

INSTALLATION PLAN - PARKING STRUCTURE METAL ROOF PHOTOVOLTAIC ARRAY

GOLDEN, CO

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CODE COMPLIANCE

ALL WORK SHALL CONFORM TO ALL PERTINENT CODES, REGULATIONS, LAWS AND ORDINANCES AS REQUIRED BY THE STATE OF COLORADO AS WELL AS 2008 NATIONAL ELECTRIC CODE

SCOPE OF WORK

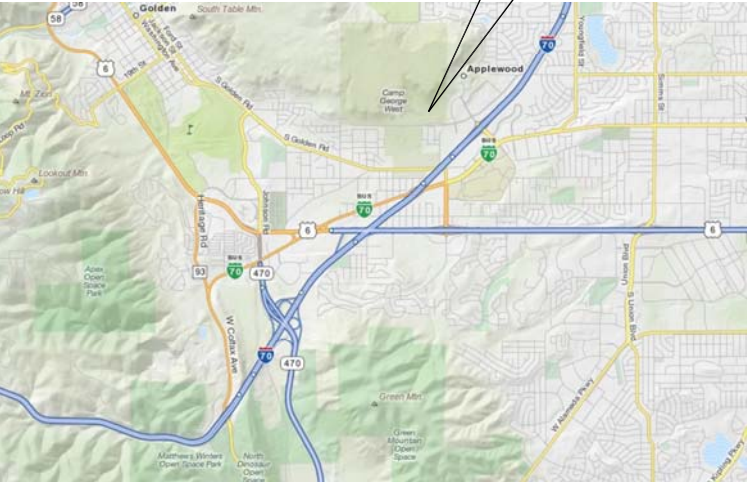
THIS PROJECT CONSISTS OF THE INSTALLATION OF A SOLAR ELECTRIC SYSTEM ON THE METAL ROOFTOP OF AN EXISTING BUILDING. THE SOLAR ELECTRIC SYSTEM INCLUDES A ROOFTOP SOLAR ARRAY AND ASSOCIATED ELECTRICAL EQUIPMENT.

THE SOLAR ELECTRIC SYSTEM WILL BE BUILT ON THE EXISTING ROOF. SUNPOWER SOLAR ELECTRIC SYSTEMS ARE DESIGNED TO WITHSTAND WIND AND SEISMIC LOADS ON THE EXISTING METAL ROOF, USING PRE-ENGINEERED ATTACHMENT METHODS.

THE ROOFTOP SYSTEM WILL BE BUILT ON THE EXISTING BUILDING FOOTPRINT AND WILL NOT ENCROACH ON ANY EXISTING SITE BOUNDARIES.

THE SOLAR ELECTRIC SYSTEM IS DESIGNED SO THAT IT WILL NOT IMPACT ROOFTOP ACCESS, ADA COMPLIANCE, FIRE DEPARTMENT CONNECTIONS, LANDSCAPING, VEHICULAR SITE ACCESS, OR PARKING & LOADING AREAS.

