

TOUGH TRAC™



Solar Thermal Ballast Set Installation Manual

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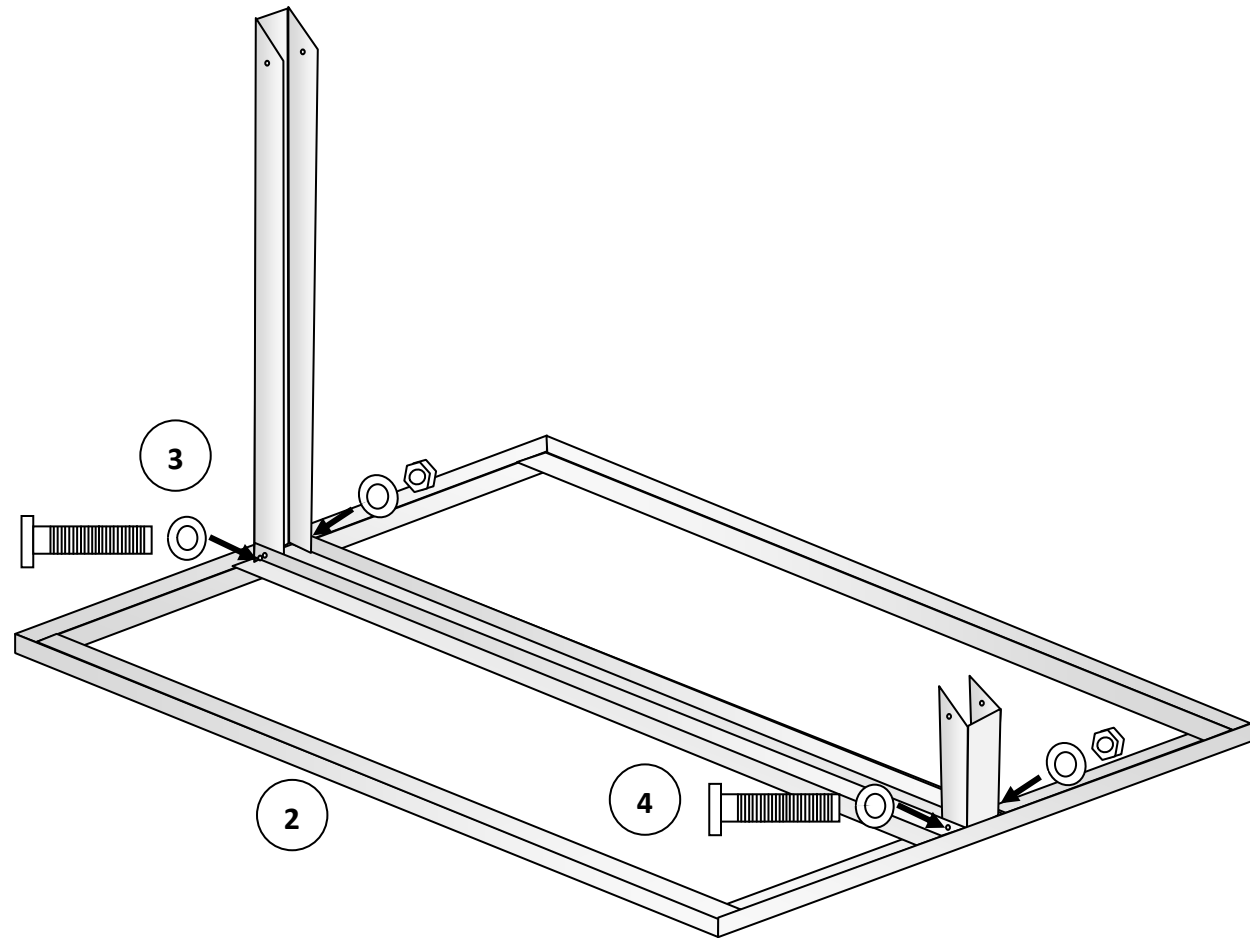
Installer Responsibilities

- Inquire and comply with all local and state building codes that apply to this installation.
- Consult with your engineer to 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 with engineers to determine weight needed for ballast systems.
- To use only TOUGH TRAC™ supplied parts for your installation. Substituting parts may void the warranty.
- Install temporary ballasts to all unfinished arrays to secure the system to the roof to prevent movement or damage due to wind after work hours.
- Ensure all electrical connections are compliant to local electrical codes.

