

## DynoRaxx® Evolution FR

Quick Guide Installation Steps

# Installer Responsibilities

Thank you for choosing to install a photovoltaic system using the proprietary DynoRaxxEVOLUTION FR system. As installer, your job is important to ensuring that the photovoltaic system, of which the DynoRaxx EVOLUTION FR system is a component, is strong, durable and problem free for its expected life. As a result, the installer is primarily responsible for the quality of installation of any photovoltaic system that includes the DynoRaxx EVOLUTION FR system. We ask that you review this installation manual thoroughly before installing your DynoRaxxEVOLUTION FR system to ensure the photovoltaic system is installed correctly. The photovoltaic system must be installed in accordance with the instructions in the owners manual including wind and load forces calculation to meet the requirements of the ASCE 7-05 and IBC 2006 code. DynoRaxx also provides a limited warranty on the DynoRaxx EVOLUTION FR system if installed according to the installation manual. By choosing the DynoRaxx EVOLUTION FR system, you get more than just a robust, high-quality, racking system designed to outlast the photovoltaic panels themselves, you have our support through the planning and installation process to resolve any technical issue that you encounter.

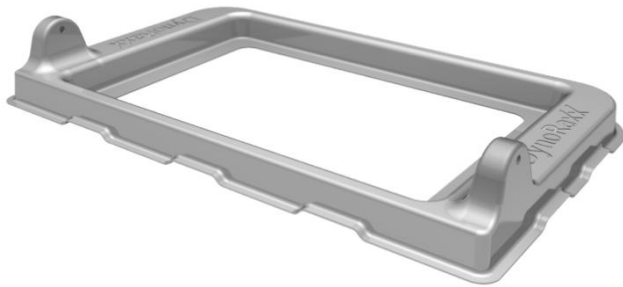
It is the installer's sole responsibility to do the following and failure to do so may void the limited manufacturer warranty on the DynoRaxx EVOLUTION FR system:

- Determine whether the DynoRaxx EVOLUTION FR system is appropriate for a particular application or location.
- Determine whether the building structure including the roof, its rafters and other structural supports can support the entire photovoltaic system under all code loading conditions including the weight of ballasts required to meet any applicable building codes.
- Use a qualified professional to design the photovoltaic system applying all appropriate design parameters to determine that loading meets or exceeds the requirements of this manual and all applicable codes including but not limited to snow loading, wind speed, exposure, and topographic factors.
- Know and comply with all applicable building codes both local and national, including codes that may have additional requirements that are not found in this manual.
- Obtain all required building permits and approvals.
- Make sure that the DynoRaxx EVOLUTION FR system is adequately ballasted according to the guidelines in this installation manual and any applicable building code.
- Make sure that the installation of the photovoltaic system using DynoRaxx EVOLUTION FR system is on a roof that is in good condition, has a sound water barrier including waterproof membrane that does not leak and is reasonably expected to have an effective life that is equal to or longer than the expected life of the photovoltaic system including the DynoRaxx EVOLUTION FR system.
- Use only DynoRaxx supplied specified or approved parts.
- Make sure that no parts are installed that are visibly damaged including parts that have coating removed by scratching, corrosive materials or environment.
- Install the electrical system of the photovoltaic system safely and meets or exceeds all electrical code requirements.

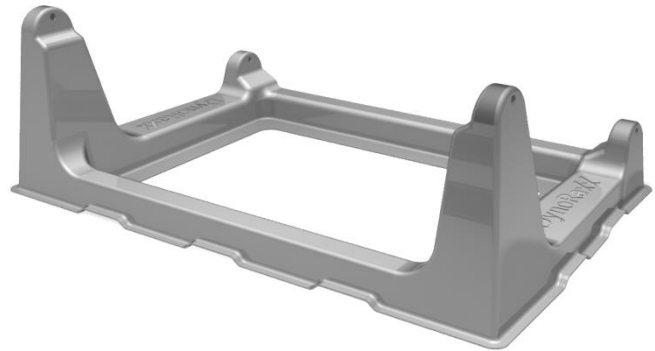
# Installation Instructions

Site plans are often completed assuming perfectly flat rooftops and geometrically symmetric arrays. In the field this is rarely the case. The EVOLUTION FR system's modular design allows for versatile design and installation. Please follow these installation guidelines to ensure an efficient and code compliant installation.

