SUNFRAME MICRORAIL
TILE REPLACEMENT FLASHING

INSTALLATION & APPLICATION GUIDE

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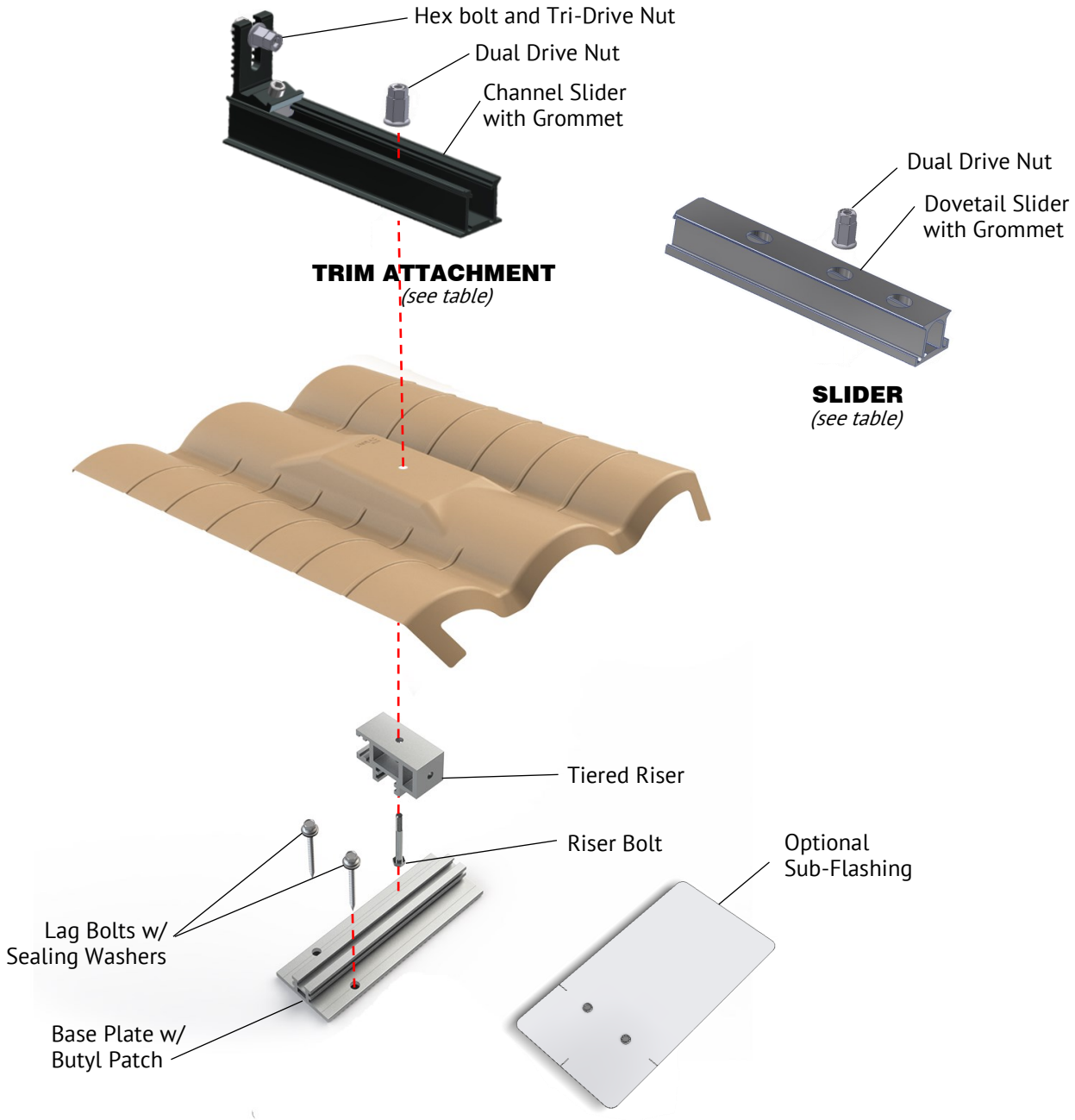


