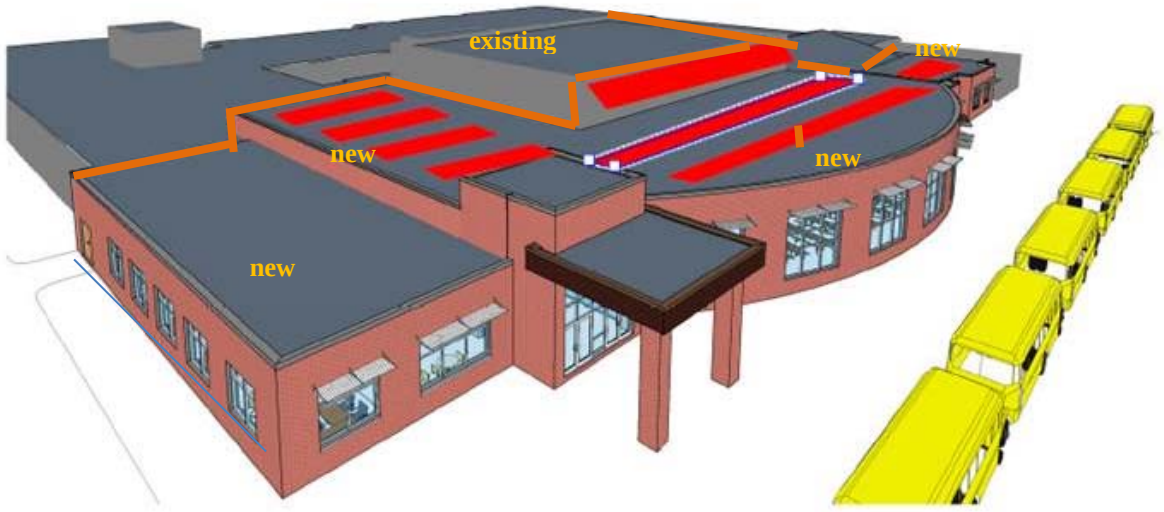
Brooklyn Elementary School
Oregon School District
Brooklyn, WI

Request for Proposals
Solar Electric System Instillation

Date RFP released: April 1, 2015
Proposal Due: April 29, 2015

Section 1: Background and Objectives

Oregon School District seeks bids from qualified Solar Electricity Installers for a nominal 36 kWDC roof mounted solar electric system. The project shall be fully installed by September, 2016. The site where system is to be installed, Brooklyn Elementary School, is a single story ~65,000 SF school building. A new addition is under construction. The PV system will be on the newly constructed roof(s) at several different elevations, compass directions and tilt angles (see picture below). The new roof structure will be designed to support these PV Panels. Support superstructure/rails will be installed by roofing contractor – solar contractor will only be responsible for racking and attachment to superstructure. The building and school district is an Alliant Energy electric utility customer.



The objective of this Request for Proposal (RFP) is to identify and select the Solar Electric System Installer that can provide The Oregon School District a fully engineered, operational, maintenance and trouble free solar electric system.

It is required that prospective system installers visit the installation site. Installer is responsible for all site conditions and needs to site-verify that proposed system will work without change orders. A site visit date is scheduled for the afternoon of April 15, 2015. To arrange a site visit contact:

Jon Evans, Owner's Technical Representative
Phone: 608-836-4488 ext 13
Email: jevans@sustaineng.com

Section 2: Solicitation Process

Each respondent to the RFP must demonstrate that they satisfy the minimum requirements described in Section 3 in order to be selected as an eligible Respondent. The response must meet the requirements in Section 4 and must adequately address all questions that may arise during the bidding process.

Responses to this RFP must be submitted in writing, signed by an authorized officer or an agent of the respondent. The Oregon School District must receive two hard copies and an electronic copy on either a flash drive/CD/DVD of the respondent's package no later than the close of business day on April 29, 2015. All materials should arrive in a sealed envelope labeled: "PV Proposal".

Responses submitted after this date cannot be accepted, and responses that are incomplete or do not conform to the requirements of this RFP will not be considered.

