



**Solar Power Purchase Agreement (Commercial CA)**

This Solar Power Purchase Agreement (this “**Agreement**”) is entered into by the parties listed below (each a “**Party**” and collectively the “**Parties**”) as of the date signed by Seller below (the “**Effective Date**”).

<b>Purchaser:</b>		<b>Seller:</b>	
Name and Address	<b>Novato Unified School District</b> 1015 7th St Novato, CA 94945 Attention: Karen Maloney	Name and Address	<b>SolarCity Corporation</b> 3055 Clearview Way San Mateo, CA 94402 Attention: Legal Department
Phone	(415) 493-4260	Phone	(650) 638-1028
E-mail	kmaloney@nUSD.org	E-mail	Contracts@solarcity.com
Facility Ownership	Purchaser owns the Facility		<b>Contractor’s License Number</b> <b>CA: CSLB 888104</b>
Tax Status	Tax-exempt Government Agency		
Project Name	Novato USD Solar Projects		

This Agreement sets forth the terms and conditions of the purchase and sale of solar generated electric energy from the solar panel system described in **Exhibit 2** (the “**System**”) and installed at the Purchaser’s facility described in **Exhibit 2** (the “**Facility**”).

The exhibits listed below are incorporated by reference and made part of this Agreement.

- Exhibit 1 Pricing Attachment
- Exhibit 2 System Description, Delivery Point and Premises
- Exhibit 3 General Terms and Conditions
- Exhibit 4 Purchaser’s Site Requirements
- Exhibit 5 Additional Insurance Requirements
- Exhibit 6 Attachment A (Scope, Criteria and Submittals) and Attachment F (Specifications) (collectively, the “**Construction Provisions**”)

**Novato Unified School District**

**SolarCity Corporation**

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

**Exhibit 1**  
**Pricing Attachment**

1. **Term:** Twenty (20) years, beginning on the Commercial Operation Date.
2. **Additional Terms:** Up to one (1) Additional Term of five (5) years.
3. **Environment Attributes Accrue to Purchaser. Environmental Incentives accrue to Seller.**
4. **Contract Price:**

Contract Year	\$/kWh
1	TBD
2	TBD
3	TBD
4	TBD
5	TBD
6	TBD
7	TBD
8	TBD
9	TBD
10	TBD
11	TBD
12	TBD
13	TBD
14	TBD
15	TBD
16	TBD
17	TBD
18	TBD
19	TBD
20	TBD

Includes ACH invoicing. If manual invoicing is required, a \$25 handling charge will be added to each invoice.

5. **Condition Satisfaction Date:** 120 days after the Effective Date
6. **Anticipated Commercial Operation Date:** 270 days after the Effective Date
7. **Outside Commercial Operation Date:** 330 days after the Effective Date (the schedule set forth in Sections 5 through 7, collectively, the “**Schedule**”)
8. **Purchase Option Price Schedule:** Purchaser shall have the right to purchase the System pursuant to Exhibit 3, Section 16.b of the Agreement.

End of Contract Year	Option Price*
6	TBD
10	TBD
20	Fair Market Value

\* Higher of Fair Market Value of System or amount specified above.

**9. Termination Value Schedule:** The following amounts are provided for informational purposes only and are intended to approximate the Termination Payment to be calculated pursuant to Section 13.b.(3) of Exhibit 3 in case and at the time of an Event of Default by Purchaser.

<b>Contract Year</b>	<b>Termination Value</b>
1	TBD
2	TBD
3	TBD
4	TBD
5	TBD
6	TBD
7	TBD
8	TBD
9	TBD
10	TBD
11	TBD
12	TBD
13	TBD
14	TBD
15	TBD
16	TBD
17	TBD
18	TBD
19	TBD
20	TBD

**10. Rebate Variance:** All prices in this Agreement are calculated based on an upfront rebate of \$0. If the actual rebate is lower than this amount, the Parties may renegotiate the prices set forth in Section 4 of this Exhibit 1. If the Parties cannot reach agreement, Seller may terminate this Agreement without penalty within 30 days of confirmation of the rebate amount. For the avoidance of doubt, under such termination neither Purchaser nor Seller shall be required to pay the Termination Payment.

## Exhibit 2

### System Description, Delivery Point and Premises

1. **System Location:** TBD
2. **System Size (DC kW):** TBD
3. **Expected First Year Energy Production (kWh):** TBD
4. **Expected Structure:** TBD
5. **Includes:**

Installation of a solar energy system (includes: design, engineering, permitting, installation, monitoring, rebate application and paperwork processing for solar energy system), payment bonds, performance bonds, **payment of prevailing wage as required by applicable law**, removal of trees during construction period only.

6. **Excludes:**

Unforeseen groundwork (including, but not limited to, excavation/circumvention of underground obstacles), upgrades or repair to customer or utility electrical infrastructure, tree trimming following the Commercial Operation Date. If any excluded item arises or becomes applicable to the permitting, construction, or interconnection of the System, Seller shall provide Purchaser with a proposed revision to the Contract Price, adjusted to reflect such item(s), as soon as reasonably possible. Purchaser shall accept or reject such revision in writing within 10 days of receipt of such notice; Purchaser's failure to respond within 10 days shall be deemed a rejection. If Purchaser agrees to such revision, the Parties will amend this Agreement accordingly. If Purchaser does not agree to such revision, Seller shall have the right to terminate this Agreement by providing Purchaser with 10 days' written notice, and following such termination, neither party shall have any further liability to the other hereunder.

7. **Delivery Point and Premises:** The following image contains the:

- (i) Facility;
- (ii) System/array;
- (iii) Delivery Point; and
- (iv) Access points needed for Seller to install and service the System (building access, electrical room, stairs etc.)

[Image to be Inserted Here]



### Exhibit 3

#### **General Terms and Conditions**

- I. **Definitions and Interpretation.** Unless otherwise defined or required by the context in which any term appears: (a) the singular includes the plural and vice versa; (b) the words “herein,” “hereof” and “hereunder” refer to this Agreement as a whole and not to any particular section or subsection of this Agreement; (c) references to any agreement, document or instrument mean such agreement, document or instrument as amended, modified, supplemented or replaced from time to time; and (d) the words “include,” “includes” and “including” mean include, includes and including “without limitation.” The captions or headings in this Agreement are strictly for convenience and shall not be considered in interpreting this Agreement.
- II. **Purchase and Sale of Electricity.** Purchaser shall purchase from Seller, and Seller shall sell to Purchaser, all of the electric energy generated by the System during the Initial Term and any Additional Term (as defined in Exhibit 1, and collectively the “**Term**”). Electric energy generated by the System will be delivered to Purchaser at the delivery point identified on Exhibit 2 (the “**Delivery Point**”). Purchaser shall take title to the electric energy generated by the System at the Delivery Point, and risk of loss will pass from Seller to Purchaser at the Delivery Point. Purchaser may purchase electric energy for the Facility from other sources if the Purchaser's electric requirements at the Facility exceed the output of the System.
- III. **Term and Termination.**
- a. **Initial Term.** This Agreement is effective as of the Effective Date. The initial term (“**Initial Term**”) of this Agreement shall commence on the Commercial Operation Date (as defined below) and continue for the length of time specified in Exhibit 1, unless earlier terminated as provided for in this Agreement. The “**Commercial Operation Date**” is the date Seller gives Purchaser written notice that the System is mechanically complete, and capable of providing electric energy to the Delivery Point; provided, however, that in no case will Purchaser be required to make payment for any production from the System until the System has been placed in service and Purchaser has received permission to operate. Upon Purchaser’s request, Seller will give Purchaser copies of certificates of completion or similar documentation from Seller’s contractor and the interconnection or similar agreement with the utility. Purchaser’s failure to enable Seller to provide the electric energy by preventing it from installing the System or otherwise not performing shall not excuse Purchaser’s obligations to make payments that otherwise would have been due under this Agreement.
- b. **Additional Terms.** If Purchaser has not exercised its option to purchase the System under Section XVI(b) by the end of the Initial Term, either Party may give the other Party written notice of its desire to extend this Agreement on the terms and conditions set forth herein for the number and length of additional periods specified in Exhibit 1 (each an “**Additional Term**”). Such notice shall be given, if at all, not more than one hundred twenty (120) and not less than sixty (60) days before the last day of the Initial Term or the then current Additional Term, as applicable. The Party receiving the notice requesting an Additional Term shall respond positively or negatively to that request in writing within thirty (30) days after receipt of the request. Failure to respond within such thirty (30) day period shall be deemed a rejection of the offer for an Additional Term. If both Parties agree to an Additional Term, the Additional Term shall begin immediately upon the conclusion of the Initial Term or the then current term on the same terms and conditions as set forth in this Agreement and at a Contract Price to be negotiated and agreed upon at such time. Notwithstanding the foregoing, if the Parties are unable to agree on a Contract Price, then this Agreement shall terminate at the end of the Initial Term (if the same has not been extended) or the then current Additional Term. If the Party receiving the request for an Additional Term rejects or is deemed to reject the first Party’s offer, this Agreement shall terminate at the end of the Initial Term (if the same has not been extended) or the then current Additional Term.
- IV. **Billing and Payment.**
- a. **Monthly Charges.** Purchaser shall pay Seller monthly for the electric energy generated by the System and delivered to the Delivery Point at the \$/kWh rate shown in Exhibit 1 (the “**Contract Price**”). The monthly payment for such energy will be equal to the applicable \$/kWh rate multiplied by the number of kWh of energy generated during the applicable month, as measured by the System meter.
- b. **Monthly Invoices.** Seller shall invoice Purchaser monthly, either manually or through ACH. Such monthly invoices shall state (i) the amount of electric energy produced by the System and delivered to the Delivery Point, (ii)

the rates applicable to, and charges incurred by, Purchaser under this Agreement and (iii) the total amount due from Purchaser.

- c. **Taxes.** Purchaser shall either pay or reimburse Seller for any and all taxes assessed on the generation, sale, delivery or consumption of electric energy produced by the System or the interconnection of the System to the utility's electric distribution system, including property taxes on the System; provided, however, Purchaser will not be required to pay or reimburse Seller for any taxes during periods when Seller fails to deliver electric energy to Purchaser due to the action or omission of Seller. For purposes of this Section IV(c), "**Taxes**" means any federal, state and local ad valorem, property, occupation, generation, privilege, sales, use, consumption, excise, transaction, and other taxes, regulatory fees, surcharges or other similar charges, but shall not include any income taxes or similar taxes imposed on Seller's revenues due to the sale of energy under this Agreement, which shall be Seller's responsibility.
- d. **Payment Terms.** All amounts due under this Agreement shall be due and payable net thirty (30) days from receipt of invoice. Any undisputed portion of the invoice amount not paid within the thirty (30) day period shall accrue interest at the annual rate of two and one-half percent (2.5%) over the Prime Rate (but not to exceed the maximum rate permitted by law).

V. **Environmental Attributes and Environmental Incentives.**

Unless otherwise specified on **Exhibit 1**, Seller is the owner of all Environmental Incentives and is entitled to the benefit of all Tax Credits. Purchaser's purchase of electricity under this Agreement does not include Environmental Incentives, the right to Tax Credits or any other attributes of ownership and operation of the System, all of which shall be retained by Seller; but Purchaser's purchase of electricity under this Agreement does include Environmental Attributes, including, without limitation all renewable energy credits ("RECs"). Purchaser shall cooperate with Seller in obtaining, securing and transferring all Environmental Incentives and the benefit of all Tax Credits, including by using the electric energy generated by the System in a manner necessary to qualify for such available Environmental Incentives and Tax Credits. Purchaser shall not be obligated to incur any out-of-pocket costs or expenses in connection with such actions unless reimbursed by Seller. If any Environmental Incentives are paid directly to Purchaser, Purchaser shall immediately pay such amounts over to Seller. Purchaser shall be deemed to have taken title to the Environmental Attributes concurrent with taking title to the System's electrical production pursuant to Section 2 above. Purchaser shall be solely responsible for any registration, tracking, or other administrative processes required for Purchaser to monetize, claim, certify, or otherwise benefit from the Environmental Attributes, including the RECs, provided that Seller shall provide Purchaser with commercially reasonable assistance at no out of pocket cost to Seller to allow Purchaser to claim such RECs. To avoid any conflicts with fair trade rules regarding claims of solar or renewable energy use, each Party shall submit to the other for approval any press releases regarding Purchaser's use of solar or renewable energy and shall not submit for publication any such releases without the written approval of the other Party. Approval shall not be unreasonably withheld, and a Party's review and approval shall be made in a timely manner to permit timely publication.

**Green Attributes and Environmental Financial Incentives.** Pursuant to and as required by the Proposition 39: California Clean Energy Jobs Act – 2015, the Seller represents that it has provided information to the Purchaser regarding all greenhouse gas attributes and value benefits associated with the System, and the Purchaser, by initialing below, indicates that it has been made aware of such benefits.

\_\_\_\_\_  
Initials

"**Environmental Attributes**" means any and all credits, benefits, emissions reductions, offsets, and allowances, howsoever entitled, attributable to the System, the production of electrical energy from the System and its displacement of conventional energy generation, including (1) any avoided emissions of pollutants to the air, soil or water such as sulfur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO) and other pollutants; (2) any avoided emissions of carbon dioxide (CO2), methane (CH4), nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride and other greenhouse gases (GHGs) that have been determined by the United Nations Intergovernmental Panel on Climate Change, or otherwise by law, to contribute to the actual or potential threat of altering the Earth's climate by trapping heat in the atmosphere; and (3) the reporting rights related to these avoided emissions, such as Green Tag Reporting Rights and Renewable Energy Credits. Green Tag Reporting Rights are the right of a party to report the ownership of accumulated Green Tags in compliance with federal or state law, if applicable, and to a federal or state agency or any other party, and include Green Tag Reporting Rights accruing under Section 1605(b) of The Energy Policy Act of 1992 and any present or future federal, state, or local law, regulation or bill, and international or foreign emissions trading program. Environmental Attributes do not include Environmental Incentives and Tax Credits. Purchaser and Seller shall file all tax returns in a manner consistent with this

Section 5. Without limiting the generality of the foregoing, Environmental Attributes include carbon trading credits, renewable energy credits or certificates, emissions reduction credits, investment credits, emissions allowances, green tags, tradeable renewable credits and Green-e® products.

“**Environmental Incentives**” means any monetary credits, rebates, subsidies, payments or other incentives that relate to self-generation of electricity, the use of technology incorporated into the System, environmental benefits of using the System, or other similar programs available from the utility, any other regulated entity, the manufacturer of any part of the System or any Governmental Authority.

“**Governmental Authority**” means any national, state or local government (whether domestic or foreign), any political subdivision thereof or any other governmental, quasi-governmental, judicial, public or statutory instrumentality, authority, body, agency, bureau or entity (including the Federal Energy Regulatory Commission or the California Public Utilities Commission), or any arbitrator with authority to bind a party at law.

“**Tax Credits**” means any and all (i) investment tax credits, (ii) production tax credits and (iii) similar tax credits or grants under federal, state or local law relating to the construction, ownership or production of energy from the System.

VI.

**Conditions to Obligations.**

**a. Conditions to Seller’s Obligations.**

Seller’s obligations under this Agreement are conditioned on the completion of the following conditions to Seller’s reasonable satisfaction on or before the Condition Satisfaction Date:

- i. Completion of a physical inspection of the Facility and the property upon which the Facility is located (the “**Premises**”) including, if applicable, geotechnical work, and real estate due diligence to confirm the suitability of the Facility and the Premises for the System;
- ii. Approval of (A) this Agreement and (B) the Construction Agreement (if any) for the System by Seller’s Financing Parties. “**Construction Agreement**” as used in this subsection means an agreement between SolarCity and a subcontractor to install the System;
- iii. Confirmation that Seller will obtain all applicable Environmental Incentives and Tax Credits;
- iv. Receipt of all necessary zoning, land use and building permits;
- v. Execution of all necessary agreements with the utility for interconnection of the System to the utility’s electric distribution system; and
- vi. Prior to Seller commencing construction and installation of the System, Purchaser shall give Seller proof of insurance for all insurance required to be maintained by Purchaser under this Agreement.

**b. Conditions to Purchaser’s Obligations.**

Purchaser’s obligations under this Agreement are conditioned on the completion of the following conditions to Purchaser’s reasonable satisfaction:

- i. The occurrence of the Commercial Operation Date for the System on or before the Outside Commercial Operation Date (See **Exhibit 1**); provided that the Outside Commercial Operation Date shall be automatically extended based on the actual impact to the Schedule resulting from Force Majeure or any other delay caused by the Purchaser or any third party.

**c. Failure of Conditions.**

If any of the conditions listed in subsections (a) or (b) above are not satisfied by the applicable dates specified in those subsections, the Parties will attempt in good faith to negotiate new dates for the satisfaction of the failed conditions. If the parties are unable to negotiate new dates and the failed condition does not result from Force Majeure or the actions/omissions of the terminating Party or any third party, including the utility, then the Party that has not failed to meet an obligation may terminate this Agreement upon ten (10) days written notice to the other Party without liability for costs or damages or triggering a default under this Agreement. Notwithstanding anything to the contrary in this Agreement, if Seller commences

construction of the System, and has performed work equal to at least fifty percent (50%) of the System's total construction cost, then all conditions listed in subsections (a) and (b) shall be deemed automatically satisfied and each party's respective termination rights under this Section 6(c) shall automatically terminate and have no further force or effect.

## VII.

### **Seller's Rights and Obligations.**

- a. **Permits and Approvals.** Seller, with Purchaser's reasonable cooperation, shall use commercially reasonable efforts to obtain, at its sole cost and expense:
- i. any zoning, land use and building permits required to construct, install and operate the System; and
  - ii. any agreements and approvals from the utility necessary in order to interconnect the System to the utility's electric distribution system.
- Purchaser shall cooperate with Seller's reasonable requests to assist Seller in obtaining such agreements, permits and approvals.
- b. **Standard System Repair and Maintenance.** Seller shall construct and install the System at the Facility. During the Term, Seller will operate and perform all routine and emergency repairs to, and maintenance of, the System at its sole cost and expense, except for any repairs or maintenance resulting from Purchaser's negligence, willful misconduct or breach of this Agreement. Seller shall (A) have the appropriate experience and ability to operate and maintain photovoltaic solar systems and the financial capability to do same (an "Operator"); or (B) enter into a contract with an Operator, pursuant to which (1) such Operator shall be responsible for System operation and maintenance under this Agreement and (2) Operator shall administer all rights (including access rights to the Facility) and obligations of Seller on behalf of Seller under this Agreement. Seller shall not be responsible for any work done by others on any part of the System unless Seller authorizes that work in advance in writing. Seller shall not be responsible for any loss, damage, cost or expense arising out of or resulting from improper environmental controls or improper operation or maintenance of the System by anyone other than Seller or Seller's contractors. If the System requires repairs for which Purchaser is responsible, Purchaser shall pay Seller for diagnosing and correcting the problem at Seller or Seller's contractors' then current standard rates. Seller shall provide Purchaser with reasonable notice prior to accessing the Facility to make standard repairs. When performing repairs to, and maintenance of, the System, Seller or Seller's contractors shall comply with all applicable statutes and Construction Provisions, including but not limited to payment of prevailing wage to the extent required by applicable law and the fingerprinting requirements of Education Code section 45125.1 and/or Education Code section 45125.2.
- c. **Non-Standard System Repair and Maintenance.** If Seller incurs incremental costs to maintain the System due to conditions at the Facility or due to the inaccuracy of any information provided by Purchaser and relied upon by Seller, the pricing, schedule and other terms of this Agreement will be equitably adjusted to compensate for any work in excess of normally expected work required to be performed by Seller. In such event, the Parties will negotiate such equitable adjustment in good faith.
- d. **Breakdown Notice.** Seller shall notify Purchaser within twenty-four (24) hours following Seller's discovery of (i) any material malfunction in the operation of the System or (ii) an interruption in the supply of electrical energy from the System. Purchaser and Seller shall each designate personnel and establish procedures such that each Party may provide notice of such conditions requiring Seller's repair or alteration at all times, twenty-four (24) hours per day, including weekends and holidays. Purchaser shall notify Seller immediately upon the discovery of an emergency condition affecting the System.
- e. **Suspension.** Notwithstanding anything to the contrary herein, Seller shall be entitled to suspend delivery of electricity from the System to the Delivery Point for the purpose of maintaining and repairing the System and such suspension of service shall not constitute a breach of this Agreement; provided, that Seller shall use commercially reasonable efforts to minimize any interruption in service to the Purchaser.
- f. **Use of Contractors and Subcontractors.** Seller shall be permitted to use contractors and subcontractors to perform its obligations under this Agreement. However, Seller shall continue to be responsible for the quality of the work performed by its contractors and subcontractors and at all times to enforce discipline and good order among their contractors and subcontractors. All contractors and subcontractors shall be properly licensed by the State of California, Contractor's State Licensing Board, in accordance with division 3, chapter 9, of the Business and Professions Code and in the classification applicable to the work performed. In addition, Seller or Seller's contractors shall comply with all applicable statutes and Construction Provisions, including but not limited to

California Labor Code, Division 3, Part 7, Chapter 1, Articles 1 – 5, including, without limitation, the payment of the general prevailing per diem wage rates for public work projects of more than one thousand dollars (\$1,000), Chapter 1 of Division 2, Part 7 of the California Labor Code, beginning with Section 1720, and including Section 1735, 1777.5 and 1777.6, forbidding discrimination, and Sections 1776, 1777.5 and 1777.6 concerning the employment of apprentices by Contractor or subcontractors, Occupational Safety and Health Act (OSHA) requirements, and the fingerprinting requirements of Education Code section 45125.1 and/or Education Code section 45125.2.

