UCSB Solar Photovoltaic PPA Project Phase III
UNIVERSITY OF CALIFORNIA, SANTA BARBARA

Notice of Impending Development

This Notice of Impending Development is for the installation of 6 roof-top and one canopy style solar systems on the University of California Santa Barbara’s Main and North Campus’.

PROJECT DESCRIPTION

Project Location: Solar Photovoltaic Systems will be installed on the roof tops of seven building structures on the Main Campus and on a carport-style canopy above a surface parking lot at the Sierra Madre Villages student housing site (see a map of locations attached).

Purpose and Need: The Solar Photovoltaic project will install systems in eight locations across Main and North Campuses at the University of California, Santa Barbara. The systems would be connected to the Campus’ 12KV electrical distribution system. This project would expand an existing 20 year contract (known as a Power Purchase Agreement or PPA) between the University and a solar electricity provider for third party installation, operation and maintenance of solar photovoltaic (PV) systems on campus facilities in order to reduce and offset current and long-term electrical utility costs as well to reduce greenhouse gas emissions associated with the campus’ electrical demand. The systems would either be removed, purchased by the University, or the contract would be extended after the initial 20 year term.

Setting and Program: The preliminary project design proposes to install approximately 3,318 modules that cover approximately 58,464 square feet of area in various locations (see preliminary project plans in Attachment B). Six solar PV systems would be installed at the following buildings: (1) Building 534 (Arts Building), (2) Building 243 (Intercollegiate Athletics Building), (3) Building 223 (Theater and Dance West Building), (4) Building 525 (Davidson Library), (5) Building 591 (Kerr Hall), and (6) Building 552 (Cheadle Hall). The surface carport will be constructed at UCSB's Sierra Madre Villages student housing site.

The systems are expected to offset the University's peak-time electricity costs by providing at least 2,140,000 kilowatt-hours of electricity each year in the initial years with a degradation factor applied to subsequent years. All systems would be designed to withstand local maximum wind speeds and seismic loading. The project operations and maintenance would include approximately two module washings per year; either with pressurized water methods or robotic methods.

The project proposes to remove five trees. In accordance with LRDP Policy ESH-28 and Appendix 2, Campus Tree Trimming and Removal Program the trees will be replaced at a 1:1 ratio. The project would remove four planted sycamore trees adjacent to the Intercollegiate Athletics Building and one pine tree adjacent to the Arts Building. The sycamore trees are approximately 50-feet tall, 18-inch diameter, and although are a tree typically native to California, these trees were planted when ICA was constructed in 2002-03 (NOID 3-02). The sycamore trees were planted in 2004 and are approximately 14 years old. Replacement trees considered include Arbutus ‘Marina’ or Magnolia ‘Little Gem.’
The pine tree near the Arts building is approximately 60 feet tall, 22-inch diameter, and is approximately 50 years old. The pine tree shows sap production at beetle attack sites at the base of the tree. Other trees in this location are dead from the same. Coast live oak is considered for a replacement tree in this location. A tree replacement plan is attached.

All of the conduits and other equipment will be mounted at or below the roof level of the roof top arrays and will not be visible from the exterior. The carport installation would include a cable management system and 360 degree fascia to minimize aesthetic impact. Mounting materials and canopy structures would be low glare (painted beams and galvanized steel). The modules would include anti-reflective glass (Shields 2010).

The Sierra Madre Apartments parking lot solar array would be installed on the northeast corner of the parking lot. A degraded constructed parking lot swale (see attached photos) is within the shaded area of the canopy and an emergency access (access easement) dirt road is further north outside the canopy. Even further north is the northern Sierra Madre restoration area. Currently there is a six-foot chain link fence on the north perimeter of the parking lot swale which delineates the North Campus Open Space Restoration project area. This fence will be relocated during installation of the array and eventually removed altogether once the NCOS project is complete.

The Solar array would be installed on ten degree fixed-tilt carport canopies supported on piers with a minimum vertical clearance of 11 feet for standard vehicles. The system would overhang approximately 7,832 square feet, or 0.2 acres. The six pedestals supporting the structure would be installed within the parking lot swale on the north edge of the parking lot. The maximum height of the canopies would be approximately 20 feet above the parking surface. Canopies would not conflict with the required 20 feet of minimum clearance for emergency vehicle access routes. One light pole within the proposed array boundaries would be removed and replaced with new dark-sky compliant fully-shielded lighting (3,000 Kelvin in accordance with LRDP Outdoor Lighting Plan standards) which would be attached to the underside of the canopies and shielded to eliminate any potential glare into the restored area and housing further north of the parking lot.

In addition, one nearby light pole would be removed, as it would shade the array. The system would include 330 modules connected to 6 inverters. The system would be tied in to the existing campus electrical infrastructure at Sierra Madre building 1123 within the main electrical room. No parking spaces would be removed for the project.

**Schedule:** Project construction would begin approximately July 2018 and finish around November 2018. It is anticipated that roof system procurement and construction would begin first followed by the surface parking canopy system procurement and construction. The entire project will take five to six months to complete.

**Background and Project Objectives:** The project is consistent with the Environmental Impact Report (EIR) prepared for the 2010 UCSB Long Range Development Plan (LRDP) (UCSB 2008). The LRDP EIR concluded that there would be a less than significant impact on energy resources from implementation of the 2010 LRDP (build out) and no mitigation is required. The University takes an aggressive approach to the efficient use of resources and the Campus Energy Program is aimed at fostering the efficient use of energy resources. One component of the
Campus Energy Program is to encourage all facilities to aggressively apply energy conservation measures including installation of solar panels. The proposed project will provide an alternative source of energy to the Santa Barbara Campus. The project would meet over 12 percent of the Campus’s electrical needs. The project will include an online energy information system that will allow campus personnel to monitor production at each solar array, as well as campus-level energy monitoring.

The project is consistent with LRDP Policy SCEN-04 since rooftop solar energy systems are not included in the building height measurements.