The Oregon School District intends to select one respondent from the qualified RFP bidders list to complete the install a Solar Energy System before August 31, 2016. The majority of site work cannot commence until after roof construction is complete and weather is appropriate – April 2016.

Responses shall be submitted to:

Andrew Weiland, Business Manager
123 E. Grove Street
Oregon, WI 53575

Phone: 608-835-4012
Email: atw@oregonsd.net

All questions related to this RFP shall be directed to:

Jon Evans, Owner's Technical Representative
Phone: 608-836-4488 ext 13
Email: jevans@sustaineng.com

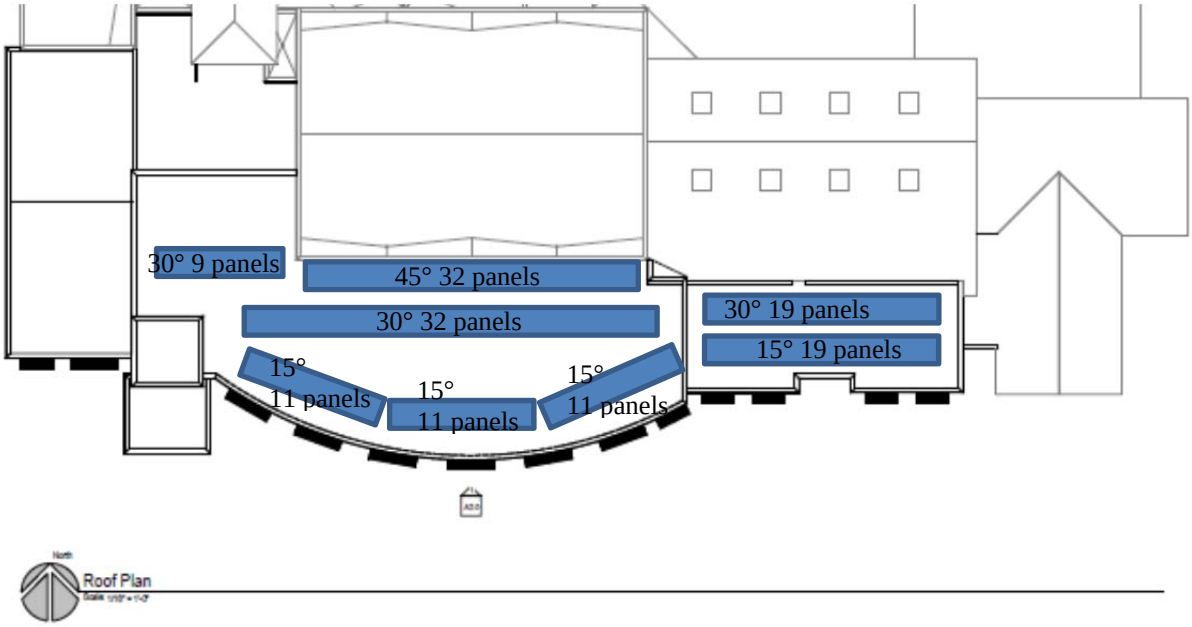
Section 3: Assumptions and Minimum Project Requirements That Must be Included in Your Proposal

Proposals submitted in response to this RFP must be as specific as possible concerning each of the areas identified herein, including obligations of each party as envisioned by the respondent. Each respondent must provide sufficient information to enable The Oregon School District to understand the overall proposal, the service(s) to be provided, and the potential adverse impacts of the proposal. The Oregon School District reserves the right to deem any proposal as non-responsive and to give it no further consideration. The Oregon School District also reserves the right to request clarification and or additional information from any respondent.

1. General Assumptions

RFP respondents are asked to make the following general project assumptions:

- Installation site is located at
  Brooklyn Elementary School
  204 Division St.
  Brooklyn, WI 53521
- Assume the following:
  - Flat Roof , mounted to existing superstructure (include racking and racking attachment to superstructure)
  - System capacity is nominal 36 kW (dc rating of the solar electric modules)
    - See next page for Basis of Design Layout
      - Nominal 32 panels at 45° mounted on gym sidewall
      - Nominal 60 panels at 30° mounted on existing superstructure
      - Nominal 52 panels at 15° mounted on existing superstructure
  - Building has 3 phase / 480 V service
  - (4) 3-phase Solar Edge Inverters with module DC Optimizers will be used – SE9K-US (http://www.solaredge.us/groups/us/inverter/three-phase-solar-inverter)
  - Include SolarEdge Monitoring Portal for access by O&M staff and service contractor.
  - School District will be integrating PV System with educational curriculum. Include eGage monitoring system for access by students and staff.
  - Design for easy access for maintenance and repairs
  - Aesthetically pleasing and visible installation