- g. **Liens and Payment of Contractors and Suppliers.** Seller shall pay when due all valid charges from all contractors, subcontractors and suppliers supplying goods or services to Seller under this Agreement and shall keep the Facility free and clear of any liens related to such charges. Seller shall indemnify Purchaser for all claims, losses, damages, liabilities and expenses resulting from any liens filed against the Facility or the Premises in connection with such charges; provided, however, that Seller shall have the right to contest any such lien, so long as it provides a statutory bond or other reasonable assurances of payment that either remove such lien from title to the Facility and the Premises or that assure that any adverse judgment with respect to such lien will be paid without affecting title to the Facility and the Premises.

## VIII.

### **Purchaser's Rights and Obligations.**

- a. **Facility Access Rights.** Purchaser grants to Seller and to Seller's agents, employees and contractors a non-exclusive license running with the Premises (the "**License**"), revocable only upon the termination of this Agreement as provided herein, for access to, on, over, under and across the Premises for the purposes of (a) installing, constructing, operating, owning, maintaining, accessing, removing and replacing the System; (b) performing all of Seller's obligations and enforcing all of Seller's rights set forth in this Agreement; and (c) installing, using and maintaining electric lines and equipment, including inverters and meters, necessary to interconnect the System to Purchaser's electric system at the Facility and/or to the utility's electric distribution system or that otherwise may from time to time be useful or necessary in connection with the construction, installation, operation, maintenance or repair of the System. Seller shall notify Purchaser prior to entering the Facility except in situations where there is imminent risk of damage to persons or property. The term of the License shall continue until the date that is one hundred and twenty (120) days following the date of expiration or termination of this Agreement (the "**License Term**"). During the License Term, Purchaser shall ensure that Seller's rights under the License and Seller's access to the Premises are preserved and protected and shall not interfere with or permit any third parties to interfere with such rights or access. The grant of the License shall survive termination of this Agreement by either Party for the 120-day period specified herein and solely for the purpose of removal of the System and restoration of the Premises pursuant to Section 11.
- b. **OSHA Compliance.** Both parties shall ensure that all Occupational Safety and Health Act (OSHA) requirements and other similar applicable safety laws or codes are adhered to in their performance under this Agreement.
- c. **Maintenance of Facility.** Purchaser shall, at its sole cost and expense, maintain the Facility in good condition and repair. Purchaser will ensure that the Facility remains interconnected to the local utility grid at all times and will not permit cessation of electric service to the Facility from the local utility. Purchaser is fully responsible for the maintenance and repair of the Facility's electrical system and of all of Purchaser's equipment that utilizes the System's outputs. Purchaser shall properly maintain in full working order all of Purchaser's electric supply or generation equipment that Purchaser may shut down while utilizing the System. Purchaser shall promptly notify Seller of any matters of which it is aware pertaining to any damage to or loss of use of the System or that could reasonably be expected to adversely affect the System.
- d. **No Alteration of Facility.** Purchaser shall not make any alterations or repairs to the Facility which may adversely affect the operation and maintenance of the System without Seller's prior written consent. If Purchaser wishes to make such alterations or repairs, Purchaser shall give prior written notice to Seller, setting forth the work to be undertaken (except for emergency repairs, for which notice may be given by telephone), and give Seller the opportunity to advise Purchaser in making such alterations or repairs in a manner that avoids damage to the System, but, notwithstanding any such advice, Purchaser shall be responsible for all damage to the System caused by Purchaser or its contractors. To the extent that temporary disconnection or removal of the System is necessary to perform such alterations or repairs, such work and any replacement of the System after completion of Purchaser's alterations and repairs shall be done by Seller or its contractors at Purchaser's cost. All of Purchaser's alterations and repairs will be done in a good and workmanlike manner and in compliance with all applicable laws, codes and permits.

- e. **Outages.** Purchaser shall be permitted to be off line for a total of forty-eight (48) day light hours as defined by the United States National Weather Service in the area where the System is located (each, a “**Scheduled Outage**”) per calendar year during the Term, during which time Purchaser shall not be obligated to accept or pay for electricity from the System; provided, however, that Purchaser must notify Seller in writing of each such Scheduled Outage at least forty-eight (48) hours in advance of the commencement of a Scheduled Outage. In the event that Scheduled Outages exceed a total of forty-eight (48) day light hours as defined by the United States National Weather Service in the area where the System is located per calendar year or there are unscheduled outages, in each case for a reason other than a Force Majeure event, Seller shall reasonably estimate the amount of electricity that would have been delivered to Purchaser during such excess Scheduled Outages or unscheduled outages and shall invoice Purchaser for such amount and any associated lost or recaptured Environmental Incentives. For avoidance of doubt, the forty-eight (48) hour period shall include all Scheduled Outage hours allowed under any of the terms of this Agreement, including those undertaken pursuant to Section 8(d).
- f. **Liens.** Purchaser shall not directly or indirectly cause, create, incur, assume or allow to exist any mortgage, pledge, lien, charge, security interest, encumbrance or other claim of any nature on or with respect to the System or any interest therein. Within five (5) days of discovery, Purchaser shall notify Seller in writing of the existence of any such mortgage, pledge, lien, charge, security interest, encumbrance or other claim, shall promptly cause the same to be discharged and released of record without cost to Seller, and shall indemnify Seller against all costs and expenses (including reasonable attorneys’ fees) incurred in discharging and releasing any such mortgage, pledge, lien, charge, security interest, encumbrance or other claim, provided that the mortgage, pledge, lien, charge, security interest, encumbrance or other claim was not caused by Seller .
- g. **Security.** Purchaser shall be responsible for using commercially reasonable efforts to maintain the physical security of the Facility and the System against known risks and risks that reasonably should have been known by Purchaser. Purchaser will not conduct activities on, in or about the Premises or the Facility that have a reasonable likelihood of causing damage, impairment or otherwise adversely affecting the System.
- h. **Insolation.** Purchaser understands that unobstructed access to sunlight (“**Insolation**”) is essential to Seller’s performance of its obligations and a material term of this Agreement. Purchaser shall not in any way cause and, where possible, shall not in any way permit any interference with the System’s Insolation. If Purchaser becomes aware of any activity or condition that could diminish the Insolation of the System, Purchaser shall notify Seller immediately and shall cooperate with Seller in preserving the System’s existing Insolation levels. The Parties agree that reducing Insolation would irreparably injure Seller, that such injury may not be adequately compensated by an award of money damages, and that Seller is entitled to seek specific enforcement of this Section VIII(h) against Purchaser.
- i. **Data Line.** Seller shall provide a cellular connection during the Term to enable Seller to record the electric energy generated by the System. If such cellular ceases to function, Seller may reasonably estimate the amount of electric energy that was generated and invoice Purchaser for such amount in accordance with Section IV.
- j. **Breakdown Notice.** Purchaser shall promptly notify Seller twenty-four (24) hours following the discovery by it of (A) any material malfunction in the operation of the System; or (B) any occurrences that could reasonably be expected to adversely affect the System. Purchaser shall notify Seller immediately upon (A) an interruption in the supply of electrical energy from the System; or (B) the discovery of an emergency condition respecting the System. Purchaser and Seller shall each designate personnel and establish procedures such that each Party may provide notice of such conditions requiring Seller’s repair or alteration at all times, twenty-four (24) hours per day, including weekends and holidays.

**IX. Change in Law.**

“**Change in Law**” means (i) the enactment, adoption, promulgation, modification or repeal after the Effective Date of any applicable law or regulation; (ii) the imposition of any material conditions on the issuance or renewal of any applicable permit after the Effective Date of this Agreement (notwithstanding the general requirements contained in any applicable Permit at the time of application or issue to comply with future laws, ordinances, codes, rules, regulations or similar legislation), or (iii) a change in any utility rate schedule or tariff approved by any Governmental Authority which in the case of any of (i), (ii) or (iii), establishes requirements affecting owning, supplying, constructing, installing, operating or maintaining the System, or other performance of the Seller’s obligations hereunder and which has a material adverse effect on the cost to Seller of performing such obligations; provided, that a change in federal, state, county or any other tax law after the Effective Date of this Agreement shall not be a Change in Law pursuant to this Agreement.

If any Change in Law occurs that has a material adverse effect on the cost to Seller of performing its obligations under this Agreement, then the Parties shall, within thirty (30) days following receipt by Purchaser from Seller of notice of such Change in Law, meet and attempt in good faith to negotiate amendments to this Agreement as are reasonably necessary to preserve the economic value of this Agreement to both Parties. If the Parties are unable to agree upon such amendments within such thirty (30) day period, then Seller shall have the right to terminate this Agreement without further liability to either Party except with respect to payment of amounts accrued prior to termination.

**X. Relocation of System**

If (i) Purchaser ceases to conduct business operations at and/or vacates the Facility or (ii) Seller is prevented from operating the System at the Facility (through no fault of Seller) or (iii) the System is otherwise prevented from delivering electricity (through no fault of Seller), in each case prior to the expiration of the Term, Purchaser shall have the option to provide Seller with a mutually agreeable substitute premises located within the same utility district as the terminated System or in a location with similar utility rates and Insolation. Purchaser shall provide written notice at least sixty (60) days but not more than one hundred eighty (180) days prior to the date that it wants to make this substitution. In connection with such substitution, Purchaser shall execute an amended agreement that shall have all of the same terms as this Agreement except for the (i) Effective Date; (ii) License, which will be amended to grant rights in the real property where the System relocated to; and (iii) Term, which will be the remainder of the Term of this Agreement and such amended agreement shall be deemed to be a continuation of this Agreement without termination. Purchaser shall also provide any new Purchaser, owner, lessor or mortgagee consents or releases required by Seller or Seller's Financing Parties in connection with the substitute facility. Purchaser shall pay all costs associated with relocation of the System, including all costs and expenses incurred by or on behalf of Seller in connection with removal of the System from the Facility and installation and testing of the System at the substitute facility and all applicable interconnection fees and expenses at the substitute facility, as well as costs of new title search and other out-of-pocket expenses connected to preserving and refiling the security interests of Seller's Financing Parties in the System. Seller shall reasonably estimate the amount of electricity that would have been delivered to Purchaser during the period of time the System is not in operation due to the relocation and shall invoice Purchaser for such amount and any associated lost or recaptured Environmental Incentives. Seller shall remove the System from the Facility prior to the termination of Purchaser's ownership, lease or other rights to use such Facility. Seller will not be required to restore the Facility to its prior condition but shall promptly pay Purchaser for any damage caused by Seller during removal of the System, but not for normal wear and tear. If the substitute facility has inferior Insolation as compared to the original Facility, Seller shall have the right to make an adjustment to Exhibit 1 such that Purchaser's payments to Seller are the same as if the System were located at the original Facility. If Purchaser is unable to provide such substitute facility and to relocate the System as provided, any early termination will be treated as a default by Purchaser.

**XI. Removal of System at Expiration**

Upon the expiration or earlier termination of this Agreement (provided Purchaser does not exercise its purchase option), Seller shall, at its expense, remove all of its tangible property comprising the System from the Facility on a mutually convenient date, but in no event later than ninety (90) days after the expiration of the Term. Excluding ordinary wear and tear, the Facility shall be returned to its original condition including the removal of System mounting pads or other support structures. In no case shall Seller's removal of the System affect the integrity of Purchaser's roof, which shall be as leak proof as it was prior to removal of the System and shall be flashed and/or patched to existing roof specifications. Seller shall leave the Facility in neat and clean order. If Seller fails to remove or commence substantial efforts to remove the System by such agreed upon date, Purchaser shall have the right, at its option, to remove the System to a public warehouse and restore the Facility to its original condition (other than ordinary wear and tear) at Seller's cost. Purchaser shall provide sufficient space for the temporary storage and staging of tools, materials and equipment and for the parking of construction crew vehicles and temporary construction trailers and facilities reasonably necessary during System removal.

**XII. Measurement**

Electricity delivered to the Facility shall be measured by the SolarGuard monitoring system, which shall include a utility-grade meter, installed and maintained by Seller as part of the System. The metering installed by Seller shall meet the reporting requirements of the Western Renewable Energy Generation Information System (WREGIS) for measurement, recording, and registration of Renewable Energy Credits (RECs) at the time of such installation. Seller shall maintain the functionality of the metering throughout the Term but shall not be obligated to register or pay for registration of RECs through WREGIS, nor to comply with any changes in metering requirements issued by WREGIS following the initial installation of the meter. The SolarGuard monitoring system provides Purchaser with an online portal for viewing the System's production. Seller shall maintain the meter in accordance with the manufacturer's requirements.

Where technically feasible and at reasonable cost at the time of System installation, Seller will provide consumption monitoring that shall have the following features:

- a. Seller will provide separate consumption meters to measure site load independently from PV system production.
- b. Consumption metering/reporting shall use the same SolarGuard monitoring portal as the production metering.
- c. Consumption metering/reporting shall have the same data/clock interval as the production metering.

For purposes of this section, “reasonable cost” shall mean at a cost to Seller that does not have a material impact on the economics of this Agreement for the Seller.

### XIII. **Default, Remedies and Damages.**

a. **Default.** Any Party that fails to perform its responsibilities as listed below or experiences any of the circumstances listed below shall be deemed a “**Defaulting Party**”, the other Party shall be the “**Non-Defaulting Party**” and each event of default shall be a “**Default Event**”:

- (1) failure of a Party to pay any amount due and payable under this Agreement, other than an amount that is subject to a good faith dispute, within ten (10) days following receipt of written notice from the Non-Defaulting Party of such failure to pay (“**Payment Default**”);
- (2) failure of a Party to substantially perform any other material obligation under this Agreement within thirty (30) days following receipt of written notice from the Non-Defaulting Party demanding such cure; provided, that such thirty (30) day cure period shall be extended (but not beyond ninety (90) days) if and to the extent reasonably necessary to cure the Default Event, if (i) the Defaulting Party initiates such cure within the thirty (30) day period and continues such cure to completion and (ii) there is no material adverse effect on the Non-Defaulting Party resulting from the failure to cure the Default Event;
- (3) if any representation or warranty of a Party proves at any time to have been incorrect in any material respect when made and is material to the transactions contemplated hereby, if the effect of such incorrectness is not cured within thirty (30) days following receipt of written notice from the Non-Defaulting Party demanding such cure;
- (4) Purchaser loses its rights to occupy and enjoy the Premises;
- (5) a Party, or its guarantor (if any), becomes insolvent or is a party to a bankruptcy, reorganization, insolvency, liquidation, receivership, dissolution, winding-up or relief of debtors, or any general assignment for the benefit of creditors or other similar arrangement or any event occurs or proceedings are taken in any jurisdiction with respect to the Party which has a similar effect (or, if any such actions are initiated by a third party, such action(s) is(are) not dismissed within ninety (90) days); or
- (6) Purchaser prevents Seller from installing the System or otherwise failing to perform in a way that prevents the delivery of electric energy from the System. Such Default Event shall not excuse Purchaser’s obligations to make payments that otherwise would have been due under this Agreement.

b. **Remedies.**

- (1) **Remedies for Payment Default.** If a Payment Default occurs, the Non-Defaulting Party may suspend performance of its obligations under this Agreement. Further, the Non-Defaulting Party may pursue any remedy under this Agreement, at law or in equity, including an action for damages and termination of this Agreement, upon ten (10) days prior written notice to the Defaulting Party following the Payment Default.
- (2) **Remedies for Other Defaults.** On the occurrence of a Default Event other than a Payment Default, the Non-Defaulting Party may pursue any remedy under this Agreement, at law or in equity, including an action for damages and termination of this Agreement, upon ten (10) days prior

written notice to the Defaulting Party following the occurrence of the Default Event. Nothing herein shall limit either Party's right to collect damages upon the occurrence of a breach or a default by the other Party that does not become a Default Event. If Purchaser terminates this contract without cause prior to System installation a \$5,000 design cancellation fee shall also apply in addition to any other remedy available to Seller.

(3) Damages Upon Termination by Default. Upon a termination of this Agreement by the Non-Defaulting Party as a result of a Default Event by the Defaulting Party, the Defaulting Party shall pay a Termination Payment to the Non-Defaulting Party determined as follows (the "**Termination Payment**"):

A. Purchaser. If Purchaser is the Defaulting Party and Seller terminates this Agreement, the Termination Payment to Seller shall be equal to the sum of (i) reasonable compensation, on a net after tax basis assuming a tax rate of 35%, for the loss or recapture of (A) the investment tax credit equal to thirty percent (30%) of the System value; and (B) MACRS accelerated depreciation equal to eighty five percent (85%) of the System value, (C) loss of any Environmental Incentives that accrue or are otherwise assigned to Seller pursuant to the terms of this Agreement (Seller shall furnish Purchaser with a detailed calculation of such compensation if such a claim is made), (D) other financing and associated costs not included in (A), (B) and (C), (ii) the net present value (using a discount rate of 5%) of the projected payments over the Term post-termination, had the Term remained effective for the full Initial Term, (iii) removal costs as provided in Section XIII(b)(3)(C) and (iv) any and all other amounts previously accrued under this Agreement and then owed by Purchaser to Seller. The estimated Termination Payments set forth in Exhibit 1 are intended to approximate the amounts that would be payable hereunder, but are provided as sample amounts only. The Parties agree that actual damages to Seller in the event this Agreement terminates prior to the expiration of the Term as the result of a Default Event by Purchaser would be difficult to ascertain, and the applicable Termination Payment is a reasonable approximation of the damages suffered by Seller as a result of early termination of this Agreement. The Termination Payment shall not be less than zero.

B. Seller. If Seller is the Defaulting Party and Purchaser terminates this Agreement, the Termination Payment to Purchaser shall be equal to the sum of (i) the present value (using a discount rate of 9.5%) of the excess, if any, of the reasonably expected cost of electric energy from the utility over the Contract Price for the reasonably expected production of the System for the remainder of the Initial Term or the then current Additional Term, as applicable; (ii) all costs reasonably incurred by Purchaser in re-converting its electric supply to service from the utility; (iii) any removal costs incurred by Purchaser; and (iv) any and all other amounts previously accrued under this Agreement and then owed by Seller to Purchaser. The Termination Payment shall not be less than zero.

C. Obligations Following Termination. If a Non-Defaulting Party terminates this Agreement pursuant to this Section XIII(b), then following such termination, Seller shall, at the sole cost and expense of the Defaulting Party, remove the equipment constituting the System and restore the Site to its original condition. The Non-Defaulting Party shall take all commercially reasonable efforts to mitigate its damages as the result of a Default Event.

#### XIV. Representations and Warranties.

a. General Representations and Warranties. Each Party represents and warrants to the other the following:

(1) Such Party is duly organized, validly existing and in good standing under the laws of the jurisdiction of its formation; the execution, delivery and performance by such Party of this Agreement have been duly authorized by all necessary corporate, partnership or limited liability company action, as applicable, and do not and shall not violate any law; and this Agreement is valid obligation of such Party, enforceable against such Party in accordance with its terms (except as may be limited by applicable bankruptcy, insolvency, reorganization, moratorium and other similar laws now or hereafter in effect relating to creditors' rights generally).

- (2) Such Party has obtained all licenses, authorizations, consents and approvals required by any Governmental Authority or other third party and necessary for such Party to own its assets, carry on its business and to execute and deliver this Agreement; and such Party is in compliance with all laws that relate to this Agreement in all material respects.

**b. Purchaser's Representations and Warranties.** Purchaser represents and warrants to Seller the following:

- (1) License. Purchaser has title to or a leasehold or other property interest in the Premises. Purchaser has the full right, power and authority to grant the License contained in Section 8(a). Such grant of the License does not violate any law, ordinance, rule or other governmental restriction applicable to Purchaser or the Facility and is not inconsistent with and will not result in a breach or default under any agreement by which Purchaser is bound or that affects the Facility. If Purchaser does not own the Premises or Facility, Purchaser has obtained all required consents from the owner of the Premises and/or Facility to grant the License and enter into and perform its obligations under this Agreement.
- (2) Other Agreements. Neither the execution and delivery of this Agreement by Purchaser nor the performance by Purchaser of any of its obligations under this Agreement conflicts with or will result in a breach or default under any agreement or obligation to which Purchaser is a party or by which Purchaser or the Facility is bound.
- (3) Accuracy of Information. All information provided by Purchaser to Seller, as it pertains to the Facility's physical configuration, Purchaser's planned use of the Facility, and Purchaser's estimated electricity requirements, is accurate in all material respects.
- (4) Purchaser Status. Purchaser is not a public utility or a public utility holding company and is not subject to regulation as a public utility or a public utility holding company.
- (5) No Pool Use. No electricity generated by the System will be used to heat a swimming pool.

**c. Seller's Warranties.**

- (1) If Seller penetrates the Facility roof, Seller will warrant roof damage it causes as a direct result of these roof penetrations. This roof warranty will run the longer of (A) one (1) year following the completion of the System installation; and (B) the length of any existing installer warranty on the Facility's roof.
- (2) Under normal use and service conditions, the System will be free from defects in workmanship or defects in, or a breakdown of, materials or components during the Term.
- (3) During the Term, Seller will repair or replace any defective part, material or component or correct any defective workmanship, at no cost or expense to Purchaser (including all labor costs), when Purchaser submits a valid claim to Seller under this Agreement. If Seller damages the Facility or property, Seller will repair the damage Seller causes at no additional cost to Purchaser or pay Purchaser for the damage Seller causes. Seller may use new or reconditioned parts when making repairs or replacements. Seller may also, at no additional cost to Purchaser, upgrade or add to any part of the System.
- (4) Seller's total liability arising out of or relating to this Section 13(c) shall in no event:
  - A. *For System Failure or Replacement:* exceed the total of the Purchaser's payments under this Agreement during the previous twelve (12) month period; and
  - B. *For damages to the Facility or property:* exceed three million dollars (\$3,000,000).

