



RENEWABLE ENERGY PROVIDER

Conditional Use Permit Alameda Grant Line Solar

Prepared by Soltage, LLC | June 2021

Table of Contents

1.	APPLICATION SUMMARY	1
1.1	Applicant and Owner	1
2.	LEGAL DESCRIPTION AND ADDRESS OF THE SITE	3
2.1	Project Area	3
3.	DESCRIPTION OF THE SCOPE OF WORK	9
3.1	Project Description	9
3.2	Solar system specifications	13
4.	RESPONSES TO CONDITIONAL USE PERMIT	15
5.	ENVIRONMENTAL REVIEW.....	19
5.1	Biological Resources.....	19
5.2	Phase I ESA	19

LIST OF FIGURES

Figure 1	Regional Location	5
Figure 2	Local Vicinity	6
Figure 3	Aerial Photograph	7
Figure 4	Site Plan	8
Figure 5	Substation Interconnection	12

LIST OF TABLES

Table 4.3-1	Project Components and Attributes	10
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APPENDIX

Exhibit A	Civil Improvement Plans
Exhibit B	Hydrology and Drainage Study
Exhibit C	Detailed Site Plan, Elevations, and Details

1. Application Summary

1.1 APPLICANT AND OWNER

1. **Project Title:** Alameda Grant Line Solar 1 Project
2. **Lead Agency Name and Address:** Alameda County Planning Department
399 Elmhurst St, Hayward, CA 94544
3. **Contact Person and Phone Number:** Sonia Urzua, Senior Planner,
510-670-5437
4. **Project Location:** West Grant Line Rd and Great Valley Parkway
Unincorporated Alameda County (near Tracy), CA 95391. See Section 2.1- Project Area.
5. **Project Applicant’s Name and Address:** Soltage, LLC. (Alameda Grant Line Solar 1, LLC)
6. **General Plan Land Use Designation:** Large Parcel Agriculture (LPA)
7. **Zoning:** Agriculture (A)
8. **Description of Project:** See Section 3.1- Project Description
9. **Surrounding Land Uses and Setting:** See Section 2.1- Project Area
11. **Summary of the Project:** Soltage, LLC. (“Soltage”) is proposing a solar photovoltaic (PV) facility named Alameda Grant Line Solar 1 (“proposed Project”). The Project is located on a 23.07 acre-site at West Grant Line Road and Great Valley Parkway in eastern unincorporated Alameda County, adjacent to the unincorporated community of Mountain House in San Joaquin County. The proposed Project consists of a 2.87MWdc/2.13MWac solar PV facility that will interconnect to PG&E’s distribution system at 12kV via the Herdlyn 1102 substation.

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2. Legal Description and Address of the Site

2.1 PROJECT AREA

The proposed Project is located at West Grant Line Rd and Great Valley Parkway, in the unincorporated eastern portion of Alameda County, California, in the Agriculture (A) Zoning District and the East County Area Plan Large Parcel Agriculture (LPA) Designation, near the border with the community of Mountain House in San Joaquin County to the east. The Assessor's Parcel Number (APN) is 99B-7650-7-1.

An Alta Survey for the Project site was completed in May 2021. The legal description of the Project site, per the Alta Survey is as follows:

“REAL PROPERTY IN THE UNINCORPORATED AREA OF THE COUNTY OF ALAMEDA, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

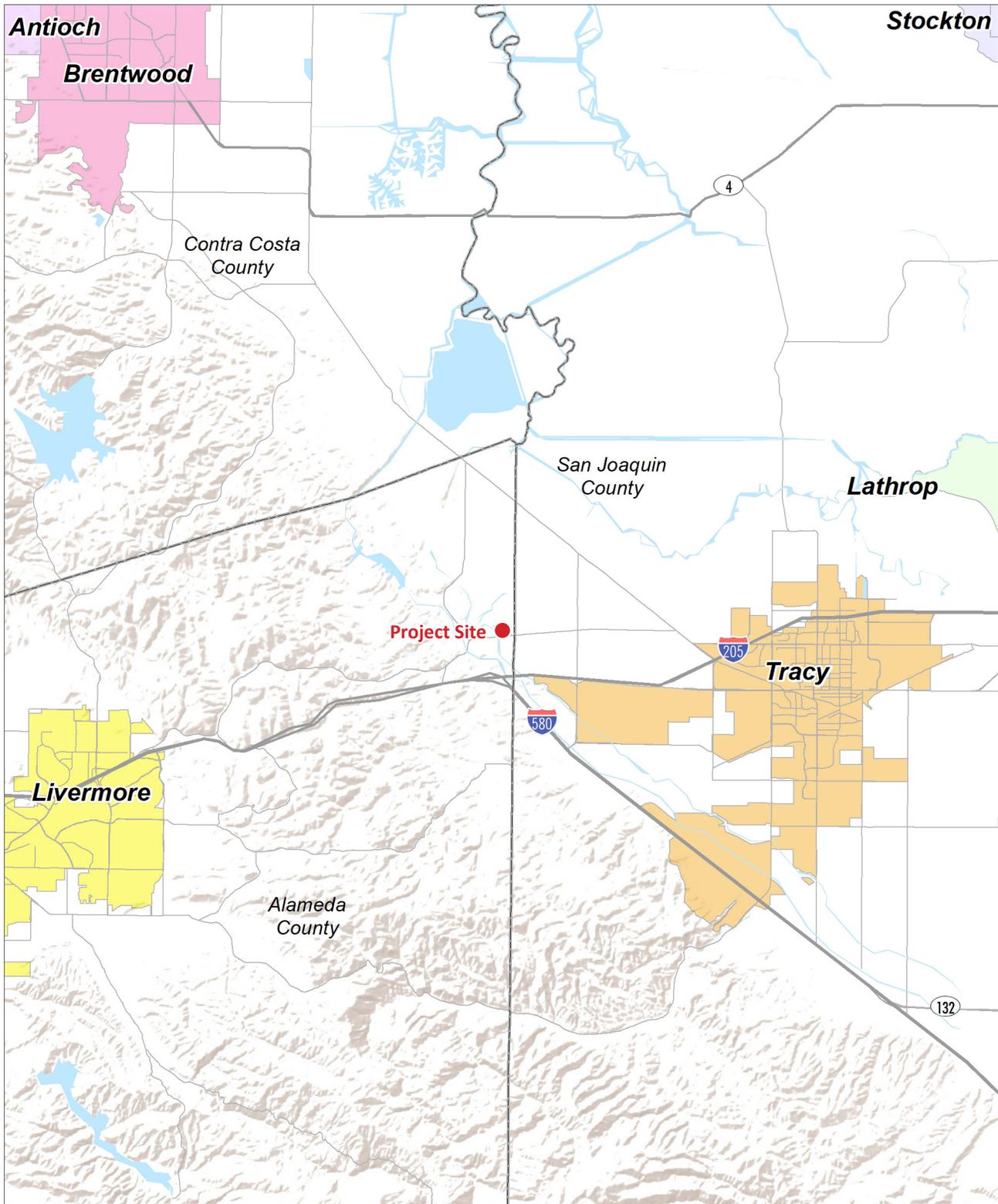
ALL THAT PORTION OF THE SOUTHWESTERN 1/4 OF SECTION 17, TOWNSHIP 2 SOUTH, RANGE 4 EAST, MOUNT DIABLO BASE AND MERIDIAN, LYING NORTHERLY OF THE NORTHERLY LINE OF GRANT LINE ROAD, AND EASTERLY OF THE GENERAL EASTERN LINE OF THAT CERTAIN 60.55 ACRE PARCEL OF LAND DESCRIBED IN THE DEED TO THE UNITED STATES OF AMERICA, RECORDED JULY 10, 1947, IN BOOK 5177, PAGE 117, ALAMEDA COUNTY RECORDS. EXCEPTING THEREFROM ALL OIL, GAS, MINERAL AND OTHER HYDROCARBON SUBSTANCES LYING BELOW A DEPTH OF 500 FEET BENEATH THE SURFACE OF SAID LAND, WITHOUT THE RIGHT OF SURFACE ENTRY, AS RESERVED BY ROBERT J. WATSON AND ANNE D. WATSON, TRUSTEES OF THE WATSON 1995 LIVING TRUST, CREATED ON MARCH 15, 1995 AND JO ELLEN MITCHELL, TRUSTEE OF THE JO ELLEN MITCHELL TRUST CREATED ON OCTOBER 22, 2009, IN EQUAL UNDIVIDED INTEREST AS TENANTS IN COMMON IN THAT CERTAIN GRANT DEED RECORDED MAY 21, 2014 AS INSTRUMENT NO. 2014-125224, OF OFFICIAL RECORDS.”

The Project site is approximately 23.07 acres in size before consideration of siting restrictions, with the actual project footprint being approximately 14.13 acres. The total Project footprint would occupy approximately 61.25 percent of the total Project boundary. The acreages are based on the Alta survey completed in May 2021 and the current iteration of the site plan, and may be slightly modified when the final design is determined. The final design will be approximate to, and less than, the acreage provided in this application. Figure 1 depicts the regional Project location within the state, Figure 2 shows the local Project location within a more focused geographical area, and Figure 3 depicts the Project location with an aerial photography base map. Figure 4 is a site layout of the proposed Project facilities. The area surrounding the Project site consists of orchards to the north, vacant land and Great Valley Parkway to the east, vacant land to the south, and the Delta-Mendota Canal to the west.

The layout and siting of the proposed Project was designed with the following considerations:

- Location of the Project facilities (solar arrays, interconnection equipment, access roads);
- Location of land under contract from property owner;
- Public roads (West Grant Line Road) and pull outs for site access;
- Construction and operation: staging area and parking located on-site, to be utilized for construction and routine maintenance;
- Current setbacks per County zoning to minimize visibility of Project.

The proposed Project is situated on one parcel of land with one owner. Soltage possesses a signed landowner agreement for the parcel under a lease option which can be executed at any time prior to December 2022. The agreement allows the proposed Project to host all equipment necessary to build and operate the solar facility, including, but not limited to, panels, access roads (gravel), laydown yard, a transformer, junction boxes, and the alternating current (AC) electrical current collection system on-site. The proposed Project will require approval of a Conditional Use Permit (CUP) and certification of an EIR from the East County Board of Zoning Adjustments.



Source: ESRI, 2021.

Note: Unincorporated county areas are shown in white.

● Project Site — County Boundaries



Figure 1
Regional Location

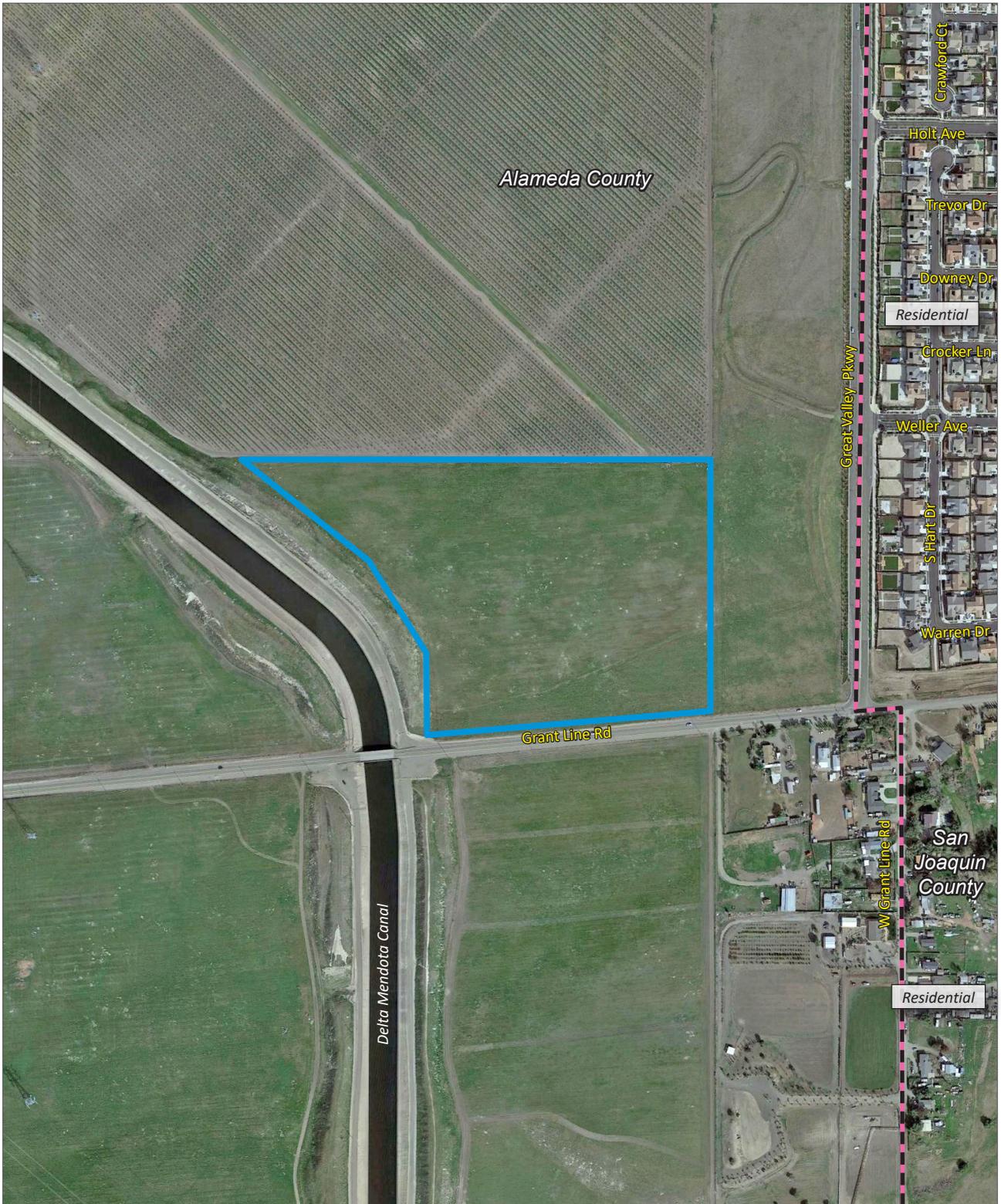


Source: ESRI, 2021.



— Project Boundary - - - - - County Boundary

Figure 2
Local Vicinity



— Project Boundary - - - County Boundary

Source: Google Earth, 2021.

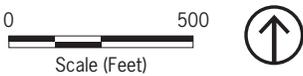
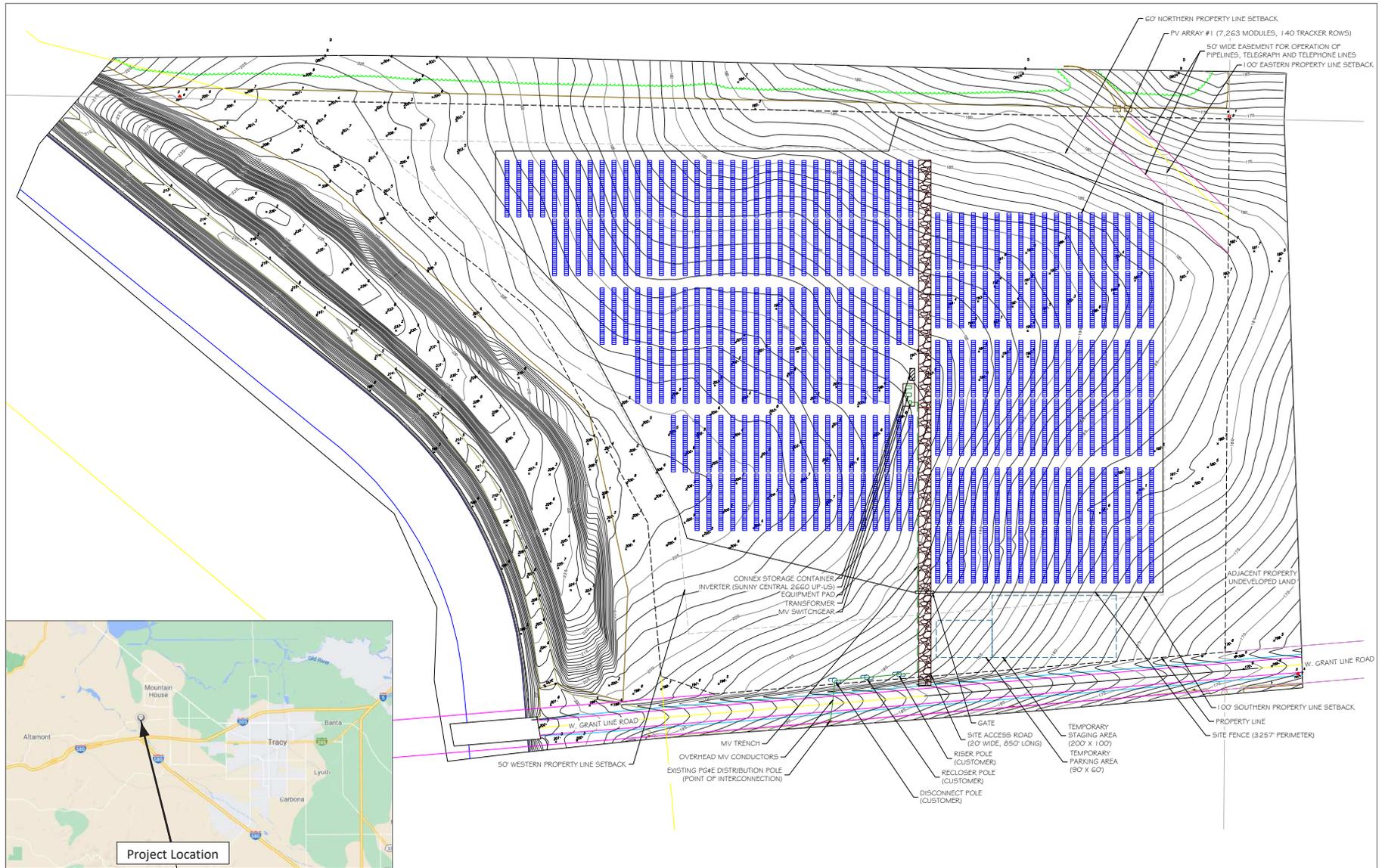
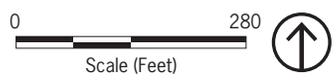


Figure 3
Aerial Photograph



Source: Soltage LLC, 2021.



SYMBOL LEGEND						
SYMBOL	NAME	DESCRIPTION				
	TRACKER PV MOD.	TRINA SOLAR TSM-DE 15H(II)				
PV SYSTEM SUMMARY TABLE						
Array ID	Inverter ID	Mod Qty.	kW size	GCR	Tilt	Azimuth
1	Inv 1	7263	2668.89	34.7%	±60°	180°

NOTE:
SITE DIMENSIONS DERIVED FROM TOPOGRAPHICAL/GEOLOGICAL SURVEY

TOTAL SITE AREA: 1,004,825 sqft. / 23.068 Acres
 USEABLE OPEN SPACE: 1,004,825 sqft. / 23.068 Acres
 AREA INSIDE FENCING: 615,416 sqft. / 14.128 Acres
 PERCENTAGE OF SITE UTILIZED: 61.25%

Figure 4
Alameda Grant Line Solar 1 - Groundmount Array Layout

3. Description of the Scope of Work

3.1 PROJECT DESCRIPTION

Soltage is proposing to construct, install, operate, and maintain a 2.87-megawatt (MW) direct current (DC) and 2.13 MW alternating current (AC) solar photovoltaic (PV) facility known as the Alameda Grant Line Solar 1 (proposed Project) to be located within an unincorporated area of Eastern Alameda County, California. The project site is a rural, disturbed, and undeveloped property zoned within the A District and designated LPA.

The power generated by the proposed Project will be transmitted by Pacific Gas and Electric's (PG&E) distribution system at 12 kilovolts (kV) via the Herdlyn 1102 substation, as shown on Figure 5. The proposed transaction with PG&E is for a full sell of the energy produced by the facility. The Project will be connected to the distribution grid, thereby providing clean, renewable energy to local homes and businesses near the project.

The proposed Project was awarded a 15-year Power Purchase Agreement (PPA) with PG&E under their Electrical Renewable Market Adjusting Tariff (REMAT) program, which is a program specifically designed for small utility-scale local renewable energy projects (<5MW) that benefit the local communities around it by delivering renewable energy via the distribution grid. Pending County approval, Soltage is currently working with PG&E to execute the PPA, which the Project is anticipated to deliver energy under in the Q1 of 2023.

The proposed Project will also create other environmental, social, and economic benefits. These benefits include new local jobs during construction, long-term maintenance jobs, utility aid payments, annual pollution reductions, and substantial contributions towards meeting California's renewable energy goals.

Soltage is seeking an approval from the East County Board of Zoning Adjustments (ECBZA) for a CUP to be valid throughout the useful life of the proposed Project in accordance with the Alameda County Ordinance.

The Appendix included with this CUP Application includes:

- Exhibit A: Civil Improvement Plans.
- Exhibit B: Hydrology and Drainage Study.
- Exhibit C: Detailed Site Plan Elevations.

