Final

TURLOCK IRRIGATION DISTRICT
CERES, FLOATING SOLAR SYSTEM

Addendum to the Initial Study and Mitigated Negative Declaration for the Ceres Main Regulating Reservoir Project State Clearinghouse Number 2021030339

Prepared for
Turlock Irrigation District

November 2024

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SECTION 1
Background and Purpose of the Addendum

1.1 Background

The Turlock Irrigation District (TID) is a community-owned, not-for-profit irrigation water and electric utility. TID delivers agricultural irrigation water through an over 250-mile-long canal system in California's Central Valley. It also generates and distributes electric power to over 240,000 residents and businesses. Regarding renewable energy specifically, TID's portfolio includes large and small hydroelectric facilities, a 137-megawatt (MW) wind farm, and clean energy purchases from solar and geothermal facilities.

TID previously undertook efforts to enhance its capture and storage of irrigation water to maximize its available water resources and provide more stability during drought conditions. In particular, TID planned for creation of its Ceres Main Regulating Reservoir in Stanislaus County. The TID Ceres Main Regulating Reservoir Initial Study/Mitigated Negative Declaration (Ceres Main Reservoir IS/MND) (SCH # 2021030339) was finalized in April 2021. The Ceres Main Reservoir IS/MND analyzed impacts associated with constructing the Ceres Main Regulating Reservoir (Reservoir) to serve as a surface water regulation and storage facility. The Reservoir, constructed in August 2023, is located adjacent to the Ceres Main Canal and the Lower Lateral 3 Canal. It accepts gravity and pump-fed flows from the Ceres Main Canal during high flows, and the Lower Lateral 3 Canal during shortages. The Reservoir supports water conservation by stabilizing flow rates in the Ceres Main Canal, capturing water that otherwise would spill into TID's drains, reducing supplemental groundwater pumping, improving operational flexibility, and overall improving customer service through improved reliability.

TID now proposes to install a floating solar (photovoltaic) energy generation system within the Reservoir. Floating solar systems are placed within water bodies such as reservoirs and lakes. They have advantages over traditional ground-mounted solar energy systems because they preserve land for other uses, they are more energy-efficient since the solar modules are cooled by the water, and they reduce water evaporation because the floating solar modules provide cover and absorb energizing sunlight (Jin et. al 2023). This document is an addendum to the Ceres Main Reservoir IS/MND to describe the proposed floating solar system and assess potential resource impacts under the California Environmental Quality Act (CEQA).

1.2 Purpose of this Addendum

The CEQA Guidelines (Sections 15162 and 15164) require that a lead agency prepare an addendum to a negative declaration if some changes or additions to the environmental evaluation of a project are necessary but none of the following occurs:

1. There are no substantial changes in the project which require major revisions to the mitigated negative declaration or a substantial increase in the severity of previously identified significant effects;

2. There are no substantial changes with respect to the circumstances under which the project is undertaken which require major revisions to the negative declaration; or

3. No new information of substantial importance, which could not have been known with the exercise of reasonable diligence at the time of negative declaration adoption, shows any of the following:

    i. the project will have one or more significant effects not discussed in the negative declaration,

    ii. the project will result in impacts substantially more severe than those disclosed in the negative declaration,

    iii. mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponent declines to adopt it, or

    iv. mitigation measures or alternatives that are considerably different from those analyzed in the negative declaration would substantially reduce one or more significant effects on the environment, but the project proponent declines to adopt it.

The purpose of this document is to: (1) evaluate the changes to the Ceres Main Regulating Reservoir; and (2) to provide documentation to support that the proposed changes would not result in effects that meet the criteria described in CEQA Guidelines Sections 15162 and 15164 and; therefore, an Addendum is appropriate.

SECTION 2
Description of Project Changes

2.1 Project Overview

TID proposes to place floating solar (photovoltaic) modules on the existing Ceres Main Regulating Reservoir (Reservoir), to create a floating solar array with accompanying grid-interactive inverters and associated equipment (floating solar system). The floating solar system and interconnection to the local electric grid is the proposed Project. The solar modules would be attached to a buoyant racking system but otherwise function in the same manner as land-based solar arrays. The electrical equipment associated with the floating solar arrays will be located within the already disturbed area surrounding the Reservoir, as shown in **Figure 1** (Site Layout). The entire photovoltaic system would supply power to the existing electrical system and is intended to operate in parallel with the electric utility service provider.

SOURCE: Noria 2023

Figure 1
Site Layout

The Project is located on a 38-acre parcel of land (Assessor's Parcel Number 041-053-010) owned by TID. The proposed Project is in Stanislaus County, adjacent to the Ceres Main Canal and the Lower Lateral 3 Canal, 0.25 mile south of Keyes Road and 0.25 mile west of Prairie Flower Road. (Refer to the Ceres Main Reservoir IS/MND Figures 1-1, *Regional Location*, and 1-2, *Project Site*.)

The proposed Project site is zoned agricultural and contains the Ceres Main Regulating Reservoir. The Reservoir was constructed in August 2023, and the proposed Project would be contained within the boundaries of the Reservoir.

2.2 Proposed Project Changes

2.2.1 Construction

The proposed floating solar array would total 5.44 megawatts of direct current (DC) power, 5.06 MW of alternating current (AC) power, for a total DC/AC ratio of 1.08. The total area of the array would be 8.73 acres and it will produce 9.9 Gigawatt hours (GWh) of electricity per year. The floating solar array would be entirely contained within the Reservoir embankments, as shown in Figure 1 (Site Layout).

The solar modules that comprise the arrays are designed to absorb light and therefore reflect approximately 2 percent of incoming light back into the atmosphere. The solar modules will be placed on a tilted racking system, with a 12-degree tilt that will reflect unabsorbed light into the sky, away from nearby structures. Any exposed wiring and cabling connecting the solar modules together shall be sunlight and water-resistant and secured with mechanical or other sunlight-resistant methods.

The floating solar arrays would connect to an equipment pad on the Reservoir's southeastern embankment, just south of the pump station and access ramp. The equipment pad will contain a transformer, a transmitter, switchboards, and inverters to turn the DC current into AC current for electrical distribution purposes.

DC cabling would connect the array to the equipment pad, at a length designed to accommodate moving the array within the Reservoir (**Figure 2**). The floating solar array is designed to be moved to allow for inspection of the Reservoir liner, sediment removal, or other maintenance as needed. The floating array will not be attached to the bottom of the Reservoir. Instead, it will be attached to anchors that will be installed along the sides of the Reservoir. Post-installation, the array can be moved in the Reservoir by reducing tension in the mooring system that connects the floating array to the on-shore anchors, and changing the length of rope used to connect the array to the mooring connection points. Specialized equipment will not be needed to move the array.

A new riser and recloser pole including overhead conductors will be installed to connect the equipment pad to the existing electrical grid at a point of interconnection (POI) at the southeastern corner of the Project site. A 12 kilovolt (kV) conduit will connect the equipment pad to the POI. At the POI site, the AC current will be fed into existing overhead distribution lines. Any aboveground DC conduit and raceways (an enclosed channel that holds wires and cables) would be marked with "high voltage" signage at a minimum of every 10 feet.

SOURCE: Noria, 2023

Figure 2
Movement Site Plan

An existing unpaved agricultural road connected to Keyes Road would be used by construction equipment and maintenance vehicles for photovoltaic system installation, operation, and maintenance. Construction equipment staging would occur on unvegetated areas within or adjacent to the Project parcel.

The total construction duration is estimated to be 12 to 16 weeks. As shown in **Table 1**, it is anticipated that construction would require the use of delivery trucks, a telehandler, a small crane, a concrete truck, a pile driver, and a drilling rig:

TABLE 1
PROPOSED CONSTRUCTION EQUIPMENT

Equipment Construction Purpose	Equipment Construction Purpose	Phase in Use
Delivery trucks	Deliver equipment such as solar panels, floating racking system components, inverters, and transfer to the site.	Pre-construction
Telehandler	Material handling	Construction
Small crane	Pouring foundation for equipment pad	Construction
Concrete truck	Pouring foundation for equipment pad	Construction
Pile driver	Anchor installation	Construction
Drilling rig	Installation of new poles and overhead 12kV electrical line to the point of interconnection	Construction

The floating solar arrays will be fully assembled on-shore and pushed into the Reservoir. The arrays may be towed into position using either a boat or from the shore using ropes.

2.2.2 Operations and Maintenance

New full-time staff would not be required for day-to-day operations. At a minimum, monthly maintenance would be required to inspect and maintain the system. Approximately one half-time employee would be required to perform monthly maintenance duties. Regular duties would include:

- Panel maintenance
- Float maintenance
- Mooring maintenance
- Anchor maintenance
- On-shore equipment maintenance

Some operations and maintenance activities (i.e., panel cleaning) would require workers to walk on the array using walkway sections specifically designed for maintenance.

Once the solar array system is operational, the solar energy generated would directly interconnect with the existing electrical grid. It would not directly power the pump station or other activities at the Ceres Main Regulating Reservoir site.

2.2.3 Decommissioning

Once the floating solar array has reached the end of its functional life, it would be removed from the Reservoir, disassembled, and recyclable components would be taken to an appropriate universal waste handler. The photovoltaic modules would then be recycled or disposed of accordingly.

SECTION 3
Analysis of Potential Environmental Effects

The focus of the analysis in this Addendum is the proposed installation of the floating solar system and associated infrastructure on the proposed Ceres Main Regulating Project (proposed Project). Project operation activities (monthly inspection and maintenance) would be consistent with proposed operations of the Reservoir (annual maintenance and cleaning, and intermittent maintenance as needed). No new staff would be required for proposed Project operations. Therefore, impacts related to proposed Project operations are not discussed further in this Addendum.

3.1 Aesthetics

Section 2.1 of the Ceres Main Regulating Reservoir IS/MND (Ceres Main Reservoir IS/MND) analyzed impacts to the aesthetics of the Project area and found that the creation of the Ceres Main Regulating Reservoir (Reservoir) facility to utilize the entire extent of the parcel would not adversely affect scenic vistas, damage scenic resources within a state scenic highway, or create a new source of substantial light or glare which would adversely affect daytime or nighttime visuals in the area. The analysis concluded that excavation during construction would affect the existing visual character or quality of public views of the site and its surroundings, although these impacts would be less than significant because the changes in existing visual conditions would be consistent with the area's agricultural nature.

Proposed changes include the installation of a floating solar array and associated infrastructure, totaling an area of 8.73 acres of the Reservoir. An existing unpaved agricultural access road adjacent to the western Reservoir embankment will be used by construction equipment and maintenance vehicles for photovoltaic system installation, operation, and maintenance. Construction equipment staging would take place within the already disturbed project footprint, and it is unlikely the equipment would be visible from Keyes Road. However, the road is not a state scenic highway or a designated scenic vista. In addition, the solar array would have a non-glare coating which would not be a new source of substantial light or glare. Therefore, installation of the solar array and associated infrastructure would not result in new impacts or a substantial increase in impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.2 Agricultural and Forestry Resources

Section 2.2 of the Ceres Main Reservoir IS/MND analyzed impacts to agricultural and forestry resources and concluded that the creation of the Reservoir facility would cause less than significant impact on Prime and Unique Farmland and no impacts to forest land or timberland.

Since the installation of a floating solar array and associated infrastructure would occur primarily within the Reservoir itself and not on agricultural or forested land there would be no conversion of farmland or forest resources and there would be no conflicts with existing agricultural zoning. In addition, there would be no impacts to Agriculture and Forestry resources from construction because all equipment would be staged on previously disturbed lands. Therefore, installation of the solar array and associated infrastructure would not result in new impacts or a substantial increase in the severity of impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.3 Air Quality

Section 2.3 of the Ceres Main Reservoir IS/MND analyzed air quality impacts and concluded that that creation of the reservoir would cause less-than-significant impacts due to construction activities. The Ceres Main Reservoir IS/MND concluded that the construction and operation of the Reservoir would not result in regional or local emissions of criteria air pollutants or precursors that exceed applicable thresholds of significance. In addition, with the implementation of Mitigation Measure AQ-1, which would reduce fugitive dust emissions from construction, pollutant emissions associated with construction of the Reservoir would be less than significant.

The floating solar array would require heavy duty construction equipment for the installation of the 9.79 GWh system. Grading is not anticipated since the 9.79 GWh system will be constructed on an existing road. Since the floating solar array and associated infrastructure would require less ground disturbing activity and fewer pieces and types of construction equipment than the Ceres Main Regulating Reservoir Project, as the only earthwork would be the installation of the utility pole. Thus, impacts to air quality would be less than those associated with the Reservoir construction. Therefore, with implementation of Mitigation Measure AQ-1, construction of the floating solar array and associated infrastructure would not result in new significant impacts or a substantial increase in severity of impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.4 Biological Resources

Section 2.4 of the Ceres Main Reservoir IS/MND analyzed impacts to biological resources and concluded that the creation of the Reservoir would result in no impact to state or federally protected wetlands, movement of any native resident or migratory fish or wildlife species, local policies and ordinances protecting biological resources, and to provisions of an adopted Habitat Conservation Plan. The analysis concluded that the Reservoir construction would have a less than significant impact to riparian habitat or other sensitive natural community it would alter only 0.01 acre of man-made cement lined irrigation canals, which are not considered a sensitive natural community. In addition, with the implementation of Mitigation Measure BIO-1, potential impacts to nesting birds regulated by the Migratory Bird Treaty Act and the California Fish and Game Code will be brought to a less than significant level.

The installation of the solar array and associated infrastructure would have similar impacts to biological resources as those analyzed in the Ceres Main Reservoir IS/MND. All pre-construction

survey requirements will apply to the solar array installment if construction occurs during the applicable nesting timeframe outlined in the Ceres Main Reservoir IS/MND. Accordingly, impacts to nesting birds would remain unchanged from those outlined in the Ceres Main Reservoir IS/MND by completing preconstruction surveys, avoiding nesting birds, incorporating Mitigation Measure BIO-1, and establishing buffer zones as warranted; the buffer zone may vary depending on species- and site-specific conditions as approved by the California Department of Fish and Wildlife. Therefore, installation of the solar array and associated infrastructure would not result in new significant impacts or a substantial increase in severity of impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.5 Cultural Resources

Section 2.5 of the Ceres Main Reservoir IS/MND analyzed impacts to cultural resources and noted that potentially significant impacts to cultural resources during the construction phase would be limited to unidentified prehistoric or historic subsurface cultural resources. The Ceres Main Reservoir IS/MND concluded that there would be no impact to the change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5. With Mitigation Measure CUL-1 incorporated, there would be a less than significant impact on archaeological resources pursuant to Section 15064.5 because in the case of an unanticipated discovery of archaeological resources, avoidance or appropriate treatment measures will be implemented. In addition, with the implementation of Mitigation Measure CUL-2, there would be a less than significant impact to human remains, including those interred outside of dedicated cemeteries.

In the unlikely event that cultural resources are discovered during the installation of the floating solar array, construction would be halted, and a qualified archeologist or paleontologist will assess the significance of the discovery. If human remains of Native American origin are found, TID would contact the Native American Heritage Commission to determine an appropriate course of action. Therefore, the installation of the solar array and associated infrastructure would not result in new significant impacts or a substantial increase in severity of impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.6 Energy

Section 2.6 of the Ceres Main Reservoir IS/MND analyzed potential impacts to energy demand and wasteful uses of energy, and potential conflicts with a renewable energy or energy efficiency plan and concluded that the creation of the Reservoir would have less than significant impacts. Since the solar array is a form of renewable energy, it is reasonable to assume this will not conflict with any renewable energy plans, nor result in wasteful uses of energy.

Construction of new solar energy generating facilities are directly in line with TID's renewable energy production goals, as TID strives to achieve 60 percent generation from renewable sources (TID, 2023). Thus, the installation of the solar array and associated infrastructure would not result in new impacts or a substantial increase in impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.7 Geology and Soils

Section 2.7 of the Ceres Main Reservoir IS/MND analyzed potential impacts to geology and soils and concluded that creation of the Reservoir would not result in rupture of a known earthquake fault, seismic shaking, liquefaction, or landslides. The Reservoir construction would have a less than significant impact to soil erosion and loss of topsoil during construction, as well as not located on expansive soil that creates risk to life or property, and there would be no impact of wastewater disposal on soil. Two mitigation measures have been developed to ensure less than significant impacts to geologic and soil resources: GEO-1 and GEO-2. Mitigation measure GEO-1 would train construction workers regarding paleontological resources, and GEO-2 would implement appropriate treatment measures in case of a potential fossil discovery. Thus, the Ceres Main Reservoir IS/MND concluded that with the implementation of Mitigation Measures GEO-1 and GEO-2, impacts on unique paleontological and geologic features would be reduced to less than significant.

Unlike the Ceres Main Regulating Reservoir project, grading and deep excavation will not be required for the solar array installation; therefore, e implementation of Mitigation Measures GEO-1 and GEO-2 is not needed and solar array installation would not have any significant impacts on paleontological or geologic resources. Installation of the solar array and associated infrastructure would not result in new impacts or a substantial increase in impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.8 Greenhouse Gas Emissions

Section 2.8 of the Ceres Main Reservoir IS/MND analyzed greenhouse gas emissions and concluded that, with mitigation incorporated, there would be less-than-significant impacts due to greenhouse gas emissions. Construction-related emissions from the Reservoir construction would be temporary and less than relevant thresholds. Operational emissions would be generated primarily from on-road vehicular traffic for maintenance trips, but would not be significantly greater than trips to the Reservoir site prior to the Reservoir construction project. In addition, with the implementation of Mitigation Measure GHG-1, which would require best performance standards during construction, construction-related emissions associated with construction of the Reservoir would be less than significant.

The floating solar array would require heavy duty construction equipment for the installation of the 12 kV conduit, but grading is not anticipated since the conduit will be constructed on an existing road. As a result, GHG emissions are expected to be less than that of the Reservoir since there will be less ground disturbing activity, grading and use of heavy-duty construction equipment. In addition, the floating solar array will produce 9.79 GWh of electricity per year which will further offset the impacts from project-related GHG emissions. In terms of maintenance and upkeep of the floating solar, operational emissions would be substantially the same as what is required for the Reservoir maintenance. Therefore, installation of the refined alignment would not result in new significant impacts or a substantial increase in the severity of impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.9 Hazards and Hazardous Materials

Section 2.9 of the Ceres Main Reservoir IS/MND analyzed impacts related to hazards and hazardous materials and concluded that construction activities associated with the Reservoir construction could result in inadvertent spills of hazardous materials during standard construction practices that require transport and use of materials such as gasoline, diesel, and industrial materials. The Reservoir construction equipment and materials would include fuels, oils and lubricants, cement, and concrete. The routine use or an accidental spill of hazardous materials used in construction could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment.

Conditions under the proposed Project will remain mostly unchanged. A spill prevention plan would be implemented to mitigate potential hazardous material spills. The spill prevention plan from the Ceres Main Reservoir IS/MND would be implemented, reducing potential impacts to less-than-significant. Project construction activities would therefore comply with numerous regulations to ensure that construction-related fuels and other hazardous materials are transported, used, stored, and disposed of safely to protect worker safety, and to reduce the potential for such fuels or other hazardous materials to be released into the environment, including stormwater and downstream receiving water bodies. Contractors would be required to prepare and implement hazardous-materials business plans that would require proper use of hazardous materials during construction and storage of such materials in appropriate containers with secondary containment, as needed, to contain a potential release.

Therefore, installation of the solar array and associated infrastructure would not result in new significant impacts or a substantial increase in severity of impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.10 Hydrology and Water Quality

Section 2.10 of the Ceres Main Reservoir IS/MND analyzed impacts to hydrology and water quality and concluded that the Reservoir construction would cause less-than-significant impacts to all issue areas considered. The Ceres Main Reservoir IS/MND determined that neither groundwater recharge nor quality would not be impacted, draining patterns would not be altered, there would be no pollutant release during project inundation, and the Reservoir construction would not conflict with a water quality control plan. Soils in the Project area have a low potential for erosion, and adherence to Best Management Practices (BMPs) as part of obtaining a National Pollutant Discharge Elimination System (NPDES) General Construction Permit would reduce impacts from waterborne pollutants entering natural waters.

The floating solar array and associated infrastructure will not alter existing drainage patterns or create runoff since no additional significant ground-disturbing activity or earthwork will be needed. In addition, the floating solar system installation would not require extra excavation equipment or modifications to the Reservoir basin. The conduit would be installed overhead via utility poles. During construction, workers would also be required to comply with the conditions of the NPDES General Construction Permit, including applicable BMPs, which would ensure that

potential water quality impacts would be minimized. As further discussed in Section 3.9, *Hazards and Hazardous Materials*, above, a spill prevention plan would be implemented and include BMPs to mitigate potential hazardous material spills. The spill prevention plan would prevent hazardous materials from entering the Reservoir. Therefore, installation of the solar array and associated infrastructure would not result in new significant impacts or a substantial increase in severity of impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.11 Noise

Section 2.11 of the Ceres Main Reservoir IS/MND analyzed noise impacts and concluded that there would be a less than significant level of noise and ground-borne vibration levels associated with initial grading and construction activities.