**d. NO OTHER WARRANTY.** OTHER THAN AS EXPRESSLY SET FORTH IN SECTIONS 13(A) AND 13(C), NO WARRANTY, WHETHER STATUTORY, WRITTEN, ORAL, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTIES ARISING FROM COURSE OF DEALING OR USAGE OF TRADE SHALL APPLY UNDER THIS AGREEMENT. THE REMEDIES SET FORTH IN THIS AGREEMENT SHALL BE

PURCHASER'S SOLE AND EXCLUSIVE REMEDIES FOR ANY CLAIM OR LIABILITY ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT, WHETHER ARISING IN CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE. NOTHING IN THE FOREGOING SHALL LIMIT A PARTY'S RIGHTS OR OBLIGATIONS UNDER THE SEPARATE PERFORMANCE GUARANTEE PROVIDED BY SOLARCITY TO PURCHASER WITH RESPECT TO THE SYSTEM.

**XV. System Damage and Insurance.**

- a. **System Damage.** If the System is damaged or destroyed other than by Purchaser's negligence, willful misconduct or breach of this Agreement, Seller shall promptly repair and restore the System to its pre-existing condition; provided, however, that if more than fifty percent (50%) of the System is destroyed during the last two (2) years of the Initial Term or during any Additional Term, Seller shall not be required to restore the System, but may instead terminate this Agreement without liability, unless Purchaser agrees to pay for the cost of restoration of the System.
- b. **Insurance Coverage.** In addition to the insurance coverages required under Exhibit 5 (Additional Insurance Requirements), at all times during the Term, Seller and Purchaser shall maintain the following insurance:
  - i. **Seller's Insurance.** Seller shall maintain (i) property insurance on the System for the replacement cost thereof, (ii) commercial general liability insurance with coverage of at least \$1,000,000 per occurrence and \$2,000,000 annual aggregate, (iii) employer's liability insurance with coverage of at least \$1,000,000 and (iv) workers' compensation insurance as required by law.
  - ii. **Purchaser's Insurance.** Purchaser shall maintain commercial general liability insurance with coverage of at least \$1,000,000 per occurrence and \$2,000,000 annual aggregate.
- c. **Policy Provisions.** In addition to and consistent with the requirements set forth in Exhibit 5, all insurance policies provided hereunder shall (i) contain a provision whereby the insurer agrees to give the party not providing the insurance thirty (30) days (ten (10) days in the event of non-payment of premiums) written notice before the insurance is cancelled, or terminated, (ii) be written on an occurrence basis, (iii) be maintained with companies either rated no less than A-VII as to Policy Holder's Rating in the current edition of A.M. Best's Insurance Guide or otherwise reasonably acceptable to the other party.
- d. **Certificates.** Upon the other Party's request each Party shall deliver to the other Party certificates of insurance evidencing the above required coverage. A Party's receipt, review or acceptance of such certificate shall in no way limit or relieve the other Party of the duties and responsibilities to maintain insurance as set forth in this Agreement.
- e. **Deductibles.** Unless and to the extent that a claim is covered by an indemnity set forth in this Agreement, each Party shall be responsible for the payment of its own deductibles.

**XVI. Ownership; Option to Purchase.**

- a. **Ownership of System.** Throughout the Term, Seller shall be the legal and beneficial owner of the System at all times, and the System shall remain the personal property of Seller and shall not attach to or be deemed a part of, or fixture to, the Facility or the Premises. Each of the Seller and Purchaser agree that the Seller is the tax owner of the System and all tax filings and reports will be filed in a manner consistent with this Agreement. The System shall at all times retain the legal status of personal property as defined under Article 9 of the Uniform Commercial Code. Purchaser covenants that it will use commercially reasonable efforts to place all parties having an interest in or a mortgage, pledge, lien, charge, security interest, encumbrance or other claim of any nature on the Facility or the Premises on notice of the ownership of the System and the legal status or classification of the System as personal property. If there is any mortgage or fixture filing against the Premises which could reasonably be construed as prospectively attaching to the System as a fixture of the Premises, Purchaser shall provide a disclaimer or release from such lienholder. If Purchaser is the fee owner of the Premises, Purchaser consents to the filing of a disclaimer of the System as a fixture of the Premises in the office where real estate records are customarily filed in the jurisdiction where the Facility is located. If Purchaser is not the fee owner, Purchaser will obtain such consent from such owner. For the avoidance of doubt, in either circumstance Seller shall file such disclaimer. Upon request, Purchaser agrees to deliver to Seller a non-disturbance agreement in a form reasonably acceptable to Seller from the owner of the Facility (if the Facility is leased by Purchaser), any mortgagee with a lien on the Premises, and other Persons holding a similar interest in the Premises. To the extent that Purchaser does not own the Premises or Facility, Purchaser shall provide to Seller immediate written notice of receipt of notice of eviction from the Premises or Facility or termination of Purchaser's lease of the Premises and/or Facility.

- b. **Option to Purchase.** At the end of the sixth (6th) and tenth (10th) Contract Years and at the end of the Initial Term and each Additional Term, so long as Purchaser is not in default under this Agreement, Purchaser may purchase the System from Seller on any such date for a purchase price equal to the Fair Market Value of the System. The “**Fair Market Value**” of the System shall be determined by mutual agreement of Purchaser and Seller; provided, however, if Purchaser and Seller cannot agree to a Fair Market Value within thirty (30) days after Purchaser has exercised its option, the Parties shall select a nationally recognized independent appraiser with experience and expertise in the solar photovoltaic industry to determine the Fair Market Value of the System. Such appraiser shall act reasonably and in good faith to determine the Fair Market Value of the System on an installed basis and shall set forth such determination in a written opinion delivered to the Parties; provided that in no event shall the amount paid to purchase the system be less than the aggregate of the amounts calculated under Section XIII(b)(3)(A)(ii) and (iv) as of the date of System title transfer. The valuation made by the appraiser shall be binding upon the Parties in the absence of fraud or manifest error. The costs of the appraisal shall be borne by the Parties equally. Purchaser must provide a notification to Seller of its intent to purchase at least ninety (90) days and not more than one hundred eighty (180) days prior to the end of the applicable Contract Year or the Initial Term or Additional Term, as applicable, and the purchase shall be complete prior to the end of the applicable Contract Year or the Initial Term or Additional Term, as applicable. Seller shall transfer good title to the System to Purchaser upon Seller’s receipt of the Purchase Option Price but otherwise disclaims all warranties of any kind, express or implied, concerning the System, “as is, where is, with all faults”; provided that Seller shall assign to Purchaser any manufacturers warranties that are in effect as of the purchase, and which are assignable pursuant to their terms. Upon purchase of the System, Purchaser will assume complete responsibility for the operation and maintenance of the System and liability for the performance of the System, and Seller shall have no further liabilities or obligations hereunder.

## XVII.

### **Indemnification and Limitations of Liability.**

#### a. **Indemnification**

- i. **Indemnification of Purchaser by Seller.** Seller shall defend, indemnify and hold harmless Purchaser, the Inspector of Record, the State of California and their officers, employees, agents and independent contractors (the “**Purchaser Indemnified Parties**”) from all liabilities, claims, actions, liens, judgments, demands, damages, or losses of any kind (“**Liability**”) arising from third party claims for death, personal injury, property damage, including all damages or injury to, loss or loss of use of, any property, sustained by any person, firm or corporation, or other cause based or asserted upon any negligent act or omission by Seller or any person, firm or corporation employed by Seller, either directly or pursuant to a subcontract, or breach of this Agreement by Seller under this Agreement. As part of this indemnity, Seller shall protect and defend, at its own expense, the Purchaser Indemnified Parties from any legal action including attorneys’ fees or other proceeding based upon such negligent act or omission or breach of this Agreement.

Furthermore, Seller agrees to and does hereby defend, indemnify and hold harmless Purchaser, Inspector of Record, the State of California and their officers, employees, agents and independent contractors from every third party Liability arising out of a third party claim or demand, which may be incurred by reason of any dispute between Seller and Seller’ subcontractors/ supplies/ sureties, including, but not limited to, any failure or alleged failure of the Seller (or any person hired or employed directly or indirectly by the Seller) to pay any subcontractor or materialman of any tier or any other person employed by Seller.

Notwithstanding the foregoing or anything to the contrary in this Agreement, and consistent with Section 22.g. (Comparative Negligence), in no case will Seller be responsible for indemnifying any Purchaser Indemnified Party against any Liability to the extent such Liability arises from or is caused by the negligence or willful misconduct of a Purchaser Indemnified Party.

- ii. **Indemnification of Seller by Purchaser.** Purchaser shall, indemnify, defend and hold harmless Seller, its agents, representatives, officers, consultants and employees (the “**Seller Indemnified Parties**”) from all Liabilities arising from third-party claims including, but not limited to, attorneys’ fees and costs, directly or indirectly arising from personal or bodily injuries, death or property damage, or other any other cause based or asserted upon the negligence or willful misconduct of Purchaser or breach of this Agreement by Purchaser. Notwithstanding the foregoing or anything to the contrary in this Agreement, and consistent with Section 22.g. (Comparative Negligence), in no case will Purchaser be responsible for indemnifying any Seller Indemnified Party against any Liability to the extent such Liability arises from or is caused by the negligence or willful misconduct of a Seller Indemnified Party.

iii. Section XVII(a)(i) and (ii) however, shall not apply to liability arising from any form of hazardous substances or other environmental contamination, such matters being addressed exclusively by Section 17(c), or disputes between the Provider and its contractors and other agents, such matters being addressed exclusively in Section 17(d)).

b. **Notice and Participation in Third Party Claims.** The Indemnified Party shall give the Indemnifying Party written notice with respect to any Liability asserted by a third party (a “**Claim**”), as soon as possible upon the receipt of information of any possible Claim or of the commencement of such Claim. The Indemnifying Party may assume the defense of any Claim, at its sole cost and expense, with counsel designated by the Indemnifying Party and reasonably satisfactory to the Indemnified Party. The Indemnified Party may, however, select separate counsel if both Parties are defendants in the Claim and such defense or other form of participation is not reasonably available to the Indemnifying Party. The Indemnifying Party shall pay the reasonable attorneys’ fees incurred by such separate counsel until such time as the need for separate counsel expires. The Indemnified Party may also, at the sole cost and expense of the Indemnifying Party, assume the defense of any Claim if the Indemnifying Party fails to assume the defense of the Claim within a reasonable time. Neither Party shall settle any Claim covered by this Section XVII(b) unless it has obtained the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed. The Indemnifying Party shall have no liability under this Section XVII(b) for any Claim for which such notice is not provided if the failure to give notice prejudices the Indemnifying Party.

c. **Environmental Indemnification.** Seller shall indemnify, defend and hold harmless all of Purchaser’s Indemnified Parties from and against all Liabilities arising out of or relating to the existence at, on, above, below or near the Premises of any Hazardous Substance (as defined in Section XVII(c)(i)) to the extent deposited, spilled or otherwise caused by Seller or any of its contractors, agents or employees. Purchaser shall indemnify, defend and hold harmless all of Seller’s Indemnified Parties from and against all Liabilities arising out of or relating to the existence at, on, above, below or near the Premises of any Hazardous Substance, except to the extent deposited, spilled or otherwise caused by Seller or any of its contractors, agents or employees. Each Party shall promptly notify the other Party if it becomes aware of any Hazardous Substance on or about the Premises generally or any deposit, spill or release of any Hazardous Substance.

i. **“Hazardous Substance”** means any chemical, waste or other substance (a) which now or hereafter becomes defined as or included in the definition of “hazardous substances,” “hazardous wastes,” “hazardous materials,” “extremely hazardous wastes,” “restricted hazardous wastes,” “toxic substances,” “toxic pollutants,” “pollution,” “pollutants,” “regulated substances,” or words of similar import under any laws pertaining to the environment, health, safety or welfare, (b) which is declared to be hazardous, toxic, or polluting by any Governmental Authority, (c) exposure to which is now or hereafter prohibited, limited or regulated by any Governmental Authority, (d) the storage, use, handling, disposal or release of which is restricted or regulated by any Governmental Authority, or (e) for which remediation or cleanup is required by any Governmental Authority.

d. **Limitations on Liability.**

i. **No Consequential Damages.** Except with respect to indemnification of third party claims pursuant to Section XVII, neither Party nor its directors, officers, shareholders, partners, members, agents and employees subcontractors or suppliers shall be liable for any indirect, special, incidental, exemplary, or consequential loss or damage of any nature arising out of their performance or non-performance hereunder even if advised of such.

ii. **Actual Damages.** Except with respect to indemnification of third party claims pursuant to Section XVII and except as otherwise limited in Section XIV(c), (a) Seller’s aggregate liability under this Agreement arising out of or in connection with the performance or non-performance of this Agreement shall not exceed the total amounts paid and payable by Purchaser under this Agreement; and (b) Purchaser’s aggregate liability under this Agreement arising out of or in connection with the performance of this Agreement shall not exceed the Termination Payment calculated pursuant to Section 13.b.(3) in the event of a termination thereunder during the year following the Commercial Operation Date. The provisions of this Section (XVII)(d)(ii) shall apply whether such liability arises in contract, tort (including negligence), strict liability or otherwise.

**XVIII.****Force Majeure.**

- a. “**Force Majeure**” means any event or circumstances beyond the reasonable control of and without the fault or negligence of the Party claiming Force Majeure. It shall include, without limitation, failure or interruption of the production, delivery or acceptance of electricity due to: an act of god; war (declared or undeclared); sabotage; riot; insurrection; civil unrest or disturbance; military or guerilla action; terrorism; economic sanction or embargo; civil strike, work stoppage, slow-down, or lock-out; explosion; fire; earthquake; abnormal weather condition or actions of the elements; hurricane; flood; lightning; wind; drought; the binding order of any Governmental Authority (provided that such order has been resisted in good faith by all reasonable legal means); the failure to act on the part of any Governmental Authority (provided that such action has been timely requested and diligently pursued); any Change in Law that makes it unlawful, impossible or materially impracticable for Seller to perform under this Agreement; unavailability of electricity from the utility grid, equipment, supplies or products (but not to the extent that any such availability of any of the foregoing results from the failure of the Party claiming Force Majeure to have exercised reasonable diligence); and failure of equipment not utilized by or under the control of the Party claiming Force Majeure.
- b. Except as otherwise expressly provided to the contrary in this Agreement, if either Party is rendered wholly or partly unable to timely perform its obligations under this Agreement because of a Force Majeure event, that Party shall be excused from the performance affected by the Force Majeure event (but only to the extent so affected) and the time for performing such excused obligations shall be extended as reasonably necessary; provided, that: (i) the Party affected by such Force Majeure event, as soon as reasonably practicable after obtaining knowledge of the occurrence of the claimed Force Majeure event, gives the other Party prompt oral notice, followed by a written notice reasonably describing the event; (ii) the suspension of or extension of time for performance is of no greater scope and of no longer duration than is required by the Force Majeure event; and (iii) the Party affected by such Force Majeure event uses all reasonable efforts to mitigate or remedy its inability to perform as soon as reasonably possible. The Term shall be extended day for day for each day performance is suspended due to a Force Majeure event.
- c. Notwithstanding anything herein to the contrary, the obligation to make any payment due under this Agreement shall not be excused by a Force Majeure event that impacts Purchaser’s ability to make payment.
- d. If a Force Majeure event continues for a period of one hundred (180) days (thirty days in the instance of a Change in Law that is a Force Majeure event) or more within a twelve (12) month period and prevents a material part of the performance by a Party hereunder, then the Parties shall, within thirty (30) days following receipt by the other Party of notice of such Force Majeure event, meet and attempt in good faith to negotiate amendments to this Agreement (except for amounts accrued but unpaid). If the Parties are unable to agree upon such amendments within such thirty (30) day period, then the Party not claiming Force Majeure (except to the extent that the Force Event is a Change in Law, under which circumstances, Seller) shall have the right to terminate this Agreement without either Party having further liability under this Agreement except with respect to payment of amounts accrued prior to termination and actions or omissions that occur prior to termination.

**XIX.****Assignment and Financing.****a. Assignment.**

- i. This Agreement may not be assigned in whole or in part by either Party without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed. If Purchaser has been provided with reasonable proof that the proposed assignee has comparable experience in operating and maintaining solar photovoltaic systems and the financial capability to do the same, Purchaser’s withholding of consent shall be deemed unreasonable.
- ii. Notwithstanding Section XIX(a)(i), Seller may, without the prior written consent of Purchaser, assign, mortgage, pledge or otherwise directly or indirectly assign its interests in this Agreement to any Financing Party, any entity through which Seller is obtaining financing from a Financing Party, any affiliate of Seller or any person succeeding to all or substantially all of the assets of Seller (provided that Seller shall be released from liability hereunder as a result of any of the foregoing permitted assignments only upon assumption of Seller’s obligations hereunder by the assignee).
- iii. This Agreement shall be binding on and inure to the benefit of the successors and permitted assignees.

- b. **Financing.** The Parties acknowledge that Seller may obtain construction and long-term financing or other credit support from lenders or third parties (including tax equity or similar investors) (“**Financing Parties**”) in connection with the installation, construction, ownership, operation and maintenance of the System. Both Parties agree in good faith to consider and to negotiate changes or additions to this Agreement that may be reasonably requested by the Financing Parties; provided, that such changes do not alter the fundamental economic terms of this Agreement. The Parties also agree that Seller may assign this Agreement to the Financing Parties as collateral, and in connection with any such assignment, Purchaser agrees to execute a consent to assignment in customary form and reasonably acceptable to the Financing Parties. Seller shall reimburse Purchaser for any reasonable and documented legal fees and costs incurred by Purchase for the purpose of reviewing a consent to assignment.

**XX. Confidentiality.**

- a. **Confidentiality.** If either Party provides confidential information, including business plans, strategies, financial information, proprietary, patented, licensed, copyrighted or trademarked information, and/or technical information regarding the design, operation and maintenance of the System or of Purchaser’s business (“**Confidential Information**”) to the other or, if in the course of performing under this Agreement or negotiating this Agreement a Party learns Confidential Information regarding the facilities or plans of the other, the receiving Party shall (a) protect the Confidential Information from disclosure to third parties with the same degree of care accorded its own confidential and proprietary information, and (b) refrain from using such Confidential Information, except in the negotiation and performance of this Agreement. Notwithstanding the above, a Party may provide such Confidential Information to its affiliates and to its and its affiliates’ respective officers, directors, members, managers, employees, agents, contractors, consultants, lenders and Financing Parties (collectively, “**Representatives**”), and potential assignees of this Agreement (provided and on condition that such potential assignees be bound by a written agreement or legal obligation restricting use and disclosure of Confidential Information), in each case whose access is reasonably necessary to the negotiation and performance of this Agreement. The disclosing Party shall clearly designate any information to be protected under this Section 20 as “Confidential Information”. In any event, each Party shall be liable (with respect to the other Party) for any breach of this provision by any entity to whom that Party improperly discloses Confidential Information. The terms of this Agreement (but not its execution or existence) shall be considered Confidential Information for purposes of this Section XX(a), except as set forth in Section XX(b). All Confidential Information shall remain the property of the disclosing Party and shall be returned to the disclosing Party or destroyed after the receiving Party’s need for it has expired or upon the request of the disclosing Party. Each Party agrees that the disclosing Party would be irreparably injured by a breach of this Section XX(a) by the receiving Party or its Representatives or other person to whom the receiving Party discloses Confidential Information of the disclosing Party and that the disclosing Party may be entitled to equitable relief, including injunctive relief and specific performance, in the event of a breach of the provision of this Section XX(a). To the fullest extent permitted by applicable law, such remedies shall not be deemed to be the exclusive remedies for a breach of this Section XX(a), but shall be in addition to all other remedies available at law or in equity.
- b. **Permitted Disclosures.** Notwithstanding any other provision in this Agreement, neither Party shall be required to hold confidential any information that (i) becomes publicly available other than through the receiving Party’s or its Representatives’ breach of this Agreement, (ii) is required to be disclosed to a Governmental Authority under applicable law or pursuant to a validly issued subpoena (but a receiving Party subject to any such requirement shall promptly notify the disclosing Party of such requirement to the extent permitted by applicable law), (iii) is independently developed by the receiving Party or (iv) becomes available to the receiving Party without restriction from a third party under no obligation of confidentiality. If disclosure of information is required by a Governmental Authority, the disclosing Party shall, to the extent permitted by applicable law, notify the other Party of such required disclosure promptly upon becoming aware of such required disclosure and shall cooperate with the other Party in efforts to limit the disclosure to the maximum extent permitted by law.
- c. **Applicability of Public Records Act.** Seller acknowledges that Purchaser is a government entity, subject to the requirements of the California Public Records Act and similar laws applying to the disclosure of public records. Nothing in this Section 22 shall be construed as limiting Purchaser’s obligations under any such law, and in no case shall Purchaser be liable for any proper disclosure required pursuant to such laws.

**XXI. Goodwill and Publicity.**

Neither Party shall use any name, trade name, service mark or trademark of the other Party in any promotional or advertising material without the prior written consent of such other Party. The Parties shall coordinate and cooperate with each other when making public announcements related to the execution and existence of this Agreement, and each Party shall have the right to promptly review, comment upon and approve any publicity materials, press releases or other public statements by the

other Party that refer to, or that describe any aspect of, this Agreement. Neither Party shall make any press release or public announcement of the specific terms of this Agreement (except for filings or other statements or releases as may be required by applicable law) without the specific prior written consent of the other Party. Without limiting the generality of the foregoing, all public statements must accurately reflect the rights and obligations of the Parties under this Agreement, including the ownership of Environmental Attributes and Environmental Incentives and any related reporting rights.

