

Building Permit Application
Howard County Maryland
Department of Inspections, Licenses and Permits
3430 Court House Drive
Permits: 410-313-2455
www.howardcountymd.gov

	TENASI D
Date Received:	

Building Address:	Liver Control of the Control	Property Owner's Name:	L Aporan
City: Mart water will State	:Zip Code:	Address:	
San As a state	Zip Code:	City: State: M	Zip Code:
Suite/Apt. #SD	P/WP/BA #:	Phone:	Fax:
Subdivision:	PA VISTICT	Email:	
Lot: Tax Map:	Parcel:	Applicant's Name & Mailing Address, (If of Applicant's Name:	other than stated herein)
Existing Use:	L-DED EXET METER	Address: 6761 Democrati	1 TO VA 6 THE TOTAL
		City: State:	Zip Code:
		Phone: Fax:	and the second s
Estimated Construction Cost: \$		Email:	CANCLEST NOT
Description of Work:		Contractor Company:	N. J.
BOULT BUSTEM	- 0- 2,0 MW AC	Contact Person:	Garage Commence
and 6642	SOLA PARIL	Address: 670 Vencino	y ENZ GH 301
		City: State:	Zip Code: _Z
THAN STANDARD T		License No. :	
	2CILITY	Phone: Fax: _	
Occupant/Tenant Name:	+INS SOLAR	Email: frank. W. Cop. Oc.	smace, not
Was tenant space previously occupied	? □Yes □No	Engineer/Architect Company:	
Contact Name:	그러는 그렇게 얼마나 하는 것이 되었다. 이 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은	하게 하나 아이를 하나요요? 이 물에 하고 마다면 지금 없는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하	
		Responsible Design Prof.:	
	y field Avenue 2" E	Address: 242 Old New Ev	many Le Coul
City:	State: <u>45</u> Zip Code: <u>0790</u> []	City:State:	7in Codo: 5 9 9 5
Phone: 408-795-3040	Fax:	Phone: Fax:	_ Zip code
Email: 5 Ban a mauni		Fax:	
	IN SURAL PROPERTY.	Email: Kleary a vicago	W.Com
Commercial Building Characteristics	Residential Building Characteristics	Utilities	
Height:	☐ SF Dwelling ☐ SF Townhouse	Electric: Yes No	
No. of stories:	<u>Depth</u> <u>Width</u>	Gas: Yes No	
Gross area, sq. ft./floor:	1 st floor:		
Area of construction (sq. ft.):	2 nd floor:	Water Supply ☐ Public	
Area of construction (sq. ft.):	Basement:		
Use group:	☐ Finished Basement	☐ Private	
	☐ Unfinished Basement ☐ Crawl Space	Sewage Disposal	
Construction type:	☐ Slab on Grade	□ Public	
☐ Reinforced Concrete	No. of Bedrooms:	☐ Private	
Structural Steel	Multi-family Dwelling	Heating System	
☐ Masonry	No. of efficiency units:	□ Electric □ Oil	
☐ Wood Frame	No. of 1 BR units:	☐ Natural Gas ☐ Propane Gas	
☐ State Certified Modular	No. of 2 BR units:	Other:	
	No. of 3 BR units:		#50 PER
	Other Structure:	Sprinkler System:	
Pandrida Trea Dusta La La	Dimensions:	☐ Yes ☐ No	MED
➤ Roadside Tree Project Permit □Yes □No	Footings:		- VLD
Roadside Tree Project Permit #	Roof:	Grading Permit Number: 2	0 2020
The state of the s	☐ State Certified Modular ☐ Manufactured Home	16516	
	Manufactured Home	Building Shell Permit Number:	PERMITS
HE UNDERSIGNED HEREBY CERTIFIES AND AGREES	AS FOLLOWS: (1) THAT HE/SHE IS AUTHORIZED TO		-IN
ITH ALL REGULATIONS OF HOWARD COUNTY WHI	CH ARE APPLICABLE THERETO; (4) THAT HE/SHE WILL PE	AKE THIS APPLICATION; (2) THAT THE INFORMATION IS COF	RRECT; (3) THAT HE/SHE WILL COMPLY
PELCATION; (5) THAT HE/SHE GRANTS COUNTY OF	FFICIALS THE RIGHT TO ENTER ONTO THIS PROPERTY FO	ERFORM NO WORK ON THE ABOVE REFERENCED PROPERTY OR THE PURPOSE OF INSPECTING THE WORK PERMITTED AN	NOT SPECIFICALLY DESCRIBED IN THIS NO POSTING NOTICES.
Applicant's Signature		t Name	
	- Company of Film	c Name	
mail Address	Not take the take the second second	202	
CONCLETE	Date		
itle/Company			
	Chacks Bought + Discourse	result of agreement flow orders	
	Checks Payable to: DIRECTOR OF FINA **PLEASE WRITE NEATL	ANCE OF HOWARD COUNTY	
	-FOR OFFICE U		
AGENCY DATE SI	GNATURE OF ARREST ARE		

AGENCY	DATE	SIGNATURE OF APPROVAL
State Highways		
Building Officials		
PSZA (Zoning)		
PSZA (Engineering)		
Health	8/6/20	so Ruther

Front:		
Rear:		
Side:		19.
Side St.:		
All minimum setbacks met?	☐ Yes	□No
Is Entrance Permit Required?	☐ Yes	□No
Historic District?	☐ Yes	□No
Lot Coverage for New Town Z	one:	
SDP/Red-line approval date:		1

Filing Fee	\$ 100000
Permit Fee	\$
Tech Fee	\$ (() 4
Excise Tax	\$
PSFS	\$
Guaranty Fund	\$
Add'I per Fee	\$
Total Fees	\$ 1
Sub- Total Paid	\$
Balance Due	\$
Check	#1/1/101/4

ribution of Copies: White: Building Officials

Green: PSZA,Zoning

Yellow: PSZA, Engineering

Pink: Health

ELECTRICAL PLAN HENRYTON ROAD - VANM SOLAR POWER GENERATION FACILITY

1825 SAND HILL ROAD, MARRIOTTSVILLE, MD 21104



	SYSTEM SIZE (AC)	2.000 MW
	SYSTEM SIZE (DC)	2.596 MW
	DC/AC RATIO	1.30
	MEDIUM VOLTAGE TRANSFORMER	2,000 KVA
	RACKING SYSTEM	SOLAR FLEXRACK
	STRING SIZE	27
	STRING COUNT	253
	INVERTER(S)	CHINT-SCA 125KW
	INVERTER QUANTITY	16
	MODULE MAKE	ADANI BIFACIAL
	MODULE MODEL	380
	MODULE STC RATING	380W
	MODULE QUANTITY	6,831
	RACK CONFIGURATION	(1) HIGH IN PORTRAIT
<u> </u>	MODULE ORIENTATION	PORTRAIT
	TILT ANGLE	+/-TBD°
	GROUND COVERAGE RATIO	50.2%
	AZIMUTH	180°
	LATTITUDE	39.321007
	LONGITUDE	-76.925859
	CODE CYCLE	2017

PROJECT DEVELOPER NAUTILUS SOLAR ENERGY, LLC 396 SPRINGFIELD AVE 2ND FLOOR **SUMMIT, NJ 07901** (908) 795-3040

PROJECT EPC SOLAMERICA ENERGY SERVICES, LLC PEACHTREE PALISADES 1819 PEACHTREE RD., SUITE 100 ATLANTA GEORGIA 30309 PETER CORBETT (404) 351-8175 FRANK BUCCERI (201) 331-7471

