ENERGY SERVICES AGREEMENT – SOLAR

Parking Structure 2

This Energy Services Agreement ("Agreement") is made and entered into as of this ____ day of _____, 2020 (the "Effective Date"), between FFP BTM Solar, LLC, a Delaware limited liability company ("Provider"), and County of San Mateo ("Purchaser"; and, together with Provider, each, a "Party" and together, the "Parties").

RECITALS

A. Purchaser desires that Provider install and operate a solar photovoltaic system at the Premises (as hereafter defined) for the purpose of providing Energy Services (as hereafter defined), and Provider is willing to have the Installation Work performed by using one or more qualified contractors holding the appropriate licenses required in the jurisdiction where the System will be installed;

B. Provider is in the business of designing, constructing, owning, financing, and operating solar photovoltaic systems for the purpose of selling power generated by the systems to its purchasers;

C. California Government Code sections 4217.10 et seq. authorizes a public entity to enter into energy service contracts, facility financing contracts, and related agreements to implement the State's conservation and alternative energy supply source policy;

D. Purchaser's governing body has made those findings required by Government Code section 4217.12 that the anticipated cost to the Purchaser for Energy Services provided by the System under this Agreement is expected to be less than the anticipated marginal cost to the Purchaser of electrical energy that would have been consumed by Purchaser in the absence of its purchase of the Energy Services;

E. Provider and Purchaser acknowledged those certain General Terms and Conditions of Energy Services Agreement between FFP BTM Solar, LLC and Purchaser dated as of _____, 2020 ("General Terms and Conditions"), which are incorporated by reference as set forth herein; and

F. The terms and conditions of this Energy Services Agreement, excluding the General Terms and Conditions incorporated herein, constitute the "Special Conditions" referred to in the General Terms and Conditions.

In consideration of the mutual promises set forth below, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

1. Incorporation of General Terms and Conditions. The General Terms and Conditions are incorporated herein as if set forth in their entirety.

2. Initial Term. The initial term of this Agreement shall commence on the Effective Date and shall continue for Twenty (20) years from the Commercial Operation Date (as defined in the General Terms and Conditions), unless and until extended or terminated earlier pursuant to the provisions of this Agreement (the "Initial Term"). After the Initial Term, this Agreement may be renewed for additional five (5) year terms (a "Renewal Term"). At least one hundred and eighty (180) days, but no more than three hundred and sixty-five (365) days, prior to the expiration of the Initial Term, Provider shall give written notice to Purchaser of the availability of the Renewal Term. Purchaser shall have sixty (60) days to agree to continuation of this Agreement for the Renewal Term. Absent agreement to the Renewal Term this Agreement shall expire on the Expiration Date. The Initial Term and the subsequent Renewal Term, if any, are referred to collectively as the "Term".

3. Schedules. The following Schedules hereto are hereby incorporated into this Agreement:

Schedule 1	Description of the Premises, System and Subsidy
Schedule 2	Energy Services Payment

Schedule 3	Early Termination Fee
Schedule 4	Estimated Annual Production
Schedule 5	Notice Information
Schedule 6	Site-Specific Information and Requirements
Schedule 7	Scope of Work
Schedule 8	Criteria & Codes
Schedule 9	Submittal & Project Acceptance
Schedule 10	General Electric Specifications
Schedule 11	Photovoltaic System Specifications
Schedule 12	Solar Photovoltaic Canopy Structure Specifications
Schedule 13	Project Labor Agreement for the County of San Mateo
Schedule 14	Site Layout
Schedule 15	Site Notes & PS2 Preliminary Garage Designs & SLD

4. Purchase Requirement; Energy Services Payment. "Energy Services" means the supply of electrical energy output from the System. Purchaser agrees to purchase one hundred percent (100%) of the Energy Services generated by the System and made available by Provider to Purchaser during each relevant month of the Term. While the Energy Services are calculated and billed on a per kWh basis as set forth in Schedule 2 of these Special Conditions, they represent a package of services and benefits.

5. Milestone Dates.

5.1 The Guaranteed Design Date for the Site is February 8, 2021

5.2 The Guaranteed Permit Submission Date for the Site is March 15, 2021

5.3 The Guaranteed Construction Start Date for the Site is June 10, 2021

5.4 The Guaranteed Commercial Operation Date for the Site is 210 days after the Construction Start Date, which date may be extended on account of Force Majeure Events or otherwise pursuant to the Agreement.

6. Privacy. Purchaser acknowledges that the System may collect certain information about Purchaser's electricity usage and the System performance. Such information may be stored and processed in the United States or any other country in which Provider or its third-party service providers, or its or their respective affiliates, subsidiaries, or service providers, maintain facilities. Purchaser consents to any such transfer of information outside of Purchaser's country.

7. Net Energy Metering; Liquidated Damages. Provider represents that it intends to comply with the with the Local Electric Utility customer requirements of all applicable interconnection and net metering agreements and shall not perform any action that would cause Purchaser to breach the terms and conditions of such interconnection agreements with the Local Electrical Utility so as to maintain the effectiveness of such agreements to preserve the Net Energy Metering (NEM) 2.0 grandfathering for the Initial Term. If after Commercial Operation, Provider's negligent or willful actions or omissions cause Purchaser to breach the Purchaser's interconnection agreements, and such breach leads to the permanent loss of NEM 2.0 grandfathering, Provider will compensate the Purchaser the lost monetary value of the grandfathering by crediting the Purchaser on each monthly billing for the duration of the loss of grandfathering as follows:

(a) For loss of NEM 2.0 grandfathering: 10% of the kWh Rate of the Energy Services Payment.

Provided, however, that in the event of a change in Applicable Law that occurs after the Commercial Operation Date and results in a loss of NEM 2.0 grandfathering, Provider shall have no liability with respect

to compensating Purchaser as set forth herein. Provided further that Purchaser shall ensure any correspondence with the Local Electric Utility regarding the tariff and changes to the interconnection agreement are shared with Provider. Purchaser acknowledges that the credit above is sufficient liquidated damages for such grandfathering loss and is Purchaser's sole remedy with respect to such loss.

8. Estimated Annual Production. The annual estimate of electricity generated by the system for each year of the initial term is set as forth in Schedule 4 of the Special Conditions ("Estimated Annual Production").

9. Minimum Guaranteed Output. If the System fails to generate at least ninety-five percent (95%) of the Estimated Annual Production for a full Term Year (such amount, the "Minimum Guaranteed Output"), other than as a result of the acts or omissions of Purchaser or the Local Electric Utility (including a Disruption Period), or an Event of Force Majeure, Provider shall credit Purchaser an amount equal to Purchaser's Lost Savings (as calculated below) on the next invoice or invoices issued during the following Term Year. The formula for calculating Lost Savings for the applicable Term Year is as follows:

Lost Savings = (MGO *WPR – AE) x RV

MGO = Minimum Guaranteed Output, as measured in total kWh, for System for the applicable Term Year.

WPR = Weather Performance Ratio, measured as the ratio of the actual insolation over typical (pro-forma) insolation shall only apply if the ratio is less than 1.00.

AE = Actual Electricity, as measured in total kWh, delivered by the System for the Term Year.

RV = (ATP – kWh Rate)

ATP = Average tariff price, measured in $/kWh, for the applicable Term Year paid by Purchaser with respect to the Premises. ATP with respect to the System under this Agreement shall be in accordance with the following schedule.

Term Year	ATP ($/kWh)	Term Year	ATP ($/kWh)
1	$0.170	11	$0.228
2	$0.175	12	$0.235
3	$0.180	13	$0.242
4	$0.186	14	$0.250
5	$0.191	15	$0.257
6	$0.197	16	$0.265
7	$0.203	17	$0.273
8	$0.209	18	$0.281
9	$0.215	19	$0.289
10	$0.222	20	$0.298

kWh Rate = the kWh Rate in effect for the applicable Term Year, measured in $/kWh.

Lost Savings Cap = System size (DC) as installed in megawatts, multiplied by $20,000. For the avoidance of doubt, the Lost Savings Cap is applicable to each Term Year.

If the RV is zero or less, then no Lost Savings payment shall be due to Purchaser. Such payment for any Lost Savings shall be made by Provider no later than sixty (60) days after the end of the Term Year during which such Lost Savings occurred (or following the date of termination, in the event of an early termination of this Agreement).

10. Allowed Disruption Time. Notwithstanding the provisions in Section 4.3 of the General Terms and Conditions to the contrary, during the initial Term, Purchaser shall be afforded two (2) periods annually which may be used consecutively or in separate periods of at least twelve (12) hours each ("Allowed Disruption Time") during which the System shall be rendered non-operational. Purchaser shall not be obligated to make payments to Provider for electricity not received during the Allowed Disruption Time, nor shall Purchaser be required to reimburse Provider for any other lost revenue during the Allowed Disruption Time, including any lost revenue associated with any reduced sales of Environmental Attributes, and Provider shall be credited for the estimated lost production the System would have produced during such Allowed Disruption Time toward satisfaction of its Minimum Guaranteed Output, as set forth in Section 8 of the Special Conditions, such estimated lost production to be calculated in the same manner as set forth in Section 4.3 of the General Conditions.

11. Sunlight Access. Purchaser will take all reasonable actions as necessary to prevent other buildings, structures or flora from overshadowing or otherwise blocking access of sunlight to the System.

12. Use of System. Purchaser will not use electrical energy generated by the System for the purposes of heating a swimming pool within the meaning of Section 48 of the Internal Revenue Code.

IN WITNESS WHEREOF and in confirmation of their consent to the terms and conditions contained in this Agreement and intending to be legally bound hereby, Provider and Purchaser have executed this Agreement as of the Effective Date.

PROVIDER: **FFP BTM SOLAR, LLC**	**PURCHASER:** **COUNTY OF SAN MATEO**
By:_____ Name: Title:	By:_____ Name: Title:

SCHEDULES

Schedule 1 – Description of the Premises, System and Subsidy

A. Premises	**400 Middlefield Road, Redwood City, CA 94064**
Site diagram attached:	X Yes ☐No
B. Description of Solar System	Behind the meter, net energy metering, canopy-mounted solar structures as further detailed in Schedules 7-12.
Solar System Size:	588 kW (DC) (this is an estimate (and not a guarantee) of the System size; Provider may update the System Size prior to the Commercial Operation Date.)
C. Anticipated Subsidy or Rebate	$0.0

Schedule 2 – Energy Services Payment

Purchaser shall pay to Provider a monthly payment (the "Energy Services Payment") for the Energy Services provided by the System during each calendar month of the Term equal to the product of (x) Actual Monthly Production for the System for the relevant month multiplied by (y) the kWh Rate.

The "Actual Monthly Production" means the amount of energy recorded by Provider's metering equipment during each calendar month of the Term.

The kWh Rate with respect to the System under this Agreement shall be in accordance with the following schedule:

Term Year	kWh Rate ($/kWh)	Term Year	$/kWh Rate ($/kWh)
1	$0.1745	11	$0.1780
2	$0.1745	12	$0.1780
3	$0.1745	13	$0.1780
4	$0.1745	14	$0.1780
5	$0.1745	15	$0.1780
6	$0.1780	16	$0.1780
7	$0.1780	17	$0.1780
8	$0.1780	18	$0.1780
9	$0.1780	19	$0.1780
10	$0.1780	20	$0.1780

Scope Changes (ITC Eligible). If changes in project scope occur that are eligible for the Federal Investment Tax Credit (including but not limited to adverse geotechnical conditions, changes to scope of work to be completed by Purchaser's parking garage contractor, or the inclusion of spare conduit) and the costs directly related such changes go beyond those contemplated as part of the development and implementation of the System in this Agreement, Provider will provide reasonable documentation demonstrating the direct and actual time and materials costs relating

to such costs to Purchaser. Within thirty (30) days after Purchaser receives such documentation, Purchaser will provide written notice to Provider of Purchaser's election of one of the following options:

a. Purchaser will bear all of the reasonably documented scope change costs, and the kWh rate as stated in Table 1 will remain unchanged.
b. For every $0.01 per watt DC of such costs, the kWh rate in Table 1 will increase $0.0005 per kWh. Provider shall then be responsible for all associated costs and payments.

Scope Changes (Non-ITC Eligible). If changes in project scope occur that are not eligible for the Federal Investment Tax Credit (including but not limited to distribution upgrade costs required by the Local Electric Utility, ADA compliance costs not related to System configuration or construction) and the costs directly related such changes go beyond those contemplated as part of the development and implementation of the System in this Agreement, Provider will provide reasonable documentation demonstrating the direct and actual time and materials costs relating to such costs to Purchaser. Within thirty (30) days after Purchaser receives such documentation, Purchaser will provide written notice to Provider of Purchaser's election of one of the following options:

a. Purchaser will pay the entire amount of such associated costs, and the kWh rate as stated in the PPA Rate Table will remain unchanged.
b. For every $0.01 per watt DC of such associated costs, the kWh rate in the PPA Rate Table will increase $0.006 per kWh, Provider shall then be responsible for all associated costs and payments.

Schedule 3 – Early Termination Fee

The Early Termination Fee with respect to the System under this Agreement shall be calculated in accordance with the following:

Early Termination Occurs in Year:	Column 1 Early Termination Fee where Purchaser does not take Title to the System ($/Wdc including costs of removal)	Purchase Date Occurs on the 91st day following: (Each "Anniversary" below shall refer to the anniversary of the Commercial Operation Date)	Column 2 Early Termination Fee where Purchaser takes Title to the System ($/Wdc, does not include costs of removal)
1*	$5.33		--
2	$4.39		--
3	$4.15		--
4	$3.91		--
5	$3.67		--
6	$3.42	5th Anniversary	$2.92
7	$3.39	6th Anniversary	$2.89
8	$3.35	7th Anniversary	$2.85
9	$3.31	8th Anniversary	$2.81
10	$3.27	9th Anniversary	$2.77
11	$3.22	10th Anniversary	$2.72
12	$3.18	11th Anniversary	$2.68
13	$3.13	12th Anniversary	$2.63
14	$3.08	13th Anniversary	$2.58
15	$3.03	14th Anniversary	$2.53
16	$2.98	15th Anniversary	$2.48
17	$2.93	16th Anniversary	$2.43
18	$2.87	17th Anniversary	$2.37
19	$2.81	18th Anniversary	$2.31
20	$2.75	19th Anniversary	$2.25

At Expiration (the end of the Initial Term), the amount in Column 1 shall be deemed to be zero (0).
*Includes Early Termination prior to the Commercial Operation Date.

Schedule 4 – Estimated Annual Production

Estimated Annual Production commencing on the Commercial Operation Date with respect to System under this Agreement shall be as follows:

Term Year	Estimated Production (kWh)	Term Year	Estimated Production (kWh)
.1	987,334	11	939,063
2	982,397	12	934,368
3	977,485	13	929,696
4	972,598	14	925,048
5	967,735	15	920,422
6	962,896	16	915,820
7	958,082	17	911,241
8	953,291	18	906,685
9	948,525	19	902,152
10	943,782	20	897,641

The values set forth in the table above are estimates (and not guarantees), of approximately how many kWhs are expected to be generated annually by the System assuming the System size indicated in Schedule 1 and based on initial System designs. Provider may deliver to Purchaser an updated table on or about the Commercial Operation Date based on the actual System size and design.

Schedule 5 – Notice Information

Purchaser:

County of San Mateo
1402 Maple Street, Redwood City, CA 94063
(650) 369-4715
slin@smcgov.org

Provider:

c/o Forefront Power, LLC
Attn: Director, Energy Services
100 Montgomery St., Suite 725
San Francisco, CA 94104

With a copy to

c/o Forefront Power, LLC
Attn: Legal Department
100 Montgomery St., Suite 725
San Francisco, CA 94104
Email: FPLegal@forefrontpower.com

Financing Party:
[To be provided by Provider when known]

Schedule 6 – Site Specific Information and Requirements

In accordance with Section 7.2(f) of the General Terms and Conditions, the following information references any known restrictions on the use of the Premises for the construction, ownership, use and operation of the System, including any land use restrictions, known underground structures or equipment, or limitations arising under permits or applicable law, as well as any additional Environmental Documents, reports or studies in the possession or control of the Purchaser, which shall each have been delivered to Provider as of the Effective Date:

Type of Information	Information Delivered to Provider as of the Effective Date
Phase I environmental site assessment	NEW PARKING STRUCTURE COUNTY GOVERNMENT CENTER REDWOOD CITY, CALIFORNIA PHASE I ENVIRONMENTAL SITE ASSESSMENTPREPARED BY ENGEO Incorporated May 31, 2018
Reports on site sampling (soil or groundwater)	GEOTECHNICAL INVESTIGATION REPORT COUNTY OF SAN MATEO GOVERNMENT CENTER NEW PARKING STRUCTURE REDWOOD CITY, CALIFORNIA, KLEINFELDER PROJECT No.: 20181527.001A FEBRUARY 15, 2018
Land use restrictions imposed by governmental authorities	Not Applicable

Type of Information	Information Delivered to Provider as of the Effective Date
Lease restrictions on proposed solar installation	Not Applicable
Cleanup plan, corrective action plan or permits applicable to Premises	Not Applicable
Open spill reports or unresolved release reports	Not Applicable
Known underground storage tanks, foundations, utilities	Not Applicable
Utility easements or public rights of way	Not Applicable
Completed closure or "cap" on buried waste or other materials	Not Applicable
Systems in place for extracting and collecting methane, groundwater or leachate	Not Applicable
Subject to the control of a trustee, group of entities or entities other than landlord and/or Purchaser	Not Applicable

Schedule 7 – Scope of Work

Project Scope

Key deliverables and milestones of each scope element shall include but not be limited to:

I. FUNDING

1. For a Power Purchase Agreement (PPA) Contract, provide complete procurement, construction and operational phase funding per the approved and executed Contract, resulting in no capital cost to the County.

II. DESIGN PHASE

1. **Preliminary design** of the PV systems to meet the targeted forecasted electrical production at each site or to the maximum system size limits allowed by the footprint available or to an agreed-upon size with the County. Sizing shall include accurate and detailed modeling of system production for each specific site based on shading, available tariffs and other site constraints using industry standard modeling tools. The goal is to meet County's requirements for Zero Net Energy (ZNE) criteria. Preliminary design shall include plans, design criteria and a brief description of the PV system sufficient for presentation and discussion with the County.
2. **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 fencing, directional boring/trenching, excavations, elevated racking and mounting systems, electrical systems, signage, foundations, lighting, ADA, access, etc. Firm will provide Electrical, Structural and all other required engineers of record to provide a complete, stamped drawing set as required to permit and construct a complete photovoltaic Project. The electrical construction drawings shall show and include all conduit below and above finished grade/finish, single-line-diagram showing, but not limited to, the interconnection of the PV system, etc. All plans and specifications must be reviewed and approved by Project Development Unit of County of San Mateo before submitting for approval by County's building/planning, and any other Local Authority(ies) Having Jurisdiction (AHJs) over Project.
3. **All permitting and permitting fees** required to complete the project with the exception of CEQA. The County is the lead agency for CEQA permitting. Provider must support the County in preparing CEQA documentation, adhere to CEQA requirements, and implement all CEQA mitigation identified by the County.

III. CONSTRUCTION PHASE

1. **Installation** of all equipment necessary for a complete, interconnected and operational solar PV system, including, but not limited to:
    - Solar PV modules, including modules where noted
    - Inverters
    - Interconnection to the existing switchgear including line-side tap. All electrical connectors, cabling & components necessary for a complete solar system
    - All mounting systems, including canopy structures, ground or roof mount as applicable

- 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. Historical data on 15-minute interval shall be readily available for the full operating history of the PV system.
- Any balance of system items for a complete, interconnected and operational solar PV system
- All lighting, security or other ancillary equipment described in the contract documents
- Installation of modules and appropriate racking systems, in areas of public rooftop, as detailed in design drawings, with understory of modules clean and aesthetically suitable.

2. **Battery Energy Storage System (BESS)**Provider: N/A
3. **Spare Conduits**. County shall provide 3" space conduit and conduit stub-outs from roof to electrical room. Provider shall not be responsible for providing spare conduit.
4. **Utility interconnection applications**, including tariff change requests, processing costs and coordination with the local utility companies such as PG&E necessary to achieve interconnect and permission to operate.
5. Safety. Provide safety officer onsite to assure site safety at all time. All incidents shall be properly investigated, reported and documented.
6. Coordinate and schedule **weekly project meetings** from Notice to Proceed (NTP) through project closeout with all stakeholders. Provider to maintain formal meeting minutes and 'three week look-ahead' schedule and distribute to all attendees within 48 hours from the meeting and an updated master project schedule each month. Frequency of meetings are allowed to change upon the stakeholder availability and approval from the County.
7. **Coordination** with and support of inspectors, the County, Architect, Design and Construction subProviders and their consultants during design, construction, commissioning and close-out.
8. **Project Commissioning**, including all associated tasks and documentation related to successfully commissioning the system. Commissioning shall include assisting any third-party commissioning agents/inspectors with their process and providing documentation as requested.
9. Final PV **"as-built" Construction Documents** clearly conformed with all changes during construction.
10. Provision of a comprehensive **Operations & Maintenance Manuals** for each installed system, per requirements listed in Schedule 9.
11. Conduct a **training** for County staff, with orientation to the Operations & Maintenance Manuals, systems and safety procedures.
12. **Secure storage** facility at job Site for all PV system equipment and supplies, including any required security.
13. Legal **toilet and hand wash** sink facilities at job Sites.
14. **Daily cleanup** to "broom clean" conditions.

15. Return disturbed areas to **pre-construction conditions** including repair of all damaged pavement/concrete, restriping, landscape restoration, irrigation restoration, equipment track marks & scuffs on finished concrete surfaces and removal of USA markings.
16. Installation of County-approved **project information signage** and removal at completion of project.
17. **Project closeout**, inclusive of obtaining AHJ "closed and certified" status for all project-associated AHJ applications.

IV. OPERATIONAL PHASE

1. All Providers must offer a comprehensive **onsite training,** and supporting documentation, to facility staff in PV system operations, safety and maintenance consistent with the System Warranty, Performance Guarantee and O&M contract provisions.

1. An Annual Report that details the following:
   - Annual production in kWh
   - Total energy produced to date in kWh in comparison to pre-solar energy consumption
   - 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
2. Work sites and adjacent areas are to be cleaned of debris and left in an orderly fashion. All improvements made in constructing the System are to be maintained.
3. O&M personnel must maintain safe operating conditions, wear identifying clothing, check-in with site personnel prior to commencing work, and minimize impact on County activities.
4. Throughout the Term, Provider shall at all times comply with the Local Electric Utility customer requirements of all applicable interconnection and net metering agreements so as to maintain the effectiveness of such agreements to preserve the prevailing Net Energy Metering (NEM) agreement for a full 20 years from the date of Permission to Operate (PTO) from the Local Electric Utility. Provider shall not perform any action that would result in the breach of the terms and conditions of such agreements

V. PROVIDER CONSTRUCTION MILESTONES

Site(s)	Design Complete, Package Submitted	Permit Received	Construction Start	Substantial Completion	Final Completion
Parking Structure 2	TBD	TBD	TBD	TBD	TBD

Schedule 8 – Criteria & Codes

I. GENERAL CRITERIA

1. All Project construction is to be completed in accordance with the final Construction Schedule, mutually agreed to by both Parties and appended hereto.
2.
3. The County shall be responsible for specifying and conducting tree removal and/or trimming as needed to meet production guarantee of PV system arrays County is responsible for any ongoing tree trimming as needed to ensure the systems meet the performance guarantees.
4. Provider shall notify the County in writing of any proposed change orders (PCO), requests for information (RFI), or construction change directives (CCD), with all supporting information regarding the RFI or changes. County shall have 10 business days to respond to all PCOs, RFIs, or CCDs. Provider shall be fully responsible for any work performed in relation to a PCO, RFI, or CCD without written approval of County.
5. The Provider shall coordinate site access through all phases of the project with key stakeholders and County identified staff at least 24 hours prior to any personnel arriving on site. The Provider shall coordinate with and provide access and support to all inspectors, County staff or consultants during testing and inspections of all systems. Exclusive of local ordinances, County shall not restrict access to construction site during standard working hours (7 am – 5 pm, Monday-Friday). County and Provider shall provide 24/7 unrestricted access to existing electric utility meter and the utility lockable disconnect location. No new access roads are planned; however, should the need arise, County and Provider shall agree upon reasonable accommodations and compensation. County to permit using on site water and power as available for construction at no charge to Provider, with the exception of fire hydrants. County to permit use of a temporary diesel generator onsite during construction activities, subject to BAAQMD and local ordinances.
6. The Provider shall coordinate closely with the County to ensure all construction activities minimize impact on operations and events at the sites. Construction fencing shall enclose entire work area.
7. Access during regular weekday working hours.
8. Provider is responsible for on-site installation supervision throughout the duration of the project.
9. All active work areas must be fenced off from start of work at that area until completion or until area is safe for entry, whichever is longer. Temporary fencing and access control layouts shall be submitted to the County and approved for each site prior to commencing construction. Temporary fencing shall also be installed to protect trees and vegetation adjacent to work areas from construction damage.
10. Provider is to meet applicable codes and specifications with regard to dust during construction and seek to minimize dust migration from the construction site.
11. Provider acknowledges that adjacent facilities may remain in operation during all or a portion of the Work, and it shall take all reasonable precautions to minimize noise as required by applicable laws and the Contract Documents. Notice of proposed noisy operations, including without limitation, operation of pneumatic demolition tools, concrete saws, and other equipment, shall be submitted to County a minimum of forty-eight (48) hours in advance of their performance. Provider shall

further prevent any of its employees or its Sub-Provider employees from playing any recorded music devices or radios or wearing any radio headphone devices for entertainment while working on the project.

