

6.90 KW DC SOLAR INSTALLATION WITH DETACHED PATIO STRUCTURE

SITE: 20442 PINE DRIVE, TRABUCO CANYON CA 92679 APN: 842-111-35

SCOPE OF WORK

This project involves implementing a new solar system to the site with solar panels on a detached patio structure capable of supporting a solar array with (15) 460 watt solar panels.

The solar system with LiFePO4 battery storage is non-exporting and cannot back feed to the grid. There is a manual bypass interlock which allows for the inverter to be bypassed with grid power but the inverter itself will automatically draw power from the grid in the event that the batteries are depleted when there is no solar power. The batteries, inverters and all new electrical equipment off the structure are located in steel framed electrical equipment shed with details included in the plans.

The single-story patio cover is a completely steel-framed structure supporting boxed beam, cold-formed steel rafters which then directly support double-sided (bifacial) solar panels which comprise the roof. All rafters and side trim is galvanized and painted.

Beneath the water-tight solar panels are cable tray made of galvanized steel track that carry the PV wires and recessed, outdoor-rated LED lighting which diffusely lights the canopy from the underside and are controlled by a dimmer.

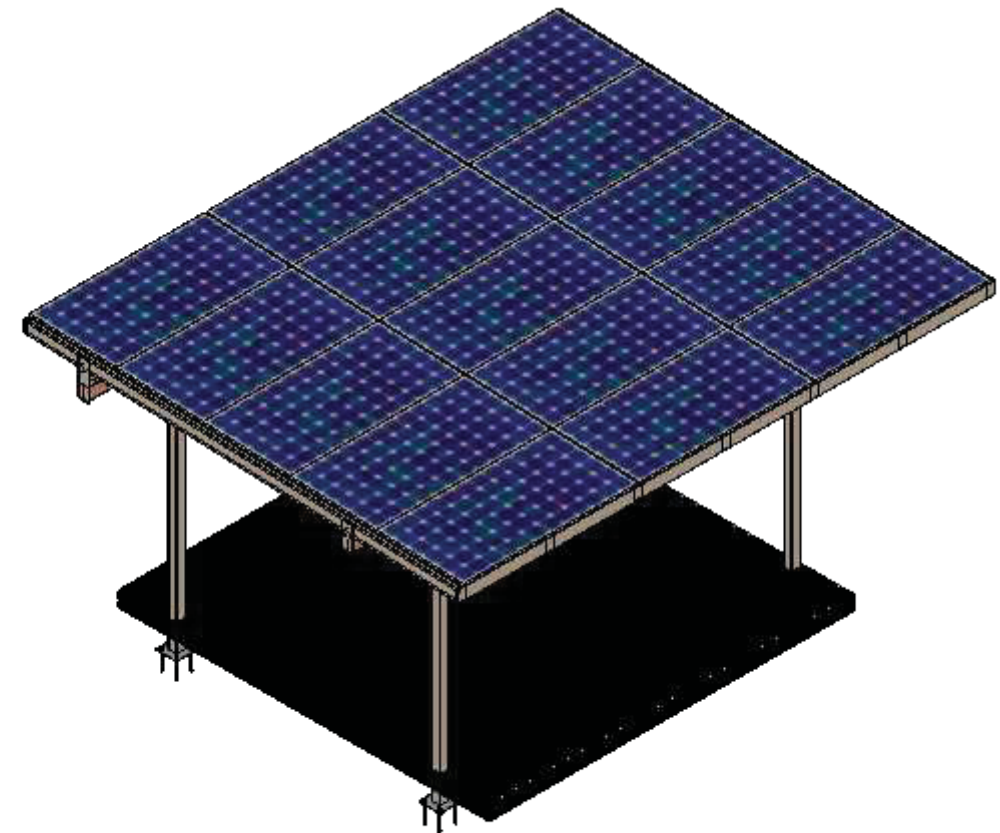
212 Ft²	Patio Cover Gross Floor Area
730 Ft²	Residence Coverage Area
325 Ft²	Garage Coverage Area
1,267 Ft²	Proposed Lot Coverage
4,817 Ft²	Lot Area (Per Assessor Parcel Map)
26.3%	Proposed Total Lot Coverage

6.90 KW	Rated DC Solar Power
5.93 KW	STC AC Output Power

SHEET INDEX

- 1 Title Page
- 2 Structural Notes
- 3 Site Plan
- 4 Architectural Side View
- 5 Architectural Front View
- 6 Architectural Underside View
- 7 Framing Front View
- 8 Framing Side View
- 9 Floor Framing At Leg Details
- 10 Floor Framing at Mid Beam Details
- 11 Solar Mounting Details
- 12 Leg Detail
- 13 Footing Details
- 14 Wide Flange Beam Plate Details
- 15 Panel Grounding
- 16 Panel Weather Sealant Detail
- 17 Solar Panel Details
- 18 Inverter Data Sheet
- 19 Battery Data Sheet
- 20 Electrical System Diagram
- 21 Electrical Enclosure Details
- 22 Electrical Enclosure Dimensions
- 23 Electrical Diagram
- 24 Safety Labeling

RENDERING



REFERENCED CODES

2022 California Electrical Code
 2020 National Electric Code NEC)
 2022 California Residential Code (CRC)
 2022 California Building Code (CBC)
 2022 California Fire Code

This structure is rated as IBC Building Occupancy Group U - Utility and Miscellaneous.

OWNER

Jessica Dobson
 20442 Pine Drive
 Trabuco Canyon CA
 92679

LEGAL SITE DESCRIPTION

N TR 626
 BLK LOT 169

GENERAL CONTRACTOR

Heatspotter Inc.
 dba Solar Power Patios
 2912 Cornelius Way
 Elk Grove, CA 95758
 solarpowerpatios.com
 650-743-3270
 CSLB Lic. 1011915

ENGINEER

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TITLE PAGE

SITE: 20442 PINE DRIVE
 TRABUCO CANYON CA 92679

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DDMMYYYY	REMARKS
1 27JUN2023	Revision 1 - K. Anderson
2 20OCT2023	Revision 2 - K. Anderson - Reoriented panels to obtain 10" leg rear setback
3
4
5

REV2 01

GENERAL STRUCTURAL NOTES

- All construction shall be in accordance with the latest approved version of the California Building Code (CBC).
- The Contractor shall verify all field dimensions prior to fabrication & erection.
- Loads
 - Dead Loading (Superimposed Dead Loading) 5 psf
(In addition to the structure self weight)
 - Live Loading (Roof Live Loading) 10 psf
2022 CBC 1607.14.4.1
ASCE 7-16 Appendix I 1105
- Location: 33.664908 N, 117.589506 W
- Wind:

Risk Category	II	
Ultimate Wind Speed	Actual=96 MPH	Design=115
Wind Exposure Factor	C	
Directional (Other factors) Methodology	Kd=0.85,G=0.85,Kz=0.85,Kzt=1.0	
Mean Roof Height	Open Structure	12' 2 5/8"
- Seismic:

a. Risk Category	II	
b. Site Class	D	
c. S s	Actual=1.387	Design=2.000
d. S 1	Actual=0.489	Design=1.600
e. S DS	Actual=1.110	Design=0.749
f. S D1	Actual=0.326	Design=0.499
g. Cs	Actual=0.317	Design=0.457
g. Des. Cat.	E	
h. Long Transition Period(T _L)	12	
i. Lateral Resisting System	Ordinary Moment Frame (C4)	
j. Redundancy Factor (ρ)	1.0	
k. Overstrength Factor (Ω _o)	3.0	
l. Response Mod Factor (R)	3.5	
m. Deflection Factor (C _d)	3.0	
- If there are any omissions, errors or discrepancies discovered within these plans (i.e. dimension conflicts), contact the Architect or Engineer of Record for clarification and/or correction prior to continuing with construction.

STRUCTURAL REFERENCE CODES

***** All work to be performed under these project plans shall conform to the following applicable codes and any applicable supplements and amendments:

- 2022 California Building Code, Title 24, Part 2
- ASCE 7-16 Minimum Design Loads for Buildings and Other Structures
- AISI S100 North American Specification for the Design of Cold-Formed Steel Structural Members
- ACI 318-19 Building Code And Commentary (Concrete)
- ANSI/AISC 360-16 Specification for Structural Steel Buildings

SAFETY NOTES

- It is the Contractors' responsibility to comply with all federal and state regulations regarding maintaining a safe work environment and performing work in a safe manner. It is the Contractors' responsibility to be aware and comply with all OSHA requirements that may apply to this construction project.

FOUNDATION NOTES

- Allowable soil pressures - per CBC:
 - Dead + Live 1500 psf
 - Dead + Live + Lateral 2000 psf

SPECIAL INSPECTION NOTES

- Special Inspections are as required by jurisdiction.
 - Any required 'Special Inspection' items require an independent inspection service. All testing and inspection reports shall be submitted to the EOR, Architect and governing jurisdiction for review and acceptance.
- *Structural observations by the Engineer of Record do not meet 'Special Inspection' requirements. It is the Contractor's responsibility to ensure that the special inspection requirements are met.

CONCRETE NOTES

- Concrete mixing, placing and pouring shall be in accordance with ACI 318 and the project specifications. Mix design shall be in accordance with the applicable sections of the CBC and these plans.
- Concrete shall not be permitted to drop from a full height of more than six (6) vertical feet. Hoppers and/or vertical chutes shall be used to avoid segregation in and around reinforcing steel (i.e. in formed cast-in-place concrete walls).
- Footings are centered under posts and columns, U.N.O.
- Footings shall bear on firm undisturbed native soil or compacted by mechanical means to 95% optimum density, free of muck and organics, and achieve 1500 PSF minimum bearing pressure and lateral bearing pressure below natural grade of 150 PSF.
- Concrete shall have minimum compression strength (f'c) of 2500 PSI. Non-shrink grout will have minimum compression strength of 5000 PSI.

REINFORCING STEEL NOTES

- Reinforcing placement and splicing shall be in accordance with the 'Manual of Standard Practice' by the Concrete Reinforcing Steel Institute.
- Non-coated reinforcing steel shall be kept clean and free of corrosion prior to placement of concrete.
- Provide any and all accessories necessary to support the reinforcing steel and hardware in place as shown in these plans.
- Wet-stabbing of reinforcing steel dowels or embedded anchor bolts shall not be permitted.
- Protection (clearance from edge or face of concrete) for reinforcing steel shall conform to following:

5.1. Concrete poured against earth	3"
5.2. Concrete formed but exposed to earth or weather	2"
5.3. Slab-on-Grade - from bottom	2"
5.4. Structural - from top	1 1/2"
- Each bar shall be wire-tied or attached by other approved method to ties, stirrups or cross-bars at a maximum of 24".
- Reinforcing steel shall meet the following requirements:

7.1. Welded Wire Fabric	ASTM 118
7.2. Ties or stirrups	ASTM A615, Grade 60
7.3. Other bars (not welded)	ASTM A615, Grade 60
7.4. Welded bars	ASTM A706

STRUCTURAL STEEL NOTES

- The requirements and specifications of the latest version of the 'Manual of Steel Construction' by the American Institute of Steel Construction shall be followed for design, fabrication & erection of all structural steel.
- Structural Steel Grades shall conform to the following ASTM material classifications, UNO on plans:

2.1. Wide Flange Members	A572 Gr50, or A992
2.2. Hollow Steel (HSS)	A500 Gr B
2.3. Misc. Plates, Angles	A36
2.4. Channels & Tees	A36
2.5. Machine Bolts	A307

STRUCTURAL STEEL MOMENT FRAME NOTES

- Unless noted otherwise within this section, all the notes under 'STRUCTURAL STEEL NOTES' apply to the design, fabrication & erection of Steel Moment Frame components as identified within these plans.
- A 'WELDING PROCEDURE SPECIFICATIONS' plan shall be prepared and maintained prior to beginning any and all welding procedures. Said plan shall be available upon request by either the EOR or the building official. Pre-qualified 'WELDING PROCEDURE SPECIFICATIONS' for Shielded Metal Arc Welding (SMAW) & Flux Core Arc Welding (FCAW) may be used.
- Welding Electrodes shall conform to one of the following:

3.1. Shielded Metal Arc Welding (SMAW)	*E7018
3.2. Flux Core Arc Welding (FCAW)	*E70 Series
3.3. Gas Metal Arc Welding (GMAW)	*E70 Series
- *Base metal shall be capable of delivering a minimum of 20 ft-lbs at 70° F, as measured by a Charpy V-Notch Impact Test per the latest edition of the AISC 'MANUAL OF STEEL CONSTRUCTION.'
- *Weld metal shall be capable of delivering a minimum of 20 ft-lbs at -20° F, as measured by a Charpy V-Notch Impact Test per AWS D1.1.
- All welds not specifically or otherwise identified shall be fillet type welds, with throat thickness not less than the thinnest material to be welded minus 1/16", and shall weld all edge contacts between the two materials.
- Individual welds shall be completed continuously before the joint being welded is allowed to cool beyond the minimum specified pre-heat and interpass temperature.
- Complete Joint Penetration (CJP) or Partial Joint Penetration (PJP) may be used in lieu of fillet welds. Where such is used, weld beads shall be peened after each pass, except for the root and surface passes.
- All welding to be performed in shop by certified welder. No field welding to be performed.

METAL STUD NOTES

- Metal stud construction members (including runner tracks) shall conform to the requirements of ASTM C645 Grade A steel with a minimum yield stress of 33 ksi except where otherwise noted in the plans. Typical studs, joists and runner tracks shall be 18 Ga UNO.
- Runner tracks shall be deep leg runner tracks UNO.
- Metal stud elements shall be cut square, fitted and seated properly to abutting/adjoining elements as required or as shown in these plans. All metal stud elements shall be plumbed, aligned and secured at all connection points as indicated in these plans.

