B
Type

Docs

Plans

BLD08-1679
Building Permit Number

19550
Street Number

GEYSERVILLE AVE
Street Name

GEY
Community Code

140-050-010
APN

COUNTY OF SONOMA
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

2550 VENTURA AVENUE, SANTA ROSA, CA 95403-2829
(707) 565-1900 FAX (707) 565-1103

Building Permit Invoice: BLD08-1679

Project Address: 19550 GEYSERVILLE AVE GEY
Cross Street: INDEPENDENCE LANE
Printed: Wednesday, July 02, 2008
Initialized by: BDAVIS
APN: 140-050-010
Activity Type: B-BLD 701
Description: COMM: INSTALL PHOTO VOLTAIC SYSTEM - ROOF MOUNTED
Res/Com: C
Insp Area: 01
Std/Quick: Q
Site Review File #:
Fire District: GEYSERVILLE FIRE
Site Review Fees Paid: $0.00

Owner: VIMARK
PO BOX NN
SANTA ROSA CA 95402-3189

707 542 3134

Applicant: SOLARCRAFT SERVICES INC
285 BEL MARIN KEYS #D
NOVATO CA
94949

415 382 7717

Valuation:

Occupancy	Type	Factor	Sq Feet	Valuation
	Totals...			$0.00*

Fees:

Item#	Description	Account Code	Tot Fee	Prev. Pmts	Cur. Pmts
60	BLDG PERM PLAN CHECK FEE	025015-1341	254.00	254.00	.00
119	FIRE COMMERCIAL REVIEW	649103-3661	472.00	236.00	.00
122	ELECTRICAL FEE	025015-1341	258.00	.00	.00
140	TECH ENHANCE FEE	025015-4040	6.44	.00	.00
1165	ZONING PERMITS W/O D.R.	025015-3829	87.00	87.00	.00
			$1,077.44	$577.00	

Total Fees: $1,077.44
Total Paid: $577.00
Balance Due: $500.44

"Refunds of fees paid may be made pursuant to Section 108.6 of Appendix 1 of the California Building Code and adopted model codes, subject to the following: 1) 100% of a fee erroneously paid or collected. 2) 90% of the plan review fee when an application for a permit is withdrawn or canceled or expires or becomes void before any plan review effort has been expended. No portion of the plan review fee shall be refunded when any plan review effort has been expended. 3) 90% of the building, plumbing, electrical, and/or mechanical fee may be refunded when a permit is withdrawn, or cancelled or expires or becomes void before any work was done and before any inspections are performed. No portion of these fees shall be refunded when any work was done and/or any inspections have been performed. 4) Application for refund must be made within one year of the date the fee is paid."

When validated below, this is your receipt.
This Building Permit shall EXPIRE

PAYMENT REC'D
$ 500.44
JUL 0 3 2008
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT
COUNTY OF SONOMA

★ APPROVED ★
—AS NOTED—

PERMIT NO. BU08-1679

APPROVED BY

PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

APPROVED JOB COPY OF PLANS AND JOB CARDS TO BE ON JOB SITE.

BUILDER SHALL NOT DEVIATE FROM THE APPROVED PLANS. REQUESTS FOR CHANGES SHALL BE MADE IN WRITING TO THE PERMIT AND RESOURCE MANAGEMENT DEPARTMENT. CHANGES MADE WITHOUT PRIOR APPROVAL SHALL BE SUBJECT TO REJECTION OF THE WORK.

APPROVAL OF THESE PLANS IS SUBJECT TO, AND DOES NOT AUTHORIZE DEVIATION FROM, COMPLETE COMPLIANCE WITH CODE REQUIREMENTS, SPECIAL INSPECTIONS WHEN REQUIRED AND FIELD INSPECTIONS.

PLEASE READ ALL PERTINENT SPECIFICATIONS AND APPLICABLE CODES.

SOLARCRAFT
SOLAR ENERGY EXPERTS

File Copy
BU08-1679

VIMARK, TRIONE VINEYARDS
707-547-1614
19550 GEYSERVILLE AVENUE
GEYSERVILLE, CA 95441
CROSS ST: INDEPENDENCE LANE
APN: 140-050-010

SOLAR ELECTRIC SYSTEM

210 SHARP 187W PV-MODULES (ND-187U1F)
5 SMA AMERICA 7000W @ 480/277V (SB7000US)
ROOF MOUNTED, FLUSH
- SHARP ON-ENERGY LOW PRO MOUNTING SYSTEM
ON S5 STANDING SEAM METAL ROOF CLAMPS
39.2 KW PHOTOVOLTAIC SOLAR SYSTEM

THESE ATTACHMENTS ARE PART OF THE APPROVED PLANS.

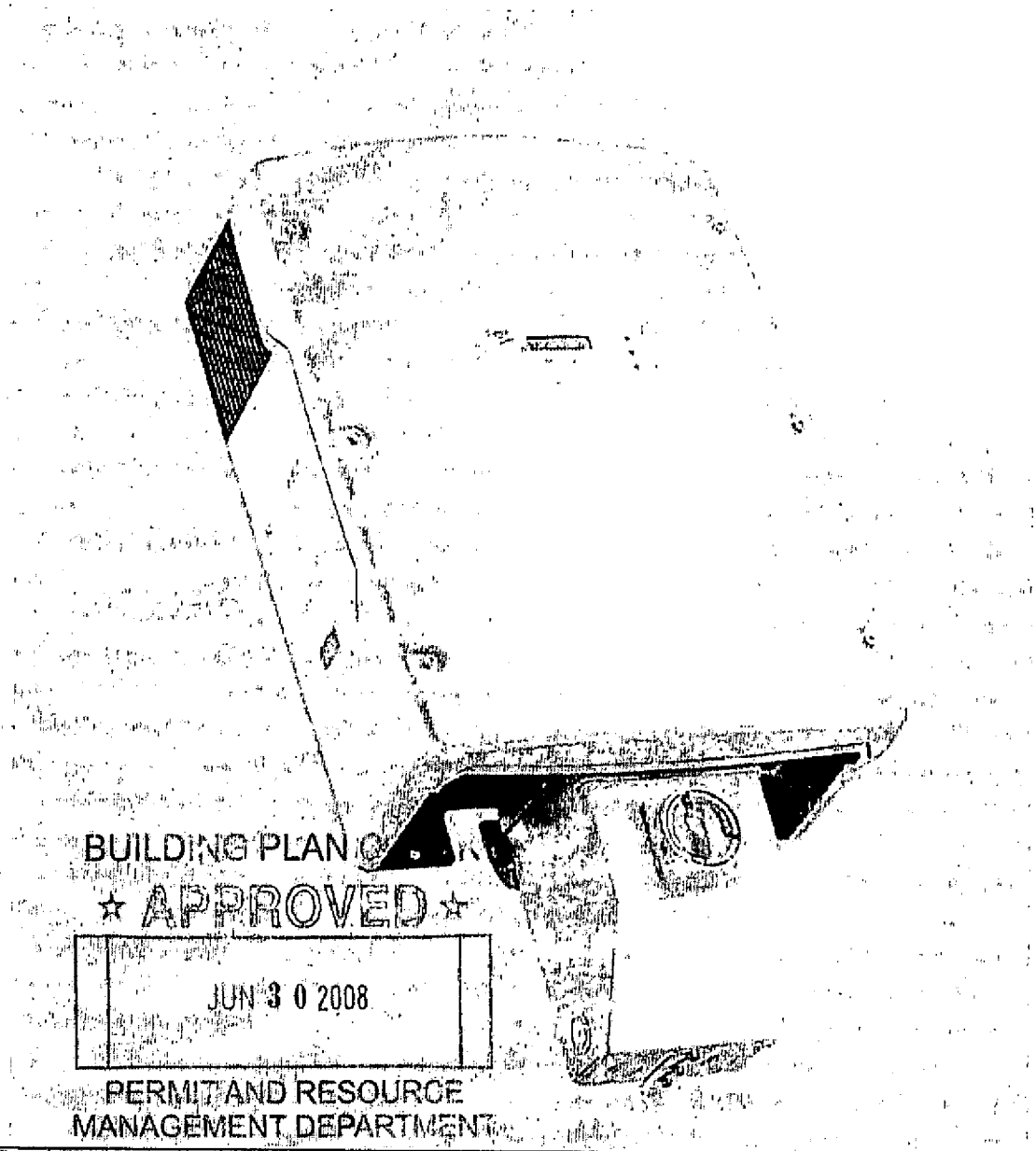
* DO NOT REMOVE THEM *

- ☐ Plan Checklist.
- ☐ Energy Conservation Forms.
- ☐ Engineered Details.
- ☐ Extracts from Soils Report.
- ☒ Fire Marshall Requirements.
- ☐ Special Inspection Form.
- ☐ _____
- ☐ _____

BUILDING PLAN CHECK
★ APPROVED ★
JUN 3 0 2008
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

285-D BEL MARIN KEYS BLVD. | NOVATO, CA 94949 | T: 415.382.7717 | F: 415.382.0592 | WWW.SOLARCRAFT.COM

- > Certified to the new UL 1741/IEEE 1547
- > 10 yr. standard warranty
- > Highest CEC efficiency in its class
- > Integrated load-break rated AC and DC disconnect switch
- > Integrated fused series string combiner
- > Sealed electronics enclosure & Opticool
- > Comprehensive SMA communications and data collection options
- > Ideal for residential or commercial applications
- > Sunny Tower compatible



BUILDING PLAN CHECK
☆ APPROVED ☆
JUN 30 2008
PERMIT AND RESOURCE
MANAGEMENT DEPARTMENT

Sunny Boy 5000 / 6000 / 7000

The best in their class

SMA is proud to introduce our new line of inverters updated with our latest technology and designed specifically to meet the new IEEE 1547 requirements. The SB6000U and SB7000U are also compatible with SMA's new Sunny Tower. Increased efficiency means better performance and shorter payback periods. All three models are field-configurable for positive ground systems making them more versatile than ever. With over 500,000 fielded units, Sunny Boy has become the benchmark for PV inverter performance and reliability throughout the world.

c UL US

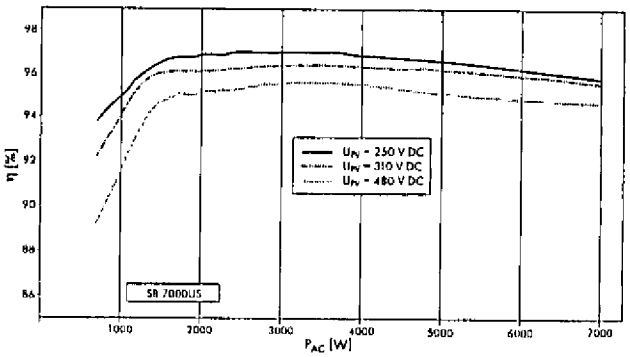
Technical Data
Sunny Boy 5000 / 6000 / 7000

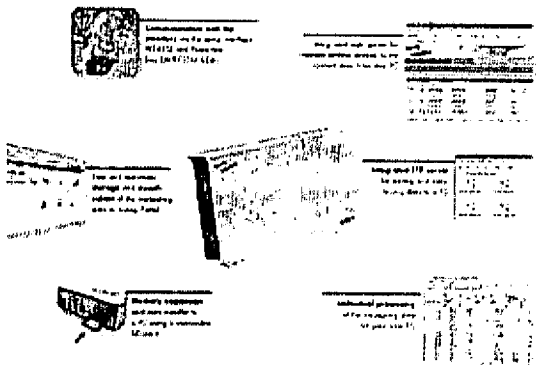
	SB 5000US	SB 6000US	SB 7000US
Input Data (DC)			
Max. Recommended Array Input Power (DC @ STC)	6250 W	7500 W	8750 W
Max. DC Voltage	600 V	600 V	600 V
Peak Power Tracking Voltage	250 - 480 V	250 - 480 V	250 - 480 V
DC Max. Input Current	21 A	25 A	30 A
DC Voltage Ripple	< 5%	< 5%	< 5%
Number of Fused String Inputs	4	4	4
PV Start Voltage	300 V	300 V	300 V
Output Data (AC)			
AC Nominal Power	5000 W	6000 W	7000 W
AC Maximum Output Power	5000 W	6000 W	7000 W
AC Maximum Output Current (@ 208, 240, 277 V)	24 A, 20.8 A, 18 A	29 A, 25 A, 21.6 A	34 A, 29 A, 25.3 A
AC Nominal Voltage / Range	183 - 229 V @ 208 V 211 - 264 V @ 240 V 244 - 305 V @ 277 V	183 - 229 V @ 208 V 211 - 264 V @ 240 V 244 - 305 V @ 277 V	183 - 229 V @ 208 V 211 - 264 V @ 240 V 244 - 305 V @ 277 V
AC Frequency / Range	60 Hz / 59.3 Hz - 60.5 Hz	60 Hz / 59.3 Hz - 60.5 Hz	60 Hz / 59.3 Hz - 60.5 Hz
Power Factor	1	1	1
Efficiency			
Peak Inverter Efficiency	96.8 %	97.0 %	97.1 %
CEC weighted Efficiency	95.5 % @ 208 V 95.5 % @ 240 V 95.5 % @ 277 V	95.5 % @ 208 V 95.5 % @ 240 V 96.0 % @ 277 V	95.5 % @ 208 V 96.0 % @ 240 V 96.0 % @ 277 V
Mechanical Data			
Dimensions W x H x D in inches	18.4 x 24.1 x 9.5	18.4 x 24.1 x 9.5	18.4 x 24.1 x 9.5
Weight / Shipping Weight	143 lbs / 154 lbs	143 lbs / 154 lbs	143 lbs / 154 lbs
Ambient temperature range	-13 to +113 °F	-13 to +113 °F	-13 to +113 °F
Power Consumption: standby / nighttime	< 7 W / 0.25 W	< 7 W / 0.25 W	< 7 W / 0.25 W
Topology	PWM, true sinewave, current source	PWM, true sinewave, current source	PWM, true sinewave, current source
Cooling Concept	Convection with regulated fan cooling	Convection with regulated fan cooling	Convection with regulated fan cooling
Mounting Location Indoor / Outdoor (NEMA 3R)	●/●	●/●	●/●
Features			
LCD Display	●	●	●
Lid Color: aluminum / red / blue / yellow	●/O/O/O	●/O/O/O	●/O/O/O
Communication: RS485 / Wireless	O/O	O/O	O/O
Warranty: 10-year	●	●	●
Compliance: IEEE-929, IEEE-1547, UL 1741, UL 1998, FCC Part 15 A & B	●	●	●

Specifications for nominal conditions

● Included O Option – Not available

Efficiency Curves





www.sma-america.com
Phone 530-273-4895
Toll Free 888-4SMAUSA

SMA America, Inc.

SB5000US-7000US-101907 Sunny Boy and SMA are registered trademarks of SMA Technologie AG. Text and figures comply with the state of the art applicable when printing. Subject to technical changes. We accept no liability for typographical and other errors. Printed on chlorine-free paper.

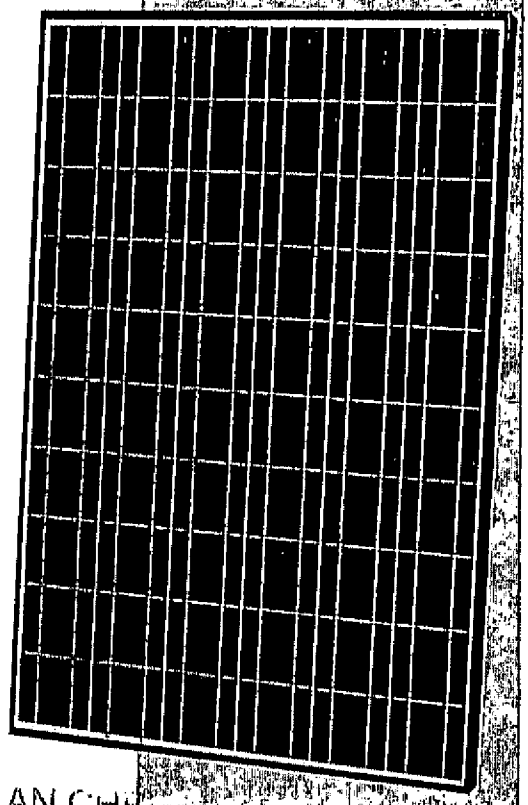
SHARP

RESIDENTIAL OR COMMERCIAL
SYSTEM MODULE

ND-187U1F

187 WATT

HIGH-POWER. EFFICIENT INSTALLATION.



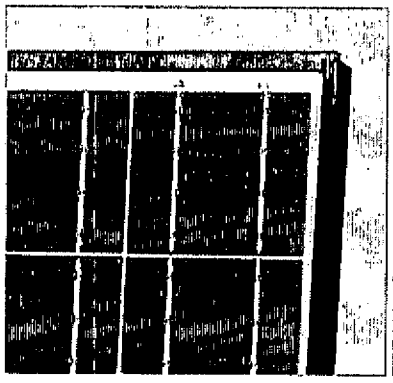
POLY-CRYSTALLINE SILICON PHOTOVOLTAIC MODULE WITH 187W MAXIMUM POWER

These poly-crystalline 187 watt modules offer high-powered performance with an efficient design for quick and easy installation. For use specifically with Sharp's solar racking system (SRS), they are designed to offer easier and faster installations. Using breakthrough technology perfected by Sharp's more than 45 years of research and development, these modules use a textured cell surface to increase light absorption and improve efficiency. Ideal for virtually all sizes of residential and commercial grid-connected systems, they also offer improved aesthetics and durability under the most rigorous operating conditions. Sharp's ND-187U1F modules are the ideal combination of power, performance and efficiency.

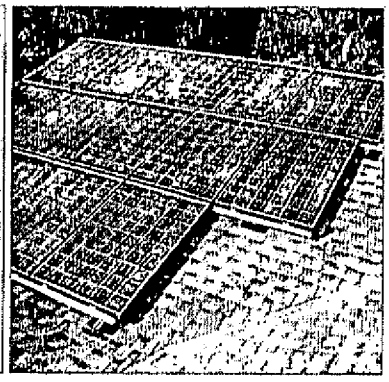
BUILDING PLAN CHE
☆ APPROVED
JUN 30 2008
PERMIT AND RESOUR
MANAGEMENT DEPARTM

FEATURES

- High-power module (187W) using 156mm square poly-crystalline silicon solar cells with 12.7% module conversion efficiency
- Bypass diode minimizes the power drop caused by shade
- Sharp's advanced surface texturing process increases light absorption and efficiency while providing a more subdued, "natural" look
- Water white tempered glass, EVA resin, and a weatherproof film, plus aluminum frame for extended outdoor use
- UL Listings: UL 1703, cUL
- Sharp modules are manufactured in ISO 9001 certified facilities
- 25-year limited warranty on power output (see dealer for details)



Special side flanges mount easily and securely to Sharp's innovative new racking system



Sharp multi-purpose modules offer outstanding performance for a variety of applications.