ELECTRICAL ENGINEER AVOCA ENGINEERS & ARCHITECTS, LLC 242 OLD NEW BRUNSWICK ROAD PISCATAWAY, NEW JERSEY 08854 (732) 465-1002 KEVIN LEARY, PE LIC. NO. 43259

CIVIL ENGINEER ROBERT H. VOGEL ENGINEERING, INC. 3300 N. RIDGE ROAD, SUITE 110 ELLICOT CITY, MD 21043 (410) 461-7666 ROBERT H. VOGEL, PE PE NO. 16193

AUTHORITY HAVING JURISDICTION (AHJ) HOWARD COUNTY DEPT. OF INSPECTION & PERMITS GEORGE HOWARD BLDG 3430 COURT HOUSE DRIVE ELLICOTT CITY, MD 21043

DESIGN CRITERIA

(410) 313-2455

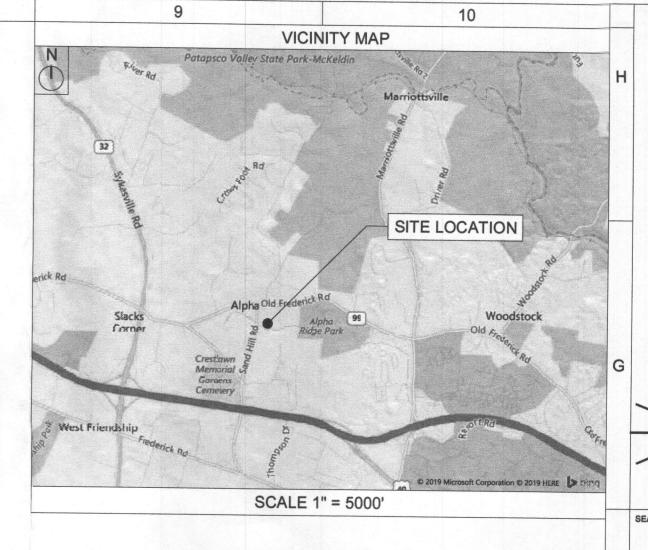
- INTERNATIONAL BUILDING CODE, 2018 EDITION
- NATIONAL ELECTRICAL CODE (NFPA 70), 2017 EDITION, WITH HOWARD COUNTY **AMENDMENTS**
- 3. 115 MPH WIND EXPOSURE C
- 4. 25 PSF GROUND SNOW LOAD

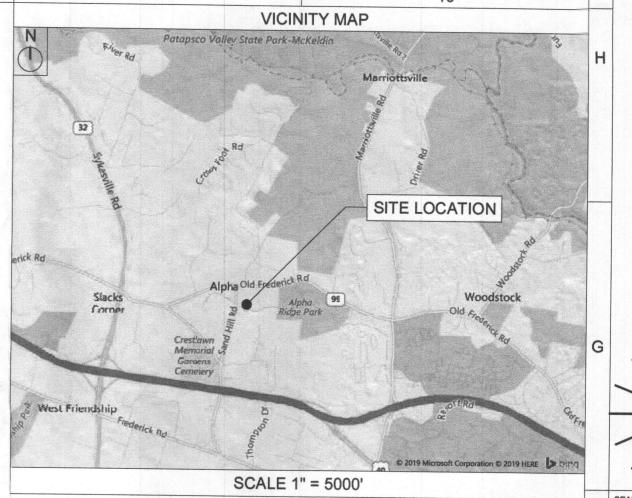
PROJECT DESCRIPTION THE PROJECT CONSISTS OF THE FOLLOWING:

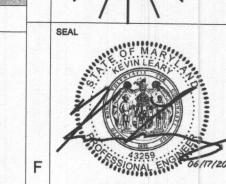
- INSTALLATION OF THE SOLAR PV MODULES AND GROUND MOUNTING SYSTEM ON OPEN LAND.
- 2. INSTALLATION OF DC CABLES, CONDUITS AND DISCONNECTS.
- 3. INSTALLATION OF THE DC TO AC INVERTERS ON INDIVIDUAL GALVANIZED BACKBOARDS NEXT TO SOLAR FLEXRACK SINGLE AXIS TRACKER SYSTEM.
- 4. INSTALLATION OF THE INTERCONNECTION WITH BALTIMORE GAS AND ELECTRIC, INCLUDING CONDUIT AND WIRE.
- 5. INSTALLATION OF A PERIMETER FENCE.

GENERAL NOTES

- THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, CONDITIONS AND BRING TO THE ENGINEER'S ATTENTION ANY DISCREPANCY OBSERVED IMMEDIATELY.
- THE CONTRACTOR SHALL COORDINATE OBTAINING ALL REQUIRED PERMITS.
- ALL DRAWINGS NOTES, & SPECIFICATIONS ARE COMPLIMENTARY, ANY WORK SHOWN OR REFERRED TO ON ANY ONE DRAWINGS SHALL BE PROVIDED AS THOUGH SHOWN ON ALL RELATED DRAWINGS. IN THE EVENT OF A CONFLICT, THE CONTRACTOR SHALL VERIFY WITH THE ENGINEER.
- THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT, ENGINEER AND/OR OWNER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY BRACING, SHORING AND PROTECTING ALL WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKAGE, COLLAPSE, DISTORTIONS AND MISALIGNMENT. SUCH TEMPORARY BRACING AND SHORING SHALL REMAIN IN-PLACE UNTIL PERMANENT CONSTRUCTION HAS BEEN COMPLETED.
- 6. THE CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS INCLUDING SAFETY.
- 7. FOR DETAILED NOTES SEE E-002.







TON ROAD AR PROJEC

ENRYT SOLA

11/14/19 K.M. K.L.

COVER SHEET

9

E-521 E-531 E-541

E-901

E-701

DWG.NO.

E-001

E-002

E-201

E-211

E-221

E-401

E-402

E-411

E-502

GENERAL GROUNDING STRUCTURE GROUNDING MV EQUIPMENT GROUNDING **FENCE GROUNDING** MV SITE PLAN AND TRENCH E-801 LABELS AND SIGNAGE 1 OF 2 E-811 LABELS AND SIGNAGE 2 OF 2 SPEC SHEETS

DRAWING SCHEDULE

DRAWING TITLE

COVER SHEET

GENERAL NOTES

GENERAL SITE OVERVIEW

AC ONE LINE DIAGRAM

DC ONE LINE DIAGRAM

MONITORING SYSTEM

CONDUCTOR SCHEDULES

CABLE AND CIRCUIT LAYOUT

CABLE AND CIRCUIT LAYOUT

CABLE AND CIRCUIT LAYOUT

TRACKER POWER SITE PLAN

EQUIPMENT WORKING SPACE

CONDUIT AND WIRE MANAGEMENT 1 OF 2

CONDUIT AND WIRE MANAGEMENT 2 OF 2

TRANSFORMER LAYOUT

SWITCHGEAR DETAILS

TRENCH DETAILS

MISCELLANEOUS DETAILS

REV

9

9

9

E-001

& PERMITS

ELECTRICAL NOTES FOR NEW PHOTOVOLTAIC SYSTEM:

SOLAR PHOTOVOLTAIC SYSTEMS. ALL EQUIPMENT SHALL BE UL APPROVED.

RECEIVED FROM THE UTILITY SERVICE PROVIDER.