12. Drugs Tobacco, and Alcohol - Provider shall take such steps as are reasonably necessary to ensure that employees of Provider or any of its Sub-Provider's employees do not use, consume, or work under the influence of any alcohol, tobacco or illegal drugs while on the project. Likewise, Provider shall prevent its employees or Sub-Provider's employees from bringing any animal onto the project. Provider shall not violate any written County policies provided to Provider.
13. Provider is responsible for all generated trash. County owned dumpsters and trash bins may not be used for storage or disposal.
14. Provider shall clean all work areas on a daily basis and equipment after project completion. Provider shall ensure that work areas are clear of construction debris, spoils and that all demolition and repair has been completed and surfaces are swept prior to releasing work areas to public access.
15. All staff are to wear identifying clothing at all times when on-site.
16. Two (2) or more ground guides shall lead the vehicle across the area of travel for all driving and delivery on the Premises. The speed limit on-the Premises shall be five (5) miles per hour (maximum) or less if conditions require. County shall designate a construction entry point to each site.
17. During the operational phase, all staff or Sub-Providers must check in at the office of the respective facility upon arrival at the site.
18. All electrical enclosures shall match existing conditions, including CMU walls, gates, and fences.
19. Provider is responsible for all aspects of safety of the construction zone. All personnel within the perimeter of the construction zone shall wear proper personal protective equipment (PPE) without any exception.

II. SOLAR PV CRITERIA

1. The Provider shall be responsible for identifying the appropriate conductor route in coordination with the County. Provider shall adhere to the number of tie-ins at each site as required by the County. Any change from a physical tie-in to a NEM-A arrangement must be approved in writing by the County.
2. The Provider shall work with the County as-needed to provide visualizations of proposed systems and assessment of potential glare or reflectivity issues.
3. Warranties - The Provider shall be required to provide the following minimum warranties consistent with Net Energy Metering requirements and the California Public Utility Code 387.5(d)(4), the Provider 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 Net Energy Metering Requirements 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.

III. GENERAL CODES, GUIDELINES AND STANDARDS

The Provider shall be required to comply with all applicable California public works and project requirements including, but not limited to:

1. Americans with Disabilities Act (ADA).
2. American National Standards Institute (ANSI).
3. American Society for Testing and Materials (ASTM)
4. California Building Code (CBC).
5. California Electrical Code (most recent).
6. California Environmental Quality Act (CEQA).
7. California Fire (CalFire) Solar Photovoltaic Installation Guidelines.
8. California Geological Survey (CGS).
9. California Labor Code
10. California Title 20 and 24.
11. Federal Communications Commission (FCC).
12. Local and State Fire Code.
13. Institute of Electrical and Electronics Engineers (IEEE) 1547: Standard for Interconnecting Distributed Resources with Electric Power Systems.
14. International Electrotechnical Commission (IEC) Technical Committee 82 (TC82).
15. National Fire Protection Association (NFPA), National Electric Code (NEC), Including NFPA 70 and NEC Article 690
16. National Electrical Manufacturers Association (NEMA).
17. Occupational Safety and Health Administration (CAL-OSHA).
18. Local Utility requirements including Net Energy Metering Rules, Interconnection Requirements and Tariffs.
19. Storm Water Pollution Prevention Plan (SWPPP).
20. Underwriters Laboratories (UL) Standards, including 1703: Flat-plate Photovoltaic Modules and Panels and 1741: Standard for Inverters, Converters, Controllers, and Interconnection System Equipment for Use with Distributed Energy Resources.
21. Uniform Solar Energy Code – ICC.
22. All applicable State and Local Codes and Ordinances.
23. County Specifications and Requirements.
24. Office of Statewide Health Planning and Development (OSHPD)

Provider shall be solely responsible for any and all tax law compliance, including, without limitation, compliance with the requirements related to any use of the Investment Tax Credit. County shall not make or cause to be provided any legal guidance or opinions related to taxation matters.

IV. 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 Provider 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. UL1741-SA (UL 1741 SA specifies the test methods needed to build the foundation for DG devices to stay online and adapt their output and overall behavior to stabilize the grid during abnormal operation rather than simply disconnecting.)
6. UL1703 (Standard for Flat Plate Photovoltaic Modules and Panels).
7. IEEE 929 (2000) – Recommended Practice for Utility Interface of Photovoltaic (PV) Systems.
8. IEEE 1262 (1995) – Recommended Practice for Qualifications of Photovoltaic (PV) Modules.
9. NEC Article 690.
10. All applicable Utility Guidelines and Standards for PV Systems, electrical utility systems and metering requirements, including net energy metering requirements.
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.

I. 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. Lighting shall meet all Title 24 requirements for installations in California.
3. All lighting sources shall be LED type.
4. Provider to design all light fixture temperatures (Kelvin value) to County standards or preference.

5. Lighting control system shall be connected to the existing lighting controls in each area. If tie-in with existing circuits is not feasible, Provider shall establish new circuit and controls.
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 and requirements for all areas previously covered by light standards removed under this contract. Existing fixtures may remain, if not in direct conflict with canopies or causing shading of new canopies.

V. CALIFORNIA PUBLIC WORKS COMPLIANCE

The Provider shall be required to comply with all applicable California public works and project requirements including, but not limited to:

1. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Provider and any subcontractors will be required to enter certified payroll reports directly into the DIR electronic eCPR system.
2. No contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.
3. The Provider 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 Purchaser, and are also available from the Director of the Department of Industrial Relations. Pursuant to California Labor Code Sections 1720 et seq., it shall be mandatory upon the Provider, and upon any subcontractor under such Provider, to pay not less than the said specified rates to all workers employed by them in the execution of the Contract. The following are hereby referenced and shall be made a part of the Contract and the Provider stipulates to the provisions contained therein.
    i. Chapter 1 of Part 7 of Division 2 of the Labor Code (Section 1720 et seq.)
    ii. California Code of Regulations, Title 8, Chapter 8, Subchapters 3-6 (Section 16000 et seq.)
4. 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.
5. 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 Contract or authorized by law.
6. 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 Purchaser, located as noted above and are also available from the Director of the Department of Industrial Relations. It is the Provider's responsibility to ensure the appropriate

prevailing rates of per diem wages are paid for each classification. It shall be mandatory upon the Provider to whom the Contract is awarded, and upon any subcontractor under such Provider, to pay not less than the said specified rates to all workers employed by them in the execution of the Contract.

7. In accordance with the provisions of Labor Code Section 3700, the Provider shall secure payment of compensation to all employees. The Provider shall certify in the Contract 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."
8. It is the policy of the Purchaser 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. The Provider 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, the Provider agrees to require like compliance by any subcontractors employed on the work by such Provider.
9. The Provider 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. The Provider 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, the Provider 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.
10. The Provider shall provide a Drug-Free Workplace Certification pursuant to the requirements mandated by Government Code Sections 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. The Provider agrees that it will abide by and implement the Purchaser's Alcoholic Beverage and Tobacco-Free Premise Policy, which prohibits the use of alcoholic beverages and tobacco products, of any kind and at any time, on Purchaser-owned or leased buildings, on Purchaser property and in Purchaser vehicles. The Provider shall procure signs stating "ALCOHOLIC BEVERAGE AND TOBACCO USE IS PROHIBITED" and shall ensure that these signs are prominently displayed at entrances to work areas at all times.
12. All other applicable California Public Works Code requirements.

VI. Bonding

1. Performance and Payment Bonds. Provider shall deliver to Purchaser evidence that the prime contractor performing the construction and installation services of the Systems maintains payment and performance bonding in favor of the Provider and meeting the following requirements. Such evidence shall be provided to the Purchaser prior to the commencement of construction on any Property:

iii. Performance Bond. A bond issued by a corporate surety authorized to issue surety insurance in California, in a form commonly used for such purposes, in an amount equal to one hundred percent (100%) of the contract price payable under the contract securing the faithful performance of the contractor of its agreement with Provider; and

iv. Payment Bond. A bond issued by a corporate surety authorized to issue surety insurance in California, in a form commonly used for such purposes, in an amount equal to one hundred percent (100%) of the contract price payable under the contract securing the payment of all claims for the performance of labor or services on, or the furnishing of materials for, the performance of the Contract.

Schedule 9 – Submittal & Project Acceptance

I. DESIGN PHASE

A. The County shall review and approve design documentation based on the requirements specified herein. The design drawings and associated documents shall represent 100% of the intended and agreed upon scope for the PV project. The Provider shall be solely responsible for providing complete design and engineering, compliant with all applicable laws and the requirements of the Agreement, by and through appropriately licensed design professionals, including, without limitation, licensed architects and registered professional engineers employed or under direct contract with Provider. The design professionals so engaged shall serve as the Architect or Engineer of Record

B. On the Effective Date, Provider will be given Notice to Proceed (NTP) for the design phase of the project. Upon NTP, Provider may begin due diligence and site discovery in close coordination with County staff for site access and scheduling.

C. The Provider shall conduct design review meetings, maintain and distribute formal meeting minutes for each stage of the process, which shall include, at a minimum, the following design stages:

Design Stage	**Time from Notice to Proceed with Design**
50% Submittal	within 8 weeks
90% Final Design	within 12 weeks

D. The Provider shall submit an electronic submittal package for each Design Stage including, but not limited to the items outlined in Table 1 on the following page.

E. The Provider shall submit the design stage package no less than five (5) business days prior to the design review meeting. The Provider shall address all County comments in writing no more than five (5) business days from the date formal County comments have been received. County comments shall be incorporated into each successive stage of the design review. Comment responses shall be provided for each phase of design review. Purchaser shall respond to Provider's comments with revisions within ten (10) business days.

F. The County will formally approve, in writing, each phase of the design upon the County's determination that the design is progressing at or beyond the percentage completion expected at stage. The Provider shall not enter a subsequent design phase without the approval of the County. The Provider is solely responsible for obtaining approvals from the County and all other Authorities Having Jurisdiction (AHJs).

G. Drawing sheets to be submitted in one full coordinated plan set document.

Table 1 – Design Submittal Packages

Submittal Requirement	50% Design	90% Final
1. Cover Sheet (TOC, project details, designers of record, PV summary table[1], etc.)	X	X
2. PV System Sizes & Production Estimates[2]	X	X
3. Site Plan (including array names, any interconnection details, conduit routes)	X	X
4. Site Plan (including topographic survey, GPR/UG Utilities, easements)	X	X
5. N/A	X	X
6. Interconnection Equipment Assessment[3]	X	X
7. Interconnection Plan		X
8. Electrical Site Plan Drawings, incl. Balance of System	X	X
9. Electrical Single Line Diagrams with Utility Meter #s	X	X
10. DC String Wiring Plans (with corresponding inverter locations & IDs)	X	X
11. Electrical Grounding Details	X	X
12. N/A	X	X
13. N/A	X	X
14. Structural Drawings and Calculations		X
15. Array Elevation Plan View		X
16. Equipment Pad, Mounting Details and Elevations	X	X
17. Signage Details	X	X
18. Monitoring System and Metering Details	X	X
19. Lighting Plan, Details and Photometric Plans	X	X
20. All Specifications Related to Scope of Work	X	X
21. Equipment Manufacturer's Cut Sheets and Details		X
22. Interconnection Application Revisions & Any Utility Correspondence		X
23. Complete list of all Subcontractors incl. specialty		X
24. Site Specific Construction Management Plan		X
25. Construction Schedule	Prelim	Detailed
26. Provider's Commissioning Protocol (see Section III below)		X
27. Complete Design Package Sufficient for AHJ Review		X

Notes:

1. PV System Summary Table shall include the following with details for each array: Array No/Name, Dimensions, Azimuth, Tilt, Module Model/Count, Inverter Model/Count, Nameplate, No. of Strings, Canopy Column Count.
2. System size spreadsheet shall include by site: system size, year-one AC production (kWh) and yield (kWh/kWp). Production shall be estimated using approved, industry standard modeling software (e.g. PVSyst). System designs shall be within 5% of contracted target production and must be formally approved by District

H. The Provider 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 Table 1. 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 the AHJ. Along with the System Size Spreadsheet, the Provider shall submit updated PV modeling and shade analysis prior to construction and post construction phase using approved modeling software and assumptions.

I. The Provider shall conduct an interconnection equipment assessment for each interconnection site. Any issues with existing County or Utility equipment that may prevent the system from interconnection to the Utility must be identified at the time of the 50% Design submittal.

J. The Provider shall submit a complete specification packet as part of the 90% Submittal. Specification Divisions that shall be included, if they are part of the Scope of Work for the Project, are:

1. Electrical (General and Solar PV)
2. Cutting and Patching
3. Subsurface Investigation
4. Concrete Forming, Reinforcing, and Finishing
5. Structural Steel Framing
6. Metal Fabrications
7. Roof Patch and Repair
8. Painting and Coating
9. Signage
10. Testing and Commissioning
11. Exterior Lighting and Controls
12. Earthwork
13. Vegetation Clearing and Control
14. Pavement Specialties and Striping
15. Fencing and Gates

K. The Provider shall submit complete electronic copies of all Final Approved Permit Set drawings prior to Construction.

II. CONSTRUCTION PHASE

A. County shall provide formal NTP for construction upon receipt of acceptable 100% Design Plan Set with all necessary AHJ approvals and all required proof of bonding.

B. Prior to beginning construction, Provider shall:

1. Provide a comprehensive onsite Construction Management and Safety Plan for the construction of the Project in accordance with all applicable laws, policies and OSHA compliant safety practices. Plan should include, at a minimum, address of local emergency medical facilities, project directory, information on Subcontractors-, coordination with County staff during specific construction tasks, and communication protocols.

2. Provide an updated Detailed Construction Schedule and a three-week look-ahead.

3. Obtain all required permits and approvals from the AHJ(s) and the Utility(ies) prior to starting Construction, in coordination with the County, and shall make copies available to the County of all permit applications and approvals.

C. The Provider shall provide Manufacturers' Installation Manuals for major project components, including, but not limited to: PV modules, inverters, racking or mounting structure, monitoring systems, , other major electrical equipment, and lighting. When approved by the County, recommended installation standards shall become the basis for commissioning, inspecting and accepting or rejecting actual installation procedures used on the work.

D. Prior to ordering equipment and materials, the Provider shall verify all measurements at each project site and notify the County in writing on any discrepancies between the drawings and site measurements.

E. Any proposed changes to design shall be submitted in writing to the County 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.

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

Table 2 – Construction Submittals

Construction Submittal	Submittal Schedule
1. Construction Mgt & Safety Plan	No later than 15 days prior to site mobilization.
2. Construction Schedule	- Three week look-ahead schedule updated and submitted weekly prior to the weekly meeting. - Detailed schedule regularly maintained and provided every two weeks or as-requested.
3. Manufacturers' Installation Manuals	No later than 5 days after construction kickoff meeting.
4. Weekly Meeting minutes	No later than 48 hours following each weekly project meeting.
5. Test Reports	As available
6. Factory Tests	As available
7. Field Tests	As available
8. Design Deviations/ Requests for Information	As-needed. All deviations shall be accurately and legibly detailed by the Provider and approved by Designer of Record, then presented to the County/County Reps in the form of an RFI. All changes shall be recorded on as-built drawings at the time of the change.
9. Proposed Change Orders	Prior to commencing any changed work, and in the form specified for changes in scope of work in the Agreement, Provider shall submit a proposed change order. No after-the-fact change orders will be accepted by County.

III. COMMISSIONING PHASE

A. The Provider shall notify the County and County representatives prior to commencing commissioning and provide a schedule for all commissioning activities.

B. Provider shall provide electricians and support to County and County representative for verification of commissioning and workmanship, including providing reasonable notice prior to conducting commissioning activities so County representatives may observe.

C. A detailed/comprehensive Commissioning Report; submitted 15 days after commissioning has been completed on a site-by-site basis.

D. Commissioning shall proceed per the approved commissioning plan submitted during the Design Phase. At a minimum, system commissioning protocol shall include:

1. Conductors
   1.1. AC & DC conductor inspection / megger testing
   1.2. Wire management check
   1.3. DC string Voc/sc testing and recording
   1.4. Confirm all conduits & junction boxes are installed properly/watertight
2. Inspection of DC fusing and disconnects
3. Inspection of AC components: AC Disconnect, Main Switch Board, AC Combiner Panel Boards, Breakers, Fuses, Terminations, Phasing, OCPD operation, etc.
4. Grounding & bonding system inspection & continuity testing
5. Inverters
   5.1. Inverter inspections & tests per manufacturer instructions
   5.2. Inverter start-up & confirm proper inverter settings
   5.3. Inverter output tests - Confirm PV system AC output as expected based on design, insolation and inverter readings
6. IV Curve Trace, Performance testing and recording
7. Thermal Imaging
   7.1. Check all electrical components while systems are energized
   7.2. Spot check, Modules, Inverters, Disconnects, AC system etc.
8. Torque spot check on mechanical and electrical terminations
9. Inspection of corrosion control measures
10. Confirm signage and placards meet plans
11. Workmanship evaluation
12. Inspection of DAS / CT metering and monitoring equipment
13. Weather station component inspection and performance audit
14. Confirm web-based monitoring interface operations
15. Lighting Controls
    15.1. Confirm canopy lighting levels match photometric design
    15.2. Verify component installations
    15.3. Confirm lighting controls function as specified
16. Commissioning of any other major electrical infrastructure installed on the project per manufacturer requirements

IV. CLOSEOUT PHASE

A. Provider shall submit complete digital "as-built" Record Drawings for all sites for review and approval. Final as-built plans shall be provided in both AutoCAD (CAD) and portable document format (PDF) prior to Commercial Operation Date (COD). Provider shall submit one set of final compiled Record Drawings for the County. The Record Drawings shall incorporate all changes from permit plan sets captured on all as-built sketches, details, and clarifications. Locations of work buried under or outside each building, including, without limitation, all utilities, plumbing and electrical lines and conduits. All deviations from the sizes, locations and other features of installations shown in Issue for Construction (IFC) plan sets and contract documents must be captured in detail in as-built Record Drawings. All horizontal boring, trench routes and depths to be recorded and transferred from logs to record drawings. All canopy column footing depths shall also be recorded and coordinated into as built drawings.

B. The Provider shall submit documentation of Punch List Completion for items under control of the Provider within 30 days of the County issuing the Final Punch List. The document must be signed and show proof of completion of each item.

C. The Provider shall submit executed Performance Guarantee (PeGu) Agreement amendment(s), if any, within 30 days of Permission to Operate (PTO) at all sites. All performance tables and commercial operation dates must be updated with the final as-built statistics.

D. Any other Project documentation required by the County.

E. The Provider shall submit to the County a comprehensive Operations and Maintenance (O&M) Manual for each system, within 30 days of the Utility granting Permission to Operate (PTO) for that system. O&M manuals shall consist of one (1) hard copy and (3) soft copies on USB flash drive in PDF format, provided as a single, bookmarked PDF document. The document shall be a well-organized, comprehensive and custom document created for each site which includes, but is not limited to:

    1. System Description and Overview
    2. Simplified site plan that shows array naming convention, inverter locations, and disconnects
    3. Predicted performance data, including expected production over time
    4. Safety Details, including shut down procedures
    5. Contact information for the system installer and maintenance personnel
    6. As-built drawings. During construction, Provider shall incorporate all information on all As-Builts, sketches, details, and clarifications, and prepare one set of final Record Drawings for the County. The Record Drawings shall incorporate onto one set of electronic drawings, all changes from all As-Builts, sketches, details, and clarifications. The Provider shall deliver the Record Drawings to the County at completion of the construction. Locations of work buried under or outside each building, including, without limitation, all utilities, plumbing and electrical lines and conduits. All deviations from the sizes, locations and other features of installations shown in Issue for Construction (IFC) plan sets and contract documents.
    7. Complete material list of all items furnished and installed, including but not limited to the following: PV Modules, inverters, wiring, combiner boxes, panelboards, switch gear, optimizers, disconnects, boxes, metering and DAS equipment, etc. PV System operation details
    8. System testing and commissioning documentation
    9. PTO and any other pertinent Utility documentation

10. Maintenance information, including schedules and responsibilities for ongoing maintenance
11. Troubleshooting and repair, including responses to typical issues
12. All warranties, cut sheets and manuals for major equipment
13. Performance guarantee details, including schedule of performance reporting and example format
14. Monitoring system login and operation details
15. Any other information that may be required for the County to easily and safely interact with, confirm performance, troubleshoot, maintain and/or service the materials and equipment installed under this Contract.
16. CAD (electronic format) "as-built" files of all drawings, provided as separate files from the Manual PDF

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V. Project Closeout Submittals

Provider shall deliver the following document submittals to County in order to attain County approval for the listed project closeout milestone.

Table 3 – Closeout Document Submittals

PTO Ready Status	
1	Documentation from AHJ as needed for interconnection
2	Schedule for Project Closeout
3	Commissioning Protocol
4	Utility Interconnection Request Submitted
Commercial Operation Date - COD (All PTO Ready Status items plus:)	
5	Utility Permission-to-Operate (PTO) Notice
6	Provider Commissioning Documentation
7	AHJ(s) Completion Documentation
8	As-Built Plan Sets (w/ Data Sheets for Major Equip.)
9	Reserved
10	As-Built Performance Modeling & 8760 Data
11	Punchlist – Major/Safety Items Signed Off by County/Inspectors
12	O&M Manual Draft
13	Major Equipment Cut Sheets/Warranty Documentation
14	DAS Login Access and Credentials & Verification of Function
15	Subcontractor Notices of Completion
16	Provider Formal Commercial Operation Notice
Final Completion/Acceptance (All COD items plus:)	
17	Punchlist – All Lists Signed Off
18	O&M Manual Final
19	Sage Cx/Inspection Completed
20	Operation and Safety Training (for Purchaser)
21	All Change Orders/Payments Finalized
22	Final Amended Executed Contracts (PPA & PeGu)
23	Inverter/Data Logger Serial Numbers, IDs, Locations Provided and Functional
24	Record of all trenching/boring routes & depths and canopy column footing depths.
25	Purchaser Notice of Acceptance

For the Purposes of a PPA Contract, achieving the above milestones shall be interpreted as follows:

1. Commercial Operation Date (COD): Seller may begin recording energy delivered for the purposes of charging the Purchaser.
2. Final Completion: Purchaser will begin paying for energy delivered upon Final Completion.