RESIDENTIAL SYSTEM MODULE

187 WATT

ELECTRICAL CHARACTERISTICS

Cell	Poly-crystalline silicon
No. of Cells and Connections	54 in series
Open Circuit Voltage (Voc)	32.7V
Maximum Power Voltage (Vpm)	25.8V
Short Circuit Current (Isc)	7.99A
Maximum Power Current (Ipm)	7.25A
Rated Power (Pmax) *	187W (+10%/-5%)
Module Efficiency Maximum Power (ηm)	12.7%
Maximum System Voltage	600VDC
Series Fuse Rating	15A
Type of Output Terminal	Lead Wire with MC Connector

* (STC) Standard Test Conditions: 25°C, 1 kW/m², AM 1.5

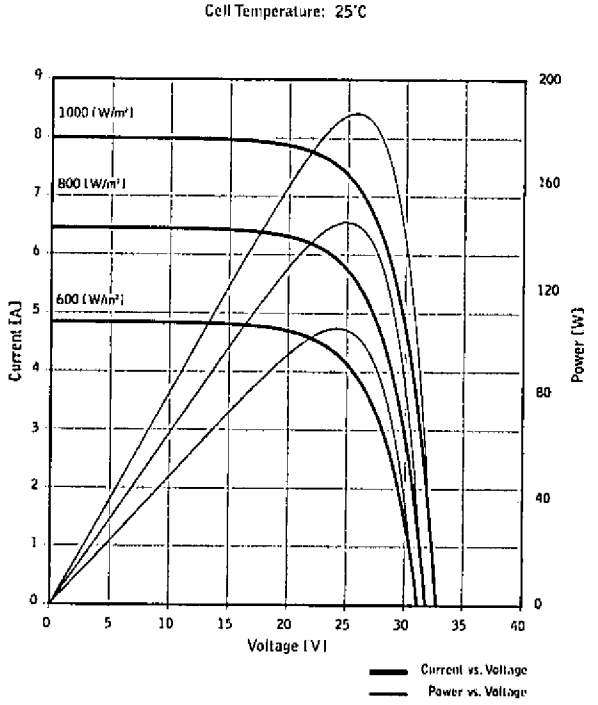
MECHANICAL CHARACTERISTICS

Dimensions (A x B x C below)	58.7" x 39.1" x 2.3" / 1491 x 994 x 57.5mm
Weight	39.6lbs / 18.0kg
Packing Configuration	2 pcs per carton
Size of Carton	62.5" x 43.0" x 5.5" / 1588 x 1092 x 140mm
Pallet Quantity	28 pcs per pallet
Loading Capacity (48 ft container)	448 pcs (16 pallets)
Loading Capacity (53 ft container)	504 pcs (18 pallets)

ABSOLUTE MAXIMUM RATINGS

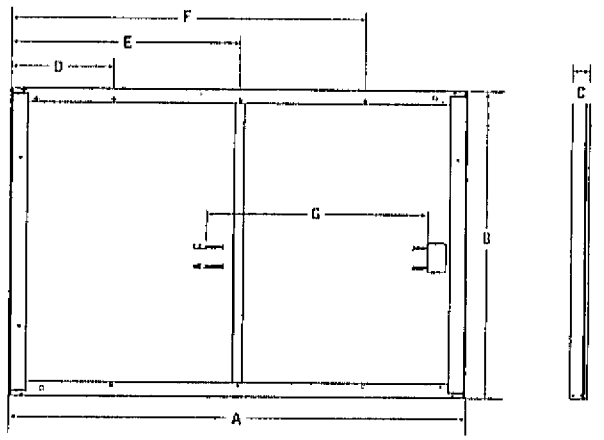
Operating Temperature (min to max, °F/°C)	-40 to 194°F / -40 to 90°C
Storage Temperature (min to max, °F/°C)	-40 to 194°F / -40 to 90°C

IV CURVES



Current, Power vs. Voltage Characteristics

DIMENSIONS



A	B	C	D	E
58.7"/1491mm	39.1"/994mm	2.3"/57.5mm	13.2"/335mm	29.35"/745.5mm

F	G
45.5"/1156mm	51.18"/1300mm

Design and specifications are subject to change without notice.

Sharp is a registered tradmark of Sharp Corporation. All other tradmarks are property of their respective owners.

In the absence of confirmation by product manuals, Sharp takes no responsibility for any defects that may occur in equipment using any Sharp devices.
Contact Sharp to obtain the latest product manuals before using any Sharp device.

c UL us

Cover photo: Solar Installation by
Borrego Solar Systems, Inc., Berkeley, CA

SHARP

SHARP ELECTRONICS CORPORATION • 5901 Bolsa Avenue, Huntington Beach, CA 92647
Tel:1-800-SOLAR-06 • E-mail: sharpsolar@sharpusa.com • www.sharpusa.com/solar

SESG-187-107
©2007 Sharp Electronics Corporation
Printed in the USA

Roof Trac™ PV MOUNTING SYSTEM INSTALLATION MANUAL

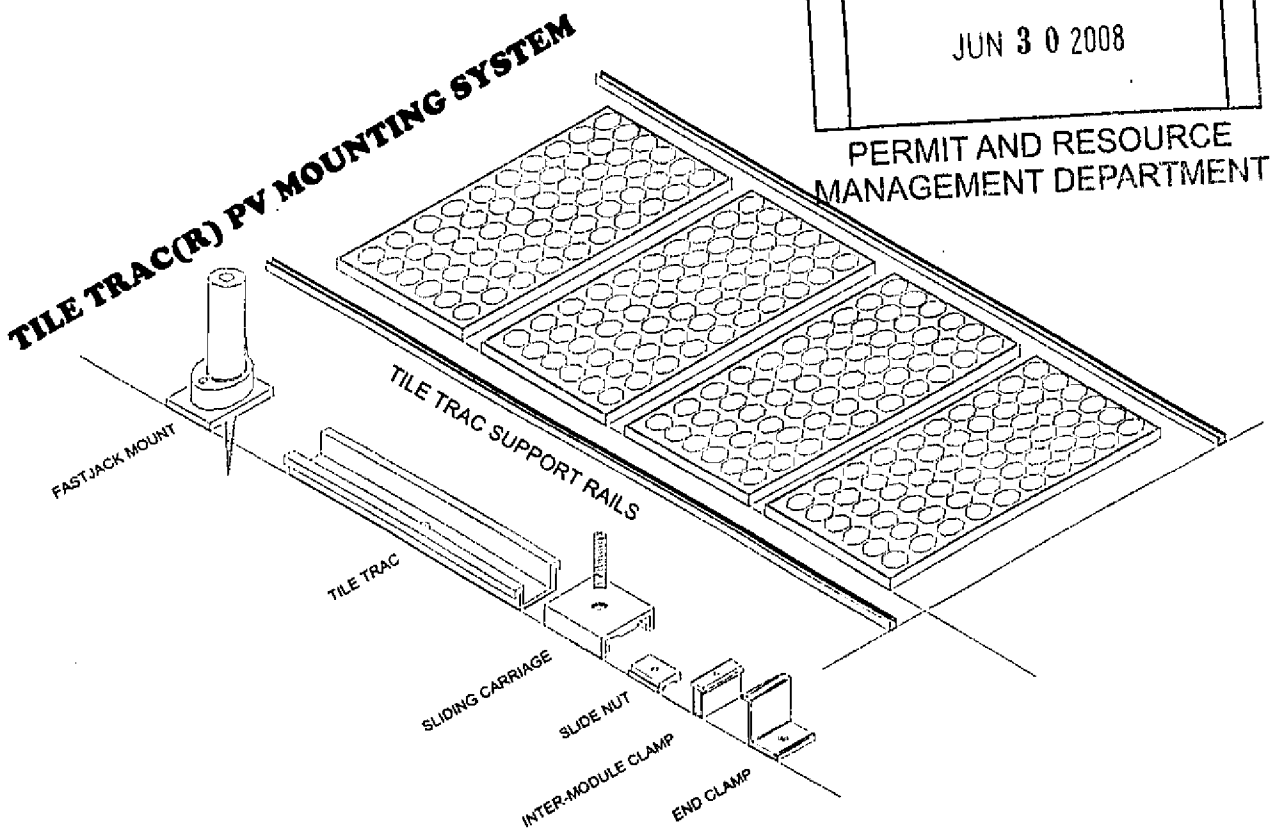
Patent #6,360,491

The ***ROOF TRAC™ PV*** mounting system makes the installation of PV modules for rooftop installations easy, safe and attractive. The patented (pat #6,360,491) PV support mount along with the ***TILE TRAC®*** patented (pat #5,746,029) tile roof attachment system, is used to install frame modules to the most common roof tops including concrete tile. This manual will illustrate the proper installation of the ***TILE TRAC®*** system and provide the installer general information on roof framing and roof coverings. This manual will also provide instruction on how to make solid, leak free attachments to the roof.

This manual will be divided into 9 different sections to provide the new and experienced installer general information and techniques that will reduce labor costs while providing a safe structural attachment to the roof. The instruction guide is divided into the following areas:

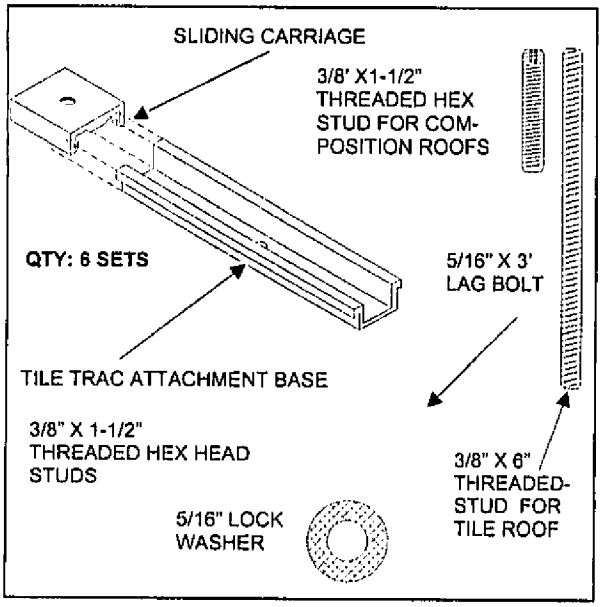
- Components of the ***ROOF TRAC™*** PV mounting system
- General information about roof framing and coverings
- How to locate rafters
- Installation of modules using the ***TILE TRAC®*** base on composition roofs
- Installation on new construction or new roof using the ***FASTJACK®*** flashable roof support stanchion
- Attachment of the modules to the support channel
- Installation of the ***TILE TRAC®*** system for tile roof installations
- Safety guidelines for the solar installer
- Recommended tools

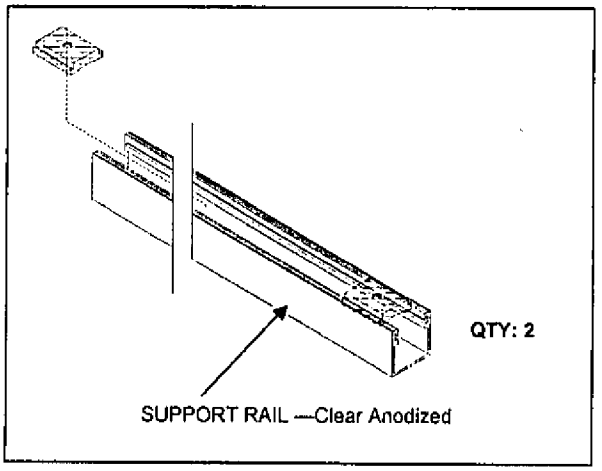
BUILDING PLAN CHECK
★ APPROVED ★
JUN 3 0 2008
PERMIT AND RESOURCE
MANAGEMENT DEPARTMENT

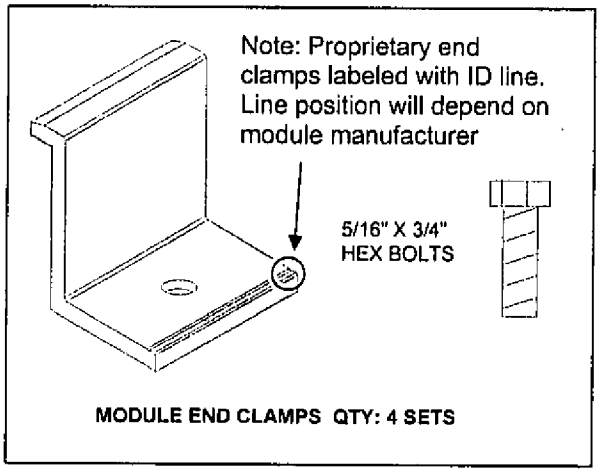


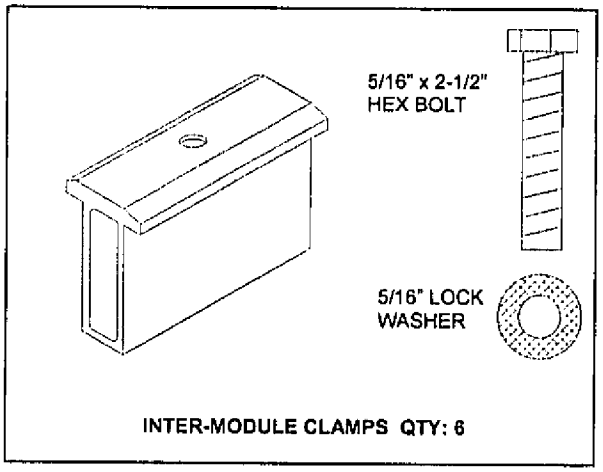
COPYRIGHT PROFESSIONAL SOLAR PRODUCTS 2002: All information contained in this manual is property of Professional Solar Products (PSP). *TILE TRAC®* is a registered trademark for PSP and is covered under U.S. patent #5,746,029. *FASTJACK®* is a registered trademark for PSP and is covered under U.S. patent #6,360,491.

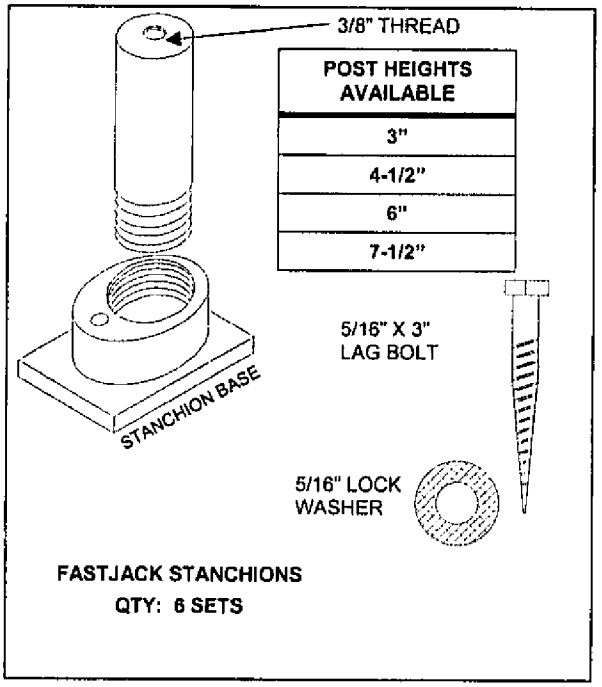
TILETRAC® & FASTJACK® MOUNT COMPONENTS

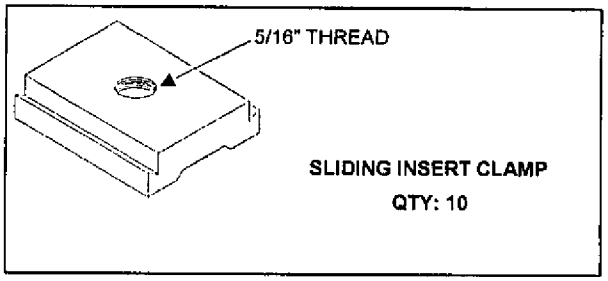












COPYRIGHT PROFESSIONAL SOLAR PRODUCTS 2002: All information contained in this manual is property of Professional Solar Products (PSP). *TILE TRAC®* is a registered trademark for PSP and is covered under U.S. patent #5,746,029.
FASTJACK® is a registered trademark for PSP and is covered under U.S. patent #6,360,491.

ROOF CONSTRUCTION

SOLAR modules of any type must be structurally attached to the roof. This means that they must be secured (bolted) into a structural member of the roof such as a rafter or joist. Structural attachment prevents damage resulting from wind, earthquakes and snow loading, it also insures that the penetration into the roof will be sealed and compressed to provide a leak free connection for the life of the system.

The ***TILE TRAC®*** **PV** mounting system's patented design has been specially engineered and tested to meet industry requirements for load testing and engineering. The ***TILE TRAC®*** mount system has been load tested and approved by a licensed structural engineer. (Copies of engineering reports are available with purchase). ***TILE TRAC®*** mounts are load tested in both the uplift and download conditions while under load at 50 pounds per square foot. Our unique extruded support rail design accomplishes this degree of support with minimal deflection using relatively light gage aluminum.

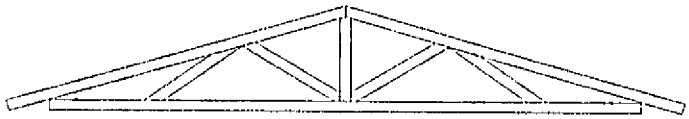
This ***TILE TRAC®*** system was the first system to employ the benefit of the "top down" attachment method. This unique innovation allows the installers to properly install attachment bolts into rafters. Before the invention of this product all module systems had to be bolted from the rear of the module frame. All module clamp sets and engineering are "module specific" and are tested and sized appropriately for each module manufacturer.

The following sections of this manual will provide a good general knowledge of most likely roof installation situations. It is presumed that the installer has a fundamental knowledge of roof construction and tools. We will also try to suggest ways in which you can reduce installation labor and time. We appreciate your selection of our mounting system and hope that this installation guide will make your installation experience faster and more profitable.

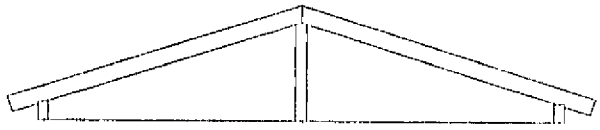
Safety: Installers should used only approved ladders and work only when roofs are dry and avoid installation on windy days. Secure all tools, modules and parts to prevent them from falling off the roof. It is advised to protect all exposed studs with protective caps during the installation process to prevent injury.

GENERAL ROOF TYPES:

Rafter and Pitch: Most modern roofs are composed of structural framing which consists of rafters or trussed units. Rafters are usually 2"x6" or better and are usually found in custom construction. Trusses are geometric shapes that are pre-fabricated in a factory and brought to the construction site. Trusses are generally used in track or modular homes. Each of these roofs supports systems will work exactly the same for attachment of the ***TILE TRAC®*** system. The angle (inclination) of the roof is measured in terms of a division of 12, examples would be "3 in 12" "4 in 12" "5 in 12", this simple means the height is relative the horizontal measure. Most roof pitches will fall the previous categories. For the sake of this manual we will consider all roof supports rafters.



TRUSS ROOF



JOIST ROOF

Rafter spans are generally 12", 16" or 24" O/C (on center). All modern roofs are design to support plywood centers which are 48". For this reason the ***TILE TRAC®*** PV mounting system is engineered and tested at 48" centers for both portrait and landscape configurations. All attachments to the roof should be laid out and attached at 48" centers, attaching at this common distance and you will be reasonably assured of making a structural attachment to a roof rafter, while distributing the load evenly on the roof structure.

Sheathing: Roof covering over the rafters generally consist of three types of materials;

1. Exterior roofing plywood.
2. OSB which is an abbreviation for Oriented Strand Board, this material has now become the standard for new home construction. This material consists of pressed wood fibers which looks similar to particle board. Although this material is structurally sound for roof sheathing, it does not have the ability to secure a lag bolt if the rafters are missed.
3. Skip sheeting (space sheeting): This material is generally not used anymore because of more strict fire codes. This is simply a 1" x 4" or better nailed to the rafters with a space or gap between each board. This type of support is mainly used on older shake or wood shingle roofs.

Important: Attaching or bolting to sheathing is not generally considered a structural attachment and should be avoided.

