

**TOUGH TRAC™**

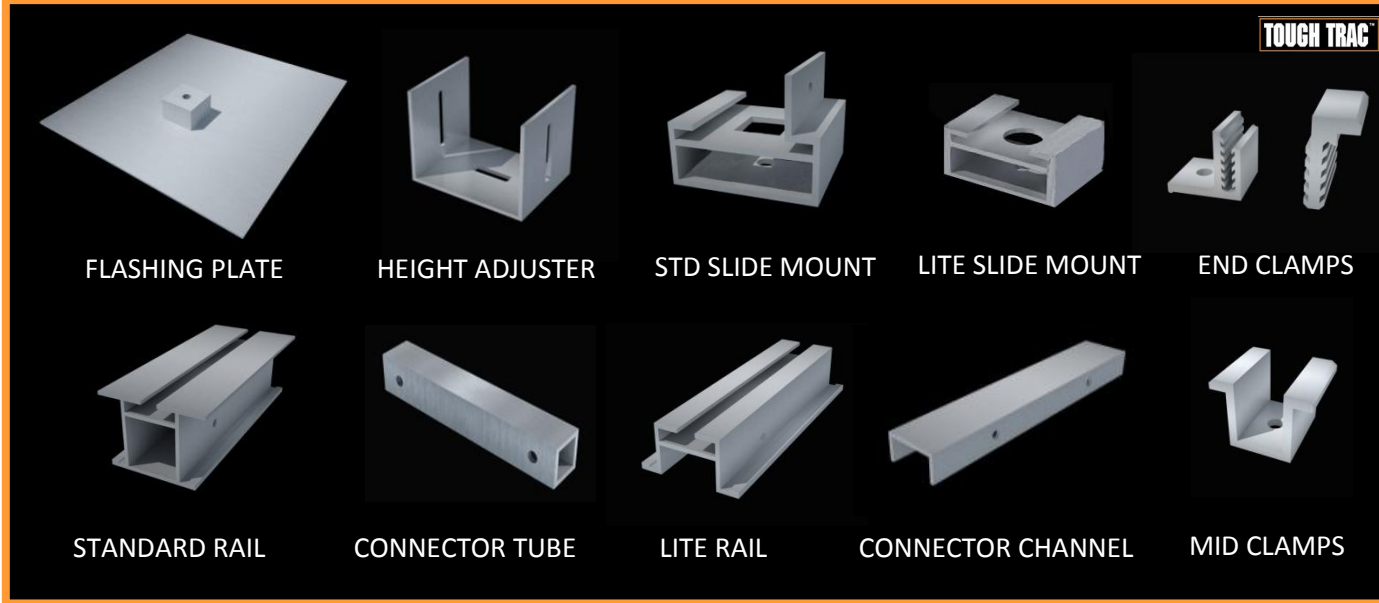
PITCH ROOF SET INSTALLATION MANUAL 2011



Photo: Courtesy of [www.mariahandadam.com](http://www.mariahandadam.com)

**TOUGH TRAC™**

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FLASHING PLATE

HEIGHT ADJUSTER

STD SLIDE MOUNT

LITE SLIDE MOUNT

END CLAMPS

STANDARD RAIL

CONNECTOR TUBE

LITE RAIL

CONNECTOR CHANNEL

MID CLAMPS

Pitch Roof System comprises of the following parts:

LITE RAIL

- Flashing Plates
- Height Adjusters
- Lite Rail Slide Mounts
- Lite Rail
- Connector Channels
- Top Mount End Clamps
- Top Mount Mid Clamps
- Rail T or Sq. Bolts

STANDARD RAIL

- Flashing Plates
- Height Adjusters
- Slide Mounts
- STD Rail
- Connector Tubes
- Top Mount End Clamps
- Top Mount Mid Clamps
- Rail T or Sq. Bolts



Installer Responsibilities

- Inquire and comply with all local, state, and national building codes that apply to this installation and solar panel installation.
- Inspect and determine that all roofs, rafters, trusses, and all structural support can handle and support the solar array and live load conditions.
- Consult and ensure that this mounting solution is appropriate for your particular installation.
- Consult and ensure your lag bolt size is correct with your particular installation.
- To use only TOUGH TRAC™ supplied parts for your installation. Substituting parts may void the warranty.
- Ensure all electrical connections are compliant to local electrical codes.