**Policy SCEN-04:** Development shall not exceed the height limits established in Figure D.4. Height shall be measured as the vertical distance at any one point from the existing grade to the highest point of the top of the roof of the structure. The highest point shall be the coping of a flat roof, or peak of the ridge for a pitch or hip roof. Mechanical and electrical equipment and solar energy systems on the roof shall not be included in the height measurement. However, mechanical equipment shall be setback as far as feasible from public roads and other viewing areas and screened by architectural features.

The proposed project implements LRDP Policy SUST-06 with installation of solar power on campus.

**Policy SUST-06:** The University shall minimize energy use and reduce pollution through such methods as the use of solar power and other renewable energy systems, natural lighting, passive solar heating and cooling and other techniques to produce energy efficient development, building management techniques such as smart metering and lighting/appliance management systems that limit waste, and use of light colored buildings and roofing materials.

The proposed project is consistent with LRDP Policy ESH-28 and Appendix 2, Campus Tree Trimming and Removal Program. A tree replacement plan is included with this submittal and the trees proposed to be removed will be replaced at a minimum of 1:1. Bird nesting surveys would be conducted prior to tree removal.

**Policy ESH-28:**
A. The routine trimming and/or removal of trees on campus necessary to maintain campus landscaping or to address potential public safety concerns shall be exempt from the requirement to obtain a Notice of Impending Development (NOID), unless otherwise required pursuant to subparagraph B, below, and provided that the trimming and/or removal activities are carried out consistent with all provisions and protocols of the certified Campus Tree Trimming and Removal Program in Appendix 2, except that the following shall require a NOID:
   1. Trimming and/or removal of trees located within ESHA or on lands designated Open Space as covered in Policy ESH-29,
   2. The removal of any tree associated with new development, re-development, or renovation shall be evaluated separately through the NOID process as detailed in subparagraph C, below;
   3. The removal of tree windrows, and
   4. Trimming and/or removal of egret, heron, or cormorant roosting trees proximate to the Lagoon.
B. All tree trimming and tree removal activities, including trimming or removal that is exempt from the requirement to obtain a Notice of Impending Development, shall be prohibited during the breeding and nesting season (February 15 to September 1) unless the University, in consultation with a qualified arborist, determines that:

1. Immediate tree trimming or tree removal action by the University is required to protect life and property of the University from imminent danger, authorization is required where such activity would occur in ESHA or Open Space through an emergency permit,
2. Trimming or removal of trees located outside of ESHA or Open Space areas during June 15 to September 1, provided where a qualified biologist has found that there are no active raptor nests or colonial birds roosts within 500 feet of the trees to be trimmed or removed, or 3. Is part of a development or redevelopment approved pursuant to a Notice of Impending Development.

C. To preserve roosting habitat for bird species and monarch butterflies, tree(s) associated with new development, re-development, or renovation that are either native or have the potential to provide habitat for raptors or other sensitive species shall be preserved and protected to the greatest extent feasible. Where native, or otherwise biologically significant, trees are retained, new development shall be sited a minimum of five feet from the outer edge of that tree’s canopy drip-line. The removal of such trees shall be evaluated pursuant to the Notice of Impending Development for the new development. Prior to the removal of any native and/or sensitive tree for development purposes, the University shall conduct biological studies to show whether the tree(s) provide nesting, roosting, or foraging habitat for raptors and sensitive bird species, aggregation or significant foraging sites for monarch butterflies, or habitat for other sensitive biological resources. The Commission may condition the subject Notice of Impending Development to secure the seasonal timing restrictions and mitigation requirements otherwise set forth in the Campus Tree Trimming and Removal Program in Appendix 2.

The proposed solar canopy is consistent with LRDP Policy ESH-44. The solar canopy will be installed within the Sierra Madre Apartments (Storke-Whittier property) parking lot outside of the 100-foot buffer from a restored wetland area to the north. The canopy would overhang approximately 7,832 square feet, or 0.2 acres of an adjacent emergency access road. The emergency access road is adjacent to the northern edge of the parking lot on the very southern edge of a wetland buffer and was approved in NOID-1-06 for the Sierra Madre Apartments. It is a dirt road with no vegetation and has recently been used to access portions of the North Campus Restoration Project. Pedestrian and bicycle access will be maintained on the access road and some vegetation may be planted there as landscaping however the road will not be restored as it is to be maintained as emergency access and a public access corridor. See attached Sierra Madre grading plans showing the emergency access road and wetland buffer.

**LRDP Policy ESH-44** – The wetland, riparian, and environmentally sensitive habitat areas on the North Parcel and the Storke-Whittier property shall be permanently retained and restored or enhanced pursuant to the approved restoration plan. The restoration and/or enhancement shall be implemented concurrently with the construction of the Sierra Madre and North Parcel Housing projects (NOID 1-06). Subsequent to successful completion of the restoration plan, these areas shall be maintained to ensure biological and hydrological functions and habitat value.
PROCEDURE
This Notice of Impending Development is being distributed to local governments, community groups, and interested parties pursuant to California Code of Regulation Section 13549-51. A list of interested parties and the NOID public notice is attached. Section 30606 of the Coastal Act and Article 14, Section 13547 through Section 13550 of the California Code of Regulations govern the Coastal Commission’s review of subsequent development where there is a certified LRDP. Section 13549(B) requires the Executive Director or his designee to review the Notice of Impending Development within ten days of receipt and determine whether it provides sufficient information to determine if the proposed development is consistent with the certified LRDP. The Notice is deemed filed when all necessary supporting information has been received.

Within thirty days of filing the Notice of Impending Development, the Executive Director shall report to the Commission and make a recommendation regarding the consistency of the proposed development with the certified LRDP. After a public hearing, by a majority of its members present, the Commission shall determine whether the development is consistent with the certified LRDP and whether conditions are required to bring it into conformance with the LRDP. No construction shall commence until after the Commission votes to render the proposed development consistent with the certified LRDP.