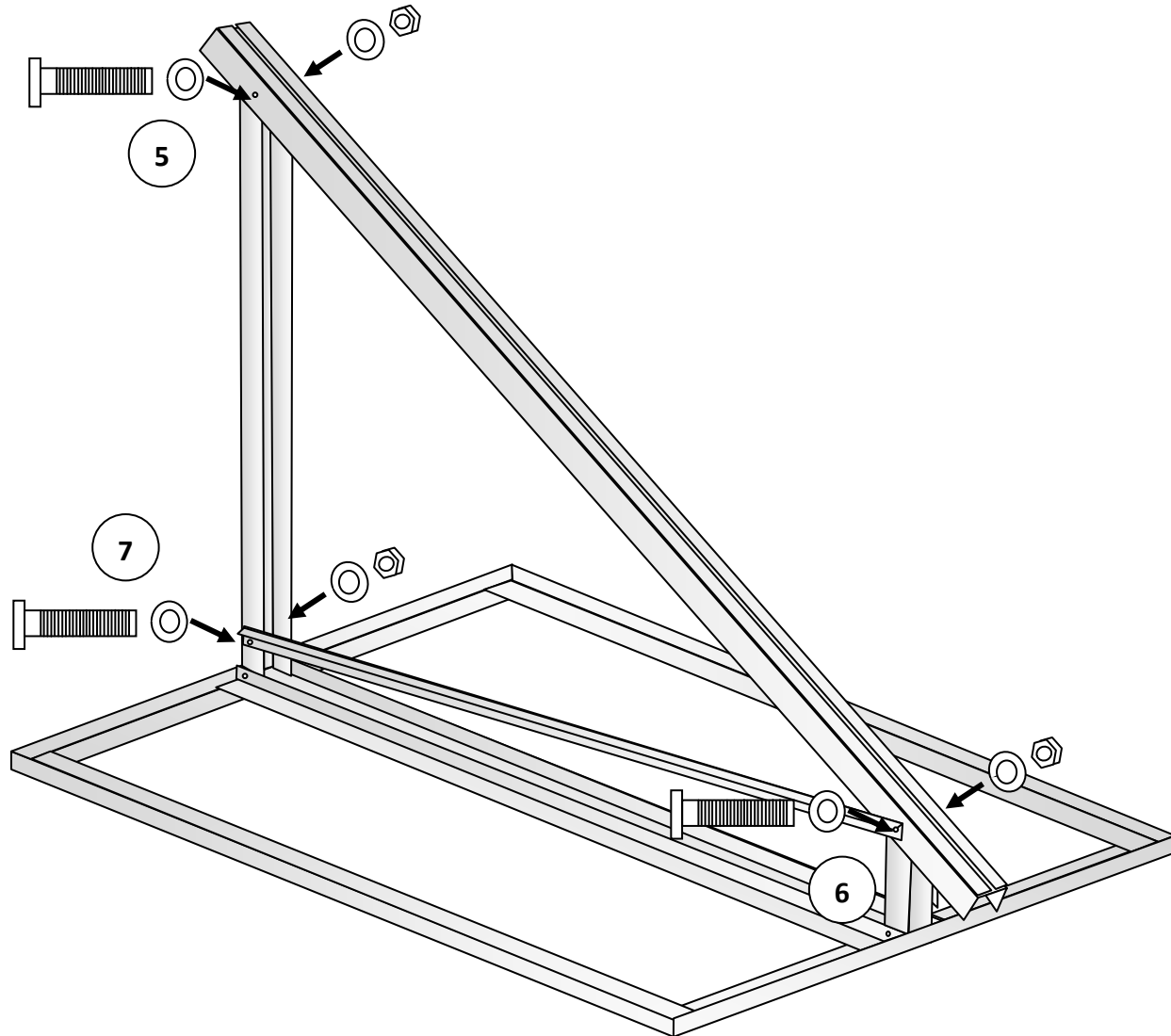
Parts supplied in your system (Stainless Steel Hardware not shown)

