PV ARRAY INSTALLATION FEASIBILITY STUDY

NOTES:

1 UNIVERSITY OF ARKANSAS
FAYETTEVILLE, AR 72701
(479) 575-2000

SOLAR PV ARRAY
INSTALLATION
FEASIBILITY
STUDY

SYSTEM INFORMATION:
DC SYSTEM SIZE (kW): 29.7 kW
AC SYSTEM SIZE (kW): 30 kW
INVERTER QUANTITY: 2
INVERTER TYPE: FRONIUS PRIMO 15.0-1
MODULE QUANTITY: 90
MODULE TYPE: TSM-330 PD14
RACKING TYPE: DCE ECOTOP-HD

UTILITY INFORMATION:
COMPANY: AEP
METER NUMBERS: 678-897-841

115 West Mountain Street
FAYETTEVILLE, AR 72701
NOT TO SCALE

(E) 1-P UTILITY COMPANY POLE-MOUNTED TRANSFORMER
50kVA 120/240V 14.47KV

(E) METER NUMBER # 678897841

M AC
DC INVERTER #1 FRONIUS PRIMO 15.0-1 TO 3 STRINGS OF 15 MODULES PV ARRAY. SEE PV-20.1 FOR MANUFACTURER & MODEL OF MODULE.

TO EXISTING FACILITY DISTRIBUTION (E) 20A/1P CIRCUIT BREAKER (TYP.) TO AEP DISTRIBUTION PANEL BOARD DP - 100 SQUARE D 120/240V, 1Ø/3W, 225A TO EXISTING FACILITY DISTRIBUTION (E) 20A/1P CIRCUIT BREAKER (TYP.)

(N) 210B DECK METER 100A, 240V, 3W, 2P UTILITY LOCKABLE AC DISCONNECT WITH 100A FUSES (EXTERIOR)

(N) JUNCTION BOX FOR MAINTENANCE BUILDING GRIDPOINT METER CONNECTION (INTERIOR)

VOLTAGE REFERENCE: CU: 4#12, #12G, 3/4"C

85A RATED FEEDER (TYP.): 3#10, #8G, 1-3/4"C (CU, THWN)

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PV-1.4
115 West Mountain Street
FAYETTEVILLE, AR 72701
1. Install AC Disconnect. Penetrate building and route conduit to Panel Board DP-100 in Electrical Room as shown. Refer to PV-1.1 for additional information. If cabinet is top penetrated, contractor shall use Myers Hub fittings to ensure connection is watertight.

2. Install All-In-One Deck Monitor. Refer to PV-1.1 for additional information.

3. Install AC Disconnect. Penetrate building and route conduit to Panel Board DP-200 in Electrical Room as shown. Refer to PV-1.3 for additional information. If cabinet is top penetrated, contractor shall use Myers Hub fittings to ensure connection is watertight.

4. Install All-In-One Deck Monitor. Refer to PV-1.3 for additional information.

5. Provide #8 Bare Copper Cable. Connect to Array Structure and run down side of building. Penetrate building and bond to building steel per 2014 NEC 690.47(D).

NOTES:

1. Refer to riser diagrams on PV-1.1 and PV-1.3 for electrical equipment size, rating, and quantity.

2. Refer to riser diagrams on PV-1.1 and PV-1.3 for feeder sizing.

3. Provide signage on all electrical equipment as specified on the riser diagrams and the details on PV-1.1 and PV-1.3. Contractor or installer shall ensure that all signage is installed in locations that will be visible to the public.

4. Confirm exact locations of existing equipment in the field. Do not locate any solar PV electrical equipment under a rooftop overflow scupper. Modifications shall not be made without approval from the engineer.

5. Paint exposed conduit to match building exterior.

6. EMT is allowed for exposed conduit. Refer to note 13 under “General Electrical Notes” on PV-1.1 for additional information. If conduit is subject to physical damage, rigid galvanized steel shall be used.

7. Refer to details 1 and 2 on PV-4 for transition from roof down exterior wall of building.

8. Grid-interactive inverters are roof mounted. Refer to PV-3 for inverter locations.
NOT TO SCALE

PLAN VIEW

EXTERIOR WALL

ROOF

UNI-STRUT SUPPORT EVERY 10 FEET

COMPRESSION CONNECTORS (TYP.)