***Tough Trac Recommended spanning for Standard Rail and Lite Rail for Pitch Roof Installation on typical rafters.***

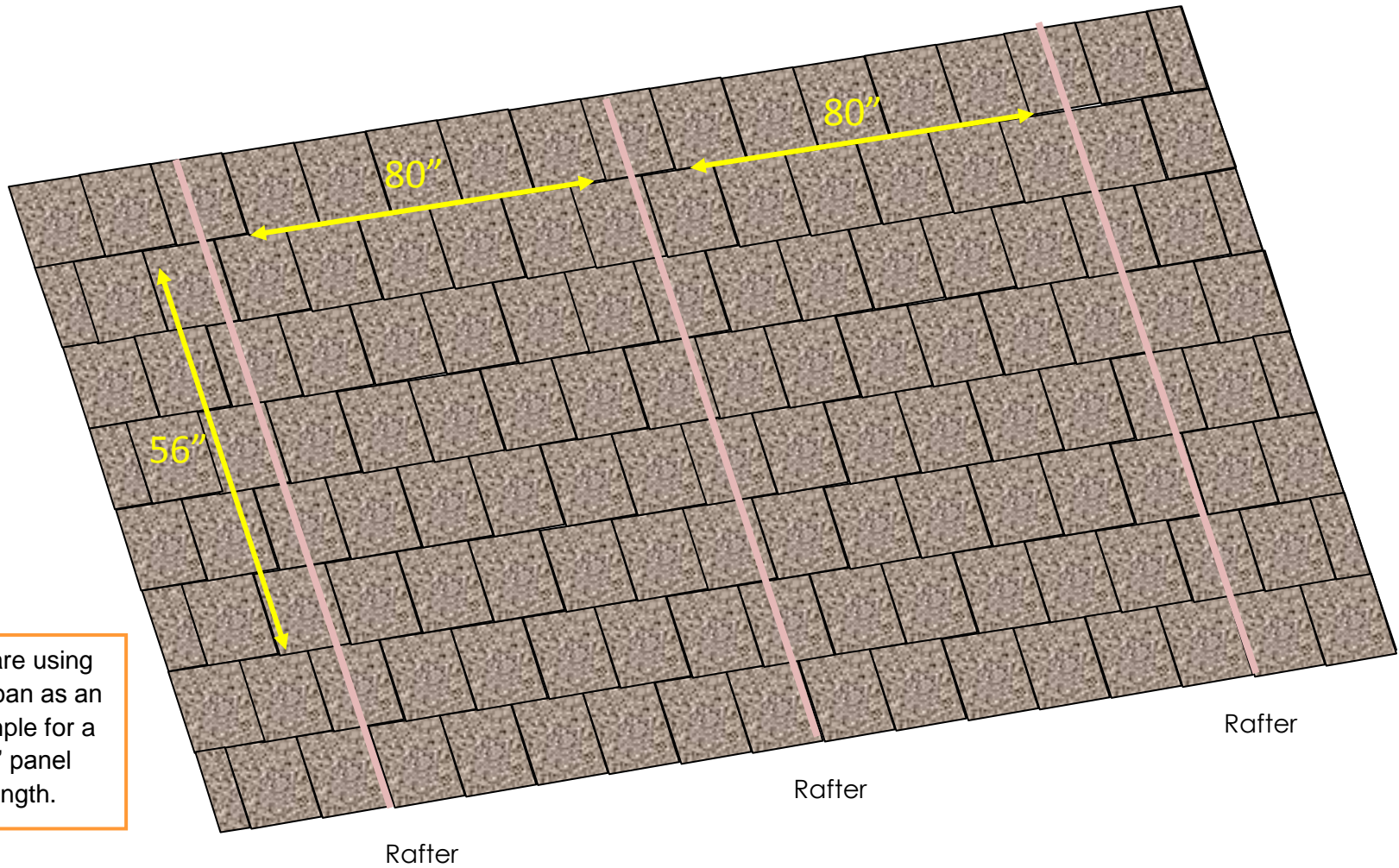
***For full PE Certified Letter and Calculation contact us.***

<u>RAIL</u>	<u>WIND SPEED MPH</u>	<u>MAX RAIL SPAN FT.</u>
STANDARD	90	96"
STANDARD	120	80"
LITE	90	48" - 64"
LITE	120	32" - 48"

