

**RECLAMATION DISTRICT NO. 1601
TWITCHELL ISLAND
BOARD OF TRUSTEES MEETING
TUESDAY, JANUARY 16, 2024
9:00 AM
ENGINEER'S REPORT**

I. PROJECT FUNDING AGREEMENT TW – 21 - 1.2 TIMES PROJECT

A. Review the general status of the drill seed planting progress.

II. DISTRICT EXCAVATOR RECOVERY WITH INSURANCE COMPANY

A. Review outcome of meeting held on Wednesday January 3, 2024, with Insurance Companies Geotechnical expert.

EXHIBIT A: Preliminary Plan of Excavator location in field for plan development of access road construction.

III. SOLAR PROJECT

A. KSN is working to bring Kern Solar under contract (T & M \$9,800) to complete the structural design of the District's Solar Plant.

EXHIBIT B: Current Solar Design Drawings from Panelized Structures Inc.

EXHIBIT C: Kern Solar Sample Carport Solar Array Structural Details

Exhibit A

FILE SPEC: P:\1110_Twitchell_Island\1080_Dist_Excavator_Retrieval_Ins_Claim\09_Civil\400_Plans\020_CAD_Sheets\240110_Base Map Exhibit.dwg
 PLOT DATE: Jan 11, 2024 - 6:53am



NOTE:
 DRAFT FOR REVIEW AND DISCUSSION
 PURPOSES.



KJELDSSEN SINNOCK NEUDECK INC.
 CIVIL ENGINEERS & LAND SURVEYORS
 www.ksninc.com

711 N. Pershing Avenue
 Stockton, CA 95203
 209-946-0268

1550 Harbor Blvd., Suite 212
 West Sacramento, CA 95691
 916-403-5900

NORTH ORIENTATION

RECLAMATION DISTRICT 1601
 TWITCHELL ISLAND
 SACRAMENTO COUNTY, CA
 EXCAVATOR LOCATION EXHIBIT

DRAWING SCALE
 1" = 20'

ORIGINAL DRAWING SCALE
 0 1/2" 1"

EXHIBIT NO.
A

PAGE NO.
1

Exhibit B

PROPOSED SOLAR SYSTEM DRAWN FOR:

RECLAMATION DISTRICT 1601

TWITCHELL ISLAND FERRY RD. RIO VISTA, CA. 94571

365.4kW SOLAR SYSTEM

VICINITY MAP



SHEET INDEX

PV SHEETS

SHEET	DESCRIPTION	# OF #
PV1	COVER SHEET	1 OF 9
PV2	SITE LAYOUT	2 OF 9
PV3	ARRAY LAYOUT	3 OF 9
PV4	ARRAY ELECTRICAL	4 OF 9
PV5	ARRAY SINGLE LINE	5 OF 9
PV6	ARRAY STRINGING	6 OF 9
PV7	MODULE DATASHEET	7 OF 9
PV8	INVERTER DATASHEET	8 OF 9
PV9	CARPORT DATASHEET	9 OF 9

PROJECT DATA

LOT SIZE: + ACRES
OWNER: RECLAMATION DISTRICT 1601
 TWITCHELL ISLAND FERRY RD.
 RIO VISTA, CA 94571
PROJECT LOCATION: TWITCHELL ISLAND FERRY RD.
 RIO VISTA, CA 94571
CONSTRUCTION TYPE: CONSTRUCTION OF NEW
 365.4KW SOLAR SYSTEM
GOVERNING AGENCY: COUNTY
GENERAL CONTRACTOR: PANELIZED STRUCTURES INC.
 5731 STODDARD ROAD
 MODESTO, CA. 95356

PROJECT NOTES

- NOTES:**
- THIS DESIGN ASSUMES THAT THE SITE WILL BE GRADED AND OTHERWISE PREPARED AS REQUIRED TO MEET ALL REQUIREMENTS OF THE PROPOSED RANGER ARRAY (SLOPE 4.0% REQUIRED GRADING IS NOT SHOWN ON THIS PLAN)
 - 100 MPH (ASCE 7-10) CATEGORY I WIND ZONE. EXPOSURE C. 0 PSF SNOW LOAD. 10' SILE ELEVATION
 - ASSUMED CORROSION CATEGORY C3
 - ARRAY SHOWN ON AERIAL IMAGE

PROPOSED SYSTEM SPECIFICATIONS	
365.4 kWp	
(840) HIGH EFF. (435) MODULES	
10 MODULES/STRING, 84 STRINGS	
# OF PILES 16	
# (20kW) INVERTERS, 1 PANELBOARDS	
ALTIMETER ANGLE: 0°	
Est. Year 1 Energy Output:	626,293.6 kWh

NOTE: THE PROPOSED ARRAY LAYOUT SHOWN IS DESIGNED TO FIT EXISTING CONDITIONS AS THEY ARE DESCRIBED ON THIS DRAWING. WIND AND MODULE QUANTITY, TYPE AND LAYOUT ARE SUBJECT TO CHANGE BASED ON SUNPOWER VERIFICATION OF ACTUAL SITE CONDITIONS, AS WELL AS ON MODULE AVAILABILITY AT THE DATE OF ORDER.

GENERAL NOTE

This building complies with TITLE 24 and the following model codes

- 2016 California Building Codes (CBC)
- 2016 California Plumbing Codes (CPC)
- 2016 California Mechanical Codes
- 2016 California Fire Codes (CFC)
- 2016 California Electrical Codes
- 2016 California Energy Code
- 2016 California Green Building Code

CONDITIONS:

THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION OF ALL DIMENSIONS, GRADES AND OTHER JOB SITE CONDITIONS AND SHALL REPORT ANY DISCREPANCIES TO THE DESIGNER OR ENGINEER FOR CLARIFICATION PRIOR TO COMMENCING WORK.

SITE:

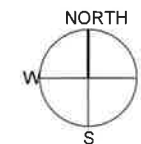
- SCRAPE ALL VEGETATION FROM BUILDING LOCATION
- ALL LOAD BEARING FOUNDATIONS SHALL BE PLACED IN UNDISTURBED NATURAL SOIL (OR ENGINEER FILL) TO DEPTH SHOWN ON PLANS. MINIMUM 12" FOR ONE STORY SNA MINIMUM 18" FOR TWO STORY CONSTRUCTION.
- ALL FILL MATERIAL SUPPORTING FOUNDATIONS SHALL BE PLACED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE IN LAYERS NOT TO EXCEED 6 INCHES. WATER SHALL BE ADDED TO EACH LAYER TO OBTAIN REQUIRED COMPACTION AND DENSITY. FILL AND COMPACTION SHALL MEET WITH THE APPROVAL OF THE BUILDING OFFICIAL.
- ALL FINISH GRADES AROUND BUILDING SHALL BE DESIGNED TO DRAIN AWAY FROM BUILDING.
- NO DRAINAGE TO ADJACENT PROPERTIES.

CONCRETE:

- ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 2500 PSI IN 28 DAYS.
- ALL PLACEMENT OF CONCRETE SHALL MEET REQUIREMENTS OF THE CURRENT CBC.
- ALL SURFACES TO RECEIVE CONCRETE SHALL BE WATERED DOWN 24 HOURS IN ADVANCE OF POURING CONCRETE.
- ALL CONCRETE SURFACES SHALL BE PROTECTED AND CURED IN ACCORDANCE WITH ACCEPTED BUILDING PRACTICES.
- WHERE AREA OF BARN SLAB EXCEEDS 500 SQUARE FEET, PROVIDE EXPANSION CONTROL JOINTS, ONLY ON NEW CONSTRUCTIONS.

SPECIFICATIONS:

- CONCRETE: 2500 PSI AT 28 DAYS, TYPE II PCC.
- REINFORCING: ASTM A615-80 GRADE 40 DEFORMED BARS.
- STRUCTURAL STEEL: ASTM A36, OR ASTM A572 GRADE 42, FABRICATED AND ERECTED PER AISC, 2013 CBC CHAPTER 22
- PIPE: ASTM A53 OR ASTM A501, 2013 CBC CHAPTER 22
- WIDE FLANGE: ASTM A992
- WOOD: IBC/CBC CHAPTER 23 AF&PA NDS-12 & AF&PA NDS-08
- STEEL ROOFING: ASTM A446 GRADE E 80 KSI YIELD
- EXCAVATION, GRADING, AND FILL: PER 2013 CBC CHAPTER 18
- CONSTRUCTION MUST MEET ALL LOCAL, STATE AND FEDERAL HEALTH DEPARTMENT REGULATIONS.



SCALE: - NONE

PANELIZED STRUCTURES INC.



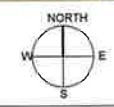
Job: RECLAMATION DISTRICT 1601
 SOLAR PROJECT
 Location: RIO VISTA, CA.
 COVER SHEET

NO.	REVISION	DATE

FOR DWG DATE:
 APPROVALS SENT DATE:
 DRAWN BY: ESD
 CHECKED BY:
 SCALE: NONE
 FINAL PLANS DATE:
 JOB:



Twitchell Island Ferry Rd.
 Rio Vista, CA. 94571
 365.4kW Solar System



SCALE: - NONE

SITE LAYOUT



Job: RECLAMATION DISTRICT 1601
 SOLAR PROJECT
 Location: RIO VISTA, CA.
 SITE LAYOUT

NO	REVISION	DATE

FOR DWG DATE: _____
 APPROVALS SENT DATE: _____
 DRAWN BY: ESD
 CHECKED BY: _____
 SCALE: NONE
 FINAL PLANS DATE: _____
 JOB: _____



LEGEND

- 1. (N) 435w SUNPOWER MODULES
- 2. (N) SUNPOWER HELIX CARPORT COLUMN



Job: RECLAMATION DISTRICT 1601

SOLAR PROJECT

Location: RIO VISTA, CA.