VICINITY MAP



SITE MAP



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ENGINEER'S STAMP

NREL
PARKING LOT STRUCTURE

GOLDEN, CO

TITLE
SHEET

REVISIONS

REV QUOTE

OPPORTUNITY 004932

PROJECT 10862

DATE DRAWN 7-21-10

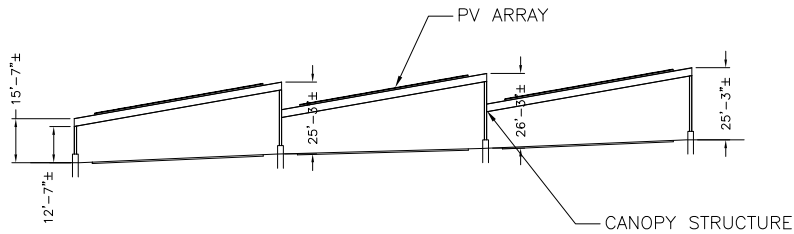
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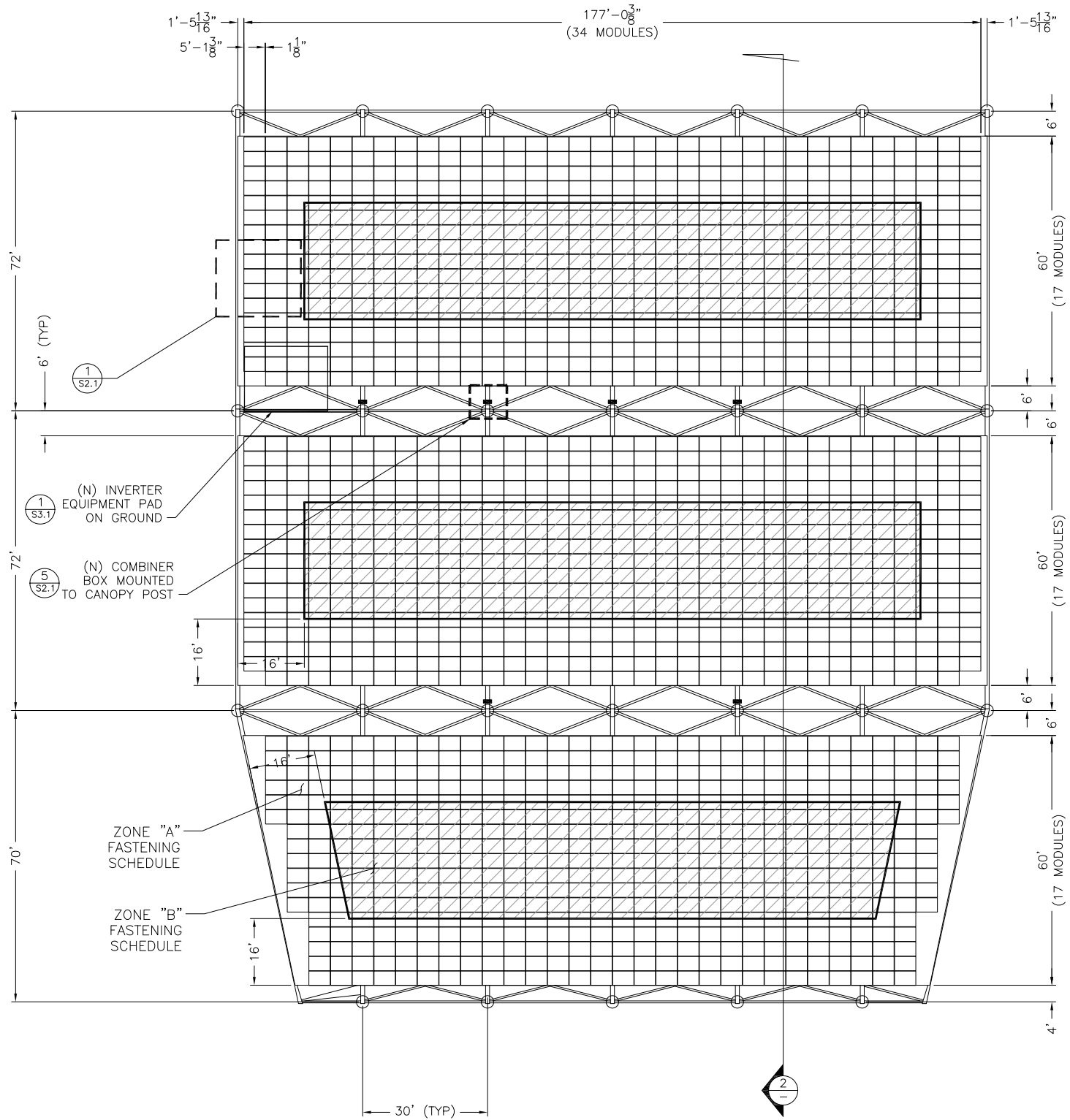
IF BAR IS NOT ONE INCH, DRAWING IS NOT TO SCALE

SHEET

T1.1



2 CANOPY SECTION
SCALE: 1/32"=1'-0"



1 ARRAY LAYOUT
SCALE: 1/16"=1'-0"



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ARRAY WEIGHTS:
(1728) MODULES @ 41 LBS = 70,848 LBS.
TOTAL ARRAY AREA = 30,337 SQ. FT.
TOTAL ROOF AREA = 38,880 SQ. FT.

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PARKING LOT STRUCTURE

GOLDEN, CO

ARRAY LAYOUT

REVISIONS		REV	QUOTE #	DATE	DB	CB
DESCRIPTION						
ISSUE FOR CUSTOMERS REVIEW		1		9/9/10	MM	MM
CUSTOMER REVIEW CORRECTIONS		2		10/1/10	MM	MM
ISSUE FOR CONSTRUCTION		3		11/16/10	MM	MM