***CONDITIONS: EXPOSURE B AT 25' ABOVE GRADE, WITH SNOW LOAD OF 30 PSF. 2 RAILS PER PANEL.***

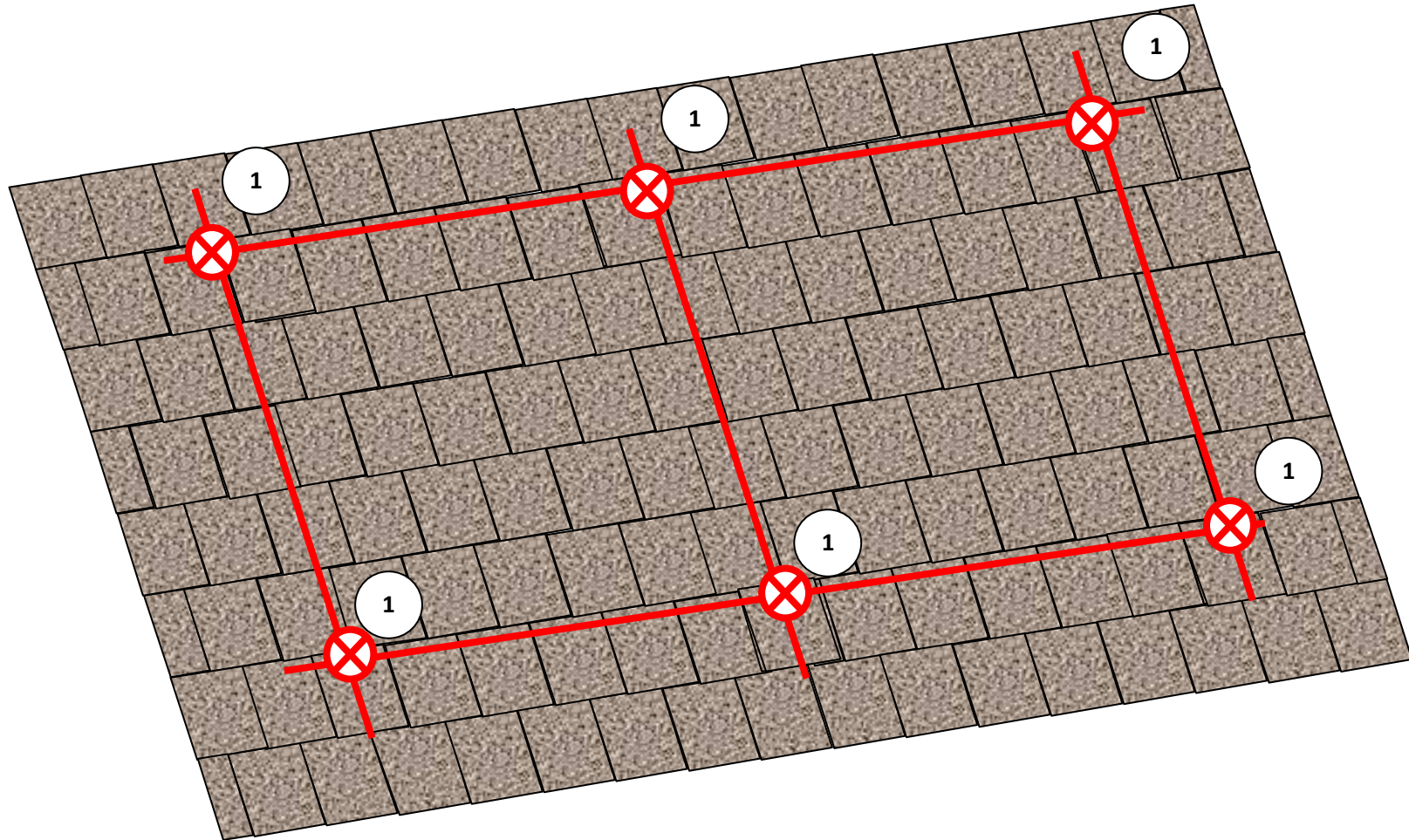
**\* Important\* Consult your Architect, Engineer, or Installer for your correct span width according to your roof design and loads.**

We are using 80" span as an example and showing only 4 panels mounted

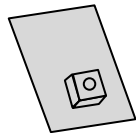


We are using 56" span as an example for a 65" panel length.

