



SOLAR OPTIMUM, INC
501 WEST GLENOAKS BLVD.
GLENDALE, CA 91202
800-552-9970
WWW.SOLAROPTIMUM.COM
LICENSE NUMBER 972228 C1



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REVISION		
MARK	DATE	DESCRIPTION
<u>1</u>	11/14/16	AS BUILT
<u>2</u>	12/14/16	AS BUILT

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

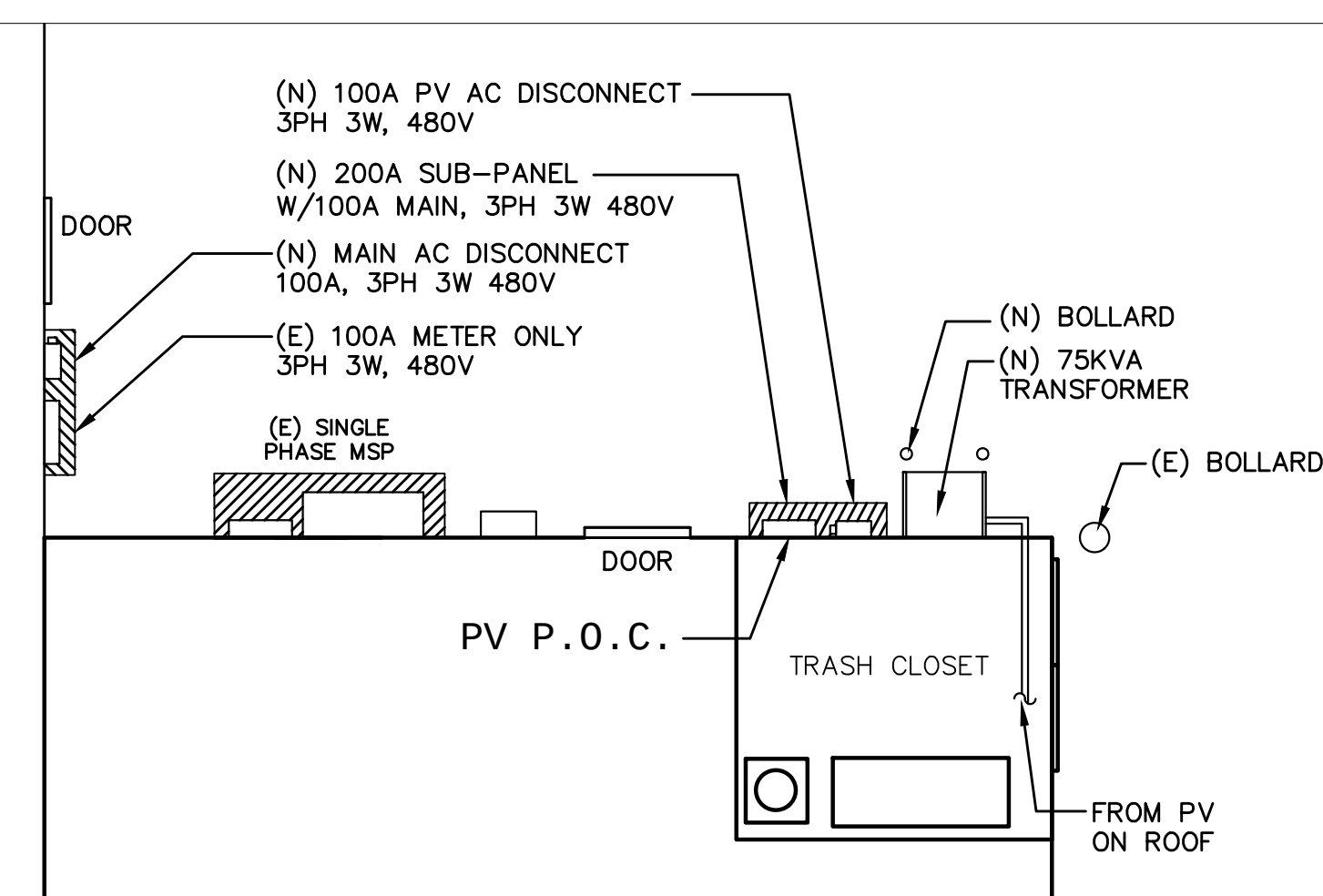
SITE PLAN
5372 PUNTA ALTA
VILLA PUERTA

S 1.7

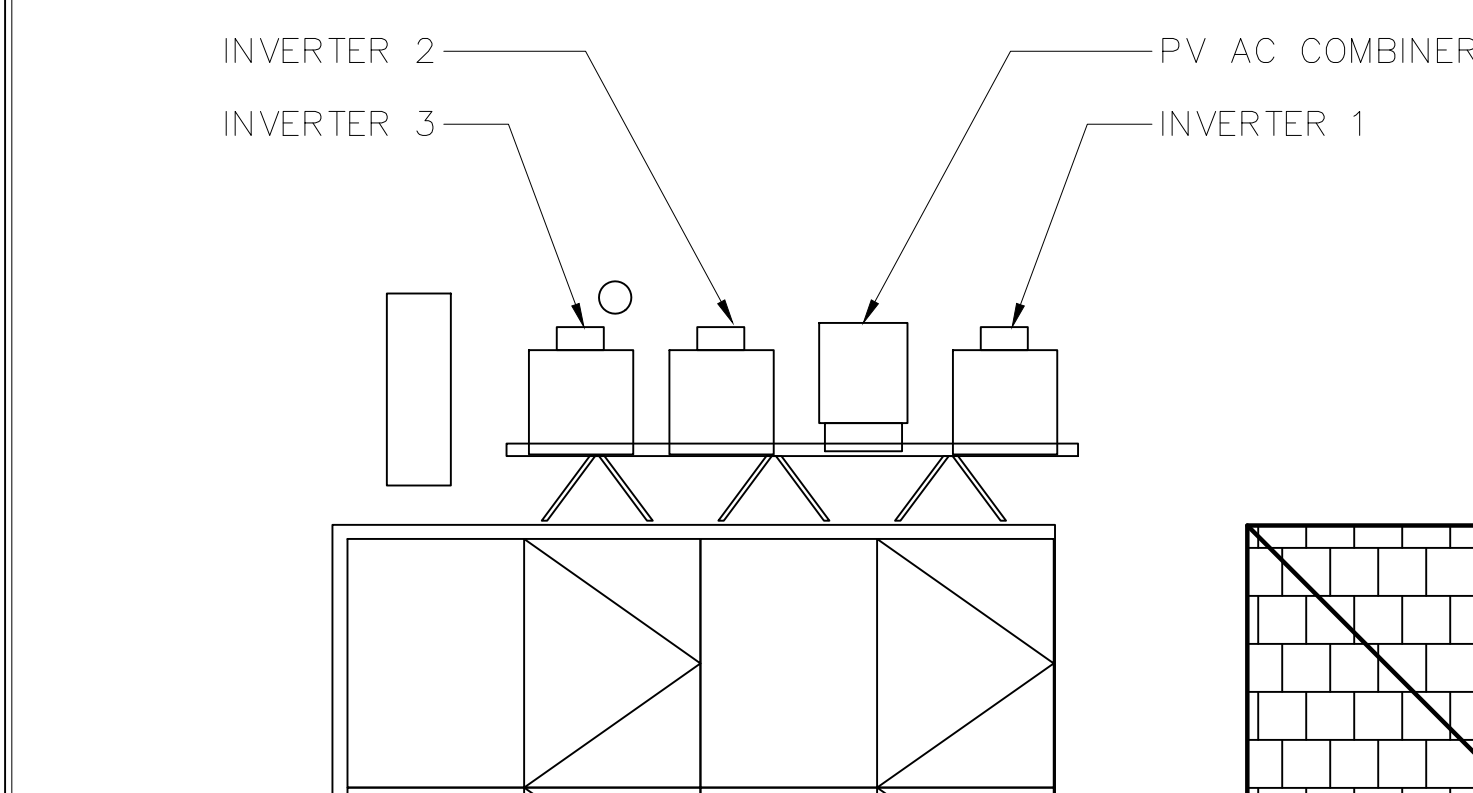
5372 PUNTA ALTA
VILLA PUERTA SITE PLAN

NOTES:

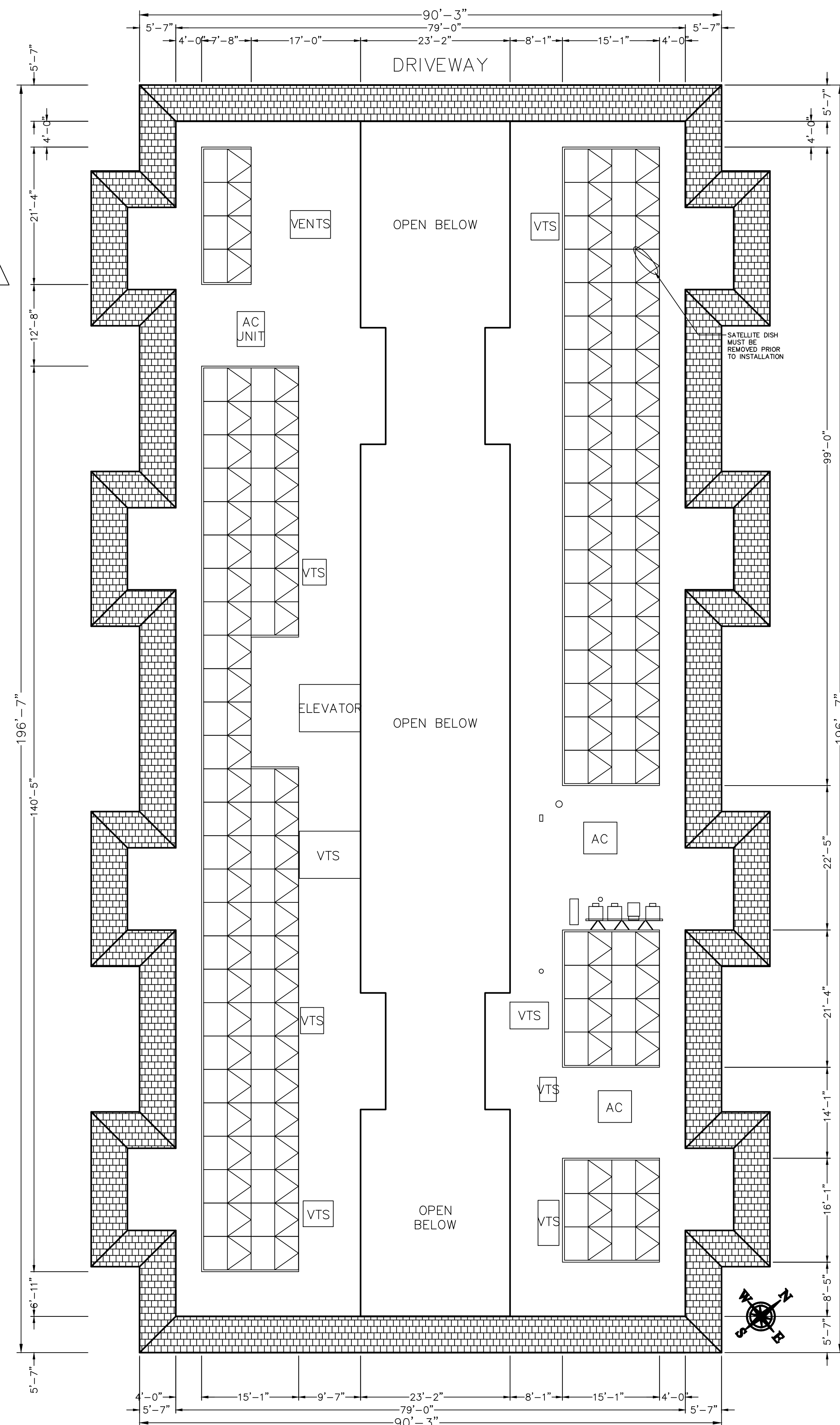
1. ROOF PERIMETER FIRE CLEARANCE: MIN 4'-0".
 2. FIRE CLEARANCE AROUND SKYLIGHT: MIN 4'-0".
 3. FIRE CLEARANCE AROUND OPENINGS: MIN 4'-0".
 4. ROOF HEIGHT: 40'-0" APPROXIMATE.
 5. ROOF PITCH: 0°
 6. CONDUIT TO PENETRATE ROOF AND ENTER THIRD FLOOR LAUNDRY ROOM.
- CONDUIT RUN WILL CONTINUE DOWN ALONG SIDE 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.



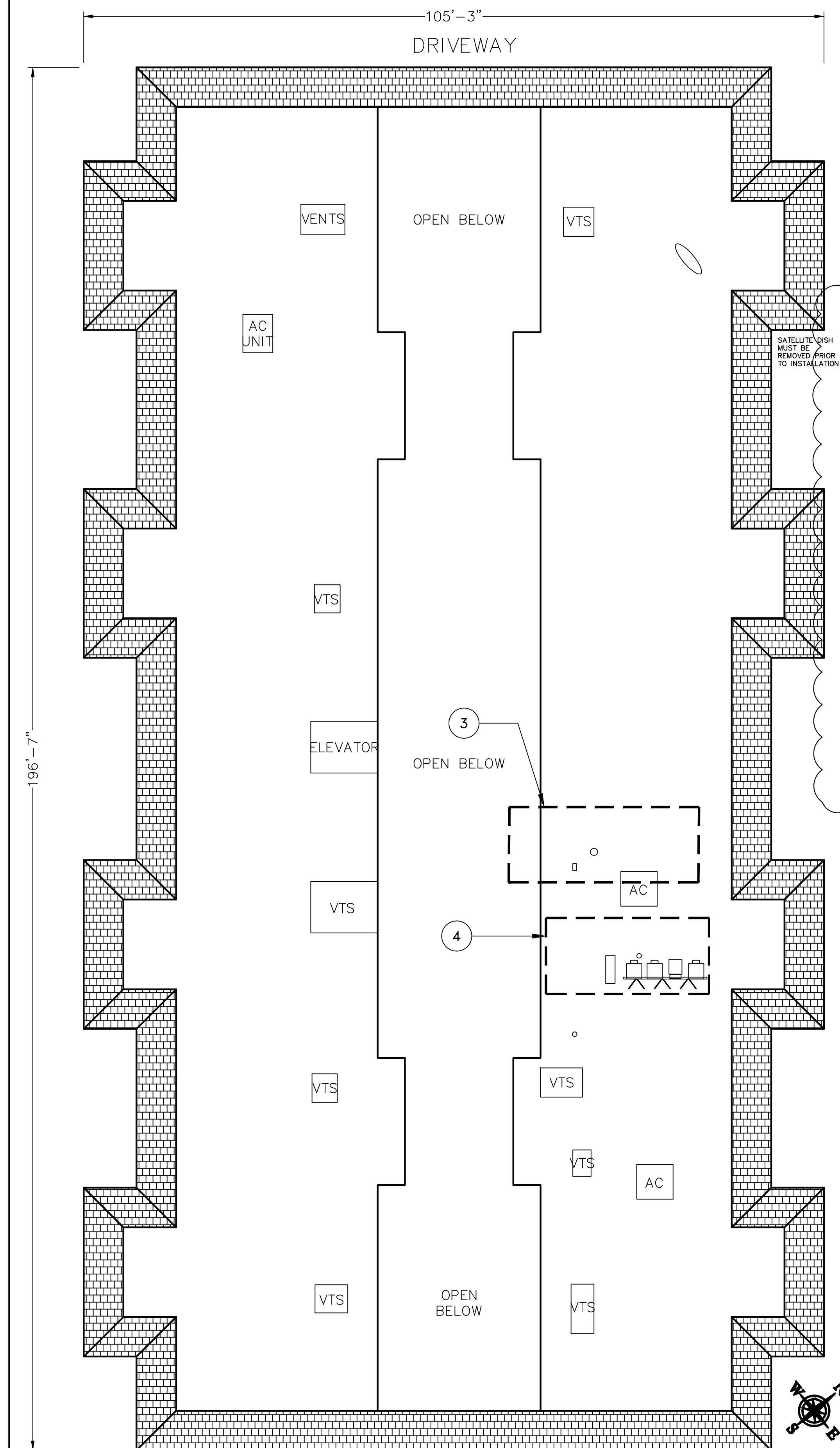
3 MAIN PANEL LOCATION 1ST FLOOR
SCALE: N.T.S.



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



② ARRAY LAYOUT
SCALE: 3/32"=1'-0"



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

WIND LOAD 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	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	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
L _B – BUILDING SCALING FACTOR (FT)		K _Z – SITE WIND PRESSURE FACTOR				
35.51		0.84				

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	112	114	10,939	4.98	2.67
TOTAL	112	114			

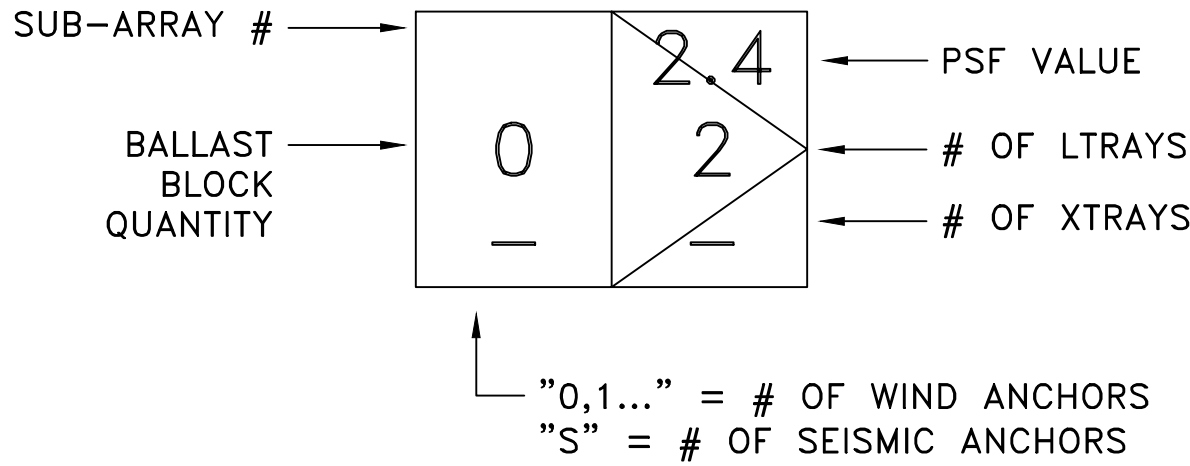
- NOTES:
- ALREADY INCLUDED THE ADDITIONAL ANCHOR & BALLAST IDENTIFIED IN NOTES ITEM#2.
 - EXISTING TRUSSES TYPICAL: 2" X 4" @ 24" O.C.
 - MAXIMUM 8PSF FOR BALLAST SYSTEM.

SITE CHARACTERIZATION			
BUILDING HEIGHT (ft)	40	BUILDING WIDTH (ft)	90.25
BUILDING LENGTH (ft)	197	PARAPET HEIGHT (ft)	1.5
WIND SPEED (ASCE7-10) (mph)	130	EXPOSURE CATEGORY	C TO B
EXPOSURE TRANSITION DISTANCE (ft)	1,597	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

5372 PUNTA ALTA VILLA 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°

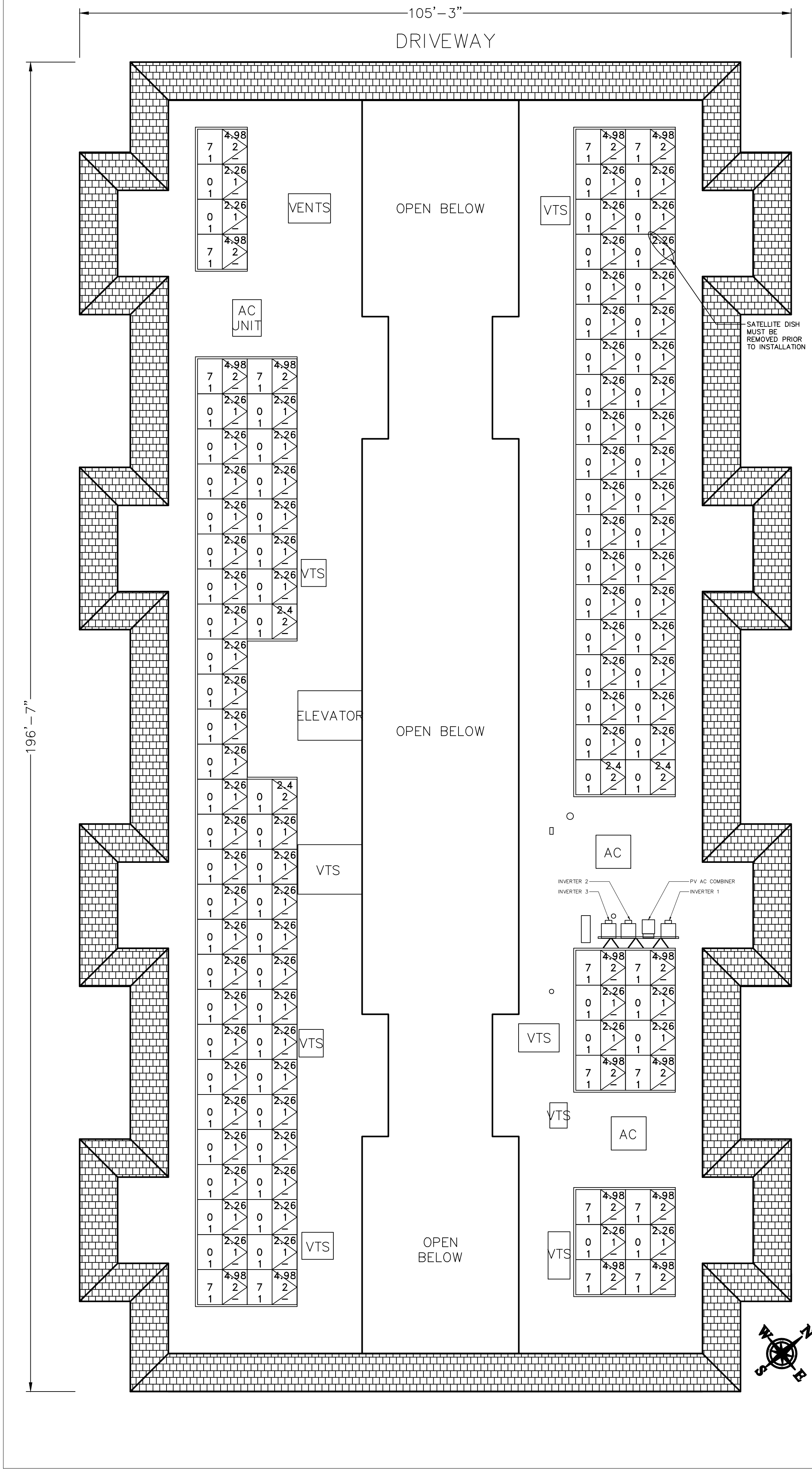
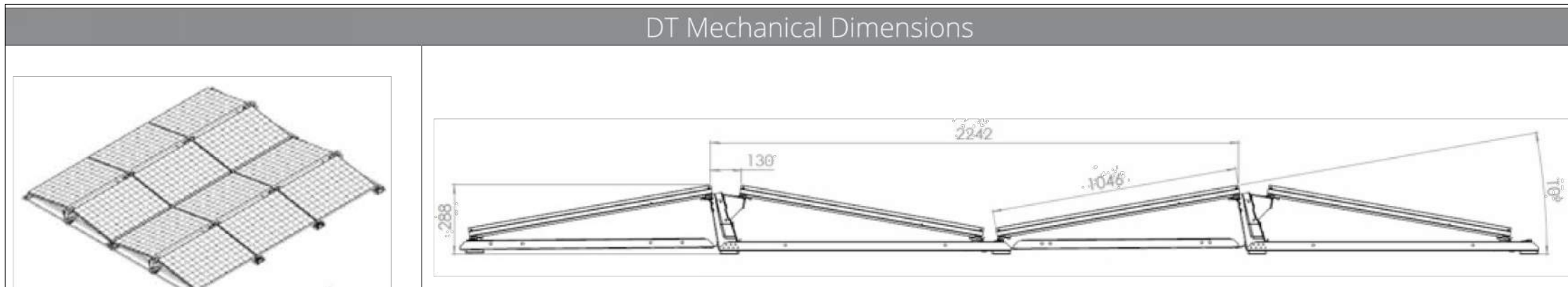
- NOTES:
- SUBARRAYS THAT DID NOT MEET THE REQUIRED MINIMUM ARRAY SIZE WILL REQUIRE ADDITIONAL ANCHORING. PLEASE CONSULT STRUCTURAL ENGINEERING.
 - ADDITIONAL ANCHORS REQUIRED PER SUBARRAY FOR LATERAL LOADS.
2.1 SUBARRAY 1: [3]
2.2 SUBARRAY 4: [2]
2.3 SUBARRAY 5: [3]
 - ADDITIONAL ANCHORS CAN BE PLACED ANYWHERE WITHIN THE SUBARRAY.