3.1.1 PROJECT COMPONENTS

The proposed Project consists of 7,263 photovoltaic crystalline modules mounted to a single axis tracker and connected to a single central inverter. Table 3-2 includes major components and project attributes of the proposed Project.

TABLE 4.3-1 PROJECT COMPONENTS AND ATTRIBUTES

Solar PV Equipment	Equipment Description
PV Modules	- 395
	- Crystalline
	- Trina
Inverters	- SMA Sunny Central 2660 UP
Step-up Transformer	- 2 MW
	- 600 V to 12kV
Project Substation Transformer (if applicable)	N/A (this is a distribution voltage interconnected system)

Source: Soltage, LLC, Project Overview, May 2021.

Additional facilities within the Project footprint necessary for the photovoltaic system includes access roads to facilitate the construction and maintenance of the solar arrays and panels, temporary parking, an equipment laydown staging area to be used during construction and routine maintenance, and additional chain-link fencing that surrounds the solar arrays within the site boundary. As shown on Figure 4, a gravel access road will run north to south through the middle of the Project site.

The Project utilizes 100 ft setbacks from the southern and eastern site boundaries to minimize visual impact of the Project from West Grant Line Rd and the housing development east of the site in San Joaquin County. The western and northern boundary setbacks are 50' and 60' respectively. Furthermore, the Project will include a chain link fence with plastic slats matching the color of the landscape on the southern and eastern portion of the project site between the Project and West Grant Line Rd to further reduce visual impact of the solar panels from the road. The proposed fence would be 9 to 10 feet high, located 100 feet north of the site's southern boundary, and extend easterly east along the southern boundary of the project site. There will be a continuous fence installed around the perimeter of the entire solar arrays to prevent the public or unauthorized members from exposure to electrical hazards and equipment. Soltage will also consider wildlife friendly strategies in the fence design and will look for guidance from the County regarding best practices.

3.1.2 PROJECT SCHEDULE

The construction timeline of the Project is relatively short, as it is expected to be approximately 3 to 4 months or less. It is anticipated that construction of the proposed Project will begin in the summer of 2022, while the Project's interconnection facilities will be complete by February of 2023 and the Project Commercial Operation Date (COD) will follow shortly after that. The expected useful life of the proposed Project is approximately 40 years, and the lease agreement is within that time frame.

3.1.3 PROJECT CONSTRUCTION AND OPERATION

The conditions are optimal due to limited topography on the site. This will result in minimal site preparation and ground disturbance which will expedite the construction process. Furthermore, relatively few pieces of construction equipment are anticipated for construction, which will minimize traffic disturbances. Soltage plans to prepare a Stormwater Pollution Prevention Plan (SWPPP) upon receiving initial comments from the County on the proposed Project. Lastly, the Project has been designed to avoid any grading or soil hauling, which will minimize dust caused during construction.

During the operation period of the Project, the solar modules will be washed one to two times per year with an electronic cleaning system. This cleaning system dramatically reduces the amount of water needed to clean the modules. It is expected that water for washing will be delivered by a 500- gallon water truck with one trip per cleaning event. It is currently contemplated that the water source will be from the orchard located immediately north of the Project.

The information and figures contained in this application are estimates based on field analyses and site visits performed to date and may change based on the final design of the solar PV system and associated facilities.

3.1.4 PROJECT DECOMMISSIONING

The Project is anticipated to have an expected useful life of at least 40 years. Once the expected useful life of the solar PV facility is over, it would either be refurbished and repowered or disassembled and decommissioned. If refurbishing and repowering the solar PV facility is elected, Soltage would be required to obtain all required agreements with the landowner and all required permit approvals.

Project decommissioning would occur in accordance with the expiration of the CUP and would involve the removal of all above-ground facilities and fencing, buried electrical conduits, and concrete foundations in accordance with a decommissioning plan, further described below. Equipment associated with the solar PV facility would be recycled, repurposed, or disposed of off-site, as appropriate.

In the event that activities associated with decommissioning involve exposure and disturbance of soils, measures for erosion and sediment control would be implemented in accordance with a future, separate, Stormwater Pollution Prevention Plan (SWPPP) specifically tailored for decommissioning. At present date, it is speculative to comment on the solar PV facility decommissioning's water use, schedule, labor requirement, heavy equipment use, or trip generation. Although, it is anticipated that decommissioning would involve the use of heavy equipment and labor similar to that used for construction of the Project.

Post decommissioning, all driveways and other areas compacted during original construction or by equipment used for decommissioning would be restored to in an adequate manner and proportionate to adjacent properties. A decommissioning plan would be prepared and submitted to Alameda County that includes steps that would be taken to restore the site to pre-project conditions to the extent feasible.



Figure 5
Substation Interconnection

3.1.5 PROJECT OBJECTIVES

- Assist California in meeting renewable energy generation goals under Senate Bill (SB) 100. SB 100 requires 100 percent of all electric retail sales to end-use customers to come from renewable energy and zero-carbon resources by 2045;
- Create construction jobs and permanent jobs in the San Francisco Bay Area
- Minimize environmental impacts associated with solar development, construction, and operation, through low-impact design, short construction timeline with minimal ground disturbance, low impervious surfaces, the continued use of existing habitat by present wildlife, and ease of decommissioning in order to restore the site to its original conditions prior to the Project, and
- Achieve economies of scale to generate, and transmit over 2 MW's of affordable, local, wholesale solar electricity to Bay Area residents
- Help Bay Area Load Serving Entities in fulfilling their local renewable energy procurement goals.

3.2 SOLAR SYSTEM SPECIFICATIONS

3.2.1 TECHNICAL CHARACTERISTICS OF PANELS

Soltage is considering the Trina Solar Duomax Twin Bifacial Dual Glass 144 Half-Cell Module, 380-405W – DEG15HC.20(II) or similar model, for the proposed Project. Each module assembly (with frame) is approximately 80 inches by 40 inches in size. The solar panels will be mounted on a steel racking frame that is positioned three to nine feet above ground to allow for vegetation control and periodic maintenance. The panels would include a single axis tracking system that is mounted on steel posts driven into the ground and would have a +/- 60-degree range of motion driven by electric motors. As shown on Figure 4, the solar arrays will be in three rows with the longest row in the rear. Final panel selection shall be made during final design due to the ever-changing nature of the technology, however the panel used shall be similar to the Trina Solar Duomax Twin module. Soltage will submit information to Alameda County reflecting the final panel type selected at the appropriate time.

3.2.2 TECHNICAL CHARACTERISTICS OF INVERTER

The proposed Project will consist of solar panels producing DC voltage that would be converted to AC voltage through one inverter and one transformer. As shown on Figure 4, the inverter and transformer shall be located in the center of the site mounted on a pad foundation. The inverter and transformer specifications will be submitted upon final design.

3.2.3 TECHNICAL CHARACTERISTICS OF INTERCONNECTION

The Project will interconnect to the PG&E distribution electrical grid on the North side of West Grant Line Rd, via an overhead wire, which PG&E will construct and maintain during the life of the Project. The Project will erect three wooden utility poles along the southern edge of the Project site, where the Project's 12kV electrical output will be connected. PG&E's interconnection facilities will connect to the Project at one of these wooden utility poles. Soltage is currently working with PG&E to execute their Small Generator Interconnection Application. The type of interconnection cable and methods of installation will be included in the final design.

4. Responses to Conditional Use Permit

1. *The use is required by the public need.*

The purpose of the proposed Project is to provide a source of renewable electricity generation within the highly populated San Francisco Bay Area and surrounding communities. The proposed Project is needed due to the increasing demand for renewable energy from generation sources that include utility-scale solar PV system. The demand for renewable energy is increasing to reduce the reliance from more conventional sources of electricity that traditionally generate carbon monoxide (CO), carbon dioxide (CO₂), and other greenhouse gases that contribute to global climate change and have harmful health effects. Additionally, the proposed Project is needed because it would enable the State of California to make progress towards meeting its Renewables Portfolio Standard (RPS) of 60 percent by 2030. Therefore, because the proposed Project is a solar PV facility located close to the local PG&E energy grid, it would qualify as a renewable energy source that contributes to meeting California's renewable energy goals and would be required by the public need.

2. *The use will be properly related to other land uses transportation and service facilities in the vicinity.*

The use of the proposed Project would be properly related to other land uses and transportation and service facilities in the vicinity of the Project site. The Project site is located nearby an existing 12 kV PG&E distribution system via the Herdlyn 1102 substation, located approximately 4.5 miles northeast of the Project site to which the facility can efficiently connect, as shown in Figure 5. The proposed Project would be easily accessed by unpaved access roads (gravel) from West Grant Line Road to the south of the site. Nearby adjacent uses including the agricultural to the north and east, residential to the east and south, and the Delta-Mendota Canal to the west.

3. *The use, if permitted, under all the circumstances and conditions of the particular case, will not materially affect adversely the health or safety of persons residing or working in the vicinity, or be materially detrimental to the public welfare or injurious to property or improvements in the neighborhood.*

Construction of the proposed Project would occur over a 3- to 4-month period, and will involve site preparation work, including minor site preparation for the installation of the Project. If approved, the Project will be required to adhere to the Bay Area Air Quality Management District dust control best management practices to reduce dust effects to adjoining parcels. As previously noted, minimal dust is expected from the Project construction, as no grading will be required.

Once installed, the solar arrays would operate with minimal noise, as the only moving part is the motor to move the solar panels a few inches every several minutes to follow the sun throughout the day. Operation of the proposed Project would not result in detrimental or toxic health effects to people residing or working in the vicinity. The solar PV system would be setback significantly from adjacent properties and West Grant Line Road, 50' to 100' for all site boundaries, with 100' from the southern and eastern site boundaries, exceeding the minimum requirements of the Alameda County

Agricultural District specifications. The large distance from public roadways and nearby properties would minimize the aesthetic views of the solar arrays from West Grant Line Rd. Additionally, chain link fencing with plastic slats that are the same color as the surrounding landscape will be installed along the southern and eastern boundary of the project to further block views of the Project from West Grant Line Road. The proposed fence would be 9 to 10 feet high, located 100 feet north of the site's southern boundary, and would extend east to west along the southern boundary of the project site. There will be a continuous fence installed around the perimeter of the entire solar arrays to prevent the public or unauthorized members of the public from exposure to electrical hazards and equipment. Soltage will also consider wildlife friendly strategies in the fence design and will look for guidance from the County regarding best practices.

Therefore, construction and operation of the proposed solar PV facility would not materially adversely affect the health or safety of persons residing or working in the vicinity or be materially detrimental to the public welfare or injurious to property or improvements in the neighborhood.

4. *The use will not be contrary to the character or performance standards established for the District in which it is to be located.*

The Project site is located within the Agricultural (A) District. The intent of the A District is "to promote General Plan land use policies for agricultural and other non-urban uses, to conserve and protect existing agricultural uses, and to provide space for and encourage such uses in places where more intensive development is not desirable or necessary for the general welfare." Permitted uses within the A District include, "one single-family residence, and general agricultural activities such as, crops and plant nurseries, livestock, fish hatcheries, hiking and riding trails", while conditional uses include, "Uses related to agriculture or those appropriate in sparsely populated areas, such as, housing for agricultural laborers, some food processing, hog ranch, kennel, stables, landfill, windmills, oil/gas drilling, radio tower, cemetery, and outdoor recreation facility." Solar PV systems are not addressed as an allowable permitted or conditional use under the A District, however, it can be inferred that solar PV systems have similar benefits to those of windmills, while potentially having less biological, visual, and auditory impacts because there are fewer moving parts and can be easily shielded from the public.

With respect to Measure D, the proposed Project is not considered Open Space, as it is privately held property without access to the public. In an agricultural context, per the results of the Phase I analysis, based on the review of historical aerial photographs, topographic maps and the site visit, the Project site appears to have possibly been used for dry land farming or pastureland. However, there is no evidence that the Project site was utilized for row crops or orchards. The Project site is presently and has, for some time, not been used in any agricultural capacity.

The Project site is not located nearby a scenic corridor, nor is it accessible as a viewpoint because it is private land. Additionally, there are no known scenic resources nearby. As previously mentioned, the design of the project includes significant setbacks, and the solar arrays will only occupy 61.25 percent of the Project site. Furthermore, the intent of the design and operation of the proposed Project is to avoid impacts to sensitive wildlife and plant species observed at the site or typically present throughout Eastern Alameda County. Additionally, the Project's construction schedule and activities shall allow for relocation, re-establishment, and accommodation of any sensitive species located on

the areas of the site that will be impacts. Impacts to sensitive species shall be further addressed under the Project's CEQA analysis. The proposed Project shall maintain a significant portion of the site in its present condition and ensure that future project decommissioning will allow for the site to return to its existing condition for future use as agricultural land or open space, consistent with land protected by Measure D. If grazing resources are deemed important at the Project site, this activity could continue during the operation of the Project outside of the fence line, with permission from the landowner.

Therefore, the use of the proposed Project would not be contrary to the character or performance standards established for the A District in which it is located or Measure D, which is applicable throughout Eastern Alameda County.

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5. Environmental Review

Soltage conducted a preliminary, cursory review of biological resources and hazardous substances located on the project. Findings are described below.

5.1 BIOLOGICAL RESOURCES

A contracted biologist conducted a site reconnaissance of the site for biological resources. The biologist observed several burrowing owl (*Athene cunicularia*) individuals that occupied burrows throughout the site. Most of these burrows were located on the central, western, and southern portions of the site. The burrowing owl is designated by the California Department of Fish and Wildlife (CDFW) as a Special Species of Concern. The biologist also identified the plant species Narrow Leaf Milkweed (*Asclepias fascicularis*) which is one of the larval host plants for the monarch butterfly (*Danaus plexippus*). Monarch butterfly populations are currently in decline and the California Department of Fish and Wildlife has designated this species as a terrestrial invertebrate of conservation concern. As project planning and design progresses, Soltage will coordinate with the contract biologist to ensure that any potential impacts to biological resources are addressed.

5.2 PHASE I ESA

A Phase I Environmental Site Assessment (ESA) was conducted on behalf of Soltage for a 23.07-acre parcel for the proposed solar PV system project at the proposed Project site. The Phase I ESA was performed in general conformance with the scope and limitations of the ASTM E 1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

Based on the results of the Phase I ESA conducted for the proposed Project, no further assessment is required. No Recognized Environmental Conditions (RECs), Historical Recognized Environmental Conditions HRECS, or Controlled Recognized Environmental Conditions (CRECs) were identified. A below ground high-pressure natural gas pipeline is located on the northeast corner of the site. The area with the gas pipeline will be outside of the proposed area of the solar PV system.

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APPENDICES

EXHIBIT A: CIVIL IMPROVEMENT
PLANS

EXHIBIT B: HYDROLOGY AND
DRAINAGE STUDY

EXHIBIT C: DETAILED SITE PLANS,
ELEVATIONS, AND DETAILS

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E X H I B I T A

C I V I L I M P R O V E M E N T P L A N S



PROJECT GENERAL NOTES:

- THE EXISTING BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS IS FROM A TOPOGRAPHIC SURVEY PLAN PREPARED BY RFE ENGINEERING AND REFERENCED ON SHEET C1. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS, ESPECIALLY POINTS OF CONNECTION TO EXISTING FACILITIES FOR ALL IMPROVEMENTS PRIOR TO CONSTRUCTION OF APPLICABLE FACILITIES. CONTRACTOR SHALL NOTIFY RFE ENGINEERING, INC. IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICTS DISCOVERED.
- THE CONTRACTOR AGREES THAT, IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXEMPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF ENGINEER.
- EXCAVATIONS SHALL BE ADEQUATELY SHORED, BRACED AND SHEETED SO THAT THE EARTH WILL NOT SLIDE OR SETTLE AND SO THAT ALL EXISTING IMPROVEMENTS OF ANY KIND WILL BE FULLY PROTECTED FROM DAMAGE. ANY DAMAGE RESULTING FROM A LACK OF ADEQUATE SHORING, BRACING AND SHEETING, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND HE SHALL AFFECT NECESSARY REPAIRS OR RECONSTRUCTION AT HIS OWN EXPENSE. WHERE THE EXCAVATION FOR A CONDUIT TRENCH, AND/OR STRUCTURE IS FIVE FEET OR MORE IN DEPTH, THE CONTRACTOR SHALL PROVIDE ADEQUATE SHEETING, SHORING AND BRACING OR EQUIVALENT METHOD FOR THE PROTECTION OF LIFE OR LIMBS WHICH SHALL CONFORM TO THE APPLICABLE CONSTRUCTION SAFETY ORDERS OF THE DIVISION OF INDUSTRIAL SAFETY OF THE STATE OF CALIFORNIA. THE CONTRACTOR SHALL ALWAYS COMPLY WITH OSHA REQUIREMENTS.
- OWNER WILL OBTAIN THE GENERAL BUILDING PERMIT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY ADDITIONAL PERMITS NECESSARY TO PERFORM THE WORK SHOWN ON THESE PLANS FROM THE APPROPRIATE AGENCIES.
- THE CONTRACTOR SHALL TAKE EFFECTIVE ACTION TO PREVENT THE FORMATION OF AN AIRBORNE DUST NUISANCE AND SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM HIS FAILURE TO DO SO.
- THE CONTRACTOR SHALL PROVIDE FOR INGRESS AND EGRESS FOR PRIVATE PROPERTY ADJACENT TO WORK THROUGHOUT THE PERIOD OF CONSTRUCTION. TRAFFIC MOVEMENT SHALL BE MAINTAINED AT ALL TIMES. IF TRAFFIC CONTROL PROCEDURES ARE DEEMED NECESSARY, THE CONTRACTOR SHALL CONFORM TO THE "WATCH HANDBOOK" AND CALTRANS TRAFFIC MANUAL. CITY/COUNTY ENGINEERS REQUIRED PRIOR TO ANY DETOURING, DISRUPTION, OR INTERRUPTION OF THE NORMAL TRAFFIC FLOW.
- THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR FURNISHING, INSTALLING, AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND PROVIDE FOR THE PROPER AND SAFE ROUTING OF ALL VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THE REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO THE NORMAL WORKING HOURS.
- THE CONTRACTOR SHALL POST EMERGENCY TELEPHONE NUMBERS FOR POLICE, FIRE, AMBULANCE, AND THOSE AGENCIES RESPONSIBLE FOR MAINTENANCE OF UTILITIES IN THE VICINITY OF THE JOBSITE.
- ANY EXTRA CONSTRUCTION STAKING NECESSITATED SOLELY BY THE CONTRACTOR'S NEGLIGENCE WILL BE CHARGED TO THE CONTRACTOR ON A TIME AND MATERIAL BASIS, AND PAID FOR BY THE CONTRACTOR.
- STATIONING HEREON IS ALONG STREET CENTERLINE UNLESS OTHERWISE SHOWN OR INDICATED.
- ALL RETURN RADII AND CURB DATA ARE TO BOTTOM FACE OF CURB.
- ALL QUANTITIES AND PAY ITEMS ARE AND WILL BE BASED ON HORIZONTAL MEASUREMENTS.
- LENGTHS OF SANITARY SEWERS AND STORM DRAINS ARE HORIZONTAL DISTANCES FROM CENTER TO CENTER OF STRUCTURES, ROUNDED OFF TO THE NEAREST FOOT.
- EXISTING UNDERGROUND UTILITIES AND IMPROVEMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS BASED ON FACILITIES IDENTIFIED BY THE TOPOGRAPHIC SURVEY AND UPON RECORD INFORMATION AVAILABLE TO THE ENGINEER AT THE TIME OF DESIGN AND NO GUARANTEE IS MADE AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES AT LEAST 2 WORKING DAYS IN ADVANCE OF CONSTRUCTION TO FIELD LOCATE UTILITIES. **CALL UNDERGROUND SERVICE ALERT (U.S.A.) AT 800-227-2600.** IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXISTENCE AND LOCATION OF THOSE UTILITIES SHOWN ON THESE PLANS OR INDICATED IN THE FIELD BY LOCATING SERVICES. ANY ADDITIONAL COSTS INCURRED AS A RESULT OF CONTRACTOR'S FAILURE TO VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION IN THEIR VICINITY SHALL BE BORNE BY THE CONTRACTOR AND ASSUMED INCLUDED AND MERGED IN THE CONTRACT UNIT PRICE.
- ALL EXISTING UTILITIES AND IMPROVEMENTS THAT BECOME DAMAGED DURING CONSTRUCTION SHALL BE COMPLETELY RESTORED TO THE SATISFACTION OF THE APPLICABLE AGENCY ENGINEER, AT THE CONTRACTOR'S SOLE EXPENSE.
- ANY RELOCATION OF PUBLIC UTILITIES SHALL BE CONDUCTED IN ACCORDANCE WITH ANY AND ALL REQUIREMENTS OF THE UTILITY COMPANY INCLUDING FEES, BONDS, PERMITS AND WORKING CONDITIONS, ETC. THIS WORK SHALL BE DONE AT NO EXPENSE TO THE UTILITY COMPANY. THE OWNER SHALL PAY THE COST OF ALL SUCH RELOCATION WORK INCLUDING FEES, BONDS, PERMITS, ETC.
- IF ARCHAEOLOGICAL MATERIALS ARE UNCOVERED DURING GRADING, TRENCHING OR OTHER EXCAVATION EARTHWORK WITHIN 100 FEET OF THESE MATERIALS SHALL BE STOPPED UNTIL A PROFESSIONAL ARCHAEOLOGIST WHO IS CERTIFIED BY THE SOCIETY OF CALIFORNIA ARCHAEOLOGY (SCA) AND/OR THE SOCIETY OF PROFESSIONAL ARCHAEOLOGY (SOPA) HAS HAD AN OPPORTUNITY TO EVALUATE THE SIGNIFICANCE OF THE FIND AND SUGGEST APPROPRIATE MITIGATION MEASURES, IF THEY ARE DEEMED NECESSARY.
- RFE ENGINEERING, INC. DOES NOT SPECIFY NOR RECOMMEND THE USE OR INSTALLATION OF ANY MATERIAL OR EQUIPMENT WHICH IS MADE FROM, OR WHICH CONTAINS ASBESTOS FOR USE IN THE CONSTRUCTION OF THESE IMPROVEMENTS. ANY PARTY INSTALLING OR USING SUCH MATERIAL OR EQUIPMENT SHALL BE SOLELY RESPONSIBLE FOR ALL INJURIES, DAMAGE OR LIABILITIES, OF ANY KIND, CAUSED BY THE USE OF SUCH MATERIALS OR EQUIPMENT. THE PROVISIONS OF THIS NOTE SHALL APPLY UNLESS THEY ARE EXPRESSLY WAIVED IN WRITING BY OWNER AND RFE ENGINEERING, INC.
- SHOULD IT APPEAR THAT THE WORK TO BE DONE OR ANY MATTER RELATIVE THERETO IS NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THESE PLANS, THE CONTRACTOR SHALL CONTACT RFE ENGINEERING, INC., AT (916) 772-7800 FOR SUCH FURTHER EXPLANATIONS AS MAY BE NECESSARY.
- CONTRACTOR SHALL PROVIDE PROTECTIVE FENCING AROUND EXISTING TREES TO REMAIN. SEE OTHER NOTES ON THESE PLANS, PROJECT CONDITIONS OF APPROVAL, AND SPECIFIC JURISDICTIONAL REQUIREMENTS FOR SUCH FENCING.