WITH THE NEC ARTICLE 705.12 "POINT OF CONNECTION".

AND ISOLATION.

ITS PURPOSE.

STRUCTURE.

PERSONNEL BY LOCK OR LOCATION.

AFFECTED IF INSTALLED IN DIRECT SUNLIGHT.

WIRING AND WIRING METHODS:

WIRE COLOR SPECIFICATIONS:

Phase A

Phase B

Phase C

Grounded Conductor

Grounded Conductor

Grounding Electrode

Conductor

Ungrounded (+) Conductor

Ungrounded (-) Conductor

Grounding Conductor

A PARTITION OR ARE CONNECTED TOGETHER.

CONDUIT SPANS AN EXPANSION JOINT.

CIRCUIT OR OTHER DAMAGE.

INTERNAL DIODES.

INSULATING PRODUCT.

OF RACEWAY.

NEC 300.19.

BE USED TO PREVENT THE ENTRY OF MOISTURE.

14. METALLIC L AND T CONDUIT BODIES SHALL NOT BE USED.

WRITTEN APPROVAL FROM AVOCA PROJECT ENGINEER.

THIS PROPOSED SOLAR ELECTRIC SYSTEM IS INTENDED TO OPERATE IN PARALLEL WITH POWER

2. THE INVERTER FOR THE PROPOSED SOLAR ELECTRIC SYSTEM SHALL BE IDENTIFIED FOR USE IN

3. THIS SYSTEM IS INTENDED TO CONNECT TO THE EXISTING FACILITY POWER SYSTEM AT A SINGLE

POINT, POINT OF COMMON COUPLING (POCC). THIS CONNECTION SHALL BE IN COMPLIANCE

4. ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT PROTECTION FOR TESTING

5. ALL DISCONNECTING COMBINERS SHALL BE SECURED FROM UNAUTHORIZED/UNQUALIFIED

7. EQUIPMENT SHALL BE INSTALLED IN A SECURE AREA. INVERTER PERFORMANCE MAY BE

ALL WIRING METHODS AND INSTALLATION PRACTICES SHALL CONFORM TO THE NATIONAL

PLASTIC ZIP TIES IS NOT AN APPROVED METHOD TO SUPPORT OR ATTACH WIRE TO A

ELECTRIC CODE, LOCAL STATE CODES, AND OTHER APPLICABLE LOCAL CODES.

8. CONDUITS AND CABLES SHALL NOT ENTER THE TOP OF ANY OUTDOOR ENCLOSURE WITHOUT

EXPOSED PV SOLAR MODULE WIRING WILL BE PV WIRE OR APPROVED EQUIVALENT, 90 DEGREE

C, WET RATED AND UV RESISTANT. ALL EXPOSED CABLES, SUCH AS MODULE LEADS SHALL BE

SECURED WITH MECHANICAL OR OTHER APPROVED SUN-LIGHT RESISTANT MEANS. THE USE OF

277 / 480 volt

BROWN

ORANGE

YELLOW

GRAY or WHITE

GREEN or BARE

GREEN W/ ORANGE

DC Ungrounded

RED wire or Black wire with

BLACK wire with no markings

GREEN or BARE

(+) FROM MODULE

(-) FROM MODULE

3. PV STRING HOME RUNS SHALL BE LABELED ON BOTH ENDS, AT ARRAY AND AT COMBINER.

COMBINER OUTPUT CONDUCTORS SHALL BE LABELED AT BOTH ENDS, AT COMBINER AND AT

LIQUID TIGHT FLEXIBLE METAL CONDUIT IS GENERALLY SUITABLE FOR INSTALLATION IN WET AND

FROM BOXES (JUNCTION BOX, CABINETS, OR CONDUIT FITTING) AND NO MORE THAN 36 INCHES

DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 12 INCHES

PROPOSED SOLAR SYSTEM SHALL NOT BE CONTAINED IN THE SAME RACEWAY CABLE TRAY.

6. UNLESS MARKED AS UV RESISTANT, PVC IS NOT APPROVED FOR INSTALLATION IN LOCATIONS

SUBJECTED TO DIRECT SUNLIGHT AND SHALL NOT BE EMPLOYED IN ANY SUCH LOCATION.

FITTINGS INSTALLED PER NEC 300.7(B). EXPANSION FITTINGS SHALL ALSO BE USED WHEN

ALL D.C. MATERIALS SHALL BE UL LISTED FOR 1500V DC. DC EQUIPMENT RATED TO 600V MAY BE

CONDUIT, USE 20 MIL PIPE WRAP TAPE HALF-LAPPED FROM 6" PAST TRANSITION POINT ON PVC

TO 6" ABOVE GROUND ON METALLIC CONDUIT. AN EXPANSION JOINT SHALL BE USED IN THE

10. WHEN TRANSITIONING UNDERGROUND PVC CONDUIT TO ABOVE GROUND RMC, IMC OR EMT

11. ANY METAL SHAVINGS RESULTING FROM SITE WORK SHALL BE CLEANED FROM ENCLOSURE

INTERIORS, TOP SURFACES OF ENCLOSURE, ROOF SURFACE, AND ANY ADDITIONAL AREAS

WHERE OXIDATION OR CONDUCTIVE METAL SHAVINGS MAY CAUSE RUST, ELECTRICAL SHORT

12. CONDUITS LONGER THAN 200' WITH NEGATIVE SLOPE TOWARD ELECTRICAL EQUIPMENT SHALL

13. WHEN TRANSITIONING FROM FREE AIR TO CONDUCTORS IN CONDUIT, A LISTED FITTING SHALL

15. ALL COPPER TERMINATION AC AND DC SHALL HAVE KOPR-SHIELD OR EQUIVALENT APPLIED.

16.MEGGER TESTING SHALL BE PERFORMED AT 1000 VDC FOR ALL AC CIRCUITS 480 V OR BELOW

REQUIRED. DO NOT MEGGER THE SOLAR MODULES AS THEY WILL LIKELY DAMAGE THEIR

AND DC CIRCUITS 600 V OR BELOW. MEGGER TESTING WILL BE PERFORMED AT 2500 VDC FOR

DC CIRCUITS IN 1500 VDC SYSTEMS. A MINIMUM OF 250 MEGAOHMS RESISTANCE TO GROUND IS

17. BENDS SHALL NOT DAMAGE THE RACEWAY OR SIGNIFICANTLY CHANGE THE INTERNAL DIAMETER

18. SUPPORT CONDUCTORS IN VERTICAL CONDUITS IN ACCORDANCE WITH THE REQUIREMENTS OF

19. CONNECTORS TO BE TORQUED PER DEVICE LISTING, OR MANUFACTURERS RECOMMENDATIONS

CONNECTORS ARE TO BE MARKED WITH PERMANENT MARKING PAINT, AFTER TORQUEING.

APPROVAL. UL LISTED ELECTRICAL TAPE ALONE IS NOT SUITABLE AS THE ONLY INSULATION

MEANS. FOLLOW MANUFACTURERS INSTRUCTIONS FOR INSTALLATION, AND APPLICATION OF

22.ALL LV AC WIRING SHALL BE TYPE THWN-2 RATED AT 90 DEGREES C. XHHW-2 IS AN APPROVED

23.USE MEYERS(OR APP EQU)HUB LISTED TO PROVIDE MOISTURE PROTECTION FOR CONDUIT

ALTERNATE. THIS NOTE WILL BE SUPERCEDED BY ANY INVERTER SPECIFICATIONS REQUIRING

20.ALL BARE CU WIRES SHALL BE INSTALLED TO NOT COME INTO CONTACT WITH DISSIMILAR

21.SPLICES/CONNECTORS SHALL BE INSULATED AND WILL REQUIRE PROJECT ENGINEER

LV AC WIRE TO MEET HIGHER VOLTAGE OR INSULATION STANDARDS.

