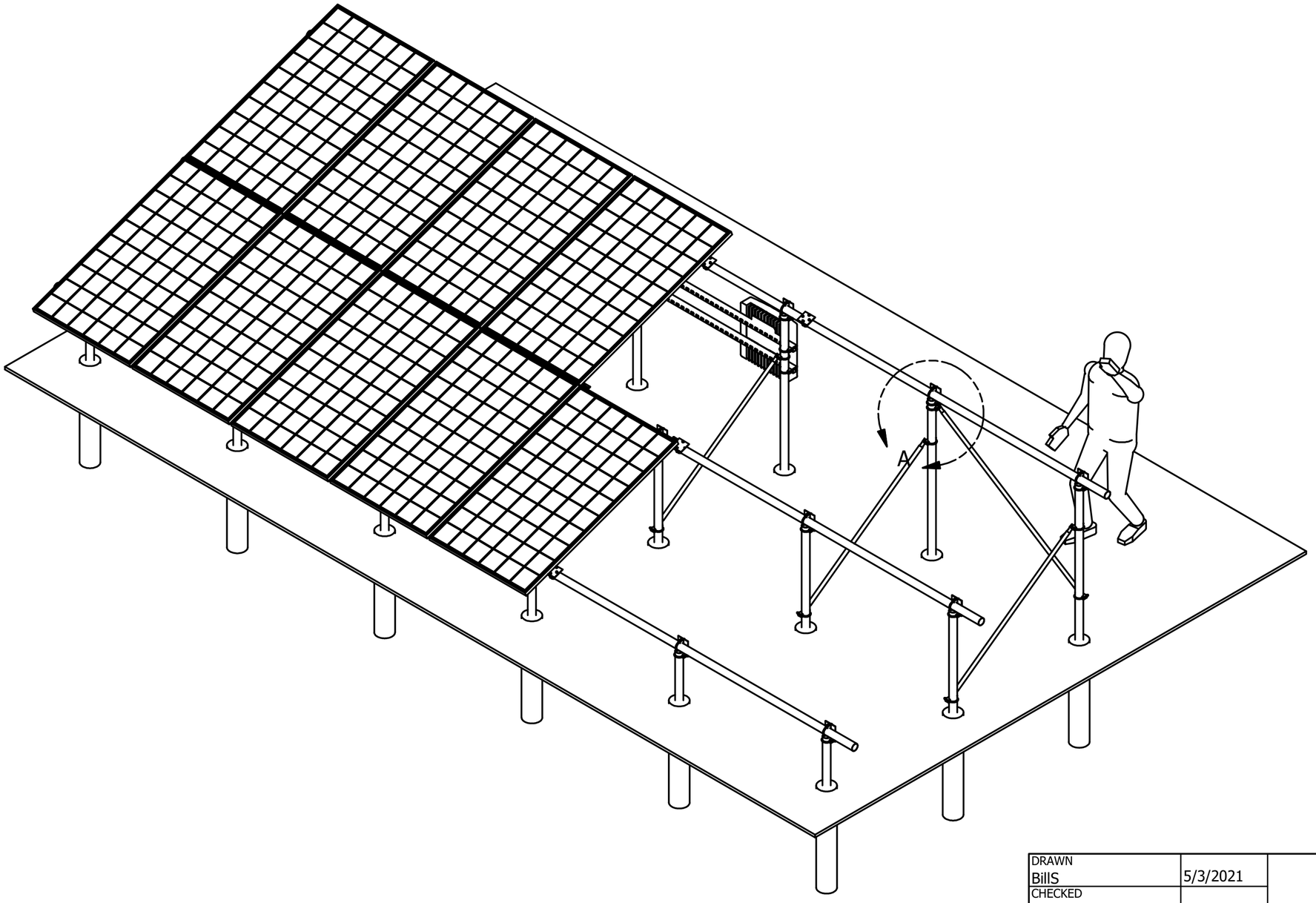
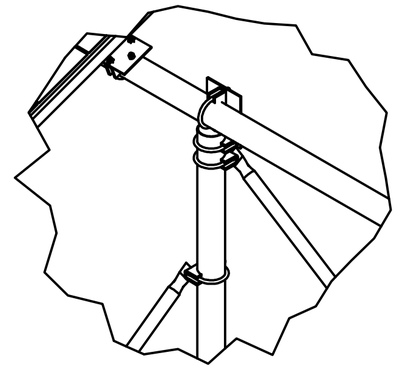
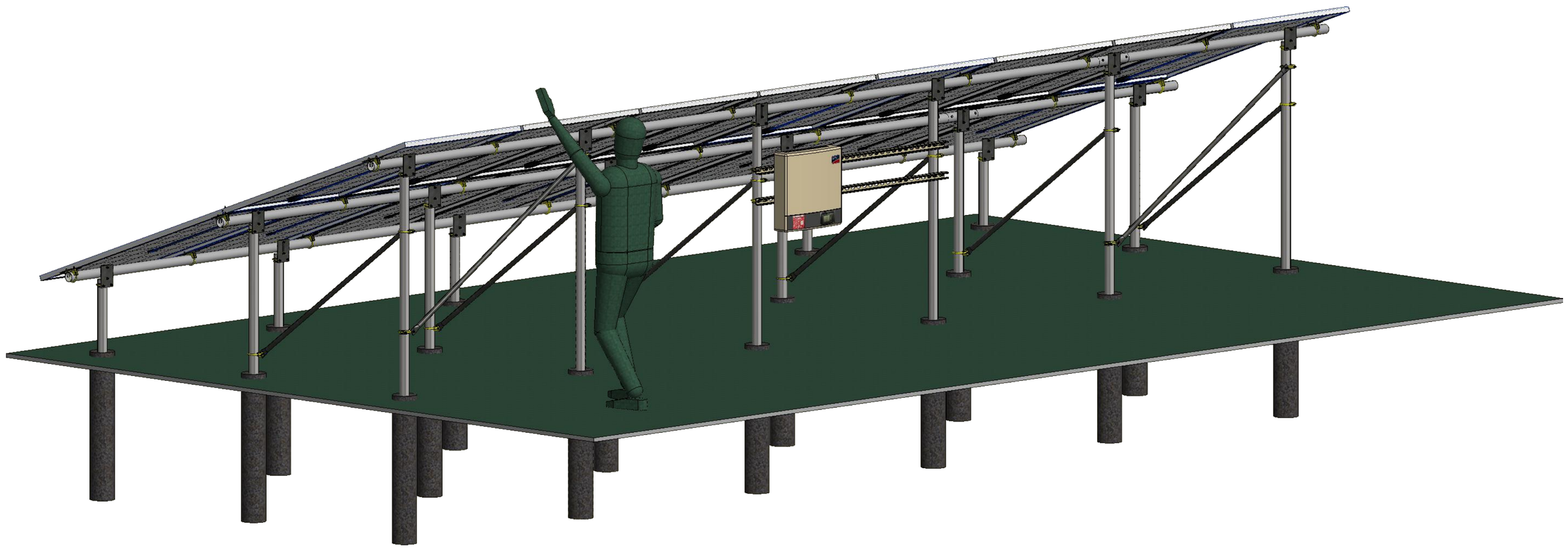
This is a 16 panel ground mount @ 5 kWatts. The pipe used as racking is fence pipe with an OD of 2 3/8".
Ironridge midclamps are used on the center section. Fabricated plates mount the panels on the top and bottom,
using the panel mount holes. Recommend placing a chain link fence, with slats, on the back side to deflect the wind.
The post spacing, front to back, depends upon the panel selected. See page 8.