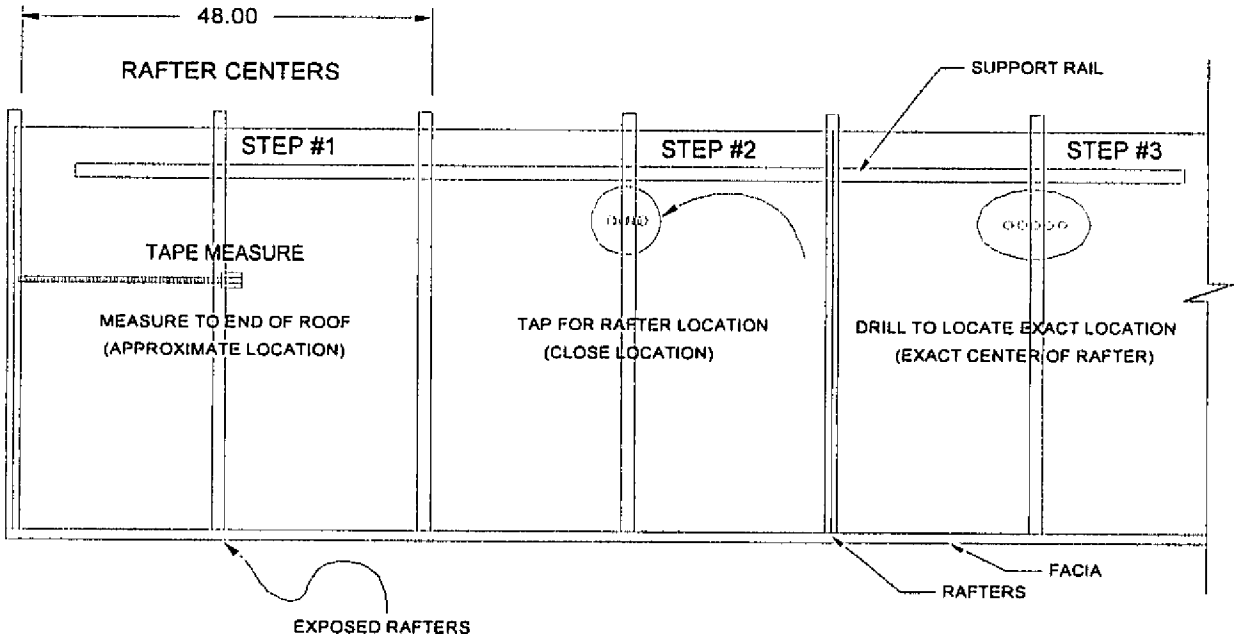
COPYRIGHT PROFESSIONAL SOLAR PRODUCTS 2002: All information contained in this manual is property of Professional Solar Products (PSP). *TILE TRAC®* is a registered trademark for PSP and is covered under U.S. patent #5,746,029.
FASTJACK® is a registered trademark for PSP and is covered under U.S. patent #6,360,491.

TECHNIQUES FOR LOCATING THE ROOF RAFTERS

Based upon the fact that roof rafters can be located at 48" centers, becomes necessary to properly locate at least one rafter. After locating a rafter, it can be used to reference other rafters on the roof. Since the roof sheathing and roofing materials conceal the rafters, there are several techniques that can be used to locate the rafter centers. Keep in mind that the rafter must be located absolute center for proper attachment. Rafters will generally provide a target of 1-1/2" wide which makes accurately locating the rafter is important for proper attachment.

Regardless of the actual spacing of the rafters, most can be located at 48" centers. Here are some ways to accomplish this.

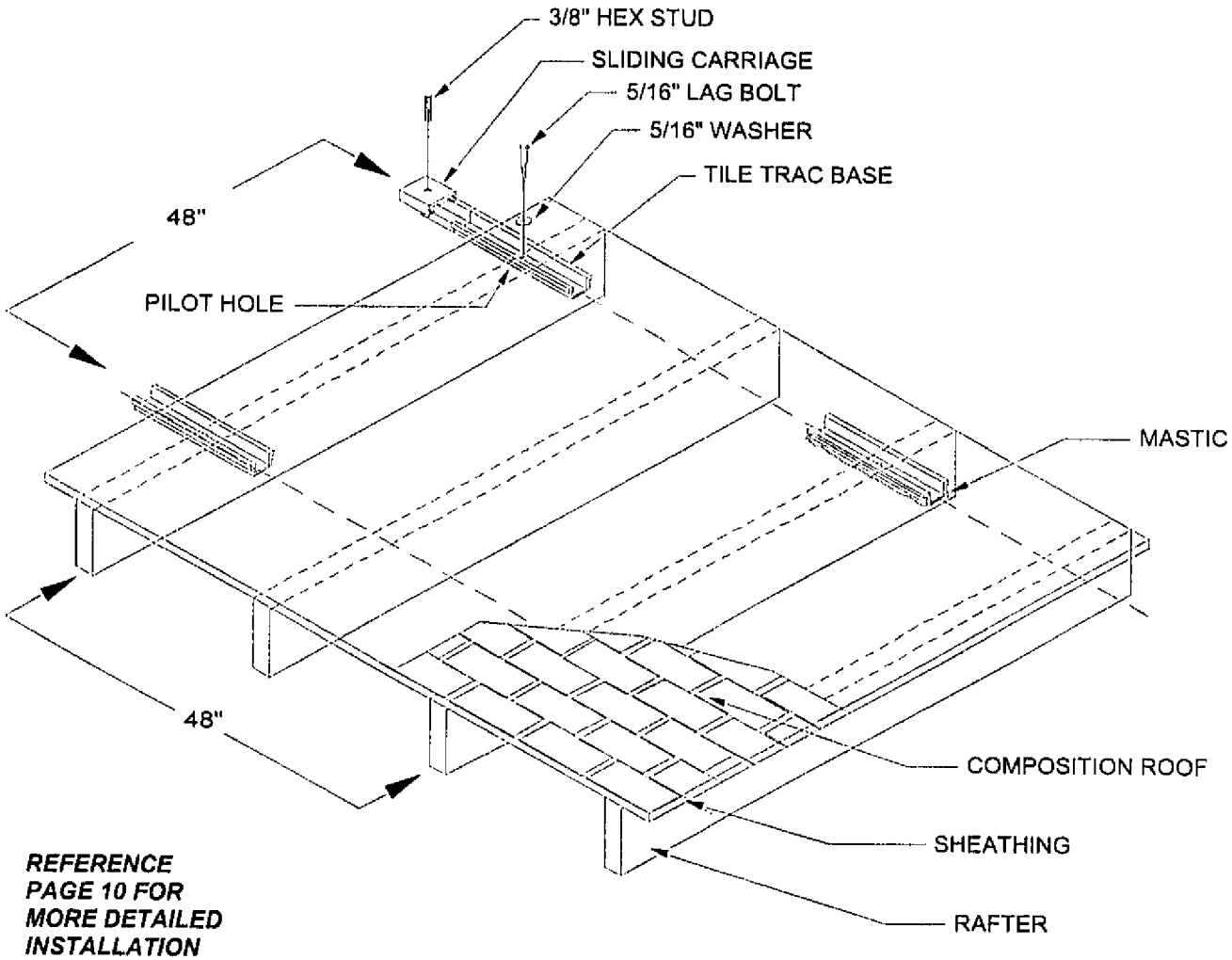
1. If the roof eve is exposed, use a framing square to locate the rafter tail and carefully transfer this location to the edge of roof. Mark this location with a crayon, visible from the top of the roof. Reference this measurement to the edge of the gable. Transfer this measurement to the work area and you should be fairly close to the rafter. For a hip roof you will have to estimate the rafter location by visually triangulating the location perpendicular to the eve. If the roof has a closed or blind soffet, you can visually look for the nails on the rim joist (fascia board), this will indicate the general location of the rafter.
2. Composition shingle or rolled cap sheet: Once you have general idea were the rafter is, you can refine your search by several methods. One simple method is to use a smooth face hammer (a rawhide hammer works nice here) and lightly tap perpendicular to the rafter until you hear a solid sound. Mark this location and you should be within inches of the rafters absolute center location. To determine absolute center you can drill small holes either left or right of the rafter until you hit the rafter center. Another way is to use a high density electronic stud sensor at the "HIGH RANGE" setting. Carefully sliding the device over a piece of thin cardboard (allowing it to slide off the roof shingles) will accurately show the start and ending location of the rafter.
3. Tile roof rafter location: This will consist of estimating the general location of the rafter and then removing the tile in the vicinity of it. After removing the tile, use the same procedures as above.
4. After locating the center of the rafter, it is advisable to mark the hole using a crayon.
   <u>Important! Never leave a hole unmarked or unaccounted for.</u>



LOCATING RAFTER FOR DRILLING AND SUPPORTING ATTACHMENTS

COPYRIGHT PROFESSIONAL SOLAR PRODUCTS 2002: All information contained in this manual is property of Professional Solar Products (PSP). *TILE TRAC®* is a registered trademark for PSP and is covered under U.S. patent #5,746,029. *FASTJACK®* is a registered trademark for PSP and is covered under U.S. patent #6,360,491.

INSTALLING THE *TILE TRAC*® ATTACHMENT FEET



REFERENCE PAGE 10 FOR MORE DETAILED INSTALLATION INSTRUCTIONS.

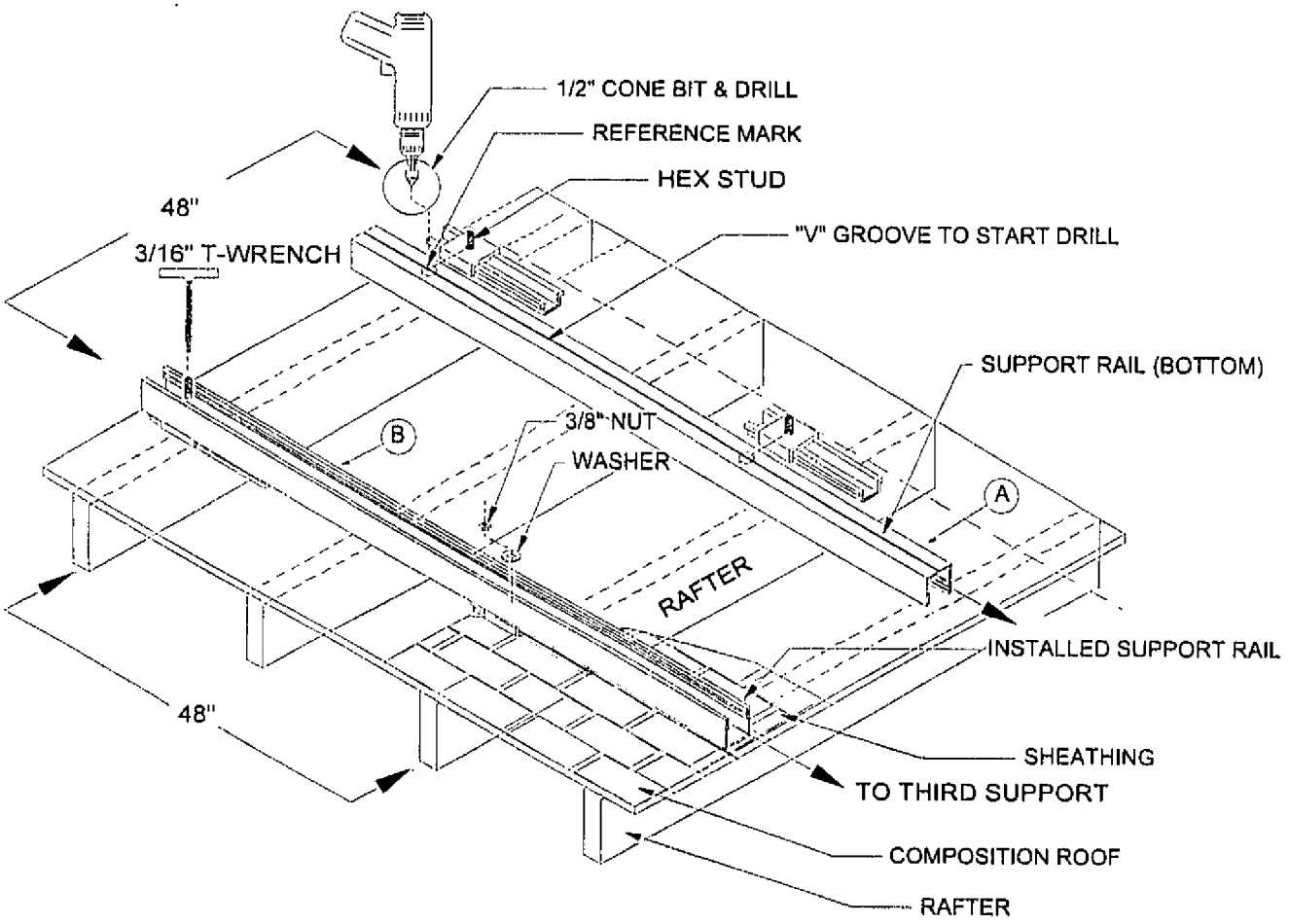
How to attach the *TILE TRAC*® base to the roof.

After locating the exact position for the ***TILE TRAC***® bases, drill a 3/16" (we recommend a carbide masonry bit) pilot hole into the rafter, place the lag bolt and washer through the base and apply mastic or roof sealant to the bottom of the base extrusion. Insuring that the roof is clean and warm, install base by inserting the lag bolt into the hole and impacting the lag bolt down using a 1/2" drive socket (do not over-tighten). After the base has been secured and sealed to the roof, install the sliding carriage over the base and thread in the 3/8" hex stud. At this point, leave the carriage stud loose to allow for final adjustment. Continue installing the ***TILE TRAC***® six attachment feet per rail set installed on 48" centers.

NOTE: Roofing mastic must be applied per the manufacturer's recommendations. To ensure a proper seal, mastic must be fresh and at least room temperature.

COPYRIGHT PROFESSIONAL SOLAR PRODUCTS 2002: All information contained in this manual is property of Professional Solar Products (PSP). *TILE TRAC*® is a registered trademark for PSP and is covered under U.S. patent #5,746,029.
FASTJACK® is a registered trademark for PSP and is covered under U.S. patent #6,360,491.

INSTALLATION OF THE *ROOFTRAC®* SUPPORTS TO THE ROOF MOUNTS



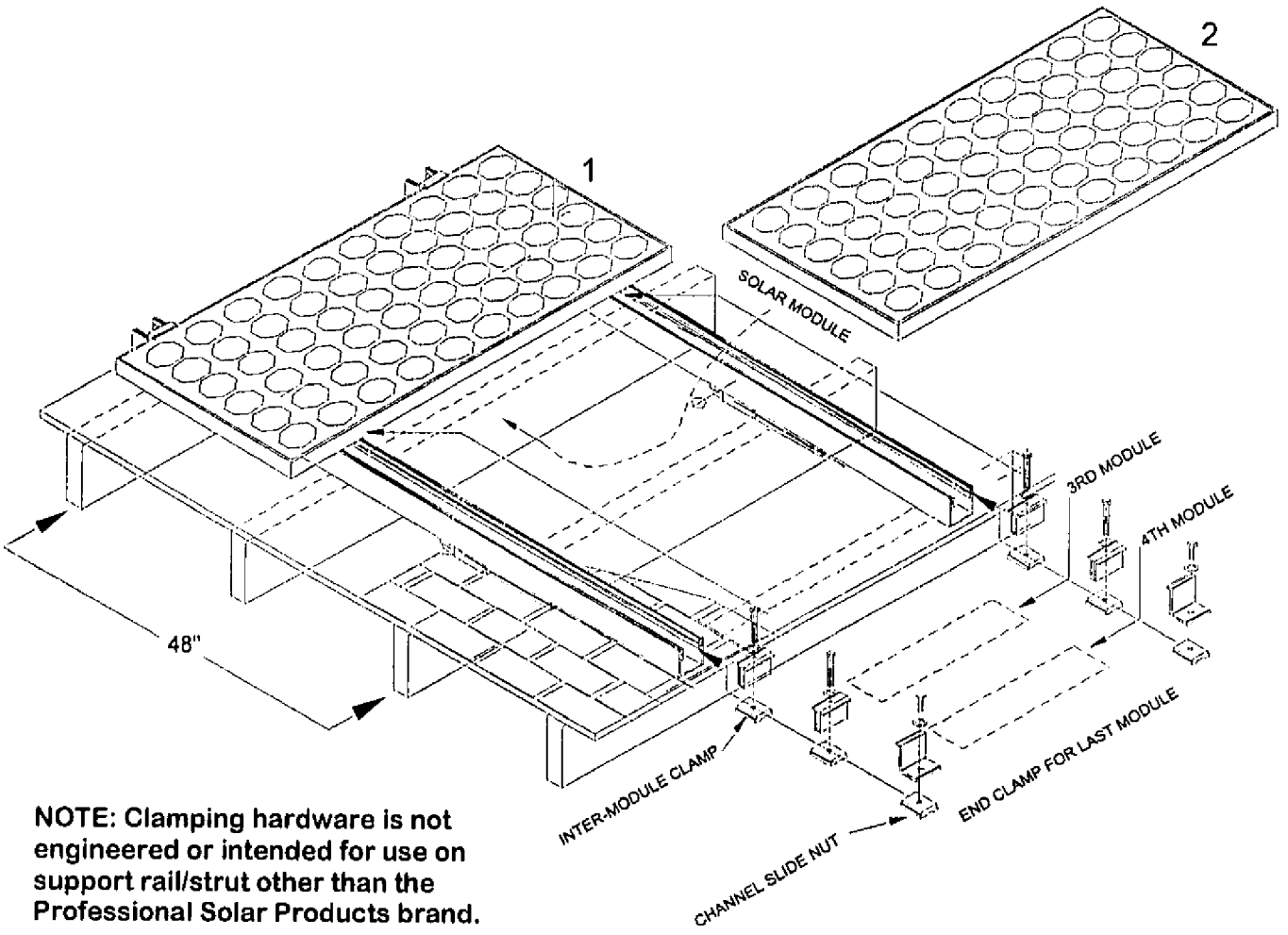
Installation of the *ROOFTRAC®* support rails to the attachment feet.

After the base has been secured and sealed to the roof, install the sliding carriage over the base and thread in the 3/8" short hex stud. At this point, leave the carriage stud loose to allow for final adjustment. Continue installing the sliding carriages over the ***TILE TRAC®*** bases, 6 sets are required per set of module supports.

Lay the module supports (upside down) next to the **TILE TRAC®** supports as illustrated in fig."A" above. Mark the channel adjacent to the support feet. Align and mark the intersecting "V" groove on the rail and drill a 1/2" hole through the rail. (Note: a "Uni-Bit™" sheet metal cone bit is recommended for this). After drilling the hole in the support rail, place the rail over the attachment feet (fig. "B"), make any necessary final adjustments and tighten the carriage using a 3/16" hex wrench. After the stud has locked the carriage to the ***TILE TRAC®*** base, install the 3/8" washer and nut and tighten using a 9/16" deep socket wrench. Your support rails are now secure and ready for installation of the modules.

COPYRIGHT PROFESSIONAL SOLAR PRODUCTS 2002: All information contained in this manual is property of Professional Solar Products (PSP). *TILE TRAC®* is a registered trademark for PSP and is covered under U.S. patent #5,746,029.
FASTJACK® is a registered trademark for PSP and is covered under U.S. patent #6,360,491.