## DynoRaxx EVOLUTION FR Components:



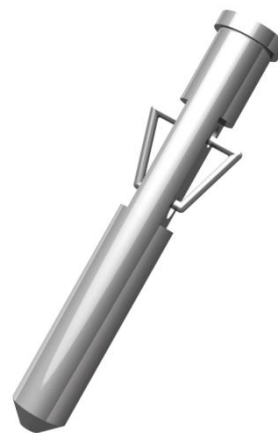
Two Leg Basket



Four Leg Basket



Rail with DynoSlide

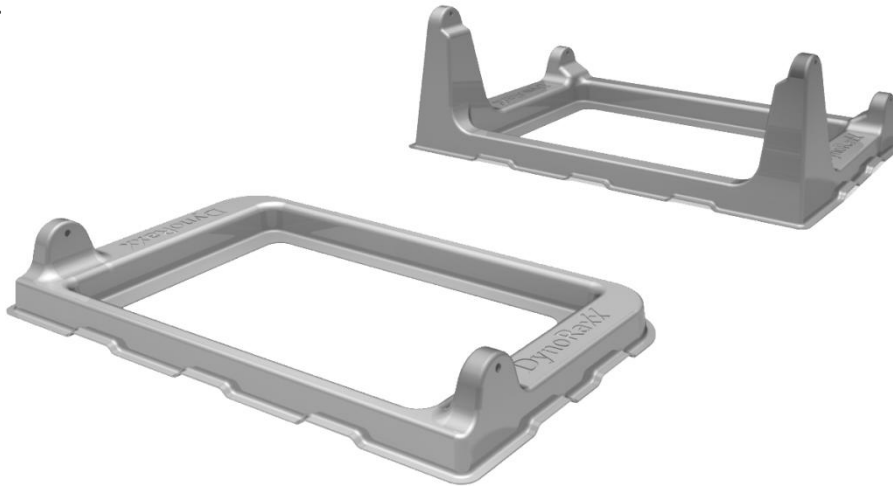


DynoPin

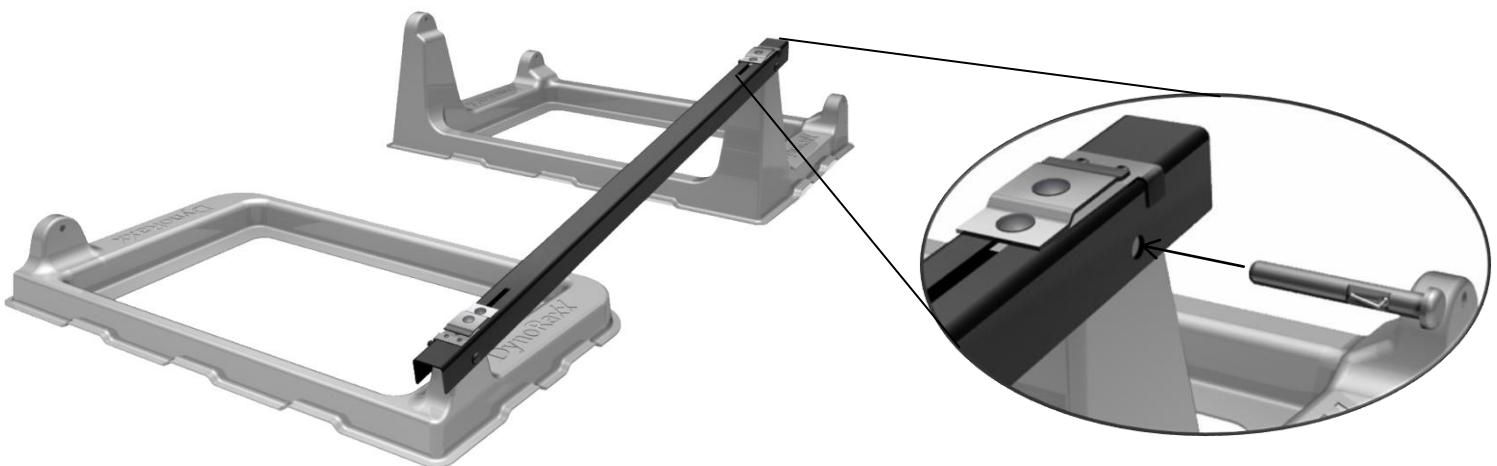
**Step 1:**Begin installation by snapping a chalk line to square and center the system. Properly align this square within the building zones and dimensions allotted by the design engineer.

