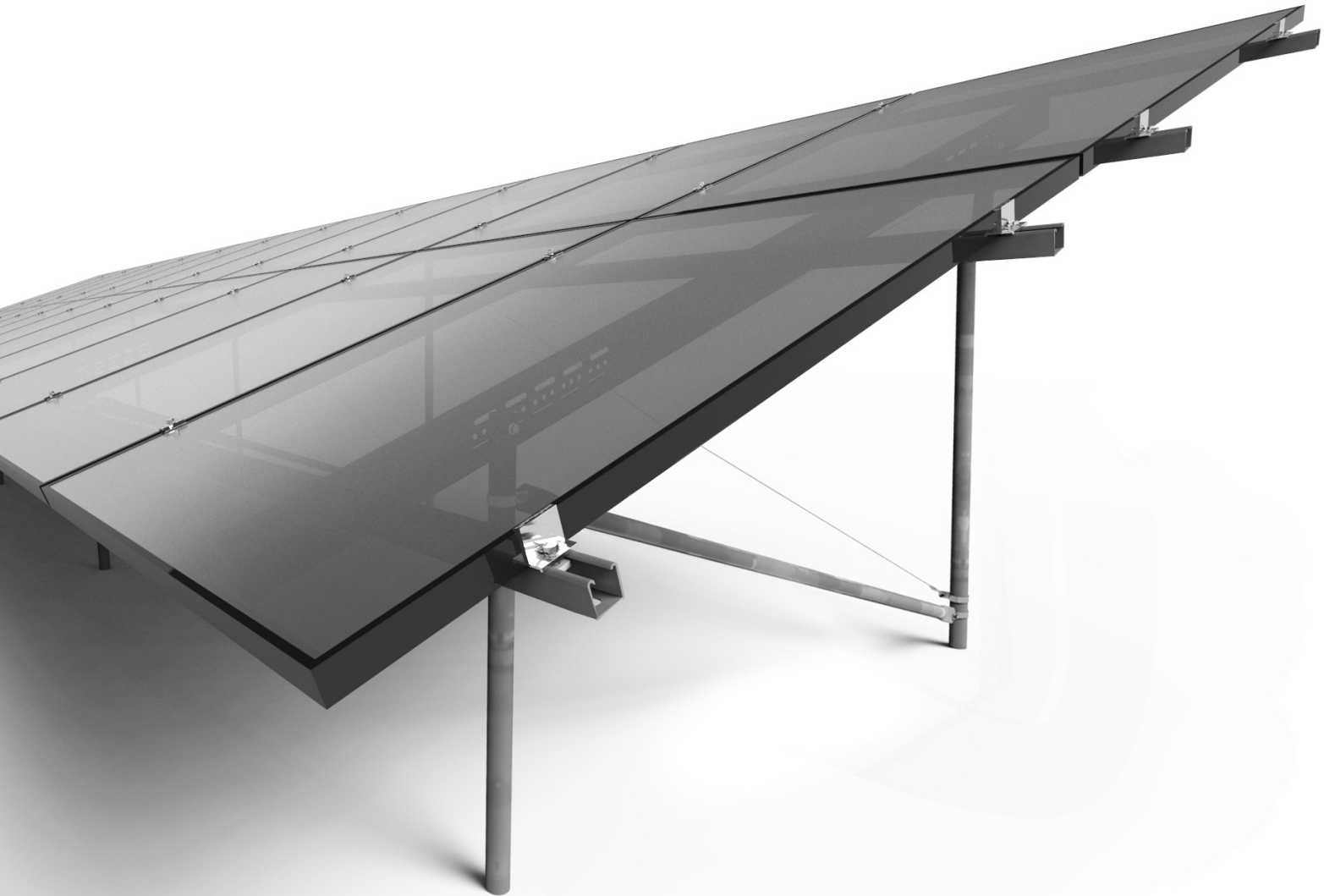


# READY RACK

A DIVISION OF  SOLAR RACKING



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## PARTS LIST

### 488-TRUSS

- [1] FRONT (SOUTH) UPPER POST\*
- [2] REAR (NORTH) UPPER POST\*
- [3] CROSS BRACE TUBE\*
- [4] N/S CHORD\*

### 488-TRUSSHDW (IN 488-TRUSS)

- [5] TUBE CLAMP
- [6] CABLE BRACING
- [7] 3/8-16 SERRATED FLANGE NUT
- [8] 3/8-16 CHANNEL NUT
- [9] 3/8-16X1.00" SERRATED FLANGE BOLT
- [10] 3/8-16X2.75" SERRATED FLANGE BOLT
- [11] TUBE CLAMP BOLT
- [12] GRIPPLE LARGE PLUS

### 488-FDTN

- [13] HELICAL (HELICAL)\*
- [14] HELICAL SPACER (HELICAL)
- [15] LOWER TUBE (HELICAL)\*
- [16] M16-2.0X25 HEX SET BOLT (SCREW)
- [17] GROUND SCREW (SCREW)\*

### 488-PURLIN (G582 SERIES)

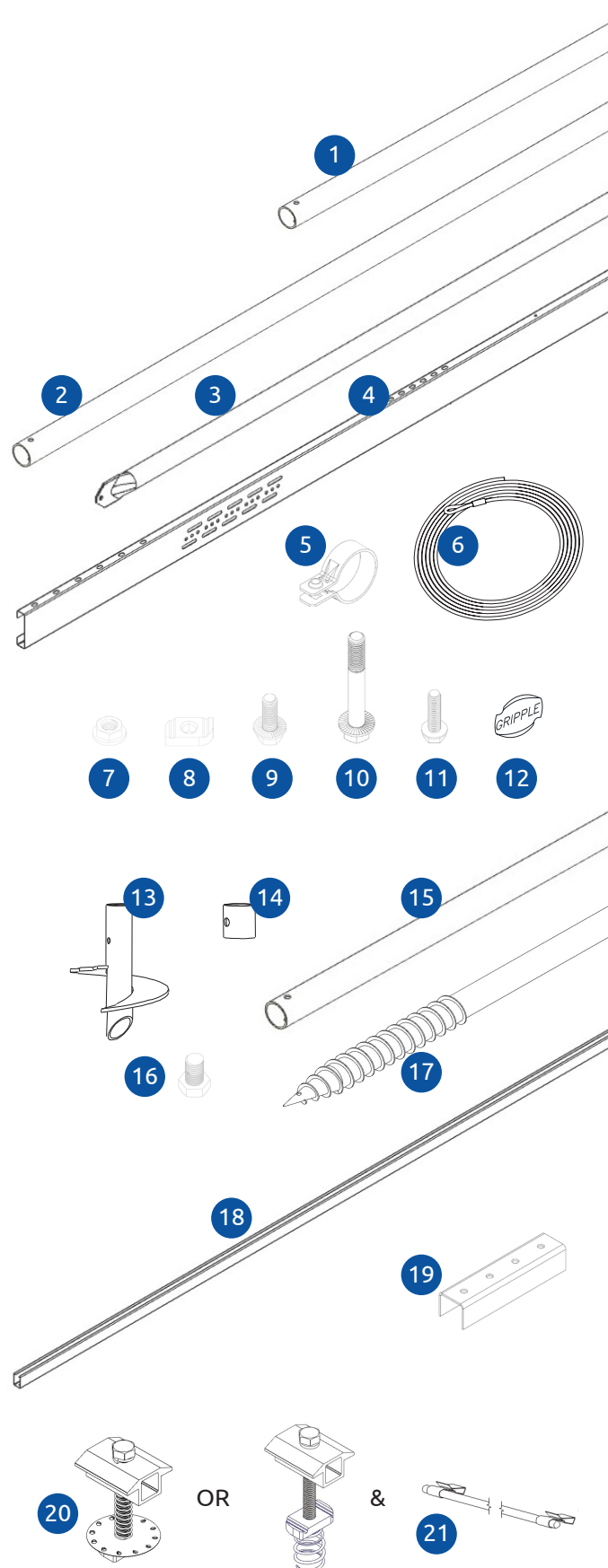
- [18] E/W STRUT PURLIN\*

### 488-SPLICE

- [19] STRUT SPLICE
- [7] 3/8-16 SERRATED FLANGE NUT
- [9] 3/8-16X1.00" SERRATED FLANGE BOLT

### 488-MODL

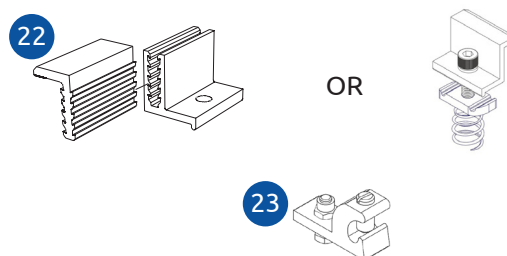
- [20] MID CLAMP ASSEMBLY\*
- [21] DYNOBOND (IF APPLICABLE)