ENTRANCES IN ALL APPLICABLE LOCATIONS AS REQUIRED BY NEC 314.15.

HAVE A PULL BOX OR VAULT ADJACENT TO THE ENTRY POINT INTO THE ELECTRICAL EQUIPMENT.

7. LONG STRAIGHT EXPOSED CONDUIT RUNS, 100 FEET OR MORE, SHALL HAVE EXPANSION

8. FUSES AND WIRES SUBJECT TO TRANSFORMER INRUSH CURRENT SHALL BE SIZED

TRANSITION TO ABOVE GROUND CONDUIT WHERE REQUIRED BY NEC 300.5(J).

USED WITH THE WRITTEN PERMISSION OF AVOCA ENGINEERING.

CABLE, OUTLET BOX, JUNCTION BOX, OR SIMILAR FITTING AS FEEDERS OR BRANCH CIRCUITS OF

OTHER SYSTEMS UNLESS THE CONDUCTORS OF THE DIFFERENT SYSTEMS ARE SEPARATED BY

5. THE PHOTOVOLTAIC SOURCE CIRCUITS AND PHOTOVOLTAIC OUTPUT CIRCUITS OF THIS

RED markings

(NEC 2017)

AC CONDUCTORS

DC CONDUCTORS

120 / 208 volt

BLACK

RED

BLUE

WHITE

GREEN or BARE

GREEN W/ ORANGE

6. ALL DISCONNECTING COMBINERS, PULL/SPLICE BOXES, AND ENCLOSURES SHALL BE LISTED FOR

5.PROVIDE DANGER, WARNING, AND CAUTION LABELS AS REQUIRED BY NESC, OR OSHA

1. CONDUITS FOR DIRECT-BURIAL OR CONCRETE ENCASEMENT SHALL BE SCHEDULE 40 PVC.

INCH MINIMUM RADIUS IS REQUIRED FOR VERTICAL SWEEPS UP TO EQUIPMENT.

BETWEEN MEDIUM VOLTAGE CONDUITS OR DUCTBANKS AND LOW-VOLTAGE OR

2. ALL MEDIUM VOLTAGE CONDUITS SHALL HAVE MINIMUM 60 INCH RADIUS SWEEPS EXCEPT 36

. MAINTAIN MINIMUM 6 INCHES OF SPACING HORIZONTALLY AND VERTICALLY AT CROSSINGS

. MAINTAIN MINIMUM 4 FOOT SPACING BETWEEN MEDIUM VOLTAGE CONDUCTORS AND POWER

CIRCUITS OF OTHER SYSTEMS WHEN RUN PARALLEL FOR DISTANCES OF OVER 10 PERCENT OF

THE RUN OF EITHER CIRCUIT UNLESS THE DUCTBANK SECTIONS INDICATE CLOSER SPACINGS

CONDUIT ENTRY SPACE AND ARRANGE CONDUITS TO PERMIT THE MOST DIRECT ROUTING OF

CABLES TO TERMINALS AND TO ALLOW ADEQUATE SLACK FOR DISCONNECTION AND PARKING

TOPS OF CONDUIT SHALL BE A MINIMUM OF 4 INCHES ABOVE THE CONCRETE PAD OR GRAVEL

ALL CONDUITS ENTERING EQUIPMENT TO BE EQUIPPED WITH BELL ENDS TO PREVENT

BEDDING TO PREVENT INGRESS OF WATER. SEAL ALL CONDUITS TO PREVENT TRANSMISSION OF

MAINTAIN ALL CONDUIT ENTRIES TO EQUIPMENT WITHIN MANUFACTURER'S DESIGNATED

ALL MEDIUM VOLTAGE EQUIPMENT WITH THE OPERATING VOLTAGE.

WHICH HAVE BEEN CONSIDERED IN AMPACITY CALCULATIONS.

HUMID AIR BETWEEN INTERIOR AND EXTERIOR OF EQUIPMENT.

OF LOADBREAK AND DEADBREAK ELBOW CONNECTORS.

CONDUITS AND DUCTBANKS:

COMMUNICATIONS CONDUITS.

CONDUCTORS

THE SHIELDING TAPE IS NOT PERMITTED.

REVERSE WRAPPED GLASS FIBER TAPE.

14.EQUIPMENT AND COMPONENTS SHALL BE LISTED AND LABELED BY A NATIONALLY-RECOGNIZED

TESTING LABORATORY (NRTL) SUCH AS UL OR ETL, WHERE SUCH LISTING IS AVAILABLE FOR THE

STANDARDS ON EQUIPMENT ENCLOSURES, DOORS, ACCESS PLATES, AND BARRIERS AND LABEL

10

7. LV WIRE SHALL BE ROUTED TO ALLOW ACCESS TO OIL DRAIN VALVE AND OIL

SAMPLE PORT.

. VERIFY THE FOLLOWING:

8.1. FACTORY WIRING DIAGRAM IS ACCURATE

8.2. TRANSFORMER IS LEVEL 8.3. MEDIUM & LOW VOLTAGE CONDUITS ARE SEPARATED AND UNDER THEIR OWN

COMPARTMENT 8.4. LOW VOLTAGE WIRE ARE ROUTED SO THAT THERE IS ACCESS TO THE OIL

DRAIN VALVE AND OIL SAMPLE PORT 8.5. LOCK OR CONICAL NUTS

8.6. HARDWARE IS THE PROPER LENGTH

PROVIDE PADLOCKS ON THE DOORS

10. PROVIDE 12" OF CLASS 5 GRAVEL DRAINAGE BEDDING UNDER THE GROUND SLEEVE.

FIELD ACCEPTANCE TESTING:

1. CONTRACTOR SHALL PROVIDE FIELD ACCEPTANCE TESTING IN ACCORDANCE WITH ANSI/NETA ATS-2013. THE FOLLOWING EQUIPMENT SHALL BE FIELD TESTED:

1.1. MV STEP-UP TRANSFORMER 1.2. AC COLLECTOR SWITCHBOARD

1.3. PRIMARY METERING CTS AND PTS

1.4. RECLOSER AND RECLOSER CONTROLLER (SEL-651R2)

1.5. MV CABLES 1.6. LV CABLES

1.7. GROUND GRID

-0-XXA --0-

2. WRITTEN FIELD ACCEPTANCE TEST REPORTS SHALL BE FURNISHED TO THE ENGINEER.

ELECTRICAL LEGEND

DENOTES QUANTITY

DENOTES QUANTITY

TRANSFORMER

SYSTEM OR EQUIPMENT GROUND

POTENTIAL TRANSFORMER - NUMBER

CURRENT TRANSFORMER - NUMBER

DRAW OUT ELEMENT OR BUSHING INSERT

POLE MOUNTED FUSED CUTOUT SWITCH

MOLDED CASE CIRCUIT BREAKER

TRANSFORMER BAY-O-NET FUSE

FUSE WHERE "XX" DENOTES SIZE

POLE MOUNTED GROUP OPERATED AIR

MEDIUM VOLTAGE SURGE ARRESTER

UNDERGROUND WIRING OR CONDUIT

PROTECTIVE RELAY - NUMBER DENOTES

DISCONNECT SWITCH

RECLOSER

GROUND ROD

IEEE DEVICE FUNCTION

POINT OF DELIVERY

POINT OF COMMON COUPLING

POINT OF INTERCONNECTION

MAXIMUM CIRCUIT OVER VOLTAGE

CONTROL POWER TRANSFORMER

EQUIPMENT GROUNDING CONDUCTOR

TRANSFORMER SWITCH

PERMIT DRAWING - NOT RELEASED FOR CONSTRUCTION

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO.43259, EXPIRATION DATE: JANUARY 15, 2021.