	REAR SUPPORTS X 2		FRONT, SUPPORTS X 2
	ANGLE ARM X 2		BALLAST FRAME TRAY X 2
	STANDARD RAIL (2) 84"		REAR CROSS BRACE X 1
	SIDE CROSS BRACE X 2		SLIDE MOUNT X 4

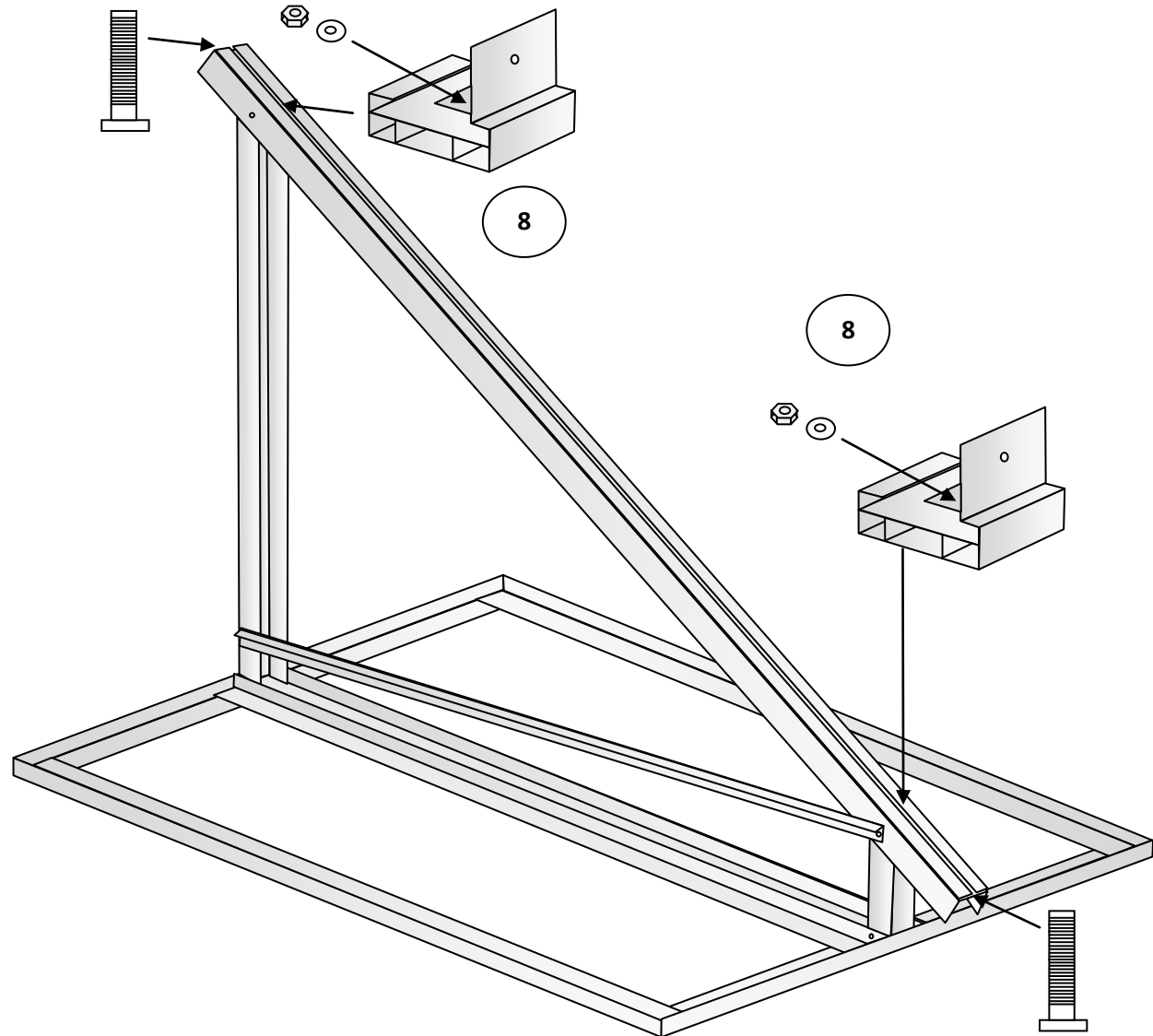
1. Determine location on the roof.
2. Layout Ballast Trays.
3. Slide each Rear Vertical Support into each Ballast Tray and fasten with $\frac{1}{4}$ " x 3" bolt, washers, and nut.
4. Slide each Front Vertical Support into each Ballast Tray and fasten with $\frac{1}{4}$ " x 3" bolt, washers, and nut.