To avoid any conflicts with fair trade rules regarding claims of solar or renewable energy use, each Party shall submit to the other Party for approval any press releases regarding Purchaser's purchase or use of solar or renewable energy in connection with this Agreement and shall not submit for publication any such releases without the written approval of the other party. Approval shall not be unreasonably withheld, and a Party's review and approval shall be made in a timely manner to permit timely publication.

## **XXII. General Provisions**

- a. **Choice of Law.** The law of the state where the System is located shall govern this Agreement without giving effect to conflict of laws principles.
- b. **Arbitration and Attorneys' Fees.** Any dispute arising from or relating to this Agreement shall be arbitrated in San Francisco, California. The arbitration shall be administered by JAMS in accordance with its Comprehensive Arbitration Rules and Procedures, and judgment on any award may be entered in any court of competent jurisdiction. The Parties agree to mediate before proceeding with arbitration. Notice of the demand for mediation of a dispute shall be filed in writing with the other party within a reasonable time after written notice of the dispute has been provided to the other party, but in no case longer than ninety (90) days after initial written notice. If a claim, or any portion thereof, remains in dispute following mediation, the claiming Party shall comply with all claims presentation requirements as provided in Chapter 1 (commencing with section 900) and Chapter 2 (commencing with section 910) of Part 3 of Division 3.6 of Title 1 of Government Code as a condition precedent to such Party's right to bring an arbitration claim against the other Party. For purposes of those provisions, the running of the time within which a claim must be presented shall be tolled from the time the submitting Party submits its written claim until the time the claim is denied, including any time utilized by any applicable meet and confer process.
- c. **Notices.** All notices under this Agreement shall be in writing and shall be by personal delivery, electronic mail, overnight courier, or regular, certified, or registered mail, return receipt requested, and deemed received upon personal delivery, acknowledgment of receipt of electronic transmission, the promised delivery date after deposit with overnight courier, or five (5) days after deposit in the mail. Notices shall be sent to the person identified in this Agreement at the addresses set forth in this Agreement or such other address as either party may specify in writing. Each party shall deem a document emailed or electronically sent in PDF form to it as an original document.
- d. **Survival.** Provisions of this Agreement that should reasonably be considered to survive termination of this Agreement shall survive. For the avoidance of doubt, surviving provisions shall include, without limitation, Section VIII(a) (Facility Access Rights), Section XI (Removal of System at Expiration), Section XIV (Representations and Warranties), Section XV(b) (Insurance Coverage), Section XVII (Indemnification and Limitations of Liability), Section XX (Confidentiality and Publicity), Section XXII(a) (Choice of Law), Section XXII (b) (Arbitration and Attorneys' Fees), Section XXII(c) (Notices), Section XXII (g) (Comparative Negligence), Section XXII(h) (Non-Dedication of Facilities), Section XXII(j) (Service Contract), Section XXII(k) (No Partnership), Section XXII(l) (Full Agreement, Modification, Invalidity, Counterparts, Captions) and Section XXII(n) (No Third Party Beneficiaries).
- e. **Further Assurances.** Each of the Parties hereto agree to provide such information, execute and deliver any instruments and documents and to take such other actions as may be necessary or reasonably requested by the other Party which are not inconsistent with the provisions of this Agreement and which do not involve the assumptions of obligations other than those provided for in this Agreement, to give full effect to this Agreement and to carry out the intent of this Agreement.
- f. **Right of Waiver.** Each Party, in its sole discretion, shall have the right to waive, defer or reduce any of the requirements to which the other Party is subject under this Agreement at any time; provided, however that neither Party shall be deemed to have waived, deferred or reduced any such requirements unless such action is in writing and signed by the waiving Party. No waiver will be implied by any usage of trade, course of dealing or course of performance. A Party's exercise of any rights hereunder shall apply only to such requirements and on such occasions as such Party may specify and shall in no event relieve the other Party of any requirements or other obligations not so specified. No failure of either Party to enforce any term of this Agreement will be deemed to be a

waiver. No exercise of any right or remedy under this Agreement by Purchaser or Seller shall constitute a waiver of any other right or remedy contained or provided by law. Any delay or failure of a Party to exercise, or any partial exercise of, its rights and remedies under this Agreement shall not operate to limit or otherwise affect such rights or remedies. Any waiver of performance under this Agreement shall be limited to the specific performance waived and shall not, unless otherwise expressly stated in writing, constitute a continuous waiver or a waiver of future performance.

- g. Comparative Negligence.** It is the intent of the Parties that where negligence is determined to have been joint, contributory or concurrent, each Party shall bear the proportionate cost of any Liability.
- h. Non-Dedication of Facilities.** Nothing herein shall be construed as the dedication by either Party of its facilities or equipment to the public or any part thereof. Neither Party shall knowingly take any action that would subject the other Party, or other Party's facilities or equipment, to the jurisdiction of any Governmental Authority as a public utility or similar entity. Neither Party shall assert in any proceeding before a court or regulatory body that the other Party is a public utility by virtue of such other Party's performance under this agreement. If Seller is reasonably likely to become subject to regulation as a public utility, then the Parties shall use all reasonable efforts to restructure their relationship under this Agreement in a manner that preserves their relative economic interests while ensuring that Seller does not become subject to any such regulation. If the Parties are unable to agree upon such restructuring, Seller shall have the right to terminate this Agreement without further liability, and Seller shall remove the System in accordance with Section XI of this Agreement.
- i. Estoppel.** Either Party hereto, without charge, at any time and from time to time, within five (5) business days after receipt of a written request by the other party hereto, shall deliver a written instrument, duly executed, certifying to such requesting party, or any other person specified by such requesting Party: (i) that this Agreement is unmodified and in full force and effect, or if there has been any modification, that the same is in full force and effect as so modified, and identifying any such modification; (ii) whether or not to the knowledge of any such party there are then existing any offsets or defenses in favor of such party against enforcement of any of the terms, covenants and conditions of this Agreement and, if so, specifying the same and also whether or not to the knowledge of such party the other party has observed and performed all of the terms, covenants and conditions on its part to be observed and performed, and if not, specifying the same; and (iii) such other information as may be reasonably requested by the requesting Party. Any written instrument given hereunder may be relied upon by the recipient of such instrument, except to the extent the recipient has actual knowledge of facts contained in the certificate.
- j. Service Contract.** The Parties intend this Agreement to be a "service contract" within the meaning of Section 7701(e)(3) of the Internal Revenue Code of 1986. Purchaser will not take the position on any tax return or in any other filings suggesting that it is anything other than a purchase of electricity from the System.
- k. No Partnership.** No provision of this Agreement shall be construed or represented as creating a partnership, trust, joint venture, fiduciary or any similar relationship between the Parties. No Party is authorized to act on behalf of the other Party, and neither shall be considered the agent of the other.
- l. Full Agreement, Modification, Invalidity, Counterparts, Captions.** This Agreement, together with any Exhibits, completely and exclusively states the agreement of the parties regarding its subject matter and supersedes all prior proposals, agreements, or other communications between the parties, oral or written, regarding its subject matter. This Agreement may be modified only by a writing signed by both Parties. If any provision of this Agreement is found unenforceable or invalid, such unenforceability or invalidity shall not render this Agreement unenforceable or invalid as a whole. In such event, such provision shall be changed and interpreted so as to best accomplish the objectives of such unenforceable or invalid provision within the limits of applicable law. This Agreement may be executed in any number of separate counterparts and each counterpart shall be considered an original and together shall comprise the same Agreement. The captions or headings in this Agreement are strictly for convenience and shall not be considered in interpreting this Agreement.
- m. Forward Contract.** The transaction contemplated under this Agreement constitutes a "forward contract" within the meaning of the United States Bankruptcy Code, and the Parties further acknowledge and agree that each Party is a "forward contract merchant" within the meaning of the United States Bankruptcy Code.
- n. No Third Party Beneficiaries.** Except as otherwise expressly provided herein, this Agreement and all rights hereunder are intended for the sole benefit of the Parties hereto and shall not imply or create any rights on the part of, or obligations to, any other Person.

- o. Bonds.** Seller shall not commence construction on the System until it has provided to the Purchaser, in a form reasonably acceptable to the Purchaser, a payment (labor and material) bond and a performance bond, each in an amount equivalent to one hundred percent (100%) of the estimated construction cost (with such reasonable documentation supporting such estimate as Purchaser may request), issued by a surety admitted to issue bonds in the State of California and otherwise acceptable to the Purchaser. Notwithstanding any language to the contrary in this Agreement and solely to the extent a performance and/or payment bond is being issued to Purchaser:
- i. Performance bond liability. Any performance bond issued for a site or system will cease one (1) year from the completion of construction. If a warranty or guarantee is provided under the terms of this Agreement, the balance of any warranty or guarantee beyond the one (1) year term of the applicable performance bond shall continue to be guaranteed solely by Seller under the terms of this Agreement. The performance bond does not guarantee any property restorative requirements.
  - ii. Payment bond liability. Any payment bond issued will cease at the termination of any time required by law.
  - iii. Performance Guarantee. Neither payment bonds, whether for labor or materials, nor performance bonds are applicable to any specified performance guarantee.

*End of Exhibit 3*

Exhibit 4  
Purchaser's Site Requirements

Seller shall comply with the provisions set forth in this Exhibit 4.

1. Seller and all Subcontractors shall comply with the provisions of California Labor Code including, but not limited to sections 1777.5, 1777.6, and 1777.7 concerning the employment of apprentices. Seller and any Subcontractor under him shall comply with the requirements of said sections, including applicable portions of all subsequent amendments in the employment of apprentices; however, Seller shall have full responsibility for compliance with said Labor Code sections, for all apprenticeable occupations, regardless of any other contractual or employment relationships alleged to exist.
2. The District has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this work is to be performed for each craft, classification or type of worker needed to execute the Contract. These per diem rates, including holiday and overtime work, as well as employer payments for health and welfare, pension, vacation, and similar purposes, are on file at the District, and are also available from the Director of the Department of Industrial Relations. Pursuant to California Labor Code section 1720 *et seq.*, it shall be mandatory upon Seller to whom the PPA is awarded, and upon any subcontractor under Seller, to pay not less than the said specified rates to all workers employed by them in the execution of the PPA. The following are hereby referenced and shall be made a part of the PPA and Seller stipulates to the provisions contained therein:
  - a. Chapter 1 of Part 7 of Division 2 of the Labor Code (Section 1720 *et seq.*)
  - b. California Code of Regulations, Title 8, Chapter 8, Subchapters 3 through 6 (Section 16000 *et seq.*)
3. Any worker employed to perform work on the Project and such work is not covered by any classification listed in the published general prevailing wage rate determinations or per diem wages determined by the Director of the Department of Industrial Relations, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to the employment of such person in such classification.
4. Holiday and overtime work, when permitted by law, shall be paid for at the rate set forth in the prevailing wage rate determinations issued by the Director of the Department of Industrial Relations or at least one and one-half (1½) times the specified basic rate of per diem wages, plus employer payments, unless otherwise specified in the PPA or authorized by law.
5. These per diem rates, including holiday and overtime work, and employer payments for health and welfare, pension, vacation, and similar purposes, are on file at the administrative office of the District, located as noted above and are also available from the Director of the Department of Industrial Relations. It is Seller's responsibility to ensure the appropriate prevailing rates of per diem wages are paid for each classification. It shall be mandatory upon Seller to whom the PPA is awarded, and upon any subcontractor under Seller, to pay not less than the said specified rates to all workers employed by them in the execution of the PPA.
6. In accordance with the provisions of Labor Code section 3700, Seller shall secure payment of compensation to all employees. Seller shall certify in the PPA as follows: "I am aware of the provisions of Section 3700 of the Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract."
7. To perform the work required by this notice, the contractor performing the work under the PPA must maintain the contractor license specified in the PPA and the RFP throughout the duration of the construction component of the PPA.
8. It is the policy of the District that in connection with all work performed under contracts, there be no discrimination against any prospective or active employee engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age, or marital status. Seller agrees to comply with applicable federal and California laws, including, but not limited to, the California Fair Employment and Housing Act, beginning with Government Code section 12900 and Labor Code section 1735. In addition, Seller agrees to require like compliance by any subcontractors employed on the work by Seller.
9. Seller agrees that it will abide by and implement the District's Alcoholic Beverage and Tobacco-Free Campus Policy, which prohibits the use of alcoholic beverages and tobacco products, of any kind and at any time, on District-owned or leased buildings, on District property and in District vehicles. Seller shall procure signs stating "ALCOHOLIC BEVERAGE AND TOBACCO USE IS PROHIBITED" and shall ensure that these signs are prominently displayed in all entrances to school property at all times.

10. Seller shall provide a Drug-Free Workplace Certification pursuant to the requirements mandated by Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990. The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract or grant for the procurement of any property or service from any State agency must certify that it will provide a drug-free workplace by performing certain specified acts.

11. Seller shall defend, indemnify and hold harmless District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors as set forth in Exhibit 3, Section 17.

12. Seller shall provide certification signed under penalty of perjury that it has performed one of the following:

Pursuant to Education Code section 45125.1, Seller has conducted criminal background checks, through the California Department of Justice, of all employees and employees of subcontractors providing services to the District, pursuant to the PPA, and that none have been convicted of serious or violent felonies, as specified in Penal Code sections 1192.7(c) and 667.5(c), respectively.

As further required by Education Code section 45125.1, attached hereto as Attachment "A" is a list of the names of the employees and employees of subcontractors of the undersigned who may come in contact with pupils.

OR

Pursuant to Education Code section 45125.2, Seller will ensure the safety of pupils by one or more of the following methods:

- a. The installation of a physical barrier at the worksite to limit contact with pupils.
- b. Continual supervision and monitoring of all employees and employees of subcontractors of the entity by an employee of the entity whom the Department of Justice has ascertained has not been convicted of a violent or serious felony.

13. Pursuant to Labor Code section 1771.1, the contractor and all subcontractors must be registered with the Department of Industrial Relations according to Labor Code section 1725.5 before the PPA is awarded.

14. This project is subject to labor compliance monitoring and enforcement by the Department of Industrial Relations.

15. Contractors will be required to enter certified payroll reports directly into the DIR electronic eCPR system.

Exhibit 5

Additional Insurance Requirements

1. Seller shall obtain insurance from a company or companies written by companies authorized to do business in the State of California at the time the policy is issued. All required insurance shall be equal to or exceed an A- VIII rating as listed in Best's Insurance Guide's latest edition. Required documentation of such insurance shall be furnished to Purchaser within the time stated in the Notice of Award. Seller shall not commence work nor shall it allow its employees or Subcontractors or anyone to commence work until all insurance required hereunder has been submitted and approved by Purchaser and a notice to proceed has been issued.
2. Seller shall take out and maintain at all times during the life of this Contract, up to the date of acceptance of the work by Purchaser, the following policies of insurance:
  - a) General Liability Insurance: Personal injury and property damage insurance for all activities of the Seller and its Subcontractors arising out of or in connection with this Contract, written on a commercial general liability form including Seller's protected coverage, blanket contractual, completed operations, in an amount no less than either:
    - (i) \$2,000,000.00 combined single limit personal injury and property damage for each occurrence and \$2,000,000.00 annual aggregate with a \$2,000,000.00 umbrella/excess; or
    - (ii) \$4,000,000.00 annual combined single limit.
  - b) Builders Risk Insurance: Seller shall procure and maintain builders' risk insurance (all-risk coverage) on a one hundred percent completed value basis on the insurable portion of the project.
  - c) Automobile Liability Insurance: Covering bodily injury and property damage in an amount no less than \$2,000,000 combined single limit for each occurrence. Such insurance shall include coverage for owned, hired, and non-owned vehicles and be included on the umbrella/excess policy.

3. The certificate(s) for both the General Liability Policy(ies) and the Automobile Liability Policy specified above must state that the insurance is under an occurrence based, and not claims made, policy(ies) and shall be endorsed to include as additional insureds with respect to liability for bodily injuries, deaths or property damage or destruction arising in any respect directly or indirectly in the performance of the Contract, with the understanding that blanket additional insured endorsements shall be acceptable:

“The Novato Unified School District is named as additional insured for all liability arising out of the operations by or on behalf of the named insured, and this policy protects the additional insured, its officers, agents and employees.”

4. The certificate(s) for the both the General Liability Policy and the Automobile Liability Policy shall be endorsed with the following specific language or equivalents:
  - a) The inclusion of more than one insured shall not operate to impair the rights of one insured against another insured and the coverages afforded shall apply as though separate policies have been issued to each insured.
  - b) The insurance provided herein is primary and no insurance held or owned by Purchaser shall be called upon to contribute to a loss.
  - c) Coverage provided by this policy shall not be canceled without thirty (30) days written notice given to the Owner by certified mail, with the exception for ten (10) days' notice for nonpayment of premium.
  - d) This policy does not exclude explosion, collapse, underground excavation hazard, or removal of lateral support.
  - e) The certificates must state that the insurance is under an occurrence based, and not a claims-made, or "modified occurrence," policy (policies).

5. Prior to Purchaser's issuance of the Notice to Proceed, the Seller shall submit certificates of insurance showing the limits of insurance provided, and signed copies of the specified endorsements for each policy. At the time of making application for an

extension of time, the Seller shall submit evidence that the insurance policies will be in effect during the requested additional period of time.

6. If the Seller fails to maintain such insurance, Purchaser may take out such insurance to cover any damages of the above mentioned classes for which Purchaser might be held liable on account of the Seller's failure to pay such damages, but not without ten (10) days' prior written notice to Contractor of District's intent to do so, and deduct and retain the amount of the premiums from any sums due the Seller under the Contract.
7. Workers' Compensation Insurance:
  - a) Prior to Purchaser's issuance of a Notice to Proceed, Seller shall furnish to Purchaser satisfactory proof that the Seller has procured, for the period covered by the Contract, full Workers' Compensation insurance and employer's liability with limits of at least \$1,000,000 with an insurance carrier satisfactory to Purchaser for all persons whom the Seller may employ in carrying out the work contemplated under this Contract in accordance with the Workers' Compensation Insurance and Safety Act, approved May 26, 1913, and all acts amendatory or supplemental thereto (the "Act"). Such insurance shall be maintained in full force and effect during the period covered by the Contract. In the event the Seller is self-insured, Seller shall furnish a Certificate of Permission to Self-Insure, signed by the Department of Industrial Relations Administration of Self-Insurance, Sacramento, California.
  - b) If the Seller fails to maintain such insurance, Purchaser may take out worker's compensation insurance to cover any compensation which Purchaser might be liable to pay under the provisions of the Act, by reason of any employee of the Seller being injured or killed, but not without ten (10) days' prior written notice to Contractor of District's intent to do so, and deduct and retain the amount of the premiums for such insurance from any sums due the Seller under the Contract, or otherwise recover that amount from the Seller or the Surety.
  - c) If an injury occurs to any employee of the Seller for which the employee, or the employee's dependents in the event of the employee's death, is entitled to compensation under the provisions of the Act, or for which compensation is claimed from Purchaser, Purchaser may retain from the sums due the Seller under this Contract an amount sufficient to cover such compensation, as fixed by the Act, until such compensation is paid, or until it is determined that no compensation is due, and if Purchaser is compelled to pay such compensation, it will deduct and retain from such sums the amount so paid, or otherwise recover this sum from the Seller or its Surety.
  - d) The policies represented by the certificates cannot be canceled until thirty (30) days after written notice of intended cancellation has been given to Purchaser by certified mail, with the exception for ten (10) days' notice for nonpayment of premium.

Exhibit 6  
Attachment A (Scope, Criteria and Submittals) and Attachment F (Specifications)  
(collectively, the “Construction Provisions”)

Notwithstanding anything to the contrary in this Agreement, to the extent that this Exhibit 6 (including all Attachments hereto) is inconsistent with or increases the obligations of Seller set forth in Exhibits 1 through 5 of this Agreement, Exhibits 1 through 5 shall govern. In addition, the requirements of this Exhibit 6 shall be subject to and construed in accordance with the terms and conditions of Exhibit 3 of the Agreement. Finally, this Exhibit 6 shall apply only to Seller’s construction, installation, and commissioning activities, and in no case shall the requirements set forth herein be construed as providing for any additional warranties or remedies beyond those provided in Exhibit 3.

## Attachment A1: Scope of Work

The project scope includes the following, except as otherwise limited in Exhibit 1 to the Agreement:

### I. Financing

1. For a Power Purchase Agreement (PPA), complete procurement, construction and operational phase financing per the approved and executed PPA Contract terms.