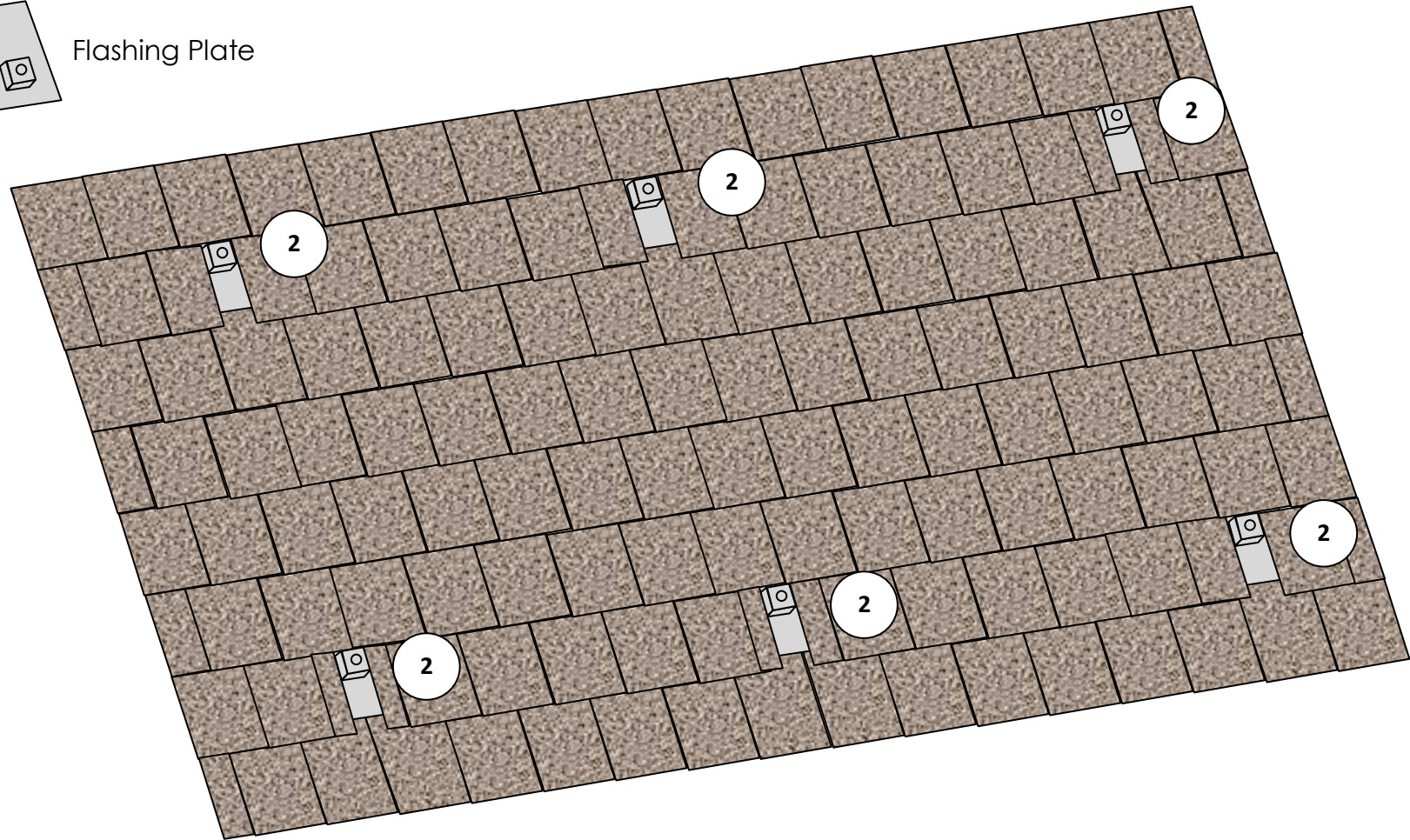
1. Snap lines or run string and pre-drill holes into roof and rafter at your marked locations.