ENVIRONMENTAL ISSUES
This project is classified as generally exempt from CEQA. General/Statutory Exemption: §Section 21080.35. A discussion on environmental issues follows. There are no unusual circumstances which would create an exception to the Exemption. The Notice of Exemption is attached.

Aesthetics: The visual impact from the array installations on top of buildings would occur only from a distance with open views or from an adjacent elevated vantage point. No views would be obstructed. All materials would be anti-reflective (anti-glare glass, painted surfaces and galvanized steel) to reduce glare. The inverters would be decentralized and integrated into the array, reducing the visibility of a bulky central inverter. The cables would be managed by an enclosure system which conceals the wires and reduces visual clutter.

Although LRDP Policy SCEN-04 exempts roof top solar energy systems from consideration when evaluating campus development height limits, the finished heights of the installations will be consistent with the established height limit zones of the LRDP.

Agricultural Resources: There are no agricultural resources at the University.

Air Quality: Installation or operation of the photovoltaic panels would not cause an air quality impact. Solar electrical generation would reduce air pollution for electrical generation elsewhere.

Biological Resources: The project proposes to remove 5 trees. The trees do not constitute raptor habitat since they are in urban-developed areas, growing right up against buildings. The project will include a tree replacement plan to mitigate the loss of trees at a 1:1 ratio in accordance with LRDP Policy ESH-28 and Appendix 2, Campus Tree Trimming and Removal Program. The five replacement trees will either be a lower-growing species planted in the same location, or of like kind planted in a location that will not conflict with maximum solar gain. Tree work will be
performed outside of bird nesting and breeding season. Pre-construction bird surveys will be conducted to evaluate the trees’ potential for providing nesting habitat.

The Sierra Madre Apartments parking lot canopy would shade the parking lot swale and approximately 7,832 square feet, or 0.2 acres of the emergency access/easement road. This shading does not result in impacts to biological resources. If necessary, the swale would be replanted with shade tolerant plants. A shading study is attached. The area shaded purple on the attached shading diagram indicates the area will be shaded for 50 percent or more of daylight hours.

**Cultural Resources:** The project proposes minor trenching for interconnection of the PV systems to the existing electrical grid at the Sierra Madre Villages site. Although there are no identified cultural resource sites within the areas proposed for trenching, campus protocols would be followed in the event cultural resources were discovered.

**Geology:** Although the canopy array would involve minimal ground disturbance and the roof-top arrays would not involve any ground disturbance and would not impact geological resources, geotechnical studies were conducted as part of due diligence. The geotechnical study is attached.

**Hazards and Hazardous Materials.** No hazardous materials would be used.

**Hydrology/Water Quality:** The project would not impact any undeveloped areas. PV panels would be installed on the tops of buildings/parking structures and over an existing ground surface parking lot. The six pedestals supporting the Sierra Madre Apartments parking lot canopy would be installed within the parking lot swale on the north edge of the parking lot. Drainage would remain the same through the swale which drains to the east and into the drainage channel and restoration area to the north.

Rain water would sheet flow over the edges of the photovoltaic panel arrays and drop on to building roofs and parking surfaces. The arrays do not form one contiguous surface and are configured with gaps that would disperse run off at multiple penetration points. The site runoffs would not increase because the project would not increase impervious surfaces. There would be no impact to hydrology or water quality from the installation or operation of the photovoltaic panels.

**Land Use:** The proposed project is located in areas designated as *Academic and Support, Recreation, and Housing*. The project purpose is to supplement the campus with electrical power; and the purpose is consistent with the designated land uses in the 2010 Long Range Development Plan.

**Mineral Resources:** There would be no impact to mineral resources as a result of the proposed project.

**Noise:** Installation and operation of the photovoltaic panels would not create a noise impact.
Population and Housing: There would be no impact to population and housing from the proposed project.

Public Services: The proposed project would not increase the need for public services at the University. There would be no impact to public services as a result of the proposed project.

Recreation: There would be no impact to recreational resources as a result of the proposed project.

Traffic: There would not be an increase of traffic. The project would not require any additional parking.

Utilities: All necessary utilities are available.

REFERENCES

Moore Twining Associates, Inc.  

Sager, Jordan  
2018 Personal communication with Jordan Sager. LEED Program Manager, UCSB Physical Facilities.

Shields, Mark. SunPower Corporation.  

University of California, Santa Barbara (UCSB)  

University of California, Santa Barbara (UCSB)  
2010 Long Range Development Plan, University of California, Santa Barbara
Intercollegiate Athletics 167 kWp
Cheadle Hall 199 kWp
Kerr Hall 216 kWp
Davidson Library Addition 217 kWp
Arts 187 kWp
Theater & Dance 173 kWp
Sierra Madre Parking 155 kWp
I. Summary of Project

The Solar Photovoltaic Power Purchase Agreement Phase III project proposes the removal of 5 trees, at two sites on the Main Campus of University of California, Santa Barbara.

In accordance with LRDP Policy ESH-28 and Appendix 2, Campus Tree Trimming and Removal Program the trees will be replaced at a 1:1 ratio. The project would remove four planted sycamore trees adjacent to the Intercollegiate Athletics Building and one pine tree adjacent to the Arts Building. The sycamore trees are approximately 50-feet tall, 18-diameter, and although are a tree typically native to California, these trees were planted when ICA was constructed in 2002-03 (NOID 3-02). The sycamore trees were planted in 2004 and are approximately 14 years old. Replacement trees considered include Arbutus ‘Marina’ or Magnolia ‘Little Gem.’

The pine tree near the Arts building is 60 feet tall, 22-diameter, and is approximately 50 years old. The pine tree shows sap production at beetle attack sites at the base of the tree. Other trees in this location are dead from the same. Coast live oak is considered for a replacement tree in this location.

A tree replacement plan is attached.

Pre-construction bird surveys will be conducted prior to removal. The trees are located in an urban setting and none of the trees are located within environmentally sensitive habitat area.