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

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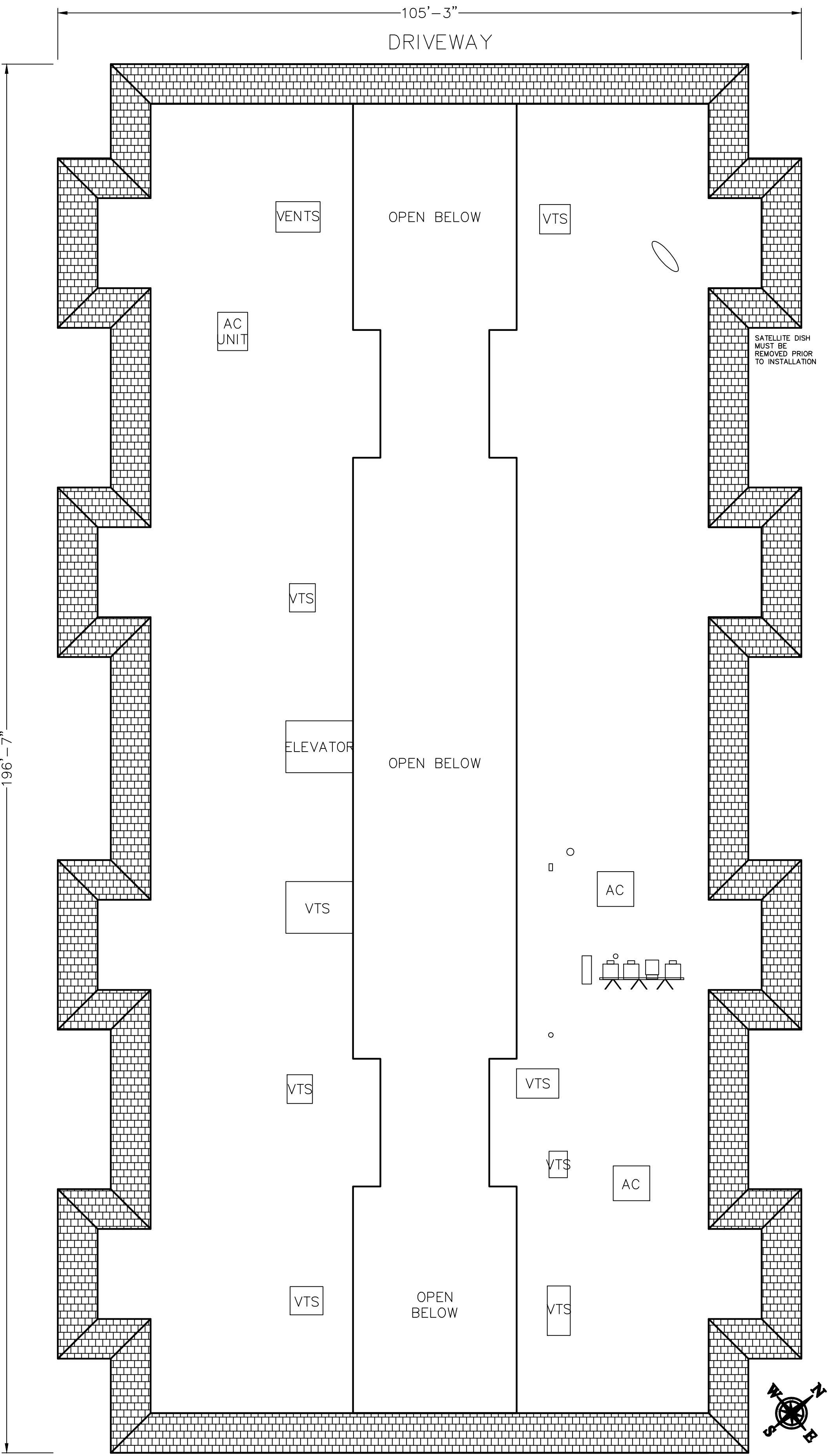
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SHEET TITLE

BALLAST AND PENETRATION
SITE PLAN
5372 PUNTA ALTA
VILLA PUERTA

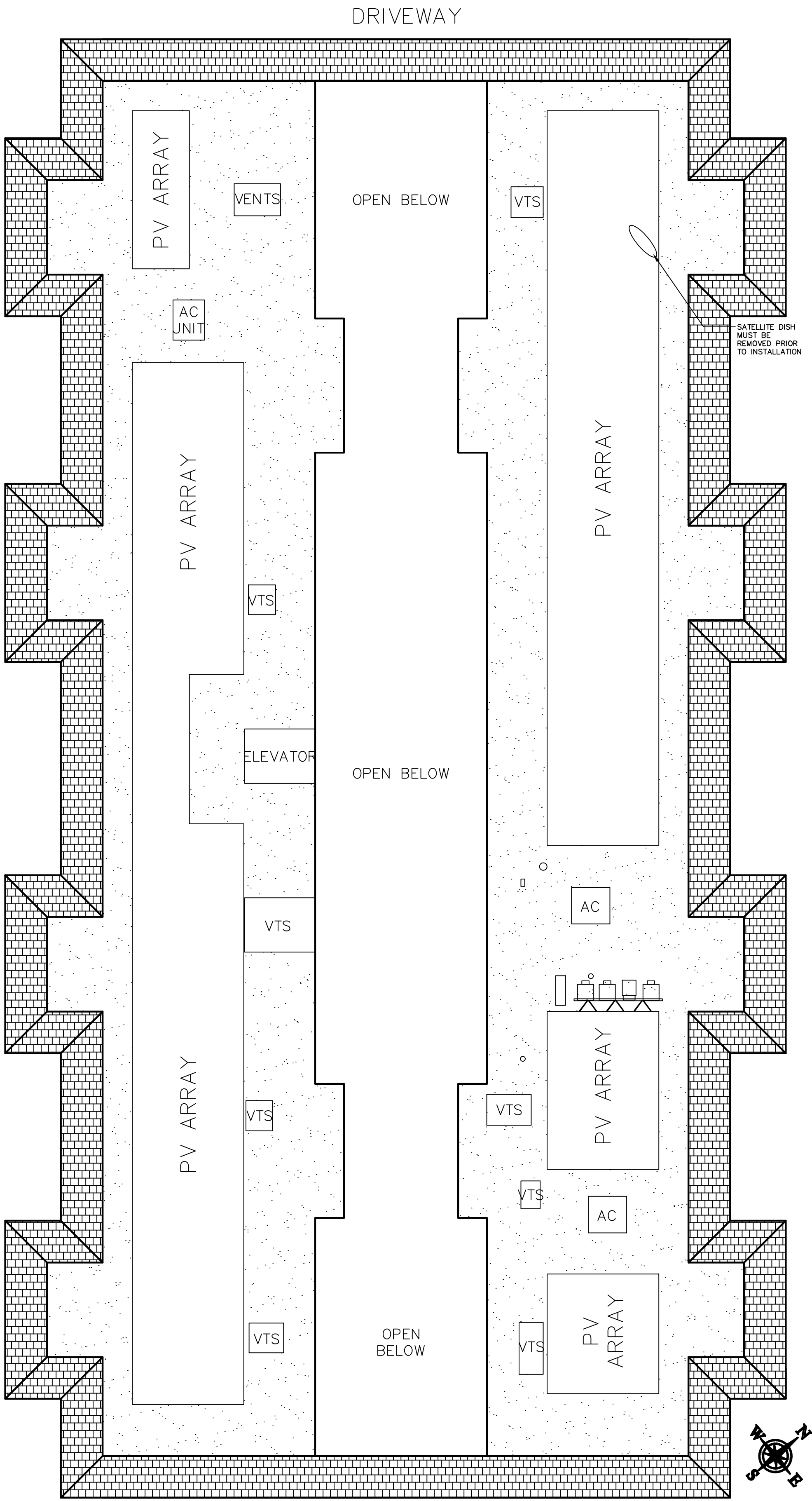
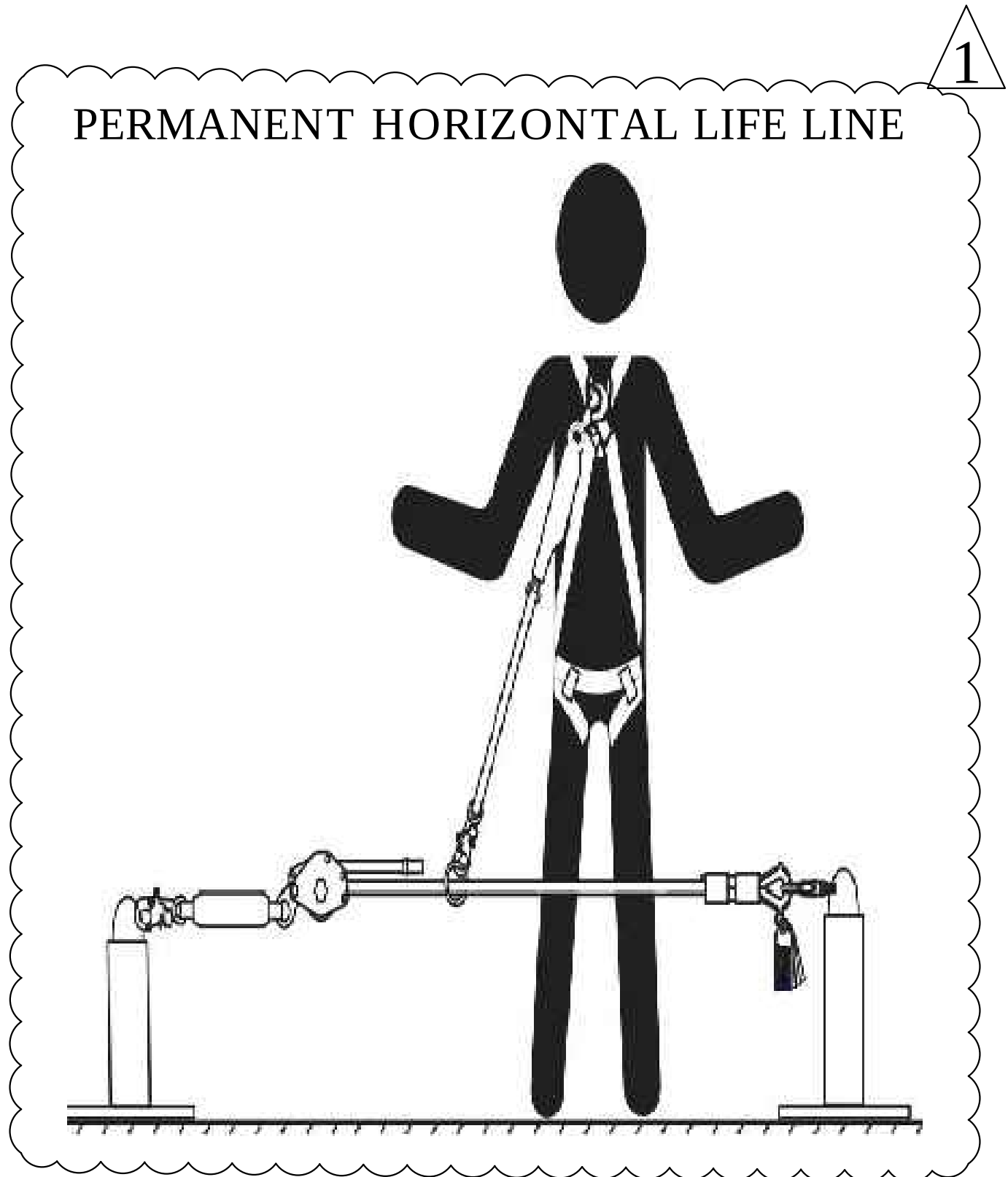
SHEET NUMBER

STR 1.7



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

5372 PUNTA ALTA
VILLA PUERTA
FIRE CLEARANCE SITE PLAN



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

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

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FIRE CLEARANCE
SITE PLAN
5372 PUNTA ALTA
VILLA PUERTA

SHEET NUMBER

S1.7F

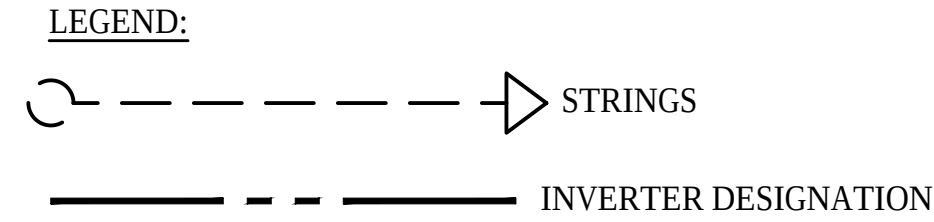
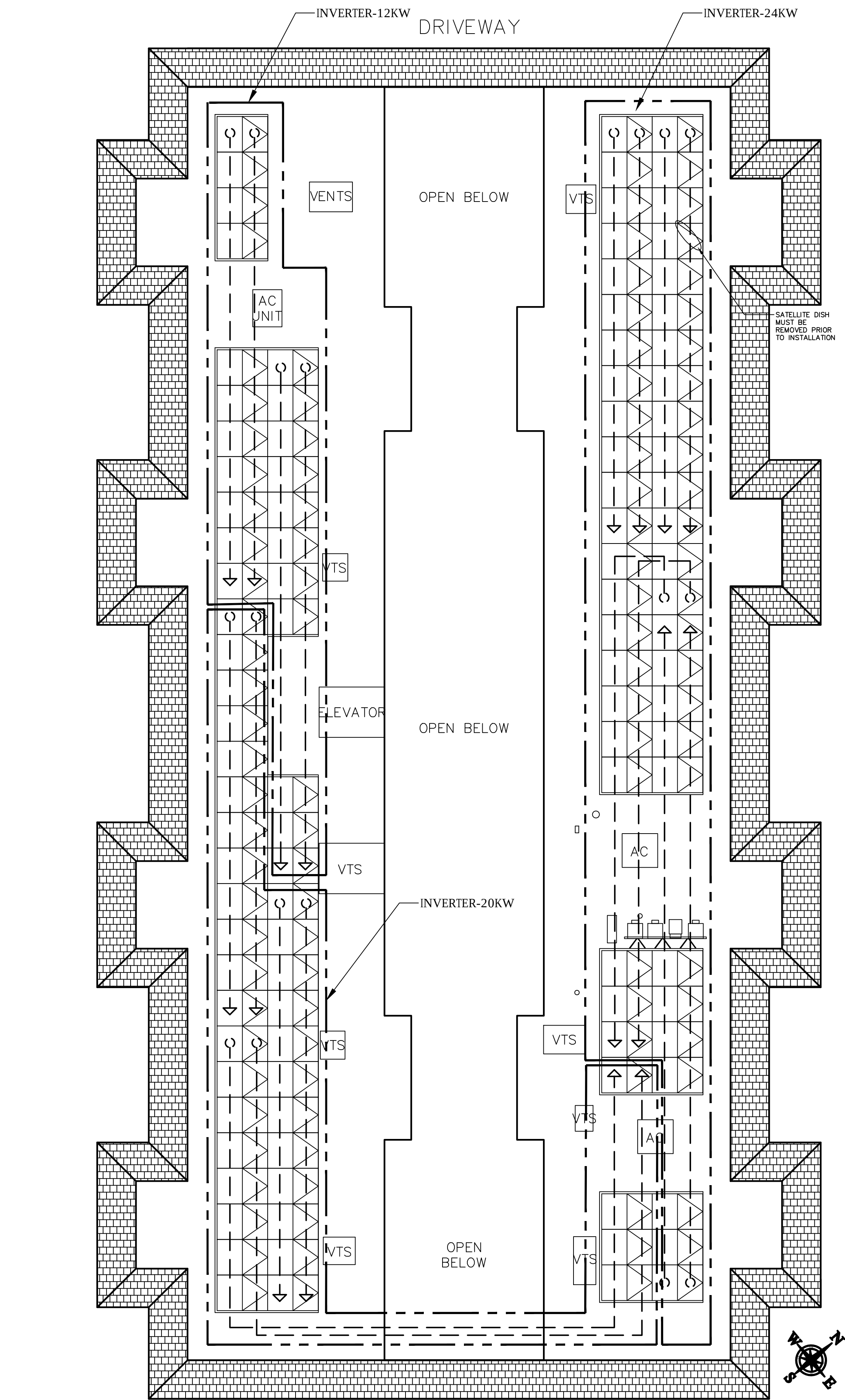
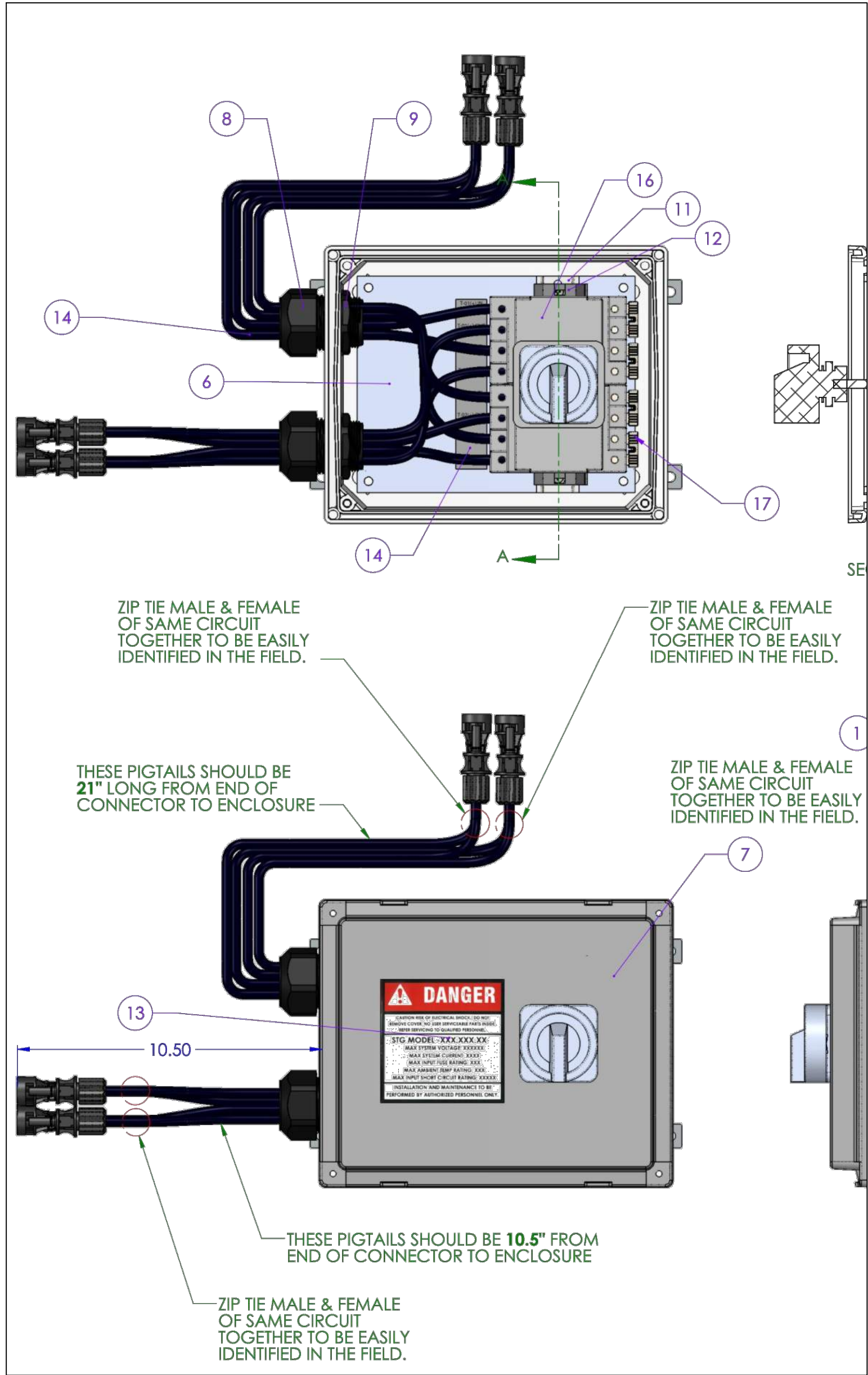
5372 PUNTA ALTA VILLA
STRING LAYOUT

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"

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SHEET TITLE

STRING LAYOUT

SHEET NUMBER

S1.1 ST

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 5/8" 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 AC DISCONNECT

OPERATING CURRENT: 29.6 A	MAXIMUM AC 36.25 A
OPERATING VOLTAGE: 748.2 V	OPERATING CURRENT: 29 A
MAXIMUM CURRENT: 32.2 A	NOMINAL AC 480 V
MAXIMUM VOLTAGE: 887.8 V	OPERATING VOLTAGE: 480 V

INVERTER 3: 12kW

WARNING: ELECTRIC SHOCK HAZARD

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

DC DISCONNECT AC DISCONNECT

OPERATING CURRENT: 14.8 A	MAXIMUM AC 18.75 A
OPERATING VOLTAGE: 685.93 V	OPERATING CURRENT: 14.4 A
MAXIMUM CURRENT: 16.14 A	NOMINAL AC 480 V
MAXIMUM VOLTAGE: 813.84 V	OPERATING VOLTAGE: 480 V

INVERTER 2: 20kW

WARNING: ELECTRIC SHOCK HAZARD

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

DC DISCONNECT AC DISCONNECT

OPERATING CURRENT: 22.2 A	MAXIMUM AC 30 A
OPERATING VOLTAGE: 748.2 V	OPERATING CURRENT: 24 A
MAXIMUM CURRENT: 24.21 A	NOMINAL AC 480 V
MAXIMUM VOLTAGE: 887.8 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

PHOTOVOLTAIC POWER SOURCE

OPERATING AC VOLTAGE: 277/480V
MAXIMUM OPERATING AC OUTPUT
CURRENT: 84.25 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: 84.25 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: 84.25 A
OPERATING VOLTAGE: 480 V