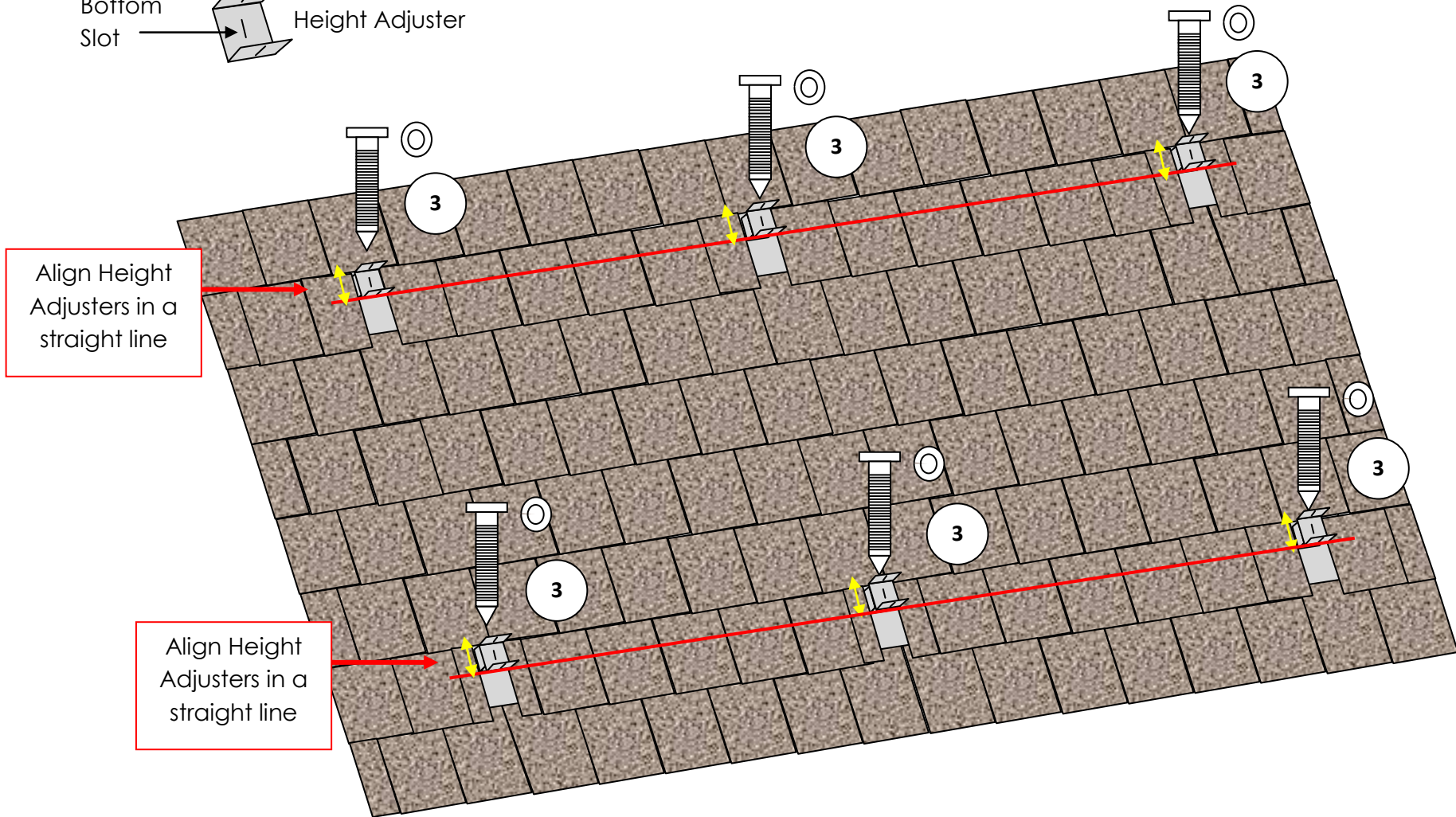
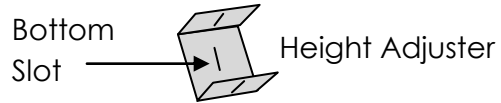
2. Slide Flashing Plate into roof shingles and cut away around lift block if needed.



Flashing Plate

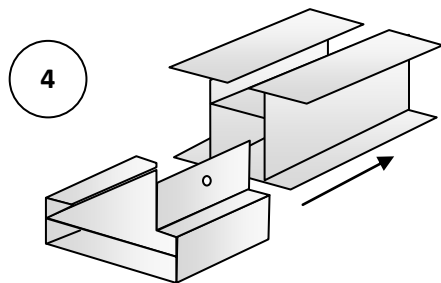


3. Place Height Adjuster on top of lift block. Fasten Height Adjuster and Flashing Plate together using 3/8" lag bolt and washer. Use bottom slot on Height Adjuster for adjustments if pre-drilled holes are not aligned.