ENGINEER

STRUCTURAL NOTES

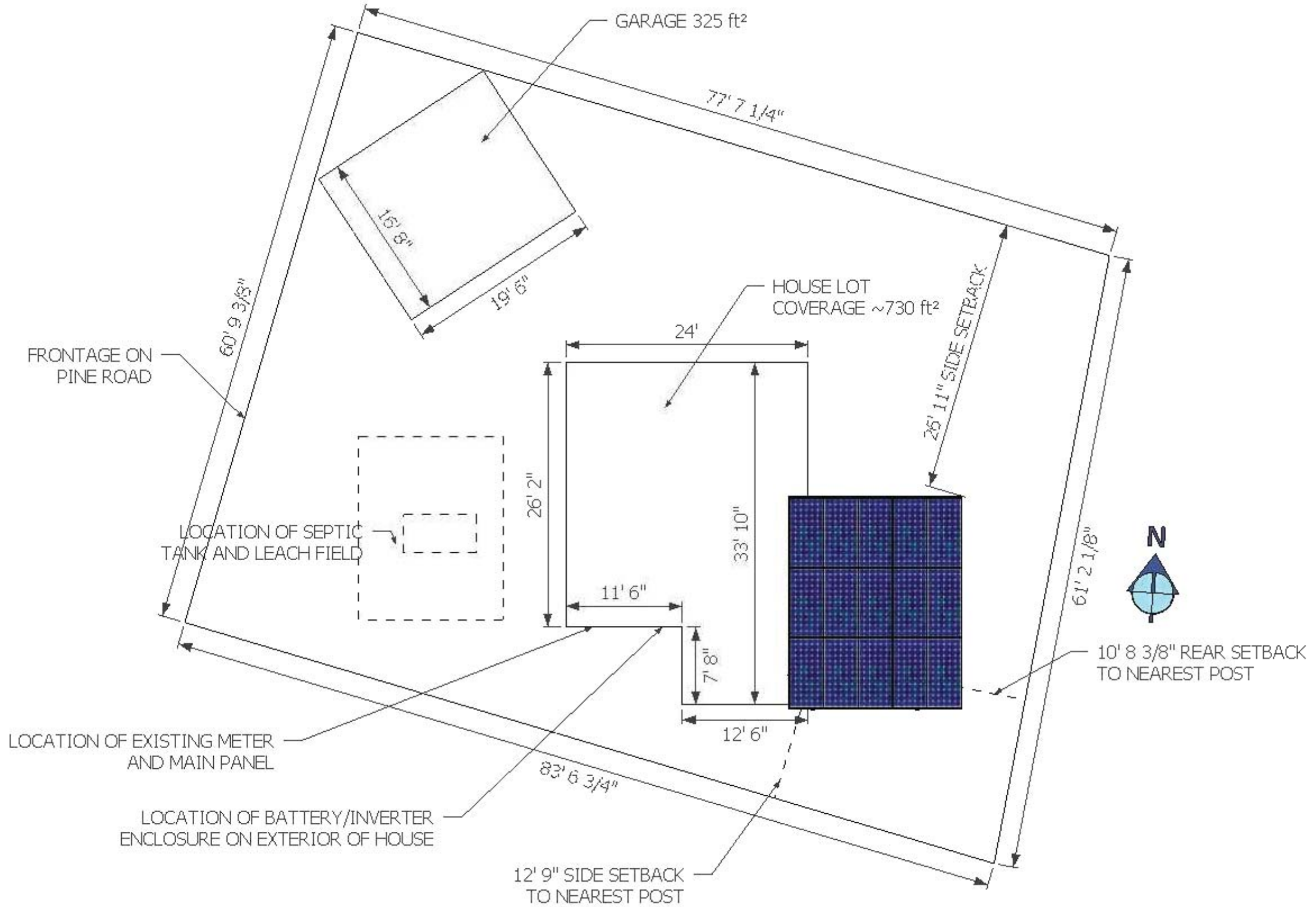
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1 27JUN2023	Revision 1 - K. Anderson
2 20OCT2023	Revision 2 - K. Anderson - Reoriented panels to obtain 10" leg rear setback
3
4
5

REV2 02



SITE PLAN
SCALE 3/32" = 1 FT (1:128)

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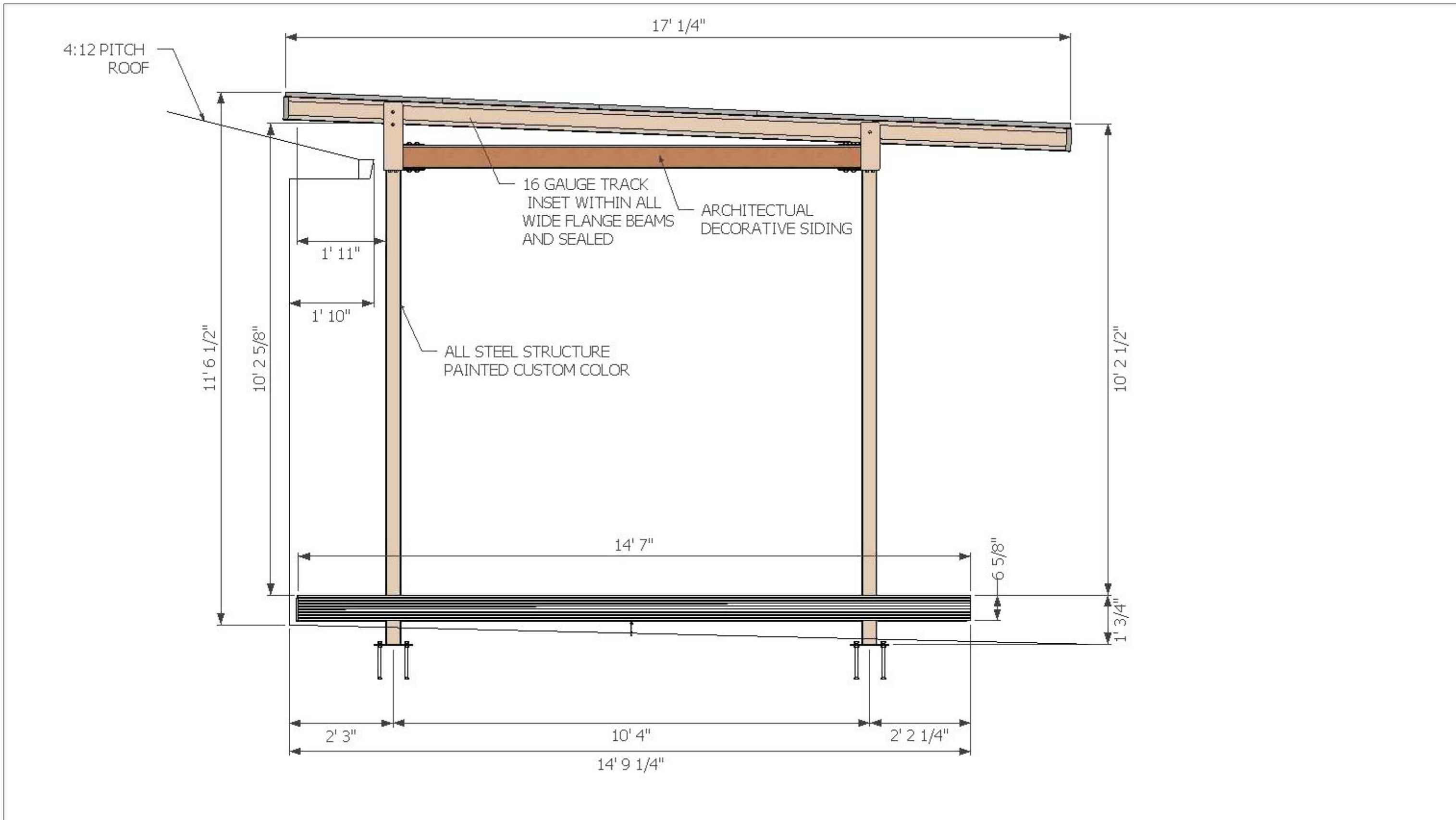


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3	...
4	...
5	...

REV2 03



ARCHITECTURAL SIDE (SOUTH) VIEW
SCALE 1/2" = 1 FT (1:24)

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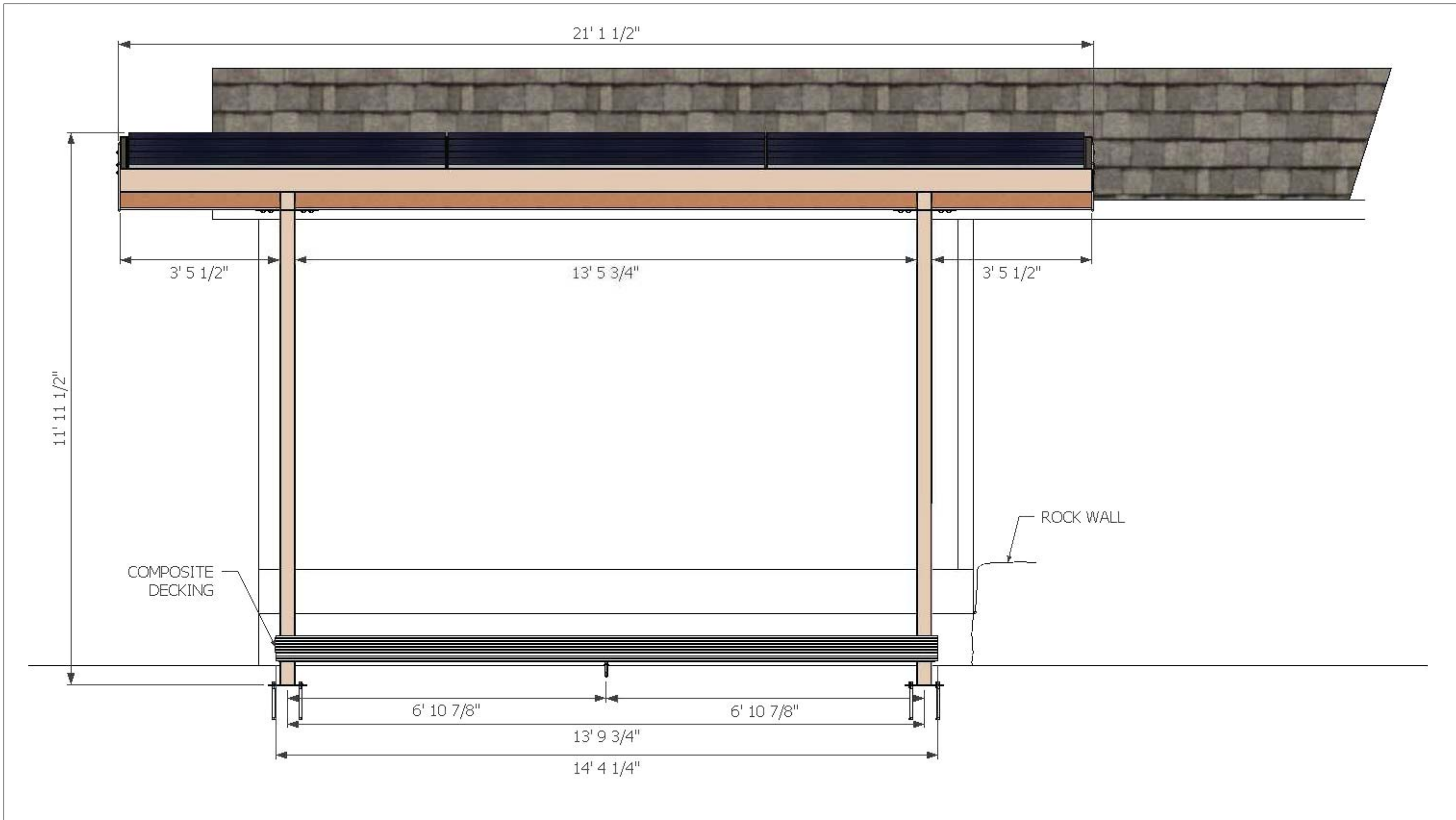
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REV2 04



ARCHITECTURAL FRONT (WEST) VIEW
SCALE 1/2" = 1 FT (1:24)

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3	...
4	...
5	...

REV2 05

RAFTERS ARE PINNED IN PLACE WITH 1/2" GALVANIZED BOLTS AND LOCKING HARDWARE

BOXED RAFTERS SUPPORT FULL LENGTHS OF PANELS

GALVANIZED TRACK ON FRONT AND BACK EDGE OF RAFTERS SERVES AS MOUNTING FOR GUTTER

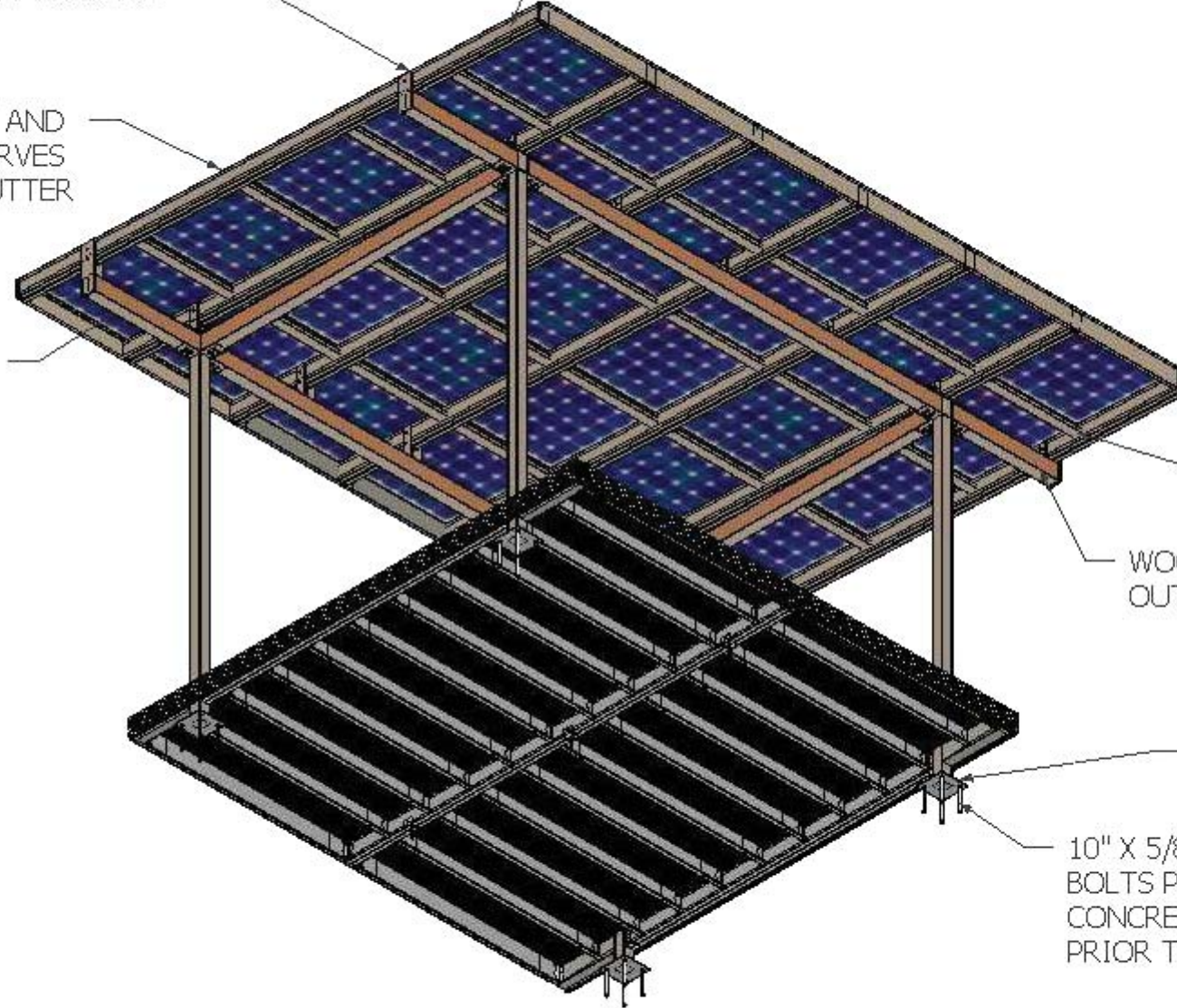
460W BIFACIAL SOLAR PANELS

UNDERSIDE OF CANOPY IS LIT WITH LED STRIP LIGHTING WITHIN STEEL TRACK BELOW SOLAR PANELS

WOOD TRIM PACKING OUT STRUCTURAL BEAMS

10" X 10" FOOTING PLATE BELOW GRADE LEVEL

10" X 5/8" FOOTING BOLTS PRE-CAST INTO CONCRETE FOOTER PRIOR TO PLACING LEGS



ARCHITECTURAL UNDERSIDE VIEW
SCALE 1/4" = 1 FT (1:48)