PROJECT GENERAL NOTES (CONT.)

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT REFERENCED ON SHEET C1.
- THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL REGULATIONS, LAWS AND ORDINANCES, INCLUDING ALLOWABLE CONSTRUCTION HOURS, CONSTRUCTION NOISE NEAR RESIDENCES, DUST CONTROL AND EROSION CONTROL.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW ALL CONTRACT DOCUMENTS INCLUDING ALL PLANS AND SPECIFICATIONS PREPARED BY OTHER DISCIPLINES FOR THIS PROJECT PRIOR TO THE START OF CONSTRUCTION. SUCH REVIEW SHALL BE CONTINUOUS THROUGHOUT THE CONSTRUCTION PROCESS. ANYTIME THAT A CONFLICT BETWEEN SUCH PLANS AND SPECIFICATIONS IS IDENTIFIED, THE CONTRACTOR SHALL CONTACT RFE ENGINEERING, INC. AND OTHER APPLICABLE DISCIPLINES TO REQUEST A VERIFICATION OF THE DESIGN REQUIREMENTS AND A RESOLUTION TO SUCH CONFLICTS PRIOR TO CONSTRUCTION OF SUCH FACILITIES.
- BEFORE EXECUTION OF ANY WORK, THE CONTRACTOR SHALL EXAMINE ACTUAL JOB CONDITIONS AND REPORT TO RFE ENGINEERING, INC. AND OWNER ANY ERROR, OMISSION, OR DISCREPANCY AFFECTING WORK. UPON COMMENCING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPORTING ANY AND ALL CONFLICTS, ERRORS, OMISSIONS, ETC. TO RFE ENGINEERING, INC. IMMEDIATELY UPON DISCOVERY. IF SO DIRECTED BY THE ENGINEER OR CITY/COUNTY ENGINEER, THE CONTRACTOR SHALL STOP WORK UNTIL MITIGATION CAN BE MADE. ANY COST INCURRED RESULTING FROM THE CONTRACTOR'S FAILURE TO STOP WORK AS DIRECTED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL PROVIDE THE CIVIL ENGINEER "AS BUILT" DRAWINGS AT PROJECT COMPLETION. THE CONTRACTOR SHALL PROVIDE ONE COMPLETE ACCURATE SET OF RECORD CHANGES. THE CHANGES SHALL BE PLACED ON A CLEAN SET OF PROJECT DRAWINGS IN RED, AND GIVEN TO THE ENGINEER AT JOB COMPLETION.
- THE ENGINEERS ESTIMATE OF QUANTITIES IS FOR DESIGN REFERENCE ONLY. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DETERMINING THE QUANTITIES FOR BID AND FIELD INSTALLATION. ALL CALCULATED EARTHWORK QUANTITIES FURNISHED FOR THIS PROJECT ARE APPROXIMATE. THE QUANTITIES HEREIN WERE CALCULATED TO FINISHED ROUGH GRADE AND EXISTING GROUND. THE ACTUAL MATERIALS MOVED ARE VARIABLE DEPENDENT UPON THE CONTRACTOR'S METHOD OF OPERATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE FOR ANY EXCESS OR SHORTAGE OF EARTH MATERIAL FOR THIS PROJECT AND NO ADDITIONAL PAYMENT WILL BE MADE.
- THESE DRAWINGS ARE FOR THIS SPECIFIC PROJECT AND NO OTHER USE IS AUTHORIZED. RFE ENGINEERING, INC. DISCLAIMS ALL RESPONSIBILITY FOR CONSTRUCTION BEYOND WHAT IS SPECIFICALLY DESIGNED OR DETAILED HEREIN.
- THE CONTRACTOR SHALL TAKE CARE TO PROTECT THE EXISTING SITE AND ADJACENT IMPROVEMENTS FROM DAMAGE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM THE CONSTRUCTION AND SHALL REPAIR OR MAKE REPLACEMENT TO CURRENT CITY/COUNTY STANDARDS. ALL SUCH WORK SHALL BE AT THE CONTRACTOR'S OWN EXPENSE. THE CONTRACTOR SHALL PERFORM THESE REPAIRS AND REMOVE ALL TRASH AND CONSTRUCTION DEBRIS AS DIRECTED BY RFE ENGINEERING, INC. OR THE CITY/COUNTY ENGINEER.
- THE AGENCY, CITY/COUNTY ENGINEER, OWNER OR RFE ENGINEERING, INC. MAY REQUIRE THE CONTRACTOR TO UNCOVER ANY IMPROVEMENTS THAT HAVE BEEN COMPLETED WITHOUT PROPER INSPECTION AND/OR APPROVAL. IF THE INSTALLATION IS FOUND NOT TO MEET APPLICABLE STANDARDS OR PREVIOUSLY APPROVED ALTERNATIVES SHOWN ON THE PLANS, THE CONTRACTOR MAY BE REQUIRED TO REMOVE AND REPLACE SUCH IMPROVEMENTS AT HIS OWN EXPENSE.
- THE CONTRACTOR IS RESPONSIBLE FOR PRESERVATION AND PROTECTION OF EXISTING SURVEY AND PROPERTY CORNER MONUMENTS THAT EXIST AT THE TIME OF CONSTRUCTION IN THE AREA WHERE CONSTRUCTION ACTIVITIES OCCUR. MONUMENTS DISTURBED OR LOST DUE TO CONSTRUCTION ACTIVITIES WILL REQUIRE THAT THE CONTRACTOR HAVE THEM REPLACED, IN KIND, BY A LICENSED CALIFORNIA LAND SURVEYOR, WHO WILL BE REQUIRED TO FILE WITH THE COUNTY EITHER A CORNER RECORD OR A RECORD OF SURVEY, WHICHEVER WILL MEET THE REQUIREMENTS OF THE LAND SURVEYOR'S ACT, SECTION 8771(B).

GENERAL PAVING NOTES:

CONTRACTOR SHALL CONSTRUCT PROJECT PAVING PER THE FOLLOWING PAVING SPECIFICATIONS AND REQUIREMENTS OUTLINED IN THE PROJECT SPECIFIC GEOTECHNICAL REPORT WHEN MORE RESTRICTIVE. FOR ALL IMPROVEMENTS WITHIN PUBLIC RIGHTS-OF-WAY TO BE MAINTAINED BY THE APPLICABLE AGENCY, UNLESS OTHERWISE NOTED ON THESE PLANS, CONTRACTOR SHALL CONSTRUCT PAVING IMPROVEMENTS PER THE APPLICABLE AGENCY STANDARDS.

SUBGRADE AND BASE PREPARATION

- A UNIFORM SUBGRADE AT THE CORRECT ELEVATION AND PROPER PREPARATION OF THE SUBGRADE IS ESSENTIAL FOR OPTIMUM LONG-TERM PERFORMANCE OF THE CONCRETE PAVING. SUBGRADE SHALL BE EXCAVATED OR FILLED WITH SUITABLE MATERIAL TO PRODUCE THE REQUIRED SUBGRADE ELEVATIONS. SAND CUSHIONS SHALL NOT BE USED AS A CONSTRUCTION EXPEDIENT IN LIEU OF PROPER SUBGRADE PREPARATION. WHEN SUBGRADE IS SHAPED, LARGE EMBEDDED OBJECTS SHALL BE REMOVED AND THE TOP 12 INCHES OF SOIL SHALL BE THOROUGHLY MOISTURE CONDITIONED TO THE OPTIMUM MOISTURE CONTENT AND UNIFORMLY COMPACTED TO 90% RELATIVE COMPACTION. THE UPPER 6-INCHES OF SOIL SHALL BE THOROUGHLY MOISTURE CONDITIONED TO THE OPTIMUM MOISTURE CONTENT AND UNIFORMLY COMPACTED TO 95% RELATIVE COMPACTION FOR ALL STRUCTURAL SECTIONS SPECIFIED ON THESE PLANS. ALL UNSUITABLE SOIL SHALL BE REMOVED AND REPLACED WITH AN ACCEPTABLE ENGINEERED FILL.
- CLASS 2 AGGREGATE BASE SHALL BE UNIFORM IN DEPTH AND COMPACTED TO 95% RELATIVE COMPACTION.
- ACCEPTABLE TOLERANCES FOR FINE GRADING OF THE SUBGRADE AND AGGREGATE BASE ARE NO MORE THAN 1/4-INCH ABOVE OR 1/4-INCH BELOW THE DESIGN GRADE.

CONCRETE PAVING

- (REFERENCE ACI 330R-01)
- PORTLAND CEMENT CONCRETE (PCC):
 - MINIMUM COMPRESSIVE STRENGTH:
 - TRAFFIC RATED CONCRETE = 4,000 PSI IN 28 DAYS
 - PEDESTRIAN RATED CONCRETE = 3,500 PSI IN 28 DAYS
 - SLUMP: 3" TO 4"
 - AIR ENTRAINMENT: SEE TABLE BELOW
 - AGGREGATE: MAXIMUM 3/4" - INCH CRUSHED (ROUGH-TEXTURED, ANGULAR-SHAPED)
 - ADMIXTURES CONTAINING CHLORIDES AND SULFIDES ARE NOT ACCEPTABLE.

GENERAL PAVING NOTES CONT.:

RECOMMENDED AVERAGE AIR-CONTENT FOR AIR ENTRAINMENT (REF ACI 330R-01 TABLE 3.1)

NORMAL MAXIMUM SIZE AGGREGATE	TYPICAL AIR CONTENTS OF NON-AIR-ENTRAINED CONCRETE	RECOMMENDED AVERAGE AIR CONTENT FOR AIR-ENTRAINED CONCRETE (%)		
		MILD EXPOSURE	MODERATE EXPOSURE	SEVERE EXPOSURE
(INCHES)	(%)			
3/4	2.0	3.5	5.0	6.0

- REINFORCING STEEL, IF SPECIFIED ON THE PLANS, SHALL BE CHAIRED AND LOCATED MID-SLAB DEPTH. REINFORCEMENT AND SPACING SHALL BE AS SPECIFIED ON THE PAVING PLAN. DEFORMED REINFORCEMENT SHALL BE GRADE 60 STEEL.
- HEAVY DUTY TRAFFIC RATED PCC SLABS SHALL BE CONSTRUCTED WITH THICKENED EDGES, AT LEAST 0.2 x SLAB THICKNESS OR 2-INCH MINIMUM, PLUS THE SPECIFIED SLAB THICKNESS AND TAPERED 3-FEET WIDE MEASURED HORIZONTALLY FROM THE PERIMETER OF THE SLAB.
- FORMS SHALL BE STRAIGHT, FREE FROM WARPING, AND STRONG ENOUGH TO RESIST THE LATERAL PRESSURE OF THE CONCRETE. A FORM RELEASE AGENT SHALL BE APPLIED TO EASE STRIPPING.
- CONCRETE SHALL BE PLACED CONTINUOUSLY AS CLOSE AS POSSIBLE TO ITS FINAL POSITION AND BE CONSOLIDATED.
- IMMEDIATELY FOLLOWING STRIKE-OFF, THE SURFACE SHALL BE LEVELED WITH A BULLFLOAT OR A SCRAPING STRAIGHTEDGE. THE SURFACE SHALL NOT BE FINISHED MORE THAN NECESSARY TO REMOVE IRREGULARITIES. ALL EDGES, TOOLED JOINTS, AND ISOLATION JOINTS SHALL BE ROUNDED TO THE SPECIFIED RADIUS WITH APPROPRIATE TOOLS. THE USE OF HAND OR POWER FLOATS AND TROWELS IS NOT NECESSARY AND IS NOT RECOMMENDED.
- AS SOON AS THE FINISHED CONCRETE HAS SET SUFFICIENTLY TO MAINTAIN A TEXTURE AND NO BLEED WATER REMAINS ON THE SURFACE, THE SURFACE CAN BE DRAGGED WITH A SHORT LENGTH OF DAMP BURLAP OR OTHER MATERIAL SUCH AS SYNTHETIC TURF CARPETING. AS AN ALTERNATIVE, THE SURFACE CAN BE BROOMED TO DEVELOP A SKID-RESISTANCE SURFACE AND UNIFORM APPEARANCE. SEE ARCHITECTURAL PLANS FOR ADDITIONAL SPECIAL CONCRETE FINISH REQUIREMENTS AND JOINT PATTERN REQUIREMENTS. UNLESS OTHERWISE SPECIFIED ON THE ARCHITECT'S PLANS, ALL CONCRETE SHALL HAVE A LIGHT BROOM FINISH.
- THE CONCRETE SHALL BE PROTECTED FROM DAMAGE DURING THE CURING PROCESS.
- CURING:
 - COLD TEMPERATURES - CONCRETE SHALL BE PROTECTED FROM FREEZING FOR AT LEAST 5-DAYS AFTER PLACEMENT. FOR FORECAST TEMPERATURES AROUND 25 TO 32 DEGREES FAHRENHEIT THE CONCRETE SHALL BE COVERED WITH POLYETHYLENE SHEETING. FOR COLDER TEMPERATURES, TWO SHEETS OF POLYETHYLENE SEPARATED BY 12-INCHES OF STRAW OR A SIMILAR DEGREE OF INSULATION.
 - WARM TEMPERATURES - WET CURING OR LIQUID MEMBRANE-FORMING CURING COMPOUND SHALL BE INITIATED IMMEDIATELY AFTER FINISHING IN SUNNY, WINDY AND WARM CONDITIONS.
 - CONTRACTOR SHALL HAVE ENOUGH PLASTIC SHEETING AVAILABLE ON THE PROJECT SITE TO COMPLETELY COVER ANY SURFACES THAT MAY BE DAMAGED IN THE EVENT OF RAIN. THERE SHALL ALSO BE ADEQUATE WEIGHTS AVAILABLE TO KEEP THE PLASTIC SHEETING FROM BLOWING AWAY. FOR CONCRETE ON A SLOPE, DIVERSION SHALL BE PROVIDED FOR POTENTIAL RUN-ON TO PROTECT FROM WATER ABOVE WASHING ACROSS THE SURFACE.
- CONCRETE JOINTS:

ISOLATION / EXPANSION JOINTS:

CONSTRUCT WHERE PCC MEETS FIXED FOUNDATIONS SUCH AS COLUMNS, BUILDING, MACHINERY FOUNDATIONS, WALLS, MANHOLES, DRAIN INLETS, UTILITY BOXES, DRAINAGE STRUCTURES, EXISTING ISLANDS, LIGHT STANDARDS, EXISTING APPROACH PAVEMENTS, ETC. ALL STRUCTURAL TUBING, PIPING, ETC. THAT EXTENDS UP THROUGH THE PCC SLAB SHALL BE WRAPPED WITH TWO LAYERS OF BUILDING PAPER OR ISOLATION JOINT MATERIAL TO BREAK BOND WITH PCC SLAB.

EXPANSION JOINT MATERIAL = 1/2" - INCH FELT EXPANSION FIBER BOARD, OR APPROVED EQUIVALENT.
 FULL DEPTH OF PCC
 WIDTH = 3/8" - INCH
 RADIUS = 1/4" - INCH

EXPANSION JOINT TO BE GREENSTREAK PAVING CAP SEAL OR APPROVED SEALANT IF SPECIFIED ON THE PLAN.

CONTRACTION CONTROL JOINTS HAND TOOLED OR SAWCUT

JOINT IS A SAW CUT, TROWEL CUT, OR PLASTIC OR HARDBOARD PREFORMED STRIP TO BE A MINIMUM OF ONE QUARTER THE DEPTH OF THE SLAB THICKNESS AND NO LESS THAN 1-INCH. THIS JOINT PROVIDES A WEAK PLANE IN THE SLAB WHERE CRACKING CAN OCCUR. MAXIMUM SPACING FOR 3/4" - INCH MAXIMUM AGGREGATE IS 2 x SLAB THICKNESS (DEPTH) IN FEET (I.E. A 4-INCH SLAB WITH 3/4" MAXIMUM AGGREGATE SHALL HAVE A MAXIMUM SPACING OF 8-FEET). MAXIMUM SPACING FOR AGGREGATE GREATER THAN 3/4" - INCH SHALL BE 2.5 x SLAB THICKNESS IN FEET (I.E. A 4-INCH SLAB WITH AGGREGATE GREATER THAN 3/4" SHALL HAVE A MAXIMUM SPACING OF 10-FEET). IN NO CASE SHALL SPACING BE GREATER THAN 15 - FEET.

PLACE CONTRACTION CONTROL JOINTS IN CURBS AND IN CURB AND GUTTER AT INTERVALS NO MORE THAN 10-FEET WHEN NOT ABUTTING CONCRETE PAVING OR SIDEWALK. WHERE CURBS ARE ABUTTING CONCRETE PAVEMENT OR SIDEWALK, JOINTS IN CURBS SHALL ALIGN WITH JOINTS IN PAVEMENT OR SIDEWALK. THE DEPTH OF THE JOINT SHALL BE NO LESS THAN 1 1/2".

SLAB THICKNESS (INCHES)	JOINT DEPTH (INCHES)	JOINT TROWEL RADIUS (INCHES)	MAXIMUM JOINT SPACING (FEET) (EACH DIRECTION)
4	1	3/8	8
5	1 1/4	3/8	10
6	1 1/2	3/8	12
6 1/2	1 3/8	3/8	13
7	1 3/4	3/8	14
8	2	3/8	15

TOOLING OR EARLY-ENTRY DRY-CUT SAW JOINTS ARE DESIRED TO PLACE JOINTS BEFORE DEVELOPMENT OF TENSILE STRESSES THAT ARE GREAT ENOUGH TO INITIATE CRACKING, THUS INCREASING THE PROBABILITY OF CRACKS FORMING AT THE JOINT. CONTRACTION JOINT PATTERNS SHOULD DIVIDE PAVEMENTS INTO APPROXIMATELY SQUARES. THE LENGTH OF A PANEL SHOULD NOT BE MORE THAN 25% GREATER THAN ITS WIDTH.

GENERAL PAVING NOTES CONT.:

CONSTRUCTION JOINTS

CONSTRUCTION JOINTS ARE STOPPING PLACES IN THE PROCESS OF CONSTRUCTION

BUTT TYPE CONSTRUCTION JOINT WITH DOWEL
 SMOOTH STEEL DOWEL BAR COATED TO PREVENT BOND
 MINIMUM 1-FOOT LONG - 6-INCHES IN EACH SIDE OF JOINT
 EDGE EACH SIDE WITH 1/8-INCH RADIUS.

DOWELS SHALL BE PLACED A MINIMUM OF 12-INCHES AWAY FROM ANY JOINT INTERSECTION.

PREVENT BOND OF CONCRETE AT JOINT OR EXTEND REBAR 1' MINIMUM BEYOND INITIAL SECTION TO TIE IN SECONDARY SECTION.