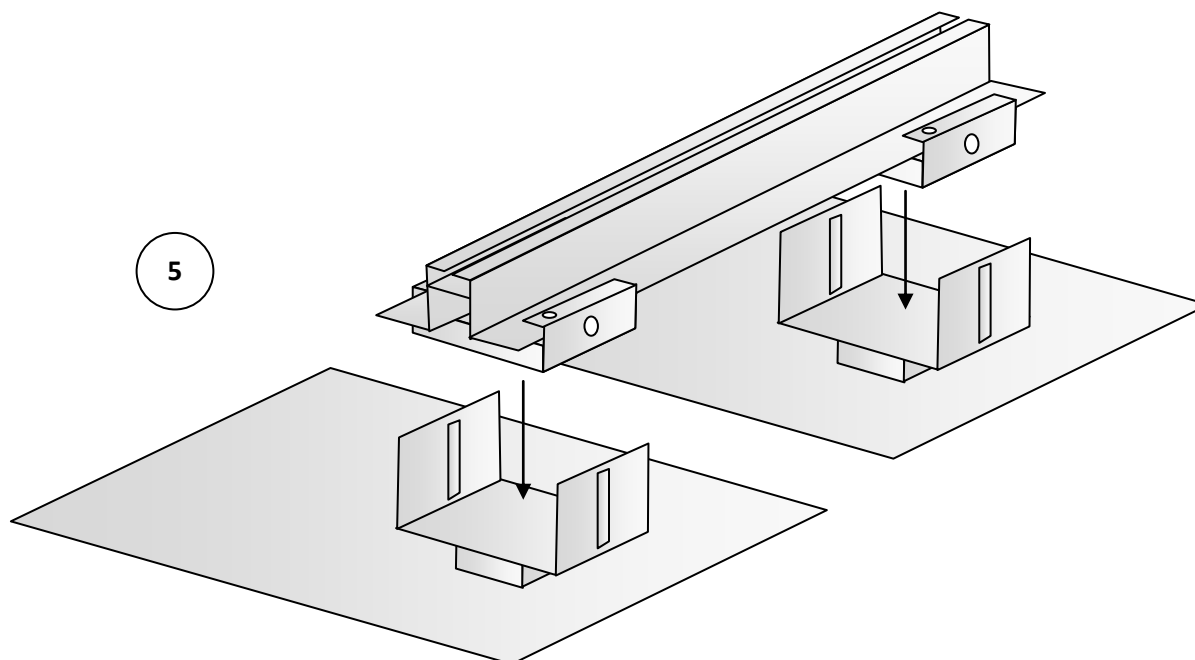
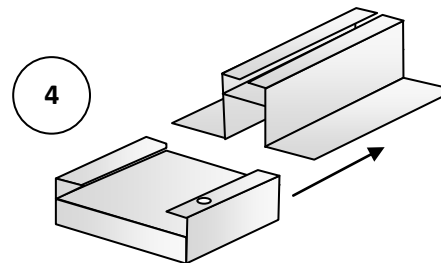