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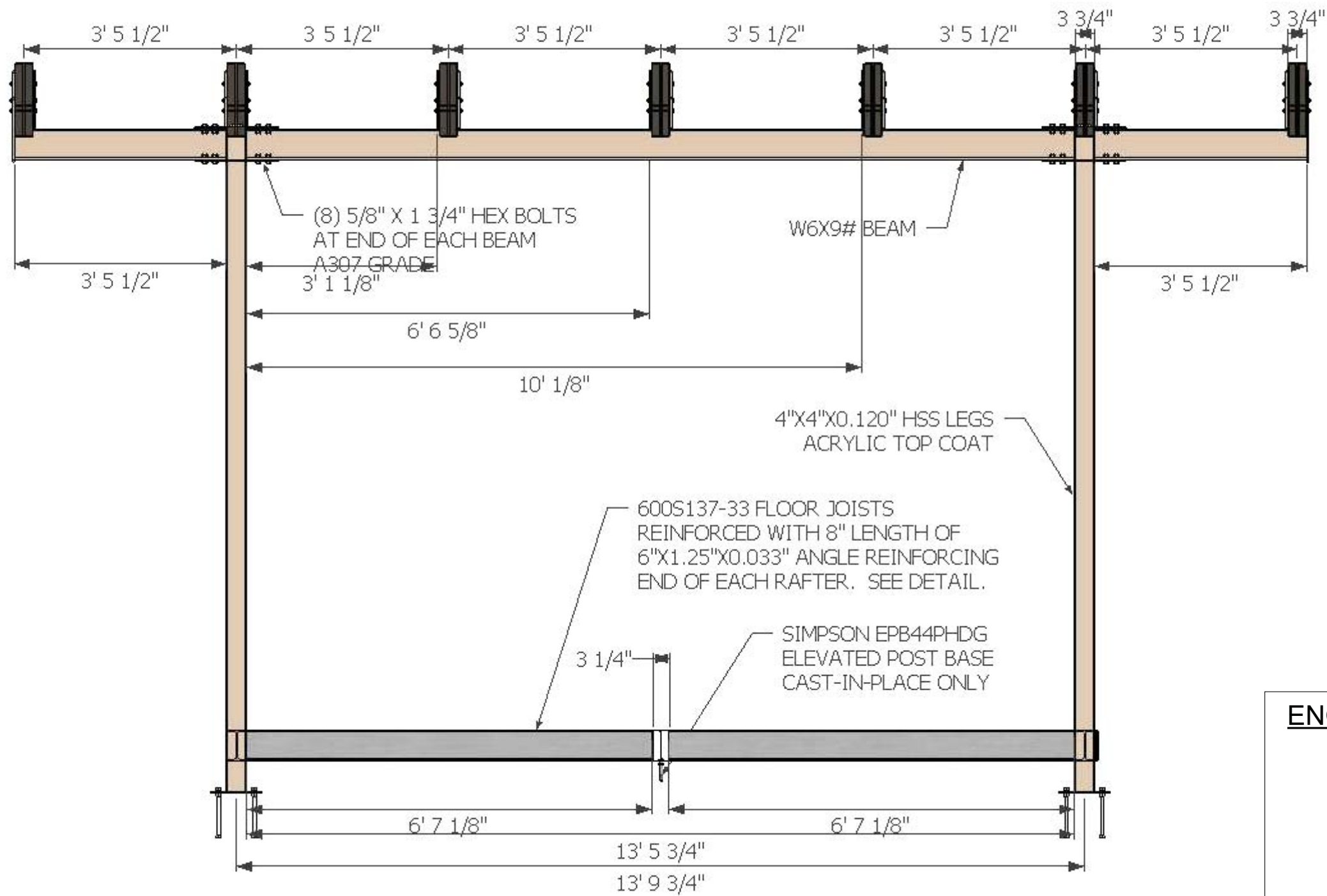


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3
4
5

REV2 06



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FRAMING FRONT VIEW (LOOKING NORTH)
SCALE 1/2" = 1 FOOT (1:24)

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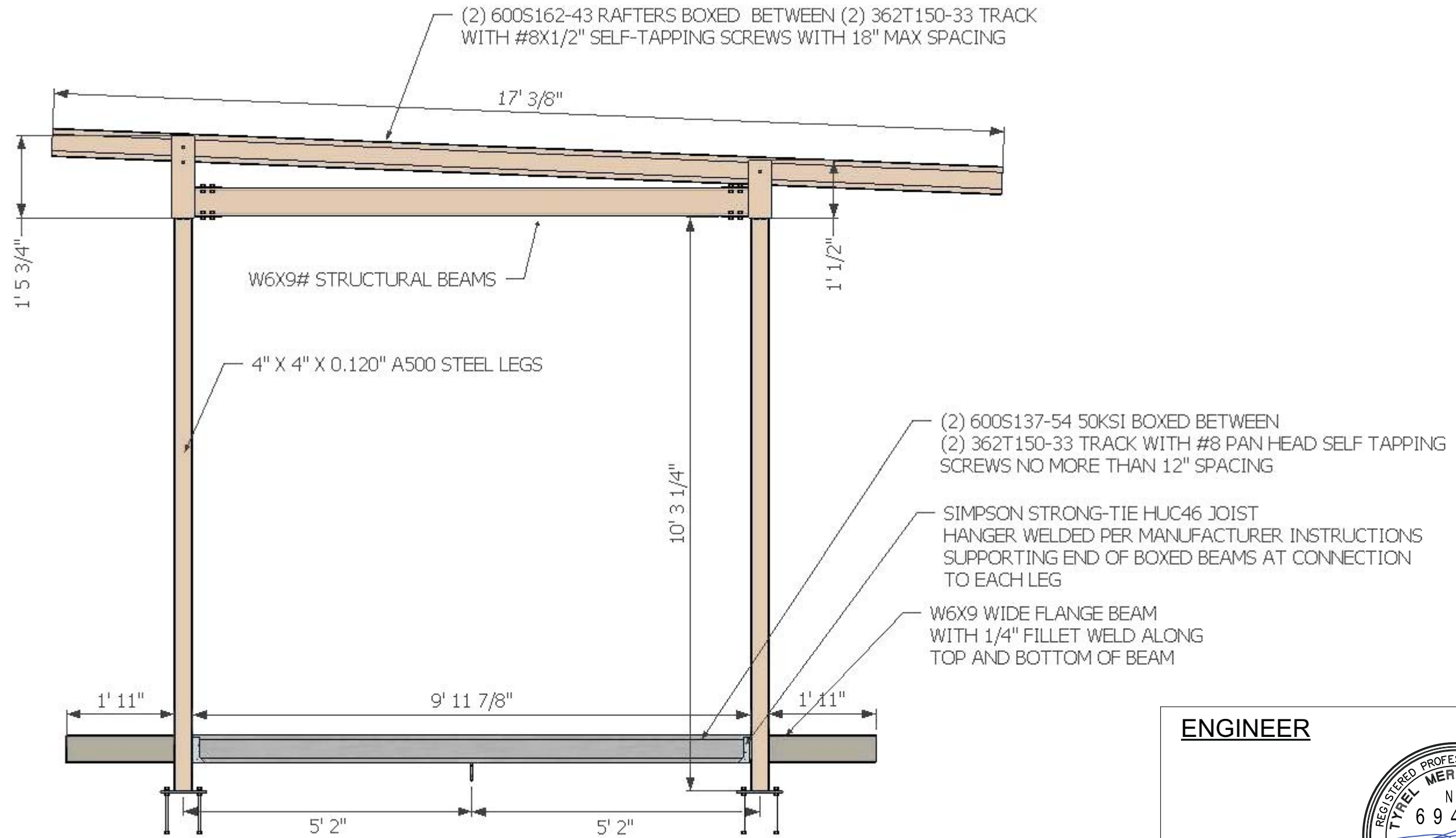
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3	...
4	...
5	...

REV2 07



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FRAMING SIDE VIEW (LOOKING WEST)
SCALE 3/8" = 1 FOOT (1:32)

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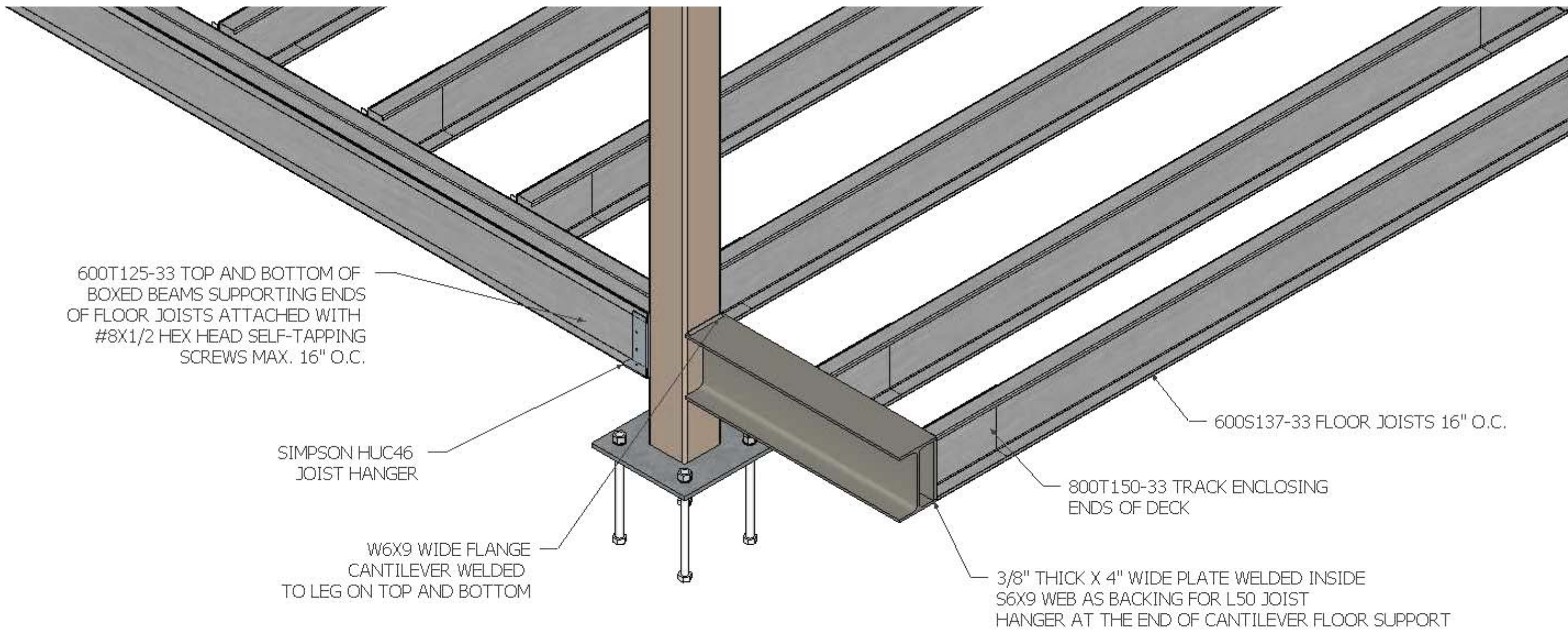
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4
5

REV 08



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FLOOR FRAMING DETAIL AT PATIO LEG
SCALE 1 1/2" = 1 FOOT (1:8)
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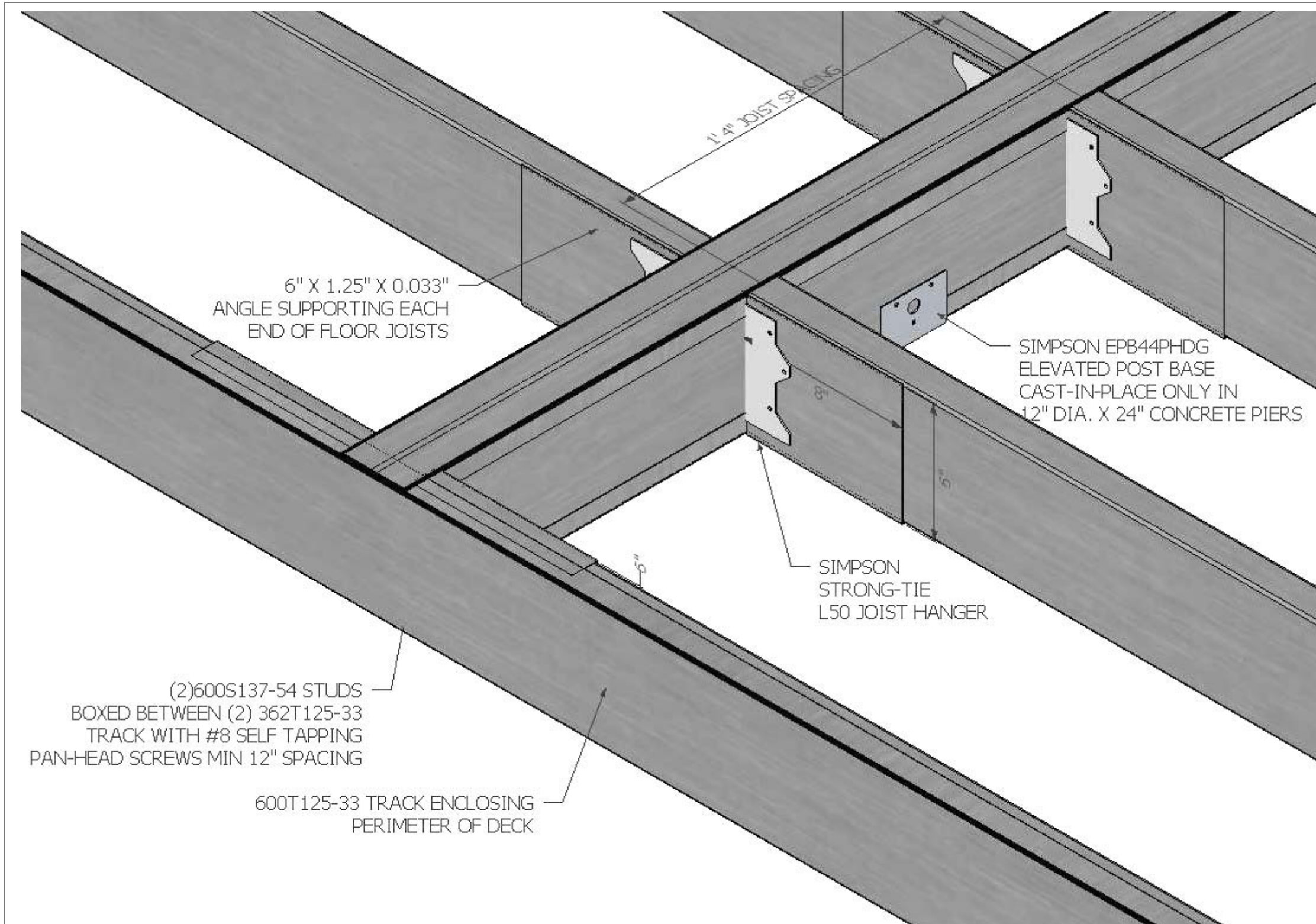
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4
5