2. Quality Assurance

- See Section 6 for Installation Performance Specification. These requirements will be enforced for this installation and bid should reflect these requirements. Please note:
    - Solar electric installation company will have a NABCEP certified installer managing this project. NABCEP certified installer is required to be onsite daily performing and supervising work.
    - All products and components must conform to the Village of Oregon codes, standards and ratings.
    - Installation must comply with NEC/NFPA 70 and all state building codes

3. Warranty and Service Contract Requirements:

- See Section 6, Part 1, 1.6 for details
    - Please note the 5 year all inclusive installation warranty
    - Please note the 25 year linear warranty requirement for the panels
    - Please note the 12 year warranty requirement for the inverters, but itemize the 25 year extended warranty option for the inverters as an owner option.

4. Major Equipment Requirements

- Panels must be manufactured in North America.
- Panels: Kyocera, Solarworld or Heliene
- Inverters: 3-phase Solar Edge

5. Requested Installer Support Services

Beyond the standard design and installation services installer will:

- Working with The Oregon School District, allow Owner Direct Purchase of major system components (including Modules, Inverters, Racking system/supports, and conduit/wire)
- Allow for completion of construction/startup checklists to be provided by Owner's technical representative.
- Include all structural and other engineering costs with bid
- Apply for and obtain all required city, township, and county permits. Include permit costs with bid.
- Assist The Oregon School District with the application for interconnection
- Attend the utilities interconnection testing of the solar electric system if requested by the utility.
- Assist The Oregon School District with documentation for the Focus on Energy grants. A RECIP Grant was applied for. Status will be known after April 17. 2015.

6. Good Faith

Both parties agree to negotiate in good faith to adjust actual pricing as necessary for specific sites to accommodate unique site requirements. Price changes will be implemented via change-order based on mutual consent of both parties.

Section 4: List of RFP Proposal Components

Please clearly number each section for our ease of evaluation.

1. Transmittal Letter - Please write a transmittal letter signed by a party authorized to sign binding agreements for projects of the nature ultimately contemplated by this RFP. The letter shall clearly indicate that the respondent has carefully read all the provisions in the RFP.

2. Statement of Qualification
   Respondents shall:
   a) Include resumes of key personnel that will manage and complete the project, NABCEP Certified Installer is required to be onsite daily supervising and completing work.

   b) Include descriptions of at least 3 other projects of similar scope and size that the company has completed in the last 5 years

3. Product/technology Description
   Respondents shall:
   a) State that their systems will comply with all of the requirements of Section 3 and Section 6, or list the items that would not comply and state why.

   b) Describe the technologies and/or manufactures/model numbers that your company proposes for this project and why those technologies would be in the best interest of The Oregon School District. Also include any value added items your company can bring to this project as part of the bid.

   c) For each technology described in b) above, please describe any other benefits your system provides that other technologies might not provide

   d) For each technology described in b) above, please provide information about any potentially adverse effects.

   e) Please provide your company's approach to structural calculations.

   f) Include a diagram that shows selected module and string layout

   g) State where inverters are to be located and how the system will be interconnected and include a one line diagram of solar electric system to point of interconnection.

4. Warrantees
   Respondents shall include warranty information per Section 6, Part 1, 1.6

5. Provide the estimated total annual kWh output of the system. Please state your assumptions and show your calculations for this determination.

6. Pricing
   a) Clarify any pricing assumptions inherent in your bid at the time of submittal, and describe any market forces that could potentially occur in the next 1 year, 3 month time frame that could affect those assumptions.

   b) List component pricing:
      i) Solar electric modules
      ii) Solar electric inverters
      iii) Racking
      iv) Structural materials
      v) Balance of system components
      vi) Engineering costs
      vii) Labor costs
      viii) Taxes on non-owner direct purchase items
      ix) Shipping
      x) Permit fees
      xi) Other costs

   c) Provide total installed cost (do not deduct incentives).

   d) State how long pricing is firm (install will be Spring/Summer 2016). If pricing isn't firm state how pricing will be adjusted (up or down).