ROOF

MOUNT CONDUIT 3.5"

MINIMUM ABOVE ROOF

CONDUITS TO RUN DOWN EXTERIOR WALL OF BUILDING AND TERMINATE IN AC DISCONNECT SWITCH 90° ELBOW

EXTERIOR WALL

UNI-STRUT SUPPORT EVERY 10 FEET

COMPRESSION CONNECTORS

SECTION VIEW

PV-4

2

NOT TO SCALE

PV-4

4

NOT TO SCALE

PV MOUNTED CONDUIT (TYP.)

ROOF MOUNT CONDUIT 3.5"

MINIMUM ABOVE ROOF

"DURA - BLOK" ROOF MOUNTS 8' OC. (OR APPROVED EQUIVALENT) (TYP.)

CONDUITS TO RUN DOWN EXTERIOR WALL OF BUILDING AND TERMINATE IN AC DISCONNECT SWITCH

PARAPET

UNI-STRUT SUPPORT AS REQUIRED

PARAPET

UNI-STRUT SUPPORT AS REQUIRED. DO NOT PENETRATE PARAPET.

NOTES:

1. PROVIDE CONDUIT SUPPORTS EVERY 10 FEET ON EXTERIOR WALL.
2. REFER TO RISER DIAGRAM FOR CONDUIT AND CONDUIT BODY SIZE AND QUANTITY.
3. NEMA 3R RATED PULL BOX AND TRANSITION CONDUITS TO BE SIZED PER NEC.
4. PROVIDE SIGNAGE ON NEMA 3R RATED PULL BOX STATING, "CAUTION: SOLAR PHOTOVOLTAIC SYSTEM CONNECTED". REFER TO SPECIFICATIONS FOR SIGNAGE REQUIREMENTS.
5. CONTRACTOR SHALL PAINT ANY PORTION OF NEMA 3R RATED PULL BOX WHICH PROTRUDES ABOVE PARAPET WALL.
6. PROVIDE ADDITIONAL STRUT SUPPORTS AS REQUIRED TO STABILIZE ASSEMBLY.

COMPRESSION CONNECTORS

SECTION VIEW

PV-4

1

NOT TO SCALE

PV-4

5

NOT TO SCALE

INVERTER (TYP.)

AC DISCONNECT

SWITCH

DISTRIBUTION PANEL

DP-100

EXISTING MAIN BONDING JUMPER

EQUIPMENT GROUND TO METAL ENCLOSURE (TYP.)

EXISTING GROUND BAR

PV SYSTEM EQUIPMENT GROUND (AC SIDE ONLY)

EXISTING GROUNDING ELECTRODE SYSTEM

TO ALL PV ARRAY FRAMES, RACKING, AND MODULE FRAMES

PV SYSTEM NEUTRAL

EXISTING NEUTRAL BAR

NEUTRAL LUGS (TYP.)

GROUND LUGS (TYP.)

SLIP SHEET (TYP.)

SLIP SHEET (TYP.)

EDM FOOT PADS (FRONT AND BACK)

2'-2"

4'-5"

SMA SUNNY TRIPOWER STP 30000TL-US-10 INVERTER

AC DISCONNECT - 60A, 600V, 3P, NON-FUSIBLE ROTARY SWITCH

UNSWITCHED NEUTRAL & GROUND TERMINALS, NEMA 4X

EATON ER53060UPGR OR SIMILAR

SMA CONNECTION UNIT (DISCONNECT COMBiner)

CU 1000US-10

DC CONDUCTORS: (2) POS, (2) NEG, (1) GND

8 AWG UL PV WIRE

1000V OR HIGHER, -40C TO 90C, VM-1

DC CONDUIT: (2) LIQUIDTIGHT FLEXIBLE NONMETALLIC - 1 INCH

AC CONDUCTORS: (5) L1-L2-L3 + N + GND

8 AWG MTW UL STYLE 1028 OR STYLE 1231

>90C, 19 STRAND, 600V

AC CONDUIT: (1) LIQUIDTIGHT FLEXIBLE NONMETALLIC - 1 INCH

RUN STRUT ACROSS TOP OF READY RACK AND BOLT IN THREE TIMES

1-5/8" STRUT

RUN STRUT ACROSS TOP OF READY RACK AND BOLT IN THREE TIMES

SIDE VIEW

SIDE VIEW

THREE DIMENSIONAL VIEW

TOP VIEW

NOTES:

1. CONDUIT SHALL BE ROUTED AS TO PROVIDE AT LEAST 3'-0" WORKING CLEARANCE IN FRONT OF THE INVERTER.
2. REFER TO MANUFACTURER'S INSTALLATION MANUAL FOR ADDITIONAL INFORMATION.
3. CONTRACTOR SHALL PROVIDE ENOUGH SLACK IN THE DC CONDUCTORS TO ALLOW FOR AMP-PROBE TESTING IN THE FUTURE. AVOID ADDING LOOPS IN THE DC CONDUCTORS PRIOR TO TERMINATION.