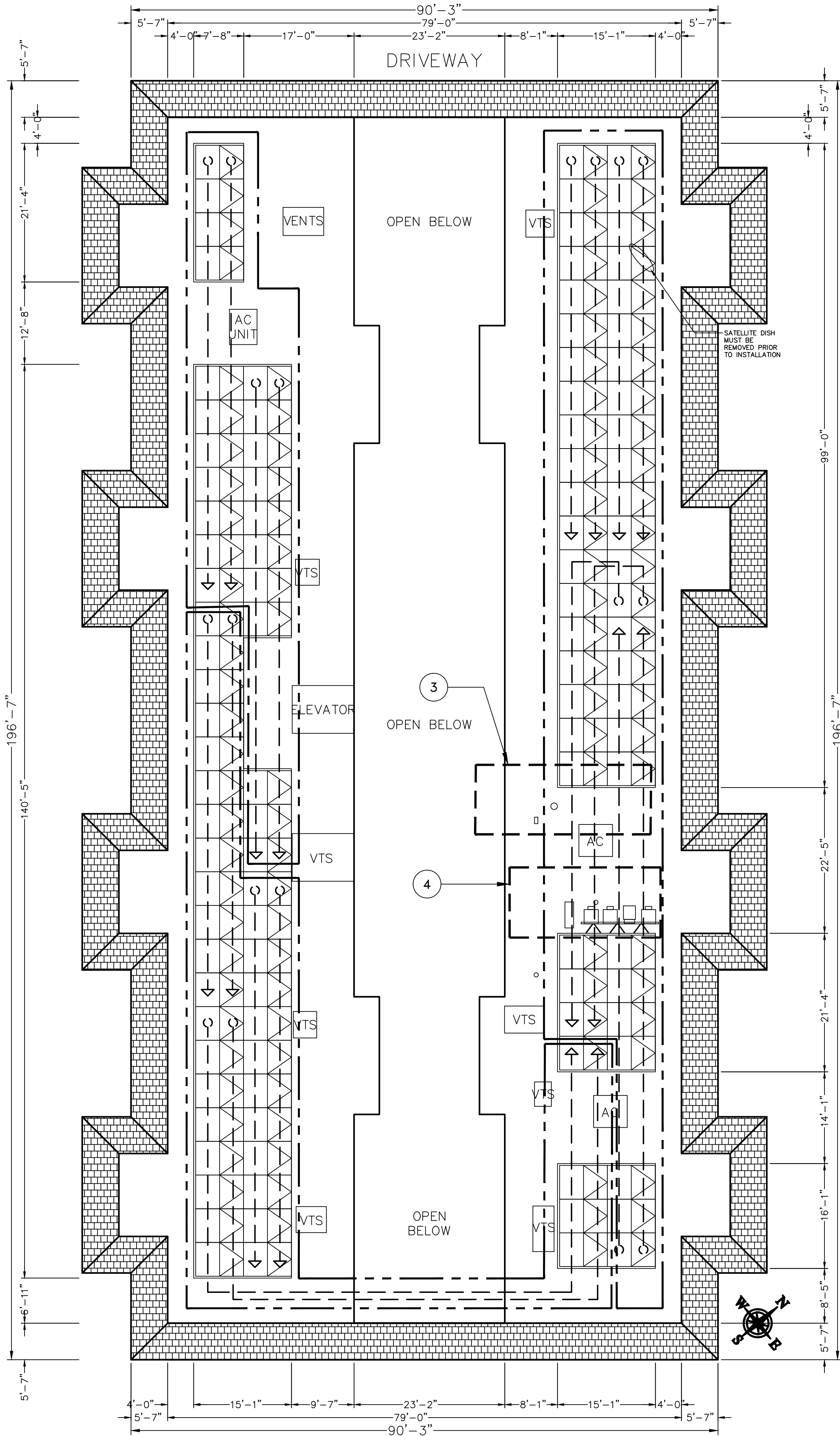
CAUTION:
EMERGENCY AC
SOLAR DISCONNECT
RAPID SHUTDOWN SYSTEM
IS LOCATED AT THE
AC COMBINER BOX ON THE ROOF
"YOU MUST TURN OFF ALL
INVERTER BREAKERS"

MARKING FOR MAIN SERVICE AND AC COMBINER

5372 PUNTA ALTA
VILLA 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 ARRAY LAYOUT
SCALE: 3/32"=1'-0"

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

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SHEET TITLE

LABELS

SHEET NUMBER

S1.7L

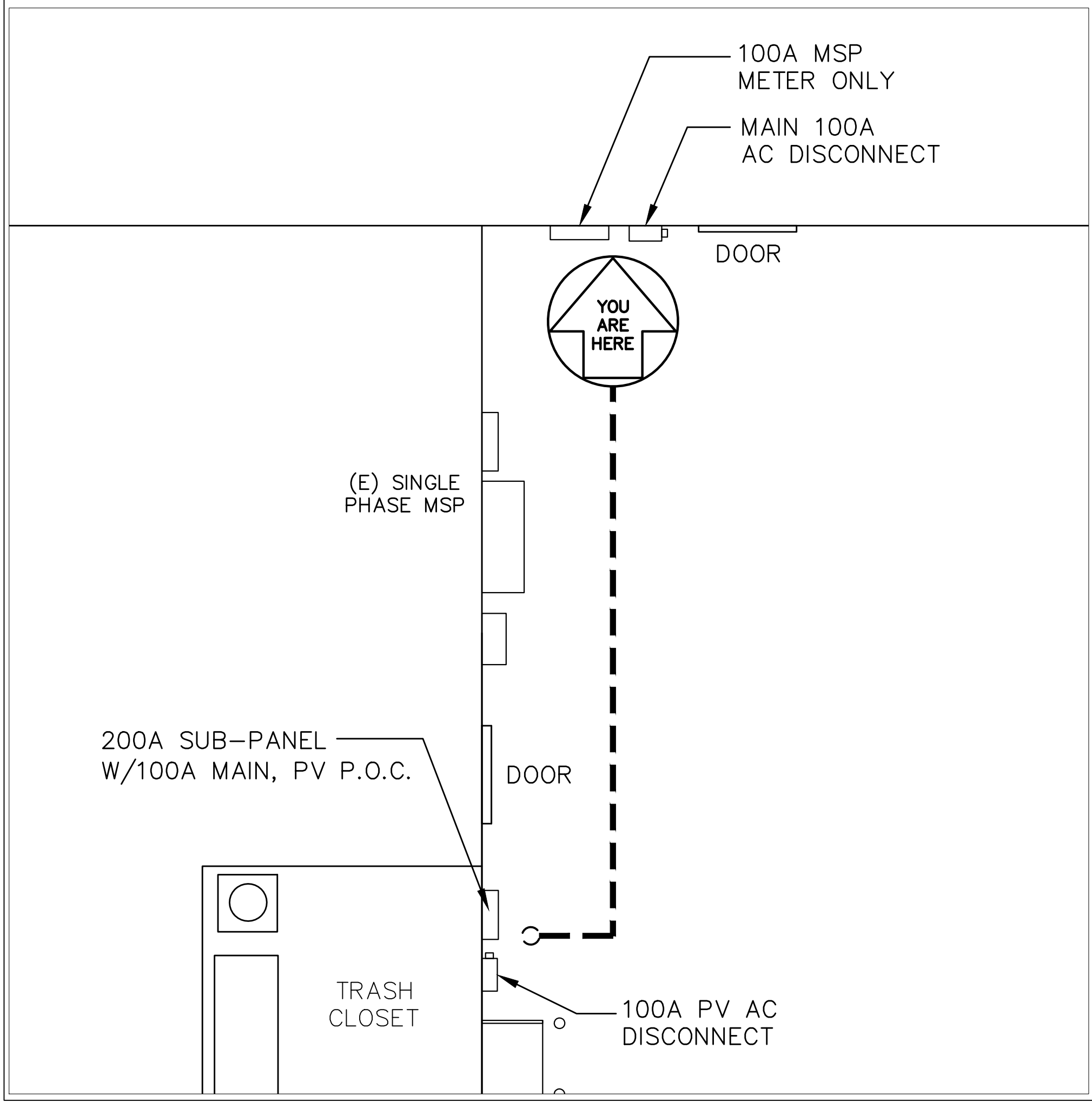
NOTES:

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.

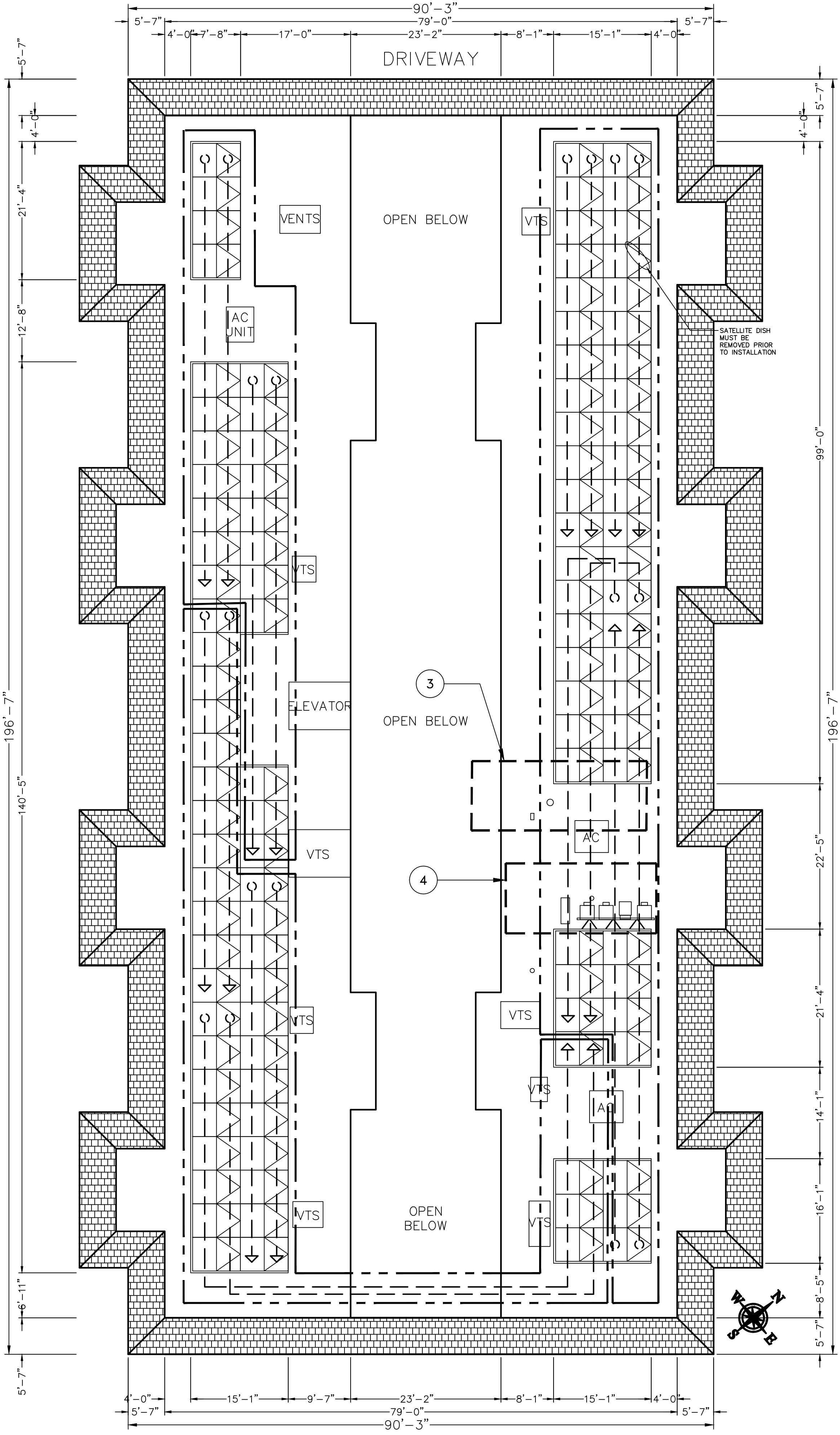
5372 PUNTA ALTA
VILLA SITE PLAN

CAUTION

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



1 DIRECTORY MAP
SCALE: N.T.S.



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

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LABELS

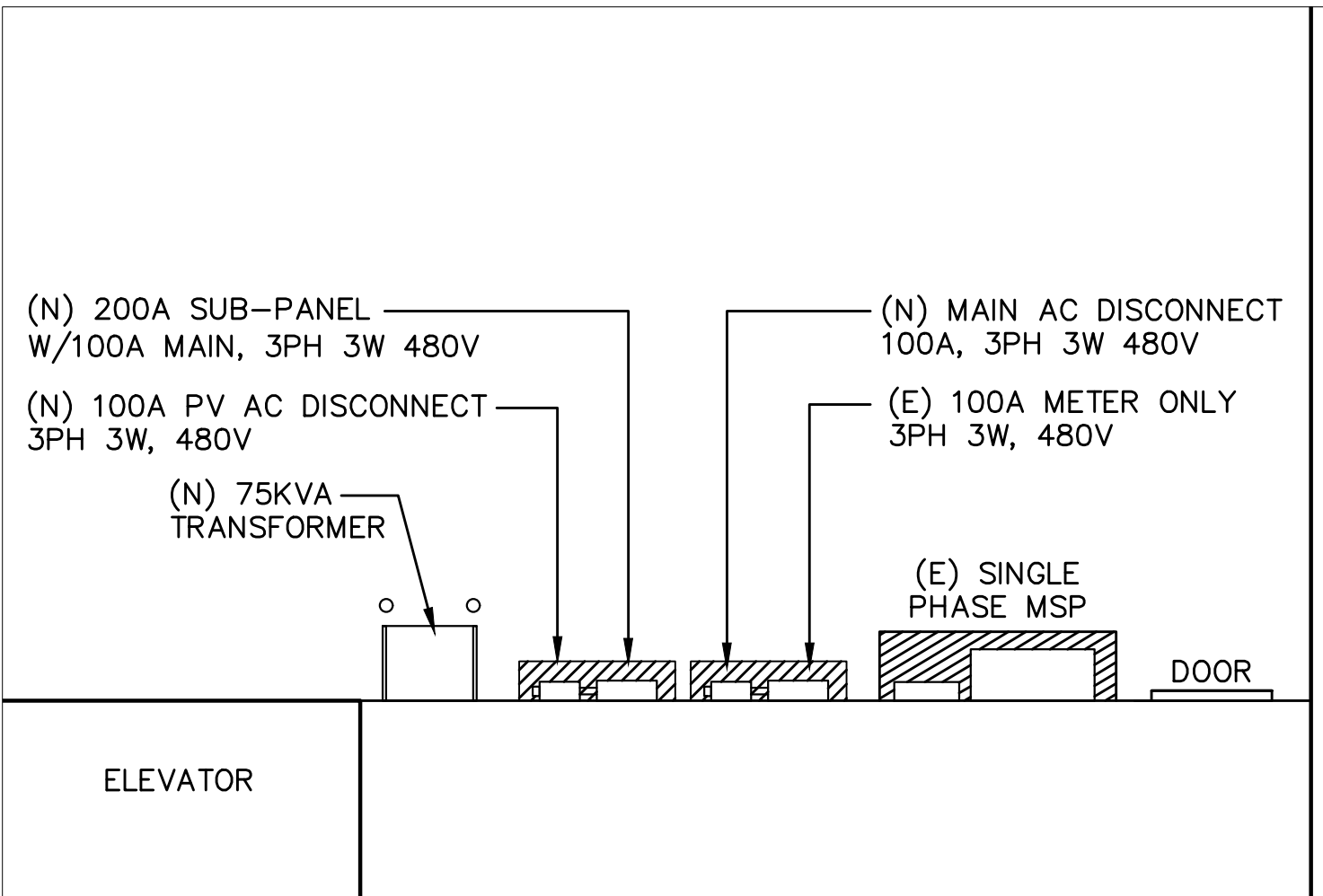
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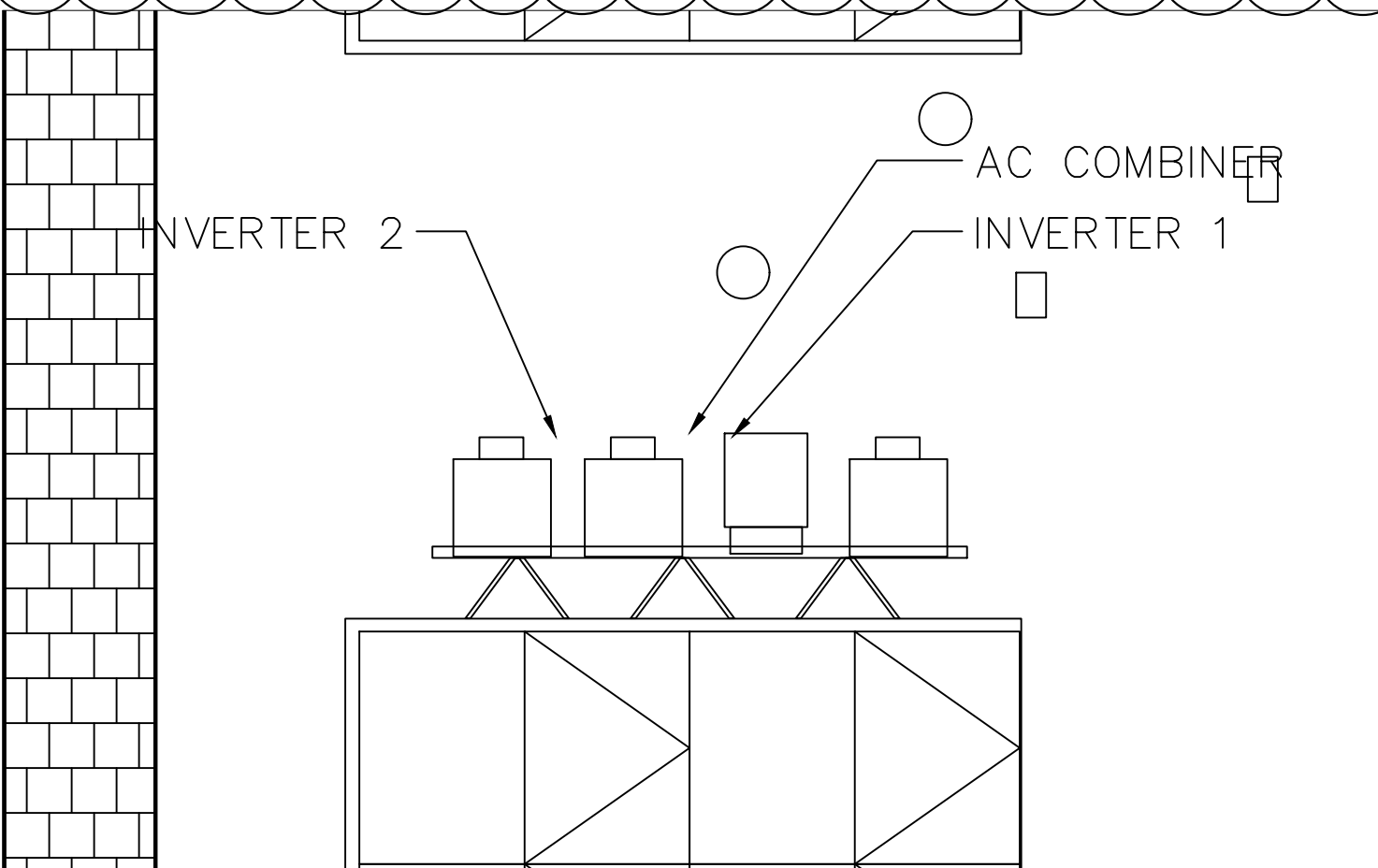
2353 VIA PUERTA
SITE PLAN

NOTES:

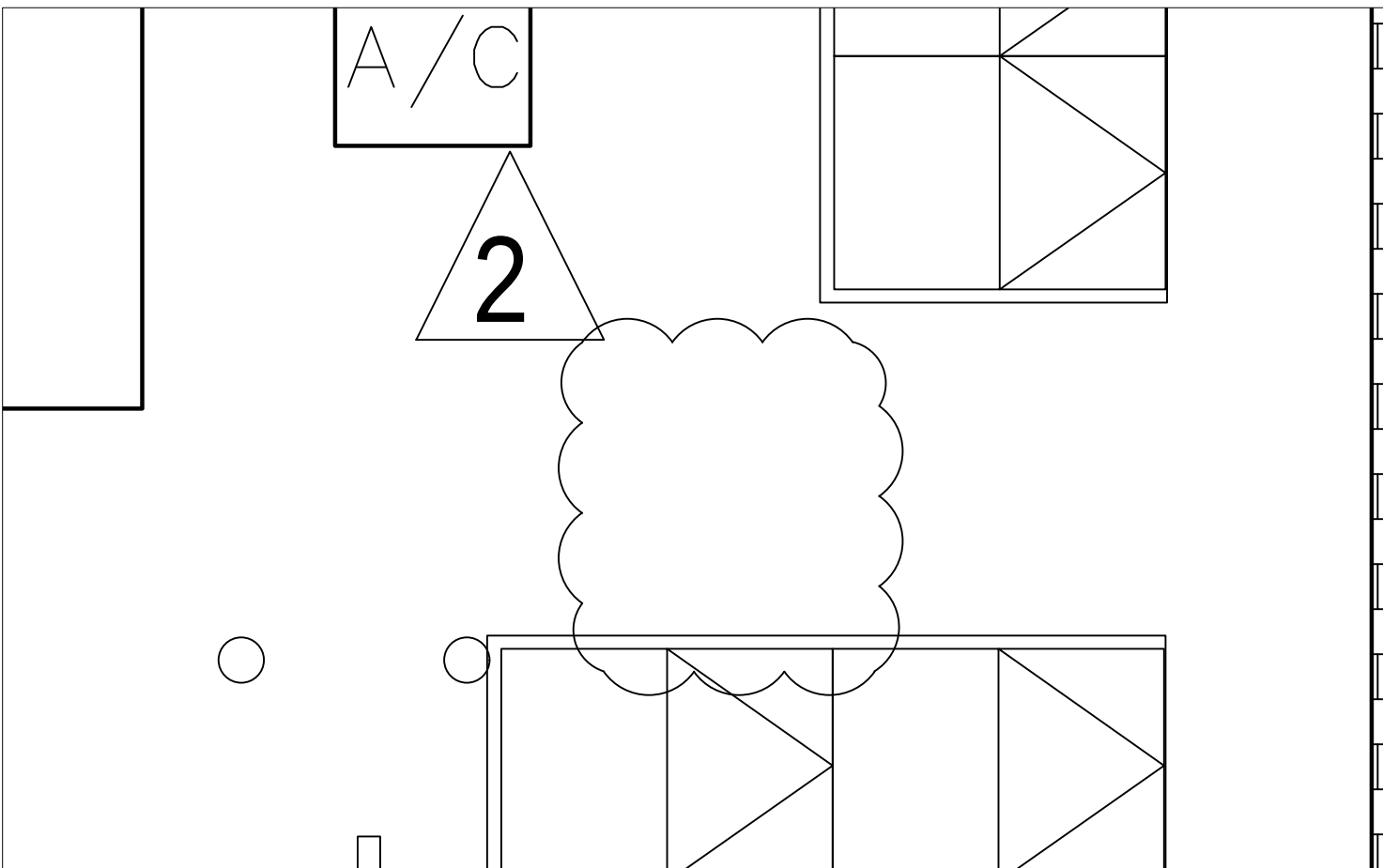
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3. FIRE CLEARANCE AROUND OPENINGS: MIN 4'-0".
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5. ROOF PITCH: 0°
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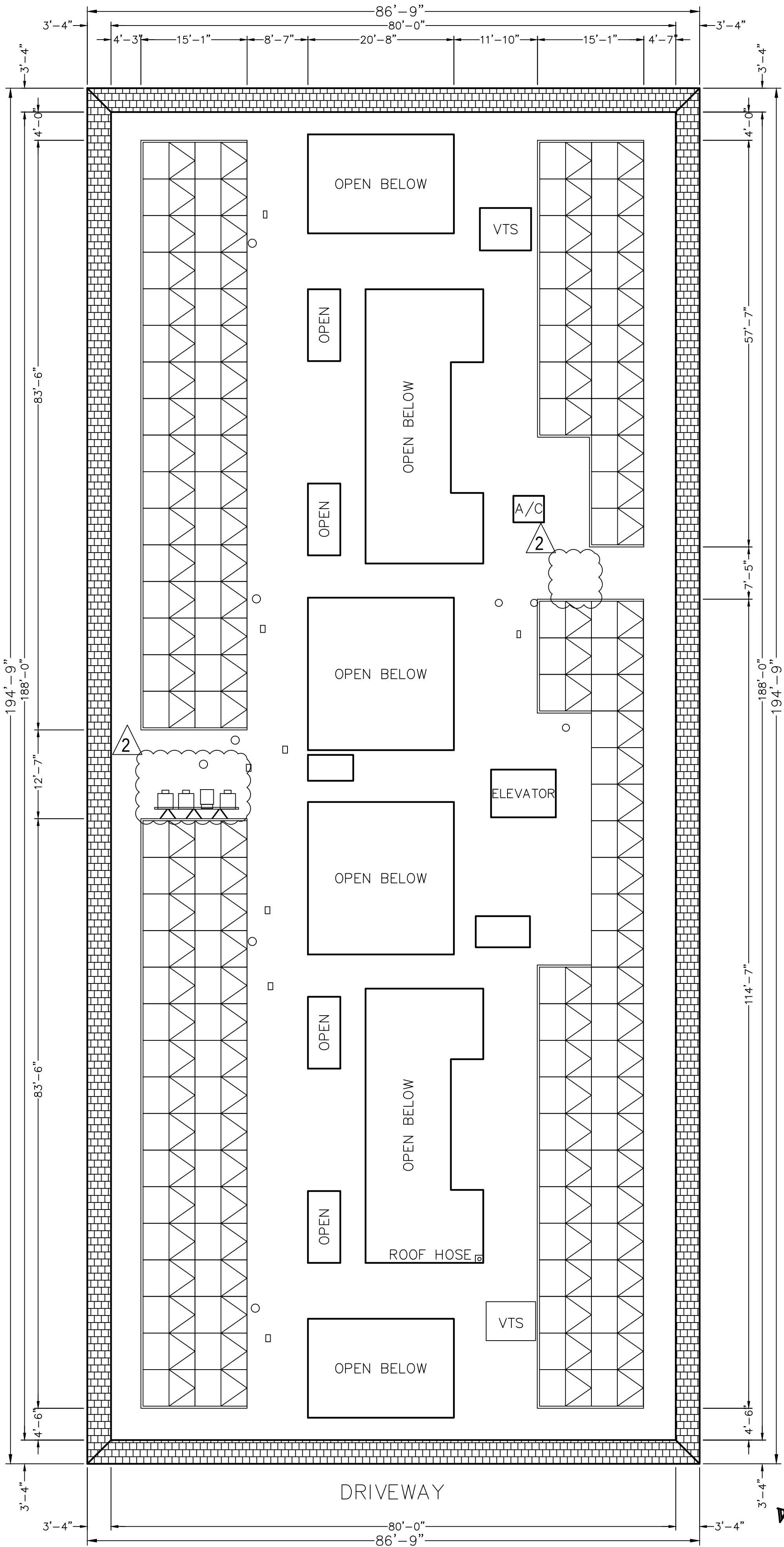
3 MAIN PANEL LOCATION 1ST FLOOR
SCALE: N.T.S.