INSTALLATION OF THE MODULES OVER THE *ROOF TRAC®* SUPPORT RAILS



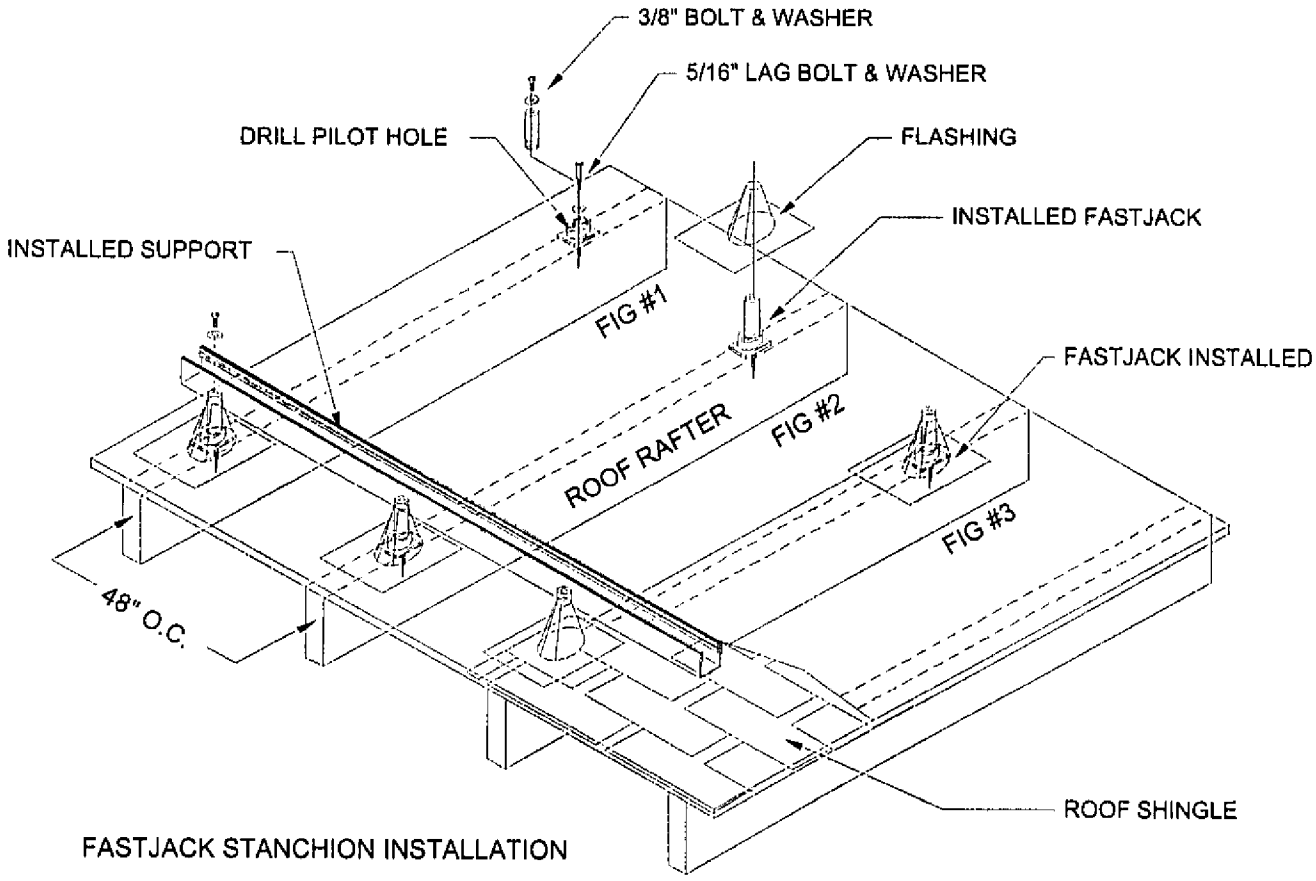
NOTE: Clamping hardware is not engineered or intended for use on support rail/strut other than the Professional Solar Products brand.

Attachment and clamping of the solar modules to the ***TILETRAC®*** feet or ***FASTJACK®*** stanchions work exactly the same. After the support rails have been installed to the attachments, you are now ready to install the solar modules. There are two sets of clamps; the outside clamps (end clamp) and the inter-module clamps that install between the modules. For convenience, it is advisable to pre-thread or start the bolt, lock washer and clamp into the sliding insert prior to bringing them up to the roof. Slide the two end clamps near the end of the support rail and install your end module (first). Carefully square the module to the frame and tighten the clamps using a 1/2" box wrench or drive socket. **DO NOT OVER-TIGHTEN**, we recommend a maximum torque of 12 foot pounds to prevent damage to the module glass. After the first module is secured, slide two inter-module clamp sets onto the first module. They are designed to stay in place freeing you up to slide and align the next module into place. Repeat this procedure until all modules are installed onto the support rail. Upon installation of the last module in the panel, install the module end clamp to complete the installation.

Please note that all module end clamps are proprietary and specially extruded to fit a specific brand of module. Since many of these tolerances are very small, we install a die line (marker) to differentiate the correct die per module frame. Please refer to the module end clamp illustration on page 2 to insure you are using the correct end clamp.

COPYRIGHT PROFESSIONAL SOLAR PRODUCTS 2002: All information contained in this manual is property of Professional Solar Products (PSP). *TILE TRAC®* is a registered trademark for PSP and is covered under U.S. patent #5,746,029.
FASTJACK® is a registered trademark for PSP and is covered under U.S. patent #6,360,491.

ROOF INSTALLATION FOR THE *FASTJACK®* FLASHABLE SUPPORTS



FASTJACK STANCHION INSTALLATION

Installation of the *FASTJACK®* support rails to the attachment feet.

The illustration above shows how the FastJack™ flashable mount is installed on a new roof. (see the following page for more detailed installation instructions). The same spans apply to the ***FASTJACK®*** mount as with the ***TILE TRAC®,*** attachment feet. All attachments to the roof should be made at 48" rafter centers, and all rafters must be located and securely bolted into. There are four heights of ***FASTJACK®*** mounts and they range from 3", which is generally used for the Oatey® style neoprene (low profile) flashing, to 7-1/2". The 4-1/2" is recommended for mounting to the composition shingle roof using a standard metal roof flashing. The 6" and 7-1/2" sizes are for flat tile roofs and curve tile using double flashings. One feature of the ***FASTJACK®*** is that the roofer can remove the posts for easy installation of the roof paper and later install them.

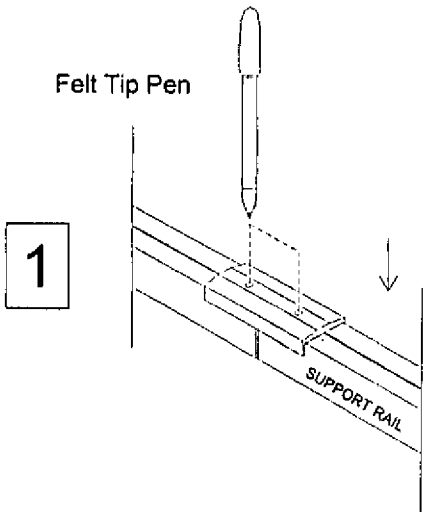
After the ***FASTJACK®*** mounts are installed, the support rails can be marked and installed in the same manner as illustrated on page 6 of the manual.

Fig #1: ***FASTJACK®*** base is installed over the roof rafter and sheathing.
Fig #2: Threaded post is screwed into the base and the f lashing is installed over it.
Fig # 3: Installed ***FASTJACK®*** ready for the roof covering.

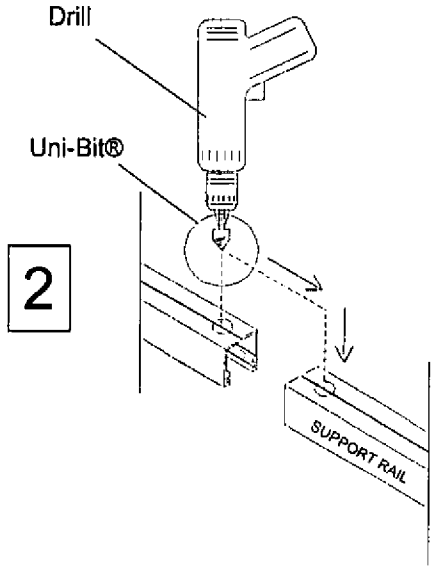
Caution: Always use care when walking around protruding stanchions.

COPYRIGHT PROFESSIONAL SOLAR PRODUCTS 2002: All information contained in this manual is property of Professional Solar Products (PSP). *TILE TRAC®* is a registered trademark for PSP and is covered under U.S. patent #5,746,029.
FASTJACK® is a registered trademark for PSP and is covered under U.S. patent #6,360,491.

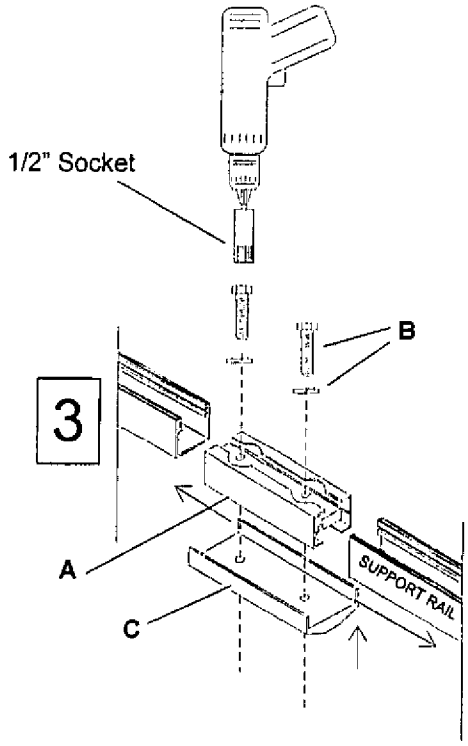
SPLICE KIT INSTRUCTIONS:



Turn the support rails so the bottom is facing up. Place the lower splice extrusion over the rails to use as a template. Center the lower splice extrusion over the rails and mark using a small felt pen.



Drill two holes using a 1/2" #10 "Uni-Bit"® - drill at the intersection of the reference mark and the extruded "V" groove in the lower support assembly.



Insert the splice "A" into the channel and install "B" —the two 5/16" bolts / lock washers— into the lower support "C". Tighten using a 1/2" socket. Splice insert is designed to expand into the extrusion walls forcing the rails into alignment, do not over tighten. Roof Trac™ support rails can now can be handled and installed as one solid rail.

Splice Expansion Feature:

Roof Trac™ splice kits are designed to hold support rails in alignment for convenient installation. It allows for thermal expansion (side movement) of the aluminum after attachment. To use this feature; assemble the sections together allowing a 3/16" gap between sections. After installing the supports remove one of the 5/16" bolts. Thermal expansion of the aluminum support rails will now be absorbed in the splice connection instead of stressing the roof attachments. The remaining splice kit bolt and assembly will keep the support rails in perfect alignment.

COPYRIGHT PROFESSIONAL SOLAR PRODUCTS 2002: All information contained in this manual is property of Professional Solar Products (PSP). *TILE TRAC®* is a registered trademark for PSP and is covered under U.S. patent #5,746,029.
FASTJACK® is a registered trademark for PSP and is covered under U.S. patent #6,360,491.

THE STANDARD IN PV MOUNTING STRUCTURES™

SolarMount®/S-5!™ Clamp Sets

Mounting PV Modules to Standing-Seam Metal Roofs

Installation Sheet 220

Thank you for using UniRac products. SolarMount®/S-5!™ clamp sets attach PV modules directly to standing seam metal roofs. No rails or roof penetrations are necessary.

Please review these instructions thoroughly before installing your array.

⚠ ***When an array is attached to a standing-seam metal roof, the roof becomes a structural member of the array. It must be properly secured so that it can support the array under live load conditions, including wind uplift loads.*** *The installer is solely responsible for ensuring that the roof, its rafters or purlins, connections, and other structural support members can withstand design wind forces.*

The installer is also solely responsible for:

- Ensuring worker safety on inherently slippery standing-seam metal roofs;
- Complying with all applicable local or national building codes, including any that may supercede this installation sheet;
- Ensuring that UniRac and other products are appropriate for the particular installation and the installation environment;
- Using only UniRac parts and installer-supplied parts as specified by UniRac;

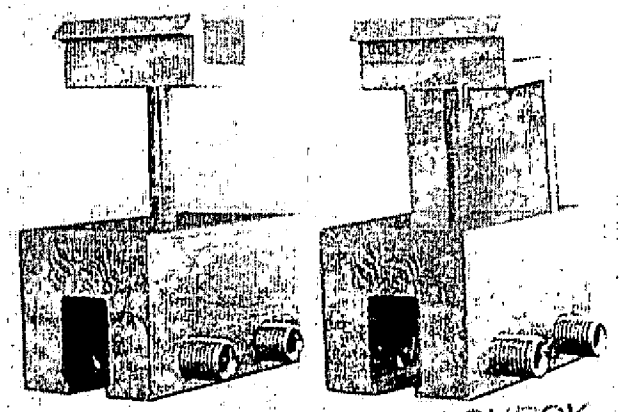


Figure 1. SolarMount/S-5! midclamp sets (left) and S-5! end clamp sets attach PV modules directly to standing-seam metal roofs.

BUILDING PLAN CHECK
APPROVED
JUN 30 2008
PERMIT AND RESOURCE
MANAGEMENT DEPARTMENT

- Maintaining the waterproof integrity of the roof; and
- Ensuring safe installation of all electrical components of the PV array.

Roof seams

The S-5! PV clamp is designed for completely vertical seams only. For standing seam varieties where the S-5! PV clamp is not suitable, please call UniRac for technical assistance with other types of S-5! clamps.

10 year limited Product Warranty, 5 year limited Finish Warranty

UniRac, Inc., warrants to the original purchaser ("Purchaser") of product(s) that it manufactures ("Product") at the original installation site that the Product shall be free from defects in material and workmanship for a period of ten (10) years, except for the anodized finish, which finish shall be free from visible peeling, or cracking or chalking under normal atmospheric conditions for a period of five (5) years, from the earlier of 1) the date the installation of the Product is completed, or 2) 30 days after the purchase of the Product by the original Purchaser ("Finish Warranty").

The Finish Warranty does not apply to any foreign residue deposited on the finish. All installations in corrosive atmospheric conditions are excluded. The Finish Warranty is VOID if the practices specified by AAMA 609 & 610-02 – "Cleaning and Maintenance for Architecturally Finished Aluminum" (www.aamanet.org) are not followed by Purchaser. This Warranty does not cover damage to the Product that occurs during its shipment, storage, or installation.

This Warranty shall be VOID if installation of the Product is not performed in accordance with UniRac's written installation instructions, or if the Product has been modified, repaired, or reworked in a manner not previously authorized by UniRac IN WRITING, or if the Product is installed in an environment for which it was not designed. UniRac shall not be liable for consequential, contingent or incidental damages arising out of the use of the Product by Purchaser under any circumstances.

If within the specified Warranty periods the Product shall be reasonably proven to be defective, then UniRac shall repair or replace the defective Product, or any part thereof, in UniRac's sole discretion. Such repair or replacement shall completely satisfy and discharge all of UniRac's liability with respect to this limited Warranty. Under no circumstances shall UniRac be liable for special, indirect or consequential damages arising out of or related to use by Purchaser of the Product.

Manufacturers of related items, such as PV modules and flashings, may provide written warranties of their own. UniRac's limited Warranty covers only its Product, and not any related items.

UniRac welcomes input concerning the accuracy and user friendliness of this publication. Please write to publications@unirac.com.

Pub 050118-1ii
February 2005

© 2005 by UniRac, Inc.
All rights reserved.

Parts

	Wrench	Recommended torque (ft.-lbs.)
S-5! clamp w/ 2 sets screws	3/16" allen	10–13
SolarMount end clamp w/ hexhead bolt	7/16"	12–15
SolarMount mid clamp w/ hexhead bolt	7/16"	12–15

⚠ Stainless steel hardware can seize up, a process called galling. To significantly reduce its likelihood, (1) apply lubricant to bolts, preferably an anti-seize lubricant, available at auto parts stores, (2) shade hardware prior to installation, and (3) avoid spinning on nuts at high speed. See Installation Supplement 910, *Galling and Its Prevention*, at www.unirac.com.

Layout and required attachments

Always mount PV modules in landscape mode. In other words, the long edges of the modules, which will take the clamps, must be perpendicular to the seams of the roof.

An S-5!/*end* clamp set consists of one S-5! PV clamp with set screws and one SolarMount end clamp with mounting bolt. An S-5!/*mid* clamp set consists of one S-5! PV clamp with set screws and one SolarMount mid clamp with mounting bolt. Use one clamp set wherever the long edge of a module crosses a standing seam. Even a very small PV module must be secured by no fewer than four attachments.

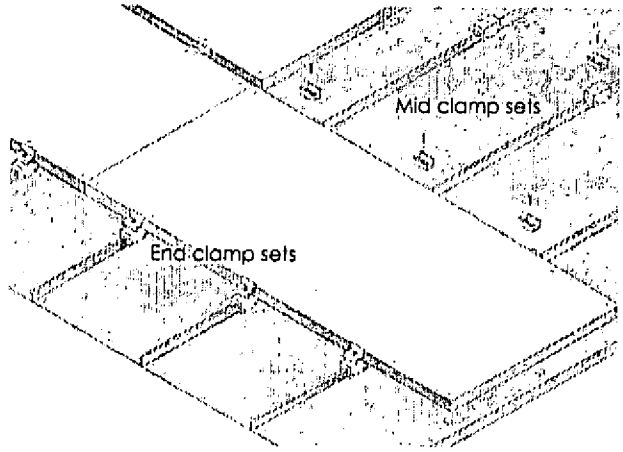


Figure 2. Align and install the lower S-5!/end clamp sets first, followed by the first row of PV modules and the first row of S-5!/mid clamps. Work up the slope of the roof.

Assembly

Loosely assemble all clamp sets on the ground. On the roof, follow these steps.

1. On the roof, begin with the lowest row of modules. Use a chalk line or other means to precisely align and mark clamp positions for the bottom edge of the row. Attach and tighten S-5!/end clamp sets to these positions. Tighten the set screw to 10 foot-pounds. Tightening each set screw will affect the other, so retighten both, again to 10 foot-pounds .

⚠ ***Tightening the set screws may tilt the S-5! on the seam. Place and secure modules to bring the clamp back to the proper orientation. For any particular type of seam, use the experience of the first four or five connections to develop your technique.***

2. Position the lowest row of modules and loosely clamp them in place with the SolarMount end clamps. Position the next row of clamp sets to support the upper side of the first row of modules. Use S-5!/mid clamp sets between rows of modules.

Never substitute an S-5!/mid clamp set where an S-5!/end clamp set is required. Use mid clamp sets between modules only. ⚠

3. Securely fasten the S-5! PV clamp, while observing the caution in Step 1. Once a module row is supported on both the upper and lower sides, fully torque the hexhead bolts on the SolarMount clamps on the lower set of clamps.

A SolarMount end clamp should lean slightly into the module (Fig. 3). ⚠

4. Continue this procedure for each row of modules. For the top edge of the highest row, use S-5!/end clamp sets.

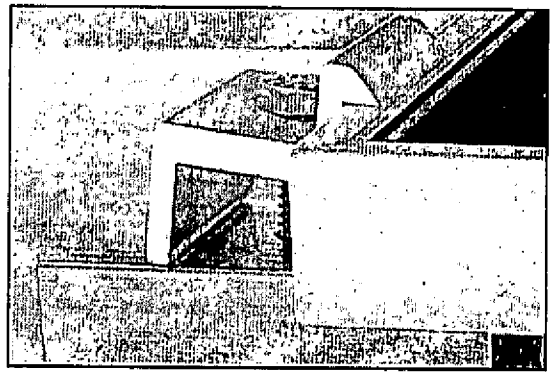


Figure 3. Lean the SolarMount end clamp slightly into the module. Avoid perpendicular orientation and never allow the clamp to lean away from the module.