II. Mitigation Plan Goals

The 5 replacement trees will be one 15-gallon coastal live oak seedling (Quercus agrifolia) and 4-25-gallon Arbutus ‘Marina’ or Magnolia ‘Little Gem.’ The trees would be replaced in proximity or the same location as the removed tree as shown in Exhibit 2 Tree Replacement Map. The selected replacement trees would not grow to a height taller than the building and would not require removal or significant trimming in the future.

Tree height will be monitored for trees shorter than breast height and dbh (diameter at breast height) will be monitored for trees of sufficient height. Tree vigor will be observed at initial planting. Vigor will be recorded on a scale of 1 to 4; one (1) being very Excellent, (2) being Good, (3) being Poor and four (4) being deceased. The trees will be included in the campus landscape maintenance routine. Facilities Management Grounds Department will monitor replacement trees for 5 years to ensure success and will be responsible for replacing any deceased trees.

III. Baseline Conditions
The two sites are urbanized as shown in Exhibit 3 Site Photos. The sycamore trees were planted as part of the landscaping plan for the Intercollegiate Athletics Building in 2004 (NOID 3-02). The Pine tree near the Arts Building is on the edge of campus in proximity to Commencement Green and the Campus Lagoon and was planted in approximately xxx. Other pine trees in the area are dead or dying from disease or as a result of the 6-year drought. Photos of the trees are attached.

The project proposes to remove 5 mature trees, all of which will be replaced in kind.

IV. Performance Standards

Replacement trees will be maintained as part of Facilities Management’s Grounds department maintenance routine. Replacement tree vigor will be monitored regularly by Grounds department staff. In the event that poor tree vigor is observed, adjustments will be made to fertilizing, watering, and maintenance routines; to improve vigor to a rating of good or better. If one or more of the trees dies, it will be replaced in kind. Monitoring will be recorded and reported annually for five years.

EXHIBITS

Exhibit 1. Tree Replacement Map.
Exhibit 2. Site Photos.
Solar Phase III Tree Replacement Plan- ARTS
Notice of Exemption

To: Office of Planning and Research  
   PO Box 3044, 1400 Tenth Street, Room 222  
   Sacramento, CA 95812-3044  
   County Clerk of Santa Barbara  

From: University of California  
   Santa Barbara  
   Office of Campus Planning and Design  
   Santa Barbara, CA 93106-1030

Project Title: UCSB Solar Photovoltaic PPA Project Phase III

Project Location – Specific: Main and North Campus, University of California, Santa Barbara

Project Location – City: Santa Barbara  Project Location – County: Santa Barbara

Project Description: The Santa Barbara Campus is proposing to install Solar Photovoltaic Systems on the roof tops of seven building structures on the Main Campus and on a carport-style canopy above a surface parking lot at the Sierra Madre Villages student housing site

Name of Public or Agency Approving Project: University of California, Santa Barbara.

Name of Person or Agency Carrying Out Project: University of California, Santa Barbara, Associated Students

Exempt Status: (check one)

☒ Ministerial (Sec. 21080.35-General/Statutory Exemption)
☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
☐ Emergency Project (Sec. 21080(b)(4); 15269 (b) (c));
☐ Categorical Exemption

Reason why project is exempt: Solar project exemption; Section 21080.35. None of the exceptions to the exemption apply.

Lead Agency-University of California, Santa Barbara, Office of Campus Planning and Design

Contact Person: Shari Hammond  
   Area Code/Telephone/Extension: (805)893 3796

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☒ Yes  ☐ No

Signature: Shari Hammond  
Date: 3. 8. 2018  
Title: Principal Planner  
Dept Name: Campus Planning and Design

MAR 20 AM 8:34

CC: Alissa Hummer, UCSB, Office of Campus Planning & Design  
    George Levinthal, UCSB Design and Construction Services  
    Jordan Sager, UCSB Campus Energy Manager, Facilities Management

MAR 13 2018
STATECLEARINGHOUSE
PUBLIC NOTICE
NOTICE OF IMPENDING DEVELOPMENT
SOLAR PHOTOVOLTAIC PPA PHASE III PROJECT

Pursuant to the California Coastal Act the University of California, Santa Barbara (University) has prepared and submitted a Notice of Impending Development for the Solar Photovoltaic Power Purchase Agreement (PPA) Phase III Project.

The University is proposing to install photovoltaic panels on the roof tops of six building structures on the Main Campus and on a carport-style canopy above a surface parking lot at the Sierra Madre Villages student housing site.

The project would execute a 20 year contract (known as a PPA) between the University and a solar electricity provider for third party installation, operation and maintenance of solar photovoltaic systems on campus facilities in order to reduce and offset current and long-term electrical utility costs.

The Notice of Impending Development is available at https://www.facilities.ucsb.edu/departments/campus-planning-design/current-projects under the Main Campus tab or upon request at the UC Santa Barbara Office of Campus Planning and Design. For more information, please contact Steve Conner at 805-893-3796 or send email to shari.hammond@planning.ucsb.edu.

