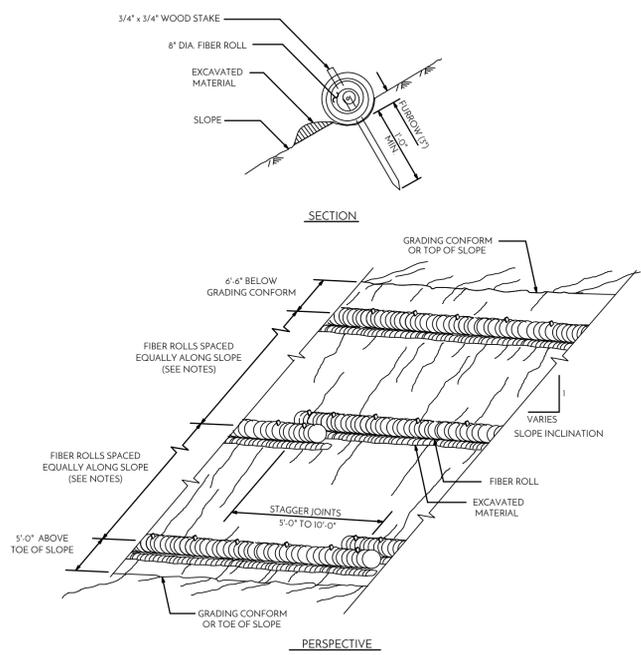
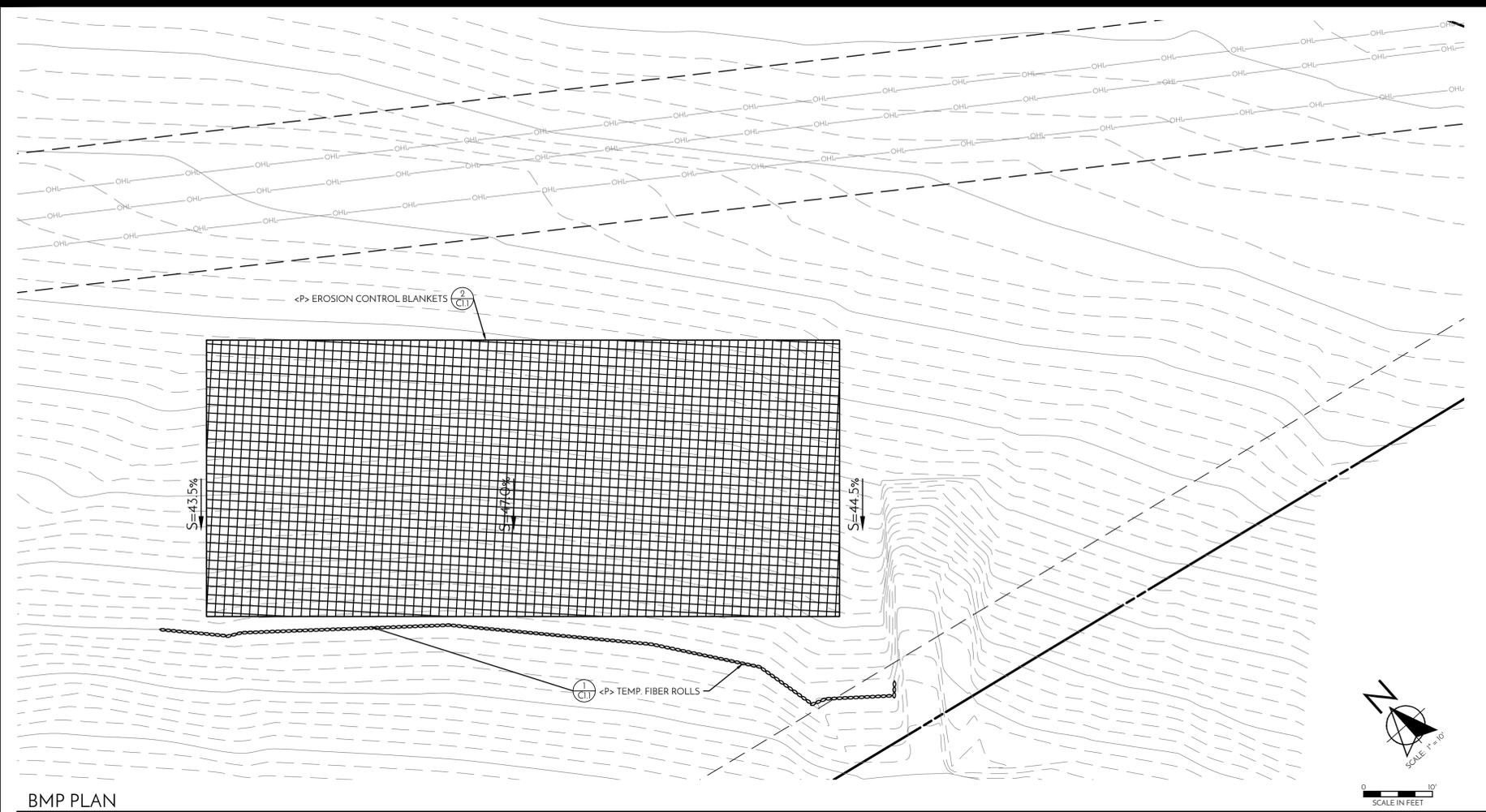


“E”

Site Plan, Civil Plan, Solar
Details, Slope Figure

Via Monte Solar Array P23-00229
Planning Commission Hearing Date May 1, 2024



NOTES
 1. FIBER ROLLS SHALL BE INSTALLED LEVEL (ON CONTOUR).
 2. FIBER ROLL ENDS SHALL BE TURNED UP SLOPE TO PREVENT RUN-OFF FROM GOING AROUND THE ROLLS.

1 TEMPORARY FIBER ROLL NOT TO SCALE

BMP PLAN

EROSION CONTROL NOTES

THE PURPOSE OF THIS PROJECT IS TO PLACE A NEW SOLAR ARRAY WITHIN APN 025-300-037, A PARCEL OF APPROXIMATELY 10.36 TOTAL ACRES LOCATED AT 277 VIA MONTE, ST. HELENA, CALIFORNIA.

- GRADING ON THE SITE WILL BE LIMITED TO THE AREAS SHOWN ON THE PLAN.
- ALL MOVEMENT OF EARTH SHALL COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE NAPA COUNTY GRADING ORDINANCE AND THE EROSION CONTROL PLAN.
- CHANGES TO THIS EROSION AND SEDIMENT CONTROL PLAN TO MEET FIELD CONDITIONS WILL BE MADE ONLY WITH THE APPROVAL OF OR AT THE DIRECTION OF THE NAPA COUNTY ENGINEERING DIVISION.
- BETWEEN OCTOBER 15 AND APRIL 1, EROSION CONTROL MEASURES WILL BE INSPECTED AND REPAIRED AT THE END OF EACH WORKING DAY AND/OR AT THE END OF A STORM EVENT. ALL PAVED AREAS WILL BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE WILL BE MAINTAINED SO THAT A MINIMUM OF SEDIMENT-LOADED RUNOFF LEAVES THE SITE.
- THE CONTRACTOR WILL INFORM ALL CONSTRUCTION SITE WORKERS ABOUT THE MAJOR PROVISIONS OF THE EROSION AND SEDIMENT CONTROL PLAN AND SEEK THEIR COOPERATION IN AVOIDING THE DISTURBANCE OF THESE CONTROL MEASURES.

VEGETATION REMOVAL CONSISTS OF CLEARING BRUSH, GRASSES, AND PLANTS FROM THE SITE. ALL ORGANIC MATERIAL SHALL BE MULCHED AND SPREAD ON SITE.

SOILS WITHIN THE GRADING ENVELOPE HAVE BEEN CLASSIFIED IN THE USDA SOIL CONSERVATION SERVICE'S NAPA COUNTY SOIL SURVEY, INCLUDING THE HAZARD OF EROSION AS FOLLOWS:

SCS#	SOIL TYPE	% SLOPE	HAZARD OF EROSION
102	AIKEN LOAM	30 TO 50	MODERATE

TEMPORARY EROSION CONTROL MEASURES WILL CONSIST OF THE INSTALLATION OF FIBER ROLLS ACCORDING TO DETAIL 1 THIS SHEET AND ANY TEMPORARY CONSTRUCTION ACCESS DRIVES WILL INSTALL EROSION CONTROL BLANKETS ON THE CUT SLOPES ACCORDING TO DETAIL 2 THIS SHEET, AND PLACEMENT OF STRAW MULCH OVER THE DISTURBED AREA. PERMANENT EROSION CONTROL MEASURES WILL CONSIST OF PLACING PERMANENT EROSION CONTROL BLANKETS UNDER THE SOLAR ARRAY.

COVER CROP MAINTENANCE
 A PERMANENT COVER CROP SHALL BE PLANTED PRIOR TO OCTOBER 15. THIS COVER CROP MAY BE MOWED EACH SPRING AFTER THE SEED HAS FULLY MATURED (HARD DOUGH STAGES) TO ENSURE ANNUAL GRASS SPECIES REGENERATION FOR THE FOLLOWING YEAR. MINIMUM MOWING HEIGHT OF 4" SHALL BE MAINTAINED FOR ESTABLISHING ANNUAL AND PERENNIAL GRASSES. NO RIPPING OR OTHER TILLAGE SHALL TAKE PLACE WITHIN THESE AREAS AFTER THE COMPLETION OF GRADING. OPTIMALLY, A GROUND COVER OF 70% OR GREATER WILL BE OBTAINED WITH THE OWNER BEING RESPONSIBLE FOR RESEEDING AND MAINTENANCE IN ORDER TO REACH THE DESIRED DEGREE OF COVER.

HYDRAULIC SEEDING REQUIREMENTS
 ALL GRADED OR DISTURBED AREAS SHALL BE SEEDDED IMMEDIATELY AFTER GRADING IS COMPLETE. SEED AND FERTILIZER SHALL BE APPLIED HYDRAULICALLY OR BROADCAST AT THE RATES SPECIFIED BELOW.

ITEM	DESCRIPTION	LB/ACRE
SEED	TYPE OF SEED	###
FERTILIZER	TYPE OF FERTILIZER	###

ITEM	DESCRIPTION	LB/ACRE
SEED	"BLANDO" BROME	15
	ZORRO FESCUE	6
	CRIMSON CLOVER	3
	ROSE CLOVER	6
FERTILIZER	AMMONIUM PHOSPHATE SULFATE (16-20-0)	200-240

AN ALTERNATE SEED MIX AND/OR FERTILIZER MAY BE USED AFTER REVIEW AND APPROVAL BY THE NAPA COUNTY ENGINEERING DIVISION.

SEED SHALL NOT REMAIN IN THE SLURRY LONGER THAN 30 MINUTES. FERTILIZERS SHALL NOT REMAIN IN THE SLURRY LONGER THAN 2 HOURS. AREAS TO BE HYDROSEEDED SHALL BE SCARIFIED TO A DEPTH OF 4" TO 6" AND DRESSED TO PROVIDE A REASONABLY SMOOTH FIRM SURFACE. THE SLURRY SHALL BE APPLIED IN A UNIFORM MANNER AT A RATE THAT IS NON-EROSIVE AND MINIMIZES RUNOFF.

ALL VINEYARD AVENUES SHALL HAVE "FAWN" TALL FESCUE ADDED TO THE SEED MIX AT 5 LB/ACRE.

EROSION CONTROL MEASURES AND BEST MANAGEMENT PRACTICES TO BE INSTALLED AND MAINTAINED

EROSION CONTROL BLANKETS
 EROSION CONTROL BLANKETS SHALL BE INSTALLED OVER ALL DISTURBED AND SEEDED AREAS AND CUT AND FILL SLOPES ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. SEE DETAIL 2 THIS SHEET FOR INSTALLATION.

IN AREAS WHERE THE TOE OF THE CUT SLOPE DOUBLES AS A SWALE ALONG THE EDGE OF THE ROAD, THE BLANKETS SHALL EXTEND TO COVER THE FLOWLINE AND SIDE SLOPES OF THE SWALE. ROCKS SHALL BE PLACED OVER THE TOP OF THE BLANKET WITHIN THE SWALE. THE BLANKETS SHALL OVERLAP IN SUCH A WAY THAT THE FLOW OF THE WATER WITHIN THE SWALE WILL NOT BE ALLOWED TO BURROW UNDER THE BLANKETS. WHERE THE SWALE FLOWLINES MEET AN EXPOSED EDGE OF BLANKET, BLANKET MUST BE KEVED INTO EXISTING SOILS SUCH THAT WATER IS NOT ALLOWED TO UNDERMINE BLANKETS.

FIBER ROLLS
 SHALL BE INSTALLED ON CONTOURS AT THE LOCATIONS SHOWN ON THE PLAN IN ACCORDANCE WITH DETAIL 1 ON THIS SHEET. FIBER ROLLS SHALL NOT BE INSTALLED ON ANY CROSS SLOPES.

STRAW MULCH
 SHALL BE SPREAD OVER ALL DISTURBED AND SEEDED AREAS. THE MULCH SHALL BE SPREAD MECHANICALLY OR BY HAND AT A RATE OF 2 TONS/ACRE.

COVERED MATERIAL STORAGE AREA
 ALL CONSTRUCTION MATERIALS INCLUDING, BUT NOT LIMITED TO PLASTER, PETROLEUM PRODUCTS, ASPHALT AND CONCRETE COMPONENTS, HAZARDOUS CHEMICALS, SHALL BE STORED IN A COVERED, CONTAINED AREA, TO PREVENT POLLUTION OF ANY WATERCOURSE. MATERIAL DATA SAFETY SHEETS SHALL BE AVAILABLE FOR ALL MATERIALS STORED. MATERIALS SHALL BE COVERED AND SECURED NIGHTLY.

CONCRETE WASHOUT
 CONCRETE WASHOUT SHALL BE PROVIDED TO WASH TOOLS AND OTHER ITEMS USED DURING CONSTRUCTION. CONTRACTOR SHALL PROVIDE A PREFABRICATED CONCRETE WASHOUT. HARDENED AND SETTLED CONCRETE SHALL BE DISPOSED OF IN AN APPROVED DISPOSAL FACILITY.

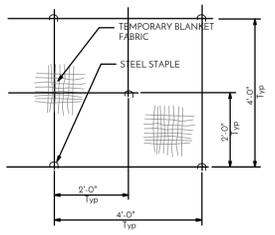
CONTRACTOR SHALL COORDINATE THE FOLLOWING INSTALLATION INSPECTIONS WITH THE CIVIL ENGINEER.

- PRE-INSTALLATION MEETING AT SITE.
- POST-INSTALLATION INSPECTION MEETING AT SITE.
- SCHEDULE COUNTY INSPECTIONS IN ADDITION TO THESE MEETINGS.

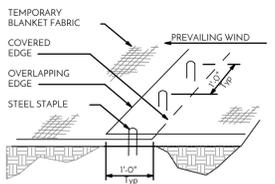
CONTRACTOR SHALL LEAD THE FOLLOWING MAINTENANCE RESPONSIBILITIES.

- REVIEW SWPPP OR ESCP.
- PROVIDE IRRIGATION (A SIMPLE LAWN SPRINKLER) TO ALL SEEDED AREAS TO PROMOTE SEED GERMINATION PRIOR TO THE BEGINNING OF RAINY SEASON.
- INSPECT ALL EROSION CONTROL MEASURES PRIOR TO ALL RAIN EVENTS.
- MAKE NECESSARY REPAIRS OR PROVIDE MAINTENANCE OF ANY SEDIMENT BUILDUP WHICH MAY HAVE ACCUMULATED.
- INSPECT ALL EROSION CONTROL MEASURES DURING HEAVY STORM EVENTS AND MAKE EMERGENCY REPAIRS OR ADDITIONS WHERE NECESSARY.
- INSPECT ALL EROSION CONTROL MEASURES AFTER RAIN EVENTS. REPAIRS SHALL BE PROMPTLY PERFORMED.
- CONTACT CIVIL ENGINEER FOR QUESTIONS OR TO PROVIDE FEEDBACK ON TROUBLE AREAS.

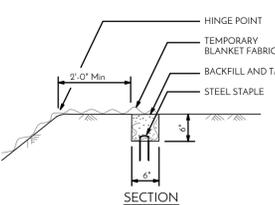
CONTRACTOR IS RESPONSIBLE FOR TRAINING ALL SUBCONTRACTORS ON PROPER STORM-WATER MANAGEMENT.