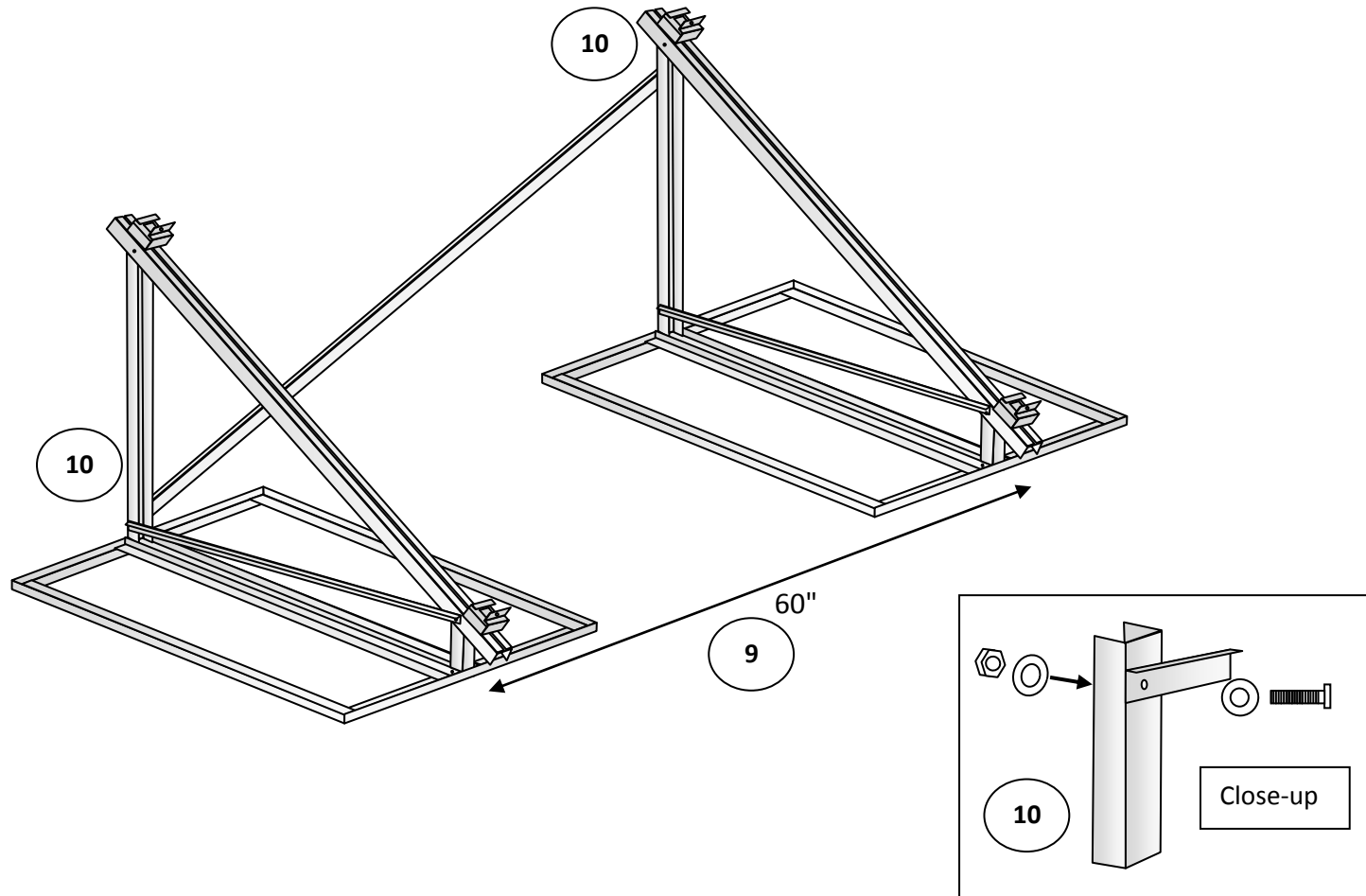
5. Attach Angle Arm to Rear Supports using $\frac{1}{4}$ " x 3" bolts, washers, and nuts.
6. Attach Angle Arm to Front Supports and Side Cross Brace using $\frac{1}{4}$ " x 3" bolts, washers, and nuts.
7. Attach Side Cross Brace to Rear Vertical using $\frac{1}{4}$ " x 1" bolts, nuts and washers.