UniRac, Inc.
www.unirac.com
1411 Broadway Boulevard NE
Albuquerque NM 87102-1545 USA
505.242.6411
505.242.6412 Fax

CONFIDENTIAL
This drawing and any data, description, and other information contained herein are considered as proprietary and exclusive property of SolarCraft Services Inc. and shall not be published, reproduced, copied, disclosed or used in whole or in part, for any purpose, without the express written consent of SolarCraft Services Inc.

Rev # 1.2

General Notes

Grounding Method Per NEC

NEC 690.43

Equipment Grounding. Exposed non-current carrying metal parts of module frames, equipment, and conductor enclosures shall be grounded in accordance with 250.134 or 250.136(A) regardless of voltage.

NEC 250.136(A)

Equipment secured to grounded metal supports.

Electrical equipment secured to and in electrical contact with a metal rack or structure provided for its support and grounded by one of the means indicated in 250.134.

The structural metal frame of a building shall not be used as the required equipment grounding conductor for ac equipment.

SOLARCRAFT
SOLAR ENERGY EFFICIENCY

SOLARCRAFT SERVICES INC.
285 BEL MARIN KEYS BLVD #D
NOVATO, CA 94949
CA LIC 497797

VIMARK, TRIONE VINEYARDS
19550 GEYSERVILLE AVE
GEYSERVILLE CA 95441
APN: 140-050-010

GROUNDING NOTES
DRAWN BY: SAM PROM
SOLARCRAFT SERVICES INC.
415-382-7717

Wiley Electronics LLC

Washer, Electrical Equipment Bond

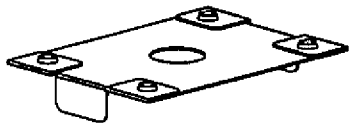
WEEB

Patent Pending

INSTALLATION INSTRUCTIONS

For Professional Solar only

Please read carefully before installing.



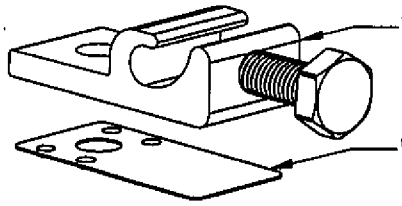
WEEB-PMC

BUILDING PLAN CHECK

★ APPROVED ★

JUN 3 0 2008

PERMIT AND RESOURCE MANAGEMENT DEPARTMENT



WEEBL-6.7 assembly

Products are tested to UL 467 3098177
UL standard for safety grounding and bonding equipment

Document Number 104-0404-000008-006

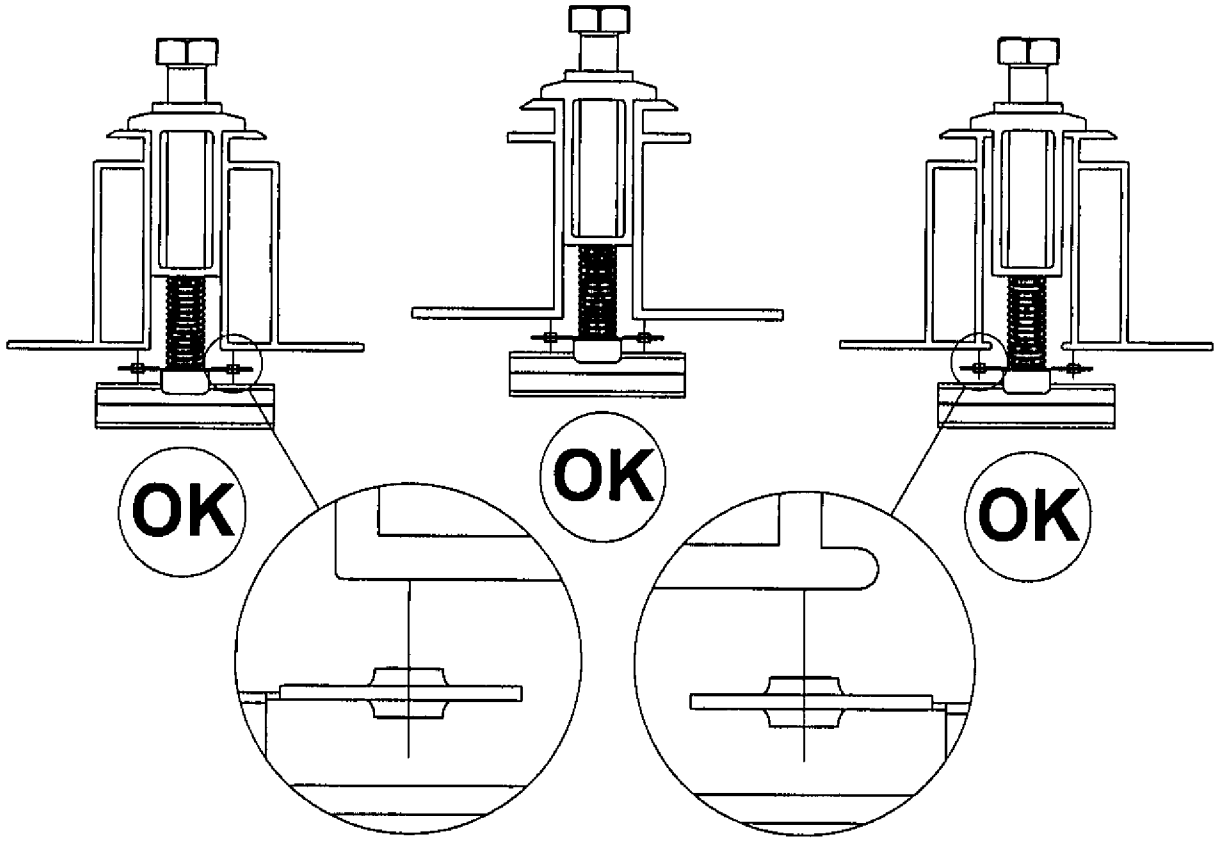
Wiley Electronics LLC. 2006-2007© – All Rights Reserved

WEEB COMPATIBILITY

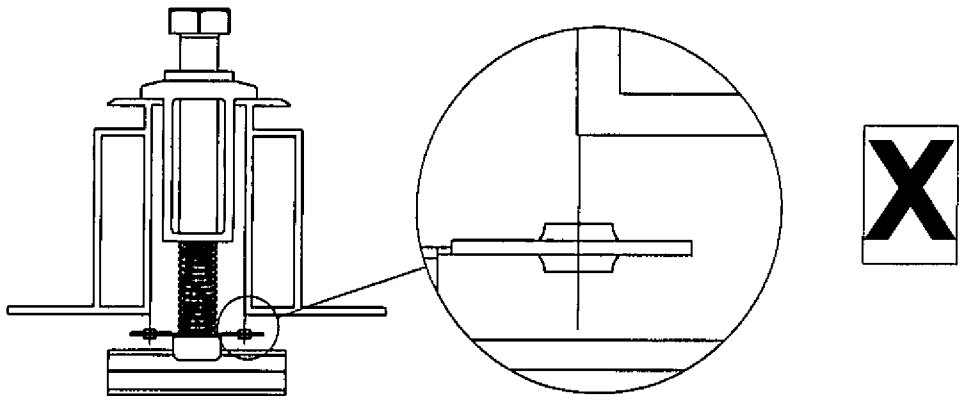
The WEEB family of products can be used to bond anodized aluminum, galvanized steel, steel and other electrically conductive metal structures.

Standard Top Down Clamps

The WEEBs used for bonding the PV modules to the mounting rails are compatible with various cross-sections of module frames. The following are examples of module frames that are compatible. Notice that the WEEB teeth are positioned completely under the edge of the module frame.



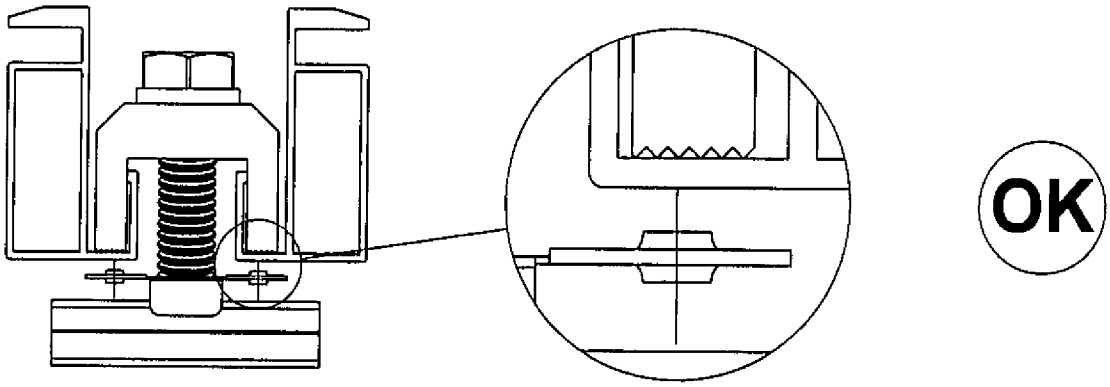
The following is an example of a module frame that is incompatible with the WEEB. The WEEB teeth are positioned only partially under the edge of the module due to the lip on the top edge of the module.



Wiley Electronics LLC. 2006-2007© – All Rights Reserved

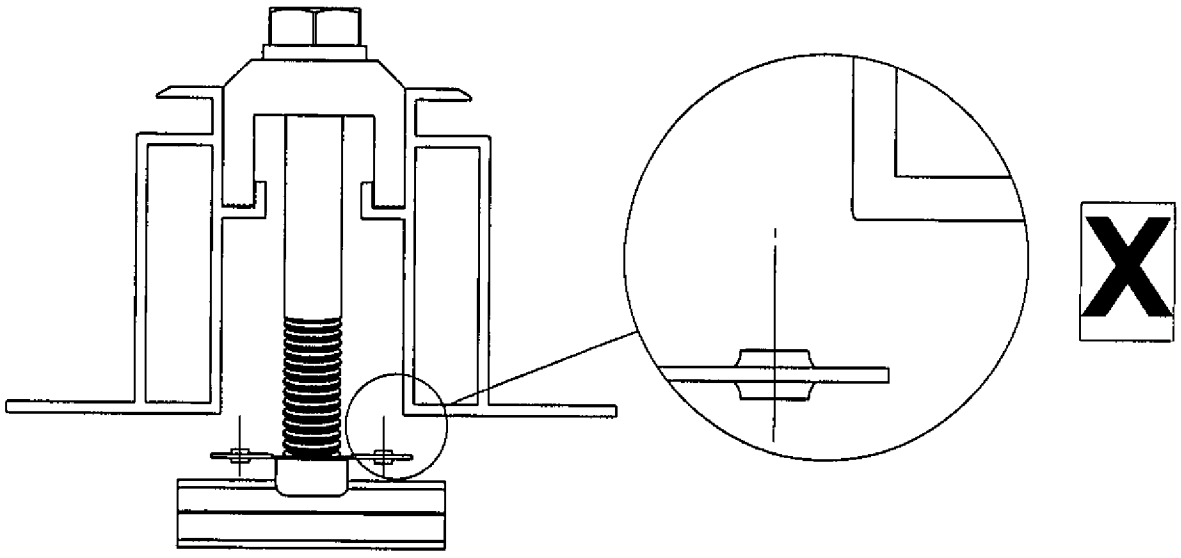
Top Down Clamps for Lipped Modules

The following are a few variations of lipped solar modules mounted with inverted U-shaped clamps. Notice that the force which the inverted U-shaped clamp exerts is in line with the WEEB teeth.



Low-Lipped Module

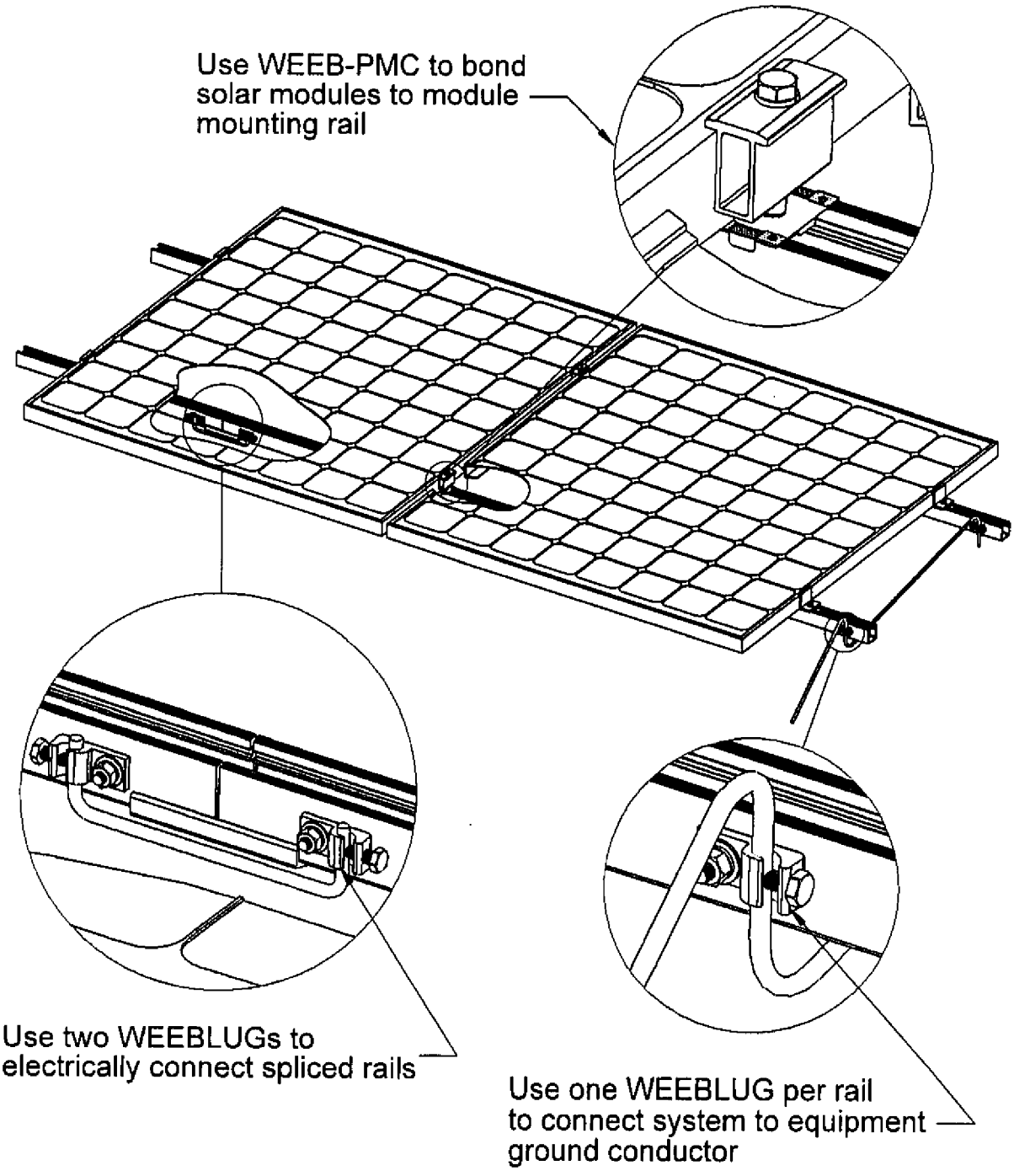
WEEB-PMC is not compatible with high lipped modules. The WEEB teeth do not intersect with the solar module frame.



High-Lipped Module

Wiley Electronics LLC. 2006-2007© – All Rights Reserved

SYSTEM OVERVIEW



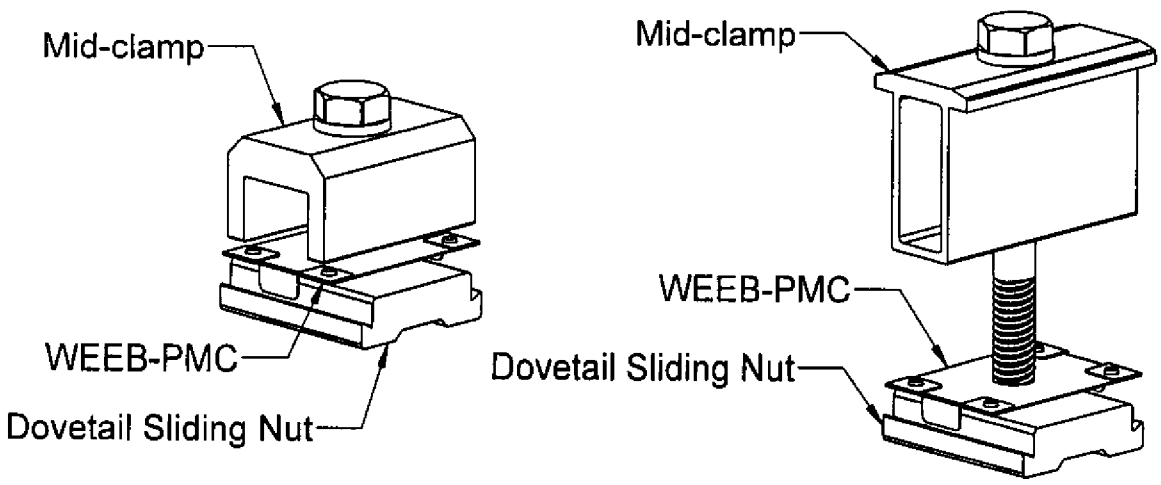
Important notes

1. **Use general purpose anti-seize compound on fastener threads when installing WEEBs.**
2. **WEEBs are intended for SINGLE USE ONLY. Functionality will not be guaranteed if reused.**

Wiley Electronics LLC. 2006-2007© – All Rights Reserved

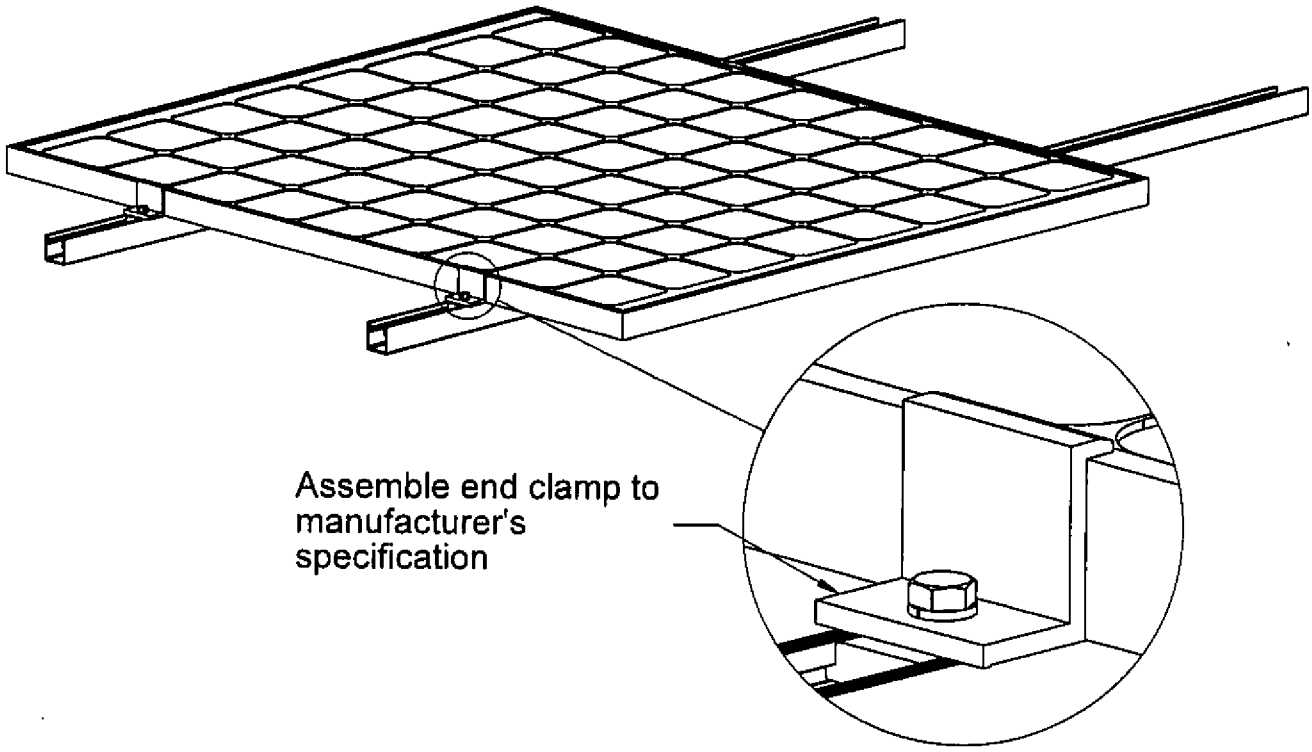
WEEB-PMC ASSEMBLY

①



Pre-assemble WEEB-PMC to mid-clamp assembly as shown. Pre-assembling WEEB-PMC to mid-clamp assembly will contain the small individual parts, reducing the possibility of losing parts during installation