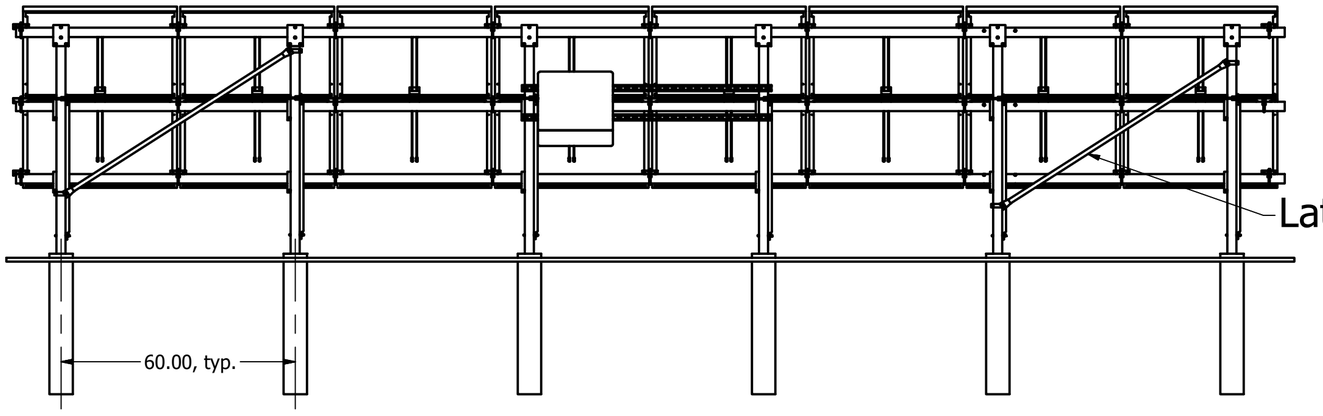




DETAIL A

DRAWN BillS	5/3/2021	Watt-Tracker,LLC
CHECKED		TITLE: Front View - 5 kWatt System
QA		
MFG		
APPROVED		SIZE C | DWG NO 2x8_GroundMount_285 | REV
		SCALE | SHEET 1 OF 9

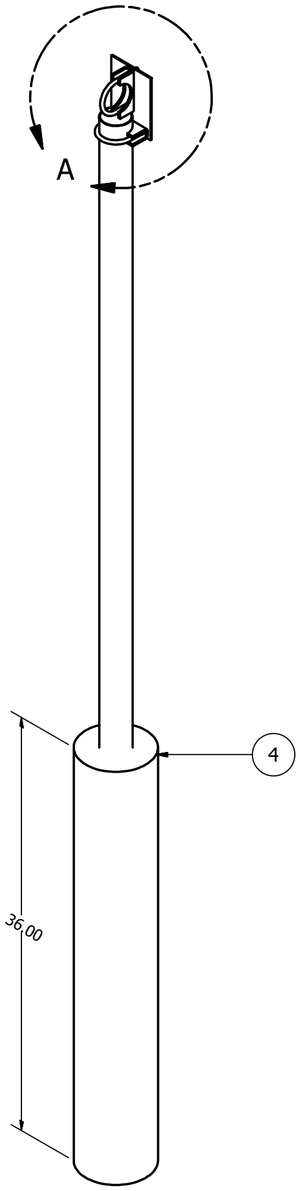


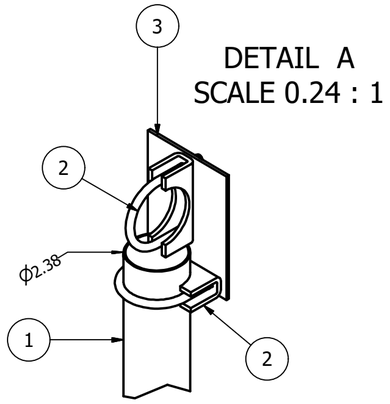


Lateral Brace, 2 each.