## PARTS LIST (CONTINUED)

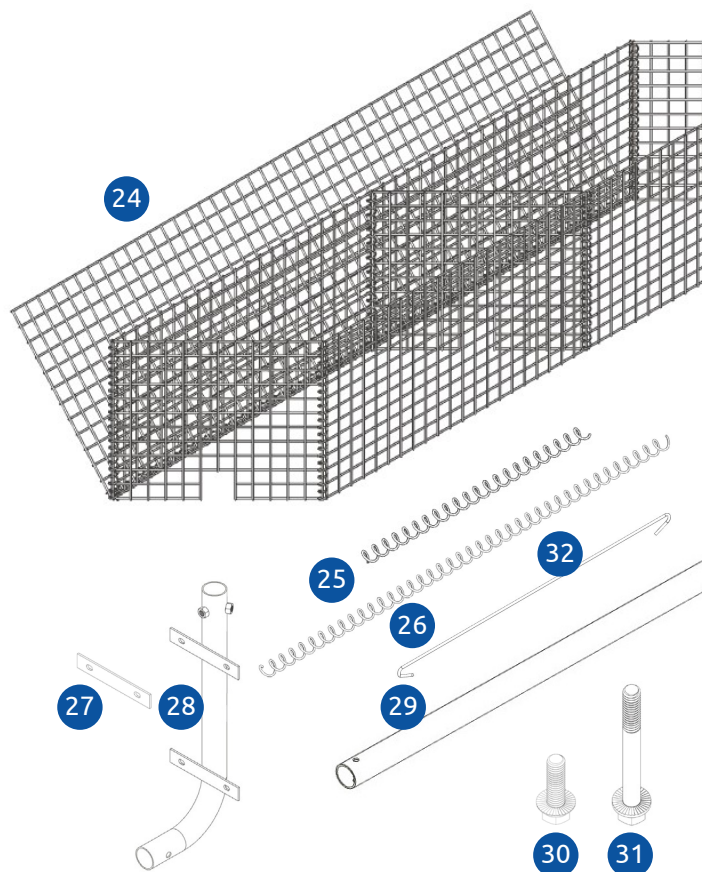
### 488-ROW

- [22] END CLAMP ASSEMBLY\*
- [23] GROUNDING LUG
- [21] DYNOBOND (IF APPLICABLE)



### \*488-BLST (ALTERNATIVE FOUNDATION)

- [24] WIRE BASKET ASSEMBLY
  - FOLDED WIRE BASKET
  - SHORT SPIRAL RING [25]
  - LONG SPIRAL RING [26]
- [27] ELBOW CLAMP PLATE
- [28] ELBOW TUBE
- [29] BASE TUBE
- [30] 3/8-16X1.25" SERRATED FLANGE BOLT
- [31] 3/8-16X3.00" SERRATED FLANGE BOLT
- [32] BASKET STABILIZER
- [1] FRONT (SOUTH) POST
- [2] REAR (NORTH) POST
- [3] CROSS BRACE TUBE
- [4] N/S CHORD
- [5] TUBE CLAMP
- [6] CABLE BRACING
- [7] 3/8-16 SERRATED FLANGE NUT
- [8] 3/8-16 CHANNEL NUT
- [9] 3/8-16X1.00" SERRATED FLANGE BOLT
- [10] 3/8-16X2.75" SERRATED FLANGE BOLT
- [11] TUBE CLAMP BOLT
- [12] GRIPPLE LARGE PLUS
- [16] M16-2.0X25 HEX SET BOLT (SCREW)



### ACCESSORIES (NOT SHOWN)

- 488-CHCK-H HELICAL DRIVE BIT
- 488-CHCK-S GROUND SCREW DRIVE BIT
- 488-INVM MICRO INVERTER MOUNTING KIT
- 488-CAP STRUT END CAP KIT

#### \*NOTE

Parts style, length, size, appearance, hole pattern or other features may vary from what is shown depending on the project requirements and the engineering used.

## CONSTRUCTION 101

All structures, regardless of how complex, are built one step at a time. Each new step builds on the previous. In order for the final structure to be complete, it is best to ensure that each step is done correctly. It is far easier, faster, and cheaper to take your time to ensure each step is done correctly before moving on. There is no remedy for an error other than a correction. Time and effort will be put forth eventually to redo steps, reconstruct, and make adjustments, but far less effort is required to correct mistakes as they appear. If errors are fixed immediately, each subsequent step will begin correct and installation will run more efficiently.

On large projects, it is recommended to completely install a test row from beginning-to-end of the row, and from beginning-to-end of all steps (from layout, to panel installation, and adjustments). This will help you understand not only how to install the product, but understand how tolerances stack up, how mistakes in one step cause errors in other steps, and how to make the adjustments required to keep everything in tolerance and looking good.

## SITE PREPARATION

Site preparation should be conducted prior to construction. This will typically involve grubbing, rock and debris removal, and any other preparation that will facilitate swift and unhindered installation. For the Geoballast foundation, this may require the preparation of level stone pads.

## UTILITIES

All utilities should be marked before any construction begins.

## ENGINEERING

Prior to installation, make sure to fully review the applicable structural print package and calculation package documents. For convenience, the project's quote will also contain the setup ID number, maximum East-West span and cantilever measurements, as well as the effective East-West span and cantilever used when it was quoted. It is the installer's responsibility to verify all measurements conform to the engineering documents prior to installation.

## LAYOUT

To ensure that the solar array is installed in accordance to the engineering documents, each foundation point should be marked prior to installation, and the site laid out and marked. This includes the North and South foundation locations for the Ready Rack system.

## NOTE

For large projects, foundation locations should be marked by a professional surveyor.

## REVIEW & INSTALLATION PREPARATION

After site preparation has been completed and the site layout is done, the foundations are ready to be installed. It is the responsibility of the installer to review and understand the engineering documents, surroundings, installation procedures, and to manage the installation to completion. Each project has different requirements (embedment depths, spans, etc.) that need to be met. The installer must verify that the foundations on site match the order and project requirements.

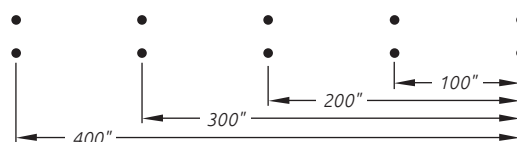
Measurements and materials will change depending on the project's requirements. Closely follow the engineering documents that match the project's requirements and if there are any questions or discrepancies, reach out for assistance before installing any foundations.

## UNEVEN GROUND

For sites with ungraded or rolling topography, it is important to ensure that the foundations are set to the correct depths.

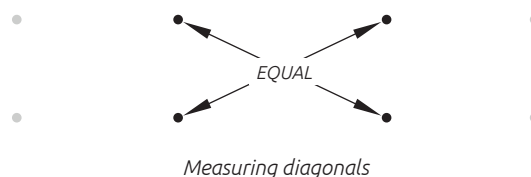
## MEASURING

All measurements in the East-West direction must be made with a steel tape measure, and made from the start of the row, not foundation-to-foundation. For example, if the engineering documents were to call for the first 4 spans to be 100" each, the tape should be staked to the ground, and the ground should be marked at 0", 100", 200", 300", 400".



Measuring from foundation-to-foundation allows tolerances to stack up. In this case, a 2" tolerance would have stacked up to be 8" off by only the fifth foundation, and will cause major installation issues further down the road. If necessary, tape measures should be marked prior to use to indicate additive measurements (ie. 0", 8'4", 16'8", 25'0", 33'4").

For Ready Rack systems, the North and South points must remain in line with each other (one should not "chase" the other). Ensure the points are square every few sets by measuring diagonals. If marks are found to be out of square, make adjustments to correct.