7. Typical project schedule and timing.
   Submit a schedule indicating dates for the expected milestones, with each task referenced as well as a start and completion dates for the project

   Include the following dates and milestones on the schedule:
   a) Notice of award: September 1, 2015
   b) Structural design submitted: September 15, 2015
   c) Submittals due to Owner and Owner's representative: September 22, 2015
   d) Approved submittals returned to Contractor: October 2, 2015
   e) Coordination and site prep work: September 2015 to December 2015
   f) Main solar electric system components (modules, racking, inverters) delivered to site: March 2016
   g) System installation begins: April 2016
   h) System installation complete: May 2016
   i) Interconnection complete: May 2016
   j) Notice of installation submitted to Focus: May 2016

Section 5: General Rules

1. Owner Discretion - The Oregon School District reserves the right, at its sole discretion, to accept a response that does not satisfy all requirements but which, in Oregon School District sole judgement, sufficiently demonstrates the ability to produce, delivery, design, permit, install and satisfy the major requirements set forth in this RFP.
2. Request for Additional Information - The Oregon School District reserves the right to interview any or all respondents to this RFP, or to ask for additional information or clarifications.
3. Timeline - The Oregon School District expects to complete its evaluation process to select qualified contractors, but reserves the right to change key dates and action as the need arises.
4. No obligation – This RFP does not obligate The Oregon School District to establish eligibility for any respondents, or to issue any subsequent RFPs or to enter into any agreements. The Oregon School District reserves the right to cancel or re-issue this RFP at any time, and to solicit qualifications through any other appropriate method.
5. Rejection of Proposals – The Oregon School District may reject any response that it deems to be incomplete, unresponsive, and significantly inaccurate in its representation or which is unacceptable. .
6. Substitutions – Respondents may substitute or alter their responses subsequent to the submission date only if such changes are approved in writing by The Oregon School District.
7. Cost of Proposal and Non Compensation – Each respondent is solely responsible for all costs associated with responding to this RFP. The Oregon School District will not in any event reimburse any respondent for any costs associated with this RFP.
8. Delivery of Proposals - Each respondent is solely responsible for assuring a timely submittal of its response. Late responses will not be accepted.
9. Withdrawal of Proposal – Reponses to this RFP maybe withdrawn after submission by written request to Andrew Weiland.
10. Disposition of Proposals, Confidential Information – All submittals and the information therein become the property of The Oregon School District upon submittal. Proposals shall be returned only at The Oregon School District's sole discretion.

Section 6: PHOTOVOLTAIC SYSTEM PERFORMANCE REQUIREMENTS

PART 1 GENERAL

1.1 DESCRIPTION

A. This section includes general performance requirements that apply to installing a 36 kW roof mounted solar electric (PV) system on the roof of Brooklyn Elementary School.

B. Contractor is the Designer of Record for this system. Contractor is required to provide a Structural PE (Professional Engineer) Stamp for the structural design and an Electrical PE Stamp for the overall system design.

C. Both the structural and electrical stamps are to be provided from experienced PV designers with at least 5 similar completed projects.

D. Contractor is required to have experience with at least 5 similar completed PV projects.

E. Product specifications included in this section are the Basis for Design. Design substitutions shall meet the minimum performance requirements defined in this section. Contractor shall select number of inverters and perform string sizing.

1.2 DEFINITIONS

A. MPPT: Maximum power point tracking.

B. STC: Standard test conditions, 1000 W/m^2, 1.5 air mass, and 25°C cell temperature.

C. NABCEP: North American Board of Certified Energy Practitioners

D. PTC: PV USA Test Conditions, 1000 W/m^2, 1.5 air mass, 20°C air temperature, and 1 meter/sec. wind speed.

E. Voc: Open circuit voltage

F. Isc: Short circuit current.

1.3 SUBMITTALS

A. Experience: Submit resumes for individuals involved with the design and construction of the PV System. Submit references and summaries of five similar projects that these individuals have completed.