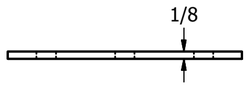
DRAWN BillS	5/3/2021	Watt-Tracker,LLC		
CHECKED				
QA		TITLE		
MFG		Back View		
APPROVED				
		SIZE C	DWG NO 2x8_GroundMount_285	REV
		SCALE	SHEET 2 OF 9	

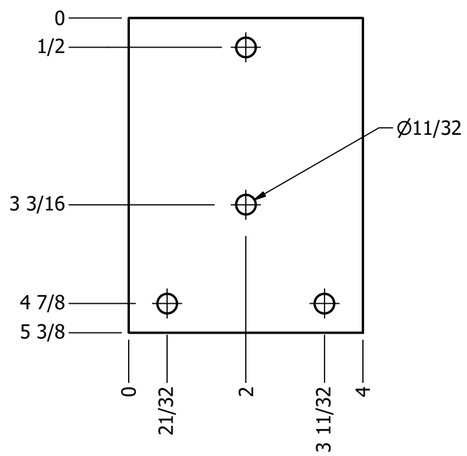
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	RearColumn_2inch_fence post_285_20	OD - 2 3/8", Length = 91"
2	2	3042T910_CLAMPING U-BOLT	from McMasterr Carr
3	1	PostMountingPlate_EMTV1	Mount, Column to Horizontal Pipe
4	1	Concrete	6" Dia x 3' Long





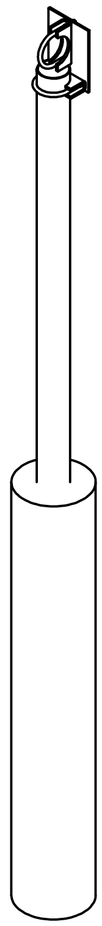
DETAIL A
SCALE 0.24 : 1





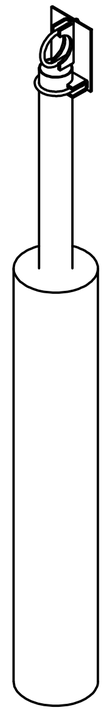
Post Mount Plate
Make 18
1/8" Thick
Galvanized or
Cold Zink paint

Make 6 of each.

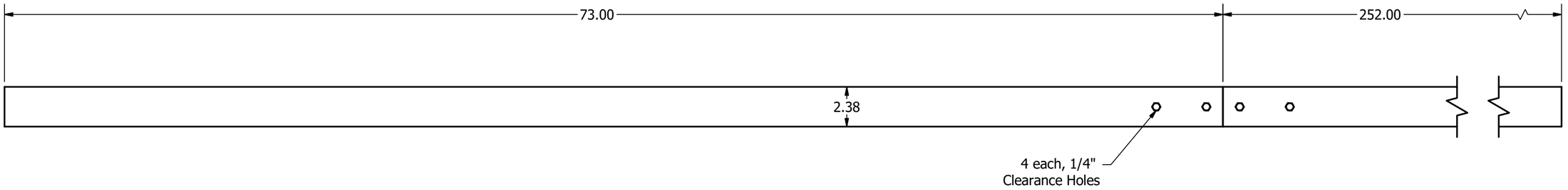


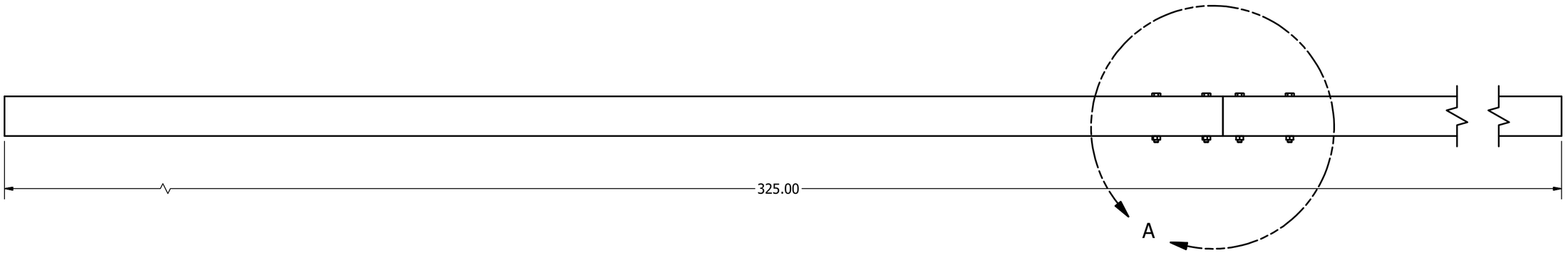
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	MiddleColumn_2x16_285	OD =2 3/8". Length = 72"
2	2	3042T910_CLAMPING U-BOLT	from McMasterr Carr
3	1	PostMountingPlate_EMTV1	Mount, Column to Horizontal Pipe
4	1	Concrete	6" Dia x 3' Long

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	ShortFenceColumn_285	OD = 2 3/8", Length = 53 1/2
2	2	3042T910_CLAMPING U-BOLT	from McMasterr Carr
3	1	PostMountingPlate_EMTV1	Mount, Column to Horizontal Pipe
4	1	Concrete	6" Dia x 3' Long

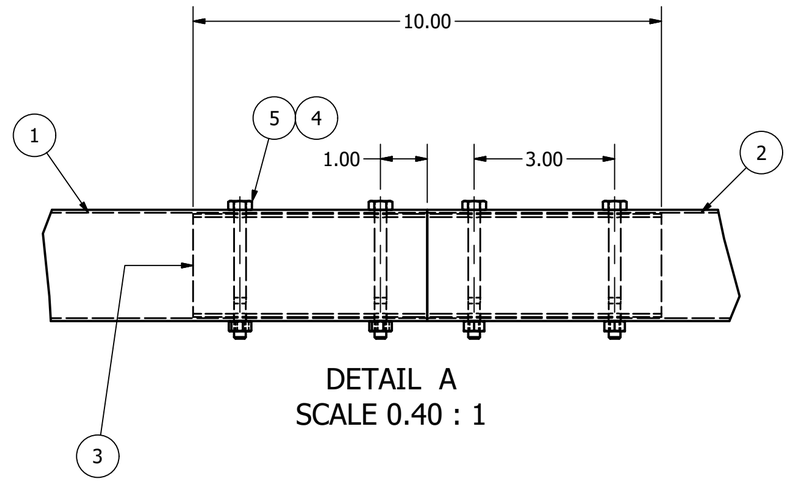


DRAWN BillS	5/3/2021	Watt-Tracker,LLC	
CHECKED			
QA		TITLE Columns	
MFG			
APPROVED			
		SIZE C	DWG NO 2x8_GroundMount_285 REV
		SCALE	SHEET 3 OF 9





PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	FencePostDrop for 10 Panel array	Thin wall 2" Galvanized tubinf. 2-3/8" OD
2	1	FencePost for 10 Panel array	Thin wall 2" Galvanized tubinf. 2-3/8" OD
3	1	2inEMT	2" EMT from Home Depot
4	4	ANSI B18.2.2 - 1/4 - 20	Hex Nuts (Inch Series) Hex Nut
5	4	ANSI/ASME B18.2.1 - 1/4-20 UNC - 2.75	Hex Bolt - UNC (Regular Thread - Inch)

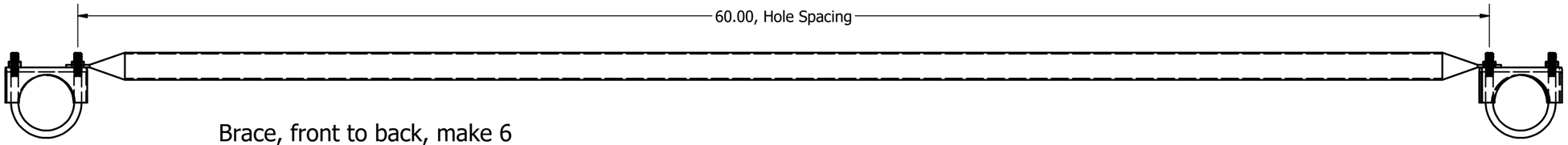


DETAIL A
SCALE 0.40 : 1

Total 2" Fence pipe length:
1. 3 Beams - 325" x 3 = 975"
2. Columns
   Long: 91" x 3 = 273"
   Middle: 72" x 3 = 216"
   Short: 53.5" x 3 = 160.5"

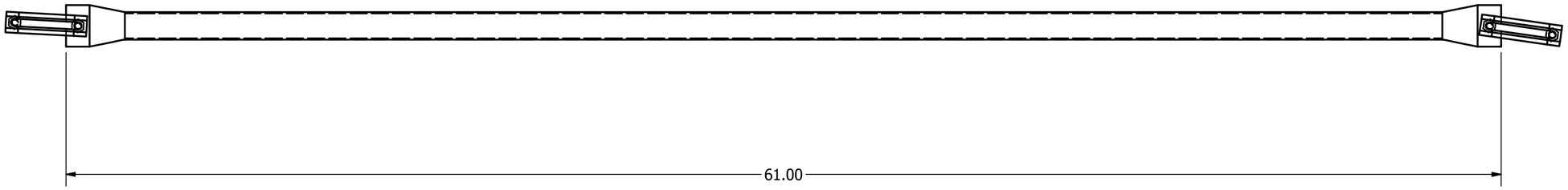
Total = 1625" = 135' - 4.5"

DRAWN BillS	5/3/2021	Watt-Tracker,LLC
CHECKED		TITLE: Long Horizontal Piece
QA		
MFG		
APPROVED		
		SIZE C / DWG NO 2x8_GroundMount_285 / REV
		SCALE / SHEET 4 OF 9



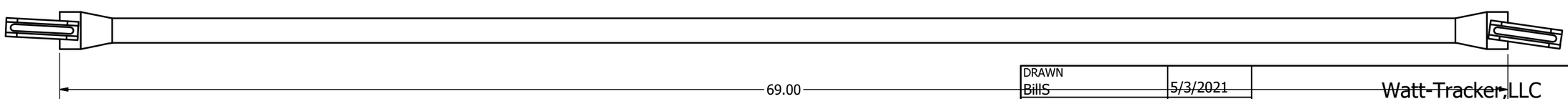
Brace, front to back, make 6

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	Brace_F_B	Wind load brace. 1" EMT
2	2	3042T910_CLAMPING U-BOLT	from McMasterr Carr



Lateral End Brace, Make 2

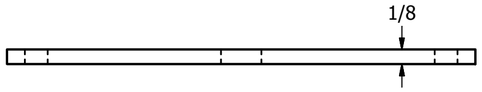
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	Brace	Wind load brace. 1" EMT
2	2	3042T910_CLAMPING U-BOLT	from McMasterr Carr

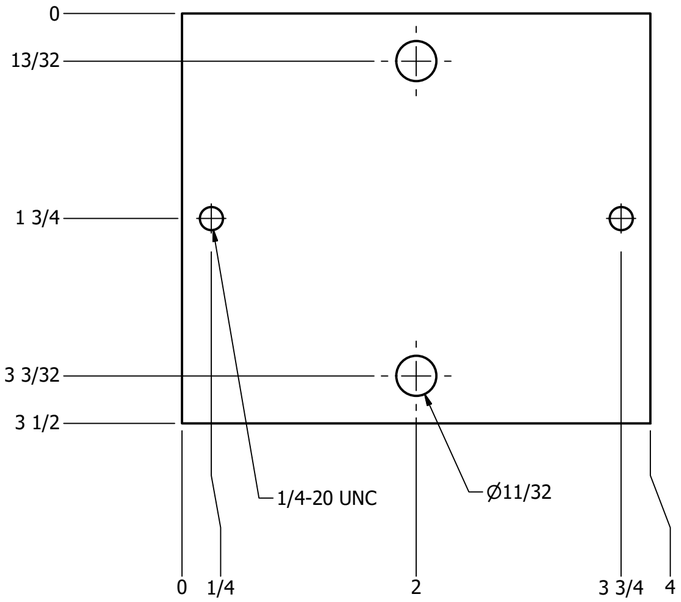


It does not matter how you squash the ends,
but maintain hole spacing.