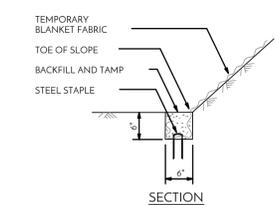
STAPLE PATTERN
 DETAIL A



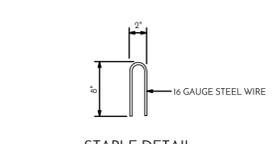
LONGITUDINAL BLANKET JOINT
 DETAIL B



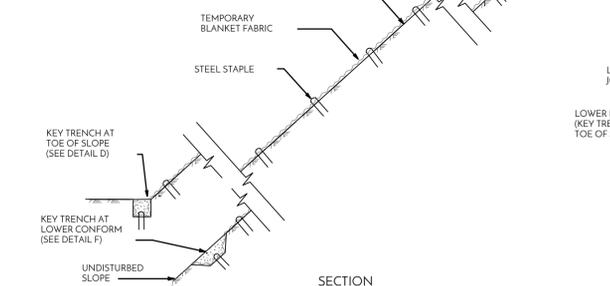
KEY TRENCH AT TOP OF SLOPE
 DETAIL C



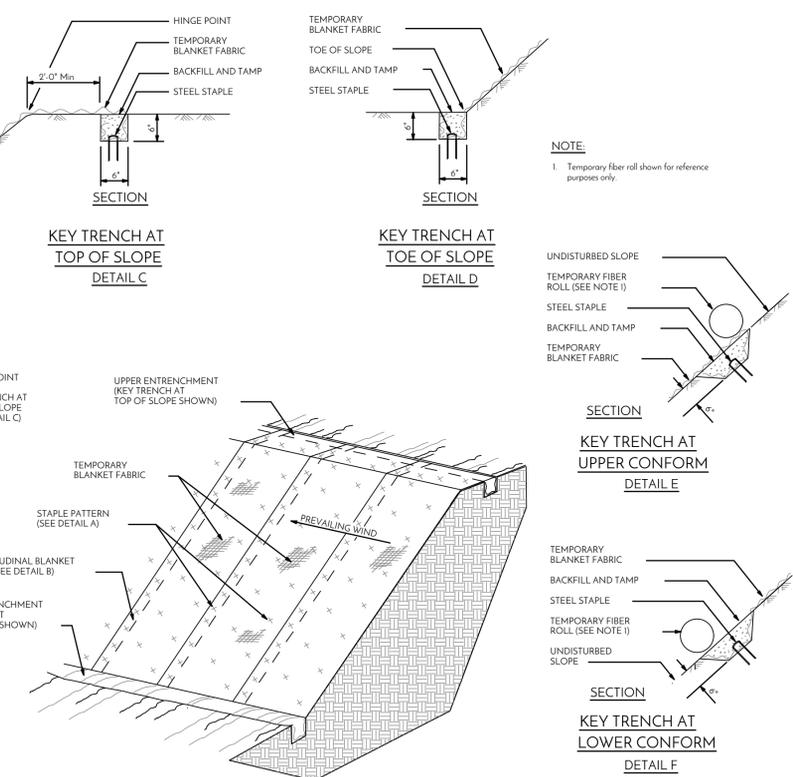
KEY TRENCH AT TOE OF SLOPE
 DETAIL D



STAPLE DETAIL



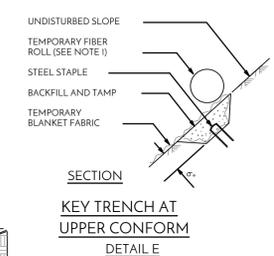
TEMPORARY EROSION CONTROL BLANKET ON SLOPE WITH VARIOUS KEY ENTRENCHMENTS



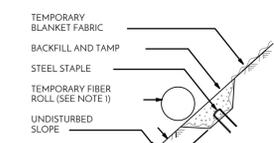
TEMPORARY EROSION CONTROL BLANKET ON SLOPE

EROSION CONTROL BLANKET

NOTE
 1. Temporary fiber roll shown for reference purposes only.



KEY TRENCH AT UPPER CONFORM
 DETAIL E



KEY TRENCH AT LOWER CONFORM
 DETAIL F

CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.

madrone
 engineering
 1483 Main Street, Suite 102
 St. Helena, CA 94574
 Tel: 707.309.6840

CIVIL IMPROVEMENT PLANS
BMP PLAN

FRIEDMAN SOLAR
 277 VIA MONTE
 ST. HELENA, CA 94574
 APN: 025-300-037
 PROJECT: 19-031

REGISTERED PROFESSIONAL ENGINEER
 No. 75989
 Exp. 06-30-24
 CIVIL
 STATE OF CALIFORNIA

EVERY PERSON PLANNING TO DIG
 CALL USA AT 800.485.7243 FOR EXCAVATION

FOR MORE INFORMATION
 SEE WWW.USANORTH.ORG

DATE: 02/07/23 ISSUE: USE PERMIT EXC
 09/20/23 REVISION 1

SHEET:

GENERAL NOTES

- CONTRACTOR SHALL BE APPROPRIATELY LICENSED WITH THE STATE OF CALIFORNIA TO PERFORM THE WORK OUTLINED IN THESE PLANS.
- PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL SECURE ANY CONSTRUCTION PERMITS FROM THE GOVERNING AGENCIES AS NECESSARY AND PAY ALL FEES INCLUDING INSPECTION FEES.
- ANY WORK DONE WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE DONE UNDER AN ENCRoACHMENT PERMIT ISSUED BY THE GOVERNING BODY.
- HOURS OF OPERATION ARE LIMITED TO 7:00 AM TO 7:00 PM, MONDAY THROUGH FRIDAY, AND 8:00 AM TO 4:00 PM ON WEEKENDS OR LEGAL HOLIDAYS, UNLESS A PERMIT IS FIRST SECURED FROM THE PUBLIC WORKS DIRECTOR OR HIS/HER DESIGNEE. THERE SHALL BE NO START UP OF MACHINES NOR EQUIPMENT PRIOR TO 8:00 AM, MONDAY THROUGH FRIDAY, NO DELIVERY OF MATERIALS NOR EQUIPMENT PRIOR TO 7:30 AM NOR PAST 5:00 PM, MONDAY THROUGH FRIDAY, NO CLEANING OF MACHINES NOR EQUIPMENT PAST 6:00 PM, MONDAY THROUGH FRIDAY, NO SERVICING OF EQUIPMENT PAST 6:45 PM, MONDAY THROUGH FRIDAY.
- CONTRACTOR AGREES THAT HE/SHE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNERS AND THE ENGINEER HARMLESS FROM ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THE PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNERS OR THE ENGINEER.
- SHOULD ANY CONTRACTOR OR SUBCONTRACTOR FIND ANY DEFICIENCIES, ERRORS, CONFLICTS OR OMISSIONS IN THESE PLANS AND SPECIFICATIONS OR SHOULD HE BE IN DOUBT AS TO THEIR MEANING OR INTENT, HE SHALL NOTIFY THE ENGINEER FOR A WRITTEN CLARIFICATION, ADDENDUM, ETC. SHOULD HE FAIL TO DO SO BEFORE SUBMITTING A PROPOSAL, HE CANNOT CLAIM ADDITIONAL COMPENSATION FROM WORK REQUIRED TO COMPLETE THE PROJECT.
- WRITTEN DIMENSIONS ALWAYS TAKE PRECEDENCE OVER SCALED DIMENSIONS. IF THERE IS A CONFLICT, NOTIFY THE ENGINEER AND OBTAIN A CLARIFICATION. NO DEVIATIONS OR SUBSTITUTIONS SHALL BE ALLOWED WITHOUT OBTAINING WRITTEN APPROVAL FROM THE ENGINEER.
- ALL WORKMANSHIP AND MATERIALS FOR BOTH ONSITE AND OFFSITE IMPROVEMENTS SHALL CONFORM TO THE STANDARD SPECIFICATIONS OF THE COUNTY OF NAPA, LATEST EDITION OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS AND STANDARD PLANS. THE ONSITE IMPROVEMENTS SHALL BE INSPECTED BY THE ENGINEERING DIVISION INSPECTOR.
- CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR BEING FAMILIAR WITH THE PROVISIONS AND REQUIREMENTS IN THE COUNTY OF NAPA STANDARD SPECIFICATIONS. CONTRACTOR SHALL HAVE A COPY AVAILABLE AT THE JOB SITE AT ALL TIMES.
- CONTRACTOR SHALL NOTIFY THE ENGINEERING DIVISION OF THE NAPA COUNTY DEPARTMENT OF PLANNING, BUILDING, AND ENVIRONMENTAL SERVICES (PBES) AT (707) 253-4351 AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
- CONTRACTOR SHALL REQUEST INSPECTIONS A MINIMUM OF ONE WORKING DAY IN ADVANCE BY CALLING THE ENGINEERING DIVISION OF THE NAPA COUNTY PBES DEPARTMENT AT (707) 253-4351.
- CONTRACTOR SHALL PROVIDE EMERGENCY TELEPHONE NUMBERS TO THE COUNTY SHERIFF, FIRE DEPARTMENT, AND ENGINEERING DIVISION OF THE NAPA COUNTY DEPARTMENT AND KEEP THEM INFORMED DAILY REGARDING STREETS UNDER CONSTRUCTION AND DETOURS. DETOURS SHALL NOT BE PERMITTED UNLESS APPROVED IN WRITING BY THE PUBLIC WORKS DIRECTOR.
- CONTRACTOR SHALL PROVIDE AND MAINTAIN SUFFICIENT BARRICADES TO PROVIDE FOR THE SAFETY OF THE GENERAL PUBLIC TO THE SATISFACTION OF THE PUBLIC WORKS DIRECTOR.
- ALL MATERIAL SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
- FADED BACKGROUND REPRESENTS EXISTING TOPOGRAPHIC FEATURES.

GRADING NOTES

- ANY AND/OR ALL MOVEMENT OF EARTH SHALL COMPLY WITH THE COUNTY OF NAPA STANDARDS AND SPECIFICATIONS (CURRENT EDITION), THE COUNTY OF NAPA CODES AND REGULATIONS, THE CALIFORNIA BUILDING CODE, THE PROJECT GEOTECHNICAL REPORT (IF ANY), AND THESE PLANS.
- THE SOILS ENGINEER SHALL BE NOTIFIED AT LEAST THREE (3) DAYS IN ADVANCE OF COMMENCING WORK, INCLUDING SITE STRIPPING AND GRADING OPERATIONS. THIS WORK SHALL BE OBSERVED AND TESTED BY THE SOILS REPRESENTATIVE AT THE OWNER'S EXPENSE.
- WHEN ABSENT A GEOTECHNICAL REPORT FOR THE PROJECT, ALL CUT AND FILL SLOPES SHALL BE A MAXIMUM OF 2:1. ALL FILLS SHALL BE COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY.
- SITE SHALL BE VISUALLY INSPECTED BY THE CONTRACTOR TO DETERMINE THE EXTENT OF CLEARING, GAUBING AND GRADING WORK TO BE DONE. NO ADDITIONAL GRADING BEYOND WHAT IS SHOWN ON THESE PLANS SHALL BE COMPLETED.
- SOIL STRIPPED IN THE AREAS TO BE PAVED SHALL BE STOCKPILED FOR USE IN LANDSCAPED AREAS. CONTRACTOR SHALL COORDINATE WITH LANDSCAPE CONTRACTOR.
- SPOILS SHALL NOT BE LEFT IN PILES EITHER ON- OR OFF-SITE. RATHER IT SHALL BE REMOVED FROM OR SPREAD OUT OVER THE PROPERTY INVOLVED.
- CONTRACTOR SHALL CONDUCT ALL GRADING OPERATIONS IN SUCH A MANNER AS TO PRECLUDE WIND BLOWN DIRT AND DUST AND RELATED DAMAGE TO NEIGHBORING PROPERTIES. SUFFICIENT WATERING TO CONTROL DUST IS REQUIRED AT ALL TIMES. CONTRACTOR SHALL ASSUME LIABILITY FOR DUST RELATED TO WIND BLOWN MATERIAL. IF THE DUST CONTROL IS INADEQUATE AS DETERMINED BY THE PUBLIC WORKS DIRECTOR OR HIS DESIGNATED REPRESENTATIVE, THE CONSTRUCTION WORK SHALL BE TERMINATED UNTIL CORRECTIVE MEASURES ARE TAKEN.
- ANY SPOILS GENERATED BY PROJECT CONSTRUCTION OR IMPROVED DRAINAGE SHALL NOT BE DEPOSITED WITHIN 50 FEET OF THE TOPS OF THE BANKS OF ANY STREAM, POND, OR LAKE, WITHIN THE FLOODWAY OF ANY STREAM, IN THE RIPARIAN ZONE ALONG ANY DRAINAGE SWAY, IN ANY MARSH OR WETLAND, IN ANY WETLAND POOL, OR IN ANY AREA THAT IS DETERMINED BY THE DIRECTOR OF THE NAPA COUNTY DEPARTMENT OF PLANNING, BUILDING, AND ENVIRONMENTAL SERVICES (PBES) TO BE BIOLOGICALLY SENSITIVE. THE LOCATION OF THE SPOILS DISPOSAL AREA(S) SELECTED FOR EACH PROJECT SHALL BE SUBMITTED TO BOTH THE ENGINEERING AND PLANNING DIVISIONS OF THE NAPA COUNTY PBES DEPARTMENT FOR THEIR APPROVAL AT LEAST TEN (10) WORKING DAYS PRIOR TO THE COMMENCEMENT OF ANY GRADING OR EXCAVATION WORK ON SITE.
- CONTRACTOR SHALL PROVIDE TO THE ENGINEERING DIVISION OF THE NAPA COUNTY PBES DEPARTMENT AN EROSION AND SEDIMENT CONTROL PLAN, AND A SCHEDULE FOR IMPLEMENTATION OF SUCH MEASURES. IF ANY LOT OR STREET GRADING IS TO BE DONE BETWEEN OCTOBER 15 THROUGH APRIL 1, HYDROSEEDING OF ALL GRADED SLOPES SHALL BE COMPLETED BY NOVEMBER 1.
- WATER AND / OR DUST PALLIATIVES SHALL BE APPLIED IN SUFFICIENT QUANTITIES DURING GRADING AND OTHER GROUND DISTURBING ACTIVITIES ON-SITE TO MINIMIZE THE AMOUNT OF DUST PRODUCED.
- OUTDOOR NOISE PRODUCING ACTIVITIES SHALL BE LIMITED TO WEEKDAYS BETWEEN 7:30 AM AND 4:30 PM.
- TREES AND/OR VINES THAT ARE TO BE REMOVED SHALL ALSO HAVE THEIR STUMPS AND MAJOR ROOT SYSTEMS REMOVED AFTER A TREE, VINE, OR A STUMP IS REMOVED. THE RESULTING CAVITY SHALL BE CLEANED OR LARGER ROOTS (2 INCH DIAMETER OR LARGER) SOIL SHOULD BE REMOVED AND DISHD TO PROVIDE ACCESS FOR COMPACTION EQUIPMENT.
- ORGANIC MATERIAL SHALL BE HAULED OFFSITE AND DISPOSED OF BY THE CONTRACTOR IN A RESPONSIBLE MANNER (COUNTY APPROVED LANDFILL OR ANOTHER COUNTY APPROVED SITE).
- ALL EARTH-WORK, SCARIFICATION, BACKFILL, AND COMPACTION SHALL BE PERFORMED PER THE PLANS AND COUNTY OF NAPA REQUIREMENTS.
- ALL STATIONS (SHOWN ON THE PLAN AND PROFILE) ARE TAKEN ALONG CENTERLINE UNLESS OTHERWISE NOTED ON PLAN, AND SHOW MEASUREMENTS IN A HORIZONTAL PLANE.

ABBREVIATIONS

AB	AGGREGATE BASE	FH	FIRE HYDRANT	R	RADIUS
AC	ASPHALT CONCRETE	FM	FLOOD RESISTANCE BATE MAP	RT	RIGHT
AD	AREA DRAIN	FL	FLOW LINE	ROW	RIGHT OF WAY
BC	BEGIN CURVE	FM	FORCE MAIN	RWL	RAIN WATER LEADER
BR	BASE FLOOD ELEVATION PER FIRM	FS	FINISHED SURFACE	RCP	REINFORCED CONCRETE PIPE
BM	BENCHMARK	GB	GRADE BREAK	S	SOUTH
BRC	BEGIN CURB RETURN	GR	GRAVEL	S	SLOPE (FEET/FOOT)
BVC	BEGIN VERTICAL CURVE	HP	HIGH POINT	SAP	SEE ARCHITECTURAL DRAWINGS
BS	BOTTOM OF STAIRS	HW	IRON PIPE	INVERT	INVERT
BSW	BACK OF SIDEWALK	IP	IRON PIPE	SOP	SUBDRAIN PIPE
CB	CATCH BASIN	IRR	IRRIGATION	SED	SEE ELECTRICAL DRAWINGS
CG	CURB AND GUTTER	JP	JOINT POLE	SLD	SEE LANDSCAPE DRAWINGS
CMU	CONCRETE MASONRY UNIT	LF	LINEAL FEET/FOOT	SLV	SLEEVE
CP	CONCRETE PIPE	LP	LOW POINT	SMD	SEE MECHANICAL DRAWINGS
C	CENTERLINE	MH	MANHOLE	SPD	SEE PLUMBING DRAWINGS
CO	CLEANOUT	MON	MONUMENT	SS	SANITARY SEWER
COMM	COMMUNICATION	(N)	NORTH	SSCO	SANITARY SEWER CLEAN OUT
CV	CHECK VALVE	+N	NEW	SMH	SANITARY SEWER MANHOLE
CW	COLD WATER	OC	ON CENTER	STA	STATION
DCV	DOUBLE CHECK VALVE	OG	ORIGINAL GROUND	STD	STANDARD
DG	DECOMPOSED GRANITE	OH	OVERHEAD	SW	SIDEWALK
DIP	DUCTILE IRON PIPE	OHL	OVERHEAD LINE	TC	TOP OF CURB
DS	DOWNSPOUT	OP	PROPOSED	TFC	TOP FACE OF CURB
DW	DOMESTIC WASTE	PCC	PORTLAND CEMENT CONCRETE	TCC	TOP OF CONCRETE
DWG	DRAWING	PD	PRESSURE DISTRIBUTION	TS	TOP OF STAIRS
EC	END OF CURVE	PG&E	PACIFIC GAS AND ELECTRIC	TW	TOP OF WALL
ED	EAST	PI	POINT OF INTERSECTION	TYP	TYPICAL
+E	EXISTING	PV	POST INDICATOR VALVE	UG	UNDERGROUND
ER	END CURB RETURN	P/L	PROPERTY LINE	VC	VERTICAL CURVE
EG	EXISTING GROUND	PRC	POINT OF REVERSE CURVE	VG	VALLEY GUTTER
EGR	EDGE OF GRAVEL	PSI	POUNDS PER SQUARE INCH	(W)	WEST
EP	EDGE OF PAVEMENT	PUE	PUBLIC UTILITY EASEMENT	WM	WATER METER
EVC	END VERTICAL CURVE	PVC	POLYVINYL CHLORIDE	W/S	WATER SERVICE
FDC	FIRE DEPT CONNECTION	PVI	POINT OF VERTICAL INTERSECTION	WV	WATER VALVE
FG	FINISHED GRADE				