TECHNICAL SPECIFICATIONS

MATERIAL TYPES

All Extruded Components:
6005A-T61 or 6061-T6 Aluminum

Tile Flashing & Subflashing (Optional):
5000 Series Aluminum Sheet

Hardware: 300 Series Stainless Steel

TOOLS REQUIRED OR RECOMMENDED

- Marker/Crayon
- String Line
- Measuring Tape
- Drill
- Pilot Drill Bit
- Ratchet/Driver
- 1/2" Socket
- 1/4" Hex Drive

ATTACHMENT KIT #	DESCRIPTION	FINISH
00520TR	Trim Attachment	Dark Anodize
00527TR	Slider	Mill

FLASHKIT PART #	TILE SHAPE	TILE COLOR
005TRFA	Flat	Adobe
005TRFD	Flat	Charcoal
005TRFM	Flat	Mill
005TRSA	Spanish	Adobe
005TRSD	Spanish	Charcoal
005TRSM	Spanish	Mill
005TRWA	W	Adobe
005TRWD	W	Charcoal
005TRWM	W	Mill

SUB-FLASHING #	TILE SHAPE	FINISH
004TRSF	All	Mill

TILE REPLACEMENT CAPACITIES AND ENGINEERING

Refer to engineering report tables for tested allowable loads. Refer to local AHJ to determine the correct code (ASCE 7-05 or 7-10), wind speed and snow load. It is the responsibility of the installer to ensure these mounting attachments are appropriate for the application. Please contact your 3rd party engineer for more information.

ENGINEERING GUIDE LIMITATIONS

- Flush roof installations only
- Roof slope must be 0-45 degrees (0/12 - 12/12 pitch)
- Surrounding ground area must not slope more than 10 degrees
- Location must fall into Exposure Category B or C

Please refer to the Sunframe MicroRail Installation Manual for proper installation of the Sunframe MicroRail system. Unirac Flashkit Tile Replacements are intended to replace Sunframe MicroRail Flashkits in the system. All connections from microrail attachment to sliders through final installation should be installed and torqued per specifications detailed in the Sunframe Microrail Installation Manual.

Please refer to www.unirac.com in the Technical Support section for the Sunframe MicroRail D&E guide which should be used in installations that do not comply with the limitations above.

SAFETY:

Observe all applicable OSHA safety guidelines. Installation of PV solar modules, electrical systems, and racking systems involves handling components with sharp metal edges. Rules regarding the use of gloves and other personal protective equipment (PPE) should observed.

FIGURE 1: Lag pull-out (withdrawal) capacities (lbs) in typical roof lumber (ASD)

	Specific Gravity	Lag Screw Specifications 5/16" shaft,* per inch thread depth
Douglas Fir, Larch	0.50	266
Douglas Fir, South	0.46	235
Engelmann Spruce, Lodgepole Pine (MSR 1650f & higher)	0.46	235
Hem. Fir, Redwood (Close Grain)	0.43	212
Southern Pine	0.55	307
Spruce, Pine, Fir	0.42	205
Spruce, Pine, Fir (E of 2million PSI & higher grades of MSR & MEL)	0.50	266

SOURCES: AMERICAN WOOD COUNCIL, NDS 2005, TABLE 1

Figure 1 (for reference only) Refer to latest AWC, NDS data to select a lag bolt embedment depth to satisfy your Uplift Point Load Force (lbs), requirements. It is the installer's responsibility to verify that the substructure and attachment method is strong enough to support the maximum point loads calculated.

NOTES:
(1) Thread must be embedded in the side grain of a rafter or other structural member integral with the building structure.
(2) Lag bolts must be located in the middle third of the structural member.
(3) This table does not include shear capacities. If necessary, contact a local engineer to specify lag bolt size with regard to shear forces.
(4) Install lag bolts with head and washer flush to surface (no gap). Do not over torque.
(5) Withdrawal design values for lag screw connections shall be multiplied by applicable adjustment factors if necessary. See table 10.3 in the American Wood Council NDS for Wood Construction

LAYOUT

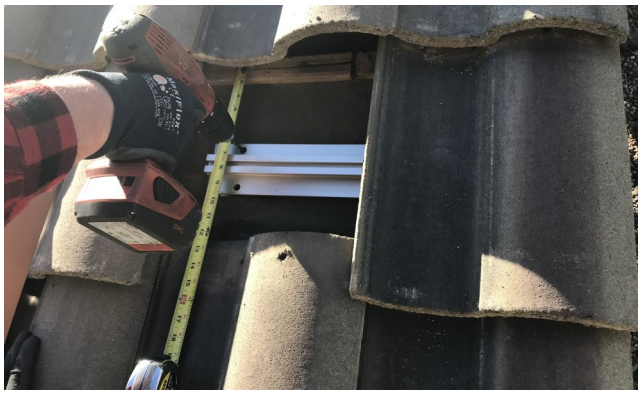
Determine perimeter of array. Mark locations on tiles where attachments are expected to be. Determine allowable overhangs per design rules on page 8.