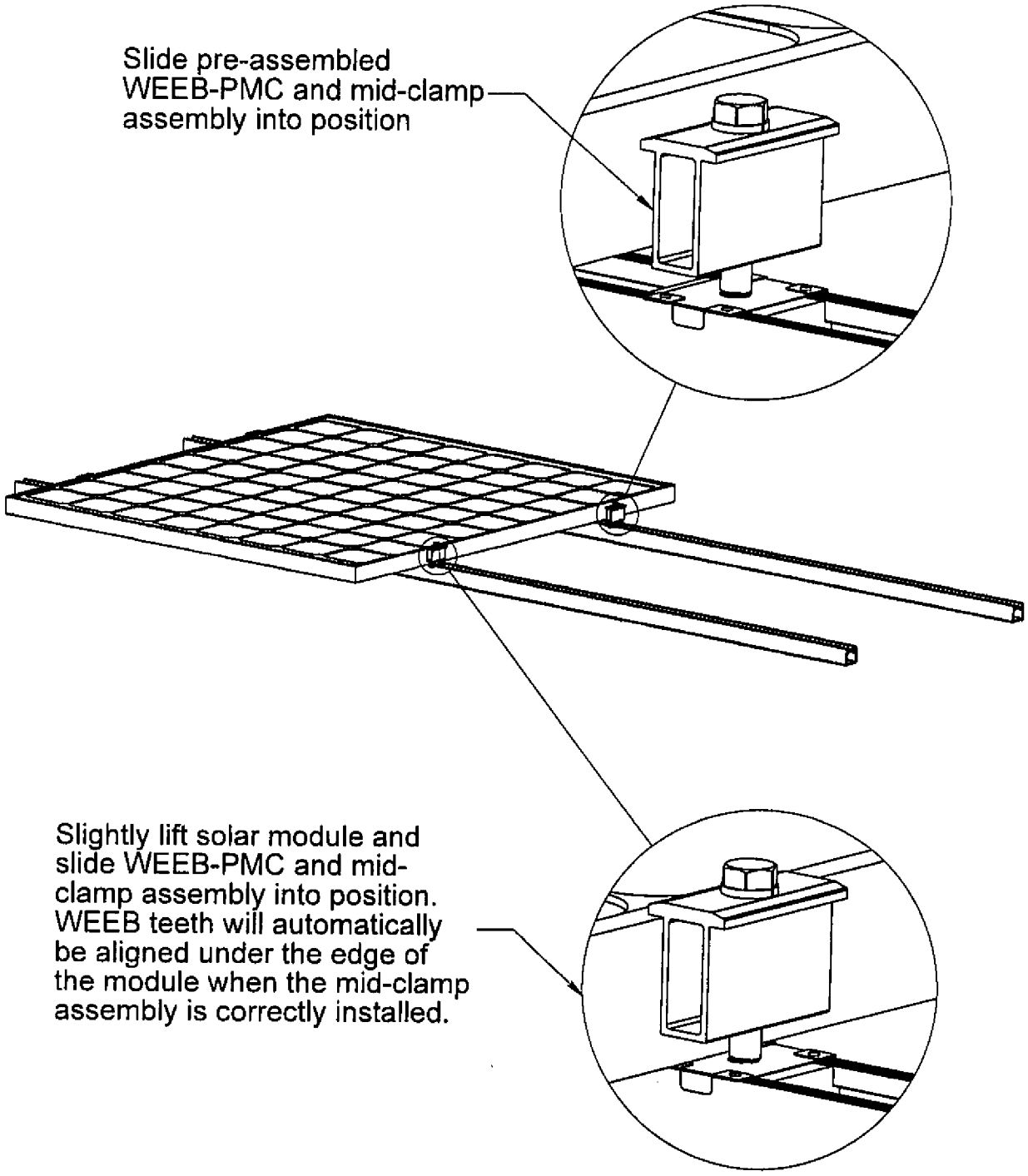
②



Wiley Electronics LLC. 2006-2007© – All Rights Reserved

③

Slide pre-assembled WEEB-PMC and mid-clamp assembly into position



Slightly lift solar module and slide WEEB-PMC and mid-clamp assembly into position. WEEB teeth will automatically be aligned under the edge of the module when the mid-clamp assembly is correctly installed.

Important note:

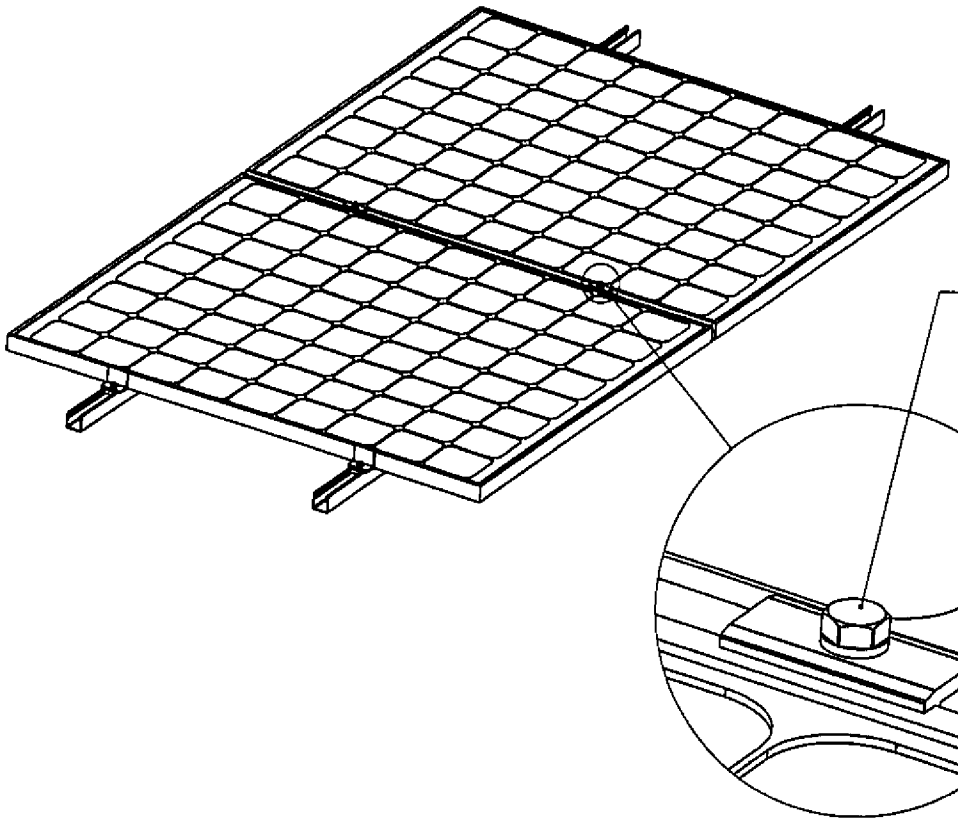
To correctly install WEEB-PMC, ensure that both sides of the solar modules are completely positioned against the mid-clamp. Refer to WEEB compatibility page for illustrations.

Wiley Electronics LLC. 2006-2007© – All Rights Reserved

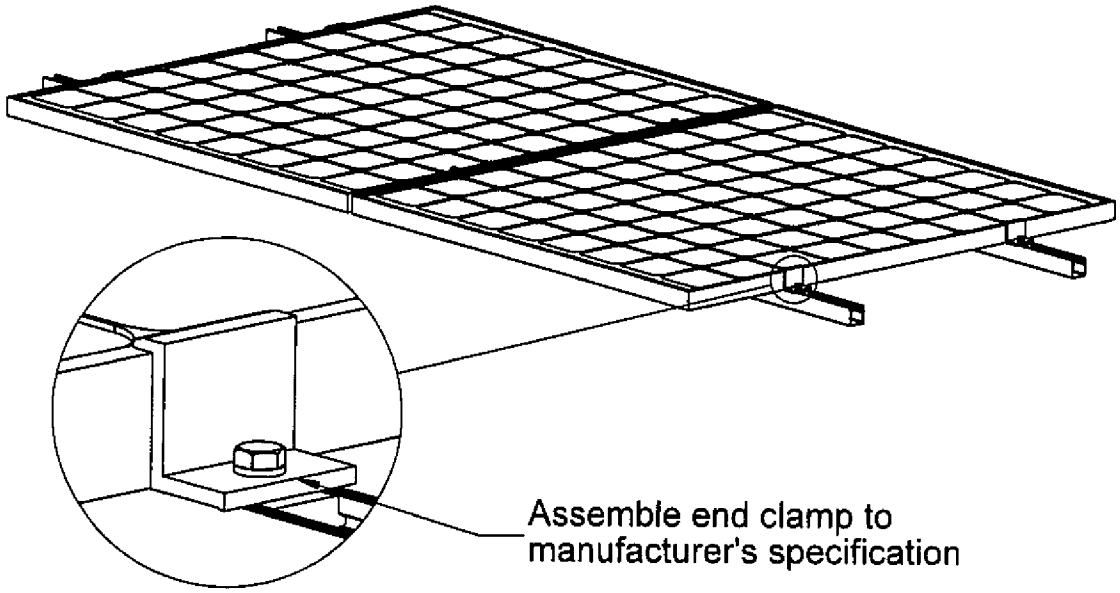
④

Important note:

WEEBs are for SINGLE USE ONLY! Do not torque fasteners down if position of solar modules is not finalized. Only slightly tighten fasteners to keep modules in place.



⑤

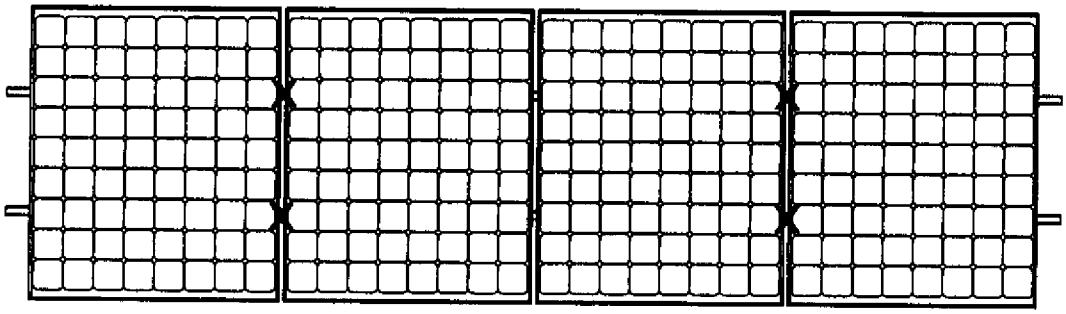


Wiley Electronics LLC. 2006-2007© – All Rights Reserved

WEEB-PMC LAYOUT

⑥

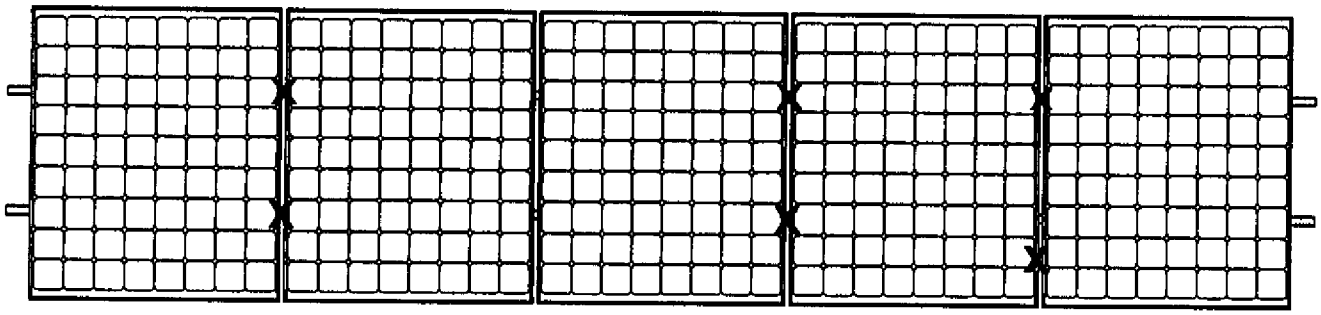
EVEN NUMBER OF MODULES IN ROW



X DENOTES PLACES TO INSTALL WEEB-PMC

C X R = 4 X 1
WEEB-PMC NEEDED = C X R = 4 X 1 = 4

ODD NUMBER OF MODULES IN ROW



X DENOTES PLACES TO INSTALL WEEB-PMC

C X R = 5 X 1
WEEB-PMC NEEDED = [C+1] X R = [5+1] X 1 = 6

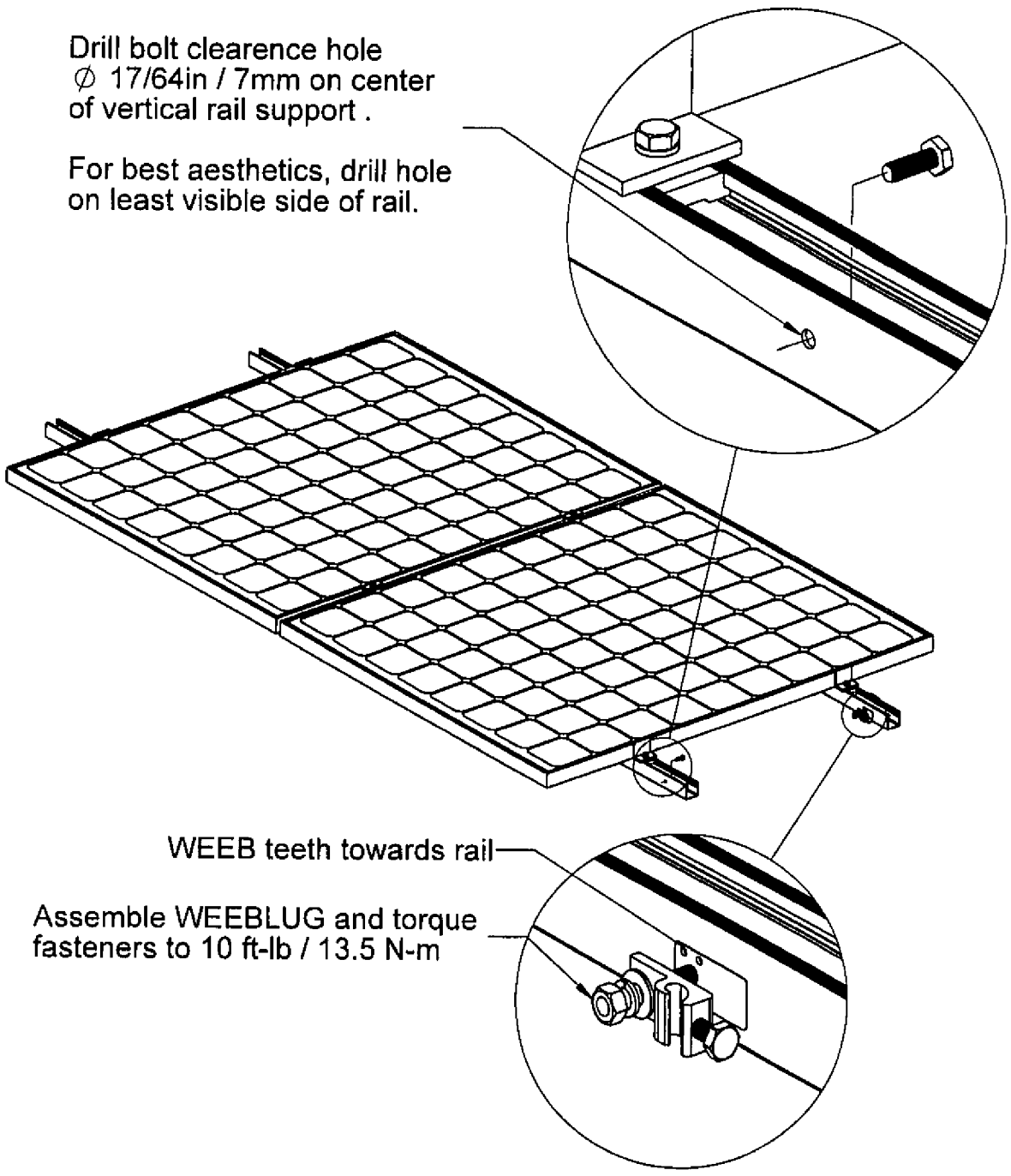
Note:

When replacing a single faulty module, also remove the adjacent module which contacts the same WEEBs as the faulty module. This will ensure that there are never ungrounded modules in the array.