CHECKED BY:

K.L. GENERAL NOTES

ENRY

24.PROTECT WIRE FROM SHARP EDGES WITH UV RATED SPIRAL WRAP, EDGE-GUARD, OR SPLIT

25.MODULE LEAD CONNECTORS SHALL BE INSTALLED SUCH THAT THEY ARE EASILY ACCESSIBLE AND PROTECTED FROM EXPOSURE TO DIRECT SUNLIGHT OR RAIN. THEY SHALL NOT BE INSTALLED WITHIN TUBING, CONDUIT OR MODULE GAPS.

26.THE STRING SOURCE CIRCUIT WIRING NEEDS TO BE SUPPORTED ADEQUATELY IN LENGTHS NOT TO EXCEED 24". THE MODULE TO MODULE INTERCONNECTION LEADS NEED TO BE SUPPORTED

AT A MINIMUM OF 12" FROM THE J-BOX AND THE MODULE TO MODULE CONNECTION POINT.

27. POLARIS TAPS AND BLOCKS ARE NOT TO BE USED TO CONNECT CURRENT CARRYING CONDUCTORS.

28. MODULE TO SOURCE CIRCUIT CONNECTORS MUST BE OF THE SAME MAKE AND MODEL AS THE MODULE TO MODULE CONNECTORS. THE CONNECTION TO SOURCE CIRCUITS MUST BE PER THE MODULE MANUFACTURER AND CONNECTOR MANUFACTURER INSTRUCTIONS. CONTRACTOR TO VERIFY THAT THE STRING CONDUCTOR DIAMETER IS COMPATIBLE WITH THE STRING CIRCUIT HOME-RUN CONNECTORS. REFER TO MANUFACTURER INSTALLATION MANUAL FOR THE SPECIFIC MODULES INSTALLED FOR THE PROPER CONNECTORS AND TOOLS NECESSARY FOR A COMPATIBLE AND CORRECT INSTALLATION.

29.ALL PENETRATION OF ALL ELECTRICAL EQUIPMENT (AC AND DC BOTH NEW AND OLD) TO BE DONE ON THE BOTTOM OR SIDE. NO TOP PENETRATIONS. IF TOP PENETRATIONS CANNOT BE AVOIDED, A DRIP LOOP ON THE WIRING MUST B DONE.

30.ALL WIRE MANAGEMENT TO BE DONE WITH STAINLESS STEEL HEYCO CLIPS OR ZIP TIES (HEYCO SUNBUNDLER)

DAMAGE PROTECTION:

THE ELECTRICAL CONTRACTOR SHALL CONSIDER THE WEATHERING OF EQUIPMENT OVER TIME AND ELIMINATE THE POSSIBILITY OF DEGRADATION DUE TO CORROSION, WATER ENTRY AND UV EXPOSURE. AS A RESULT, THE USE OF UNISTRUT OR SIMILAR MOUNTING SYSTEMS IS REQUIRED TO MOUNT ENCLOSURES, PULL BOXES, LOAD CENTERS, FUSE BOXES, OR OTHER EQUIPMENT.

ALL NEMA 4 BOXES SHALL BE EQUIPPED WITH LISTED DRAIN PLUGS INSTALLED TO ALLOW WATER TO DRAIN. ANY MODIFICATION TO AS-MANUFACTURED EQUIPMENT SHOULD BE DONE IN SUCH A WAY AS TO MAINTAIN ALL LISTED RATINGS.

ALL NEMA 3 BOXES SHALL BE EQUIPPED WITH A WEEP HOLE OR LISTED DRAIN PLUGS INSTALLED

. ALL OUTDOOR ENCLOSURES REQUIRE AN APPROVED MEANS OF DRAINAGE AND VENTILATION.

. ALL ELECTRICAL CONDUIT, EQUIPMENT AND COMPONENTS MUST BE ADEQUATELY PROTECTED FROM DAMAGE AND VANDALISM BY THE USE OF BOLLARDS, SHIELDS, GUARDS OR OTHER ACCEPTABLE MEANS.

. ALL CIRCUIT BREAKERS INSTALLED THAT ARE SUBJECT TO REVERSE POWER FLOW SHALL BE LISTED AND LABELED AS BACKFEED COMPATIBLE.

. ALL EQUIPMENT MOUNTING HARDWARE SHOULD BE HOT DIP GALVANIZED OR STAINLESS STEEL.

2. RGS SHALL BE INSTALLED FOR ALL CONDUIT WITHIN 3 FEET OF GRADE, AND INCLUDING ALL

. MINIMUM EQUIPMENT/TROUGH HEIGHT ABOVE GRADE SHALL BE 3 FEET.

STUB-UP TRANSITIONS FROM BELOW-GROUND TO ABOVE-GROUND.

ALUMINUM CONDUCTOR INSTALLATION NOTES

MINIMUM WIRE SIZE FOR CURRENT CARRYING CONDUCTORS WHEN IMPLEMENTING ALUMINUM AS A CONDUCTOR SHALL BE 1/0 AWG STRANDED, COMPACT ELECTRICAL GRADE AA-8000 SERIES

MANUFACTURERS SHALL BE APPROVED BY AVOCA PRIOR TO USAGE. WHERE BOLTED CONNECTIONS ARE NOT POSSIBLE, MECHANICAL SCREW STYLE LUGS AND

. ALUMINUM POWER CABLE, WIRE CONNECTORS, AND INSULATING AND CODING TAPE

TERMINATIONS ARE APPROVED ONLY WHEN USED IN CONJUNCTION WITH A LISTED COPPER PIGTAIL COMPRESSION ADAPTOR (SOLID CORE PIN ADAPTERS ARE NOT ALLOWED)

4. USE OF A "ONE-SHOT" CRIMPER OR "DIE-LESS CRIMPERS" WILL NOT BE ALLOWED

COMPRESSION STYLE LUGS AND TERMINATIONS SHALL BE RATED FOR THE MAXIMUM DC and AC VOLTAGE OF THE SYSTEM.

5.1. MUST BE PRE-FILLED WITH OXIDE INHIBITOR 5.2. WIRE STRIPPING AND BRUSHING OF CONDUCTOR IN ACCORDANCE WITH VENDOR SPECS IS

REQUIRED IMMEDIATELY PRIOR TO LUG INSTALLATION. 5.3. OXIDE INHIBITOR MUST BE APPLIED TO EXPOSED CONDUCTOR IMMEDIATELY AFTER

STRIPPING AND BRUSHING AND IMMEDIATELY PRIOR TO INSTALLATION OF THE LUG. 5.4. USE COMPRESSION TOOL LISTED FOR USE WITH SELECTED COMPRESSION CONNECTOR. 5.5. A MINIMUM 9" LENGTH OF COLD OR HEAT SHRINK WITH A VOLTAGE RATING EQUAL TO THE

CONDUCTOR SHALL BE APPLIED TO COVER THE CONNECTION BETWEEN CRIMP AND THE CONDUCTOR BEGINNING AT THE STRAIGHT SECTION OF THE CRIMP. 5.6. ALL CONNECTORS AND CORRESPONDING CRIMPING TOOLS SHALL BE UL LISTED FOR THEIR SPECIFIC APPLICATION.