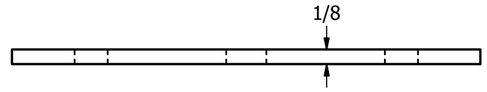
DRAWN BillS	5/3/2021	Watt-Tracker,LLC
CHECKED		TITLE: Brace
QA		
MFG		
APPROVED		
		SIZE C · DWG NO 2x8_GroundMount_285 · REV
		SCALE · SHEET 5 OF 9

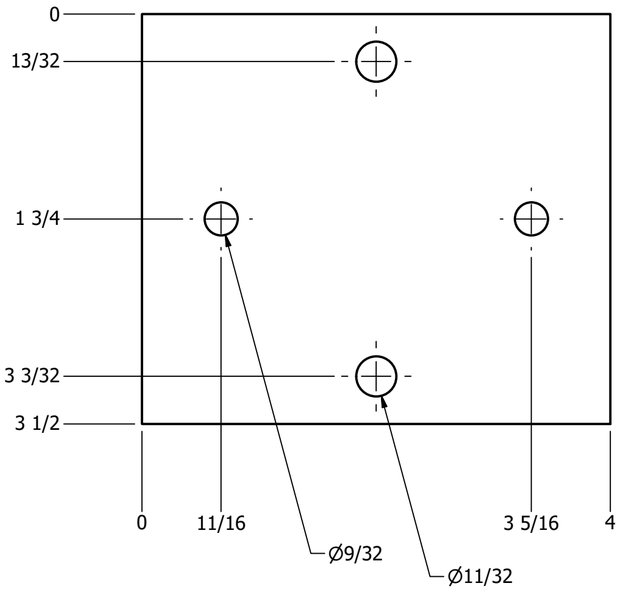
Panel Mount Plate, Midway
Make 9
1/8" Thick
Galvanized or
Cold Zink paint

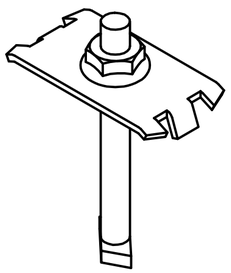




Panel Mount Plate_EMT,
top and bottom
Make 18
1/8" Thick
Galvanized or
Cold Zink paint