LOCATE RAFTER AT ONE EDGE OF ARRAY

Remove tile located at one of the front corners of array and locate the nearest rafter.

VERIFY FIT OF BASE

Determine if rafter location will allow base to be positioned so that riser aligns with hole in flashing. If needed, remove adjacent tile and relocate base for proper fit. *(see page 7 for dimensions and limits)*



ALIGN BASE WITH RAFTER & DRILL PILOT HOLES:

Align tile replacement base mounting holes over rafter and adjust position north-south so riser will align with hole in flashing. Mark and drill pilot holes.

PREPARE UNDERLAYMENT & BUTYL:

Clear any dust or debris from underlayment and peel to remove sealing patch release liner.

INSTALL BASE:

Optional: Place Tile Replacement Sub Flashing

Align base over pilot holes and install base using supplied lag screws and sealing washers.

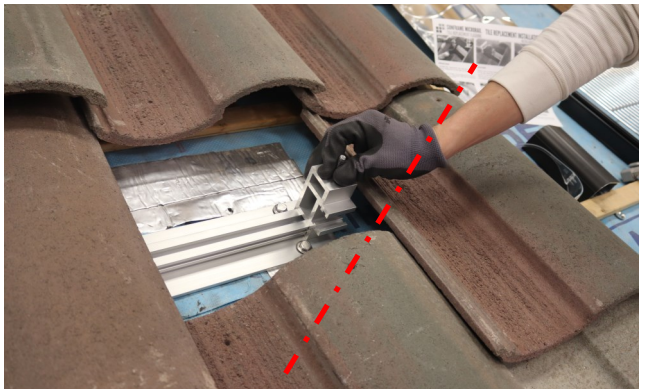
PREPARE RISER:

Assemble tile replacement riser and bolt using the correct configuration for tile type. (S-Tile Configuration Shown)

The Universal Tile Base can be configured for all three tile types. See: Tile Configurations Page (Can be completed before Base Installation;)

INSTALL TRIM ATTACHMENT ON 1ST ROW

Attach channel slider/L-Foot assembly to riser bolt with tri-drive nut. Fastening assembly locks flashing, riser, and base together to achieve full capacity. Tighten nut to 20ft-lbs torque.



PLACE RISER:

Position riser on correct mating rail surfaces of base for tile type. Rotate bolt to slide as necessary. Align position of riser with hole location in replacement flashing (this will be at peak of tile course for the S-tile configuration)

ALTERNATE ATTACHMENT POSITIONS AVAILABLE

Trim attachment assembly may be positioned as required using one of the available holes in the channel slider. Relocate the rubber grommet if needed to the hole being used for attachment.

INSERT TILE FLASHING:

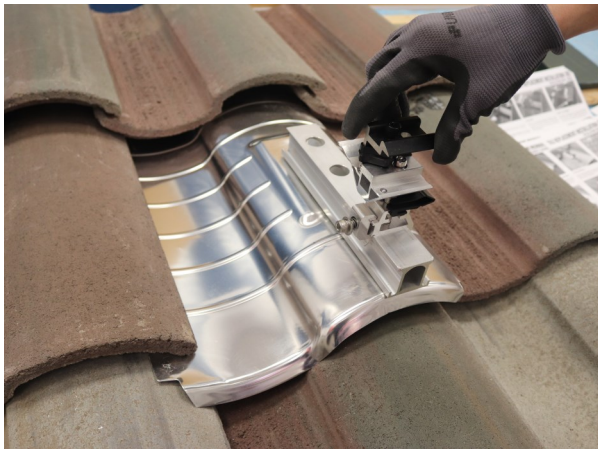
Lift upslope and adjacent tiles to insert tile flashing into tile course. Position replacement flashing over riser bolt threads and insert into replacement flashing. Riser can slide freely to position with mating flashing hole.