OPPORTUNITY 004932

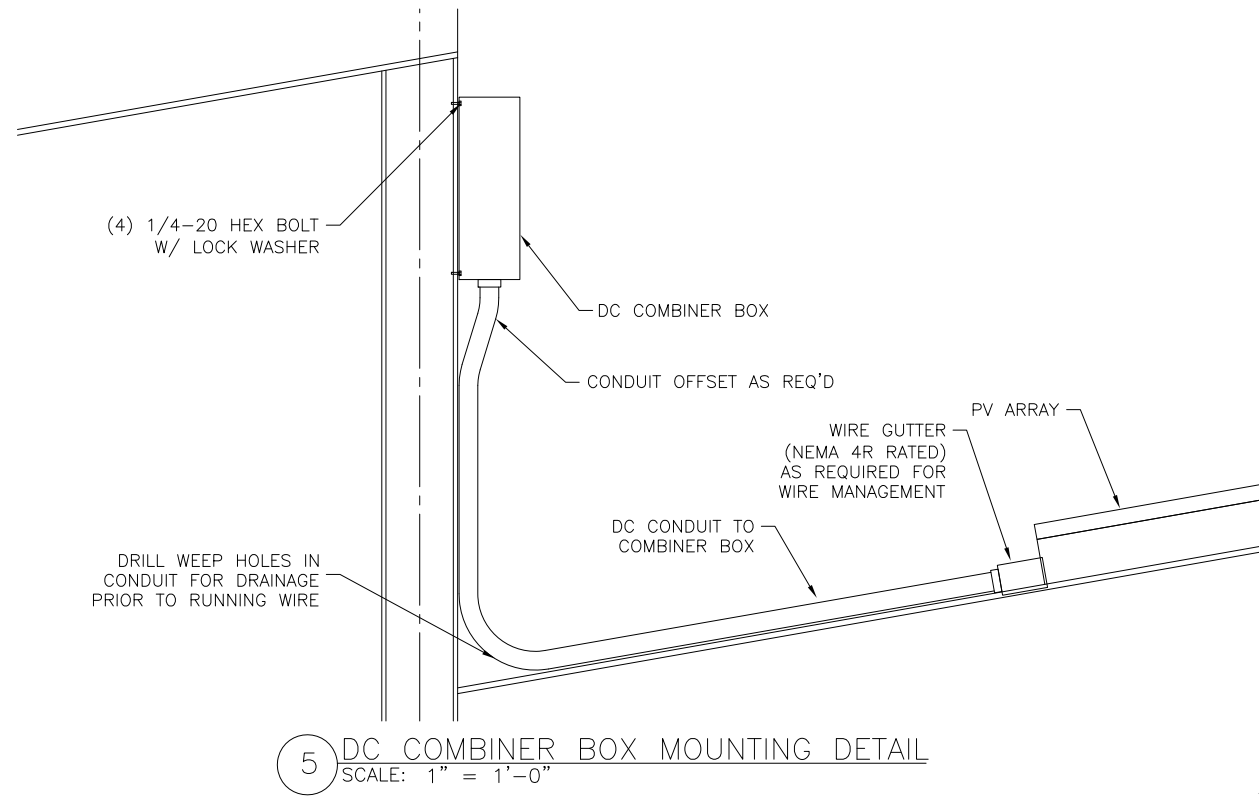
PROJECT 10862

DATE DRAWN 7-21-10

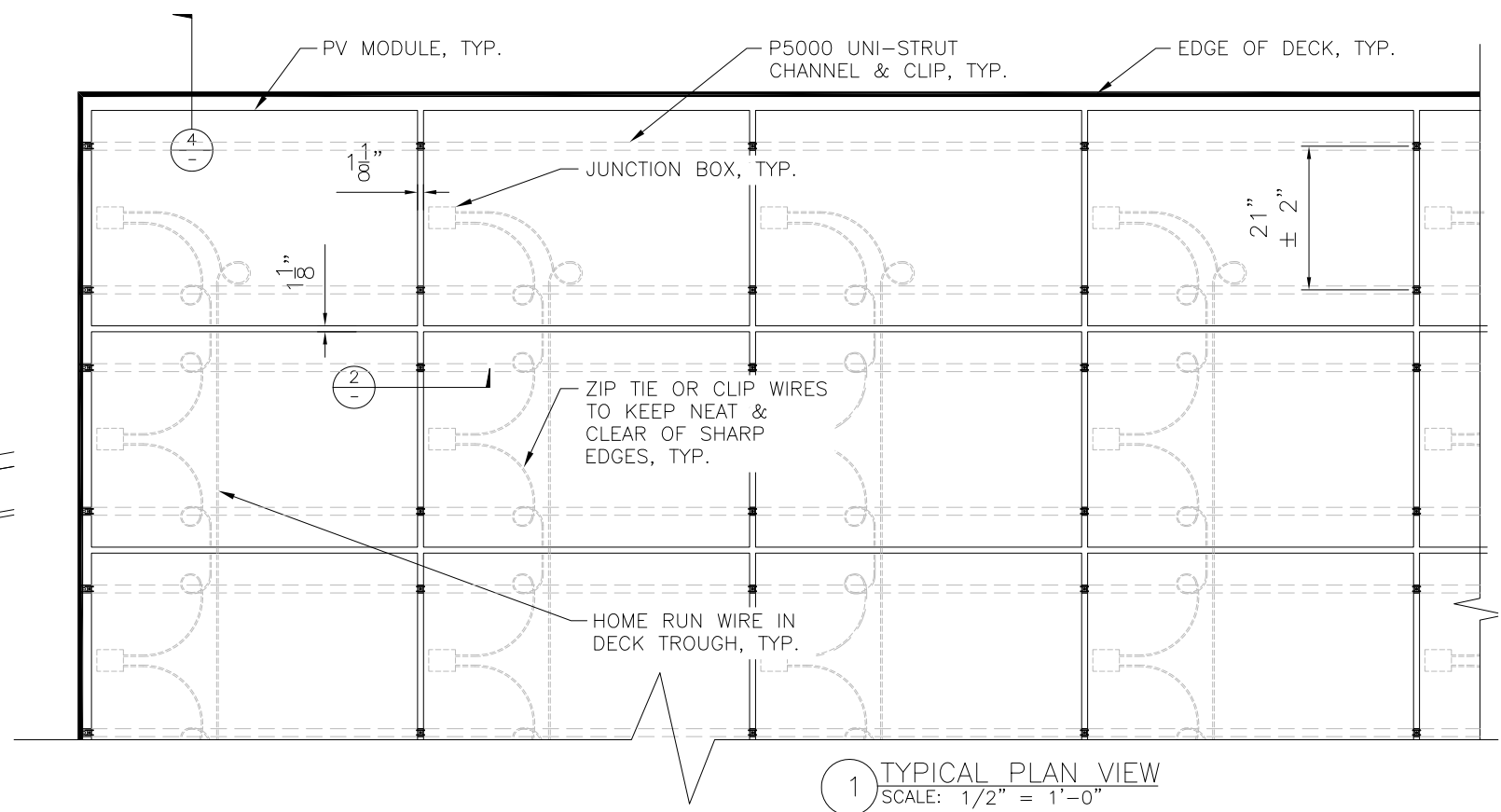
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0 1/2" 1"
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SHEET