Installation of the solar array and associated infrastructure would require ground-disturbing activities for the installation of the grounding system and conduit. While these construction activities would cause a temporary increase in noise and ground-borne vibration levels, installation of the floating solar array and associated infrastructure would be required to comply with Stanislaus County noise ordinance to reduce impacts to less-than-significant levels. Therefore, installation of the floating solar array and associated infrastructure would not result in new significant impacts or a substantial increase in severity of impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.12 Transportation

Section 2.12 of the Ceres Main Reservoir IS/MND analyzed impacts to transportation and concluded that the Reservoir construction project would not result in significant impacts to an existing circulation plan, increase Vehicle miles traveled (VMT) to above acceptable levels, substantially increase hazards, or impede emergency services. The Reservoir construction project temporarily generated increases in vehicle trips due to construction-related trips, but given the scale of the proposed Project and the length of the construction period, the capacity of local roads used to access the Reservoir site would not be substantially reduced. In addition, temporary construction staging would not block or interfere with emergency response vehicles.

These impacts would be expected to be the same during the installation of the solar array, as local roads would not be impacted by increased vehicle trips during construction. Therefore, installation of the floating solar arrays and associated infrastructure would not result in new significant impacts or a substantial increase in severity of impacts to transportation components over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.13 Tribal Cultural Resources

Section 2.13 of the Ceres Main Reservoir IS/MND analyzed impacts to tribal cultural resources and concluded that the Reservoir creation would result in significant impacts. The proposed Project site was once inhabited by the Northern Valley Yokuts. The proposed Project would not affect any known archaeological resources that could be considered tribal cultural resources,

listed or determined eligible for listing in the California Register of Historical Resources. However, if any previously unrecorded archaeological resource were to be identified during ground-disturbing construction activities, and should the resource be found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(1), any impacts of the proposed Project on the resource could be potentially significant. However, with the implementation of Mitigation Measure CUL-1, potential impacts would be brought to a less than significant threshold because the measure requires work halt in the vicinity of a find until a qualified archaeologist is consulted.

In the unlikely event that cultural resources are discovered during the installation of the solar array, construction would be halted, and a qualified archeologist will assess the significance of the discovery. Therefore, the installation of the solar array and associated infrastructure would not result in new significant impacts or a substantial increase in severity of impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.14 Utilities and Service Systems

Section 2.14 of the Ceres Main Reservoir IS/MND analyzed impacts to utilities and service systems and concluded that there would be less than significant impacts to all issue areas considered. The Reservoir construction would not include or require the relocation or construction of new or expanded wastewater treatment or stormwater drainage, natural gas, or telecommunications facilities. Construction of the Reservoir would comply with all wastewater requirements of the Central Valley Regional Water Quality Control Board as well as all federal, state, and local statutes and regulations related to solid waste. In addition, the Reservoir construction would generate minimal waste during temporary construction activities. Although almond trees, native soil, and unsuitable fill material would be hauled off-site, the landfill that serves the Reservoir site has the capacity to accept the minimal amount of waste generated.

Impacts relating to the installation of the floating solar array would be similar to the components analyzed in Ceres Main Reservoir IS/MND. Installation of the floating solar array would not generate wastewater, cause additional stormwater runoff, require new water entitlements, or impact any wastewater providers' ability to serve existing and projected commitments. Any waste generated during Project construction would be disposed of in an approved dump site, however, this would not affect local landfill capacities. As of March 1, 2017, the Fink Road Sanitary Landfill, the sole permitted landfill in Stanislaus County, had a permitted capacity of 14,640,000 cubic yards and a remaining capacity of 7,184,701, and the landfill is permitted through 2023. It is reasonable to assume that the installation of the solar array and associated infrastructure would generate a marginally negligible amount of waste; an amount which the landfill has ample capacity to handle.

Since solar panels have a 25–30-year lifespan, they will need to be replaced and recycled. This however, will not impact local landfill capacity because they will be hauled off to an appropriate recycling facility. The Clean Earth universal and electronic waste recycling facility is located approximately 21 miles northwest of the Project site and is the nearest to the proposed Project. In addition, the facility is U. S. Environmental Protection Agency (EPA) permitted and complies with all state & federal EPA, Occupational Safety and Health Association (OSHA), and

Department of Transportation (DOT) Regulations (Clean Earth 2023). The floating solar array and associated infrastructure would not involve development of new residential, commercial or industrial land uses; and therefore, would not directly or indirectly result in population growth or development that would require additional water supply, wastewater treatment, or demand for other utilities. Therefore, installation of the floating solar array and associated infrastructure would not result in new significant impacts or a substantial increase in the severity of impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

3.15 Wildfire

Section 2.15 of the Ceres Main Reservoir IS/MND analyzed impacts to utilities and service systems and concluded that there would be less than significant impacts to an adopted emergency response plan, exacerbate wildfire spread, and increase fire risk. The IS/MND concluded that there would be no impact to people or structures.

The floating solar array and associated infrastructure would not increase the exacerbate the risk of fire, nor increase the risk of people or structures to wildfire. The site is adjacent to lands occupied by irrigated agriculture, with vegetation and land use types having a low potential for wildland fires. The construction of the solar array would be contained within the boundaries of the Project area and would not impair emergency response access on roadways or to areas within or adjacent to the Project area. The installation would also not exacerbate risks that would expose on-site employees to pollutants or uncontrolled wildfires more so than what was analyzed in the Ceres Main Reservoir IS/MND. Therefore, installation of the floating solar array and associated infrastructure would not result in new significant impacts or a substantial increase in the severity of impacts over those identified and evaluated in the Ceres Main Reservoir IS/MND.

SECTION 4
Conclusion

On the basis of the evaluation presented in Section 3, the proposed floating solar array and associated infrastructure would not trigger any of the conditions listed in Section 1.2 of this Addendum requiring preparation of a subsequent or supplemental MND. All applicable mitigation measures from the Ceres Main Reservoir IS/MND apply to the floating solar array, as described previously in Section 3, Analysis of Potential Environmental Effects. This Addendum satisfies the requirements of CEQA Guidelines Sections 15162 and 15164. Under CEQA, modifications that are not substantial, but represent minor changes or additions may be presented in an addendum and does not require circulation. This document will be made part of the administrative record and will be transmitted to the lead agency decision-making body along with the certified Ceres Main Reservoir IS/MND, as amended to provide clarification regarding proposed floating solar array outlined above and to comply with CEQA Guidelines Section 15164.

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SECTION 5
References

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Appendix A

Ceres Main Reservoir Floating Solar Construction Plans

TURLOCK IRRIGATION DISTRICT
TID SOLAR - CERES MAIN

37°32'37.98"N, 120°56'3.61"W

5,435.3KW DC

GENERAL NOTES

GENERAL NOTES

1. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRICAL CODE AS AMENDED BY THE CALIFORNIA BUILDING CODE, CMC, CPC, CEC AND ALL APPLICABLE LOCAL CODES, ORDINANCES, AND STATE AMENDMENTS.
2. THE CONTRACTOR SHALL CHECK ALL DRAWINGS IMMEDIATELY UPON THEIR RECEIPT AND SHALL VERIFY ALL DIMENSIONS AND SITE CONDITIONS BEFORE STARTING WORK. ARCHITECTS AND ENGINEERS SHALL BE NOTIFIED OF ANY DISCREPANCIES.
3. EACH UNGROUNDED CONDUCTOR OF THE MULTIWIRE BRANCH CIRCUIT WILL BE IDENTIFIED BY PHASE AND SYSTEM PER ART. 210.5.
4. A NATIONALLY-RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH ART 110.3.
5. CIRCUITS OVER 250V TO GROUND SHALL COMPLY WITH ART. 250.97, 250.92(B).
6. DC CONDUCTORS INSIDE BUILDING SHALL BE IN METALLIC RACEWAY PER ART. 690.31(E).
7. ALL WIRES SHALL BE PROVIDED WITH STRAIN RELIEF AT ALL ENTRY INTO BOXES AS REQUIRED BY UL LISTING.
8. WHERE REQUIRED GROUNDING ELECTRODE INSTALLATION SHALL COMPLY WITH ART. 250.52, 250.53.
9. INSTALL PARALLEL CONDUCTORS PER ART. 310.10(H).
10. ALL VALUES FOR IMP AND ISC AND VMP ARE MANUFACTURER'S LISTED DATA UNCORRECTED BY CEC.
11. REFER TO CURRENT MANUFACTURER'S PLANNING AND INSTALLATION MANUAL FOR TORQUE SPECS FOR ALL BOLTS AND TERMINAL CONNECTIONS.
12. DC STRING CIRCUITS SHALL BE RUN IN OUTDOOR ROOFTOP AMBIENT CONDITIONS.
13. PV INVERTER MAY CONTAIN INTEGRATED AC AND DC DISCONNECTS.
14. BURIED CONDUCTORS SHALL BE BURIED TO THE MINIMUM DEPTH SPECIFIED IN ART. 300.50.
15. ALL CONDUCTORS ARE 90° C RATED COPPER OAN (OR AS NOTED).
16. SUPPLY SIDE INTERCONNECTIONS SHALL COMPLY WITH ART. 705.12 AND ART. 230 FOR THE INSTALLATION OF AN ADDITIONAL SERVICE ENTRANCE.
17. SUPPLY SIDE INTERCONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S INSTRUCTIONS AND SHALL NOT INVALIDATE THE UL LISTING OF THE EQUIPMENT.
18. EMT TYPE CONDUIT SHALL BE USED TO ENCLOSE CONDUCTORS BETWEEN A SUPPLY SIDE INTERCONNECTION AND THE FIRST OCP IN THE INVERTER OUTPUT CIRCUIT.

GROUNDING NOTES

19. SINGLE-CONDUCTOR CABLE USED AS A GROUNDED CONDUCTOR IN PHOTOVOLTAIC POWER SYSTEMS SHALL BE IDENTIFIED AT THE TIME OF INSTALLATION BY DISTINCTIVE WHITE MARKING AT ALL TERMINATIONS.
20. PV INVERTER CONTAINS AN INTEGRATED GFDI CIRCUIT. DO NOT BOND THE GROUNDED DC CONDUCTOR TO THE GROUND EXCEPT THROUGH THE INVERTER GFDI.
21. ALL EXPOSED METAL PARTS (RAIL, PIPE, BOXES, ETC.) SHALL BE GROUNDED USING TIN-PLATED COPPER LAY-IN LUGS OR GROUNDING CLIPS LISTED FOR THE PURPOSE. RAIL CLAMPS SHALL BE MADE ELECTRICALLY CONTINUOUS WITH ATTACHED RAIL.
22. #10 BARE COPPER EGC AT SOURCE CIRCUITS SHALL BE ROUTED SECURELY TO MOUNTING HARDWARE IN A MANNER THAT PROTECTS FROM PHYSICAL HARM.
23. MODULE FRAMES SHALL BE GROUNDED AT THE UL-LISTED LOCATION PROVIDED BY THE MANUFACTURER USING UL LISTED GROUNDING HARDWARE.
24. MODULE FRAMES, RAIL AND POSTS SHALL BE BONDED WITH EQUIPMENT GROUND CONDUCTORS AND GROUNDED AT THE MAIN ELECTRIC PANEL.
25. BOTH ENDS OF ALL METALLIC CONDUIT CONTAINING GROUNDING ELECTRODE CONDUCTORS SHALL BE BONDED PER ART. 250.64(E).
26. GROUNDING ELECTRODE CONDUCTOR TO BE BONDED TO UFER PER ART. 250.30(A)(4).
27. DC GROUNDING ELECTRODE CONDUCTOR SIZED PER ART. 250.166(D).

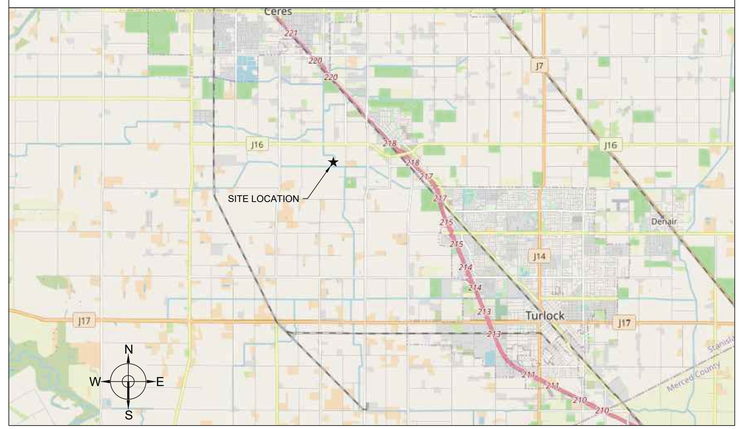
GENERAL ELECTRICAL NOTES

GENERAL ELECTRICAL NOTES

1. ALL EQUIPMENT SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LAB.
2. PROVIDE SUPPORT FOR ALL ELECTRICAL EQUIPMENT TO COMPLY WITH SEISMIC AND WINDSTORM REQUIREMENTS OF THE BUILDING CODE AND ALL LOCAL CODES.
3. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC. THE SIZE AND LOCATION OF EQUIPMENT SHOWN ARE TO SCALE WHEREVER POSSIBLE. VERIFY ALL CONDITIONS, DATA INFORMATION AS INDICATED ON THE DRAWINGS. REVIEW SHOP DRAWINGS AND SUBMITTAL DATA PRIOR TO INSTALLATION.
4. CONDUIT RUNS ARE SCHEMATIC ONLY. CONDUIT ROUTE SHALL BE FIELD VERIFIED AS TO REDUCE THE RISK OF BEING DAMAGED OR AFFECTED BY OTHER UTILITIES. UNDERGROUND CONDUIT SHALL BE PUT IN JOINT TRENCHES WHERE POSSIBLE PER UTILITY COMPANY REQUIREMENTS.
5. CONDUIT SHOWN ON THE PLANS IS EMT OR OTHER APPROVED RACEWAY INCLUDING MC ABOVE GRADE AND PVC OAN BELOW GRADE. INSTALL EMT SUCH THAT IT IS MECHANICALLY AND ELECTRICAL CONTINUOUS WITH RATED FITTINGS AT ALL POINTS.
6. ALL CONDUIT CONNECTIONS TO MACHINES AND EQUIPMENT SUBJECT TO VIBRATION SHALL BE FLEX CONDUIT. PROVIDE SUFFICIENT SLACK TO ELIMINATE VIBRATION. ARRANGE CONNECTION TO PREVENT THE ENTRANCE OF MOISTURE. PROVIDE CONTINUOUS GROUND WIRE THROUGH ALL FLEX TO ASSURE GROUND CONTINUITY.
7. PROVIDE INSULATED CONNECTOR FITTINGS FOR RACEWAYS CONTAINING UNGROUNDED CONDUCTORS 4 AWG OR LARGER ENTER A CABINET, BOX ENCLOSURE, OR RACEWAY. PROVIDE A SUBSTANTIAL FITTING PROVIDING A SMOOTHLY ROUNDED INSULATING SURFACE IN COMPLIANCE WITH 300.4(G).
8. ALL WIRE SHALL BE COPPER OAN (OR AS NOTED). ALL AC WIRE SHALL BE LISTED, RATED FOR 1000 VOLTS, TYPE XHHW-2 INSULATION OAN, AND #10 MINIMUM SIZE EXCEPT FOR CONTROLS.
9. ALL UNDERGROUND BONDING CONDUCTORS SHALL BE COPPER.
10. TERMINATION PROVISIONS OF EQUIPMENT SHALL BE LISTED AND IDENTIFIED FOR USE WITH CONDUCTORS RATED 75°C, OR DUAL RATED TO INCLUDE 75°C.
11. COMPLETE SYSTEM SHALL BE GROUNDED PER 250 AND 690.
12. PROVIDE AN ENCLOSURE AND INSTALLATION METHOD OF EQUAL FIRE RESISTANT RATING AROUND ALL FIXTURES AND EQUIPMENT INSTALLED IN OR PENETRATING THROUGH FIRE RATED SEPARATIONS.
13. ALL DEVICES INSTALLED OUTSIDE OR IN DAMP LOCATIONS SHALL BE WEATHERPROOF. CONDUIT RUNS IN SUCH LOCATIONS SHALL BE INSTALLED WITH APPROVED FITTINGS. SURFACE TYPE ENCLOSURES SHALL BE NEMA 3R AND MOUNTED WITH A ¼" AIRSPACE BETWEEN THE ENCLOSURE AND THE WALL PER 312.2.
14. CONTRACTOR TO VERIFY UTILITY COMPANY REQUIREMENTS PRIOR TO ORDERING.
15. CONDUITS OR RACEWAYS THROUGH WHICH MOISTURE MAY CONTACT LIVE PARTS SHALL BE SEALED OR PLUGGED AT BOTH ENDS IN ACCORDANCE WITH 300.5(G).

SITE

VICINITY MAP



ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A, AMP	AMPERE	MAX	MAXIMUM
AC	ALTERNATING CURRENT	MIN	MINIMUM
AFC	AVAILABLE FAULT CURRENT	MLO	MAIN LUG OUT
AL	ALUMINUM	MSB	MAIN SWITCHBOARD
AWG	AMERICAN WIRE GAUGE	N	NEMA
BC	BARE COPPER	NTS	NOT TO SCALE
BKR	CIRCUIT BREAKER	(N)	NEW
BLDG	BUILDING	NEC	NATIONAL ELECTRIC CODE
C	CONDUIT	NTS	NOT TO SCALE
CONC	CONCRETE	OAN	OR AS NOTED
CU	COPPER	OC	ON CENTER
DC	DIRECT CURRENT	OCP	OVERCURRENT PROTECTION
DIA	DIAMETER	PH	PHASE
DISC	DISCONNECT	PL	PROPERTY LINES
DIST	DISTANCE	PV	PHOTOVOLTAIC
EQ	EQUAL	PVC	POLYVINYL CHLORIDE
EGC	EQUIPMENT GROUNDING CONDUCTOR	SCH	SCHEDULE
(E)	EXISTING	SQ. IN.	SQUARE INCHES
EA.	EACH	SS	STAINLESS STEEL
EMT	ELECTRICAL METALLIC TUBING	STC	STANDARD TESTING
GALV	GALVANIZED	CONDITIONS	
GEC	GROUNDING ELECTRODE CONDUCTOR	TYP	TYPICAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	UON	UNLESS OTHERWISE NOTED
GND	GROUND	UPS	UNINTERRUPTIBLE POWER
I	CURRENT	SUPPLY	
IMP	CURRENT AT MAX POWER	VIF	VERIFY IN FIELD
INV	INVERTER	V	VOLT
ISC	SHORT CIRCUIT CURRENT	VMP	VOLTAGE AT MAX POWER
J-BOX	JUNCTION BOX	VOC	VOLTAGE AT OPEN CIRCUIT
KVA	KILOVOLT AMPERE	W	WATT
KW	KILOWATT	XFMR	TRANSFORMER
KWH	KILOWATT-HOUR	3R	NEMA 3R, RAINTIGHT
LBW	LOAD BEARING WALL		

SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	NEUTRAL DISCONNECT LINK	01	CONDUCTOR IDENTIFIER
100A 3P	BREAKER	DAS	MONITORING EQUIPMENT
	DISCONNECTING SWITCH		CONTINUATION
	FUSE, FUSE HOLDER		GROUND ROD OR UFER
	DIRECT CURRENT	MPPT1-ST01-17M	PV ARRAY MPPT#, STRING#, MODULE QTY.
	ALTERNATE CURRENT		

APPLICABLE CODES

2022 CALIFORNIA BUILDING CODE (CBC),
2022 CALIFORNIA ELECTRICAL CODE (CEC)
2022 CALIFORNIA MECHANICAL CODE (CMC)
2022 CALIFORNIA PLUMBING CODE (CPC)
2022 CALIFORNIA ENERGY CODE
2022 CALIFORNIA FIRE CODE
2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
2022 CALIFORNIA REFERENCED STANDARDS
2020 NATIONAL ELECTRICAL CODE

SCOPE OF WORK

DESIGN AND CONSTRUCTION OF SOLAR PHOTOVOLTAIC POWER SYSTEM. THE ARRAY WILL CONVERT DC POWER TO AC POWER AND GRID-TIE ONTO THE EXISTING UTILITY TRANSFORMER.