HEAT/COLD/MOISTURE/SUNLIGHT/ RESISTANT. INSULATING TAPE SHALL BE BLACK AND COLOR CODING TAPE SHALL BE FADE RESISTANT.

FOR ALUMINUM MV CONDUCTORS, WHERE USED, THE GUIDELINES IN THIS SECTION PLUS

INSULATING AND COLOR CODING TAPE SHALL BE PREMIUM GRADE PRESSURE SENSITIVE VINYL.

GENERAL REQUIREMENTS FOR MV CONDUCTOR INSTALLATION SHALL APPLY. . DIRECT LANDING OF ALUMINUM CONDUCTORS IS ONLY ALLOWED TO BREAKERS WHICH ARE SPECIFICALLY RATED FOR ALUMINUM CONDUCTORS.

SEE ELECTRICAL DIAGRAM AND ELECTRICAL DETAILS FOR MORE GROUNDING INFORMATION.

ONLY ONE CONNECTION TO DC CIRCUITS AND ONE CONNECTION TO AC CIRCUITS WILL BE USED FOR SYSTEM GROUNDING (NEC 690.42) (REFERENCED TO THE SAME POINT).

EQUIPMENT GROUNDING CONDUCTORS AND SYSTEM GROUNDING CONDUCTORS WILL HAVE AS SHORT A DISTANCE TO GROUND AS POSSIBLE AND A MINIMUM NUMBER OF TURNS.

NON-CURRENT CARRYING METAL PARTS SHALL BE CHECKED FOR PROPER GROUNDING; NOTING THAT TERMINAL LUGS BOLTED ON AN ENCLOSURE'S FINISHED SURFACE MAY BE INSULATED BECAUSE OF PAINT/FINISH. PAINT/FINISH AT POINT OF CONTACT SHALL BE PROPERLY REMOVED.

. RACKING COMPONENTS AND STRUCTURAL SUPPORTS MUST BE ELECTRICALLY BONDED TOGETHER BY AN ACCEPTABLE MEANS.

MODULES SHALL BE GROUNDED WITH EQUIPMENT GROUNDING CONDUCTORS BONDED TO A LOCATION APPROVED BY THE MANUFACTURER WITH A MEANS OF BONDING LISTED FOR THIS

THE CONNECTION TO THE MODULE OR PANEL OF THIS PROPOSED SOLAR ELECTRIC SYSTEM SHALL BE SO ARRANGED THAT REMOVAL OF A MODULE OR A PANEL FROM THE PHOTOVOLTAIC SOURCE CIRCUIT DOES NOT INTERRUPT A GROUNDED CONDUCTOR TO ANOTHER PHOTOVOLTAIC SOURCE CIRCUIT. SETS OF MODULES INTERCONNECTED AS SYSTEMS RATED AT 50 VOLTS OR LESS WITH OR WITHOUT BLOCKING DIODES, AND HAVING A SINGLE OVER CURRENT DEVICE SHALL BE CONSIDERED AS A SINGLE SOURCE CIRCUIT.

GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, INCLUDING BUT NOT LIMITED TO GROUND RODS, GROUNDING LUGS, GROUNDING CLAMPS, ETC.

. ALL GROUNDING CONNECTIONS SHALL BE RATED FOR DIRECT BURIAL (DB RATED) CONTRACTOR IS TO SUPPLY DOCUMENTATION PROVING THIS DURING PRODUCT SUBMITTALS

ALL EQUIPMENT GROUNDING CONDUCTORS INSTALLED SHOULD BE COPPER ONLY

GROUND FAULT PROTECTION:

. PHOTOVOLTAIC INVERTERS SHALL BE EQUIPPED WITH D.C. GROUND FAULT PROTECTION TO REDUCE FIRE HAZARDS. INVERTERS ARE ALSO EQUIPPED WITH ANTI-ISLANDING CIRCUITRY.

DISCONNECTING MEANS:

MEANS SHALL BE PROVIDED TO DISCONNECT ALL CURRENT CARRYING CONDUCTORS OF THE PHOTOVOLTAIC POWER SOURCE FROM ALL OTHER EXISTING CONDUCTORS.

WHERE A CIRCUIT GROUNDING CONNECTION IS NOT DESIGNED TO BE AUTOMATICALLY INTERRUPTED AS PART OF THE GROUND-FAULT PROTECTION SYSTEM REQUIRED BY SECTION 690-5, A SWITCH OR CIRCUIT BREAKER USED AS A DISCONNECTING MEANS SHALL NOT HAVE A POLE IN THE GROUNDED CONDUCTOR.

ALLOW MAINTENANCE OR TROUBLESHOOTING BY QUALIFIED PERSONNEL. . UNLESS DISCONNECT IS SERVICING A LINE-SIDE TAP, THE DISCONNECTING MEANS SHALL NOT BE REQUIRED TO BE SUITABLE AS SERVICE EQUIPMENT AND SHALL BE RATED IN ACCORDANCE

3. THE GROUNDED CONDUCTOR MAY HAVE A BOLTED OR TERMINAL DISCONNECTING MEANS TO

EQUIPMENT SUCH AS PHOTOVOLTAIC SOURCE CIRCUITS, OVER CURRENT DEVICES, AND BLOCKING DIODES SHALL BE PERMITTED ON THE PHOTOVOLTAIC SIDE OF THE PHOTOVOLTAIC DISCONNECTING MEANS.

MEANS SHALL BE PROVIDED TO DISCONNECT EQUIPMENT SUCH AS INVERTERS, BATTERIES CHARGE CONTROLLERS, AND THE LIKE FROM ALL UNGROUNDED CONDUCTORS OF ALL SOURCES. IF THE EQUIPMENT IS ENERGIZED FROM MORE THAN ONE SOURCE, THE DISCONNECTING MEANS SHALL BE GROUPED AND IDENTIFIED. A SINGLE DISCONNECTING MEANS SHALL BE PERMITTED FOR THE COMBINED A.C. OUTPUT OF

ONE OR MORE INVERTERS IN AN INTERACTIVE SYSTEM - PROVIDED EACH INVERTER ASSOCIATED WITH THE DISCONNECT HAS ITS OWN INTERNAL AC DISCONNECT. DISCONNECTING MEANS SHALL BE PROVIDED TO DISCONNECT A FUSE FROM ALL SOURCES OF SUPPLY IF THE FUSE IS ENERGIZED FROM BOTH DIRECTIONS AND IS ACCESSIBLE TO OTHER THAN QUALIFIED PERSONS. SUCH A FUSE IN A PHOTOVOLTAIC SOURCE CIRCUIT SHALL BE CAPABLE OF BEING DISCONNECTED INDEPENDENTLY OF FUSES IN OTHER PHOTOVOLTAIC

ALL DISCONNECTS AND COMBINERS SHALL BE SECURED FROM UNAUTHORIZED AND UNQUALIFIED PERSONNEL BY EITHER LOCK OR LOCATION.