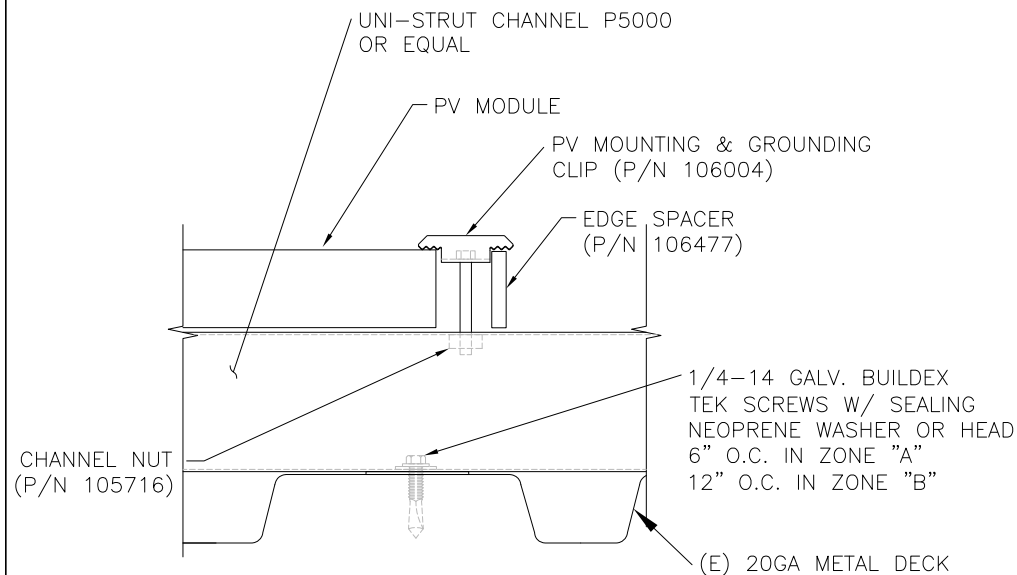
S1.1



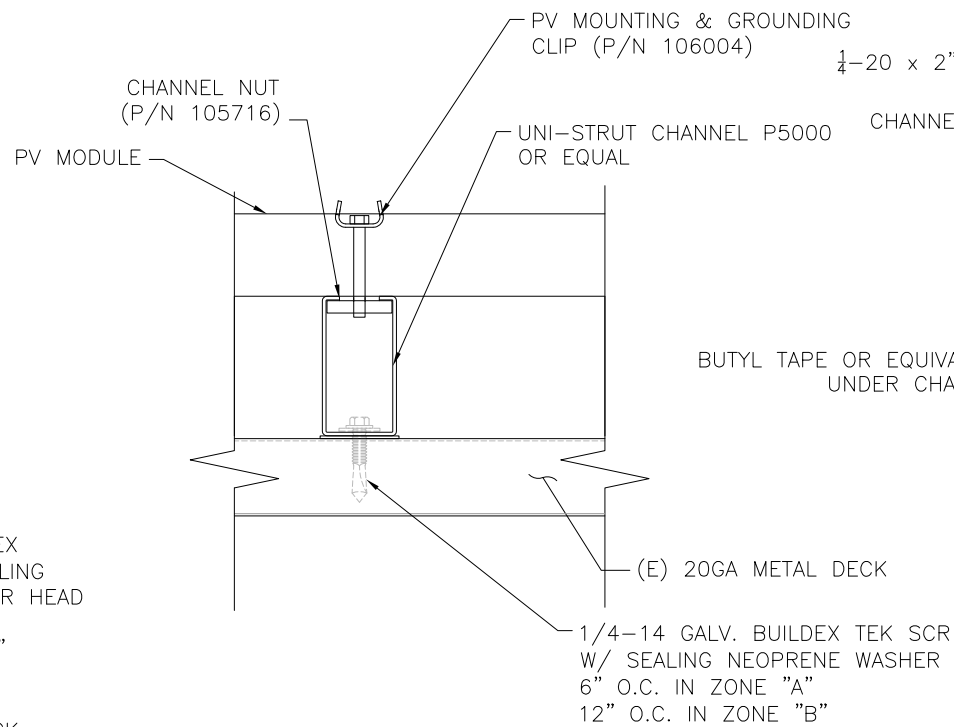
5 DC COMBINER BOX MOUNTING DETAIL
SCALE: 1" = 1'-0"



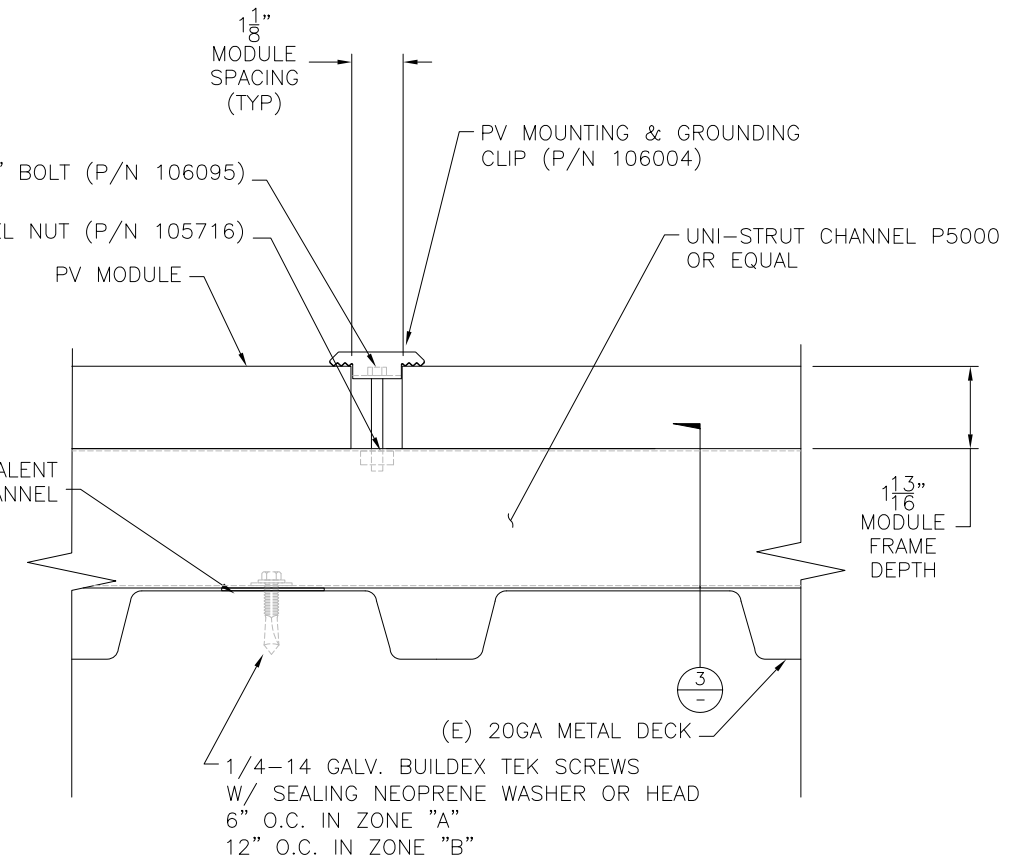
1 TYPICAL PLAN VIEW
SCALE: 1/2" = 1'-0"