Wiley Electronics LLC. 2006-2007© – All Rights Reserved

WEEBLUG ASSEMBLY

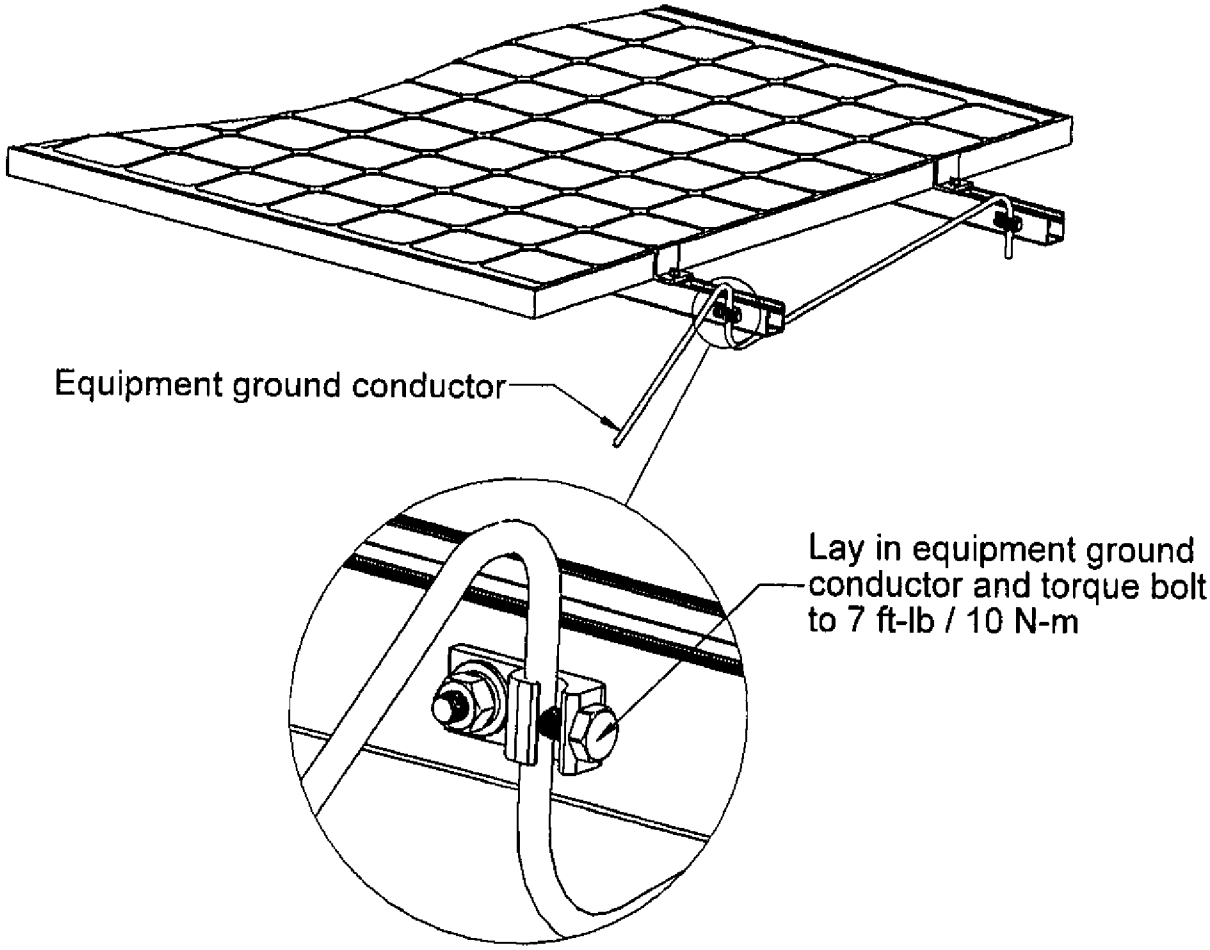
⑦



Important note:

WEEB-6.7 that sits under the WEEBLug is for SINGLE USE ONLY!
Ensure position is correct before tightening.

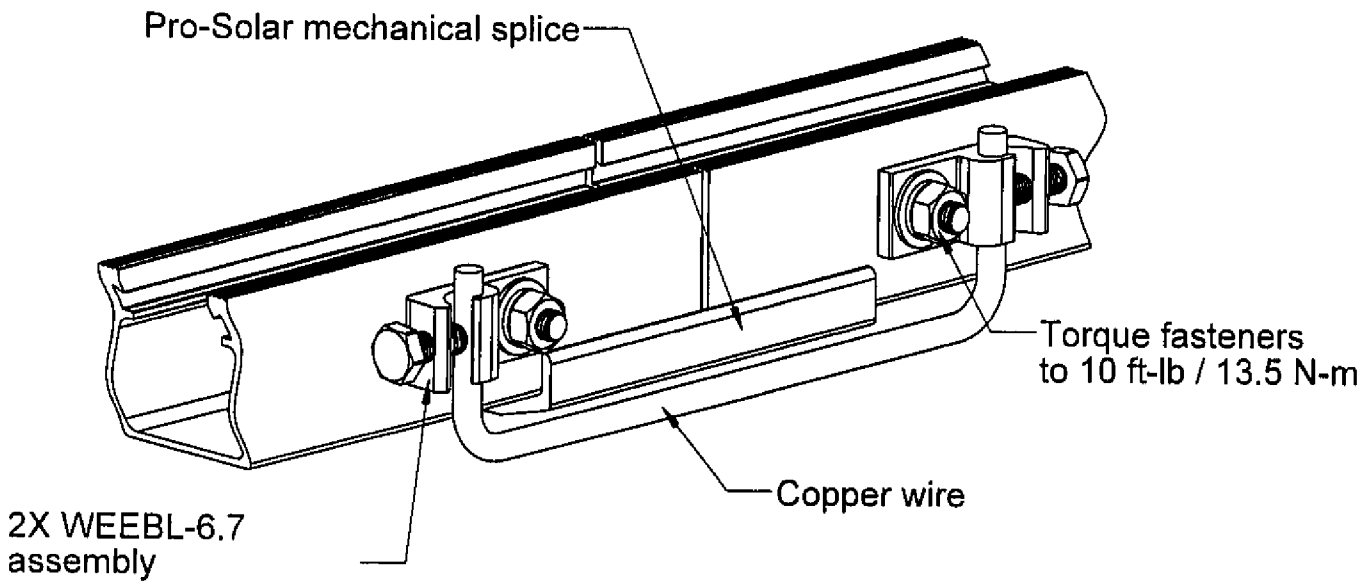
Wiley Electronics LLC. 2006-2007© – All Rights Reserved



Wiley Electronics LLC. 2006-2007© – All Rights Reserved

PMC SPLICE KIT ASSEMBLY

⑨



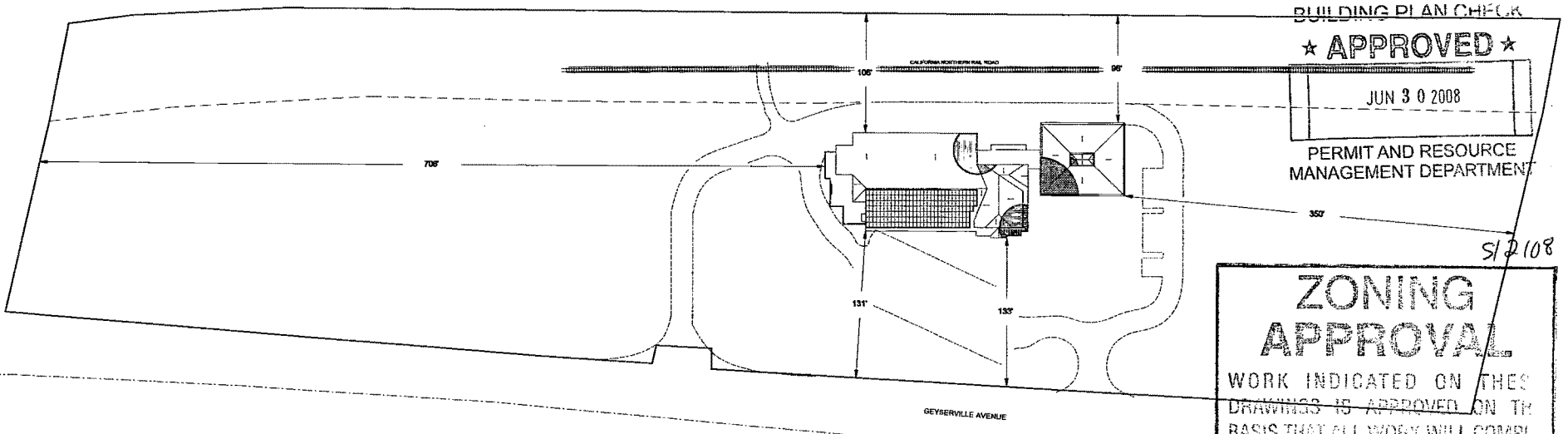
Wiley Electronics LLC. 2006-2007© – All Rights Reserved

CONFIDENTIAL
This drawing and any data, description, and other information contained herein are considered as proprietary and exclusive property of SolarCraft Services Inc. and shall not be published, reproduced, copied, disclosed or used in whole or in part, for any purpose, without the express written consent of SolarCraft Services Inc.

Rev # 1.1

210 SHARP 187W PV-MODULES (ND-187U1F)
ROOF MOUNTED FLUSH
- SHARP ON-ENERGY LOW PRO MOUNTING SYSTEM
ON S5 STANDING SEAM METAL ROOF CLAMPS
5 SMA AMERICA 7000W @ 480/277V, 3-PHASE, 4-WIRE
(SB7000US)

NORTH



BUILDING PLAN CHECK
★ APPROVED ★
JUN 3 0 2008
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

5/2/08

ZONING APPROVAL
WORK INDICATED ON THESE DRAWINGS IS APPROVED ON THE BASIS THAT ALL WORK WILL COMPLY WITH ALL REQUIREMENTS OF THE COUNTY OF SONOMA, WHETHER SHOWN ON THESE DRAWINGS OR NOT.
Scott D. Humpleys
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

New roof mounted Solar array

SOLARCRAFT
SOLAR ENERGY EXPERTS

SOLARCRAFT SERVICES INC.
285 BEL MARIN KEYS BLVD #D
NOVATO, CA 94949
CA LIC 497797

VIMARK, TRIONE VINEYARDS
19550 GEYSERVILLE AVE
GEYSERVILLE CA 95441
APN: 140-050-010

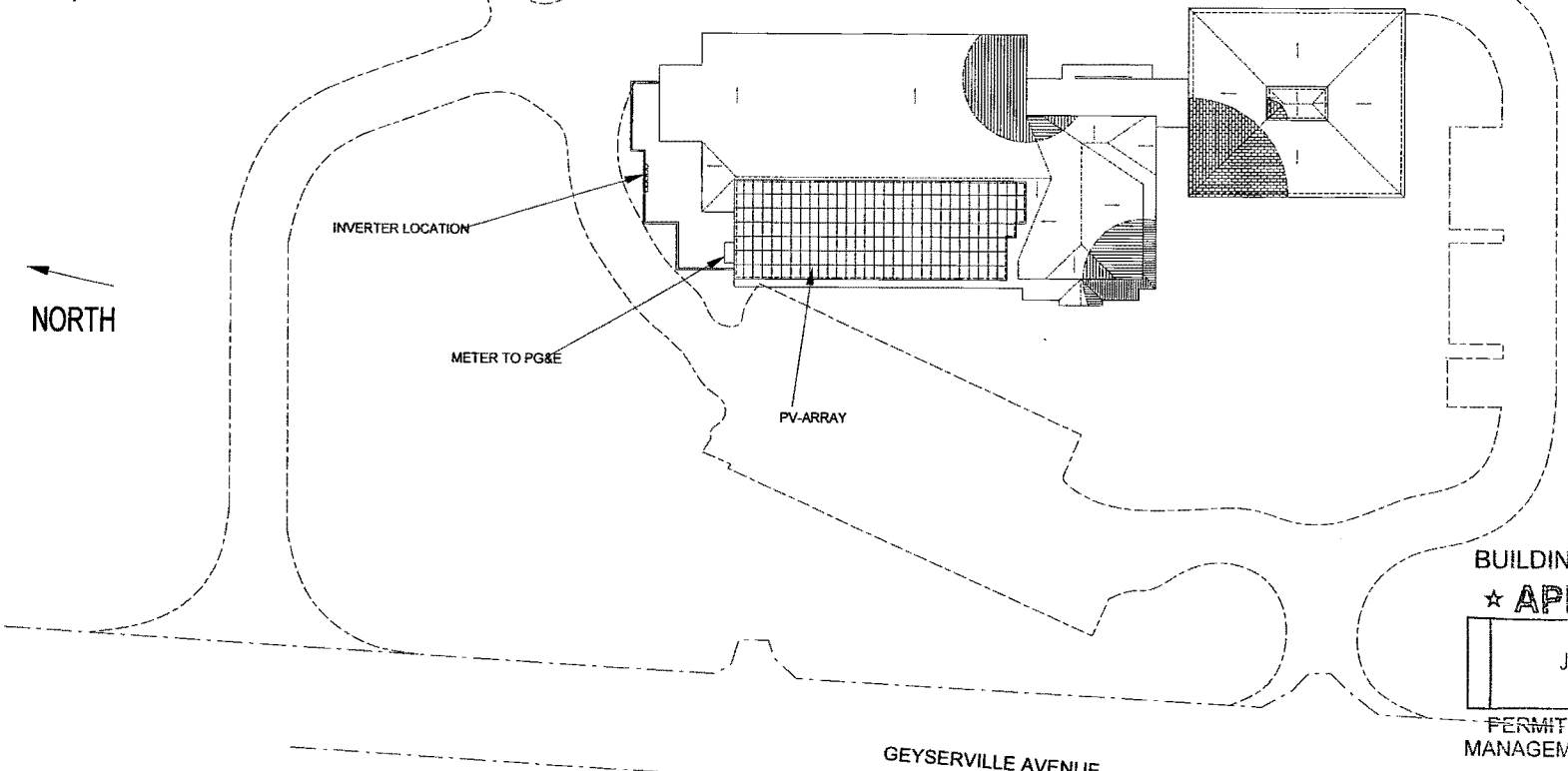
SITE PLOT 1 OF 2
DRAWN BY: SAM PROM
SOLARCRAFT SERVICES INC
415-382-7717

CONFIDENTIAL
This drawing and any data, description, and other information contained herein are considered as proprietary and exclusive property of SolarCraft Services Inc. and shall not be published, reproduced, copied, disclosed or used in whole or in part, for any purpose, without the express written consent of SolarCraft Services Inc.

Rev # 1.1

CALIFORNIA NORTHERN RAIL ROAD

210 SHARP 187W PV-MODULES (ND-187U1F)
ROOF MOUNTED FLUSH
- SHARP ON-ENERGY LOW PRO MOUNTING SYSTEM
ON S5 STANDING SEAM METAL ROOF CLAMPS
5 SMA AMERICA 7000W @ 480/277V, 3-PHASE, 4-WIRE
(SB7000US)



BUILDING PLAN CHECK
★ APPROVED ★
JUN 30 2008
PERMIT AND RESOURCE
MANAGEMENT DEPARTMENT

GEYSERVILLE AVENUE

SOLARCRAFT
SOLAR ENERGY EXPERTS

SOLARCRAFT SERVICES INC.
285 BEL MARIN KEYS BLVD #D
NOVATO, CA 94949
CA LIC 497797

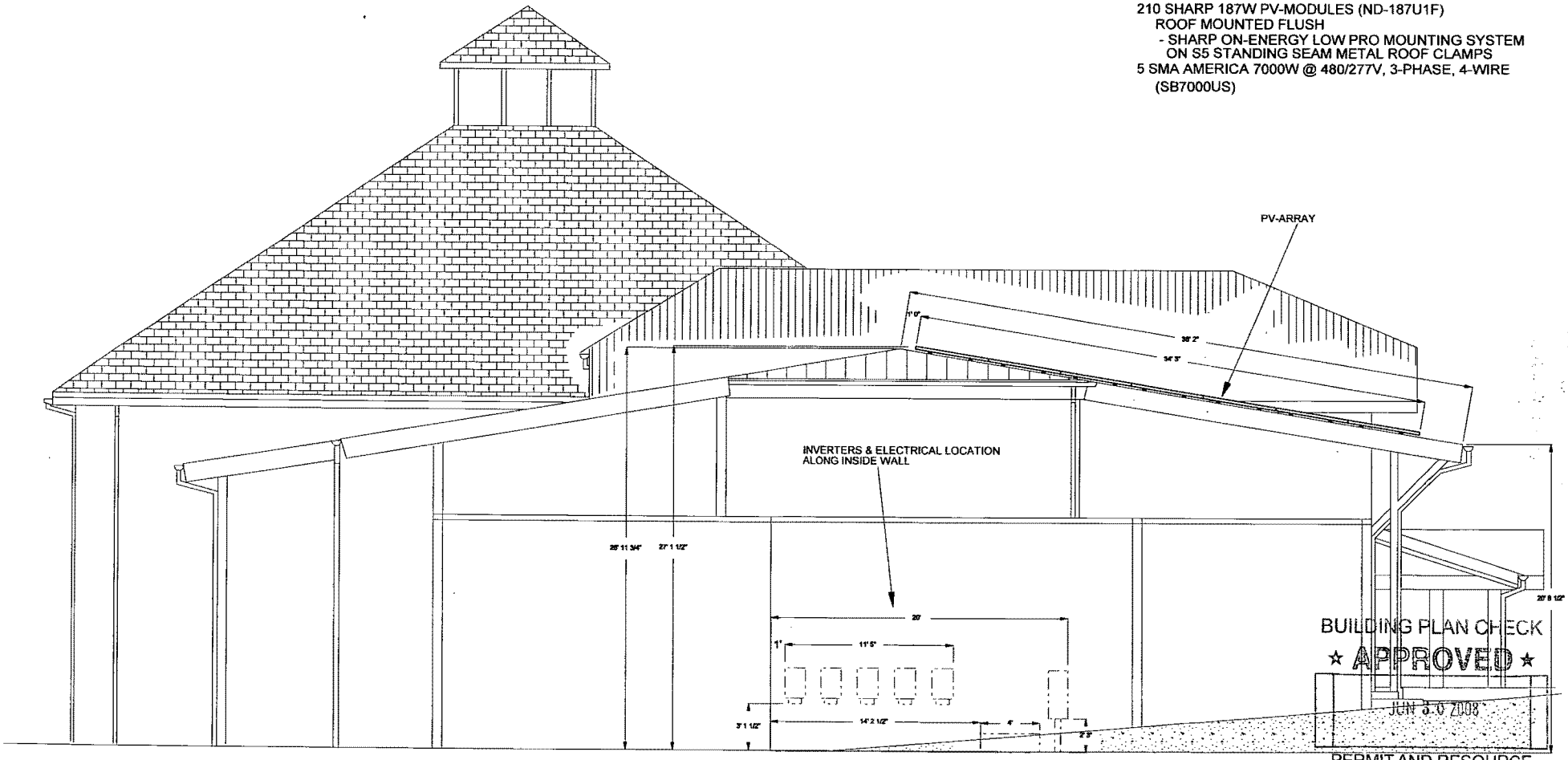
VIMARK, TRIONE VINEYARDS
19550 GEYSERVILLE AVE
GEYSERVILLE CA 95441
APN: 140-050-010

SITE PLOT 2 OF 2
DRAWN BY: SAM PROM
SOLARCRAFT SERVICES INC.
415-382-7717

CONFIDENTIAL
This drawing and any data, description, and other information contained herein are considered as proprietary and exclusive property of SolarCraft Services Inc. and shall not be published, reproduced, copied, disclosed or used in whole or in part, for any purpose, without the express written consent of SolarCraft Services Inc.