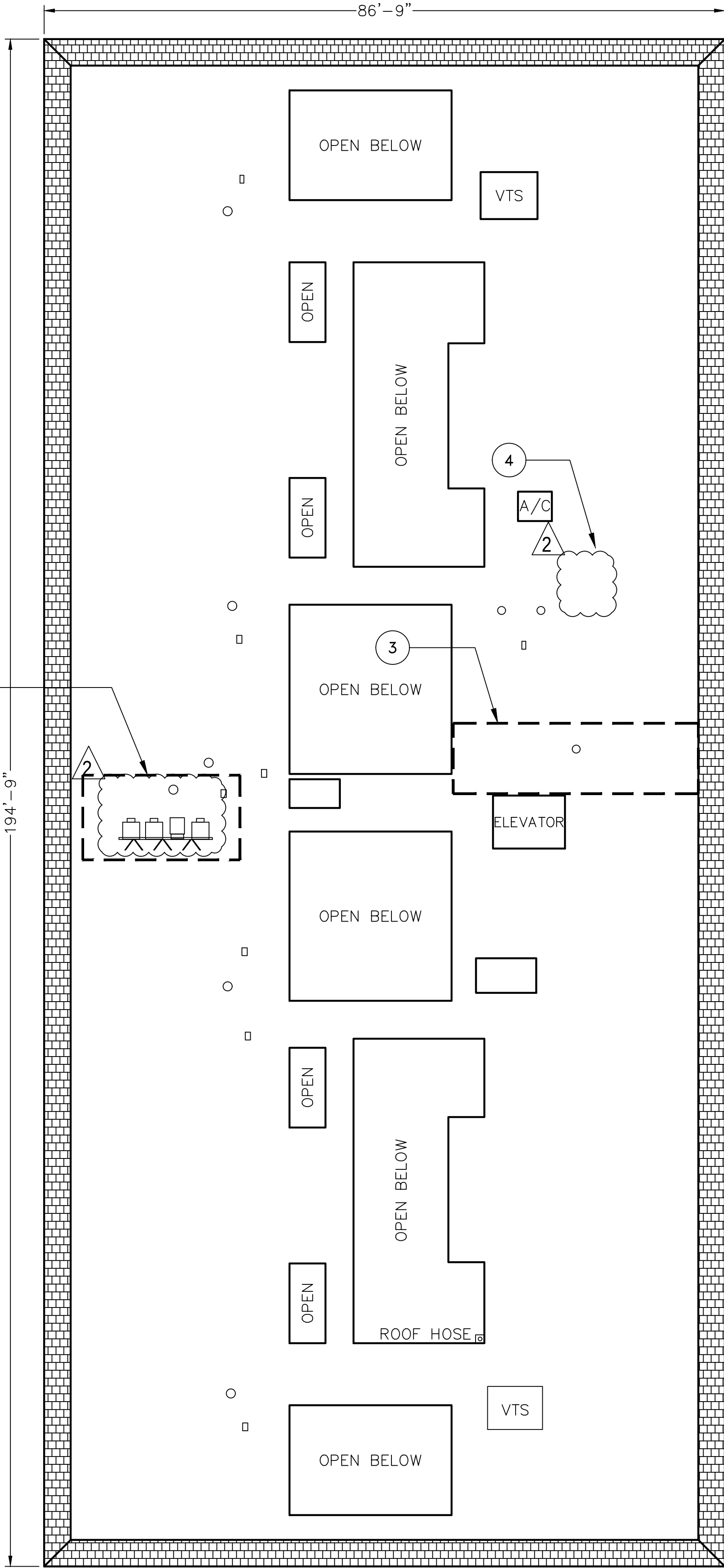
4 POWER STATION LOCATION ROOF
SCALE: N.T.S.



5 POWER STATION 2 LOCATION ROOF
SCALE: N.T.S.



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



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

PROJECT SITE

THIRD MUTUAL
LAGUNA WOODS VILLAGES

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SHEET TITLE

SITE PLAN
2353 VIA PUERTA

SHEET NUMBER

S1.9

WIND LOAD SUMMARY						
OUTPUTS		WIND ZONES				
PANEL TYPES	ATTRIBUTES	A	B	C	D	E
1	Ballast Block(s)	6	0	13	5	0
	Wind Anchor(s)	1	1	0	0	0
	Pressure (psf)	4.62	2.40	7.20	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				
35.33		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	66	120	11,495	4.62	2.48
TOTAL	66	120			

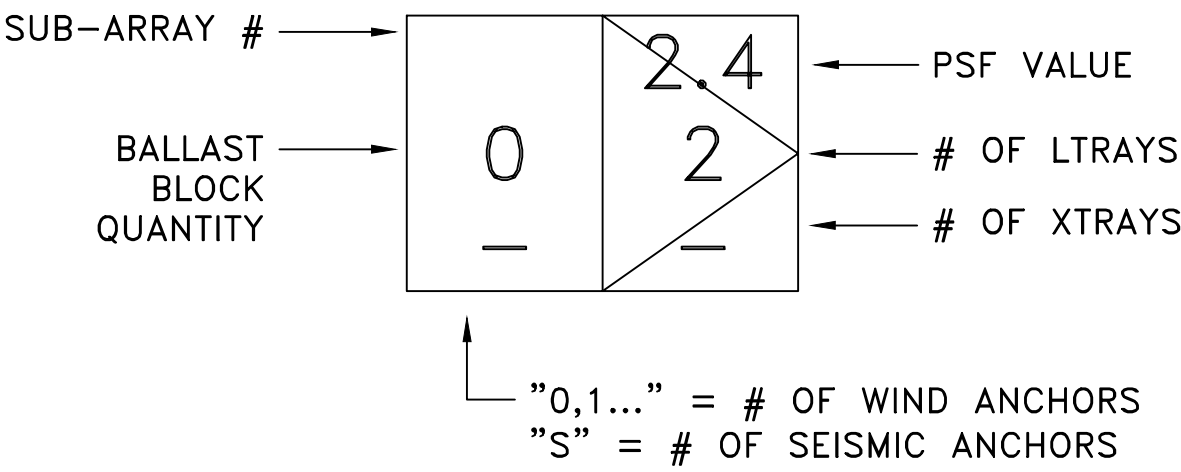
NOTES:

- EXISTING TRUSSES TYPICAL: 2" X 4" @ 24" O.C.
- MAXIMUM 8PSF FOR BALLAST SYSTEM.

SITE CHARACTERIZATION			
BUILDING HEIGHT (ft)	40	BUILDING WIDTH (ft)	87
BUILDING LENGTH (ft)	195	PARAPET HEIGHT (ft)	0.3
WIND SPEED (ASCE7-10) (mph)	130	EXPOSURE CATEGORY	B TO C
EXPOSURE TRANSITION DISTANCE (ft)	1677	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

2353 VIA PUERTA BALLAST AND PENETRATION PLAN

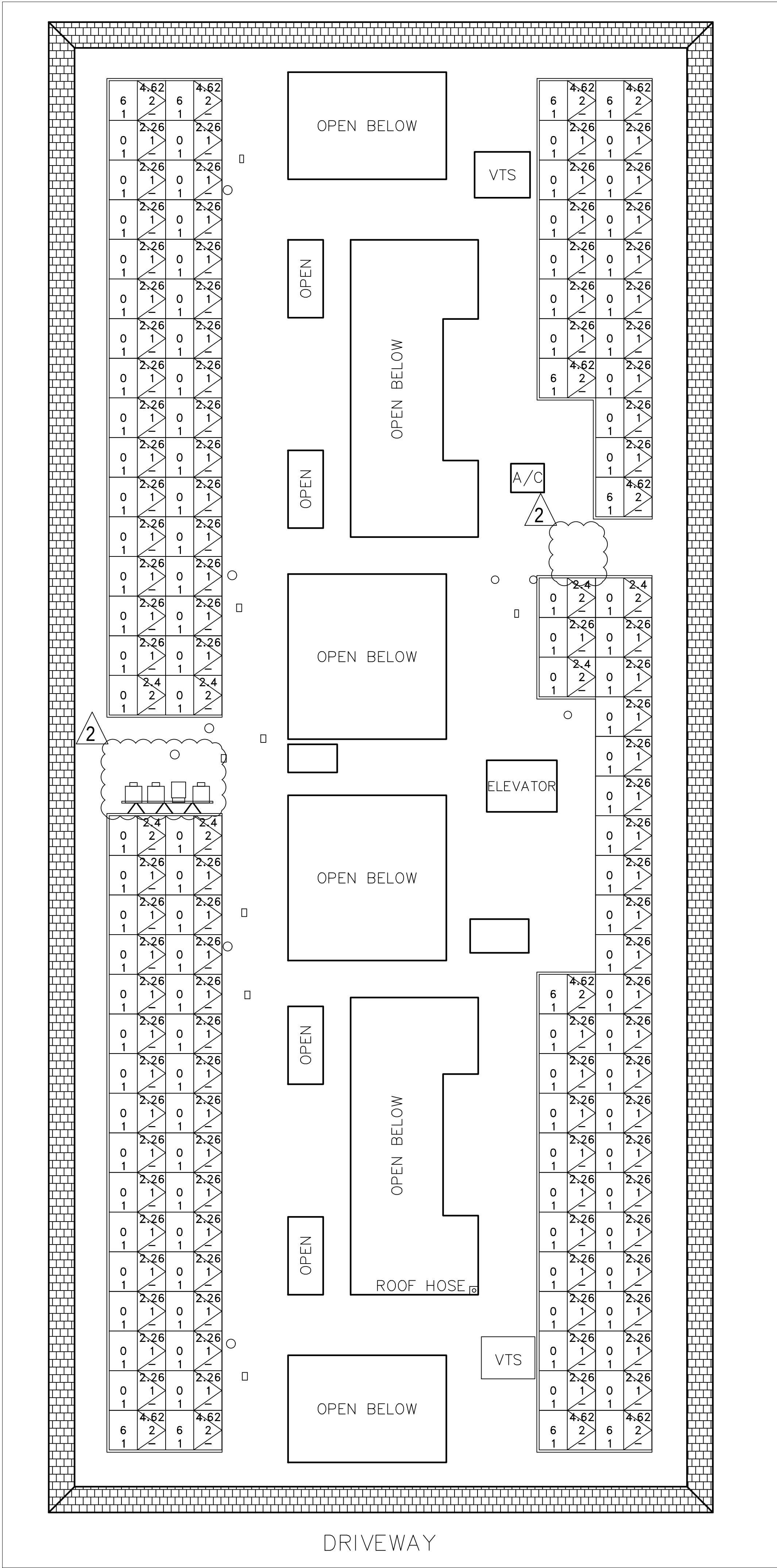
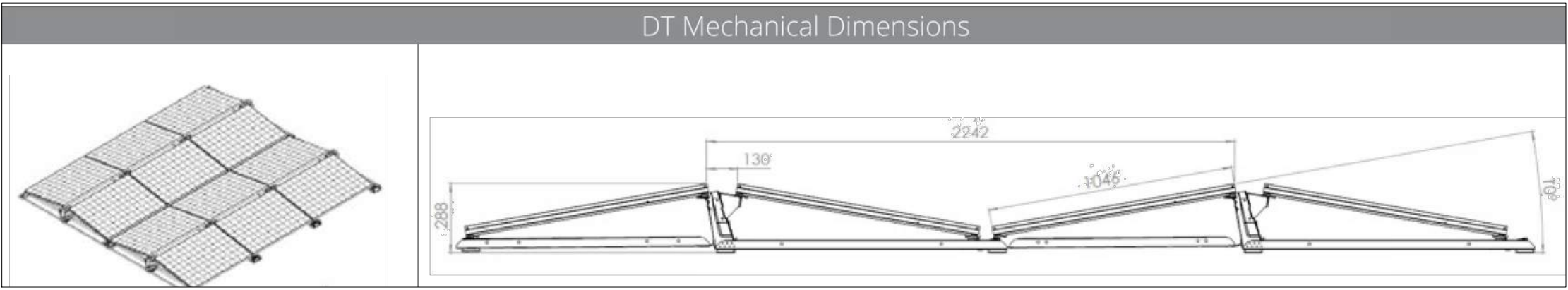
PROPOSED SYSTEM SPECIFICATION
TOTALS: 78.48 kWp 240 HIGH EFF. (327W) MODULES 12 MODULES/STRING, 20 STRINGS ROOF HEIGHT: 40' ROOF PITCH: ASSUMED FLAT



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

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

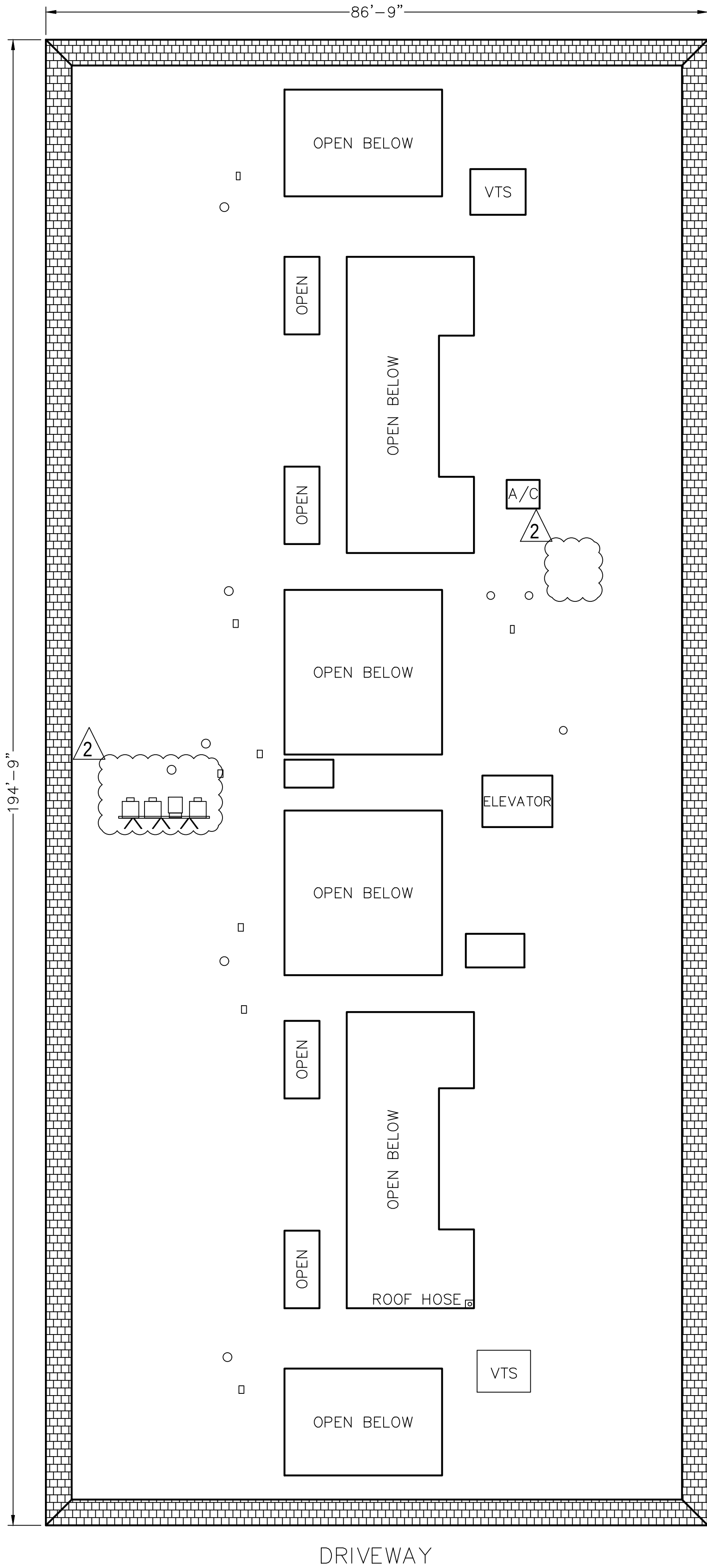
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CHECKED BY: T.T.T.
SCALE: AS SHOWN
DATE: 12/21/16

SHEET TITLE

BALLAST AND
PENETRATION PLAN
2353 VIA PUERTA

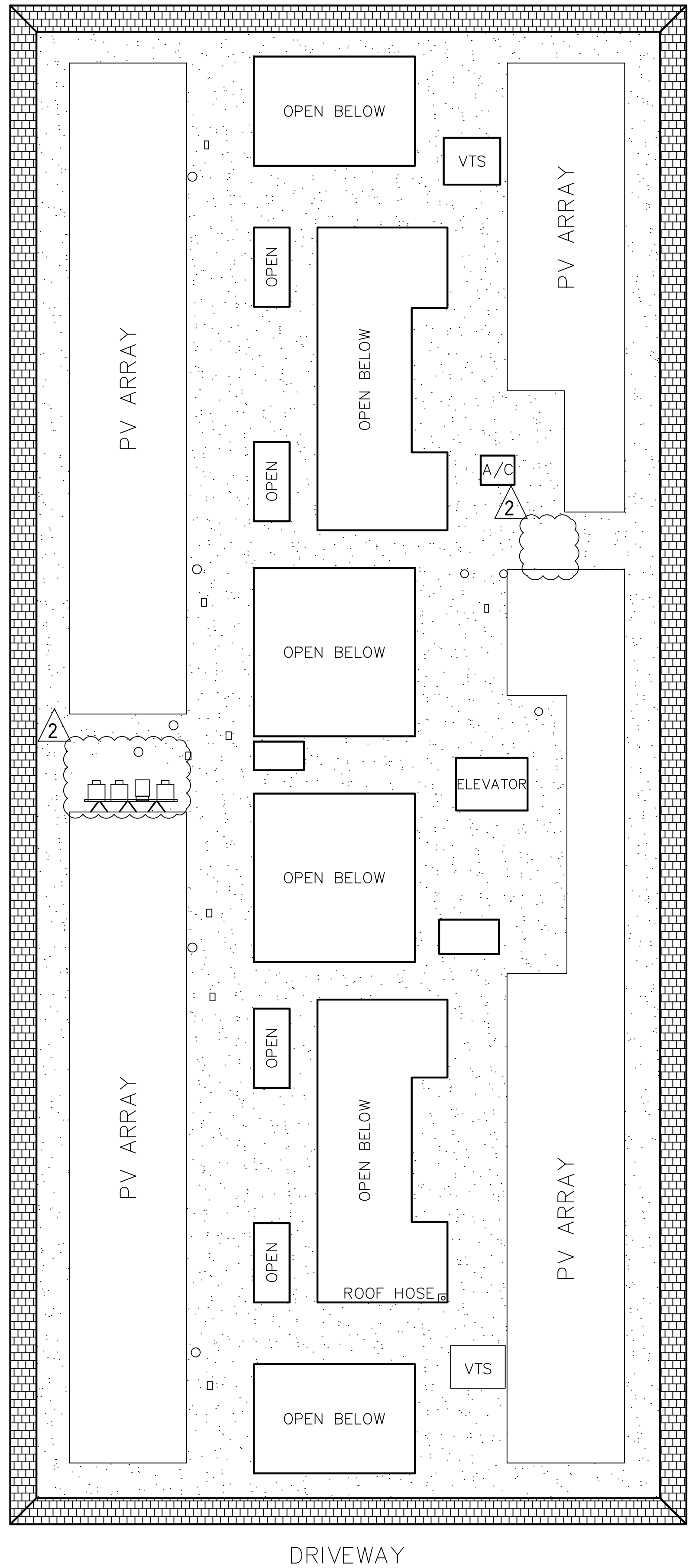
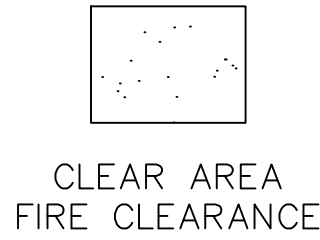
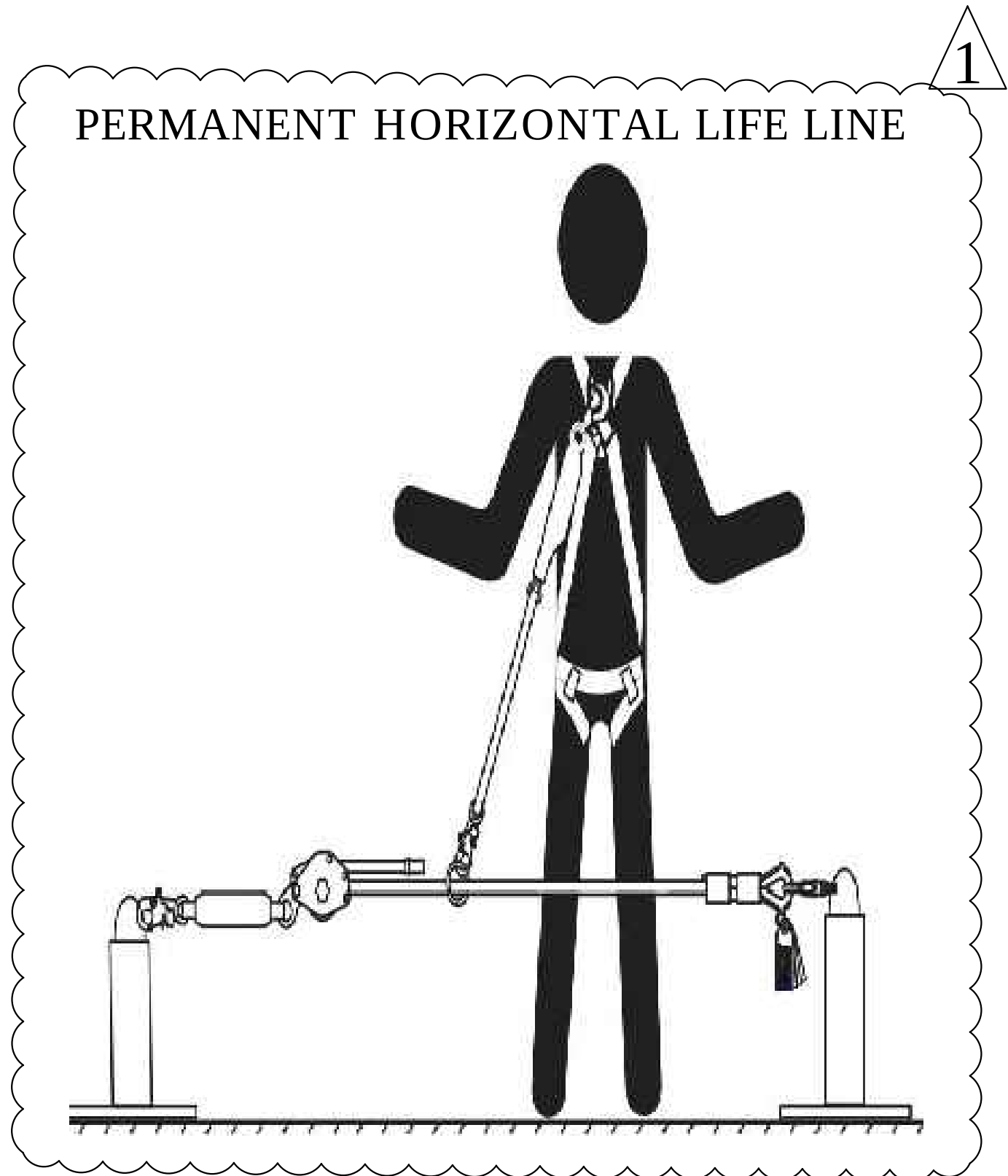
SHEET NUMBER

STR 1.9



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

2353 VIA PUERTA
FIRE CLEARANCE SITE PLAN



2 FIRE CLERANCE 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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CHECKED BY:

T.T.T.