4 ARRAY ATTACHMENT DETAIL - END CONDITION
SCALE: 6" = 1'-0"

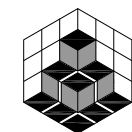


3 ARRAY ATTACHMENT DETAIL
SCALE: 6" = 1'-0"



2 ARRAY ATTACHMENT DETAIL
SCALE: 6" = 1'-0"

NOTE: INSTALL TEK SCREWS PER MANUFACTURERS' RECOMMENDATIONS TO ENSURE PROPER SEATING WITHOUT STRIPPING SUBSTRATE. DEPTH SENSITIVE NOSEPIECE IS REQUIRED.



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GOLDEN, CO

ATTACHMENT DETAILS
SHEET 1

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1		ISSUE FOR CUSTOMERS REVIEW	9/9/10	MM	MM
2		CUSTOMER REVIEW CORRECTIONS	10/1/10	MM	MM
3		ISSUE FOR CONSTRUCTION	11/16/10	MM	MM

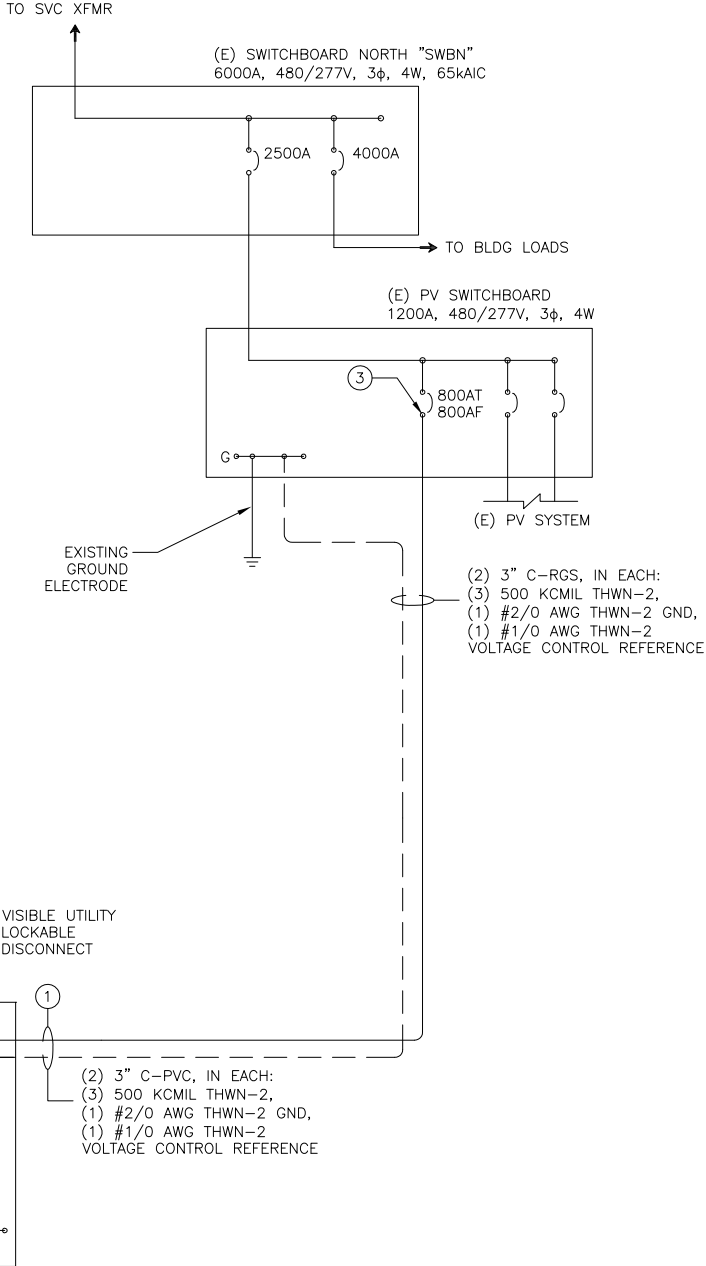
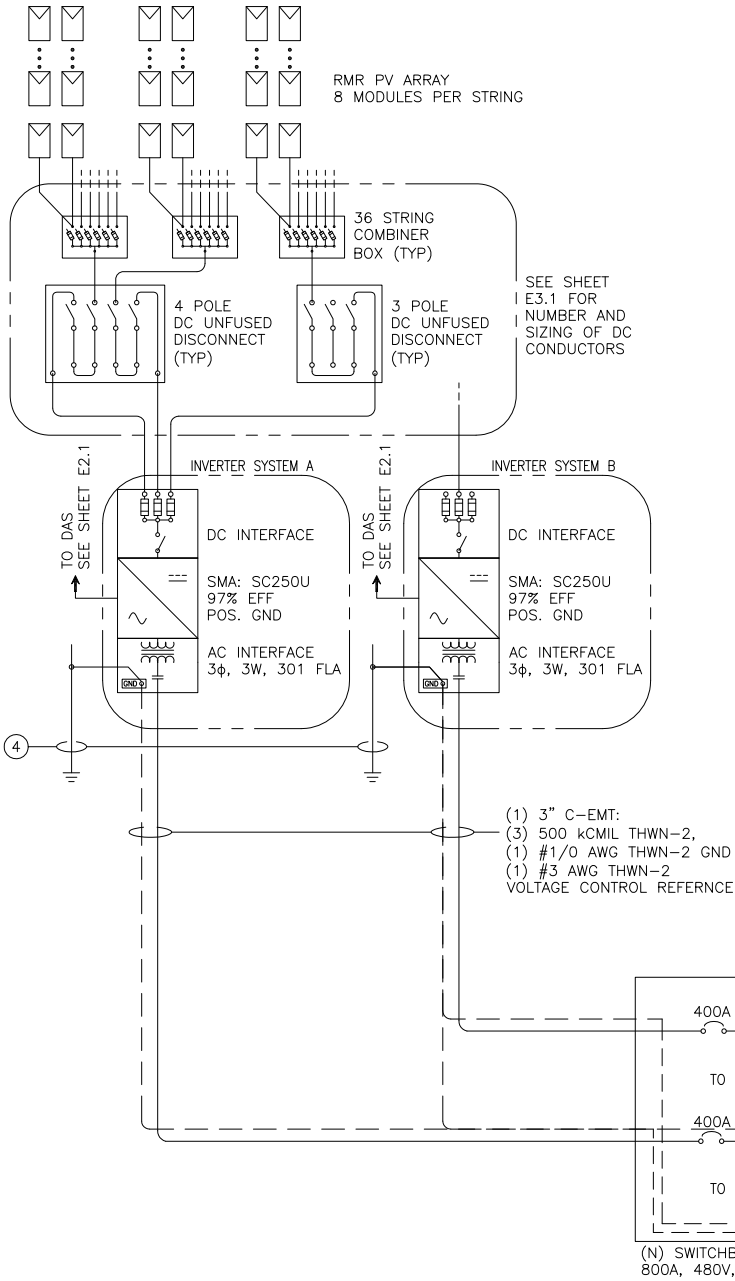
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0 1/2" 1"
IF BAR IS NOT ONE INCH, DRAWING IS NOT TO SCALE
SHEET