ALL NEW PCC PAVING SHALL BE TIED INTO EXISTING WITH 1/2-INCH STEEL DOWEL @ 12-INCHES O.C. EPOXY INTO EXISTING. DOWELS SHALL NOT BE WITHIN 12-INCHES OF EDGE OF CONCRETE OR JOINT INTERSECTION. EDGE NEW PCC WITH 1/8-INCH RADIUS AT JOINT.

SCORE JOINTS - HAND TROWELED FOR AESTHETICS ONLY. SEE ARCHITECTURAL PLANS FOR PATTERN IF NOT SPECIFIED ON CIVIL PLANS - FIT ALL OTHER CONTRACTION AND CONSTRUCTION JOINTS INTO THIS PATTERN.

- ALL ISOLATION / EXPANSION JOINTS SHALL BE CAPPED WITH GREENSTREAK G-SEAL PAVING CAP SEAL PROFILE #610 OR #628 AS APPROPRIATE FOR USE.
- ALL CONTRACTION CONTROL AND CONSTRUCTION JOINTS SHALL BE SEALED WITH SIKAFLEX SELF-LEVELING SEALANT (COLOR TO MATCH CONCRETE) OR APPROVED EQUIVALENT. JOINT WALLS AND ALL SURFACES TO WHICH THE SEALING MATERIAL IS TO ADHERE SHALL BE SURFACE DRY FOR AT LEAST THREE HOURS PRIOR TO SEALING. THE SURFACE OF THE SEALING COMPOUND SHALL BE A MAXIMUM OF 1/8-INCH BELOW THE LEVEL OF THE PCC SLAB SURFACE.
- CONTRACTOR SHALL TAKE PRECAUTIONS TO REDUCE RAPID LOSS OF MOISTURE FROM THE CONCRETE AND REDUCE PLASTIC SHRINKAGE CRACKING. PRIOR TO PLACEMENT, DURING PLACEMENT AND UP TO 5-DAYS AFTER PLACEMENT AND FINISHING OF THE CONCRETE.
- SEE ARCHITECTURAL PLANS FOR ADDITIONAL SPECIAL CONCRETE FINISH REQUIREMENTS AND JOINT PATTERN REQUIREMENTS. UNLESS OTHERWISE SPECIFIED ON THE ARCHITECT'S PLANS, ALL CONCRETE SHALL HAVE A LIGHT BROOM FINISH.

ASPHALT PAVING

(REFERENCE CALTRANS STANDARD SPECIFICATIONS SECTION 39)

- ALL ASPHALT SHALL MEET CALTRANS TYPE A HMA SPECIFICATIONS.

- FOR ASPHALT PAVEMENT THICKNESSES PLACED IN ONE SINGLE LIFT, THE GRADATION REQUIREMENTS SHALL BE AS FOLLOWS:

TYPE A HMA PAVEMENT THICKNESS	GRADATION
0.10 FEET	3/4 INCH
GREATER THAN 0.10 TO LESS THAN 0.20 FEET	1/2 INCH
0.20 TO LESS THAN 0.25 FEET	3/4 INCH
0.25 FEET OR GREATER	3/4 INCH OR 1 INCH

- FOR PAVEMENT THICKNESS IN EXCESS OF 0.30 FEET, PAVEMENT SHALL BE PLACED IN MULTIPLE LIFTS NOT LESS THAN 0.15 FEET. WHEN PLACING ASPHALT IN LIFTS, THE TABLE BELOW IS APPLICABLE:

TYPE A HMA LIFT THICKNESS	GRADATION
0.15 TO LESS THAN 0.20 FEET	1/2 INCH
0.20 FEET TO LESS THAN 0.25 FEET	3/4 INCH
0.25 FEET OR GREATER	3/4 INCH OR 1 INCH

- APPLY A TACK COAT BEFORE PLACING A SUBSEQUENT LIFT.

DUST MITIGATION NOTES:

- ENCLOSE, COVER OR WATER ALL SOIL PILES TWICE DAILY.
- WATER EXPOSED SOIL WITH ADEQUATE FREQUENCY TO KEEP SOIL MOIST AT ALL TIMES.
- WATER ALL HAUL ROADS TWICE DAILY.
- MAINTAIN AT LEAST TWO (2) FEET OF FREEBOARD ON TRUCKS WHEN HAULING LOADS.
- MAINTAIN CONSTRUCTION EQUIPMENT (STATIONARY AND MOBILE) IN OPTIMUM RUNNING CONDITION.

APPRVD									
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DATE									
REVISION									
CHECK NO.									
BY									
DESIGN									
DRAWN									
QUANT.									
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ORIGINAL SCALE IS IN INCHES



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 civil engineers • planners • surveyors
 2260 Douglas Blvd., Suite 160, Roseville, CA 95661
 Ph: 916-772-7800 Fax: 916-772-7804
 www.rfeengineering.com

SOLTAGE
 66 YORK ST., 5TH FLOOR
 JERSEY CITY, NJ, 07302

ALAMEDA GRANT LINE SOLAR 1
 W GRANT LINE RD
 UNINCORPORATED
 ALAMEDA COUNTY, 95391
GENERAL NOTES

Sheet
C2
 2 of 7
 06/22/2021

REVIEWED BY:

LEGEND:

PROPERTY LINE: Solid line

ROW: Dashed line

EASEMENT: Dotted line

LOT LINE: Long dashed line

CENTERLINE: Short dashed line

FENCE: Line with 'x' markers

CONTROL POINTS: Triangle with '100' or '100.00' and 'PK'

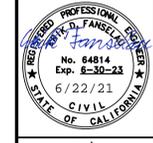
RIPRAP: Pattern of circles

3/4" GRAVEL (MIN. 6" THICK) OR CLASS 3 AB: Stippled pattern

AC PAVING 0.15' AC TYPE B / 0.50' CLASS 3 AB: Solid grey fill

NOTE:
SEE ELECTRICAL DRAWINGS FOR MORE INFORMATION

DESIGN	DRAWN	QUANT.	BY	CHECK	NO.	DATE	BY	APPRVD



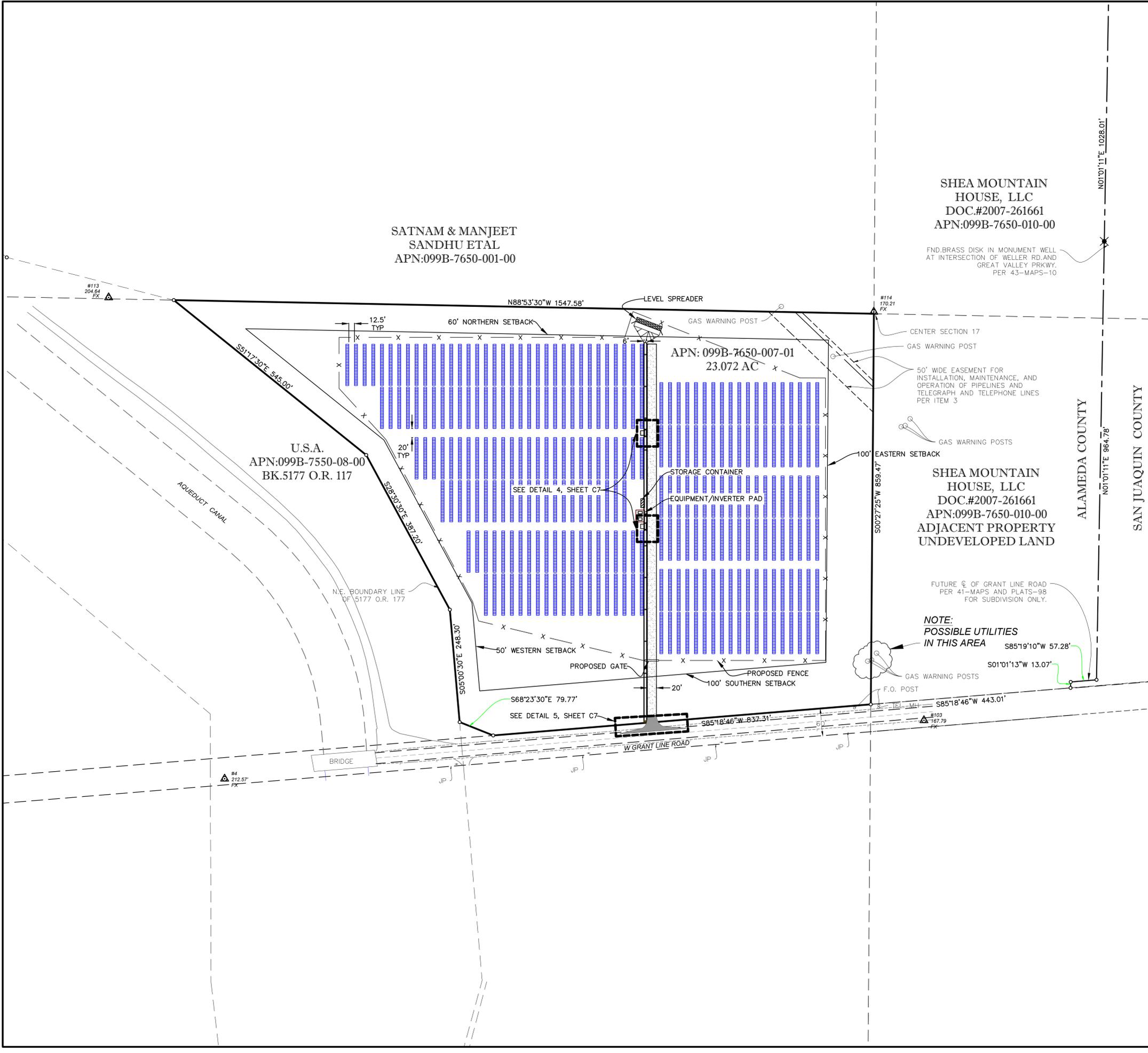
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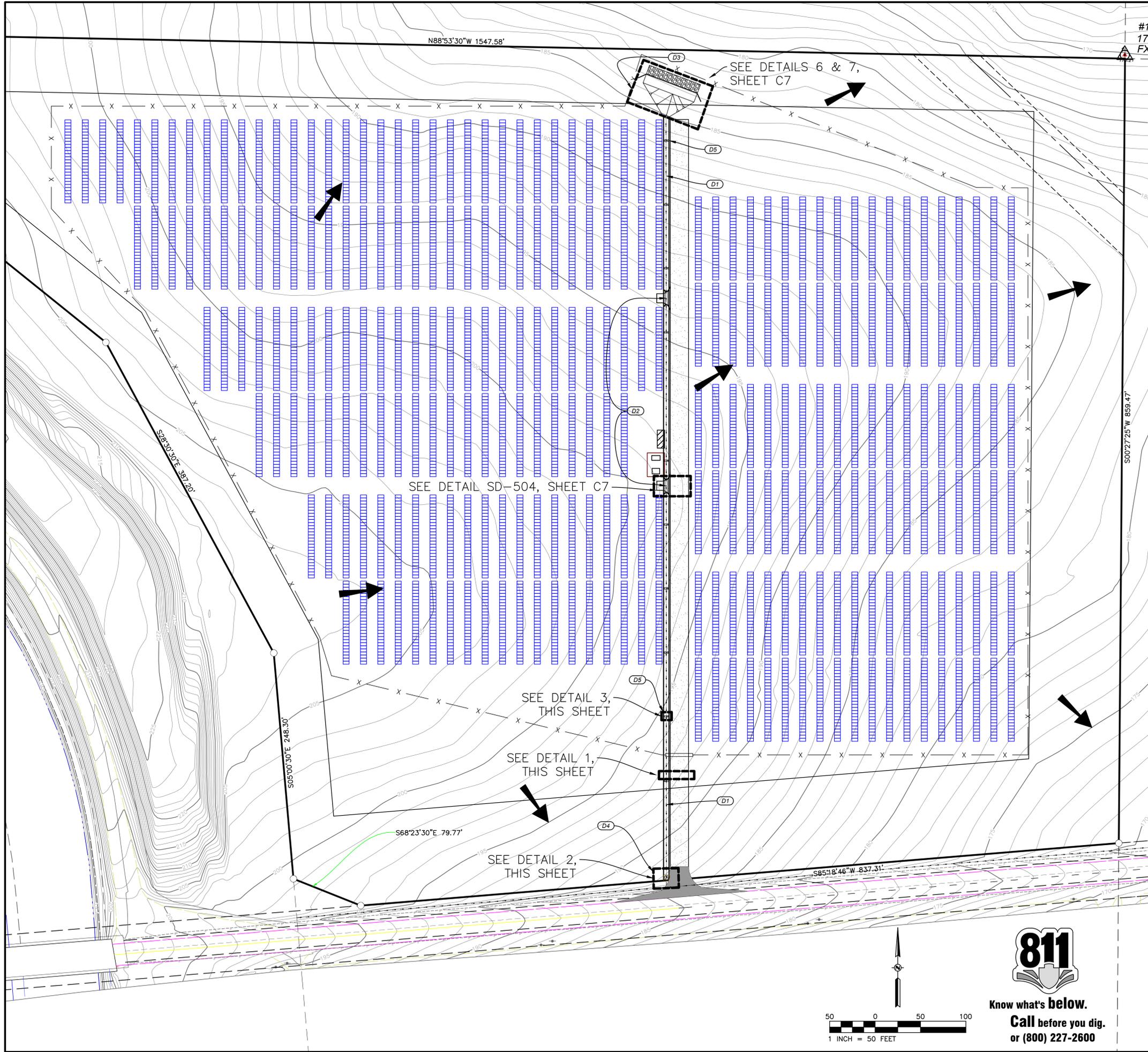
ALAMEDA GRANT LINE SOLAR 1
W GRANT LINE RD
UNINCORPORATED
ALAMEDA COUNTY, 95391
HORIZONTAL CONTROL PLAN

Sheet
C3
3 of 7
06/22/2021

811
Know what's below.
Call before you dig.
or (800) 227-2600



RFE PROJECT 21-067 - ALAMEDA SOLAR; GRANT LINE RD; MOUNTAIN HOUSE, CA



LEGEND:

- RIPRAP
- GRAVEL
- ROCK CHECK DAMS
- OVERLAND RELEASE
- DRAINAGE FLOW
- INTERMEDIATE CONTOURS
- INDEX CONTOUR

DRAINAGE KEYNOTES:

- (D1) CONSTRUCT 6 FT WIDE TRIANGULAR CHANNEL WITH A 2:1 SLOPE PER DETAIL 1. SEE THIS SHEET
- (D2) INSTALL 15 LF 12" RCP WITH FLARED END SECTIONS PER DETAIL SD-504, SEE SHEET C7.
- (D3) CONSTRUCT 60 FT X 2 FT LEVEL SPREADER WITH RIPRAP AND FABRIC UNDERLAYMENT. USE CALTRANS CLASS 2 RIPRAP WITH CALTRANS TYPE A FILTER FABRIC PER DETAILS 6 & 7, SEE SHEET C7.
- (D4) CONSTRUCT 6 FT X 6 FT SECTION OF CALTRANS CLASS 2 RIPRAP WITH CALTRANS TYPE A FILTER FABRIC AT THE CONNECTION POINT OF THE PROPERTY DITCH AND THE PUBLIC DITCH PER DETAIL 2. SEE THIS SHEET.
- (D5) CONSTRUCT ROCK CHECK DAMS EVERY 70 FT FROM THE ELEVATION HIGH POINT PER DETAIL 3. SEE THIS SHEET.

NOTE:
VERIFY ALL UTILITY LOCATIONS, PIPE ELEVATIONS, ETC. PRIOR TO CONSTRUCTION.

DETAIL 1 - ROAD AND DITCH SECTION VIEW
NOT TO SCALE

DETAIL 2 - SITE TO ROADSIDE DITCH CONNECTION
NOT TO SCALE

DETAIL 3 - ROCK CHECK DAM SECTION VIEW
NOT TO SCALE

811
Know what's below.
Call before you dig.
or (800) 227-2600

1 INCH = 50 FEET

REVISION	DATE	BY	APPROVED

DESIGN: [Signature]
DRAWN: [Signature]
QUANT.: 0

ORIGINAL SCALE IS 1/4" = 1'

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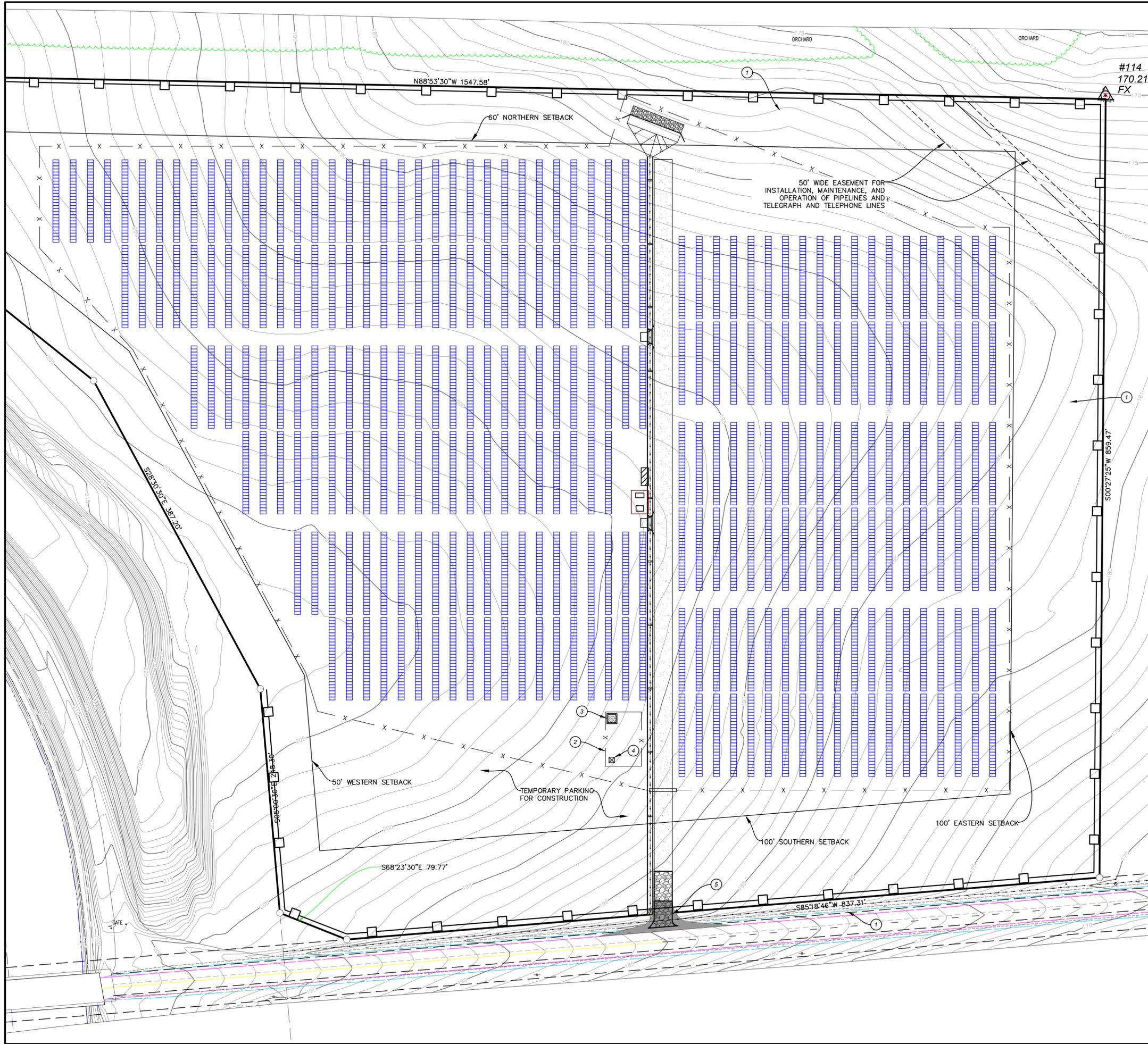
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ALAMEDA GRANT LINE SOLAR 1
W GRANT LINE RD
UNINCORPORATED
ALAMEDA COUNTY, 95391

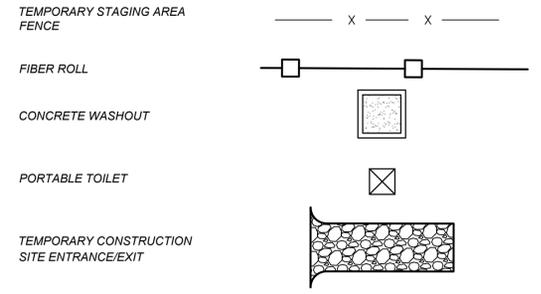
GRADING & DRAINAGE PLAN

Sheet
C4
4 of 7
06/22/2021

RF E PROJECT 21-067 - ALAMEDA SOLAR; GRANT LINE RD, MOUNTAIN HOUSE, CA



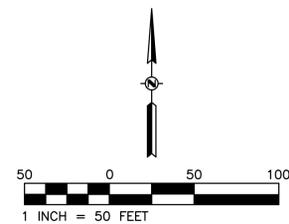
LEGEND:



CONSTRUCTION KEYNOTES:

- 1 PLACE FIBER ROLL
- 2 STAGING AREA, MATERIAL STORAGE, TEMPORARY STOCKPILE STORAGE AREA, FUELING AREA.
- 3 CONSTRUCT CONCRETE WASHOUT
- 4 PLACE PORTABLE TOILET(S) FOR USE DURING CONSTRUCTION AND ANCHOR TO PREVENT OVERTURNING
- 5 CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE / EXIT

NOTE:
 1. CONTRACTOR TO DETERMINE SPECIFIC LOCATIONS AND BMPs EMPLOYED FOR EROSION AND SEDIMENT CONTROL, EITHER NOT SHOWN ON PLAN OR IN ADDITION TO PLAN (AS NEEDED). HYDROSEEDING (PER CASQA MANUAL) OF PERMANENTLY EXPOSED SOIL AND EROSION CONTROL BLANKETS TO BE USED IN COMBINATION (AS REQUIRED) DURING CONSTRUCTION TO PREVENT EROSION.