ARRAY LAYOUT

NO	REVISION	DATE

FOR DWG DATE:

APPROVALS SENT DATE:

DRAWN BY: ESD

CHECKED BY:

SCALE: NONE

FINAL PLANS DATE:

JOB:



EQUIPMENT LEDGEN

- 1. (N) SMA SUNNY STP-50-US-41 INVERTER
- 2. (N) COMBINER PANEL BOARD
- 3. (E) PG&E INTERCONNECTION
- 4. (N) UNDERGROUND CONDUITS



SCALE: - 1" = 30'-0"

**Job: RECLAMATION DISTRICT 1601
SOLAR PROJECT**
Location: RIO VISTA, CA.
ARRAY ELECTRICAL

NO	REVISION	DATE

FOR DWG DATE: _____
 APPROVALS SENT DATE: _____
 DRAWN BY: ESD
 CHECKED BY: _____
 SCALE: NONE
 FINAL PLANS DATE: _____
 JOB: _____



Helix™ Roof Compatible Modules

Factory-installed clips enable tool-free panel installation, decreasing installation time and minimizing business disruption.¹

More than 20% Efficiency

Captures more sunlight and generates more power than conventional panels.

High Performance

Delivers excellent performance in real-world conditions, such as high temperatures, clouds and low light.^{2,3,5}

Commercial Grade

Optimized to maximize returns and energy production, the E-Series panel is a bankable solution for commercial solar applications.



Maxeon® Solar Cells: Fundamentally better. Engineered for performance, designed for reliability.

Engineered for Peace of Mind

Designed to deliver consistent, trouble-free energy over a very long lifetime.^{4,5}

Designed for Reliability

The SunPower Maxeon Solar Cell is the only cell built on a solid copper foundation. Virtually impervious to the corrosion and cracking that degrade conventional panels.⁴

#1 Rank in Fraunhofer durability test.¹⁰
100% power maintained in Atlas 25+ comprehensive durability test.¹¹

High Performance & Excellent Reliability



SPR-E20-435-COM

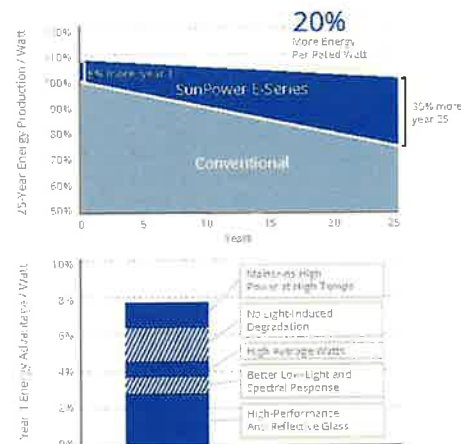


High Efficiency⁶

Generate more energy per square foot. E-Series commercial panels convert more sunlight to electricity by producing 31% more power per panel² and 60% more energy per square foot over 25 years.^{2,3,4}

High Energy Production⁷

Produce more energy per rated watt. More energy to power your operations. High year-one performance delivers 7-9% more energy per rated watt.³ This advantage increases over time, producing 20% more energy over the first 25 years to meet your needs.⁴



SunPower Offers The Best Combined Power And Product Warranty



More guaranteed power: 95% for first 5 years, -0.4%/yr. to year 25⁸



Combined Power and Product defect 25-year coverage⁹

Electrical Data	
SPR-E20-435-COM	
Nominal Power (P _{nom}) ^{1,2}	435 W
Power Tolerance	+5/-3%
Avg. Panel Efficiency ³	20.3%
Rated Voltage (V _{mpp})	72.9 V
Rated Current (I _{mpp})	5.97 A
Open-Circuit Voltage (V _{oc})	85.6 V
Short-Circuit Current (I _{sc})	6.43 A
Max. System Voltage	1000 V UL
Maximum Series Fuse	15 A
Power Temp Coef.	-0.35%/°C
Voltage Temp Coef.	-235.5 mV/°C
Current Temp Coef.	2.6 mA/°C

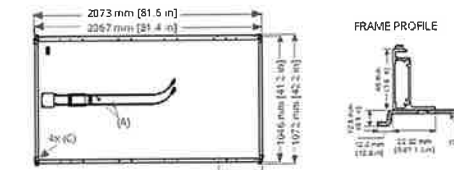
- REFERENCES
- 1 Helix compatible modules may not be compatible with other racking systems
 - 2 All comparisons are SPR-E20-327 vs a representative conventional panel 250 W, approx. 1.6 m², 15.3% efficiency.
 - 3 Typically 7-9% more energy per watt, BEW/DNV Engineering "SunPower Yield Report," Jan 2013
 - 4 SunPower 0.25%/yr degradation vs. 1.0%/yr conv. panel Campeau, Z. et al "SunPower Module Degradation Rate," SunPower white paper, Feb 2013, Jordan, Dirk "SunPower Test Report," NREL, D1 2015
 - 5 "SunPower Module 40 Year Useful Life" SunPower white paper, May 2015 Useful life is 99 out of 100 panels operating at more than 70% of rated power
 - 6 Second highest, after SunPower X-Series, of over 3,200 silicon solar panels, Photon Module Survey, Feb 2014
 - 7 8% more energy than the average of the top 10 panel companies tested in 2012 (151 panels, 102 companies), Photon International, Feb 2013
 - 8 Compared with the top 15 manufacturers' SunPower Warranty Review, May 2015
 - 9 Some restrictions and exclusions may apply. See warranty for details
 - 10 5 of top 8 panel manufacturers tested in 2013 report, 3 additional panels in 2014. Ferrara, C. et al "Fraunhofer PV Durability Initiative for Solar Modules Part 2" Photovoltaics International, 2014.
 - 11 Compared with the non-stress tested control panel Atlas 25+ Durability test report, Feb 2013
 - 12 Standard Test Conditions (1000 W/m² irradiance, AM 1.5, 25° C) NREL calibration Standard
 - 13 Based on average of measured power values during production
 - 14 Type 2 fire rating per UL1703 2013, Class C fire rating per UL1703 2002

See www.sunpower.com/docs for more reference information. For more details, see extended datasheet: www.sunpower.com/docs/datasheets

Document # 521912 Rev A (LIR_US)

Tests And Certifications	
Standard Tests ^{1,4}	UL1703 (Type 2 Fire Rating)
Quality Certs	ISO 9001:2008, ISO 14001:2004
EHS Compliance	RoHS, OHSAS 18001:2007, lead free, REACH SVHC: 163, PV Cycle
Ammonia Test	IEC 62716
Desert Test	10.1109/PVSC.2013.6744437
Salt Spray Test	IEC 61701 (maximum seventy)
PID Test	Potential-Induced Degradation free: 1000 V ¹⁰
Available Listings	UL, CEC

Operating Condition And Mechanical Data	
Temperature	-40° F to +185° F (-40° C to +85° C)
Impact Resistance	1 inch (25 mm) diameter hail at 52 mph (23 m/s)
Appearance	Class B
Solar Cells	128 Monocrystalline Maxeon Gen II
Tempered Glass	High-transmission tempered anti-reflective
Junction Box	IP-65, TE (PV4S)
Weight	56 lbs (25.4 kg)
Max. Load	Wind: 50 psf, 2400 Pa, 244 kg/m ² front & back Snow: 112 psf, 5400 Pa, 550 kg/m ² front
Frame	Class 2 silver anodized; stacking pins



- (A) Cable Length: 1230 mm ± 10 mm
- (B) Stacking Pins: 4 x 398 mm (15.7 in) (B)
- (C) Optional Helix compatible Clips

Please read the safety and installation guide. Clips installed on Helix Roof compatible modules only. Clips are not removable and may not be compatible with non-Helix-branded racking.

Datasheet

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SUNPOWER®



Job: RECLAMATION DISTRICT 1601
SOLAR PROJECT
Location: RIO VISTA, CA.
MODULE DATASHEET

NO	REVISION	DATE

ECR DWG DATE:
APPROVALS SENT DATE:
DRAWN BY: ESD
CHECKED BY:
SCALE: NONE
FINAL PLANS DATE:
JOB:



Job: RECLAMATION DISTRICT 1601
SOLAR PROJECT
Location: RIO VISTA, CA.
INVERTER DATASHEET

NO	REVISION	DATE

ECR DWG DATE:
APPROVALS SENT DATE
DRAWN BY: ESD
CHECKED BY:
SCALE: NONE
FINAL PLANS DATE:
JOB:



SUNNY TRIPower CORE1 33-US / 50-US / 62-US



UP TO 60% FASTER INSTALLATION FOR COMMERCIAL PV SYSTEMS



- Fully integrated**
 - Innovative design requires no additional racking for rooftop installation
 - Integrated DC and AC disconnects and overvoltage protection
 - 12 direct string inputs for reduced labor and material costs
- Increased power, flexibility**
 - Multiple power ratings for small to large scale commercial PV installations
 - Six MPPT trackers for flexible stringing and maximum power production
 - OpiTrac™ Global Peak shade tolerant MPPT tracking
- Enhanced safety, reliability**
 - Integrated SunSpec PLC signal for module-level rapid shutdown compliance to 2017 NEC
 - NextGen DC AFCI arc-fault protection certified to new Standard UL 1699B Ed. 1
- Smart monitoring, control, service**
 - Advanced smart inverter grid support capabilities
 - Increased ROI with SMA ennexOS cross sector energy management platform
 - SMA Smart Connected proactive O&M solution reduces time spent diagnosing and servicing in the field

SUNNY TRIPower CORE1 33-US / 50-US / 62-US

It stands on its own

The Sunny Tripower CORE1 is the world's first free-standing PV inverter for commercial rooftops, carports, ground mount and repowering legacy solar projects. Now with expanded features and new power classes, the CORE1 is the most versatile, cost-effective commercial solution available. From distribution to construction to operation, the Sunny Tripower CORE1 enables logistical, material, labor and service cost reductions. Integrated SunSpec PLC for rapid shutdown and enhanced DC AFCI arc-fault protection ensure compliance to the latest safety codes and standards. With Sunny Tripower CORE1 and SMA's ennexOS cross sector energy management platform, system integrators can deliver comprehensive commercial energy solutions for increased ROI.