### II. Design-Build Phase

1. Design of the PV systems to meet the targeted electrical production at each site or to the maximum system size limit allowed by the footprint available, subject to other site conditions. Sizing shall include accurate and detailed modeling of system production and bill offset for each specific site based on shading, available tariffs and other site constraints using industry standard modeling tools.
2. Conceptual design of System reasonably sufficient for presentation and discussion with the Purchaser.
3. Detailed design and complete construction drawings of the PV systems and all ancillary work sufficient for permitting and construction. Drawings must fully describe all aspects of the construction work including directional boring/trenching, racking and mounting systems, electrical systems, foundations, lighting, ADA, etc. Firm will provide Electrical, Structural and other engineers of record to provide a complete, stamped bid package as required to construct a complete photovoltaic Project. The electrical construction drawings shall show and include all conduit below and above finished grade/finish. All plans and specifications must meet the approval of DSA, the Purchaser, Local Fire Authority and/or any other agency having jurisdiction over Project.
4. All permitting and permitting fees required to complete the project, including DSA, with the exception of CEQA. The Purchaser is the lead agency for CEQA permitting. Seller must adhere to and implement all CEQA mitigation identified by the Purchaser.
5. Complete electrical engineering services including diagrams and stamped drawings
6. Complete structural engineering services including diagrams and stamped drawings
7. Installation of all equipment necessary for a complete, interconnected and operational solar PV system, including, but not limited to:
  - Solar PV modules
  - Inverters
  - All electrical switch gear interconnection to accept solar system
  - All electrical connectors, cabling & components necessary for a complete solar system
  - All mounting systems, including ground or solar PV canopy structures
  - All monitoring equipment necessary to remotely access and download real-time and historical PV energy production, with capability to provide reporting sufficient for WREGIS REC registration, and to remotely access and download real-time and historical site energy consumption data.
  - Any balance of system items for a complete, interconnected and operational solar PV system
  - All lighting, security or other ancillary equipment
8. Utility interconnection applications, including tariff change requests, processing costs and coordination with the local utility necessary to achieve interconnection and permission to operate.
9. Identification of all Americans with Disabilities Act (ADA) compliance issues that are directly associated with the PV project. Seller is responsible for parking lot restriping, covered parking space ratios, signage, and other compliance issues that are located under the footprint of the PV array canopy and directly arising from the PV installation. The Purchaser shall be responsible for all other ADA compliance improvements outside of canopy areas (i.e. path of travel access issues that fall outside of the canopy footprint).
10. Coordination with and support of inspectors, the Purchaser and their consultants during design, construction and commissioning.
11. Any significant changes to Purchaser property (i.e. re-striping of parking areas, removal of trees, light standard removal, new lighting, parking islands, etc.) that are required solely and directly as a result of the installation of the PV project, with the exception of ADA path of travel outlined in Item 9, above, are the sole responsibility of the Seller.

12. Project Commissioning, including all associated tasks and documentation related to successfully commissioning the system. Shall include reasonable assistance to third party commissioning agents/inspectors with their process and providing documentation as requested.
13. Final PV system “as-built” Construction Documents clearly conformed with all changes during construction.
14. Provision of a comprehensive Operations & Maintenance Manuals for each installed system, per requirements listed in Attachment A3 – Submittals and Project Acceptance.
15. Conduct a training for Purchaser staff including all safety and emergency shutdown procedures.
16. Secure storage facility at job Site for all PV system equipment and supplies, including any required security of the Seller’s property and equipment during construction and installation.
17. Legal toilet facilities at job sites for Seller’s personnel.
18. Daily cleanup to “broom clean” conditions.
19. Return disturbed areas to pre-construction conditions including repair of all pavement/concrete, restriping, landscape restoration, irrigation restoration, and removal of USA markings.
20. Installation of Purchaser approved project information signage and removal at completion of project.
21. Project closeout, consisting of obtaining DSA closed and certified status for all project associated DSA applications.

### **III. Operational Phase**

1. Comprehensive operations and maintenance for the entire term of the PPA.
2. All necessary maintenance to maintain manufacturers’ warranties and performance guarantee.
3. Monthly billing to the Purchaser with kWh of production, per kWh cost for the period and total cost.
4. An Annual Report that details the following:
  - Annual production in kWh
  - Total energy produced to date in kWh
  - Significant issues encountered and mitigation measures taken
  - Maintenance performed during that year for each individual PV system
  - Actual Performance compared with estimated performance, performance guarantee, and any true-up period accounting
5. Daily system monitoring and response to alarms as-needed to keep the system operational, operating safely, and performing optimally.
6. Annual on-site system inspection, including system testing and routine preventive maintenance, repair and/or replacement of defective parts (equipment and labor) as-needed to meet the Purchaser’s 25-year production target.
7. Routine preventative and unexpected maintenance to keep the systems in good working order, including panel washing as-needed to meet the performance guarantee.
8. Maintenance of all ancillary equipment installed as part of the project in working order and good aesthetic condition, including maintaining fencing, canopy structures, canopy lighting, overhead or underground cabling, etc. as applicable.
9. Maintenance of all meters required by this project, including maintaining the WREGIS compliant meters in working condition.
10. All costs associated with fees for monitoring, including web-based access to monitoring data and maintaining monitoring equipment.

**End of Attachment A1**

## Attachment A2: Criteria and Codes

### I. General Criteria

1. Seller shall comply with the Schedule set forth in Exhibit 1 of the Agreement, subject to Section 6.c. of Exhibit 3 of the Agreement.
2. The Seller shall coordinate closely with the Purchaser to ensure all construction activities minimize impact on operations and events at the sites.
3. Access during regular weekday working hours, which are 7 am to 4:30 pm.
4. All active work areas must be fenced off from start of work at that area until substantial completion or until area is safe for entry, whichever is longer. Temporary fencing and access control layouts shall be submitted to the Purchaser and approved for each site prior to commencing construction, such approval not to be unreasonably conditioned, delayed or withheld.
5. The selected Seller is responsible for locating and protecting all underground utilities.
6. The Seller shall be responsible for identifying the appropriate conductor route in coordination with the Purchaser.
7. The selected Seller is responsible for maintaining fire lane access and clearances at all easements required for the system construction.
8. The Seller shall coordinate with and provide reasonable access and support to all inspectors, Purchaser staff or consultants during testing and inspections of all systems.
9. The Seller shall be responsible for DSA closeout and certification of all project-related DSA applications.
10. The Seller shall be responsible for specifying and conducting tree removal and/or trimming during construction. All tree stumps shall be removed to a minimum of 18 inches below grade. Disturbed area shall be repaired to match surrounding area. Trees to be removed shall be identified on the Seller's design drawings.
11. Sellers are responsible for identification and removal of light poles that are in conflict with PV system design. Light pole foundation shall be chipped to a sufficient depth so as to allow for existing conduit to be contained in a concrete box that is flush with the surface and for resurfacing of areas surrounding any boxes to match existing. Existing conduit that is not reused shall be capped and placed in a concrete box. Existing lighting controls may be reused, if available. Light poles to be removed shall be identified on the Seller's proposal layouts and design drawings. Disturbed area shall be repaired to match surrounding area. Light poles shall be provided in good condition to the Purchaser or disposed of at the Purchaser's option.
12. Sellers are responsible for ensuring ADA compliance arising solely and directly as a result of the System installation for covered parking spaces.
13. Storm Water Pollution Prevention (SWPPP).

Sellers shall ensure implementation and monitoring of a Storm Water Pollution Prevention Plan (SWPPP) for the purpose of preventing the discharge of pollutants from the construction site as required by the local AHJ. The following are general guidance regarding the SWPPP. The local AHJ requirements shall take precedence where in conflict.

The Seller shall secure all necessary permits and certifications and comply with all applicable local, state, and federal regulations governing storm water pollution prevention. Use materials of a class, grade and type needed to meet the performance described in the BMP Handbook.

- a. SWPPP Implementation - The Seller shall implement the Storm Water Pollution Prevention Plan by doing the following to the extent required by AHJ in connection with the construction of the System:
  1. Install perimeter controls prior to starting other construction Work at the site.
  2. Contain on-site storm water at the jobsite. Do not drain on-site water directly into the storm drain.
  3. Provide SWPPP and BMP implementation training for those responsible for implementing the SWPPP.
  4. Designate trained personnel for the proper implementation of the SWPPP.
  5. Revise the SWPPP to suit changing site conditions and instances when properly installed systems are ineffective.
- b. At the end of Construction Contract:
  1. Leave in place storm water pollution prevention controls needed for post-construction storm water management and remove those that are not needed. The Seller shall maintain left-in-place controls until no longer required, then remove.

2. Provide Site Monitoring Reports, SWPPP revisions, Compliance Certifications and related documents to the Purchaser. Post-construction storm water operation and management plan as mentioned in the compliance certifications are considered to be in place at the end of the Construction Contract.
  - c. SWPPP Monitoring - During the construction of the System, the Seller shall conduct examination of storm water pollution prevention controls monthly, as well as before and after each storm event and once each 24-hour period during extended storm events to identify BMP effectiveness and implement repairs or BMP changes as soon as feasible. All maintenance related to a storm event should be completed within 48 hours of the storm event. The Contactor shall also prepare and maintain, at the jobsite, a log of each inspection using Site Monitoring Report forms.
  - d. SWPPP Liabilities and Penalties
    1. Review of the SWPPP and inspection logs by the Purchaser shall not relieve the Seller from liabilities arising from non-compliance with storm water pollution regulations.
    2. Payment of penalties for non-compliance by the Seller shall be the sole responsibility of the Seller and will not be reimbursed by the Purchaser.
    3. Compliance with the Clean Water Act pertaining to construction activity is the sole responsibility of the Seller. For any fine(s) levied against the Purchaser due to non-compliance by the Seller, the Purchaser may issue a Deductive Change Order or make withholding for the total amount of the fine(s) levied on the Purchaser, plus legal and associated costs.
  - e. The Seller shall submit to the Purchaser a completed NOI for change of information (Construction Site Information and Material Handling/Management Practices).
14. Seller is to meet applicable codes and specifications with regard to dust during construction and seek to minimize dust migration from the construction site.
  15. Noise, Drugs, Tobacco, and Alcohol - See Exhibit 4 of the Agreement.
  16. Seller is responsible for re-vegetating all vegetated areas disturbed by construction. Vegetation disturbed by construction should be planted to match existing vegetation, to the extent reasonably possible. Any irrigation disturbed by Seller or its subcontractors during construction is to be repaired to original condition by the Seller. The Seller shall coordinate all landscaping plans with the Purchaser. The Seller is encouraged to initiate a pre-construction survey with the Purchaser to review the condition of irrigation systems prior to start of construction. Any such survey must be done with a Purchaser representative. In no case will Seller be responsible for landscaping or irrigation beyond returning those areas of the Premises disturbed by its activities to their pre-construction condition.
  17. Seller is responsible for on-site installation supervision throughout the duration of the project.
  18. Seller is responsible for patching and repairing all building penetrations performed by the Seller during installation. Conduit installed on the exterior of Purchaser structures shall be painted to match.
  19. Seller is responsible for all trash generated by the activities of Seller or its subcontractors. Purchaser owned dumpsters and trash bins may not be used for storage or disposal.
  20. Seller shall clean all of its work areas on a daily basis and equipment after project completion. Seller shall ensure that its work areas are clear of construction debris, spoils and that all of its demolition and repair has been completed prior to releasing work areas to public access.
  21. Seller is responsible for all required permits for the System.
  22. Seller must coordinate and provide start up/interconnection agreements with local utility.
  23. All staff are to wear identifying clothing at all times when on-site.
  24. All staff or subcontractors are to wear Purchaser-provided badges during construction
  25. During the operational phase, all staff or subcontractors must check in at the office of the respective school upon arrival at the site. The District shall ensure that check in is available during all work hours.
  26. The Seller shall work with the Purchaser as-needed to provide visualizations of proposed systems and assessment of potential glare or reflectivity issues.
  27. Warranties - The Seller shall be required to provide the following minimum warranties for the benefit of the System Owner: Consistent with the California Solar Initiative Handbook and the California Public Utility Code 387.5(d)(4), the Seller shall

provide a warranty of not less than 10 years to protect against defects and more than a 15% degradation of electrical generation output that may occur as a result of faulty installation. Standard warranty coverage should be at least twenty-five (25) years for any PV modules, at least ten (10) years for all inverters, or consistent with current CSI Guidelines for PV System warranty requirements, whichever is greater. Meters must have a 1 year warranty to ensure against defective workmanship, system or component breakdown, or degradation in electrical output of more than 15% from their originally rated electrical output during the warranty period. For meters that are integrated into the inverter, the meter warranty period must be 10 years.

## **II. GENERAL CODES, GUIDELINES AND STANDARDS**

The Seller shall comply with the most current version of all applicable codes, laws, rules, regulations and standards of applicable authorities having jurisdiction, including but not limited to:

1. California Department of Forestry and Fire Protection, Office of the State Fire Marshal (CAL FIRE) Solar Photovoltaic Installation Guidelines.
2. California Electrical Code (most recent).
3. National Electric Code (most recent).
4. Local and State Fire Code.
5. International Building Code.
6. California Title 20 and 24.
7. Occupational Safety and Health Administration (CAL-OSHA).
8. All applicable State and Local Codes and Ordinances.
9. American National Standards Institute (ANSI).
10. American Society for Testing and Materials (ASTM).
11. Factory Mutual (FM).
12. Federal Communications Commission (FCC).
13. Institute of Electrical and Electronics Engineers (IEEE).
14. National Electrical Manufacturers Association (NEMA).
15. National Fire Protection Association (NFPA).
16. Underwriter's Laboratories (UL).
17. Purchaser Specifications and Requirements.
18. DSA IR-16-8 (most recent) Guidelines.
19. DSA PL 07-02 (most recent) Guidelines.

## **III. Equipment and installation standards**

All system design, equipment and installation must conform to the following codes, standards and rating methodologies.

1. All design, equipment and workmanship must comply with the requirements of the local electrical utility. The Seller must ensure all proposed equipment is acceptable to the local electrical utility and meets the interconnection and code requirements.
2. If any equipment using hazardous materials (i.e. Cadmium or other hazardous materials) are included in the Project, then the environmental impact of the hazardous material usage must be discussed, including any special maintenance requirements and proper disposal/recycling of the equipment at the end of its useful life. Equipment containing hazardous materials must comply with the EPA Landfill Disposal Requirements. Any additional costs related to equipment containing hazardous materials must be clearly identified.
3. CPUC approved Electric Rule 21 – Generating Facility Interconnections.
4. UL1741 (Inverters, Converters and Controllers for Independent Power Systems).
5. UL1703 (Standard for Flat Plate Photovoltaic Modules and Panels).
6. IEEE 929 (2000) – Recommended Practice for Utility Interface of Photovoltaic (PV) Systems.
7. IEEE 1262 (1995) – Recommended Practice for Qualifications of Photovoltaic (PV) Modules.
8. NEC Article 690.
9. All applicable Utility Guidelines and Standards for PV Systems, electrical utility systems and metering requirements.
10. All applicable California Solar Initiative Guidelines (CSI)
11. Conform to the Utility's Distribution Interconnection Handbook

12. Wind uplift requirements per the American Society of Civil Engineers Standard for Minimum Design Loads for Buildings and Other Structures (ASCE 7), and must be able to withstand applicable design wind speeds for that location (at least 85 mph or 105 mph, as applicable (3-second gusts)).
13. All other applicable codes.

#### IV. California Public Works Compliance

The Seller shall be required to comply with all applicable requirements for California public works projects including, but not limited to:

1. Department of Industrial Relations Notice and Registration. This project subject to compliance monitoring and enforcement by the Department of Industrial Relations (DIR):
  - a. Pursuant to Labor Code section 1771.1, Seller and all of its subcontractors on a public works project must be registered with the Department of Industrial Relations according to Labor Code section 1725.5.
  - b. Contractors will be required to enter certified payroll reports directly into the DIR electronic eCPR system.
  - c. Seller is required to ensure that all subcontractors maintain DIR registration through DSA project closeout.
2. Prevailing Wages. See Exhibit 4 of the Agreement.
3. Ineligible Contractors. Pursuant to Public Contract Code § 6109, Purchaser shall not award this Contract to Seller, if Seller is ineligible to perform work on the public works project pursuant to Section 1777.1 or 1777.7 of the Labor Code. Further, Seller is prohibited from performing work on this Project with a subcontractor who is ineligible to perform work on the public works projects pursuant to Section 1777.1 or 1777.7 of the Labor Code.
4. Contractor License. Seller shall be a licensed contractor pursuant to the Business and Professions Code with the following appropriate classification(s) of contractor's license(s), for the Project, and must maintain the license(s) throughout the duration of the Project: Class B. All subcontractors performing work on the Project shall be a licensed contractor pursuant to the Business and Professions Code with the appropriate classification(s) of contractor's license(s) for their scope of work, and must maintain the license(s) throughout the duration of the Project.
5. Non-Collusion Declaration. Seller has executed the "Non-Collusion Declaration."
6. Bonding. The Seller will be required to furnish the Purchaser with a Payment and Performance Bond equal to 100% of the construction cost, prior to commencement of project work. All bonds are to be secured from a surety that meets all of the State of California bonding requirements, as defined in Code of Civil Procedure Section 995.120. The cost of obtaining such bonds are included in the Contract Price.
7. Fingerprinting Requirements. Seller, and all of its employees, and all of its subcontractors shall comply with the applicable requirements of California Education Code Section 445125.2 with respect to fingerprinting of employees who may have contact with the Purchaser's students. In no event shall any employees of the Seller and all of its employees and subcontractors come into contact with the Purchaser's students before complying with the fingerprinting requirements of California Education Code section 45125.2.

Seller shall ensure the safety of the pupils by one or more of the following methods:

- a. The installation of a physical barrier at the worksite to limit contact with pupils.
  - b. Submission to the California Department of Justice of fingerprints of all employees of the Seller and subcontractor who will have more than limited contact with the students.
  - c. Continual supervision and monitoring of all employees of the Seller and subcontractor by an employee of the Seller whom the Department of Justice has ascertained has not been convicted of a violent or serious felony. For purposes of this paragraph, an employee of the Seller may submit his or her fingerprints to the Department of Justice pursuant to subdivision (a) of Education Code Section 45125.1 and the Department shall comply with subdivision (d) of Section 45125.1. Prior to allowing worker contact with students, the Seller shall receive a determination from the Department of Justice that the employee has not been convicted of a violent or serious felony as defined in Education Code section 45122.1.
8. All other requirements applicable to California Public Works projects for school districts.

**End of Attachment A2**

**Attachment A3: Submittals & Project Acceptance**

**I. DESIGN PHASE**

A. In each case throughout this Exhibit 6 where the Purchaser has a right of review and approval, Purchaser shall complete such review and provide a written approval or reasonably detailed explanation of suggested changes within five (5) days of its receipt of the document(s) or materials to be reviewed. If Purchaser fails to provide such written approval or explanation of suggested changes within such five (5) day period, Purchaser shall be deemed to have approved the applicable documents and/or materials. If Purchaser requires additional time to complete its review, Purchaser shall promptly notify Seller of such requirement, and the Schedule shall be deemed extended on a day-for-day basis for each day of additional review. In no case shall Purchaser’s approval be unreasonably conditioned, delayed or withheld. The Purchaser shall review and approve design documentation based on the requirements in this RFP. The design drawings and associated documents shall represent 100% of the intended and agreed upon scope for the PV project. The Seller shall conduct design review meetings for each stage of the process, which shall include, at a minimum, the following design stages:

<u>Design Stage</u>	<u>Time from Award</u>
30% Design	4 to 7 weeks
50% Submittal	8 to 10 weeks
90% Final Design	11 to 13 weeks

**B. DESIGN SUBMITTAL PACKAGES**

The Seller shall submit an electronic submittal package for each Design Stage including, but not limited to:

Submittal Requirement	30% Design	50% Submittal	90% Final
1. Cover Sheet, with Content, Project Details, Directory, etc.	X	X	X
2. PV System Sizes & Production Estimates (see Item F, below)	X		X
3. Overall Site Plan with PV Array Names, Interconnection IDs, Conduit Routes, Tree/Light Removal, etc.	X		X
4. Interconnection Equipment Assessment (see Item G, below)	X		X
5. Interconnection Plan			X
6. Electrical Site Plan Drawings, incl. Balance of System	X		X
7. Electrical Single Line Diagrams	X		X
8. DC String Wiring Plans			X
9. Demolition Plans			X
10. Structural Drawings			X
11. Equipment Pad and Mounting Details			X
12. Signage, Trenching, Installation, and Grounding Details			X
13. Monitoring System Details			X
14. Lighting Plan, Details and Photometric Plans			X
15. All specifications related to the Scope of Work (see Item H, below)		X	X
16. Geotechnical Reports and Associated Drawings		X	
17. Equipment Manufacturer’s Cut Sheets and Details		X	
18. Copy of Interconnection Application		X	
19. Complete list of all Sub Contractors, incl. specialty		X	

C. The Seller shall submit the design stage package no less than three (3) days prior to the design review meeting. The Seller shall address all Purchaser comments in writing no more than five (5) days from the date of the design review meeting, and shall incorporate reasonable additional detail as agreed between Seller and the Purchaser at each successive stage of the design review.

- D. The Purchaser will formally approve, in writing, each phase of the design upon the Purchaser determination that the design is progressing at or beyond the percentage completion expected at stage. The Seller shall not enter a subsequent design phase without the approval of the Purchaser. The Seller is solely responsible for obtaining approvals from the Purchaser and all other Authorities Having Jurisdiction (AHJs). In no case shall the District unreasonably condition, delay, or withhold any approval required.
- E. The Seller shall submit a System Size Spreadsheet showing all system sizes by site, year one production (kWh), and associated yields (kWh/kWp) per item 2 in the above table. The spreadsheet shall be submitted at each phase of design as noted above and prior to construction. All final system designs shall be within 5% of contracted target production and must receive written approval from customer before submittal to DSA/AHJ. Along with the System Size Spreadsheet, the Seller shall submit updated PV modeling and shade analysis prior to construction and post construction phase.
- F. The Seller shall conduct an interconnection equipment assessment for each interconnection site. Seller shall use commercially reasonable efforts to identify any issues with existing Purchaser or Utility equipment that may prevent the system from interconnection to the Utility at the time of the 30% Design submittal. The Purchaser is responsible for coordination and costs associated with infrastructure upgrades, however, necessary upgrades must be identified by the Seller.
- G. The Seller shall submit a complete specification packet as part of the 50% Submittal. Specification Divisions that shall be included, if they are part of the Scope of Work for the Project, are:
- Cutting and Patching
  - Subsurface Investigation
  - Concrete Forming, Reinforcing, and Finishing
  - Structural Steel Framing
  - Metal Fabrications
  - Roof Patch and Repair
  - Painting and Coating
  - Signage
  - Testing and Commissioning
  - Exterior Lighting and Controls
  - Earthwork
  - Vegetation Clearing and Control
  - Pavement Specialties and Striping
  - Chain Link Fencing and Gates
- H. The Seller shall submit complete electronic copies of all Final Approved Permit Set drawings prior to Construction.

