PROJECT INFORMATION

OWNER
ELLIOIT BRANDT RESIDENCE
2523 P St NW Washington, DC 20007

SCOPE OF WORK
RESIDENTIAL GRID INTERACTIVE SOLAR INSTALLATION

CONTRACTOR
REVOLUTION SOLAR
10746 JUDY LANE
COLUMBIA, MD 21044
CONTACT: MATT YOUNG
PHONE: 443-865-5039

SITE AND ARRAY DETAILS
FLAT ROOF, 2 x 8 RAFTERS
24" O.C., DF #2

CLIMATE DATA SOURCE: WASHINGTON DC REAGAN AP, VA, USA, 38.87N, 77.03W
ASHRAE EXTREME LOW: -12.3°C
ASHRAE 2% HIGH: 36°C
ASHRAE EXTREME HIGH: 40.9°C
WIND SPEED: 115 MPH (ASCE7-10)
RISK CATEGORY: II
GROUND SNOW LOAD: 25 PSF

INDEX
G-1 COVER SHEET
PV-1 SITE PLAN
PV-2 ROOF LAYOUT
PV-2.1 STRUCTURAL DETAILS
PV-3 ELECTRICAL PLAN
PV-4 SINGLE LINE DIAGRAM
PV-5 LABELS
PV-6 ELEVATION

SUPPORTING DOCUMENTS
DATA SHEETS
STRUCTURAL CALCULATIONS

NUMBER OF ARRAYS PROPOSED: 1

<table>
<thead>
<tr>
<th>ARRAY #1 DETAILS</th>
<th># OF MODULES: 35</th>
<th>TILT: 1º</th>
<th>AZIMUTH: 180º</th>
<th>ARRAY HEIGHT: 1'-4&quot;</th>
</tr>
</thead>
</table>

NOTE: MAX HEIGHT OF SYSTEM IS 1'-4" ABOVE ROOF

2523 P St NW Washington, DC 20007
SITE PLAN

SCALE: 1/16' = 1'-0"

OFFICIAL USE

NOTE: "CHECK WITH CITY/COUNTY OR LAND SURVEYOR FOR ACCURATE PROPERTY LOCATE.

S
W
E
N

CONTRACTOR
REVOLUTION SOLAR
10746 JUDY LANE
COLUMBIA MD 21044
Ph: 443-865-5039        Contractor # 410518000062

ELLIOIT BRANDT RESIDENCE
Residential Grid Interactive Solar Installation
2523 P St NW Washington, DC 20007
Ph:
Square / Lot / Zoning: 2726, 4000, R3     PEPCO#: 1264 0106

SITE PLAN

System AC Size @ STC: 10.150 kW       System DC Size @ STC: 15.575 kW
(36) SOLAREVER SE-185*83-445M-144 445 SOLAR MODULES OR EQUAL
(35) IQ7PLUS-72-2-US INVERTERS

Number of Arrays Proposed: 1

Array #1 Details
# of Modules: 35  Tilt: 1°  Azimuth: 180°  Array Height: 1'-4"

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NOTE: "CHECK WITH CITY/COUNTY OR LAND SURVEYOR FOR ACCURATE PROPERTY LOCATE.
**PERMIT SET**

**_SYSTEM AC Size @ STC: 15.575 kW**

**SYSTEM DC Size @ STC: 10-150 kW**

**SOLAR MODULES OR EQUAL**

**(35) IQ7PLUS-72-2-US MICRO INVERTERS**

**CONTRACTOR**

**REVOLUTION SOLAR**

10746 JUDY LANE

COLUMBIA MD 21044

Ph: 443-865-5039

Contractor # 410518000062

**ELLIOT BRANDT RESIDENCE**

2523 P St NW

Washington, DC 20007

Ph: 202-393-7722

Square / Lot / Zoning: 2726, 4000, R3

PEPCO #: 1264 0106

**PE STAMP**

**OFFICIAL USE**

**KEYED NOTES:**

- IRONRIDGE XR100 RAIL
- IRONRIDGE L-FOOT
- IRONRIDGE MID CLAMP
- IRONRIDGE END CLAMP
- BRICK PARAPET
- FASCIA BOARD
- S3 SCHLETTER BEAM
- PV MODULE
- IRONRIDGE VERTICAL LEG
- IRONRIDGE RAIL BRACING ATTACHED TO LEGS WITH 1/2" T-BOLTS AND L-FEET
- EXISTING ROOF RAFTERS
- 10" TRIM FASCIA BOARD TO BLOCK PANEL VISIBILITY