www.SMA-America.com

Technical data	Sunny Tripower CORE1 33-US	Sunny Tripower CORE1 50-US	Sunny Tripower CORE1 62-US
Input (DC)			
Maximum array power	50000 Wp STC	75000 Wp STC	93750 Wp STC
Maximum system voltage	1000 V	1000 V	1000 V
Rated MPPT voltage range	330 V...800 V	500 V...800 V	550 V...800 V
MPPT operating voltage range	150 V...1000 V	150 V...1000 V	150 V...1000 V
Minimum DC voltage/start voltage	150 V/188 V	150 V/188 V	150 V/188 V
MPPT trackers / strings per MPPT input	6/2	6/2	6/2
Maximum operating input current / per MPPT tracker	120 A/20 A	120 A/20 A	120 A/20 A
Maximum short circuit current per MPPT / per string input	30 A/30 A	30 A/30 A	30 A/30 A
Output (AC)			
AC nominal power	33300 W	50000 W	62500 W
Maximum apparent power	33300 VA	53000 VA	66000 VA
Output phases / line connections	3/3-NL-PE	3/3-NL-PE	3/3-NL-PE
Nominal AC voltage	480 V/277 V WYE	480 V/277 V WYE	480 V/277 V WYE
AC voltage range	244 V...305 V	244 V...305 V	244 V...305 V
Maximum output current	40 A	64 A	80 A
Rated grid frequency	60 Hz	60 Hz	60 Hz
Grid frequency / range	50 Hz, 60 Hz / -6 Hz... +6 Hz	50 Hz, 60 Hz / -6 Hz... +6 Hz	50 Hz, 60 Hz / -6 Hz... +6 Hz
Power factor at rated power / adjustable displacement	1 / 0.0 leading... 0.0 lagging	1 / 0.0 leading... 0.0 lagging	1 / 0.0 leading... 0.0 lagging
Harmonics THD	<3 %	<3 %	<3 %
Efficiency			
CEC efficiency	97.5%	97.5%	97.5%
Protection and safety features			
Load rated DC disconnect	•	•	•
Load rated AC disconnect	•	•	•
Ground fault monitoring: Ribs / Differential current	• / •	• / •	• / •
DC AFCI arc-fault protection	•	•	•
SunSpec PLC signal for rapid shutdown	•	•	•
DC reverse polarity protection	•	•	•
AC short circuit protection	•	•	•
DC surge protection: Type 2 / Type 1+2	o / o	o / o	o / o
AC surge protection: Type 2 / Type 1+2	o / o	o / o	o / o
Protection class / overvoltage category (as per UL 840)	1 / IV	1 / IV	1 / IV
General data			
Device dimensions (W/H/D)	621 mm / 733 mm / 569 mm [24.4 in x 28.8 in x 22.4 in]		
Device weight	84 kg [185 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 emissions (full power @ 1m and 25 °C)	65 dB(A)		
Internal consumption at night	5 W		
Topology	Transformerless		
Cooling concept	OpiCool (forced convection, variable speed fans)		
Enclosure protection rating	Type 4X, 3SX (as per UL 50E)		
Maximum permissible relative humidity (non-condensing)	100%		
Additional information			
Mounting	Free-standing with included mounting feet		
DC connection	AmphacoUL UTx PV connectors		
AC connection	Screw terminals - 4 AWG to 4/0 AWG CU/AL		
LED indicators (Status / Fault / Communication)	•	•	•
Network interfaces: Ethernet / WLAN / RS485	• (2 ports) / • / o	• (2 ports) / • / o	• (2 ports) / • / o
Data protocols: SMA Modbus / SunSpec Modbus / Webconnect	• / • / •	• / • / •	• / • / •
Multifunction relay	•	•	•
OpiTrac: Global Peak (shade-tolerant MPPT tracking)	•	•	•
Integrated Peak Control / Q on Demand 24/7	• / •	• / •	• / •
Off-Grid capable / SMA Fuel Save Controller compatible	• / •	• / •	• / •
SMA Smart Connected (proactive monitoring and service support)	•	•	•
Certifications			
Certifications and approvals	UL 1741, UL 1699B Ed. 1, UL 1998, CSA 22.2 107-1, PV Rapid Shutdown System Equipment		
FCC compliance	PCC Part 15 Class A		
Grid interconnection standards	IEEE 1547, UL 1741 SA - CA Rule 21, HECO Rule 14H		
Advanced grid support capabilities	L/HVRT, L/HVRT, Volt-VAr, Volt-Watt, Frequency-Watt, Ramp Rate Control, Fixed Power Factor		
Warranty			
Standard	10 years		
Optional extensions	15 / 20 years		
o Optional features • Standard features - Not available			
Type designation	STP 33-US-41	STP 50-US-41	STP 62-US-41



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

SMA America, LLC

HELIX Carport Structure



Structural Component	Description	Standard Specification	Additional Options
Foundations and Elevated Concrete Pier	Reinforced concrete caisson or spread footing	Elevated concrete pier	Flush-mounted base plates
Columns	Hot rolled structural steel (tube or I-beam)	Hot-dip galvanized	Painted
Crossbeams	Hot rolled structural steel (tapered I-beam)	Hot-dip galvanized	Painted
Purlins and Fascia	C-shaped cold rolled structural steel, fascia included	Galvanized, G-90	Galvanized, up to G-230
Structural Hardware and Assembly	Nuts and bolts (no field welding or field cutting)	A325 and A307	n/a

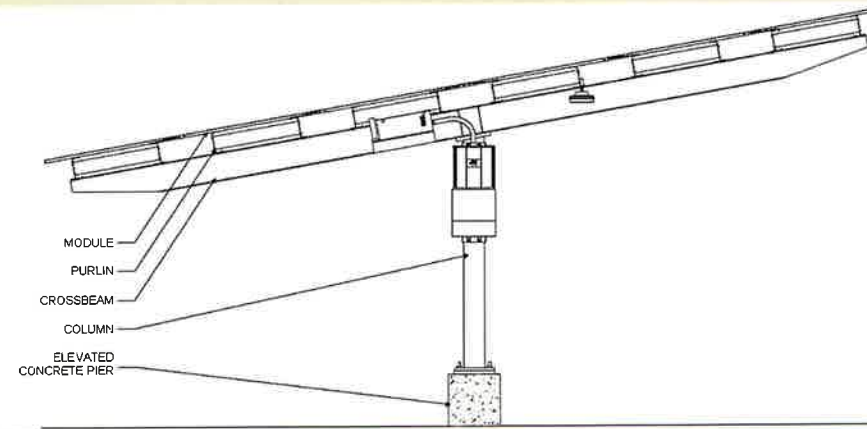
Mechanical or Grounding Component	Standard Specification
Module mounting	Stainless steel nuts and bolts
Module grounding	WEEBs
Structural equipment grounding conductor (EGC)	Ground braids
Grounding electrode conductor (GEC)	Concrete-encased rebar cage

Optional Features: Snow guard, decking, branding

Specsheet

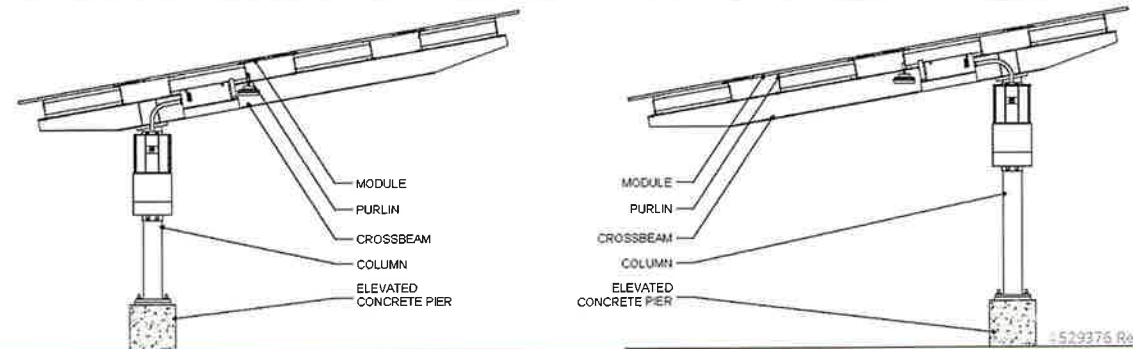


HELIX Carport Structure



Structural Specifications

Clearance at drive aisle (south end)	Standard: 11', Optional: 10' to 14'
Width @ 6 modules up (N-S)	40.2' (footprint on ground)
@ 5 modules up (N-S)	33.5'
@ 4 modules up (N-S)	26.8'
Length	Varies by block; 34.75' minimum (10 modules E-W)
Column-to-column spacing	34.75' (typical)
Cantilever beyond end columns	Up to 12.1'
Elevated concrete pier diameter	30"
Elevated concrete pier height	Standard: 30", Optional: 18" to 48" above grade
Canopy tilt	10 degrees (typical for West Coast) or 7.5 degrees (typical for East Coast)



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Job: RECLAMATION DISTRICT 1601
 SOLAR PROJECT
 Location: RIO VISTA, CA.
 CARPORT DATASHEET

NO	REVISION	DATE

FOR DWG DATE:
 APPROVALS SENT DATE:
 DRAWN BY: ESD
 CHECKED BY:
 SCALE: NONE
 FINAL PLANS DATE:
 JOB:

Exhibit C



427 WILLIAMS ST.
BAKERSFIELD, CA 93305 USA
+1 (805) 912-0580

PROPRIETARY NOTICE:
THE DRAWING CONTAINS CONFIDENTIAL
INFORMATION PROPRIETARY TO
KERR SOLAR STRUCTURES, INC.
REPRODUCTION, DISCLOSURE OR USE
WITHOUT PERMISSION IS STRICTLY PROHIBITED.
PE STAMP:

PRELIMINARY
NOT FOR
CONSTRUCTION

STRUCTURAL COVER SHEET

REVISION SCHEDULE

DATE: _____
DRAWN BY: _____
CHECKED BY: _____
SHEET: _____

KSS PROJECT # _____

DATE: _____
DRAWN BY: _____
CHECKED BY: _____

SHEET **S001**



DESIGN CRITERIA	
GOVERNING CODES	IBC(CBC) 2018/ASCE 7-16
OCCUPANCY TYPE	U
PROJECT ADDRESS	
LATITUDE / LONGITUDE	
PV MODULE	
SIZE (L X W X H)	
ORIENTATION	PORTRAIT
PV ARRAY SIZES	CP1 6x75 / 216.0 kW
LOADING CONDITIONS	
WIND SPEED	
SNOW LOAD	
OCCUPATIONAL RISK CATEGORY	CATEGORY II
SURFACE ROUGHNESS CATEGORY	CATEGORY B
EXPOSURE CATEGORY	CATEGORY B

GEOTECHNICAL DESIGN CRITERIA	
GEOTECHNICAL REPORT BY	
GEOTECHNICAL REPORT DATE	
SEISMIC SITE CLASSIFICATION	CATEGORY D
SEISMIC RISK CATEGORY	CATEGORY II
SEISMIC DESIGN CLASSIFICATION	CATEGORY D
SEISMIC COEFFICIENTS	S S = g S DS = g S I = g S D1 = g S MS = g S M1 = 0.000 g

SHEET INDEX	
SHEET	DESCRIPTION
S001	STRUCTURAL COVER SHEET
S002	GENERAL STRUCTURAL NOTES
S003	GENERAL STRUCTURAL NOTES, CONTINUED
S100	SITE LAYOUT
S101	CP1 STRUCTURAL VIEWS & BOM
S102	CP2 STRUCTURAL VIEWS & BOM
S103	CP3 STRUCTURAL VIEWS & BOM
S200	FOUNDATION DETAILS
S300	STEEL DETAILS

GENERAL STRUCTURAL NOTES

GENERAL

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION. DO NOT SCALE DRAWINGS.
2. THE STRUCTURAL ERECTION DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHODS OF CONSTRUCTION THE CONTRACTOR SHALL PROVIDE WHICH ARE REQUIRED TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES MIGHT INCLUDE, BUT ARE NOT LIMITED TO BRACING AND SHORING.
3. ALL REQUESTS FOR CLARIFICATION (RFC) MUST BE SUBMITTED IN WRITING PRIOR TO PROCEEDING WITH WORK.
4. THE ENGINEER OF RECORD SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
5. ALL DRAWINGS ARE CONSIDERED CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW, CONTROL AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS IN CONNECTION WITH PRE-CONSTRUCTION AND CONSTRUCTION ACTIVITIES.
6. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF KERN SOLAR STRUCTURES AND THE ENGINEER OF RECORD IN WRITING PRIOR TO THE INITIATION OF WORK. ALL DISCREPANCIES SHALL BE CLARIFIED IN WRITING BY KERN SOLAR STRUCTURES AND THE ENGINEER OF RECORD PRIOR TO THE CONTINUATION OF WORK.
7. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE OR STANDARD REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR EXPENSE.
8. NOTES AND DETAILS ON APPLICATION / PROJECT SPECIFIC DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND DETAILS.
9. ALL WORK SHALL CONFORM TO THE MINIMUM STANDARDS INCLUDING THE FOLLOWING CODES: LOCAL BUILDING CODE, REGULATING AGENCIES, AUTHORITY HAVING JURISDICTION (AHJ)

CONTRACTOR SUBMITTALS AND SHOP DRAWINGS

1. THE CONTRACTOR SUBMITTALS AND SHOP DRAWING ARE INTENDED TO HELP THE STRUCTURAL ENGINEER OF RECORD VERIFY THE DESIGN CONCEPT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK THEIR OWN SHOP DRAWINGS.
2. THE STRUCTURAL SHOP DRAWINGS WILL BE RETURNED FOR RESUBMITTAL IF A CURSORY REVIEW SHOWS MAJOR ERRORS WHICH SHOULD HAVE BEEN ADDRESSED BY THE CONTRACTOR.
3. THE FOLLOWING SUBMITTALS (ALONG WITH SUPPORTING CALCULATIONS) ARE REQUIRED FOR STRUCTURAL REVIEW:
 - A. REINFORCING STEEL DESIGN INCLUDING FABRICATION DRAWINGS
 - B. CONCRETE MIX DESIGN INCLUDING STRENGTH TEST RESULTS
 - C. STRUCTURAL STEEL FABRICATION DRAWINGS
4. THE FOLLOWING SUBMITTALS TYPICALLY ARE NOT REQUIRED FOR STRUCTURAL REVIEW:
 - A. FORMWORK
 - B. STRUCTURAL STEEL MILL REPORTS
 - C. SHORING AND BRACING
5. SHOP DRAWINGS AND CALCULATIONS SHALL CLEARLY REFERENCE THE DESIGN ASSUMPTIONS USED TO PRODUCE THE SUBMITTAL.
6. ALL SUBMITTALS WILL BE PROVIDED IN A DIGITAL FORMAT FOR REVIEW (PREFERABLY PDF) BY THE STRUCTURAL ENGINEER OF RECORD.

STATEMENT OF STRUCTURAL TESTS AND SPECIAL INSPECTIONS

THE FOLLOWING ELEMENTS OF CONSTRUCTION SHALL REQUIRE SPECIAL INSPECTION PER CHAPTER 17 OF THE CURRENT BUILDING CODE UNLESS NOTED OTHERWISE
SPECIAL INSPECTIONS AND TESTING SHALL BE PROVIDED BY AN INSPECTION AGENCY, EMPLOYED BY THE OWNER, AND QUALIFIED BY THE BUILDING OFFICIAL TO INSPECT THE PARTICULAR TYPE OF CONSTRUCTION. TESTS AND INSPECTIONS, AS REQUIRED BY SECTIONS 110 & 1705 OF THE CURRENT IBC, SHALL BE PERFORMED DURING CONSTRUCTION ON THE TYPES OF WORK LISTED BELOW:

CATEGORY	INSPECTION	TESTING
• STRUCTURAL STEEL CONSTRUCTION	SECTION 1705.2	SECTION 1705.13
• CONCRETE CONSTRUCTION	SECTION 1705.3 / TABLE 1705.3	SECTION 1705.3
• SOILS	SECTION 1705.6 / TABLE 1705.6	
• CAST-IN-PLACE DEEP FOUNDATIONS	SECTION 1705.8 / TABLE 1705.8	

- A. THE SPECIAL INSPECTIONS IDENTIFIED ON PLANS ARE, IN ADDITION TO, AND NOT A SUBSTITUTE FOR, THOSE INSPECTIONS REQUIRED TO BE PERFORMED BY THE GOVERNING JURISDICTION. SPECIALLY INSPECTED WORK WHICH IS INSTALLED OR COVERED WITHOUT THE APPROVAL OF AN INSPECTOR FROM THE GOVERNING JURISDICTION IS SUBJECT TO REMOVAL OR EXPOSURE.
- B. FOR CONTINUOUS INSPECTION, WHEN WORK IN MORE THAN ONE CATEGORY OF WORK REQUIRING SPECIAL INSPECTION IS TO BE PERFORMED SIMULTANEOUSLY, OR THE GEOGRAPHIC LOCATION OF THE WORK IS SUCH THAT IT CANNOT BE CONTINUOUSLY OBSERVED IN ACCORDANCE WITH THE PROVISIONS OF THE CODE, IT IS THE CONTRACTOR'S RESPONSIBILITY TO EMPLOY A SUFFICIENT NUMBER OF INSPECTORS TO ASSURE THAT ALL WORK IS INSPECTED IN ACCORDANCE WITH THOSE PROVISIONS.
- C. THE SPECIAL INSPECTORS MUST BE CERTIFIED BY THE GOVERNING JURISDICTION IN THE CATEGORY OF WORK REQUIRED TO HAVE SPECIAL INSPECTION.
EXCEPTIONS:
 1. SOILS INSPECTIONS BY THE SOILS ENGINEER OF RECORD OR THE PROJECT INSPECTOR
 2. WHEN WAIVED BY THE GOVERNING JURISDICTION
- D. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INFORM THE SPECIAL INSPECTOR OR INSPECTION AGENCY AT LEAST TWO WORKING DAYS PRIOR TO PERFORMING ANY WORK THAT REQUIRES SPECIAL INSPECTION. ALL WORK PERFORMED WITHOUT REQUIRED SPECIAL INSPECTION IS SUBJECT TO REMOVAL.
- E. PROVIDE SPECIAL INSPECTION FOR CONNECTIONS BOLTED WITH A325 AND A490 BOLTS. INSPECTIONS SHALL BE DONE PER APPROVED NATIONALLY RECOGNIZED STANDARDS AND THE REQUIREMENTS OF THE CODE AND THE GOVERNING JURISDICTION. WHILE THE WORK IS IN PROGRESS, THE SPECIAL INSPECTOR SHALL DETERMINE THE BOLTS, NUTS, WASHERS AND PAINT; BOLTED PARTS; AND INSTALLATION AND TIGHTENING MEET THE STANDARDS REQUIREMENTS.
- F. THE SPECIAL INSPECTOR FOR HIGH STRENGTH BOLTED CONNECTIONS SHALL:
 1. OBSERVE THE CALIBRATION PROCEDURES WHEN SUCH PROCEDURES ARE REQUIRED BY THE PLANS OR SPECIFICATIONS.
 2. MONITOR THE INSTALLATION OF BOLTS TO DETERMINE THAT ALL PLIES OF CONNECTED MATERIALS HAVE BEEN DRAWN TOGETHER.
 3. MONITOR THAT THE SELECTED PROCEDURE IS PROPERLY USED TO TIGHTEN ALL BOLTS.
- G. THE CONSTRUCTION MATERIALS TESTING LABORATORY MUST BE APPROVED BY THE GOVERNING JURISDICTION, FOR TESTING OF MATERIALS, SYSTEMS, COMPONENTS AND EQUIPMENT.
- H. PERIODIC INSPECTION SHALL OCCUR FREQUENTLY ENOUGH TO INSPECT ALL OF THE INSTALLED ITEMS AND TO PERIODICALLY WITNESS THE INSTALLATION OF THE ITEMS.
- I. THE SPECIAL INSPECTOR SHALL PROVIDE WEEKLY REPORTS AND A FINAL REPORT TO THE STRUCTURAL ENGINEER IN ADDITION TO REPORTING REQUIREMENTS OUTLINED IN SECTION 1704.2.4.
- J. A CERTIFICATE OF SATISFACTORY COMPLETION OF WORK REQUIRING SPECIAL INSPECTION MUST BE COMPLETED AND SUBMITTED TO THE GOVERNING JURISDICTION AND THE STRUCTURAL ENGINEER OF RECORD FOR THE PROJECT.
- K. THE SPECIAL INSPECTOR SHALL ENSURE THAT ALL DEFICIENCIES NOTED BY THE STRUCTURAL ENGINEER IN STRUCTURAL OBSERVATION REPORTS ARE CORRECTED. SUCH COMPLIANCE SHALL BE REFERENCED IN SPECIAL INSPECTOR REPORT.