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ALAMEDA GRANT LINE SOLAR 1
 W GRANT LINE RD
 UNINCORPORATED
 ALAMEDA COUNTY, 95391
EROSION & SEDIMENT CONTROL PLAN

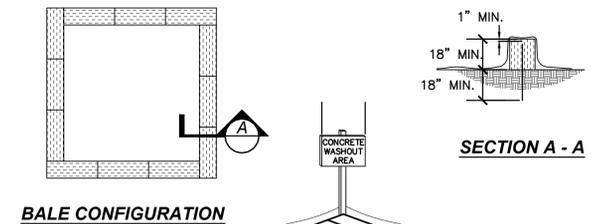
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 5 of 7
 06/22/2021

PROJECT 21-067 - ALAMEDA SOLAR; GRANT LINE RD, MOUNTAIN HOUSE, CA

EROSION AND SEDIMENT CONTROL NOTES:

- THE CONTRACTOR SHALL FOLLOW ALL JURISDICTIONAL GUIDELINES FOR GRADING AND THE EROSION AND SEDIMENT CONTROL MEASURES SHOWN OR STATED ON THESE PLANS.
- CONTRACTOR MUST ENSURE THAT THE CONSTRUCTION SITE IS PREPARED PRIOR TO THE ONSET OF ANY STORM. CONTRACTOR SHALL HAVE ALL EROSION AND SEDIMENT CONTROL MEASURES IN PLACE FOR THE WINTER MONTHS PRIOR TO OCTOBER 1.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL DISTURBED AREAS ARE STABILIZED. CHANGES TO THIS EROSION AND SEDIMENT CONTROL PLAN SHALL BE MADE TO MEET FIELD CONDITIONS ONLY WITH THE APPROVAL OF OR AT THE DIRECTION OF A REPRESENTATIVE OF THE DEPARTMENT OF UTILITIES.
- THIS PLAN MAY NOT COVER ALL THE SITUATIONS THAT ARISE DURING CONSTRUCTION DUE TO UNANTICIPATED FIELD CONDITIONS. VARIATIONS MAY BE MADE TO THE PLAN IN THE FIELD SUBJECT TO THE APPROVAL OF OR AT THE DIRECTION OF A REPRESENTATIVE OF THE DEPARTMENT OF UTILITIES.
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED BEFORE AND AFTER ALL STORMS TO ENSURE MEASURES ARE FUNCTIONING PROPERLY.
- CONTRACTOR SHALL MAINTAIN A LOG AT THE SITE OF ALL INSPECTIONS OR MAINTENANCE OF BMPs, AS WELL AS, ANY CORRECTIVE CHANGES TO THE BMPs OR EROSION AND SEDIMENT CONTROL PLAN.
- IN AREAS WHERE SOIL WILL BE EXPOSED LONGER THAN 14 DAYS, CONTRACTOR SHALL STABILIZE EXPOSED SOILS WITH HYDROSEEDING OR OTHER EQUIVALENT METHOD. CONTRACTOR SHALL ENSURE NO AREAS WILL BE LEFT EXPOSED OVER THE WINTER SEASON.
- THE CONTRACTOR SHALL INSTALL THE STABILIZED CONSTRUCTION ENTRANCE PRIOR TO COMMENCEMENT OF GRADING. LOCATION OF THE ENTRANCE MAY BE ADJUSTED BY THE CONTRACTOR TO FACILITATE GRADING OPERATIONS. ALL CONSTRUCTION TRAFFIC ENTERING THE PAVED ROAD MUST CROSS THE STABILIZED CONSTRUCTION ENTRANCE. THE STABILIZED CONSTRUCTION ENTRANCE SHALL REMAIN IN PLACE UNTIL THE ROAD BASE ROCK COURSE IS COMPLETED.
- ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE SWEEPED AT THE END OF EACH WORKING DAY OR AS NECESSARY.
- CONTRACTOR SHALL PLACE GRAVEL BAG BARRIERS AROUND ALL NEW DRAINAGE STRUCTURE OPENINGS IMMEDIATELY AFTER THE STRUCTURE OPENING IS CONSTRUCTED. THESE GRAVEL BAG BARRIERS SHALL BE MAINTAINED AND REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETED.
- SOIL STOCKPILE SHALL BE SURROUNDED BY STRAW WATTLE. CONTRACTOR SHALL COVER STOCKPILE WHEN NOT IN USE.

- CONTRACTOR SHALL IMPLEMENT HOUSEKEEPING PRACTICES AS FOLLOWS:
 - SOLID WASTE MANAGEMENT:**
PROVIDE DESIGNATED WASTE COLLECTION AREAS AND CONTAINERS. ARRANGE FOR REGULAR REMOVAL AND DISPOSAL. CLEAR SITE OF TRASH INCLUDING ORGANIC DEBRIS, PACKAGING MATERIALS, SCRAP OR SURPLUS BUILDING MATERIALS AND DOMESTIC WASTE DAILY.
 - MATERIAL DELIVERY AND STORAGE:**
PROVIDE A DESIGNATED MATERIAL STORAGE AREA WITH SECONDARY CONTAINMENT SUCH AS BERMING. STORE MATERIAL ON PALLETS AND PROVIDE COVERING FOR SOLUBLE MATERIALS. RELOCATE STORAGE AREA INTO BUILDING SHELL WHEN POSSIBLE. INSPECT AREA WEEKLY.
 - CONCRETE WASTE:**
PROVIDE A DESIGNATED AREA FOR A TEMPORARY PIT TO BE USED FOR CONCRETE TRUCK WASH-OUT. DISPOSE OF HARDENED CONCRETE OFFSITE. AT NO TIME SHALL A CONCRETE TRUCK DUMP ITS WASTE AND CLEAN ITS TRUCK INTO THE CITY STORM DRAINS VIA CURB AND GUTTER. INSPECT DAILY TO CONTROL RUNOFF, AND WEEKLY FOR REMOVAL OF HARDENED CONCRETE.
 - PAINT AND PAINTING SUPPLIES:**
PROVIDE INSTRUCTION TO EMPLOYEES AND SUBCONTRACTORS REGARDING REDUCTION OF POLLUTANTS INCLUDING MATERIAL STORAGE, USE, AND CLEAN UP. INSPECT SITE WEEKLY FOR EVIDENCE OF IMPROPER DISPOSAL.
 - VEHICLE FUELING, MAINTENANCE AND CLEANING:**
PROVIDE A DESIGNATED FUELING AREA WITH SECONDARY CONTAINMENT SUCH AS BERMING. DO NOT ALLOW MOBILE FUELING OF EQUIPMENT. PROVIDE EQUIPMENT WITH DRIP PANS. RESTRICT ON-SITE MAINTENANCE AND CLEANING OF EQUIPMENT TO A MINIMUM. INSPECT AREA WEEKLY.
 - HAZARDOUS WASTE MANAGEMENT:**
PREVENT THE DISCHARGE OF POLLUTANTS FROM HAZARDOUS WASTES TO THE DRAINAGE SYSTEM THROUGH PROPER MATERIAL USE, WASTE DISPOSAL AND TRAINING OF EMPLOYEES. HAZARDOUS WASTE PRODUCTS COMMONLY FOUND ON-SITE INCLUDE BUT ARE NOT LIMITED TO PAINTS & SOLVENTS, PETROLEUM PRODUCTS, FERTILIZERS, HERBICIDES & PESTICIDES, SOIL STABILIZATION PRODUCTS, ASPHALT PRODUCTS AND CONCRETE CURING PRODUCTS.
- THE FOLLOWING SOIL WIND EROSION CONTROL (DUST CONTROL) METHODS ARE PROPOSED AS PART OF THESE IMPROVEMENT PLANS:
 - WATER THE SOIL OF THE SITE AND THE ADJACENT STREETS BEING USED IN CONNECTION WITH SOIL DISTURBANCE OPERATIONS ON THE SITE IN ACCORDANCE WITH CALTRANS STANDARDS.
 - COVER EXPOSED SOIL WITH GRAVEL OR ROCK LANDSCAPING.
 - COVER EXPOSED SOIL WITH ORGANIC MULCHES, SPRINKLER IRRIGATED.
 - IRRIGATE GRASSES.
 - MAINTAIN LANDSCAPE VEGETATION.
- REFER TO THE PROJECT SWPPP FOR ADDITIONAL EROSION AND SEDIMENT CONTROL REQUIREMENTS AND RECOMMENDATIONS.

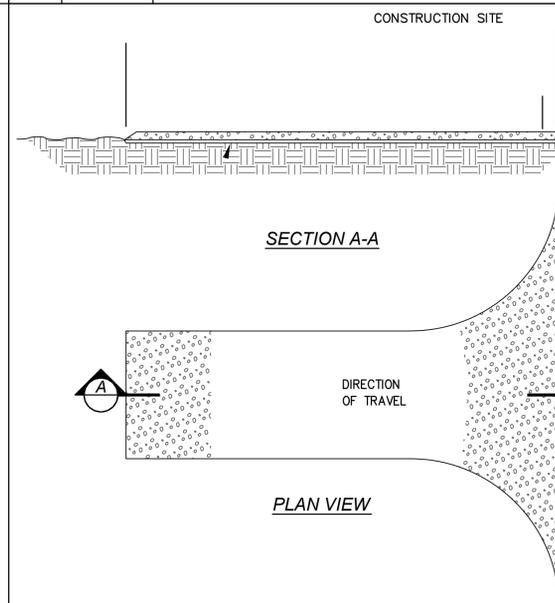


BALE CONFIGURATION

THIS SECTION REMOVED FOR GRAPHICAL REPRESENTATION ONLY. STRAW BALE PERIMETER SHALL BE CONTINUOUS.

- NOTES:**
- FACE SIGN TOWARD NEAREST STREET OR ACCESS POINT.
 - CONCRETE WASHOUT SHALL BE LOCATED BEHIND THE CURB AND 50 FT. MINIMUM FROM DRAINAGE INLETS OR WATERCOURSES

5 NTS CONCRETE WASHOUT



- NOTE:**
- STABILIZED CONSTRUCTION SITE ACCESS SHALL BE CONSTRUCTED OF CRUSHED AGGREGATE (WASHED) BETWEEN 3-6 INCHES. MATERIAL SHALL BE PLACED TO A MINIMUM THICKNESS OF 12 INCHES.
 - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING WITH MATERIAL (AS SPECIFIED IN NOTE 1), REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 - WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
 - WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
 - WHERE RUNOFF CONTAINING SEDIMENT LADEN WATER IS LEAVING THE SITE VIA THE CONSTRUCTION ENTRANCE, OTHER MEASURES SHALL BE IMPLEMENTED TO DIVERT RUNOFF THROUGH AN APPROVED FILTERING SYSTEM.
 - LENGTH OF ENTRANCE SHALL BE A MINIMUM OF 50 FEET. WIDTH SHALL BE A MINIMUM OF 15 FEET OR GREATER IF NECESSARY TO COVER ALL VEHICULAR INGRESS AND EGRESS. PROVIDE AMPLE TURNING RADI, MIN. 20-FOOT RADIUS.
 - ACCESSES SHALL BE INSPECTED WEEKLY DURING PERIODS OF HEAVY USAGE, AND AFTER EACH RAINFALL, WITH MAINTENANCE PROVIDED AS NECESSARY. PERIODIC TOP DRESSING SHALL BE DONE AS NEEDED.



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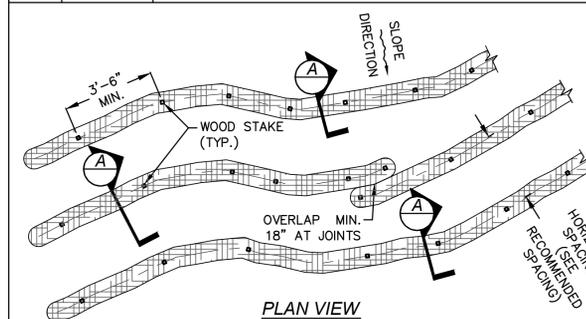
ALAMEDA GRANT LINE SOLAR 1
UNINCORPORATED
ALAMEDA COUNTY, 95591
EROSION & SEDIMENT CONTROL NOTES & DETAILS

EROSION AND SEDIMENT CONTROL MEASURES

PHASE OF CONSTRUCTION	(WET SEASON)						(WET AND DRY SEASON)						
	HYDRO-SEEDING	STRAW MULCHING & TACKIFIER	PRESERVATION OF EXISTING VEGETATION	SOIL BINDERS	FIBER ROLLS	OUTLET PROTECTION	STORM DRAIN INLET PROTECTION	DEWATERING	STABILIZED CONSTRUCTION ENTRANCE	MATERIAL & WASTE DISPOSAL LOCATION	CONCRETE WASHOUT	DUST CONTROL	SEDIMENT TRAP
PRE-GRADING			●		●		●		●	●		●	●
CUT AND FILL QUANTITIES	●	●		●				●				●	●
UNDERGROUND WORK												●	●
STORM DRAIN IMPROVEMENTS						●					●	●	●
CURB & GUTTER							●					●	●
STREET IMPROVEMENTS					●							●	●
POST CONSTRUCTION	●	●	●										

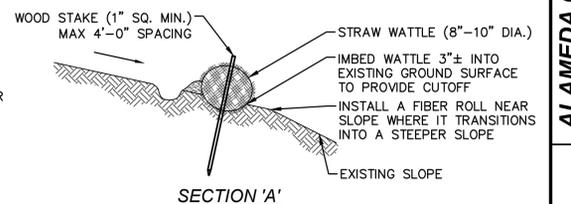
- NOTES:**
- ALL EROSION BMPs SHALL BE IN PLACE PRIOR TO STORM EVENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF SECTION II OF THE IMPROVEMENT STANDARDS AND THE CALIFORNIA STORM WATER HANDBOOK.
 - MAINTAIN BMPs AS NECESSARY.

4 NTS CONSTRUCTION ENTRANCE

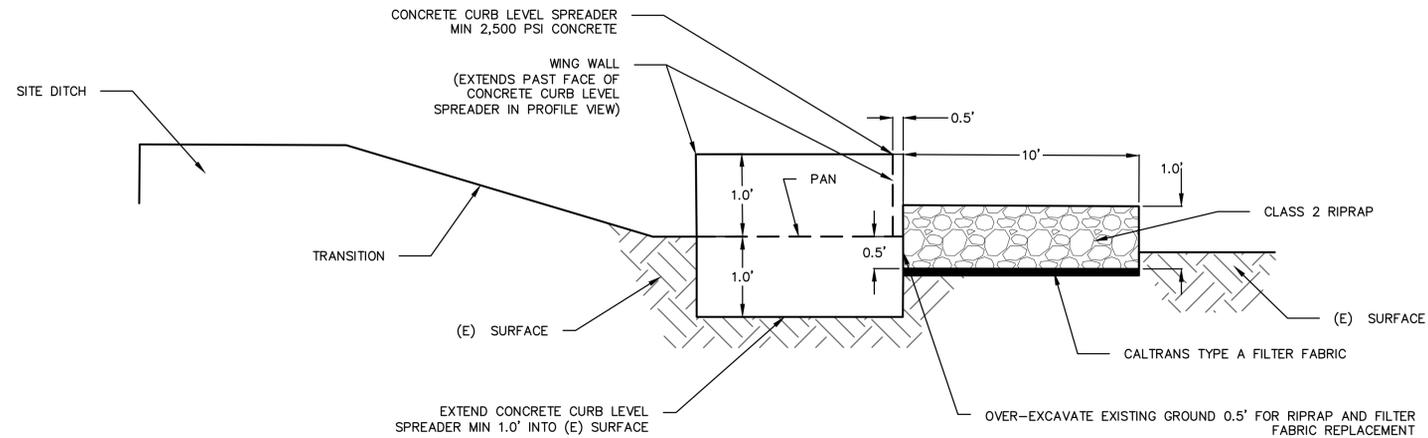


- RECOMMENDED MAX SPACING:**
4:1 SLOPE OR FLATTER: 20 FT. INTERVAL BETWEEN 4:1 & 2:1 : 15 FT. INTERVAL
2:1 SLOPE OR MORE: 10 FT. INTERVAL MAX..
- RECOMMENDED PLACEMENT (AS APPLICABLE):**
- ALONG TOE, TOP, FACE AND AT GRADE BREAKS OF EXPOSED AND ERODABLE SLOPES.
 - ALONG PERIMETER OF PROJECT.
 - AS CHECK DAMS ON UNLINED, MINIMALLY SLOPED DITCHES.
 - AROUND TEMPORARY STOCKPILES.

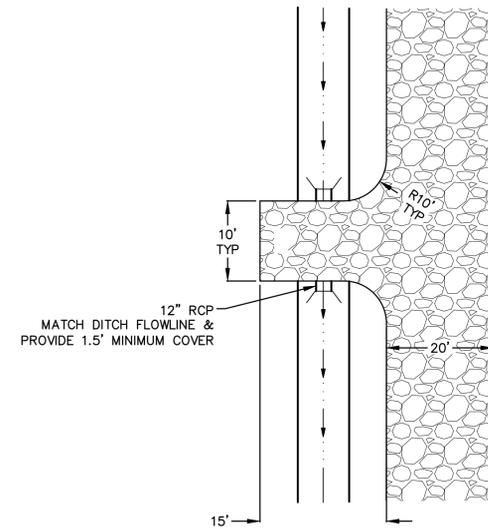
- NOTES:**
- STRAW WATTLES TO BE PLACED ALONG SITE CONTOURS.
 - HORIZONTAL SPACING VARIES DEPENDING ON SOIL TYPE AND STEEPNESS, SEE PLAN (5' MIN - 25' MAX.)
 - RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.
 - STRAW WATTLE SHALL BE RICE STRAW ONLY. USE OF FIBER ROLLS, WHEAT GRASS, OR RYE STRAW NOT PERMITTED.
 - AT ENDS OF A ROW TURN THE LAST TWO FEET UP SLOPE SLIGHTLY



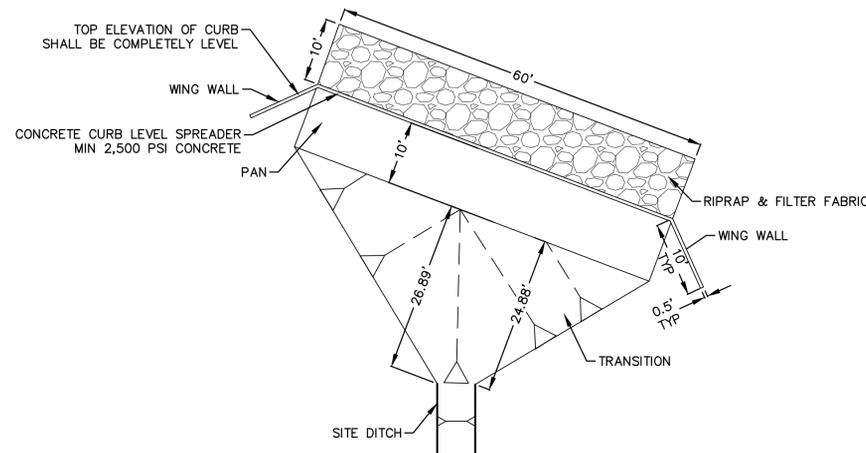
1 NTS FIBER ROLL



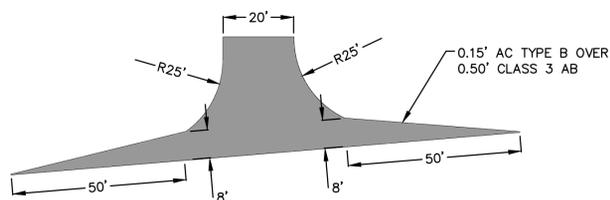
DETAIL 7 - LEVEL SPREADER PROFILE VIEW
NOT TO SCALE



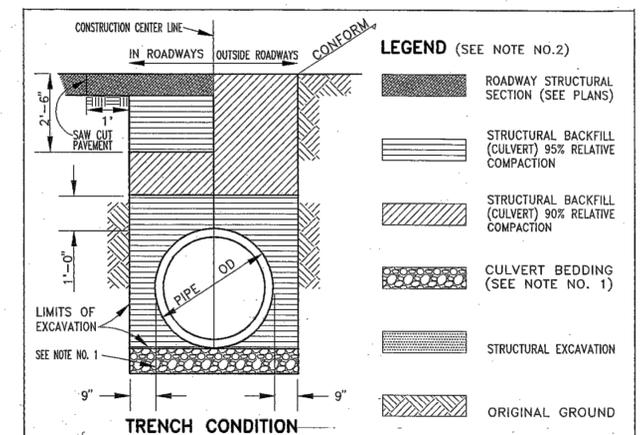
DETAIL 4 - DRIVEWAY TURNOUT
NOT TO SCALE