VI. Submittal Dates

Provider

Submittal Item	Date
50% Design Submittal	1/8/21
90% Design Submittal	2/5/21
Final Approved Permit Set, Submitted to AHJ	2/19/21
Construction Management Plan	4/9/21
Construction Schedule Submittal	4/9/21
Commissioning Reports	10/15/21
O&M Manual, All Sites	11/15/21
Punch List Completion Documents, All Sites	11/15/21
As Built – Record Drawings	11/30/21
O&M Contract Agreement Amendment(s), All Sites	N/A
PeGu Agreement Amendment(s), All Sites	11/30/21

Schedule 10 – General Electric Specifications

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Section 26 60 00: Photovoltaic System Specification

B. Section 05 90 02: Solar PV Canopy Structure Specification

C. Section 05 90 03: Solar PV Ground-Mount Specification

D. Section 05 90 04: Solar PV Roof-Mount Specification

E. Other relevant Purchaser Specifications

NOTE: Where this specification and other specifications or bridging-documents are in conflict, the more stringent shall apply. Provider shall identify conflicts and confirm recommended equipment or procedures with the Purchaser.

1.02 CODES & REFERENCES

A. The design and installation shall conform to all requirements as defined by the applicable codes, laws, rules, regulations and standards of applicable code enforcing authorities (Latest Edition unless otherwise noted). The following are key standards that shall be followed. The Architect/Engineer of Record and Provider shall ensure all applicable codes are followed:

1. ASTM International (ASTM) (www.astm.org), including:
   a. E3010, Standard Practice for Installation, Commissioning, Operation, and Maintenance Process (ICOMP) of Photovoltaic Arrays
2. American National Standards Institute (ANSI)
3. Americans with Disabilities Act (ADA)
4. California Building Code (CBC), with State of California Amendments
5. California Energy Commission Title 24 Building Energy Efficiency Requirements
6. California Department of Forestry and Fire Protection, Office of the State Fire Marshal – Solar Photovoltaic Installation Guidelines
7. California Office of Statewide Health Planning and Development (OSHPD)
8. Code of Federal Regulations (CFR)
9. Factory Mutual (FM)
10. Institute of Electrical and Electronics Engineers (IEEE)
11. International Building Code (IBC)
12. National Electrical Testing Association (NETA)
13. Local Fire Permit Requirements
14. National Electrical Manufacturers Association (NEMA)
15. National Fire Protection Association (NFPA), National & California Electrical Code
16. Occupational Safety and Health Administration (OSHA)
17. Purchaser Specifications and Requirements
18. Underwriters Laboratory (UL), including:
    a. UL 2703 – Standard for Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for use with Flat-Plate Photovoltaic Modules.
19. Utility company standards and requirements
20. All other applicable Codes and Ordinances

1.03 GENERAL

A. "Purchaser" shall refer to Purchaser as defined in the Energy Services Agreement, who is owner of the site where project will be located, regardless of system ownership, and include any representative of the site owner, such as consultants or inspectors. "Contract" refers to the design-build or construction contract and any associated design-build bridging documents. "Provider" refers to the entity performing the work, inclusive of Engineer and Architect of Record for design-build contracts.

B. 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, regulations and standards as specified in the Agreement.

C. The Provider shall include all items and all work reasonably inferred by these specifications and the Contract Documents, including any design-build bridging documents. If the Provider is in doubt as to the intent of any portion of these specifications or the Contract Documents, or necessary information is omitted, the Provider shall notify the Purchaser in writing for clarifications or corrections to be provided by addendum.

D. All design documents, cut sheets, and technical specifications shall be submitted, reviewed and accepted by the Purchaser per the guidelines specified in the Contract.

1.04 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. Evaluation of existing switchgear and Utility transformers for interconnection compatibility.
3. Location and layout of all system equipment.
4. Site plans, elevations, schedules, equipment arrangement and detailed drawings
5. Single line diagrams including local utility system tie-ins.
6. 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 required incidental work directly related to the construction of the System, such as excavating, directional boring, backfilling, roof flashing, , , pavement repair, , and testing.

F. Any other electrical work as might reasonably be implied as required to fulfill the contracted scope, 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 to fulfill the contracted scope.

1.05 CONDITIONS AT SITE

A. Provider is responsible for familiarizing themselves with the site construction drawings. No extra payment will be allowed for work required that was discernible from the site construction drawings.

B. Lines of other services that are damaged as a result of this work shall promptly be repaired at no expense to the Purchaser and to the complete satisfaction of the Purchaser.

1.06 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, or equal.
4. If after contract is awarded, minor changes and additions are required by aforementioned authorities, they shall be included at Provider's expense.

C. COORDINATION

1. Provider 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 Provider'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:
        i) Clearances to meet safety requirements and for servicing and maintaining equipment, including space for equipment disassembly required for periodic maintenance.
        ii) Equipment support details.
        iii) Exterior wall, roof and foundation penetrations of cable and raceway; and their relation to other penetrations and installations.
        iv)

v) Sizes and locations of required concrete pads and bases.
vi) Grounding system details.

1.07 DELIVERY, STORAGE AND HANDLING

A. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the work and materials of all trades.

B. Delivery and Storage: Deliver all materials to the job site in their original containers with all labels intact and legible at time of use. Store in strict accordance with approved manufacturers' recommendations. All deliveries are to be made to the Provider's job trailer or approved storage location. Under no circumstances shall Purchaser be responsible for accepting deliveries.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Purchaser and at no additional cost to the Purchaser.

D. Provider 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.

1.08 SCHEDULING/SEQUENCING

A. Provider shall coordinate all schedules and sequencing of electrical work with Purchaser.

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 Provider.

1. Provider shall coordinate production and delivery schedule for all Purchaser-supplied equipment with the equipment suppliers to ensure that all Purchaser-supplied equipment is delivered to site in coordination with the construction schedule and in such a manner as to cause no delays in completion of the Contract as scheduled.

1.09 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 electrical equipment wind loading restraint shall be designed as required by the Authorities Having Jurisdiction (AHJs).

B. The electrical system shall be designed to meet all seismic design requirements of the AHJs. Where applicable, the electrical equipment 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.

1.10 PERMITS AND INSPECTIONS

A. Provider 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, or equal.

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. 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 CATALOGGED PRODUCTS / SERVICE AVAILABILITY

A. Materials and equipment shall be current products by manufacturers regularly engaged in the production of such products. Specified product models shall have been in satisfactory commercial or industrial use for a minimum of 2 years prior to design. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The 2-year period shall be satisfactorily completed by a product for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6,000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished. The equipment items shall be supported by service organizations which are reasonable convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

2.04 ACCEPTABLE MANUFACTURERS

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

2.05 BASIC ELECTRICAL EQUIPMENT AND MATERIALS

A. Inverters and PV Modules – See Specification 26 60 00.

B. AC Panelboards:

1. As manufactured by Cutler-Hammer, Square D, General Electric, Siemens, IEM, or to match existing equipment at each Site, wherever possible. Similar products may be submitted for considerations and formal approval. Equipment shall at a minimum be NEMA 3R outdoors or NEMA 1 for surface mount 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. 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, 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 inches 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.

    i) Schedule 80 PVC conduit shall be used in all concrete footings or foundations and to 18” of either side of footings or foundation walls.
    ii) Schedule 80 PVC conduit shall be used in all concrete masonry unit (CMU) walls or columns.

2. Provide a minimum cover of 36 inches for all conduits in ground outside of buildings, unless otherwise noted.

3. Conduit installed using horizontal directional boring (HDB) shall include tracer tape or traceable conduit. Minimum depth of the conduit shall be per NEC Table 300.5 or per Purchaser Requirements, whichever is more stringent. The Provider 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. Provider shall provide documentation of final depth and routes of all conduit installed in horizontal bores.

4. 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.

5. 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 Purchaser.

6. Electrical Metallic Tubing (EMT) shall only be 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 or AHJ requirements 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 or within 8’ of grade.

7. All exposed conduits on sides of buildings, or in other visible areas, shall be painted to match adjacent finishes, after complete installation.

8. Fasten conduits securely to boxes with locknuts and bushings to provide good electrical continuity.
9. To facilitate pulling of conductors, install junction boxes as required.
10. If any empty conduits are provided as part of the projects, they shall be provided with a minimum of two sufficiently rated pull strings or wires inside conduit for future wire pull.
11. 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. Expansion joints only refer to contiguous structures, not the overhead space between adjacent, separate canopies. Under no circumstance shall conduits/conductors pass overhead between separate canopies.
12. 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.
13. 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. Function 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 water rated covers and installation of box rated for water in all traffic areas.

H. 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. <u>All conductors shall be copper. Any substitution shall require written approval from Purchaser.</u>
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 C 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.
   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 Purchaser. Exercise care in pulling to avoid damage or disarrangement of conductors, using approved grips. No cable shall be bent to smaller radius allowed by NEC code or manufacturer recommendations. Color code feeder cables at terminals. Provide identifying linen tags in each pull box

I. 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.

3. When these assemblies are penetrated, seal around conduits and equipment with approved firestopping material. Install firestopping material complete as directed by manufacturer's installation instructions.

4. Meet requirements of ASTM E814, Standard Test Method for Fire Tests of Through Penetration Fire Stops.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine the areas and conditions under which the work of this Section will be installed.. Do not proceed until unsatisfactory conditions have been corrected by Purchaser.

3.02 FIELD QUALITY CONTROL

A. All workmanship shall be Best in Class and carried out in a manner satisfactory to and approved by the Purchaser.

B. This Provider shall personally, or through an authorized and competent representative, constantly supervise the work and, as much 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 Provider in conformance with the Purchaser's requirements.

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.

1. Use the importance factor of 1.5 and overstrength factor of 2.5 for the anchor bolt calculations.

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.

C. Throughout work, remove construction debris and surplus materials accumulated during work.

D. Upon completion of installation, thoroughly clean electrical equipment, removing dirt, debris, dust, temporary labels and traces of foreign substances.

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.

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 Purchaser: Tests shall be conducted at the expense of and by the Provider 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 Purchaser, with a copy to the Purchaser, signed certificates of final inspection by the appropriate inspection authority.
    a. Grounding System:
        i) 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.
        ii) Ground tests shall meet the requirements of the National Electric Code, Article 250.
        iii) All PV system grounding shall meet the requirements of NEC Article 690.

END OF SPECIFICATION SECTION 26 00 00

Schedule 11 – Photovoltaic System Specifications

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The Contract and any design-build bridging documents.

B. Section 26 00 00: General Electrical Specifications

C. Section 05 90 02: Solar PV Canopy Structure Specification

D. Section 05 90 04: Solar PV Roof-Mount Specification

E. Other relevant Purchaser Specifications

NOTE: Where this specification and other specifications or bridging-documents are in conflict, the more stringent shall apply. Provider shall identify conflicts and confirm recommended equipment or procedures with the Purchaser.

1.02 CODES & REFERENCES

A. The design and installation shall conform to all requirements as defined by the applicable codes, laws, rules, regulations and standards of applicable code enforcing authorities (Latest Edition unless otherwise noted). The following are key standards that shall be followed. The Architect/Engineer of Record and Provider shall ensure all applicable codes are followed:

1. ASTM International (ASTM) (www.astm.org), including:
   a. E3010, Standard Practice for Installation, Commissioning, Operation, and Maintenance Process (ICOMP) of Photovoltaic Arrays
2. American National Standards Institute (ANSI)
3. Americans with Disabilities Act (ADA)
4. California Building Code (CBC), with State of California Amendments
5. California Energy Commission Title 24 Building Energy Efficiency Requirements
6. California Department of Forestry and Fire Protection, Office of the State Fire Marshal – Solar Photovoltaic Installation Guidelines
7. California Office of Statewide Health Planning and Development (OSHPD)
8. Code of Federal Regulations (CFR)
9. Factory Mutual (FM)
10. Institute of Electrical and Electronics Engineers (IEEE)
11. International Building Code (IBC)
12. International Electrotechnical Commission (IEC), including:
    a. 62446-1 Photovoltaic (PV) systems – Requirements for testing, documentation and maintenance. Part 1: Grid connected systems – Documentation, commissioning tests and inspection
13. National Electrical Testing Association (NETA)
14. Local Fire Permit Requirements
15. National Electrical Manufacturers Association (NEMA)
16. National Fire Protection Association (NFPA),
17. National Electrical Code (NEC)
18. Occupational Safety and Health Administration (OSHA)
19. Purchaser Specifications and Requirements
20. Underwriters Laboratory (UL), including:

a. UL 2703 – Standard for Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for use with Flat-Plate Photovoltaic Modules.

21. Utility company standards and requirements
22. All other applicable Codes and Ordinances
23. Where code requirements are at variance with Contract Documents, meet code requirements as a minimum requirement and include costs necessary to meet these in Contract. Machinery and equipment are to comply with OSHA requirements, as currently revised and interpreted for equipment manufacturer requirements. Install equipment provided per manufacturer recommendations.
24. Whenever this Specification calls for material, workmanship, arrangement or construction of higher quality and/or capacity than that required by governing codes, higher quality and/or capacity take precedence.

1.03 GENERAL

A. "Purchaser" shall refer to owner of the site where project will be located, regardless of system ownership, and include any representative of the site owner, such as consultants or inspectors. "Contract" refers to the design-build or construction contract and any associated design-build bridging documents. "Provider" refers to the entity performing the work, inclusive of Engineer and Architect of Record for design-build contracts.

B. 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 Contract.

C. The Provider shall include all items and all work reasonable required to complete the System in accordance with the Agreement. If the Provider is in doubt as to the intent of any portion of these specifications, or necessary information is omitted, the Provider shall notify the Purchaser in writing for clarifications or corrections to be provided by addendum.

D. All design documents, cut sheets, and technical specifications shall be submitted, reviewed and accepted by the Purchaser per the guidelines specified in the Contract and any bridging documents.

1.04 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 Provider 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 Provider 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 Purchaser prior to rough-in.

1.05 QUALITY ASSURANCE

A. All equipment shall be listed to Underwriters' Laboratories (UL) standards as applicable.

B. Installer Qualifications – The installing Provider shall be familiar with the equipment to be installed and have the necessary training to install in the equipment.

1.06 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.

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 Purchaser seeks equipment from proven, industry leading manufacturers in solid financial standing, producing tier-one equipment.

B. Provider proprietary products shall have an International Code Council (ICC) report or a testing report stamped and signed by a licensed California engineer.

2.02 EQUIPMENT AND MATERIALS

A. PV MODULES SHALL MEET THE FOLLOWING:

1. Module manufacturer that has produced no less than 250MW of modules in the prior year.
2. Modules are from a field-tested product line that has been commercially available for no less than three years.
3. Module manufacturer shall provide a 25-year warranty on the solar modules with at least 80 percent power output guaranteed at 25 years.
4. Have a minimum 25-year design life, designed for normal, unattended operation.
5. UL 1703 listed.

6. UL listed for the specified voltage (typically 1000 V-DC).
7. Meet IEC 61215 (crystalline silicon PV modules) or IEC 61646 (thin film PV modules) standards.
8. Meet California SB1 Guidelines for Eligibility.

B. INVERTERS SHALL MEET THE FOLLOWING:

1. String-type inverters.
2. Integrated AC and DC disconnects
3. Include a 10-year warranty.
4. Manufacturer produced no less than 250 MW of inverters in the prior fiscal year.
5. Field-tested product line that is commercially available for no less than 2 fiscal years.
6. Comply with the following:
   a. UL 1741 listed, inclusive of UL 1741-SA requirements.
   b. IEEE 1547, including testing to IEEE 1547.1 and IEEE C62.45.
   c. IEEE C62.41.2 and CSA107.1-01.1.
   d. California Rule 21, CEC approved and utility line interactive type.
7. Incorporate disconnect switch for main DC power disconnect in compliance with applicable codes and utility requirements.
8. Sized as required to support the PV module production load within the rating of the equipment, together with all other components. Sizing shall not exceed 1.35 DC:AC ratio without approval by Purchaser.
9. Meet the following requirements:
   a. Nominal AC Voltage (Three-phase, + 10%): 208, 240, or 480 VAC (as required per site)
   b. Nominal AC Frequency (+ 0.5 Hz): 60 Hz
   c. Line Power Factor (Above 20% rated power): >0.99
   d. AC Current Distortion (At rated power): <5% THD
   e. Maximum Open Circuit Voltage DC: 1,000 VDC
   f. Maximum Ripple Current (% of rated current): <5%
   g. Minimum Inverter Efficiency: >96%
   h. Temperature Range Ambient: -4º F to 122º F (-20º C to 50º C)
   i. Enclosure Environmental Rating (minimum): NEMA 3R
   j. Relative Humidity (non-condensing): 0-95%
   k. Sound level: <85 dBa
   l. 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).
   m. Protective Functions: 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
   n. User Display: Standard-LCD with on/off capability
   o. DC Disconnect: 1,000 VDC load break rated

p. Isolation Transformer (if applicable): High-efficiency type, supplied by the manufacturer of the Inverter Systems, mounted within same enclosure or directly adjacent, with factory-designated wiring provisions.
q. Zone 4 Seismic Rating (free standing) or wall mounted
r. Internal combiner panel option to allow connections of sub-arrays at the Inverter without the use of additional equipment.

C. All equipment costs shall include all known and future duties, tariffs, export tariffs, customs, demurrage, and shipping costs.

D. No substitution for contracted equipment shall be made without the written consent of Purchaser. Such consent will not to be unreasonably conditioned, delayed, or withheld.

E. 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.

F. Combiner boxes (where used) shall be NEMA 3R rated (minimum) 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).]

G. 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.

H. 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.

I. All AC circuits to be 3-wire or 4-wire + ground. All grounding per NEC 690, Part V.

J. 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.

K. All DC circuits to be 2-wire + ground.

L. All AC and DC wiring in conduit to be RHW-2, PVWIRE, THWN-2, or XHHW-2 (90 degree C) wet rated for use with 90 degree C listed terminals on PV equipment.

M. All exposed DC wiring to be USE-2, PVWIRE, or SE (90 degree C) wet rated and sunlight resistant or PV Wire.

N. Above ground exposed conduit shall be rigid galvanized steel with threaded fittings except where other applicable codes specifically allow for the use of EMT conduit. All conduit shall meet NEC Code 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 Purchaser, such approval not to be unreasonably conditioned, delayed, or withheld.

O.

P. 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 is 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. All conductors and conduits between separate arrays shall be routed underground. Wiring shall be routed down columns, encased in piers/caissons, routed underground between arrays or carports, and up the nearest column on the adjacent array. Under no circumstance shall circuits, conduits, or chaseways be mounted overhead between separate structures, including seismic gaps.

E. 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 are allowed to contact each other (use plastic or rubber washers) with the exception of anodized aluminum module frames in contact with galvanized carport purlins. Best practices shall be used to avoid corrosion.

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 pigtails shall be quick-connect electrical wiring connections rated for the application (90 degree C 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. Exceptions may be made by Purchaser where PV system is part of an emergency power/battery backup allowed by Utility and AHJ.

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. Means of system grounding to be approved by professional Electrical Engineer of record and GFCI protection shall be in accordance with latest NEC requirements.

2.06 MONITORING

A. DAS - 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. Energy consumption in 15-min reporting intervals.
3. Weather data in 15-min reporting intervals
4. 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).
5. Pounds of CO_2 emissions avoided from the generation of PV energy at the site (compared to local utility fuel mix electric carbon content).
6. DAS shall be capable of outputting data in the Western Renewable Energy Generation Information System (WREGIS) format sufficient for registering Renewable Energy Credits (RECs) from each system.
7. Lifetime logging and access to data reported by DAS.
8. DAS shall provide Purchaser access to all data through an open data exchange protocol (File Transfer Protocol (FTP) Push or Application Programming Interface (API)) at no additional cost to Purchaser or Purchaser's third-party designee. This data shall, at a minimum, include PV production data, energy consumption data, inverter production data, inverter AC power data, inverter current data, inverter voltage data, weather station and/or satellite data, and alarm status readings. All data shall be available over multiple timescales, ranging from 15-min intervals to annual intervals and shall include both real-time and historic data.

B. Cellular data shall be used for communications with the DAS and metering systems. In the absence of cellular service availability, the Purchaser may, at its own discretion, provide internet connections on a site by site basis.

C. A separate consumption meter shall be provided for the utility account that the PV system is interconnected with. Consumption meters shall include a web-enabled interface and 15-min reporting intervals to be synced with PV meter production intervals. Consumption meter standard assumption is 480V Point of Interconnection (POI), assumption for anything above 480V POI without a storage component will be monitored at additional cost.

D. Provider shall load software (as applicable) on Purchaser provided computers and train Purchaser in operation and maintenance of software or cloud-based systems and related monitoring functions.

E. WEATHER STATION

1. A weather station shall be provided at one site out of five (with a minimum of one) in the Purchaser's portfolio of Systems, located geographically to best provide coverage for the portfolio of sites being considered. The station 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.

2. Alternatively, satellite weather may be utilized in lieu of on-site weather stations. If utilized in place of a weather station, satellite weather information shall be made available on the same interval as PV production at no additional cost to Purchaser per Item A above.

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 Provider shall complete the submissions for the utility interconnection agreement with the Purchaser’s approval. The Provider shall submit the required authorization form with the utility to act on behalf of the Purchaser. In the event that the Purchaser has already submitted interconnection applications, the Provider shall take all responsibility for the interconnect process upon contract execution.

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 Provider 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 and results shall be included in the Operation and Maintenance manuals.

B. Inverters shall be factory tested for performance and the results shall be included in the Operation and Maintenance manuals.

C. System testing of the installed photovoltaic array shall be performed on all system strings and recorded in commissioning documentation and the Operation and Maintenance manuals.

D. Commissioning of PV Systems shall adhere to IEC 62446-1 requirements and shall include the following at a minimum:

1. CONDUCTORS

a. AC & DC conductor inspection / megger testing

   b. Wire management check
   c. DC string *V*oc & *I*sc testing and recording
   d. Confirm all conduits & junction boxes are installed properly/watertight
2. Inspection of DC fusing and disconnects
3. Inspection of AC components: AC Disconnect, Main Switch Board, AC Combiner Panel Boards, Breakers, Fuses, Terminations, Phasing, OCPD operation, etc.
4. Grounding & bonding system inspection and continuity testing
5. INVERTERS
   a. Inverter inspections and tests per manufacturer instructions
   b. Inverter start-up and confirm proper inverter settings
   c. Inverter output tests - Confirm PV system AC output as expected based on design, insolation and inverter readings
6. IV Curve Trace, Performance testing and recording
7. THERMAL IMAGING
   a. Check all electrical components while systems are energized
   b. Spot check, Modules, Inverters, Disconnects, AC system, etc.
8. Torque spot check on mechanical and electrical terminations
9. Inspection of corrosion control measures
10. Confirm signage and placards meet plans
11. Workmanship evaluation
12. Inspection of DAS / CT metering and monitoring equipment
13. Weather station component inspection and performance audit
14. Confirm web-based monitoring interface operations
15. LIGHTING CONTROLS.
   a. Confirm canopy lighting levels match photometric design
   b. Verify component installations
   c. Confirm lighting controls function as specified
16. Commissioning of any other major electrical infrastructure installed on the project by Provider per manufacturer requirements.
17. Medium voltage equipment tested to ANSI/NETA requirements

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. Provider to provide all testing and certification / commissioning.