STRUCTURAL STEEL

1. STRUCTURAL STEEL DESIGN SHALL BE APPROVED AND FABRICATED BY AN AISC APPROVED CONTRACTOR.
2. ALL STRUCTURAL STEEL SHALL CONFORM TO THE ASTM DESIGNATION INDICATED BELOW UNLESS OTHERWISE NOTED:

DESCRIPTION	DESIGNATION	COATING / FINISH
W SHAPES - COLUMNS, GIRDERS AND BEAMS	A992-GRADE 50	HOT DIPPED GALVANIZED PER ASTM A123
BASE PLATES AND CAP PLATES	A572-GRADE 50	
STIFFENERS AND MISC. PLATES	A572-GRADE 50, OR A36	
ANGLES, CHANNELS AND MISC.	A36	
HSS SECTIONS	A500-GRADE C	PRE-GALVANIZED
"C" AND "T" PURLINS	A653-G90	
HIGH STRENGTH BOLTED CONNECTIONS	BOLTS: ASTM A325	PRE-GALVANIZED OR STAINLESS STEEL
	NUTS: ASTM A563	
	WASHERS: F436	
	TC BOLTS: F1852	
	TI WASHERS: F959	
ANCHOR RODS	F1554-GRADE 36	PRE-GALVANIZED

3. THE STRUCTURAL STEEL FABRICATOR SHALL MAINTAIN ALL MANUFACTURERS MATERIAL TEST REPORTS (MTR) FOR ALL STRUCTURAL STEEL MEMBERS.
4. THE APPROVED STRUCTURAL STEEL FABRICATOR SHALL EMPLOY DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES THAT PROVIDE A BASIS FOR INSPECTION CONTROL OF THE WORKMANSHIP AND MATERIALS USED IN FABRICATION. AT COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE BUILDING OFFICIAL STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
5. ALL STRUCTURAL STEEL MEMBERS SHALL BE CLASSIFIED AS ARCHITECTURALLY EXPOSED STRUCTURAL STEEL - TYPE 3 (AESS 3) AND SHALL BE FABRICATED, FINISHED AND HANDLED PER ANSI/AISC 303-16, CHAPTER 10-AESS 3.
6. ALL WELDING TO BE PERFORMED BY WELDERS CERTIFIED TO AWS D1.1 STRUCTURAL WELDING CODE, PER AISC 360 LATEST EDITIONS AND APPROVED WELD PROCEDURES.
7. ALL WELDING FILLER MATERIALS SHALL BE APPROVED TO AWS SPECIFICATION A5.20 AND CLASSIFIED TO AWS E71T-1.
8. STRUCTURAL OBSERVATIONS SPECIFIED IN SECTIONS 1, 2 AND 3 OF THE ADJACENT TABLE (STEEL: TESTS AND SPECIAL INSPECTIONS) ARE NOT REQUIRED FOR THIS PROJECT PER BUILDING CODE IF FABRICATION IS COMPLETED BY A FABRICATOR APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION.
9. AT COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE OWNER OR OWNER'S AUTHORIZED AGENT FOR SUBMITTAL TO THE BUILDING OFFICIAL STATING THAT WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
10. ALL HIGH STRENGTH BOLTS SHALL BE TIGHTENED TO "SNUG-TIGHT" CONDITION PER AISC 360 SECTION J3.1G AND RCSC SPECIFICATION SECTION 8.1 UNLESS OTHERWISE SPECIFIED.

STEEL: TESTS AND SPECIAL INSPECTIONS

VERIFICATION AND INSPECTION	TYPE	RESP	REFERENCING STANDARD
1. VERIFICATION OF STRUCTURAL STEEL MATERIAL			
A. STRUCTURAL STEEL MARKINGS CONFORMING TO AISC 360, CURRENT EDITION	P	SI	AISC 360: M5.5
B. VERIFY MANUFACTURERS MATERIAL TEST REPORTS	P	SI	AISC 360: M5.5
2. VERIFICATION OF WELD FILLER MATERIALS AND PROCEDURES			
A. VERIFY MARKINGS TO CONFORM TO INDICATED AWS SPECIFICATION	P	SI	AISC 360: A3.5 AWS A5.20
B. VERIFY MANUFACTURERS MATERIAL TEST REPORTS OR CERTIFICATE OF COMPLIANCE	P	SI	AISC 360: A3.5 AWS A5.20
C. VERIFY WELD PROCEDURE (WPS), WELDER QUALIFICATION AND EQUIPMENT	P	SI	AISC 360: A3.5 AWS A5.20
3. VERIFICATION OF WELDING			
A. MULTIPASS WELDS	C	SI	AWS D1.1
B. SINGLE-PASS WELDS > 3/8"	C	SI	AWS D1.1
C. SINGLE PASS WELDS = 3/8"	P	SI	AWS D1.1
4. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS			
A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS	P	SI	AISC 360: A3.3, NS.6-1 RCSC 2.3
B. VERIFY MANUFACTURERS MATERIAL TEST REPORTS OR CERTIFICATE OF COMPLIANCE	P	SI	AISC 360: NS.6-1 RCSC 2.1
C. VERIFY "SNUG-TIGHTEND" CONNECTIONS	P	SI	AISC 360: M2.5, NS.6-2 RCSC 8.1, 9.1

TEST AND SPECIAL INSPECTIONS KEY

TYPE:

- P (PERIODIC) - INDICATES THAT A PERIODIC SPECIAL INSPECTION IS REQUIRED
- C (CONTINUOUS) - INDICATES THAT A CONTINUOUS SPECIAL INSPECTION IS REQUIRED
- T (TEST) - INDICATES THAT A TEST IS REQUIRED
- RESPONSIBILITY (PERFORMED BY):
- SI (SPECIAL INSPECTOR) - INDICATES THAT A SPECIAL INSPECTION IS TO BE PERFORMED BY QUALIFIED SPECIAL INSPECTOR
- PI (PROJECT INSPECTOR) - INDICATES THAT A SPECIAL INSPECTION IS TO BE PERFORMED BY THE QUALIFIED PROJECT INSPECTOR
- GE (GEOTECHNICAL ENGINEER) - INDICATES THAT THE SPECIAL INSPECTION IS TO BE PERFORMED BY A REGISTERED GEOTECHNICAL ENGINEER OR HIS/HER AUTHORIZED REPRESENTATIVE



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GENERAL STRUCTURAL NOTES

REV	DATE	DESCRIPTION

KSS PROJECT #
DATE
DRAWN BY: ODN
CHECKED BY: ODN

SHEET
S002

GENERAL STRUCTURAL NOTES CONTINUED

FOUNDATION

- CONTRACTOR SHALL INVESTIGATE SITE DURING CLEARING AND EARTHWORK OPERATIONS FOR FILLED EXCAVATIONS OR BURIED STRUCTURES, SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, ETC., IF ANY SUCH STRUCTURES ARE FOUND, STRUCTURAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
- CONTRACTOR SHALL REMOVE CONTAMINATED SOILS (WHERE OCCUR) PER THE SOILS REPORT. SOIL REMOVAL AND RECOMPACTION SHALL BE PER THE SOILS REPORT AND APPROVED CONTRACT DOCUMENTS.
- FOUNDATIONS SHALL BE PLACED AND ESTIMATED ACCORDING TO DEPTHS SHOWN ON DRAWINGS. SHOULD SOIL ENCOUNTERED AT THESE DEPTHS NOT BE APPROVED BY THE INSPECTOR OR SOILS ENGINEER, FOUNDATION ELEVATIONS WILL BE ALTERED.
- KEEP EXCAVATIONS FREE OF WATER BEFORE PLACING CONCRETE UNLESS OTHERWISE APPROVED BY THE SOILS ENGINEER. IF UNABLE TO SEAL OFF WATER FLOW, PER THE APPROVAL OF THE SOILS ENGINEER, ALLOW WATER LEVEL TO ATTAIN ITS NORMAL LEVEL AND PLACE CONCRETE BY THE TREMIE METHOD OR OTHER APPROVED METHOD. CONTRACTOR TO PROVIDE FOR DE-WATERING OF EXCAVATIONS FROM EITHER SURFACE WATER, GROUND WATER, OR SEEPAGE, IF REQUIRED.
- EACH BORING FOR THE DRILLED PIER MUST BE INSPECTED BY THE SOILS ENGINEER PRIOR TO PLACING CONCRETE AND REINFORCING STEEL. ADJUST SHAFT LENGTHS UNDER DIRECTION OF THE SOILS ENGINEER AND THE OWNER'S REPRESENTATIVE BASED ON SOIL CONDITIONS AT TIME OF DRILLING.
- PRECAUTIONS SHOULD BE TAKEN DURING THE INSTALLATION OF PIERS TO MINIMIZE THE POSSIBILITY OF CAVING. CLOSELY SPACED PIERS SHOULD BE DRILLED AND FILLED ALTERNATELY, ALLOWING THE CONCRETE TO SET AT LEAST EIGHT HOURS BEFORE DRILLING AN ADJACENT HOLE. PIER EXCAVATIONS SHOULD BE FILLED WITH CONCRETE AS SOON AFTER DRILLING AND INSPECTION AS POSSIBLE.
- PLACE REINFORCING STEEL IN ONE CONTINUOUS UNIT AND ACCURATELY HOLD SECURELY IN FINAL POSITION USING CHAIRS OR SPACERS DURING CONCRETE PLACEMENT.
- AN UNREINFORCED HEIGHT OF 12 INCHES AT THE BOTTOM OF THE SHAFT IS ACCEPTABLE.
- CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF ACI 336.3R, LATEST EDITION.