## FOUNDATION INSTALLATION (HELICAL)

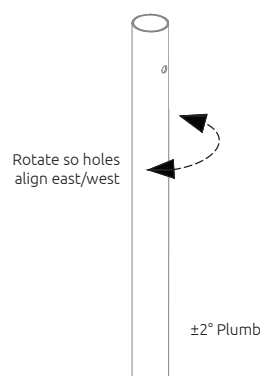
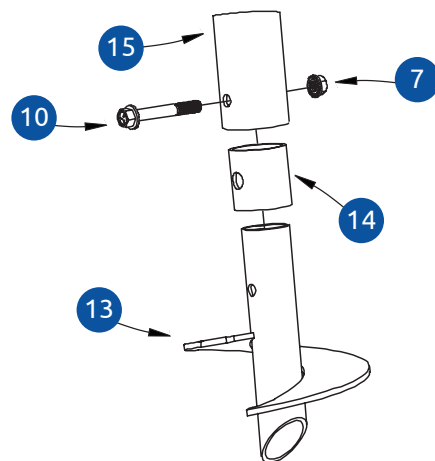
1. Attach the helicals to lower tubes.

- [13] HELICAL
- [14] HELICAL SPACER
- [15] LOWER TUBE
- [7] 3/8-16 SERRATED FLANGE NUT
- [10] 3/8-16X2.75" SERRATED FLANGE BOLT

2. Drive the foundation using a skid steer, auger attachment, and drive bit, starting at one end of the site for the South side posts. Ensure the foundation is held plumb and in the proper location using a level.

3. Drive the foundation to the correct depth as indicated by the engineering documents. Also ensure the upper bolt holes are rotated to align in the East-West direction.

4. Install all remaining foundations, using a string line as a guide for placement and height if necessary. Use a tape measure as described in the preparation process for checking locations and diagonals.



## POST INSTALLATION (HELICAL)

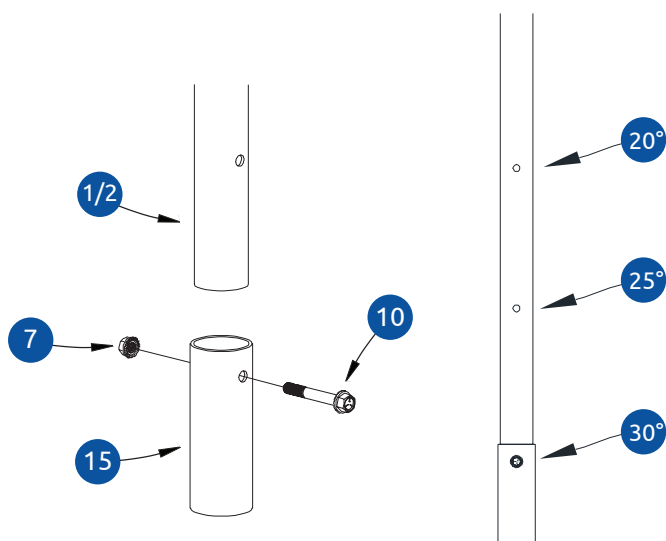
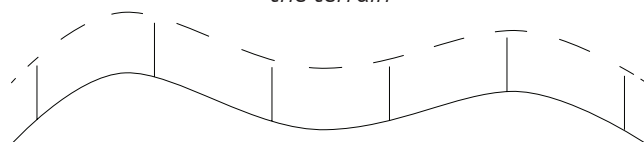
1. Attach the front (South) upper posts to the lower tubes using the pre-drilled hole locations.

- [1] FRONT (SOUTH) UPPER POST
- [2] REAR (NORTH) UPPER POST

2. Attach the rear (North) upper posts to the lower tubes using the pre-drilled hole locations, selecting the hole that corresponds to the desired tilt angle in the engineering documents.

3. Confirm that all upper post holes align in the East-West direction. Adjust foundations as necessary.

*Racking should conform to the terrain*



### NOTE

The holes in the rear (North) upper tubes will vary. Refer to the applicable engineering documents to ensure the correct hole is used to achieve the desired tilt.

## FOUNDATION INSTALLATION (SCREW)

1. Preinstall the set bolts to ensure the integrity of the welded nut.
2. Drive the foundation using a skid steer, auger attachment, and drive bit, starting at one end of the site for the South side foundations. Ensure the foundation is held plumb and in the proper location using a level.
3. Drive the foundation to the correct depth as indicated in the engineering documents.
4. Install all remaining foundations, using a string line as a guide for placement and height if necessary. Use a tape measure as described in the preparation process for checking locations and diagonals.

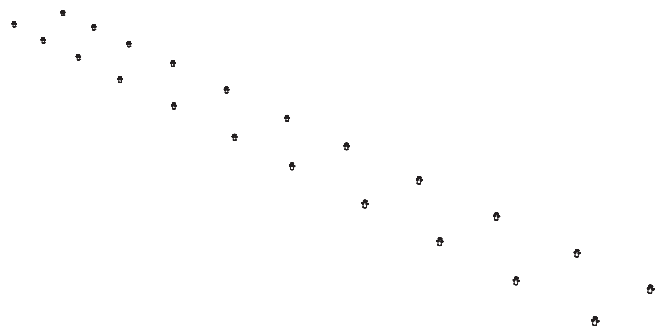
## ALTERNATE FOUNDATION INSTALLATION

For sites with medium-to-heavy rock or bedrock, holes may need to be piloted and backfilled prior to foundation install. When required, perform the following steps prior to the steps above.

1. With an auger or rock drill, drill a pilot hole to correct depth and diameter.
2. Fill the hole with stone as indicated by APA. The amount of stone varies based on the site's soil type.

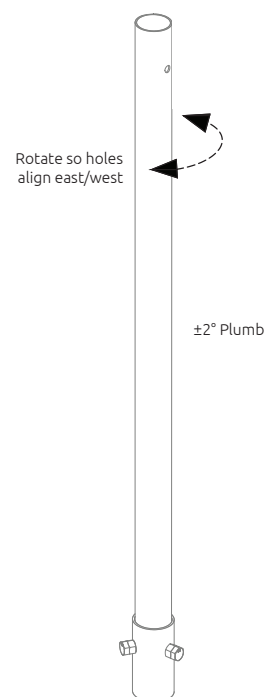
## POST INSTALLATION (SCREW)

1. Insert the front (South) post at the first point on the South set of foundations.
2. Measuring from the ground to the top of the post, ensure the post is at the correct height according to the engineering documents. Also ensure the upper bolt holes are rotated to align in the East-West direction. Temporarily secure the post in place with a quick clamp or similar tool.
3. Repeat further down the front (South) side of the row with another foundation to create the next attachment point for the string line, once again measuring and ensuring plumbness. When topography is present, additional transition posts must be installed at transition points so that the string line can flow through hills and valleys at a moderate rate. Although the racking will follow terrain, it has limitations. Therefore, ensuring smooth flow will greatly aid the installation process.



### NOTE

Check all foundation locations before pilot drilling.





## POST INSTALLATION (SCREW - CONTINUED)

4. Continue to the end of the row as required to set a string line.

5. Run a string line between all foundations at the same height. For consistency, string line should run along the same side of the foundation for the entirety of the site. For example, always wrap counterclockwise, then install new posts on the South side of the string. This will help prevent zigzagging.

6. Ensure the heights of all posts are correct and flow with the terrain in the method indicated in the engineering documents.