S2.1

INVERTER SYSTEM "B"	INVERTER SYSTEM "A"	TOTAL ARRAY RATING
RMR PV ARRAY 262.08 KWP 832 MODULES, SUNPOWER SPR-315E-WHT 8 MODULES PER STRING, 104 STRINGS STRING AMPERAGE: 5.76A IMP, 6.14A ISC STRING VOLTAGE: 437.60V VMP, 516.80V VOC	RMR PV ARRAY 262.08 KWP 832 MODULES, SUNPOWER SPR-315E-WHT 8 MODULES PER STRING, 104 STRINGS STRING AMPERAGE: 5.76A IMP, 6.14A ISC STRING VOLTAGE: 437.60V VMP, 516.80V VOC	RMR PV ARRAY 524.16 KWP 1664 MODULES, SUNPOWER SPR-315E-WHT MODULE RATING: 290.00 WPTC 8 MODULES PER STRING, 208 STRINGS STRING AMPERAGE: 5.76A IMP, 6.14A ISC STRING VOLTAGE: 437.60V VMP, 516.80V VOC

NOTE
(FOR SUNPOWER ARRAYS ONLY):
SUNPOWER MODULES ARE TO BE POSITIVELY GROUNDDED.
THIS REQUIRES THAT POSITIVE CONDUCTORS BE UN-FUSED
AND UN-BROKEN FROM THE ARRAY TO THE INVERTER'S DC
TERMINAL AND NEGATIVE CONDUCTORS BE FUSED AND/OR
SWITCHED AS SPECIFIED IN THE DRAWINGS.