**Step 2:**Place a two leg basket with the legs facing South in the Southeast corner of the chalk line. It's imperative that extra care is taken to make sure this basket is oriented correctly since any imperfections will be magnified exponentially as you move further through the installation. For large systems, starting from the center of the system and working east and west will limit the effect of inaccurate measurements.

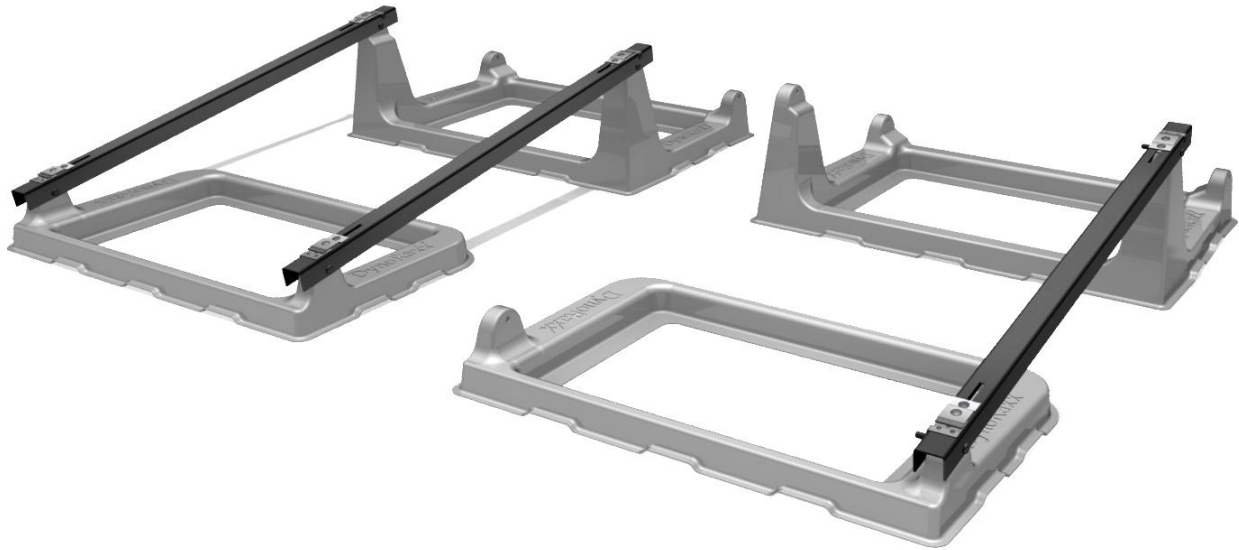
**Step 3:**Place a four leg basket approximately one(1) foot north of the two leg basket oriented with the tall legs facing south.