7. Secure the transition posts at the foundations with three (3) bolts and remove the temporary clamps.

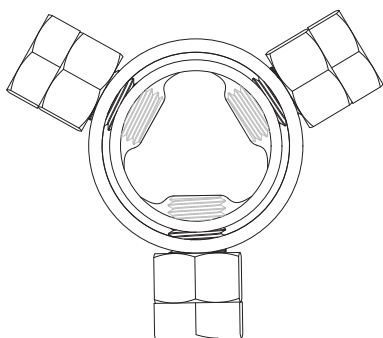
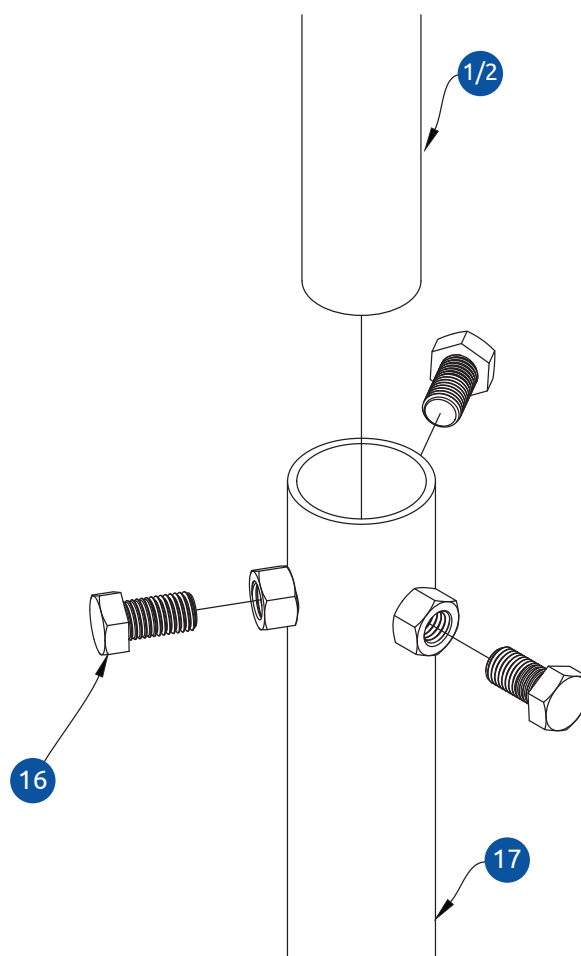
**[17]** SCREW FOUNDATION

**[1/2]** FRONT (SOUTH)/REAR (NORTH) POST

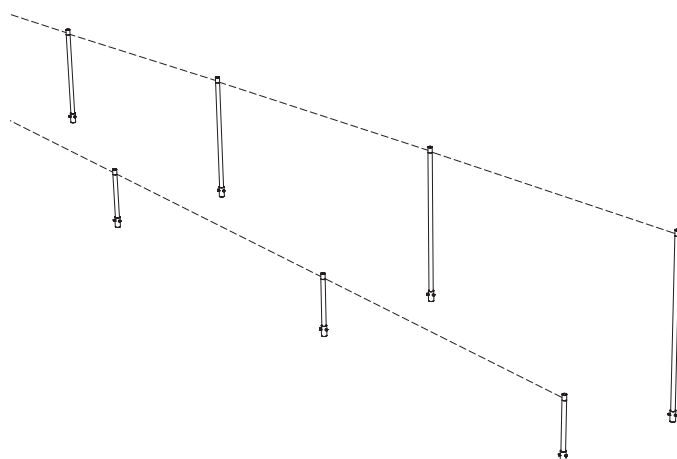
**[16]** M16X2.0 25MM HEX BOLT (GROUND SCREW SET BOLT)

8. Once heights are verified correct and rotation is correct, bolts can be tightened. Every post should be checked to ensure the bolts are fully seated.

9. Once the front (South) side posts are installed, set the rear (North) side posts by adjusting the height to the designed tilt angle per foundation set. Use a steel guide and angle finder to determine the tilt. Repeat the string method for the rear (North) side posts.



*Top view of post and fully tightened bolts*



## BASKET ASSEMBLY (BALLAST)

1. Unfold the semi-assembled wire basket assembly.

- [24] WIRE BASKET ASSEMBLY
- [27] ELBOW CLAMP PLATE
- [28] ELBOW TUBE
- [29] BASE TUBE
- [7] 3/8-16 SERRATED FLANGE NUT
- [30] 3/8-16X1.25" SERRATED FLANGE BOLT
- [31] 3/8-16X3.00" SERRATED FLANGE BOLT
- [25] SHORT SPIRAL RING
- [26] LONG SPIRAL RING
- [32] BASKET STABILIZER

2. Bolt the base tube to the elbow tubes.

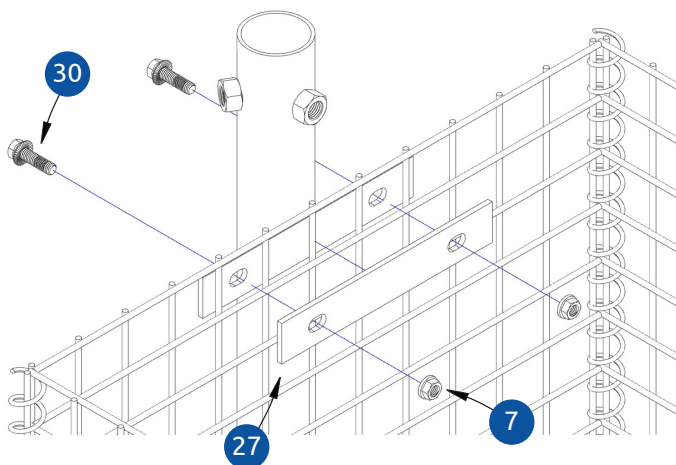
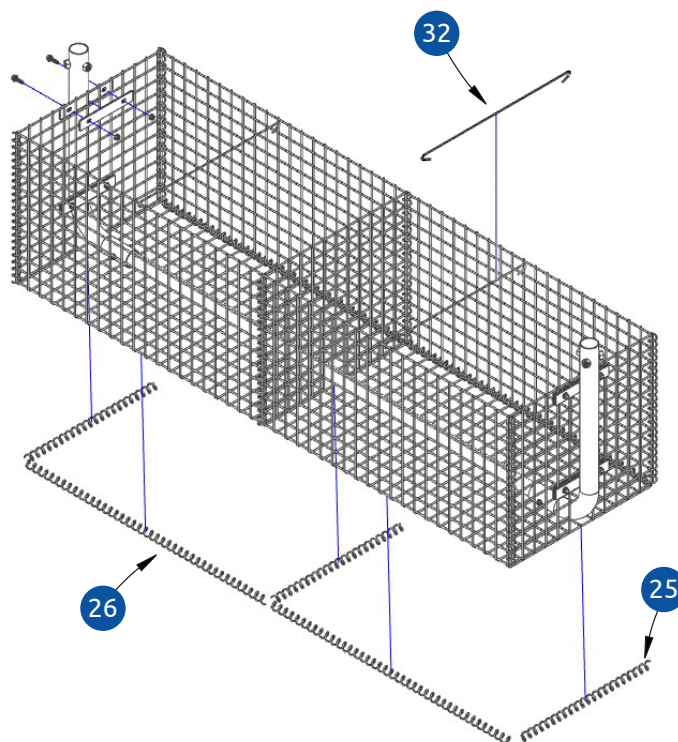
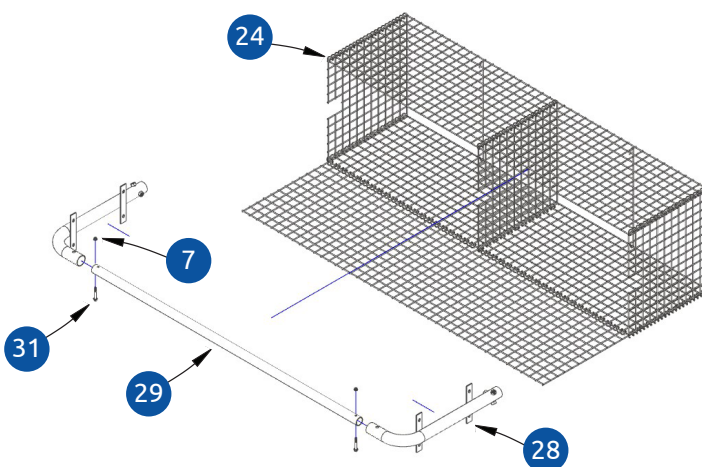
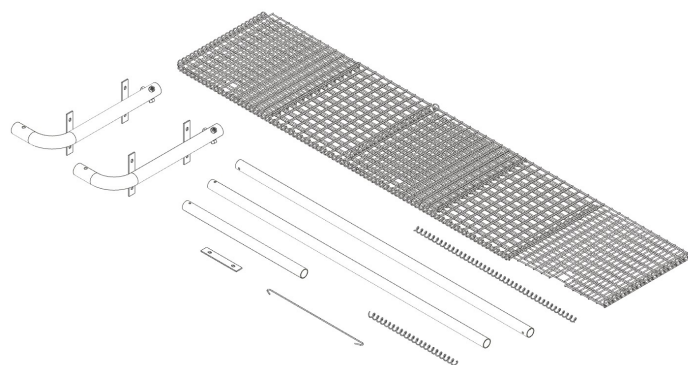
3. Place the wire basket assembly on its side and position the elbow and base tube assembly into the bottom of the wire basket assembly so that it is positioned within the cutouts of the mid and end panels of the basket.