Shari Hammond
Office of Campus Planning and Design-1030
University of California, Santa Barbara
Santa Barbara, California, 93106
Joan Hartmann  
Third District, SB Co. Bd. Of Supervisors  
105 East Anapamu Street  
Santa Barbara, CA 93101

Kenneth Kahn  
Santa Ynez Band of Chumash Indians  
P.O. Box 517  
Santa Ynez, CA 93460

Henning Bohn  
Academic Senate  
1233 Girvetz Hall  
University of California, Santa Barbara  
Santa Barbara, CA 93106

Gina Fischer  
Third District, SB Co. Bd. Of Supervisors  
123 East Anapamu Street  
Santa Barbara, CA 93101

Goleta Water District  
4699 Hollister Avenue  
Santa Barbara, CA 93117

Julie Lynn Tumanmaite  
Barbareno/Ventureno Band of Mission Indians  
365 North Poli Ave  
Ojai, CA 93023

Richard Watts  
Chancellor’s Office  
5130 Cheadle Hall  
University of California, Santa Barbara  
Santa Barbara, CA 93106

Brian Graham  
Housing and Residential Services  
University of California, Santa Barbara  
Santa Barbara, CA 93106

Goleta Water District  
4699 Hollister Avenue  
Santa Barbara, CA 93117

Santa Barbara News Press  
P.O. Box 1359  
Santa Barbara, CA 93102

Mark Nocciolo  
Budget and Planning  
University of California, Santa Barbara  
Santa Barbara, CA 93106

Nestor Covarrubias  
Transportation and Parking Services  
University of California, Santa Barbara  
Santa Barbara, California 93106

Freddie Romero  
Santa Ynez Tribal Elders Council  
P.O. Box 517  
Santa Ynez, CA 93460

Cherie Topper  
Audubon Society  
5679 Hollister Ave., Ste. 5B  
Santa Barbara, CA 93117

Patrick Tumamait  
Barbareno/Ventureno Band of Mission Indians  
992 El Camino Corto  
Ojai, CA 93023

Raudel Joe Banuelos, Jr.  
Barbareno/Ventureno Band of Mission Indians  
P.O. Box 5687  
Ventura, CA 93005

Tribal Admin/Counsel Sam Cohen  
Santa Ynez Band of Mission Indians  
P.O. Box 517  
Santa Ynez, CA 93460

Raudel Joe Banuelos, Jr.  
Barbareno/Ventureno Band of Mission Indians  
331 Mira Flores Court  
Camarillo, CA 93012
APPARENT LOCATION OF 50% SHADING:
AREAS BETWEEN THIS LINE AND NORTH EDGE OF CARPORT REPRESENT >50% SHADING.
AREAS NORTH OF THIS LINE REPRESENT <50% SHADING.
GENERAL NOTES:

1. ARRAY MOUNTING STRUCTURE: SUNPOWER
2. MINIMUM VERTICAL CLEARANCE: 11'-0" FOR ENTIRE PARKING.
3. THIS DESIGN ASSUMES THAT SITE PREPARATION WILL BE COMPLETED AS REQUIRED TO MEET ALL TOLERANCES OF THE PROPOSED ARRAY, INCLUDING TREE REMOVAL/TRIMMING AND OR LIGHT FIXTURE REMOVAL. SEE DEMO SHEET PV-011 FOR MORE INFORMATION.
4. ALL DIMENSIONS PROVIDED SHALL BE FIELD VERIFIED PRIOR TO COMMENCEMENT OF WORK.
5. LOCATIONS OF UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE. VERIFY EXACT LOCATIONS IN FIELD PRIOR TO COMMENCEMENT OF WORK.
6. THE PROPOSED ARRAY LAYOUT SHOWN IS DESIGNED TO FIT EXISTING CONDITIONS AS THEY ARE DESCRIBED ON THIS DRAWING. kWp AND MODULE QUANTITY, TYPE AND LAYOUT ARE SUBJECT TO CHANGE BASED ON SUNPOWER VERIFICATION OF ACTUAL SITE CONDITIONS, AS WELL AS ON MODULE AVAILABILITY AT THE DATE OF ORDER.
NOTES:
1. CONTRACTOR SHALL PROVIDE SLIP SHEETS UNDER HELIX RUBBER FOOT PADS AND ANY OTHER EQUIPMENT WHICH MAY BE SUBJECT TO THERMALLY DRIVEN OSCILLATION MOVEMENT OR MATERIAL COMPATIBILITY REQUIREMENTS.
2. SLIP SHEETS SHALL BE SECURED TO THE FOOT PADS, CONDUIT SUPPORTS, EQUIPMENT, ETC. AND NOT TO THE ROOF MEMBRANE.
3. ALL MODIFICATIONS, REPAIRS, AND ATTACHMENTS TO THE (S) ROOFING SYSTEM SHALL BE PERFORMED BY A LICENSED ROOFING CONTRACTOR AUTHORIZED TO WORK ON THE ROOFING SYSTEM AND APPROVED BY THE ROOFING MANUFACTURER.

ANCHOR PLATE (WHERE ANCHOR REQUIRED) PLACE TOWARDS EXTERIOR CORNER REFER TO DETAIL 3

ANCHOR PLATE TO TRAY ATTACHMENT

HELIX DUAL TILT BALLAST LOCATIONS

HELIX DUAL TILT SYSTEM

OEM WALKWAY SEPARATION BETWEEN MODULES

12" (MIN.) - 14" MAX
CONTRACTOR NOTE: VERIFY ALL DIMENSIONS PRIOR TO INSTALLATION.

SHADING NOTE:
- SHADING APPLIES TO MODULAR AND FASTENERS SUPPLIED BY CONTRACTOR.
- MODULARS ON ROOF WILL NOT BE SHADED PRIOR TO INSTALLATION.
- MODULARS LOCATED DUE NORTH OF EXISTING OBSTRUCTION SHALL BE NO LESS THAN 1.5 X HEIGHT OF OBSTRUCTION.
- MODULARS LOCATED EAST AND WEST OF EXISTING OBSTRUCTION SHALL BE NO LESS THAN 2 X HEIGHT OF OBSTRUCTION.
- RFI ANY MODULAR LOCATIONS THAT DO NOT MEET THIS CRITERIA.