UTILITY NOTES

- CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (U.S.A.) AT 1-800-227-2600 PRIOR TO START OF ANY CONSTRUCTION ADJACENT TO EXISTING UTILITY LINES UNLESS THE COUNTY ENCRoACHMENT PERMIT SPECIFIES OTHERWISE.
- ALL WORK SHALL BE IN COMPLIANCE WITH APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (O.S.H.A.) STANDARDS AS SET FORTH BY THE FEDERAL DEPARTMENT OF LABOR AND/OR THE STATE OF CALIFORNIA. THE CONTRACTOR SHALL SECURE A TRENCH PERMIT FROM THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PRIOR TO EXCAVATION OF ANY TRENCH OVER FIVE (5) FEET IN DEPTH.
- CONTRACTOR SHALL NOTIFY ALL PUBLIC OR PRIVATE UTILITY COMPANIES 48 HOURS PRIOR TO COMMENCEMENT OF WORK ADJACENT TO EXISTING UTILITY LINES UNLESS THE COUNTY ENCRoACHMENT PERMIT SPECIFIES OTHERWISE.
- ONE WEEK PRIOR TO ANY EXCAVATION IN EXISTING STREET AREAS, THE CONTRACTOR SHALL CONTACT AND REQUEST PG&E, CURRENT TELEPHONE COMPANY, CITY ENGINEER (WATER DIVISION), NAPA SANITATION DISTRICT AND CURRENT CABLE PROVIDER FOR MARKING THE LOCATION OF THEIR RESPECTIVE FACILITIES. COSTS OF REPAIRING ANY INJURIES OR DAMAGES CAUSED BY THE CONTRACTOR SHALL BE BORNE BY THE CONTRACTOR. VARIOUS UNDERGROUND UTILITY LINES WERE PLOTTED ON THE PLANS FROM THE INFORMATION OBTAINED FROM THE RESPECTIVE UTILITY COMPANIES, THEREFORE, NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE AS TO THE COMPLETENESS OR CORRECTNESS OF THEIR LOCATION. BURIED UTILITIES WERE NOT VERIFIED, NOR WAS ANY SUBSURFACE EXPLORATION CONDUCTED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION OF ALL EXISTING UTILITIES IN THE FIELD. LOCATIONS OF UTILITIES AND UNDERGROUND FACILITIES SHOWN ARE APPROXIMATE AND FOR GENERAL INFORMATION ONLY. SEE NOTE 3 ABOVE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING FACILITIES AND IMPROVEMENTS FROM DAMAGE RESULTING FROM CONTRACTORS WORK. ANY DAMAGE CAUSED BY CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL COORDINATE ALL NECESSARY UTILITY RELOCATIONS, IF REQUIRED, WITH THE APPROPRIATE UTILITY COMPANIES AND/OR THE OWNER.
- ALL UNDERGROUND UTILITY WORK IN THE STREET AREAS SHALL BE COMPLETED PRIOR TO PLACEMENT OF BASE ROCK UNLESS OTHERWISE NOTED.
- TRENCHING AND BACKFILL WITHIN THE PUBLIC RIGHT OF WAY AND UNDER PRIVATE ROADS SHALL COMPLY WITH THE COUNTY OF NAPA STANDARDS. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY STANDARDS FOR TRENCH SAFETY.
- IF ELECTRIC, GAS, TELEPHONE, CABLE TV, LINES AND/OR OTHER SERVICES, ETC., MUST BE INSTALLED BY OTHERS, THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THESE FACILITIES WITH PG&E, CURRENT TELEPHONE COMPANY, CURRENT CABLE TV PROVIDER OR THEIR CONTRACTORS AND COOPERATE FULLY IN THE EXECUTION OF THIS WORK CONCURRENTLY WITH THE PROGRESS OF THE REST OF THE WORK.
- EXISTING UTILITIES SHALL BE KEPT IN SERVICE AT ALL TIMES. UTILITIES THAT INTERFERE WITH THE WORK TO BE PERFORMED SHALL BE PROTECTED AS REQUIRED BY COUNTY OF NAPA, PG&E, OTHER UTILITIES, AND THE OWNER.
- ALL STORM DRAIN SYSTEM INSTALLATION SHALL BE COMPLETED IN ACCORDANCE WITH COUNTY OF NAPA STANDARDS. PLASTIC PIPE FOR THE STORM DRAIN SHALL COMPLY WITH SECTION 64 OF THE CALIFORNIA STANDARD SPECIFICATIONS. CORRUGATED METAL PIPE (C.M.P.) SHALL COMPLY WITH SECTION 64 OF THE CALTRANS STANDARD SPECIFICATIONS. REINFORCED CONCRETE PIPE (R.C.P.) SHALL BE CLASS 3 PER SECTION 45 OF THE CALTRANS STANDARD SPECIFICATIONS.
- CONTRACTOR HAS THE FOLLOWING OPTIONS FOR STORM DRAIN PIPING: REINFORCED CONCRETE PIPE (R.C.P.) SHALL BE CLASS III PER CALTRANS STANDARD SPECIFICATIONS, POLYVINYL CHLORIDE PIPE (P.V.C.) FOR THE STORM DRAIN SHALL COMPLY WITH ANSI/ASTM D 3034-78, SDR 35 REQUIREMENTS OR CORRUGATED POLYETHYLENE PIPE SUCH AS ADVANCED DRAINAGE SYSTEMS (A.D.S.) N-12 OR APPROVED EQUAL. USE OTHER IF SPECIFIED ON THE PLANS.
- ASBESTOS CEMENT PIPE (A.C.P.) SHALL NOT BE ALLOWED UNDER ANY CIRCUMSTANCES.

GEOTECHNICAL NOTES

- A GEOTECHNICAL REPORT DATED DECEMBER 17, 2020 HAS BEEN PREPARED BY JIM GLOMB GEOTECHNICAL AND ENVIRONMENTAL CONSULTING, INC. THE GEOTECHNICAL REPORT AND ALL UPDATES SHOULD BE CONSIDERED A PART OF THESE PLANS. ALL GRADING, FOUNDATION EXCAVATIONS, AND DRAINAGE SHALL BE IN ACCORD WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.
- THE GEOTECHNICAL ENGINEER SHALL BE RETAINED TO PROVIDE OBSERVATION AND TESTING SERVICES DURING CONSTRUCTION, INCLUDING SITE EXCAVATIONS, FILL PLACEMENT AND COMPACTION, EXCAVATION OF SPREAD FOOTING FOUNDATIONS PRIOR TO FORMING OR STEEL PLACEMENT, OBSERVATION OF RETAINING WALL BACKDRAINS, CRAWL SPACE GRADING AND DRAINAGE, AND OBSERVATION AND TESTING OF RETAINING WALL BACKFILL.
- THE GEOTECHNICAL ENGINEER SHALL BE PROVIDED AT LEAST 48 HOURS NOTICE PRIOR TO THE START OF GRADING, FOUNDATION EXCAVATIONS, OR OTHER ITEMS REQUIRING OBSERVATION AND TESTING.
- A PRECONSTRUCTION CONFERENCE SHALL BE CALLED BY THE CONTRACTOR PRIOR TO ANY EQUIPMENT BEING MOVED ONTO THE SITE. TO BE PRESENT AT THIS CONFERENCE ARE:
OWNER'S REPRESENTATIVE
GRADING CONTRACTOR
GEOTECHNICAL ENGINEER
CIVIL ENGINEER
- UPON COMPLETION OF GRADING ACTIVITIES, THE GEOTECHNICAL ENGINEER SHALL PROVIDE A "FINAL SOIL REPORT", AND DESCRIBE HOW GRADING ACTIVITIES MET THE REQUIREMENTS OF THE PRELIMINARY REPORT.

SURVEY NOTES

- THE BOUNDARY ON THESE DRAWINGS DOES NOT REPRESENT A PROPERTY LINE. SURVEY PROPERTY LINES SHOWN HEREON ARE BASED ON RECORD DATA, AND MAY NOT REPRESENT THE TRUE POSITIONS OF THE LINES.
- THE TOPOGRAPHY IS BASED ON A FIELD SURVEY OF SEPTEMBER, 2019 PERFORMED BY JACKSON AND ASSOCIATES, INC.
- THE PROPERTY LINES SHOWN HEREON WERE COMPILED FROM DATA FROM PREVIOUS SURVEY PROVIDED BY ALBION SURVEYS INC. THE ELEVATIONS AND RELATIVE POSITIONS OF FEATURES SHOWN HEREON ARE IN CONFORMANCE WITH THE NATIONAL STANDARDS OF THE AMERICAN CONGRESS ON SURVEYING AND MAPPING.
- SITE BENCHMARK DESCRIPTION: "CONTROL POINT #1016, FOUND 404 SPIKE FROM PREVIOUS SURVEY PERFORMED BY ALBION SURVEYS INC., DATED JAN. 3, 2005." ELEVATION = 415.24'
- MADRONE ENGINEERING ASSUMES NO LIABILITY, REAL OR ALLEGED, REGARDING THE ACCURACY OF THE TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS.
- CONTRACTOR SHALL PROTECT EXISTING SURVEY MONUMENTS OR REPLACE THEM AT HIS OWN EXPENSE.

PROJECT STATEMENT

THE PURPOSE OF THIS PROJECT IS TO REPLACE THE EXISTING GARAGE AND SHOP THAT WERE DESTROYED IN THE 2020 FIRES, ALONG WITH THE REQUIRED INFRASTRUCTURE. THE PROJECT ALSO INCLUDES EXTERIOR LANDSCAPING IMPROVEMENTS.

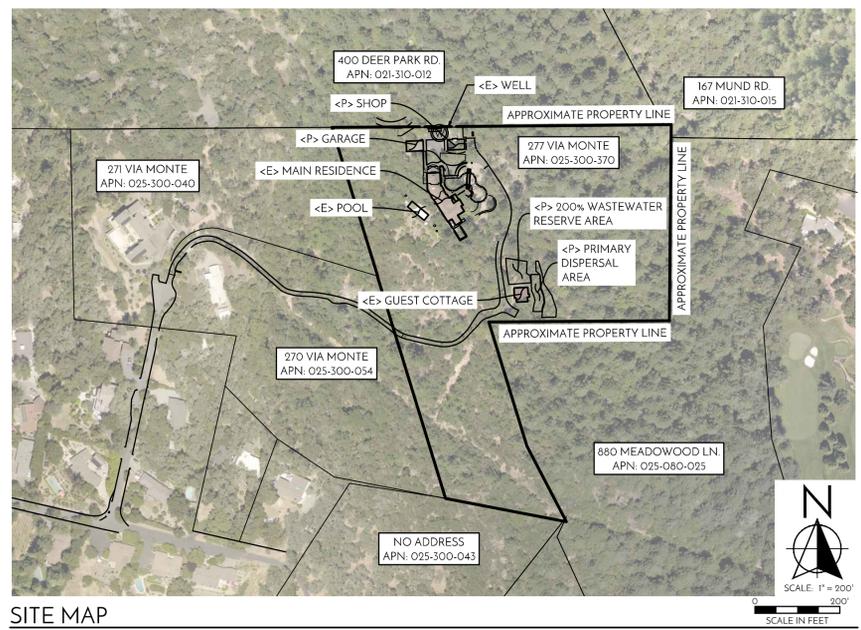
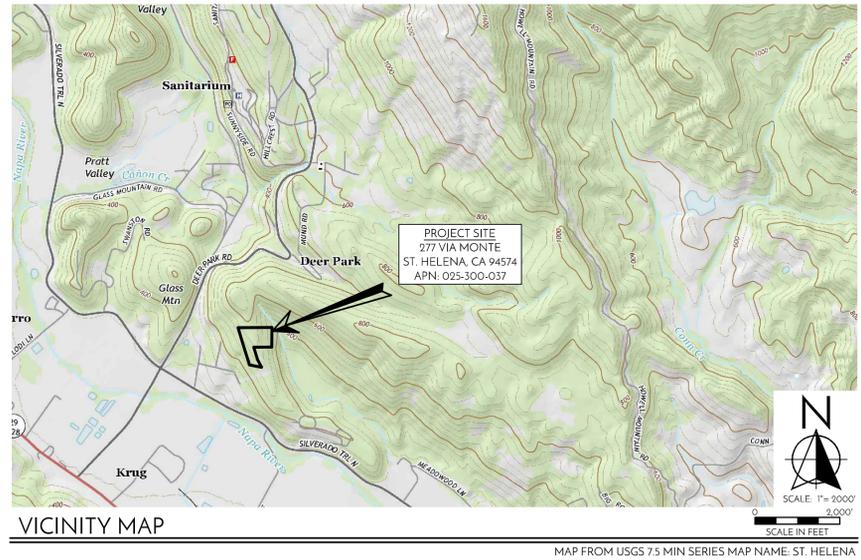
ESTIMATED EARTHWORK QUANTITIES

- THE EARTHWORK QUANTITIES LISTED BELOW ARE ESTIMATES ONLY AND MAY VARY DUE TO SOIL TYPE, COMPACTION AND BULKING FACTORS, GRADING PRACTICES, AND COMPACTION VALUES.
- THE UNADJUSTED QUANTITIES HAVE BEEN DERIVED USING A VOLUMETRIC ANALYSIS BETWEEN THE EXISTING AND PROPOSED FINISHED GRADE ELEVATIONS.
- THE FOLLOWING ASSUMPTIONS HAVE BEEN MADE WHEN DEVELOPING ADJUSTED QUANTITY ESTIMATES:
• QUANTITIES FROM UTILITY TRENCHES AND FOUNDATION TRENCHES HAVE NOT BEEN ESTIMATED.
• QUANTITIES RELATED TO OVEREXCAVATION AND RECOMPACTION HAVE BEEN ESTIMATED WITH AN AVERAGE DEPTH OF 2.0 FEET.
- CONTRACTOR SHALL WORK WITH THE PROJECT GEOTECHNICAL ENGINEER TO DETERMINE IF COMPACTION AND BULKING FACTORS ARE APPLICABLE FOR THE PROPOSED GRADING ACTIVITIES. THESE FACTORS HAVE THE POTENTIAL TO SIGNIFICANTLY ALTER THE CUT & FILL QUANTITIES IDENTIFIED IN THIS ANALYSIS.
- SEE THE TABLE BELOW FOR THE ESTIMATED EARTHWORK QUANTITIES FOR THE PROJECT.

ESTIMATED PROJECT EARTHWORK		
	UNADJUSTED QUANTITIES (CY)	ADJUSTED QUANTITIES (CY)
CUT	770	1070
FILL	160	520
ESTIMATED NET EARTHWORK		550 EXCESS

THE APPROXIMATE AREA OF DISTURBED SOIL IS 28,000 SF (0.64 AC). EXCESS SOIL WILL BE OFF-HAULED TO A LOCATION APPROVED BY NAPA COUNTY.

CIVIL IMPROVEMENT PLANS FOR: FRIEDMAN GARAGE/SHOP 277 VIA MONTE ST. HELENA, CA 94574



SITE MAP

SHEET INDEX

C1.0	COVER SHEET
C2.0	HARDSCAPE PLAN
C2.1A	GRADING PLAN
C2.1B	GRADING PLAN
C2.2	CROSS SECTIONS
C2.3	CROSS SECTIONS
C2.4	CROSS SECTIONS
C3.0	UTILITY PLAN
C4.0	BMP PLAN
C4.1	DETAILS

REVISIONS

- △ UPDATED SHEET INDEX

PROJECT INFORMATION

OWNER:	MARK FRIEDMAN 2028 E BEN WHITE BLVD #240-6455 AUSTIN, TX 78741	ARCHITECT:	JOSEPH FARRELL ARCHITECTURE 1 COMMERCIAL BLVD, SUITE 106 NOVATO, CA 94949 JOSEPH FARRELL (415) 884-2860
SITE ADDRESS:	277 VIA MONTE ST. HELENA, CA 94574	ASSESSOR PARCEL #:	025-300-037
COUNTY ZONING:	AW	PARCEL SIZE:	+10.36 ACRES
SURVEYOR:	JACKSON AND ASSOCIATES, INC. P.O. BOX 737 CLOVERDALE, CA 95425 DARRIN JACKSON, P.L.S. 707/894-8494	CIVIL ENGINEER:	MADRONE ENGINEERING 1485 MAIN STREET, SUITE 302 ST. HELENA, CA 94574 JOEL DICKERSON, P.E. 707/302-6280

THIS DOCUMENT AND THE IDEAS INCORPORATED HEREIN AS AN INSTRUMENT OF PROFESSIONAL SERVICE, ARE THE PROPERTY OF MADRONE ENGINEERING. THE CONSULTANT OR ENGINEER HAS NOT BEEN RESPONSIBLE FOR THE LABEL FOR ANY OTHER PROJECTS. THE CONSULTANT OR ENGINEER HAS NOT BEEN RESPONSIBLE FOR THE LABEL FOR ANY OTHER PROJECTS. THE CONSULTANT OR ENGINEER HAS NOT BEEN RESPONSIBLE FOR THE LABEL FOR ANY OTHER PROJECTS. THE CONSULTANT OR ENGINEER HAS NOT BEEN RESPONSIBLE FOR THE LABEL FOR ANY OTHER PROJECTS.

madrone
ENGINEERING
1485 Main Street, Suite 302
St. Helena, California 94574
Tel: 707-302-6280

CIVIL IMPROVEMENT PLANS
COVER SHEET

FRIEDMAN GARAGE/SHOP
277 VIA MONTE
ST. HELENA, CA 94574
APN: 025-300-037
PROJECT 19-031



EVERY PERSON PLANNING TO DIG CALL USA AT 811 BEFORE TO EXCAVATION



FOR MORE INFORMATION SEE WWW.SJAN08TH.ORG

DATE: 02/05/21 ISSUE: PERMIT SET
04/09/21 REVISION 1
05/02/22 REVISION 3

SHEET: C1.0

GENERAL NOTES

- 1.1.1 **PROJECT NOTES:**
- 1.1.2 THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE CALIFORNIA ELECTRIC CODE (CEC) ARTICLE 690, ALL MANUFACTURERS'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
- 1.1.3 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION
- 1.1.4 ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY CEC 690.4: **PV MODULES:** UL1703, IEC61730, AND IEC61215, AND NFPA 70 CLASS C FIRE **INVERTERS:** UL 1741 CERTIFIED, IEEE 1547, 929, 519 **COMBINER BOX(ES):** UL 1703 OR UL 1741 ACCESSORY
- 1.1.5 MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO CEC 690.7.
- 1.1.6 ALL INVERTERS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D). SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS FROM LISTING OR LABELING [CEC 110.3].
- 1.1.7 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE CEC AND AHJ.

- 1.2.1 **SCOPE OF WORK:**
- 1.2.2 PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ONSITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE GROUND MOUNT ARRAY PORTION OF THE PHOTOVOLTAIC SYSTEMS DETAILED IN THIS DOCUMENT.