**EXAMPLE OF FASCIA BLOCKING PANEL VISIBILITY**

**SCALE:**

RACKING DETAIL

PV-2.1

SECTION DETAIL

PV-2.1

RACKING DETAIL

PV-2.1

**RACKING DETAIL**

PV-2.1

**SCALE:**

1/2" = 1'-0"

**SCALE:**

1/2" DIA, 18" LONG ALL THREADED ANCHOR SET, (42)HIT-HY270, 36" O.C. THROUGH THE LENGTH OF THE IRONRIDGE RAIL.
**GENERAL NOTES**

A. ANCHORS SHALL BE INSTALLED USING (42) HIT-HY270 EPOXY SYSTEM. FOLLOW ALL INSTALLATION INSTRUCTIONS FROM THE MANUFACTURER.

B. ALL ANCHORS SHALL BE FULLY THREADED CONFORMING TO ASTM A36 (Fy = 36 KSI) AND GALVANIZED.

C. ANY ROOFING WORK MUST BE COMPLETED BY A QUALIFIED ROOFER. WEATHERPROOF PENETRATIONS.

**SOLAREVER SE-166*83-445M-144**

**MODEL**

**DIMENSIONS**

(L) 82.44 X (W) 40.86" X (H) 1.37"

**WEIGHT**

51.8 LB

**KEYED NOTES:**

1. IRONRIDGE XR100 RAIL
2. IRONRIDGE L-FOOT
3. IRONRIDGE MID CLAMP
4. IRONRIDGE END CLAMP
5. BRICK PARAPET
6. FASCIA BOARD
7. S3 SCHLETTER BEAM
8. PV MODULE
9. IRONRIDGE VERTICAL LEG
10. IRONRIDGE RAIL BRACING ATTACHED TO LEGS WITH \( \frac{1}{2} \) T-BOLTS AND L-FEET
11. 2 x 8 RAFTERS @24" O.C.(FIELD VERIFY), TYP.

**NOTE:** MAX HEIGHT OF SYSTEM IS 1'-4" ABOVE FLAT ROOF

---

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Square / Lot / Zoning: 2726, 4000, R3

PEPCO#: 1264 0106

---

**PERMIT SET**

06.01.2022
ELECTRICAL PLAN
SCALE: 3/32" = 1'-0"

GENERAL NOTES:
1. CONDUIT AND WIRING IS
   DIAGRAMMATIC. FINAL ROUTING TO BE
   DETERMINED BY INSTALLER

KEYED NOTES:
1. (N) AC DISCONNECT
   (EXTERIOR WALL)
2. (N) IQ7PLUS-72-2-US MICRO INVERTER
   (ARE LOCATED UNDERSIDE OF EACH MODULE AND
   ARE INSTALLED TO CONTINUOUS SUPPORT RAIL)
3. (N) ENPHASE IQ COMBINER+ W/ ENVOY
   (AT GROUND LEVEL)
4. (N) PV MODULE
5. (E) METER
   (FIELD VERIFY LOCATION)
6. (E) SERVICE PANEL
   (INTERIOR WALL)

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ELLIOI BRANDT RESIDENCE
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Ph: Square / Lot / Zoning: 2726, 4000, R3 PEPCO#: 1264 0106

ELECTRICAL PLAN
System AC Size @ STC:10.150 kW
System DC Size @ STC:15.575 kW
16 SOLAREVER SE-166*83-445M-144 445 SOLAR MODULES OR EQUAL
170 IQ7PLUS-72-2-US MICRO INVERTERS

1°

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16 SOLAREVER SE-166*83-445M-144 445 SOLAR MODULES OR EQUAL
170 IQ7PLUS-72-2-US MICRO INVERTERS

1°
### General Notes:
1. Contractor responsible for complying with all local or national code requirements and equipment installation instructions.
2. See PV-5 for labeling requirements.