NOTE: CONTRACTOR SHALL PRODUCE AND INSTALL ALL REQUIRED SIGNAGE AS SPECIFIED IN SUNPOWER DOCUMENT NUMBER REV. B, TITLED SPECIFICATION, SBC SIGNAGE, ELECTRICAL SIGN SPEC. ALL SIGNAGE SHALL COMPLY WITH ALL CALIFORNIA STATE FIRE MARSHAL, NFPA 70, AND CAL FIRE SOLAR SIGNAGE REQUIREMENTS.
O&M WALKWAY SEPARATION
BETWEEN MODULES
12" (MIN.) - 14" MAX

NOTES:
1. CONTRACTOR SHALL PROVIDE SLIP SHEETS UNDER HELIX RUBBER FOOT PADS AND ANY OTHER EQUIPMENT WHICH MAY BE SUBJECT TO THERMALLY DRIVEN OSCILLATION MOVEMENT OR MATERIAL COMPATIBILITY REQUIREMENTS.
2. Slip sheets shall be secured to the foot pads, conduct supports, equipment, etc. and not to the roof membrane.
3. ALL MODIFICATIONS, REPAIRS, AND ATTACHMENTS TO THE (E) ROOFING SYSTEM SHALL BE PERFORMED BY A LICENSED ROOFING CONTRACTOR AUTHORIZED TO WORK ON THE ROOFING SYSTEM AND APPROVED BY THE ROOFING MANUFACTURER.

ANCHOR TO TRAY ATTACHMENT
ANCHOR PLATE
LEADING TRAY
LINK TRAY

HELIX DUAL TILT BALLAST LOCATIONS
BALLAST BLOCK
(SIZE DETERMINED BY THE WIND UPLIFT CALCULATOR AND BALLAST SPECIFICATION)

HELIX DUAL TILT SYSTEM
ANCHOR PLATE (WHERE ANCHOR REQUIRED) PLACE TOWARDS EXTERIOR CORNER REFR TO DETAIL 3

SCALE: 1-1/2" = 1'-0"
ARRAY LAYOUT - FIRE PLAN

TYPICAL ROOF SETBACKS MIN DISTANCE
- FEAC UNIT: 4'-0"
- SPOTLIGHTS: 4'-0"
- EXHAUST FAN: 4'-0"
- SELF-PROTECTIVE PATHWAYS: 4'-0"

TYPICAL WALKWAY MIN CLEARANCE DISTANCE
- INDOOR WALKWAYS: 4'-0" MINIMUM CLEARANCE BETWEEN ROOFS, PERIMETER WALKWAYS AND WALLS MINIMUM CLEARANCE BETWEEN ROOFS, PERIMETER WALKWAYS AND WALLS
- OUTDOOR WALKWAYS: 4'-0" MINIMUM CLEARANCE BETWEEN ROOFS, PERIMETER WALKWAYS AND WALLS MINIMUM CLEARANCE BETWEEN ROOFS, PERIMETER WALKWAYS AND WALLS
- SELF-PROTECTIVE PATHWAYS: 4'-0" MINIMUM CLEARANCE BETWEEN ROOFS, PERIMETER WALKWAYS AND WALLS MINIMUM CLEARANCE BETWEEN ROOFS, PERIMETER WALKWAYS AND WALLS

CONTRACTOR NOTE: VERIFY ALL DIMENSIONS PRIOR TO INSTALLATION
SUBMITTALS REQUIRED:
1. STRUCTURAL DRAWINGS, REQUIREMENTS SUPPLIED BY CONTRACTOR
2. SELF-SUPPORTING SUPPORTS SUPPLIED BY CONTRACTOR
3. BALLAST BLOCKS

SHADING NOTE:
- BALLAST BLOCKS ON ROOF WILL NOT BE SHADOWED PRIOR TO INSTALLATION
- CONTRACTOR TO VERIFY ALL EXISTING OBSTRUCTIONS ON ROOF AND CONFIRM THAT THE FOLLOWING SETBACK REQUIREMENTS FOR SHADING ARE MET:
- MINIMUM SETBACK DISTANCE FOR MODULES LOCATED DUE NORTH OF EXISTING OBSTRUCTION SHALL BE NO LESS THAN 1.5X HEIGHT OF OBSTRUCTION.
- MINIMUM SETBACK DISTANCE FOR MODULES LOCATED EAST AND WEST OF EXISTING OBSTRUCTION SHALL BE NO LESS THAN 2X HEIGHT OF OBSTRUCTION.
- ANY MODULE LOCATIONS THAT DO NOT MEET THIS CRITERIA MUST BE RFI'd.

NOTE:
- CONTRACTOR SHALL PROVIDE AND INSTALL ALL REQUIRED SIGNAGE AS SPECIFIED IN SUNPOWER DOCUMENT DESIGN REV 8, TITLED SPECIFICATION, D&E, SIGNAGE, ELECTRICAL SIGN SPECS. ALL SIGNAGE SHALL COMPLY WITH ALL CALIFORNIA STATE FIRE MARSHAL, NFPA 70, AND CAL FIRE SOLAR SIGNAGE REQUIREMENTS.
NOTES:
1. CONTRACTOR SHALL PROVIDE SLIP SHEETS UNDER HELIX RUBBER FOOT PADS AND ANY OTHER EQUIPMENT WHICH MAY BE SUBJECT TO THERMALLY DRIVEN OSCILLATION MOVEMENT OR MATERIAL COMPATIBILITY REQUIREMENTS.
2. SLIP SHEETS SHALL BE SECURED TO THE FOOT PADS, CONDUIT SUPPORTS, EQUIPMENT, ETC. AND NOT TO THE ROOF MEMBRANE.
3. ALL MODIFICATIONS, REPAIRS, AND ATTACHMENTS TO THE (E) ROOFING SYSTEM SHALL BE PERFORMED BY A LICENSED ROOFING CONTRACTOR AUTHORIZED TO WORK ON THE ROOFING SYSTEM AND APPROVED BY THE ROOFING MANUFACTURER.

HELIX DUAL TILT SYSTEM

LEADING TRAY

MAIN CHASSIS

LINK TRAY

(NOTICE REQUIRED)

HELIX DUAL TILT BALLAST LOCATIONS

BALLAST BLOCK

(SIZE DETERMINED BY THE WIND UPLIFT CALCULATOR AND BALLAST SPECIFICATION)

EDGE TRAY - OPTIONAL WITH BALLAST REQUIREMENTS

MODULE OUTLINING

OEM WALKWAY SEPARATION BETWEEN MODULES
12" (MIN.) - 14" MAX.