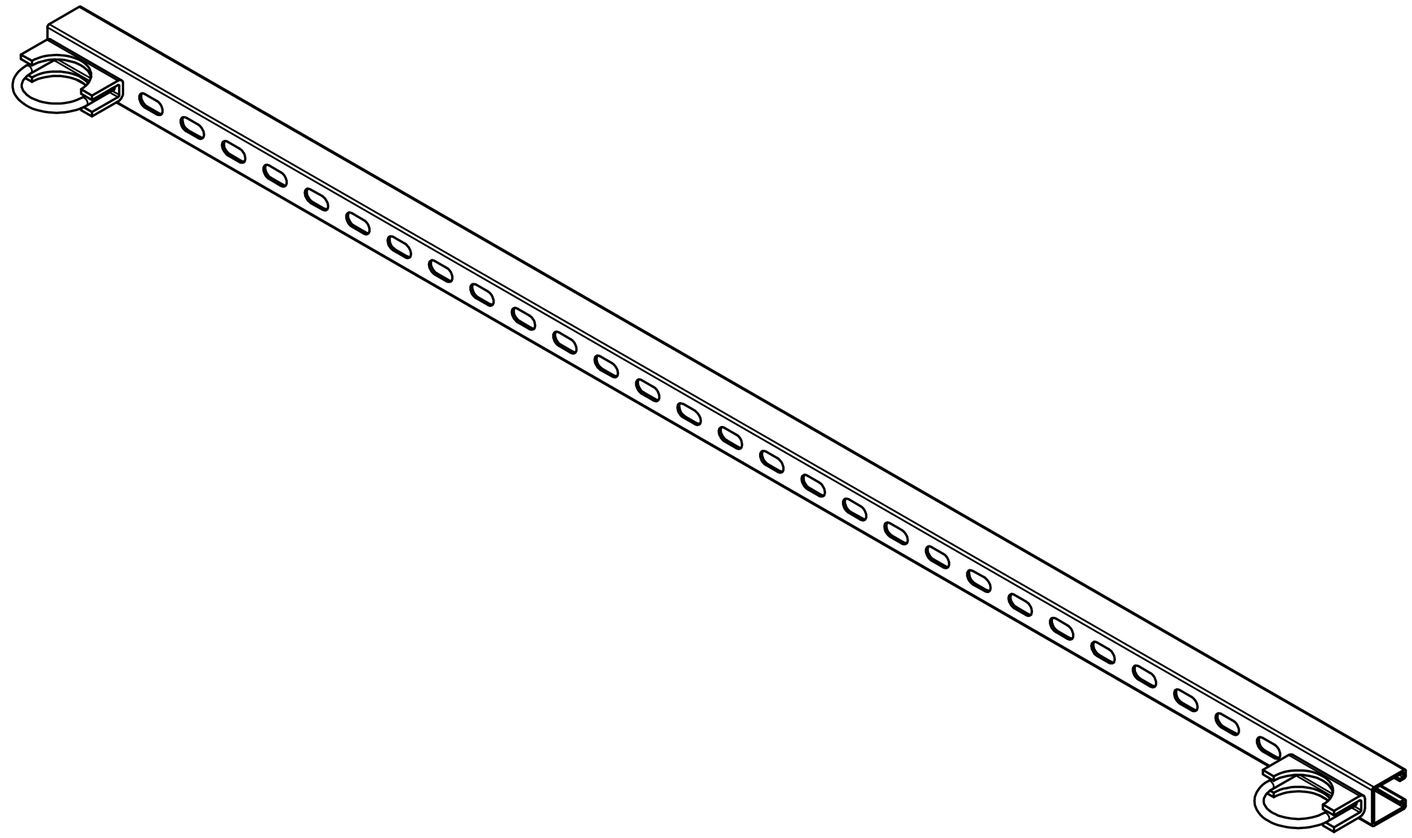


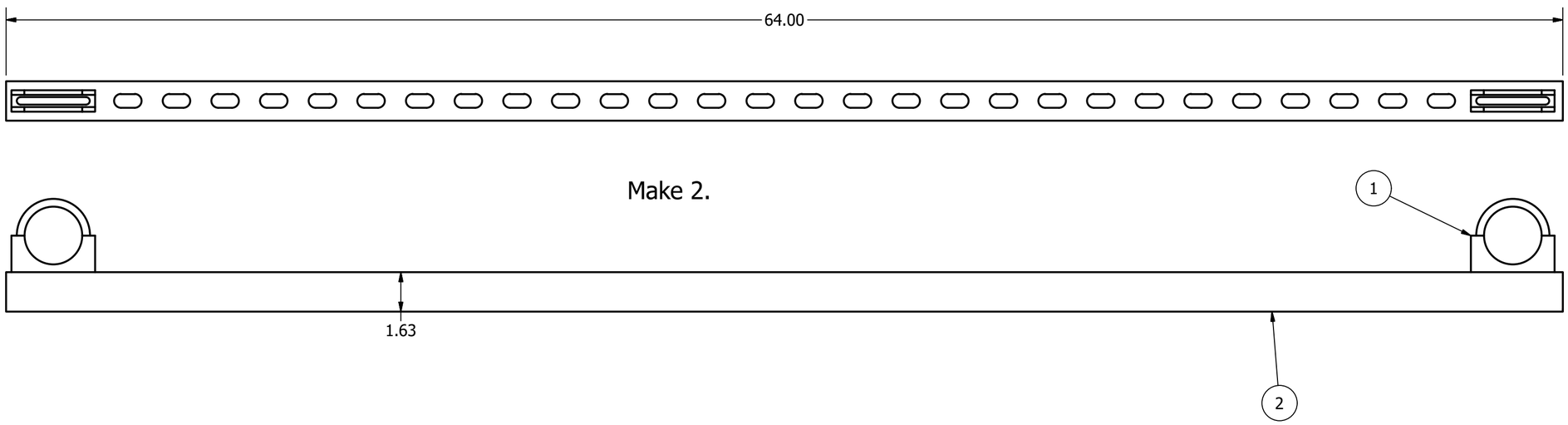


PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	Midclamp_Ironridge	
2	1	Bolt_Midclamp	
3	1	IFI - I0.25 - 20	Hex Flange Nut

Midclamps mount on the above plate.
Rombus bolt head screwed flush to plate.
1 Assy per Panel. For example:
https://www.ebay.com/itm/283754669050?hash=item421118a3fa:g:SjIAAOSw6SNeKhCZ

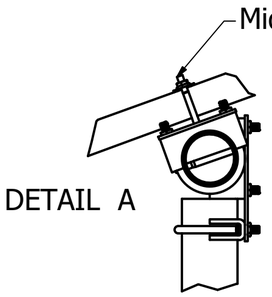
DRAWN BillS	5/3/2021	Watt-Tracker,LLC
CHECKED		TITLE: Plates
QA		
MFG		
APPROVED		
SIZE C		DWG NO 2x8_GroundMount_285 REV
SCALE		SHEET 6 OF 9