### Voltage Drop Calculations

<table>
<thead>
<tr>
<th>Wire Run</th>
<th># of MDS</th>
<th>V (Volts)</th>
<th>I (Amperes)</th>
<th>L (ft)</th>
<th>VD (%)</th>
<th>Wire Size</th>
<th>Raceway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Branch #1 to J-Box</td>
<td>11</td>
<td>240V</td>
<td>13.31A</td>
<td>40</td>
<td>0.35%</td>
<td>12 AWG</td>
<td>Free Air</td>
</tr>
<tr>
<td>Branch #1 to J-Box</td>
<td>12</td>
<td>240V</td>
<td>19.94A</td>
<td>40</td>
<td>0.38%</td>
<td>12 AWG</td>
<td>Free Air</td>
</tr>
<tr>
<td>J-Box to IQ Combiner</td>
<td>12</td>
<td>240V</td>
<td>19.94A</td>
<td>40</td>
<td>0.38%</td>
<td>12 AWG</td>
<td>3/4&quot; EMT</td>
</tr>
<tr>
<td>IQ Combiner to POI</td>
<td>35</td>
<td>240V</td>
<td>42.38A</td>
<td>10</td>
<td>0.70%</td>
<td>6 AWG</td>
<td>3/4&quot; EMT</td>
</tr>
</tbody>
</table>

**Max Voltage Drop:** 1.47%

### Module Specs

<table>
<thead>
<tr>
<th>Module Make</th>
<th>SOLAREVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Model</td>
<td>SE-166*83-445M-144</td>
</tr>
<tr>
<td>Max. Power Pmax</td>
<td>290 W</td>
</tr>
<tr>
<td>Max. Input Voltage</td>
<td>60 V</td>
</tr>
<tr>
<td>Open Circuit Voltage Voc</td>
<td>49.86 V</td>
</tr>
<tr>
<td>Voc @ -12.3°C</td>
<td>YES</td>
</tr>
<tr>
<td>Short Circuit Current Isc</td>
<td>4.93 A</td>
</tr>
<tr>
<td>Max. Power Point Ivmp</td>
<td>10.81 A</td>
</tr>
<tr>
<td>Ipp @ -12.3°C</td>
<td>YES</td>
</tr>
<tr>
<td>DC/AC Ratio</td>
<td>0.92</td>
</tr>
</tbody>
</table>

### Inverter Specs

<table>
<thead>
<tr>
<th>Enphase Model</th>
<th>IQ7PLUS-72-2-US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Power Pmax</td>
<td>290 W</td>
</tr>
<tr>
<td>Max. Input Voltage</td>
<td>60 V</td>
</tr>
<tr>
<td>Voc @ -12.3°C</td>
<td>YES</td>
</tr>
<tr>
<td>Output Current</td>
<td>1.21 A</td>
</tr>
<tr>
<td>Output Voltage</td>
<td>240 V, 1</td>
</tr>
</tbody>
</table>

### Single Line Diagram

- **Meter**
- **Ground**
- **Neutral**
- **Supply Side Connection (Line Tap)** via ILSCO IP20-50 or equivalent inside MEP.
- **Junction Box (Typ.)**
- **Interconnection Type:** Supply Side Connection (Line Tap) via ILSCO IP20-50 or Equivalent Inside MEP.
- **Optional Grounding Electrode**
- **3/4" EMT or Equivalent**
- **(6) #12 AWG THWN-2 Conductors**
- **(1) #12 AWG THWN-2 Ground**
- **No Grounding Electrode**
- **Integration Grounding Clamp**
- **Integrated Grounding**
- **Inverter**
- **Micro Inverters**
- **Ac Disconnect with 60A Fuses**
- **20A**
- **3542.35 kW**
- **35**
- **35**

### Module Specs

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<td>SE-166*83-445M-144</td>
</tr>
<tr>
<td>Max. Power Pmax</td>
<td>290 W</td>
</tr>
<tr>
<td>Voc @ -12.3°C</td>
<td>YES</td>
</tr>
<tr>
<td>Voc Temp. Coeff.</td>
<td>-0.29%/°C</td>
</tr>
<tr>
<td>Imp @ -12.3°C</td>
<td>YES</td>
</tr>
<tr>
<td>DC/AC Ratio</td>
<td>0.92</td>
</tr>
</tbody>
</table>