F. System start-up procedure shall be as outlined by the Manufacturer’s Installation Manual(s).

3.05 DOCUMENTATION

A. All commissioning and testing reports shall be provided to the Purchaser within 15 days of completion of testing.

B. The Provider shall submit to the Purchaser a comprehensive Operations and Maintenance (O&M) Manual with details for each system. O&M Manuals shall be compiled as a single, bookmarked portable document format (PDF) file. The document shall be a well-organized, comprehensive and custom document created with details for each site. The document shall include at a minimum the following:

1. System description and overview
2. Simplified site plan that shows array naming convention, inverter locations, and disconnects
3. Safety Details, including shut down procedures
4. Contact information for the system installer and maintenance personnel
5. Monitoring system login and operation details
6. Standard procedures for both Purchaser and O&M personnel
7. Maintenance information, including schedules and responsibilities for ongoing maintenance.
8. Troubleshooting and repair, including responses to typical issues and responsible parties.
9. Summary of Performance Guarantee on a site-by-site basis, inclusive of COD for each site, reporting dates and true-up dates.
10. Summary table with the following details for each site: Site, System Size, Permission-to-Operate (PTO), Commercial Operation Date (COD), Final Completion Date, AHJ Closeout Date
11. Any other information that may be required for the Purchaser to easily and safely interact with, confirm performance, troubleshoot, maintain and/or service the materials and equipment installed under this Contract.
12. O&M Attachments shall include:
    a. Permission-to-Operate (PTO) notice and any other pertinent Utility documentation
    b. As-built Record Drawings in both AutoCAD and PDF (single compiled file for each site), provided as separate files from the fully compiled O&M Manual PDF. The updated as-built drawings shall also include the following details:
        i) DC string maps with corresponding inverter nomenclature (ID), locations, serial numbers, azimuth, and tilt.
        ii) Data logger make, model and serial number
        iii) Include all horizontal/directional boring logs and column footing depths
    c. Performance Guarantee (PeGu) with as-built details.
    d. Performance Data, Modeled As-built, including expected production over time. Electronic 8760 production and insolation data shall also be provided in spreadsheet format.
    e. Material List - Complete material list of all items furnished and installed, including but not limited to the following: PV Modules, inverters, wiring, combiner boxes,

panelboards, switch gear, optimizers, disconnects, boxes, metering and DAS equipment, etc. PV System operation details

f. All warranties, cut sheets and manuals for major equipment
g. System testing and commissioning documentation

END OF SPECIFICATION SECTION 26 60 00

Schedule 12 – Solar Photovoltaic Canopy Structure Specifications

SPECIFICATION SECTION 05 90 02: SOLAR PHOTOVOLTAIC CANOPY STRUCTURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The Contract and any design-build bridging documents.

B. Section 26 00 00: General Electrical Specifications

C. Section 26 60 00: Photovoltaic System Specifications

D. Other relevant Owner Specifications

NOTE: Where this specification and other specifications or bridging-documents are in conflict, the more stringent shall apply. Contractor shall identify conflicts and confirm recommended equipment or procedures with the Owner.

1.02 CODES & REFERENCES

A. The design and installation shall conform to all requirements as defined by the applicable codes, laws, rules, regulations and standards of applicable code enforcing authorities (Latest Edition unless otherwise noted). The following are key standards that shall be followed. The Architect/Engineer of Record and Contractor shall ensure all applicable codes are followed:

1. Aluminum Association (AA) (www.aluminum.org) - Aluminum Standards and Data, 2003 Edition.
2. ASTM International (ASTM) (www.astm.org), including:
   a. A6, Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
   b. A36, Standard Specification for Carbon Structural Steel
   c. A123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
   d. A653, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
   e. E3010, Standard Practice for Installation, Commissioning, Operation, and Maintenance Process (ICOMP) of Photovoltaic Arrays
3. AISC Manual of Steel Construction
4. AISI Specifications for the Design of Cold Formed Steel Members
5. American National Standards Institute (ANSI)
6. American Society of Civil Engineers (ASCE), Minimum Design Loads and Associated Criteria for Buildings And Other Structures (7-16)
7. California Building Code (CBC), with State of California Amendments
8. California Energy Commission Title 24 Building Energy Efficiency Requirements
9. California Department of Forestry and Fire Protection, Office of the State Fire Marshal – Solar Photovoltaic Installation Guidelines
10. California Office of Statewide Health Planning and Development (OSHPD)
11. Local and State Fire Code
12. Owner Specifications and Requirements
13. Institute of Electrical and Electronics Engineers (IEEE)
14. National Electrical Manufacturers Association (NEMA)
15. National Fire Protection Association (NFPA), National/CA Electrical Code
16. Occupational Safety and Health Administration (CAL_OSHA)
17. Research Council on Structural Connections (RCSC)

18. Underwriters Laboratory (UL), including:
    a. UL 2703 – Standard for Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for use with Flat-Plate Photovoltaic Modules.
19. Utility company standards and requirements
20. All other applicable Codes and Ordinances

1.03 GENERAL

A. "Owner" shall refer to owner of the site where project will be located, regardless of system ownership, and include any representative of the site owner, such as consultants or inspectors. "Contract" refers to the design-build or construction contract and any associated design-build bridging documents. "Contractor" refers to the entity performing the work, inclusive of Engineer and Architect of Record for design-build contracts.

B. The Contractor shall include all items and all work reasonable inferred by these specifications and the Contract for compliance with all applicable structural codes. If the Contractor is in doubt as to the intent of any portion of these specifications and the Contract, or necessary information is omitted, the Contractor shall notify the Owner 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 the Contract.

D. General Specifications as described in Section 26 00 00: General Electrical Specifications, are referred to herein and shall apply to this specification. Section 26 00 00 shall be deemed to supersede this specification in the case of conflicts.

1.04 WORK INCLUDED

A. The work shall include the design and construction of the structural systems for solar PV canopies, in conformity with applicable codes and professionally recognized standards.

B. 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 per the Contract and as described in Section 26 60 00, Photovoltaic System Specifications. Clear-height of canopy above grade shall be clearly noted on the drawings for the low side of canopies at corners and at the minimum clear location between corners.

C. Contractor 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.

D. Contractor shall provide temporary power and lighting as required for construction.

E. Contractor shall be responsible for prompt removal and disposal of spoils from all related construction activities.

1.05 DESIGN PROCEDURE & REQUIREMENTS

A. Engineering calculations, drawings and specifications shall be prepared and signed by a Structural Engineer, registered in the State of California and regularly employed in the design of **solar canopy projects**. Structural Engineer shall be the Engineer of Record as required by code-enforcing authorities. The Engineer of Record shall provide required statements and certifications.

B. 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 25-years.

1.06 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 SOLAR CANOPY STRUCTURES

A. The PV Canopies shall consist of interconnected structural steel columns and beams, purlins attached to cross beams and solar modules mechanically fastened to the purlins.

B. For mounting of Bi-facial PV modules, design of racking, fastening and structural support should adhere to specific means consistent and effective in supporting that type of module. Mounting should be structurally sound, taking into consideration all wind and seismic requirements. Array and racking design should allow maximum irradiance to the array.

C. COATINGS AND CORROSION CONTROL

1. Each canopy 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. The design life shall be a minimum of 25-years.

2. All structural members and racking installed outdoors shall be hot dipped galvanized steel.

   a. All galvanized structural components shall be hot-dipped galvanized in compliance with ASTM 123.
   b. All purlin framing members shall meet ASTM A653, minimum G90. If structure is in close proximity to a marine environment (within 1 mile), G120 or higher shall be installed per Engineer/Architect of Record's specification.
   c. Field cuts of galvanized materials shall be kept to a minimum. All galvanized materials cut during construction shall be field coated with a long-lasting rust inhibiting coating, color matched and intended for coating hot-dipped galvanized metal in outdoor settings.

3. All canopy bolts, nuts and washers, unless otherwise noted, shall be hot dip galvanized or stainless steel.

4. Particular attention shall be given to the prevention of corrosion at the connections between dissimilar metals.

D. All materials shall conform to the requirements, tolerances, etc. of the latest editions of the AISC Manual of Steel Construction, AISI Specifications, ASTM Standard Specifications.

E. All framing material shall be drained or have provisions to prevent water pooling on or within the framing member (weep holes).

F. FOUNDATIONS AND COLUMNS

1. In parking areas, concrete column foundations shall extend a minimum height of 30 inches above grade for protection of structural steel from vehicle strikes.
2. For canopies outside of parking areas, such as hardscape play areas or interior campus areas, foundations shall be flush to grade, with no concrete above-grade. Columns shall be painted yellow (on top of hot-dipped galvanizing) from grade up to 6-feet above grade and topped with a 3" wide band of outdoor rated reflective tape along the top edge of the paint.
3. All column anchor bolts shall be torqued per Engineer of Record requirements and marked once torqued. Nuts shall then be double nutted or 'staked' (threading irreversibly altered) to protect from structural compromise and vandalism.
4. All structural connections at the flanged base of columns shall be outfitted with metal pole skirts coated to match columns. Pole skirts shall have rounded corners. Alternatively, flange bases may be grouted at the approval of the Owner.

G. CANOPY

1. All canopies shall have a minimum clear height above grade of 12-feet at the lowest point of any structure or shall meet or exceed parking structure minimum clearance heights at the entrance of the structure. Contractor is responsible for determining grade elevations under canopies and ensuring clear-heights are achieved. Clear heights shall be identified on drawings, including at all low side corners and at the point of minimum clearance on the low side.
2. All canopies to be co-planar and in alignment horizontally and vertically with adjacent arrays. Installations with slopes on the long axis or stair-stepping between adjacent arrays shall only be approved in writing by Owner. Top of column heights shall be shown in design drawings.
3. Canopies shall have a minimum tilt of five degrees (5°) and maximum tilt of ten degrees (10°).
4. 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 26 60 00. Minimum labeling along the long axis of the low-side of the carport shall be every 50 feet of canopy or 3 labels, whichever is greater. Labeling shall also include the exterior corner of each canopy within a parking lot. Label should be easily visible from a vehicle.

H. ELECTRICAL CONDUITS

1. Electrical conduits extending from the canopy to grade are to be encased in the foundations, not mounted on the outside of finished piers.
2. All electrical connections between separate structures shall be underground. Overhead "jumpers" between structures shall not be permitted. Structures are considered separate wherever a gap exists between structural crossmembers that is not spanned by purlins.

2.02 LIGHTING SYSTEMS

A. 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.

B. Lighting shall meet all Title 24 requirements for installations in California.

C. All lighting sources shall be LED type.

D. Lighting control system shall be connected to the existing lighting controls in each area.

E. Lighting temperature or Kelvin Rating shall be consistent with Owner Standards and approved during design phase. Contractor shall obtain written approval from Owner of temperature rating prior to ordering fixtures.

F. Modify other existing lighting to coordinate with the new work and design, including reconnection of any existing downstream circuiting and controls to remain..

G. 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

PART 3 - EXECUTION

3.01 SITE PREPARATION AND INSPECTION

A. Contractor shall direct, oversee and inspect all site work related to photovoltaic structural installation. Site preparation shall be in accordance with final drawings and specifications provided by manufacturer.

3.02 INSTALLATION

A. Erect/stand structural steel with proper equipment and qualified installers.

B. Actively cooperate with other trades and provide incidental welding, connections, etc. for securement of work of others to structural steel framing.

C. Erect/stand 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.

F. Post installation, Contractor shall provide the materials and labor to grout the base of the column to produce a finished joint.

3.03 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".

3.04 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.

3.05 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, post heating, etc. shall be detailed in writing and submitted for review by the testing laboratory and results provided to Owner. 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.

3.06 . ANCHOR BOLTS

A. Purchaser shall provide at site, for others to install, all anchor bolts, bearing plates, and templates to be embedded in concrete.

B. Purchaser shall Provide necessary steel or wood templates and diagrams for setting and securing of such anchor bolts in concrete forms.

C. Purchaser and Provider shall be jointly responsible with others for proper locating and installing, and make good any deficiencies and errors.

D. Purchaser shall be responsible for 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 OF SPECIFICATION SECTION 05 90 02

Schedule 13 – Project Labor Agreement for the County of San Mateo

PROJECT LABOR AGREEMENT
FOR THE COUNTY OF SAN MATEO

INTRODUCTION/FINDINGS

This Agreement is entered into this ____ day of _____, 20___, by and between the County of San Mateo (hereinafter the "County"), together with contractors and subcontractors of all tiers, who shall become signatory to this Agreement by signing the **"Agreement to be Bound" (Addendum A)** (referred to collectively herein as "Contractor(s)/Employer(s)"), and the San Mateo County Building and Construction Trades Council (hereinafter the "Council") and its affiliated local Unions that have executed this Agreement (referred to collectively herein as "Union" or "Unions").

The purpose of this Agreement is to promote the efficiency of construction operations for the County through use of skilled labor resulting in quality construction outcomes, and to provide for the peaceful settlement of labor disputes and grievances without strikes or lockouts, thereby promoting the public interest in assuring the timely and economical completion of the Project.

WHEREAS, the timely and successful completion of the Project is of the utmost importance to meet the needs of the County and avoid increased costs resulting from delays in construction; and

WHEREAS, large numbers of workers of various skills will be required in the performance of the construction work and will be represented by the Unions signatory to this Agreement and employed by contractors and subcontractors who are also signatory to this Agreement; and

WHEREAS, the use of skilled labor on construction work increases the safety of construction projects as well as the quality of completed work; and

WHEREAS, it is recognized that on projects of this magnitude with multiple contractors and bargaining units on the job site at the same time over an extended period of time, the potential for work disruption is substantial without an overriding commitment to maintain continuity of work; and

WHEREAS, the interests of the County, its residents, the Unions, and the Contractors/Employers would be best served if the construction work proceeded in an orderly manner without disruption because of strikes, sympathy strikes, work stoppages, picketing, lockouts, slowdowns or other interferences with work; and

WHEREAS, the Contractors/Employers and the Unions desire to mutually establish and stabilize wages, hours, and working conditions for the workers employed on the Project and to encourage close cooperation among the Contractors/Employers and the Unions so that a satisfactory, continuous, and harmonious relationship will exist among the parties to this Agreement; and

WHEREAS, one of the primary purposes of this Agreement is to promote labor harmony and avoid labor disputes where employees of different employers work side by side on the Project; and

WHEREAS, this Agreement is not intended to replace, interfere with, abrogate, diminish or modify existing local or national collective bargaining agreements in effect during the duration of the Project, insofar as a legally binding agreement exists between the Contractors/Employers and the affected Unions, except to the extent that the provisions of this Agreement are inconsistent with said collective bargaining agreements, in which event, the provisions of this Agreement shall prevail; and

WHEREAS, the contract(s) for construction work on the Project will be awarded in accordance with applicable local, state, and federal laws; and

WHEREAS, the County places high priority upon the development of comprehensive programs for the recruitment, training and employment of local area residents, and recognizes the ability of local pre-apprenticeship and apprenticeship programs to provide meaningful and sustainable career pathways to careers in the building and construction industry; and

WHEREAS, the parties to this Agreement pledge their full good faith and trust to work toward the mutually satisfactory completion of the Project;

NOW, THEREFORE, IT IS AGREED BETWEEN AND AMONG THE PARTIES HERETO, AS FOLLOWS:

ARTICLE I
DEFINITIONS

1.1 "Agreement" means this Project Labor Agreement.

1.2 "Agreement to be Bound" means the agreement (attached hereto and incorporated herein as Addendum A) that shall be executed by each and every Contractor/Employer as a condition of working on the Project.

1.3 "Completion" means that point at which there is Final Acceptance by the County of a Construction Contract and the County has filed a Notice of Completion. For the purposes of this definition, "Final Acceptance" means that point in time at which the County has determined upon final inspection that the work has been completed in all respects and all required contract documents, contract drawings, warranties, certificates, manuals and data have been submitted and training completed in accordance with the contract documents and the County has executed a written acceptance of the work.

1.4 "Construction Contract" means the public works or improvement contract(s) (including design-bid, design-build, construction manager at risk, or other contracts under which construction of the Project is done) awarded by the County that are necessary to complete the Project.

1.5 "Contractor(s)/Employer(s)" or "Contractor(s)" or "Employer(s)" means any

individual, firm, partnership or corporation (including the prime contractor, general contractor, construction manager, project manager, design-build entity, lease-leaseback entity or equivalent entity), or combination thereof, including joint ventures, and their successors and assigns, that is an independent business enterprise and entered into a contract with the County with respect to the construction of any part of the Project, under contract terms and conditions that are approved by the County and that incorporate this Agreement, and all contractors and subcontractors of any tier.

1.6 "Council" means the San Mateo County Building and Construction Trades Council.

1.7 "County" means the County of San Mateo, its governing board, officers, agents and public employees, including managerial personnel.

1.8 "Master Agreement" or "Schedule A" means the Master Collective Bargaining Agreement of each craft Union signatory hereto.

1.9 "Project" means the County construction projects that are identified on the **Covered Projects List** attached hereto as **Addendum B**. The County and the Council may mutually agree in writing to add additional projects to the Covered Projects List (Addendum B) to be covered by this Agreement. In addition, the County's governing board may direct or authorize the County to apply this Agreement, as may be modified from time to time by mutual consent of the County and the Council, to additional projects. The term Project applies to all projects as defined in this section, whether used in the singular or plural herein.

1.10 "Project Manager" means the person(s) or entity(ies) designated by the County to oversee all phases of construction on the Project and the implementation of this Agreement, and that works under the guidance of the County's authorized representative.

1.11 "Union" or "Unions" means the San Mateo County Building and Construction Trades Council, and its affiliated local Unions signatory to this Agreement, acting on their own behalf and on behalf of their respective affiliates and member organizations, whose names are subscribed hereto and who have through their officers executed this Agreement.

ARTICLE II
SCOPE OF AGREEMENT

2.1 Parties: This Agreement applies to and is limited to all Contractors/Employers performing Construction Contracts on the Project (including subcontractors at any tier), and their successors and assigns, the County, the Council, and the Unions signatory to this Agreement.

2.2 Applicability: This Agreement governs all Construction Contracts awarded on the Project. For purposes of this Agreement, Construction Contracts shall be considered completed as set forth in Section 1.3, except when the County directs a Contractor to engage in repairs, warranty work, modifications or punch list work as required under a Construction Contract or when a Contractor performs work under a change order for a Construction Contract.

2.3 Covered Work: This Agreement covers all on-site site preparation, surveying,

construction, alteration, demolition, installation, improvement, remediation, retrofit, painting, or repair of buildings, structures and other works, and related activities for the Project, that is within the craft jurisdiction of one of the Unions and which is part of the Project, including, without limitation to the following examples, geotechnical and exploratory drilling, temporary HVAC, landscaping and temporary fencing, pipelines (including those in linear corridors built to serve the Project), pumps, pump stations, start-up, modular furniture installation, and final clean-up. On-site work includes work done for the Project in temporary yards, dedicated sites, or areas adjacent to the Project, and at any on-site or off-site batch plant constructed solely to supply materials to the Project. This scope of work includes all soils and materials testing and inspection where such testing and inspection is a classification in which a prevailing wage determination has been published.

2.3.1 This Agreement applies to any start-up, calibration, commissioning, performance testing, repair, maintenance, and operational revisions to systems and/or subsystems for the Project performed after Completion pursuant to a Construction Contract, unless performed by County employees.

2.3.2 This Agreement covers all on-site fabrication work over which the County, Contractor(s)/Employer(s) or subcontractor(s) possess the right of control (including work done for the Project in any temporary yard or area established for the Project). Additionally, this Agreement covers any off-site work, including fabrication necessary for the Project defined herein, that is traditionally performed by any of the Unions that is part of the Project, provided such work is covered by a Master Agreement or local addenda to a national agreement of the applicable Union(s).

2.3.3 This Agreement covers all construction trucking work, including the hauling and delivery of ready-mix, asphalt, aggregate, sand, soil or other fill or similar material that is directly incorporated into the construction process as well as the off-hauling of soil, sand, gravel, rocks, concrete, asphalt, excavation materials, construction debris and excess fill, material and/or mud to the fullest extent set forth by prevailing wage law and determinations of the California Department of Industrial Relations. Contractor(s)/Employer(s), including brokers, of persons providing construction trucking work shall provide certified payroll records to the County within ten (10) days of written request or as required by bid specifications. However, the delivery of supplies, equipment or materials that are stockpiled for later use shall not be covered by this Agreement.

2.3.4 Work covered by this Agreement within the following craft jurisdictions shall be performed under the terms of their National Agreements as follows: the National Agreement of Elevator Constructors, the National Transient Lodge (NTL) Articles of Agreement, the National Stack/Chimney Agreement, the National Cooling Tower Agreement, and any instrument calibration work and loop checking shall be performed under the terms of the UA/IBEW Joint National Agreement for Instrument and Control Systems Technicians, with the exception that Articles IV, XIII and XIV of this Agreement shall apply to such work.

2.4 Exclusions: Notwithstanding any other provision of this Agreement, the following shall be excluded from the scope of this Agreement:

2.4.1 This Agreement is not intended to, and shall not, affect or govern the award of public works contracts by the County that are not included in the Project.

2.4.2 This Agreement shall not apply to a Contractor/Employer's non-construction craft employees, including but not limited to executives, managerial employees, engineering employees and supervisors above the level of general foreman (except those covered by existing Master Agreements), staff engineers or other professional engineers, administrative, management, office, and clerical personnel.

2.4.3 This Agreement shall not apply to any non-Project work performed on or near or leading to the site of work covered by this Agreement that is undertaken by state, county, city, or other governmental bodies or their contractors, or by public or private utilities. Work performed by public or private utilities, including all electrical utility, voice-data-video, and security installation work ahead of and up to the electrical service entry connection or the minimum point of entry into the building shall be excluded. All electrical utility, voice data video, and security installation work performed after the electrical utility service entrance or the minimum point of entry shall be Covered Work. Additionally, all contracted work performed ahead of the service entrance connection and minimum point of entry that is inside the property line that provides for access to the building via a conduit or series of conduits shall be Covered Work. This Section 2.4.3 may also be subject to other exclusions set forth herein.

2.4.4 This Agreement shall not apply to off-site maintenance of leased equipment and on-site supervision of such work.

2.4.5 This Agreement shall not apply to any work performed by the County's own forces as permitted by the Public Contract Code.

2.4.6 This Agreement shall not apply to any work performed by employees of a manufacturer or vendor necessary to maintain the manufacturer's warranty or guaranty, to install any proprietary or specialty system (including but not limited to specialty security systems), or to ensure full warranty support and/or interoperability of proprietary systems within the County and/or region; provided, in any case, that the Unions' members do not possess the skill, knowledge or experience to perform such work or that such work is not traditionally performed by any of the Unions signatory to this Agreement. If there is a dispute concerning the applicability of this section, the dispute shall be submitted to expedited arbitration for resolution.

2.4.7 This Agreement shall not apply to maintenance and repair work not part of the Project, including on-going maintenance, janitorial, and security services.

2.4.8 This Agreement shall not apply to non-construction support services contracted by Contractor/Employer or the County in connection with the Project.

2.4.9 Work by employees of the County, design teams (including but not limited to architects, engineers, and master planners) or any other consultants for the County (including, but not limited to, project managers not performing or subcontracting Covered Work) and their sub-consultants and other employees of professional service organizations, not performing or subcontracting Covered Work.

2.5 Award of Contracts: It is understood and agreed that the County has the right to select any qualified bidder for the award of Construction Contracts under this Agreement. Such selection shall be made without regard to and is not dependent upon the existence or nonexistence of an agreement between such bidder and any party to this Agreement. The bidder need only be willing, ready and able to execute and comply with this Agreement. It is further agreed that this Agreement shall be included in all invitations to bid or solicitations for proposals from Contractors or subcontractors for work on the Project that are issued on or after the effective date of this Agreement. A copy of all invitations to bid shall be provided at the time of issuance to the Council.

ARTICLE III
EFFECT OF AGREEMENT

3.1 By executing this Agreement, the Unions and the County agree to be bound by each and all of the provisions of the Agreement.

3.2 By accepting the award of work under a Construction Contract for the Project, whether as a Contractor or subcontractor thereunder, the Contractor/Employer agrees to be bound by each and every provision of the Agreement and agrees that it will evidence its acceptance prior to the commencement of work by executing the **Agreement to be Bound** in the form attached hereto as Addendum A.

3.3 At the time that any Contractor/Employer enters into a subcontract with any subcontractor providing for the performance of work under a Construction Contract, the Contractor/Employer shall provide a copy of this Agreement to said subcontractor and shall require the subcontractor, as a condition of accepting the award of a construction subcontract, to agree in writing by executing the **Agreement to be Bound** to be bound by each and every provision of this Agreement prior to the commencement of work. The obligations of a Contractor may not be evaded by subcontracting. If the subcontractor refuses to execute the Agreement to be Bound then such subcontractor shall not be awarded a construction subcontract to perform work on the Project. Unless otherwise provided by law or applicable Master Agreements, the Contractor/Employer shall not, by executing this Agreement, be liable in any way for the subcontractor's failure to pay the wages and benefits required by the Agreement.

