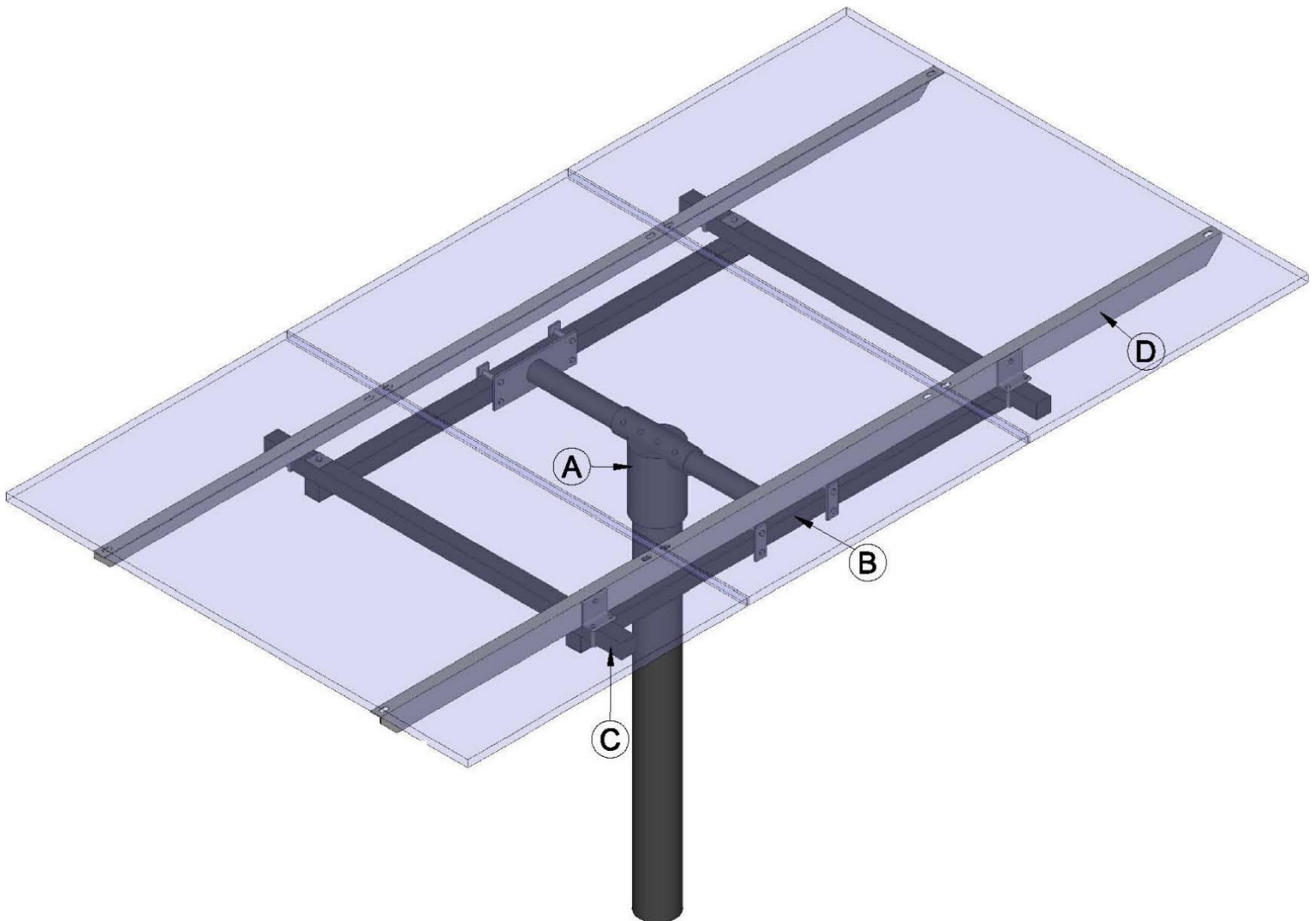


## UPM 6X Custom



- A. **TEE SOCKET:** 6" O.D. PIPE SOCKET TO FIT OVER 5" SCHEDULE 40 or 80 STEEL PIPE
- B. **CROSS PIECE:** 2" X 2" X 3/16", LENGTH DEPENDENT ON MODULE USED, SQUARE TUBE – 2 PLACES
- C. **LONGITUNDINAL:** 2" x 2" X 1/8", LENGTH DEPENDENT ON MODULE USED, SQUARE TUBE – 2 PLACES
- D. **ALUMINUM RAILS:** 3" X 1-1/2" X 3/16" UNIVERSAL T-SLOT EXTRUSION OR PUNCHED ALUMINUM ANGLE, LENGTH DEPENDENT ON MODULE USED – 2 PLACES