SCALE:

AS SHOWN

DATE:

12/21/16

SHEET TITLE

FIRE CLEARANCE
SITE PLAN
2353 VIA PUERTA

SHEET NUMBER

S 1.9F

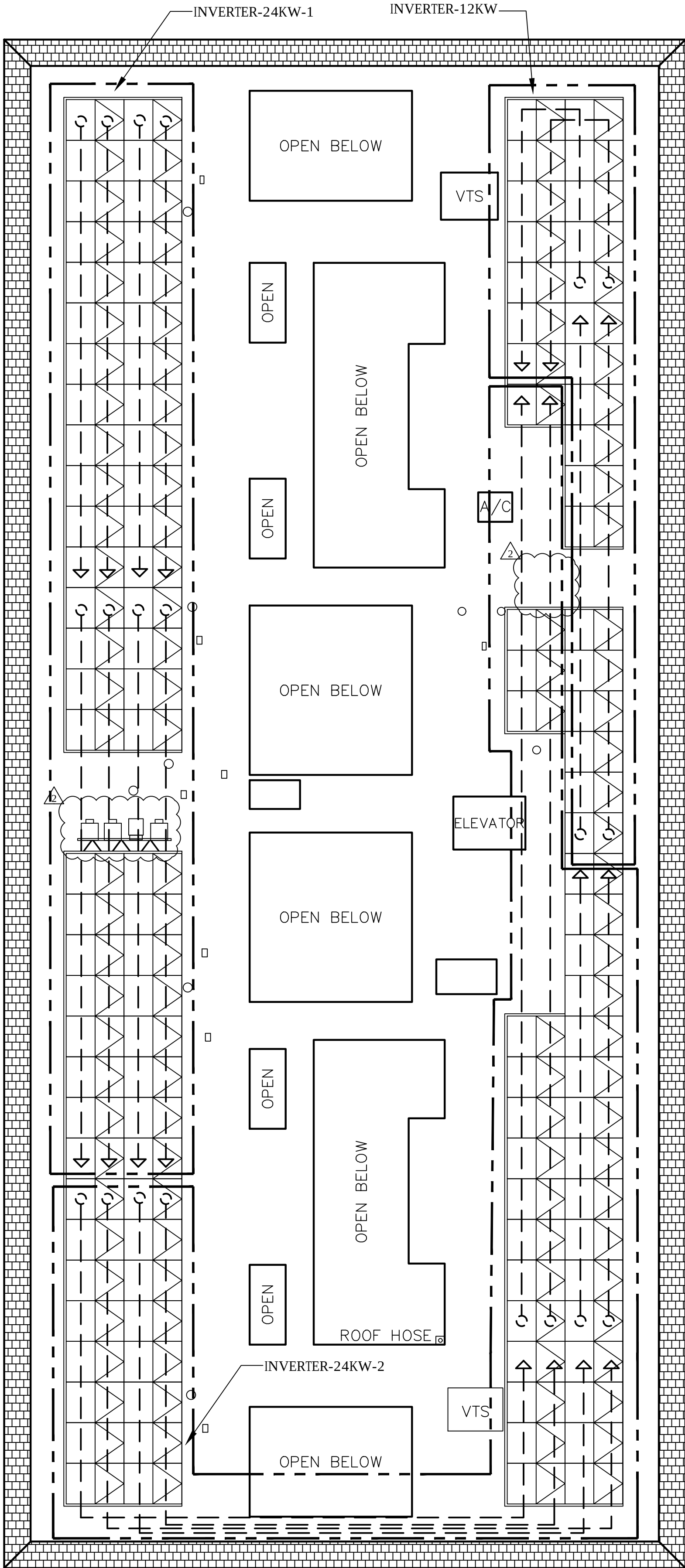
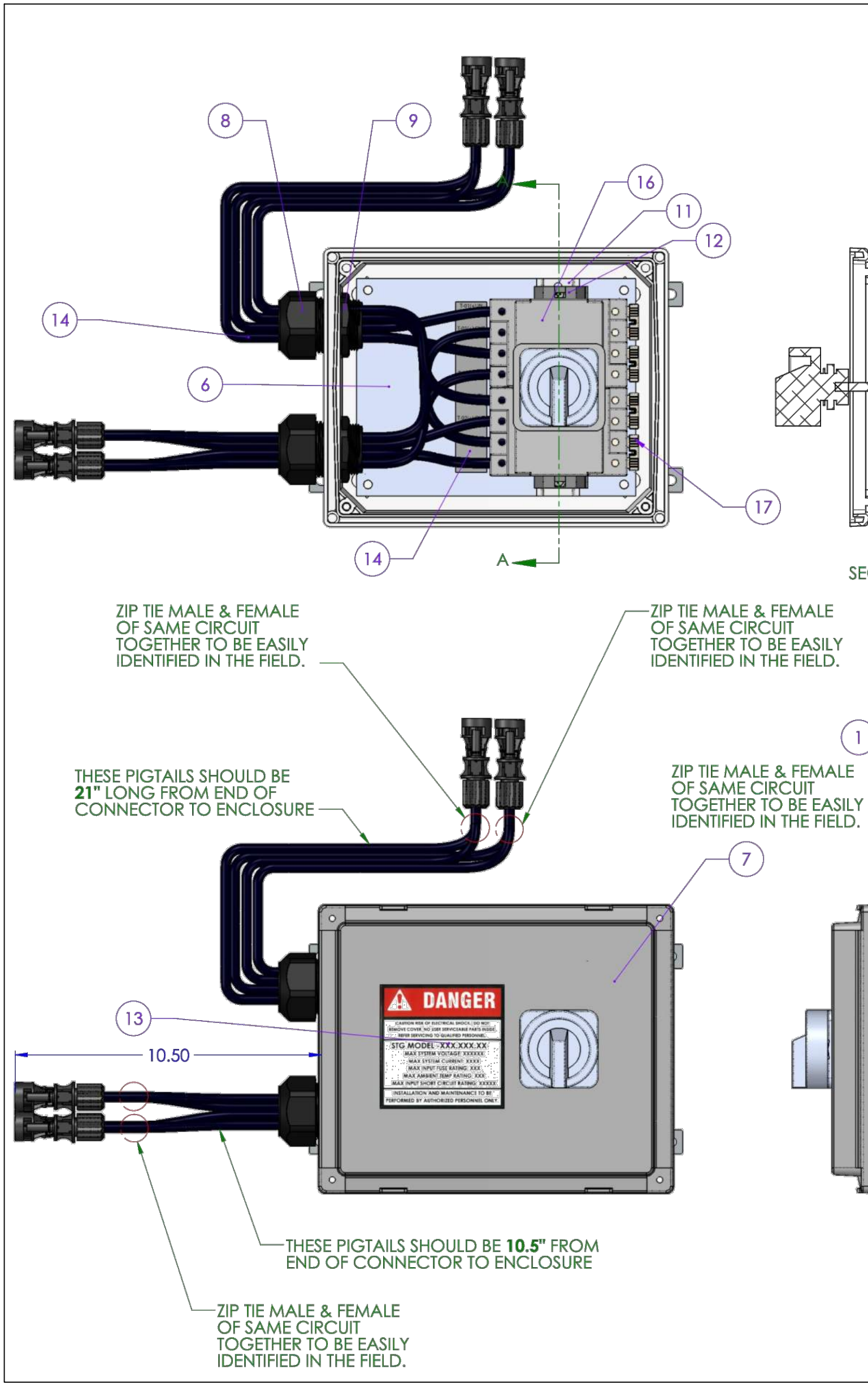
2353 VIA PUERTA
STRING LAYOUT

SunPower® | Helix Roof Solution

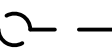
HELIX ROOF Power Station



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



LEGEND:

-  --- ➔ STRINGS
-  --- INVERTER DESIGNATION

1 STRING 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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T.T.T.

SCALE:

AS SHOWN

DATE:

12/22/16

SHEET TITLE

STRING LAYOUT

SHEET NUMBER

S1.1 ST

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 5/8" 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

AC DISCONNECT

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

MAXIMUM AC 36.25 A
OPERATING CURRENT: 29 A
NOMINAL AC 480 V
OPERATING VOLTAGE: 480 V

INVERTER 2: 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
OPERATING VOLTAGE: 748.2 V
MAXIMUM CURRENT: 32.2 A
MAXIMUM VOLTAGE: 887.8 V

MAXIMUM AC 36.25 A
OPERATING CURRENT: 29 A
NOMINAL AC 480 V
OPERATING VOLTAGE: 480 V

INVERTER 3: 12kW

WARNING: ELECTRIC SHOCK HAZARD

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

DC DISCONNECT

AC DISCONNECT

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

MAXIMUM 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

PHOTOVOLTAIC POWER SOURCE

OPERATING AC VOLTAGE: 277/480 V
MAXIMUM OPERATING AC OUTPUT
CURRENT: 91.25 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: 91.25 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: 91.25 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"

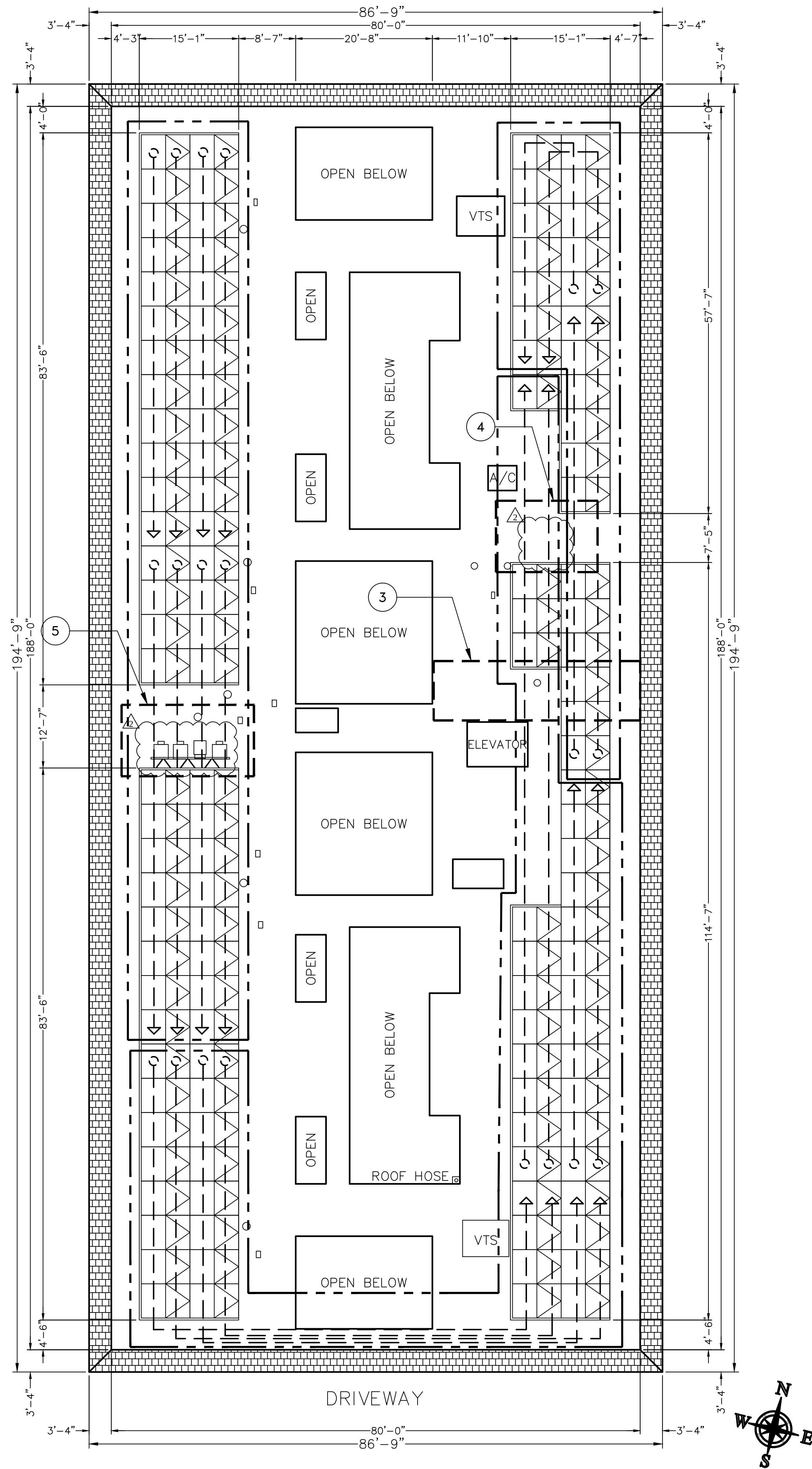
MARKING FOR MAIN SERVICE AND AC COMBINER

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.

2353 VIA 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 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
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LICENSE NUMBER 972228 C10

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REVISION

MARK	DATE	DESCRIPTION
⚠	11/14/16	AS BUILT
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DRAWN BY: SCOTT
CHECKED BY: T.T.T.
SCALE: AS SHOWN
DATE: 12/22/16

SHEET TITLE

LABELS

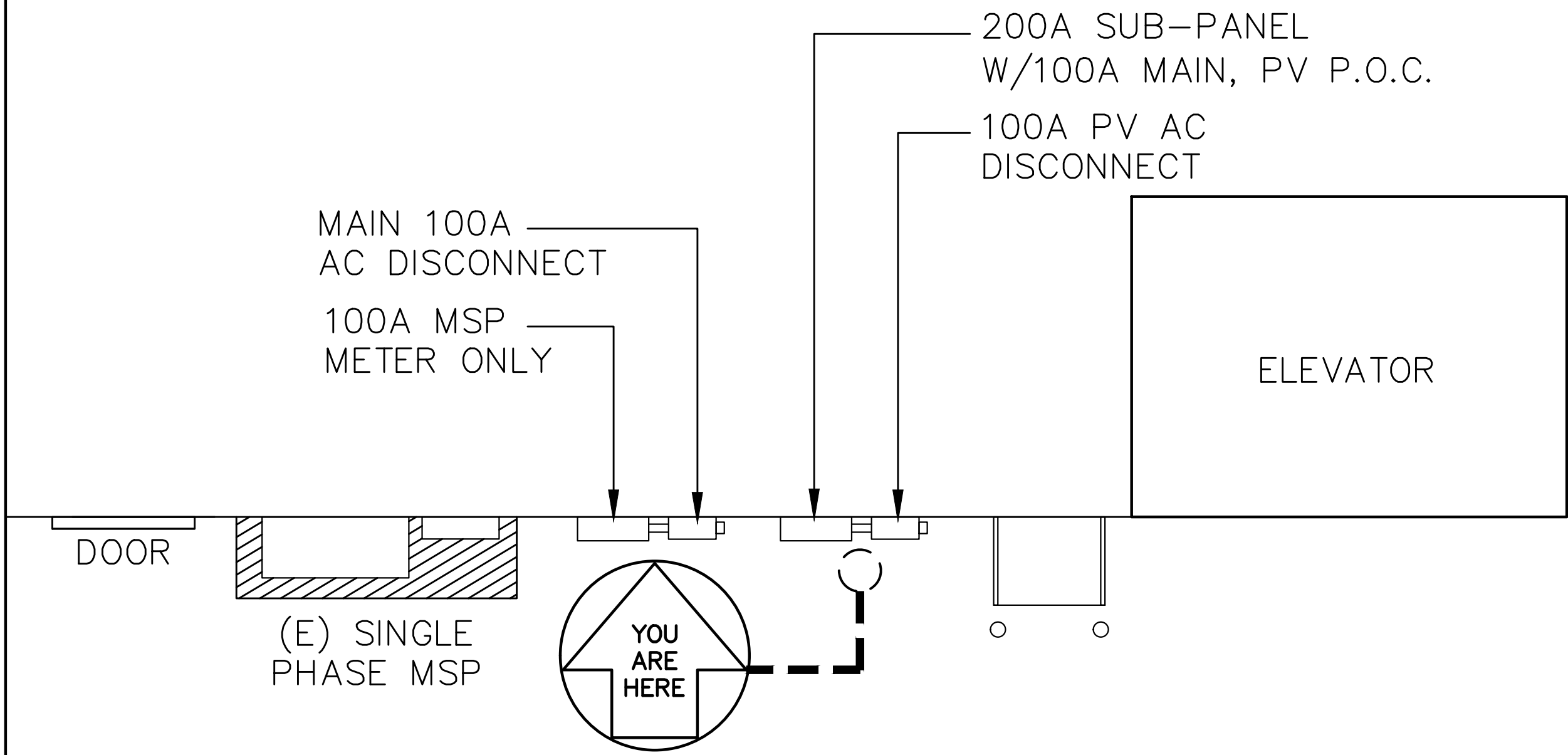
SHEET NUMBER

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2353 VIA PUERTA
SITE PLAN

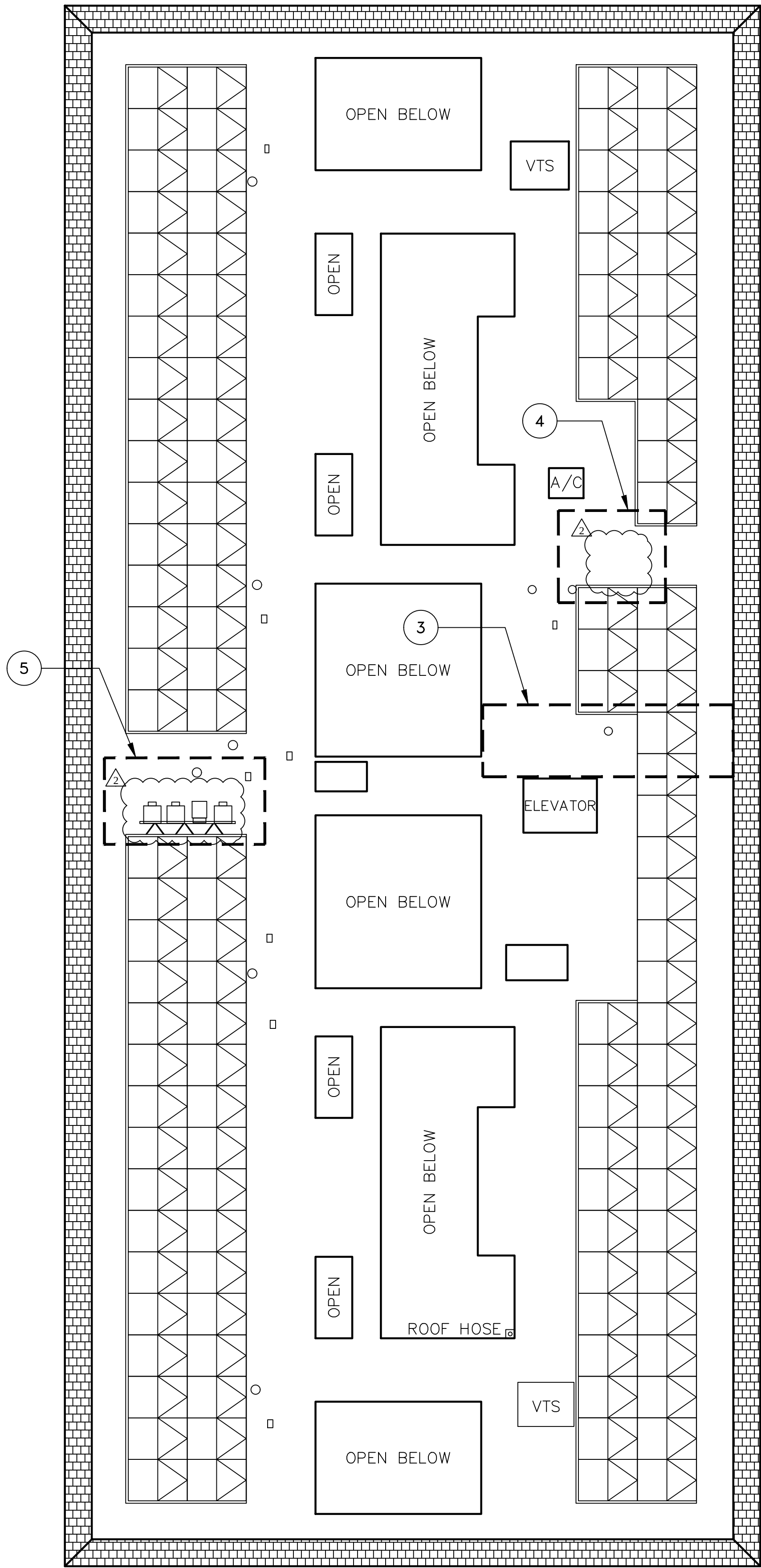
CAUTION

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



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


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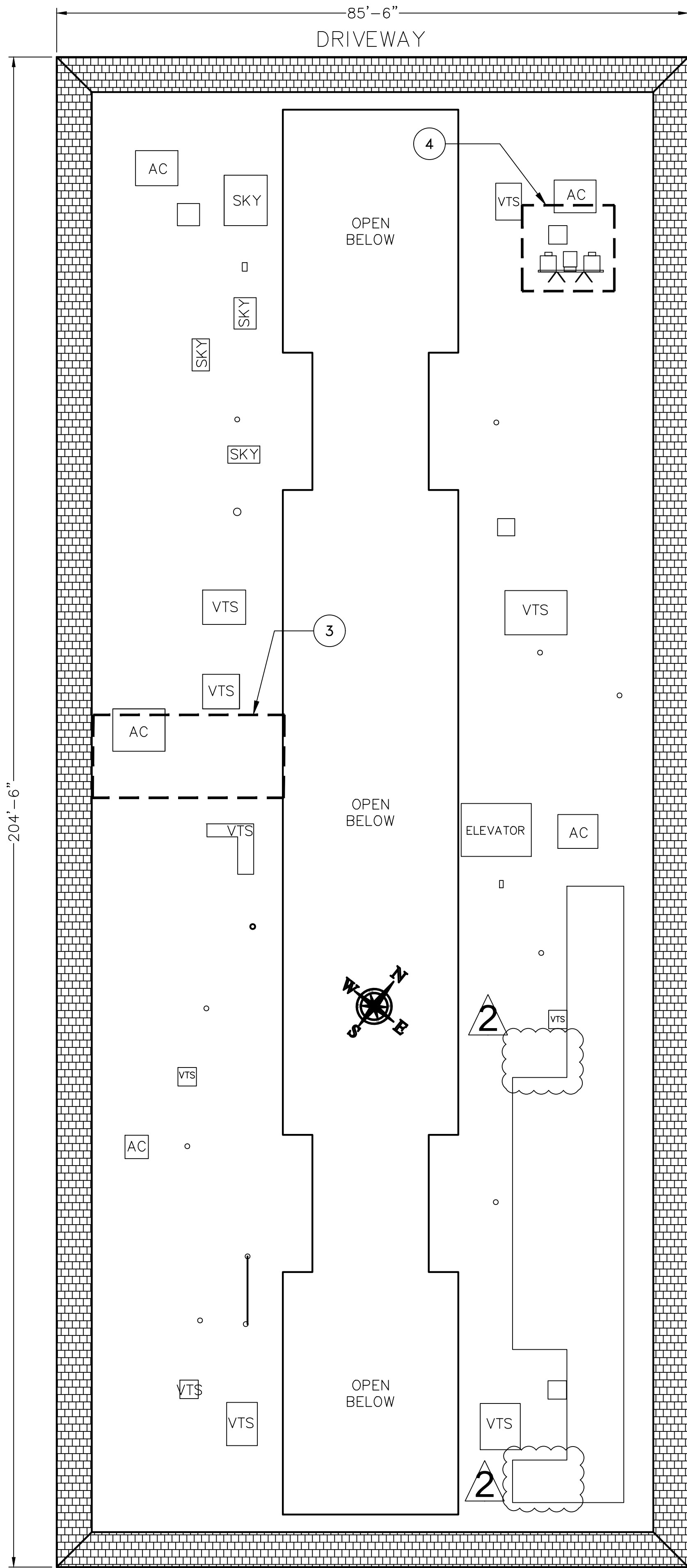
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CHECKED BY: T.T.T.
SCALE: AS SHOWN
DATE: 12/22/16