4. Fold the bottom panel of the basket back into place and insert the short spirals. Then proceed by inserting the long spirals.

5. Stand the assembly up and check elbow tube for plumbness.

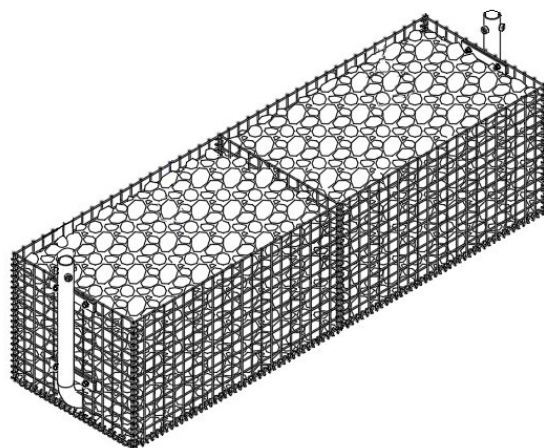
6. Secure the elbow tubes to the basket assembly using the elbow clamp plate by placing it inside the basket and pinching the wire mesh of the basket between the two surfaces.

7. Install stabilizer to ensure basket integrity.



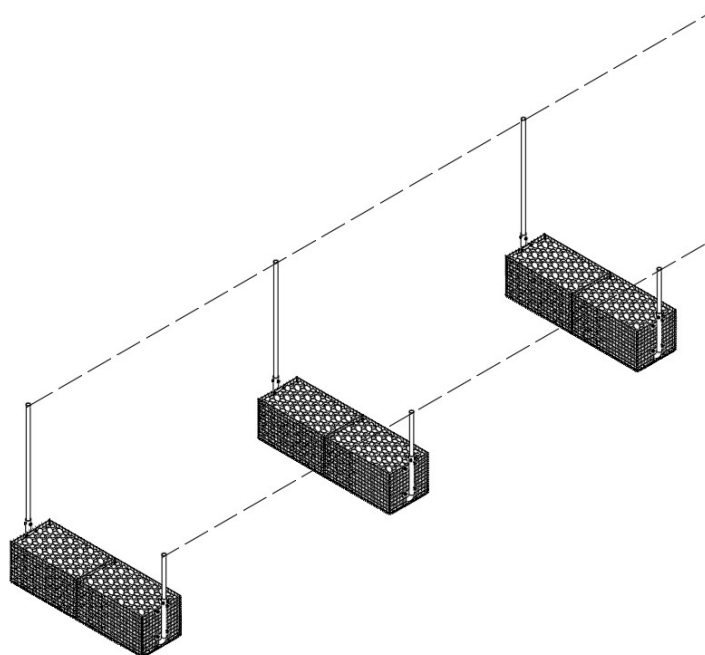
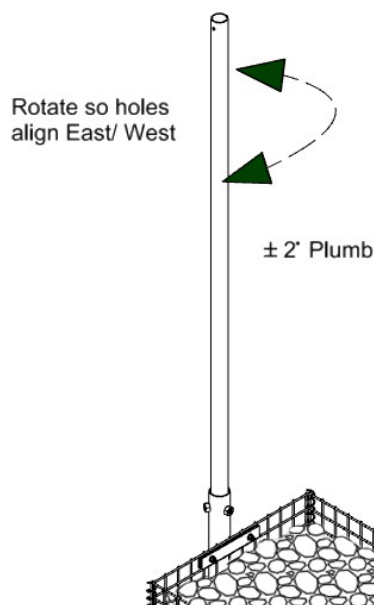
## BALLAST STAGING & FILL WITH AGGREGATE

1. Stage the basket and tube assembly at each foundation location.
2. Position the basket and tube assembly so that the North and South foundation points align with the center of the elbow tube. Stage all ballast assemblies in the row.
3. Once the location has been confirmed, fill the ballast assemblies with aggregate as specified in the engineering documents.



## POST INSTALLATION (BALLAST)

1. Insert the front (South) post at the first point on the South set of elbow tubes.
2. Measuring from the ground to the top of the post, ensure the post is at the correct height according to the construction plans. Also ensure the upper bolt holes are rotated to align in the East-West direction. Temporarily secure the post in place with a quick clamp or similar tool.
3. Repeat further down the front (South) side of the row with another foundation to create the next attachment point for the string line, once again measuring and ensuring plumbness. When topography is present, additional transition posts must be installed at transition points so that the string line can flow through hills and valleys at a moderate rate. Although the racking will follow terrain, it has limitations. Therefore, ensuring smooth flow will greatly aid the installation process.
4. Continue to the end of the row as required to set a string line.
5. Run a string line between all foundations at the same height. For consistency, string line should run along the same side of the foundation for the entirety of the site. For example, always wrap counterclockwise, then install new posts on the South side of the string. This will help prevent zigzagging.
6. Ensure the heights of all posts are correct and flow with the terrain in the method indicated in the construction plans.



## POST INSTALLATION (BALLAST - CONTINUED)

7. Secure the transition posts at the foundations with three (3) bolts and remove the temporary clamps.

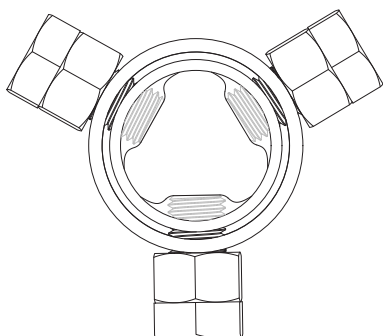
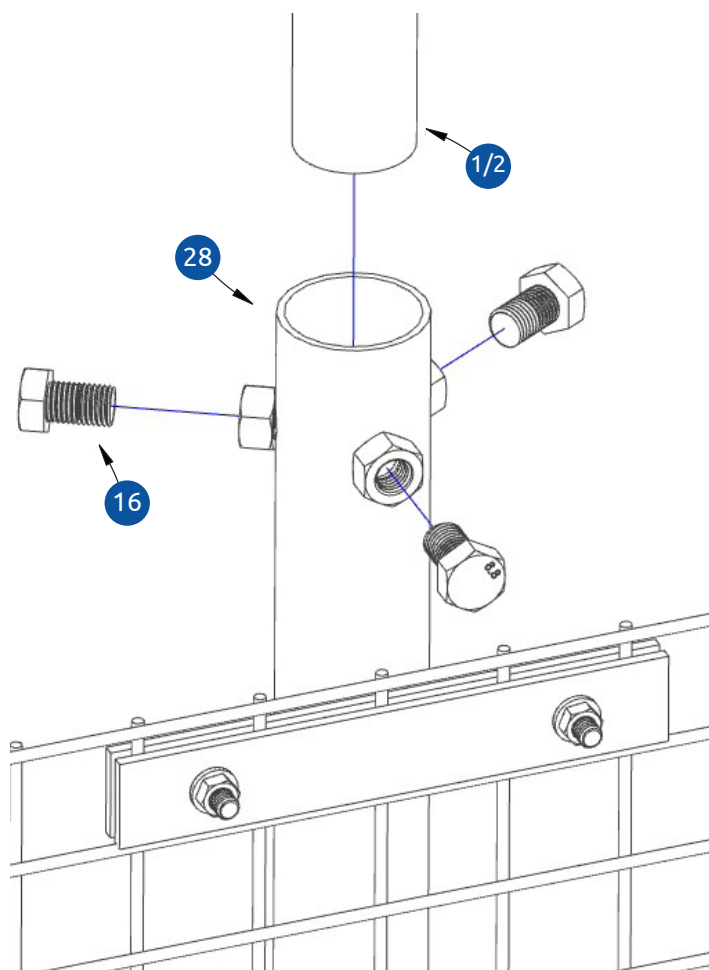
[1/2] FRONT (SOUTH)/REAR (NORTH) POST