DETAIL 6 - LEVEL SPREADER
NOT TO SCALE



DETAIL 5 - DRIVEWAY APRON
NOT TO SCALE



- NOTES:**
- EXCAVATE UNSUITABLE SUBGRADE BELOW THE LIMIT OF EXCAVATION AND REPLACE WITH CULVERT BEDDING MATERIAL, ONLY IF SO DIRECTED BY THE ENGINEER. OVER EXCAVATION DUE TO FAILURE OF THE CONTRACTOR TO MAINTAIN SUBGRADE SHALL BE REPLACED WITH CULVERT BEDDING AT THE CONTRACTOR'S EXPENSE.
 - MATERIALS SHALL CONFORM TO THE ALAMEDA COUNTY PUBLIC WORKS AGENCY SPECIFICATIONS AND THE CALTRANS STANDARD SPECIFICATIONS AS MODIFIED BY COUNTY SPECIAL PROVISIONS. REINFORCED CONCRETE PIPE SHALL BE CLASS III, MINIMUM.
 - FOR PIPES INSTALLED IN AN EMBANKMENT CONDITION, THE CONTRACTOR SHALL ENSURE THAT MINIMUM EMBANKMENT HEIGHT CRITERIA IS SATISFIED PRIOR TO EXCAVATING THE TRENCH. EMBANKMENT HEIGHT PRIOR TO EXCAVATION FOR PIPE INSTALLATION SHALL BE 2/3 O.D. (MIN. OF 30') FOR PIPES UP TO 84\"/>
 - WHERE PIPE COVER IS LESS THAN 36 INCHES, THE PIPE LOAD CARRYING CAPACITY SHALL BE INCREASED AND OTHER MODIFICATIONS MADE AS APPROVED BY THE ENGINEER.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

REVISIONS		DATE		SCALE		FILE NO.	
EA	ALD	MARCH	1994	NONE	SD-504	1	2

TYPICAL PIPE SECTION

APPROVED: *[Signature]*
APPROVED: *[Signature]*
APPROVED: *[Signature]*
COUNTY ENGINEER

APPROVED	BY	DATE	REVISION	CHECK NO.	BY	DESIGN	DRAWN	QUANT.	ORIGINAL SCALE IS IN INCHES
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ALAMEDA GRANT LINE SOLAR 1
W GRANT LINE RD
UNINCORPORATED
ALAMEDA COUNTY, 95391
CONSTRUCTION DETAILS

Sheet
C7
7 of 7
06/22/2021

E X H I B I T B

H Y D R O L O G Y A N D D R A I N A G E
S T U D Y





TECHNICAL MEMORANDUM

TO: Dylan Brown, SepiSolar
FROM: Erik Fanselau, PE; Aaron Bernatchy, EIT
DATE: June 22, 2021
SUBJECT: Alameda Solar

RFE PROJECT NO.: 21-067

A. PURPOSE

The purpose of this document is to summarize the proposed improvements and impacts to drainage for the solar energy development of this site. The proposed project includes the addition of solar arrays and related support equipment.

B. LOCATION

The existing parcel is 23.1 acres and is located at the northwest corner of the Grant Line Road and Great Valley Parkway intersection in Mountain House, CA. The site is in Alameda County, just to the west of the Alameda County and San Joaquin County dividing line. The APN is 099B-7650-007-01.

C. EXISTING CONDITIONS

The parcel is currently agricultural land. The ground cover consists of open-field grassland. The imperviousness of the existing conditions of the parcel is approximately 5%. The site is located outside the FEMA 100-yr flood plain based on Map number 06001C0225G, dated August 3, 2009. Runoff generally flows across the site from the west to the east.

D. PROPOSED CONDITIONS

The proposed use includes the addition of solar arrays and related support equipment. There will be six sections of solar arrays, three on each side of the proposed roadway. Each section will have two rows of arrays with varying amounts, laid out to fit the proposed fencing. The north, mid, and southwestern sections will have 66, 49, and 40 arrays respectively. The north, mid, and southeastern sections will all have 38 arrays. No grading is proposed for the project other the maintenance road and related drainage improvements.

E. CALCULATIONS

All calculations used were found in the Alameda County Hydrology & Hydraulics Manual provided by the Alameda County Flood Control & Water Conservation District. Flow was calculated using the District's Rational Formula:

$Q = C'IA$, where:

Q = flow (cfs)

C' = District's runoff coefficient

I = rainfall intensity (in/hr)

A = drainage area (acres)

The District's runoff coefficient was calculated using the District's runoff coefficient equation:

$C' = C + C_s + C_i$, where:

C' = District's runoff coefficient

C = basic runoff coefficient, see Attachment 3

= 0.20

C_s = ground slope adjustment factor, see Attachment 4

= 0.019 for the existing conditions and 0.024 for the proposed conditions

C_i = rainfall intensity factor, see Attachment 4

= 0.074 for a 10-year event and 0.132 for a 100-year event for the existing conditions

= 0.108 for a 10-year event and 0.173 for a 100-year event for the proposed conditions

The calculated values for the District's runoff coefficients were 0.29 for a 10-year storm on the existing site, 0.33 for a 10-year storm on the proposed site, 0.35 for a 100-year storm on the existing site, and 0.40 for a 100-year storm on the proposed site.

Rainfall intensity was found by first, calculating the time of concentration using the Overland Time of Concentration Equation for undeveloped watersheds:

$T_o = L_o / 60V_o$, where:

T_o = time of concentration (min)

L_o = overland flow length (ft)

V_o = overland flow velocity (ft/s)

The longest flow length and slope were found for all three sheds on the existing site and all five sheds on the proposed site, then those values were averaged to get one flow length and one slope for each site. The average flow length for the existing site was 895 ft for the existing site and 615 ft for the proposed site. The average slope was 3.6% for the existing site and 4.1% for the proposed site. Using the Overland Flow Velocity Table, see Attachment 5, the overland flow velocity was found to be 1.40 ft/s for the existing site and 1.55 ft/s for the proposed site. The calculated values were then plugged into the equation above and netted overland time of concentration values of 11 minutes for the existing site and 7 minutes for the proposed site.

The rainfall intensities were found using the calculated time of concentrations and a value of 13 inches for the mean annual precipitation based on the location of the site within Alameda County. The rainfall intensities for a 10-year storm for the existing site were 1.54 in/hr for a 10-year storm and 2.30 in/hr for a 100-year storm, see Attachment 6. The rainfall intensities for the proposed site were 1.99 in/hr for a 10-year storm and 2.97 in/hr for a 100-yr storm, see Attachment 7.

On the existing site, water sheds E-1, E-2, and E-3 had areas of 6.16, 6.02, and 10.90 acres respectively. On the proposed site, water sheds P-1, P-2, P-3, P-4, and P-5 had areas of 6.16, 2.89, 3.13, 7.06, and 3.84 acres respectively.

**Table 1 - Existing Site 10-yr Event**

Shed	C'	I (in/hr)	A (acres)	Q (cfs)
E-1	0.29	1.54	6.16	2.78
E-2	0.29	1.54	6.02	2.72
E-3	0.29	1.54	10.90	4.92

Table 2 - Proposed Site 10-yr Event

Shed	C'	I (in/hr)	A (acres)	Q (cfs)
P-1	0.33	1.99	6.16	4.07
P-2	0.33	1.99	2.89	1.91
P-3	0.33	1.99	3.13	2.07
P-4	0.33	1.99	7.06	4.66
P-5	0.33	1.99	3.84	2.54

Table 3 - Existing Site 100-yr Event

Shed	C'	I (in/hr)	A (acres)	Q (cfs)
E-1	0.35	2.30	6.16	4.97
E-2	0.35	2.30	6.02	4.86
E-3	0.35	2.30	10.90	8.80

Table 4 - Proposed Site 100-yr Event

Shed	C'	I (in/hr)	A (acres)	Q (cfs)
P-1	0.40	2.97	6.16	7.26
P-2	0.40	2.97	2.89	3.41
P-3	0.40	2.97	3.13	3.69
P-4	0.40	2.97	7.06	8.32
P-5	0.40	2.97	3.84	4.53

F. CONCLUSIONS

Of the five water shed areas on the proposed site, P-1, P-3, and P-4 have runoff that flows completely to the edges of the property. While P-2 and P-5 have some runoff that flows to the edge of the property, the remainder of it flows into other water sheds, but more importantly, over the proposed roadway. A drainage ditch will be added on the west side of the roadway to direct the flow from areas P-2 and P-5. Assuming a flow of 5 cfs, which is slightly higher than the expected flow for a 100-year event in both of these areas, a triangular channel with a width of 6 ft and side slopes of 2:1 is large enough to handle the maximum potential flow within the water shed areas. The total depth of the channel is 1.5 ft while the maximum potential flow only reaches a depth of 0.84 ft, see Attachment 8. Two culverts will be added to the west side of the proposed roadway so vehicles will be able to access both sides of the site from the proposed roadway. The culverts will be constructed with 12" RCP with flared end sections and are large enough to handle the maximum potential flow within the water shed areas, see Attachment 9. The design parameters of the triangular channel and the culverts were calculated using the Hydraflow Express Extension for Civil 3D. At the north end of the drainage ditch there will be a level spreader angled to be parallel with the ridge lines to prevent the runoff from ponding at the discharge point. The proposed roadway will have negligible impact on the imperviousness of the site as total percent imperviousness only increases by 1% going from the existing conditions to the proposed conditions. No permanent water quality treatment is required for this project.

G. REFERENCES

Alameda County Hydrology & Hydraulics Manual, Alameda County Flood Control & Water Conservation District, 2018.

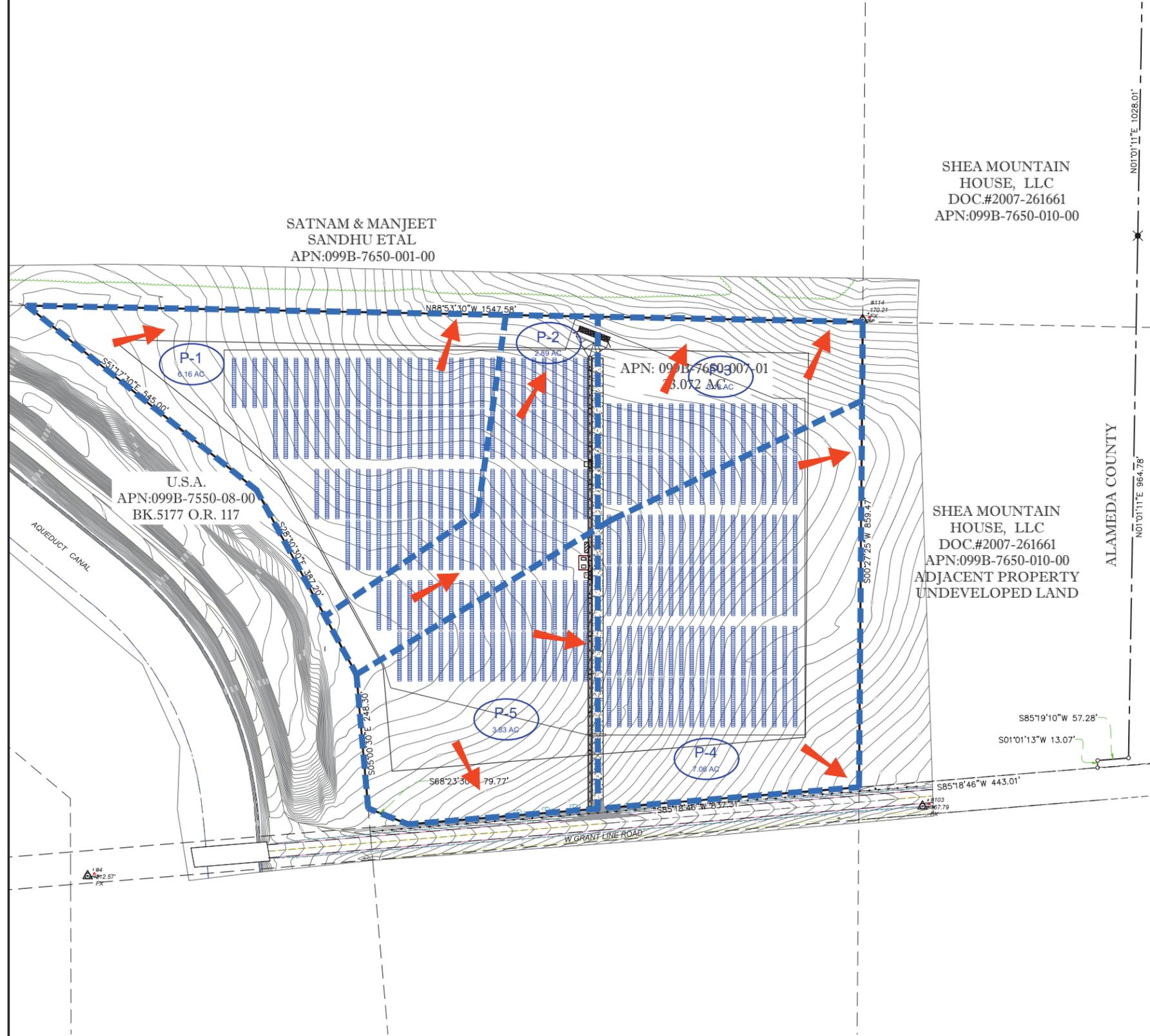
Attachments:

- 1) Existing Conditions Water Shed Map
- 2) Proposed Conditions Water Shed Map
- 3) Basic Runoff Coefficients for Particular Land Use and Soil Type Table
- 4) Ground Slope Adjustment Factor and Rainfall Intensity Factor Equations
- 5) Overland Flow Velocity Graph
- 6) Rainfall Intensity for 10-Year Storm
- 7) Rainfall Intensity for 100-Year Storm
- 8) Drainage Ditch Report from Hydraflow Express
- 9) Culvert Report from Hydraflow Express

ALAMEDA SOLAR

PROPOSED CONDITIONS SHED MAP

W GRANT LINE RD, MOUNTAIN HOUSE, CA 95391
APN: 099B-7650-007-01



LEGEND

DRAINAGE AREA
DESIGNATIONS & AREA



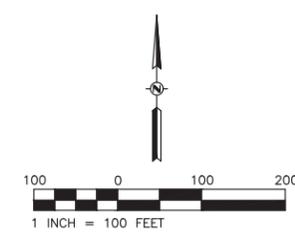
DRAINAGE AREA BOUNDARY



OVERLAND RELEASE



POST-CONSTRUCTION SHED AREAS (ACRES)				
SHED	IMPERVIOUS	PERVIOUS	TOTAL	% IMPERVIOUS
P-1	0.31	5.85	6.16	5%
P-2	0.14	2.75	2.89	5%
P-3	0.25	2.88	3.13	8%
P-4	0.56	6.50	7.06	8%
P-5	0.19	3.64	3.83	5%
TOTAL	1.45	21.62	23.07	6%



DESIGN	DRAWN	QUANT.	REVISION	DATE	BY	APPRVD
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DYLAN BROWN SEPISOLAR 3070 OSGOOD CT FREMONT, CA 94539 (510) 940-9750						
ALAMEDA SOLAR W GRANT LINE RD MOUNTAIN HOUSE, CA PROPOSED CONDITIONS SHED MAP						
Sheet SM2 2 of 2 06/16/2021						

TABLE 2 BASIC RUNOFF COEFFICIENTS FOR PARTICULAR LAND USE AND SOIL TYPE				
Land Use Description	Hydrologic Soil Group			
	A	B	C	D
Undeveloped land, parks, and golf courses	0.10	0.15	0.20	0.25
Rural Residential (larger than 1 ac lot)	0.13	0.18	0.23	0.28
Residential 10,000 - 1 ac lot	0.20	0.25	0.30	0.35
Residential 1/4 ac (8,000 - 10,000 sf lot)	0.25	0.30	0.35	0.40
Residential 1/8 ac (5,000 - 8,000 sf lot)	0.27	0.32	0.37	0.42
Residential (3600 - 5000 sf lot)	0.28	0.33	0.38	0.43
Residential (2700 - 3600 sf lot)	0.29	0.34	0.39	0.44
Zero Lot Line Residential & Less than 2700 sf	0.34	0.39	0.44	0.49
Townhouse	0.44	0.49	0.54	0.59
Condominium	0.51	0.56	0.61	0.66
Industrials	0.58	0.63	0.68	0.73
Apartment	0.65	0.70	0.75	0.80
Commercial	0.69	0.74	0.79	0.84
Freeway*	0.72	0.77	0.82	0.87
Mobile Home Park*	0.34	0.39	0.44	0.49
School (large open space)	0.24	0.29	0.34	0.39
School (small open space)	0.44	0.49	0.54	0.59

* For freeways, use aerial imagery to estimate percent impervious area.
 ** For mobile home parks, a minimum of 50% of the NCIA roof area should be counted as DCIA; for example, DCIA = 17+(37/2) = 35.5

(District 2015)

HYDROLOGIC SOIL GROUPS

Attachment 9 provides a map that shows the areas of hydrologic soil groups A, B, C, and D based on Natural Resource Conservation Service (NRCS – formerly Soil Conservation Service, SCS) mapping.

Soil Type A: Sand, loamy sand, or sandy loam. Low runoff potential and high infiltration rate even when thoroughly wetted. Primarily deep, well- to excessively-drained sand or gravel that has a high rate of water transmission.

Soil Type B: Silt loam or loam. Moderately low runoff potential and moderate infiltration rate when thoroughly wetted. Moderately deep to deep, moderately well- to well-drained soil with moderately fine to moderately coarse texture.

Soil Type C: Sandy clay loam. Moderately high runoff potential and low infiltration rate when thoroughly wetted that impedes downward movement of water. Soil with moderately fine to fine structure.

Soil Type D: Clay loam, silty clay loam, sandy clay, silty clay, or clay. High runoff potential and very low infiltration rate when thoroughly wetted. Consists chiefly of clay soil with a high swelling potential, soil with a permanent high water table, soil with a claypan or clay layer at or near the surface, and shallow soil over nearly impervious material.

Ground Slope Adjustment Factor

The ground slope adjustment factor (C_s) is used to adjust for increases in runoff as the average slope of the incremental drainage area increases. Use an area-weighted average slope (S) from the slope map provided in *Attachment 10* as a basis for determining C_s .

Rainfall Intensity Factor

The rainfall intensity factor (C_i) is used to account for the decrease in soil permeability that can be expected with an increase in ground slope and rainfall intensity.