## II. CONSTRUCTION PHASE

- A. Prior to beginning construction, Seller shall provide a comprehensive onsite Construction Management Plan for the construction of the Project in accordance with all applicable laws and policies. Plan should include, at a minimum, project directory, information on Subcontractors, coordination with Purchaser staff during specific construction tasks, and communication protocols.
- B. Upon Purchaser acceptance and approval of the 90% Final Design, the Seller shall submit a Construction Schedule to the Purchaser for coordination, review and approval. The Construction schedule shall be updated and provided to the Purchaser on a weekly basis.
- C. The Seller shall provide Manufacturers' Installation Manuals for major project components, including, but not limited to: PV modules, inverters, optimizers, racking or mounting structure, monitoring systems, transformers, and lighting. When approved by the Purchaser, recommended installation standards shall become the basis for inspecting and accepting or rejecting actual installation procedures used on the work.
- D. The Seller is responsible for obtaining all required permits and approvals from DSA/AHJ and the Utility prior to starting Construction, in coordination with the Purchaser, and shall make copies available to the Purchaser of all permit applications and approvals.
- E. Prior to ordering equipment and materials, the Seller shall verify all measurements at each project site, and notify the Purchaser in writing on any discrepancies between the drawings and site measurements.

F. Any proposed changes to design shall be submitted in writing to the Purchaser for approval before any changes are made. Submittal for changes shall contain all necessary details of the proposed changes and an updated system size and production spreadsheet. In no case shall the Purchaser unreasonably, condition, or delay any approval.

G. CONSTRUCTION SUBMITTALS: The following documents and schedules shall be provided by the Seller as listed:

1. Construction Management Plan; submitted no later than 15 days prior to site mobilization.
2. Construction Schedule; updated and submitted weekly.
3. Manufacturers' Installation Manuals; submitted no later than 5 days after construction kickoff meeting.
4. Test Reports; submitted as available:
  - a. Factory Tests.
  - b. Field Tests.
5. Proposed change orders; submitted when available.
6. Commissioning Report; submitted 10 days after commissioning on a site-by-site basis.

### III. CLOSEOUT PHASE

1. The Seller shall submit to the Purchaser a standard Operations and Maintenance (O&M) Manual and provide as-built drawings of System in PDF. The Seller shall submit documentation of Punch List Completion for items under control of the Seller within 30 days of the Purchaser issuing the Final Punch List. The document must be signed and show proof of completion of each item.
2. The Seller shall submit executed Performance Guarantee (PeGu) Agreement amendment(s) within 30 days of PTO at all sites. All performance tables and commercial operation dates must be updated with the final as-built statistics.

## **Attachment F1: Section 26 00 00: General Electrical Specifications**

### **SECTION 26 00 00: GENERAL ELECTRICAL SPECIFICATION**

#### **PART 1 - GENERAL**

##### **1.02 GENERAL**

- A. This specification defines the general electrical work required for complete and fully functioning photovoltaic systems at each site. The design and installation shall conform to all requirements as defined by the applicable codes, laws, rules, and regulations.
- B. The Contractor shall include all items and all work reasonable inferred by these specifications. If the Contractor is in doubt as to the intent of any portion of these specifications, or necessary information is omitted, the Contractor shall notify the Owner in writing for clarifications or corrections to be provided by addendum.
- C. The District shall have the right to review all design documents, cut sheets, and technical specifications.

##### **1.03 WORK INCLUDED**

- A. The work shall include the design of the electrical system, materials, equipment, fabrication, installation and tests in conformity with applicable codes and professionally recognized standards.
- B. The electrical design shall be fully developed, including but not limited to the following:
  - 1. Description and supportive calculations for all power and grounding systems.
  - 2. Location and layout of all system equipment.
  - 3. Site plans, elevations, schedules, equipment arrangement and detailed drawings
  - 4. All items of a given type shall be the products of the same manufacturer.
  - 5. Single line diagrams including local utility system tie-ins.
  - 6. Evaluation of existing switchgear and Utility transformers for interconnection compatibility.
  - 7. All other drawings, calculations, details, and schedules required for the system design.
- C. All required construction documents and compliance documentation.
- D. Temporary power and lighting as required for construction.
- E. All reasonably required incidental work directly related to the construction of the System, such as excavating, directional boring, backfilling, roof flashing, fire stopping, waterproofing, pavement repair, striping, and testing.
- F. Any other electrical work as might reasonably be implied as required, even though not specifically mentioned herein or shown on the drawings
- G. Design and construction coordination with all other disciplines and trades.
- H. All other utilities, labor, materials, apparatus, tools, equipment, transportation, and special or occasional services as required.

##### **1.09 CONDITIONS AT SITE:**

- A. Contractor is responsible for familiarizing themselves with all discernible site conditions. No extra payment will be allowed for work required because of these conditions, whether specifically mentioned or not.
- B. Lines of other services that are damaged as a result of this work shall promptly be repaired at no expense to the Owner and to the complete satisfaction of the Owner.

##### **1.10 QUALITY ASSURANCE**

- A. General:
  - 1. Construction Documents shall be designed and signed by a validated, registered professional engineer in the State of California.
- B. Conformance:
  - 1. All equipment and accessories to be the product of a manufacturer regularly engaged in its manufacture.
  - 2. Supply all new equipment and accessories free from defects and listed by Underwriter's Laboratories, Inc., or bearing its label or label of a Nationally Recognized Testing Laboratory (NRTL).

3. All items of a given type shall be the products of the same manufacturer.
4. If after contract is awarded, minor changes and additions are required by aforementioned authorities, they shall be included at Contractor's expense.

C. Coordination:

1. Contractor shall become familiar with the conditions at each job site and plan the installation of the electrical work to conform with the existing conditions so as to provide the commercially reasonable assembly of the combined work of all trades within the Contractor's scope.

D. Coordination Drawings for electrical installation:

1. Prepare Coordination Drawings, to scale. Detail major elements, components and systems of electrical equipment and materials in relation to each other and to other systems, installations, and building components. Indicate locations and space requirements for installation, access and working clearances. Show where sequence and coordination of installations are important to the efficient flow of the Work. Indicate the following:
  - a. Provisions for scheduling, sequencing, moving and positioning large equipment in or on the site or buildings during construction.
  - b. Plans, elevations and details including the following:
    - 1) Clearances to meet safety requirements and for servicing and maintaining equipment, including space for equipment disassembly required for periodic maintenance.
    - 2) Equipment support details.
    - 3) Exterior wall, roof and foundation penetrations of cable and raceway; and their relation to other penetrations and installations.
    - 4) Fire-rated wall and roof penetrations by electrical installations.
    - 5) Sizes and locations of required concrete pads and bases.
    - 6) Grounding system details.

#### 1.12 DELIVERY, STORAGE AND HANDLING

- A. Protection: Protect the materials of this Section before and during installation and to protect the work and materials of all trades within Contractor's scope.
- B. Delivery and Storage: Deliver all materials to the job site. All deliveries are to be made to the Contractor's job trailer or approved storage location. Under no circumstances shall owner be responsible for accepting deliveries.
- D. Contractor shall personally, or through an authorized representative, check all materials upon receipt at jobsite for conformance with approved shop drawings and/or plans and specifications.

#### 1.13 SCHEDULING/SEQUENCING

- A. Contractor shall coordinate all schedules and sequencing of electrical work with Owner.
- B. Place orders for all equipment in time to prevent any delay in construction schedule or completion of project. If any materials or equipment are not ordered in time, additional charges made by equipment manufacturers to complete their equipment in time to meet the construction schedule, together with any special handling charges, shall be borne by the Contractor.

#### 1.14 WIND LOADING AND SEISMIC DESIGN

- A. Comply with all applicable codes and standards and provide wind load restraints for all equipment installed under this contract that requires restraint. The photovoltaic array wind loading restraint shall be designed as required by wind tunnel data. The photovoltaic array shall be designed to accommodate lateral displacement in the event of an earthquake based on a nonlinear response-history seismic analysis for the appropriate seismic zone.

#### 1.15 PERMITS AND INSPECTIONS

- A. Contractor shall obtain all required permits and arrange for all required inspections, including utility company requirements, inspections, and sign-offs.
- B. Do not allow or cause any of the work to be covered or enclosed until it has been tested and/or inspected.

### **PART 2 - PRODUCTS**

#### 2.01 MATERIALS

- A. Materials of the same type or classification, used for the same purpose, shall be the product of the same manufacturer.

#### 2.02 POSTED OPERATING INSTRUCTIONS

- A. Furnish approved operating instructions for systems and equipment where indicated in the technical sections for use by operation and maintenance personnel of the System owner. The operating instructions shall include wiring diagrams, control diagrams, and control sequence for each principal system and equipment. Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post instructions as directed. Attach or post operating instructions adjacent to each principal system and equipment including startup, proper adjustment, operating, lubrication, shutdown, safety precautions, procedure in the event of equipment failure, and other items of instruction as recommended by the manufacturer of each system or equipment. Provide weather-resistant materials or weatherproof enclosures for operating instruction exposed to the weather. Operating instruction shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

### 2.03 Intentionally Omitted

### 2.04 ACCEPTABLE MANUFACTURERS

- A. Materials shall be of make mentioned elsewhere in this specification. All materials shall be new and approved by the Underwriters' Laboratories or an NRTL.

### 2.05 BASIC ELECTRICAL EQUIPMENT AND MATERIALS

- A. Inverters and PV Modules – See Specification 16300.

B. AC Panelboards:

1. As manufactured by Cutler-Hammer, Square D, General Electric, Siemens, IEM, or similar, or to match existing equipment at each Site, wherever possible. Equipment shall be NEMA 3R outdoors, NEMA 1 surface mounted in unfinished interior locations and flush mounted in finished and occupied spaces. Provide housekeeping pads for all floor or slab mounted equipment.
2. Enclosures: code gauge galvanized sheet steel with welded full flange end pieces, stretcher- leveled steel trim, back pan and door or painted steel or powder coated steel, or fiberglass. All surface mounted panels to have enclosures painted in gray enamel. All flush mounted panels to have cover painted to match adjacent surface.
3. Phase and ground bussing of copper with silver-plated or tin-plated or nickel plated contact surfaces.
4. Trims on surface-mounted cabinets secured with nickel-plated screws with cup washers, bottom of all trims to have lugs for resting on cabinet flange.
5. Panels shall be 20 inches minimum in width where possible, provided with approved gutter space, barriers and adjustable supports. Doors mounted with concealed hinges provided with combination spring latch and lock. Doors and trims and surface mounted cabinets primed and finished with one coat baked on gray enamel.
6. Each panel shall be equipped with a copper ground bus.
7. All panels shall be fully bussed to accept future circuit breakers.

C. Distribution Low Voltage Dry-Type Transformers (120/208V and 277/480V):

1. Ventilated type, NEMA 3R where used outdoors.
2. Transformer shall be 3 phase, 60 Hertz. Primary winding shall be Delta connected and secondary winding shall be Wye connected. The temperature rise at rated voltage and full load shall not exceed 150 degrees C with a 220 degrees C U.L. Component Recognized Insulation System. The windings shall be Aluminum or Copper.
3. The higher voltage winding shall have quantity (6) 2.5% taps - (2) FCAN and (4) FCBN. Set secondary voltage for 120/208V.
4. Transformer terminals shall be front connected for ease of installation and maintenance.
5. Where the transformers are installed outdoors provide weatherproof drip cover, rodent screen and a NEMA 3R rating of the enclosure.
6. Transformers shall be suitable to carry the PV load characteristics and in the direction of power flow required for the PV system power production.

D. Circuit Breakers:

1. Circuit breakers shall be molded case rated 250 or 480 volt, multiple or single pole with amperage ratings as required for each circuit. All breakers to be bolt on, manually operated with "de-ion" arc chutes. Plug-in breakers are not acceptable.
2. Circuit breakers shall be rated to interrupt the available short circuit current at the point of application.

E. Raceways and Conduit Bodies: Only the raceways specified below shall be utilized on these projects. Substitutions shall be pre-approved in writing:

1. Rigid Type - hot dip galvanized or sherardized steel, to be used at all exterior locations, below grade, or in concrete slab, and to 18" on either side of structural expansion joints in floor slabs, with completely watertight, threaded fittings throughout.
  - a. All rigid steel conduit couplings and elbows in soil or concrete or under membrane to be ½ lap wrapped with Scotch #50 tape and threaded ends coated with T&B #S.C.40 rust inhibitor prior to installation of couplings.

- b. ½ lap wrap all rigid steel conduit stub-ups from slab or grade to 6" above finished grade level with Scotch #50 tape.
  - c. In lieu of rigid steel conduit for power and control raceways and branch circuit conduits in soil or concrete slabs, "Schedule 40" PVC with Schedule 80 PVC conduit elbows and stub-ups may be used with code size (minimum No. 12) ground wire. A "stub-up" is considered to terminate 6" above the finished surface.
    - 1) Schedule 80 PVC conduit shall be used in all concrete footings or foundations and to 18" of either side of footings or foundation walls.
    - 2) Schedule 80 PVC conduit shall be used in all concrete masonry unit (CMU) walls or columns.
2. Conduit installed using horizontal directional boring (HDB) shall include tracer tape or traceable conduit. Minimum depth of the conduit shall be per NEC 2011 Article 300.5. The Contractor is responsible for demonstrating that all conduits installed utilizing horizontal boring meets the minimum depth requirement and is solely responsible for any remediation costs and schedule impacts if the specification is not met. Contractor shall provide documentation of final depth and routes of all conduit installed in horizontal bores.
  3. Conduit buried underground shall be suitable for the application and compliant with all applicable codes. PVC shall be constructed of a virgin homopolymer PVC compound and be manufactured according to NEMA and UL specifications. All PVC conduit feeders shall contain an appropriate copper grounding conductor sized per NEC requirements and continuity shall be maintained throughout conduit runs and pull boxes. Minimum conduit size shall be ¾". A metallic tracing/caution tape shall be installed in the trench over all buried conduit. All underground conduits placed in trenches, buried under roadways, or swales shall be encased with red dyed concrete slurry cap.
  4. All conduit runs in concrete floor slabs (where allowed) shall be installed to comply with all applicable UBC and structural codes to maintain the structural integrity of the floor slab. Where conflicts occur, alternate routing shall be provided at no additional cost to the Owner.
  5. Electrical Metallic Tubing (EMT) shall be used exposed in electrical and mechanical rooms and in unfinished spaces and in concealed and furred spaces, made up with steel watertight or steel set screw type fittings and couplings. Set screws shall have hardened points. Cast fittings are unacceptable. EMT may be used in exterior installations where allowed by NEC, DSA, City code and any other applicable code. All exterior fittings shall be watertight. EMT may not be installed in areas subject to severe physical damage, including in any carport location with potential for vehicle strike.
  6. All exposed conduits on sides of buildings, or in other visible areas, shall be painted to match adjacent finishes, after complete installation.
  7. Fasten conduits securely to boxes with locknuts and bushings to provide good electrical continuity.
  8. To facilitate pulling of conductors, install junction boxes as required.
  9. If any empty conduits are provided as part of the projects, they shall be provided with a pull-wire.
  10. If conduits are to pass through structural expansion joints in floor slab, rigid galvanized conduit shall be used 18" on either side of joint, complete with Appleton expansion couplings and bonding jumpers, or equal. All above grade expansion joint crossings shall also utilize expansion joint couplings or flex conduit transitions as required for each particular installation. No solid conduits shall be allowed to cross expansion joints without proper provisions for building and seismic movement.
  11. Provide thermal expansion fittings or provisions, per NEC 300.7(b), for all raceways subject to high temperatures in direct exposure to sunlight. Provide expansion provisions where more than 0.25" of expansion is calculated.10.  
Minimum cover of conduits in ground outside of building - 36 inches, unless otherwise noted.
  12. Provide and install exterior wall conduit seals and cable seals in the locations listed below. Coordinate installation and scheduling with other trades:
    - a. Conduit seals through exterior wall or slab (below grade): O.Z. Gedney series "FSK" in new cast in concrete locations, series "CSM" in cored locations.
    - b. Conduit seals through exterior wall or slab (above grade): O.Z. Gedney series "CSMI."
    - c. Cable seals at first interior conduit termination after entry through exterior wall or slab: O.Z. Gedney series "CSBI." Coordinate quantity of conductors at each location.

F. Junction Boxes / Pull Boxes:

1. One piece steel knockout type drawn j-boxes, unless otherwise noted, sized as required for conditions at each location.
2. J-boxes for wet locations, cast aluminum FS or FD type with cast aluminum gasketed spring lid cover. Weatherproof "Bell" type boxes are not acceptable.
3. Pull boxes to be NEMA 1 (indoor) or NEMA 3R (outdoor), sized per code, with grey enamel finish, steel construction, and screw-on covers.
4. All connectors from conduit to junction or outlet boxes shall have insulated throats. Connectors shall be manufactured with insulated throats as integral part. Insertable insulated throats are unacceptable.
5. Conduit Bodies: Malleable iron type, with lubricated spring steel clips over edge of conduit body, O-Z/Gedney type EW, or equal.

G. Site Pull boxes: All site pull boxes shall be flush in-ground concrete, with engraved covers identifying service use (i.e. electrical, communications, etc.). Boxes shall be NEMA 250, Type 6, outside flanged, with recessed cover for flush

mounting, by Christy or equal, with required depth to provide box and conduit depths shown or required.

1. Provide concrete covers for all boxes in planted or paved areas (up to available concrete cover size).
2. Provide galvanized steel covers for all larger boxes (when concrete is not available), or in traffic areas. No cast iron covers.
3. Provide bolted covers and slab bottoms (with grouted perimeter) or vault type boxes for all electrical distribution and signal system pull boxes used for site distribution, to prevent rodent entry. No collar type boxes with dirt or gravel bottoms.
4. Provide drain hole at bottom of all vault type boxes, with loose aggregate base below, for proper drainage.
5. All covers to be completely flush with finished adjacent surfaces.
6. Provide galvanized steel H20 rated covers and installation of box rated for H20 in all traffic areas.

I. Wire and Cable:

1. 600 or 1,000-volt class (as required for system design), insulation color coded, minimum No. 12 AWG for DC string circuits or AC circuits.
2. All conductors shall be copper.
3. Insulation type:
  - a. Standard locations: Conductors shall be Type PV or THWN or THWN-2 or RHH, RHW-2, USE-2 for wet and dry locations. All AC wire sizes used shall be based on a 75 degree insulation rating, unless specifically used with 90 degree rated devices. For wires/cables with 90 deg C insulation, the 90 deg C ampacity ratings shall be used for cable sizing before conditions of use de-rates are applied per NEC. All DC wire sizes shall be based on 90 degree insulation rating, when used with 90 degree rated PV equipment and components.
  - b. All conductors shall be stranded.
  - c. Install all wiring (low voltage and line voltage) in conduit, except PV string wiring at modules, which may be run outside of raceway per Exhibit A, Section 2.
  - d. Do not pull conductors into conduit until raceways and boxes have been thoroughly cleaned and swabbed as necessary to remove water and debris.
  - e. Approximately balance all AC circuits about the neutral conductors in AC collector panels.
  - f. All wire and cable shall bear the Underwriters' Label or equivalent NRTL label, brought to the job in unbroken packages.
  - g. The equipment grounding conductor shall be insulated or bare copper; where it is insulated, the insulation shall be colored green.
  - h. Install all circuits in one continuous section unless splices are approved by Owner. Exercise care in pulling to avoid damage or disarrangement of conductors, using approved grips. No cable shall be bent to smaller radius than the spool on which it was delivered from the manufacturer. Color code feeder cables at terminals. Provide identifying linen tags in each pull box

J. Fire stopping: as manufactured by 3M Fire Protection Products or equal.

1. Fire-rated and smoke barrier construction: Maintain barrier and structural ceiling fire and smoke resistance ratings including resistance to cold smoke at all penetrations, connections with other surfaces or types of construction, at separations required to permit building movement and sound vibration absorption, and at other construction gaps.
2. Systems or devices listed in the UL Fire Resistance Directory under categories XHCR and XHEZ may be used, providing that it conforms to the construction type, penetration type, annular space requirements and fire rating involved in each separate instance, and that the system be symmetrical for wall penetrations. Systems or devices must be asbestos free.

## **PART 3 - EXECUTION**

### **3.01 INSPECTION**

- A. Examine the areas and conditions under which the work of this Section will be installed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

### **3.02 FIELD QUALITY CONTROL**

- A. Intentionally Omitted.
- B. This Contractor shall personally, or through an authorized and competent representative, constantly supervise the work and so far as possible keep the same foreman and workmen on the job throughout.

### **3.03 INSTALLATION/APPLICATION/ERECTION**

- A. All cutting, repairing and structural reinforcing for the installation of this work shall be done by the General Contractor.
- B. Excavate and trench or directional bore as necessary for the electrical installation, and when the work has been installed, inspected and approved, backfill all excavations with clean earth from excavation, or imported sandy soil in maximum 8"

(eight-inch) layers, moisten and machine tamp to 95% compaction, and restore the ground and/or paving or floor surfaces to their original condition.

- C. Floor Mounted Inverter Installation: Provide mounting channels for grouting into floor or slab. Channels shall be properly drilled to receive the equipment placed flush in floor, leveled and secured in place prior to pouring of floor, of length as required for switchboard. Bolt or weld switchboard to channels.
- D. Furnish and install all disconnect switches as required by code (AC and DC).