REV2 09



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FLOOR JOIST DETAIL

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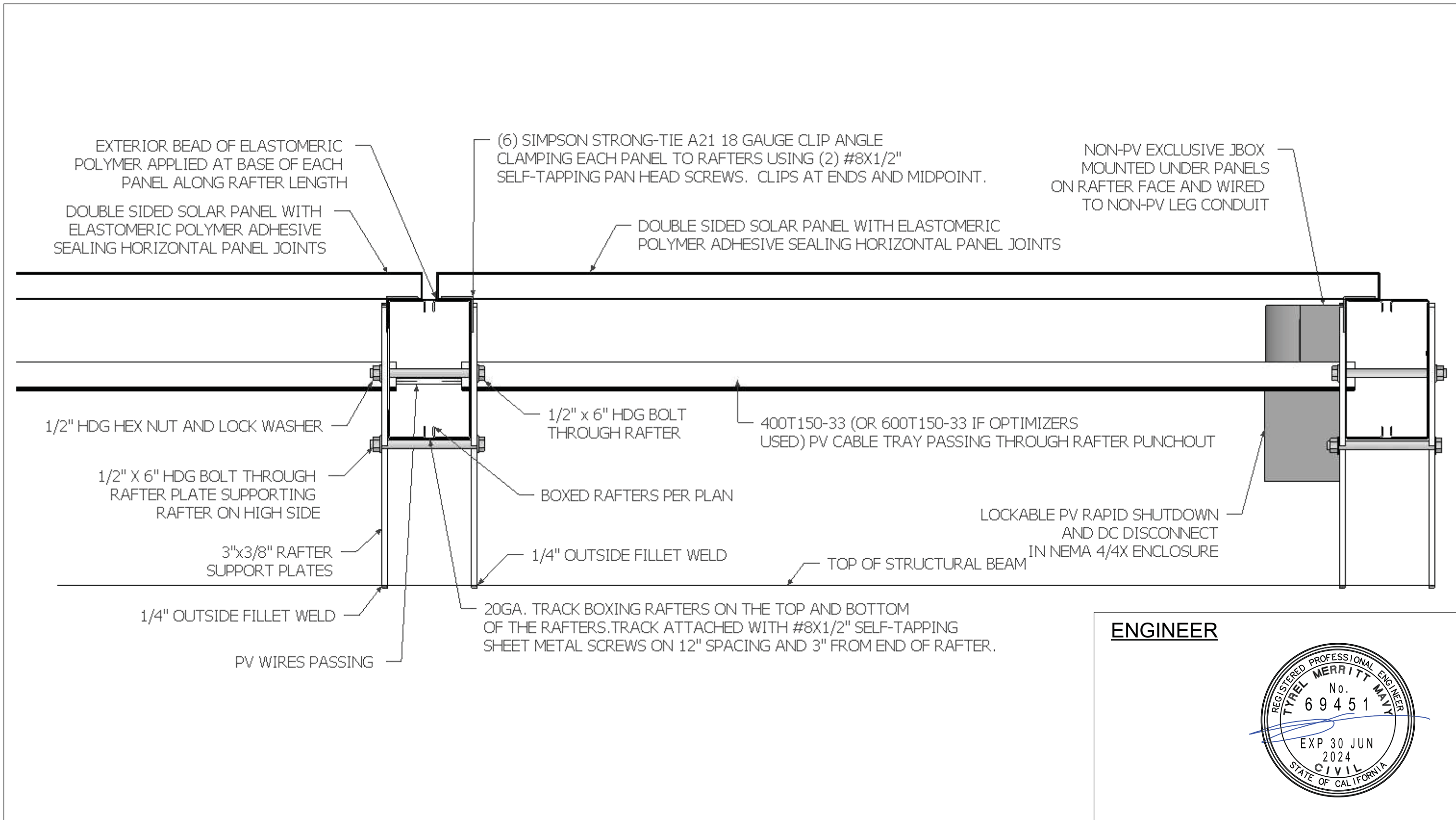
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3
4
5

REV2 10



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SOLAR MOUNTING DETAIL
SCALE 1" = 4" (1:4)
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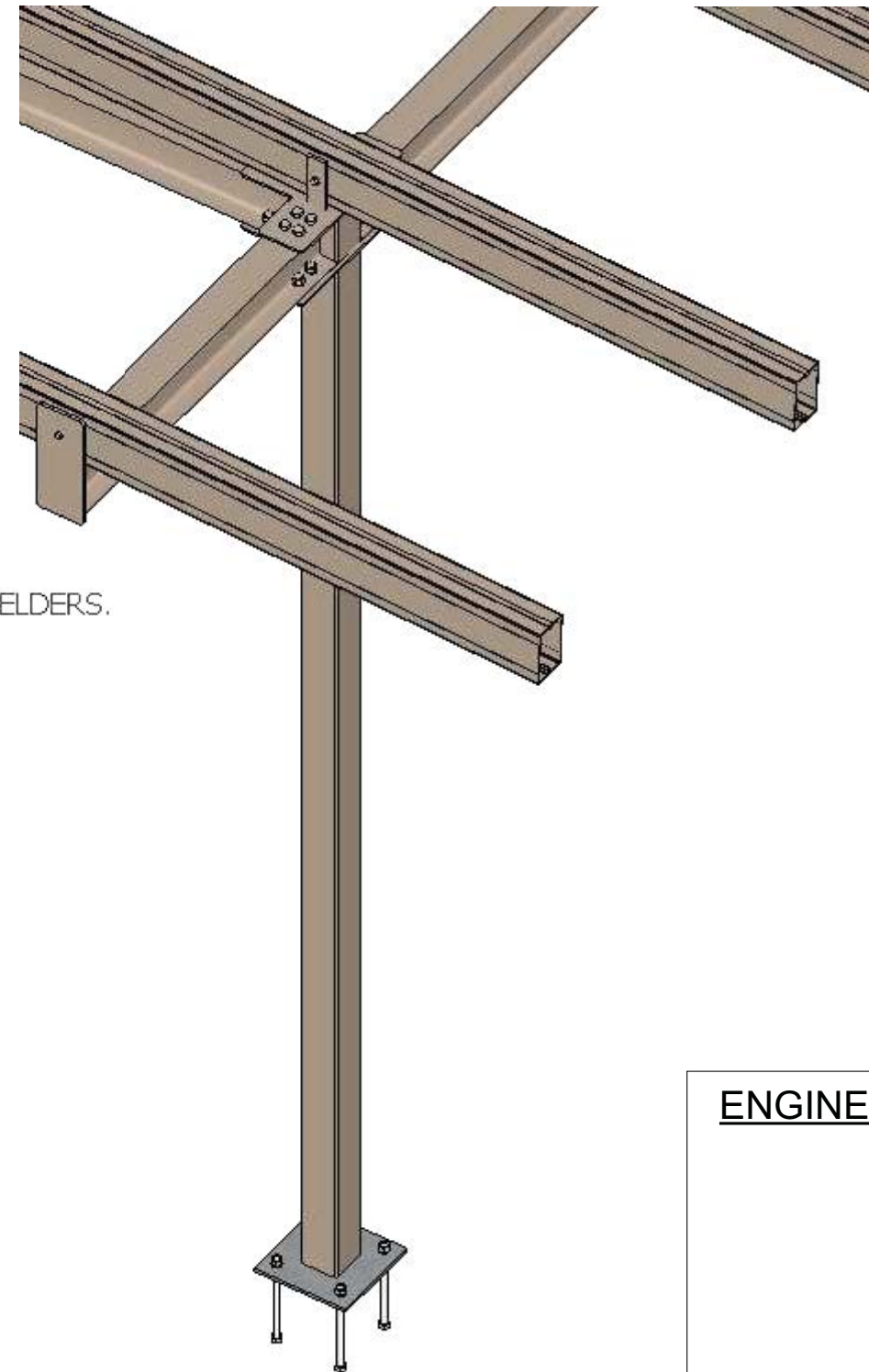
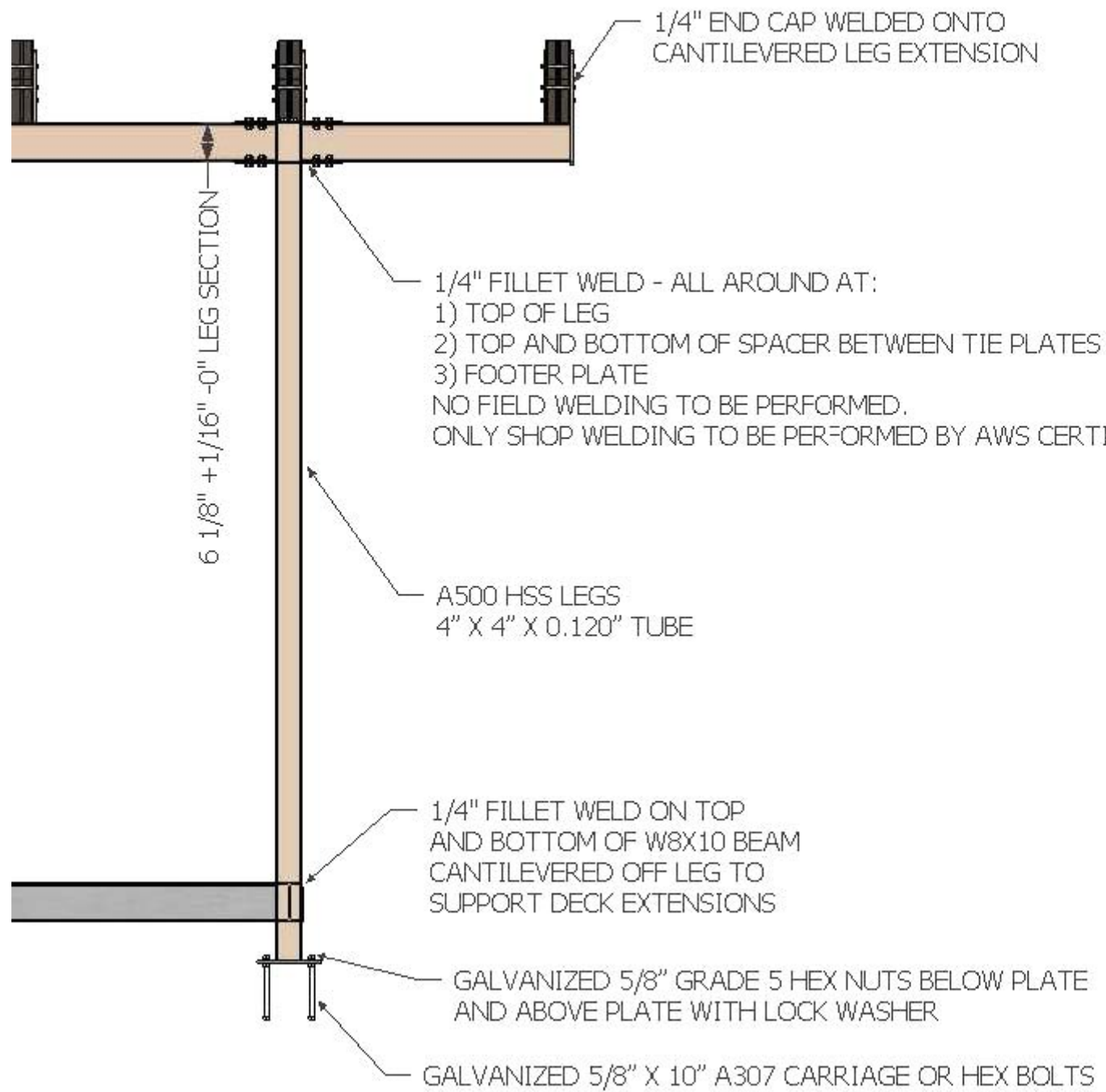
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3	...
4	...
5	...