REINFORCING STEEL

- REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 19 OF THE CODE, ASTM A615 (A706 WHERE NOTED ON PLANS), GRADE 60 UNLESS OTHERWISE NOTED. DEFORMATIONS SHALL BE IN ACCORDANCE WITH ASTM A-305.
- BARS SHALL BE CLEAN OF RUST, GREASE, OR OTHER MATERIALS LIKELY TO IMPAIR BOND. ALL REINFORCING BAR BENDS SHALL BE MADE COLD.
- REINFORCING BARS SHALL NOT BE SPICED UNLESS SPECIFICALLY NOTED ON PLAN AND SHALL CONFORM TO THE PROVISIONS OF ACI 318. LAP ALL HORIZONTAL BARS AT CORNERS AND INTERSECTIONS.
- ALL BARS SHALL BE MARKED SO THEIR IDENTIFICATION CAN BE MADE WHEN THE FINAL IN-PLACE INSPECTION IS MADE.
- REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH ACI 315.
- COMPLETE AND DETAILED REINFORCING PLACEMENT DRAWINGS SHALL BE PREPARED AND SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER PRIOR TO FABRICATION IN ACCORDANCE WITH SPECIFICATIONS AND APPLICABLE CODES. THESE APPROVED DRAWINGS SHALL BE AVAILABLE ON THE JOB SITE PRIOR TO PLACING OF CONCRETE.
- REBAR SPACINGS GIVEN ARE MAXIMUM ON CENTER WHETHER STATED AS "O.C." OR NOT, UNLESS A SPECIFIED LENGTH IS GIVEN. ALL REBAR IS CONTINUOUS UNLESS STATED AS "CONT." OR NOT.
- MILL TEST REPORTS FOR GRADE 60 BARS SHALL BE SUBMITTED PRIOR TO PLACEMENT OF CONCRETE.
- MECHANICAL BAR SPLICES (COUPLERS) SHALL BE USED WHERE SPECIFIED ON PLANS. THEY MAY ALSO BE USED AT THE CONTRACTOR'S OPTION IN LIEU OF LAP SPLICES AND WHERE REINFORCING IS SHOWN CONTINUOUS THROUGH BY ACI 318 AND BE ONE OF THOSE LISTED BELOW AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS:
 - HRC 500 SERIES MECHANICAL COUPLERS (ICC ESR-2764)
 - LENTON A2 SERIES MECHANICAL SPLICES (IAPMO ER-0129)

FOUNDATION TESTS AND SPECIAL INSPECTIONS			
VERIFICATION AND INSPECTION	TYPE	RESP	REFERENCING STANDARD
1. SOILS (TABLE 1705.6)			
A. VERIFY MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	P	GE	-
B. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	P	GE	-
C. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY	P	GE	-
2. CAST-IN-PLACE DEEP FOUNDATIONS (TABLE 1705.8)			
A. INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT.	C	SI	-
B. VERIFY PLACEMENT LOCATIONS, PLUMBNESS, DIAMETER AND DEPTH. VERIFY ADEQUATE END-BEARING STRATA CAPACITY AND PROPER MATERIAL AT DEPTH.	C	SI	-
3. REINFORCING			
INSPECT HEAR STUDS AJ	P	SI	ACI 318: 20, 25.2, 25.3, 26.6.1 - 26.6.3
B. INSPECT WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A706	P	SI	ACI 318: 20, 25.2, 25.3, 26.6.1 - 26.6.3
C. INSPECT ANCHOR BOLTS AND EMBED PLATES TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE	C	SI	ACI 318: 17.8.2

CONCRETE

- ALL CONCRETE CONSTRUCTION SHALL CONFORM WITH THE CODE AND WITH THE PROVISIONS OF ACI 318 AND ACI 301.
- CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED TESTING LABORATORY AND APPROVED BY THE STRUCTURAL ENGINEER.
 - MIX DESIGN METHODS (TEST HISTORY OR TRIAL BATCH METHOD) PER THE CODE SHALL BE USED TO PROPORTION CONCRETE. SUBMIT MIX DESIGN METHOD DATA.
 - MIX DESIGNS SHALL SATISFY EITHER THE SHRINKAGE CRITERIA OR THE W/C RATIO AND TOTAL WATER CRITERIA.
- PORTLAND CEMENT SHALL CONFORM TO ASTM C-150 TYPE II
- AGGREGATE FOR HARD ROCK CONCRETE SHALL CONFORM TO ALL REQUIREMENTS AND TESTS OF ASTM C33 AND PROJECT SPECIFICATIONS. CONCRETE SHALL BE DESIGNED TO FACILITATE PLACEMENT BY PUMP. EXCEPTIONS MAY BE USED ONLY WITH PERMISSION OF THE STRUCTURAL ENGINEER.
- CONCRETE MIXING OPERATION, ETC. SHALL CONFORM TO ASTM C94.
- SCHEDULE OF STRUCTURAL CONCRETE PERFORMANCE REQUIREMENTS:

MEMBER	f _c / 28 DAY	MAX W/C	MAX DENSITY
ALL FOOTINGS AND FOUNDATIONS	4000 PSI	0.50	150 PCF

- PLACEMENT OF CONCRETE SHALL CONFORM TO ACI 301 AND PROJECT SPECIFICATIONS. CLEAN AND ROUGHEN TO 1/4" AMPLITUDE ALL CONCRETE SURFACES AGAINST WHICH NEW CONCRETE IS TO BE PLACED.
- CONTINUOUS INSPECTION OF CONCRETE SHALL INCLUDE INSPECTION DURING INSTALLATION OF REINFORCING STEEL. INSPECTION SHALL BE SCHEDULED SO THAT PLACEMENT OF REINFORCING STEEL, CONDUIT, SLEEVES, AND EMBEDDED ITEMS MAY BE CORRECTED PRIOR TO PLACEMENT OF OVERLYING GRIDS OF REINFORCING STEEL.
- FOR CAST-IN-PLACE CONCRETE, THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:

DESCRIPTION	MINIMUM COVER
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3" (±3/8")
CONCRETE EXPOSED TO EARTH OR WEATHER No. 4 THROUGH No. 18 BAR	2" (±3/8")
CONCRETE EXPOSED TO EARTH OR WEATHER No. 5 BAR, W31 OR D31 WIRE OR SMALLER	1 1/2" (±3/8")
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND	3/4" (±1/4")

- ALL REINFORCING BARS, ANCHOR BOLTS, AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.
- CONCRETE SHALL BE PUMPED IN PLACE IN 18" TO 24" LIFTS PER ACI RECOMMENDATIONS.
- PIPES OR CONDUITS LARGER THAN 4" DIAMETER SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE EXCEPT WHERE SPECIFICALLY APPROVED BY STRUCTURAL ENGINEER. PIPES OR CONDUITS SHALL NOT DISPLACE OR INTERRUPT REINFORCING BARS. SPACE THE PIPES OR CONDUITS SUCH THAT PROPER CONCRETE PLACEMENT AND CONSOLIDATION IS ACHIEVED.
- FOAM USED AS STAY-IN-PLACE FORMS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5.8 PSI AT 1% DEFORMATION AND A MINIMUM MODULUS OF 800 PSI PER ASTM D6817.
- PROVIDE MIN 1/4" CHAMFER ON ALL EXPOSED CORNERS UNLESS INDICATED OTHERWISE.
- THE SolFast™ SHORING SYSTEM MUST REMAIN INSTALLED 48 HOURS AFTER THE FOUNDATIONS HAVE BEEN CAST OR AFTER CONCRETE REACHES A MINIMUM COMPRESSIVE STRENGTH OF 2000-PSI, WHICHEVER COMES FIRST. BREAK TESTS NOT REQUIRED IF WAITING UNTIL 48 HOURS TO REMOVE SolFast™ SHORING SYSTEM.