#### 3.04 EARTHQUAKE RESISTANT INSTALLATION & FASTENING:

- A. All electrical equipment and raceways shall be designed to withstand forces generated by earthquake motions. As a minimum, equipment and equipment frames shall be designed to withstand a force of 25% of the weight of the equipment and frame acting at its center of gravity. Anchorage of the equipment and/or frame to the structure shall be for a force of 50% gravity also acting at the center of gravity.
- B. For floor mounted inverters and switchboards / distribution panels, the above values shall be doubled. Design stresses in either case may be increased 1/3 over normal allowable stresses but never beyond yield.

#### 3.05 ADJUSTING AND CLEANING

- A. All electrical equipment, including existing equipment not "finish painted" under other sections, shall be touched up where finished surface is marred or damaged.
- B. All equipment shall be left in clean condition, with all shipping and otherwise unnecessary labels removed there from.

#### 3.06 IDENTIFICATION

- A. Inverters, combiner boxes, pull boxes, switchboards, panel boards, distribution circuit breakers, disconnect switches, and related electrical enclosures shall be properly identified by means of engraved laminated plastic descriptive nameplates mounted on apparatus using stainless steel screws or permanent epoxy adhesive where set screws are not feasible. Standard adhesives alone are not acceptable. Nameplates shall have white letters with black background. Cardholders in any form are not acceptable.
- B. Provide all required safety and identification placards as required by code and as designated in Exhibit A, Section 2.

#### 3.07 PAINTING OF EQUIPMENT

- A. Factory Applied: Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test, except equipment specified to meet requirements of ANSI C37.20 shall have a finish as specified in ANSI C37.20.
- B. Field Applied: Paint electrical equipment as required to match finish or meet safety criteria.

#### 3.08 TESTING

- A. General:
  - 1. All inspections and tests shall be in accordance with the International Electrical Testing Association - Acceptance Testing Specifications ATS-2009 (referred to herein as NETA ATS-2009).
  - 2. Final test and inspection may be conducted in presence of Owner: Tests shall be conducted at the expense of and by the Contractor at a mutually agreed time. Submit written test reports.
  - 3. The electrical installation shall be inspected and tested to ensure safety to building occupants, operating personnel, conformity to code authorities, and final Construction Shop Drawings.
  - 4. Final Inspection Certificates: Prior to final payment approval, deliver to the Owner, with a copy to the Owner, signed certificates of final inspection by the appropriate inspection authority.
    - a. Grounding System:
      - 1) All ground connections shall be checked and the entire system shall be checked for continuity. The resistance of the ground system at each site shall be measured using a 3 point fall-of-potential method. The maximum ground resistance shall be three ohms.
      - 2) Ground tests shall meet the requirements of the National Electric Code, Article 250.
      - 3) All PV system grounding shall meet the requirements of NEC Article 690.

**End of Attachment F1**

## **Attachment F2: Section 26 60 00: Photovoltaic System Specifications**

### **PART 1 – GENERAL**

#### **1.01 RELATED DOCUMENTS**

- A. Section 26 00 00: General Electrical Specifications
- B. Section 05 90 00: PV Mounting Specifications

#### **1.02 GENERAL**

- A. The project includes the design and construction of complete Photovoltaic Systems (PV), including all AC and DC components. The design and installation shall conform to all requirements as defined by the applicable codes, laws, rules, regulations and standards as specified in the RFP.
- B. The Contractor shall include all items and all work reasonable required to complete the System in accordance with the Agreement. If the Contractor is in doubt as to the intent of any portion of these specifications, or necessary information is omitted, the Contractor shall notify the District in writing for clarifications or corrections to be provided by addendum.
- C. All design documents, cut sheets, and technical specifications shall be submitted, reviewed and accepted by the Owner per the guidelines specified in RFP Attachment A3 – Submittals and Project Acceptance.

#### **1.03 WORK INCLUDED**

- A. The work shall include the design, engineering, materials, labor, equipment, installation, testing, services, and incidentals necessary to install complete Photovoltaic (PV) Systems in conformity with applicable codes and professionally recognized standards.
- B. PV systems shall consist of arrays of framed photovoltaic modules, mounting hardware, terminal boxes, combiner boxes, quick-connect electrical connectors, DC wiring, DC disconnects, utility interactive inverters, AC disconnects, AC feeders, AC circuit breakers, AC panel boards / switchgear, and complete data acquisition and monitoring systems.
- C. The PV systems shall be utility grid connected. The Contractor shall be responsible for all required utility company coordination, applications, inspections, permits, and final approval for the complete interconnection of the PV systems with the utility company grid, including bi-directional utility meters at each location.
- D. The Contractor shall ensure adequate clearance and equipment space within the allotted areas and existing building and site conditions. All equipment and sizes / clearances shall be coordinated with the District prior to rough-in.
- E. The Contractor shall be provide for the disconnection, disposition and proper disposal of all existing equipment to be replaced.

#### **1.04 QUALITY ASSURANCE**

- A. All equipment shall be listed to Underwriters' Laboratories (UL) standards as applicable.
- B. Installer Qualifications – The installing contractor shall be approved by the PV equipment manufacturer(s) to install the PV materials.

#### **1.05 MATERIALS, DELIVERY, STORAGE, AND HANDLING**

- A. All materials shall be delivered new, undamaged and without defects.
- B. All equipment and panels shall be handled with care so as not to damage the delivered products. All equipment shall be installed in new and neat condition.
- C. Appropriate protective clothing shall be worn when handling the equipment. Such clothing shall include hard hats and steel-toe boots when lifting materials to roof, and insulated gloves when working on an active system.
- D. All materials stored on the roof shall be distributed so as not to overload the roof at any point. All materials stored on roof shall follow the guidelines of the roofing system manufacturer including protection boards, pallets and/or mats to prevent damage to the roof system and insulation assemblies. All roof top construction, construction related traffic and staging areas shall have protection boards in place to prevent damage to the roofing system and insulation assemblies.

### **PART 2 – PRODUCTS**

## 2.01 ACCEPTABLE MANUFACTURERS

- A. Acceptable system manufacturers/vendors shall be as specified in other sections of this RFP. Manufacturers shall provide their latest line of equipment, meeting all current industry standards and all performance criteria set forth in this RFP. The District seeks equipment from proven, industry leading manufacturers in solid financial standing, producing tier-one equipment.
- B. Contractor proprietary products shall have an ICC report or a testing report stamped and signed by a licensed California engineer.

## 2.02 EQUIPMENT AND MATERIALS

- A. All PV Modules shall be UL 1703 listed and meet the following specifications:
  - 1. PV modules shall comply with IEEE 1262 “Recommended Practice for Qualifications of Photovoltaic Modules”.
  - 2. Meet IEC 61215 (crystalline silicon PV modules) or IEC 61646 (thin film PV modules) standards for the model selected for this Facility.
  - 3. PV modules shall be sourced from a field tested product line that has been commercially available for no less than three fiscal years.
  - 4. PV Modules shall be UL listed for the specified voltage (typically 600VDC).
  - 5. Include all known and future duties, tariffs, export tariffs, customs, demurrage, and shipping costs. 6.
  - 7. PV modules shall comply with the State of California SB1 Guidelines for Eligibility.
  - 8.
  - 9. PV modules shall have a 25-year design life, designed for normal, unattended operation.
  - 10. The solar module manufacturer shall provide a 25-year warranty on the solar modules with at least 80 percent power output guaranteed at 25 years.
- B. All Inverters shall be UL 1741 listed and Comply with IEEE 1547, including testing to IEEE 1547.1 and IEEE C62.45. Regulatory standards compliance shall also include IEEE C62.41.2 and CSA107.1-01.1.
- C. Inverters carry a minimum 5-year standard warranty with options for at least a 10-year extended warranty.
- D. The system shall be capable of producing reactive power to operate between a power factor of 0.9 lagging to 0.9 leading (as adjusted on the inverter equipment).
- E. Have a maximum harmonic distortion less than 3 percent of total harmonic distortion at rated power output.
- F. Incorporate a no-load, two-pole, lockable disconnect switch for main DC power disconnect for maintenance personnel safety.
- G. All inverters shall be sized as required to support the PV module production load within the rating of the equipment, together with all other components.
- H. All inverters shall be CEC approved and shall be utility line interactive type.
- I. All inverters shall be string inverters.
- J. All inverters shall meet the following requirements:
  - 1. Nominal AC Voltage (Three-phase, + 10%)
    - a. 208, 240, or 480 VAC (as required per site)
    - b. Nominal AC Frequency (+ 0.5 Hz)
      - 1) 60 Hz
    - c. Line Power Factor (Above 20% rated power)
      - 1) >0.99
    - d. AC Current Distortion (At rated power)
      - 1) <5% THD
    - e. Maximum Open Circuit Voltage DC
      - 1) 1,000 VDC
    - f. Maximum Ripple Current (% of rated current)
      - 1) <5%
    - g. Minimum Inverter Efficiency
      - 1) >95%
    - h. Temperature Range Ambient

- 1) -4° F to 122° F (-20° C to 50° C)
- i. Enclosure Environmental Rating
  - 1) NEMA 3R
- j. Relative Humidity (non-condensing)
  - 1) 0-95%
- k. Sound level
  - 1) <85 dBa
- l. Protective Functions
  - 1) Standard wakeup voltage, wakeup time delay, shutdown power, shutdown time delay, AC over / under voltage and time delays, AC over / under frequency and time delays, ground over current, over-temperature, AC and DC over current, DC over voltage
- m. User Display
  - 1) Standard-LCD with on/off capability
- n. DC Disconnect
  - 1) 1,000 VDC load break rated
- o. Isolation Transformer (if applicable)
  - 1) High efficiency type, supplied by the manufacturer of the Inverter Systems, mounted within same enclosure or directly adjacent, with factory designated wiring provisions.
- p. Zone 4 Seismic Rating (free standing) or wall mounted.
- q. Internal combiner panel option to allow connections of sub-arrays at the Inverter without the use of additional equipment.
- r. Include placards on the Inverters per section 3.1 below.

- G. Upon connection of the new PV systems, provide a placard on the respective Main Switchboard to identify the two sources of power feeding the equipment.
- H. Combiner boxes (where used) shall be NEMA 3R rated and shall include fuses for string inputs and a bus bar to combine the strings into sub-arrays, for input into the Inverter system. Minimum combiner box output bus ampacity shall be 156% of the rated short circuit current available to be carried on the bus (the sum from all strings to the bus).]
- I. All AC interconnecting feeders shall be sized to NEC Table 310.16 (75 degree column) based on associated disconnect amperage. Conduit fill to 40% max. Include temperature derating as required for the ambient temperatures and roof conditions per NEC. Provide equipment grounding conductor in each conduit.
- J. All roof and exterior mounted raceways shall be designed and installed to accommodate expansion and contraction due to heating affects, including adequate cable length and listed expansion couplings. All expansion couplings or installations shall include grounding bonding jumpers as required by code.
- K. All AC circuits to be 3-wire or 4-wire + ground. All grounding per NEC 690, Part V.
- L. All DC circuits and feeders sized to NEC table 310.16 (90 degree column) based on associated disconnect amperage. Minimum ampacity shall be 156% of the rated short circuit current available to be carried on the specific conductor. Conduit fill to 40% max. Include temperature derating as required for the ambient temperatures and roof conditions per NEC. Provide equipment grounding conductor in each conduit.
- M. All DC circuits to be 2-wire + ground.
- N. All AC and DC wiring in conduit to be RHW-2, THWN-2, or XHHW-2 (90 degree) wet rated for use with 90 degree listed terminals on PV equipment.
- O. All exposed DC wiring to be USE-2 or SE (90 degree) wet rated and sunlight resistant or PV Wire.
- P. Above ground exposed conduit shall be rigid galvanized steel with threaded fittings except where DSA and other applicable codes specifically allow for the use of EMT conduit. All conduit shall meet NEC Code, DSA Guidelines and any applicable standards. Exterior installations shall have watertight fittings. All conduit shall be rated for exposed installation and a minimum design life equivalent to the solar panels. Paint all visible exposed raceways and boxes to match adjacent surface finish after installation. Colors to be selected and approved by the District.
- Q. All conduits and stub-ups under array canopies shall be encased within concrete caissons or piers or, protected from parking traffic with appropriately sized bollards.
- R. All interior conduit to be EMT with steel set-screw fittings (no cast fittings).

## 2.03 WIRE MANAGEMENT

- A. All inter-array wiring methods must meet or exceed current industry standards for wire management, strain relief and fastening.

- B. All inter-array wire management shall use stainless steel or galvanized steel cable clips, Heyco or similar. UV rated cable ties shall be used minimally and only in locations where the use of cable clips are impossible.
- C. Where exposed, wires, cables and conductors shall be managed in a neat and orderly manner. Where exposed to environmental conditions e.g. sunlight, rain, wind etc. and visible from below, wires shall be fastened in a uniform and discrete fashion.
- D. Strain relief and drip loops shall be utilized at all entrances to and from conduit bodies, junction boxes, weather heads, switchgear, inverters and panelboards etc. Conductors shall be strapped with strain relief as not to stress panel leads, home runs or mechanically crimped connections within the array.

#### 2.04 MISC. SYSTEM REQUIREMENTS

- A. All exterior equipment to be sunlight and UV resistant as well as rated for elevated temperatures at which they are expected to operate (on roofs in hot sunlight).
- B. No dissimilar metals allowed to contact each other (use plastic or rubber washers)
- C. No aluminum in contact with concrete or masonry materials.
- D. Bolted connections shall be non-corrosive and include locking devices designed to prevent twisting over the design life of the PV system.
- E. Environmental impact of system equipment containing hazardous materials shall be disclosed, as well as maintenance and disposal instructions for equipment at the end of its useful life.

#### 2.05 SYSTEM ELECTRICAL

- A. The modules shall be interconnected using cable assemblies. The pigtailed shall be quick-connect electrical wiring connections rated for the application (90 degree rated).
- B. Raceway system shall be installed in a manner that prevents water from draining into electrical equipment.
- C. Full specifications of the inverter shall be supplied as part of the system submittal.
- D. All major components of the systems and the installation procedures shall meet National Electrical Code requirements, including Article 690.
- E. The PV system shall be designed to automatically drop offline when normal utility power is lost to avoid unintentional islanding effects as required by the local utility.
- F. All electrical system equipment shall be properly rated to withstand and interrupt (in the case of over current protection devices) the available fault current at the point of use.
- G. All required overcurrent protection and electrical bussing sizes per NEC 690.
- H. Provide a grounding electrode connection from each inverter assembly to the nearest building steel per NEC 690.45 and the manufacturer's instructions. Inverters shall have GFCI protection, allowing grounding per NEC Table 250.122.

#### 2.06 MONITORING

- A. A Data Acquisition and Monitoring System (DAS) shall be provided for all points of interconnect. The system shall include, but not be limited to, the measurement, calculation, display, and reporting of the following items:
  - 1. PV production in 15-min reporting intervals.
  - 2. System electrical functions (instantaneous and accumulated power output (kW and kWh), AC and DC system voltage and amperage, and peak value tracking with associated time stamps).
  - 3. Pounds of CO2 emissions avoided from the generation of PV energy at the site (compared to conventional coal and gas production methods).
  - 4. Generation data in the Western Renewable Energy Generation Information System (WREGIS) format.
- B. Cellular data shall be used for communications with the DAS and metering systems. In the absence of cellular service availability, the District may, at its own discretion, provide internet connections on a site by site basis.
- C. Separate consumption meters shall be provided for each utility account. Consumption meters shall include a web-enabled interface and 15-min reporting intervals to be synced with PV meter production intervals.
- D. Contractor shall load software (as applicable) on District provided computers and train District in operation and maintenance of software or cloud based systems and related monitoring functions.
- E. Weather stations shall be provided at a minimum of two sites across the District's portfolio of Systems, located

geographically to best provide coverage for the portfolio of sites being considered. Weather stations shall provide at a minimum: solar irradiation (coplanar and horizontal), ambient temperature, wind speed and any other data relevant to weather correction of solar PV system performance.

### **PART 3 - EXECUTION**

#### **3.01 REQUIRED PLACARDS**

- A. All placards shall be machine generated phenolic type with red background and white lettering, affixed to equipment with stainless steel screws or with permanent adhesive where set screws are not feasible. Minimum lettering size to be 1/4" unless otherwise noted or required for legibility.
- B. Provide a placard clearly visible at each main service panel to identify both sources of power, with the following wording in 1/4" high lettering per NEC 690.64(B)(4): "Warning - This Service Is Fed By Two Sources Of Power – The Utility Service Main Disconnect And The PV System Main Disconnect – Both Services Must Be Disconnected To Remove Power From The Switchboard".
- C. Provide a placard on each PV system input circuit breaker (where used) at the main panel with the following wording in 1/4" high lettering per NEC 690.64(B)(7): "Warning – Inverter Output Connection – Do Not Relocate This Overcurrent Device".
- D. Provide a placard on all disconnects with the following wording in 1/4" high lettering per NEC 690.17: "Warning - Electric Shock Hazard - Do Not Touch Terminals - Terminals On Both The Line and Load Sides May Be Energized In The Open Position".
- E. Provide a placard on the Main PV System Disconnect (adjacent to each main service panel) with the following information in 1/4" high lettering per NEC 690.53: "Photovoltaic Power Source Disconnect - Operating Current: X Amps; Operating voltage: XX VAC; Maximum System Voltage: XX VAC; Short-Circuit Current: XXX Amps", where X is the operating current, XX is the system voltage, and XXX is the maximum short circuit current contribution of the generating facility at the point of interconnection with the utility system.
- F. Provide a placard at each Main Switchboard with the following information in 1/4" High lettering per NEC 690.54: "Caution - Possible Backfeed From Photovoltaic Power System – X VAC, XX Amps", where X is the system voltage and XX is the maximum AC amperes of the installed system.
- G. Provide a placard on each PV System Inverter with the following information in 1/4" high lettering: "Photovoltaic Power Source Inverter Rating - Operating Current: XX Amps; Operating voltage: XXX VDC; Maximum System Voltage: 1,000 VDC; Short-Circuit Current: XXXX Amps", where XX is the maximum DC amperes of the installed system, XXX is the operating voltage DC, and XXXX is the short circuit current that the Inverter can provide (from all strings in parallel).
- H. Provide utility-required System Directory placard and utility safety switch Identification placard as required by local utility company, to identify all system components.
- I. Provide a placard for all Combiner Boxes to read: "DC Combiner Box [XXX]– [System Voltage] VDC Maximum".

#### **3.02 UTILITY INTERCONNECTION**

- A. The Contractor shall complete the submissions for the utility interconnection agreement with the District's approval. The Contractor shall submit the required authorization form with the utility to act on behalf of the District.
- B. The PV system at each Site shall not be interconnected with the Utility's distribution facilities until written authorization from the Utility Company has been obtained. Unauthorized interconnections may result in injury to persons and damage to equipment or property for which the installing contractor may be liable.

#### **3.03 INSTALLATION STANDARDS**

- A. System Installation shall conform to the equipment manufacturers Installation Manual(s) and requirements or guidelines.
- B. All Local, State, and NEC codes shall be observed, including all industry standards related to the installation, operation, and maintenance of photovoltaic power systems.

#### **3.04 TESTING**

- A. Photovoltaic modules shall be tested in the factory for design performance.
- B. Inverters shall be factory tested for performance.
- C. System testing of the installed photovoltaic array shall be performed on all system strings.
- D. Megger test each array feeder before energizing to establish that no shorts or ground exist at any point on the arrays.

- E. Testing to be performed per CPUC Electric Rule 21 testing procedures and requirements. All testing to be done on “no-cloud” days to avoid system fluctuation by passing clouds. Installer to provide all testing and certification / commissioning.
- F. System start-up procedure shall be as outlined by the Manufacturer’s Installation Manual and the Inverter Manual.

**End Attachment F2**

## Attachment F3: Section 05 90 00: Solar PV Mounting Specification

### PART 1 – GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Section 26 00 00: General Electrical Specifications
- B. Section 26 60 00: Photovoltaic System Specifications

#### 1.02 GENERAL

- A. The installation of the System includes the design and construction of shade structure canopies mounted photovoltaic systems. The design and installation shall conform to all requirements as defined by the applicable codes, laws, rules, and regulations.
- B. The Seller shall include all items and all work reasonable inferred by these specifications for compliance with all applicable structural codes. If the Seller is in doubt as to the intent of any portion of these specifications, or necessary information is omitted, the Seller shall notify the Purchaser in writing for clarifications or corrections to be provided by addendum.
- C. Purchaser shall have the right to review all design documents, cut sheets, and technical specifications specified in Attachment A3 – Submittals and Project Acceptance.
- D.

#### 1.03 WORK INCLUDED

- A. The work shall include the design and construction of the structural systems, in conformity with applicable codes and professionally recognized standards.
- B. All required construction documents and compliance documentation. The structural design shall be fully developed, including descriptions and calculations for all structural components. The site, plans, elevations, schedules and detail drawings must be sufficiently developed to reflect the overall design.
- C. Seller shall provide all materials, labor, equipment, services, and incidentals necessary to install the structures at each Site as shown on the design drawings and as specified hereinafter. Temporary power and lighting as required for construction.
- D. Include any other structural work as might reasonably be implied as required, even though not specifically mentioned herein or shown on the drawings.
- E. Seller shall be responsible for prompt removal and disposal of spoils from its construction activities.

#### 1.04 COATINGS AND CORROSION CONTROL

- A. Each racking system and associated components must be designed and selected to withstand the environmental conditions of the site (e.g., temperatures, winds, rain, flooding, etc.) to which they will be exposed. Design life should be a minimum of 30-years.
- B. All racking installed outdoors shall be hot dipped galvanized steel, stainless steel or aluminum.
  - 1. All galvanized materials cut during construction shall be field coated with a long lasting rust inhibiting coating, color matched and intended for coating galvanized metal.
  - 2. All galvanized materials shall be in compliance with ASTM 123 Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.
  - 3. All purlin framing members shall be G90 galvanized steel. If structure is in close proximity to coastal conditions, G120 galvanized steel or higher shall be installed per engineer of record's specification.
- C. Particular attention shall be given to the prevention of corrosion at the connections between dissimilar metals.