SOLAR PV DETAILS

115 S CHURCH AVE,

FAYETTEVILLE, AR 72701

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MODULE QUANTITY:

90

MODULE TYPE: TSM-330 PD14

RACKING TYPE: DCE ECOTOP-HD

UTILITY INFORMATION:

COMPANY:

AEP

METER NUMBERS: 678-897-841
NOTES:
1. INSTALL MANUFACTURED LABEL ADJACENT TO THE MC4 CONNECTOR IDENTIFYING THE INVERTER AND STRING NUMBER. LABEL MUST HAVE RED BACKGROUND FOR POSITIVE OR BLACK BACKGROUND FOR NEGATIVE. TEXT SHALL BE WHITE WITH A HEIGHT OF 3/4”.
2. NO CROSS MATING OF CONNECTORS IS AUTHORIZED. BOTH MALE AND FEMALE CONNECTOR ENDS MUST BE OF THE SAME MANUFACTURER TO ENSURE UL COMPLIANCE. ACCEPTABLE MANUFACTURER INCLUDE AMPENOL, MC4 AND TYCO. THE MANUFACTURER SPECIFIC TOOL KIT MUST BE USED WHILE MAKING FIELD CONNECTIONS.
3. MOUNTING DETAIL APPLIES TO ALL RACKING PRODUCTS. CONTRACTOR SHALL ADJUST EXACT SIZE AND POSITION OF LABEL BASED ON RACKING PRODUCT.

WINDSCREEN
INVERTER # XX
STRING # XX
POS./NEG.
IDENTIFICATION
LABEL (4”X6”)

TIE WRAP
HELLERMANN TYTON
T50REC4A BLK UV TIE & HIRHS

FIELD INSTALLED MC4 CONNECTOR TO BE SECURED UNDERNEATH MODULE

PV WIRE (TYP.)

ROOF
SOLAR IRRADIANCE AND TEMPERATURE SENSOR. DRILL INTO SIDE OF MODULE AND SECURE WITH NUT AND BOLT.

MODULE

NOTES:
1. INSTALL THE WEATHER STATION AT A CENTRAL LOCATION WITHIN THE ARRAY USING THE MANUFACTURING SUPPLIED MOUNT.
2. THE WEATHER STATION SHALL BE INSTALLED AT THE SAME TILT AS THE MODULES.
3. MOUNT THE CELL TEMPERATURE PROBE TO THE UNDERSIDE OF THE ADJACENT MODULE.
4. PROVIDE DC POWER SUPPLY TO THE WEATHER STATION FROM THE ALL-IN-ONE DECK IN ACCORDANCE TO MANUFACTURER SPECS.
5. PROVIDE DATA COMMUNICATION LINK FROM THE WEATHER STATION TO THE ALL-IN-ONE DECK WITH A TWISTED SHIELDED PAIR. REFER TO MANUFACTURER’S SPEC FOR ADDITIONAL INFORMATION.

NOT TO SCALE

OBSTACLE (GAS LINE, ETC.)
"DURA-BLOK" ROOF MOUNTS 8’ OC (OR APPROVED EQUIVALENT)
OFFSET CONDUIT OVER OBSTACLE
EMT SIZED PER NEC
EMT STRAP TO MATCH CONDUIT SIZE

3” CLEARANCE BETWEEN EMT & OBSTACLES

NOT TO SCALE

PV-5

NOTES:
1. HOLD SETBACK OF 3 TIMES THE HEIGHT OF THE EQUIPMENT FROM THE SOUTH FACING ARRAY.
2. ADJUST INVERTER LOCATIONS IN FIELD AS NEEDED TO PREVENT SHADING.

INVERTER RACKING
ARRAY

NOTES:
1. SECURE CONDUIT JUMPER AT BOTH ENDS TO THE RACKING USING CONDUIT CLAMPS OR STRAPS WITH NUT AND BOLT OR OTHER APPROVED MEANS.
2. INSTALL BONDING BUSHINGS AT BOTH ENDS OF CONDUIT JUMPERS.

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PV-5