INSTALL DOVETAIL SLIDER FOR MICRORAIL

Attach dovetail slider to riser bolt with tri-drive nut in same manner as trim attachment. Tighten nut to 20ft-lbs torque.

ALTERNATE ATTACHMENT POSITIONS AVAILABLE:

Dovetail sliders may be positioned as required using one of the available holes in the slider. Relocate the rubber grommet if needed to the hole being used for attachment.



ATTACH MICRORAIL

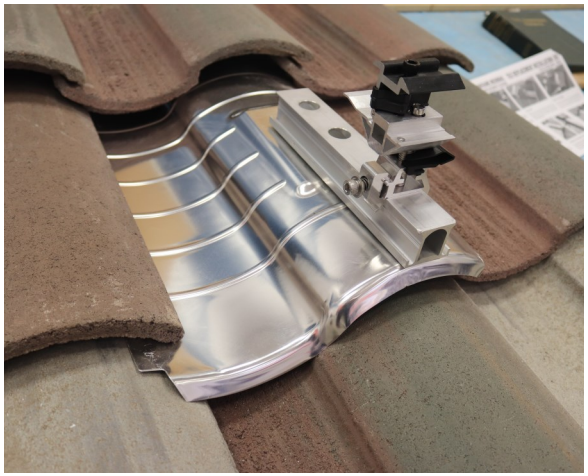
Click microrail assembly on to dovetail slider. Do not tighten dovetail bolt until modules are positioned and clamp bolts are tightened.

INSTALL REMAINDER OF ARRAY ATTACHMENTS

Install the remaining tile replacement attachments, flashings, and SFM attachments.

ADJUST L-FEET ON SOUTH ROW

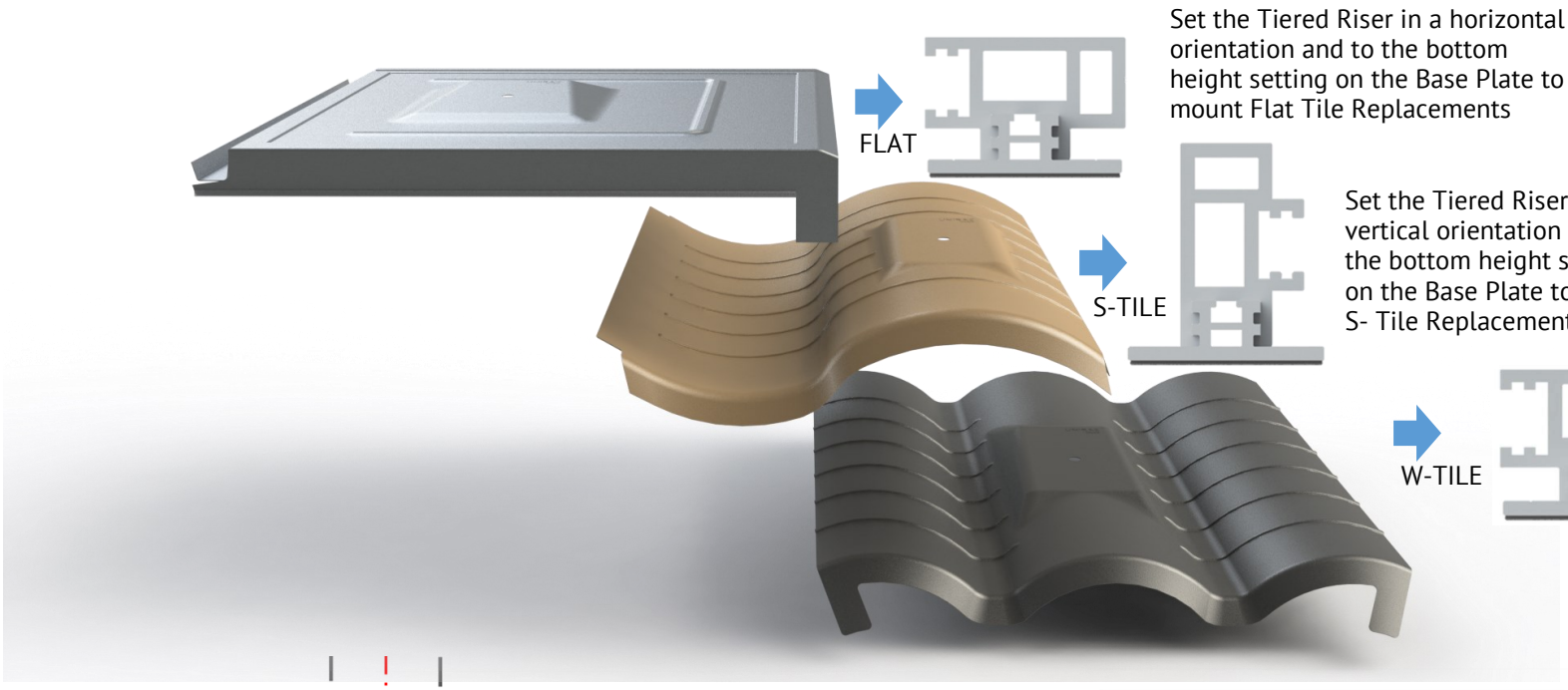
Adjust L-feet along front row(s) where trim rail will be attached. L-feet should be adjusted to achieve proper alignment of trim rail and as needed to position modules at each rows.