#### 1.05 GEOTECHNICAL STUDY AND ANALYSIS

- A. A geotechnical analysis shall be provided by Seller and performed by a qualified geotechnical engineering contractor. The results of the analysis shall be used when designing the foundations for the structures on the Site.
- B. At a minimum, the following should be included in the analysis:
  - 1. Review publicly available geotechnical information. This may include soils and geologic maps and literature, photographs, hydroelectric reports, groundwater reports, and water well data.
  - 2. Coordination and mobilization of the geotechnical services team for subsurface exploration of the Site. This should include working with the local utilities to mark any existing underground utilities (such as cables, gas lines, piping, etc.).
  - 3. Study the Site to determine the presence of faults, ground fissures, and other potential geologic hazards that could affect the structural design and construction of the Facility.
  - 4. Drilling or digging of exploratory borings and pits. The amount and depth shall be determined by the Seller.
  - 5. Performance of cone penetration tests. The amount and depth shall be determined by the Seller.
  - 6. Laboratory testing of collected soil samples from the borings and test pits. An evaluation of the in-place moisture content and dry density, gradation, plasticity, consolidation characteristics, collapse potential, expansivity, shear strength, resistivity, chloride content, sodium sulfate content, and solubility potential (total salts) should be conducted.

7. Analyze the corrosivity of the soil. Include a recommendation for the type of cement to be used in concrete foundations. Also include recommendations for corrosion protection for underground steel, including rigid metal conduit (such as the need for polyvinyl chloride [PVC] coating).
- C. A detailed report shall be provided outlining the tasks performed and the results of the testing. Included in the report should be any recommendations for the foundation designs, structural support designs, corrosion protection, pile drive frequency, minimum pile size, and any geologic conditions that may prevent the development of the project. For ground mount systems, an opinion on the viability of driven piles as the PV racking supports should be provided.

## **PART 2 – PRODUCTS**

### **2.01 SOLAR CANOPY STRUCTURES**

- A. All structural system components shall be designed and constructed to withstand the environmental conditions of the site to which they will be exposed. The mounting systems shall be designed and installed to resist dead load, live load, corrosion UV degradation, wind loads, and seismic loads appropriate to the geographic area over the expected life of the PV system, a minimum 30-years.
- B. Canopies installed at sites under the control of the California Division of the State Architect (DSA) shall be Pre-Check Approved Structures and follow the guidelines outlined in DSA PL 07-02: Over-The-Counter Review of Pre-Check Approved Designs.
- C. Canopies shall have a minimum clear height of 12 foot at the lowest point of any structure. Clear heights shall be verified by the Seller with the Purchaser and increased as needed.
- D. Canopies placed in parking lots shall be clearly labeled with max clearance for vehicles at the low points. Labels shall be rated for long-term UV exposure with lifetime to match warranties specified for PV panels in Section 16300. Minimum labeling of one every 50 feet of carport on the long axis and one at every exterior corner of each array within a parking lot. Label should be easily visible from a vehicle.
- E. Foundations for canopies in parking lots shall extend a minimum height of 30 inches above grade.
- F. Electrical conduits extending from the canopy to grade are to be encased in the foundations, not mounted on the outside of finished piers.
- G. For canopies located in parking lots, a minimum of one canopy (or more if listed in the Site Details) shall include spare conduit sized at a minimum of 2” or sufficient for up to five (5) future Level 2 EV charging stations. Conduits shall originate at the main service cabinet and follow the PV AC homerun conduits to the point designated on the Site Detail Sheets. In the absence of a designated termination point at the canopies, conduit shall terminate at the first column of a designated carport. The spare conduit shall terminate in a Christy box (hand hole). Spare conduit shall include have a minimum of two sufficiently rated pull strings or wires inside conduit for future wire pull. Additional spare conduits may be required as specified in the Site Detail sheet.
- H. All framing material shall be drained or have provisions to prevent water pooling on or within the framing member (weep holes).
- I. All canopies to be co-planer and in alignment horizontally and vertically with adjacent arrays.
- J. All anchor bolts shall be double nutted or ‘staked’ (threading irreversibly altered) to protect from structural compromise and vandalism.
- K. All structural connections at the flanged base of columns and/or top of caisson to be outfitted with pole skirts, grout, or other Purchaser approved means of coverage of attachment hardware.
- L. Lighting Systems
  1. Canopy lighting systems shall be designed to meet the Illuminating Engineering Society of North America (IESNA) requirements for parking lot areas, to meet or exceed minimum values and maximum uniformity ratios as listed in the IESNA criteria.
  2. All lighting sources shall be LED type.
  3. Lighting control system shall be connected to the existing lighting controls in each area, if existing, and shall meet Title 24 requirements for new lighting systems. Provide dual level control as required by CA Title 24, including new control zones as needed.
  4. Lighting design on canopies shall insure cut-off light control to limit spill light or glare to adjoining areas as-needed. Design and install custom shielding or other mitigation measures to avoid light pollution and glare to neighbors.
  5. Existing pole mounted lighting in areas of new carport canopies shall be removed. Modify other existing lighting to coordinate with the new work and design, including reconnection of any existing downstream circuiting and controls to

remain. Foundations of existing pole mount lighting are to be completely removed a minimum of 6-inches below grade, with grade restored to surrounding condition.

6. New design shall cover all areas of the parking lots (in the area of the work) to leave no dark spots and meet IESNA requirements for all areas previously covered by light standards removed under this contract. Seller shall install new pole mounted luminaires if canopy lighting does not provide sufficient lighting in all areas previously covered by removed or altered light standards. Existing fixtures may remain, if not in direct conflict with canopies or causing shading of new canopies.
7. Lighting is not required for canopies where lighting has not been removed or altered, unless called out on the Site Plans/Detail sheets.

M. For canopies located in areas that are not over parking spaces, the concrete pier foundations shall not extend above grade.

### **PART 3 - EXECUTION**

#### **3.02 SITE PREPARATION AND INSPECTION:**

- A. Seller shall direct, oversee and inspect all site work related to the ground mount structure installation. Site preparation shall be in accordance with final drawings and specifications provided by manufacturer.
- B. Installer shall inspect site and notify general contractor in writing of any condition(s) that may inhibit the proper and timely construction of the ground mount structures. Installer shall be under no obligation to proceed until conditions have been sufficiently corrected.

#### **3.01 INSTALLATION**

- A. Erect structural steel with proper equipment and qualified riggers.
- B. Actively cooperate with other trades and provide incidental welding, connections, etc. for securement of work of others to structural steel framing.
- C. Erect temporary flooring, planking, and scaffolding necessary in connection with erection of structural steel or support of erection machinery. Use of temporary floors shall be as required by municipal or state laws and governing safety regulations. Hoist metal deck onto structural frame.
- D. After erection, clean connections and abrasions to shop coat and spot paint with same primer used in shop.
- E. Installation of the structural system and all components shall be in strict accordance with manufacturer's recommendations.

#### **3.02 ERECTION TOLERANCES**

- A. Erection tolerances for structural steel work shall be in accordance with latest AISC "Code of Standard Practice for Steel Buildings and Bridges".

#### **3.03 BOLTING**

- A. High strength steel bolts shall be used where indicated. Fabrication and erection shall be in strict accordance with the latest edition of "Specifications for Assembly of Structural Joints Using High-Strength Steel Bolts", as approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation. Load indicator washer shall be used. Use beveled washers on sloping surfaces.

#### **3.04 WELDING**

- A. Welding and welded joints shall be in accordance with AWS standards. Work shall be performed by operators who have been qualified by test in accordance with AWS D1.1, "Structural Welding Code – Steel", to perform type of work required for this project.
- B. All methods, sequence, qualifications and procedures, including preheating, postheating, etc. shall be detailed in writing and submitted to Architect for review by the testing laboratory. Provisions shall be made in detailing of lengths of members for dimensional changes as a result of shrinkage stresses so as to provide specified finished dimensions.
- C. Remove all runoff tabs, and bottom backing bars. Top backup bars to be removed or have continuous fillet weld to column.

#### **3.05 ANCHOR BOLTS**

- A. Provide at site, for others to install, all anchor bolts, bearing plates, and templates to be embedded in concrete.
- B. Provide necessary steel or wood templates and diagrams for setting and securing of such anchor bolts in concrete forms.
- C. Be jointly responsible with others for proper locating and installing, and make good any deficiencies and errors.

D. Setting of anchor bolts in hardened concrete necessitates drilled holes solidly grouted in place with epoxy grout. Submit materials and methods for review and approval.

**End Attachment F3**

## Attachment F4: Section 31 2316.13 Trenching Specifications

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Trenching, backfilling and compacting for utilities as indicated or necessary.

#### 1.02 RELATED REQUIREMENTS

- A. Division 26: Pertinent sections specifying work requiring trenching.

#### 1.03 REFERENCES

- A. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3- C. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
- D. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3- E. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- F. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).</sup></sup>

#### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where directed by Owner.
  - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
  - 2. Prevent contamination.
  - 3. Protect stockpiles from erosion and deterioration of materials.
- C. Do not excavate with power driven equipment within two feet of known existing buried utilities. Work immediately adjacent to existing utilities and piping shall be excavated by hand.
- D. Support uncovered utilities and other work affected by excavation until approval for backfill is granted. Report damage to buried utilities or other work to Project Inspector immediately.
- E. Verify that survey bench marks and intended elevations for the Work are as indicated. F. Protect plants, lawns, rock outcroppings, trees, and other features to remain.
- G. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

### PART 2 PRODUCTS

#### 2.01 FILL MATERIALS

- A. General Fill: Subsoil excavated on-site.
  - 1. Free of lumps larger than 3 inches, rocks larger than 2 inches, organic material and debris.
- B. Concrete for Fill: Lean concrete.
- C. Granular Fill: Pit run washed stone; free of shale, clay, friable material and debris.
  - 1. Graded in accordance with ASTM C136, within the following limits:
    - a. 3 inch sieve: 100 percent passing.
    - b. No. 4 sieve: 40 to 100 percent passing.
- D. Sand-Fill Type A: Conforming to State of California Highway Department standard.

#### 2.02 ACCESSORIES

- A. Warning Tape: Polyethylene plastic/metallic laminate, three inches wide, bearing legend of "CAUTION BURIED \_\_\_\_\_ PIPE", where the blank shall represent the type of buried utility.

### **3.01 TRENCHING**

- A. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- B. Saw-cut existing pavements where necessary for new trenching.
- C. Side of the trench shall be cut vertical Conform to OSHA requirement for excavation and trenching shoring.
- D. Do not interfere with 22.5 degree bearing splay of foundations. Zone of influence is considered to begin not less than nine inches above the footing bottom.
- E. Cut trenches wide enough to allow inspection of installed utilities.
- F. Remove large stones and other hard matter which could damage piping or impede consistent backfilling or compaction to an overdepth of 6 inches minimum..
- G. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. H. Remove excavated material that is unsuitable for re-use from site.
- I. Remove excess excavated material from site.

### **3.02 PREPARATION FOR UTILITY PLACEMENT**

- A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- C. Grade trench bottom to provide uniform bearing and support in undisturbed soil for each section of pipe or conduit.
- D. Provide a layer of sand in the trench bottom and around the pipe for suitable bedding. E. Backfill over-excavations with sand to the proper grade, prior to placement of utilities.

### **3.03 BACKFILLING**

- A. Fill up to subgrade elevations unless otherwise indicated.
- B. Employ placement and compaction methods that do not disturb or damage the work.
- C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, or spongy subgrade surfaces.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Granular Fill: Place and compact materials in equal continuous layers not exceeding 8 inches compacted depth.
- F. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- G. Install warning tape above utilities, twelve inches below finish grade. H. Correct areas that are over-excavated.
- I. Compaction must be performed by mechanical methods only utilizing vibratory equipment whenever necessary to obtain required compaction. Ponding, jetting, or excessive amounts of water will not be allowed.
- J. Compaction Density Unless Otherwise Specified or Indicated:
  - 1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density.
  - 2. At landscaped areas: 85 percent of maximum dry density.
  - 3. At other locations: 95 percent of maximum dry density.
- K. Reshape and re-compact fills subjected to vehicular traffic.

### **3.04 BEDDING AND FILL**

- A. Use general fill in non-paved areas only.
- B. Trenches under all paving and hard-surfaces areas: Utility Piping and Conduits and other trenches:
  - 1. Bedding: Use sand.
  - 2. Cover with Granular Backfill.
  - 3. Fill up to subgrade elevation.
  - 4. Compact in maximum 8 inch lifts to 90 percent of maximum dry density.
  - 5. Compaction within 12 inches of subgrade shall be not less than 95 percent relative compaction.

### **3.05 TOLERANCES**

- A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

### **3.06 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing. B. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D2922, or ASTM D3017.
- C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.
- D. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- E. Frequency of Tests: each lift.

### **3.07 CLEANING**

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

**End Attachment F4**

## **Attachment F5: Section 32 0117 Pavement Repair**

### **1.01 SECTION INCLUDES**

- A. Repair of existing asphalt concrete pavement, including the following:
  - 1. Aggregate base course.
  - 2. Asphalt concrete paving.
  - 3. Header boards at perimeter of paved areas except where paved areas are bounded by concrete curbs or curb and gutter.

### **1.02 RELATED SECTIONS**

- A. Section 31 2316.13 - Trenching for Site Utilities.

### **1.03 REFERENCES**

- A. California Department of Transportation "Standard Specification", latest published edition.

### **1.04 SUBMITTALS**

- A. See Section 01300 - Submittals, for submittal procedures.
- B. Product Data: Provide product data verifying compliance with specified criteria for all products, including the following.
  - 1. Asphalt mix design parameters and certificates of compliance.
  - 2. Certificate of compliance for aggregate base materials, AB-II.

### **1.05 QUALITY ASSURANCE**

- A. Obtain materials from same source throughout.

### **1.06 PROJECT CONDITIONS**

- A. Coordinate pavement repair installation with size, location and installation of service utilities. B. All construction beneath the subgrade shall be completed prior to asphalt concrete placement. C. Sequence installation to ensure that construction traffic does not occur over finished work.

### **1.07 ENVIRONMENTAL REQUIREMENTS**

- A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.
- B. Place bitumen mixture when temperature is not more than 15 F degrees below bitumen suppliers bill of lading and not more than maximum specified temperature.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Aggregate Base: Class 2, combined aggregate shall conform to either of the gradings specified in Section 26-1.02A "Class 2 Aggregate Base" of the Caltrans specifications.
  - 1. Clean, free of vegetable matter and deleterious substances
  - 2. Suitable for compaction by watering and rolling to form a firm, stable base, or pneumatic compacting with "elephant foot" at restricted locations.
- B. Asphaltic Concrete: Type A, 1/2 inch maximum, medium for paved surfaces and conform to the applicable portions of Section 39 of the Caltrans Standard Specifications..

### **2.02 ACCESSORIES**

- A. Header boards: Constructed of nominal 2" x 6" redwood, meeting the requirements of Section 20-2.12, "Lumber", of the Caltrans Specifications.
  - 1. Curved portions of header boards may be fabricated of layers of 1/4 inch thickness redwood bender board built up to equivalent thickness and formed to radius as indicated.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that subgrade is dry and ready to support paving and imposed loads..
- B. Verify gradients and elevations of base are as indicated, or as required for positive drainage..

### **3.02 PREPARATION**

- A. Base Material: Aggregate base shall be delivered as uniform mixtures and shall be graded in layers or windrows. Segregation shall be avoided and the base shall be free from pockets of coarse or fine material.
- B. Shape aggregate base to such thickness that after watering and compacting the completed base will conform to the required grade and cross section, within the tolerances specified in Section 26-1.05 "Compacting" of the Caltrans Specifications.
- C. Spread, moisture-condition and compact in lifts 6 inches maximum compacted thickness to achieve the specified thickness.
- D. The relative compaction of the base shall not be less than 95 percent.
  - 1. The finished surface of the aggregate base shall not vary more than 0.05 foot from the design grades.

### **3.03 INSTALLATION**

- A. Apply tack coat of RS-1 or CRS1 Emulsion to vertical surfaces of existing surfacing that will come into contact with asphalt concrete.
- B. Spreading and compacting of asphalt concrete shall be in accordance with Section 39 of the Caltrans Standard Specifications, and shall be placed in one lift.
- C. Header boards shall be installed in conformance with the requirements of Section 20-4.04 "Header Boards" of the Caltrans Specifications. The header board shall be carefully placed and staked to provide a smooth edge to the paved surface areas.

### **3.04 TOLERANCES**

- A. Grades shall not vary more than 0.05 foot above or below existing adjacent grades.

### **3.05 ADJUSTING**

- A. Work failing to meet the specified tolerances shall be replaced at the Contractor's expense.

### **3.06 CLEANING and PROTECTION**

- A. Clean and remove all debris and stains resulting from the work of this section.. B. Protect installed work from subsequent construction operations.
- C. Do not permit traffic over completed work.

**End Attachment F5**

## **Attachment F6: Section 32 1313 Concrete Paving Specification**

### **1.01 SECTION INCLUDES SECTION 32 1313**

#### **CONCRETE PAVING**

- A. Repair of existing concrete sidewalks, integral curbs, and gutters if damaged by Contractor, including the following;
1. Aggregate base course
  2. Concrete paving

### **1.02 RELATED REQUIREMENTS**

- A. Section 31 2316.13 - Trenching for Site Utilities.

### **1.03 REFERENCE STANDARDS**

- A. California Building Code (CBC), Title 24, Part 2.
- B. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International.
- C. ACI 305R - Hot Weather Concreting; American Concrete Institute International. D. ACI 306R - Cold Weather Concreting; American Concrete Institute International.
- E. ASTM A497/A497M - Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete; 2007.
- F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- G. ASTM C33/C33M - Standard Specification for Concrete Aggregates.
- H. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete. I. ASTM C150/C150M - Standard Specification for Portland Cement.
- J. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

### **1.04 SUBMITTALS**

- A. See Section 01 3300 - Submittals, for submittal procedures.
- B. Product Data: Provide data on admixtures and curing compound.
- C. Samples: Submit two sample panels, 48 x48 inch in size illustrating exposed aggregate finish.
- D. Design Data: Submit Mix Design, indicate design concrete strength and compliance with specified parameters.

### **1.05 QUALITY ASSURANCE**

- A. Obtain cementitious materials from same source throughout.

### **1.06 ENVIRONMENTAL REQUIREMENTS**

- A. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

## **PART 2 PRODUCTS**

### **2.01 FORM MATERIALS**

- A. Wood form material, profiled to suit conditions.
- B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D 1751). Provide with plastic bond breaker "zip-strip" at joints receiving sealant.
1. Thickness: 3/4 inch.

### **2.02 REINFORCEMENT**

- A. Reinforcing Steel: ASTM A615/A615M Grade 80 (80,000 psi); deformed billet steel bars; unfinished finish.
- B. Steel Welded Wire Fabric: Do not use.
- C. Dowels: ASTM A 615/A 615M Grade 40 (280); deformed billet steel bars; unfinished.

### **2.03 ACCESSORIES**

- A. Curing Compound: ASTM C 309, Type 1, Class A.

### **2.04 CONCRETE MIX DESIGN**

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations and the following. B. Concrete

Properties:

1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 2500 psi.
2. Fly Ash Content: Maximum 35 percent of cementitious materials by weight.
3. Water-Cement Ratio: Maximum 40 percent by weight.
4. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
5. Maximum Slump: 3 inches.
6. Maximum Aggregate Size: 3/4 inch.

### **2.05 MIXING**

- A. Transit Mixers: Comply with ASTM C94/C94M.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads. B. Verify gradients and elevations of base are correct.

### **3.02 SUBBASE**

- A. See pertinent sections of Division 31 for construction of base course for work of this Section.

### **3.03 PREPARATION**

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Coat surfaces of manhole and other insert frames with oil to prevent bond with concrete pavement. C. Notify Architect minimum 24 hours prior to commencement of concreting operations.

### **3.04 FORMING**

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

### **3.05 REINFORCEMENT**

- A. Place reinforcement as indicated.
- B. Interrupt reinforcement at contraction and expansion joints.
- C. Provide doweled joints at interruptions of concrete with one end of dowel set in capped sleeve to allow longitudinal movement.

### **3.06 PLACING CONCRETE**

- A. Place concrete in accordance with ACI 304R.
- B. Ensure reinforcement, inserts, embedded parts, formed joints and other elements are not disturbed during concrete placement.
- C. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

### **3.07 JOINTS**

- A. Align curb, gutter, and sidewalk joints.

### **3.08 FINISHING**

- A. Match finishes of adjacent concrete paving as closely as possible.
- B. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

### **3.09 TOLERANCES**

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.
- B. Surfaces shall not vary more than 0.02 foot from staked grades and shall be free from blemishes and defects.
- C. Adjust all new or existing boxes, irrigation controllers or other service castings within the limits of this work, to exact grade at the same time the concrete paving is constructed.
  - 1. Maintain these appurtenances to true and exact grade until concrete is set.

### **3.10 PROTECTION**

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit vehicular traffic over pavement for 7 days minimum after finishing.
- C. Protect concrete pavement subject to construction traffic from damage until final acceptance. Provide pavement free from:
  - 1. Cracks
  - 2. Chips
  - 3. Wheel marks or other vehicle damage.
  - 4. Discoloration or staining from foreign materials
  - 5. Cementitious slag from plaster, masonry or other similar materials.
- D. Replace damaged, defective or non-conforming pavement with new work. Repairs shall be made by removing and replacing the entire section between scoring joints or lines

**End Attachment F6**