SYSTEM TYPE: GROUND MOUNT
(9620) 565W MODULES
(26) 150kW INVERTER(S)

INVERTERS 01-20
150kW INVERTER
205,660kW DC
364 MODULES
26 MODULE PER STRING
14 STRINGS

INVERTER 21-26
150kW INVERTER
220,350kW DC
390 MODULES
26 MODULE PER STRING
15 STRINGS

SYSTEM SUMMARY

MODULE:	SERAPHIM SOLAR SYSTEM CO., LTD. SRP-565-BTA-BG
INVRETER:	SMA AMERICA SHP150-US 20 [600V][SISEP22]
RACKING:	FLOATING CIEL ET TERRE HYREILO AIR OPTIM
ARRAY AZIMUTH:	180°
MODULE TILT:	12°

INDEX

PV1.0	COVER SHEET	PV4.1	DETAILS	C-110	15KV TRANSFORMER FOUNDATION
PV2.0	SITE PLAN	PV4.2	DETAILS	C-112	12KV TRANSFORMER FOUNDATION
PV2.1	ARRAY LAYOUT	PV5.0	PLACARDS	S-101	PRELIMINARY PV ARRAY AND ANCHOR LAYOUT
PV2.2	STRING LAYOUT	PV6.0	DATA SHEETS		
PV3.0	LOW VOLTAGE ONE LINE DIAGRAM	PV6.1	DATA SHEETS	S-301	CROSS SECTION HWL, LWL
		E-601	AC ONE LINE		
PV3.1	WIRE SCHEDULES AND CALCULATIONS	E-603	AC THREE LINE		
		E-610	15KV BREAKER DC SCHEMATIC		
PV4.0	EQUIPMENT LAYOUT		12KV GROUNDING PLAN		

DEVELOPER:

NORIA

80 LIBERTY SHIP, STE 5
SAUSALITO, CA 94965
NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

PROJECT NAME:
TID SOLAR
CERES MAIN

PROJECT ADDRESS:
CERES, CA,

APN NUMBER:
45210083

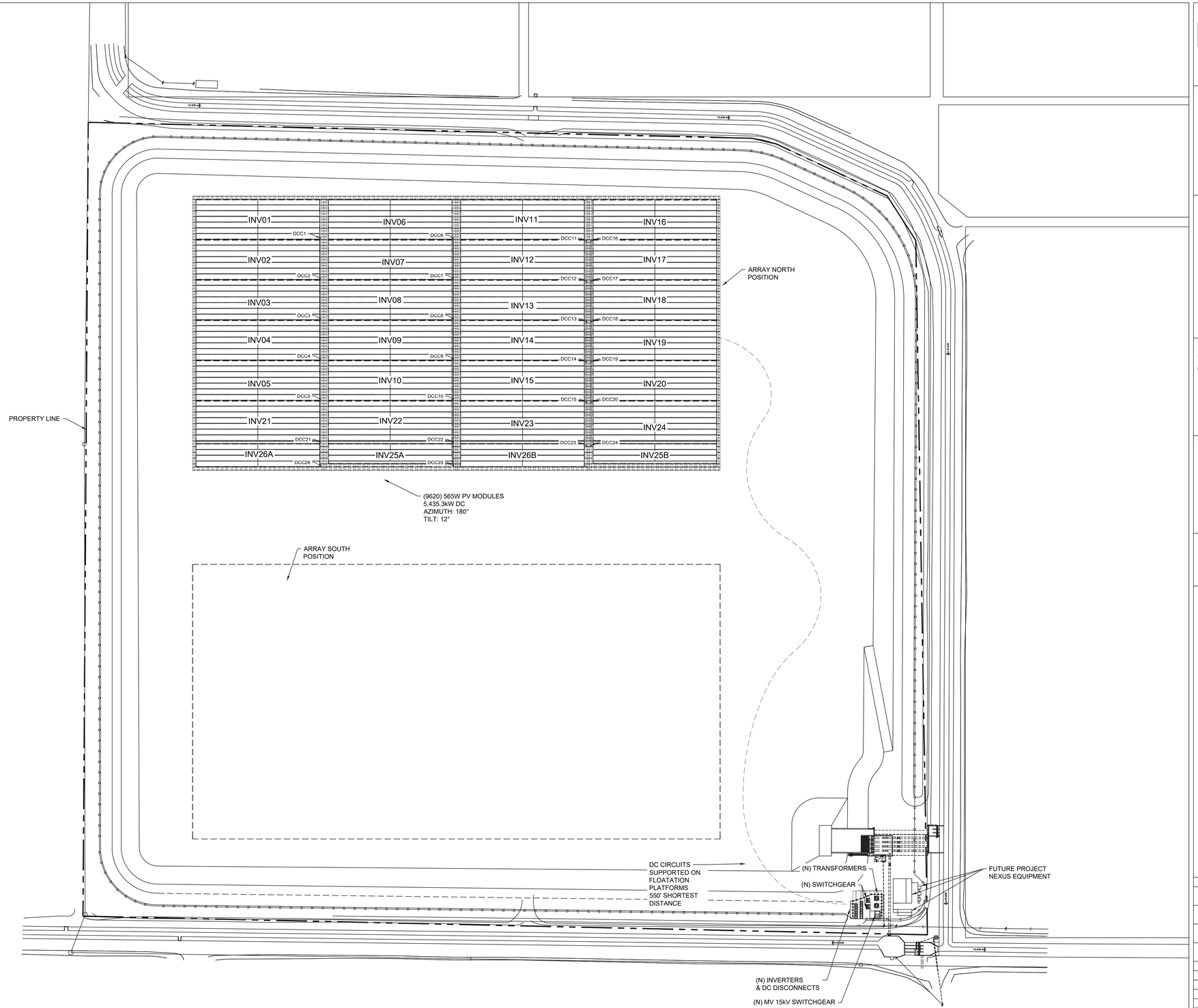
LAT, LONG
37.545°, -120.936°

IFC DESIGN

REVISION:	DATE
DRAWN BY: K.Olberding	
CHECKED BY:	
PROJECT #:	
DATE: 8/12/2024	
COVER SHEET	

SHEET NO.

PV1.0



N
W E
S

SITE PLAN

SCALE: 1"=80'

1

DEVELOPER:

NORIA

80 LIBERTY SHIP, STE 5
SAUSALITO, CA 94965
NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

REGISTERED PROFESSIONAL ENGINEER
Charles W. Cunha
No. 12478
Exp:9-30-25
ELECTRICAL
STATE OF CALIFORNIA

PROJECT NAME:
TID SOLAR
CERES MAIN

PROJECT ADDRESS:
CERES, CA,

APN NUMBER:
45210083

LAT, LONG
37.545°, -120.936°

IFC DESIGN

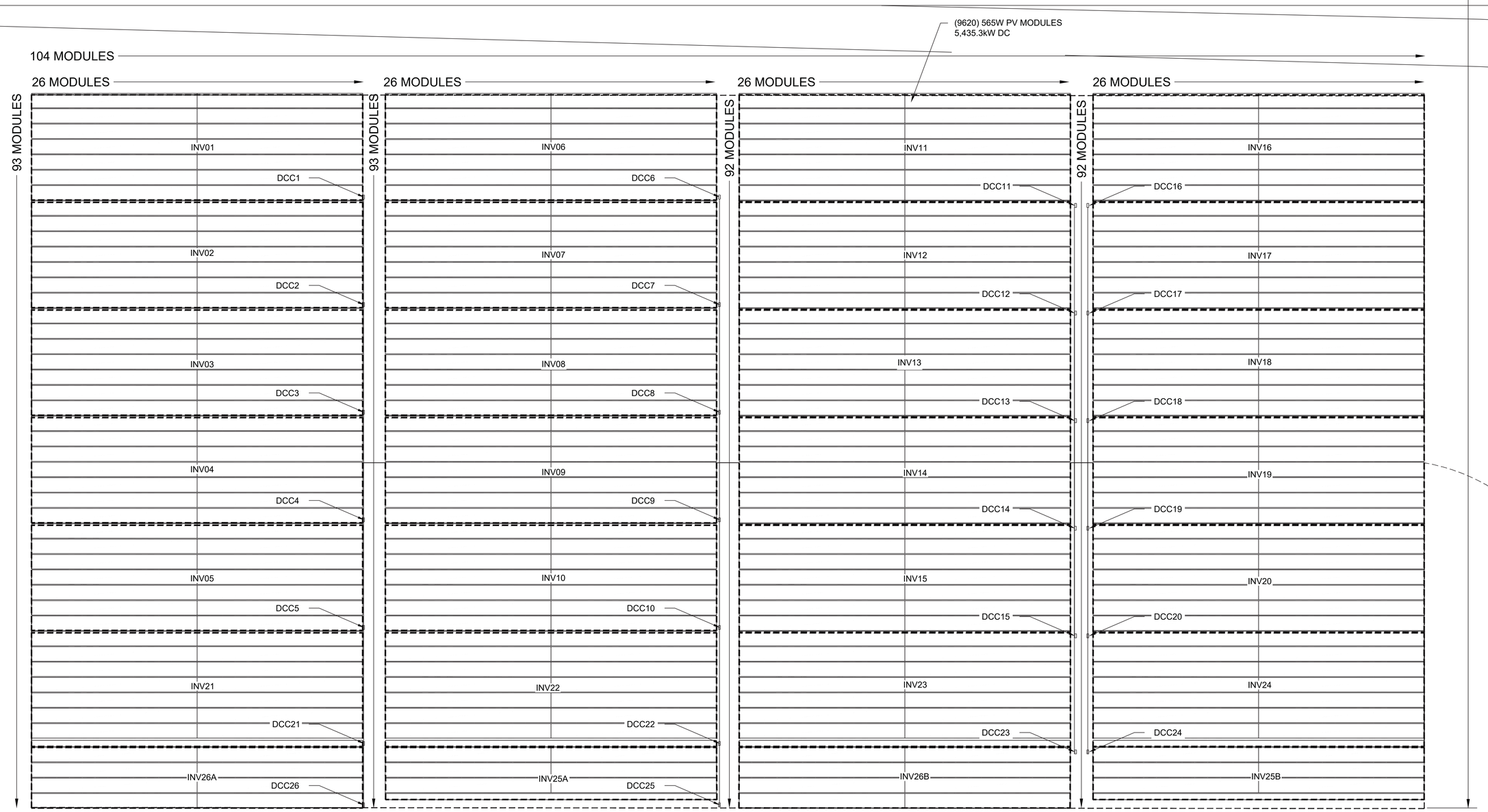
REVISION:	DATE

DRAWN BY: K.Olberding	
CHECKED BY:	
PROJECT #:	
DATE: 8/12/2024	

SITE PLAN

SHEET NO.

PV2.1



ARRAY LAYOUT

SCALE: ######

1

DEVELOPER:

NORIA

80 LIBERTY SHIP, STE 5
SAUSALITO, CA 94965
NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

PROJECT NAME:

TID SOLAR
CERES MAIN

PROJECT ADDRESS:

CERES, CA,

APN NUMBER:

45210083

LAT, LONG

37.545°, -120.936°

IFC DESIGN

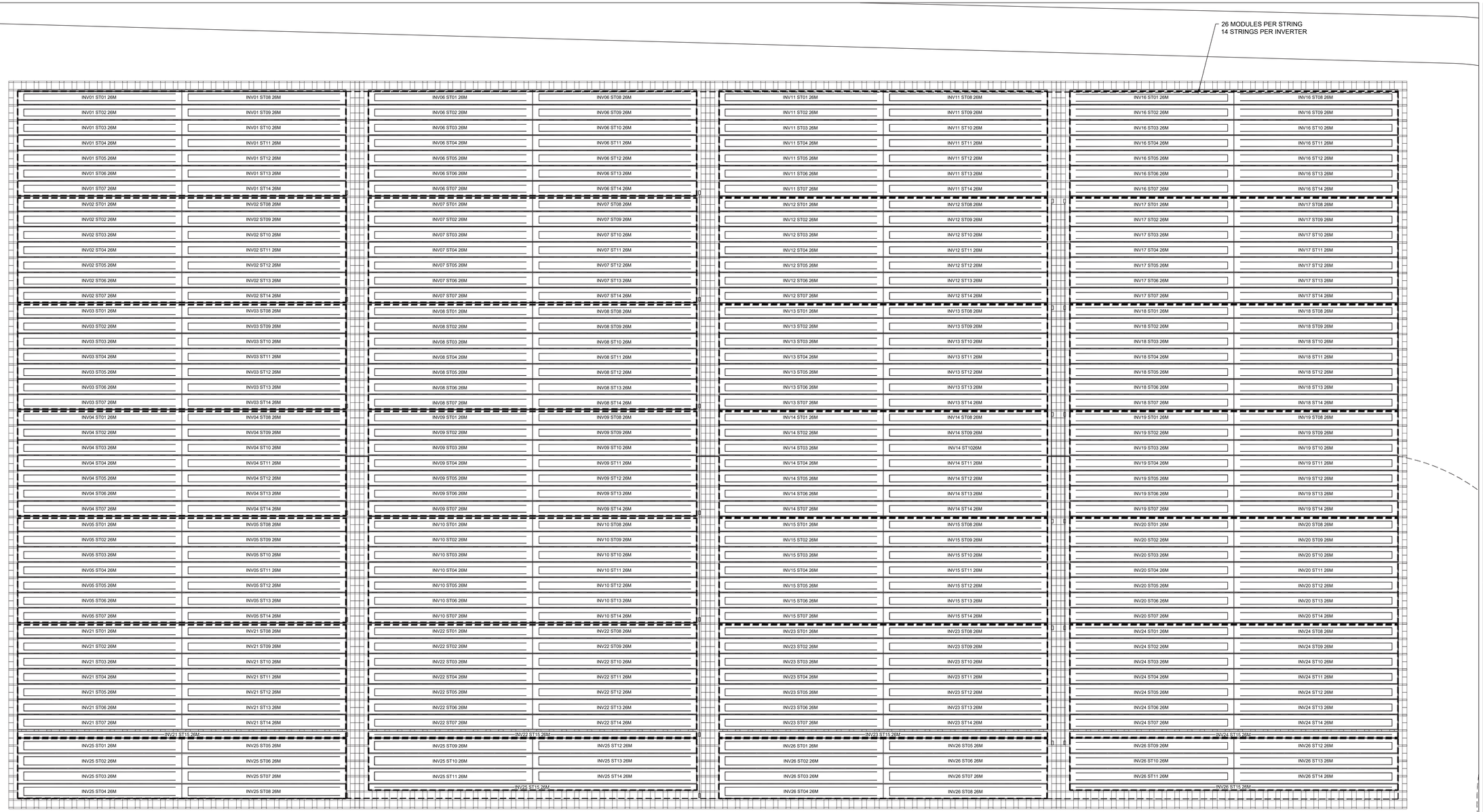
REVISION:	DATE

DRAWN BY: K.Olberding	
CHECKED BY:	
PROJECT #:	
DATE: 8/12/2024	

ARRAY LAYOUT

SHEET NO.

PV2.2



N
W E
S

STRING LAYOUT

SCALE: ######

1

DEVELOPER:

NORIA

80 LIBERTY SHIP, STE 5
SAUSALITO, CA 94965
NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

PROFESSIONAL ENGINEER
Charles W. Cunha
No. 12478
Exp.9-30-25
ELECTRICAL
STATE OF CALIFORNIA

PROJECT NAME:
TID SOLAR
CERES MAIN

PROJECT ADDRESS:
CERES, CA,

APN NUMBER:
45210083

LAT, LONG
37.545°, -120.936°

IFC DESIGN

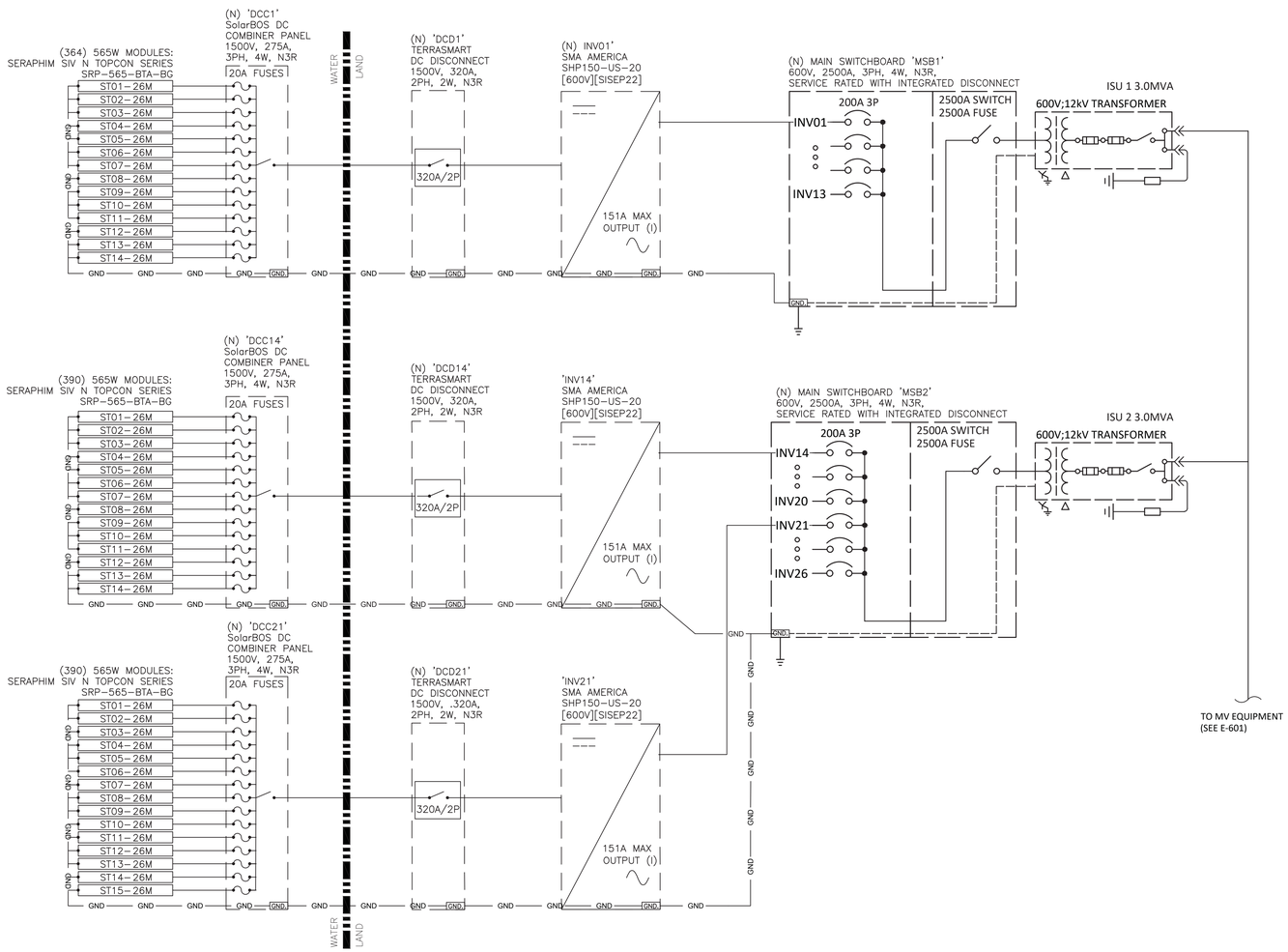
REVISION:	DATE

DRAWN BY: K.Olberding
CHECKED BY:
PROJECT #:
DATE: 8/12/2024

STRING LAYOUT

SHEET NO.