REV2 11



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LEG DETAIL
SCALE 1/2" = 1 FOOT (1:24)
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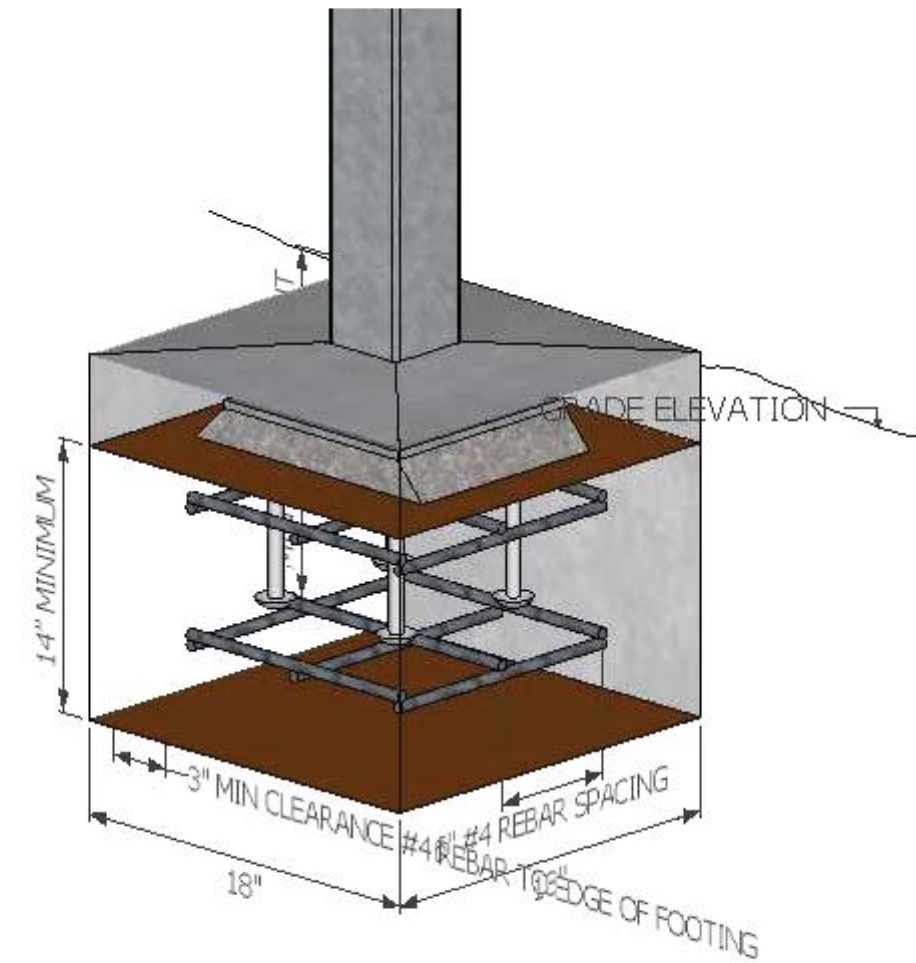
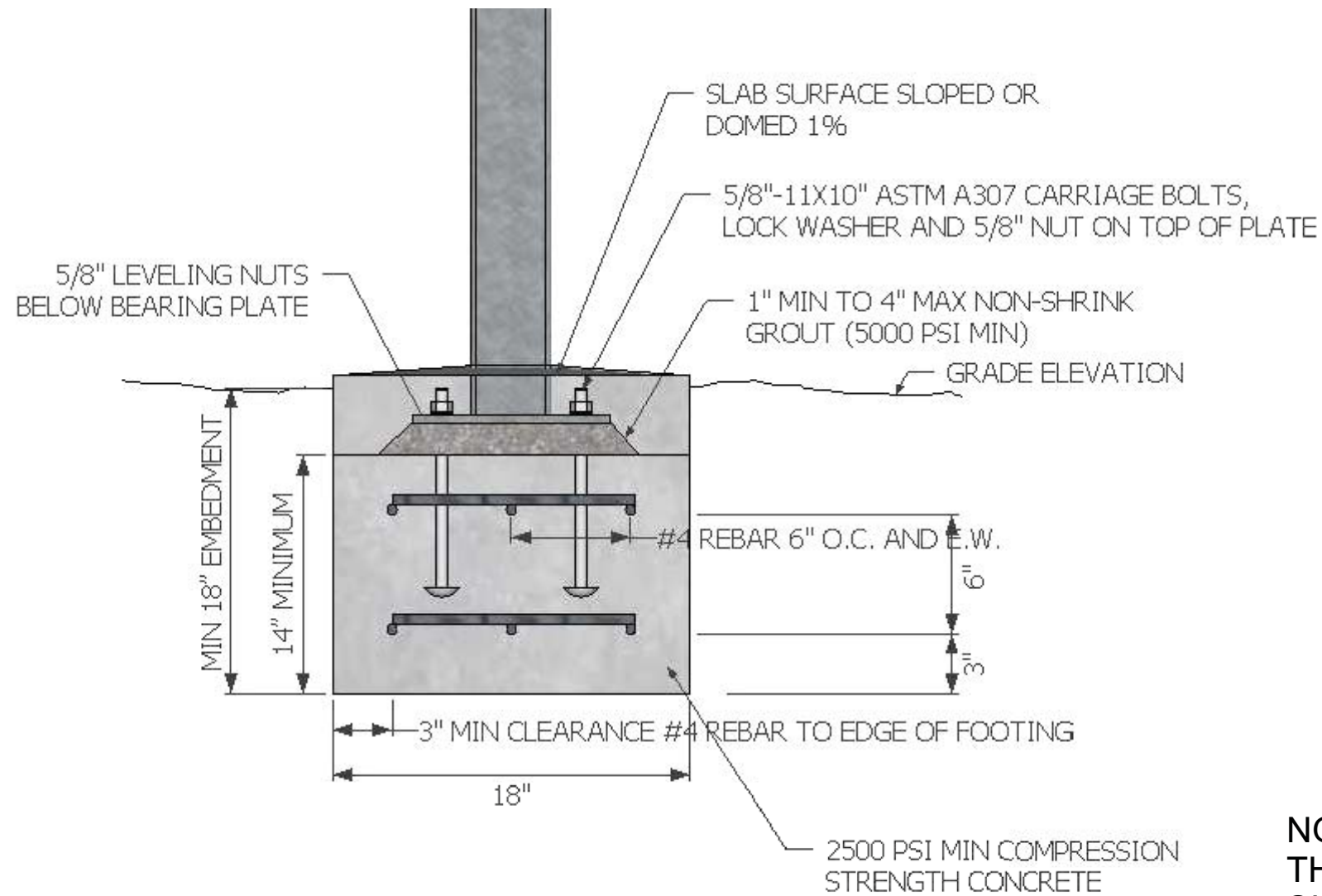
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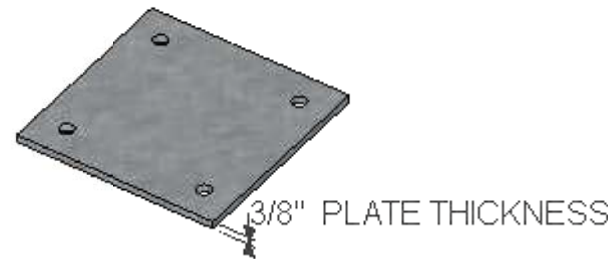
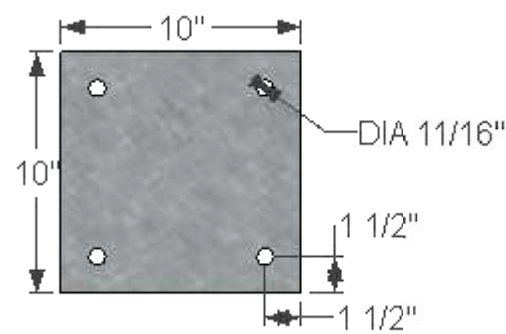
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3
4
5

REV2 12



NOTE: FOOTING FOR (3) CENTER JOIST SUPPORTS TO BE THE SAME SIZE AS LEG FOOTING BUT WITH CAST-IN-PLACE SIMPSON EPB44PHDG ELEVATED POST BASE. REBAR AND OVERALL FOOTER SPACING TO BE IDENTICAL.



ENGINEER

LEG & FLOOR JOIST FOOTING DETAIL
SCALE 1.5" = 12" (1:8)

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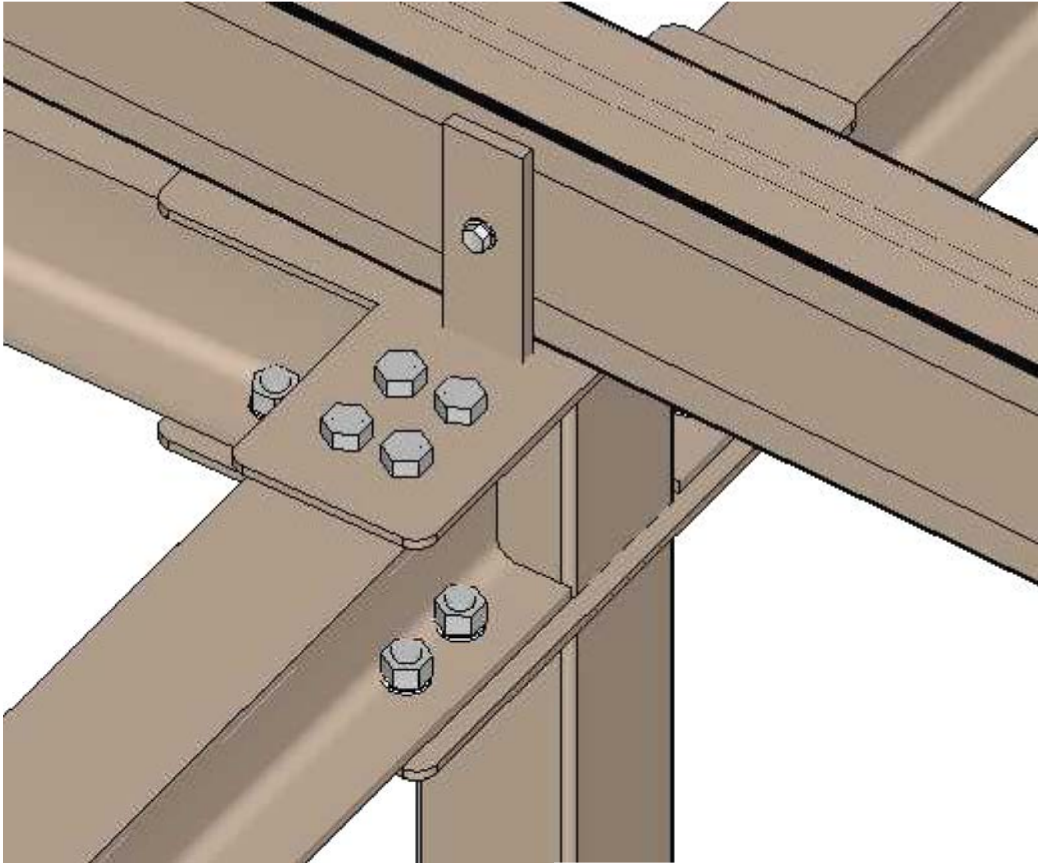
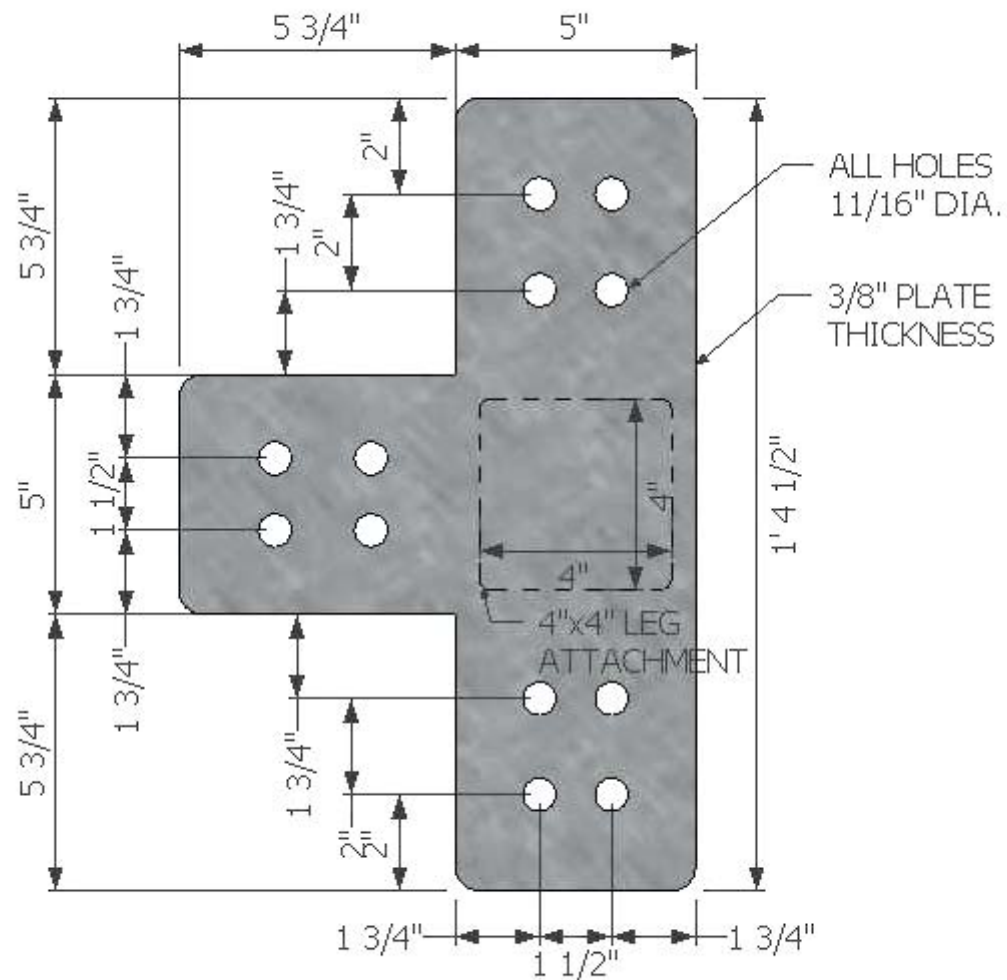


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2 20OCT2023	Revision 2 - K. Anderson - Reoriented panels to obtain 10" leg rear setback
3	...
4	...
5	...

REV2 13

3-BEAM TIE PLATE
1/4" THICK A36



ENGINEER



WIDE FLANGE BEAM TIE PLATE DETAILS
SCALE 3" = 12" (1:4)

SITE: 20442 PINE DRIVE
 TRABUCO CANYON CA 92679

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3
4
5

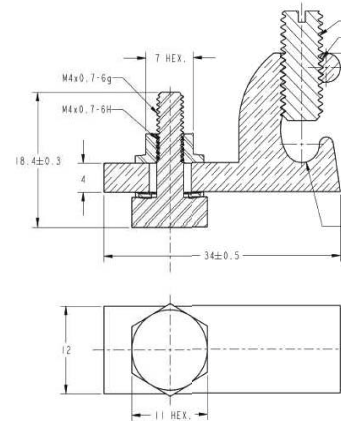
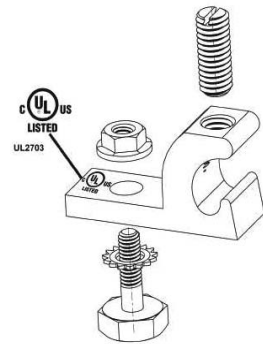
REV2 14

HelioLug

UL 2703 E338690
QIMS7 (Canada) E338690

Included Components:

- 1) Lay in lug (tin-plated, solid copper lay-in lug with a stainless-steel set screw)
- 2) Stainless star washer
- 3) Stainless steel bolt
- 4) Stainless serrated lock nut



How to order

1	2	3	4
HG	L	U	I
Product Line	Product Type	Approvals	Packaging
HG Helios Grounding Products	L HelioLug (Wire Range 4-12 AWG)	U UL	I Individual M 1000 pcs

INSTALLATION INSTRUCTIONS:

- Place the lug to the designated module grounding hole with the star washer between the grounding lug and the module frame in order to break through the anodizing and establish electrical contact with the aluminum. Torque the bolt and nut to 30 in-lbs. **NOTE: These instructions provide guidelines for general use. If available, the specific module manufacturer's instructions for the location of the star washer are to be followed.**
- For the attachment to the racking, mount on a flat surface if used in a channel, or into a 1/4" hole drilled through the extrusion. Place the star washer between the racking and lug and secure the nut and bolt to 30 in-lbs.
- Insert a 4 to 12 AWG copper wire into the lug and tighten the lug set screw to the copper wire to the torque based on the wire size. (4-6 AWG at 35 in-lbs and 8-12 AWG at 30 in-lbs). Do not exceed the maximum rated overcurrent protection, 20 A (12 AWG), 40 A (10 AWG), 90 A (8 AWG), 150 A (6 AWG), and 200 A (4 AWG).