SHEET TITLE

LABELS

SHEET NUMBER

DIRECTORY MAP

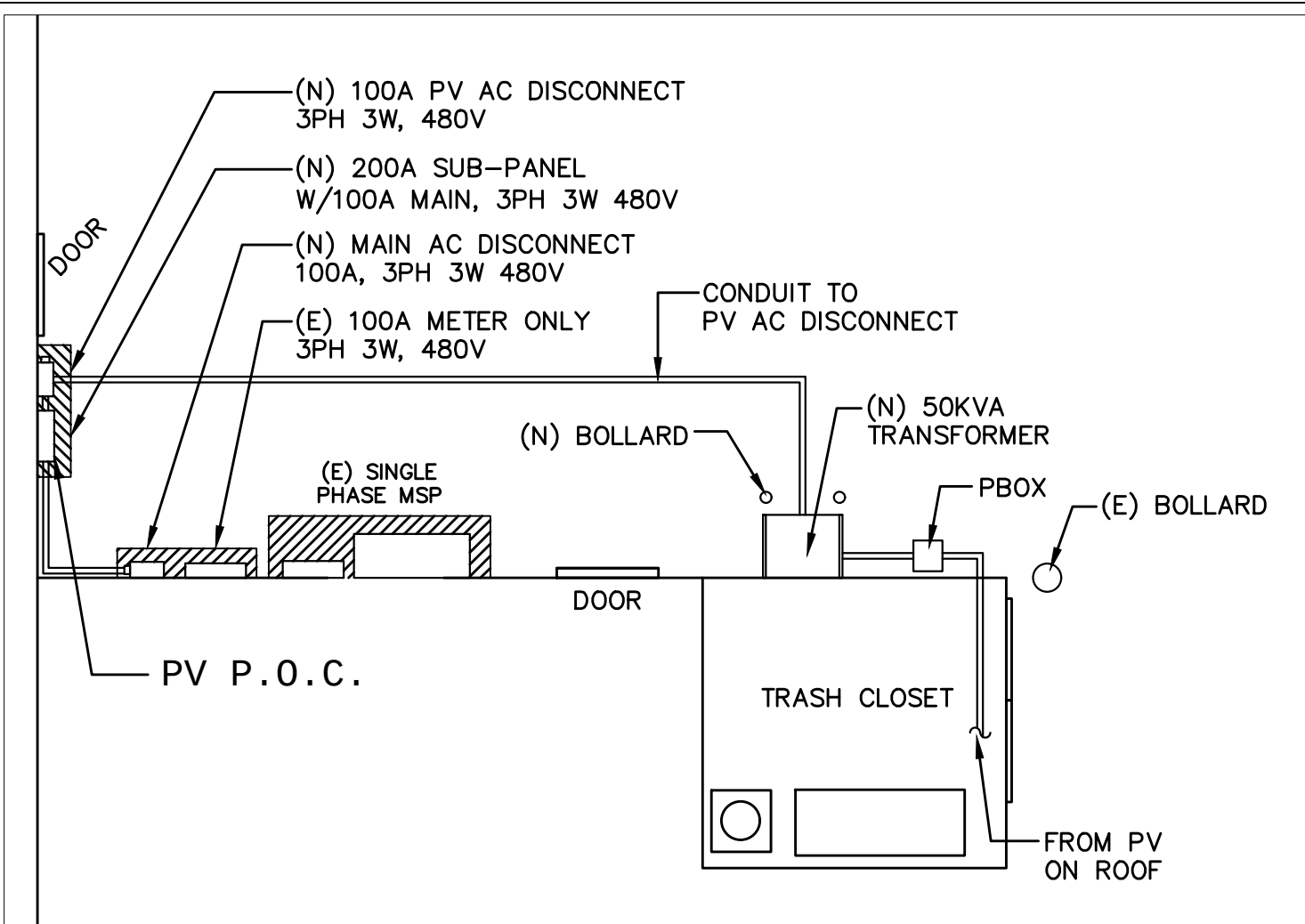


1 BUILDING LAYOUT
SCALE: 3/32"=1'-0"

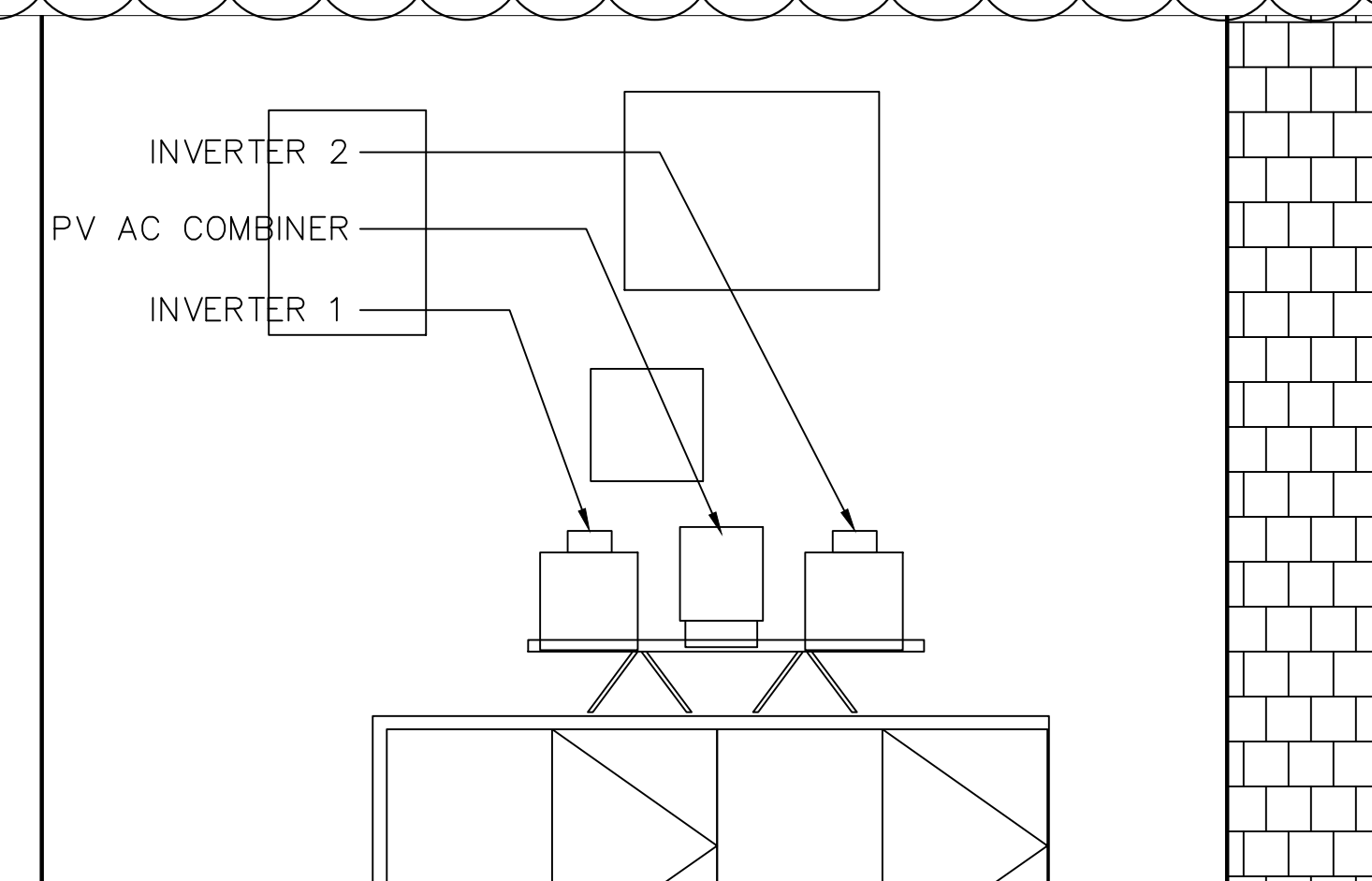
5510 PASEO DEL LAGO WEST EL MIRRIADOR SITE PLAN

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.



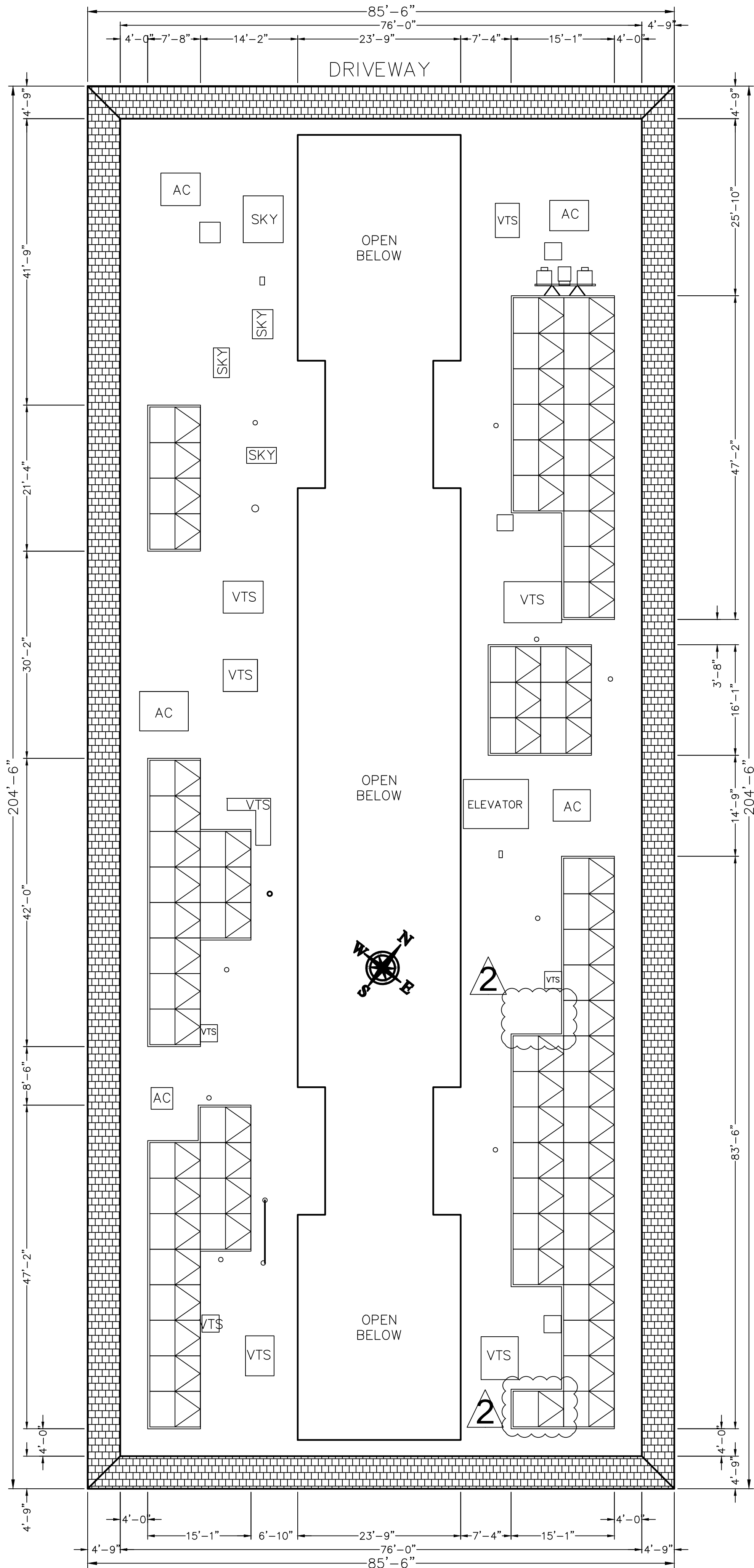
3 MAIN PANEL LOCATION 1ST FLOOR
SCALE: N.T.S.



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

1 SITE PLAN SCALE: N.T.S.

TOTAL NUMBER OF MODULES: 144



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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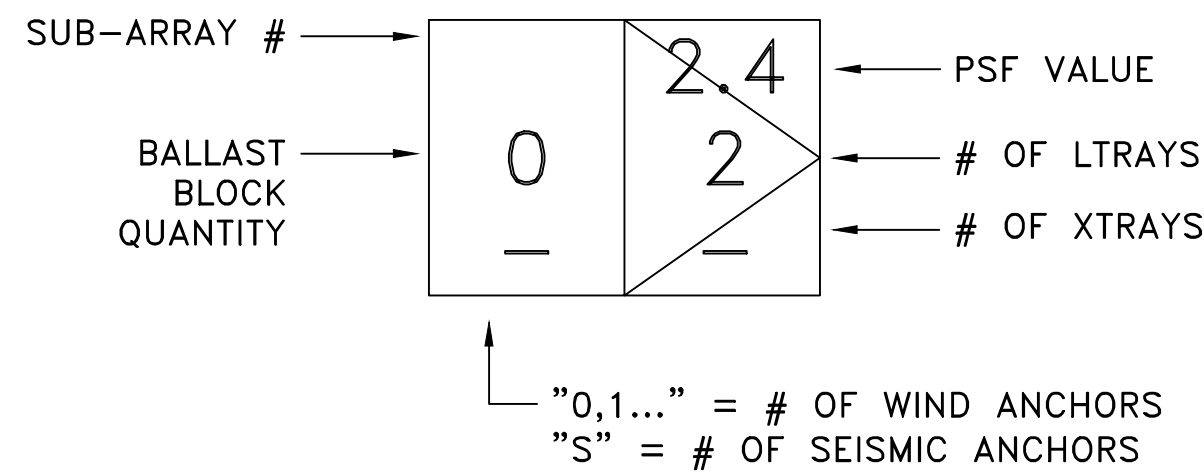
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SITE PLAN
5510 PASEO
DEL LAGO WEST
EL MIRRIADOR
SHEET NUMBER

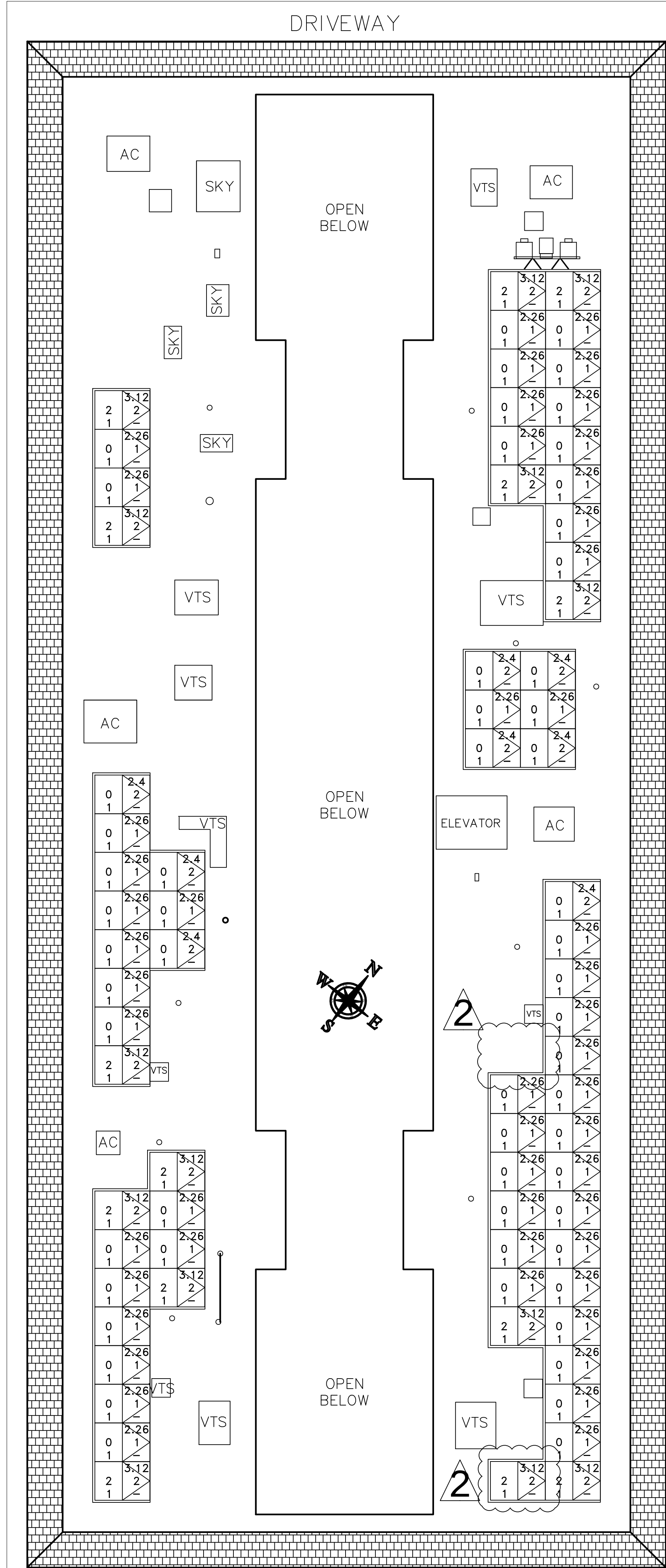
S1.8

NOTES:

1. SUBARRAYS THAT DID NOT MEET THE REQUIRED MINIMUM ARRAY SIZE WILL REQUIRE ADDITIONAL ANCHORING. PLEASE CONSULT STRUCTURAL ENGINEERING.
2. ADDITIONAL ANCHORS REQUIRED PER SUBARRAY FOR LATERAL LOADS.
ROOF 1:
 - 2.1 SUBARRAY 1: [3] ADDITIONAL ANCHOR
 - 2.2 SUBARRAY 2: [1] ADDITIONAL ANCHOR
 - 2.3 SUBARRAY 3: [3] ADDITIONAL ANCHOR
 - 2.4 SUBARRAY 4: [2] ADDITIONAL ANCHOR
 - 2.5 SUBARRAY 5: [2] ADDITIONAL ANCHOR
3. ADDITIONAL ANCHORS CAN BE PLACED ANYWHERE WITHIN THE SUBARRAY.



HELIX DT



1 BALLAST AND PENETRATION LAYOUT

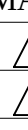
SCALE: N.T.S.

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
	48	12kW	1	MPPT 1: 12 MODULES, 2 STRING
				MPPT 2: 12 MODULES, 2 STRING
TOTAL	144	36kW	2	

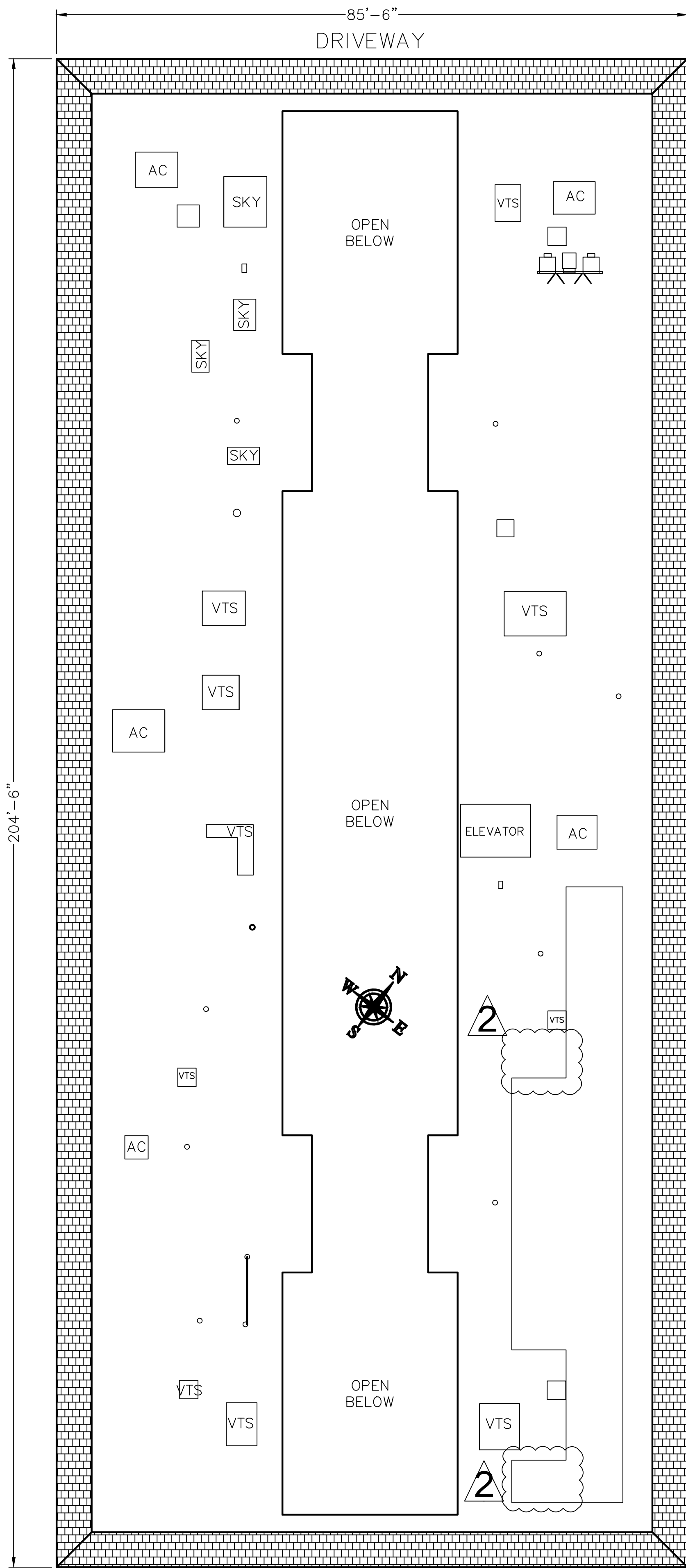
BALLAST AND ANCHOR SUMMARY					
ROOF	BALLAST COUNT	ANCHOR COUNT	ARRAY WEIGHT (LBS)	MAX. PSF	AVERAGE PSF
1	28	83	6,784	3.12	2.44
TOTAL	28	83			