CONCRETE: TESTS AND SPECIAL INSPECTIONS			
VERIFICATION AND INSPECTION	TYPE	RESP	REFERENCING STANDARD
1. PRE-PLACEMENT INSPECTIONS (TABLE 1705.3)			
A. INSPECT POSITION AND PLACEMENT OF REINFORCEMENT STEEL	C	SI	ACI 318: 26.6
B. INSPECT POSITION OF PLACEMENT OF EMBEDDED STRUCTURAL STEEL COLUMNS, ANCHOR BOLT ASSEMBLIES, ELECTRICAL CONDUIT AND GROUNDING GRID EMBEDMENTS	C	SI	ACI 318: 26.8.2, 26.11.1.2
C. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS	C	SI	ACI 318: 26.11.1.2
2. CONCRETE PLACEMENT			
A. VERIFY USE OF REQUIRED DESIGN MIX	P	SI	ACI 318: 19, 26.4.3, 26.4.4
B. INSPECT CONCRETE PLACEMENT TECHNIQUES	C	SI	ACI 318: 26.5
C. AT THE TIME CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, RECORD THE FOLLOWING TEST RESULTS OF THE CONCRETE: <ul style="list-style-type: none"> SLUMP AIR CONTENT TEMPERATURE 	C	SI	ACI 318: 26.5, 26.12, ASTM C172, ASTM C31
D. VERIFY SPECIFIED CURING TEMPERATURE AND TECHNIQUES FOR PLACED CONCRETE	P	SI	ACI 318: 26.5.3, 26.5.5
E. VERIFY IN-SITU CONCRETE STRENGTH PRIOR TO THE REMOVAL OF FORMS AND SHORING SYSTEMS	P	SI	ACI 318: 26.11.2

TEST AND SPECIAL INSPECTIONS KEY

- TYPE:
- P (PERIODIC) - INDICATES THAT A PERIODIC SPECIAL INSPECTION IS REQUIRED
 - C (CONTINUOUS) - INDICATES THAT A CONTINUOUS SPECIAL INSPECTION IS REQUIRED
 - T (TEST) - INDICATES THAT A TEST IS REQUIRED
 - RESPONSIBILITY (PERFORMED BY):
 - SI (SPECIAL INSPECTOR) - INDICATES THAT A SPECIAL INSPECTION IS TO BE PERFORMED BY QUALIFIED SPECIAL INSPECTOR
 - PI (PROJECT INSPECTOR) - INDICATES THAT A SPECIAL INSPECTION IS TO BE PERFORMED BY THE QUALIFIED PROJECT INSPECTOR
 - GE (GEOTECHNICAL ENGINEER) - INDICATES THAT THE SPECIAL INSPECTION IS TO BE PERFORMED BY A REGISTERED GEOTECHNICAL ENGINEER OR HIS/HER AUTHORIZED REPRESENTATIVE



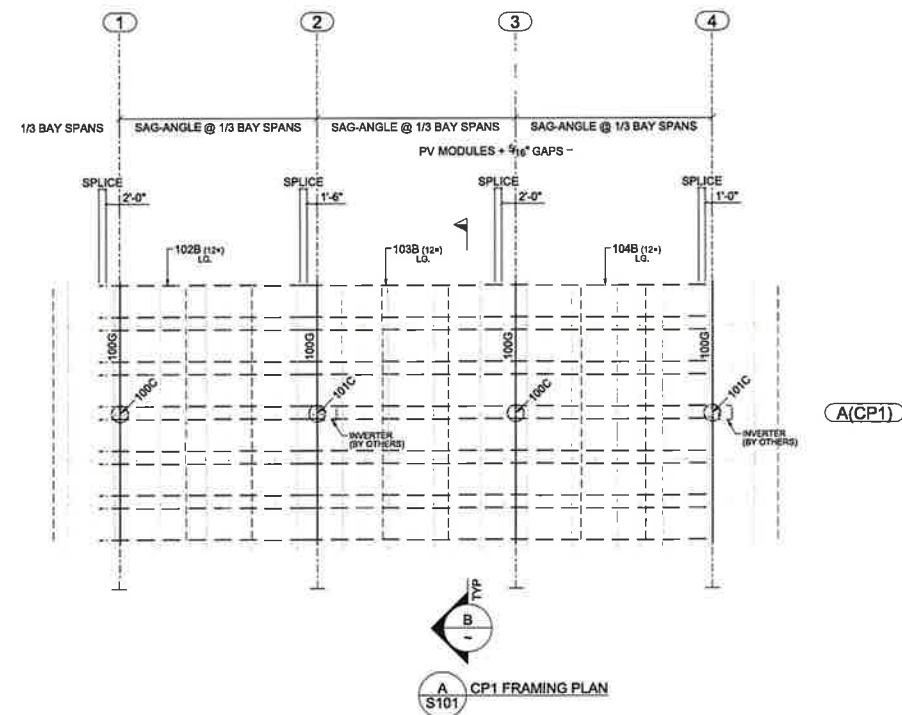
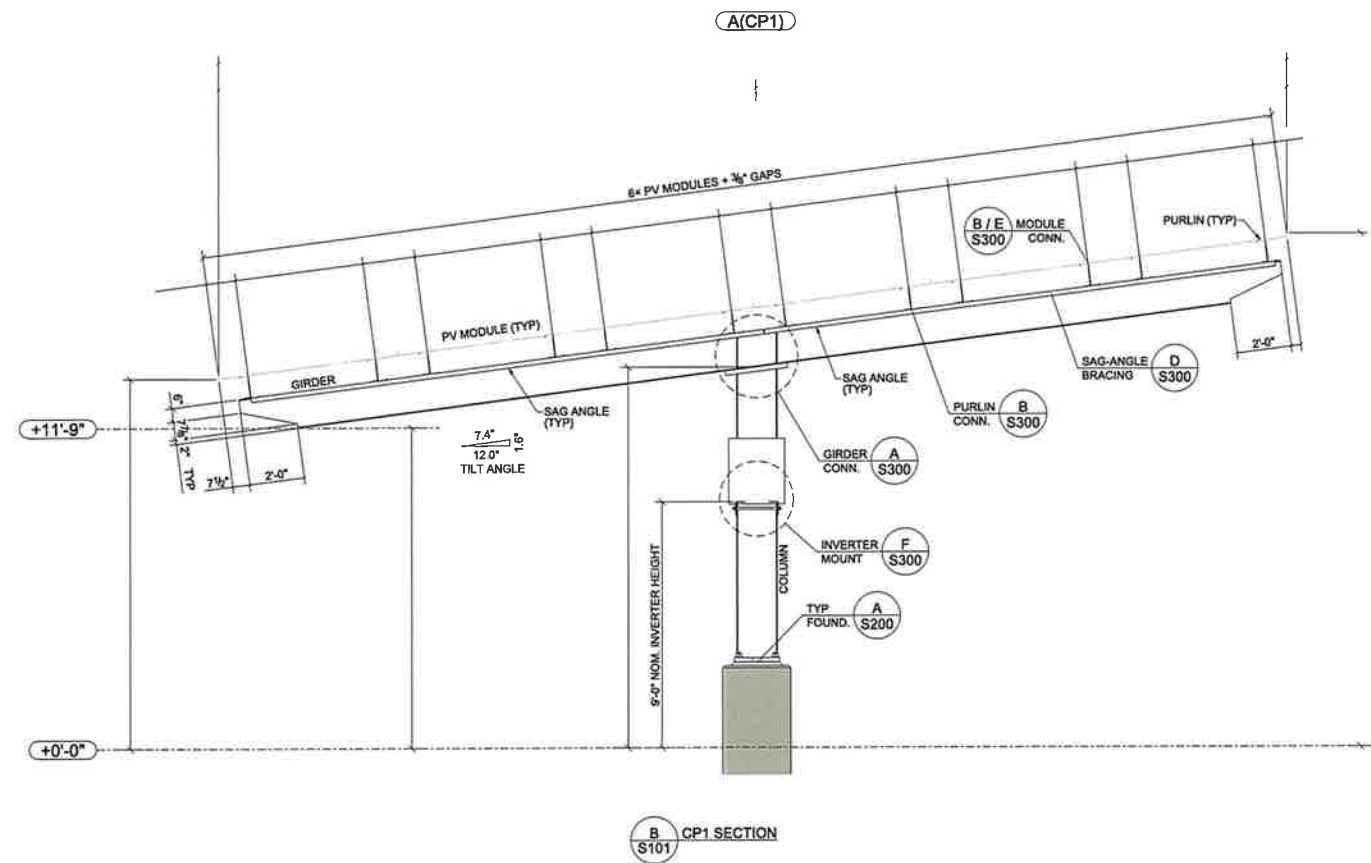
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GENERAL STRUCTURAL NOTES CONTINUED

REV	DATE	DESCRIPTION
01	05/10/2022	ISSUE FOR PERMIT

REVISION SCHEDULE
Design No.: 2200000000
PROJECT #
DATE
DRAWN BY: GKH
CHECKED BY: GKH
SHEET: S003



BILL OF MATERIALS							
ITEM NO.	PART NUMBER	SHIPPING MARK	PROFILE	DESCRIPTION	LENGTH	MATERIAL	QTY.
STRUCTURAL COMPONENTS							
1		1xc	W18X60	COLUMN		A92 GALVANIZED PER ASTM A133	
2		1xcg	W18X60	GIRDER		A92 GALVANIZED PER ASTM A133	
3		1xc8	C10X3.50X0.135	CENTER PURLIN		A53-GW PRE-GALV.	
4		1xc8	C10X3.50X0.135	CENTER PURLIN		A53-GW PRE-GALV.	
5		1xc8	C10X3.50X0.135	CENTER PURLIN		A53-GW PRE-GALV.	
6		1xc8	C10X3.50X0.135	CENTER PURLIN		A53-GW PRE-GALV.	
7		1xc8	C10X3.50X0.135	CENTER PURLIN		A53-GW PRE-GALV.	
8		1xc8	C10X3.50X0.135	END PURLIN		A53-GW PRE-GALV.	
9		1xc8	C10X3.50X0.135	END PURLIN		A53-GW PRE-GALV.	
10		1xc7		AB TEMPLATE		A36	
11		1xcP	8PL1/4\"X6"	G-CLIP		A36 GALVANIZED PER ASTM A133	
12		1xcM	16X4X5/16	INV MOUNT	3'-6 1/2"	A36 GALVANIZED PER ASTM A133	
13		1xcDUM	28 3/4\"X22 1/2"	INVERTER	2'-0 3/4"	A36	
14		1xcD	L2X2X1/8	SAG ANGLE		A36 GALVANIZED PER ASTM A133	
STRUCTURAL HARDWARE							
15				HEAVY HEX BOLT 1 1/4\"Ø x 4 1/2"		A325N GALV.	
16				HEAVY HEX NUT 1 1/4\"Ø		A325 GALV.	
17				FLAT WASHER 1 1/4\"Ø		F436 GALV.	
18				HEAVY HEX BOLT 5/8\"Ø x 1 3/4"		A325N GALV.	
19				HEAVY HEX NUT 5/8\"Ø		A563 GALV.	
20				FLAT WASHER 5/8\"Ø		F436 GALV.	
21				HEX BOLT 1/2\"Ø x 1 1/2"		A307 GALV.	
22				HEX NUT 1/2\"Ø		A563 GALV.	
23				FLAT WASHER 1/2\"Ø		F844 GALV.	
24				HEX BOLT 1/2\"Ø x 1 1/4"		A307 GALV.	
25				HEX NUT 1/2\"Ø		A563 GALV.	
26				FLAT WASHER 1/2\"Ø		F844 GALV.	
27				HEX BOLT 1/2\"Ø x 1"		A307 GALV.	
28				HEX NUT 1/2\"Ø		A563 GALV.	
29				FLAT WASHER 1/2\"Ø		F844 GALV.	