PV2.3



ONE LINE DIAGRAM

1

PHOTOVOLTAIC MODULE	
MANUFACTURER	SERAPHIM SOLAR SYSTEMS CO., LTD
MODEL #	SRP-565-BTA-BG
INV1-20 QTY EACH	364
POWER	565W
Vmp	42.8V
Imp	14.53A
Voc	51.5V
Isc	15.28A

DC COMBINER PANEL	
DCC01	SOLARBOS 28 STRING
QTY	20

DC DISCONNECT	
DCD1	SOLARBOS 1500V, 320A
QTY	20

INVERTER	
MANUFACTURER	SMA AMERICA
QUANTITY	20
MODEL #	SHP 150-US-20 [600V][SISEP22]
NOMINAL AC VOLTAGE	600V
MAX AC CURRENT	151A

INVERTER CONFIGURATION	
MODULES PER STRING	26
STRINGS PER DCC	14
NUMBER OF INVERTERS	20
AVERAGE HIGH TEMP (°C)	37
RECORD LOW TEMP (°C)	-3.0
VOLTAGE TEMP COEFFICIENT (MODULE)	0.25%/°C

DC SYSTEM SPECIFICATIONS	
OPERATING VOLTAGE	1112.8V
OPERATING CURRENT	203.42A
MAX SYSTEM VOLTAGE w/ TEMP DERATE	1432.73V
SHORT CIRCUIT CURRENT x 1.25	267.4A

INVERTER DC:AC RATIO	
PV SYSTEM SIZE (DC-STC)	205,660W
PV SYSTEM SIZE (AC)	150,000W
DC : AC RATIO	1.37

MAIN SWITCH BOARD
600V, 3000A, 3PH, 4 WIRE, N3R,
3000A FRAME SET TO 2750A TRIP

TRANSFORMER
600Y/12.47kVA, 3.0 MVA

PHOTOVOLTAIC MODULE	
MANUFACTURER	SERAPHIM SOLAR SYSTEMS CO., LTD
MODEL #	SRP-565-BTA-BG
INV21-26 QTY EACH	390
POWER	565W
Vmp	42.8V
Imp	14.53A
Voc	51.5V
Isc	15.28A

DC COMBINER PANEL	
DCC01	SOLARBOS 28 STRING
QTY	6

DC DISCONNECT	
DCD1	SOLARBOS 1500V, 320A
QTY	6

INVERTER	
MANUFACTURER	SMA AMERICA
QUANTITY	6
MODEL #	SHP 150-US-20 [600V][SISEP22]
NOMINAL AC VOLTAGE	600V
MAX AC CURRENT	151A

INVERTER CONFIGURATION	
MODULES PER STRING	26
STRINGS PER DCC	15
NUMBER OF INVERTERS	6
AVERAGE HIGH TEMP (°C)	37
RECORD LOW TEMP (°C)	-3.0
VOLTAGE TEMP COEFFICIENT (MODULE)	0.25%/°C

DC SYSTEM SPECIFICATIONS	
OPERATING VOLTAGE	1112.8V
OPERATING CURRENT	217.95A
MAX SYSTEM VOLTAGE w/ TEMP DERATE	1432.73V
SHORT CIRCUIT CURRENT x 1.25	286.5A

INVERTER DC:AC RATIO	
PV SYSTEM SIZE (DC-STC)	220,350W
PV SYSTEM SIZE (AC)	150,000W
DC : AC RATIO	1.47

MAIN SWITCH BOARD
600V, 3000A, 3PH, 4 WIRE, N3R,
3000A FRAME SET TO 2750A TRIP

TRANSFORMER
600Y/12.47kVA, 3.0 MVA

DEVELOPER:
NORIA
80 LIBERTY SHIP, STE 5
SAUSALITO, CA 94965
NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

PROJECT NAME:
TID SOLAR
CERES MAIN

PROJECT ADDRESS:
CERES, CA,

APN NUMBER:
45210083

LAT, LONG
37.545°, -120.936°

IFC DESIGN

REVISION:	DATE
DRAWN BY: K.Olberding	
CHECKED BY:	
PROJECT #:	
DATE: 8/12/2024	

LOW VOLTAGE
ONE LINE DIAGRAM

SHEET NO.

PV3.0

DC VOLTAGE DROP FROM ARRAY TO DC COMBINER PANEL									
Inverter	String	Mod Qty	Vmp	Amps	Dist. (ft)	R/1000	Wire Size	VD	VD %
TYP.	Longest	26	1112.8	14.5	180	1.24	10AWG	6.49	0.58
(Phase x R x I x Dist.) / Runs = VD									
Wire Type is PV Wire CU									
Longest DC String to DC Combiner Box is 180'									

DC VOLTAGE DROP CALCULATION FROM DC COMBINER PANEL TO INVERTER

Cicuit Location	Cicuit Location	Modules Per Str.	Strings Per DCC	Vmp	Imp	Voc	Isc	Imax Total 690.8(A)	Min. OCPD Set Point	OCPD Size	Phase	A/ Wire Imax x 1.2	Imax x Condition of Use	Conductor Size	Type	Grounding Conductor Size	Type	Max Dist/FT	Conduit Type	Conduit Size	Fill Derate	Runs	Voltage Drop	Voltage Drop %
String	DCC	26	14	1112.80	14.53	1432.73	15.28	19.10	23.88	25	2	23.88	17.38	10AWG	CU	6AWG	CU	180	PVC	.75"	1.0	1	6.277	0.564
DCC1	INV01	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	1340	PVC	3.5"	1.0	2	9.813	0.882
DCC2	INV02	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	1275	PVC	3.5"	1.0	2	9.337	0.839
DCC3	INV03	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	1205	PVC	3.5"	1.0	2	8.824	0.793
DCC4	INV04	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	1215	PVC	3.5"	1.0	2	8.898	0.800
DCC5	INV05	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	1275	PVC	3.5"	1.0	2	9.337	0.839
DCC6	INV06	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	1120	PVC	3.5"	1.0	2	8.202	0.737
DCC7	INV07	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	1055	PVC	3.5"	1.0	2	7.726	0.694
DCC8	INV08	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	990	PVC	3.5"	1.0	2	7.250	0.651
DCC9	INV09	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	995	PVC	3.5"	1.0	2	7.287	0.655
DCC10	INV10	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	1060	PVC	3.5"	1.0	2	7.763	0.698
DCC11	INV11	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	990	PVC	3.5"	1.0	2	7.250	0.651
DCC12	INV12	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	830	PVC	3.5"	1.0	1	12.156	1.092
DCC13	INV13	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	765	PVC	3.5"	1.0	1	11.204	1.007
DCC14	INV14	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	785	PVC	3.5"	1.0	1	11.497	1.033
DCC15	INV15	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	850	PVC	3.5"	1.0	1	12.449	1.119
DCC16	INV16	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	890	PVC	3.5"	1.0	2	6.518	0.586
DCC17	INV17	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	825	PVC	3.5"	1.0	1	12.083	1.086
DCC18	INV18	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	860	PVC	3.5"	1.0	1	12.596	1.132
DCC19	INV19	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	775	PVC	3.5"	1.0	1	11.351	1.020
DCC20	INV20	26	14	1112.80	203.42	1432.73	213.92	267.40	334.25	350	2	334.25	243.33	600KCM	AL	3AWG	CU	840	PVC	3.5"	1.0	1	12.303	1.106
DCC21	INV21	26	15	1112.80	217.95	1432.73	229.20	286.50	358.13	400	2	358.13	260.72	600KCM	AL	3AWG	CU	1350	PVC	3.5"	1.0	2	10.592	0.952
DCC22	INV22	26	15	1112.80	217.95	1432.73	229.20	286.50	358.13	400	2	358.13	260.72	600KCM	AL	3AWG	CU	1130	PVC	3.5"	1.0	2	8.866	0.797
DCC23	INV23	26	15	1112.80	217.95	1432.73	229.20	286.50	358.13	400	2	358.13	260.72	600KCM	AL	3AWG	CU	920	PVC	3.5"	1.0	2	7.219	0.649
DCC24	INV24	26	15	1112.80	217.95	1432.73	229.20	286.50	358.13	400	2	358.13	260.72	600KCM	AL	3AWG	CU	910	PVC	3.5"	1.0	2	7.140	0.642
DCC25	INV25	26	15	1112.80	217.95	1432.73	229.20	286.50	358.13	400	2	358.13	260.72	600KCM	AL	3AWG	CU	990	PVC	3.5"	1.0	2	7.768	0.698
DCC26	INV26	26	15	1112.80	217.95	1432.73	229.20	286.50	358.13	400	2	358.13	260.72	600KCM	AL	3AWG	CU	1390	PVC	3.5"	1.0	2	10.906	0.980
WIRE TYPE IS XHHW-2																								

AC VOLTAGE DROP CALCULATION FROM INVERTER TO MSB

Cicuit Source	Cicuit Destination	Inverter Max V	Inverter Max (I) Output	Imax Total 690.8(A)	OCPD Size	Phase	A/ Wire Imax x 1.2	Temp Coefficient Factor	Imax x Condition of Use	Conductor Size	Type	Grouonding Conductor Size	Type	Neutral Conductor Size	Type	Max Dist/FT	Conduit Type	Conduit Size	Fill Derate	Runs	Voltage Drop	Voltage Drop %
INV01	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	35	PVC	2.5"	1.0	1	0.778	0.130
INV02	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	35	PVC	2.5"	1.0	1	0.778	0.130
INV03	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	30	PVC	2.5"	1.0	1	0.667	0.111
INV04	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	35	PVC	2.5"	1.0	1	0.778	0.130
INV05	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	35	PVC	2.5"	1.0	1	0.778	0.130
INV06	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	40	PVC	2.5"	1.0	1	0.889	0.148
INV07	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	35	PVC	2.5"	1.0	1	0.778	0.130
INV08	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	35	PVC	2.5"	1.0	1	0.778	0.130
INV09	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	30	PVC	2.5"	1.0	1	0.667	0.111
INV10	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	35	PVC	2.5"	1.0	1	0.778	0.130
INV11	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	35	PVC	2.5"	1.0	1	0.778	0.130
INV12	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	40	PVC	2.5"	1.0	1	0.889	0.148
INV13	MSB1	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	45	PVC	2.5"	1.0	1	1.000	0.167
INV14	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	45	PVC	2.5"	1.0	1	1.000	0.167
INV15	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	40	PVC	2.5"	1.0	1	0.889	0.148
INV16	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	40	PVC	2.5"	1.0	1	0.889	0.148
INV17	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	40	PVC	2.5"	1.0	1	0.889	0.148
INV18	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	40	PVC	2.5"	1.0	1	0.889	0.148
INV19	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	50	PVC	2.5"	1.0	1	1.112	0.185
INV20	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	50	PVC	2.5"	1.0	1	1.112	0.185
INV21	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	45	PVC	2.5"	1.0	1	1.000	0.167
INV22	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	40	PVC	2.5"	1.0	1	0.889	0.148
INV23	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	40	PVC	2.5"	1.0	1	0.889	0.148
INV24	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	40	PVC	2.5"	1.0	1	0.889	0.148
INV25	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	45	PVC	2.5"	1.0	1	1.000	0.167
INV26	MSB2	600	151.00	188.75	200	3	188.75	0.91	171.76	250KCM	AL	4AWG	CU	2AWG	AL	45	PVC	2.5"	1.0	1	1.000	0.167
WIRE TYPE IS XHHW-2																						

AC VOLTAGE DROP CALCULATION FROM MSB TO XFMR

Cicuit Source	Cicuit Destination	Inverter Max V	Max (I) Output	Imax Total 690.8(A)	OCPD Size	Phase	A/ Wire Imax x 1.2	Temp Coefficient Factor	Imax x Condition of Use	Conductor Size	Type	Grouonding Conductor Size	Type	Neutral Conductor Size	Type	Max Dist/FT	Conduit Type	Conduit Size	Fill Derate	Runs	Voltage Drop	Voltage Drop %
MSB1	XFMR1	600	1963.00	2453.75	2500	3	2453.75	0.91	2232.91	500KCM	AL	2AWG	CU	1/0AWG	AL	40	PVC	4"	1.0	8	0.731	0.122
MSB2	XFMR2	600	1963.00	2453.75	2500	3	2453.75	0.91	2232.91	500KCM	AL	2AWG	CU	1/0AWG	AL	40	PVC	4"	1.0	8	0.731	0.122
WIRE TYPE IS XHHW-2																						

DC STRING TO DC COMBINER PANEL AMPERAGE
10% BI-FACIAL VALUES
PV MODULE Isc = 15.28A
PV MODULE Imp = 14.53A
14.53 x 1.25 = 18.16A
MCA = 15.28A x 1.56 = 23.84A

SOURCE CIRCUIT ON FLOATS TO TRANSITION BOX
10AWG PV WIRE = 35A > 23.84A – AT 75°C RATED TERMINATIONS

TEMPERATURE CORRECTION FACTOR FOR 36-40°C AMBIENT = 0.91
CORRECTED AMPACITY = 40A * 0.91 = 36.4 > 18.16A – AT 90°C RATED CONDUCTOR

SOURCE CIRCUIT CONTINUOUS RATING = 14.53A (FOR VOLTAGE DROP PURPOSES)
SOURCE CIRCUIT FUSE SIZE = 25A > 23.84A

2#10AWG & 1#10AWG CU GND CONDUCTORS LISTED AND IDENTIFIED AS PHOTOVOLTAIC WIRE PER CEC 690.35(D). 1°C WHERE EXPOSED, TYP OF PV SOURCE CIRCUIT.

DC COMBINER PANEL AMPERAGE TO INVERTER
10% BI-FACIAL VALUES
PV MODULE Isc = 15.28A x 14 = 213.92A
PV MODULE Imp = 14.53A x 14 = 203.42A
203.42 x 1.25 = 254.275A
MCA = 15.28A x 14 x 1.25 x 1.25 = 334.25A

DC COMBINER PANEL TO DC DISCONNECT TO INVERTER
2 SETS OF 600AWG XHHW-2 = 680A > 334.25A – AT 75°C RATED TERMINATIONS

TEMPERATURE CORRECTION FACTOR FOR 36-40°C AMBIENT = 0.91
CORRECTED AMPACITY = 770A x 0.91 = 700.7 > 254.275A – AT 90°C RATED CONDUCTOR

SOURCE CIRCUIT CONTINUOUS RATING = 203.42A (FOR VOLTAGE DROP PURPOSES)
SOURCE CIRCUIT FUSE SIZE = 350A > 334.25A

2#600AWG & 1#3AWG CU GND CONDUCTORS LISTED AND IDENTIFIED AS PHOTOVOLTAIC WIRE PER CEC 690.35(D). 3.5°C.

DC COMBINER PANEL AMPERAGE TO INVERTER
10% BI-FACIAL VALUES
PV MODULE Isc = 15.28A x 15 = 229.2A
PV MODULE Imp = 14.53A x 15 = 217.95A
217.95 x 1.25 = 272.44A
MCA = 15.28A x 15 x 1.25 x 1.25 = 358.13A

DC COMBINER PANEL TO DC DISCONNECT TO INVERTER
2 SETS OF 600AWG XHHW-2 = 680A > 358.13A – AT 75°C RATED TERMINATIONS

TEMPERATURE CORRECTION FACTOR FOR 36-40°C AMBIENT = 0.91
CORRECTED AMPACITY = 770A x 0.91 = 700.7 > 272.44A – AT 90°C RATED CONDUCTOR

SOURCE CIRCUIT CONTINUOUS RATING = 217.95A (FOR VOLTAGE DROP PURPOSES)
SOURCE CIRCUIT FUSE SIZE = 400A > 358.13A

2#600AWG & 1#3/0AWG CU GND CONDUCTORS LISTED AND IDENTIFIED AS PHOTOVOLTAIC WIRE PER CEC 690.35(D). 3.5°C.

DC COMBINER PANEL AMPERAGE TO INVERTER
10% BI-FACIAL VALUES
PV MODULE Isc = 15.28A x 14 = 213.92A
PV MODULE Imp = 14.53A x 14 = 203.42A
203.42 x 1.25 = 254.275A
MCA = 15.28A x 14 x 1.25 x 1.25 = 334.25A

DC COMBINER PANEL TO DC DISCONNECT TO INVERTER
1 SET OF 600AWG XHHW-2 = 340A > 334.25A – AT 75°C RATED TERMINATIONS

TEMPERATURE CORRECTION FACTOR FOR 36-40°C AMBIENT = 0.91
CORRECTED AMPACITY = 385A x 0.91 = 350.35 > 254.275A – AT 90°C RATED CONDUCTOR

SOURCE CIRCUIT CONTINUOUS RATING = 203.42A (FOR VOLTAGE DROP PURPOSES)
SOURCE CIRCUIT FUSE SIZE = 350A > 334.25A

1#600AWG & 1#3AWG CU GND CONDUCTORS LISTED AND IDENTIFIED AS PHOTOVOLTAIC WIRE PER CEC 690.35(D). 3.5°C.

DC WIRE CALCULATIONS (1)

ALL AMPACITIES CALCULATED AT 75°C PER STANDARD TERMINATION RATINGS. ALL DE-RATING CALCULATED AT 90°C PER CONDUCTOR RATING.

INVERTER OUTPUT CIRCUIT TRENCHED
MAX CONTINUOUS CURRENT = 151A
MCA = 151A * 1.25 = 188.75A

(3)#250AWG AL XHHW-2 = 205A > 188.75A – AT 75°C RATED TERMINATIONS

TEMPERATURE CORRECTION FACTOR FOR 36-40°C AMBIENT = 0.91
CONDUIT FILL CORRECTION FACTOR FOR 3 CONDUCTORS IN THE CONDUIT = 1.00
CORRECTED AMPACITY = 230A * 0.91 * 1.00 = 209.3A > 151A – AT 90°C RATED CONDUCTOR

INVERTER OUTPUT CIRCUIT PROTECTION = 200A > 188.75A

2.5"C – (3)#250AWG AL XHHW-2, (1)#2AWG AL XHHW-2 NEUTRAL & (1)#4AWG CU THWN-2 GND

ALL AMPACITIES CALCULATED AT 75°C PER STANDARD TERMINATION RATINGS. ALL DE-RATING CALCULATED AT 90°C PER CONDUCTOR RATING.

INVERTER OUTPUT CIRCUIT TRENCHED
MAX CONTINUOUS CURRENT = 1963.0A
MCA = 1963.0A * 1.25 = 2453.75A

8 SETS OF
(3)#500AWG AL XHHW-2 = 2480A > 2453.75A – AT 75°C RATED TERMINATIONS

TEMPERATURE CORRECTION FACTOR FOR 36-40°C AMBIENT = 0.91
CONDUIT FILL CORRECTION FACTOR FOR 3 CONDUCTORS IN THE CONDUIT = 1.00
CORRECTED AMPACITY = 2800A * 0.91 * 1.00 = 2548.0A > 1963A – AT 90°C RATED CONDUCTOR

INVERTER OUTPUT CIRCUIT PROTECTION = 2500A > 2453.75A
8 SETS OF
3"C – (3)#500AWG AL XHHW-2, (1)#1/0AWG AL XHHW-2 NEUTRAL & (1)#2AWG CU THWN-2 GND

AC WIRE CALCULATIONS (2)

DEVELOPER:
NORIA
80 LIBERTY SHIP, STE 5
SAUSALITO, CA 94965
NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

PROJECT NAME:
TID SOLAR
CERES MAIN

PROJECT ADDRESS:
CERES, CA,

APN NUMBER:
45210083

LAT, LONG
37.545°, -120.936°

IFC DESIGN

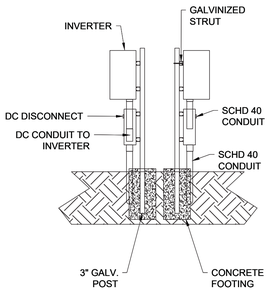
REVISION:	DATE

DRAWN BY: K.Olberding	
CHECKED BY:	
PROJECT #:	
DATE: 9/5/2024	

WIRE SCHEDULES AND CALCULATIONS

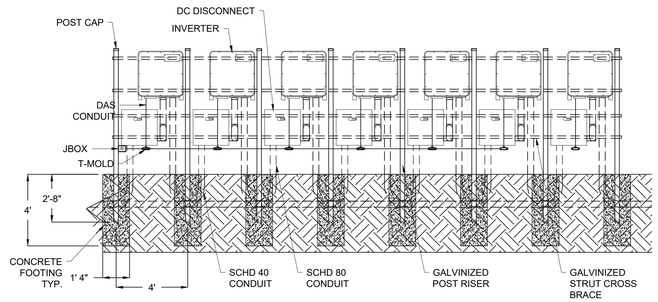
SHEET NO.