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

SITE CHARACTERIZATION			
BUILDING HEIGHT (ft)	40	BUILDING WIDTH (ft)	85.5
BUILDING LENGTH (ft)	204.5	PARAPET HEIGHT (ft)	1.0
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)	1.009	SEISMIC IMPORTANCE FACTOR (I_p)	1

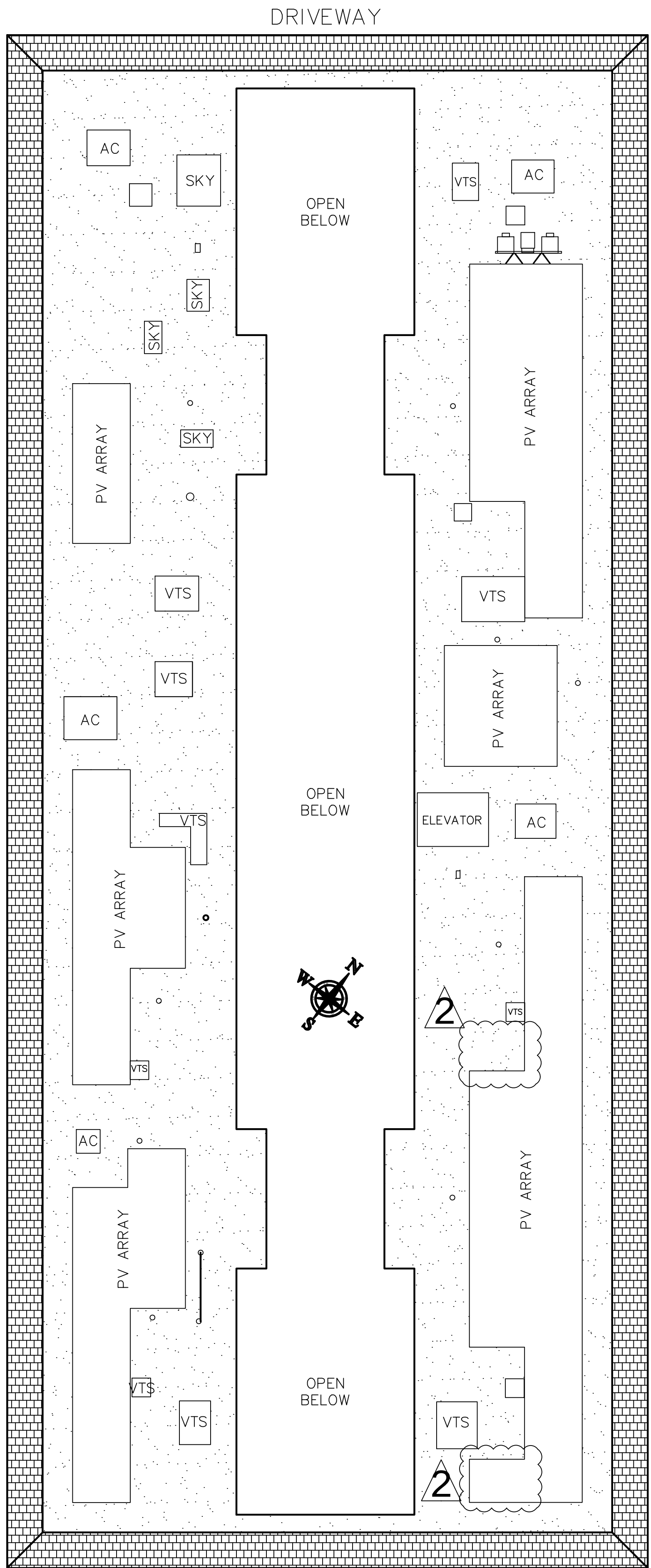
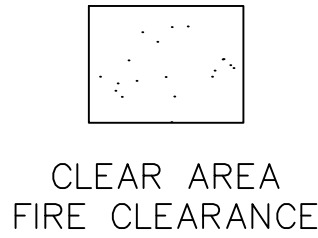
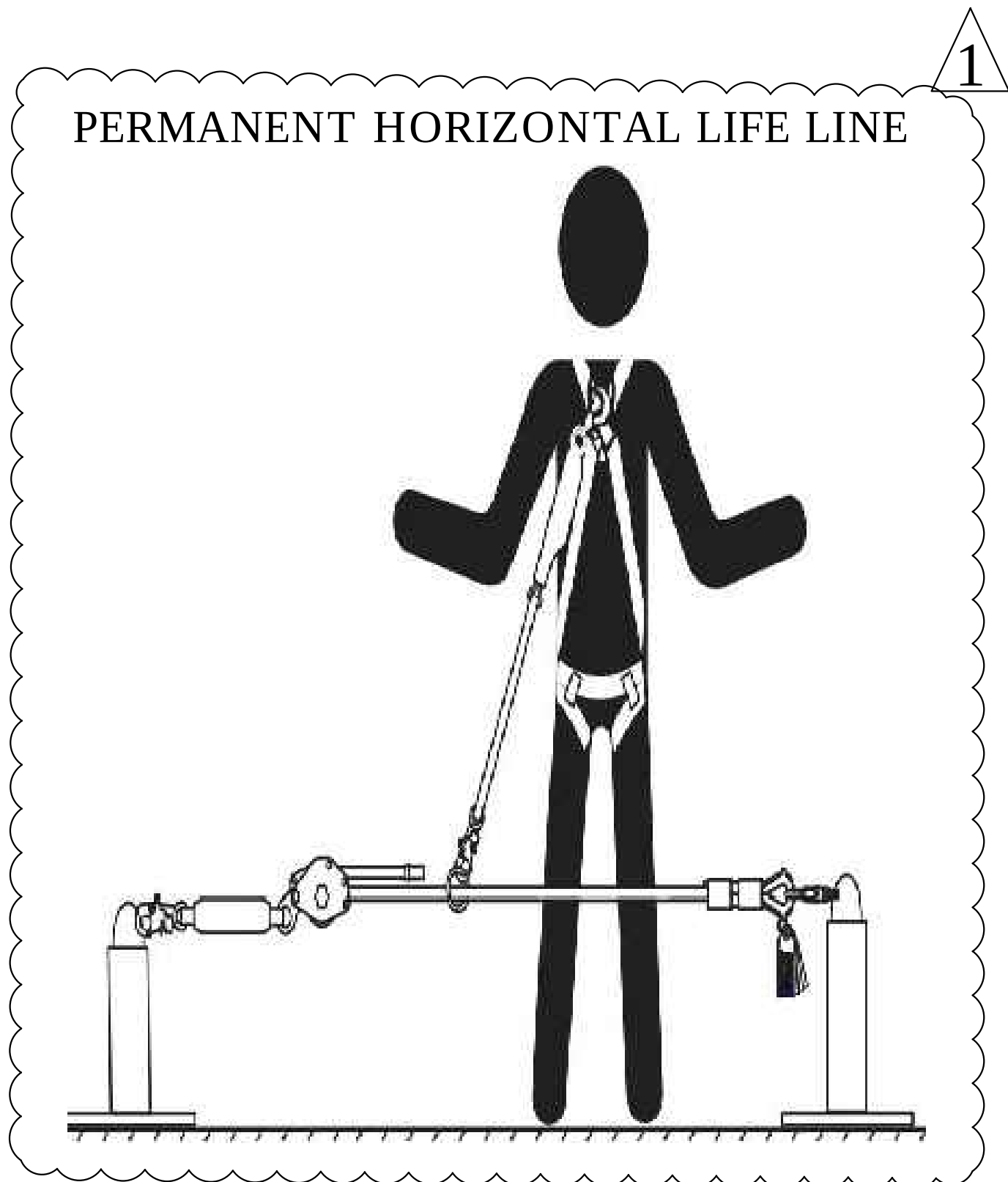
PROJECT SITE		
THIRD MUTUAL LAGUNA WOODS VILLAGES		
24351 EL TORO RD. LAGUNA WOODS, CA 92637		
PROJECT DEVELOPER		
 SOLAR OPTIMUM, INC 501 WEST GLENOAKS BLVD. GLENDALE, CA 91202 800-552-9970 WWW.SOLAROPTIMUM.COM LICENSE NUMBER 972228 C10		
CONTRACTOR		
 SOLAR OPTIMUM, INC 501 WEST GLENOAKS BLVD. GLENDALE, CA 91202 800-552-9970 WWW.SOLAROPTIMUM.COM LICENSE NUMBER 972228 C10		
SIGNATURE		
		
STAMP		
CITY APPROVAL STAMP		
REVISION		
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SCALE: AS SHOWN		
DATE: 12/21/16		
SHEET TITLE		
SITE PLAN 5510 PASEO DEL LAGO WEST EL MIRRADOR		
SHEET NUMBER		

STR 1.8



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

5510 PASEO DEL LAGO WEST
EL MIRRIADOR
FIRE CLEARANCE SITE PLAN



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


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SIGNATURE



STAMP

CITY APPROVAL STAMP

REVISION

MARK	DATE	DESCRIPTION
△	11/14/16	AS BUILT
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DRAWN BY: SCOTT
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SCALE: AS SHOWN
DATE: 12/21/16

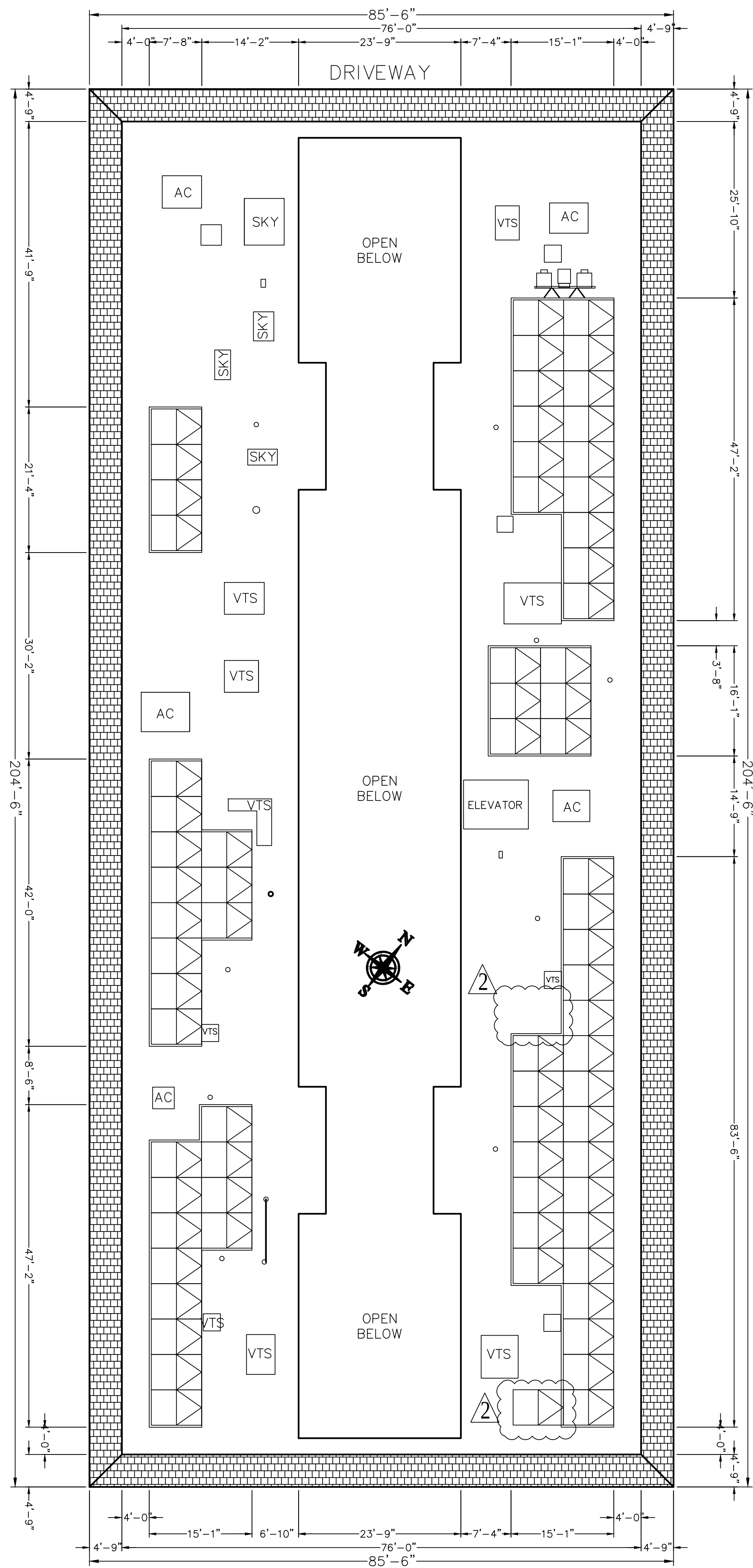
SHEET TITLE
FIRE CLEARANCE
SITE PLAN
5510 PASEO
DEL LAGO WEST
EL MIRRIADOR
SHEET NUMBER

S 1.8F

SunPower® Helix Roof Solution																
HELIIX ROOF Power Station																
	DC Branch															
	<table> <tr> <td>Model</td><td>Helix plug-and-play DC Branch</td></tr> <tr> <td>String input options</td><td>2, 3, and 4 string</td></tr> <tr> <td>String fuse rating</td><td>15 A</td></tr> <tr> <td>Conductor size</td><td>#12 to #8 AWG</td></tr> <tr> <td>Conductor insulation rating</td><td>Sunlight-resistant PV Wire</td></tr> <tr> <td>Voltage rating</td><td>2000 VDC</td></tr> <tr> <td>Fusing</td><td>12 A</td></tr> <tr> <td>Connectors</td><td>String side: Tyco PV4 Solarlock Combined side: Amphenol H4-UTX-XL</td></tr> </table>	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
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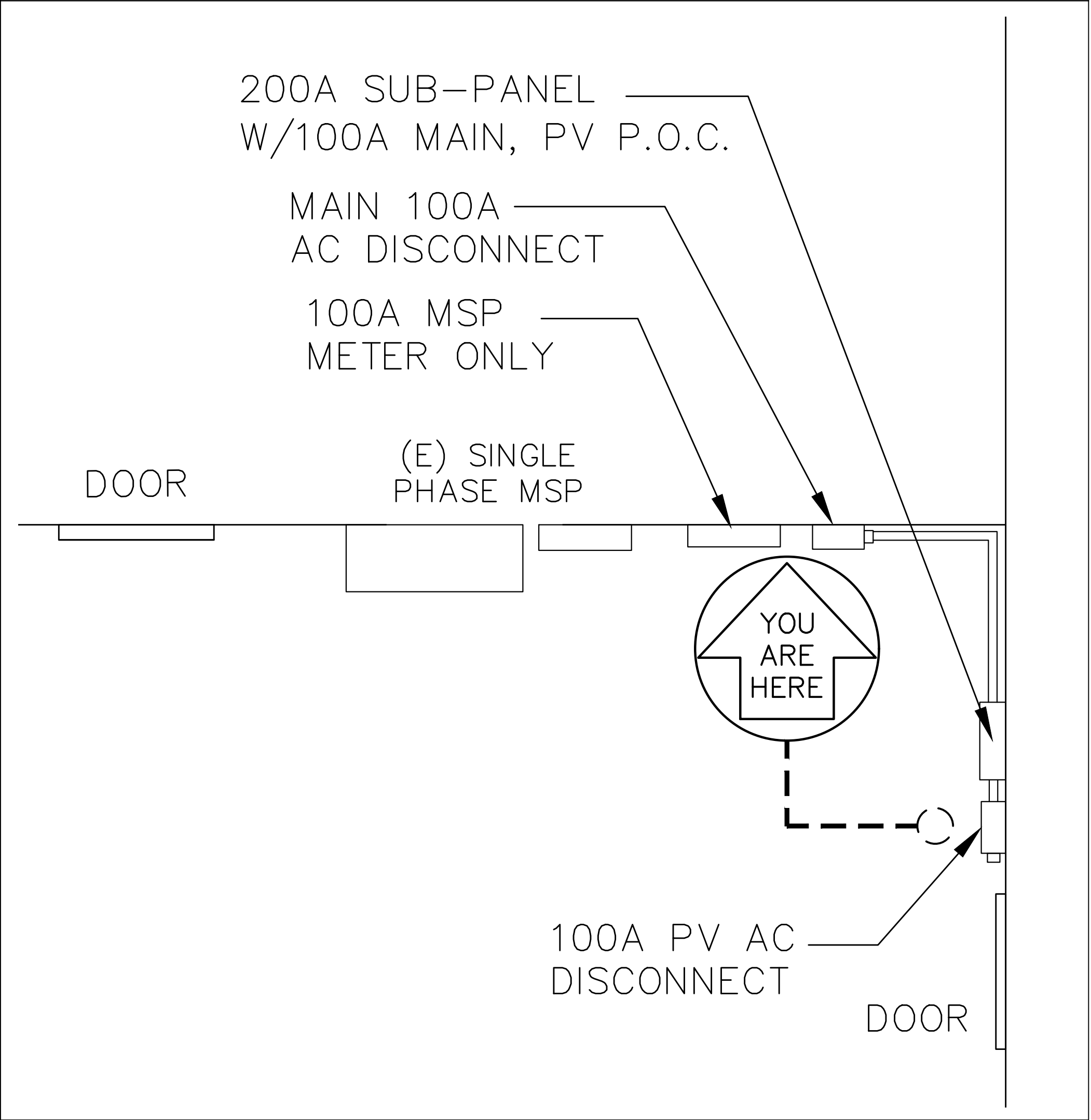
S 1.1 S T



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

5510 PASEO DEL LAGO WEST EL MIRRIADOR STRING LAYOUT

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



2 DIRECTORY MAP
SCALE: 3/32"=1'-0"

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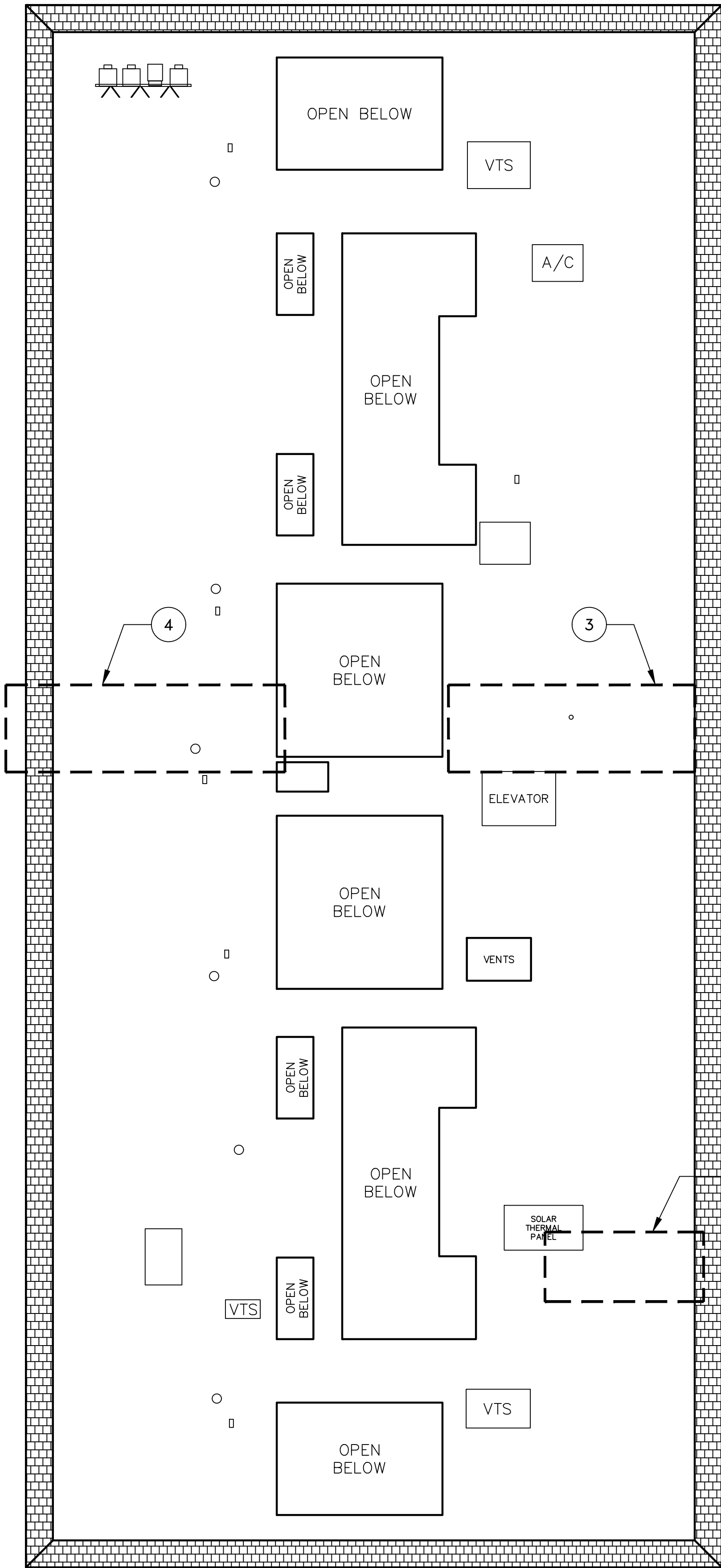
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SHEET TITLE