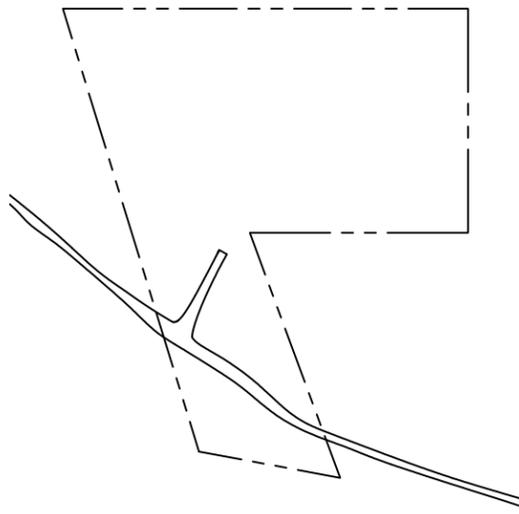
- 1.3.1 **WORK INCLUDES:**
- 1.3.2 PV RACKING SYSTEM INSTALLATION - CUSTOM GROUND MOUNT
- 1.3.3 PV MODULE AND INVERTER INSTALLATION - HYUNDAI ENERGY SOLUTIONS HIS-S400YH(BK) / SMA SB 7.7-1SP-US-41 (240V)
- 1.3.4 PV EQUIPMENT GROUNDING
- 1.3.5 PV INSTALLING SYSTEM MONITORING EQUIPMENT
- 1.3.6 PV LOAD CENTERS (IF INCLUDED)
- 1.3.7 PV METERING (IF INCLUDED)
- 1.3.8 PV DISCONNECTS
- 1.3.9 PV GROUNDING ELECTRODE & BONDING TO (E) GEC
- 1.3.10 PV FINAL COMMISSIONING
- 1.3.11 (E) ELECTRICAL EQUIPMENT RETROFIT FOR PV
- 1.3.12 TRENCHING (IF NECESSARY)

NEW PV SYSTEM: 64.800 KWP HAMMERSCHMIDT RESIDENCE

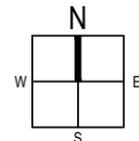
277 VIA MONTE
ST HELENA, CA 94574
ASSESSOR'S #: 025300037000



01 AERIAL PHOTO
SCALE: NOT TO SCALE



02 PLAT MAP
SCALE: NOT TO SCALE



SCOPE OF WORK
SYSTEM SIZE: STC: 162 X 400W = 64.800KW
PTC: 162 X 378.56W = 61.327KW
(162) HYUNDAI ENERGY SOLUTIONS HIS-S400YH(BK)
(6) SMA SB 7.7-1SP-US-41 (240V)

ATTACHMENT TYPE: CUSTOM GROUND MOUNT
MSP UPGRADE: NO

SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE
T-001	COVER PAGE
G-001	NOTES
A-101	SITE PLAN
A-102	ELECTRICAL PLAN
A-103	SOLAR ATTACHMENT PLAN
S-501	ASSEMBLY DETAILS
E-601	LINE DIAGRAM
E-602	DESIGN TABLES
E-603	PLACARDS
R-001	RESOURCE DOCUMENT
R-002	RESOURCE DOCUMENT
R-003	RESOURCE DOCUMENT

PROJECT INFORMATION

OWNER
NAME: HAMMERSCHMIDT

PROJECT MANAGER
NAME:
PHONE:

CONTRACTOR
NAME: WESTCOAST SOLAR
PHONE: 707-664-6450

AUTHORITIES HAVING JURISDICTION
BUILDING: NAPA COUNTY
ZONING: NAPA COUNTY
UTILITY: PG&E

DESIGN SPECIFICATIONS
OCCUPANCY: II
CONSTRUCTION: SINGLE-FAMILY
ZONING: RESIDENTIAL GRID-TIED
GROUND SNOW LOAD: 0 PSF
WIND EXPOSURE: C
WIND SPEED: 110 MPH

APPLICABLE CODES & STANDARDS
BUILDING: CBC 2019, CRC 2019
ELECTRICAL: NEC 2017, CEC 2019
FIRE: CFC 2019



CONTRACTOR

WESTCOAST SOLAR

PHONE: 707-664-6450
ADDRESS: 2975 DUTTON AVE SUITE A
SANTA ROSA, CA 95407

LIC. NO.: 963158
HIC. NO.:
ELE. NO.:

UNAUTHORIZED USE OF THIS DRAWING SET WITHOUT WRITTEN PERMISSION FROM CONTRACTOR IS IN VIOLATION OF U.S. COPYRIGHT LAWS AND WILL BE SUBJECT TO CIVIL DAMAGES AND PROSECUTIONS.

NEW PV SYSTEM: 64.800 KWP

HAMMERSCHMIDT RESIDENCE

277 VIA MONTE
ST HELENA, CA 94574
APN: 025300037000

ENGINEER OF RECORD

Jason Kross

PAPER SIZE: 11" x 17" (ANSI B)

COVER PAGE

DATE: 09.03.2022

DESIGN BY: I.P.

CHECKED BY: M.M.

REVISIONS

T-001.00
(SHEET 1)

	A	B	C	D	E	F	G	H
1	2.1.1	SITE NOTES:						
	2.1.2	THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.		2.5.4				PHASE C OR L3- BLUE, YELLOW, ORANGE*, OR OTHER CONVENTION NEUTRAL- WHITE OR GRAY
	2.1.3	THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING OR MECHANICAL.						
	2.1.4	PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION CEC 110.26.				2.7.9		* IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [CEC 110.15]. ELECTRICAL WIRES IN TRENCH SHALL BE AT LEAST 18IN. BELOW GRADE (RESIDENTIAL).
2	2.2.1	EQUIPMENT LOCATIONS		2.5.5				
	2.2.2	ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY CEC 110.26.						
	2.2.3	WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY CEC 690.31 (A),(C) AND CEC TABLES 310.15 (B)(2)(A) AND 310.15 (B)(3)(C).		2.5.6				
	2.2.3	JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO CEC 690.34.		2.5.7				
	2.2.4	ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.		2.5.8				
	2.2.5	ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO CEC APPLICABLE CODES.						
	2.2.6	ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.		2.6.1				
	2.2.7	SOLAR ARRAY LOCATION SHALL BE ADJUSTED ACCORDINGLY TO MEET LOCAL SETBACK REQUIREMENTS.		2.6.2				
3	2.3.1	STRUCTURAL NOTES:		2.6.3				
	2.3.2	RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAIL MANUFACTURER'S INSTRUCTIONS.		2.6.4				
	2.3.3	JUNCTION BOX WILL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IT SHALL BE SEALED PER LOCAL REQUIREMENTS.		2.6.5				
	2.3.4	ALL PV RELATED ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.						
4	2.4.1	GROUNDING NOTES:		2.6.6				
	2.4.2	GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.		2.6.7				
	2.4.3	PV SYSTEMS REQUIRE AN EQUIPMENT GROUNDING CONDUCTOR. ALL METAL ELECTRICAL EQUIPMENT AND STRUCTURAL COMPONENTS BONDED TO GROUND, IN ACCORDANCE WITH 250.134 OR 250.136(A). ONLY THE DC CONDUCTORS ARE UNGROUNDED.		2.6.8				
	2.4.4	PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO CEC 690.43 AND MINIMUM CEC TABLE 250.122.		2.6.9				
	2.4.5	METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURE CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A).		2.7.1				
	2.4.6	EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ. IF WEEBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURERS' INSTALLATION REQUIREMENTS.		2.7.2				
	2.4.7	THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.		2.7.3				
5	2.4.8	GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [CEC 250.119]		2.7.4				
	2.4.9	THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH CEC 690.47 AND CEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO CEC 250, CEC 690.47 AND AHJ.		2.7.5				
	2.4.10	DC PV ARRAYS SHALL BE PROVIDED WITH DC GROUND-FAULT PROTECTION MEETING THE REQUIREMENTS OF 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS.		2.7.6				
				2.7.7				
6	2.5.1	INTERCONNECTION NOTES:		2.7.8				
	2.5.2	LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [CEC 705.12 (B)]						
	2.5.3	THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY						



CONTRACTOR

WESTCOAST SOLAR

PHONE: 707-664-6450
 ADDRESS: 2975 DUTTON AVE SUITE A
 SANTA ROSA, CA 95407

LIC. NO.: 963158
 HIC. NO.:
 ELE. NO.:

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NEW PV SYSTEM: 64.800 KWP

HAMMERSCHMIDT RESIDENCE

277 VIA MONTE
 ST HELENA, CA 94574
 APN: 025300037000

ENGINEER OF RECORD

Jason Kross

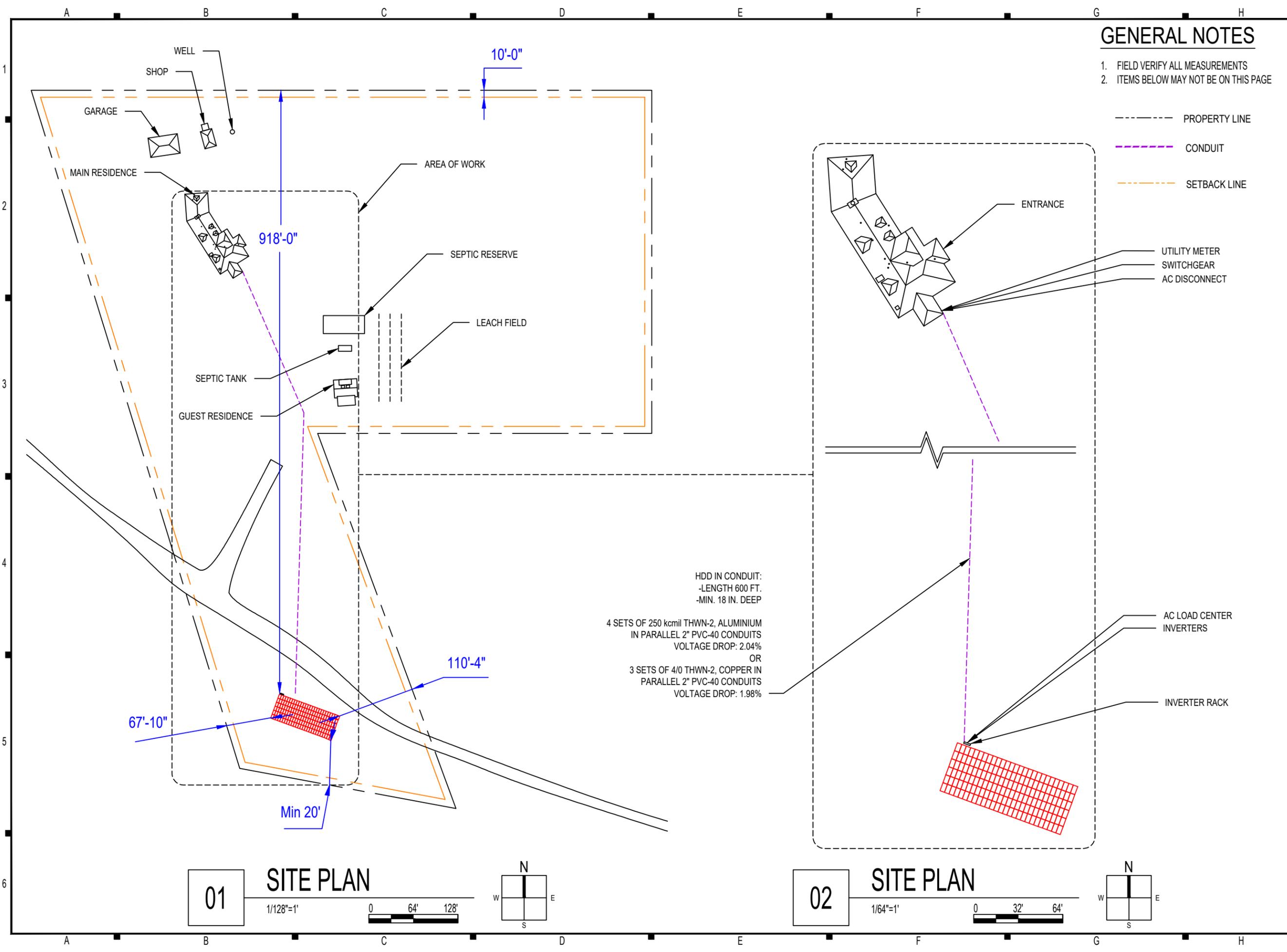
PAPER SIZE: 11" x 17" (ANSI B)

NOTES

DATE: 09.03.2022
 DESIGN BY: I.P.
 CHECKED BY: M.M.

REVISIONS

G-001.00
 (SHEET 2)



GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS
2. ITEMS BELOW MAY NOT BE ON THIS PAGE

- PROPERTY LINE
- - - CONDUIT
- - - SETBACK LINE

HDD IN CONDUIT:
 -LENGTH 600 FT.
 -MIN. 18 IN. DEEP

4 SETS OF 250 kcmil THWN-2, ALUMINIUM
 IN PARALLEL 2" PVC-40 CONDUITS
 VOLTAGE DROP: 2.04%
 OR
 3 SETS OF 4/0 THWN-2, COPPER IN
 PARALLEL 2" PVC-40 CONDUITS
 VOLTAGE DROP: 1.98%

01 SITE PLAN
 1/128"=1'
 0 64' 128'
 N
 W E S

02 SITE PLAN
 1/64"=1'
 0 32' 64'
 N
 W E S



CONTRACTOR

WESTCOAST SOLAR

PHONE: 707-664-6450
 ADDRESS: 2975 DUTTON AVE SUITE A
 SANTA ROSA, CA 95407

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NEW PV SYSTEM: 64.800 KWP

**HAMMERSCHMIDT
 RESIDENCE**

277 VIA MONTE
 ST HELENA, CA 94574
 APN: 025300037000

ENGINEER OF RECORD

Jason Kross

PAPER SIZE: 11" x 17" (ANSI B)

SITE PLAN

DATE: 09.03.2022
 DESIGN BY: I.P.
 CHECKED BY: M.M.

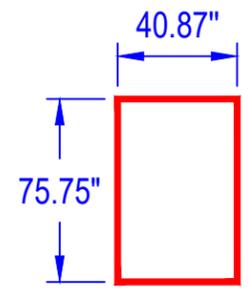
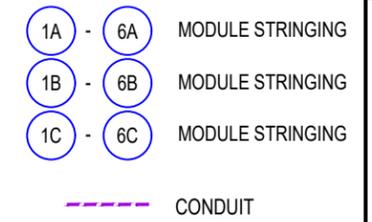
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A-101.00
 (SHEET 3)



GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS
2. ITEMS BELOW MAY NOT BE ON THIS PAGE



MODULE:
 HYUNDAI ENERGY SOLUTIONS
 HIS-S400YH(BK)
 400 WATTS

EXTERIOR PV EQUIPMENT
 (E) (1) UTILITY METER
 (E) (1) SWITCHGEAR
 (N) (1) AC DISCONNECT

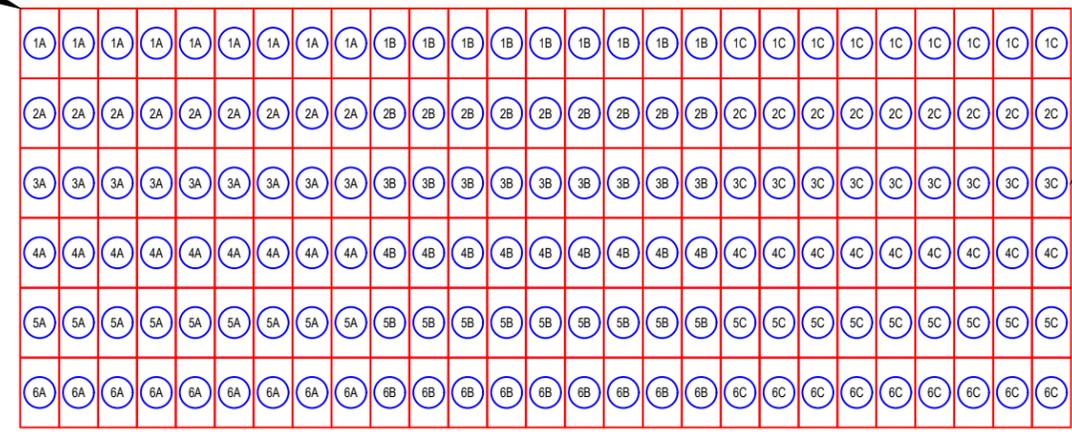
HDD IN CONDUIT:
 -LENGTH 600 FT.
 -MIN. 18 IN. DEEP

4 SETS OF 250 kcmil THWN-2, ALUMINIUM
 IN PARALLEL 2" PVC-40 CONDUITS
 VOLTAGE DROP: 2.04%
 OR
 3 SETS OF 4/0 THWN-2, COPPER IN
 PARALLEL 2" PVC-40 CONDUITS
 VOLTAGE DROP: 1.98%

EXTERIOR PV EQUIPMENT
 (N) (1) AC LOAD CENTER
 (N) (6) INVERTERS

(N) (6) JUNCTION BOXES

INVERTER RACK



ARRAY 1 - 64.800 kW
 [x162] (N) MODULES
 TILT: 10 DEGREES
 AZIMUTH: 200 DEGREES

CONTRACTOR

WESTCOAST SOLAR

 PHONE: 707-664-6450
 ADDRESS: 2975 DUTTON AVE SUITE A
 SANTA ROSA, CA 95407

LIC. NO.: 963158
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NEW PV SYSTEM: 64.800 KWP

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277 VIA MONTE
 ST HELENA, CA 94574
 APN: 025300037000

ENGINEER OF RECORD

Jason Kross

PAPER SIZE: 11" x 17" (ANSI B)

ELECTRICAL PLAN

DATE: 09.03.2022

DESIGN BY: I.P.