SHIPPING MARK KEY
 CARPORT (C) MEMBER TYPE
 ASSEMBLY# RANGING 00 TO 99
 EXAMPLE: 1018 (SEE PLAN)
 ASSEMBLY TYPE:
 COLUMN - C
 GIRDER - G
 CENTER PURLIN - B
 END PURLIN - E
 SAG ANGLE - D
 INV MOUNT - M
 G-CLIP - P
 AB TEMPLATE - T



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DATE

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S101

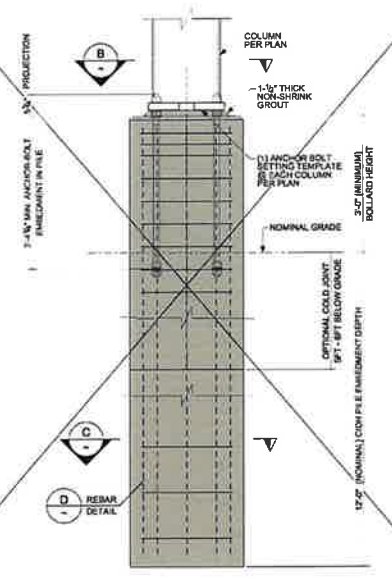


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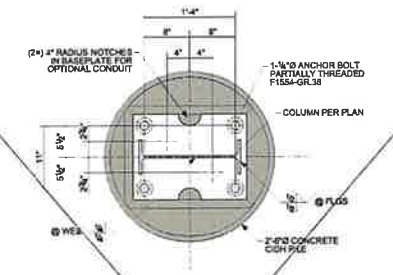
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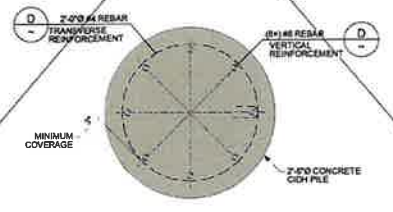
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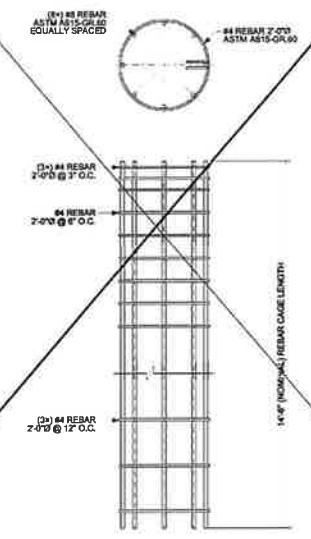
A 30" CIDH PILE WITH BOLLARD & BASEPLATE
S200



B BASEPLATE DETAIL
S200



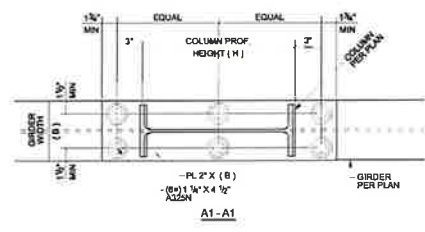
C 30" CIDH PILE SECTION
S200



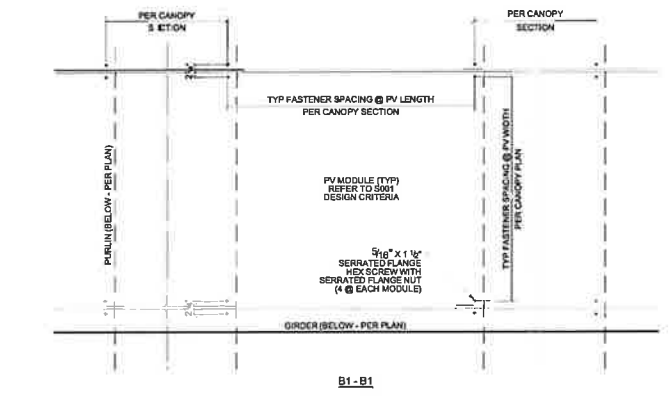
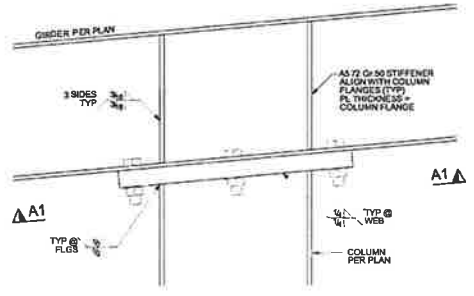
D 24" REINFORCEMENT DETAIL
S200

REV	DATE	DESCRIPTION

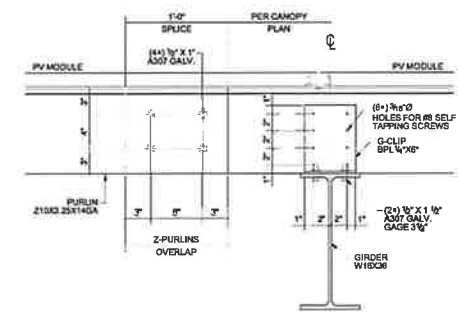
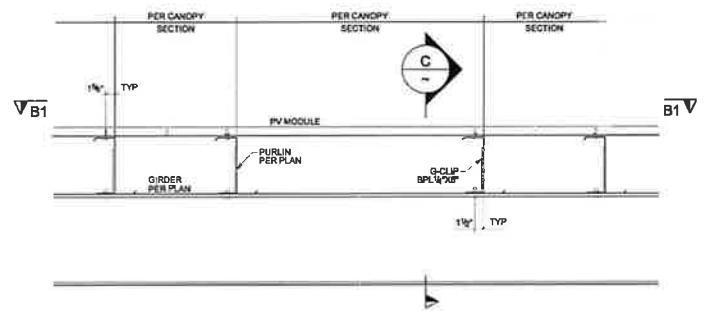
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SHEET **S200**



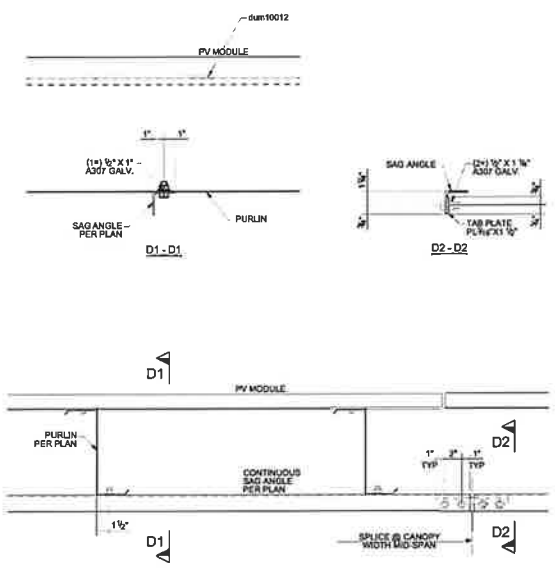
A GIRDER CONNECTION
S300



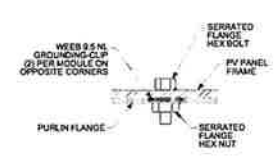
B PURLIN & PV MODULE CONNECTION
S300



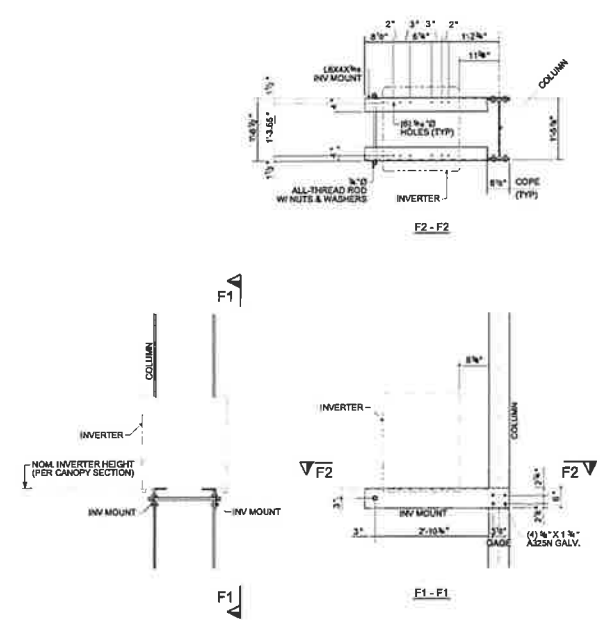
C PURLIN CONNECTION & PURLIN SPLICE
S300



D SAG-ANGLE PURLIN BRACING
S300



E PV MODULE - WEEB
S300



F INVERTER MOUNT - W18x40 COLUMN
S300



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STEEL DETAILS

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