LABELS

SHEET NUMBER

DIRECTORY MAP

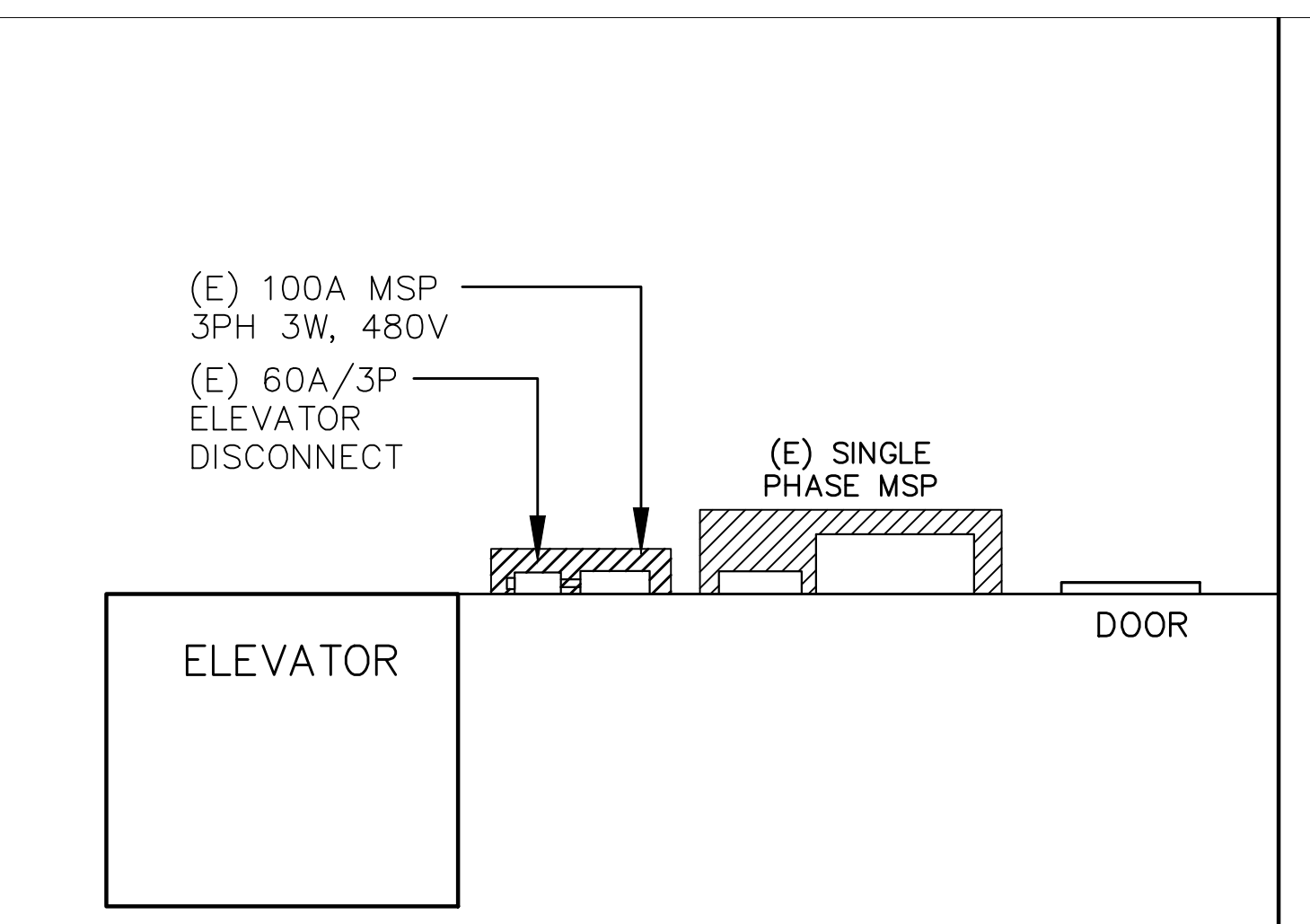


1 SITE PLAN
SCALE: N.T.S.

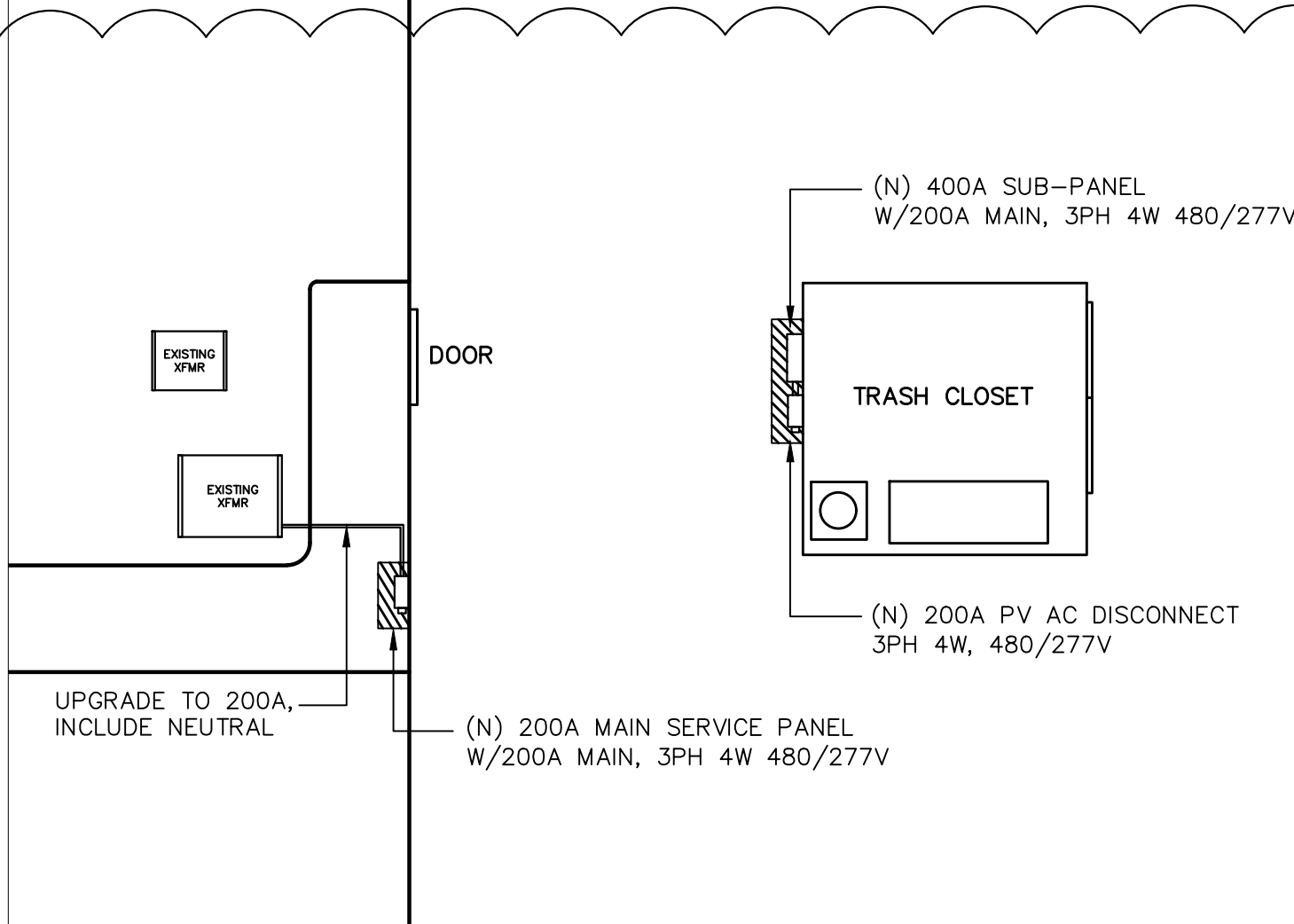
1 BUILDING LAYOUT
SCALE: 3/32"=1'-0"

NOTES:

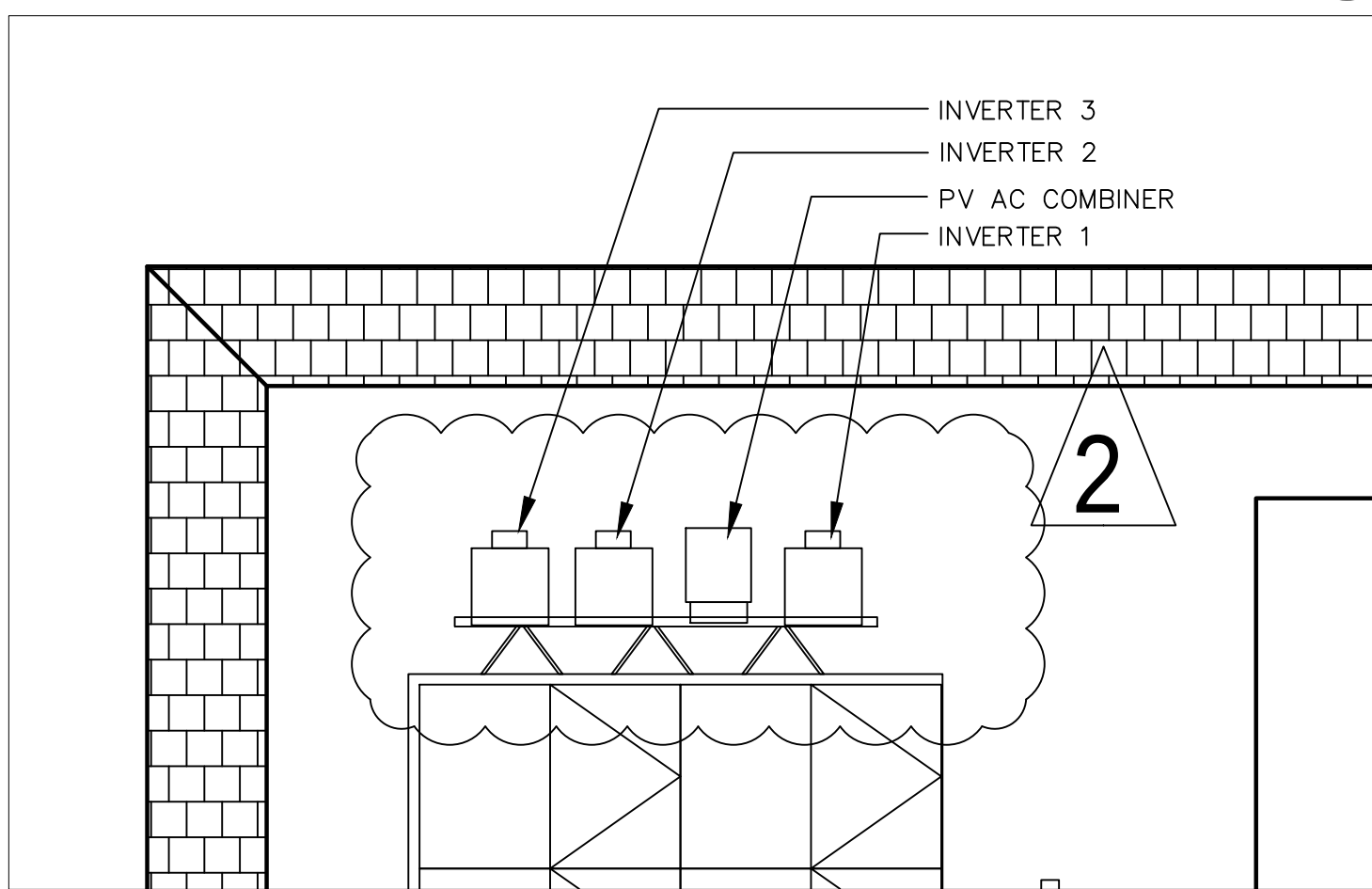
1. ROOF PERIMETER FIRE CLEARANCE: MIN 4'-0".
2. FIRE CLEARANCE AROUND SKYLIGHT: MIN 4'-0".
3. FIRE CLEARANCE AROUND OPENINGS: MIN 4'-0".
4. ROOF HEIGHT: 40'-0" APPROXIMATE.
5. ROOF PITCH: 0°
6. CONDUIT TO PENETRATE ROOF AND ENTER THIRD FLOOR LAUNDRY ROOM. CONDUIT RUN WILL CONTINUE DOWN ALONG SIDE THE 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.



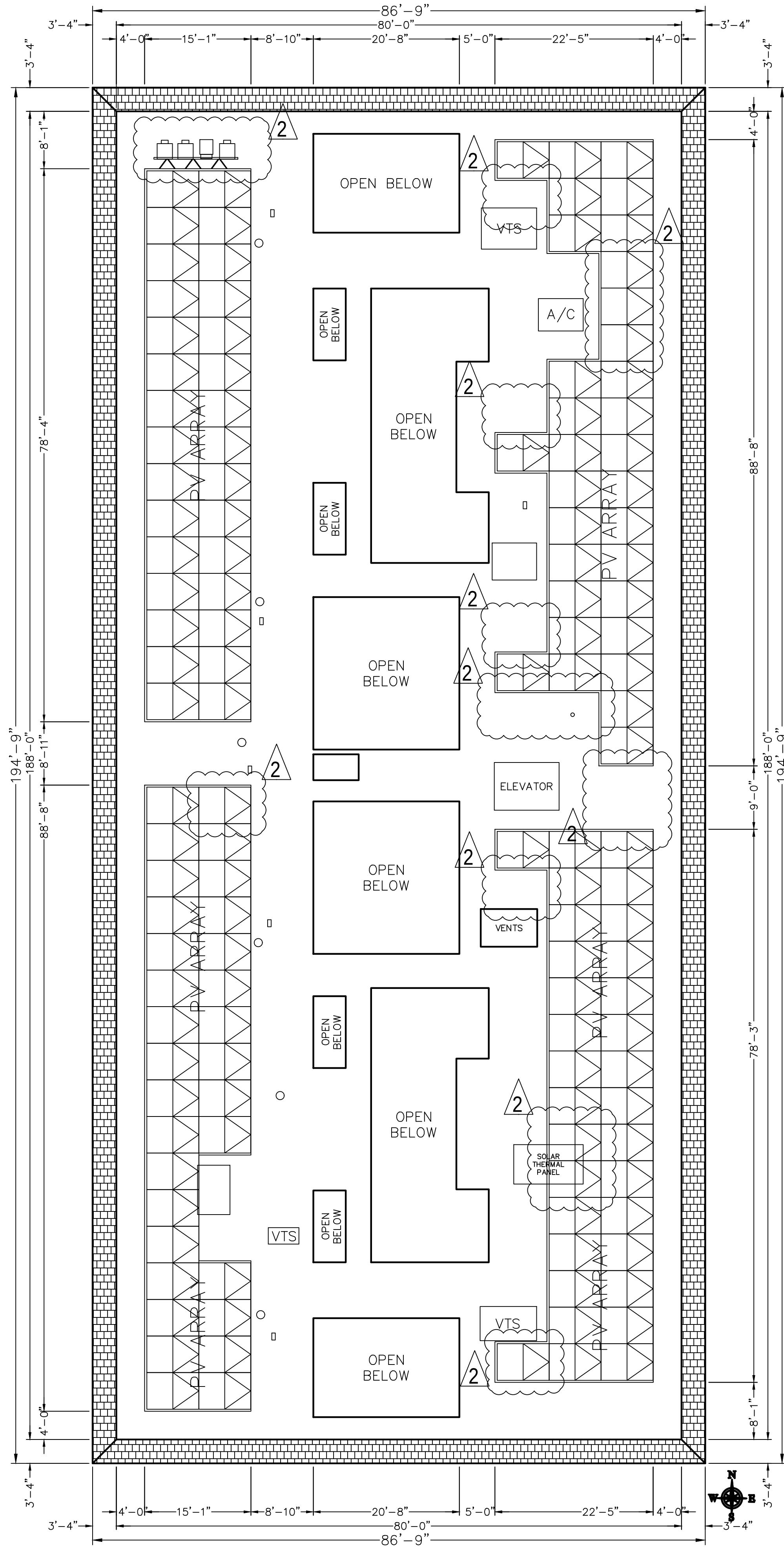
3 MAIN PANEL LOCATION 1ST FLOOR
SCALE: N.T.S.



4 EQUIPMENT LOCATION
SCALE: N.T.S.



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



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

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SHEET TITLE

SITE PLAN
2381 VIA MARIPOSA

SHEET NUMBER

S1.10

WIND LOAD SUMMARY						
WIND LOAD SUMMARY						
OUTPUTS		WIND ZONES				
PANEL TYPES	ATTRIBUTES	A	B	C	D	E
1	Ballast Block(s)	1	0	10	3	0
	Wind Anchor(s)	1	1	0	0	0
	Pressure (psf)	2.76	2.40	6.11	3.49	2.40
2	Ballast Block(s)	0	15	7	2	0
	Wind Anchor(s)	1	0	0	0	0
	Pressure (psf)	2.40	7.98	4.94	3.12	2.40
3	Ballast Block(s)	0	15	7	2	0
	Wind Anchor(s)	1	0	0	0	0
	Pressure (psf)	2.26	7.81	4.84	2.98	2.26
4	Ballast Block(s)	14	7	2	0	0
	Wind Anchor(s)	0	0	0	0	0
	Pressure (psf)	7.45	4.85	2.98	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				
35.33		0.76				
L _B – BUILDING SCALING FACTOR (FT)		K _Z – SITE WIND PRESSURE FACTOR				
35.33		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
	88	24kW	1	MPPT 1: 11 MODULES, 4 STRING
				MPPT 2: 11 MODULES, 4 STRING
	66	20kW	1	MPPT 1: 11 MODULES, 3 STRING
				MPPT 2: 11 MODULES, 3 STRING
TOTAL	250		3	

BALLAST AND ANCHOR SUMMARY					
ROOF	BALLAST COUNT	ANCHOR COUNT	ARRAY WEIGHT (LBS)	MAX. PSF	AVERAGE PSF
1	497	97	18,171	7.98	3.76
TOTAL	497	97			

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

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 1:
2.1 SUBARRAY 3: [3]
2.2 SUBARRAY 4: [2]
- ADDITIONAL ANCHORS CAN BE PLACED ANYWHERE WITHIN THE SUBARRAY.

SITE CHARACTERIZATION			
BUILDING HEIGHT (ft)	40	BUILDING WIDTH (ft)	87
BUILDING LENGTH (ft)	195	PARAPET HEIGHT (ft)	0.3
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)	0.993	SEISMIC IMPORTANCE FACTOR (I _p)	1

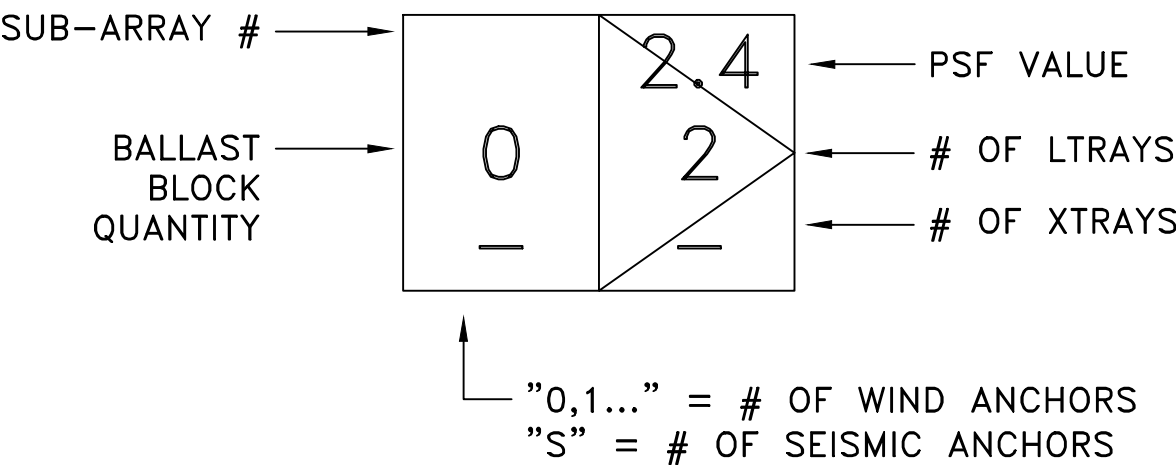
2381 VIA MARIPOSA BALLAST AND PENETRATION PLAN

PROPOSED SYSTEM SPECIFICATION

TOTALS:
81.750 kWp
250 HIGH EFF. (327W) MODULES
11 MODULES/STRING, 14 STRINGS
12 MODULES/STRING, 8 STRINGS
ROOF HEIGHT: 40'
ROOF PITCH: ASSUMED FLAT
AZIMUTH: 0°

NOTES:

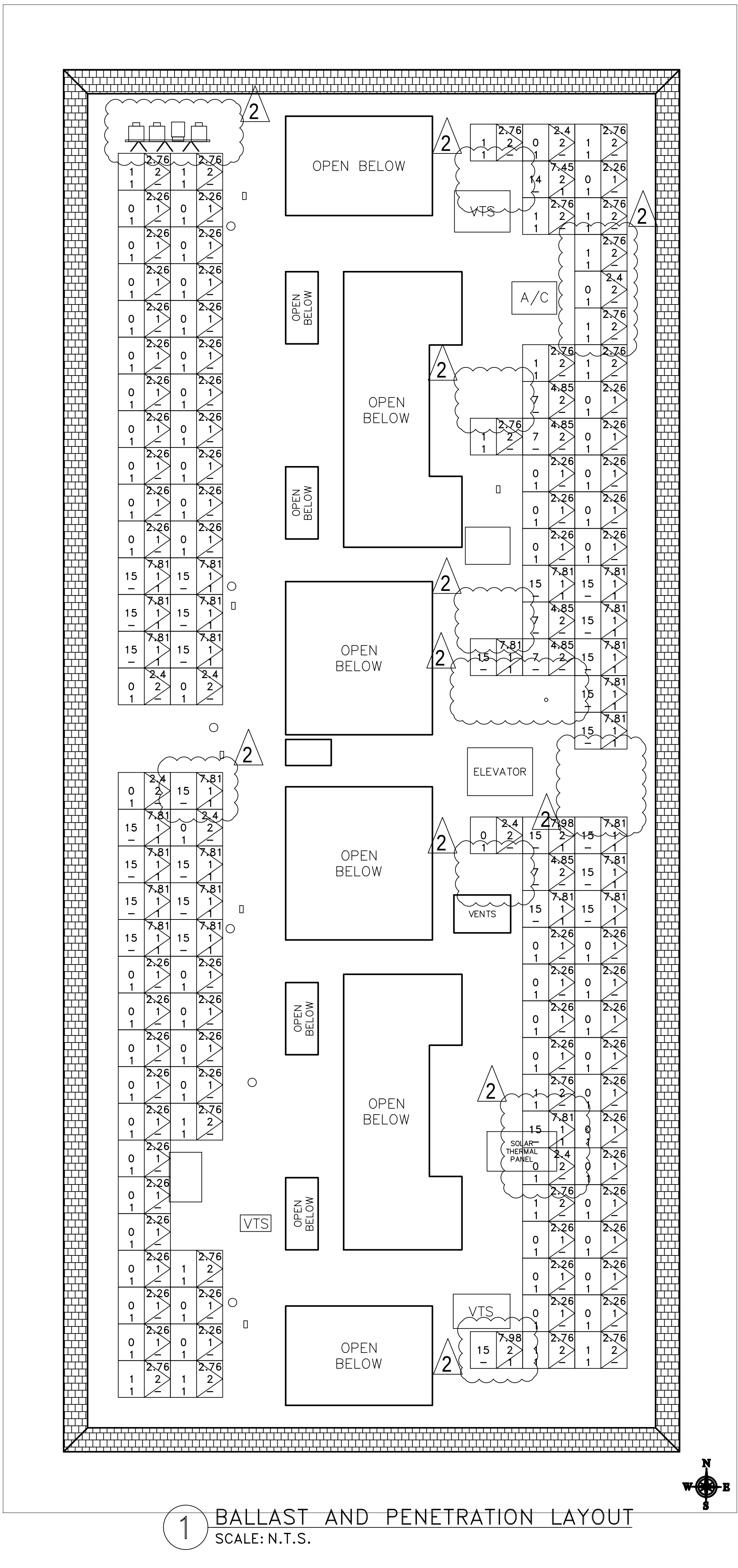
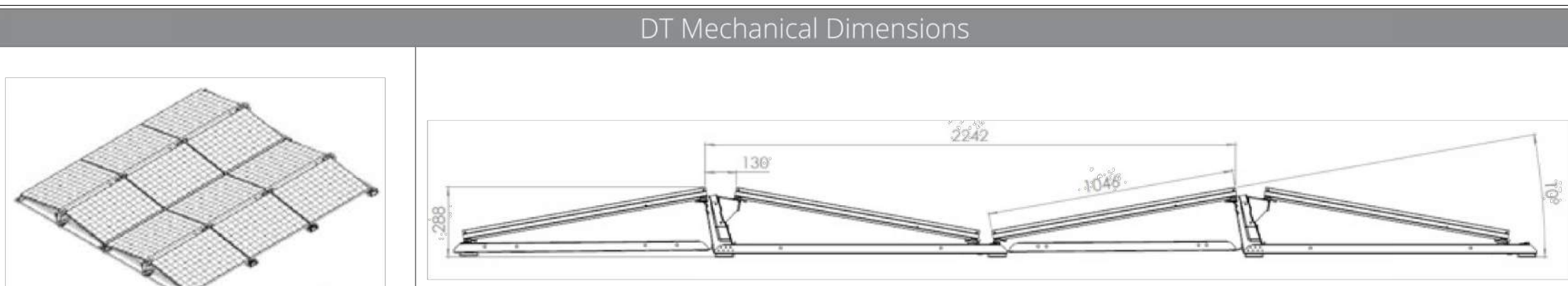
- LAYOUT ASSUMES THAT ADDITION OF ARRAY WILL NOT INCREASE THE DEMAND/CAPACITY RATIO OF ANY MEMBER IN THE BUILDING'S LATERAL FORCE RESISTING SYSTEM BY MORE THAN 10%, RELATIVE TO ORIGINAL CONSTRUCTION, PER IBC/CBC 3404.4.
- OCCUPANCY CATEGORY II.
- POINT OF INTERCONNECTION & METER # TBD.
- ARRAY SHOWN ON AERIAL IMAGE.
4.1. WITH ROOF PLAN OVERLAY.
- # OF PANELBOARDS: [1]



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.

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PENETRATION
SITE PLAN
2381 VIA MARIPOSA
SHEET NUMBER

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