PV3.2



INVERTER RACK ELEVATION 3

NTS



INVERTER RACK ELEVATION 2

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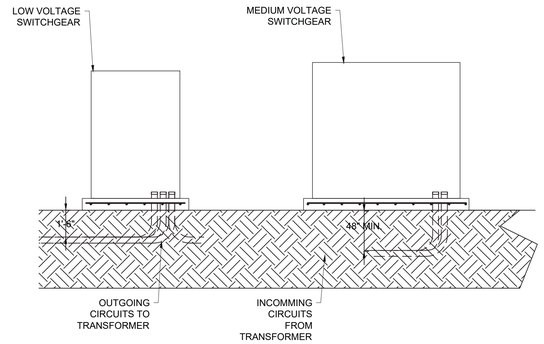


MV AND LV SWITCHGEAR ELEVATIONS 1

NTS

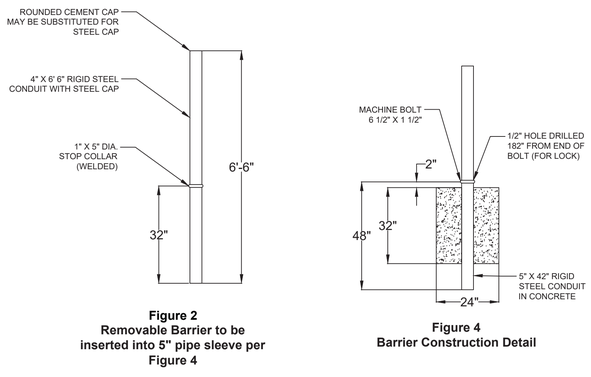


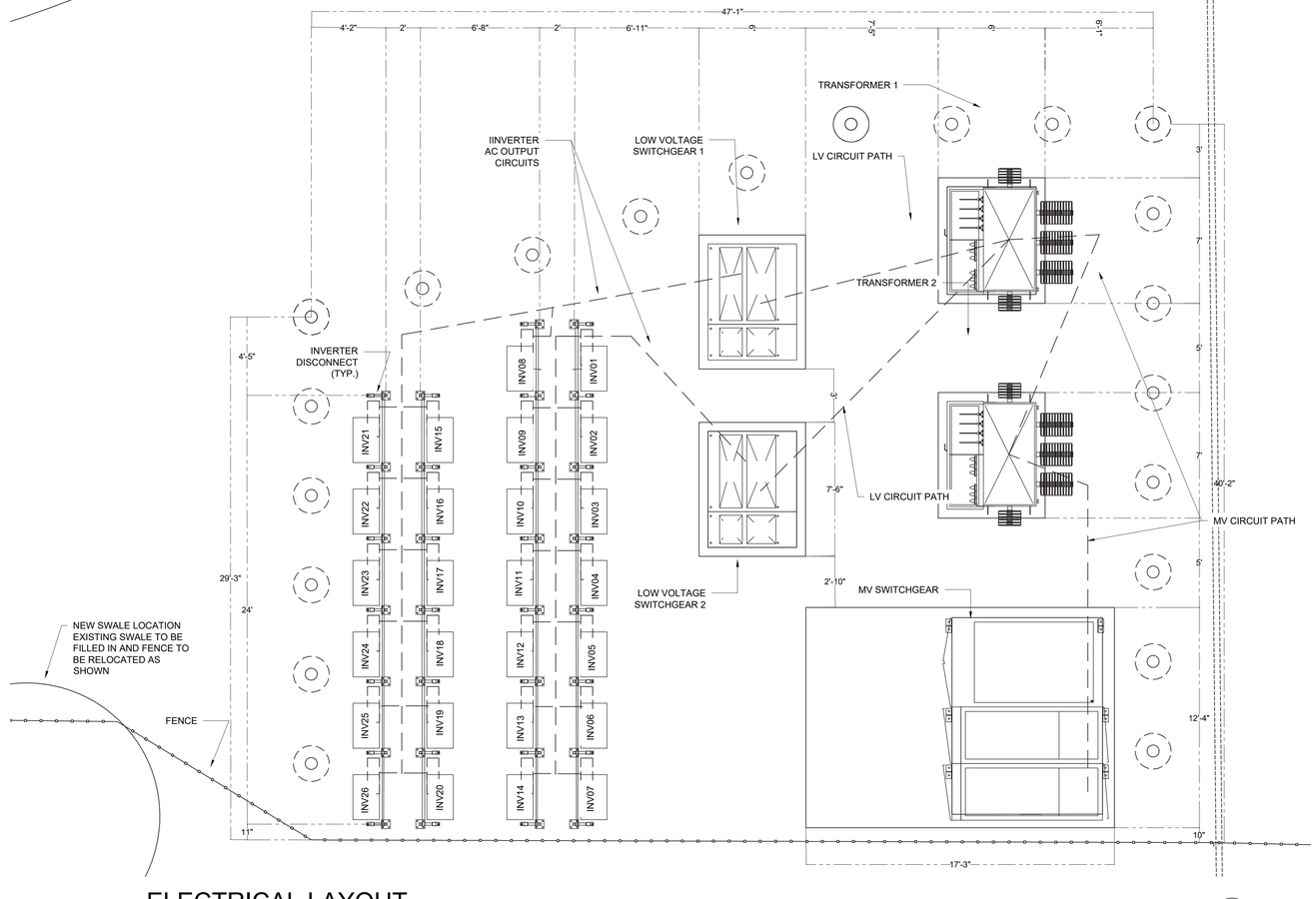
Figure 2
Removable Barrier to be inserted into 5" pipe sleeve per Figure 4

Figure 4
Barrier Construction Detail

BOLLARD DETAIL 5

NTS

NOTE:
REMOVABLE BOLLARDS TO BE PLACED AROUND EQUIPMENT PER TURLOCK IRRIGATION DISTRICT SPECIFICATIONS



ELECTRICAL LAYOUT 4

1"=4'

DEVELOPER:

NORIA

80 LIBERTY SHIP, STE 5
SAUSALITO, CA 94965
NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

PROJECT NAME:
TID SOLAR
CERES MAIN

PROJECT ADDRESS:
CERES, CA,

APN NUMBER:
45210083

LAT, LONG
37.545°, -120.936°

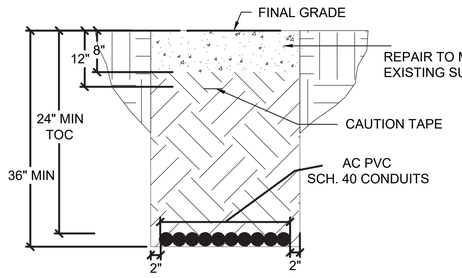
IFC DESIGN

REVISION:	DATE

DRAWN BY: K.Olberding	
CHECKED BY:	
PROJECT #:	
DATE: 8/12/2024	
EQUIPMENT LAYOUT	

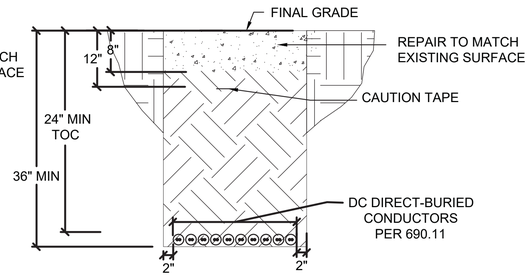
SHEET NO.

PV4.0



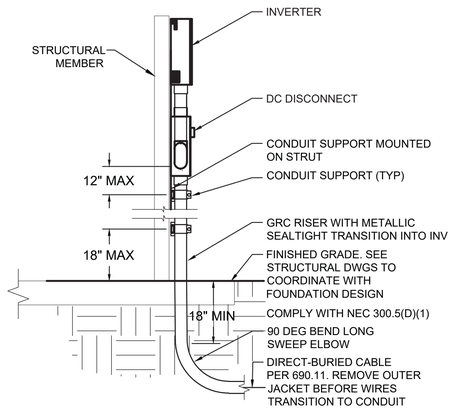
AC TRENCH FROM INV. RACK TO LV GEAR 1A

SCALE: NTS



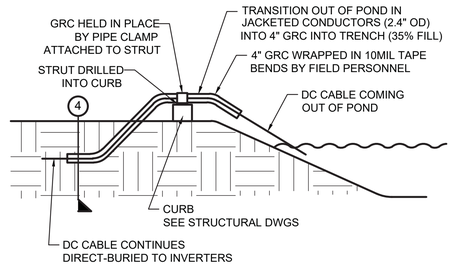
DC TRENCH DIRECT-BURIED CONDUCTOR TO EQUIP. PAD 1B

SCALE: NTS



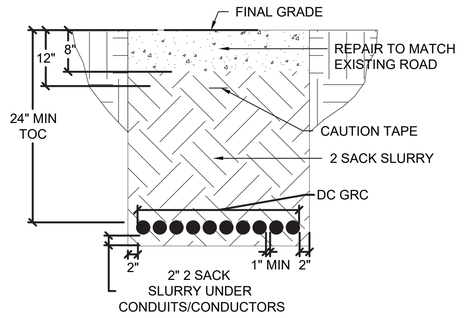
CONDUIT RISER @ INV EQ. 2

SCALE: NTS



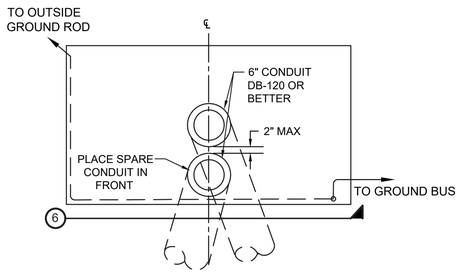
FROM POND TO DIRECT-BURY 3

SCALE: NTS



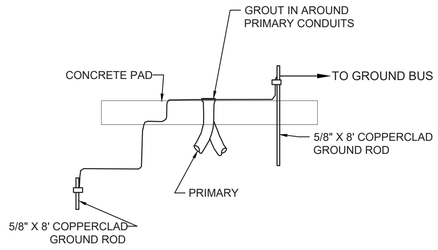
DC TRENCH FROM POND TO DIRECT-BURIED 4

SCALE: NTS



SWITCHGEAR PRIMARY PULL STUB OUT 5

SCALE: NTS



SWITCHGEAR PRIMARY PULL STUB OUT SECTION VIEW 6

SCALE: NTS

TRENCH NOTES

1. WIDTH AND DEPTH OF TRENCHES VARY BY LOCATION AND QUANTITY OF CIRCUITS. SPECIFIC DIMENSIONS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND DIMENSION PRIOR TO PERFORMING ANY WORK. NOTIFY ENGINEER OF ANY CONDITIONS OF WHICH WOULD AFFECT THE PERFORMANCE OF THE WORK IN ACCORDANCE WITH CONTRACT DRAWINGS AND SPECIFICATIONS. INSTALLATION OF UNDERGROUND CONDUCTORS SHALL COMPLY WITH REQUIREMENTS OF NEC 300.5 & 300.50.
2. NATIVE BACKFILL SHALL BE FREE OF ORGANIC MATERIAL, OTHER DELETERIOUS MATTER, AND ROCK PARTICLES LARGER THAN 1/2".
3. WITH CONDUITS AND CABLES IN PLACE TRENCH COMPACTION SHALL OCCUR AFTER 8" OF NATIVE BACKFILL HAS BEEN APPLIED (UON). COMPACT TO MEET MINIMUM REQUIREMENTS AS STATED IN GEOTECH REPORT.
4. SURFACE ACTIVITIES AND LOADING OVER BURIED CABLES DURING CONSTRUCTION SHALL NOT EXCEED RATED CRUSH CAPACITY OF CABLES OR CONDUITS.
5. MAINTAIN MINIMUM 12" CLEARANCE WHERE DC CIRCUITS CROSS OR PARALLEL AC CIRCUITS.
6. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (DIAL 811) THREE FULL BUSINESS DAYS IN ADVANCE OF ANY CONSTRUCTION ACTIVITIES, INCLUDING PAVEMENT REMOVAL, EXCAVATION AND AC OVERLAY, WHICH COULD AFFECT ANY UNDERGROUND UTILITY.
7. CAUTION TAPE: 3" FOIL-BACKED DETECTABLE BURIED UTILITY TAPE, T&B OAE.
8. CONDUITS INSTALLED IN SINGLE LAYER, IN CLEAN/LEVEL TRENCH, AND BACKFILLED WITH APPROPRIATE MATERIAL.

DEVELOPER:
NORIA
80 LIBERTY SHIP, STE 5
SAUSALITO, CA 94965
NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

PROJECT NAME:
TID SOLAR
CERES MAIN

PROJECT ADDRESS:
CERES, CA,

APN NUMBER:
45210083

LAT, LONG
37.545°, -120.936°

IFC DESIGN

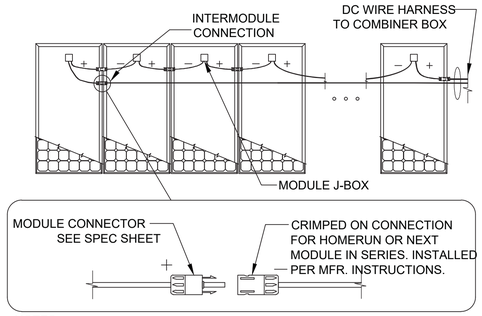
REVISION:	DATE

DRAWN BY: K.Olberding	
CHECKED BY:	
PROJECT #:	
DATE: 8/12/2024	

DETAILS

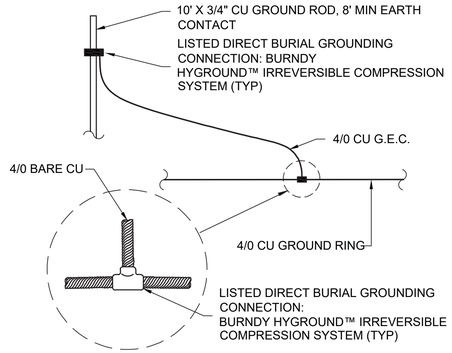
SHEET NO.

PV4.1



NOTES:
1. SECURE ALL STRING CONDUCTORS AND HARNESSES AT EACH FRAME LOCATION WITH PV CABLE HT EDGE CLIPS.
2. CONNECTOR SHALL BE COMPATIBLE AS LISTED WITH MODULE CONNECTOR.

MODULE CONNECTIONS 4
SCALE: NTS



GROUNDING ELECTRODE CONNECTIONS 3
SCALE: NTS

GENERAL NOTES

1.DETAILS ON THIS SHEET ARE REPRESENTATIVE. DIMENSIONS AND LAYOUTS ARE SUBJECT TO CHANGE. INSTALLER SHALL FIELD VERIFY ALL EQUIPMENT DIMENSIONS AND STUB UP LOCATIONS USING APPROVED EQUIPMENT MANUFACTURER'S SHOP DRAWINGS.

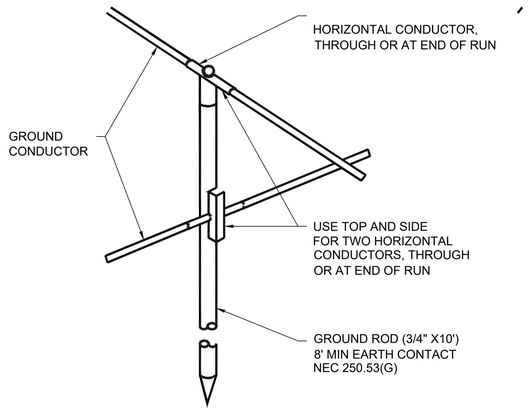
2.REFER TO SINGLE LINE DRAWINGS FOR CABLE SIZES AND TYPE.

3.MODULE TO SOURCE CIRCUIT CONNECTORS MUST BE OF THE SAME MAKE AND MODEL AS THE MODULE TO MODULE CONNECTORS. THE CONNECTION TO SOURCE CIRCUITS MUST BE PER THE MODULE MANUFACTURER AND CONNECTOR MANUFACTURER INSTRUCTIONS. CONTRACTOR TO VERIFY THAT THE STRING CONDUCTOR DIAMETER IS COMPATIBLE WITH THE STRING CIRCUIT HOME-RUN CONNECTORS.

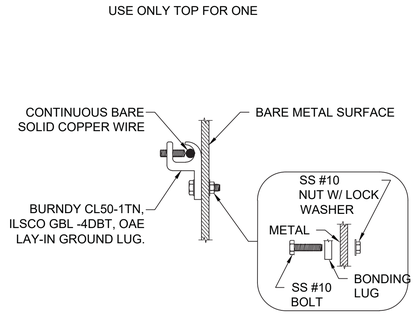
4. UNDERGROUND CONNECTIONS TO GROUNDING CONDUCTORS SHALL BE MADE USING EXOTHERMIC WELD OR LISTED IRREVERSIBLE HY-PRESS COMPRESSION CONNECTORS. BURNDY HYGROUND SERIES OR APPROVED EQUAL.

5. ALL GROUNDING CONNECTORS SHALL BE SUITABLE FOR DIRECT BURIAL IN CONTACT WITH EARTH OR CONCRETE.

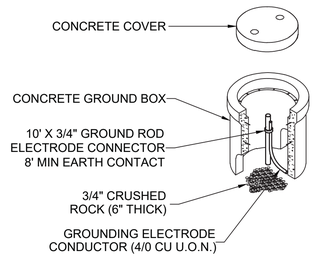
6. THE USE OF TEK SCREWS IS NOT APPROVED. GROUNDING CONNECTIONS TO EXPOSED METAL PARTS SHALL BE MADE BY NUT, BOLT AND LOCKING WASHER, OR AS REQUIRED BY EQUIPMENT MANUFACTURER, OR BY AHJ.



GROUND WIRE TO GROUND ROD CONNECTION DETAIL 7
SCALE: NTS



THROUGH BOLT GROUNDING W/ LAY-IN LUG 6
SCALE: NTS



GROUND ROD BOX 5
SCALE: NTS

DEVELOPER:
NORIA
80 LIBERTY SHIP, STE 5
SAUSALITO, CA 94965
NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:
Charles W. Cuninghame, No. 12478, Exp.9-30-25, Electrical, State of California

PROJECT NAME:
TID SOLAR
CERES MAIN

PROJECT ADDRESS:
CERES, CA,

APN NUMBER:
45210083

LAT, LONG
37.545°, -120.936°

IFC DESIGN

REVISION:	DATE

DRAWN BY: K.Olberding	
CHECKED BY:	
PROJECT #:	
DATE: 8/12/2024	

DETAILS

SHEET NO.
PV4.2

ALL TYPE "A" LABELS

COLOR: ANSI Z535.4
MATERIAL: POLYESTER UV
FRONT: ARIAL
TEXT HEIGHT: 3/16" UON

PHOTOVOLTAIC POWER SOURCE INVERTER	
INVERTER MODEL	PEAK3 150-US
OPERATING AC CURRENT	151
OPERATING AC VOLTAGE	600

A-08A

- LOCATION: INVERTERS
- 1/4" + 3/16" TEXT

DC PHOTOVOLTAIC POWER SOURCE

RATED MPP CURRENT: AMP
MAX SYSTEM VOLTAGE: Vdc
SHORT CIRCUT CURRENT: AMP

NEC 690.53

A-07

- LOCATION: DS 1
- 3/8" TEXT

PHOTOVOLTAIC DISCONNECT FOR UTILITY OPERATIONS

NEC 690.13(B)

PHOTOVOLTAIC POWER SOURCE INVERTER	
INVERTER MODEL	PEAK3 150-US
OPERATING AC CURRENT	151
OPERATING AC VOLTAGE	600

A-04A

- LOCATION: DS 1

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT: 151 A
NOMINAL OPERATING AC VOLTAGE: 600V

NEC 690.54

- LOCATION: AC INVERTER PANEL
- 3/8" + 1/8"

WARNING

THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR

CEC 705.12(B)(2)(3)(c)

2" × 5"

- LOCATION: INVERTERS
- 1/4" + 3/16" TEXT

PHOTOVOLTAIC SYSTEM AC DISCONNECT

RATED OUTPUT CURRENT: 151 A
OPERATING AC VOLTAGE: 600V

A-01A NEC 690.54

- AC SWITCH / CIRCUIT BREAKER LABEL
- LOCATION(S): DS 1 & PNL 1.1

WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

A-02A NEC 690.13(B)

COLOR: RED BACKGROUND, WHITE TEXT
MATERIAL: UV TAPE
FRONT: ARIAL
TEXT HEIGHT: 3/8"
TYCO # SOL-CSC-159254-4-0.1 (OR EQUAL)

S-02

DC WIRING
ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES, AND CABLE ASSEMBLIES AT TURNS ABOVE AND/OR BELOW PENETRATIONS TO BE LABELED EVERY 10'.

WARNING: PHOTOVOLTAIC POWER SOURCE

NEC 690.31(G)(3)(4)

- LOCATION: INVERTER
- 3/8" + 3/16"

WARNING

ELECTRIC SHOCK HAZARD
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED

5" × 3"

- LOCATION: EXISTING SWITCHBOARD
- 3/8" TEXT

CAUTION PV AND UTILITY POWER

3" × 1"

EQUIPMENT LABLES
COLOR: BLACK BACKGROUND, WHITE TEXT
MATERIAL: ABS UV
FRONT: ARIAL
TEXT HEIGHT: 3/8"

ALL ELECTRICAL EQUIPMENT IDENTIFIED ON CONSTRUCTION DRAWINGS.

- ONE EACH: INVERTER(S), COMBINER(S), ELECTRICAL PANEL(S), DISCONNECT(S), BREAKER CABINET(S), TRANSFORMERS, COMMUNICATIONS AND CONTROL CABINETS & CUSTOMER OWNED MEDIUM VOLTAGE EQUIPMENT

INV 01

3" × 1"

GENERAL NOTES

1. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL LABELS REQUIRED BY CALIFORNIA ELECTRIC CODE AND THE AUTHORITY HAVING JURISDICTION. THIS MAY INCLUDE LABELS THAT ARE NOT SHOWN ON THE WARNING LABELS PLAN.
2. ANY FIELD APPLIED LABELS, WARNINGS, AND MARKINGS SHALL COMPLY WITH ANSI Z535.4 - 2011 PER ARTICLE CEC 110.21(B) IN THE 2019 CEC.
3. ARE INSTALLED (CEC 110.21(B)(3). OUTDOOR LABELS SHALL BE UV RESISTANT.
4. CABLE LABELS SHALL BE PLACED CLOSE TO TERMINATIONS.