EQUATION 8 GROUND SLOPE ADJUSTMENT FACTOR

$$C_s = \frac{(0.8 - C)[\ln(S - 1)]S^{0.5}}{56} \quad (8)$$

$$C_s = 0 \text{ for } C \geq 0.8$$

where:

- C_s = ground slope adjustment factor
- C = basic runoff coefficient
- S = slope (percent from *Attachment 10*)

(District 1989)

EQUATION 9 RAINFALL INTENSITY FACTOR

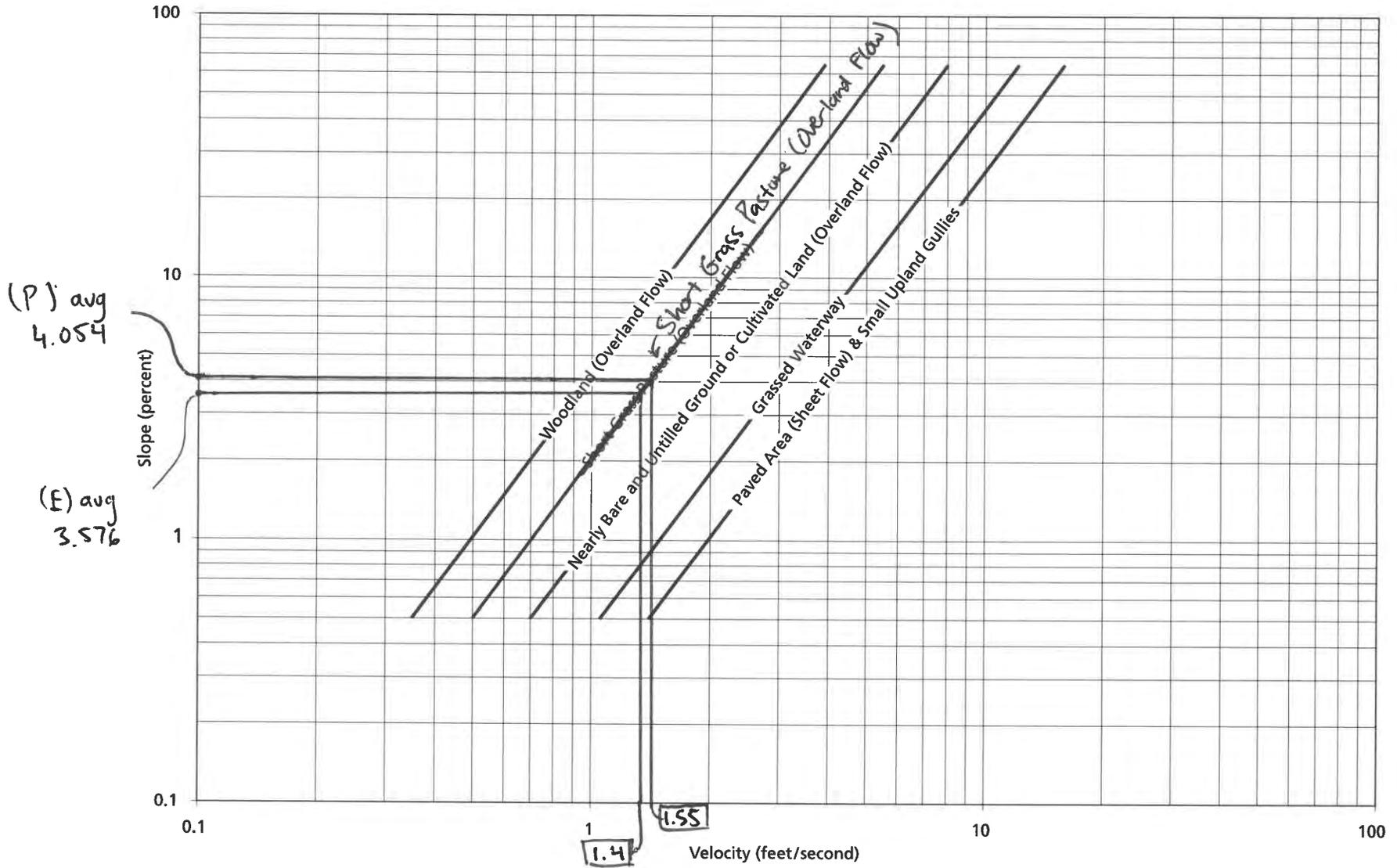
$$C_i = \left(0.8 - (C + C_s) \right) \left(1 - \frac{1}{e^{\frac{1}{i} + \ln(i+1)}} \right) \quad (9)$$

$$C_i = 0 \text{ for } C + C_s \geq 0.8$$

where:

- C_i = rainfall intensity factor
- C = basic runoff coefficient
- C_s = ground slope adjustment factor
- i = rainfall intensity (inches/hr from *Equation 5* or *Attachment 7*)

(District 1989)



(NRCS 2010)



T_c (min)	Mean Annual Precipitation (in)																															
	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32										
1	5.28	5.64	6.00	6.36	6.73	7.09	7.45	7.81	8.17	8.53	8.90	9.26	9.62	9.98	10.34	10.71	11.07	11.43	11.79	12.15	12.52	12.88										
2	3.56	3.81	4.05	4.30	4.54	4.78	5.03	5.27	5.52	5.76	6.00	6.25	6.49	6.74	6.98	7.23	7.47	7.71	7.96	8.20	8.45	8.69										
3	2.83	3.02	3.22	3.41	3.61	3.80	4.00	4.19	4.38	4.58	4.77	4.97	5.16	5.35	5.55	5.74	5.94	6.13	6.32	6.52	6.71	6.91										
4	2.40	2.57	2.73	2.90	3.06	3.23	3.39	3.56	3.72	3.89	4.05	4.22	4.38	4.55	4.71	4.88	5.04	5.21	5.37	5.54	5.70	5.87										
5	2.12	2.26	2.41	2.55	2.70	2.84	2.99	3.14	3.28	3.43	3.57	3.72	3.86	4.01	4.15	4.30	4.44	4.59	4.73	4.88	5.02	5.17										
6	1.91	2.04	2.17	2.30	2.43	2.57	2.70	2.83	2.96	3.09	3.22	3.35	3.48	3.61	3.74	3.88	4.01	4.14	4.27	4.40	4.53	4.66										
7	1.75	1.87	1.99	2.11	2.23	2.35	2.47	2.59	2.71	2.83	2.95	3.07	3.19	3.31	3.43	3.55	3.67	3.79	3.91	4.03	4.15	4.27										
8	1.62	1.73	1.85	1.96	2.07	2.18	2.29	2.40	2.51	2.62	2.74	2.85	2.96	3.07	3.18	3.29	3.40	3.51	3.63	3.74	3.85	3.96										
9	1.52	1.62	1.73	1.83	1.93	2.04	2.14	2.25	2.35	2.45	2.56	2.66	2.77	2.87	2.98	3.08	3.18	3.29	3.39	3.50	3.60	3.70										
10	1.43	1.53	1.63	1.72	1.82	1.92	2.02	2.12	2.21	2.31	2.41	2.51	2.61	2.70	2.80	2.90	3.00	3.10	3.19	3.29	3.39	3.49										
11	1.35	1.45	1.54	1.63	1.73	1.82	1.91	2.00	2.10	2.19	2.28	2.38	2.47	2.56	2.66	2.75	2.84	2.93	3.03	3.12	3.21	3.31										
12	1.29	1.38	1.47	1.55	1.64	1.73	1.82	1.91	2.00	2.09	2.17	2.26	2.35	2.44	2.53	2.62	2.70	2.79	2.88	2.97	3.06	3.15										
13	1.23	1.32	1.40	1.49	1.57	1.65	1.74	1.82	1.91	1.99	2.08	2.16	2.25	2.33	2.42	2.50	2.58	2.67	2.75	2.84	2.92	3.01										
14	1.18	1.26	1.34	1.42	1.51	1.59	1.67	1.75	1.83	1.91	1.99	2.07	2.15	2.23	2.32	2.40	2.48	2.56	2.64	2.72	2.80	2.88										
15	1.14	1.21	1.29	1.37	1.45	1.53	1.60	1.68	1.76	1.84	1.92	1.99	2.07	2.15	2.23	2.30	2.38	2.46	2.54	2.62	2.69	2.77										
16	1.10	1.17	1.25	1.32	1.40	1.47	1.55	1.62	1.70	1.77	1.85	1.92	2.00	2.07	2.15	2.22	2.30	2.37	2.45	2.52	2.60	2.67										
17	1.06	1.13	1.20	1.28	1.35	1.42	1.49	1.57	1.64	1.71	1.78	1.86	1.93	2.00	2.07	2.15	2.22	2.29	2.36	2.44	2.51	2.58										
18	1.02	1.09	1.17	1.24	1.31	1.38	1.45	1.52	1.59	1.66	1.73	1.80	1.87	1.94	2.01	2.08	2.15	2.22	2.29	2.36	2.43	2.50										
19	0.99	1.06	1.13	1.20	1.27	1.33	1.40	1.47	1.54	1.61	1.67	1.74	1.81	1.88	1.95	2.02	2.08	2.15	2.22	2.29	2.36	2.42										
20	0.97	1.03	1.10	1.16	1.23	1.30	1.36	1.43	1.49	1.56	1.63	1.69	1.76	1.83	1.89	1.96	2.02	2.09	2.16	2.22	2.29	2.35										
21	0.94	1.00	1.07	1.13	1.20	1.26	1.33	1.39	1.45	1.52	1.58	1.65	1.71	1.78	1.84	1.90	1.97	2.03	2.10	2.16	2.23	2.29										
22	0.91	0.98	1.04	1.10	1.17	1.23	1.29	1.35	1.42	1.48	1.54	1.60	1.67	1.73	1.79	1.85	1.92	1.98	2.04	2.11	2.17	2.23										
23	0.89	0.95	1.01	1.08	1.14	1.20	1.26	1.32	1.38	1.44	1.50	1.56	1.63	1.69	1.75	1.81	1.87	1.93	1.99	2.05	2.11	2.18										
24	0.87	0.93	0.99	1.05	1.11	1.17	1.23	1.29	1.35	1.41	1.47	1.53	1.59	1.65	1.71	1.77	1.83	1.88	1.94	2.00	2.06	2.12										
25	0.85	0.91	0.97	1.03	1.08	1.14	1.20	1.26	1.32	1.38	1.43	1.49	1.55	1.61	1.67	1.73	1.78	1.84	1.90	1.96	2.02	2.08										
26	0.83	0.89	0.95	1.00	1.06	1.12	1.17	1.23	1.29	1.34	1.40	1.46	1.52	1.57	1.63	1.69	1.74	1.80	1.86	1.92	1.97	2.03										
27	0.81	0.87	0.93	0.98	1.04	1.09	1.15	1.20	1.26	1.32	1.37	1.43	1.48	1.54	1.60	1.65	1.71	1.76	1.82	1.87	1.93	1.99										
28	0.80	0.85	0.91	0.96	1.02	1.07	1.13	1.18	1.23	1.29	1.34	1.40	1.45	1.51	1.56	1.62	1.67	1.73	1.78	1.84	1.89	1.95										
29	0.78	0.84	0.89	0.94	1.00	1.05	1.10	1.16	1.21	1.26	1.32	1.37	1.43	1.48	1.53	1.59	1.64	1.69	1.75	1.80	1.85	1.91										
30	0.77	0.82	0.87	0.92	0.98	1.03	1.08	1.13	1.19	1.24	1.29	1.35	1.40	1.45	1.50	1.56	1.61	1.66	1.71	1.77	1.82	1.87										
31	0.75	0.80	0.86	0.91	0.96	1.01	1.06	1.11	1.17	1.22	1.27	1.32	1.37	1.42	1.48	1.53	1.58	1.63	1.68	1.73	1.79	1.84										
32	0.74	0.79	0.84	0.89	0.94	0.99	1.04	1.09	1.14	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80										
33	0.73	0.78	0.83	0.88	0.93	0.98	1.03	1.08	1.13	1.17	1.22	1.27	1.32	1.37	1.42	1.47	1.52	1.57	1.62	1.67	1.72	1.77										
34	0.71	0.76	0.81	0.86	0.91	0.96	1.01	1.06	1.11	1.16	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.64	1.69	1.74										
35	0.70	0.75	0.80	0.85	0.90	0.94	0.99	1.04	1.09	1.14	1.18	1.23	1.28	1.33	1.38	1.43	1.47	1.52	1.57	1.62	1.67	1.71										
36	0.69	0.74	0.79	0.83	0.88	0.93	0.98	1.02	1.07	1.12	1.17	1.21	1.26	1.31	1.36	1.40	1.45	1.50	1.55	1.59	1.64	1.69										
37	0.68	0.73	0.77	0.82	0.87	0.91	0.96	1.01	1.05	1.10	1.15	1.19	1.24	1.29	1.33	1.38	1.43	1.47	1.52	1.57	1.61	1.66										
38	0.67	0.72	0.76	0.81	0.85	0.90	0.95	0.99	1.04	1.08	1.13	1.18	1.22	1.27	1.31	1.36	1.41	1.45	1.50	1.54	1.59	1.64										
39	0.66	0.71	0.75	0.80	0.84	0.89	0.93	0.98	1.02	1.07	1.11	1.16	1.20	1.25	1.30	1.34	1.39	1.43	1.48	1.52	1.57	1.61										
40	0.65	0.70	0.74	0.79	0.83	0.87	0.92	0.96	1.01	1.05	1.10	1.14	1.19	1.23	1.28	1.32	1.37	1.41	1.46	1.50	1.54	1.59										
41	0.64	0.69	0.73	0.77	0.82	0.86	0.91	0.95	0.99	1.04	1.08	1.13	1.17	1.22	1.26	1.30	1.35	1.39	1.44	1.48	1.52	1.57										
42	0.63	0.68	0.72	0.76	0.81	0.85	0.89	0.94	0.98	1.02	1.07	1.11	1.16	1.20	1.24	1.29	1.33	1.37	1.42	1.46	1.50	1.55										
43	0.63	0.67	0.71	0.75	0.80	0.84	0.88	0.93	0.97	1.01	1.05	1.10	1.14	1.18	1.23	1.27	1.31	1.35	1.40	1.44	1.48	1.53										
44	0.62	0.66	0.70	0.74	0.79	0.83	0.87	0.91	0.96	1.00	1.04	1.08	1.12	1.17	1.21	1.25	1.29	1.34	1.38	1.42	1.46	1.51										
45	0.61	0.65	0.69	0.73	0.78	0.82	0.86	0.90	0.94	0.99	1.03	1.07	1.11	1.15	1.19	1.24	1.28	1.32	1.36	1.40	1.44	1.49										
46	0.60	0.64	0.68	0.73	0.77	0.81	0.85	0.89	0.93	0.97	1.01	1.06	1.10	1.14	1.18	1.22	1.26	1.30	1.34	1.39	1.43	1.47										
47	0.59	0.64	0.68	0.72	0.76	0.80	0.84	0.88	0.92	0.96	1.00	1.04	1.08	1.12	1.17	1.21	1.25	1.29	1.33	1.37	1.41	1.45										
48	0.59	0.63	0.67	0.71	0.75	0.79	0.83	0.87	0.91	0.95	0.99	1.03	1.07	1.11	1.15	1.19	1.23	1.27	1.31	1.35	1.39	1.43										
49	0.58	0.62	0.66	0.70	0.74	0.78	0.82	0.86	0.90	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.22	1.26	1.30	1.34	1.38	1.42										
50	0.57	0.61	0.65	0.69	0.73	0.77	0.81	0.85	0.89	0.93	0.97	1.01	1.05	1.09	1.13	1.16	1.20	1.24	1.28	1.32	1.36	1.40										
51	0.57	0.61	0.65	0.68	0.72	0.76	0.80	0.84	0.88	0.92	0.96	1.00	1.03	1.07	1.11	1.15	1.19	1.23	1.27	1.31	1.35	1.38										
52	0.56	0.60	0.64	0.68	0.72	0.75	0.79	0.83	0.87	0.91	0.95	0.98	1.02	1.06	1.10	1.14	1.18	1.22	1.25	1.29	1.33	1.37										
53	0.56	0.59	0.63	0.67	0.71	0.75	0.78	0.82	0.86	0.90	0.94	0.97	1.01	1.05	1.09	1.13	1.16	1.20	1.24	1.28	1.32	1.36										
54	0.55	0.59	0.62	0.66	0.70	0.74	0.78	0.81	0.85	0.89	0.93	0.96	1.00	1.04	1.08	1.11	1.15	1.19	1.23	1.27	1.30	1.34										
55	0.54	0.58	0.62	0.66	0.69	0.73	0.77	0.80	0.84	0.88	0.92	0.95	0.99	1.03	1.07	1.10	1.14	1.18	1.21	1.25	1.29	1.33										
56	0.54	0.58	0.61	0.65	0.69	0.72	0.76	0.80	0.83	0.87	0.91	0.94	0.98	1.02	1.05	1.09	1.13	1.17	1.20	1.24	1.28	1.31										
57	0.53	0.57	0.61	0.64	0.68	0.72	0.75	0.79	0.83	0.86	0.90	0.93	0.97	1.01	1.04	1.08	1.12	1.15	1.19	1.23	1.26	1.30										
58	0.53	0.56	0.60	0.64	0.67	0.71	0.74	0.78	0.82	0.85	0.89	0.93	0.96	1.00	1.03	1.07	1.11	1														