- GENERAL ELECTRICAL NOTES:**
- PROVIDE CONTINUOUS PATH FOR GROUND CONDUCTOR FROM THE AC SWITCHGEAR TO THE EXISTING SWITCHBOARD GROUND BUS. GROUNDING ELECTRODE CONDUCTOR TO SERVE AS EQUIPMENT GROUND. PROVIDE LAY-IN LUGS TO BOND ALL EQUIPMENT ALONG THIS PATH TO THE GROUNDING ELECTRODE CONDUCTOR TO ALLOW FOR CONTINUOUS RUN.
 - PROVIDE LAY-IN LUGS TO TAP GROUNDING ELECTRODE CONDUCTOR.
 - PROVIDE LOAD SIDE CONNECTION IN ACCORDANCE WITH NEC ARTICLE 690.64(B).
 - USE #6 AWG BARE CU CONDUCTOR TO BOND INVERTER GROUNDING BAR TO (N) DC GROUND ROD ELECTRODE PER NEC 250.52 & 250.53
 - REFER TO SHEET E2.1 FOR CONDUIT AND WIRE REQUIREMENTS AND MONITORING SCHEMATIC DETAILS.
 - CONFIRM LOCATION OF UTILITY LOCKABLE DISCONNECT PRIOR TO CONSTRUCTION WITH ENGINEER OF RECORD IF LOCKABLE DISCONNECT CANNOT BE LOCATED WITHIN 10 FEET OF UTILITY METER.
 - UTILITY LOCKABLE DISCONNECT EQUIPMENT MODEL DELIVERED ON-SITE MUST MATCH THE EQUIPMENT CALLED OUT IN THESE PLANS. CONTRACTOR HAS THE RESPONSIBILITY TO INFORM SUNPOWER PROJECT MANAGER, CONSTRUCTION MANAGER AND ENGINEER OF RECORD IN THE EVENT THAT A NON-CONFORMING UTILITY-LOCKABLE DISCONNECT IS PROVIDED.

- GENERAL ELECTRICAL NOTES:**
- ALL EQUIPMENT IS NEW UNLESS OTHERWISE NOTED.
 - ALL DC COMPONENTS SHALL BE LISTED FOR 600VDC.
 - CONDUIT ENTRY/CONNECTION TO ELECTRICAL ENCLOSURES SHALL BE SUITABLE FOR GROUNDING (PER NEC 250.97) AND SHALL BE SEALED AGAINST ENVIRONMENT.
 - ALL NEW EQUIPMENT TO HAVE AN AIC RATING GREATER THAN OR EQUAL TO THAT OF THE EXISTING EQUIPMENT UNLESS OTHERWISE NOTED
 - CONSULT INVERTER INSTALLATION GUIDE FOR WIRING METHODS AND OPERATING PROCEDURES.
 - INVERTER-INTEGRATED PROTECTION INCORPORATES THE FOLLOWING PROTECTIVE FUNCTIONS (PER UL-1741):
 - 50/51 PHASE OVERCURRENT
 - 59 OVERVOLTAGE
 - 27 UNDERVOLTAGE
 - 810 OVERFREQUENCY
 - 81U UNDERFREQUENCY
 - 51N GND FAULT DETECTION & INTERRUPT
 - ANTI-ISLANDING PROTECTION
 - DC VOLTAGE FROM THE ARRAY IS ALWAYS PRESENT AT THE DISCONNECT AND DC TERMINALS OF THE INVERTER DURING DAYLIGHT HOURS. LIVE WIRING SAFETY AND CAUTIONARY PRACTICES SHOULD BE EMPLOYED DURING INSTALLATION AND MAINTENANCE OPERATIONS.

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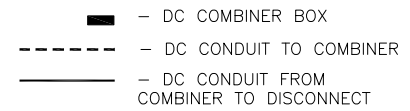
ELECTRICAL
SINGLE LINE SCHEMATIC

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0 1/2" 1"
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E1.1



1 DC WIRING PLAN
SCALE: 3/32" = 1'-0"

2. CONDUIT EXPANSION FITTINGS REQUIRED, PLEASE REFER TO G1.1 FOR CALCULATIONS.

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DC WIRING PLAN

REVISIONS					
REV	QUOTE #	DESCRIPTION	DATE	DB	CB
1		ISSUE FOR CUSTOMERS REVIEW	9/9/10	NK	NN
2		CUSTOMER REVIEW CORRECTIONS	10/11/10	NN	NN
3		ISSUE FOR CONSTRUCTION	11/16/10	NN	RH

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E4.1



E4.2