**Note:** Number of panels may vary.

<b>UPM 6X CUSTOM</b>		
Standard stock Tee socket sized for 5" schedule 40 or 80 Pipe		
		REVISION:
		02.09.16

## **Materials**

**Box #1:**

- Tee with Center tube

**Box #2:**

- Crosspiece, Hardware & Instructions

**Box #3:**

- Longitudinals (2)

**Box #4**

- Aluminum rails (2)

**Hardware Packets in Box #2:****Bag #1:**

- Bolts for attaching aluminum angle brackets to rails.
- Square head set bolts for Tee.

**Bag #2:**

- Bolts and nuts for attaching crosspieces to longitudinals (use included galvy square washers with these).

**Bag #3:**

- U-bolts for attaching aluminum angle brackets to longitudinals (use included aluminum angle brackets with these).

**Bag #4:**

- Bolts and flat bar for attaching center tube end plates on Tee assembly to crosspieces.

**Bag #5:**

- Instructions.
- Stainless bolts and nuts for attaching panels to aluminum rails.

**Shrink wrapped to crosspieces in Box #2:**

- Galvy square washers for crosspieces to longitudinals (use with bag 2).
- Aluminum angle brackets for longitudinals to rails (to use with bags 1 & 3).

## Recommendations for Dimensions of Post Hole for Standard Installation of General Specialties Manufacturing Top of Pole Mounts

UPM Model	Depth of Hole	Width of Square Hole / Cubic Yards of concrete needed	Diameter of Round Hole / Cubic Yards of concrete needed
All 6X Custom	54"	24" / .66 CY	30" / .81 CY

Your building department may require the foundation for a PV array post mount to be designed by a structural engineer licensed in the state where the PV array is to be erected. This is required because failure of a post mount foundation may be a threat to the safety of people and property in its proximity. At a minimum, failure will result in costly damage to the PV modules. The foundation described here is suitable for most soil types, but no warranty of its suitability for your particular soil or wind conditions is offered or implied.