3.4 This Agreement shall only be binding on the signatory parties hereto and their successors and assigns, and shall not apply to the parents, affiliates, subsidiaries, or other ventures of any such party. Each Contractor/Employer shall alone be liable and responsible for its own individual acts and conduct and for any breach or alleged breach of this Agreement, except as otherwise provided by law or the applicable Schedule A. Any dispute between the Union(s) and the Contractor(s)/Employer(s) respecting compliance with the terms of the Agreement shall not affect the rights, liabilities, obligations and duties between the Union(s) and other Contractor(s)/Employer(s) party to this Agreement.

3.5 It is mutually agreed by the parties that any liability by a Union signatory to this Agreement shall be several and not joint. Any alleged breach of this Agreement by a Union shall not affect the rights, liabilities, obligations and duties between the Contractor(s)/Employer(s) and the other Union(s) party to this Agreement.

3.6 The provisions of this Agreement, including the Schedule A's incorporated herein by reference, shall apply to the work covered by this Agreement, notwithstanding the provisions of any other local, area and/or national agreements which may conflict with or differ from the terms of this Agreement. To the extent a provision of this Agreement is inconsistent with a Schedule A, the provisions of this Agreement shall prevail. Where a provision of a Schedule A is not inconsistent with this Agreement, the provision of the Schedule A shall apply.

ARTICLE IV
WORK STOPPAGES, STRIKES, SYMPATHY STRIKES AND LOCKOUTS

4.1 The Unions, County, and Contractor(s)/Employer(s) covered by this Agreement agree that for the duration of the Project:

4.1.1 There shall be no strikes, sympathy strikes, work stoppages, picketing, hand billing or otherwise advising the public that a labor dispute exists, or slowdowns of any kind, for any reason, by the Unions or employees employed on the Project, at the job site of the Project or at any other facility of the County because of a dispute on the Project. Disputes arising between the Unions and Contractor(s)/ Employer(s) on other County projects are not governed by the terms of the Agreement or this Article.

4.1.2 There shall be no lockout of any kind by a Contractor/Employer of workers employed on the Project.

4.1.3 If a Master Agreement expires before the Contractor/Employer completes the performance of work under a Construction Contract and the Union or Contractor/Employer gives notice of demands for a new or modified Master Agreement, the Union agrees that it will not strike on work covered by this Agreement and the Union and the Contractor/Employer agree that the expired Master Agreement will continue in full force and effect for work covered under this Agreement until a new or modified Master Agreement is reached. If the new or modified Master Agreement provides that any terms of the Master Agreement shall be retroactive, the Contractor/ Employer agrees to comply with any retroactive terms of the new or modified Master Agreement that are applicable to any employee(s) on the Project during the interim, with retroactive payment due within seven (7) calendar days of the effective date of the new or modified Master Agreement.

4.1.4 In the case of nonpayment of wages or trust fund contributions on the Project, the Union shall give the County and the Contractor/Employer three (3) business days' notice when nonpayment of trust fund contributions has occurred, and one (1) business day's notice when nonpayment of wages has occurred or when paychecks being tendered to a financial institution normally recognized to honor such paychecks will not honor such paycheck as a result of insufficient funds, of the intent to withhold labor from the Contractor/Employer's or their subcontractor's workforce, during which time the Contractor/Employer may correct the default. In this instance, a Union's withholding of labor (but not picketing) from a Contractor/Employer that has failed to pay its fringe benefit contributions or failed to meet its weekly payroll shall not be considered a violation of this Article. The County may elect to issue a joint check(s) to satisfy the delinquency, or require the Contractor with whom it is in contract to issue a joint check(s) to

satisfy the delinquency. If the delinquency constitutes wages, the joint check(s) must be payable to the delinquent Contractor/Employer and the employee(s). If the delinquency constitutes benefits, the joint check(s) must be payable to the delinquent Contractor/Employer and the appropriate benefit trust fund(s). Upon receipt of a joint check, the delinquent Contractor/Employer must immediately endorse and transmit the joint check to the payee employee(s) and/or trust fund(s). Furthermore, the County reserves the right to withdraw the contract and/or subcontract from the Contractor/Employer who is in default and put such contract and/or subcontract or remainder thereof out for re-bid, or require the Contractor with whom it is in contract to do so.

4.1.5 Notification: If the County contends that any Union has violated this Article, it will so notify, in writing, the Senior Executive of the Council and the Senior Executive of the Union, setting forth the facts alleged to violate the Article, prior to instituting the expedited arbitration procedure set forth below. The Council will immediately use its best efforts to cause the cessation of any violation of this Article. The leadership of the Union will immediately inform the workers of their obligations under this Article and shall, to the fullest extent possible, prohibit workers on the Project from violating this Article. A Union complying with this obligation shall not be held responsible for the unauthorized acts of employees it represents.

4.2 Expedited Arbitration: Any party to this Agreement shall institute the following procedure, prior to initiating any other action at law or equity, when a breach of this Article is alleged to have occurred.

4.2.1 A party invoking this procedure shall notify Robert Hirsch, as the permanent arbitrator, or Barry Winograd, as the alternate arbitrator under this procedure. In the event the permanent arbitrator is unavailable at any time, the alternate will be contacted. If neither is available, then the parties shall select the arbitrator from the list in Section 13.4. Notice to the arbitrator shall be by the most expeditious means available, with notice by email and telephone to the County and the party alleged to be in violation, and to the Council and involved local Union if a Union is alleged to be in violation.

4.2.2 Upon receipt of said notice, the County will contact the permanent arbitrator named above, or his alternate, who will attempt to convene a hearing within twenty-four (24) hours if it is contended that the violation still exists.

4.2.3 The arbitrator shall notify the parties by email and telephone of the place and time for the hearing. Said hearing shall be completed in one session, which, with appropriate recesses at the arbitrator's discretion, shall not exceed twenty-four (24) hours unless otherwise agreed upon by all parties. A failure of any party to attend said hearings shall not delay the hearing of evidence or the issuance of an award by the arbitrator.

4.2.4 The sole issue at the hearing shall be whether or not a violation of Section 4.1 of the Agreement has occurred. The arbitrator shall have no authority to consider any matter of justification, explanation or mitigation of such violation or to award damages, which issue is reserved for court proceedings, if any. The award shall be issued in writing within three (3) hours after the close of the hearing, and may be issued without a written opinion. If any party desires a

written opinion, one shall be issued within fifteen (15) days, but the parties shall not delay compliance with or enforcement of the award due to the issuance of a written opinion. The arbitrator may order cessation of the violation of this Article and other appropriate relief and such award shall be served on all parties by hand or registered mail upon issuance

4.2.5 Such award may be enforced by any court of competent jurisdiction upon the filing of this Agreement and all other relevant documents referred to above in the following manner. The party filing such enforcement proceedings shall give written notice to the other party. In the proceeding to obtain a temporary order enforcing the arbitrator's award as issued under this Article, all parties waive the right to a hearing and agree that such proceedings may be *ex parte*. Such agreement does not waive any party's right to participate in a hearing for a final order of enforcement. The Court's order or orders enforcing the arbitrator's award shall be served on all parties by hand or delivered by certified mail.

4.2.6 Any rights created by statute or law governing arbitration proceedings inconsistent with the above procedure, or which interfere with compliance, are waived by the parties.

4.2.7 The fees and expenses of the arbitrator shall be divided equally between the party instituting the arbitration proceedings provided in this Article and the party alleged to be in breach of its obligation under this Article.

4.2.8 Should either the permanent or the alternate arbitrator identified above no longer work as a labor arbitrator, the County and the Council shall mutually agree to a replacement.

ARTICLE V
PRE-CONSTRUCTION CONFERENCE

5.1 Upon request of the County or the Council, each Contractor will conduct a pre-job conference with the Council at a mutually agreeable time and location within fourteen (14) calendar days after the Effective Date, or if their Construction Contract is executed after the Effective Date, at least fourteen (14) calendar days prior to commencing work on the Project. The Contractor(s) shall be prepared to announce craft assignments and to discuss in detail the scope of work and the other issues set forth below.

5.2 The pre-construction conference shall be attended by a representative of each participating Contractor and each affected Union, and the Council and County may attend at their discretion.

5.3 At least twenty-one (21) calendar days prior to the commencement of any Project work, all Contractors/Employers must submit the applicable Pre-Construction Conference Form, attached hereto as **Addendum C**, to the Council via e-mail.

5.4 The pre-construction conference shall include but not be limited to the following subjects:

(a) A listing of each Contractor's scope of work;

(b) The craft assignments;

(c) The estimated number of craft workers required to perform the work;

(d) Transportation arrangements;

(e) The estimated start and completion dates of the work; and

(f) Discussion of pre-fabricated materials.

5.5 Review Meetings: In order to ensure the terms of this Agreement are being fulfilled and all concerns pertaining to the County, the Unions and the Contractors are addressed, the Project Manager, General Contractor and Senior Executive of the Council, or designated representatives thereof, shall meet on a periodic basis during the term of construction. The County and the Council shall have the right to call a meeting of the appropriate parties to ensure the terms of this Agreement are being fulfilled.

ARTICLE VI
NO DISCRIMINATION

6.1 The Contractors/Employers and the Unions agree to comply with all nondiscrimination provisions of federal, state and local law, to protect employees and applicants for employment, on the Project.

ARTICLE VII
UNION SECURITY

7.1 The Contractors/Employers recognize the Unions as the sole bargaining representative of all craft employees working within the scope of this Agreement, and all such employees must be represented by a Union for the duration of their employment on the Project.

7.2 This Agreement does not require any employee to join a Union or to pay dues or fees to a Union as a condition of working on the Project. The Contractors/Employers shall make and transmit all deductions for Union dues, fees, and assessments that have been authorized by employees in writing in accordance with the applicable Master Agreement. Nothing in this section is intended to supersede the requirements of the applicable Master Agreements as to those Contractors/Employers otherwise signatory to such Master Agreements and as to the employees of those Contractors/Employers.

7.3 Authorized representatives of the Unions shall have access to the Project whenever work covered by this Agreement is being, has been, or will be performed on the Project.

ARTICLE VIII
REFERRAL

8.1 Contractor(s)/Employer(s) performing construction work on the Project shall, in filling craft job requirements, utilize and be bound by the registration facilities and referral systems established or authorized by the Unions signatory hereto. The Contractor(s)/Employer(s)

shall have the right to reject any applicant referred by the Union(s), in accordance with the applicable Master Agreement.

8.2 Contractor(s)/Employer(s) shall have the unqualified right to select and hire directly all supervisors above the level of general foreman it considers necessary and desirable, without such persons being referred by the Union(s) (unless such craft construction employees are covered by existing Master Agreements).

8.3 In the event that referral facilities maintained by the Union(s) are unable to fill the requisition of a Contractor/Employer for employees within a forty-eight (48) hour period (Saturdays, Sundays and Holidays excluded) after such requisition is made by the Contractor/Employer, the Contractor/Employer shall be free to obtain workers from any source. A Contractor/Employer who hires any worker(s) to perform Covered Work on the Project pursuant to this section shall immediately provide the appropriate Union with the name and address of such worker(s) and shall immediately refer such worker(s) to the appropriate Union to satisfy the requirements of Article VII of this Agreement.

ARTICLE IX
WAGES AND BENEFITS

9.1 The Contractors/Employers agree to pay contributions to the vacation, pension and/or other form of deferred compensation plan, apprenticeship, worker protection and assistance, and health benefit funds established by the applicable Master Agreement(s) for each hour worked on the Project, in the amounts designated in the Master Agreement(s) of the appropriate local Union(s).

9.2 By signing this Agreement, the Contractors/Employers adopt and agree to be bound by the written terms of the legally established Trust Agreements described in Section 9.1, which may from time to time be amended, specifying the detailed basis on which payments are to be made into, and benefits paid out of, such Trust Funds. The Contractors/Employers authorize the parties to such local Trust Agreements to appoint trustees and successor trustees to administer the Trust Funds and hereby ratify and accept the trustees so appointed as if made by the Contractors/Employers. The Contractors/Employers agree to execute a separate Subscription Agreement(s) when such Trust Fund(s) requires such document(s).

9.3 Wages, Hours, Terms and Conditions of Employment: The wages, hours and other terms and conditions of employment on the Project shall be governed by the Master Agreement of the respective craft, to the extent such Master Agreement is not inconsistent with this Agreement. Where a subject is covered by the Master Agreement and not covered by this Agreement, the Master Agreement will prevail. When a subject is covered by both the Master Agreement and this Agreement, to the extent there is any inconsistency, this Agreement will prevail.

9.4 Holidays: Holidays shall be in compliance with the applicable Master Agreement.

ARTICLE X
APPRENTICES

10.1 Recognizing the need to develop adequate numbers of competent workers in the construction industry, the Contractors/Employers shall, to the extent legally required and consistent with the applicable program, employ apprentices from a California state-approved Joint Apprenticeship Training Program in the respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured.

10.2 The apprentice ratios will be in compliance with the applicable provisions of the California Labor Code and Prevailing Wage Rate Determinations.

10.3 Consistent with the Master Agreements, there shall be no restriction on the utilization of apprentices in performing the work of their craft, provided they are properly supervised.

10.4 Pre-Apprenticeship: Recognizing that the Bay Area Apprenticeship Coordinators Association, the San Mateo Workforce Investment Board, the San Mateo County Union Community Alliance, and the California Division of Apprenticeship Standards have established a countywide Pre-Apprenticeship Program – the Trades Introduction Program (TIP San Mateo) – to prepare students to become apprentices to work in construction-related trades, and acknowledging that JobTrain also creates opportunities for people to acquire relevant skills through high-value training and effective personal development programs, the parties agree to provide opportunities for employment on the Project for students who have completed the TIP or JobTrain program by being admitted to trade apprenticeship programs. As such, each individual Project shall endeavor to employ a minimum of two (2) TIP and two (2) Job Train graduates who meet the local Union relevant requirements for admittance into a California Certified Joint Labor Management Apprenticeship Training Program.

ARTICLE XI
HELMETS TO HARDHATS

11.1 The Contractors/Employers and Unions recognize a desire to facilitate the entry into the building and construction trades of veterans who are interested in careers in the building and construction industry. The Contractors/Employers and Unions agree to utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter "Center") and the Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the parties.

11.2 The Unions and Contractors/Employers agree to coordinate with the Center to participate in an integrated database of veterans interested in working on the Project and of apprenticeship and employment opportunities for this Project. To the extent permitted by law, the Unions will give credit to such veterans for bona fide, provable past experience.

ARTICLE XII
COMPLIANCE

12.1 It shall be the responsibility of the Contractors/Employers and Unions to investigate and monitor compliance with the provisions of the Agreement contained in Article IX. Nothing in this Agreement shall be construed to interfere with or supersede the usual and customary legal remedies available to the Unions and/or employee benefit Trust Funds to collect delinquent Trust Fund contributions from Contractors/Employers on the Project. The County shall monitor and enforce compliance with the prevailing wage requirements of the state and the Contractors/Employers' compliance with this Agreement.

ARTICLE XIII
GRIEVANCE ARBITRATION PROCEDURE

13.1 Project Labor Disputes: All disputes involving the application or interpretation of a Master Agreement to which a Contractor/Employer and a Union are parties shall be resolved pursuant to the resolution procedures of the Master Agreement. All disputes relating to the interpretation or application of this Agreement, other than disputes under Article IV (Work Stoppages, Strikes, Sympathy Strikes and Lockouts) and Article XIV (Work Assignments and Jurisdictional Disputes), shall be subject to resolution by the grievance arbitration procedures set forth below.

13.2 Employee Discipline: All disputes involving the discipline and/or discharge of an employee working on the Project shall be resolved through the grievance and arbitration provisions contained in the Master Agreement for the craft of the affected employee. No employee working on the Project shall be disciplined or discharged without just cause.

13.3 No grievance shall be recognized unless the grieving party (Union or District Council on its own behalf, or on behalf of an employee whom it represents, or a Contractor/Employer on its own behalf) provides notice in writing to the party with whom it has a dispute within five (5) business days after becoming aware of the dispute but in no event more than thirty (30) business days after it reasonably should have become aware of the event giving rise to the dispute. Time limits may be extended by mutual agreement of the parties.

13.4 Grievances shall be settled according to the following procedures:

Step 1: Within five (5) business days after the receipt of the written notice of the grievance, the representative of the involved Union or District Council, or his/her designee, and the representative of the involved Contractor/Employer, shall confer and attempt to resolve the grievance.

Step 2: If the grievance is not resolved at Step 1, within five (5) business days of the Step 1 meeting, the alleged grievance may be referred in writing by either involved party to the Business Manager(s) of the affected Union(s) involved and the Labor Relations Manager of the Contractor/Employer, or the Contractor/Employer's designated representative, for discussion and resolution. Regardless of which party has initiated the grievance, the Union shall notify its International Union representative prior to the Step 2 meeting, and the International Union

representative shall advise if it intends to participate in the Step 2 meeting. The Project Manager and the Council shall have the right to participate in any efforts to resolve the dispute at Step 2.

Step 3: If the grievance is not resolved at Step 2, within five (5) business days of the Step 2 meeting, either party may request the dispute be submitted to arbitration or the time may be extended by mutual consent of both parties. Within five (5) business days after referral of a dispute to Step 3, the representatives shall notify the permanent arbitrator, or if he is not available, his alternate, for final and binding arbitration. The parties agree that if the permanent arbitrator set forth in Article IV or his alternate is not available, an arbitrator shall be selected by the alternate striking method from the list of three (3) below. The order of striking names from the list of arbitrators shall be determined by a coin toss, the winner of which shall decide whether they wish to strike first or second

1. William Riker
2. Morris Davis
3. John Kagel

13.5 The decision of the Arbitrator shall be final and binding on all parties. The Arbitrator shall have no authority to change, amend, add to or detract from any of the provisions of the Agreement. The expense of the Arbitrator shall be borne equally by both parties. The Arbitrator shall arrange for a hearing on the earliest available date from the date of his/her selection. A decision shall be given to the parties within five (5) calendar days after completion of the hearing unless such time is extended by mutual agreement. A written opinion may be requested by a party from the presiding Arbitrator.

13.6 The time limits specified at any step of the Grievance Procedure may be extended by mutual agreement of the parties. However, failure to process a grievance, or failure to respond in writing within the time limits provided above, without an agreed upon extension of time, shall be deemed a waiver of such grievance without prejudice, or without precedent to the processing and/or resolution of like or similar grievances or disputes.

13.7 In order to encourage the resolution of disputes and grievances at Steps 1 and 2 of this Grievance Procedure, the parties agree that such settlements shall not be precedent setting.

13.8 Should any of the arbitrators listed in this Article or Article IV no longer work as a labor arbitrator, the County and the Council shall mutually agree to a replacement

ARTICLE XIV
WORK ASSIGNMENTS AND JURISDICTIONAL DISPUTES

14.1 The assignment of Covered Work will be solely the responsibility of the Employer performing the work involved; and such work assignments will be in accordance with the Plan for the Settlement of the Jurisdictional Disputes in the Construction Industry (the "Plan") or any successor Plan.

14.2 All jurisdictional disputes on this Project between or among the building and

construction trades Unions and the Employers parties to this Agreement, shall be settled and adjusted according to the present Plan established by the Building and Construction Trades Department or any other plan or method of procedure that may be adopted in the future by the Building and Construction Trades Department. Decisions rendered shall be final, binding and conclusive on the Employers and Unions parties to this Agreement.

14.3 If a dispute arising under this Article involves the Northern California Carpenters Regional Council or any of its subordinate bodies, an Arbitrator shall be chosen by the procedures specified in Article V, Section 5 of the Plan from a list composed of John Kagel, Thomas Angelo, Robert Hirsch and Thomas Pagan, and the Arbitrator's hearing on the dispute shall be held at the offices of the California State Building and Construction Trades Council in Sacramento, California, within fourteen (14) days of the selection of the Arbitrator. All other procedures shall be as specified in the Plan.

14.4 All jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage, or slow-down of any nature, and the Employer's assignment shall be adhered to until the dispute is resolved. Individual employees violating this section shall be subject to immediate discharge. Each Employer will conduct a pre-job conference with the Council prior to commencing work. The County and the Project Manager will be advised in advance of all such conferences and may participate if they wish. Pre-job conferences for different Employers may be held together.

ARTICLE XV
MANAGEMENT RIGHTS

15.1 Consistent with the Schedule A agreements, the Contractors/Employers shall retain full and exclusive authority for the management of their operations, including the right to direct their work force in their sole discretion. No rules, customs or practices shall be permitted or observed which limit or restrict production, or limit or restrict the working efforts of employees, except that lawful manning provisions in the Master Agreement shall be recognized.

ARTICLE XVI
DRUG AND ALCOHOL TESTING

16.1 The use, sale, transfer, purchase and/or possession of a controlled substance, alcohol and/or firearms at any time during the work day is prohibited.

16.2 Drug and alcohol testing shall be conducted in accordance with the Substance Abuse Prevention Policies contained in the applicable Schedule A.

ARTICLE XVII
SAVINGS CLAUSE

17.1 It is not the intent of the parties to this Agreement to violate any law. The parties agree that in the event any article, provision, clause, sentence or word of the Agreement is determined to be illegal or void as being in contravention of any applicable law, by a court of competent jurisdiction, the remainder of the Agreement shall remain in full force and effect. The parties further agree that if any article, provision, clause, sentence or word of the Agreement is

determined to be illegal or void, by a court of competent jurisdiction, the parties shall substitute, by mutual agreement, in its place and stead, an article, provision, clause, sentence or word which will meet the objections to its validity and which will be in accordance with the intent and purpose of the article, provision, clause, sentence or word in question.

17.2 The parties agree that in the event a decision of a court of competent jurisdiction materially alters the terms of the Agreement such that the intent of the parties is defeated, then the entire Agreement shall be null and void.

17.3 If a court of competent jurisdiction determines that all or part of the Agreement is invalid and/or enjoins the County from complying with all or part of its provisions and the County accordingly determines that the Agreement will not be required as part of an award to a Contractor/Employer, the Unions will no longer be bound by the provisions of Article IV.

ARTICLE XVIII
TERM

18.1 This Agreement shall be included in the bid documents, requests for proposals, or other equivalent Project solicitations by the County or any Contractor(s)/Employer(s) issued after the effective date of this Agreement, which shall indicate that entering into this Agreement is a condition of the award of a Construction Contract(s) for the Project.

18.2 This Agreement shall become effective on the day it is executed by the County and by the Council. Projects identified on Addendum B shall also be subject to the Side Letter attached hereto as **Addendum D**.

18.3 This Agreement may be executed in counterparts, such that original signatures may appear on separate pages and when bound together all necessary signatures shall constitute an original. Faxed or emailed PDF signature pages transmitted to other parties to this Agreement shall be deemed the equivalent of original signatures.

COUNTY OF SAN MATEO

By: _____ Date: _____

SAN MATEO COUNTY BUILDING AND
CONSTRUCTION TRADES COUNCIL

By: _____ Date: _____
James Ruigomez, Business Manager

UNION SIGNATURES

International Association of Heat and Frost Insulators & Asbestos Workers Local #16

_____

Brick Layers & Allied Crafts Local #3

_____

International Brotherhood of Electrical Workers Local #617

_____

International Association of Bridge Structural & Ornamental Iron Workers Local #377

_____

International Union of Operating Engineers Local #3

_____

United Association of Plumbers & Steamfitters Local Union #467

_____

Sprinkler Fitters Local #483

_____

Sheet Metal Workers Local #104

_____

Plasterers Local Union #66

_____

District Council of Plasterers & Cement Masons of No. California

_____

District Council #16 for Painters #913, Glaziers #718 & Carpet Layers #12

_____

Roofers & Waterproofers Local Union #40

_____

International Brotherhood of Teamsters Local Union #853

_____

Elevator Constructors Local 8

_____

Laborers Local 67

_____

U.A. Local 355

_____

Sign & Display Local 510

_____

Laborers Local #261

_____

[*Signatures Continued*]

Boilermakers Local 549

_____

International Brotherhood of Teamsters Local Union #350

_____

Northern California Carpenters Regional Council, on behalf of itself and its affiliated Local Unions

_____

Carpenters 46 Northern California Counties Conference Board, on behalf of itself and its affiliated Local Unions

_____

Northern California District Council of Laborers, on behalf of itself and its affiliated Local Unions

_____

Addendum A

AGREEMENT TO BE BOUND

[Date]
[Addressee]
[Address]

Re: Project Labor Agreement for the County of San Mateo -- Agreement to be Bound

Dear Mr./Ms. _____:

The undersigned confirms that it agrees to be a party to and bound by the Project Labor Agreement for the County of San Mateo as such Agreement may, from time to time, be amended by the parties or interpreted pursuant to its terms.