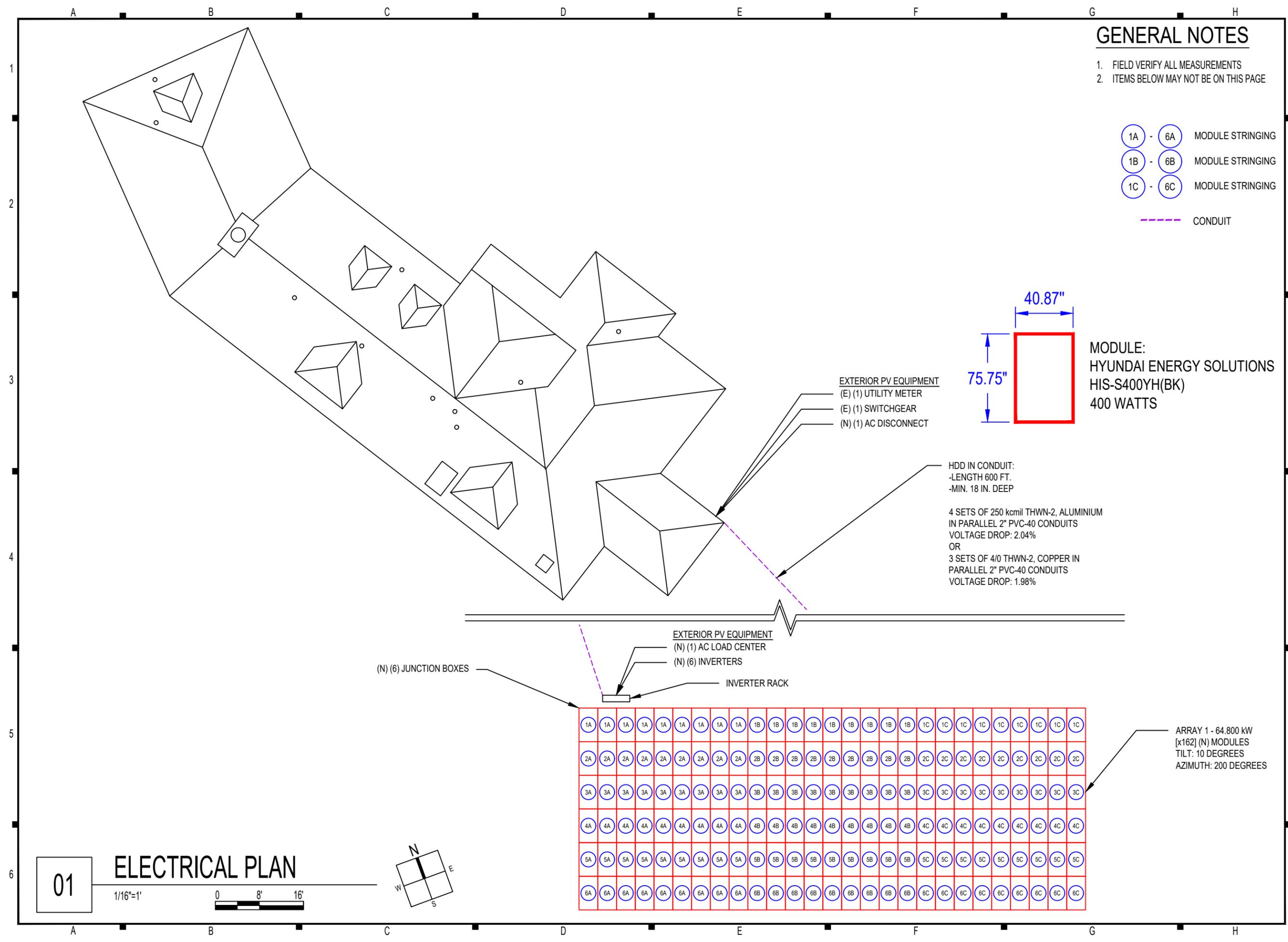
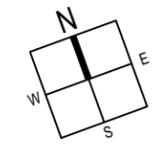
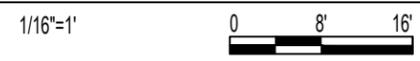
CHECKED BY: M.M.

REVISIONS

A-102.00
 (SHEET 4)

ELECTRICAL PLAN

01



GENERAL NOTES

1. FIELD VERIFY ALL MEASUREMENTS
2. ITEMS BELOW MAY NOT BE ON THIS PAGE



CONTRACTOR

WESTCOAST SOLAR

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SANTA ROSA, CA 95407

LIC. NO.: 963158

HIC. NO.:

ELE. NO.:

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NEW PV SYSTEM: 64.800 KWP

HAMMERSCHMIDT RESIDENCE

277 VIA MONTE
ST HELENA, CA 94574
APN: 025300037000

ENGINEER OF RECORD

Jason Kross

PAPER SIZE: 11" x 17" (ANSI B)

SOLAR ATTACHMENT PLAN

DATE: 09.03.2022

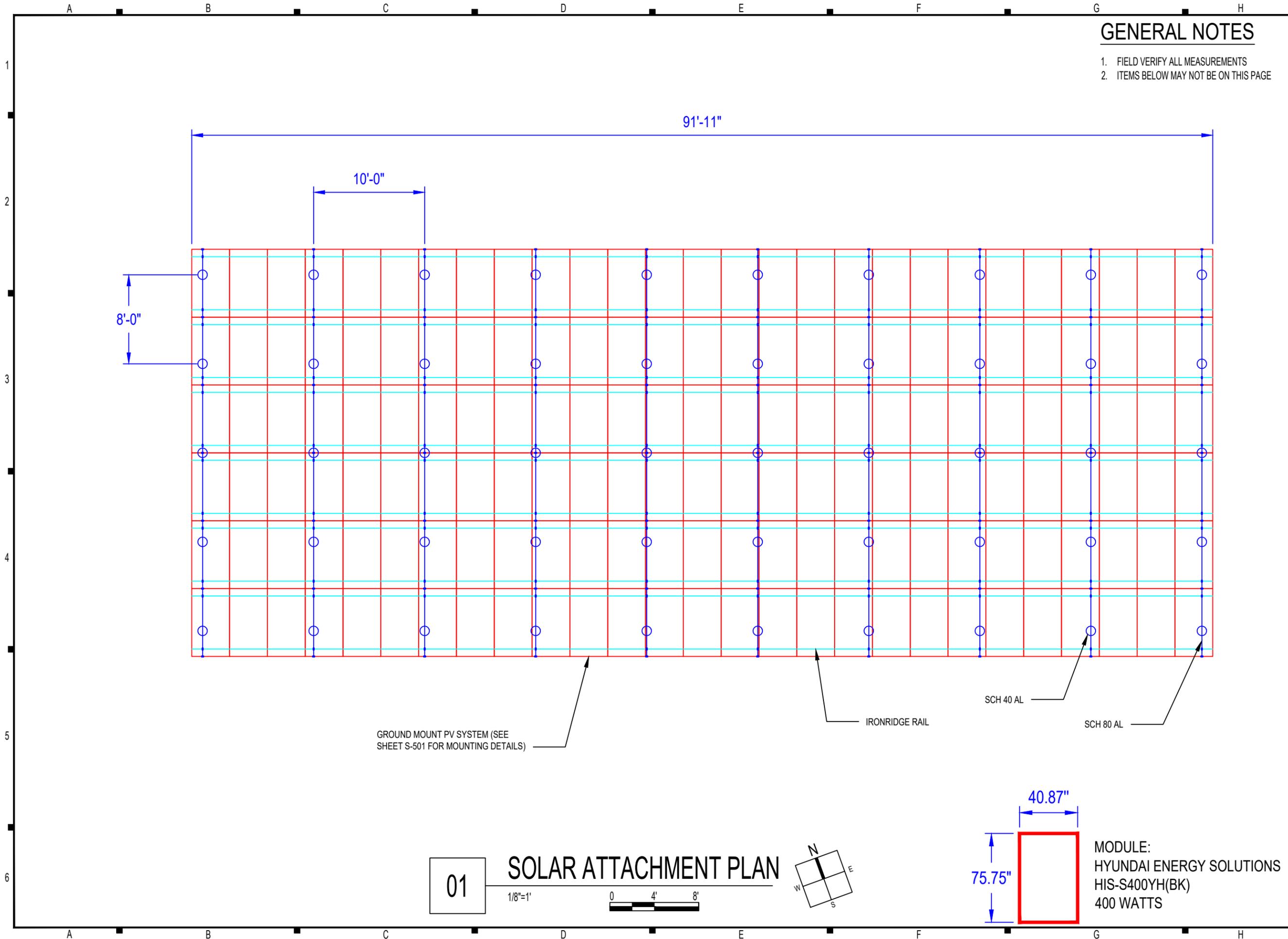
DESIGN BY: I.P.

CHECKED BY: M.M.

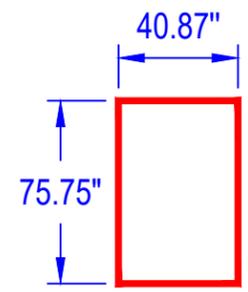
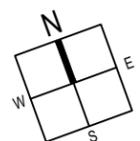
REVISIONS

A-103.00

(SHEET 5)



01 SOLAR ATTACHMENT PLAN
1/8"=1'

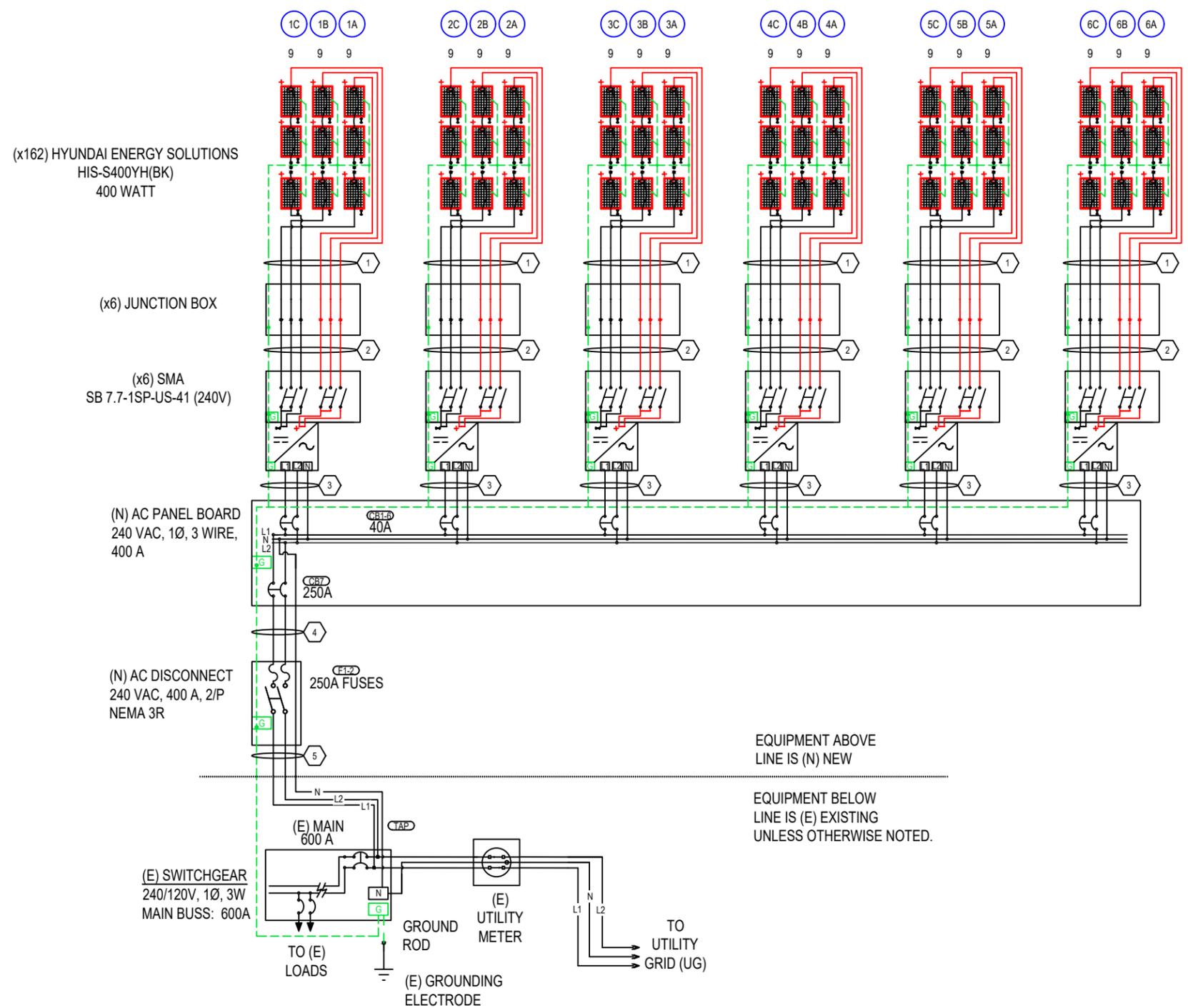


MODULE:
HYUNDAI ENERGY SOLUTIONS
HIS-S400YH(BK)
400 WATTS

CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS

ID	TYPICAL	CONDUCTOR	CONDUIT	CURRENT-CARRYING CONDUCTORS IN CONDUIT	OCPD	EGC	TEMP. CORR. FACTOR	CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT (125%)	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	AMP. @ TERMINAL	VOLTAGE DROP
1	18	10 AWG PV WIRE, COPPER	FREE AIR	2	N/A	6 AWG BARE, COPPER	0.96 (32.6 °C)	1	14.06A	17.58A	55A	52.8A	75°C	50A	
2	6	10 AWG THWN-2, COPPER	1" DIA PVC-40	6	N/A	10 AWG THWN-2, COPPER	0.96 (32.6 °C)	0.8	14.06A	17.58A	40A	30.72A	75°C	35A	
3	6	8 AWG THWN-2, COPPER	0.75" DIA EMT	2	40A	10 AWG THWN-2, COPPER	0.96 (32.6 °C)	1	32A	40A	55A	52.8A	75°C	50A	
4 (ONE OF THE OPTIONS)	1	4 SETS OF 250 kcmil THWN-2, ALUMINIUM IN PARALLEL PVC-40 CONDUITS	4 SETS OF 2" DIA PVC-40 (PARALLEL RUN)	2	250A	2 AWG THWN-2, ALUMINIUM IN PARALLEL PVC-40 CONDUITS	0.96 (32.6 °C)	1	192A	240A	920A	1150A	75°C	820A	2.04%
	1	3 SETS OF 4/0 THWN-2, COPPER IN PARALLEL PVC-40 CONDUITS	3 SETS OF 2" DIA PVC-40 (PARALLEL RUN)	2	250A	4 AWG THWN-2, COPPER IN PARALLEL PVC-40 CONDUITS	0.96 (32.6 °C)	1	192A	240A	780A	748.8A	75°C	690A	1.98%
5	1	250 kcmil THWN-2, COPPER	2" DIA EMT	2	N/A	2 AWG THWN-2, COPPER	0.96 (32.6 °C)	1	192A	240A	320A	307.2A	75°C	285A	

- 1A - 6A MODULE STRINGING
- 1B - 6B MODULE STRINGING
- 1C - 6C MODULE STRINGING



EQUIPMENT ABOVE LINE IS (N) NEW
EQUIPMENT BELOW LINE IS (E) EXISTING UNLESS OTHERWISE NOTED.



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NEW PV SYSTEM: 64.800 KWP

HAMMERSCHMIDT RESIDENCE

277 VIA MONTE
ST HELENA, CA 94574
APN: 025300037000

ENGINEER OF RECORD

Jason Kross

PAPER SIZE: 11" x 17" (ANSI B)

LINE DIAGRAM

DATE: 09.03.2022

DESIGN BY: I.P.

CHECKED BY: M.M.

REVISIONS

E-601.00
(SHEET 6)



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NEW PV SYSTEM: 64.800 KWP

**HAMMERSCHMIDT
RESIDENCE**

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ENGINEER OF RECORD

Jason Kross

PAPER SIZE: 11" x 17" (ANSI B)

DESIGN TABLES

DATE: 09.03.2022

DESIGN BY: I.P.

CHECKED BY: M.M.