4. Attach Slide Mount onto bottom of rail.
5. Place rail and Slide Mounts onto Height Adjusters.

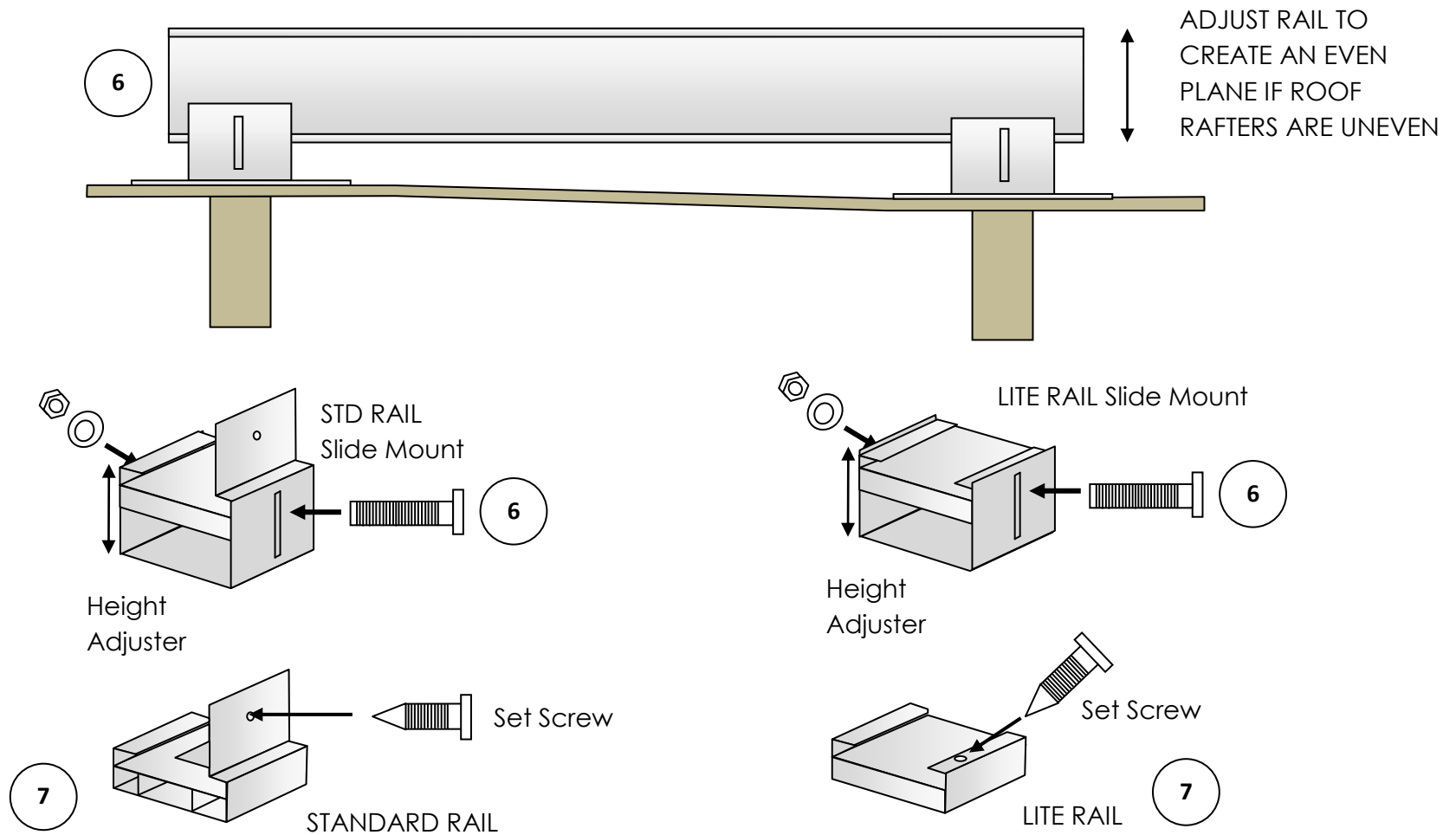
STANDARD RAIL



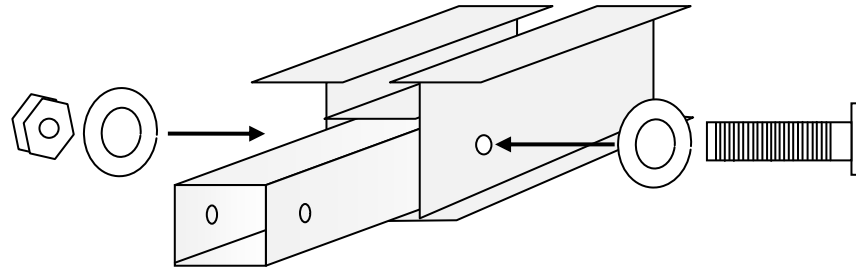
LITE RAIL



6. Adjust all Slide Mounts to create an even plane in height and fasten using 1/4"x 4" bolt and washer.
7. When the location of the rail is desired, pre-drill 1/8" hole if necessary and tightens set screw.

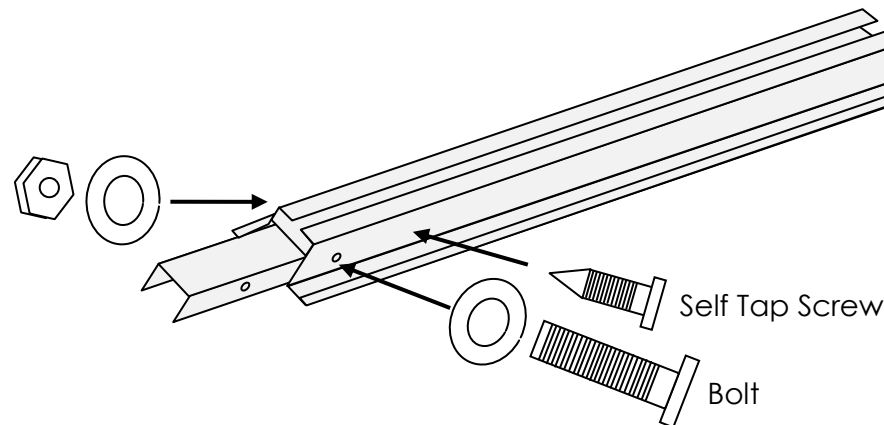


Use Connector Tubes to connect STD Rails using  $\frac{1}{4}$ " x 2" bolts, washers, and nuts.