By executing this **Agreement to be Bound**, the undersigned subscribes to, adopts and agrees to be bound by the written terms of the legally established trust agreements as set forth in Section 9.1, as they may from time to time be amended, specifying the detailed basis upon which contributions are to be made into, and benefits made out of, such trust funds, and ratifies and accepts the trustees appointed by the parties to such trust funds. The undersigned agrees to execute a separate Subscription Agreement(s) for such trust funds when such trust fund(s) require(s) such document(s).

The obligation to be a party to and bound by this Agreement shall extend to all work covered by this Agreement undertaken by the undersigned. The undersigned shall require all of its subcontractors, of whatever tier, to become similarly bound for all their work within the scope of this Agreement by signing an identical Agreement to be Bound.

This letter shall constitute a subscription agreement, to the extent of the terms of the letter.

CONTRACTOR/SUBCONTRACTOR:_____

California Contractor State License No. or Motor Carrier (CA) Permit No.: _____

Name of Authorized Person (print): _____

Signature of Authorized Person: _____

Title of Authorized Person: _____

Telephone Number of Authorized Person:_____

Address of Authorized Person:_____

State Public Works Registration Number: _____

Addendum B

COVERED PROJECTS LIST

San Mateo County Office Building 3 (COB3)

San Mateo County Parking Structure 2 (PS2)

Cordilleras Mental Health Center (Cordilleras)

Addendum C

PRE-CONSTRUCTION CONFERENCE FORMS

[*See attached*]

Addendum D

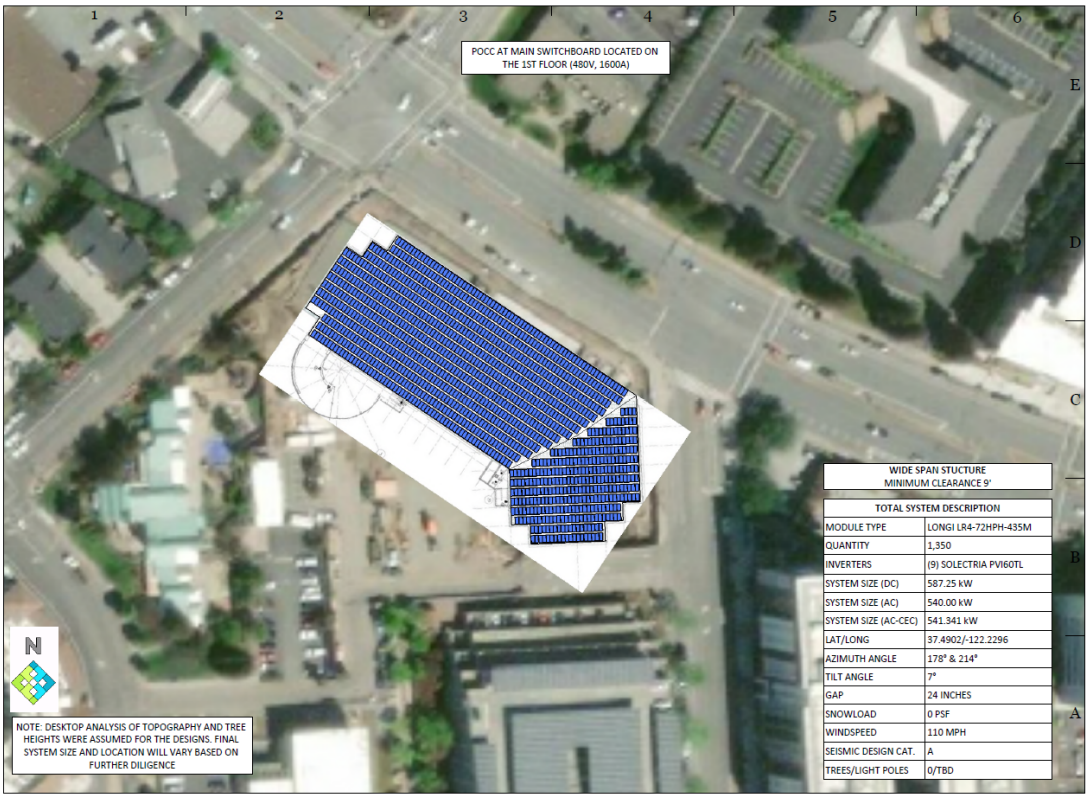
SIDE LETTER

All prime contractors already engaged by the County on Covered Projects shall sign an Agreement to be Bound within ten (10) business days of the effective date of this Agreement. In addition, for any subcontracts already entered into by said prime contractors prior to the effective date of this Agreement, for which work has not yet been completed, a request shall be made to the subcontractor to sign an Agreement to be Bound within ten (10) business days of the effective date of this Agreement.

For the avoidance of doubt, this Agreement shall apply to and govern all other prime contracts and subcontracts on Covered Projects, and all contractors that have signed an Agreement to be Bound must conduct a pre-job conference.

135692\1103691

Schedule 14 – Site Layout



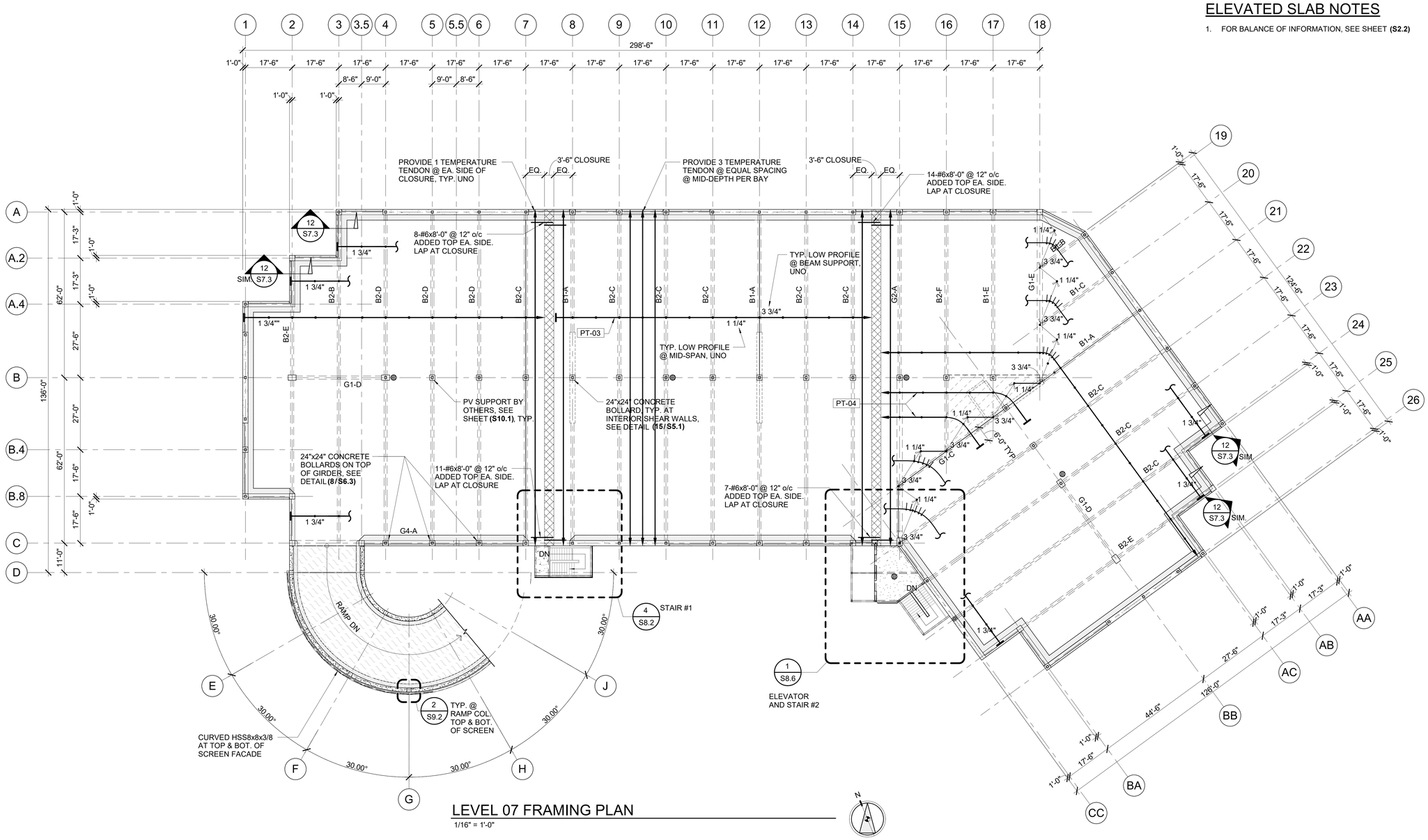
Schedule 15 PS2 Preliminary Garage Designs & SLD

Site Details

PV Description	- Long-span canopies on roof deck of new parking structure. -
Siting Preferences/ Constraints	- Steel embed plates for column attachment provided by others. See SHEET S2.7 LEVEL 07 FRAMING PLAN for embed locations and SHEET S10.1 PV FRAMING DETAILS/DETAIL 20 for embed details. - PPA vendor responsible for attaching canopy structure to steel embeds. - Canopy minimum clear height of 9'.
Concurrent Site Work	- Building is new construction. Coordination with general contractor and other trades required.
Main Service	- Located in electrical room on 1st floor as shown on SHEET A2.1 LEVEL 01 PARKING PLAN. - Physical interconnection via line side tap as shown on SHEET E5.01 ELECTRICAL SINGLE LINE DIAGRAMS. - 3 PG&E meters at facility serve the main building load, EV charging station load, and fire pump load.
Homerun	- Conduit stub-outs to be provided by others on roof. - Conduit from roof to electrical room to be provided by others. - See SHEET E3.07 LEVEL 07 – POWER AND FIRE ALARM PLAN for location.
Fire Marshall Requirements	- Under-canopy sprinklers required and to be provided by others. - Emergency Power Off (EPO) required.

ELEVATED SLAB NOTES

1. FOR BALANCE OF INFORMATION, SEE SHEET **(S2.2)**



LEVEL 07 FRAMING PLAN

1/16" = 1'-0"

N

16'-0" 0' 32'-0" 64'-0"

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

Architects + Engineers + Parking Planners

WATRY DESIGN, INC.

San Jose, California
Irvine, California
Dallas, Texas

watrydesign.com

REGISTERED PROFESSIONAL ENGINEER
JESSICA ARMSTRONG MCINERNEY
C 63755
01/16/19
CIVIL
STATE OF CALIFORNIA

LEVEL 07 FRAMING PLAN

SAN MATEO COUNTY PARKING STRUCTURE 2

REDWOOD CITY, CA

REVISIONS

NO.	DATE	BY

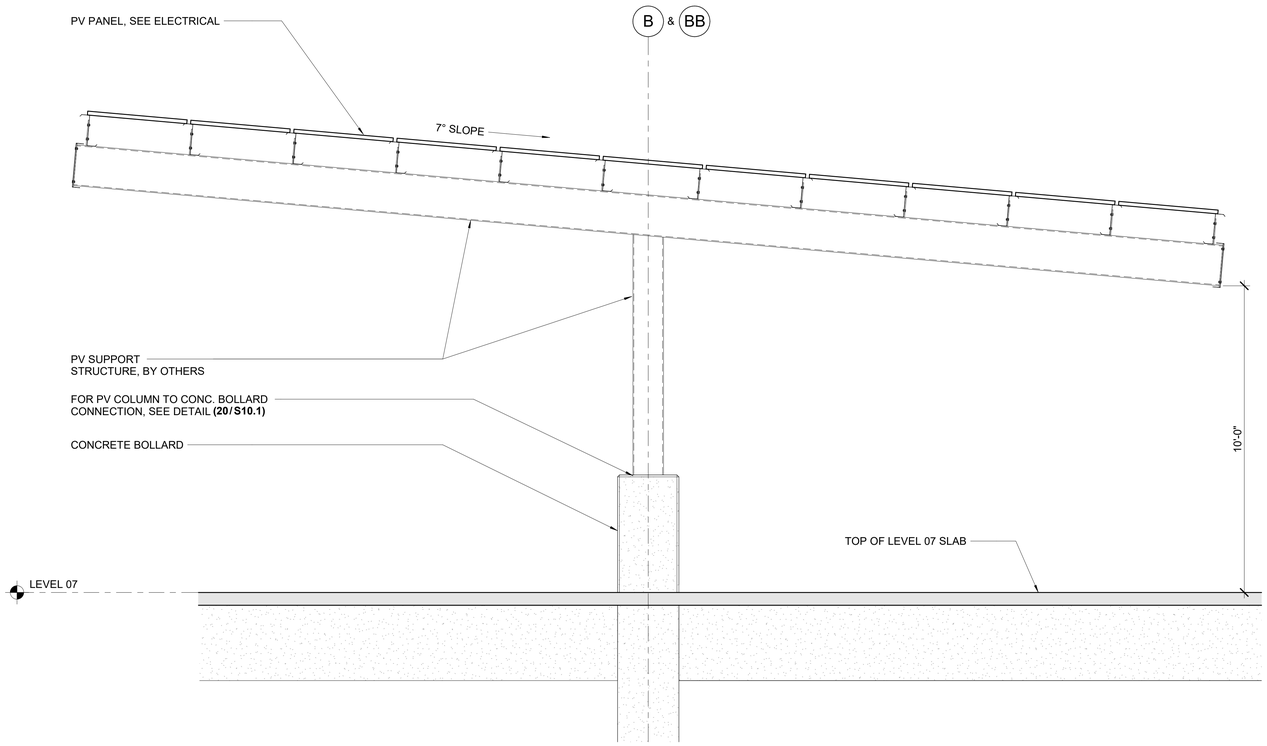
ISSUED FOR PLAN CHECK

JOB NO.:	15-022
DATE :	01/16/19
DESIGN:	C. MAULINO
DRAWN:	NAVARRO
CHK. BY:	J.A. McINERNEY
SCALE :	As indicated

SHEET:

S2.7

1/16/2019 12:47:33 PM



6 S10.1 — ALONG GRID B AND BB
TYPICAL PV SECTION
1/2" = 1'-0"

LOADS

1. **VERTICAL LOADS**:

   PV PANEL WEIGHT = 3.0 PSF
   MISCELLANEOUS DEAD LOAD = 3.0 PSF
   LIVE LOAD =10 PSF (NON-REDUCIBLE) OR 300 # POINT LOAD.

2. **SEISMIC DESIGN:** ASCE 7-10 SECTION 13.3

$$F_p = \frac{0.4 a_p S_{DS} W_p}{\left[\frac{R_p}{I_p}\right]} \left[1+2\frac{z}{h}\right]$$

$$F_{p,\,MAX} = 1.6 S_{DS} I_p W_p$$

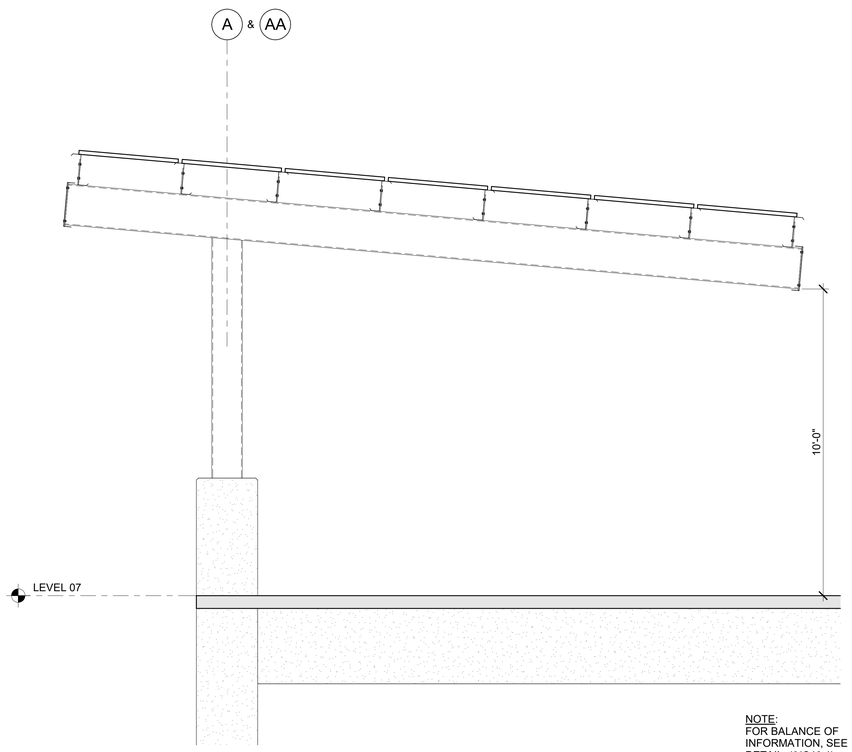
$$F_{p,\,MIN} = 1.3 S_{DS} I_p W_p$$

DESCRIPTION	FACTOR
SHORT PERIOD SPECTRAL ACCELERATION, S_{DS}	1.126
COMPONENT AMPLIFICATION FACTOR, a_p	2.5
COMPONENT IMPORTANCE FACTOR, I_p	1.0
COMPONENT RESPONSE MODIFICATION FACTOR, R_p	2.5
HEIGHT IN STRUCTURE AT POINT OF ATTACHMENT, z	73.33 FT
AVERAGE ROOF HEIGHT OF STRUCTURE, h	73.33 FT

3. **WIND DESIGN**: COLD-FORMED STEEL PURLINS: ASCE 7-10 COMPONENTS AND CLADDING PART 5, SECTION 30.8 (OPENING BUILDING, ANY HEIGHT, DIRECTIONAL PROCEDURE). STRUCTURAL STEEL SUPERSTRUCTURE: MWFRS DIRECTIONAL PROCEDURE, PART 1, SECTION 27.2 (OPEN BUILDING ANY HEIGHT).

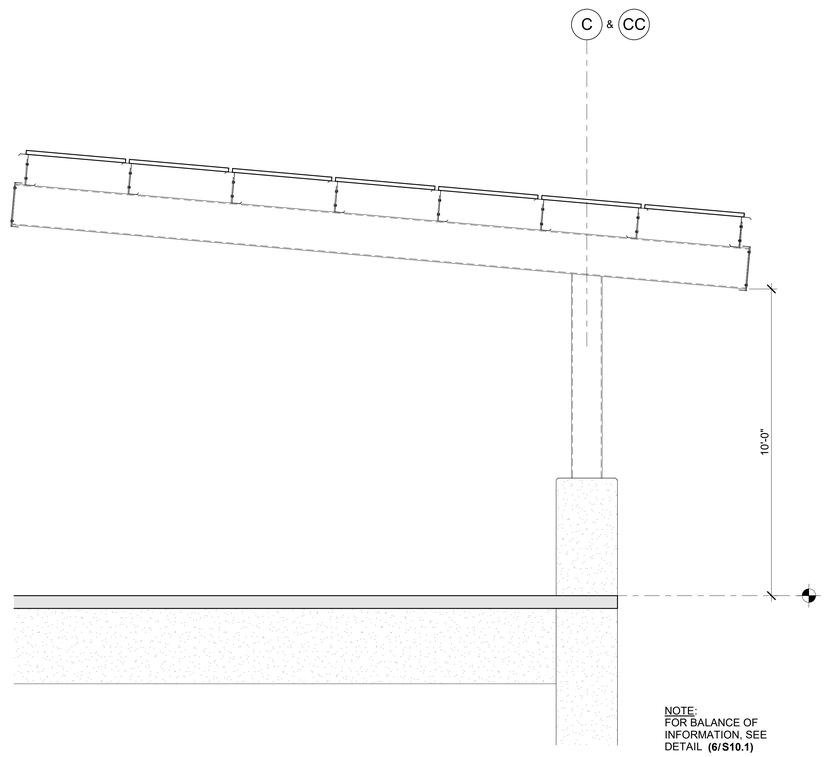
DESCRIPTION	FACTOR
BASIC WIND SPEED:	V = 110 MPH
EXPOSURE CATEGORY:	B
RISK CATEGORY:	II

10 S10.1
PV FRAMING DESIGN LOADS
12" = 1'-0"



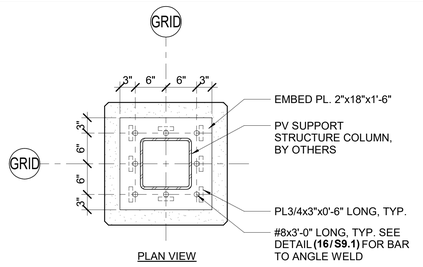
NOTE:
FOR BALANCE OF INFORMATION, SEE DETAIL **(6/S10.1)**

16 S10.1 — ALONG GRID A AND AA
PV FRAMING SECTION
1/2" = 1'-0"



NOTE:
FOR BALANCE OF INFORMATION, SEE DETAIL **(6/S10.1)**

18 S10.1 — ALONG GRID C AND CC
PV FRAMING SECTION
1/2" = 1'-0"



PLAN VIEW

EMBED CAPACITY:
Mu = 150 KIP-FT
Vu = 15 KIPS

20 S10.1 — PV EMBED CONNECTION
DETAIL
1" = 1'-0"

Architects + Engineers + Parking Planners
WATRY DESIGN, INC.
San Jose, California
Irvine, California
Dallas, Texas
watrydesign.com

REGISTERED PROFESSIONAL ENGINEER
JESSICA ARMSTRONG MCINERNEY
01/16/19
C 63755
CIVIL
STATE OF CALIFORNIA

PV FRAMING DETAILS

SAN MATEO COUNTY PARKING STRUCTURE 2
REDWOOD CITY, CA

REVISIONS

NO.	DATE	BY

ISSUED FOR PLAN CHECK

JOB NO.:	15-022
DATE :	01/16/19
DESIGN:	C. MAULINO
DRAWN:	NAVARRO
CHK. BY:	J.A. McINERNEY
SCALE :	As indicated

SHEET:
S10.1

1/16/2019 12:49:43 PM

TRANSFORMER SECONDARY COPPER FEEDER AND GROUNDING REQUIREMENT

SIZE (KVA)	FEEDER TAG	FEEDER DESCRIPTION	SECONDARY FEEDER SIZE: CONDUIT	SECONDARY FEEDER SIZE: CONDUCTORS ①	SECONDARY FEEDER SIZE: FEEDER GROUND ②	GROUNDING ELECTRODE CONDUCTOR ③	SYSTEM BONDING JUMPER ②
30	T1004	100 AMP, 3 PHASE, 4 WIRE	1-1.50"	4 #1	#6	#6 in 3/4" C.	#6
45	T1504	150 AMP, 3 PHASE, 4 WIRE	1-2.00"	4 #1/0	#6	#6 in 3/4" C.	#6
75	T2504	250 AMP, 3 PHASE, 4 WIRE	1-2.50"	4 #250	#2	#2 in 3/4" C.	#2
112.5	T4004	400 AMP, 3 PHASE, 4 WIRE	2-2.00"	2 SETS OF 4 #3/0	#1/0 PER SET	#1/0 in 3/4" C.	#1/0
150	T5004	500 AMP, 3 PHASE, 4 WIRE	2-2.50"	2 SETS OF 4 #250	#1/0 PER SET	#1/0 in 3/4" C.	#1/0
225	T8004	800 AMP, 3 PHASE, 4 WIRE	2-3.50"	2 SETS OF 4 #600	#3/0 PER SET ④	#2/0 in 1" C.	#3/0 ④
300	T10004	1000 AMP, 3 PHASE, 4 WIRE	3-3.00"	3 SETS OF 4 #400	#3/0 PER SET	#3/0 in 1" C.	#3/0

SCHEDULE GENERAL NOTES:

1. CONDUCTORS AND CONDUITS SHOWN IN THIS SCHEDULE ARE BASED ON COPPER CONDUCTORS WITH DUAL RATED THHN/THWN-2 INSULATION IN AMBIENT TEMPERATURE OF 30° C (86° F) AND EMT CONDUIT.
2. FEEDERS CONSISTING OF MULTIPLE SETS OF CONDUCTORS AND CONDUITS ARE TO BE PROVIDED WITH THE INDICATED SIZE GROUND CONDUCTOR IN EACH CONDUIT.