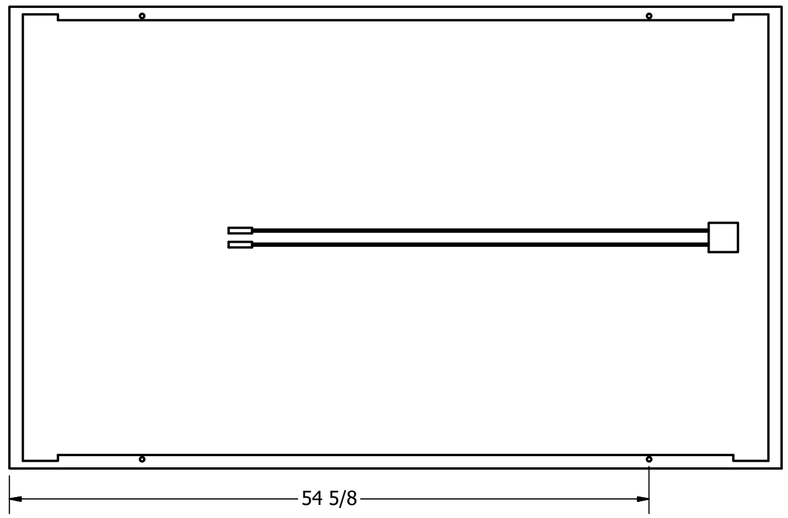


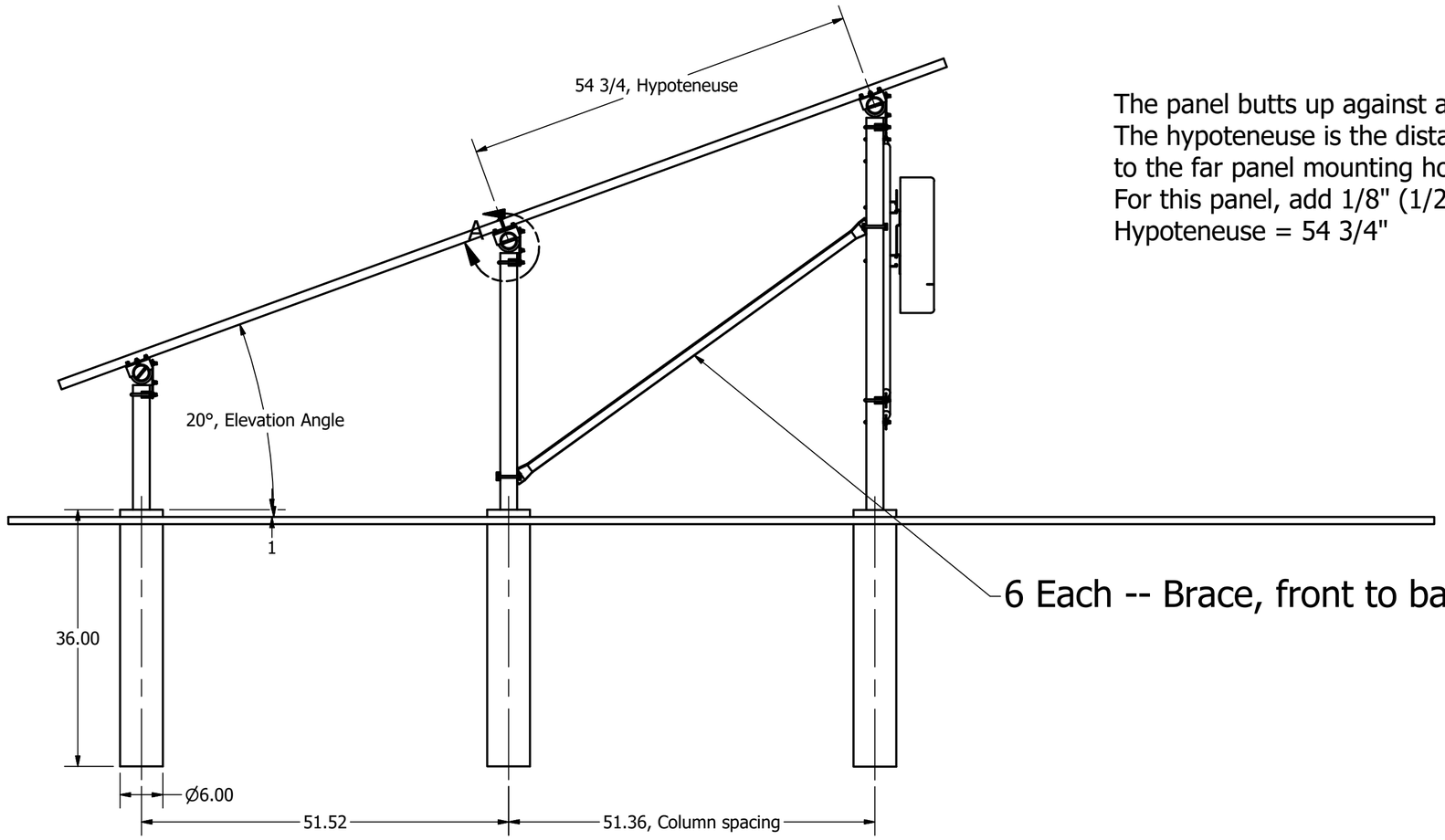


PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	3042T910_CLAMPING U-BOLT	from McMasterr Carr
2	1	A-1200-HalfSlot	Framing Strut Square A-1200-HalfSlot

DRAWN BillS	5/3/2021	Watt-Tracker,LLC
CHECKED		TITLE: Inverter Mount- Make 2
QA		
MFG		
APPROVED		
SIZE C	DWG NO 2x8_GroundMount_285	REV
SCALE	SHEET 7 OF 9	







The panel butts up against a MidClamp, 1/4" Dia. See Detail A.
The hypoteneuse is the distance from the MidClamp Centerline
to the far panel mounting hole.
For this panel, add 1/8" (1/2 x 1/4') to the distance shown (1/8" +54 5/8" = 54 3/4").
Hypoteneuse = 54 3/4"

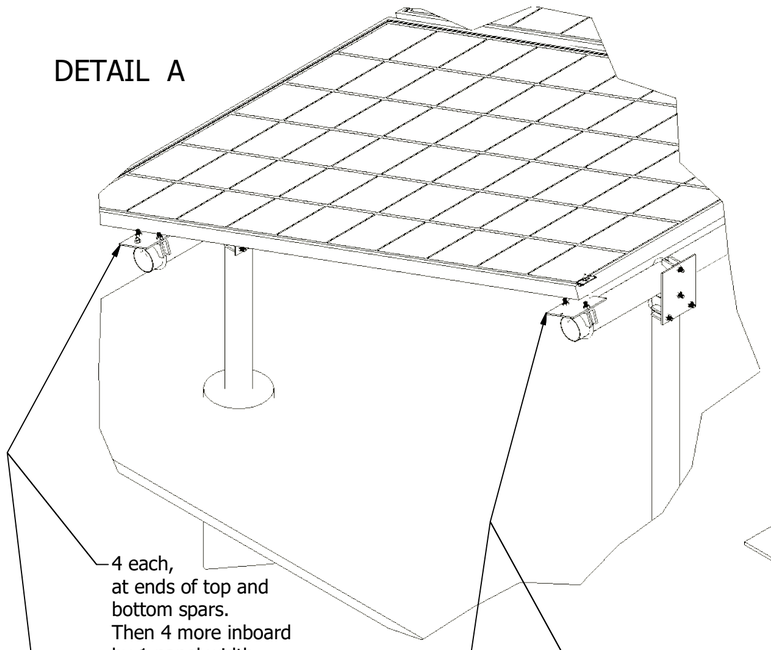
Column Spacing = Hypoteneuse x cos(Elevation Angle)
51.36 = ?? 54.75 x cos(20)
Close enough!