RECYCLED RUBBER FOOT PAD, TYP. SEE NOTE BELOW
ARRAY LAYOUT - FIRE PLAN

CONTRACTOR NOTE: VERIFY ALL DIMENSIONS PRIOR TO INSTALLATION.

SHADING NOTE:
- MINIMUM SETBACK DISTANCE FOR MODULES LOCATED DUE NORTH OF EXISTING OBSTRUCTION SHALL BE NO LESS THAN 1.5X HEIGHT OF OBSTRUCTION.
- MINIMUM SETBACK DISTANCE FOR MODULES LOCATED EAST AND WEST OF EXISTING OBSTRUCTION SHALL BE NO LESS THAN 2X HEIGHT OF OBSTRUCTION.
- RFIs ANY MODULE LOCATIONS THAT DO NOT MEET THIS CRITERIA.

SHADING NOTE:
- Module locations on roof will not be shaded prior to installation.
- Minimum setback distance for modules located due north of existing obstruction shall be no less than 1.5X height of obstruction.
- Minimum setback distance for modules located east and west of existing obstruction shall be no less than 2X height of obstruction.
- All any module locations that do not meet this criteria.

CONTRACTOR SHALL PROVIDE AND INSTALL ALL REQUIRED SIGNAGE AS SPECIFIED IN SUNPOWER DOCUMENT 505614 REV B, TITLED SPECIFICATION, D&E, SIGNAGE, ELECTRICAL SIGN SPEC. ALL SIGNAGE SHALL COMPLY WITH ALL CALIFORNIA STATE FIRE MARSHAL, NFPA 70, AND CAL FIRE SOLAR SIGNAGE REQUIREMENTS.

TYPICAL ROOF SETBACKS MIN DISTANCE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC UNIT</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>SKYLIGHTS</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>EXHAUST FAN</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>MECH ACCESS PATHWAYS</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>

TYPICAL WALKWAY MIN CLEARANCE DISTANCE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERIOR WALKWAYS</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>
| INTERIOR WALKWAYS TO EXTERIOR WALKWAYS | 4'-0"

TYPICAL WINDWARD MIN CLEARANCE DISTANCE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERIOR WALKWAYS</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>
| INTERIOR WALKWAYS TO EXTERIOR WALKWAYS | 4'-0"

TYPICAL ROOF SETBACKS MIN DISTANCE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC UNIT</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>SKYLIGHTS</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>EXHAUST FAN</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>MECH ACCESS PATHWAYS</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>

TYPICAL WALKWAY MIN CLEARANCE DISTANCE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERIOR WALKWAYS</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>
| INTERIOR WALKWAYS TO EXTERIOR WALKWAYS | 4'-0"

TYPICAL WINDWARD MIN CLEARANCE DISTANCE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERIOR WALKWAYS</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>
| INTERIOR WALKWAYS TO EXTERIOR WALKWAYS | 4'-0"

CONTRACTOR TO INSTALL ALL REQUIRED SIGNAGE AS SPECIFIED IN SUNPOWER DOCUMENT 505614 REV B, TITLED SPECIFICATION, D&E, SIGNAGE, ELECTRICAL SIGN SPEC. ALL SIGNAGE SHALL COMPLY WITH ALL CALIFORNIA STATE FIRE MARSHAL, NFPA 70, AND CAL FIRE SOLAR SIGNAGE REQUIREMENTS.
O&M WALKWAY SEPARATION BETWEEN MODULES
12" (MIN.) - 14" MAX

RECYCLED RUBBER FOOT PAD, TYP. SEE NOTE BELOW

NOTES:
1. CONTRACTOR SHALL PROVIDE SLIP SHEETS UNDER HELIX RUBBER FOOT PADS AND ANY OTHER EQUIPMENT WHICH MAY BE SUBJECT TO THERMALLY DRIVEN OSCILLATION MOVEMENT OR MATERIAL COMPARABILITY REQUIREMENTS.
2. SLIP SHEETS SHALL BE SECURED TO THE FOOT PADS, CONDUIT SUPPORTS, EQUIPMENT, ETC. AND NOT TO THE ROOF MEMBRANE.
3. ALL MODIFICATIONS, REPAIRS, AND ATTACHMENTS TO THE (E) ROOFING SYSTEM SHALL BE PERFORMED BY A LICENSED CONTRACTOR AUTHORIZED TO WORK ON THE ROOFING SYSTEM AND APPROVED BY THE ROOFING MANUFACTURER.

ANCHOR PLATE (WHERE ANCHOR REQUIRED) PLACE TOWARDS EXTERIOR CORNER REFER TO DETAIL 3

HELIX DUAL TILT BALLAST LOCATIONS

BALLAST BLOCK
(SIZE DETERMINED BY THE WIND UPLIFT CALCULATOR AND BALLAST SPECIFICATION)

HELIX DUAL TILT BALLAST LOCATIONS

MODULE ATTACHING

EDGE TRAY - OPTIONNAL WITH BALLAST REQUIREMENTS

HELIX DUAL TILT SYSTEM

ANCHOR PLATE (WHERE ANCHOR REQUIRED) PLACE TOWARDS EXTERIOR CORNER REFER TO DETAIL 3

ANCHOR TO TRAY ATTACHMENT

1" CLR
NOTE: CONTRACTOR SHALL PROCURE AND INSTALL ALL REQUIRED SIGNAGE AS SPECIFIED IN SUNPOWER DOCUMENT MODULE REV B, TITLED SPECIFICATION, D&E, SIGNAGE, ELECTRICAL SIGNAGE. ALL SIGNAGE SHALL COMPLY WITH ALL CALIFORNIA STATE FIRE MARSHAL, NFPA 70, AND CAL FIRE SOLAR SIGNAGE REQUIREMENTS.
O&M WALKWAY SEPARATION
BETWEEN MODULES
12" (MIN.) - 14" MAX