### Branch Circuit #1

- (11) SOLAREVER SE-166*83-445M-144 Modules
- (11) Micro-Inverters
- @ 240V VAC

### Branch Circuit #2

- (12) SOLAREVER SE-166*83-445M-144 Modules
- (12) Micro-Inverters
- @ 240V VAC

### Branch Circuit #3

- (12) SOLAREVER SE-166*83-445M-144 Modules
- (12) Micro-Inverters
- @ 240V VAC

---

**Contractor:** Revolution Solar

**Date:** 06.01.2022

**Pe Stamp:**

---

**System DC Size @ STC:** 10.150 kW

**System AC Size @ STC:** 15.575 kW

**Residential Grid Interactive Solar Installation**

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**System AC Size @ STC:** 10.150 kW

**System DC Size @ STC:** 15.575 kW

---

**Enphase Model:** IQ7PLUS-72-2-US

**Solar Modules or Equal:** SOLAREVER SE-166*83-445M-144 445W

---

**Enphase Model:** IQ7PLUS-72-2-US MICRO INVERTERS

---

**Contractor #:** 41051800062

**System AC Size @ STC:** 15.575 kW

**System DC Size @ STC:** 10.150 kW

**Module Make:** SOLAREVER

**Module Model:** SE-166*83-445M-144

---

**Ph:** 443-865-5039

**Pepco #:** 1264 0106
\[\text{NOMINAL OPERATING AC VOLTAGE:} \quad 240V\]
\[\text{NOMINAL OPERATING AC FREQUENCY:} \quad 60HZ\]
\[\text{MAXIMUM AC POWER:} \quad 60A\]

\[\text{WARNING} \quad \text{ELECTRIC SHOCK HAZARD}\]
\[\text{DO NOT TOUCH TERMINALS TERMINALS ON BOTH LINE AND LOAD SIDE MAY BE ENERGIZED IN THE OPEN POSITION}\]

\[\text{LOCATION AT POINT OF INTERCONNECTION CODE SECTION: NEC 690.52}\]

\[\text{WARNING} \quad \text{CAUTION SOLAR CIRCUIT}\]
\[\text{LABEL EVERY 10'}\]

\[\text{WARNING} \quad \text{RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM}\]

\[\text{LOCATION AT POINT OF INTERCONNECTION CODE SECTION: NEC 690.52}\]

\[\text{WARNING} \quad \text{PHOTOVOLTAIC POWER SOURCE}\]
\[\text{IF APPLICABLE PER IFC 605.11.2}\]

\[\text{CONTRACTOR} \quad \text{REVOLUTION SOLAR}\]
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\[\text{System AC Size @ STC:} 10.150 \quad \text{System DC Size @ STC:} 15.575\]
\[\text{SOLAREVER SE-166*83-445M-144 SOLAR MODULES OR EQUAL}\]
\[\text{IQ7PLUS-72-2-US MICRO INVERTERS}\]

\[\text{06.01.2022} \quad \text{PHOENIX SOLAR}\]
\[\text{CONTRACTOR} \quad \text{REVOLUTION SOLAR}\]
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\[\text{PHOTOVOLTAIC SYSTEM DISCONNECT}\]
\[\text{OPERATING AMPS}\]
\[\text{OPERATING VOLTAGE}\]
\[\text{LOCATION: PV SYSTEM DISCONNECT}\]

\[\text{Rapid Shutdown Switch}\]
\[\text{Location: PV System Disconnect}\]

\[\text{Dual Power Supply}\]
\[\text{Sources: Utility Grid and Solar Photovoltaic System}\]
\[\text{Location: Main Service Panel}\]
Residential Grid Interactive Solar Installation

System AC Size @ STC: 10.15 kW
System DC Size @ STC: 15.575 kW

10" TRIM FASCIA BOARD TO BLOCK PANEL VISIBILITY

CONDUIT

REAR OF HOME

AC LOAD CENTER

AC DISCONNECT

METER