SCHEDULE NOTES:

① PER CEC 240.21(C), THE PROVISIONS OF 240.4(B) SHALL NOT BE PERMITED FOR TRANSFORMER SECONDARY CONDUCTORS.
② SIZED PER CEC TABLE 250.102(C)(1).
③ SIZED PER CEC TABLE 250.66.

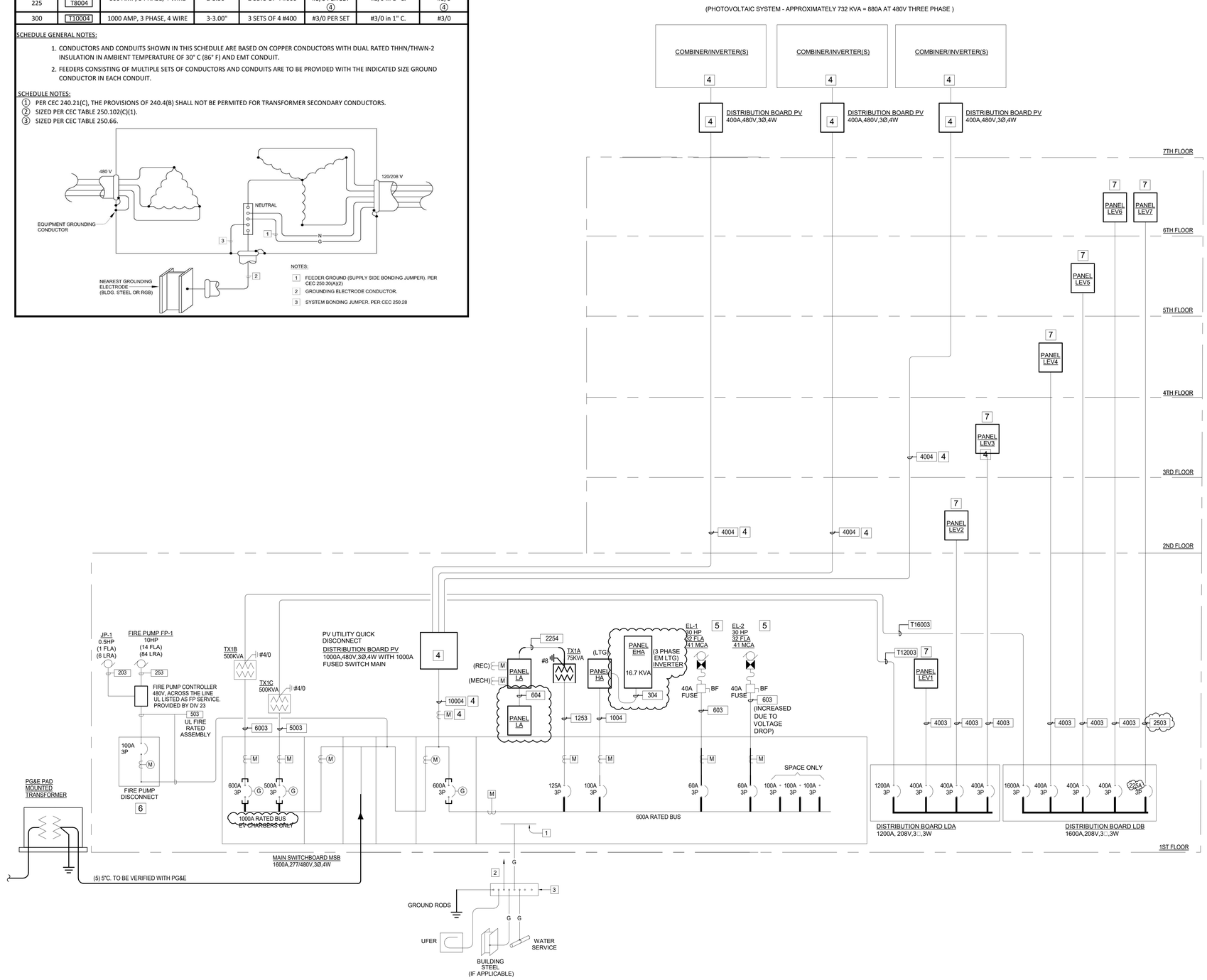
NOTES:
1. FEEDER GROUND (SUPPLY SIDE BONDING JUMPER). PER CEC 250.30(A)(2)
2. GROUNDING ELECTRODE CONDUCTOR.
3. SYSTEM BONDING JUMPER. PER CEC 250.28

GENERAL SHEET NOTES

1. ALL PANELS AND SWITCHBOARDS SHALL BE PROVIDED WITH MICRO- PROCESSOR-BASED METERS (SATEC) TO PROVIDE REAL TIME ENERGY MONITORING. PROVIDE BMS INTERFACE AS REQUIRED.
2. PROVIDE PERMANENT LABELING AT EACH SERVICE DISCONNECTING MEANS PER CEC 225.37, 230.2(E).
3. POST THE RATED AVAILABLE CALCULATED FAULT CURRENT ON MAIN SWITCHBOARD PER CEC 110.24.

NUMBERED SHEET NOTES

1. EQUIPMENT COPPER GROUNDING BAR BONDED TO ENCLOSURE.
2. GROUND CONNECTION TO TELECOMMUNICATION MAIN GROUND BUS TMGB-MDF.
3. MAIN BUILDING REFERENCE GROUND BUS. REFER TO DETAILS ON SHEET E7.1
4. SCOPE OF WORK FOR THE FUTURE PHOTOVOLTAIC SYSTEM IS LIMITED TO SPACE PLANNING, CONDUIT PATHWAYS (BLOCKOUTS AND/OR CORINGS), AND EMBEDDED CONDUIT ROUTING ONLY. ALL WORK THAT CAN BE INSTALLED AFTER CONSTRUCTION OF THE STRUCTURE IS EXCLUDED.
5. ELEVATOR PROVIDED WITH INTEGRAL BATTERY LOWERING DEVICE.
6. FIRE PUMP DISCONNECTING MEANS, SIZED FOR LOCKED ROTOR CURRENT PER CEC 695.4(B).
7. PROVIDE PHENOLIC PLAQUE WITH RED BACKGROUND AND WHITE LETTERS STATING "EMERGENCY POWER OFF. ELECTRIC VEHICLE CHARGING STATION."



COPPER FEEDER SCHEDULE

FEEDER TAG	FEEDER DESCRIPTION	CONDUIT	CONDUCTORS: PHASE/NEUTRAL	CONDUCTORS: GROUND	REMARKS
16004	1600 AMP,3 PHASE,4 WIRE	4-3.50"	4 SETS OF 4 #600 KCMIL	1 #4/0 PER SET	-
16003	1600 AMP,3 PHASE,3 WIRE	4-3.00"	4 SETS OF 3 #600 KCMIL	1 #4/0 PER SET	③
14004	1400 AMP,3 PHASE,4 WIRE	4-3.00"	4 SETS OF 4 #500 KCMIL	1 #4/0 PER SET	③
14003	1400 AMP,3 PHASE,3 WIRE	4-3.00"	4 SETS OF 3 #500 KCMIL	1 #4/0 PER SET	-
12004	1200 AMP,3 PHASE,4 WIRE	3-3.50"	3 SETS OF 4 #600 KCMIL	1 #3/0 PER SET	-
12003	1200 AMP,3 PHASE,3 WIRE	3-3.00"	3 SETS OF 3 #600 KCMIL	1 #3/0 PER SET	③
10004	1000 AMP,3 PHASE,4 WIRE	3-3.00"	3 SETS OF 4 #400 KCMIL	1 #2/0 PER SET	-
10003	1000 AMP,3 PHASE,3 WIRE	3-2.50"	3 SETS OF 3 #400 KCMIL	1 #2/0 PER SET	-
8004	800 AMP,3 PHASE,4 WIRE	2-3.50"	2 SETS OF 4 #600 KCMIL	1 #1/0 PER SET	③
8003	800 AMP,3 PHASE,3 WIRE	2-3.00"	2 SETS OF 3 #600 KCMIL	1 #1/0 PER SET	③
7004	700 AMP,3 PHASE,4 WIRE	2-3.00"	2 SETS OF 4 #400 KCMIL	1 #1/0 PER SET	②
7003	700 AMP,3 PHASE,3 WIRE	2-3.00"	2 SETS OF 3 #400 KCMIL	1 #1/0 PER SET	② ③
6004	600 AMP,3 PHASE,4 WIRE	2-3.00"	2 SETS OF 4 #350 KCMIL	1 #1 PER SET	-
6003	600 AMP,3 PHASE,3 WIRE	2-2.50"	2 SETS OF 3 #350 KCMIL	1 #1 PER SET	-
5004	500 AMP,3 PHASE,4 WIRE	2-2.50"	2 SETS OF 4 #250 KCMIL	1 #2 PER SET	-
5003	500 AMP,3 PHASE,3 WIRE	2-2.00"	2 SETS OF 3 #250 KCMIL	1 #2 PER SET	-
4504	450 AMP,3 PHASE,4 WIRE	1-3.50"	4 #600 KCMIL	1 #2	②
4503	450 AMP,3 PHASE,3 WIRE	1-3.00"	3 #600 KCMIL	1 #2	②
4004	400 AMP,3 PHASE,4 WIRE	1-3.50"	4 #500 KCMIL	1 #2	②
4003	400 AMP,3 PHASE,3 WIRE	1-3.00"	3 #500 KCMIL	1 #2	②
3504	350 AMP,3 PHASE,4 WIRE	1-3.00"	4 #400 KCMIL	1 #2	②
3503	350 AMP,3 PHASE,3 WIRE	1-2.50"	3 #400 KCMIL	1 #2	②
3004	300 AMP,3 PHASE,4 WIRE	1-3.00"	4 #350 KCMIL	1 #4	-
3003	300 AMP,3 PHASE,3 WIRE	1-2.50"	3 #350 KCMIL	1 #4	-
2754	275 AMP,3 PHASE,4 WIRE	1-2.50"	4 #300 KCMIL	1 #4	③
2753	275 AMP,3 PHASE,3 WIRE	1-2.50"	3 #300 KCMIL	1 #4	-
2504	250 AMP,3 PHASE,4 WIRE	1-2.50"	4 #250 KCMIL	1 #4	-
2503	250 AMP,3 PHASE,3 WIRE	1-2.50"	3 #250 KCMIL	1 #4	-
2254	225 AMP,3 PHASE,4 WIRE	1-2.50"	4 #4/0	1 #4	-
2253	225 AMP,3 PHASE,3 WIRE	1-2.00"	3 #4/0	1 #4	-
2004	200 AMP,3 PHASE,4 WIRE	1-2.00"	4 #3/0	1 #6	-
2003	200 AMP,3 PHASE,3 WIRE	1-2.00"	3 #3/0	1 #6	-
1754	175 AMP,3 PHASE,4 WIRE	1-2.00"	4 #2/0	1 #6	-
1753	175 AMP,3 PHASE,3 WIRE	1-2.00"	3 #2/0	1 #6	-
1504	150 AMP,3 PHASE,4 WIRE	1-2.00"	4 #1/0	1 #6	-
1503	150 AMP,3 PHASE,3 WIRE	1-1.50"	3 #1/0	1 #6	-
1254	125 AMP,3 PHASE,4 WIRE	1-1.50"	4 #1	1 #6	-
1253	125 AMP,3 PHASE,3 WIRE	1-1.25"	3 #1	1 #6	-
1004	100 AMP,3 PHASE,4 WIRE	1-1.25"	4 #2	1 #8	②
1003	100 AMP,3 PHASE,3 WIRE	1-1.25"	3 #2	1 #8	②
904	90 AMP,3 PHASE,4 WIRE	1-1.25"	4 #3	1 #8	②
903	90 AMP,3 PHASE,3 WIRE	1-1.25"	3 #3	1 #8	②
804	80 AMP,3 PHASE,4 WIRE	1-1.25"	4 #3	1 #8	-
803	80 AMP,3 PHASE,3 WIRE	1-1.25"	3 #3	1 #8	-
704	70 AMP,3 PHASE,4 WIRE	1-1.25"	4 #4	1 #8	-
703	70 AMP,3 PHASE,3 WIRE	1-1.00"	3 #4	1 #8	-
604	60 AMP,3 PHASE,4 WIRE	1-1.00"	4 #6	1 #10	②
603	60 AMP,3 PHASE,3 WIRE	1-0.75"	3 #6	1 #10	② ③
504	50 AMP,3 PHASE,4 WIRE	1-1.00"	4 #6	1 #10	-
503	50 AMP,3 PHASE,3 WIRE	1-0.75"	3 #6	1 #10	-
404	40 AMP,3 PHASE,4 WIRE	1-0.75"	4 #8	1 #10	-
403	40 AMP,3 PHASE,3 WIRE	1-0.75"	3 #8	1 #10	-
304	30 AMP,3 PHASE,4 WIRE	1-0.75"	4 #10	1 #10	-
303	30 AMP,3 PHASE,3 WIRE	1-0.75"	3 #10	1 #10	-
204	20 AMP,3 PHASE,4 WIRE	1-0.50"	4 #12	1 #12	-
203	20 AMP,3 PHASE,3 WIRE	1-0.50"	3 #12	1 #12	-
154	15 AMP,3 PHASE,4 WIRE	1-0.50"	4 #12	1 #12	-
153	15 AMP,3 PHASE,3 WIRE	1-0.50"	3 #12	1 #12	-

FEEDER SCHEDULE GENERAL NOTES

1. CONDUCTORS AND CONDUITS SHOWN IN THIS SCHEDULE ARE BASED ON COPPER CONDUCTORS WITH DUAL RATED THHN/THWN-2 INSULATION IN AMBIENT TEMPERATURE OF 30° C (86° F) AND EMT CONDUIT.
2. FEEDERS CONSISTING OF MULTIPLE SETS OF CONDUCTORS AND CONDUITS ARE TO BE PROVIDED WITH THE INDICATED SIZE GROUND CONDUCTOR IN EACH CONDUIT.

FEEDER SCHEDULE REMARK

② CEC SECTION 240.4(B) APPLIED WHEN SIZING CONDUCTORS.
③ INCREASE CONDUIT TO THE NEXT LARGER TRADE SIZE WHEN USING SCHEDULE 40 OR 80 PVC CONDUIT.

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ALAMEDA, CA 94501
(530) 886-8556

REGISTERED PROFESSIONAL ENGINEER CRAIG W. OTT No. E17909 ELECTRICAL STATE OF CALIFORNIA

ELECTRICAL SINGLE LINE DIAGRAMS

SAN MATEO COUNTY PARKING STRUCTURE 2

REDWOOD CITY, CA

REVISIONS

NO.	DATE	BY
1	03/20/2019	CO
2	04/29/2019	CO
3	05/15/2019	PTM
4	07/23/2019	PTM
5	08/27/2019	PTM

CONFORMED SET

JOB NO.:	18-058
DATE :	1/31/20
DESIGN:	DR
DRAWN:	CD/SB
CHK. BY:	PTM
SCALE :	12" = 1'-0"

SHEET:

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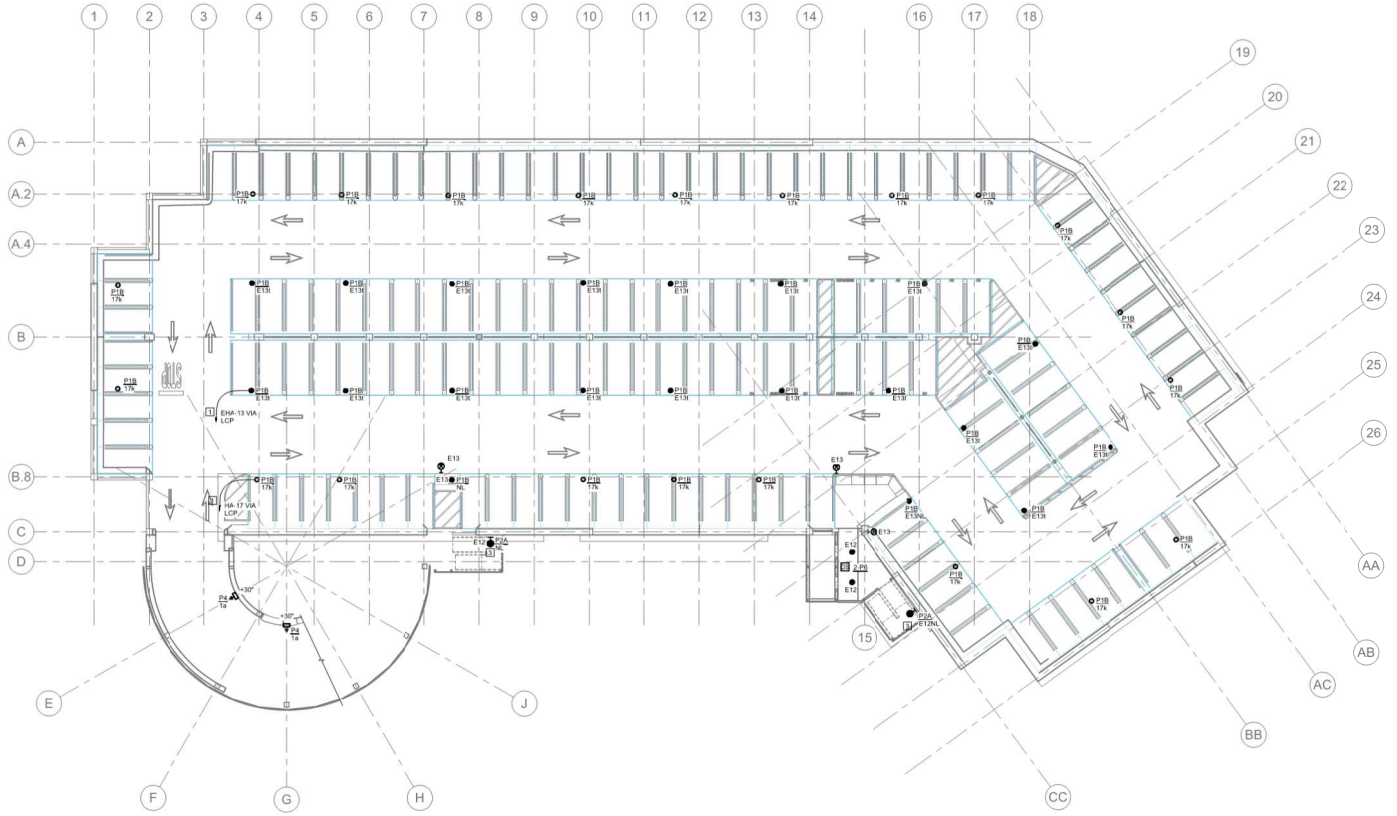
GENERAL SHEET NOTES

1. MINIMUM #10 AWG WIRING
2. CONNECT ALL NORMAL LIGHTING TO PANEL HA
3. CONNECT ALL EMERGENCY LIGHTING TO PANEL EHA
4. TYPE 'P1B' LUMINAIRES AND EXIT SIGNS THIS LEVEL SUPPORTED FROM P.V. SYSTEM SUPERSTRUCTURE. COORDINATE INSTALLATION WITH P.V. SYSTEM PROVIDER

NUMBERED SHEET NOTES

1. PROVIDE DEDICATED NEUTRAL PER FLOOR/CIRCUIT
2. MOUNTING HEIGHT SHOWN IS ABOVE RAMP FLOOR
3. MOUNTED IN CENTER OF PANEL. SEE ARCHITECTURAL ELEVATIONS.



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The Engineering Enterprise
CONSULTING ENGINEERS
1305 MARINA VILLAGE PARKWAY
ALAMEDA, CA 94501
(530) 886-8556

REGISTERED PROFESSIONAL ENGINEER
CRAIG W. OTT
No. E17909
CIVIL
STATE OF CALIFORNIA

LEVEL 07 - LIGHTING PLAN

SAN MATEO COUNTY PARKING STRUCTURE 2

REDWOOD CITY, CA

REVISIONS

NO.	DATE	BY
1	03/20/2019	CO
2	04/29/2019	CO

CONFORMED SET

JOB NO.:	18-058
DATE :	1/31/20
DESIGN:	DR
DRAWN:	CD/SB
CHK. BY:	PTM
SCALE :	1/16" = 1'-0"

SHEET:

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LIGHTING CONTROL RELAY PANEL SCHEDULE (LCP)

RELAY	DESIGNATION	CIRCUIT	AREA	CONTROL SCHEDULE	ON/OFF
1	a	HA-1	RAMP - LEVEL 01 ---> 06	ON 24 HOURS	LVS
2	b	HA-3	GARAGE - ENTRIES LEVEL 01	ON DAWN TO DUSK (DAYLIGHT TRANSITION LIGHTING)	TC/LVS
3	c	HA-5	GARAGE - PARKING LEVEL 01	ON 24 HOURS	LVS
4	d	HA-7	GARAGE - PARKING LEVEL 02	ON 24 HOURS	LVS
5	f	HA-9	GARAGE - PARKING LEVEL 03	ON 24 HOURS	LVS
6	g	HA-11	GARAGE - PARKING LEVEL 04	ON 24 HOURS	LVS
7	h	HA-13	GARAGE - PARKING LEVEL 05	ON 24 HOURS	LVS
8	j	HA-15	GARAGE - PARKING LEVEL 06	ON 24 HOURS	LVS
9	k	HA-17	GARAGE - PARKING LEVEL 07	ON 24 HOURS	LVS
10	aa	HA-1	RAMP - LEVEL 06 ---> 07	ON 30 MIN BEFORE SUNSET, OFF 30 MIN AFTER SUNRISE	TC
11	bb	HA-15	GARAGE - ENTRY LEVEL 06	ON DAWN TO DUSK (DAYLIGHT TRANSITION LIGHTING)	TC/LVS
12			SPARE		
			BARRIER FOR SEPARATELY DERIVED SOURCES		
13	m	EHA-1	GARAGE - PARKING LEVEL 01	ON 24 HOURS	LVS
14	n	EHA-3	GARAGE - PARKING LEVEL 02	ON 24 HOURS	LVS
15	p	EHA-5	GARAGE - PARKING LEVEL 03	ON 24 HOURS	LVS
16	q	EHA-7	GARAGE - PARKING LEVEL 04	ON 24 HOURS	LVS
17	r	EHA-9	GARAGE - PARKING LEVEL 05	ON 24 HOURS	LVS
18	s	EHA-11	GARAGE - PARKING LEVEL 06	ON 24 HOURS	LVS
19	t	EHA-13	GARAGE - PARKING LEVEL 07	ON 24 HOURS	LVS
20	v	EHA-10	SITE - PLAZA POLES	ON 30 MIN BEFORE SUNSET, OFF 30 MIN AFTER SUNRISE (1)	TC/LVS
21			SPARE		
22			SPARE		
23			SPARE		
24			SPARE		
			BARRIER FOR SEPARATELY DERIVED SOURCES		
25	w	LA-20	SITE SIGNAGE	ON 30 MIN BEFORE SUNSET, OFF 30 MIN AFTER SUNRISE	TC
26	y	LA-22	SITE SIGNAGE	ON 30 MIN BEFORE SUNSET, OFF 30 MIN AFTER SUNRISE	TC
27	z	LA-24	SITE SIGNAGE	ON 30 MIN BEFORE SUNSET, OFF 30 MIN AFTER SUNRISE	TC
28			SPARE		
29			SPARE		
30			SPARE		
31			SPARE		
32			SPARE		
33			S P A C E		
34			S P A C E		
35			S P A C E		
36			S P A C E		

LVS **LOW VOLTAGE SWITCH**
TC **TIMECLOCK**
(1) **PROVIDE UL924 LISTED BYPASS RELAY TO TURN LIGHTS ON DURING POWER FAILURE**