REVISIONS

E-602.00

(SHEET 7)

SYSTEM SUMMARY

	INVERTER #1-6		
	MPPT #1	MPPT #2	MPPT #3
MODULES IN SERIES	9	9	9
ARRAY VMP	339.3V	339.3V	339.3V
ARRAY IMP	10.61A	10.61A	10.61A
ARRAY VOC	407.7V	407.7V	407.7V
ARRAY MAX VOC	441.7V	441.7V	441.7V
ARRAY ISC	11.25A	11.25A	11.25A
ARRAY STC POWER	10,800W		
ARRAY PTC POWER	10,221W		
MAX AC CURRENT	32A		
MAX AC POWER	7,680W		
DERATED (CEC) AC POWER	7,680W		
ARRAY STC POWER	64,800		
ARRAY PTC POWER	61,327W		
MAX AC CURRENT	192A		
MAX AC POWER	46,080W		
DERATED (CEC) AC POWER	46,080W		

MODULES

REF.	QTY.	MAKE AND MODEL	P _{MAX}	PTC	ISC	IMP	VOC	VMP	TEMP. COEFF. OF VOC	FUSE RATING
PM1-162	162	HYUNDAI ENERGY SOLUTIONS HIS-S400YH(BK)	400W	378.56W	11.25A	10.61A	45.3V	37.7V	-0.121V/°C (-0.27%/°C)	20A

INVERTERS

REF.	QTY.	MAKE AND MODEL	AC VOLTAGE	GROUND	OCPD RATING	RATED POWER	MAX OUTPUT CURRENT	MAX INPUT CURRENT	MAX INPUT VOLTAGE	CEC WEIGHTED EFFICIENCY
I1-6	6	SMA SB 7.7-1SP-US-41 (240V)	240V	FLOATING	40A	7680W	32A	3X18A	600V	96.8%

DISCONNECTS

REF.	QTY.	MAKE AND MODEL	RATED CURRENT	MAX RATED VOLTAGE
SW1	1	SIEMENS HF225NR OR EQUIV.	400A	240VAC

OCPDS

REF.	QTY.	RATED CURRENT	MAX VOLTAGE
CB1-6	6	40A	240VAC
CB7	1	250A	240VAC
F1-2	2	250A	240VAC

ASHRAE EXTREME LOW	-6.2°C (20.8°F), SOURCE: NAPA CO (38.21°; -122.28°)
ASHRAE 2% HIGH	32.6°C (90.7°F), SOURCE: NAPA CO (38.21°; -122.28°)



CONTRACTOR

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NEW PV SYSTEM: 64.800 KWP

**HAMMERSCHMIDT
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 ST HELENA, CA 94574
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ENGINEER OF RECORD

Jason Kross

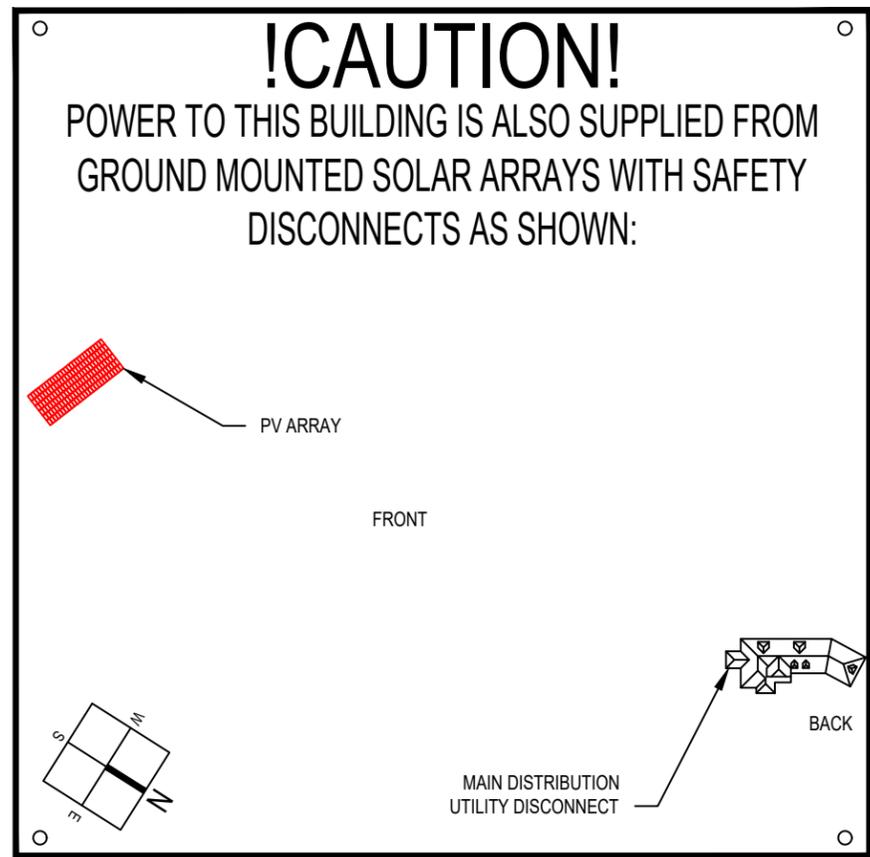
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PLACARDS

DATE: 09.03.2022
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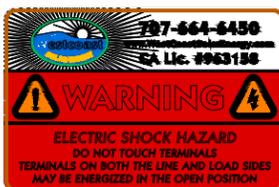
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E-603.00
 (SHEET 8)



PERMANENT SIGNAGE NOTES:

1. NOT ALL PLACARDS SHOWN MAY BE REQUIRED BY LOCAL AHJ. CONTRACTOR TO VERIFY PLACARD REQUIREMENTS WITH LOCAL AHJ BEFORE INSTALLATION.
2. ALL PLAQUES AND SIGNAGE REQUIRED BY THE LATEST EDITION OF THE CALIFORNIA ELECTRICAL CODE AND HEALDSBURG AREA ELECTRICAL NEWSLETTER WILL BE INSTALLED AS REQUIRED.
3. ALTERNATE POWER SOURCE PLACARD SHALL BE METALLIC OR PLASTIC, ENGRAVED OR MACHINE PRINTED LETTERS IN A CONTRASTING COLOR TO THE PLAQUE. THIS PLAQUE WILL BE ATTACHED BY POP RIVETS OR SCREWS OR OTHER APPROVED METHOD.
4. DIRECTORY PLACARD MARKING CONTENT AND FORMAT: RED BACKGROUND, WHITE LETTERING, MINIMUM 3/8" LETTER HEIGHT, ALL CAPITAL LETTERS, ARIAL OR SIMILAR FONT, NON-BOLD, REFLECTIVE WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT.



LABEL 1
 REQ'D BY: NEC 690.5(C)
 APPLY TO:
 INVERTER(S), IF NOT APPLIED BY MFR



LABEL 2
 REQ'D BY: NEC 690.13(B)
 APPLY TO:
 AC DISCONNECT SWITCHES



LABEL 3
 REQ'D BY: NEC 690.17(E)
 APPLY TO:
 DISCONNECTS, FUSES, CIRCUIT BREAKERS



LABEL 4
 REQ'D BY: NEC 690.31(G)(3)
 APPLY TO:
 JUNCTION BOXES, RACEWAYS, CABLE TRAYS,
 CONDUIT BODIES WITH AVAILABLE OPENINGS,
 EVERY 10', WITHIN 1' OF TURNS/PENETRATIONS



LABEL 5
 REQ'D BY: NEC 705.12(D)(3)
 APPLY TO:
 ANY/ALL ELECTRICAL PANELS
 CONNECTED TO MULTIPLE
 POWER SOURCES



LABEL 6
 REQ'D BY: NEC 705.12(D)(2)(3)(B)
 APPLY TO:
 PV BACKFED CIRCUIT BREAKER(S)



LABEL 7
 REQ'D BY: NEC 690.35(F)
 APPLY TO:
 JUNCTION & COMBINERS BOXES,
 DC DISCONNECTS, OTHER SERVICEABLE DEVICES



LABEL 8 (INVERTER 1-6)
 REQ'D BY: NEC 690.54
 APPLY TO:
 POINT OF INTERCONNECTION



LABEL 9 (INVERTER 1-6)
 REQ'D BY: NEC 690.54
 APPLY TO:
 INVERTER



LABEL 10
 REQ'D BY: NEC 690.12
 APPLY TO:
 PV SYSTEM MAIN AC DISCONNECT



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 APN: 025300037000

ENGINEER OF RECORD

Jason Kross

PAPER SIZE: 11" x 17" (ANSI B)

ASSEMBLY DETAILS

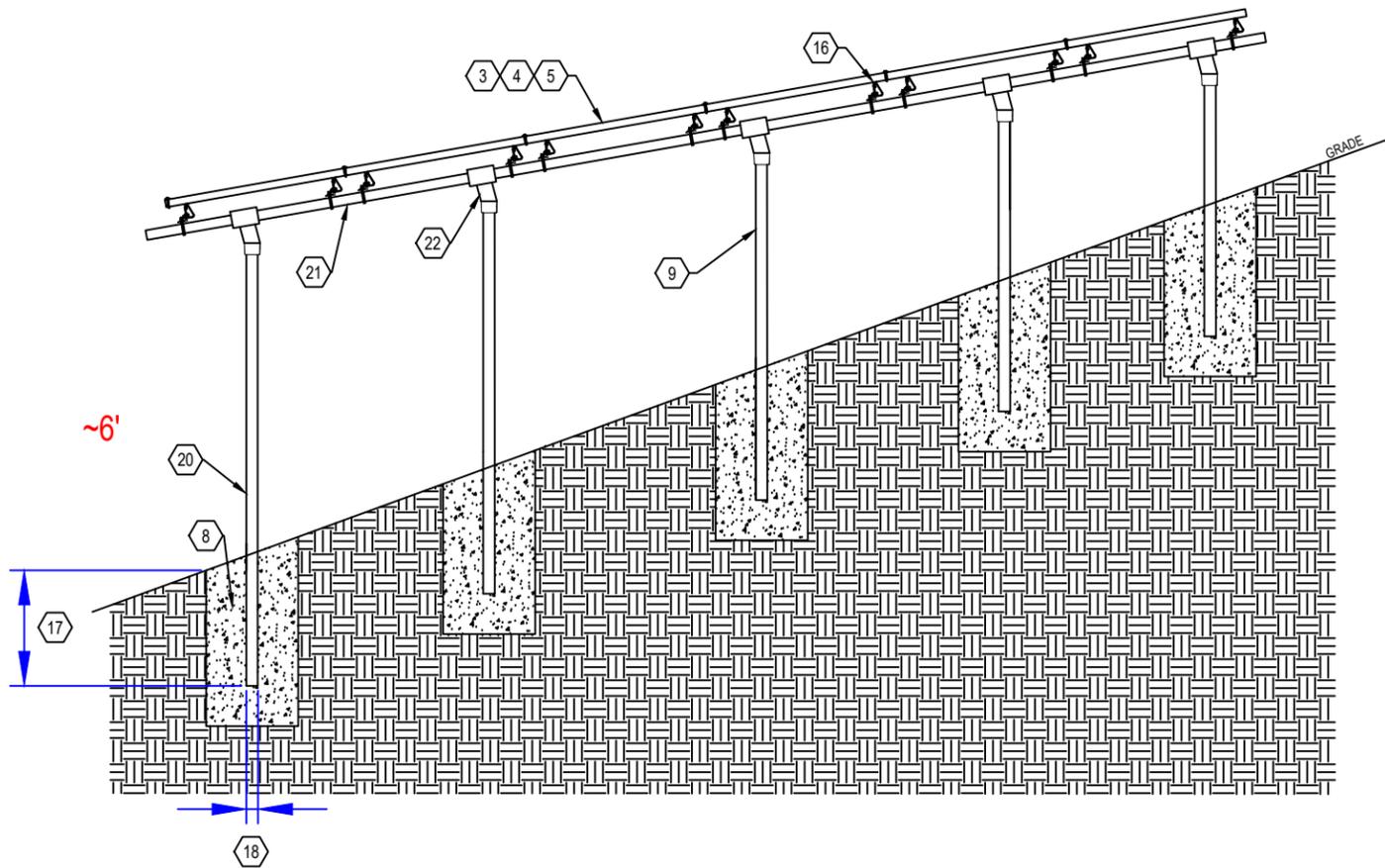
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S-501.00
 (SHEET 9)

GENERAL NOTES

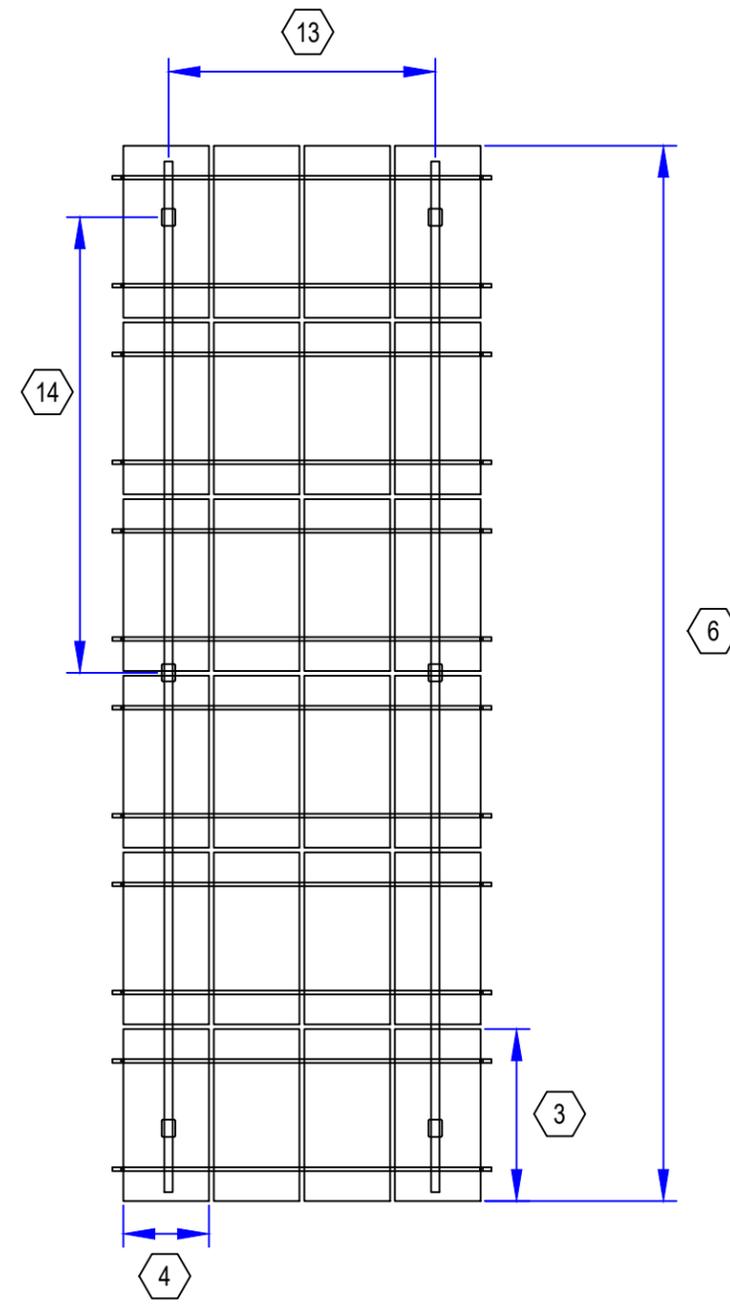
1. FIELD VERIFY ALL MEASUREMENTS



D1 RACKING DETAIL (TRANSVERSE)
 NOT TO SCALE

SHEET KEYNOTES

1. MODULE MANUFACTURER: HYUNDAI ENERGY SOLUTIONS
2. MODULE MODEL: HIS-S400YH(BK)
3. MODULE LENGTH: 75.75"
4. MODULE WIDTH: 40.87"
5. MODULE WEIGHT: 46.52 LBS.
6. SEE SHEET A-103 FOR DIMENSION(S)
7. MIN. SETBACK REQUIREMENT: 10 FT.
8. FOUNDATION/ANCHOR TYPE: DRILL AND POUR
9. TOTAL # OF FOUNDATION/ANCHOR: 60
10. TOTAL AREA: 3482.89 SQ. FT.
11. TOTAL WEIGHT: 8579.04 LBS.
12. WEIGHT PER FOUNDATION/ANCHOR: 142.98 LBS.
13. EAST/WEST SPACING: 10 FT.
14. NORTH/SOUTH SPACING (BETWEEN PIERS): 8 FT.
15. RACKING MANUFACTURER (OR EQUIV.): CUSTOM
16. RACKING MODEL (OR EQUIVALENT): GROUND MOUNT SYSTEM (XR 1000)
17. MIN. FOOTING DEPTH: 3 FT.
18. FOOTING DIAMETER: 18 IN.
19. SLOPE OF TERRAIN: 20 DEGREES
20. SCH 40 AL
21. SCH 80 AL
22. HOLLANDER ADJ FITTINGS
23. WIND EXPOSURE: C
25. WIND SPEED: 110 MPH
26. ARRAY TILT: 10 DEGREES



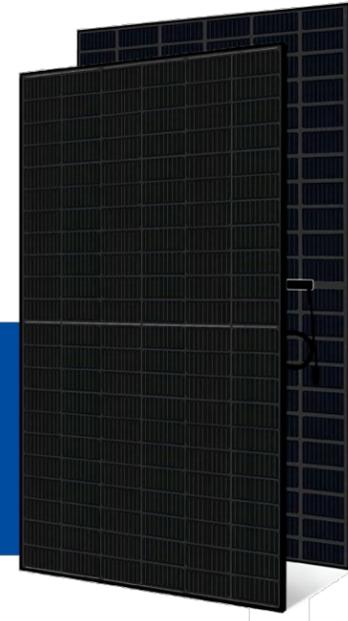
D2 RACKING DETAIL (TOP)
 NOT TO SCALE

HYUNDAI SOLAR MODULE

YH SERIES

Dual Black Max

HIS-S385YH(BK) HIS-S390YH(BK) HIS-S395YH(BK)
 HIS-S400YH(BK) HIS-S405YH(BK) HIS-S410YH(BK)



Bifacial Cells
132



More Power Generation In Low Light



UL 1,500V IEC 1,500V Saves BOS Costs



All black Module For Sleek Design (Black Meshed T-Backsheet)



Maximized Power Generation

Increased total power output through capturing light from both the front and back of Bifacial solar modules. Back side power gain up to 25% of the front output depending on PV system design.



Mechanical Strength

Tempered glass and reinforced frame design withstand rigorous weather conditions such as heavy snow(5,400Pa) and strong wind(5,400Pa).



Half-Cut & Multi-Wire Technology

Improved current flow with half-cut technology and 9 thin wiring technology allows high module efficiency of up to 20.5%. It also reduces power generation loss due to micro-cracks.



UL / VDE Test Labs

Hyundai's R&D center is an accredited test laboratory of both UL and VDE.



Anti-LID / PID

Both LID(Light Induced Degradation) and PID(Potential Induced Degradation) are significantly reduced to ensure higher actual yield during lifetime.



Reliable Warranty

Global brand with powerful financial strength provide reliable 25-year warranty.