[28] ELBOW TUBE

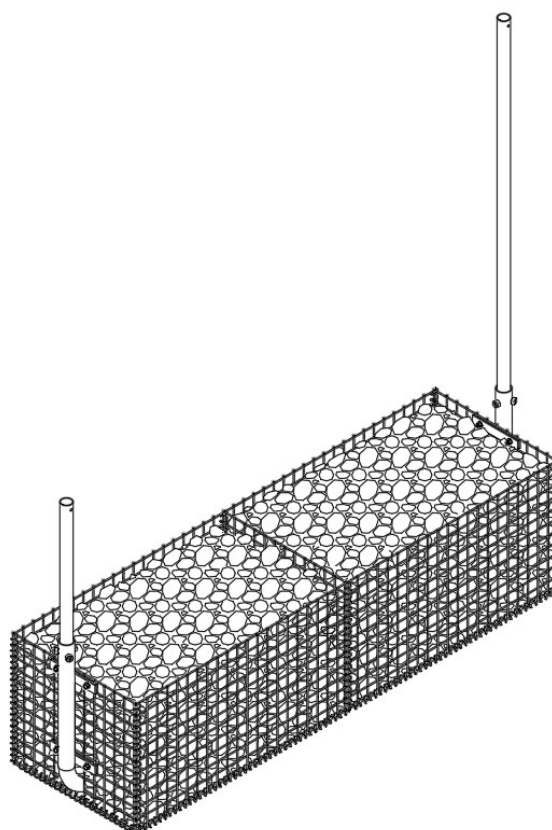
[16] M16X2.0 25MM HEX BOLT

8. Once heights are verified correct and rotation is correct, bolts can be tightened. Every post should be checked to ensure the bolts are fully seated.

9. Once the front (South) posts are installed, set the rear (North) side posts by adjusting the height to the designed tilt angle per foundation set. Set a steel guide on top of the front (South) and rear (North) posts and use an angle finder to determine the tilt. Repeat the string method for the rear (North) side posts.



*Top view of post and fully tightened bolts*



## TUBE CLAMP STAGING

1. Slide the tube clamps over both the rear (North) and front (South) posts prior to attaching the N/S chord. If this step is missed, you may stretch the clamp apart, fit it around the post, and squeeze it back to its original shape. Refer to the engineering documents for the bracing requirements and locations.

[5] TUBE CLAMP

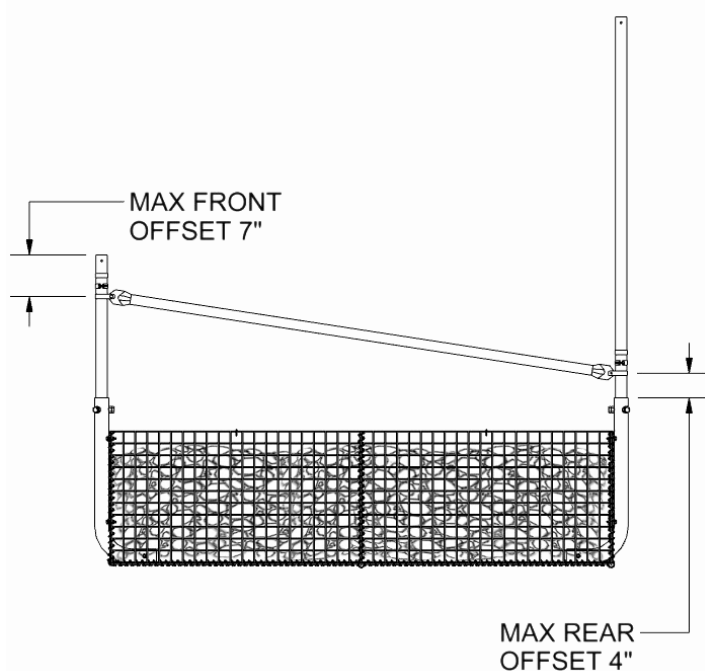
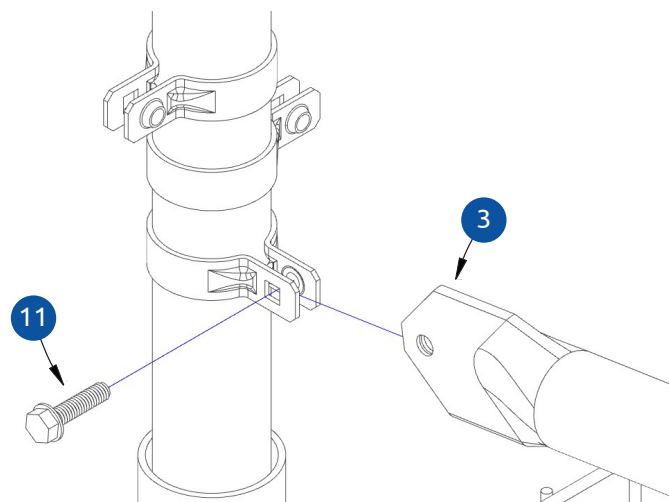
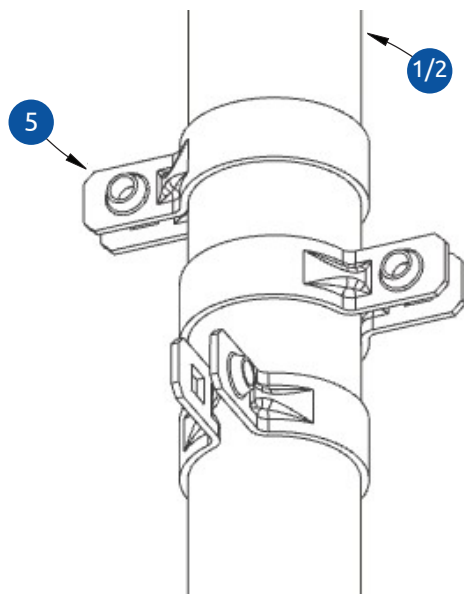
[1/2] FRONT (SOUTH)/REAR (NORTH) POST

## CROSS BRACE TUBE INSTALLATION (BALLAST)

1. Install the cross brace tube at the lower location on the rear (North) post and at the upper location on the front (South) post.

[3] CROSS BRACE TUBE

[11] TUBE CLAMP BOLT

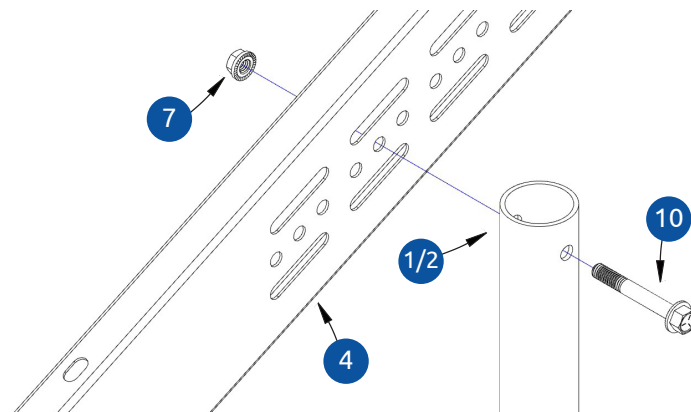




## N/S CHORD-TO-POST

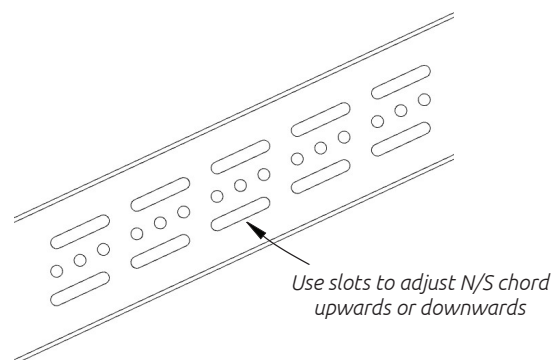
1. Attach the N/S chord to the West side of the posts. Refer to the engineering documents for the nominal hole locations.

- [4] N/S CHORD
- [1/2] FRONT (SOUTH)/REAR (NORTH) POST
- [10] 3/8-16X2.75" SERRATED FLANGE BOLT
- [7] 3/8-16 SERRATED FLANGE NUT



## FINE HEIGHT ADJUSTMENT

1. Sighting down a row, looking from East or West, look for inconsistencies in the heights of the racking. Adjust the height by removing the N/S chord hardware and adjusting the height using the adjustment holes before re-attaching the hardware.