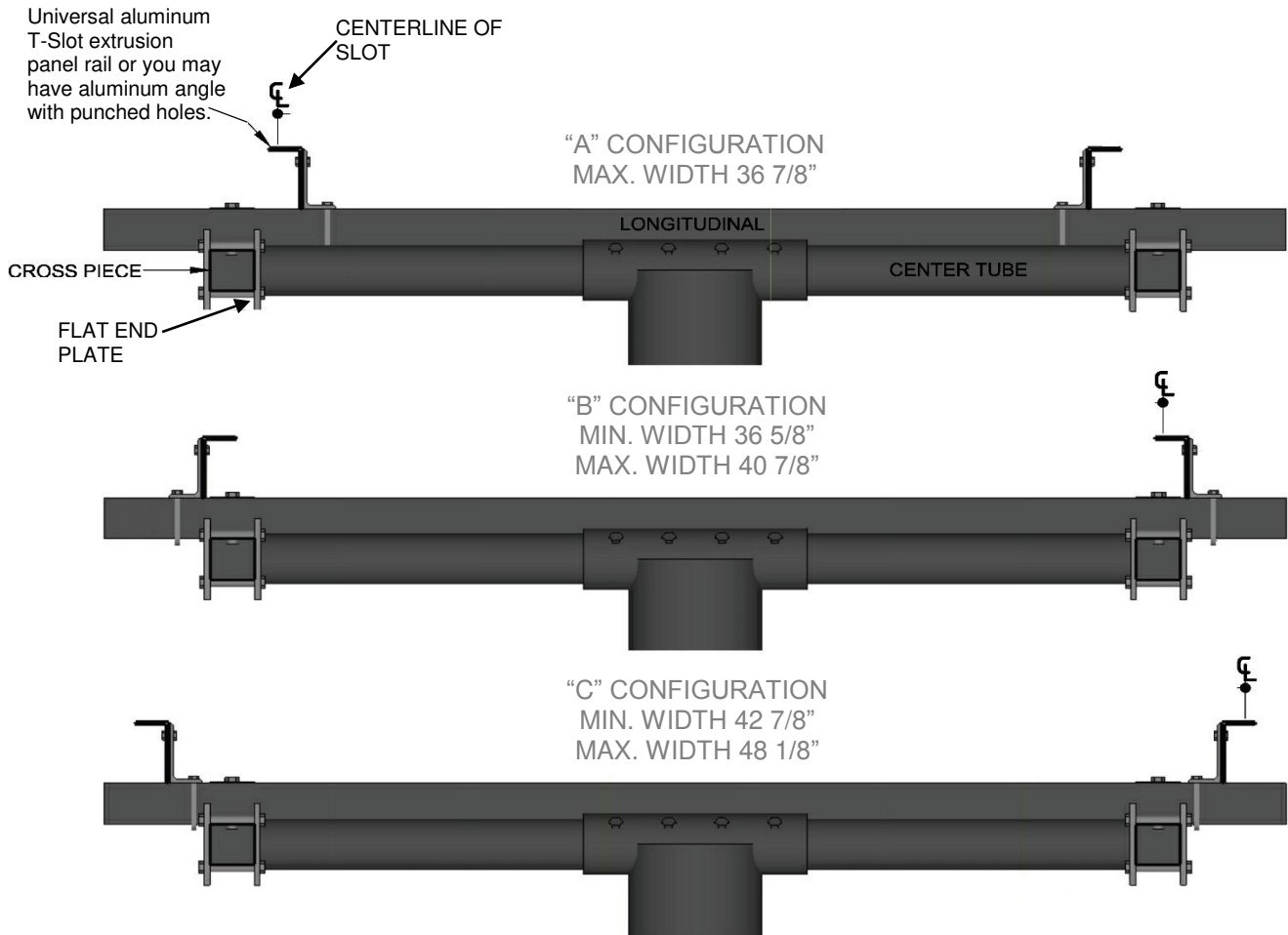
If you are unable to dig holes of these dimensions because you encounter bed rock or if you have very loamy or loose sandy soil, (get the recommendation of a soil engineer or building department), then you may have to seek a design for an alternative foundation construction.

For type and size of pole to install in concrete foundation, refer to chart below.

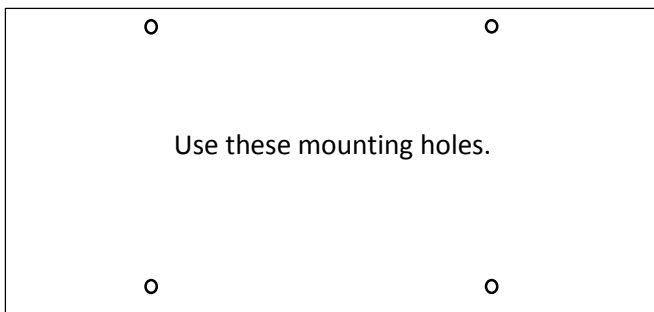
## General Specialties Recommendations for Pole Height and Dimension for Top of Pole Mounts

We cannot guarantee a standard 1.67 safety factor if these recommendations are not observed. Since we cannot assess each customer's individual site and conditions, a professional installer and the local building department should be consulted for the safest and most effective installation.

UPM Model	Post Size (sch = schedule, or thickness of pipe wall)	Max Pole Height above concrete Base w/array @ 45° tilt	Clearance between top of concrete and lowest point on array @ 45° tilt	Max Pole Height above concrete base w/array @ 60° tilt	Clearance between top of concrete and lowest point on array @ 60° tilt	Max Pole Height above concrete base w/array @ 90° tilt	Clearance between top of concrete and lowest point on array @ 90° tilt
<b>UPM 6X Custom</b> Standard stock tee socket size 5"	5" sch 40 5 9/16" OD	8' 9"	5' 9"	7'	3' 4"	5' 10"	1' 1"
	5" sch 80 5 9/16" OD	12'	9'	9' 9"	6' 1"	8' 5"	3' 8"



To determine which configuration to use for your modules, measure center of hole to center of hole on the LONG edge of module (see drawing below). These are the holes that you will use to fasten to the slots in the rails shown. Compare this dimension to dimensions shown above and choose the most advantageous configuration.