B. Product Data: For each type of component indicated below. Include rated capacities, operating characteristics, and furnished specialties and accessories. All product data submittals shall be submitted for review by Owner prior to purchasing any materials or equipment.

1. Solar panels
2. Combiner boxes and fuses
3. Grid tie inverters, including efficiency data.
4. Surge and lightening protection
5. Solar panel structural system, including rail, clamps, and brackets.
6. Manufacturer’s installation instructions.

C. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection. All shop drawings shall be submitted for review by Owner prior to purchasing any materials or equipment.

1. Dimensioned AutoCAD plan drawings of equipment including solar panel array, inverters, disconnects, combiner boxes, metering, and electrical routing.

2. Provide AutoCAD drafted three-line wiring diagram of solar PV system indicating ratings of all panels and inverters, wire and conduit types and sizes, and disconnects.

3. Wiring Diagrams: Power, signal, and control wiring.

D. Design Calculations

1. The following design calculations shall be performed by Contractor and submitted for review by Owner prior to purchasing any materials or equipment.

a. Electrical calculations, including string sizing, inverter selection, and voltage losses.
b. Structural calculations, including rail spans, wind and snow loading, required ballast weights, and roof strength calculations. Modules and racking must comply with wind uplift requirements per the American Society of Civil Engineers Standard for Minimum Design Loads for Buildings and Other Structures, and must be able to withstand design wind speeds of at least 100 mph (3-second gusts) or WI code requirements, whichever is stricter

E. Permitting and Agreements

1. The following permits and agreements shall be prepared by Contractor on behalf of the Owner. All approved permits and agreements shall be submitted for review by Owner prior to purchasing any materials or equipment.

a. Utility interconnection agreement
b. Building permit
c. Electrical permit

F. As built drawings:

1. Dimensioned AutoCAD plan drawings of equipment including solar panel array, inverters, disconnects, combiner boxes, metering, and electrical routing.

2. Provide AutoCAD drafted three-line diagram of solar PV system indicating ratings of all panels and inverters, wire and conduit types and sizes, and disconnects.

G. Field quality-control test reports.

1. Include voltages and power output for each string. Measure and record solar intensity during testing. Include time, date, and weather conditions of test.

H. Operation and Maintenance Data: For panels, inverter, metering, and monitoring include the following:

1. Instructions for operating equipment.

2. Identification of operating limits which may result in hazardous or unsafe conditions.
3. Document ratings of equipment and each major component.
4. Technical Data Sheets.
5. Wiring Diagrams.
6. Parts list.

I. Warranty: Copies of all manufacturer's and installer's warranties.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:

1. Maintenance Proximity: Not more than one hour normal travel time from Installer's place of business to Project site.
2. Installer must have PV Installer certification through NABCEP.

B. Source Limitations: Obtain panels from a single manufacturer, of a single type and rating. Obtain inverters from a single manufacturer, of a single type and a single rating.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with NFPA 70 and all applicable state and local codes

E. System installation must conform to and meet Occupational Health and Safety Administration (OSHA) directives

1.5 COORDINATION

A. Coordinate metering and interconnection agreement with electric utility. Contractor shall pay all interconnection fees including the application review fee, engineering review fee, and distribution system study fee. Contractor shall submit all required forms to utility.

1.6 WARRANTY

A. Installer must provide a five (5) year all inclusive installation warranty covering any defects of the installation, materials or equipment.

B. Panel Warranty Period:

1. 10 year materials and workmanship warranty.
2. 25 year linear power output warranty.