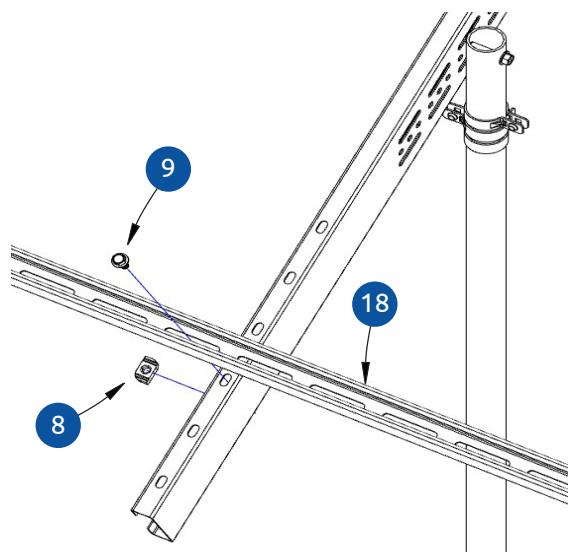
## E/W STRUT PURLIN-TO-N/S CHORD

1. Bolt the E/W strut purlin to the N/S chord using the correct hole location per the engineering documents and the corresponding module clamp zone.

- [18] E/W STRUT PURLIN
- [9] 3/8-16X1.00" SERRATED FLANGE BOLT
- [8] 3/8-16 CHANNEL NUT

### NOTE

Hole patterns in N/S chord will vary.



## E/W STRUT PURLIN SPLICE

1. Connect two E/W strut purlins by using the splice to make a continuous rail. Stagger the location of the splices between foundations to reduce sagging.

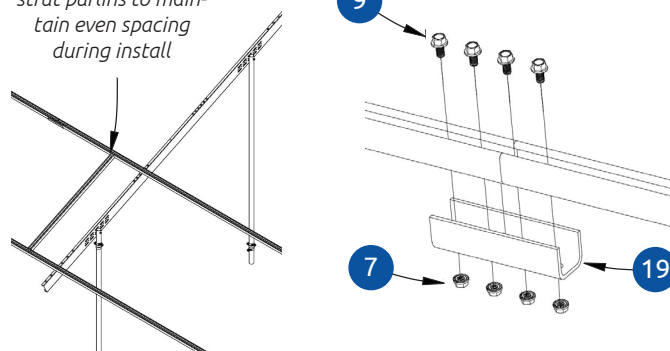
[19] STRUT SPLICE

[7] 3/8-16 SERRATED FLANGE NUT

[9] 3/8-16X1.00" SERRATED FLANGE BOLT

2. Ensure the bottom or southern most E/W strut purlin is straight by adjusting it in the slot or by moving the N/S chord. Once visually straight, fasten down. Use spacers (scrap wood, scrap metal, etc.) to set the remaining E/W strut purlins to keep even spacing per the construction documents.

Use temporary spacers between E/W strut purlins to maintain even spacing during install

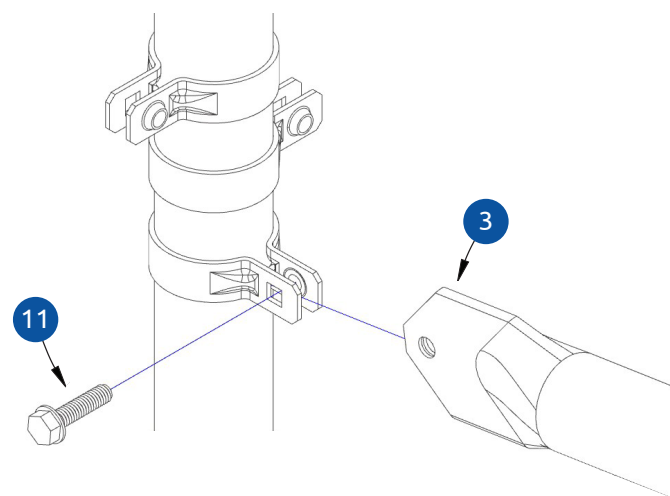


## CROSS BRACE TUBE INSTALLATION (SCREW / HELICAL)

1. Install the cross brace tube at the lower location on the rear (North) post and at the upper location on the front (South) post. Check the engineering documents for the appropriate placement and tolerances.

[3] CROSS BRACE TUBE

[11] TUBE CLAMP BOLT

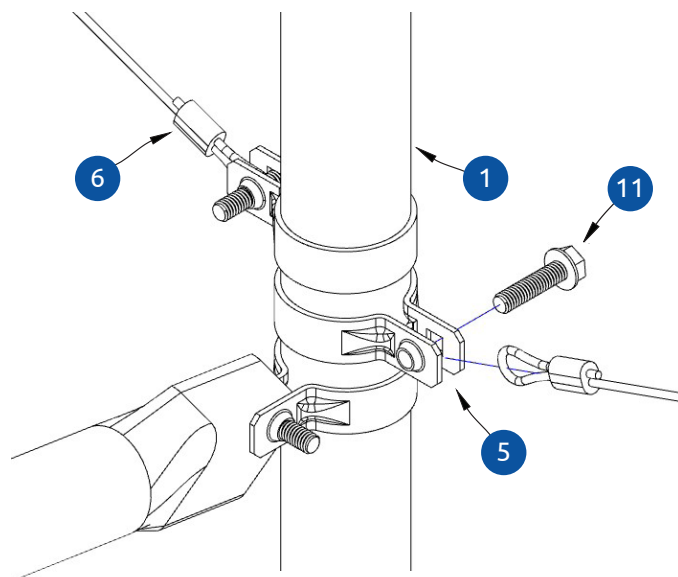


## CABLE BRACE-TO-FRONT (SOUTH) POST

Refer to the engineering documents for locations and frequency of cable bracing.

1. If clamps were not installed prior to installing the N/S chord (highly recommended), spread the clamp apart, slide around the post, and re-compress it. Install clamps on the front (South) and rear (North) posts as required.
2. Once clamps are installed, string a cable between the two clamps.
3. Secure cable with bolts, loosely. Ensure that the bolts are pointing to the interior of the rack. Close the open end of the cable with the gripper, creating a loop at the appropriate length.
4. Install all cables on the front (south) posts as indicated in the engineering documents. Cables should be taut and have no noticeable slack or sag.

- [1] FRONT (SOUTH) POST
- [11] TUBE CLAMP BOLT
- [6] CABLE BRACING
- [5] TUBE CLAMP



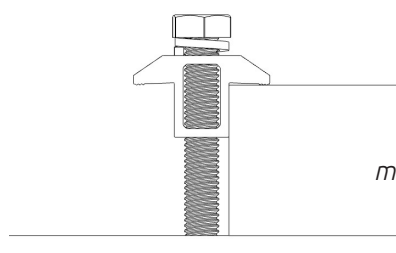
### NOTE

Cable braces are not used to induce static tension, like trusses of a bridge, but instead only to keep the posts from spreading or shifting.