LINE SIDE CONNECTION LABEL (WHERE OCCURS)

- LOCATION: MSB PV BREAKER
- 3/8" + 3/16"

WARNING

INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE

CEC 705.12(B)(2)(3)(b)

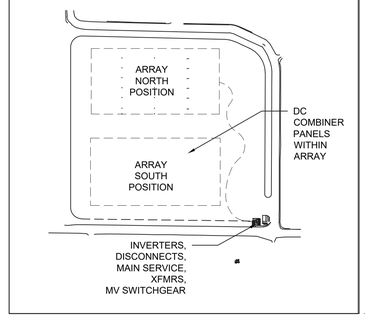
5" × 2"

- LOCATION: AT MSB, NEAR UTILITY METER
- COLOR: RED W/ 3/4" & 3/16" WHITE LETTERING

5" × 8"

CAUTION

POWER TO THIS FACILITY IS SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN:



PER NEC 690.56B (PERMANENT PLAQUE OR DIRECTORY WITH ENGRAVED LABEL). OWNER MAY REQUIRE TO INCLUDE EMERGENCY CONTACT. SIGNAGE TO BE RED BACKGROUND WITH WHITE ENGRAVED LETTERS.

DEVELOPER:
NORIA
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SAUSALITO, CA 94965
NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

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CHECKED BY:	
PROJECT #:	
DATE: 8/12/2024	

PLACARDS

SHEET NO.

PV5.0

1500VDC Disconnect Combiners

terrasmart

SolarBOS Disconnect Combiners for 1500 VDC photovoltaic systems are ETL listed to UL-1741. They provide direct cost savings by increasing the number of modules per source circuit(s), resulting in fewer circuits and fewer BOS components. The combiners feature load break disconnect switches up to 400A and can be customized to fit the solar integrators' specific needs.

Product features

- ETL listed to UL-1741
- 10k SCCR
- Up to 36 input circuits
- 90C terminals
- NEMA-3R, 4 & 4X enclosures

Available options

- Transient surge suppression
- Provisions for compression lugs
- Dual output lugs
- Floating / Bi-polar configurations
- Pre-terminated input conductors
- Touch safe cover over live parts
- Breather and drain vents
- Padlockable enclosures

Floating Disconnect Combiner, 1500VDC, 275A disconnect, 15 input circuits, transient surge protection, NEMA-4X fiberglas enclosure

Specifications

Disconnect Ampacity	275 A / 320 A / 400 A		
Maximum Number of Input Circuits	18	28	36
Input Conductor Size (AWG)	#14 - 8	#14 - 8	#14 - 8
Max Fuse Size (Amps)	32	32	32
Max Rated Current (ADC Continuous)	275 / 320 / 400		
Number of Output Conductors (Per Polarity)	1 or 2	1 or 2	1 or 2
Output Conductor Size Range (AWG) *	#6 to 350	#2 to 600	#2 to 600
Steel Enclosure Internal Dimensions (Inches) *	24×24×8	30×24×8	30×30×8
Appox. Weight - Powder Coated or Stainless Steel (Pounds) *	55	65	95
Fiberglass Enclosure Internal Dimensions (Inches) *	24×24×8	30×24×8	30×30×8
Appox. Weight - Fiberglass (Pounds) *	50	60	90
Enclosure NEMA Ratings	3R / 4 / 4X	3R / 4 / 4X	3R / 4 / 4X

* Other options available upon request. Please note dimensions and weight may vary for any custom solutions. Contact us for details.

www.terrasmart.com | info@terrasmart.com

SUNNY HIGHPOWER PEAK3 125-US / 150-US

SMA

Cost effective
- Modular architecture reduces BOS and maximizes system uptime
- Compact design and high power density maximize transportation and logistical efficiency

Maximum flexibility
- Scalable 1,500 VDC building block with best-in-class performance
- Flexible architecture creates scalability while maximizing land usage

Simple install, commissioning
- Ergonomic handling and simple connections enable quick installation
- Centralized commissioning and control with SMA Data Manager

Highly innovative
- SMA Smart Connected reduces O&M costs and simplifies field-service
- Powered by award winning ennexOS cross sector energy management platform

SUNNY HIGHPOWER PEAK3 125-US / 150-US

A superior modular solution for large-scale power plants

The PEAK3 1,500 VDC inverter offers high power density in a modular architecture that achieves a cost-optimized solution for large-scale PV integrators. With fast, simple installation and commissioning, the Sunny Highpower PEAK3 is accelerating the path to energization. SMA has also brought its field-proven Smart Connected technology to the PEAK3, which simplifies O&M and contributes to lower lifetime service costs. The PEAK3 power plant solution is powered by the ennexOS cross sector energy management platform, 2018 winner of the Intersolar smarter E AWARD.

Technical Data	Sunny Highpower PEAK3 125-US	Sunny Highpower PEAK3 150-US
Input (DC)		
Maximum array power	187500 Wp STC	225000 Wp STC
Maximum system voltage	1500 VDC	
Rated MPP voltage range	705 V ... 1450 V	880 V ... 1450 V
MPPT operating voltage range	684 V ... 1500 V	855 V ... 1500 V
MPP trackers	1	
Maximum operating input current	180 A	
Maximum input short-circuit current	325 A	
Output (AC)		
Nominal AC power	125000 W	150000 W
Maximum apparent power	125000 VA	150000 VA
Output phases / line connections	3 / 3-PE	
Nominal AC voltage	480 V	600 V
Compatible transformer winding configuration	Wye-grounded	
Maximum output current	151 A	
Rated grid frequency	60 Hz	
Grid frequency / range	50 Hz, 60 Hz / -6 Hz ... +6 Hz	
Power factor at rated power / adjustable displacement	1 / 0.0 leading ... 0.0 lagging	
Harmonics (THD)	<3%	
Efficiency		
CEC efficiency	98.5 %	99.0 %
Protection and safety features		
Ground fault monitoring: Riso / Differential current	● / ●	
DC reverse polarity protection	●	
AC short circuit protection	●	
Monitored surge protection (Type 2): DC / AC	● / ●	
Protection class / overvoltage category (as per UL 840)	I / IV	
General data		
Device dimensions (W / H / D)	770 / 830 / 444 mm (30.3 / 32.7 / 17.5 in.)	
Device weight	98 kg (216 lbs)	
Operating temperature range	-25°C ... +60°C (-13°F ... +140°F)	
Storage temperature range	-40°C ... +70°C (-40°F ... +158°F)	
Audible noise emission (full power @ 1m and 25°C)	< 69 dB(A)	
Internal consumption at night	< 5 W	
Topology	Transformerless	
Cooling concept	OptiCool (forced convection, variable speed fans)	
Enclosure protection rating	Type 4X (as per UL 50E)	
Maximum permissible relative humidity (non-condensing)	100%	
Additional information		
Mounting	Rack mount	
DC connection	Terminal lugs - up to 600 kcmil CU/AL	
AC connection	Screw terminals - up to 300 kcmil CU/AL	
LED indicators (Status/Fault/Communication)	●	
SMA Speedwire (Ethernet network interface)	● (2 x RJ45 ports)	
Data protocols: SMA Modbus / SunSpec Modbus	● / ●	
Integrated Plant Control / Q on Demand 24/7	● / ●	
Off-grid capable / SMA Hybrid Controller compatible	– / ●	
SMA Smart Connected (proactive monitoring and service)	●	
Certifications		
Certifications and approvals	UL 62109, UL 1998, CAN/CSA-C22.2 No.62109	
FCC compliance	FCC Part 15, Class A	
Grid interconnection standards	IEEE 1547, UL 1741 SA - CA Rule 21, HECO Rule 14H	
Advanced grid support capabilities	L/HFRT, L/HVRT, Volt-VAr, Volt-Watt, Frequency-Watt, Ramp Rate Control, Fixed Power Factor	
Warranty		
Standard	5 years	
Optional extensions	10 / 15 / 20 years	
Type designation	SHP 125-US-20	SHP 150-US-20

Technical data as of May 2020 ● Standard features ○ Optional features – Not available

Toll Free +1 888 4 SMA USA
www.SMA-America.com

SMA America, LLC

SERAPHIM®

SHIFTING·THE FUTURE
www.seraphim-energy.com

SIV N-TOPCON SERIES

N for Now, Fit for Future

565-580W

• N-TOPCON MODULE ADVANTAGE

- Multi-main gate technology
- Superior load capacity
- High module conversion efficiency
- Excellent low-light performance
- Low attenuation long warranty
- Low BOS and KWH cost
- Reduce heat spot effect
- Higher bifacially

• QUALITY SYSTEM

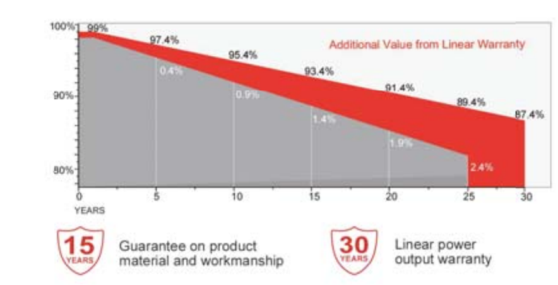
ISO9001 / ISO14001 / ISO45001

• PRODUCT CERTIFICATION

• INSURANCE

PICC

• WARRANTY



15 YEARS Guarantee on product material and workmanship

30 YEARS Linear power output warranty

SERAPHIM ENERGY GROUP CO., LTD.
Add: Intersection of baimafeng road and Weimin Road, Jinzhai County, Lu'an City, Anhui Province
Tel: +86-0564-7736177 Email: info@seraphim-energy.com

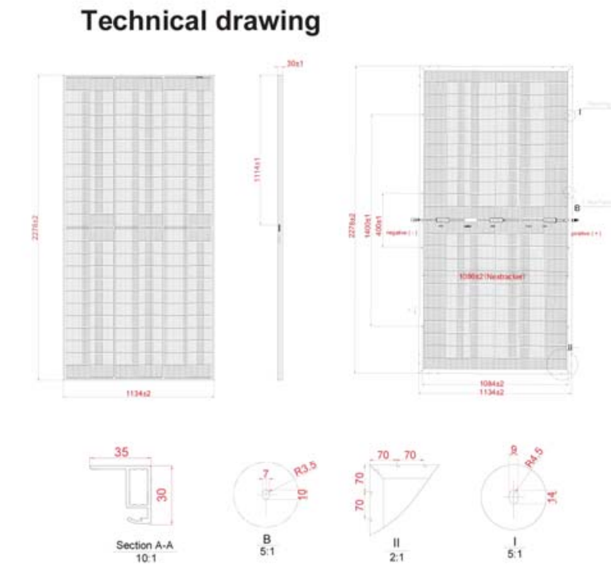
SERAPHIM®

SHIFTING·THE FUTURE
www.seraphim-energy.com

Mechanical Specifications

External Dimension	2278 x 1134 x 30 mm
Weight	32.0 kg
Solar Cells	N-TOPCon 182 x 91mm (144pcs)
Front / Back Glass	2.0mm AR coating semi-tempered glass, low iron
Frame	Anodized aluminium alloy
Junction Box	IP68, 3 diodes
Output Cables	4.0mm², 250mm(+)/350mm(-) or Customized Length

Technical drawing



Packing Configuration

Container	20'GP	40'HQ
Pieces per Pallet	36	36
Pallets per Container	4	20
Pieces per Container	144	720

Electrical Characteristics

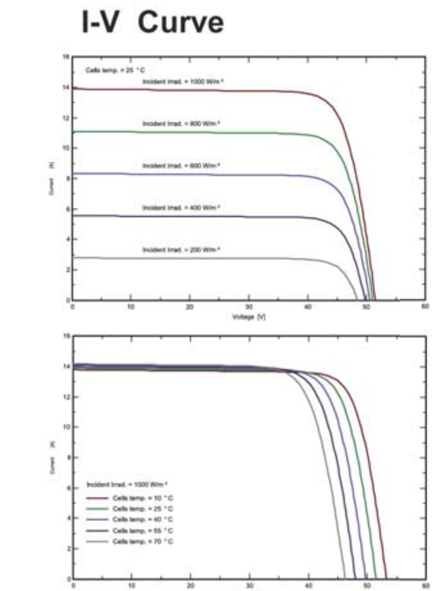
Module Type	SRP-565-BTA-BG			SRP-570-BTA-BG			SRP-575-BTA-BG			SRP-580-BTA-BG		
	Front STC	Front NOCT	Back STC	Front STC	Front NOCT	Back STC	Front STC	Front NOCT	Back STC	Front STC	Front NOCT	Back STC
Maximum Power -P_{mp} (W)	565	425	452	570	429	456	575	433	460	580	437	464
Open Circuit Voltage -V_{oc} (V)	51.50	48.93	51.48	51.70	49.12	51.68	51.90	49.31	51.88	52.10	49.50	52.08
Short Circuit Current -I_{sc} (A)	13.89	11.11	11.11	13.95	11.16	11.16	14.01	11.21	11.21	14.07	11.26	11.26
Maximum Power Voltage -V_{mp} (V)	42.80	40.22	42.78	43.00	40.44	42.98	43.20	40.63	43.18	43.40	40.86	43.38
Maximum Power Current -I_{mp} (A)	13.21	10.57	10.57	13.26	10.61	10.61	13.32	10.66	10.66	13.37	10.70	10.70
Module Efficiency STC-η_m (%)	21.87			22.07			22.26			22.45		
Power Tolerance (W)	(0, +4.99)											
Pmax Temperature Coefficient	-0.29 %/°C											
Voc Temperature Coefficient	-0.25 %/°C											
Isc Temperature Coefficient	+0.046 %/°C											

STC: Irradiance 1000 W/m² module temperature 25°C AM=1.5
Power measurement tolerance: +/-3%

Rear Side Power Gain(SRP-565-BTA-BG)

Power Gain	10%	15%	20%	25%	30%
Maximum Power -P_{mp} (W)	621	648	675	702	729
Open Circuit Voltage -V_{oc} (V)	51.50	51.50	51.50	51.50	51.50
Short Circuit Current -I_{sc} (A)	15.28	15.98	16.67	17.36	18.06
Maximum Power Voltage -V_{mp} (V)	42.80	42.80	42.80	42.80	42.80
Maximum Power Current -I_{mp} (A)	14.53	15.19	15.85	16.51	17.17

I-V Curve



Application Conditions

Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25 A
Operating Temperature	-40~+85 °C
Nominal Operating Cell Temperature	45±2 °C
Bifaciality	80%±5%
Mechanical Load	Front side 5400 Pa / Back side 2400 Pa

SERAPHIM ENERGY GROUP CO., LTD.
Add: Intersection of baimafeng road and Weimin Road, Jinzhai County, Lu'an City, Anhui Province
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DEVELOPER:
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ELECTRICAL ENGINEER:

SEAL:

PROJECT NAME:
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CHECKED BY:
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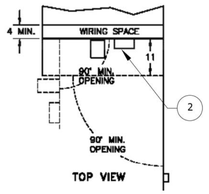
DATE: 8/12/2024

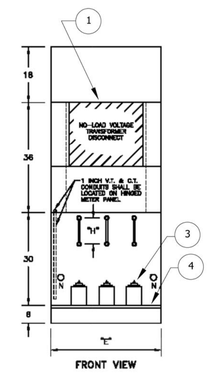
DATA SHEETS

SHEET NO.

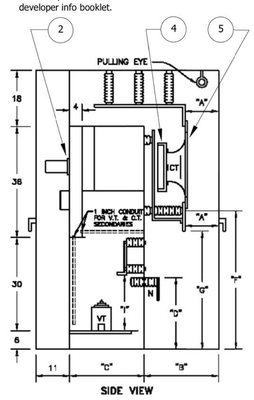
PV6.0



TOP VIEW



FRONT VIEW



SIDE VIEW

NOTES:

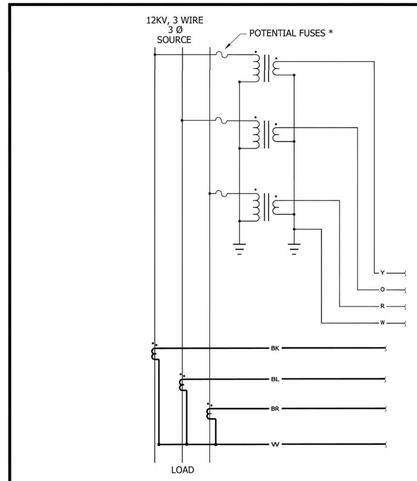
All panels must conform to EUSERC section 400 dwg. 401.

1. P.T. disconnect per EUSERC section 400 III A.
2. Meter panel per EUSERC dwg. 408.
3. P.T.'s per EUSERC dwg. 404.
4. P.T. mounting per EUSERC dwg. 407.
5. C.T.'s per EUSERC dwg. 407.
6. Meter may be remoted to outside wall. See developer info booklet.

METER WIRING
12 KV GENERATION METERING

CONSTRUCTION STANDARDS

SHEET 3 OF 4 | 51082 A DWG. NO. | PAGE



* Potential fuses (TID Stock Number U-7115-000) are required for padmount and indoor metering enclosures. No potential fuses shall be installed on overhead/pole metering installations.

This standard is for all new primary metering services.

All new installations shall use 3 P.T.'s and 3 C.T.'s.

Page 2 shows metering wiring for new installations.

Page 3 shows EUSERC panel requirements.

TURLOCK IRRIGATION DISTRICT

REV	DESCRIPTION	INIT	CHK	RVD	RVD	RVD	APP	DATE
A	INITIAL ISSUE	ADL	MAC	DNP			SSG	10/2022

CONSTRUCTION STANDARDS

METER WIRING
12 KV GENERATION METERING

SHEET 1 OF 4 | 51082 A DWG. NO. | PAGE

Customer Requirements:

1. Customers must request and receive approval of 12 kV service in advance and prior to customer's design completion and switchboard purchase. TID shall review and approve service request, location switchboard drawings, and other service parameters. Customer must comply with the provisions of this standard, TID's Developer Information Book, TID rules, rates tariffs and standards, and applicable provisions of the NEC, OSHA requirements, and other applicable codes, regulations and laws.
2. All 12 kV service will be 12,000 Volt nominal 3-wire service.
3. Customers shall provide a breaker as the main protective device (fuses are not acceptable). Main protective device must have adjustable phase and ground trip settings. Customer shall provide settings, protective device details, and time-current curves to TID staff for approval. Phase and ground overcurrent coordination with TID's source-side device is required (except for IT - see item 4 below).
4. Instantaneous Overreach. TID will provide notice of, upon request, the available fault current contribution form TID's system at the point of interconnection. For fault currents above approximately 3,000 amps, it may not be possible to achieve coordination with the customer's relay/breaker protection due to TID's instantaneous trip setting. Customer's protective device must go to lock out (i.e. no reclosing is allowed) until Customer has received approval from TID's Power Control Center.
5. Any on-site generation must comply with separate standards and requirements (please contact TID if on-site generations is considered).
6. TID will specify the cable and conduit from the 12 kV switchgear to the TID facility interconnection (TID to install and terminate cable only - see specific detailed design for the project). If the unprotected length of other factors associated with the facility interconnection result in a substantial exposure (in TID staff's opinion), TID will notify the customer and other measures may be taken to reduce the exposure, including relocation of the switchgear or interconnection point or installation of a TID line recloser (at Customer's cost).
7. Customer shall be obligated to perform industry standard tests by qualified personnel on the main protective device with the approved settings, in TID's presence, and submit test reports to TID. Please allow 1 week notice to TID staff for scheduling attendance.
8. Customer is expected to maintain and keep in good working order the 12 kV switchgear and main protective device. Any main protective device setting changes must be approved in advance by TID. TID may request attendance at the time of setting change and/or that test sheets are provided for TID approval.