1. CONTRACTOR SHALL PROVIDE SLIP SHEETS UNDER HELIX RUBBER FOOT PADS AND ANY OTHER EQUIPMENT WHICH MAY BE
SUBJECT TO THERMALLY DRIVEN OSCILLATION MOVEMENT OR MATERIAL COMPATIBILITY REQUIREMENTS.
2. SLIP SHEETS SHALL BE SECURED TO THE FOOT PADS, CONDUIT SUPPORTS, EQUIPMENT, ETC. AND NOT TO THE ROOF
MEMBRANE.
3. ALL MODIFICATIONS, REPAIRS, AND ATTACHMENTS TO THE (E) ROOFING SYSTEM SHALL BE PERFORMED BY A LICENSED
ROOFING CONTRACTOR AUTHORIZED TO WORK ON THE ROOFING SYSTEM AND APPROVED BY THE ROOFING
MANUFACTURER.

ANCHOR PLATE (WHERE ANCHOR REQUIRED) PLACE TOWARDS EXTERIOR CORNER
REFER TO DETAIL 3

ANCHOR TO TRAY ATTACHMENT

HELIX DUAL TILT BALLAST LOCATIONS

HELIX DUAL TILT SYSTEM

RECYCLED RUBBER FOOT PAD, TYP. SEE NOTE BELOW

NOTE:

HELIX DUAL TILT BALLAST LOCATIONS

SCALE: 1-1/2" = 1'-0"

SCALE: 2-1/2" = 1'-0"

SCALE: 3-1/2" = 1'-0"

ANCHOR PLATE (WHERE ANCHOR REQUIRED) PLACE TOWARDS EXTERIOR CORNER
ANCHOR TO TRAY ATTACHMENT

ANCHOR PLATE
FLUSH ANCHOR, NO SPRING

LEADING TRAY

MAIN CHASSIS

LINK TRAY

(WHERE REQUIRED)

TRAY

ANCHOR PLATE

BALLAST BLOCK

(BALLAST BLOCK LOCATIONS)

BALLAST REQUIREMENTS

(DESIGN DETERMINED BY THE WIND UPLIFT CALCULATOR AND BALLAST SPECIFICATION)

CROSS TRAY - OPTIONAL WITH BALLAST REQUIREMENTS

MODULE INSTALLING

SHEET METAL CUTTING

IF BAR IS NOT ONE INCH, DRAWING IS NOT TO SCALE

SUNPOWER

UCSB ARTS BUILDING
BLDG. 534

501 UNIVERSITY ROAD
SANTA BARBARA, CA 93117

4321

4321

4321

4321

S501

11844_UCSB_ARTS_BUILDING_STRUCTURAL_HELIX_ROOF.DWG 2/22/2018 4:52 PM

ISSUE FOR PERMIT 02-22-18

UCSB PROJECT NO.

FM180292B/110-10

BLDG. 534

UCSB DRAWING NO. 534-303

11844

11844

HELIX RACKING DETAILS

505066, REV F

HELIX DUAL TILT SYSTEM

1-1/2" = 1'-0"

SCALE:
SHADING NOTE:
MINIMUM SETBACK DISTANCE FOR MODULES LOCATED DUE NORTH OF EXISTING OBSTRUCTION SHALL BE NO LESS THAN 1.5X HEIGHT OF OBSTRUCTION.
MINIMUM SETBACK DISTANCE FOR MODULES LOCATED EAST AND WEST OF EXISTING OBSTRUCTION SHALL BE NO LESS THAN 2X HEIGHT OF OBSTRUCTION.
RFI ANY MODULE LOCATIONS THAT DO NOT MEET THIS CRITERIA.

CONTRACTOR SHALL PROVIDE AND INSTALL ALL REQUIRED SIGNAGE AS SPECIFIED IN SUNPOWER DOCUMENT NO. 505614 REV B, TITLED SPECIFICATION, D&E, SIGNAGE, ELECTRICAL SIGN SPECS. ALL SIGNAGE SHALL COMPLY WITH ALL CALIFORNIA STATE FIRE MARSHAL, NFPA 70, AND CAL FIRE SOLAR SIGNAGE REQUIREMENTS.

SHADING NOTE:
MINIMUM SETBACK DISTANCE FOR MODULES LOCATED DUE NORTH OF EXISTING OBSTRUCTION SHALL BE NO LESS THAN 1.5X HEIGHT OF OBSTRUCTION.
MINIMUM SETBACK DISTANCE FOR MODULES LOCATED EAST AND WEST OF EXISTING OBSTRUCTION SHALL BE NO LESS THAN 2X HEIGHT OF OBSTRUCTION.
RFI ANY MODULE LOCATIONS THAT DO NOT MEET THIS CRITERIA.

CONTRACTOR NOTE: VERIFY ALL DIMENSIONS PRIOR TO INSTALLATION.

TYPICAL ROOF SETBACKS MIN DISTANCE

MIN. OFFSET FROM ROOF EDGE (IN) 87 87

MAX ALLOWABLE SYSTEM PRESSURE (PSF) 12 12
MAX ALLOWABLE SYSTEM WEIGHT (LBS) 56555 58129

ROOF A

MAX ROOF SLOPE 1:12 1:12
MIN. OFFSET FROM ROOF EDGE (IN) 87 87

CONTRACTOR SHALL PROVIDE AND INSTALL ALL REQUIRED SIGNAGE AS SPECIFIED IN SUNPOWER DOCUMENT NO. 505614 REV B, TITLED SPECIFICATION, D&E, SIGNAGE, ELECTRICAL SIGN SPECS. ALL SIGNAGE SHALL COMPLY WITH ALL CALIFORNIA STATE FIRE MARSHAL, NFPA 70, AND CAL FIRE SOLAR SIGNAGE REQUIREMENTS.