Notes: Specifications are subject to change without notice. Contact your nearest Amphenol Corporation Sales Office for the latest specifications. All statements, information and data given herein are believed to be accurate and reliable but are presented without guarantee, warranty, or responsibility of any kind, expressed or implied. Statements of suggestions concerning possible use of our products are made without representation or warranty that any such use is free of patent infringement and are not recommendations to infringe any patent. The user should assume that all safety measures are indicated or that other measures may not be required. Specifications are typical and may not apply to all connectors.

For further information on your individual application requirements, contact Amphenol Corporation

<p>North America: Amphenol Industrial Operations 180 N. Freepoint Drive, Plant 4 Hogansville, AZ 85621 Tel: (520) 285-5130 Fax: (520) 285-5134 Email: tech@amphenol-aio.com</p>	<p>Europe: Amphenol Industrial Operations Europe Via Barbarana 5 I-20020 Lainate (MI) Italy Tel: +39 02 93254.204 Fax: +39 02 93254.444 Email: info@amphenol-aio.com</p>	<p>Middle East: Amphenol Middle East Enterprises FZE Office C-37 PO Box 21107 Ajman Free Zone - UAE Phone: +9 716-7422494 Fax: +9 716-7422941 Email: jhussain@amphenol-industrial.com</p>	<p>Asia: Amphenol Technology Shenzhen Ltd Block 5 Fuan 2nd Industrial Park Dayang Rd., Fuyong Baoan Baoan, Shenzhen, China 518103 Tel: +86 755 2881 8389 Fax: +86 755 2891 8310 Email: enquiry@amphenol-aio.com</p>
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PANEL GROUNDING DATA SHEET

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3
4
5

REV2 15



SPECIALTY

STORM BLASTER®

All Weather Construction Sealant



White Lightning® STORM BLASTER® is a super-elastomeric sealant that is ideal for exterior use in weather extremes. It can be applied to cold or wet surfaces and still retain its excellent adhesion. White Lightning® STORM BLASTER® can be used on: glass, wood, metal, paint, concrete, asphalt, brick, tile, fiberglass and most plastics.

- Instantly Bonds & Seals – Even Wet and Oily Surfaces
- Permanently Flexible – Won't Crack or Split
- Extreme Temperature Application
- Minimal Surface Prep



PART #	UPC	Color	SIZE
W41401010	0-23275-77010-2	Crystal Clear	10.0 fl oz
W41401005	0-23275-00379-8	Crystal Clear	5.0 fl oz
W41000010	0-23275-77515-2	White	10.0 fl oz



SPECIALTY
Storm Blaster®

Product Description:

White Lightning® STORM BLASTER® is a super-elastomeric sealant that is ideal for exterior use in weather extremes. It can be applied to cold or wet surfaces and still retain its excellent adhesion. White Lightning® STORM BLASTER® can be used on: glass, wood, metal, paint, concrete, asphalt, brick, tile, fiberglass and most plastics.

Physical Properties:

- Type:** Solvent based
- Colors:** Crystal Clear, White
- Shelf Life:** 12 Months
- Flash Point:** 109° F
- Flammability:** Combustible
- Full Cure Time:** 4 days
- Tack Free Time:** 2 hours
- Application Temperature:** 0° F to 140° F (-18° C to 60° C)
- Service Temperature:** -40° F to 180° F (-40° C to 82° C)
- Vehicle:** Hydrocarbon Solvents
- Solids by Weight:** 65%
- Weight/Gallon:** 7.72 lbs/gal
- Painting:** Paintable
- Primers:** Not required

Performance Data:

- Joint Size:** Minimum recommended joint size is 1/4" x 1/4", maximum joint size 1/2" x 1/2" in depth.
- Freeze-Thaw Stability:** Won't freeze
- Shelf Life:** 12 Months
- Clean Up:** Clean tools with mineral spirits. Follow manufacturer's precautions when using mineral spirits.
- Flexibility:** 1025%
- Painting:** Latex paint in 24 hours, oil based paint in 3 to 5 days. Allow extra dry time during periods of high humidity and/or cool temperatures.

Application:

- Surface should be free from loose mortar, release agents, old caulking, old paint, or other contaminants.
 - 10oz Cartridge
 - Cut cartridge tip 45° angle and puncture inner seal.
 - Load cartridge into caulk gun.
 - Squeeze trigger to start flow of sealant and work sealant into joint.
 - If needed, tool sealant immediately after application (small amount of soapy water or mineral spirits helps smoothing)
- 5.0oz Squeeze Tube
 - Remove cap, cut tube tip 45° angle.
 - Squeeze tube to start flow of sealant and work sealant into joint.
 - If needed, too sealant immediately after application (small amount of soapy water or mineral spirits helps smoothing)
- Clean up with mineral spirits.
- FOR BEST RESULTS:** Do not use in areas of continuous submersion (i.e. aquariums or swimming pools). Do not use in areas where temperatures exceed 180 F. Do not apply to frosty or icy surfaces. STORM BLASTER® may damage some plastics, such as polystyrene foam insulation.

Clean Up:

Clean tools with mineral spirits. Follow manufacturer's precautions when using mineral spirits.

Cautions:

COMBUSTIBLE (during cure). Keep away from heat and open flame. Use only in well-ventilated areas. Avoid contact with eyes and skin. Avoid breathing vapor and spray mist. Wash hands after using. Do not transfer contents to other containers for storage. Keep out of reach of children. **FIRST AID:** In case of eye contact, flush with large amounts of water for at least 15 minutes. Get medical attention. For skin contact, wash thoroughly with soap and water. Remove contaminated clothing and launder before re-use. For inhalation, if affected, remove from exposure. Restore breathing. Keep warm and quiet. If swallowed, do not induce vomiting. Call Poison Control Center, hospital emergency room, or physician immediately.

Limitations:

- Do not use on traffic-bearing surfaces
- Do not use on extruded polystyrene insulating sheathing (Styrofoam®, etc.)
- Do not use on acrylic skylight glazing surfaces
- Do not use in areas where food is processed or stored
- Do not apply to frozen or frost-covered services.
- Not for use below grade, on aquariums or for marine use below the water line.

LIMITED WARRANTY:

If when applied according to label directions within one year from date of purchase this product fails to perform to your satisfaction, as your sole remedy we will replace the product at no cost or refund the original purchase price with proof of purchase. Labor or costs associated with labor not included. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY, WHICH ARE ALL DISCLAIMED AND/OR LIMITED IN DURATION TO THE EXTENT PERMITTED BY LAW. WE SHALL NOT BE LIABLE FOR INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS) FROM ANY CAUSE WHATSOEVER.

For more information please call or write:

White Lightning® Products | 101 Prospect Ave. NW | Cleveland, OH 44115
1-800-241-5295 Option 1 Customer Service | 1-800-241-5295 Option 2 Technical Service
www.wlcaulk.com

Rev. 6/17

WL19

WEATHER SEALANT DATA SHEET

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TRABUCO CANYON CA 92679

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3
4
5

REV2 16



HEX₄ BSM460M-72HBD

166 Bi-facial mono perc 440 w- 460 w
Efficiency up to 21.2%

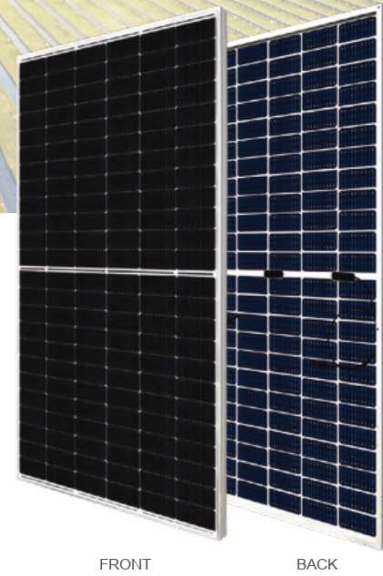
Made In Thailand

- 📍 Long Beach, CA Stock
- 🏆 Best Commercial Selling (ICW+Shipped)
- 🚚 Same Day Shipping

- Dimensions: 2094*1038*30mm
- Weight: 28kg
- Max. System Voltage: 1500 V (IEC/UL)

GREAT PERFORMANCE AND RELIABILITY

- ★ Bi-facial Perc Half Cut Technology
- ★ Better Energy Yield
- ★ Power Degradation -0.45%/30 Years Linear Warranty
- ★ TUV SUD Anti PID Certified
- ★ IP68 Junction Box/High Water Proof Level
- ★ Reduced Hot Spot Risk



FRONT BACK

PERFORMANCE WARRANTY

- 15** Years Enhanced Product Warranty on Materials and Workmanship*
- 30** Years Linear Power Performance Warranty*
*According to the applicable Bluesun Solar Limited Warranty Statement.

MANAGEMENT SYSTEM CERTIFICATES

- ISO 9001: 2015 Quality Management System
- ISO 14001: 2015 Environment Management System
- ISO 45001: 2018 Occupational Health and Safety Management Systems

PRODUCT CERTIFICATES

- IEC 61215 / IEC 61730 / UL 61730



BLUESUN SOLAR CO.,LTD
Add: 1499 Zhenxing Road, Shuahan District, 230031 Hefei, China
Tel: +86 (158) 5821 3997 Fax: +86 (551) 6565 2651
E-mail: info@bluesunpv.com Http://www.bluesunpv.com

BLUESUN SOLAR
US Warehouse Location: Long Beach, CA
*Release: 05/30/2019/05/27/09/LV_01_03

ELECTRICAL PARAMETERS

Performance at STC (Power Tolerance 0 ~ +3%)

Maximum Power (Pmax/W)	440	445	450	455	460
Operating Voltage (Vmpp/V)	41.6	41.8	42.0	42.2	42.4
Operating Current (Impp/A)	10.58	10.65	10.72	10.79	10.86
Open-Circuit Voltage (Voc/V)	50.0	50.2	50.4	50.6	50.8
Short-Circuit Current (Isc/A)	11.22	11.29	11.36	11.43	11.50
Module Efficiency ηm(%)	20.2	20.5	20.7	20.9	21.2

Performance at NMOT

Maximum Power (Pmax/W)	327	330	334	337	341
Operating Voltage (Vmpp/V)	38.9	39.1	39.3	39.4	39.6
Operating Current (Impp/A)	8.41	8.47	8.52	8.57	8.62
Open-Circuit Voltage (Voc/V)	46.8	46.9	47.1	47.3	47.5
Short-Circuit Current (Isc/A)	9.04	9.10	9.16	9.21	9.27

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5 NMOT: Irradiance at 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s

Electrical characteristics with different rear side power gain (refer to 440W front)

Pmax gain	Pmax/W	Vmpp/V	Impp/A	Voc/V	Isc/A
5%	462	41.6	11.11	50.0	11.78
10%	484	41.6	11.64	50.0	12.34
15%	506	41.6	12.17	50.0	12.90
20%	528	41.6	12.70	50.2	13.46
25%	550	41.6	13.23	50.2	14.03

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	166*168mm
Cell Arrangement	144 (6*24)
Weight	28kg (61.73lbs)
Module Dimensions	2094*1038*30mm (82.44*40.87*1.18inches)
Cable Length (Portrait)	Portrait 300mm/Landscape 1200mm/Customized
Cable Cross Section Size	TUV: 4mm ² (0.006inches ²)/UL: 12AWG
Front Glass	2.0mm (0.08 inches) AR Coating Semi-tempered Glass
Back Glass	2.0mm (0.08 inches) Glazed Semi-tempered Glass
No. of Bypass Diodes	3/6
Packing Configuration (1)	35pcs/carton, 770pcs/40hq
Packing Configuration (for USA)	36pcs/carton, 648pcs/40hq
Frame	Anodized Aluminium Alloy
Junction Box	IP68

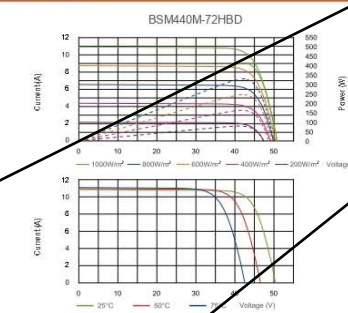
OPERATING CONDITIONS

Maximum System Voltage	1500V/DC(IEC)
Operating Temperature	-40°C ~ +85°C
Maximum Series Fuse	25A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.1Ω
Safety Class	II
Module Fire Performance	Compliant With IEC 61730 Class A Fire Rating
Resistance	≥100MΩ
Connector	T01/LJQ-3-CSY/MC4/MC4-EVO2
Backside Output Ratio*	70% ± 5%
*Under STC: Backside Output Ratio = P _{max(rear)} / P _{max(front)}	

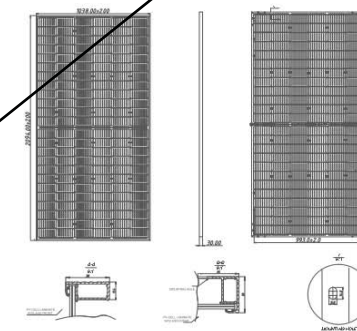
TEMPERATURE COEFFICIENT

Temperature Coefficient Pmax	-0.36%/°C
Temperature Coefficient Voc	-0.26%/°C
Temperature Coefficient Isc	+0.043%/°C
NMOT	43±2°C

I-V CURVE



TECHNICAL DRAWINGS



NOTES:

- PANELS ARE TESTED BY INTERTEK LABORATORIES TO MEET UL 1703 AND UL 61730 STANDARDS.
- PANELS ARE GLASS-ON-GLASS DESIGN AND CLASS A FIRE RATED PER UL 1703 AND UL 61730.