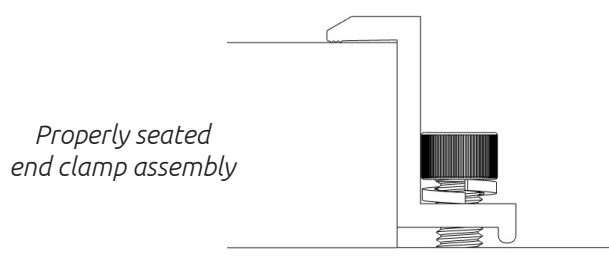


## PANEL INSTALLATION

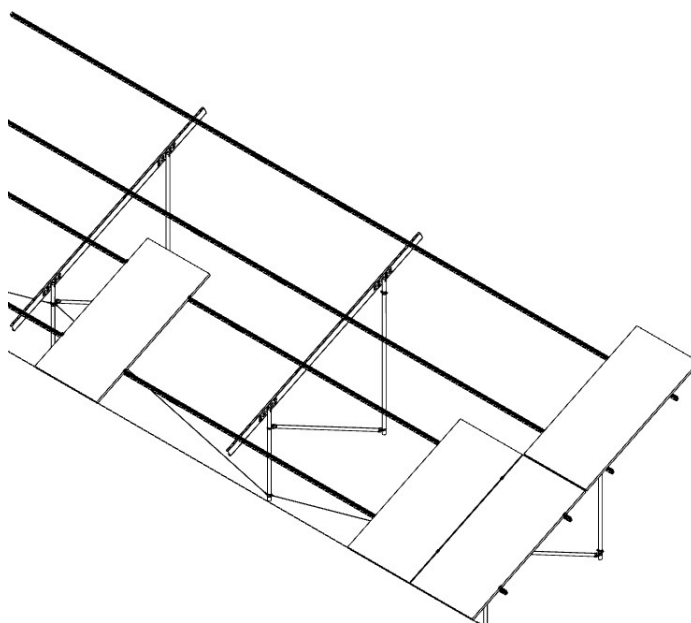
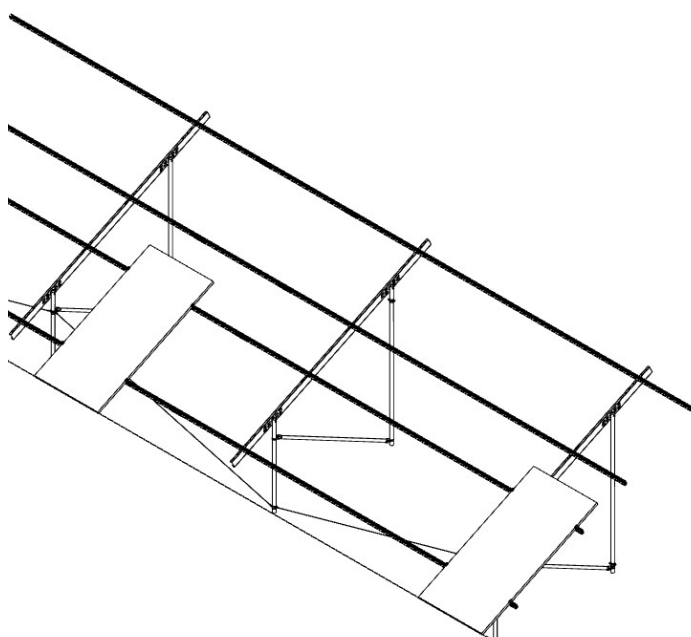
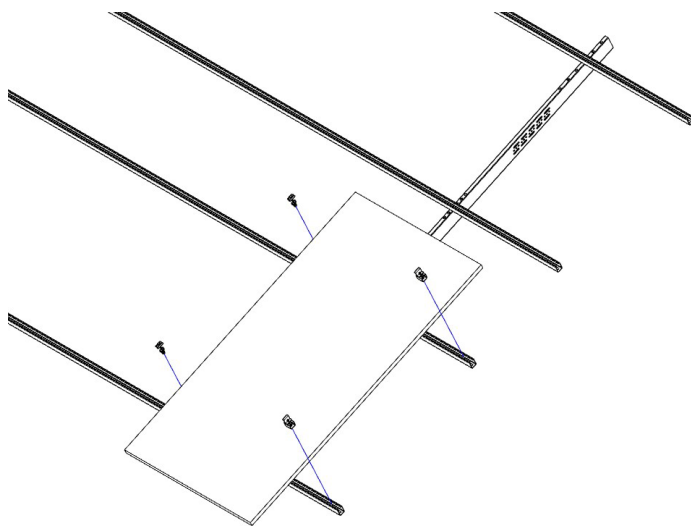
1. Beginning at one end, start setting the panels by squaring the first panel to the bottom E/W strut purlin.
2. Place the top panel after squaring the bottom panel. Make sure the spacing between the top and bottom panel is correct. Note: Use a fixture to create the proper gap, such as a piece of wood and spare clamp from the site.
3. Place transition panels periodically throughout the row, squaring them to the rack as you go. Once these transition panels have been placed, run a string across them to create your leading edge for the row. This is done to provide the best aesthetics while keeping the panel placement within specification.
4. Stage panels throughout the row in preparation to be set to the string line.
5. When starting panels, mid clamps can be placed in any area of the E/W strut purlin, except for splice locations.
6. Tighten the clamps square to the panels and ensure the grounding teeth (if applicable) are coming into contact with the panel frame.
7. Repeat steps down the row, moving transition panels as you reach them if necessary.



*Properly seated  
mid clamp assembly*



*Properly seated  
end clamp assembly*

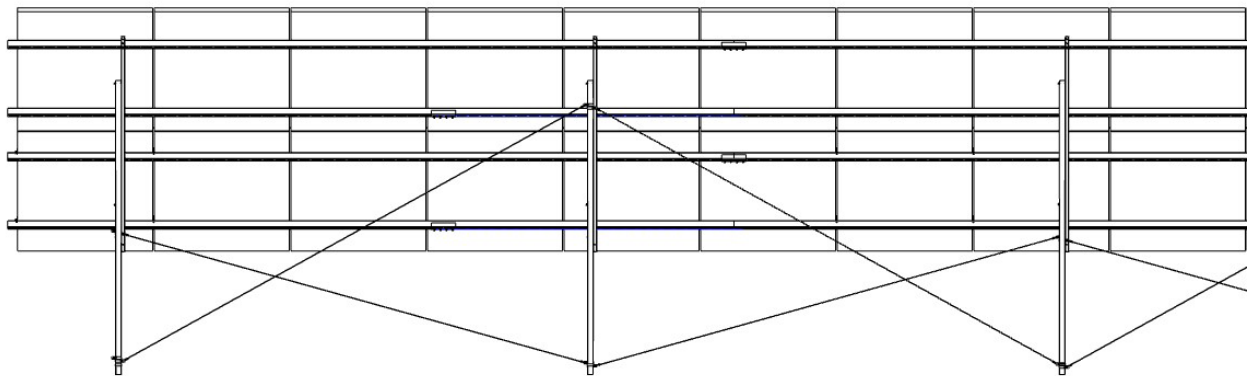


## CABLE BRACE-TO-REAR (NORTH) POST

1. Install the bracing on the rear (North) posts following the process used for front (South) posts.
2. Trim excess cable as desired for aesthetics.

### NOTE

Cable braces are not used to induce static tension, like trusses of a bridge, but instead only to keep the posts from spreading or shifting.



## OPERATION & MAINTENANCE

Regular inspections and proper maintenance are essential to maintain the design life and warranty of the Ready Rack solar racking system. Solar racking is exposed to many elements from initial construction to seasonal changes and can even be susceptible to severe weather conditions. The following Operation and Maintenance procedures should be followed and performed on an annual basis to ensure the warranty for the racking system remains active. The procedures below highlight the critical points to be examined and maintained for a properly functioning solar racking system.

### BOLTED CONNECTIONS

Bolted connections need to be visually inspected annually to ensure the components are properly joined together. At the beginning, middle, and end of each row, the installer should torque mark nuts/bolts per the manufacturer's QA/QC process. These marked locations should be visually inspected to confirm no movement of the bolted connections has occurred. If loose hardware is found, re-tighten to the specifications noted in the plan set for the racking system.

### SOLAR PANEL CLAMPS

Clamps need to be visually inspected annually to ensure modules are properly secured. If loose clamps are found, re-tighten to the specifications noted in the plan set for the racking system.

### GALVANIZE COATING

The galvanized coating ensures that the steel components are protected from corrosion and that the solar racking system will last for the entire project life. The solar racking system should be inspected annually for any areas of corrosion or rust. If areas are found, they should be repaired in a timely manner by cleaning the area and then generously applying cold galvanizing compound.

The cut, slit and sheared edges of the racking system are exposed steel that are expected to show corrosion or rust. This is normal and should be expected, but does not affect the structural integrity of the system.

Copper should be isolated and cannot touch the galvanized coating, as it will expedite corrosion.

### CROSS BRACING CABLE WIRE

If applicable to your project, the bracing needs to be visually inspected on an annual basis to ensure that it has not become loose. Cables are required to be taut for motion limiting, but do not need to be tensioned.

### SYSTEM DAMAGE

The solar racking system should be visually inspected for other types of damage. Examples include damage from mowing equipment, maintenance equipment, falling trees or branches, storm damage, system lean, soil erosion, etc. Any components that are damaged or deformed should be replaced as they may be weaker or corrode faster than intended. Some components may be able to be repaired onsite if replacement is not practical. For assistance with replacement parts or instructions on repairing a component, contact Ready Rack Solar.

### GENERAL OPERATION

It is important to maintain the solar racking system to ensure the design lifespan.

Keep all vegetation managed and off of the racking system and solar modules.

Check that module cleaner solution, weed killer, or other chemicals used on or around the solar racking system are not corrosive to galvanized or stainless steels.

Check electrical wiring to ensure it is managed properly and protected.

Take note and log when inspections were performed and if any corrective actions were taken or need to be taken in the future.