**Note:** Number of panels may vary.

UPM 6X - CUSTOM PANEL RAIL/BACKET CONFIGURATIONS	
Standard stock Tee socket sized for 5" schedule 40 or 80	
REVISION:	
Not to Scale	06.16.14

## UPM 6X Custom for 3 Modules



Place Tee assembly on top of post. Align center tube east and west and tighten two square head set bolts to post. Finger tighten the aluminum flat bar and straighten 1/2" bolts onto "Tee" endplates on the center tube. Slide crosspieces into the flat bar arrangement. Make sure to locate the lugs on crosspieces so they are facing in toward the center tube endplates.



Place longitudinal tubes on top of crosspieces and bolt with square washers on top and bottom.



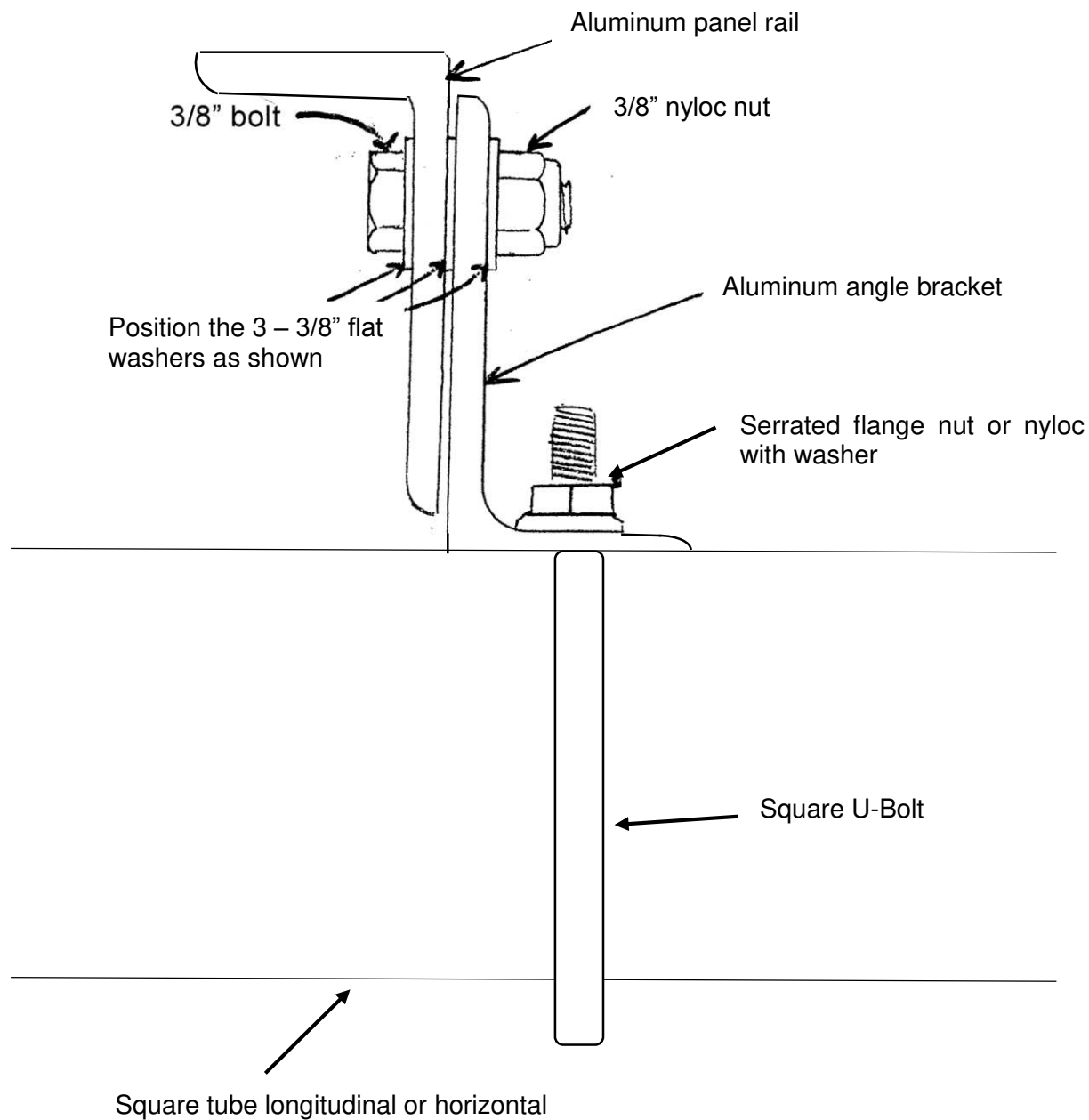
Attach aluminum angle brackets to longitudinals with square U-bolts. Oppose angle brackets so they face in toward each other. Attach aluminum rails, aligning the ends marked "Top" to the same end.