REQUIRED SAFETY SIGNS AND LABELS: REQUIRED SAFETY SIGNS AND LABELS SHALL BE ETCHED PLACARDS PERMANENTLY ATTACHED BY ADHESIVE, OR OTHER MECHANICAL MEANS. LABELS SHALL COMPLY WITH ARTICLE 690 OF THE NEC OR OTHER APPLICABLE STATE AND LOCAL CODES. SEE LABELS AND MARKING PAGE FOR MORE

WEAR PERSONAL PROTECTIVE EQUIPMENT(PPE) APPROPRIATE FOR THE HAZARD: INSULATED GLOVES WITH PROTECTORS, INSULATED MATS AND TOOLS.

ANY SWITCH, FUSES, OR CIRCUIT BREAKERS THAT CAN BE ENERGIZED IN EITHER DIRECTION SHALL BE LABELED AS FOLLOWS:

ELECTRICAL SHOCK HAZARD DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE **ENERGIZED IN THE OPEN POSITION**

THIS PHOTOVOLTAIC SYSTEM WILL BE EQUIPPED WITH DC DISCONNECTING COMBINERS WHICH WILL BE LABELED AS FOLLOWS

PHOTOVOLTAIC DISCONNECTING COMBINERS

. THIS PHOTOVOLTAIC SYSTEM WILL BE EQUIPPED WITH AN A.C. DISCONNECT WHICH WILL BE LABELED AS FOLLOWS:

PHOTOVOLTAIC DISCONNECTING MEANS

SOURCE CIRCUITS.

. A MARKING SPECIFYING THE PHOTOVOLTAIC POWER SOURCE RATED AS FOLLOWS SHALL BE PROVIDED AT AN ACCESSIBLE LOCATION AT THE DISCONNECTION MEANS FOR THE POWER SOURCE:

OPERATING CURRENT **OPERATING VOLTAGE** MAXIMUM SYSTEM VOLTAGE SHORT CIRCUIT CURRENT COMBINER

MARKINGS:

. ALL INTERACTIVE SYSTEM POINTS OF INTERCONNECTION WITH OTHER SOURCES SHALL BE MARKED AT AN ACCESSIBLE LOCATION AT THE DISCONNECTION MEANS.

A PERMANENT ETCHED PLAQUE OR DIRECTORY SHALL BE PROVIDED IDENTIFYING THE LOCATION OF THE SERVICE DISCONNECTION MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTION MEANS, IF NOT LOCATED AT THE SAME LOCATION.

1. ELBOWS, BUSHINGS, AND TEST CAPS MUST BE CLEAN AND PROPERLY LUBRICATED.

ALL REQUIRED EQUIPMENT SHALL BE UL LISTED AND LABELED ACCORDINGLY.

GENERAL MEDIUM VOLTAGE NOTES:

POWER CABLE, ELBOW, AND M.V. TERMINATION DRAINS SHALL BE INSTALLED IN A MANNER THAT WILL ALLOW FOR THE REMOVAL, STANDING OFF, AND/OR LANDING OF ELBOWS WITH MINIMUM BENDING RADIUS PER NEC 300.34.

TAPE SHIELD ADAPTER KITS ARE TO BE USED WITH POWER CABLE THAT HAS TAPE SHIELDING.

THE MEDIUM-VOLTAGE SYSTEM IS DESIGNED TO BE A 3-PHASE, 3-WIRE PLUS GROUND, EFFECTIVELY GROUNDED SYSTEM WHETHER CONNECTED TO THE UTILITY OR ISOLATED FROM

. ALL MEDIUM VOLTAGE WORK SHALL COMPLY WITH THE LATEST EDITION OF ANSI C2 - NATIONAL ELECTRICAL SAFETY CODE (NESC)

. MEDIUM VOLTAGE CABLES: 6.1. WHERE MEDIUM VOLTAGE CABLES ARE INSTALLED ALONG ACCESS ROADS, THEY SHALL BE DIRECT BURIED.

SHOP DRAWINGS SHALL BE SUBMITTED FOR ENGINEER REVIEW AND APPROVED PRIOR TO

 MEDIUM VOLTAGE CABLE MEDIUM VOLTAGE SWITCHGEAR/SECTIONALIZING CABINET

7.1. MEDIUM VOLTAGE EQUIPMENT TO INCLUDE:

MV SWITCH

FABRICATION OR INSTALLATION OF THE FOLLOWING EQUIPMENT.

7.2. LOW VOLTAGE EQUIPMENT TO INCLUDE: DRY TYPE DISTRIBUTION (REX) TRANSFORMER

> DC COMBINER BOXES DC DISCONNECT SWITCH

 LOW VOLTAGE AC BREAKER LOW VOLTAGE PANELBOARDS

7.3. CONTRACTOR (TESTING AGENCY) TO PERFORM ACCEPTANCE TESTING PER ANSI/NETA ATS-2013. ALL EQUIPMENT INCLUDING SWITCHGEAR, SECTIONALIZING CABINETS, TRANSFORMERS, ETC.

ON THE DRAWINGS WITH OUTDOOR, REFLECTIVE, ADHESIVE LABELS, BLACK ON YELLOW,

MINIMUM 2 INCH HIGH LETTERS. ALL MEDIUM VOLTAGE CABLES SHALL BE LABELED AT EACH END, AT AN ACCESSIBLE POINT INSIDE EQUIPMENT ENCLOSURE, WITH CIRCUIT AND PHASE IDENTIFICATION CORRESPONDING TO THE DRAWINGS. LABELS SHALL BE ENGRAVED AND FILLED STAINLESS STEEL, OR TWO-COLOR ENGRAVED PHENOLIC, SECURED WITH UV-RESISTANT WIRE TIES. LABELS SHALL BE VISIBLE

SHALL BE LABELED ON THE FRONT EXTERIOR TO CORRESPOND TO THE IDENTIFICATION SHOWN

0. ARRANGE PHASES IN SWITCHGEAR, SECTIONALIZING CABINETS, ETC., A-B-C FROM LEFT TO RIGHT OR TOP TO BOTTOM AS VIEWED FROM THE FRONT.

FROM OUTSIDE THE ENCLOSURE WITHOUT REACHING INSIDE OR MOVING CABLES.

TO PROVIDE CORRECT PHASE SEQUENCE AT INVERTER SIDE OF STEP-UP TRANSFORMERS. 2. PROVIDE ARC FLASH HAZARD WARNING LABELS COMPLYING WITH ANSI Z535.4 ON ALL EQUIPMENT. LABELS SHALL BE APPLIED ON BOTH INSIDE AND OUTSIDE DOORS OR BARRIERS OF OUTDOOR EQUIPMENT.

1. VERIFY UTILITY PHASE SEQUENCE AND COORDINATE INSTALLATION OF FEEDER CONDUCTORS

13. ALL EQUIPMENT LABELING SHALL COMPLY WITH AVOCA REQUIREMENTS.

PROVIDE DANGER, WARNING, AND CAUTION LABELS AS REQUIRED BY NESC, OR OSHA

ENERGIZED AT OVER 600V SHALL REQUIRE TOOLS FOR REMOVAL OR BE PADLOCKABLE CLOSED.

PUBLIC SHALL COMPLY WITH NESC REQUIREMENTS FOR TAMPER-PROOF CONSTRUCTION. EQUIPMENT SHALL BE ANCHORED TO CONCRETE PADS OR FOUNDATIONS PER

RECOMMENDATION.