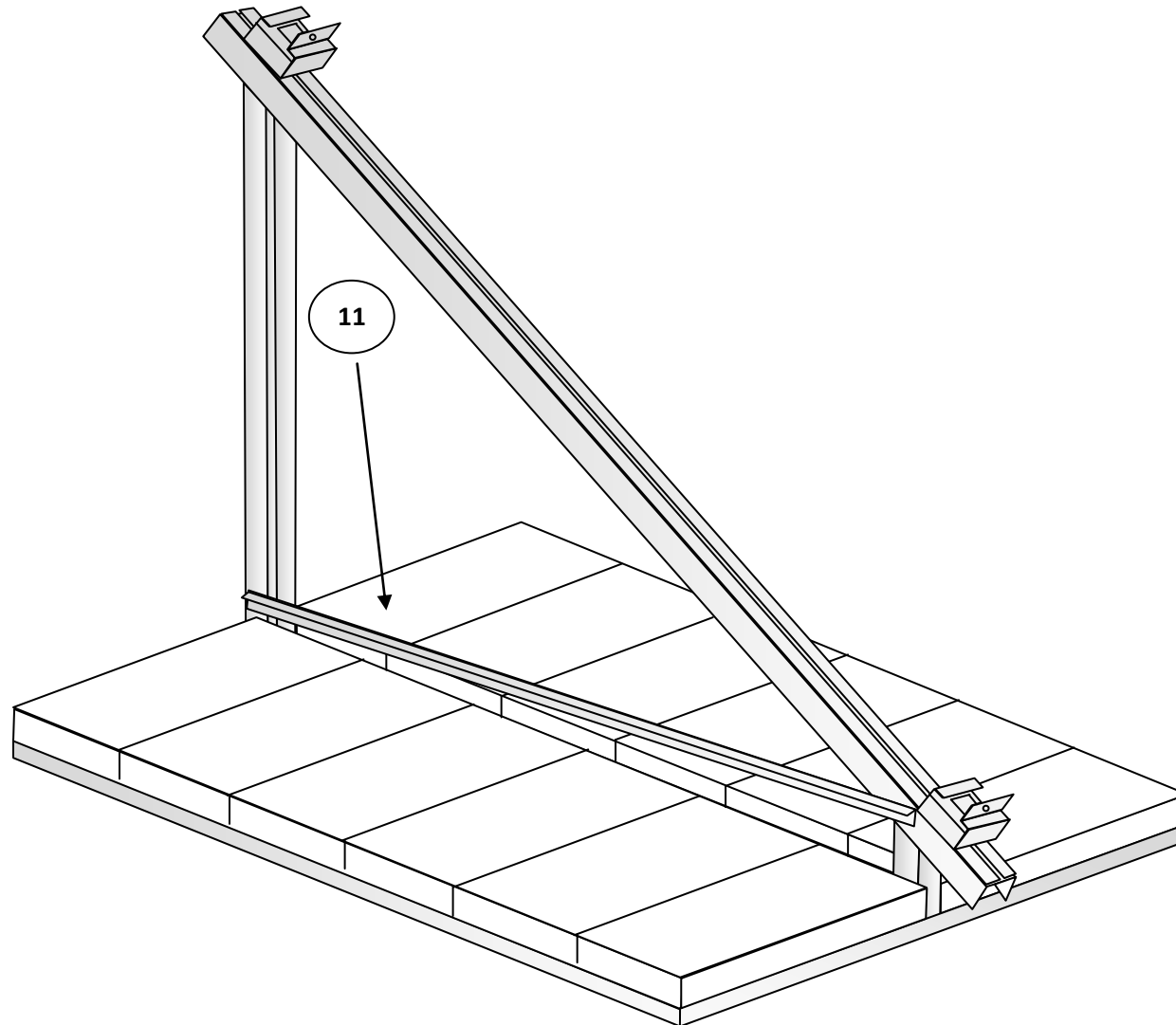
8. Attach 2 Slide Mounts to each Angled Arm using the 3/8" square bolts. Slide bolts into channel and fasten with nuts and washers in Slide Mount.