T_c (min)	Mean Annual Precipitation (in)																															
	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32										
1	7.87	8.41	8.95	9.49	10.03	10.57	11.11	11.64	12.18	12.72	13.26	13.80	14.34	14.88	15.42	15.96	16.50	17.04	17.58	18.12	18.66	19.20										
2	5.31	5.67	6.04	6.40	6.77	7.13	7.50	7.86	8.22	8.59	8.95	9.32	9.68	10.04	10.41	10.77	11.14	11.50	11.87	12.23	12.59	12.96										
3	4.22	4.51	4.80	5.09	5.38	5.67	5.96	6.25	6.53	6.82	7.11	7.40	7.69	7.98	8.27	8.56	8.85	9.14	9.43	9.72	10.01	10.30										
4	3.58	3.83	4.08	4.32	4.57	4.81	5.06	5.31	5.55	5.80	6.04	6.29	6.53	6.78	7.03	7.27	7.52	7.76	8.01	8.25	8.50	8.75										
5	3.16	3.38	3.59	3.81	4.02	4.24	4.46	4.67	4.89	5.11	5.32	5.54	5.76	5.97	6.19	6.41	6.62	6.84	7.06	7.27	7.49	7.71										
6	2.85	3.04	3.24	3.43	3.63	3.82	4.02	4.22	4.41	4.61	4.80	5.00	5.19	5.39	5.58	5.78	5.97	6.17	6.36	6.56	6.75	6.95										
7	2.61	2.79	2.97	3.15	3.33	3.50	3.68	3.86	4.04	4.22	4.40	4.58	4.76	4.94	5.12	5.29	5.47	5.65	5.83	6.01	6.19	6.37										
8	2.42	2.59	2.75	2.92	3.08	3.25	3.41	3.58	3.75	3.91	4.08	4.24	4.41	4.58	4.74	4.91	5.07	5.24	5.41	5.57	5.74	5.90										
9	2.26	2.42	2.57	2.73	2.88	3.04	3.19	3.35	3.50	3.66	3.81	3.97	4.13	4.28	4.44	4.59	4.75	4.90	5.06	5.21	5.37	5.52										
10	2.13	2.28	2.42	2.57	2.72	2.86	3.01	3.16	3.30	3.45	3.59	3.74	3.89	4.03	4.18	4.32	4.47	4.62	4.76	4.91	5.06	5.20										
11	2.02	2.16	2.30	2.44	2.57	2.71	2.85	2.99	3.13	3.27	3.40	3.54	3.68	3.82	3.96	4.10	4.24	4.37	4.51	4.65	4.79	4.93										
12	1.92	2.05	2.19	2.32	2.45	2.58	2.71	2.85	2.98	3.11	3.24	3.37	3.50	3.64	3.77	3.90	4.03	4.16	4.30	4.43	4.56	4.69										
13	1.84	1.96	2.09	2.21	2.34	2.47	2.59	2.72	2.84	2.97	3.10	3.22	3.35	3.47	3.60	3.73	3.85	3.98	4.10	4.23	4.36	4.48										
14	1.76	1.88	2.00	2.12	2.24	2.37	2.49	2.61	2.73	2.85	2.97	3.09	3.21	3.33	3.45	3.57	3.69	3.81	3.94	4.06	4.18	4.30										
15	1.69	1.81	1.93	2.04	2.16	2.27	2.39	2.51	2.62	2.74	2.86	2.97	3.09	3.20	3.32	3.44	3.55	3.67	3.78	3.90	4.02	4.13										
16	1.63	1.74	1.86	1.97	2.08	2.19	2.30	2.42	2.53	2.64	2.75	2.86	2.98	3.09	3.20	3.31	3.42	3.54	3.65	3.76	3.87	3.98										
17	1.58	1.69	1.79	1.90	2.01	2.12	2.23	2.34	2.44	2.55	2.66	2.77	2.88	2.98	3.09	3.20	3.31	3.42	3.53	3.63	3.74	3.85										
18	1.53	1.63	1.74	1.84	1.95	2.05	2.16	2.26	2.37	2.47	2.57	2.68	2.78	2.89	2.99	3.10	3.20	3.31	3.41	3.52	3.62	3.73										
19	1.48	1.58	1.68	1.79	1.89	1.99	2.09	2.19	2.29	2.40	2.50	2.60	2.70	2.80	2.90	3.00	3.11	3.21	3.31	3.41	3.51	3.61										
20	1.44	1.54	1.64	1.73	1.83	1.93	2.03	2.13	2.23	2.33	2.43	2.52	2.62	2.72	2.82	2.92	3.02	3.12	3.21	3.31	3.41	3.51										
21	1.40	1.50	1.59	1.69	1.78	1.88	1.98	2.07	2.17	2.26	2.36	2.46	2.55	2.65	2.74	2.84	2.94	3.03	3.13	3.22	3.32	3.41										
22	1.36	1.46	1.55	1.64	1.74	1.83	1.92	2.02	2.11	2.20	2.30	2.39	2.48	2.58	2.67	2.77	2.86	2.95	3.05	3.14	3.23	3.33										
23	1.33	1.42	1.51	1.60	1.69	1.78	1.88	1.97	2.06	2.15	2.24	2.33	2.42	2.51	2.61	2.70	2.79	2.88	2.97	3.06	3.15	3.24										
24	1.30	1.39	1.48	1.56	1.65	1.74	1.83	1.92	2.01	2.10	2.19	2.28	2.37	2.45	2.54	2.63	2.72	2.81	2.90	2.99	3.08	3.17										
25	1.27	1.35	1.44	1.53	1.62	1.70	1.79	1.88	1.96	2.05	2.14	2.22	2.31	2.40	2.48	2.57	2.66	2.75	2.83	2.92	3.01	3.09										
26	1.24	1.32	1.41	1.50	1.58	1.67	1.75	1.84	1.92	2.01	2.09	2.18	2.26	2.35	2.43	2.52	2.60	2.69	2.77	2.86	2.94	3.03										
27	1.21	1.30	1.38	1.46	1.55	1.63	1.71	1.80	1.88	1.96	2.05	2.13	2.21	2.30	2.38	2.46	2.55	2.63	2.71	2.79	2.88	2.96										
28	1.19	1.27	1.35	1.43	1.52	1.60	1.68	1.76	1.84	1.92	2.00	2.09	2.17	2.25	2.33	2.41	2.49	2.57	2.66	2.74	2.82	2.90										
29	1.17	1.25	1.33	1.41	1.49	1.57	1.64	1.72	1.80	1.88	1.96	2.04	2.12	2.20	2.28	2.36	2.44	2.52	2.60	2.68	2.76	2.84										
30	1.14	1.22	1.30	1.38	1.46	1.54	1.61	1.69	1.77	1.85	1.93	2.01	2.08	2.16	2.24	2.32	2.40	2.48	2.55	2.63	2.71	2.79										
31	1.12	1.20	1.28	1.35	1.43	1.51	1.58	1.66	1.74	1.81	1.89	1.97	2.05	2.12	2.20	2.28	2.35	2.43	2.51	2.58	2.66	2.74										
32	1.10	1.18	1.25	1.33	1.40	1.48	1.56	1.63	1.71	1.78	1.86	1.93	2.01	2.08	2.16	2.24	2.31	2.39	2.46	2.54	2.61	2.69										
33	1.08	1.16	1.23	1.31	1.38	1.45	1.53	1.60	1.68	1.75	1.83	1.90	1.97	2.05	2.12	2.20	2.27	2.35	2.42	2.49	2.57	2.64										
34	1.06	1.14	1.21	1.28	1.36	1.43	1.50	1.58	1.65	1.72	1.80	1.87	1.94	2.01	2.09	2.16	2.23	2.31	2.38	2.45	2.53	2.60										
35	1.05	1.12	1.19	1.26	1.33	1.41	1.48	1.55	1.62	1.69	1.77	1.84	1.91	1.98	2.05	2.13	2.20	2.27	2.34	2.41	2.48	2.56										
36	1.03	1.10	1.17	1.24	1.31	1.38	1.46	1.53	1.60	1.67	1.74	1.81	1.88	1.95	2.02	2.09	2.16	2.23	2.30	2.37	2.44	2.52										
37	1.02	1.08	1.15	1.22	1.29	1.36	1.43	1.50	1.57	1.64	1.71	1.78	1.85	1.92	1.99	2.06	2.13	2.20	2.27	2.34	2.41	2.48										
38	1.00	1.07	1.14	1.21	1.27	1.34	1.41	1.48	1.55	1.62	1.69	1.75	1.82	1.89	1.96	2.03	2.10	2.17	2.23	2.30	2.37	2.44										
39	0.99	1.05	1.12	1.19	1.26	1.32	1.39	1.46	1.53	1.59	1.66	1.73	1.80	1.86	1.93	2.00	2.07	2.13	2.20	2.27	2.34	2.40										
40	0.97	1.04	1.10	1.17	1.24	1.30	1.37	1.44	1.50	1.57	1.64	1.70	1.77	1.84	1.90	1.97	2.04	2.10	2.17	2.24	2.30	2.37										
41	0.96	1.02	1.09	1.15	1.22	1.29	1.35	1.42	1.48	1.55	1.61	1.68	1.75	1.81	1.88	1.94	2.01	2.07	2.14	2.21	2.27	2.34										
42	0.94	1.01	1.07	1.14	1.20	1.27	1.33	1.40	1.46	1.53	1.59	1.66	1.72	1.79	1.85	1.92	1.98	2.05	2.11	2.18	2.24	2.30										
43	0.93	1.00	1.06	1.12	1.19	1.25	1.32	1.38	1.44	1.51	1.57	1.64	1.70	1.76	1.83	1.89	1.95	2.02	2.08	2.15	2.21	2.27										
44	0.92	0.98	1.05	1.11	1.17	1.24	1.30	1.36	1.42	1.49	1.55	1.61	1.68	1.74	1.80	1.87	1.93	1.99	2.06	2.12	2.18	2.24										
45	0.91	0.97	1.03	1.10	1.16	1.22	1.28	1.34	1.41	1.47	1.53	1.59	1.66	1.72	1.78	1.84	1.91	1.97	2.03	2.09	2.15	2.22										
46	0.90	0.96	1.02	1.08	1.14	1.20	1.27	1.33	1.39	1.45	1.51	1.57	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.07	2.13	2.19										
47	0.89	0.95	1.01	1.07	1.13	1.19	1.25	1.31	1.37	1.43	1.49	1.55	1.62	1.68	1.74	1.80	1.86	1.92	1.98	2.04	2.10	2.16										
48	0.88	0.94	1.00	1.06	1.12	1.18	1.24	1.30	1.36	1.42	1.48	1.54	1.60	1.66	1.72	1.78	1.84	1.90	1.96	2.02	2.08	2.14										
49	0.87	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.87	1.93	1.99	2.05	2.11										
50	0.86	0.91	0.97	1.03	1.09	1.15	1.21	1.27	1.33	1.38	1.44	1.50	1.56	1.62	1.68	1.74	1.79	1.85	1.91	1.97	2.03	2.09										
51	0.85	0.90	0.96	1.02	1.08	1.14	1.19	1.25	1.31	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.77	1.83	1.89	1.95	2.01	2.06										
52	0.84	0.89	0.95	1.01	1.07	1.12	1.18	1.24	1.30	1.35	1.41	1.47	1.53	1.58	1.64	1.70	1.76	1.81	1.87	1.93	1.98	2.04										
53	0.83	0.88	0.94	1.00	1.06	1.11	1.17	1.23	1.28	1.34	1.40	1.45	1.51	1.57	1.62	1.68	1.74	1.79	1.85	1.91	1.96	2.02										
54	0.82	0.88	0.93	0.99	1.04	1.10	1.16	1.21	1.27	1.32	1.38	1.44	1.49	1.55	1.61	1.66	1.72	1.77	1.83	1.89	1.94	2.00										
55	0.81	0.87	0.92	0.98	1.03	1.09	1.14	1.20	1.26	1.31	1.37	1.42	1.48	1.53	1.59	1.64	1.70	1.76	1.81	1.87	1.92	1.98										
56	0.80	0.86	0.91	0.97	1.02	1.08	1.13	1.19	1.24	1.30	1.35	1.41	1.46	1.52	1.57	1.63	1.68	1.74	1.79	1.85	1.90	1.96										
57	0.79	0.85	0.90	0.96	1.01	1.07	1.12	1.18	1.23	1.28	1.34	1.39	1.45	1.50	1.56	1.61	1.67	1.72	1.78	1.83	1.88	1.94										
58	0.79	0.84	0.89	0.95	1.00	1.06	1.11	1.16	1.22	1.27	1.33	1.38	1.43	1.49	1.54																	

Channel Report

Alameda Solar Drainage Ditch

Triangular

Side Slopes (z:1) = 2.00, 2.00
Total Depth (ft) = 1.50

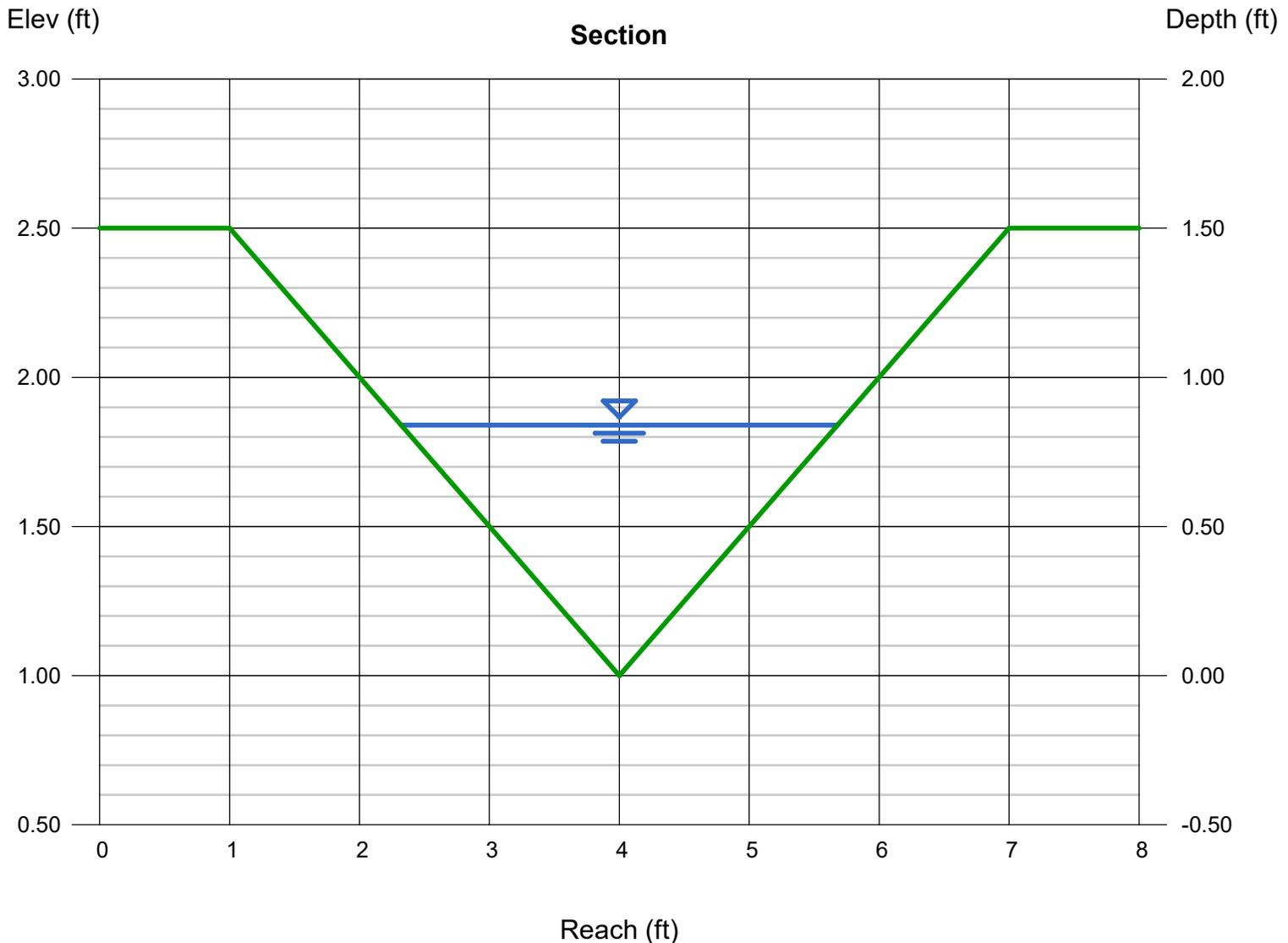
Invert Elev (ft) = 1.00
Slope (%) = 2.00
N-Value = 0.030

Calculations

Compute by: Known Q
Known Q (cfs) = 5.00

Highlighted

Depth (ft) = 0.84
Q (cfs) = 5.000
Area (sqft) = 1.41
Velocity (ft/s) = 3.54
Wetted Perim (ft) = 3.76
Crit Depth, Yc (ft) = 0.83
Top Width (ft) = 3.36
EGL (ft) = 1.04



Culvert Report

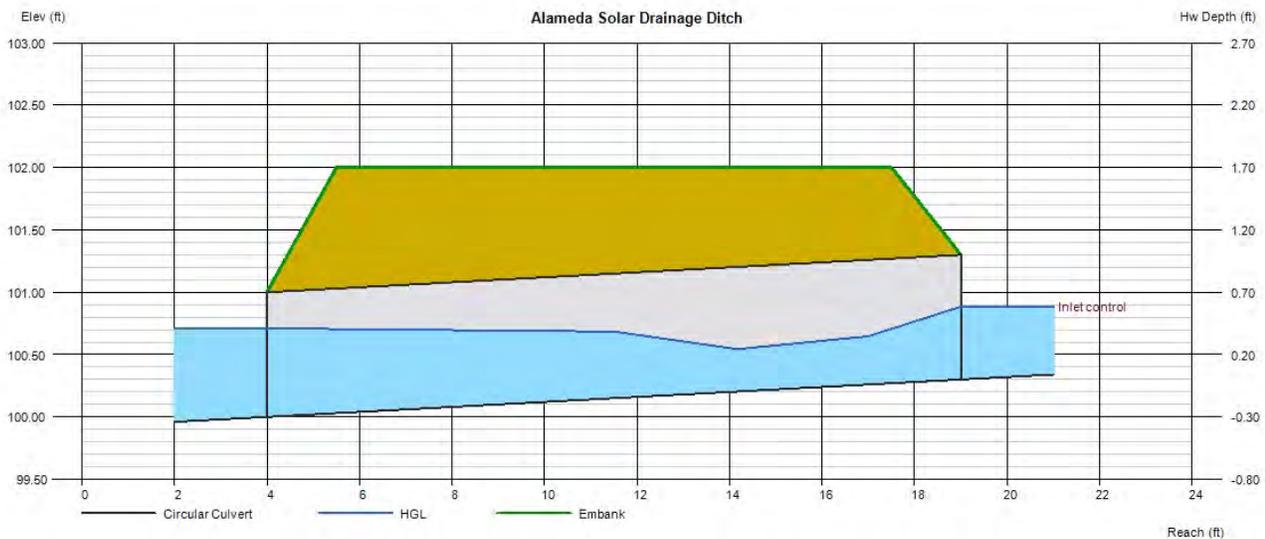
Alameda Solar Culvert

Invert Elev Dn (ft)	=	100.00
Pipe Length (ft)	=	15.00
Slope (%)	=	2.00
Invert Elev Up (ft)	=	100.30
Rise (in)	=	12.0
Shape	=	Circular
Span (in)	=	12.0
No. Barrels	=	1
n-Value	=	0.015
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment	
Top Elevation (ft)	= 102.00
Top Width (ft)	= 12.00
Crest Width (ft)	= 10.00

Calculations	
Qmin (cfs)	= 1.00
Qmax (cfs)	= 5.00
Tailwater Elev (ft)	= (dc+D)/2

Highlighted	
Qtotal (cfs)	= 1.00
Qpipe (cfs)	= 1.00
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 1.68
Veloc Up (ft/s)	= 3.20
HGL Dn (ft)	= 100.71
HGL Up (ft)	= 100.72
Hw Elev (ft)	= 100.88
Hw/D (ft)	= 0.58
Flow Regime	= Inlet Control



E X H I B I T C

DETAILED SITE PLAN,
ELEVATIONS, AND DETAILS



SYMBOL LEGEND						
SYMBOL	NAME	DESCRIPTION				
	TRACKER	TRINA SOLAR TSM-DE 15H(I)				
	PV MOD.					

PV SYSTEM SUMMARY TABLE						
Array ID	Inverter ID	Mod Qty.	kW size	GCR	Tilt	Azimuth
1	Inv 1	7263	2868.89	34.7%	±60°	180°

NOTE:
 SITE DIMENSIONS DERIVED FROM TOPOGRAPHICAL/GEOLOGICAL SURVEY
 TOTAL SITE AREA: 1,004,825 sqft. / 23.068 Acres
 USEABLE OPEN SPACE: 1,004,825 sqft. / 23.068 Acres
 AREA INSIDE FENCING: 615,416 sqft. / 14.128 Acres
 PERCENTAGE OF SITE UTILIZED: 61.25%



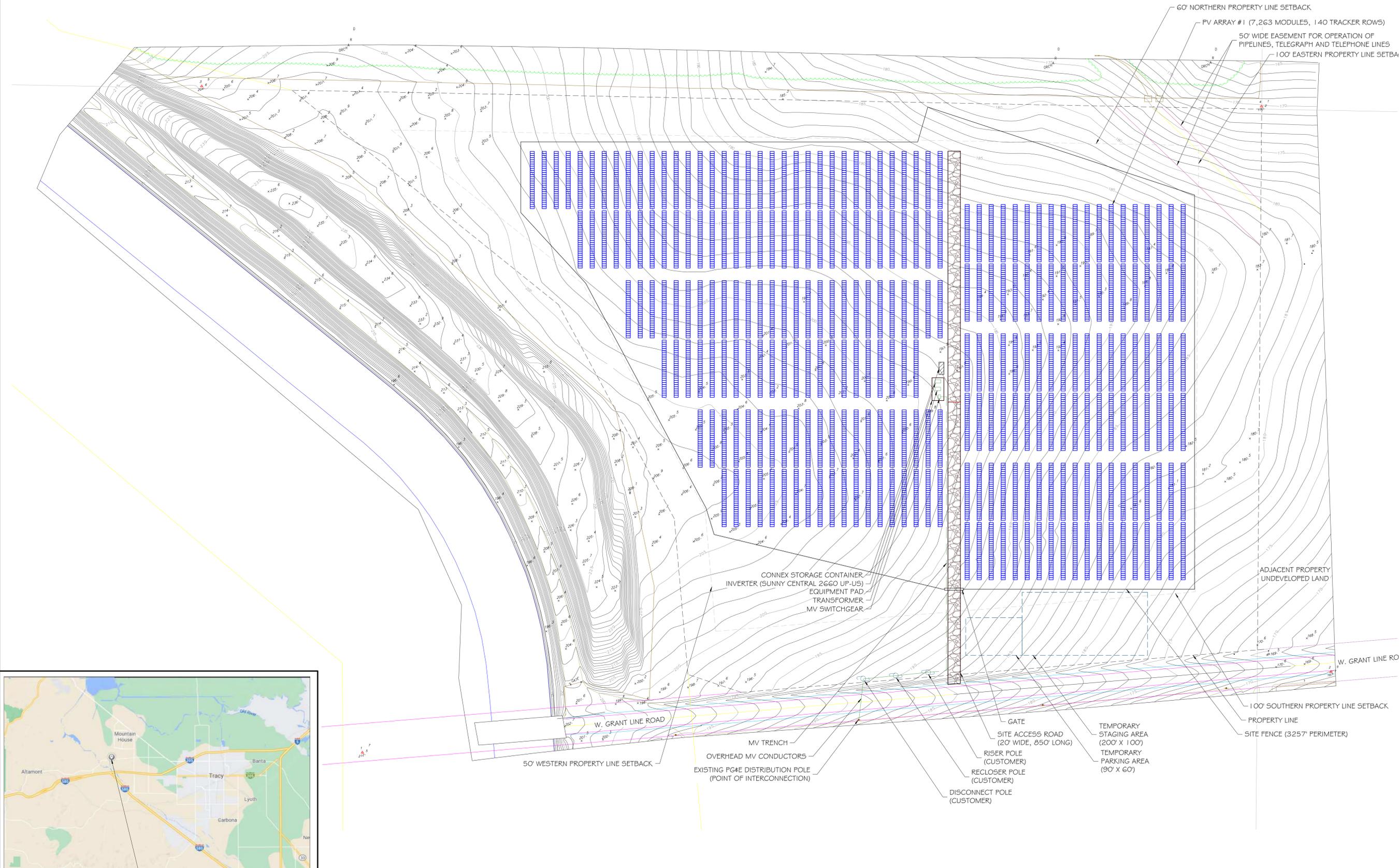
Contractor:
Soltage
 RENEWABLE ENERGY PROVIDER
 66 YORK STREET, 5TH FLOOR
 JERSEY CITY, NJ, 07302

PROPERTY OWNER:
 MAININDER S. SANDHU
 3972 DURHAM FERRY ROAD
 TRACY, CA, 95304

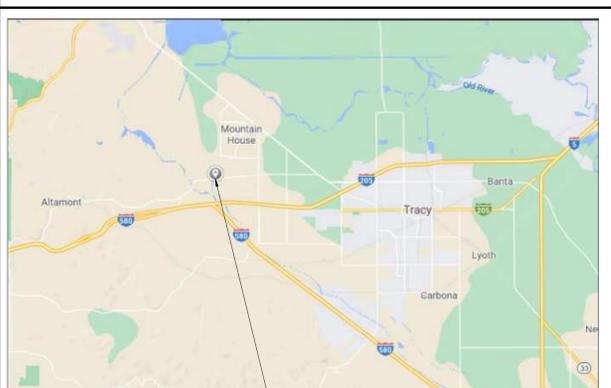
Project:
 ALAMEDA GRANT LINE SOLAR 1
 WEST GRANT LINE ROAD
 ALAMEDA COUNTY
 (UNINCORPORATED) CA, 95391

Project Details:
 2868.89 kWdc, 2128.00 kW AC
 AHJ: ALAMEDA, COUNTY OF
 APN: 009B-7650-007-01

Engineering Approval:



REVISIONS		
DESCRIPTION	DATE	REV
CU PERMIT SET	6/24/2021	A



SITE PLAN
 SCALE: 1" = 70'

Sheet Title:
SITE PLAN

Sheet Number:
A1.0

Sheet Size:
ARCH D - 36" x 24"

Design & Drafting by:
 TAYLOR BOHLEN
We are what we repeatedly do. Excellence, then, is not an act, but a habit. - Will Durant (att. to Aristotle)



Reviewed & Approved by:
 RD

Soltage

RENEWABLE ENERGY PROVIDER

Experienced • Consistent • Reliable