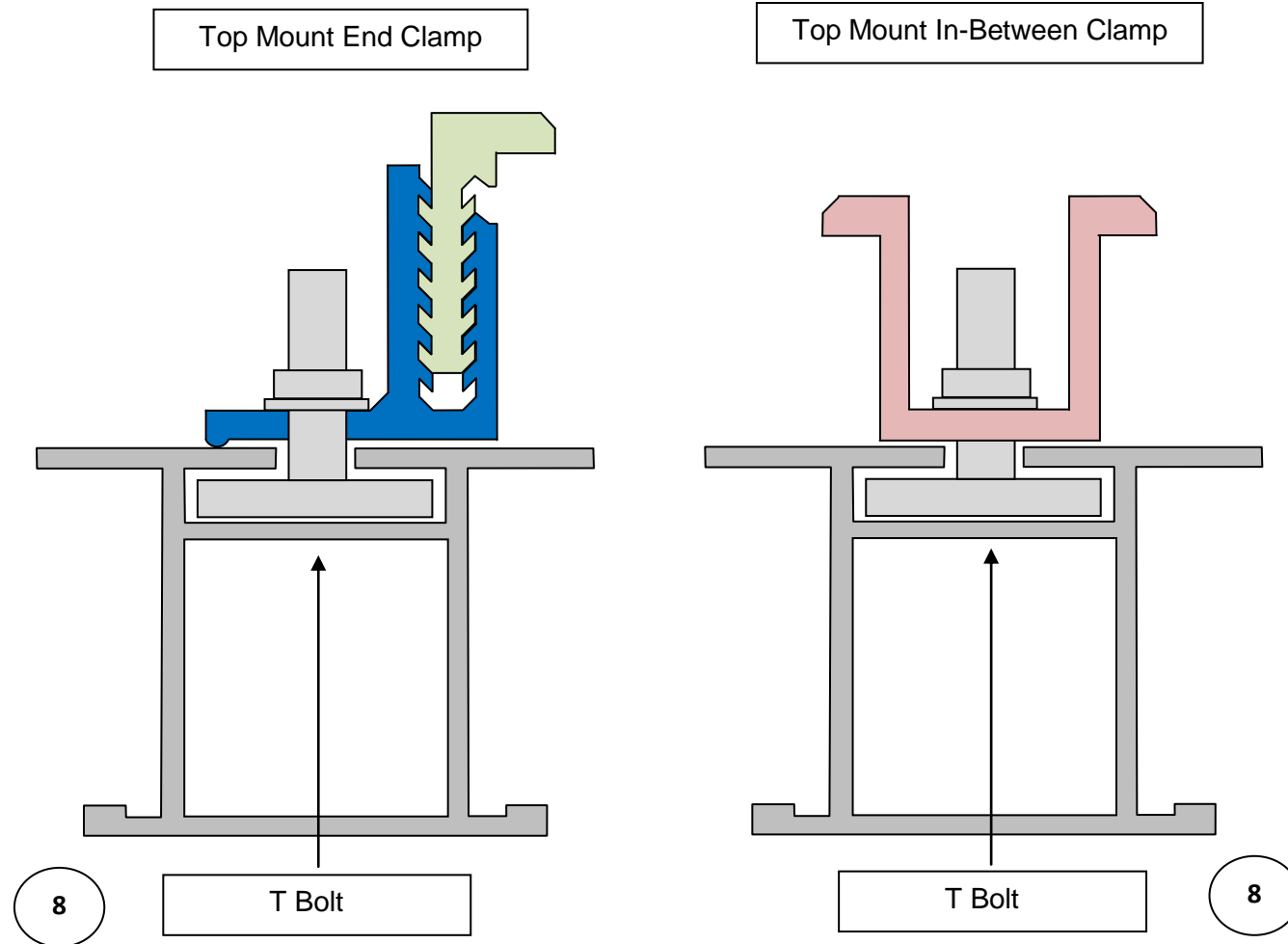
Use Connector Channels to connect Lite Rails using  $\frac{1}{4}$ " x 1.5" bolts, washers, and nuts.

Then fasten additional #14 x 1 self tap screws to each side of the bolts



8. Insert 5/16" x 1.625" T Bolts into rail.

9. Place solar panel on Rail and attach Top Mount Clamps and tighten nuts on bolts. Nuts should be tightening to 15 lbs of pressure.





## 20-year Limited Warranty

TOUGH TRAC™ warrants the original purchaser that each Solar Panel Mounting System ("Units") to be free from defects in materials and workmanship for a period of 20 years from the date of first purchase except for the anodized finish.

The Limited Warranty is considered VOID if TOUGH TRAC™ Units are not installed properly and not used for the purpose for which it is designed. TOUGH TRAC™ Limited Warranty does not cover Units that are damaged resulting from shipping, storage, and misuse or abuse during installation.

The Limited Warranty covers the cost of parts to repair or replace the Units to a proper working condition. Transportation and incidental costs associated with warranty items are not reimbursable. TOUGH TRAC™ Limited Warranty only covers its Units and under no circumstances be liable for indirect or consequential damages resulting from or related use by the original purchaser of the Unit.

*All parts supplied for this system is made of 6005 & 6061 series aluminum. All hardware including all bolts, nuts, and washers are made of Stainless Steel.*