METER WIRING
12 KV PRIMARY METERING

CONSTRUCTION STANDARDS

SHEET 4 OF 4 | 51082 A DWG. NO. | PAGE

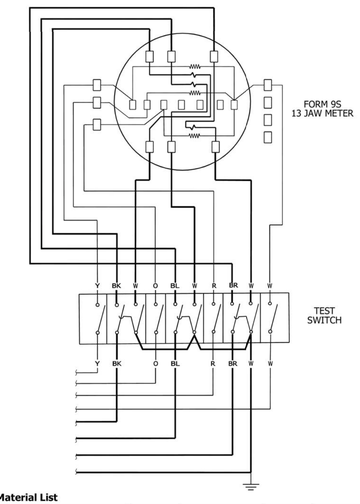


Table 1 Material List

Meter	CT Stock Number	CT Ratio	PT Stock Number	PT Ratio	Test Switch Stock No.
SEL 735	W-1700-000	200:5	W-2300-000	60:1	W3300-000
	W-1710-000	400:5			
	W-1720-000	600:5			
	W-1730-000	800:5			

METER WIRING
12 KV GENERATION METERING

CONSTRUCTION STANDARDS

SHEET 2 OF 4 | 51082 A DWG. NO. | PAGE

DEVELOPER:

NORIA

80 LIBERTY SHIP, STE 5
SAUSALITO, CA 94965
NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

REGISTERED PROFESSIONAL ENGINEER
Charles W. Cunha
Charles W. Cunha†
No. 12478
Exp.9-30-25
ELECTRICAL
STATE OF CALIFORNIA

PROJECT NAME:
TID SOLAR
CERES MAIN

PROJECT ADDRESS:
CERES, CA,

APN NUMBER:
45210083

LAT, LONG
37.545°, -120.936°

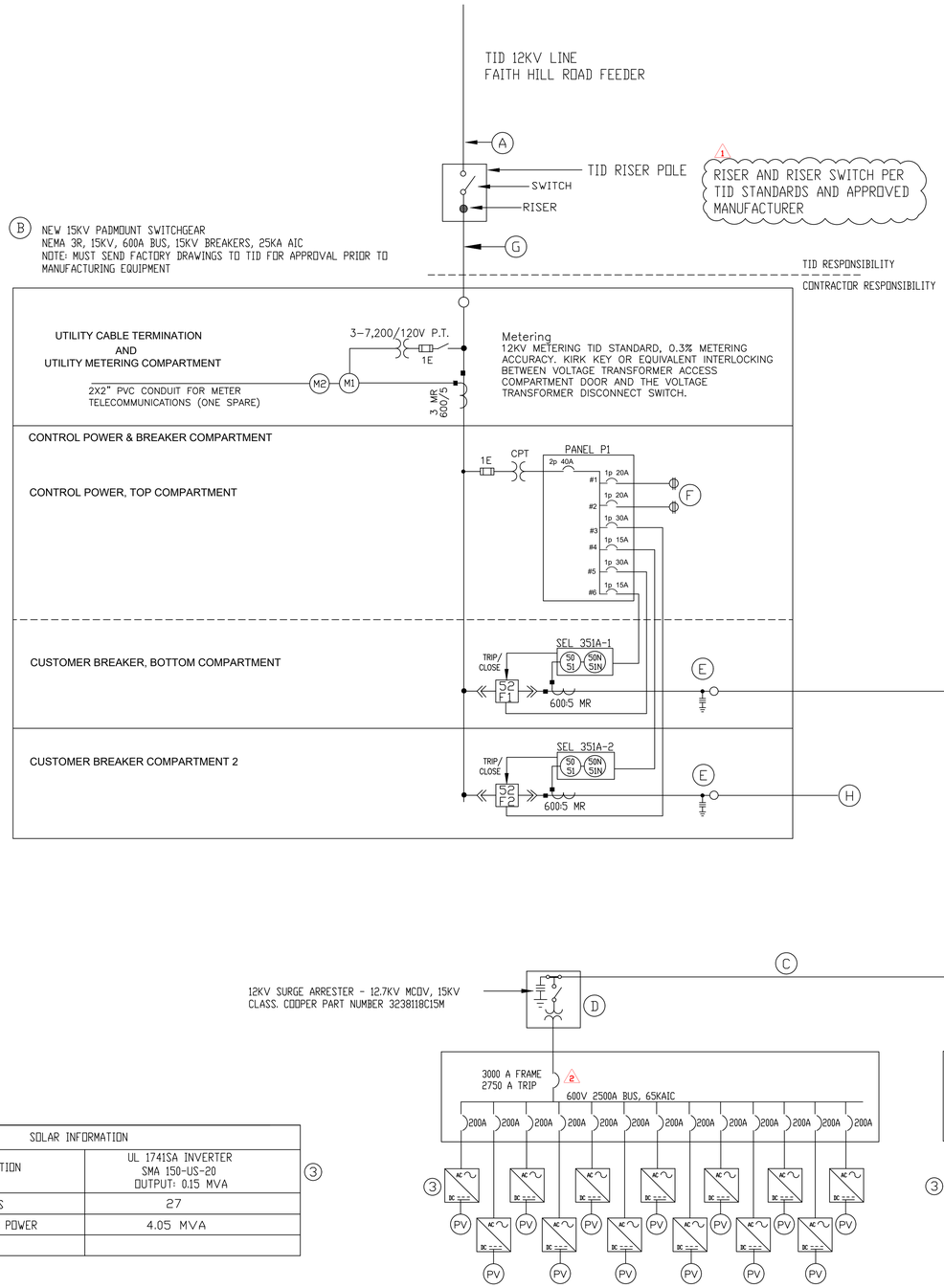
IFC DESIGN

REVISION:	DATE
DRAWN BY: K.Olberding	
CHECKED BY:	
PROJECT #:	
DATE: 8/12/2024	

DATA SHEETS

SHEET NO.

PV6.1



SOLAR INFORMATION	
INVERTER INFORMATION	UL 1741SA INVERTER SMA 150-US-20 OUTPUT: 0.15 MVA
# OF INVERTERS	27
TOTAL INVERTER AC POWER	4.05 MVA

LEGEND

- (50) INSTANTANEOUS PHASE
- (50N) INSTANTANEOUS GROUND
- (51) OVER-CURRENT PHASE
- (51N) OVER-CURRENT GROUND
- (M1) UTILITY METER - TELEMETERED
- (M2) UTILITY METER - SPARE

CPT CONTROL POWER TRANSFORMER - 10KVA, 12,000V TO 120/240V

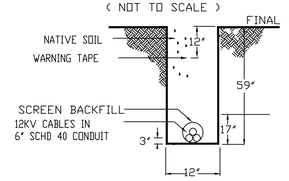
- (A) TID INSTALLED OVERHEAD WIRE
- (B) NEHMA 3R METALCLAD SWITCHGEAR, BUS IS 15 KV, 3-PH, 600 AMPS, 12,000 AIC. USE 120V CAPACITIVE TRIP, NO BATTERIES
- 2 (C) 1100 MCM AL 25KV CABLE, EPR IN 6" CONDUIT PER TID STANDARDS IN 59" DEEP TRENCH
- (D) ANSI C57 TRANSFORMER, 2.5 MVA - 5.75% IMPEDANCE, X/R =9, 12.00KV/600V, DELTA-UNGROUNDED WYE. TAPS +/- 5% AT 2.5% TAP INTERVAL.
- (E) TERMINALS FOR UNDERGROUND CABLES. MANUFACTURER TO SUPPLY SURGE ARRESTERS, 12KV-14KV MCOV
- (F) PROVIDE TWO 120V POWER OUTLETS, EACH ON ITS OWN 20A BREAKER
- 2 (G) 1100 MCM AL 25KV CABLE, EPR IN 6" CONDUIT PER TID STANDARDS IN 59" DEEP TRENCH
- (H) 5" SCHED 40 PVC CONDUIT STUBOUT 5' FROM PAD, SET 3M ELECTRONIC MARKER, 15" DIAMETER "FULL RANGE MARKER" OVER CONDUIT END. SEAL CONDUIT END

LONGEST WIRE RUN SHOWN BELOW

FEEDER SCHEDULE													
ID	FEEDER AMPS	FEEDER AX125%	BREAKER AMPS	FEEDER 75°C AMPACITY	FEEDER 90°C AMPACITY	CF	FEEDER AMPACITY	CONDUIT	WIRES*	WIRE TYPE	LENGTH WIRE	VOLTS	%VOLT DROP
2 Ⓒ	94	118	250	N/A	285A	1.0	603A	6" PVC	3X1100AL, 1100AL&1/3 NEUTRAL	EPR	15'	12.0KV	0.00
2 Ⓖ	192	240	250	N/A	446A	1.0	603A	6" PVC	3X1100AL, 1100AL&1/3 NEUTRAL	EPR	80'	12.0KV	0.00

* 90 DEG C TERMINALS - PVC IS SCHEDULE 40.

DETAIL C&G FOR 12KV CIRCUIT
(NOT TO SCALE)



TRENCH NOTES:

1. PROVIDE 3" CLEARANCE FROM SIDES AND BOTTOM OF TRENCH TO ANY CABLE.
2. PLACE 10" MINIMUM SCREENED COVER OVER CABLES, AND 3" SCREEN ON BOTTOM AND SIDES OF CABLES CABLES INPLACE TO 90% COMPACTION- NO MECHANICAL EQUIPMENT
3. TOP 12" OF TRENCH, COMPACT TO 95%.
4. USE NATIVE SOIL BACKFILL, LOWER 17" IS SCREENED TO 3/8" INCH.

DEVELOPER:

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NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

REGISTERED PROFESSIONAL ENGINEER
Charles W. Cunha
No. 12478
Exp.9-30-25
ELECTRICAL
STATE OF CALIFORNIA

PROJECT NAME:

TURLOCK IRRIGATION DISTRICT CERES MAIN

PROJECT ADDRESS:

3501 WARNER RD,
CERES, CA, 95307
37.544073°, -120.934478°

IFP DESIGN

REVISION:	DATE
1 ISSUE FOR PERMIT	05-16-2024
2 ISSUE FOR PERMIT	08-23-2024

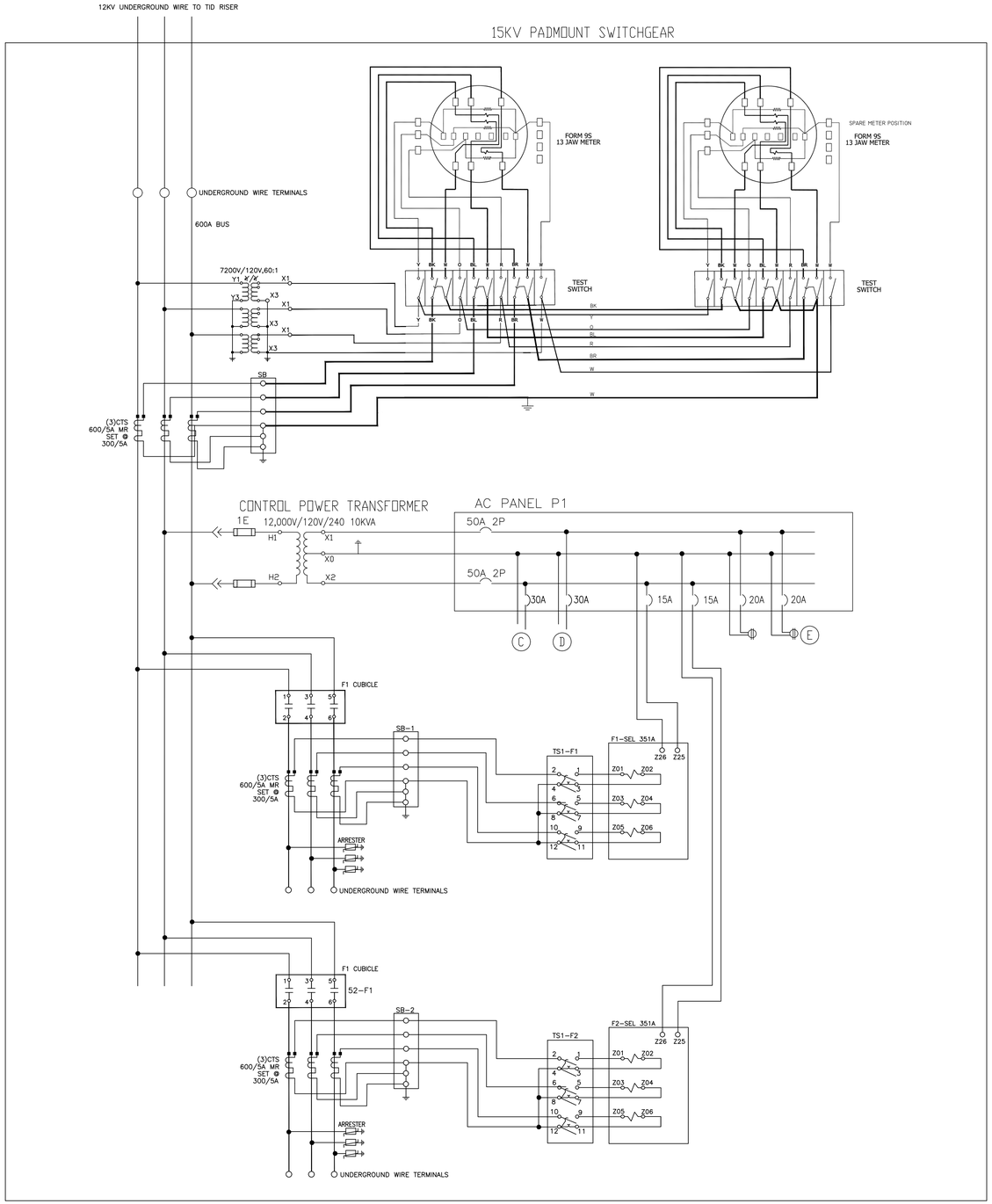
DRAWN BY: CWC
CHECKED BY: AH
PROJECT #:

SHEET TITLE

AC ONE LINE

SHEET NO.

E-601



LEGEND

- (A) THWN-2 #10CU. WIRE LENGTH APPROXIMATELY 10'.
- (B) THWN-2 #12CU. WIRE LENGTH APPROXIMATELY 10'.
- (C) TO BREAKER F1 TRIP/CLOSE CIRCUITS
- (D) TO BREAKER F2 TRIP/CLOSE CIRCUITS
- (E) 120V CONVENIENCE OUTLET

DEVELOPER:
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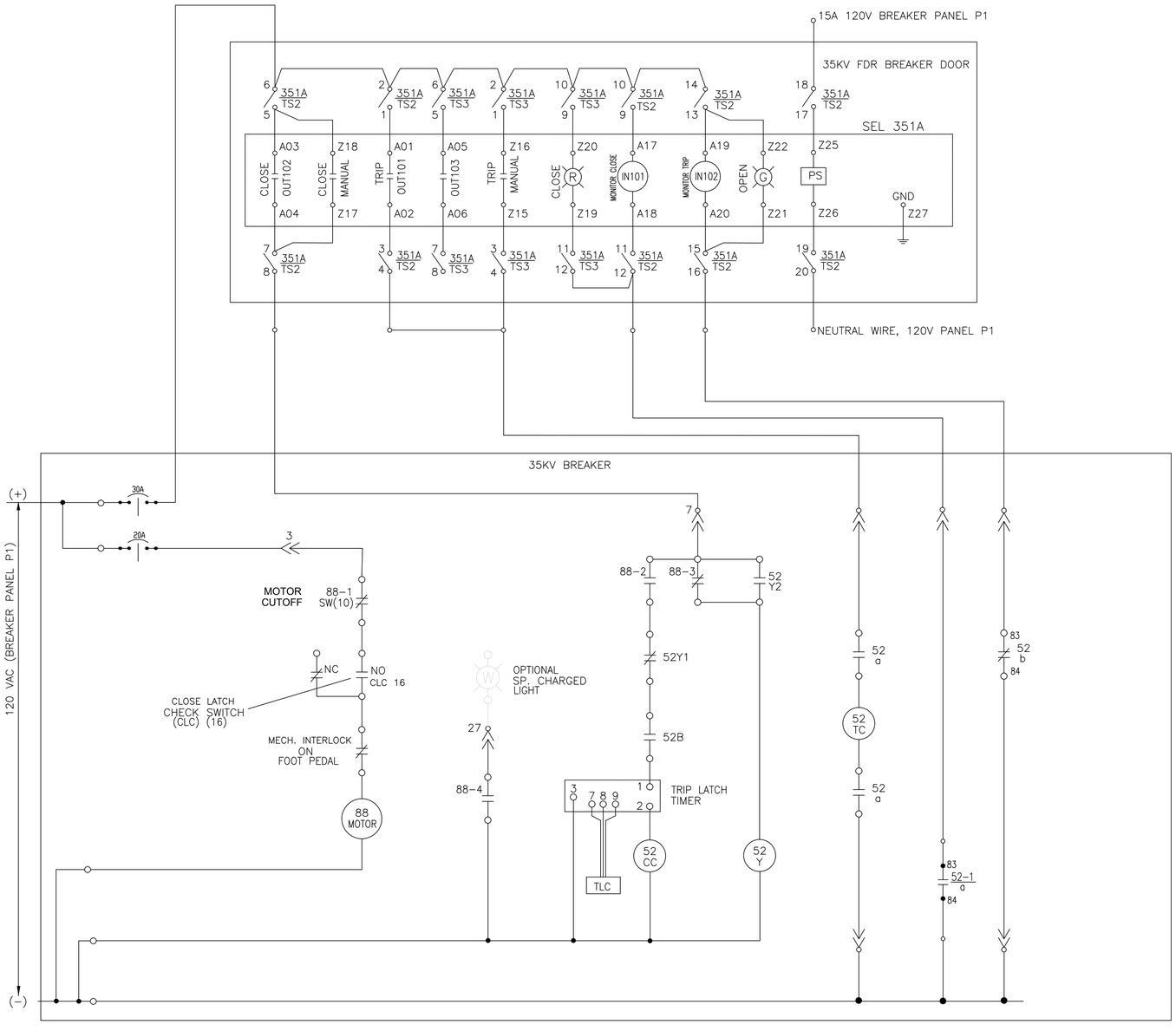
DRAWN BY: CWC
CHECKED BY: AH
PROJECT #:

SHEET TITLE
AC THREE LINE

SHEET NO.
E-603



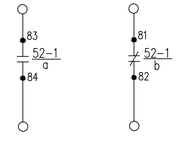
LEGEND:

BREAKER SHOWN OPEN AND WITH CLOSING SPRING DISCHARGED

52 TC	CIRCUIT BREAKER TRIP COIL
52 CC	CIRCUIT BREAKER CLOSING COIL
52Y	ANTI–PUMP RELAY PREVENTS RECLOSING ON A SUSTAINED CLOSE COMMAND
88	SPRING CHARGING MOTOR
88–4	CONTACTS CLOSED WHEN CLOSING SPRING IS FULLY CHARGED
CLC	CLOSE LATCH CHECK SWITCH
TLC	TRIP LATCH CHECK SWIITCH
R	RED INDICATING LIGHT
G	GREEN INDICATING LIGHT
TS	TEST SWITCH, ABB TYPE FT–1.
TB	TERMINAL BLOCK
●	CONNECTION POINT OF 2 OR MORE WIRES
○	DEVICE TERMINAL
——·——·——	LINETYPE TO SHOW WIRING LEAVING SWITCHGEAR LINETYPE FOR SWITCHGEAR BUILDING WIRING
Ⓐ	CAISO RIG – LOCATED IN CAISO METERING CABINET
Ⓑ	SCE RTU – LOCATED IN 35KV SWITCHGEAR, SCE COMMUNICATION COMPARTMENT

NOTE: SCE RTU AND CAISO RIG 48VDC POWER IS SHOWN ON DRAWING E110

SPARE AUXILIARY CONTACTS



NOTE: BREAKER PORTION OF THIS DRAWING IS BASED ON ASSUMED BREAKER DC SCHEMATICS. ACTUAL/FINAL BREAKER DC SCHEMATIC MAY CHANGE ONCE A BREAKER VENDOR IS DETERMINED.

DEVELOPER:

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ELECTRICAL
STATE OF CALIFORNIA

PROJECT NAME:

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PROJECT ADDRESS:

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PROJECT #:

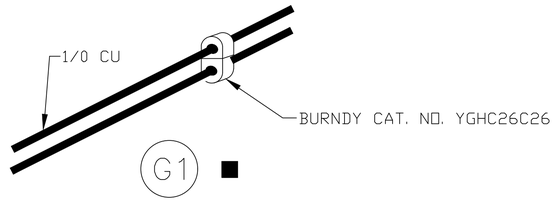
SHEET TITLE

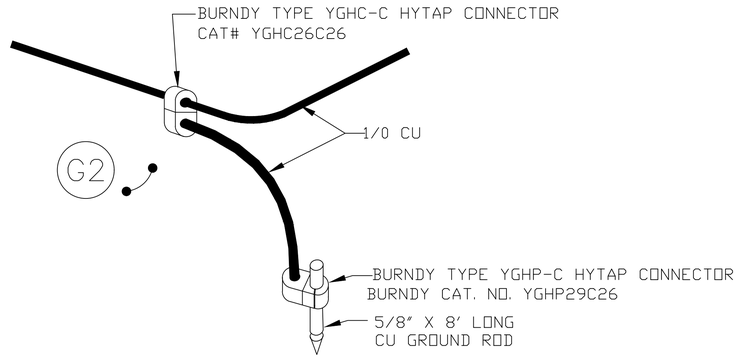
15KV BREAKER DC SCHEMATICS

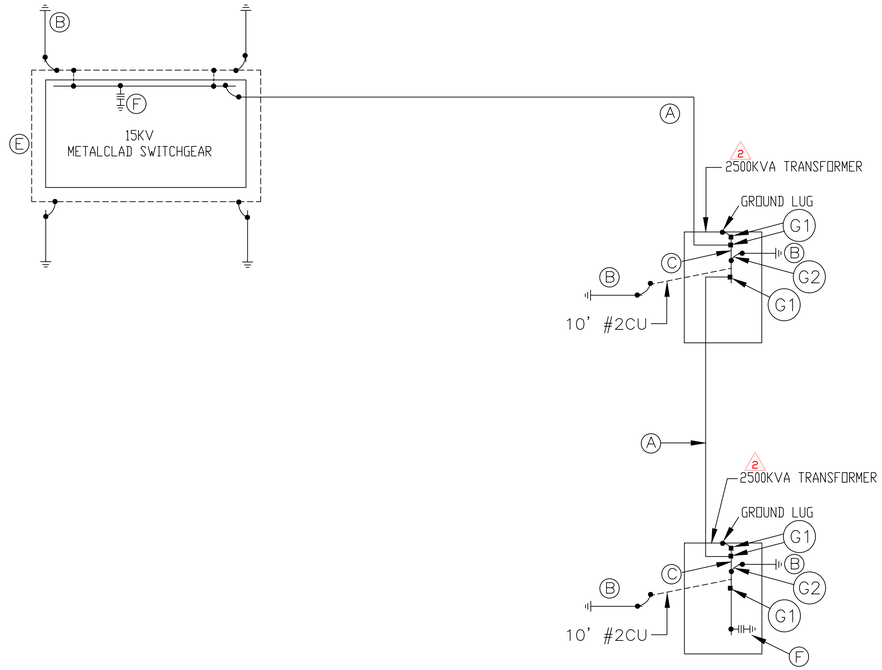
SHEET NO.