C. Inverter Warranty Period: 12 year warranty. Provide optional, itemized pricing for owner to extend to 25 years.

PART 2 PRODUCTS

2.1 SOLAR PANELS

A. Available Manufacturers: Subject to compliance with performance requirements, manufacturers offering products that may be incorporated into the Work include:

1. Kyocera KDXXXGX-LFB2
2. Heliene 60 P HD XXX
3. Solar World Sunmodule Plus SWXXX Mono

B. Capacities and Characteristics:

1. All panels shall be of a single type from a single manufacturer.
2. Power Output Ratings: STC rated power of between 250 and 270 watts.
3. Power tolerance of less than 5% variation (maximum minus minimum). Minimum tolerance of -0%.
4. Manufactured in North America.
5. Nameplates: To identify electrical characteristics, manufacturer's name and address, and model and serial number of component.
6. Module efficiency: minimum 15.51%

C. Materials and construction

1. Monocrystalline or Polycrystalline
2. Junction box with bypass diodes.
3. Output Connections: Factory wired separate positive and negative leads sized per electrical code wiring requirements with locking quick disconnects, rated for use in direct sunlight. Shall meet all requirements of NEC article 690.33.
4. Anodized aluminum frame with drainage holes and grounding holes.
5. Operating temperature range of -40°C to +85°C.
6. Withstand 1” diameter hail at 50 mph without damage.
7. Load rated at 5400 Pa (113 psf) when used with two rail system.

2.2 INVERTERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:

1. Solar Edge with Power Optimizers

B. Standards

1. IEEE 1547
2. UL 1741 – anti-islanding.

C. Electrical characteristics

1. AC kW rating: 33 kW

2. Output voltage: 480VAC (-12%, +10%), 3 phase.
3. Frequency: 60 Hz sine wave
4. Input voltage: Coordinated with solar array.
5. Max Voc: Coordinated with solar array.
6. Max DC current: Coordinated with solar array.
7. Startup voltage: Coordinated with solar array.
8. Output power factor: Unity
9. DC to AC conversion efficiency:
    a. 97.5% CEC rated efficiency

D. Features

1. Transformerless design.
2. Forward facing DC disconnect
3. DC side ground fault protection.
4. Inverter must limit power output to nameplate value. If connected to an array capable of producing more than the inverter's capacity, the inverter must limit the power without damage.
5. Maximum power point tracking over the range of voltages of the array, at the ambient temperatures of the site.
6. User navigable display.
7. LED status lights on enclosure.
8. Communication port for diagnostics and communication port for communication with multiple inverters and internet interface device.
9. NEMA 3R enclosure

2.3 PV WIRING

A. Type USE-2, #10AWG, from array to combiner box, and where used as a jumper for connection between panels.

B. UV-Stabilized Cable Ties:

1. Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.
2. Minimum Width: 3/16 inch (5 mm).
3. Tensile Strength at 73 °F (23 °C), According to ASTM D 638: 12,000 psi (82.7 MPa).
4. Temperature Range: -40 to +185 °F (-40 to +85 °C).
5. Color: Black.

C. Ampacity of PV source circuits shall be a minimum of 156% of the sum of parallel strings short circuit currents. Where installed exposed to direct sunlight, ampacity shall include adjustment for ambient temperature per NEC article 310.15.

1. Shall be sized to limit voltage drop to 1.5% from array to inverter during full production at MPPT voltage at maximum ambient temperature.

2. Shall be in metallic conduit from combiner box to inverter.

2.4 COMBINER BOX

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:

1. Blue Oak

2. SMA

3. MidNite solar

4. Product by panel manufacturer (Kyocera, Solarworld or Heliene) for use with their panels.

B. Capacities and Characteristics:

1. DC current and voltage ratings coordinated with array.

2. Positive and negative combiner blocks.

a. Number of poles coordinated with array.

3. DC voltage fuses in fingersafe fuse holder.

C. Materials and construction

1. Powder coated steel, NEMA 3R enclosure.

2. Knockouts

3. Stainless steel hardware.

2.5 RACKING & ROOF ATTACHMENT & ROOF PENETRATIONS

A. Tilt Angle of Panels: Varies (15, 30 and 45 degrees)

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include:

1. Products for systems on flat roofs mounted on superstructure:

a. Iron-Ridge Tilt Up
b. Unirac U-LA

2. Products for systems mounted from side walls (awning):
a. Schletter Awning & Façade

2.6 METERING

A. eGage power monitoring

2.7 INTERNET BASED MONITORING

A. Provide standard package from inverter manufacturer

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine roughing-in of electrical connections. Verify actual locations of connections before panel installation.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ARRAY REQUIREMENTS

A. Install panels on existing superstructure.

B. Coordinate installation with roofing contractor.

C. Structural Performance: Installation shall withstand all local wind and snow loads, and all local building department requirements.