3. ALL OPENINGS INTO EQUIPMENT SHALL BE SEALED WITH GALVANIZED STEEL PLATE OR SCREEN TO PREVENT ENTRY OF INSECTS AND RODENTS.

3. PROVIDE 12 INCHES OF CLASS 5 GRAVEL DRAINAGE BEDDING IN THE BOTTOM OF ALL BOTTOM

9. ALL CONDUCTORS SHALL BE ROUTED TO MAINTAIN ACCESS TO INDICATORS, VALVES, SAMPLE PORTS, SWITCHES, TAP CHANGES, FUSE WELLS, AND OTHER COMPONENTS AND ACCESSORIES REQUIRING OPERATOR ACCESS.

SWITCHGEAR, INVERTERS, TRANSFORMERS, ETC.

PROVIDE NEMA 4 ENCLOSURE WHERE AVAILABLE FOR EXTERIOR DC AND LV EQUIPMENT. PROVIDE NEMA 3R ENCLOSURES WHERE NEMA 4 IS NOT AVAILABLE.

TRANSFORMERS:

GAPS BETWEEN THE PAD AND BASE OF THE TRANSFORMER MUST BE SEALED.

3. PROPER LABELING REQUIRED FOR: TRANSFORMER, POWER CABLES, HIGH VOLTAGE COMPARTMENT (STATEMENT OF VOLTAGE), AND TRANSFORMER DOORS (DANGER WARNING)

PROPER TORQUE SHALL BE APPLIED TO ALL BUSHINGS AS INDICATED.

4. NEMA DRILLED LONG BARREL COMPRESSION LUGS TO BE USED FOR THE LOW VOLTAGE WIRE.

1. COMPLETELY INSTALL ALL CONDUIT RUNS AND BACKFILL DUCTBANKS BEFORE PULLING CABLE. PULL A FLEXIBLE MANDREL AND BRUSH THROUGH EACH CONDUIT AFTER INSTALLATION. INSTALL A 1/4" DIAMETER NYLON PULL ROPE IN ALL SPARE CONDUITS. MEDIUM VOLTAGE CONDUCTORS SHALL BE PULLED USING DIRECT CONNECTION OF PULLING EYES TO THE CONDUCTORS OF EACH CABLE IN THE CIRCUIT OR BY INDIVIDUAL KELLEMS GRIPS APPLIED TO EACH CABLE OF THE CIRCUIT OVER THE INSULATION WITH THE TAPE SHIELDING REMOVED. USE OF KELLEMS GRIPS OVER THE OUTER JACKET OF THE CONDUCTOR OR OVER

INSTALL HANDHOLES AS REQUIRED TO MINIMIZE MAXIMUM ALLOWABLE CABLE TENSION PER CABLE MANUFACTURER WHEN PULLING CABLES.

THE DRAWINGS OR APPROVED IN ADVANCE OF INSTALLATION BY ENGINEER AND OWNER. WHERE CONDUCTORS OF DIFFERENT CIRCUITS PASS THROUGH THE SAME MANHOLE. HANDHOLE OR PULLBOX, COVER THE CONDUCTORS OF EACH CIRCUIT WITH ARC-PROOF TAPE, 3M SCOTCH 77 OR EQUIVALENT, SPIRAL WRAPPED HALF-LAPPED AND HELD IN PLACE WITH

SPLICES ARE NOT PERMITTED IN POWER OR CONTROL CONDUCTORS UNLESS INDICATED ON

TERMINATE ALL CONTROL WIRING BETWEEN PIECES OF EQUIPMENT ON FIELD WIRING TERMINAL BOARDS. LABEL ALL CONTROL WIRES WITH TERMINAL BOARD AND TERMINAL NUMBER IDENTIFICATION AT BOTH ENDS.

ALL MECHANICAL CONNECTIONS OTHER THAN ELBOW CONNECTORS SHALL BE MADE USING UL-LISTED TIN-PLATED COPPER CIRCUMFERENTIAL COMPRESSION LUGS. LUGS SHALL BE LONG-BARREL WITH NEMA TWO-HOLE DRILLING, BURNDY HYLUG MODEL YAZ OR EQUIVALENT CONNECTED WITH HIGH-STRENGTH SILICON BRONZE BUS BOLTS, NUTS AND LOCK WASHERS. LUGS TO MATCH CONDUCTOR TYPE.

8. VERIFY PROPER TORQUE OF ALL BOLTED CONNECTIONS USING A CALIBRATED TORQUE WRENCH AND MARK EACH BOLT HEAD TO INDICATE VERIFICATION IS COMPLETE.

9. CLEAN AND LUBRICATE ALL LOADBREAK AND DEADBREAK BUSHING SURFACES PER MANUFACTURER'S INSTRUCTIONS BEFORE FINAL CONNECTION. 0. MOUNT FAULT INDICATORS SUCH THAT INDICATOR WINDOW IS READILY VISIBLE WITHOUT THE NEED TO ENTER THE CABLE COMPARTMENT OR MOVE CONDUCTORS OR OTHER COMPONENTS.

LABEL FAULT INDICATORS WITH CIRCUIT IDENTIFICATION USING ENGRAVED PHENOLIC LABEL.

EQUIPMENT AND COMPONENTS SHALL BE LISTED AND LABELED BY A NATIONALLY-RECOGNIZED TESTING LABORATORY (NRTL) SUCH AS UL OR ETL, WHERE SUCH LISTING IS AVAILABLE FOR THE

STANDARDS ON EQUIPMENT ENCLOSURES, DOORS, ACCESS PLATES, AND BARRIERS AND LABEL ALL MEDIUM VOLTAGE EQUIPMENT WITH THE OPERATING VOLTAGE. DOORS PROVIDING ACCESS TO PARTS NORMALLY ENERGIZED AT OVER 600V SHALL BE

PADLOCKABLE CLOSED. REMOVABLE PANELS PROVIDING ACCESS TO PARTS NORMALLY MEDIUM VOLTAGE EQUIPMENT INSTALLED OUTSIDE OF FENCES WHERE ACCESSIBLE TO THE

MANUFACTURER'S INSTRUCTIONS USING GALAVANIZED STEEL ANCHOR BOLTS EMBEDDED IN PAD OR WITH 6 INCH DEEP EPOXY ANCHOR BOLTS. ANCHOR BOLT SIZE PER MANUFACTURER

. CAULK ALONG BOTTOM PERIMETER OF EQUIPMENT MOUNTED ON CONCRETE PADS TO PREVENT WATER ENTRY BETWEEN BOTTOM OF ENCLOSURE AND TOP OF CONCRETE SLAB.

CONDUIT ENTRIES TO OPEN CABLE COMPARTMENTS.

10. PLACE MICARTA NAMEPLATES WITH MINIMUM 3/4" HIGH LETTERS FOR DISTRIBUTION EQUIPMENT

12.INSTALL BOLLARDS AS REQUIRED.

TRANSFORMERS SHALL BE SECURELY BOLTED TO THE EQUIPMENT PAD AND MADE LEVEL. ANY

PENTA-BOLTS ARE TO BE USED ON BOTH SETS OF DOORS.

GROUNDING ELECTRODE CONDUCTOR GROUND FAULT PROTECTION DEVICE SITE FENCE **EXISTING UTILITY POLE** NEW WOOD POLE UTILITY POLE AND POLE NUMBER **GUY WIRE**

S & PETM ISION

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11/14/19 K.M.