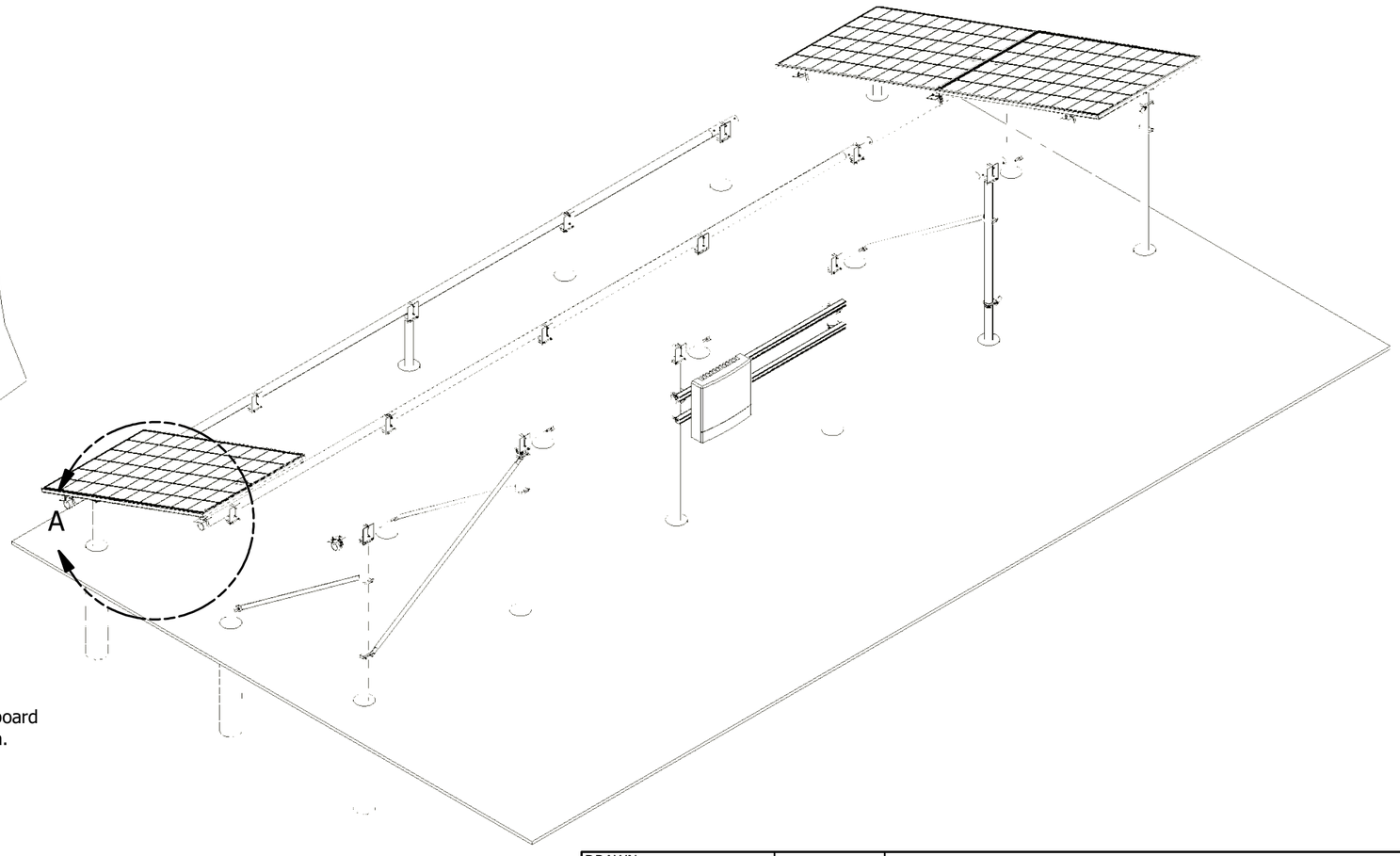
DRAWN BillS	5/3/2021	Watt-Tracker,LLC
CHECKED		TITLE: Array End View and Column Spacing Math
QA		
MFG		
APPROVED		
SIZE C	DWG NO 2x8_GroundMount_285	REV
SCALE	SHEET 8 OF 9	

Assembly Notes:

1. Assemble 18 columns with hardware shown on Page 3.
2. Mark the midpoint of the horizontal spar with electrical tape. (See page 4) The spar is 323" = 26'-11". This is the split between the 2 center panels.
3. Place tape 30" on either side of center tape. This is the location of the center 2 columns. Then mark 2 more column locations on either side.
   These marks, except for the midpoint, are the column locations. Lay the spar on the ground and mark the column locations.
4. On page 8, the front-to-back column spacing is listed. Use the taped spar to mark the remaining column locations. 12 each.
5. With an auger, bore out holes 35" deep. Place te 18 columns in the bored holes, and mount 3 horizontal spars to the columns. Use the tape locations to locate the points to attach the column tops. The spar makes a line of columns straight.
6. Add the braces, without tightening the pipe clamps.
7. Add 4 panels, 2 on either end, with the MC4 cables oriented toward the middle columns.This will establish the spar spacing, front to back.
   In the photo, you will note that the panel upper edge is flush with 2 midclamps, pictured on page 6. Add another panel and clamp.
   Then attach the upper/lower clamps, shown on the LL view. The goal is to establish the front to back column spacing.
8. With 4 panels installed, go about making the columns vertical. Use a hammer! tighten the front to back braces.
9. The connections to the inverter are 2 strings of 8 panels in series. You will need some #12 PV wire with MC4 Connectors on one end..
   The 2 strings, 8 panels in series, can be like 2 U's with the open parts facing one another. The 2 bare wires connect to the inverter lower section.

DETAIL A





DRAWN BillS	5/3/2021	Watt-Tracker,LLC	
CHECKED			
QA		TITLE Notes	
MFG			
APPROVED			
		SIZE C	DWG NO 2x8_GroundMount_285 REV
		SCALE	SHEET 9 OF 9