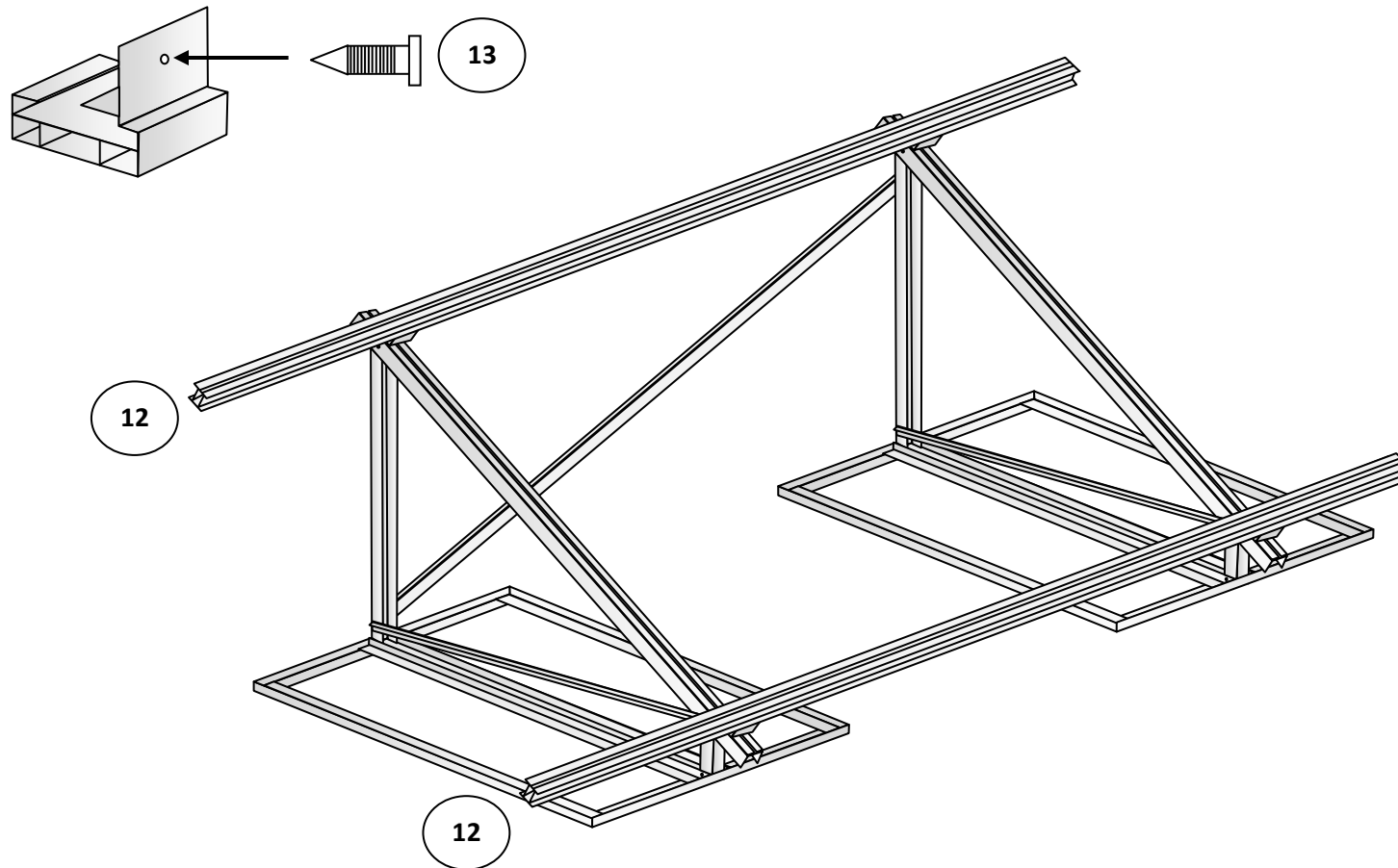
9. Layout finished ballast trays at 60" O.C.
10. Install Rear Cross Braces at Vertical Slots on Rear Vertical Support with 1/4" x 1" bolts, washers, and nuts.