SOLAR PANEL DETAIL

SITE: 20442 PINE DRIVE
TRABUCO CANYON CA 92679

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3
4
5

REV2 17

Model	BluePower SP6548
Rated Power	6500W
Parallel	Yes, 6 units
Input	
Voltage	120V
Selectable Voltage Range	90-140 VAC/80-140 VAC
Frequency Range	50/60HZ (Auto Sensing)
Output	
AC Voltage Regulation	120V AC \pm 5%
Surge Power	15000VA
Efficiency	93%
Transfer Time	20ms
Perform	Pure Sine Wave
Idle Power Consumption	< 70W
Battery	
Battery Voltage	48V DC
Low DC Cut-off Voltage	Self-defined from 42-48Vdc
Bulk Charging Voltage	Self-defined from 48V-62V
Overcharge Protection	66 VDC
Solar Charger & AC Charger	
Solar Charger Type	MPPT
Maximum PV Array Power	8000W (2 X 4000W)
MPTT Operation Voltage	90-230VDC 90-350VDC(Upgrade in September)
Maximum PV Array Open Circuit Voltage	250VDC 390VDC(Upgrade in September)
Maximum Solar Charge Current	120A
Maximum AC Charge Current	120A
Maximum Charge Current	120A
Physical	
Size D X W X H (inch)	5.91 X 16.93 X 23.62
Net Weight (lb)	43.2
Communication Interface	USB/RS232/RS485/WIFI/DRY-Contact

BluePower SP6548 Solar Inverter Parallel

Main Features >>>

- 6500W Pure Sine Wave 120V output
- Parallel up to 6 units (built-in parallel kits)
- 120V/240V Split Phase capable (2 unit parallel)
- 208V 3-Phase Support (3 unit parallel)
- Max solar charging 120A MPPT and AC charging 120A
- Built-in Wi-Fi for mobile monitoring
- Work with 48V Lead-acid/Lithium/User-Defined/Batteryless
- Pylontech/Weco/Soltaro BMS Support
- Built-in genset starter dry contact
- FREE monitoring software
- UL 1741 Standard Listed by TUV / CSA / FCC**



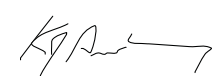
INVERTER DETAILS

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3
4
5

REV2 18



48V CNDR Elite

SKU: FCNDR-48118-G1

PARAMETERS

Note: Bulk, Absorption, Float, and Equalize are not applicable to lithium batteries but are included here with the correct numbers to input into your charge controller as they are our most commonly requested parameters.

Charge Voltage: 58.8V

Bulk Voltage: 58.8V (Not Applicable to Lithium Batteries)

Absorption Voltage: 58.8V (Not Applicable to Lithium Batteries)

Absorption Time: 0 Minutes (Not Applicable to Lithium Batteries)

Float Voltage: 58.8V (Not Applicable to Lithium Batteries)

Equalize: Off (Not Applicable to Lithium Batteries)

Low Voltage Cutoff: 43V

High Voltage Cutoff: 58.8V

Suggested Inverter Low Voltage Setting: 44V - 45V

FREQUENTLY ASKED QUESTIONS

How do I connect this battery into my existing system?

Our product uses a standard 175 electrical connector. A single battery order will include a 175 Connector to Ring Terminal cable for ease of installation.

How many times can I put this battery in parallel / series?

This battery is not series capable but can be connected in parallel up to eight times. Make sure that the total amount of these batteries in your configuration never exceeds eight total batteries. When connecting batteries in parallel, make sure all batteries are within 1 volt of one another.

How many years will my battery last?

Lithium Iron Phosphate (LiFePO4) batteries can be cycled from 3000 to 5000 times. If you cycle the battery daily then you can get more than 10 years of use from your battery.

Can I connect into this battery's BMS to get extra info?

Our BMS is just there to keep your battery safe and healthy, it does not have the ability to network with any charge controllers or inverters for extra read-outs.

What is the warranty on this battery?

We offer a comprehensive 10 year warranty on all of our batteries. You can read more about our warranty at BigBattery.Com/Policies.

CONTACT US

Phone: (818) 280-3091 **Email:** Sales@BigBattery.Com

Hours: Monday through Friday 9:00 AM to 5:00 PM PST

Address: 9667 Owensmouth Ave. Chatsworth, CA 91311

Last Revision Date - 11/16/2021



BATTERY SPECS

Chemistry: LiFePO4 **Voltage:** 48V

kWh: 11.8 kWh **Amp Hours:** 231 Ah

Operating Voltage Range: 43V - 58.8V

Charging Voltage Range: 55.6V - 58V

Max Charging Voltage: 58.8V

WARNING: Do NOT exceed max charging voltage.

Cell Configuration: 16S

Charge Temperature Range: 0°C - 55°C

Discharge Temperature Range: -30°C - 55°C

Optimal Discharge Temp. Range: 15°C - 35°C

Storage Temperature Range: -5°C - 35°C (Max 6 months)

BMS SPECS

Max Continuous Discharge: 175A

Max Continuous Power: 7500W

Max Peak Discharge: 350A (Over 6 Seconds)

Max Charge Current: 90A

BATTERY SIZE

Weight: 225 lbs **Width:** 9.5 in

Length: 21 in **Height:** 31.5 in

BATTERY DETAILS

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REV2 19

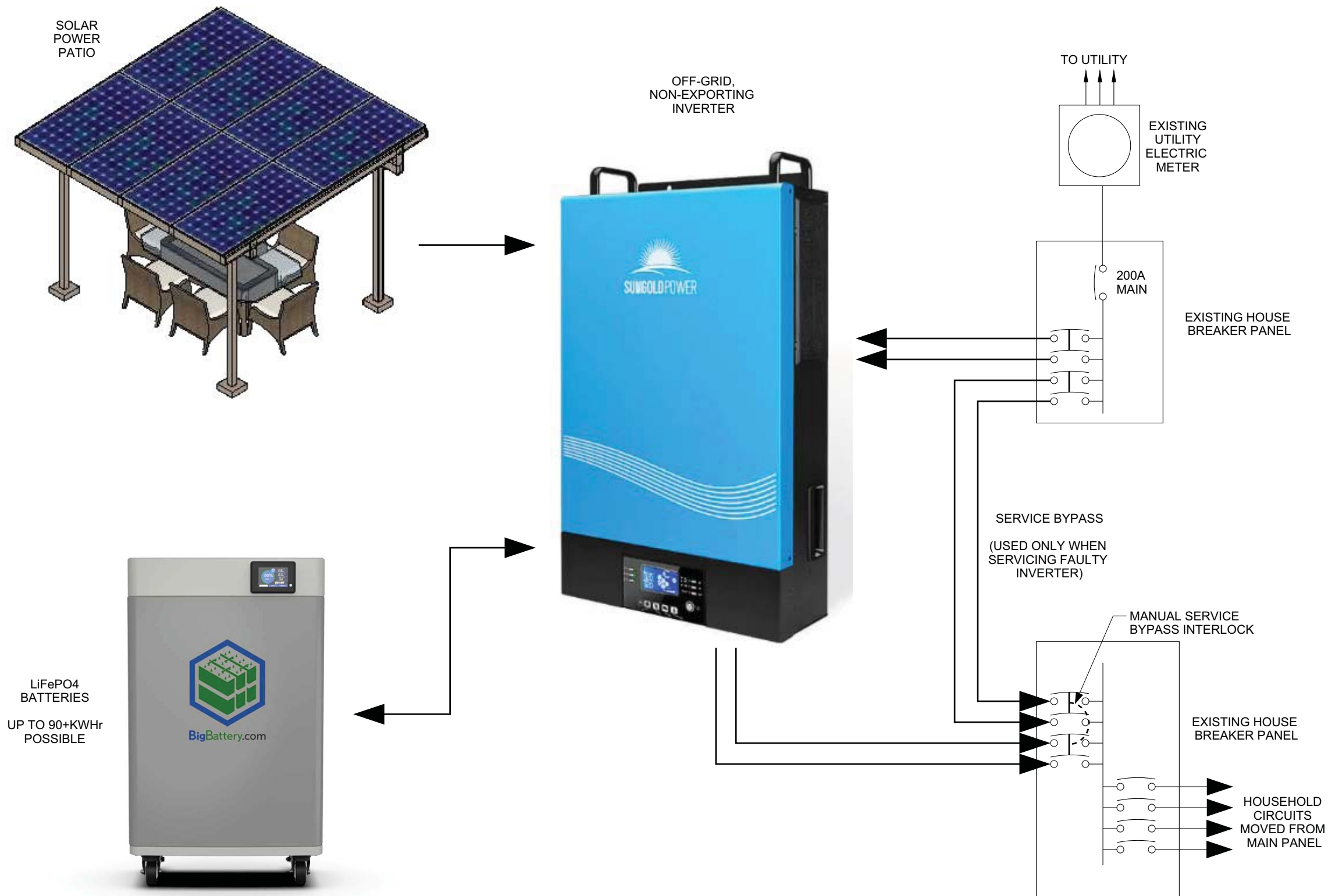
PACKAGED SOLAR AND BATTERY STORAGE SYSTEM FOR PARTIAL-TO-FULL HOUSE BACKUP

OPERATION - Back up as many home circuits as desired - up to 50 amps continuous - with a system that delivers the solar power generated during the day to household circuits and stores the rest. If the lithium (LiFePO4) batteries are drained before the sun comes up the next day the system simply delivers power from the grid.

NON-EXPORTING - Because the system does not export power to the grid there is no need for a utility connection agreement and you don't need to obtain utility Permission to Operate. On an electrical permit is required to install and a building permit is generally required for patio covers greater than 120 square foot in floor area.

SELF-CONTAINED - Everything that needs to be installed at the job site is mounted in a single weather-tight enclosure including the batteries, inverters and circuit breakers. This saves space, field labor and cost and protects the equipment.

SERVICEABLE - Because the inverters perform the automatic transfer from battery power to grid power if the inverter needs to be serviced a bypass is needed. A manual interlock allows for grid power to bypass all off-grid equipment.



ELECTRICAL SYSTEM DIAGRAM

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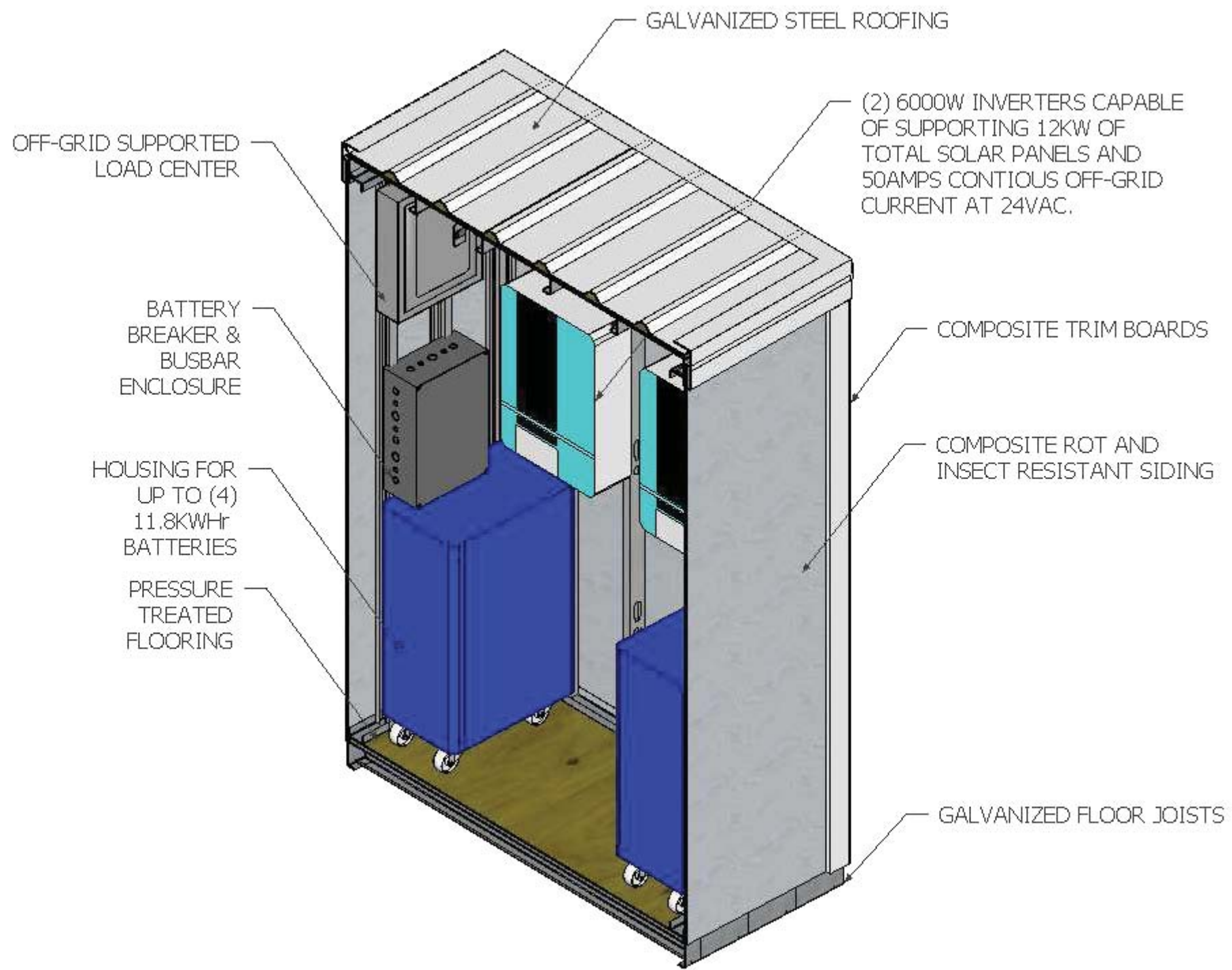


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3	...
4	...
5	...