PROJECT: **SAN MATEO PARKING STRUCTURE 2**

LOCATION: **ELEC. CLOSET RM. 601**

PANEL - LEV6

LOAD SERVED	LOAD (KVA) LTG.	RECP.	OTHER	C. B. AMP	POLE	A B C		C. B. AMP	POLE	LOAD (KVA) LTG.	RECP.	OTHER	LOAD SERVED
EV CHARGER - DUAL CORE (HALF)			3.4	40	2	1 *	2	40	2			3.4	EV CHARGER - DUAL CORE (HALF)
			3.4		---	*			---			3.4	
EV CHARGER - DUAL CORE (HALF)			3.3	40	2	5	* 6	40	2			3.4	EV CHARGER - DUAL CORE (HALF)
			3.4		---	*			---			3.4	
EV CHARGER - DUAL CORE (HALF)			3.4	40	2	9	* 10	40	2			3.4	EV CHARGER - DUAL CORE (HALF)
			3.4		---	*			---			3.4	
EV CHARGER - DUAL CORE (HALF)			3.4	40	2	13 *	14	40	2			3.4	EV CHARGER - DUAL CORE (HALF)
			3.4		---	*			---			3.4	
EV CHARGER - DUAL CORE (HALF)			3.4	40	2	17	* 18	40	2			3.4	EV CHARGER - DUAL CORE (HALF)
			3.4		---	*			---			3.4	
EV CHARGER - DUAL CORE (HALF)			3.4	40	2	21	* 22	40	2			3.4	EV CHARGER - DUAL CORE (HALF)
			3.4		---	*			---			3.4	
EV CHARGER - DUAL CORE (HALF)			3.4	40	2	25 *	26	40	2			3.4	EV CHARGER - SPLIT CORE
			3.4		---	*			---			3.4	
EV CHARGER - DUAL CORE (HALF)			3.4	40	2	29	* 30	40	2			3.4	EV CHARGER - SPLIT CORE
			3.4		---	*			---			3.4	
SPACE						33	* 34						SPACE
SPACE						35	* 36						SPACE
SPACE						37 *	38						SPACE
SPACE						39	* 40						SPACE
SPACE						41	* 42						SPACE
TOTALS ---------->			53.6									53.6	<-------- TOTALS

VOLTAGE: **208V, 3Ø, 3W**
S.C.A.: **22,000 AIC RMS SYM.**
MOUNTING: **SURFACE**
BUS SIZE: **400 AMP BUSING**
MAINS: **MAIN LUGS ONLY**

For Office Use Only

CONNECT LOAD (KVA)		DEMAND FACTOR	DEMAND LOAD (KVA)	
	X	100% OF LOAD	=	<---- LIGHTING
	X	NEC 220-13	=	<---- RECEPTACLES
107	X	1.00	= 107	<---- OTHER
107	KVA	298 Amps	107 KVA	298 AMPS

134 KVA <---- 80% Rated Breaker ----> 134 KVA 372 AMPS

THESE VALUES SUMMARIZE THE LOADS FROM ALL PANEL SECTIONS

PHASE BALANCE

	A	B	C
KVA	40	34	33
%	37%	31%	31%
AMP	335	280	279

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ADDITIONAL FEATURES:

DATE ISSUED:
DATE PRINTED: 01/28/20

PROJECT: **SAN MATEO PARKING STRUCTURE 2**

LOCATION: **ELEC. CLOSET RM. 601**

PANEL - LEV7

LOAD SERVED	LOAD (KVA) LTG.	RECP.	OTHER	C. B. AMP	POLE	A B C		C. B. AMP	POLE	LOAD (KVA) LTG.	RECP.	OTHER	LOAD SERVED
EV CHARGER - DUAL CORE (HALF)			3.4	40	2	1 *	2	40	2			3.4	EV CHARGER - DUAL CORE (HALF)
			3.4		---	*			---			3.4	
EV CHARGER - DUAL CORE (HALF)			3.3	40	2	5	* 6	40	2			3.4	EV CHARGER - DUAL CORE (HALF)
			3.4		---	*			---			3.4	
EV CHARGER - DUAL CORE (HALF)			3.4	40	2	9	* 10	40	2			3.4	EV CHARGER - SPLIT CORE
			3.4		---	*			---			3.4	
EV CHARGER - DUAL CORE (HALF)			3.4	40	2	13 *	14	40	2			3.4	EV CHARGER - SPLIT CORE
			3.4		---	*			---			3.4	
SPACE						17	* 18	40	2			3.4	EV CHARGER - SPLIT CORE
SPACE						19 *			---			3.4	
SPACE						21	* 22						SPACE
SPACE						23	* 24						SPACE
SPACE						25 *	26						SPACE
SPACE						27	* 28						SPACE
SPACE						29	* 30						SPACE
						XXX *	XXX						
						XXX	* XXX						
						XXX	* XXX						
						XXX *	XXX						
						XXX	* XXX						
						XXX	* XXX						
TOTALS ---------->			26.8									33.5	<-------- TOTALS

VOLTAGE: **208V, 3Ø, 3W**
S.C.A.: **22,000 AIC RMS SYM.**
MOUNTING: **SURFACE**
BUS SIZE: **225 AMP BUSING**
MAINS: **MAIN LUGS ONLY**

For Office Use Only

CONNECT LOAD (KVA)		DEMAND FACTOR	DEMAND LOAD (KVA)	
	X	100% OF LOAD	=	<---- LIGHTING
	X	NEC 220-13	=	<---- RECEPTACLES
60	X	1.00	= 60	<---- OTHER
60	KVA	168 Amps	60 KVA	168 AMPS

75 KVA <---- 80% Rated Breaker ----> 75 KVA 210 AMPS

THESE VALUES SUMMARIZE THE LOADS FROM ALL PANEL SECTIONS

PHASE BALANCE

	A	B	C
KVA	23	20	17
%	39%	33%	28%
AMP	195	168	140

panel13.xls 05/12/98

ADDITIONAL FEATURES:

DATE ISSUED:
DATE PRINTED: 01/28/20

LUMINAIRE SCHEDULE

TYPE	IMAGE	MANUFACTURER & CATALOG NUMBER	LAMP TYPE	WATTAGE, VOLTAGE	DESCRIPTION
P1		LITHONIA VCPG SERIES #VCPG-LED-P4-40K-T5M-MVOLT-PM-UPL2-PIR-FINISH GARDCO #SVPG SERIES EQUAVALENT McGRAW-EDISON #TopTier SERIES EQUAVALENT	TIER 1 LED 8700 NOMINAL INITIAL LUMENS 4000K	65 WATTS 277 VAC	PENDANT MOUNTED PARKING GARAGE LUMINAIRE, NOMINAL 20 INCH DIAMETER, 5 INCH HEIGHT. 24 INCHES FROM CEILING TO BOTTOM OF LUMINAIRE. 8-12 PERCENT UPLIGHT. TYPE 5 DISTRIBUTION. INTEGRAL MOTION SENSOR AND DAYLIGHT SENSOR. SET DAYLIGHT SENSOR TO 200% OF MEASURED ELECTRIC-ONLY LIGHTING LEVELS. SET MOTION SENSOR TO 20 PERCENT OUTPUT WHEN NO MOTION IS DETECTED. STANDARD COLOR AS SELECTED BY ARCHITECT.
P1A		LITHONIA VCPG SERIES #VCPG-LED-P5-40K-T5M-MVOLT-PM-UPL2-PIR-FINISH GARDCO #SVPG SERIES EQUAVALENT McGRAW-EDISON #TopTier SERIES EQUAVALENT	TIER 1 LED 11000 NOMINAL INITIAL LUMENS 4000K	91 WATTS 277 VAC	SIMILAR TO TYPE 'P1' EXCEPT HIGHER LUMEN OUTPUT.
P1B		LITHONIA VCPG SERIES #VCPG-LED-P2-40K-T5M-MVOLT-PM-PIR-FINISH GARDCO #SVPG SERIES EQUAVALENT McGRAW-EDISON #TopTier SERIES EQUAVALENT	TIER 1 LED 4800 NOMINAL INITIAL LUMENS 4000K	34 WATTS 277 VAC	SIMILAR TO TYPE 'P1' EXCEPT LOWER LUMEN OUTPUT, NO UPLIGHT, NO DIMMING PHOTOCELL. COORDINATE PENDANT LENGTH WITH PV SUPERSTRUCTURE SYSTEM TO PROVIDE MOUNTING HEIGHTS AS SHOWN ON PLANS.
P1C		**LITHONIA VCPG SERIES #VCPG-LED-P4-40K-T5M-MVOLT-PM-UPL2-PIR-FINISH GARDCO #SVPG SERIES EQUAVALENT McGRAW-EDISON #TopTier SERIES EQUAVALENT**	**TIER 1 LED 8700 NOMINAL INITIAL LUMENS 4000K**	**65 WATTS 277 VAC**	**SIMILAR TO TYPE 'P1' EXCEPT WITH SHORTER STEM DUE TO MOUNTING ON SURFACE JUNCTION BOX. COORDINATE LENGTH OF STEM SUCH THAT ALL LUMINAIRES ARE AT SAME DISTANCE FROM CEILING.**
P1D		**LITHONIA VCPG SERIES #VCPG-LED-P5-40K-T5M-MVOLT-PM-UPL2-PIR-FINISH GARDCO #SVPG SERIES EQUAVALENT McGRAW-EDISON #TopTier SERIES EQUAVALENT**	**TIER 1 LED 11000 NOMINAL INITIAL LUMENS 4000K**	**91 WATTS 277 VAC**	**SIMILAR TO TYPE 'P1A' EXCEPT WITH SHORTER STEM DUE TO MOUNTING ON SURFACE JUNCTION BOX. COORDINATE LENGTH OF STEM SUCH THAT ALL LUMINAIRES ARE AT SAME DISTANCE FROM CEILING.**
P2		BEGA #22433 LIGMAN #VEKTER1 SERIES EQUIVALENT **OR APPROVED EQUIVALENT**	TIER 1 LED 2300 NOMINAL INITIAL LUMENS 4000K	26 WATTS 277 VAC	WALL MOUNTED INDIRECT ASYMMETRIC SCONCE, NOMINAL 6 INCHES WIDE, 6 INCHES TALL, 8 INCH PROJECTION. STANDARD COLOR AS SELECTED BY ARCHITECT.
P2A		BEGA #22433 LIGMAN #VEKTER1 SERIES EQUIVALENT **OR APPROVED EQUIVALENT**	TIER 1 LED 2300 NOMINAL INITIAL LUMENS 4000K	26 WATTS 277 VAC	WALL MOUNTED DIRECT ASYMMETRIC SCONCE, NOMINAL 6 INCHES WIDE, 6 INCHES TALL, 8 INCH PROJECTION. STANDARD COLOR AS SELECTED BY ARCHITECT. FROSTED LENS.
P3					NOT USED
P3A		GOTHAM INCITO SERIES #ICOCYL-40/10-2WR-25D-277-FCM-FINISH BEGA #66982 **OR APPROVED EQUIVALENT**	TIER 2 LED 1000 NOMINAL INITIAL LUMENS 4000K	13 WATTS 277 VAC	SIMILAR TO TYPE 'P3' EXCEPT 4 INCH DIAMETER, 6 INCH HEIGHT, REDUCED LUMEN OUTPUT, 25 DEGREE BEAM. FROSTED LENS.
P4		BEGA #22249 **LIGMAN #URA-40552-W40-FINISH**	TIER 1 LED 500-850 NOMINAL INITIAL LUMENS 4000K	8 WATTS 277 VAC	RECESSED FORWARD THROW STEPLIGHT, NOMINAL 8 INCHES SQUARE, 4 INCH DEPTH. STANDARD COLOR AS SELECTED BY ARCHITECT.
P5		GOTHAM INCITO SERIES #ICOCYL-40/80-6WR-70D-277-FCM-FINISH **METEOR ATRIA 6 SERIES #AS6-80W-408-UNV-60-STD-FINISH-SUM**	TIER 2 LED 8000 NOMINAL INITIAL LUMENS 4000K	100 WATTS 277 VAC	SURFACE CEILING MOUNTED DOWNLIGHT, NOMINAL 10 INCH DIAMETER, 16 INCH HEIGHT. REGRESSED LENS TO OBSCURE LEDS. WHITE INTERIOR CONE FINISH. 70 DEGREE BEAM ANGLE. STANDARD COLOR AS SELECTED BY ARCHITECT.
P5A		GOTHAM INCITO SERIES #ICOCYL-40/65-6WR-70D-277-FCM-FINISH **METEOR ATRIA 6 SERIES #AS6-60W-408-UNV-60-STD-FINISH-SUM**	TIER 2 LED 6500 NOMINAL INITIAL LUMENS 4000K	80 WATTS 277 VAC	SIMILAR TO TYPE 'P5' EXCEPT LOWER LUMEN OUTPUT.
P5B		**GOTHAM INCITO SERIES #ICOCYL-40/35-4WR-60D-277-ACC-FINISH METEOR ATRIA 4 SERIES #AS4-35W-408-UNV-60-STD-FINISH-AP10**	**TIER 2 LED 3500 NOMINAL INITIAL LUMENS 4000K**	**36 WATTS 277 VAC**	**SIMILAR TO TYPE 'P5' EXCEPT SMALLER SIZE, LOWER LUMEN OUTPUT, SHORT AIRCRAFT CABLE PENDANT FOR MOUNTING ON SLOPED CEILING. MOUNT AS CLOSE TO CEILING AS PRACTICABLE.**
P6		GOTHAM INCITO SERIES #ICO-40/20-4FINISH-40D-277 **METEOR REV SERIES #RS4N-20-408-277-NOD-45-FINISH**	TIER 2 LED 2000 NOMINAL INITIAL LUMENS 4000K	23 WATTS 277 VAC	RECESSED DOWNLIGHT, NOMINAL 4 INCH DIAMETER APERTURE, MAXIMUM 8 INCH HEIGHT. REGRESSED LENS TO OBSCURE LEDS. INTERIOR CONE FINISH AS SELECTED BY ARCHITECT. 40 DEGREE BEAM ANGLE.
P6A		GOTHAM INCITO SERIES #ICO-40/25-4FINISH-25D-277 **METEOR REV SERIES #RS4N-40-408-277-NOD-35-FINISH**	TIER 2 LED 2500 NOMINAL INITIAL LUMENS 4000K	33 WATTS 277 VAC	SIMILAR TO TYPE 'P6' EXCEPT INCREASED LUMEN OUTPUT, 25 DEGREE BEAM.
F1		CREE #LS4-25L-40K OR EQUIVALENT	TIER 1 LED 2500 NOMINAL INITIAL LUMENS	23 WATTS 277 VAC	4 FOOT LED STRIP LIGHT WITH OBSCURING LENS.
F1E		CREE #LS4-25L-40K-EB14 OR EQUIVALENT	TIER 1 LED 2500 NOMINAL INITIAL LUMENS	23 WATTS 277 VAC	SIMILAR TO TYPE 'F1' EXCEPT WITH INTEGRAL EMERGENCY BACKUP.
F2		COLUMBIA #LXEM-4-40/W-RFA-E-U OR EQUIVALENT	TIER 1 LED 2000 NOMINAL INITIAL LUMENS	20 WATTS 277 VAC	4 FOOT ENCLOSED AND GASEKETED LED WITH OBSCURING LENS.
S1		BEGA #77208 **SELUX #RRSL-1-RP10-2G350-30-FINISH-277**	TIER 1 LED 1750 NOMINAL INITIAL LUMENS **3000K**	37 WATTS 277 VAC	POST-TOP MOUNTED DISK LUMINAIRE WITH INDIRECT LIGHT SOURCE. NOMINAL 32 INCH DIAMETER DISK. MOUNT ON 10 FOOT HIGH, 4 INCH DIAMETER POLE MOUNTED ON FLUSH CONCRETE BASE. STANDARD COLOR AS SELECTED BY ARCHITECT.
S2		GARDCO #P26-48L-600-NWG2-AR-2-277-PCB-FP1-RPA-HIS-COLOR #RA5-STB-22-D1-FINISH LITHONIA #D-SERIES EQUIVALENT **OR APPROVED EQUIVALENT**	TIER 2 LED 10000 NOMINAL INITIAL LUMENS **4000K**	89 WATTS 277 VAC	POLE MOUNTED FULL CUTOFF LUMINAIRE, TYPE 2 DISTRIBUTION WITH HOUSE SIDE SHIELD. NOMINAL 32 INCH BY 16 INCH. WITH INTEGRAL BUTTON PHOTOCELL. MOUNT ON 5 INCH DIAMETER, 22 FOOT POLE ON 30 INCH RAISED CONCRETE BASE. FULL BASE COVER. STANDARD COLOR AS SELECTED BY ARCHITECT.
S3		GARDCO #SFRA-140L-1150-NWG2-AR-3-277-PCB-FP1-COLOR #RA4.5-STB-10-D1-FINISH LITHONIA #OMERO MR1 SERIES EQUIVALENT **OR APPROVED EQUIVALENT**	TIER 2 LED 5400 NOMINAL INITIAL LUMENS **4000K**	51 WATTS 277 VAC	POLE MOUNTED CIRCULAR FULL CUTOFF LUMINAIRE, TYPE 3 DISTRIBUTION. NOMINAL 20 INCH DIAMETER TO MATCH TYPE P1. WITH INTEGRAL BUTTON PHOTOCELL. MOUNT ON 4 INCH DIAMETER, 10 FOOT POLE ON 30 INCH RAISED CONCRETE BASE. FULL BASE COVER. STANDARD COLOR AS SELECTED BY ARCHITECT.
EXIT		CW COLE BRUTUS SERIES #LX165-GRN-277-ARROWS-W **EVENLITE SENTRY SERIES #CDW-AC-G-1-COLOR** **LITHONIA EXTREME #LVS-COLOR-1G**	INCL	1 WATT 277 VAC	HEAVY DUTY DIE-CAST ALUMINUM EXIT SIGN, SINGLE STENCIL FACE WITH GREEN LETTERS. BACK-WALL MOUNTED, ARROWS AS SHOWN ON DRAWINGS. STANDARD COLOR AS SELECTED BY ARCHITECT. WEATHERPROOF.

Architects * Engineers * Parking Planners

WATRY DESIGN, INC.

San Jose, California
Irvine, California
Dallas, Texas

watrydesign.com

The Engineering Enterprise
CONSULTING ENGINEERS
1305 MARINA VILLAGE PARKWAY
ALAMEDA, CA 94501
(530) 886-8556

REGISTERED PROFESSIONAL ENGINEER
CRAIG W. OTT
No. E17909
ELECTRICAL
STATE OF CALIFORNIA

SCHEDULES - LIGHTING

SAN MATEO COUNTY PARKING STRUCTURE 2
REDWOOD CITY, CA

REVISIONS

NO.	DATE	BY
1	03/20/2019	CO
2	04/29/2019	CO
4	07/23/2019	PTM
5	08/27/2019	PTM

CONFORMED SET

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SHEET:
E0.03

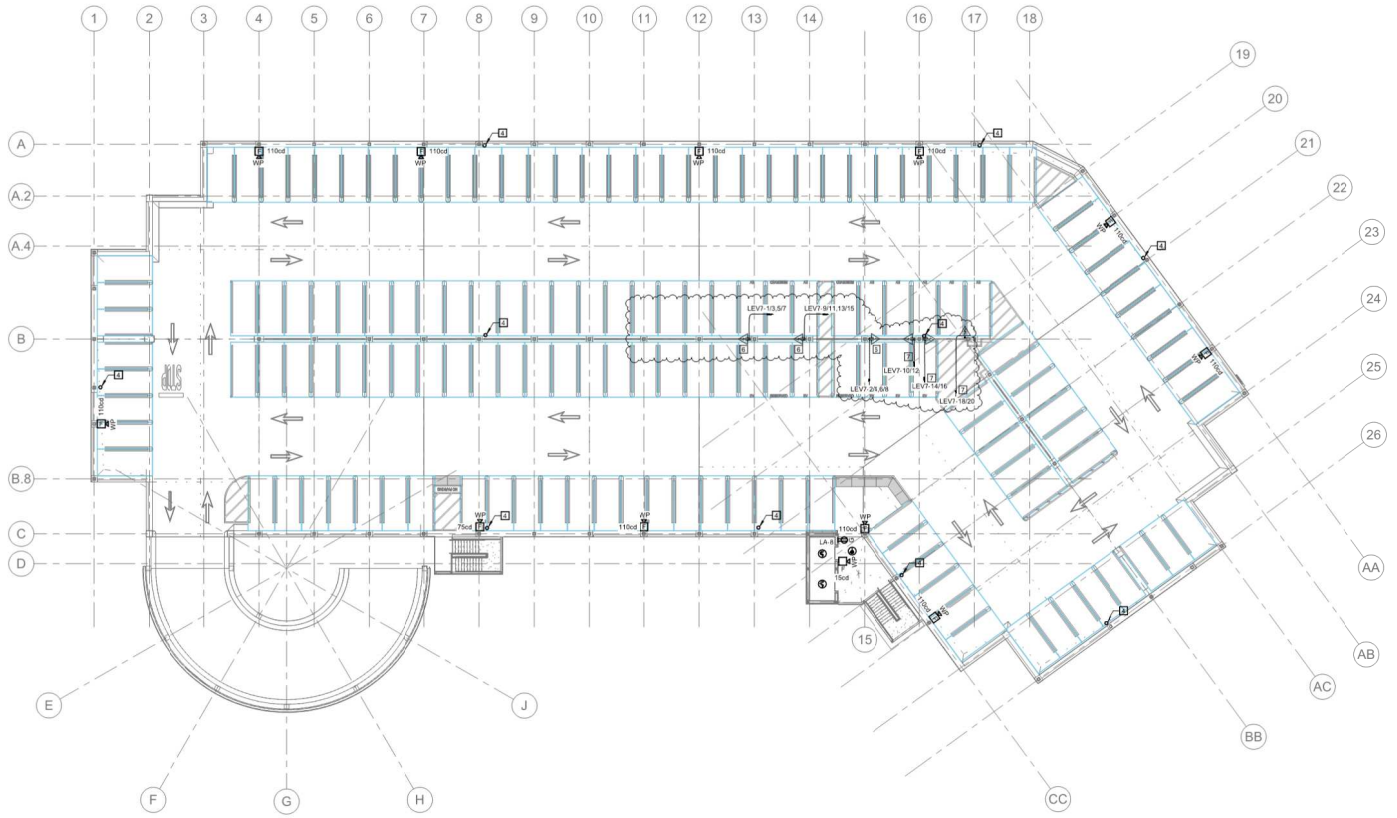
1/30/2020 9:10:06 AM

GENERAL SHEET NOTES

1. MINIMUM #10 AWG WIRING
2. FIRE ALARM DEVICES THIS LEVEL SUPPORTED FROM P.V. SYSTEM SUPERSTRUCTURE. COORDINATE INSTALLATION WITH P.V. SYSTEM PROVIDER.

NUMBERED SHEET NOTES

1. NOT USED.
2. NOT USED.
3. NOT USED.
4. PROVIDE 3" SLEEVE THROUGH THE FLOOR SLAB FOR FUTURE PV SYSTEM CONDUIT ROUTING.
5. NOT USED.
6. EV CHARGING STATION - DUAL. PROVIDED IN ANOTHER DIVISION OF WORK. CONNECT COMPLETE. 4#8 AWG AND #10G IN 1"C.
7. EV CHARGING STATION - DUAL. PROVIDED IN ANOTHER DIVISION OF WORK. CONNECT COMPLETE. 2#8 AWG AND #10G IN 1"C.



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No. E17909
ELECTRICAL
STATE OF CALIFORNIA

LEVEL 07 - POWER AND FIRE ALARM PLAN

SAN MATEO COUNTY PARKING STRUCTURE 2

REDWOOD CITY, CA

REVISIONS

NO.	DATE	BY
1	03/20/2019	CO
2	04/29/2019	CO
3	05/15/2019	PTM
4	07/23/2019	PTM
5	08/27/2019	PTM
7	1/22/2019	PR
		M

CONFORMED SET

JOB NO.:	18-058
DATE :	1/31/20
DESIGN:	DR
DRAWN:	CD/SB
CHK. BY:	PTM
SCALE :	1/16" = 1'-0"

SHEET:

E3.07

1/29/2020 2:36:56 PM