Hyundai's Warranty Provisions



- 25-Year Product Warranty
- Materials and workmanship



- 25-Year Performance Warranty
- Initial year : 98.0%
- Linear warranty after second year: with 0.54%p annual degradation, 85.0% is guaranteed up to 25 years

Certification



UL61730 certified by UL, Type 1(for Fire Class A)

Printed Date : 04/2022(final)

www.hyundai-es.co.kr



Electrical Characteristics

		Mono-Crystalline Type(HIS-S YH(BK))					
		385	390	395	400	405	410
Nominal Output (P _{mpp})	W	385	390	395	400	405	410
Open Circuit Voltage (V _{oc})	V	44.5	44.8	45.0	45.3	45.6	45.9
Short Circuit Current (I _{sc})	A	11.04	11.11	11.18	11.25	11.33	11.40
Voltage at P _{max} (V _{mpp})	V	37.1	37.3	37.5	37.7	37.9	38.1
Current at P _{max} (I _{mpp})	A	10.40	10.47	10.54	10.61	10.69	10.76
Module Efficiency	%	19.3	19.5	19.8	20.0	20.3	20.5
Cell Type	-	Mono crystalline, 9busbar					
Maximum System Voltage	V	1,500					
Temperature Coefficient of P _{max}	%/K	-0.347					
Temperature Coefficient of V _{oc}	%/K	-0.268					
Temperature Coefficient of I _{sc}	%/K	+0.032					

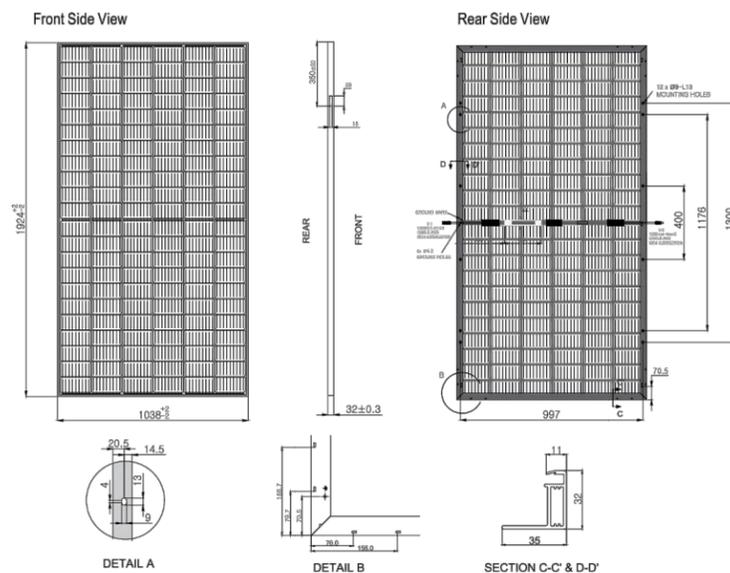
*All data at STC (Measurement tolerances P_{mpp} ±3%; I_{sc} ; V_{oc} ±3%). Above data may be changed without prior notice.

Additional Power Gain from rear side		385	390	395	400	405	410
		5%	W	399	404	410	415
15%	W	437	443	449	454	466	472
25%	W	475	482	488	494	506	513

Mechanical Characteristics

Dimensions	1,038 mm (W) x 1,924 mm (L) x 32 mm(H)
Weight	Approx. 21.1 kg
Solar Cells	132 half cut bifacial cells (2 parallel x 66 half cells in series)
Output Cables	Cable : 1,200mm / 4mm ² Connector : MC4 genuine connector
Junction Box	IP68, weatherproof, IEC certified (UL listed)
Bypass Diodes	3 bypass diodes to prevent power decrease by partial shade
Construction	Front : 3.2mm, High Transmission, AR Coated Tempered Glass Encapsulant : EVA Back Sheet : Black Meshed Transparent Backsheet
Frame	Anodized aluminum alloy type 6063

Module Diagram (unit : mm)

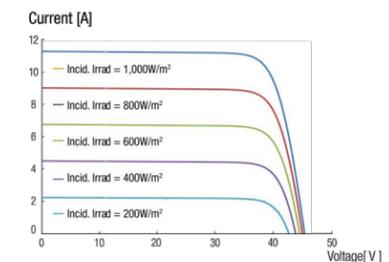
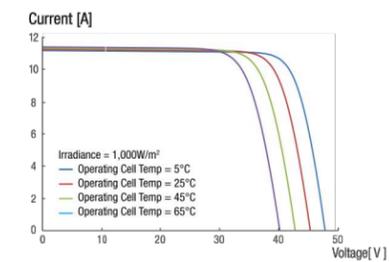


Installation Safety Guide

- Only qualified personnel should install or perform maintenance.
- Be aware of dangerous high DC voltage.
- Do not damage or scratch the rear surface of the module.
- Do not handle or install modules when they are wet.

Nominal Operating Cell Temperature	45.5°C ± 2°C
Operating Temperature	-40°C ~ +85°C
Maximum System Voltage	DC 1,500V
Maximum Reverse Current	20A
Maximum Test Load	Front 5,400 Pa (113 psf) Rear 5,400 Pa (113 psf)

I-V Curves



CONTRACTOR

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APN: 025300037000

ENGINEER OF RECORD

Jason Kross

PAPER SIZE: 11" x 17" (ANSI B)

RESOURCE DOCUMENT

DATE: 09.03.2022

DESIGN BY: I.P.

CHECKED BY: M.M.

REVISIONS

R-001.00

(SHEET 10)

SUNNY BOY 3.0-US / 3.8-US / 5.0-US / 6.0-US / 7.0-US / 7.7-US



Value-Added Improvements

- SunSpec certified technology for cost-effective module-level shutdown
- Advanced AFCI compliant to UL 1699B for arc fault protection

Reduced Labor

- New Installation Assistant with direct access via smartphone minimizes time in the field
- Advanced communication interface with fewer components creates 50% faster setup and commissioning

Optimized Power Production

- ShadeFix, SMA's proprietary shade management solution, produces more power than alternatives
- Reduced component count provides maximum system reliability

Trouble-Free Service

- SMA Service Mobile App provides simplified, expedited field service
- Equipped with SMA Smart Connected, a proactive service solution that is integrated into Sunny Portal

SUNNY BOY 3.0-US / 3.8-US / 5.0-US / 6.0-US / 7.0-US / 7.7-US

Power with a purpose

The residential PV market is changing rapidly. Your bottom line matters more than ever—so we've designed a superior residential solution to help you decrease costs at every stage of your business operations. The Sunny Boy 3.0-US/3.8-US/5.0-US/6.0-US/7.0-US/7.7-US join the SMA lineup of field-proven solar technology backed by the world's #1 service team. This improved residential solution features ShadeFix, SMA's proprietary technology that optimizes system performance. ShadeFix also provides superior power production with a reduced component count versus competitors, which provides maximum reliability. No other optimized solution generates more power or is as easy as systems featuring SMA ShadeFix and SunSpec certified devices. Finally, SMA Smart Connected will automatically detect errors and initiate the repair and replacement process so that installers can reduce service calls and save time and money.

www.SMA-America.com

Technical data	Sunny Boy 6.0-US		Sunny Boy 7.0-US		Sunny Boy 7.7-US	
	208 V	240 V	208 V	240 V	208 V	240 V
Input (DC)						
Max. PV power	9600 Wp		11200 Wp		12320 Wp	
Max. DC Voltage	220 - 480 V		245 - 480 V		270 - 480 V	
Rated MPP Voltage range	220 - 480 V		245 - 480 V		270 - 480 V	
MPPT operating voltage range	100 - 550 V		100 - 550 V		100 - 550 V	
Min. DC voltage / start voltage	100 V / 125 V		100 V / 125 V		100 V / 125 V	
Max. operating input current per MPPT	10 A		10 A		10 A	
Max. short circuit current per MPPT	18 A		18 A		18 A	
Number of MPPT tracker / string per MPPT tracker	3 / 1		3 / 1		3 / 1	
Output (AC)						
AC nominal power	5200 W	6000 W	6660 W	7000 W	6660 W	7680 W
Max. AC apparent power	5200 VA	6000 VA	6660 VA	7000 VA	6660 VA	7680 VA
Nominal voltage / adjustable	208 V / ●	240 V / ●	208 V / ●	240 V / ●	208 V / ●	240 V / ●
AC voltage range	183 - 229 V	211 - 264 V	183 - 229 V	211 - 264 V	183 - 229 V	211 - 264 V
AC grid frequency	60 Hz / 50 Hz		60 Hz / 50 Hz		60 Hz / 50 Hz	
Max. output current	25.0 A	25.0 A	32.0 A	29.2 A	32.0 A	32.0 A
Power factor (cos φ) / harmonics	1 / < 4 %		1 / < 4 %		1 / < 4 %	
Output phases / line connections	1 / 2		1 / 2		1 / 2	
Efficiency						
Max. efficiency	97.3 %	97.7 %	97.3 %	97.9 %	97.3 %	97.5 %
CEC efficiency	96.5 %	97.0 %	96.5 %	97.0 %	96.5 %	97.0 %
Protection devices						
DC disconnect device / DC reverse polarity protection			● / ●			
Ground fault monitoring / Grid monitoring			●			
AC short circuit protection			●			
All-pole sensitive residual current monitoring unit (RCMU)			●			
Arc fault circuit interrupter (AFCI)			●			
Protection class / overvoltage category			I / IV			
General data						
Dimensions (W / H / D) in mm (in)			535 x 730 x 198 (21.1 x 28.5 x 7.8)			
Packaging Dimensions (W / H / D) in mm (in)			600 x 800 x 300 (23.6 x 31.5 x 11.8)			
Weight / packaging weight			26 kg (57 lb) / 30 kg (66 lb)			
Temperature range: operating / non-operating			-25°C ... +60°C / -40°C ... +60°C			
Environmental protection rating			NEMA 3R			
Noise emission (typical)	39 dB(A)				45 dB(A)	
Internal power consumption at night			< 5 W			
Topology / cooling concept	transformerless / convection				transformerless / fan	
Features						
Ethernet ports			2			
Secure Power Supply			● 1)			
Display (2 x 16 characters)			●			
2.4 GHz WLAN / External WLAN antenna			▲ / ○			
ShadeFix technology for string level optimization			●			
Cellular (4G / 3G) / Revenue Grade Meter			○ / ○ 2)			
Warranty: 10 / 15 / 20 years			● / ○ / ○ 3)			
Certificates and approvals			UL 1741, UL 1741 SA incl. CA Rule 21 RSD, UL 1998, UL 1699B Ed. 1, IEEE1547, FCC Part 15 (Class A & B), CAN/CSA V22.2 107.1-1, HECO Rule 14H, PV Rapid Shutdown System Equipment			
● Standard features ○ Optional features — Not available ▲ Subject to availability						
Data at nominal conditions 1) Not compatible with SunSpec shutdown devices 2) Standard in SBX.X-1TP-US-41						
Type designation	SB6.0-1SP-US-41 / SB6.0-1TP-US-41		SB7.0-1SP-US-41 / SB7.0-1TP-US-41		SB7.7-1SP-US-41 / SB7.7-1TP-US-41	

THE SMA ENERGY SYSTEM HOME

The SMA Energy System Home combines legendary SMA inverter performance and SunSpec certified shutdown devices in one cost-effective, comprehensive package. In addition, SMA ShadeFix technology optimizes power production and provides greater reliability than alternatives.

This rapid shutdown solution fulfills UL 1741, NEC 2014, and NEC 2017 requirements and is certified to the power line-based SunSpec Rapid Shutdown communication signal over DC wires, making it the most simple and cost-effective rapid shutdown solution on the market.

Visit www.SMA-America.com for more information.



CONTRACTOR

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NEW PV SYSTEM: 64.800 KWP

HAMMERSCHMIDT RESIDENCE

277 VIA MONTE
ST HELENA, CA 94574
APN: 025300037000

ENGINEER OF RECORD

Jason Kross

PAPER SIZE: 11" x 17" (ANSI B)

RESOURCE DOCUMENT

DATE: 09.03.2022

DESIGN BY: I.P.

CHECKED BY: M.M.

REVISIONS

R-002.00

(SHEET 11)



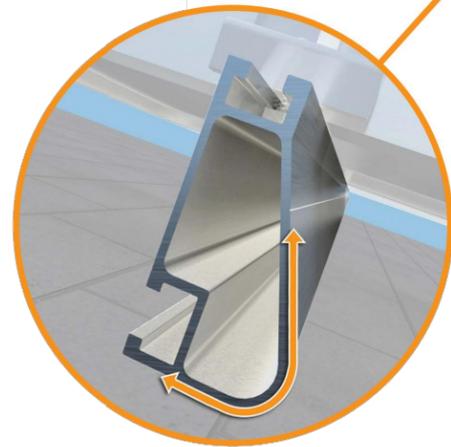
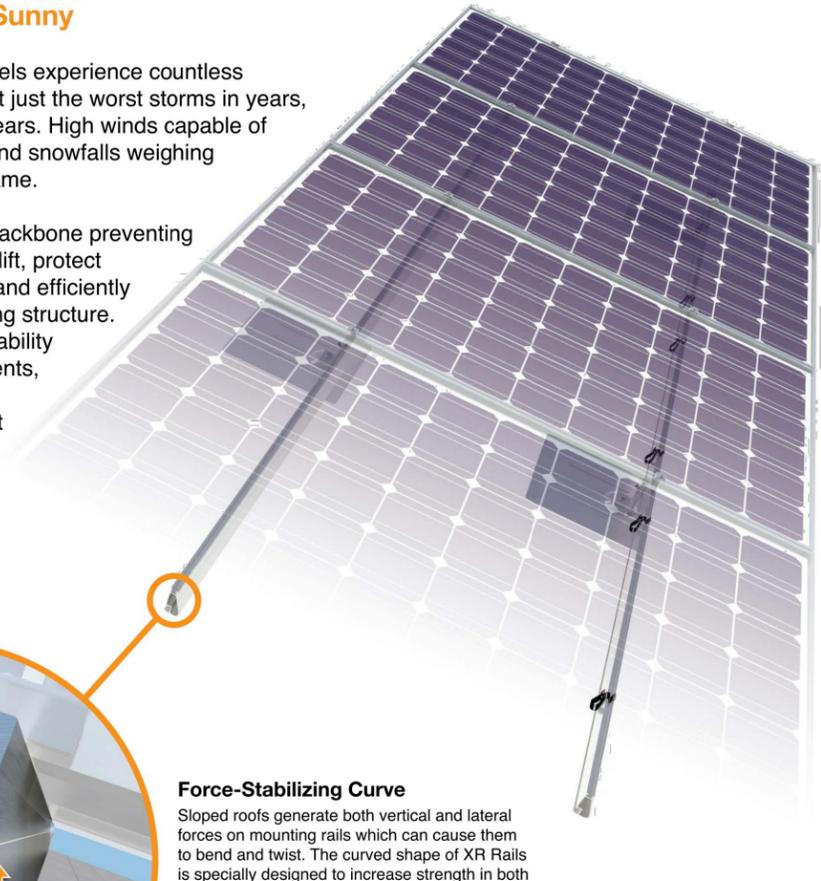
Tech Brief

XR Rail Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.



Force-Stabilizing Curve
Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of marine-grade aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.



XR Rail Family

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.



XR10
XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves 6 foot spans, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear anodized finish
- Internal splices available



XR100
XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 8 feet.

- 8' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available



XR1000
XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans 12 feet or more for commercial applications.

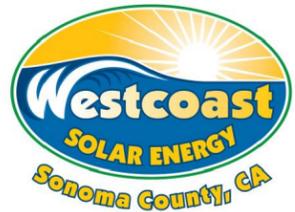
- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	100	XR10		XR100		XR1000	
	120						
	140						
	160						
10-20	100			XR1000			
	120						
	140						
	160						
30	100						
	160						
40	100						
	160						
50-70	160						
	160						
80-90	160						

Tech Brief



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NEW PV SYSTEM: 64.800 KWP

HAMMERSCHMIDT RESIDENCE

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ST HELENA, CA 94574
APN: 025300037000

ENGINEER OF RECORD

Jason Kross

PAPER SIZE: 11" x 17" (ANSI B)

RESOURCE DOCUMENT

DATE: 09.03.2022

DESIGN BY: I.P.

CHECKED BY: M.M.

REVISIONS

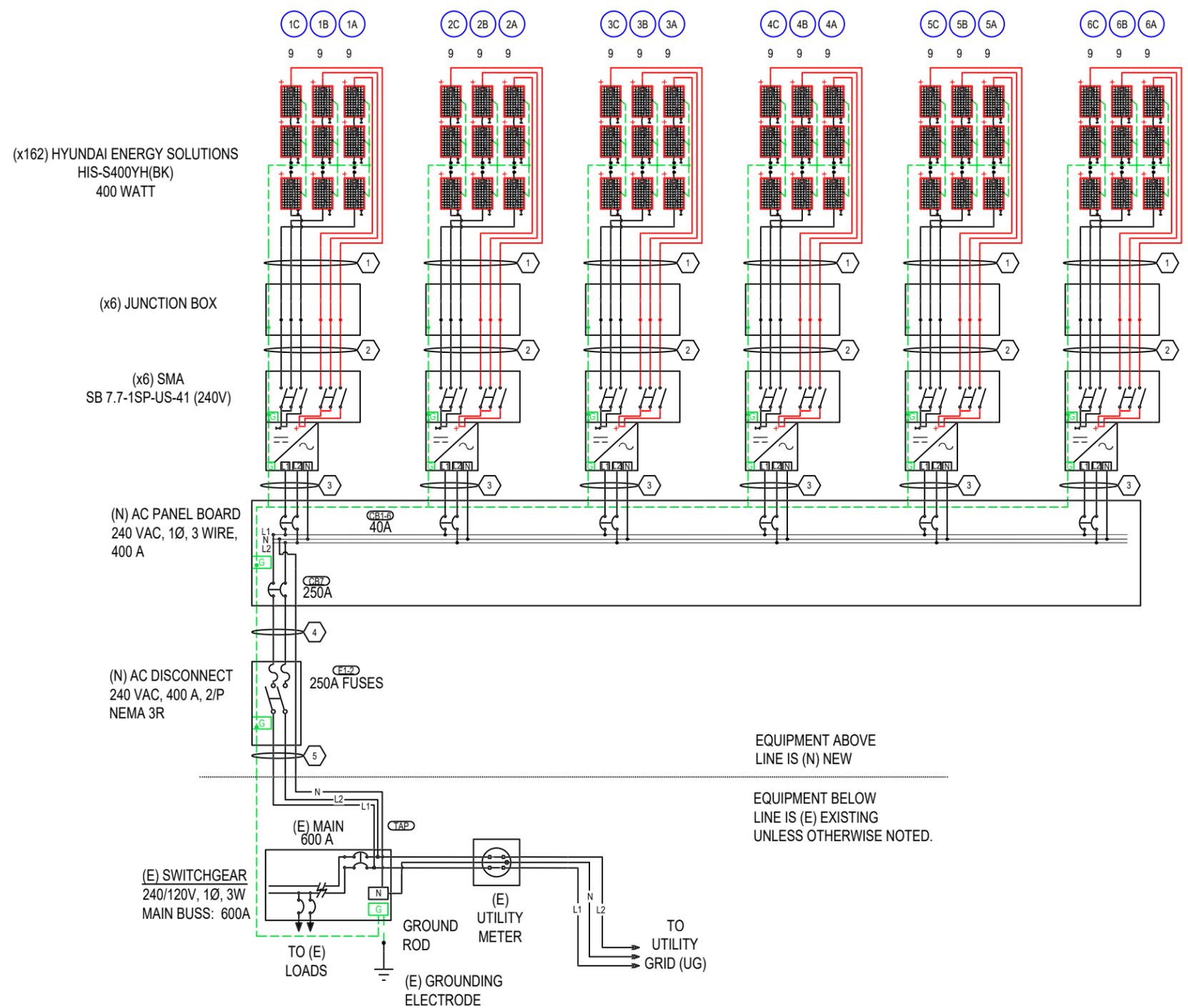
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(SHEET 12)

CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS

ID	TYPICAL	CONDUCTOR	CONDUIT	CURRENT-CARRYING CONDUCTORS IN CONDUIT	OCPD	EGC	TEMP. CORR. FACTOR	CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT (125%)	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	AMP. @ TERMINAL	VOLTAGE DROP
1	18	10 AWG PV WIRE, COPPER	FREE AIR	2	N/A	6 AWG BARE, COPPER	0.96 (32.6 °C)	1	14.06A	17.58A	55A	52.8A	75°C	50A	
2	6	10 AWG THWN-2, COPPER	1" DIA PVC-40	6	N/A	10 AWG THWN-2, COPPER	0.96 (32.6 °C)	0.8	14.06A	17.58A	40A	30.72A	75°C	35A	
3	6	8 AWG THWN-2, COPPER	0.75" DIA EMT	2	40A	10 AWG THWN-2, COPPER	0.96 (32.6 °C)	1	32A	40A	55A	52.8A	75°C	50A	
4 (ONE OF THE OPTIONS)	1	4 SETS OF 250 kcmil THWN-2, ALUMINIUM IN PARALLEL PVC-40 CONDUITS	4 SETS OF 2" DIA PVC-40 (PARALLEL RUN)	2	250A	2 AWG THWN-2, ALUMINIUM IN PARALLEL PVC-40 CONDUITS	0.96 (32.6 °C)	1	192A	240A	920A	1150A	75°C	820A	2.04%
	1	3 SETS OF 4/0 THWN-2, COPPER IN PARALLEL PVC-40 CONDUITS	3 SETS OF 2" DIA PVC-40 (PARALLEL RUN)	2	250A	4 AWG THWN-2, COPPER IN PARALLEL PVC-40 CONDUITS	0.96 (32.6 °C)	1	192A	240A	780A	748.8A	75°C	690A	1.98%
5	1	250 kcmil THWN-2, COPPER	2" DIA EMT	2	N/A	2 AWG THWN-2, COPPER	0.96 (32.6 °C)	1	192A	240A	320A	307.2A	75°C	285A	

- 1A - 6A MODULE STRINGING
- 1B - 6B MODULE STRINGING
- 1C - 6C MODULE STRINGING



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NEW PV SYSTEM: 64.800 KWP

HAMMERSCHMIDT RESIDENCE

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 APN: 025300037000

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

LINE DIAGRAM

DATE: 08.26.2022

DESIGN BY: I.P.

CHECKED BY: M.M.

REVISIONS

E-601.00
 (SHEET 6)



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NEW PV SYSTEM: 64.800 KWP

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 RESIDENCE**

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 APN: 025300037000

ENGINEER OF RECORD

PAPER SIZE: 11" x 17" (ANSI B)

ASSEMBLY DETAILS

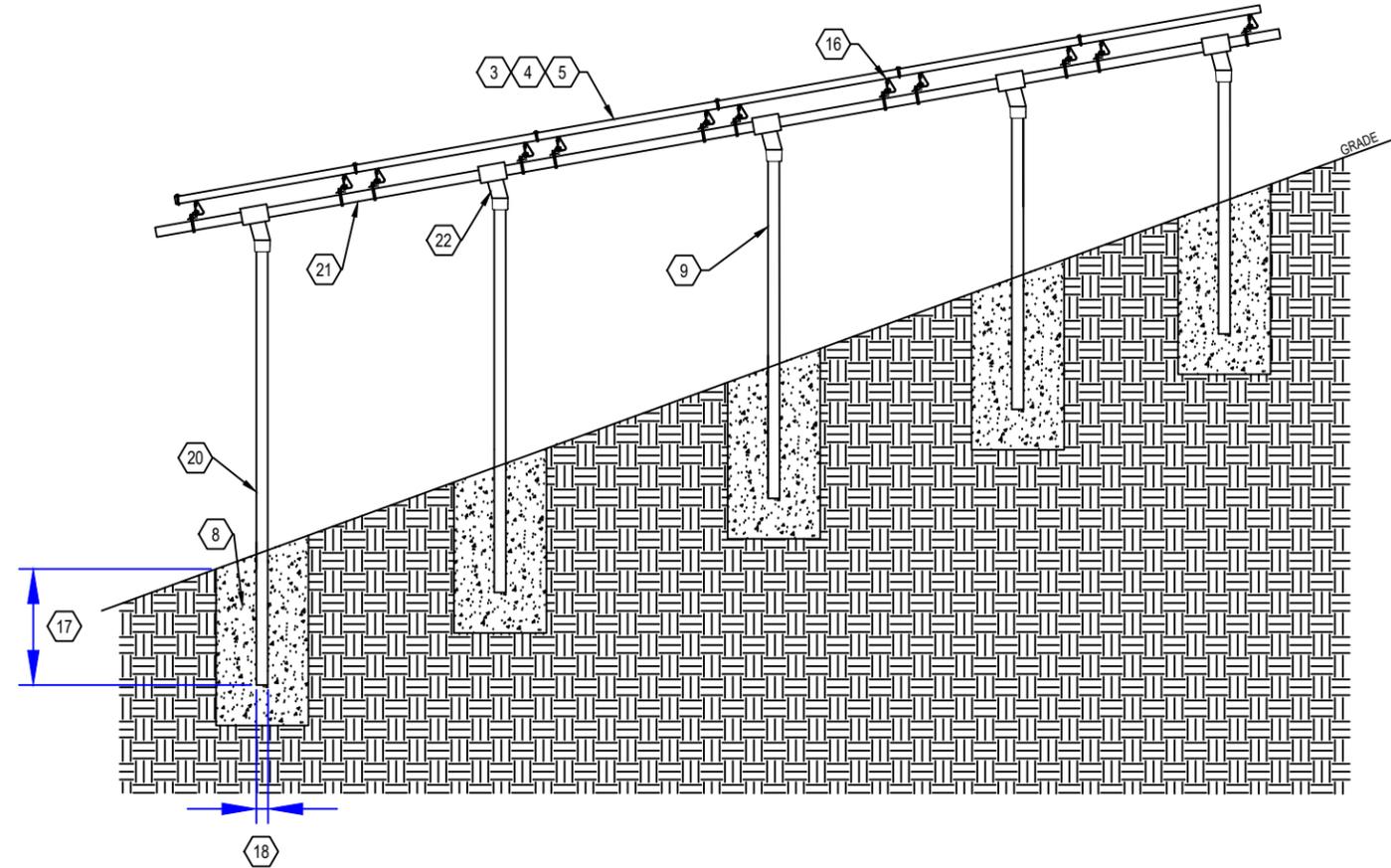
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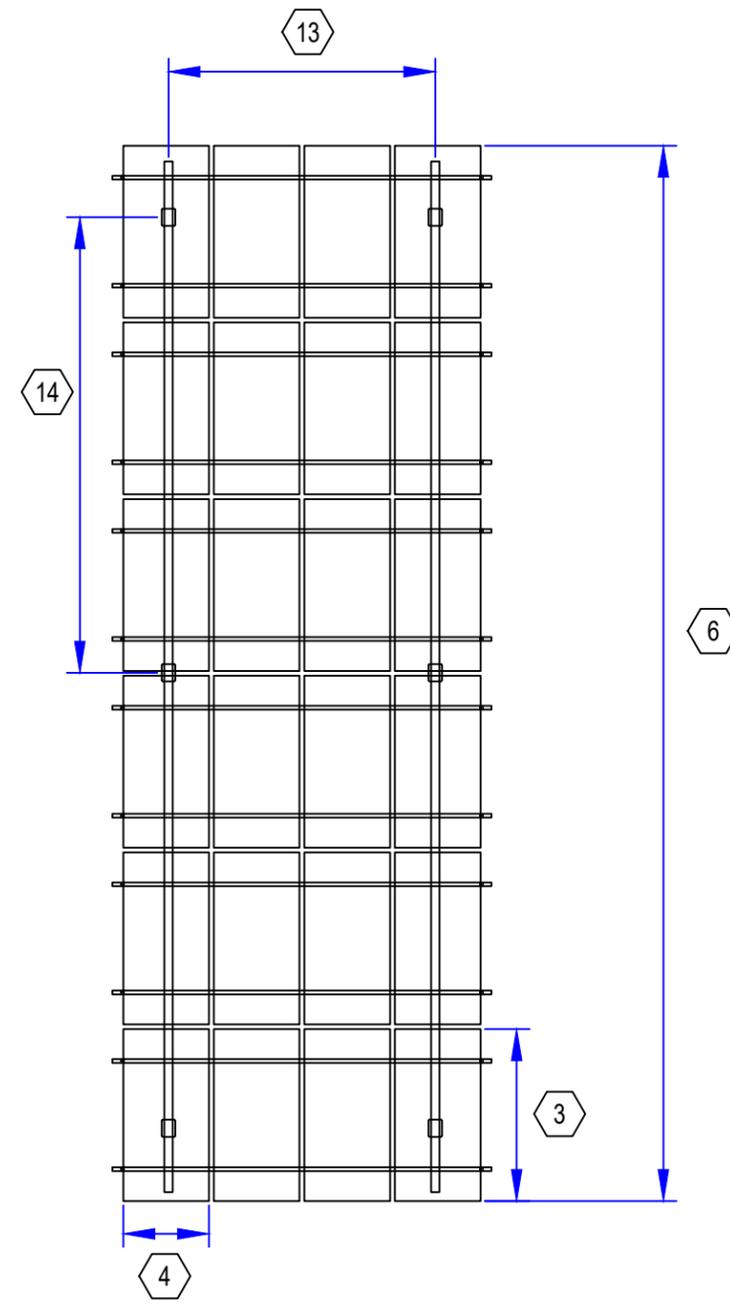
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 (SHEET 9)

GENERAL NOTES

1 FIELD VERIFY ALL MEASUREMENTS



D1 RACKING DETAIL (TRANSVERSE)
 NOT TO SCALE



D2 RACKING DETAIL (TOP)
 NOT TO SCALE

SHEET KEYNOTES

1. MODULE MANUFACTURER: HYUNDAI ENERGY SOLUTIONS
2. MODULE MODEL: HIS-S400YH(BK)
3. MODULE LENGTH: 75.75"
4. MODULE WIDTH: 40.87"
5. MODULE WEIGHT: 46.52 LBS.
6. SEE SHEET A-103 FOR DIMENSION(S)
7. MIN. SETBACK REQUIREMENT: 10 FT.
8. FOUNDATION/ANCHOR TYPE: DRILL AND POUR
9. TOTAL # OF FOUNDATION/ANCHOR: 60
10. TOTAL AREA: 3482.89 SQ. FT.
11. TOTAL WEIGHT: 8579.04 LBS.
12. WEIGHT PER FOUNDATION/ANCHOR: 142.98 LBS.
13. EAST/WEST SPACING: 10 FT.
14. NORTH/SOUTH SPACING (BETWEEN PIERS): 8 FT.
15. RACKING MANUFACTURER (OR EQUIV.): CUSTOM
16. RACKING MODEL (OR EQUIVALENT): GROUND MOUNT SYSTEM (XR 1000)
17. MIN. FOOTING DEPTH: 3 FT.
18. FOOTING DIAMETER: 18 IN.
19. SLOPE OF TERRAIN: 20 DEGREES
20. SCH 40 AL
21. SCH 80 AL
22. HOLLANDER ADJ FITTINGS
23. WIND EXPOSURE: C
25. WIND SPEED: 110 MPH
26. ARRAY TILT: 10 DEGREES



Caution: Photovoltaic system performance predictions calculated by PVWatts® include many inherent assumptions and uncertainties and do not reflect variations between PV technologies nor site-specific characteristics except as represented by PVWatts® inputs. For example, PV modules with better performance are not differentiated within PVWatts® from lesser performing modules. Both NREL and private companies provide more sophisticated PV modeling tools (such as the System Advisor Model at //sam.nrel.gov) that allow for more precise and complex modeling of PV systems.

The expected range is based on 30 years of actual weather data at the given location and is intended to provide an indication of the variation you might see. For more information, please refer to this NREL report: The Error Report.

Disclaimer: The PVWatts® Model ("Model") is provided by the National Renewable Energy Laboratory ("NREL"), which is operated by the Alliance for Sustainable Energy, LLC ("Alliance") for the U.S. Department Of Energy ("DOE") and may be used for any purpose whatsoever.

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The energy output range is based on analysis of 30 years of historical weather data, and is intended to provide an indication of the possible interannual variability in generation for a Fixed (open rack) PV system at this location.

RESULTS

98,744 kWh/Year*

System output may range from 94,883 to 100,422 kWh per year near this location.

Month	Solar Radiation (kWh / m ² / day)	AC Energy (kWh)
January	2.73	4,462
February	3.79	5,472
March	4.86	7,627
April	6.56	9,771
May	7.40	11,204
June	7.97	11,575
July	7.96	11,822
August	7.33	10,881
September	6.42	9,238
October	4.91	7,592
November	3.32	5,098
December	2.46	4,003
Annual	5.48	98,745

Location and Station Identification

Requested Location	Napa
Weather Data Source	Lat, Lng: 38.29, -122.3 1.0 mi
Latitude	38.29° N
Longitude	122.30° W

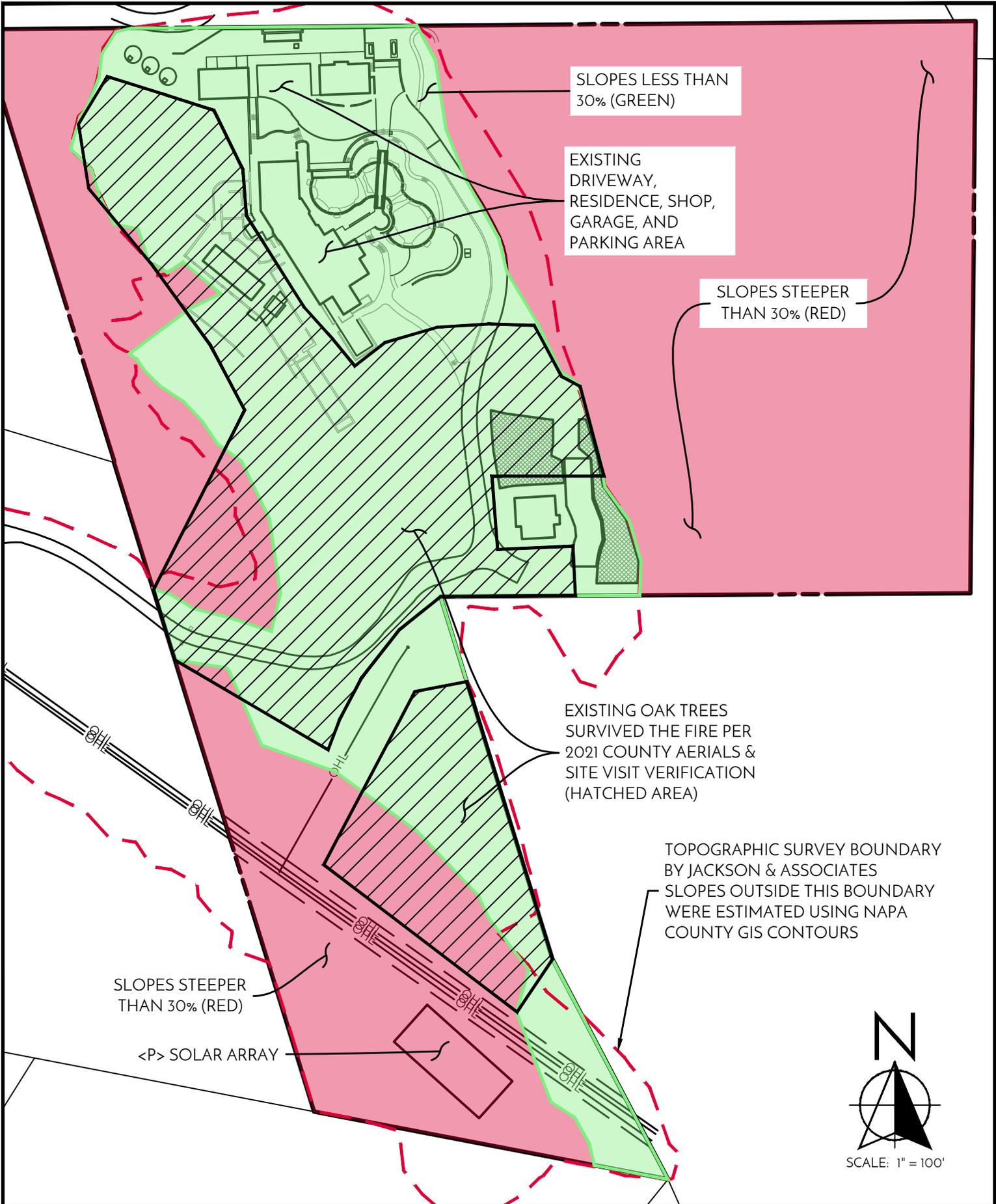
PV System Specifications

DC System Size	64.8 kW
Module Type	Standard
Array Type	Fixed (open rack)
System Losses	14.08%
Array Tilt	10°
Array Azimuth	180°
DC to AC Size Ratio	1.2
Inverter Efficiency	96%
Ground Coverage Ratio	0.4
Albedo	From weather file
Bifacial	No (0)

Monthly Irradiance Loss	Jan	Feb	Mar	Apr	May	June
	0%	0%	0%	0%	0%	0%
Monthly Irradiance Loss	July	Aug	Sept	Oct	Nov	Dec
	0%	0%	0%	0%	0%	0%

Performance Metrics

DC Capacity Factor	17.4%
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FRIEDMAN SOLAR SLOPE ANALYSIS



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(707) 302-6280

DATE:	04/10/2023	SHEET	1
SCALE:	1" = 100'	OF	1
JOB #	19.031		
APN:	025-300-370		