D. All fastening hardware must be stainless steel.

E. All materials must be metallurgically compatible where different materials are in contact with each other.

F. Roof penetrations shall be made watertight using methods that are standard to the roofing industry, are approved by the roofing manufacturer, and that protect the warranty of the roof.

G. The panels shall be connected in arrays with the following characteristics:

1. Total DC peak STC rated power of all panels in the array shall be minimum 36 kW. The panels shall be divided into even arrays between the inverters.

2. The panels shall be installed only on the pitched roof.

3. If an alternate layout is proposed, bid is to document how the proposed solution is more cost effective to the owner.

4. Each array shall be provided with a combiner box.

5. The panels can be installed with long axis running east west or north south.

6. PV panel cables may be installed exposed where routed directly behind panels, but all cables shall be installed in a section of conduit where crossing part of the roof not under a panel. Conduit running across roof shall be supported on roof using Cooper B-Line Dura-Blok or equivalent.

7. All PV panel cables shall be installed in a neat and workmanship like manner. Excess wire shall be coiled and bundled neatly and supported securely in an area where they are not subject to environmental degradation, such as from wind, sun, and animals. Attach PV panel cables to racking with zip-ties listed for use in direct sunlight.

8. Panels shall be connected in series and parallel to match voltage and current ratings of inverter, across all ambient temperatures common to site (-25°C to 40°C).

a. Open circuit voltage of array on coldest day of year in full sunlight shall not exceed maximum operating voltage rating of inverter, panels, or any other equipment.

b. Open circuit voltage on warmest day of year in morning sunlight conditions (200W/m^2 irradiance) shall exceed inverter startup voltage. Voltage under operating MPPT conditions, minus any voltage drop over conductors, shall exceed minimum inverter input voltage.

c. Available short circuit current multiplied by 1.25 shall not exceed ratings for the inverter or any panels.

d. All series strings of panels shall have same performance characteristics.

3.3 ELECTRICAL INSTALLATION

A. Provide surge protection and lighting protection for both the AC and DC lines connected to the PV System.

B. Ground equipment according to electrical code

1. Size grounding conductors per NEC articles 250 and 690.

2. All conductive equipment enclosures must be grounded.

3. All panel frames must be grounded.

a. The removal of any panel shall not interrupt a grounded conductor to another photovoltaic source circuit.

C. Install wiring, combiner boxes, conduit, disconnects, inverter, web based monitoring hardware, sensors and other equipment.

D. Coordinate electrical shutdown with owner.

3.4 IDENTIFICATION

A. Identify and label system components:

1. Provide a unique label for each inverter, PV output circuit, combiner box, PV Source circuit, and panel. Labeling shall match labeling shown on as-built diagram and plan provided by contractor.

B. Provide all labeling required by NEC article 690, including, but not limited to:

1. Label disconnects capable of being energized from both directions as such.

2. Provide plaque at utility service disconnect per article 690.56B. Field verify exact location.

3. Label each photovoltaic disconnecting means per NEC article 690.53.

3.5 FIELD QUALITY CONTROL

A. Perform tests and inspections as indicated below and prepare test reports. Correct any deficiencies.

1. Visually inspect all connections.

2. Visually inspect all supports.

3. Measure Voc of each individual string of panels under full sunlight.

a. Verify Voc of all strings are balanced.

b. Verify measured Voc against calculated Voc for the ambient temperature. Extrapolate Voc to temperatures expected at site, and verify they are within inverters ratings.

4. Measure Isc of each string of panels.

5. Verify correct operation of inverter.

6. Verify correct operation of complete system.

7. Replace any defective panels. Panels shall be replaced at contractor's expense.

3.6 DEMONSTRATION

A. Simulate power outage by interrupting normal source, and demonstrate that system disconnects from utility.

B. Provide owner's maintenance personnel with minimum two hour training session:

1. Provide training on function of each piece of equipment.

2. Provide training on maintaining the system.

3. Explain means of disconnecting the system, and principals of operation and safety.

END OF SECTION 6