Rev # 1.1

210 SHARP 187W PV-MODULES (ND-187U1F)
ROOF MOUNTED FLUSH
- SHARP ON-ENERGY LOW PRO MOUNTING SYSTEM
ON S5 STANDING SEAM METAL ROOF CLAMPS
5 SMA AMERICA 7000W @ 480/277V, 3-PHASE, 4-WIRE
(SB7000US)



SOLARCRAFT
SOLAR ENERGY EXPERTS

SOLARCRAFT SERVICES INC.
285 BEL MARIN KEYS BLVD #D
NOVATO, CA 94949
CA LIC 497797

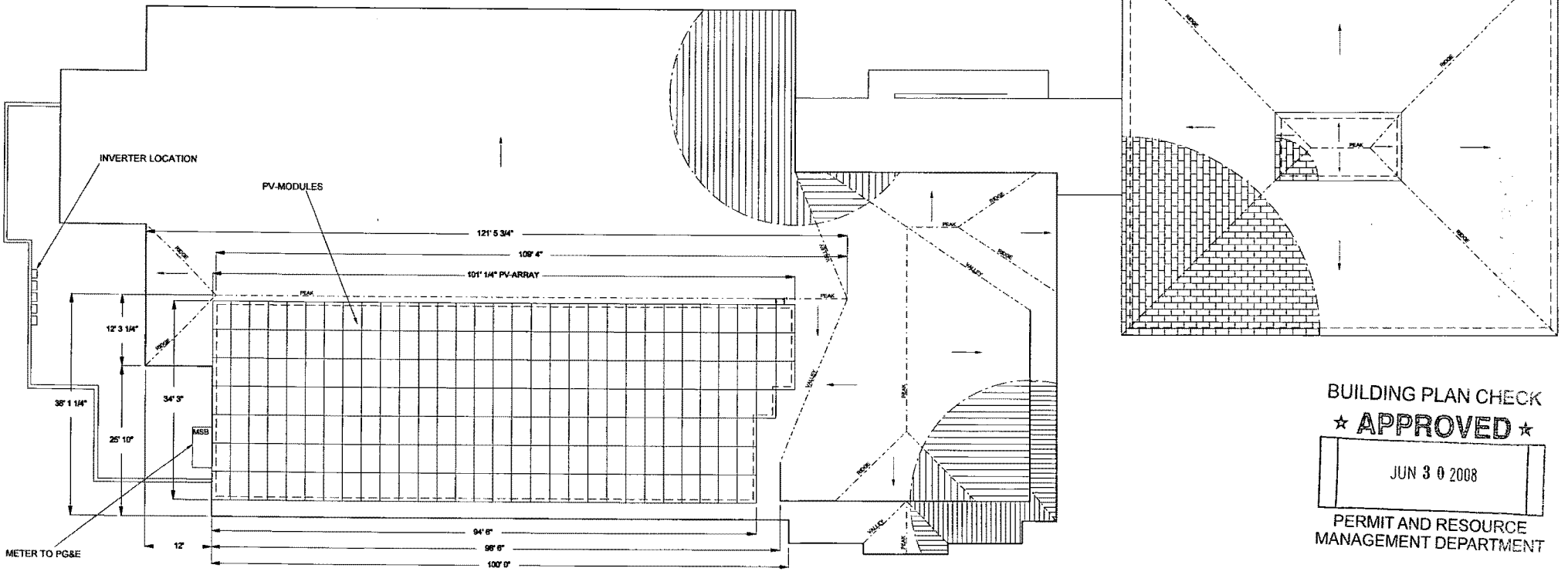
VIMARK, TRIONE VINEYARDS
19550 GEYSERVILLE AVE
GEYSERVILLE CA 95441
APN: 140-050-010

NORTH ELEVATION
DRAWN BY: SAM PROM
SOLARCRAFT SERVICES INC.
415-382-7717

CONFIDENTIAL
This drawing and any data, description, and other information contained herein are considered as proprietary and exclusive property of SolarCraft Services Inc. and shall not be published, reproduced, copied, disclosed or used in whole or in part, for any purpose, without the express written consent of SolarCraft Services Inc.

Rev # 1.1

210 SHARP 187W PV-MODULES (ND-187U1F)
ROOF MOUNTED FLUSH
- SHARP ON-ENERGY LOW PRO MOUNTING SYSTEM
ON S5 STANDING SEAM METAL ROOF CLAMPS
5 SMA AMERICA 7000W @ 480/277V, 3-PHASE, 4-WIRE
(SB7000US)



BUILDING PLAN CHECK
☆ APPROVED ☆
JUN 3 0 2008
PERMIT AND RESOURCE
MANAGEMENT DEPARTMENT

SOLARCRAFT
SOLAR ENERGY EXPERTS

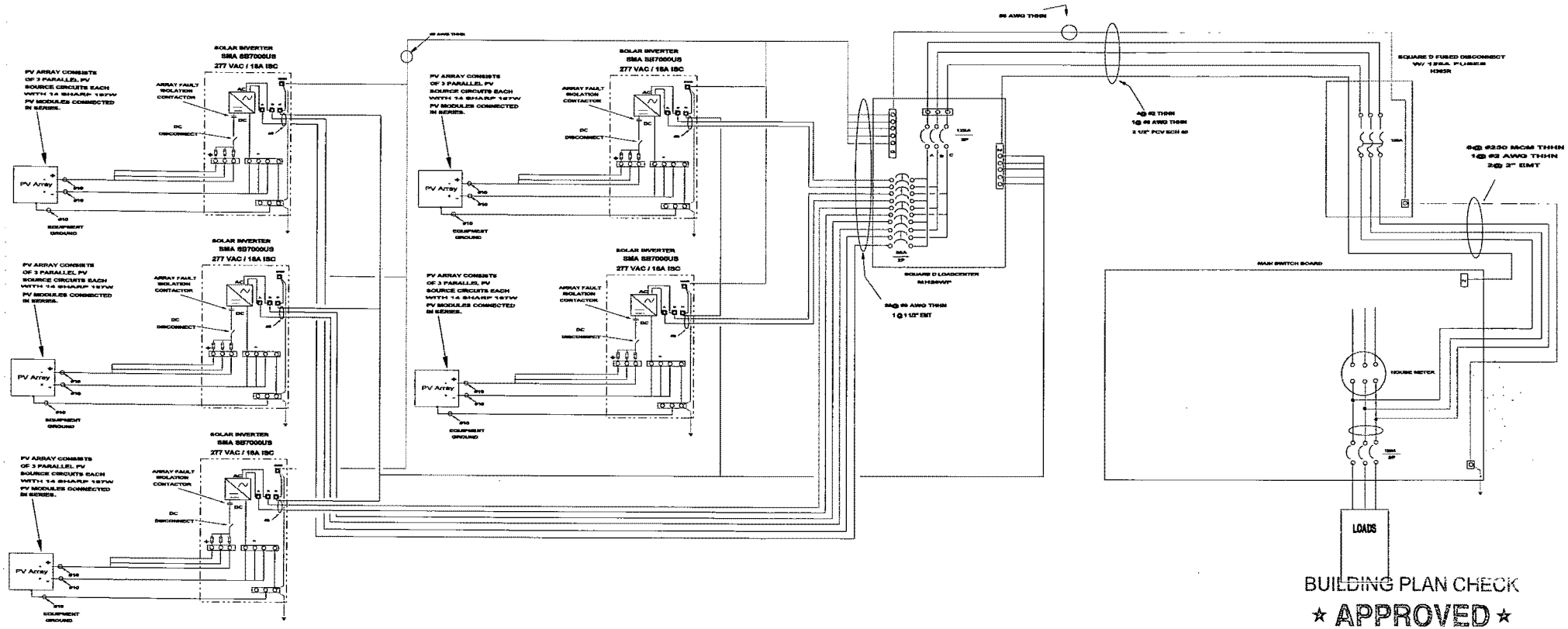
SOLARCRAFT SERVICES INC.
285 BEL MARIN KEYS BLVD #D
NOVATO, CA 94949
CA LIC 497797

VIMARK, TRIONE VINEYARDS
19550 GEYSERVILLE AVE
GEYSERVILLE CA 95441
APN: 140-050-010

ARRAY LAYOUT A.1
DRAWN BY: SAM PROM
SOLARCRAFT SERVICES INC.
415-382-7717

CONFIDENTIAL
This drawing and any data, description, and other information contained herein are considered as proprietary and exclusive property of SolarCraft Services Inc. and shall not be published, reproduced, copied, disclosed or used in whole or in part, for any purpose, without the express written consent of SolarCraft Services Inc.

Rev # 1.1



SOLAR MODULE DETAILS:
SHARP 187W PV-MODULES (ND-187U1F)
OPEN CIRCUIT VOLTAGE= 32.7 VDC
MAXIMUM POWER VOLTAGE= 25.8 VDC
SHORT CIRCUIT CURRENT= 7.99 A
MAX POWER CURRENT= 7.25 A

SOLAR ARRAY DETAILS:
3 STRINGS OF
14 SHARP 187W PV-MODULES (ND-187U1F)
OPEN CIRCUIT VOLTAGE= 457.8 VDC
MAXIMUM POWER VOLTAGE= 361.2 VDC
SHORT CIRCUIT CURRENT= 7.99 A
MAX POWER CURRENT= 7.25 A

COMBINED SOLAR ARRAY DETAILS:
42 SHARP 187W PV-MODULES (ND-187U1F)
OPEN CIRCUIT VOLTAGE= 457.8 VDC
MAXIMUM POWER VOLTAGE= 361.2 VDC
SHORT CIRCUIT CURRENT= 23.97 A
MAX POWER CURRENT= 21.75 A

COMBINED SYSTEM OF 210 PV-MODULES

INVERTER OUTPUT DATA:
AC NOMINAL POWER = 7000 W @ 240 V
AC MAXIMUM OUTPUT POWER = 7000 W
AC MAXIMUM OUTPUT CURRENT = 29 A @ 240 V
AC NOMINAL VOLTAGE RANGE = 211 - 264 V @ 240 V
AC FREQUENCY RANGE = 60 Hz / 59.3 Hz - 60.5 Hz
POWER FACTOR = 1

BUILDING PLAN CHECK
★ APPROVED ★
JUN 30 2008
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

SOLARCRAFT
SOLAR ENERGY EXPERTS

SOLARCRAFT SERVICES INC.
285 BEL MARIN KEYS BLVD #D
NOVATO, CA 94949
CA LIC 497797

VIMARK, TRIONE VINEYARDS
19550 GEYSERVILLE AVE
GEYSERVILLE CA 95441
APN: 140-050-010

ELECTRICAL E.1
DRAWN BY: SAM PROM
SOLARCRAFT SERVICES INC.
415-382-7717

COUNTY OF SONOMA - PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

2550 Ventura Avenue, Santa Rosa, CA 95403 (707) 565-1900 FAX (707) 565-1103

Please Print Your Name: Sam Prom

Date Applied: 5/2/08

INFORMATION WITHIN HEAVY LINE TO BE COMPLETED BY APPLICANT

JOB ADDRESS: 19550 Geyserville Ave PERMIT NUMBER: B1P08-1044 INSPECTION AREA: 3N

SITE LOCATION INFORMATION - PRINT CLEARLY

Site Address: 19550 Geyserville Avenue | City: Geyserville | ZIP: 95441

Cross-Street: Independence lane | APN: 140-050-010 | Project Phone #: (707) 547.1614 | Project Fax #: ( )

Directions:

Subd. Name | Unit # | Lot #

Describe Project: 39.2 KW Solar Electric System, Roof Mounted flush, 210 sharp PV-modules 5.5MM 7000W INverters

Living Area: Bed07-2334 | Garage | Decks | Contract Price: 343,000.00

OWNER NAME AND ADDRESS

Name: Mark Trione, Trione Vineyards

Mailing Address: 19550 Geyserville Avenue

City: Geyserville | State: CA | ZIP: 95441

Day Ph: (707) 547.1614 | Fax: ( )

APPLICANT NAME AND ADDRESS

Name: Sam Prom

Mailing Address: 285-D Bel Marin Keys blvd

City: Novato | State: CA | ZIP: 94949

Day Ph: (415) 382.7717 x31 | Fax: (415) 382.0592

CONTRACTOR INFORMATION

Company Name: SolarCraft Services, INC.

Address: 285-D Bel Marin Keys blvd

City: Novato | State: CA | ZIP: 94949

Day Ph: (415) 382.7717 x31 | Fax: 415 382.0592

OTHER PERSONS (ARCHITECT, ENGINEER, ETC.)

Name:

Address:

City: | State: | ZIP:

Day Ph: ( ) | Fax: ( )

License No: | Exp. Date:

WORKER'S COMPENSATION DECLARATION

I hereby affirm under penalty of perjury one of the following declarations:

☐ I have and will maintain a certificate of consent to self-insure for worker's compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

☒ I have and will maintain worker's compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My worker's compensation insurance carrier and policy number are:

Carrier Redwood fire & casulty

Policy No. WJA37080

(This section need not be completed if the permit is for one hundred dollars ($100) or less).

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the worker's compensation laws of California, and agree that if I should become subject to the worker's compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Exp. Date: 10/1/08 Applicant:

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000), IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

OWNER-BUILDER DECLARATION

I hereby affirm under penalty of perjury that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5, Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractor's License Law (Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500).):

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044 Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his or her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he or she did not build or improve for the purpose of sale.).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law.).

☐ I am exempt under Sec. _____, B & P.C. for this reason _____

Date _____ Owner _____

LICENSED CONTRACTOR'S DECLARATION

I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Lic. Class C46 Lic. No. 497797

Exp. Date 9/30/08 Contractor SolarCraft Services, INC.

ASBESTOS DECLARATION

Written asbestos notification pursuant to Part 61 of Title 40 of the Code of Federal Regulations is required when asbestos exists in buildings, or portions thereof, undergoing demolition. I hereby declare that demolition authorized by this permit is from construction that (☐ does) (☐ does not) contain asbestos, or that ☐ no demolition is authorized by this permit.

I certify that I have read this application and affirm under penalty of perjury that the above information is correct. I agree to comply with all local Ordinances and State laws relating to building construction. I hereby authorize representatives of the County of Sonoma to enter upon the above-mentioned property for inspection purposes. If, after making the Certificate of Exemption for the Worker's Compensation provision of the Labor Code I should become subject to such provisions, I will forthwith comply. In the event I do not comply with the Worker's Compensation law, this permit shall be deemed revoked.

PERMITTEE SIGNATURE

285-D Bel Marin Keys blvd, Novato, CA 94949
ADDRESS CITY ZIP

☒ Contractor ☐ Owner ☐ Other Licensed Professional

CONSTRUCTION LENDING DECLARATION

I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued. (Sec. 3097, Civ. C.).

Lenders Name

Lenders Address

FOR DEPARTMENT USE

Zoning LIA B6-20, Z, SR, VOH File No. PLP06-0056 Acres 7.27

Existing Use/Structures Trione Winery

Proposed Use/Structures new roof mount solar array

Zoning Min. Yard Requirements: Front 30 Left 10 Right 10 Back 20

NOTE: Fire Safe Standards require all parcels greater than 1 Acre to have a min. 30' setback unless mitigated. ☐ Mitigation Required ☐ Address subject to change

Approval for Permit Issuance: By: _____ Date: _____

Approval for Occupancy: By: Scott D. Humpert Date: 5/2/08

Conditions:

Sewer Connection: ☐ Available ☐ Fees Paid

Approved by: _____ Date: _____

Road Encroachment: ☐ Fees Paid

Approved by: _____ Date: _____

Septic System Permit/Clearance # _____

Approved by: _____ Date: _____

Flood Zone: ☐ Yes ☒ No 100 Year Flood Elevation: _____

Site Review _____

Drainage Review:

Approved by: _____ Date: _____

Fire:

Approved by: _____ Date: _____

Code Enforcement Violation ☐ Yes ☒ No Violation # _____

This permit is limited to _____ days.

Work Authorized: New Roof Mounted PV System

☒ Plans Approved ☐ No Plans Subject To Field Inspection

☐ Post FIRM ☐ Alquist Priolo Report Available ☐ Pre FIRM ☐ Geotechnical report Available

Checked By	Date	Type of Construction	Occupancy	No. of Stories	No. of Bedrooms
	6/30/08	VB			

Permit Cleared for Issuance By	Date	Auto. Fire Sprinklers Req'd	No. of Units	Certificate of Occupancy
	7/2/08	NO		

Machine Space for Permit Fee

PAYMENT REC'D $ _____

JUL 03 2008

PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

Final Date:	Inspector:
9/16/08	Rob S.

THIS PERMIT SHALL EXPIRE IN THREE(3) YEARS FROM DATE FEES ARE PAID UNLESS OTHERWISE NOTED BY CODE ENFORCEMENT

Distribution: White - File, Canary - Applicant, Pink - Audit Copy, Blue - Assessor, Cardstock - Inspector

Revised 4/6/05 S:\forms\static\S-007.dot

131) SPECIAL INSPECTION REQUIRED	☐ YES	☒ NO	IF YES, SEE ADDITIONAL SHEET

INSPECTION RECORD	DATE	NAME
101) ROUGH GRADING		
103). FOUNDATION		
FORMS/SETBACK		
FOOTING		
WALLS		
106) UFER GROUND #		
104) CAISSONS/PIERS		
105) SLAB		
107) UNDERGROUND UTILITIES		
110) MASONRY		
109) RETAINING WALLS		
113) FIREPLACE		
FOOTING		
HEARTH/PROTECTION		
THROAT		
114) CHIMNEY		
120) UNDERFLOOR/UNDERSLAB		
115) HYDRONICS		
116) U/F ELECTRICAL		
117) U/F MECHANICAL		
118) U/F PLUMBING		
119) U/F FRAMING		
139) U/F INSULATION		
126) SHEAR WALLS		
☐ INTERIOR ☐ EXTERIOR		
127) DIAPHRAGMS		
☐ ROOF ☐ FLOOR		
134) SIDING/SHEATHING		
125) HOLD DOWNS		
132) CLOSE-IN		
122) ROUGH ELECTRICAL		
123) ROUGH MECHANICAL		
124) ROUGH PLUMBING		
128) ROUGH FRAME		
160) SMOKE DETECTORS		
139) INSULATION		
142) WALLBOARD		
143) FIREWALLS		
135) STUCCO/PLASTER		
☐ LATH ☐ SCRATCH		
137) ROOFING		
130) TUB/SHOWER PAN		
162) FIRE DAMPERS/DOORS		
164) SUSPENDED CEILING		
☐ ROUGH ELEC. ☐ ROUGH MECH.		
165) EXITING - RAMPS/STAIRS		
163) HANDRAILS/GUARDRAILS		
CORRIDORS/DOORS		
166) ACCESSIBILITY COMPLIANCE		
144) WATER TANKS		
☐ SLAB ☐ WALLS		
170) TEMPORARY OCCUPANCY		
171) TEMPORARY ELECTRICAL		
172) TEMPORARY GAS		
174) ELECTRIC METER AUTHORIZATION		
152) PANEL BOARDS/SERVICE		
189) SEPTIC ELECTRIC FINAL		
175) GAS METER AUTHORIZATION		
153) GAS PRESSURE TEST		
HOUSE YARD		
190) MANUF. HOME FOUNDATION		
191) MANUF. HOME INSTALLATION		
CONTINUITY		
STAIRS/SKIRTS		
RIDGE BOLTING		
193) MANUF. HOME COND. FINAL		
SWIMMING POOLS		
194) PRE-GUNITE		
195) PRE-DECK		
196) PRE-PLASTER/FENCE		
197) VINYL/FIBERGLASS POOL EXCAVATION		
102) GRADING FINAL	9/16/08	Rob S
176) ELECTRICAL FINAL		
177) MECHANICAL FINAL		
178) PLUMBING FINAL		
199) FINAL	9/16/08	Rob S
OCCUPANCY (OK TO OCCUPY)		

REMARKS

(199) NOT READY - ALSO NEED FIRE FINAL AND ACCESS TO ALL AREAS 9.16.08 R

650) SUSMP INSPECTION			
651) NPDES EROSION COMPLIANCE			
652) NPDES SEDIMENT COMPLIANCE			
653) NPDES DOCS/SWPPP			
FIRE INSPECTION REQUIRED ☒ Yes ☐ No		DATE	NAME
759) KNOX BOX			
760) PROPANE TANK HOLD DOWNS			
770) SPRINKLER FINAL			
771) ABOVEGROUND HYDROSTATIC			
772) UNDERGROUND HYDROSTATIC			
773) UNDERGROUND FLUSH			
774) THRUST BLOCKS			
775) PIPE WELD			
776) HYDRANTS/APPLIANCES			
777) PUMP ACCEPTANCE			
778) WATER SUPPLY/TANK			
779) ALARM SYSTEM			
780) HOOD & DUCT SYSTEM			
781) ABOVEGROUND TANK/DISPENSER			
198) FIRE FINAL			

CLEARANCES:

FIRE ☐ Local ☐ County

HEALTH DEPARTMENT

ZONING

SANITATION

PERMIT #

PLAN RETENTION REQUIRED?
☐ Yes ☐ No