E-610

SURGE ARRESTER







Ⓐ CU CONCENTRIC FROM 12KV CABLE. USE THE CU CONCENTRIC FOR 12KV SYSTEM GROUND WIRE (MINIMUM SIZE IS 1/0)

Ⓑ 5/8" X 8' GROUND ROD

Ⓒ TRANSFORMER GROUNDING BAR

Ⓓ 15KV METALCLAD SWITCHGEAR GROUNDING BAR

Ⓔ 1/0 CU GROUND WIRE, SET 24" DEEP, ABOUT 1' FROM SWITCHGEAR PAD, CONNECT TO GROUND RODS AND SWITCHGEAR AT TWO POINTS

Ⓕ ARRESTER, SEE 1-LINE

DEVELOPER:

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STATE OF CALIFORNIA

PROJECT NAME:

TURLOCK IRRIGATION DISTRICT CERES MAIN

PROJECT ADDRESS:

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2 ISSUE FOR PERMIT	08-23-2024

DRAWN BY: CWC
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PROJECT #:

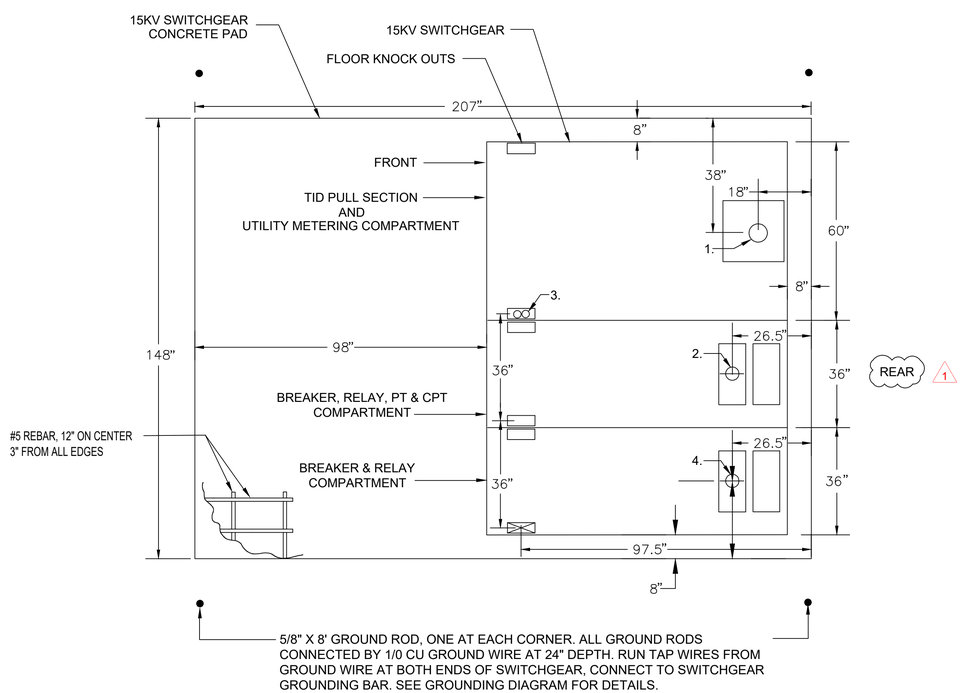
SHEET TITLE

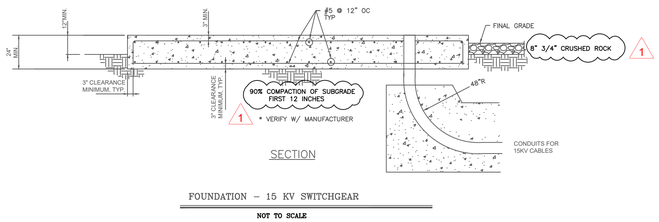
12KV GROUNDING PLAN

SHEET NO.

E-612

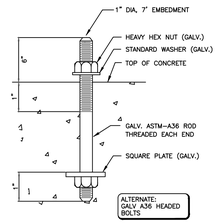
15KV SWITCHGEAR PAD
DIMENSIONS ARE INCHES





FOUNDATION – 15 KV SWITCHGEAR

NOT TO SCALE



DETAIL – ANCHOR BOLT

NOT TO SCALE

SWITCHGEAR PAD NOTES:

1. INSTALL 6" SCHED 40 PVC CONDUIT TO TID RISER POLE
2. INSTALL 5" SCHED 40 PVC CONDUIT TO NORIA TRANSFORMER
3. INSTALL 2X2" SCHED 40 PVC CONDUIT FOR TID COMMUNICATION LINE (1 SPARE)
4. INSTALL 5" SCHED 40 PVC CONDUIT STUB-OUT 5' FROM PAD

1

5. COMPACT SOIL BELOW SWITCHGEAR FOUNDATION AND 2 FEET AROUND TO 90% FOR 12 INCHES BELOW GRADE
6. PLACE 8 INCHES OF 3/4 INCH CRUSHED ROCK FOR THREE FEET BEHIND REAR OF CONCRETE PAD
7. CONCRETE IS 2500 PSI

NOTE: CONTRACTOR TO CHECK SWITCHGEAR MANUFACTURER DRAWINGS FOR LATEST DIMENSIONS BEFORE POURING PAD

DEVELOPER:

NORIA

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ELECTRICAL ENGINEER:

SEAL:

REGISTERED PROFESSIONAL ENGINEER
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No. 12478
Exp.8-30-25
ELECTRICAL
STATE OF CALIFORNIA

PROJECT NAME:

TURLOCK IRRIGATION DISTRICT CERES MAIN

PROJECT ADDRESS:

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CERES, CA, 95307
37.544073°, -120.934478°

IFP DESIGN

1	REVISION:	DATE
	ISSUE FOR PERMIT	05-16-2024
	ISSUE FOR PERMIT	08-23-2024

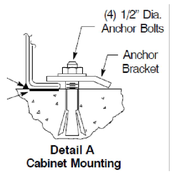
DRAWN BY: CWC
CHECKED BY: AH
PROJECT #:

SHEET TITLE
15KV SWITCHGEAR FOUNDATION

SHEET NO.
C-110

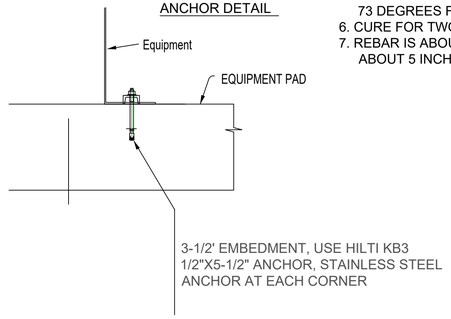
NOTE:

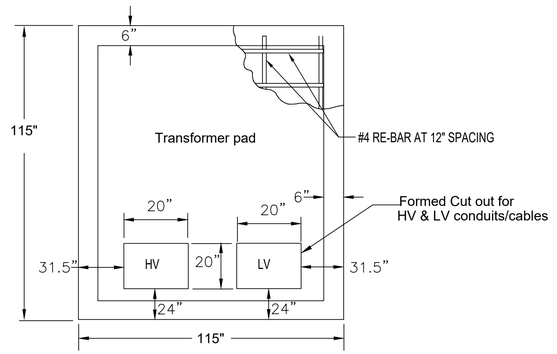
1. DISTURBED EARTH UNDER PAD SHALL BE EXCAVATED, WELL TAMPED - 95% COMPACTION AND INSTALL 6' INCHES OF TAMPED GRAVEL.
2. CONDUIT SHALL BE CUT OFF APPROXIMATELY 6 INCHES BELOW CONCRETE PAD SURFACE.
3. CONCRETE SHALL BE DESIGNED TO ATTAIN A STRENGTH OF 2500 POUNDS PER SQUARE INCH IN 28 DAYS.
4. WOOD FLOAT FINISH TOP. FINISH ALL EXPOSED EDGES WITH FINISHING TOOL, CHAMFER VERTICAL EDGES. SLOPE EXPOSED HORIZONTAL SURFACES SLIGHTLY FOR DRAINAGE. DO NOT INSTALL EQUIPMENT UNTIL 7 DAYS AFTER POUR.
5. WHEN AMBIENT IS BELOW 50 DEGREES, COVER WITH WATERPROOF INSULATION SUCH THAT CONCRETE CAN MAINTAIN "HEAT OF HYDRATION" OF ABOUT 73 DEGREES FAHRENHEIT. COVER IS ABOVE GROUND ONLY.
6. CURE FOR TWO WEEKS BEFORE SETTING EQUIPMENT.
7. REBAR IS ABOUT 5.5" FROM BOTTOM AND 5" FROM EDGES (6 INCHES FOR LENGTHWISE BARS, ABOUT 5 INCHES FOR THE ENDS OF BARS.

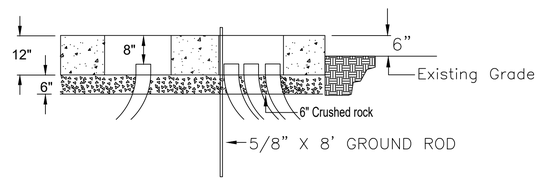


Detail A
Cabinet Mounting

ANCHOR DETAIL







NOTE: CONTRACTOR TO CHECK EQUIPMENT MANUFACTURER DRAWINGS FOR LATEST DIMENSIONS BEFORE POURING PAD

DEVELOPER:

NORIA

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NORIAENERGY.COM

ELECTRICAL ENGINEER:

SEAL:

PROJECT NAME:

TURLOCK IRRIGATION DISTRICT CERES MAIN

PROJECT ADDRESS:

3501 WARNER RD,
CERES, CA, 95307
37.544073°, -120.934478°

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REVISION:	DATE
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DRAWN BY: CWC
CHECKED BY: AH
PROJECT #:

SHEET TITLE

12KV TRANSFORMER FOUNDATION

SHEET NO.

C-112

FLOATING PV ARRAY:
5,442.08 kWstc
9,632 x 565 Wstc PV modules
aiR Optim 12° 2-in-a-row

(E) PRIVATE PUMP STATION
TO REMAIN

(E) 30" SIDE GATE 20-5
TO REMAIN

(E) 30" SIDE GATE 20-6
TO REMAIN

CERES MAIN CANAL

15' PERIMETER ROAD AND DRAINAGE AREA

15' RESERVOIR EMBANKMENT ROAD

15' RESERVOIR EMBANKMENT ROAD

MINIMUM 25' PERIMETER ACCESS ROAD

CHAIN LINK PERIMETER FENCE
WITH 3 STRAND BARB WIRE

(E) WESTLEY-WALNUT WALNUT-PARKER
ELECTRICAL TRANSMISSION LINE
TO REMAIN

RESERVOIR INTERIOR ACCESS RAMP
(SEE SHEET 13, DETAIL 23)

CHAIN LINK PERIMETER FENCE
WITH 3 STRAND BARB WIRE

RESERVOIR PUMP STATION
(SEE SHEET 5)

72"Ø CLASS 3 RCP INTAKE PIPE

30"Ø C905 PUMP DISCHARGE LINES
(SEE SHEET 5)

1"Ø UNDERGROUND ELECTRICAL CONDUIT TO INLET STRUCTURE GATES
PER TID CONSTRUCTION STANDARD 35201

RESERVOIR INLET/OUTLET STRUCTURE
(SEE SHEET 5)

30"Ø C905 PUMP DISCHARGE LINE
(SEE SHEET 6)

4"Ø UNDERGROUND PRIMARY ELECTRICAL CONDUIT TO RESERVOIR
PUMP STATION PER TID

(E) TID DRAINAGE WELL
TO REMAIN, PROTECT IN

LOWER LATERAL 3 DROP
(SEE SHEET 9)

LOWER LATERAL 3 CANAL

(E) 30" SIDE GATE 1-2
TO REMAIN

(E) 30" SIDE GATE 1-1
TO REMAIN

(E) WESTLEY-WALNUT WALNUT-PARKER
ELECTRICAL TRANSMISSION LINE
TO REMAIN

(E) ELECTRICAL POLE
TO REMAIN, PROTECT IN PLACE

1"Ø UNDERGROUND ELECTRICAL CONDUIT TO LOWER
LATERAL 3, DROP 1 RUBICON GATES
PER TID CONSTRUCTION STANDARD 35201

4"Ø UNDERGROUND PRIMARY ELECTRICAL CONDUIT
TO RESERVOIR PUMP STATION PER TID
CONSTRUCTION STANDARD 35201

2"Ø UNDERGROUND SEC
TO EXISTING TID DRAINA
PER TID CONSTRUCTION

(E) ELECTRICAL POLE AN
TO REMAIN, PROTECT IN

NEW ELECTRICAL SERVI
FOR RESERVOIR PUMP S

0.2%

Legend

- PV panels
- Floats HYDRELIO
- Mooring Lines
- Spreader Bars
- Anchors

SCALE: 1" = 80'
80' 160' 320'

Owner:
Noria Energy
80 Liberty Ship Way Ste 5,
Sausalito, CA 94965

Project:
CERES MAIN TID
V4indA

Project Details:
9,632 PV modules, 565 Wp,
5,442.08 kWp DC

Engineering Approval:

REVISIONS

DESCRIPTION	DATE	REV
ORIGINAL	6/5/2024	A

Sheet Title:
Preliminary PV array
and anchor layout

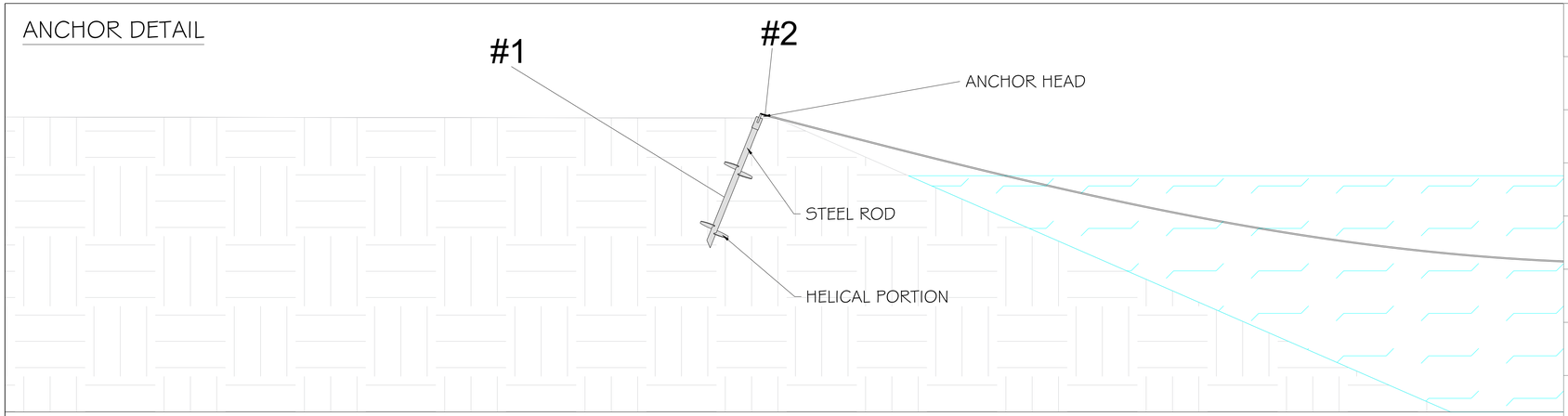
Sheet Number:
S-101

Sheet Size:
ARCH D - 36" x 24"

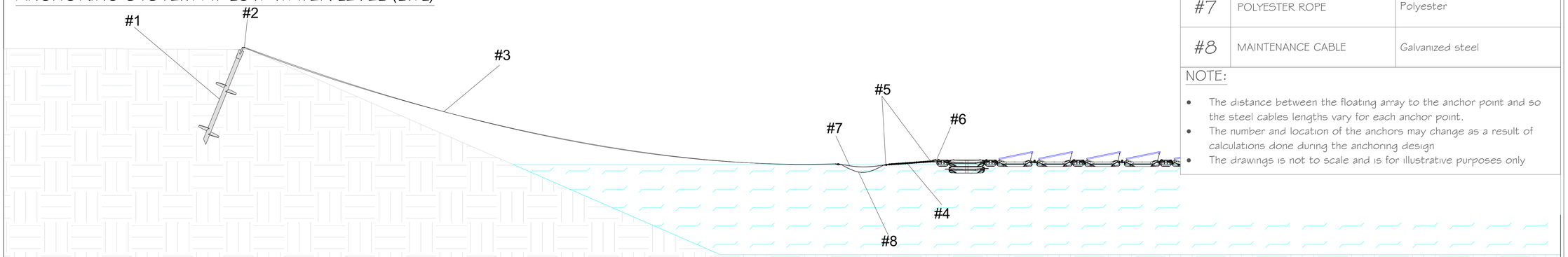
DESIGN & DRAFTING BY:
Alban Debiais
CIEL & TERRE
THE FLOATING SOLAR COMPANY
USA

Reviewed & Approved by:
Bertrand COLIN

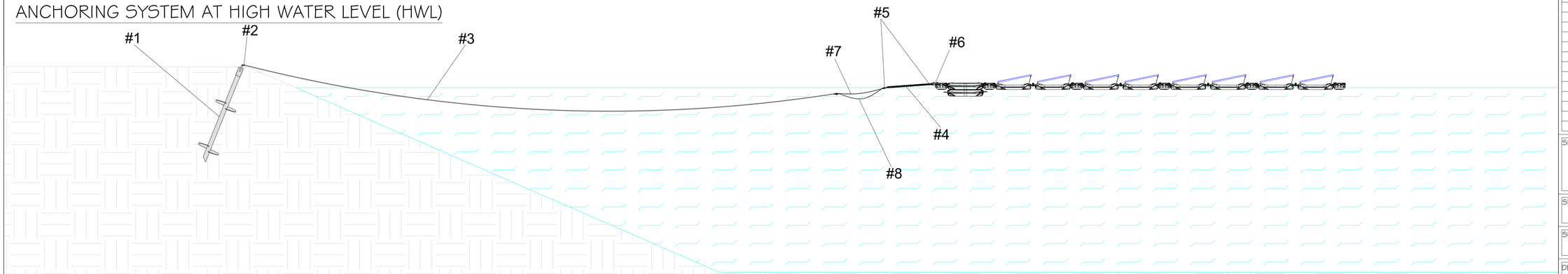
ANCHOR DETAIL



ANCHORING SYSTEM AT LOW WATER LEVEL (LWL)



ANCHORING SYSTEM AT HIGH WATER LEVEL (HWL)



MATERIAL SPECIFICATIONS* :

ITEMS	DESCRIPTION	MATERIAL
#1	HELICAL ANCHOR	Galvanized steel
#2	LARGE SHACKLE	Galvanized steel
#3	STEEL CABLE	Galvanized steel
#4	CHAIN	Galvanized steel
#5	SMALL SHACKLE	Galvanized steel
#6	SPREADER BAR	AL7075
#7	POLYESTER ROPE	Polyester
#8	MAINTENANCE CABLE	Galvanized steel

NOTE:

- The distance between the floating array to the anchor point and so the steel cables lengths vary for each anchor point.
- The number and location of the anchors may change as a result of calculations done during the anchoring design
- The drawings is not to scale and is for illustrative purposes only

Owner:
Noria Energy
80 Liberty Ship Way Ste 5, Sausalito, CA 94965

Project:
CERES MAIN TID
V4indA

Project Details:
9,632 PV modules, 565 Wp, 5,442.08 kWp DC

Engineering Approval:

REVISIONS

DESCRIPTION	DATE	REV
ORIGINAL	6/5/2024	A

Sheet Title:
Cross section HWL, LWL

Sheet Number:
S-301

Sheet Size:
ARCH D - 36" x 24"

DESIGN & DRAFTING BY:
Alban Debiais

CIEL & TERRE
THE FLOATING SOLAR COMPANY
USA

Reviewed & Approved by:
Bertrand COLIN