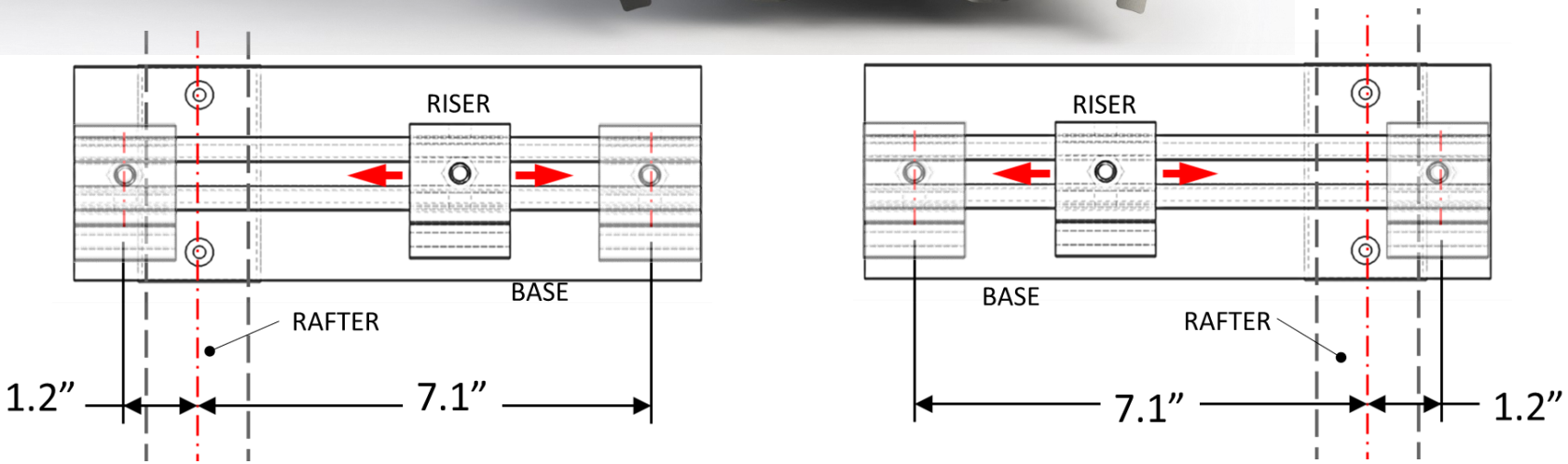


ADJUST MICRORAILS

In coordination with adjustment of trim rail L-foot, adjust microrails at each module row to allow for positioning and attachment as each module row is installed. (Refer to SFM installation manual)

INSTALL TRIM RAILS, MODULES AND REMAINDER OF SYSTEM COMPONENTS PER SFM INSTALLATION MANUAL INSTRUCTIONS.





ADJUSTMENT RANGE OF RISER RELATIVE TO RAFTER ATTACHMENT LOCATION

(base may be positioned with rafter attachment holes on either the left or right hand side)`

NOTE: Refer to SFM D&E guide for design rules, load capacities and pressure tables.