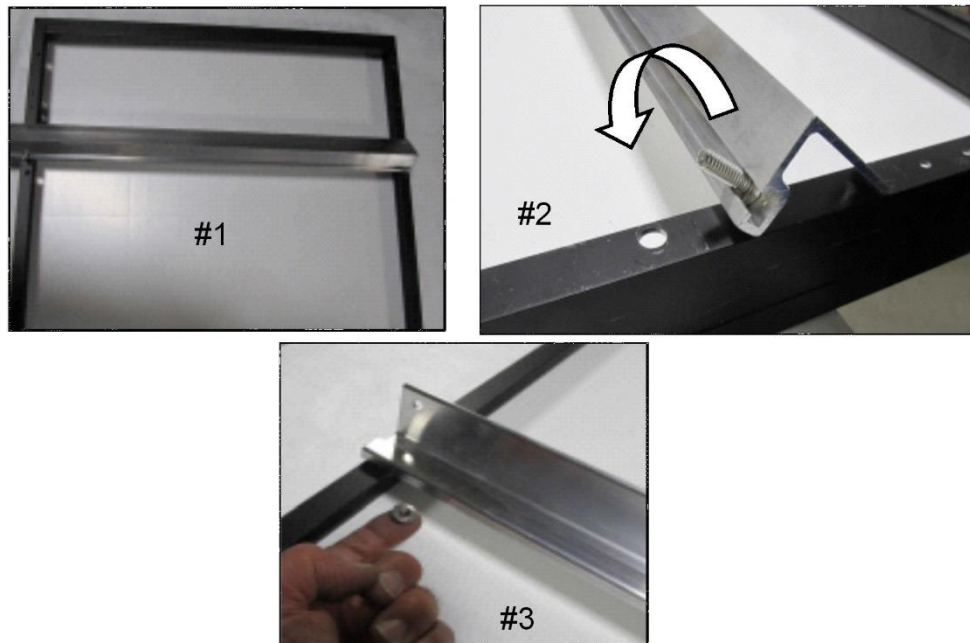
When fastening panels to rails, place first panel at end of rails marked "Top" and work down until all panels are in place with bolts finger tight. Cross measure array for square, check to see that all spaces between panels are equal (at least 1/4"), then tighten all bolts with wrench.



Detail of aluminum rail to angle bracket assembly showing arrangement of the flat washers between the bolt head, rail, bracket, and nyloc nut.



## Instructions for Attaching Solar Panel to Mounting Rails



**For T-Slot Rails:** Lay T-Slot rails across the short axis of the panel as shown in Photo #1. Slide stainless bolts into T-slot of rail and position so they are opposite to the mounting holes on the frame of the panel as shown in Photo #2.

Then roll the rails over so the bolts slip into the holes on the panel frame. Place the flange nut on your finger with the flange UP and thread onto the bolt from underneath as shown in Photo #3. Finger tighten.

**For Pre-Punched Angle Rails:** Attach panel rails to solar module across the width of the panel as in Photo #4. Make sure the part of the rail with the punched slots "toes-out" toward the ends of the panel. Insert the bolts in the holes provided from underneath facing out (Photo #5) and tighten on the flange nut. It is important that the flange nut bears against the rail and not the panel frame, Photo #6.