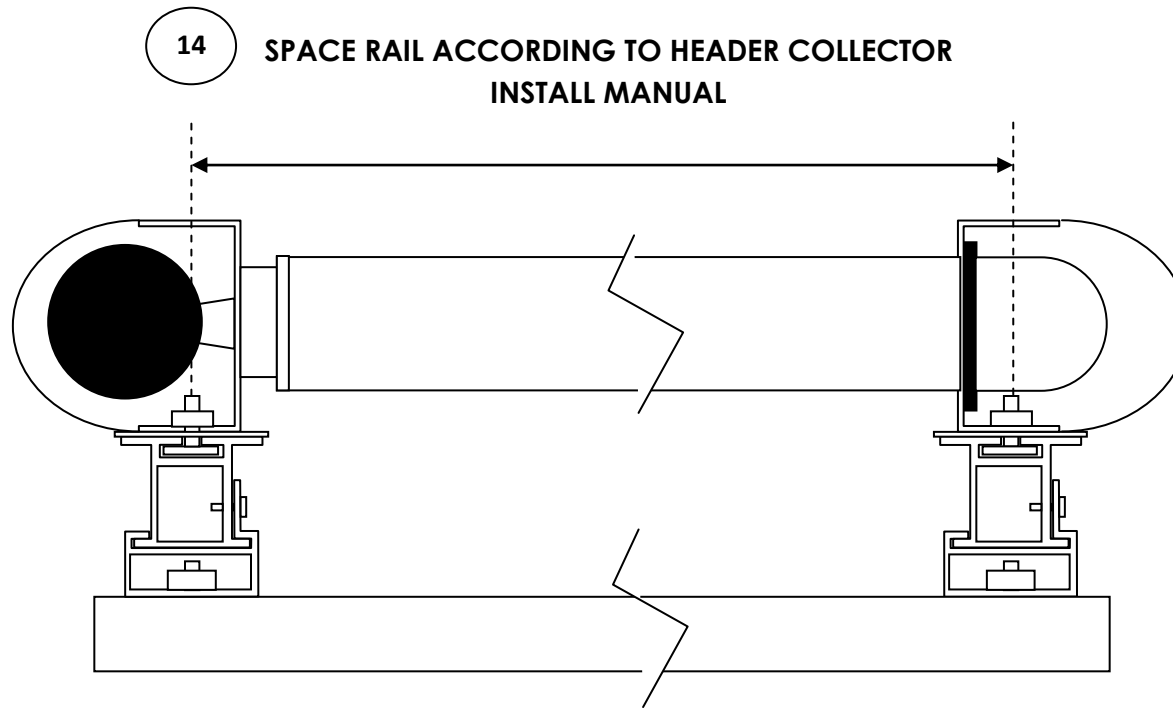
11. Add blocks to tray as needed. Use Concrete (CMU) Cap Blocks 16" x 8" x 4"
Consult your engineer for the required weight application needed for your installation.



12. Slide TOUGH TRAC Rail through Slide Mounts.
13. After Rails are attached, fasten set screws on Slide Mounts to Lock Rail.



14. Adjust Rail according to spacing recommended for the Collector Header Install Specs.
15. Slide Square Rail Bolts into Rail to align with mounting slots on Header Support brackets.
16. Continue to follow Install Manual for Collector Tubes and Header assembly.



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 6000 series aluminum. All hardware including all bolts, nuts, and washers are made of Stainless Steel.