REV2 20



SYSTEM ENCLOSURE DETAILS

SITE: 20442 PINE DRIVE
TRABUCO CANYON CA 92679

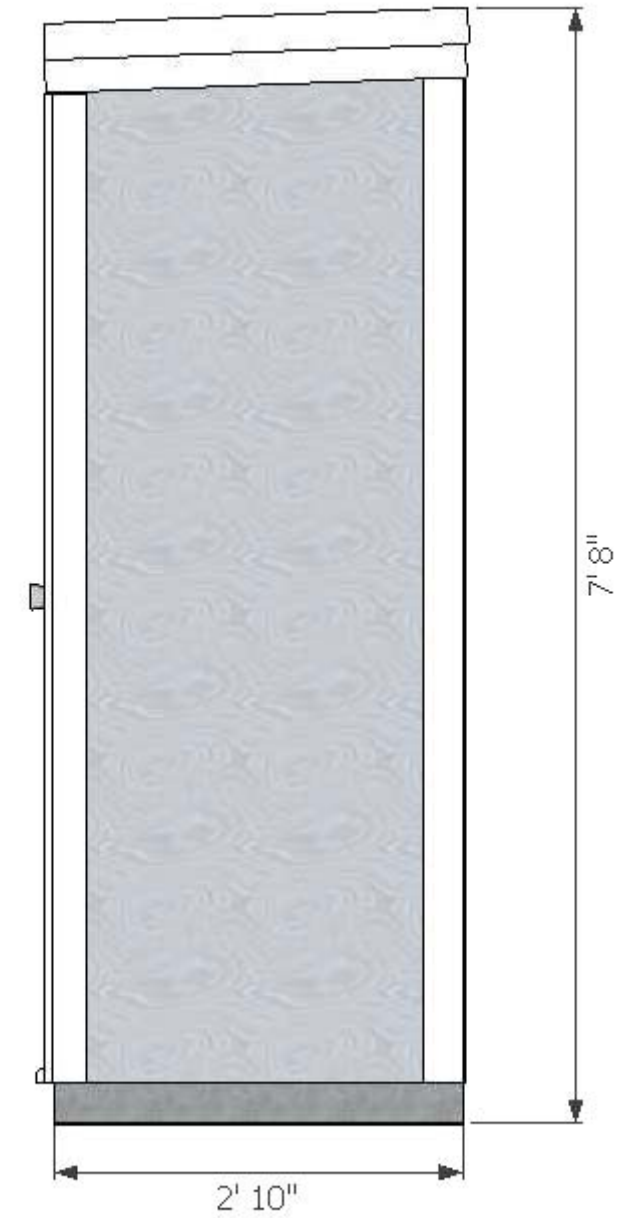
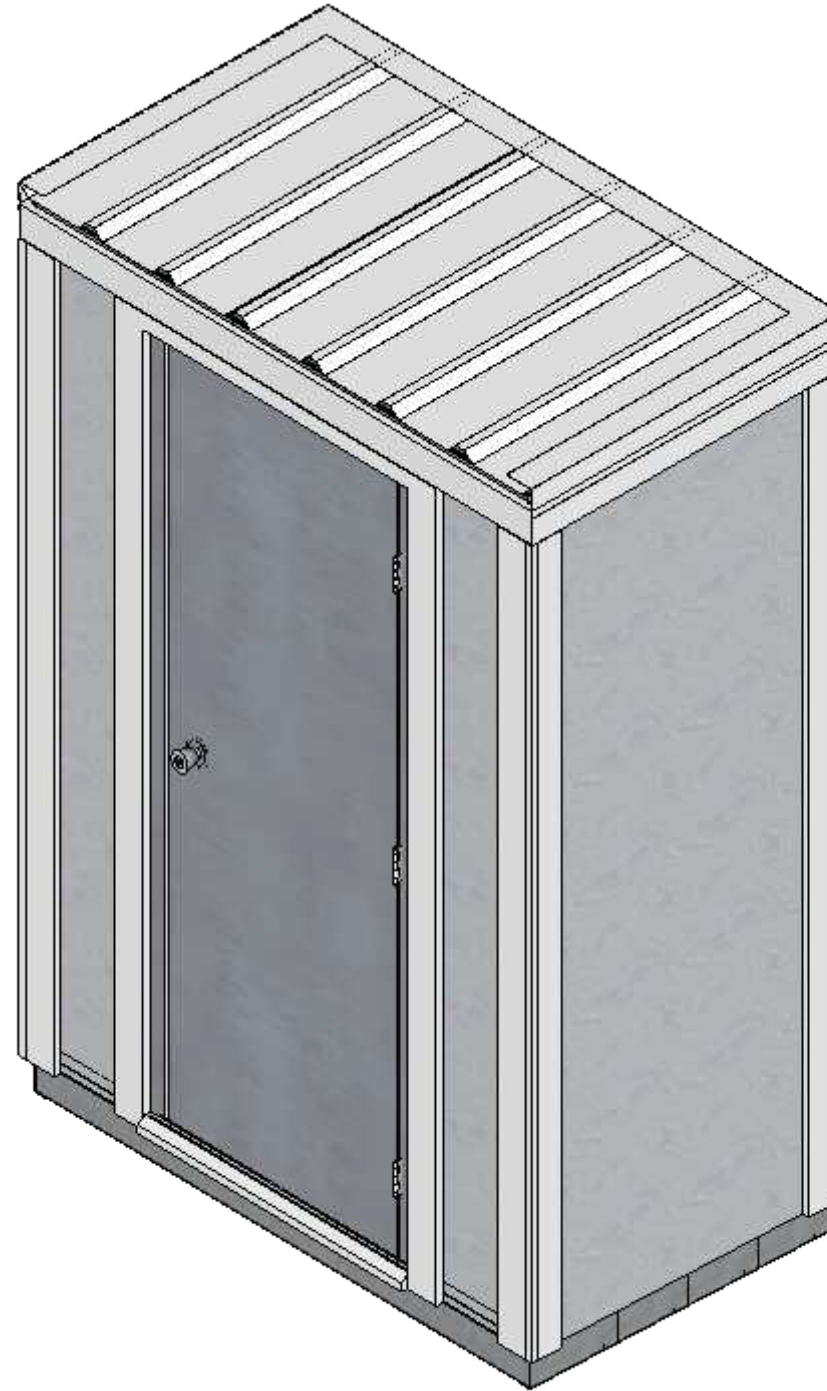
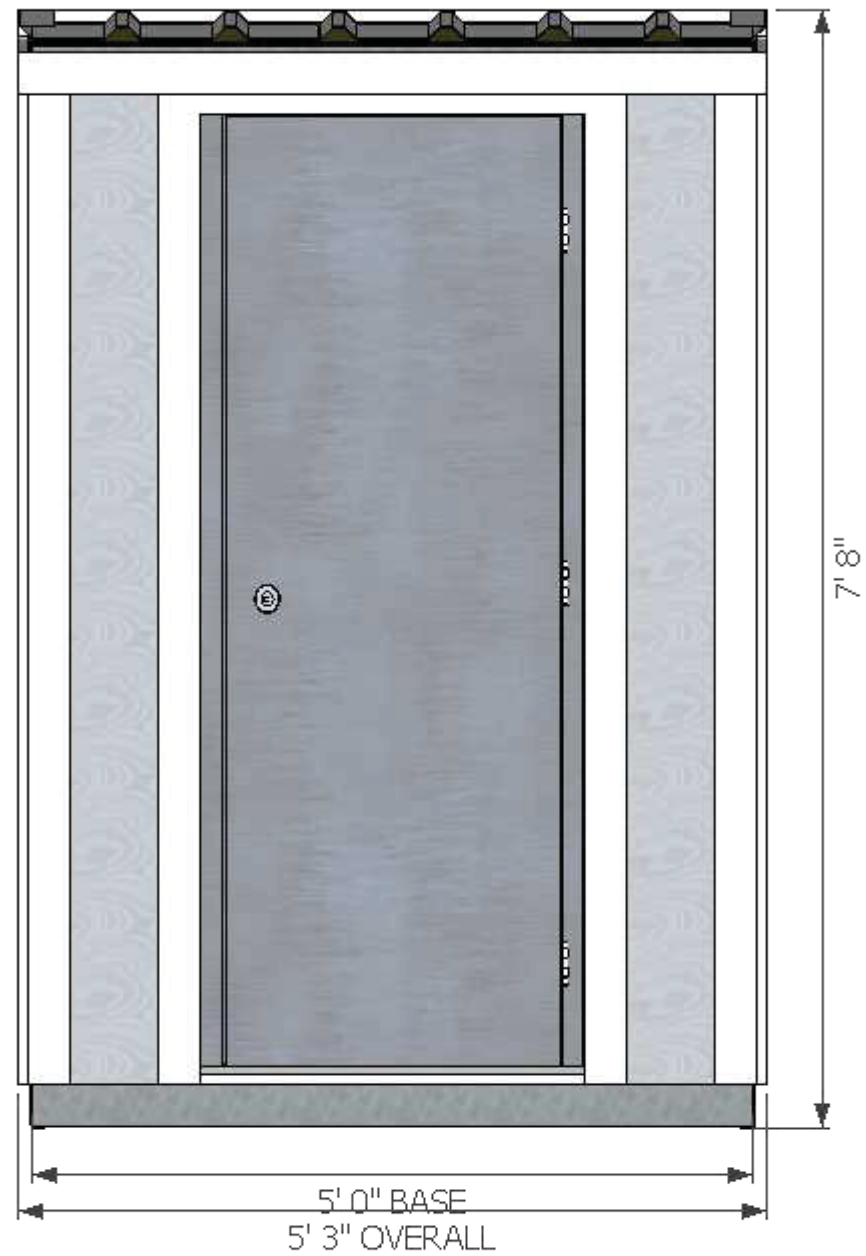
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DESIGNER
SOLAR POWER PATIOS
CSLB C-10 & A LICENSE #1011915

REVISIONS		REMARKS
DDMMYYYY		
1	27JUN2023	Revision 1 - K. Anderson
2	20OCT2023	Revision 2 - K. Anderson - Reoriented panels to obtain 10" leg rear setback
3
4
5

REV2 21



ENCLOSURE DIMENSIONS
SCALE 1:16 (1" = 16")

SITE: 20442 PINE DRIVE
TRABUCO CANYON CA 92679

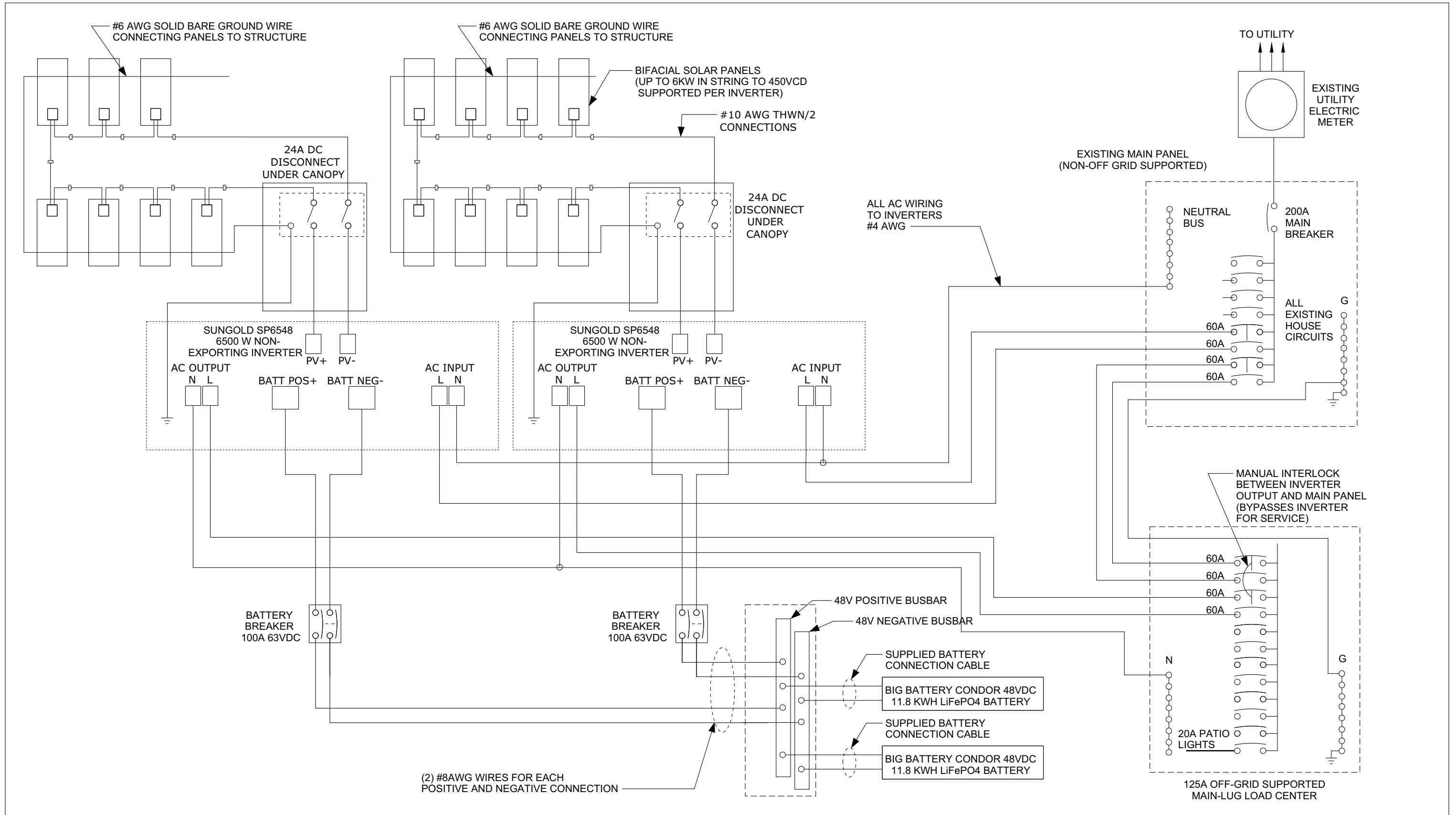
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REV2 22



ELECTRICAL SCHEMATIC

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REV2 23

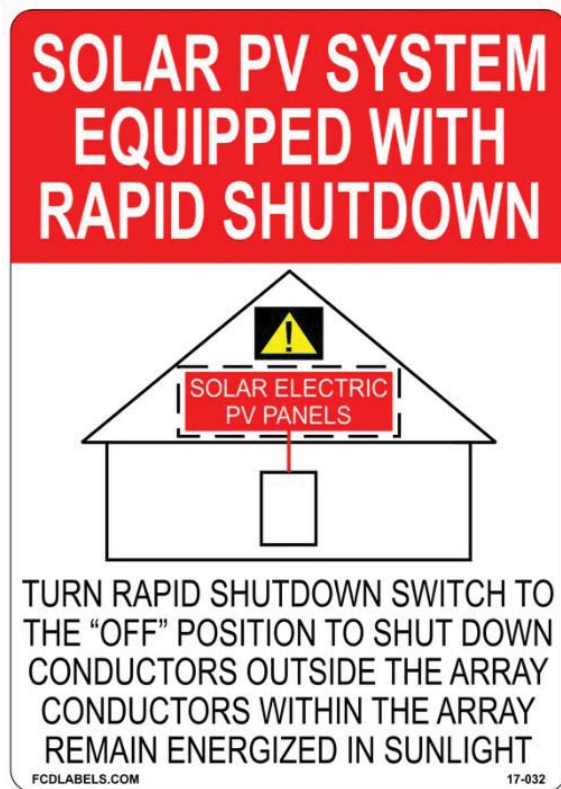
MAIN PANEL LABELING



WARNING INVERTER OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE.

Main Panel Breaker Label
per Section 690.64 (B)(7).

PHOTOVOLTAIC SYSTEM AC DISCONNECT. WARNING. DUAL POWER SUPPLY. ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. Solar Warning Label 4" x 4" - Red & White



AC DISCONNECT LABELING



PHOTOVOLTAIC SYSTEM AC DISCONNECT. WARNING. DUAL POWER SUPPLY. ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. Solar Warning Label 4" x 4" - Red & White

DC DISCONNECT LABELING



RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM
Solar Label 2" x 5" - Red & White Reflective
Designed to meet requirements for NEC 690.56(C)(3)

LABELING

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REV2 24