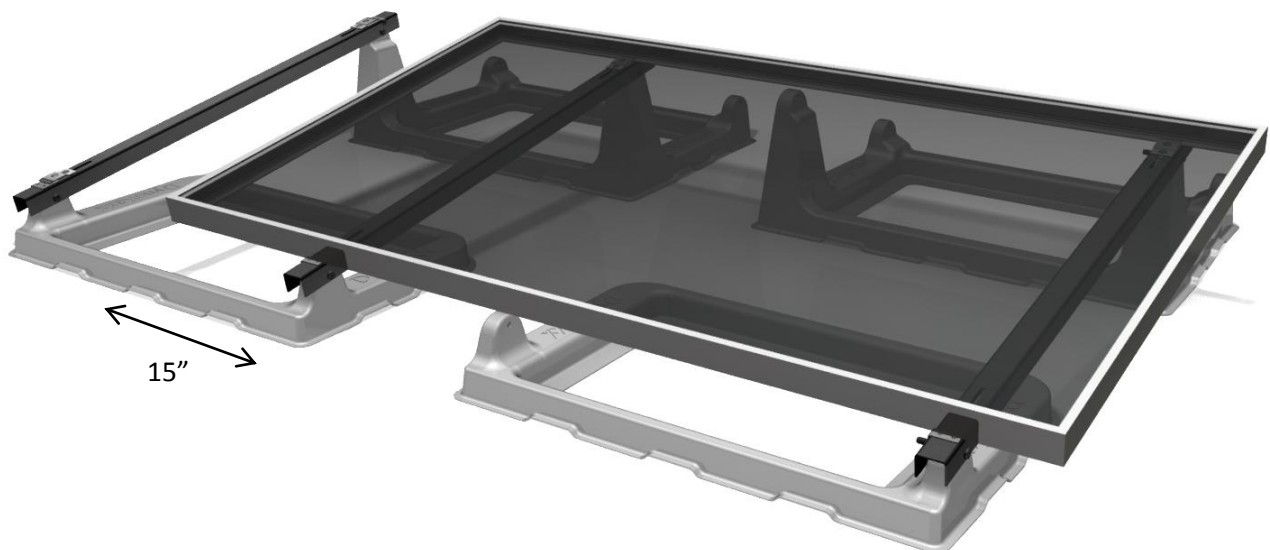
**Step 4:**Attach a rail from the eastern leg of the two leg basket to the eastern tall leg of the four leg basket using two DynoPins.



**Step 5:** Place this second set of baskets approximately eighteen inches (18") from the western edge of the first pair of baskets. This distance will vary depending on the dimensions of the solar panels being installed. Fasten two rails to the new set of baskets in the same fashion used in step 4.



**Step 6:** Place the first solar panel three inches (3") from the eastern edge of the system. Be sure to follow module manufacturer's minimum required distance. The second set of baskets should be adjusted so the western edge of this panel bisects their legs. Clamp the panel down using the DynoSlide at both ends of each rail.



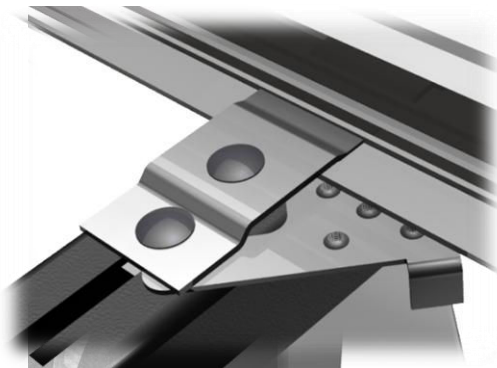
**Closing the DynoSlide:** The DynoSlide is a patent pending design. It clamps the solar module's bottom flange between a fixed top plate and a pivoting dimpled handle. To embrace the module flange, lay the panel in the desired location flat on the rail. With the handle in the open position, slide the top plate over the lip of the panel until it hits the side wall of the panel frame extrusion. The top plate is now positioned properly. Pivot the handle under module frame until thumb press is flush against rail. The module is properly secured when the handle is visible from the outside of the panel.



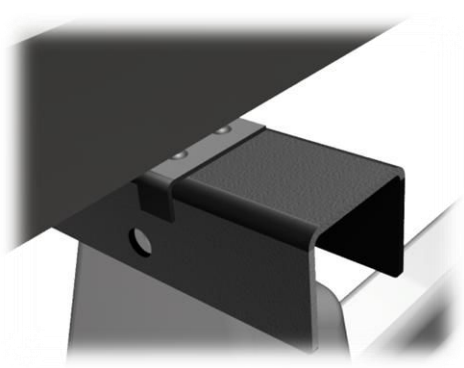
Step 1



Step 2

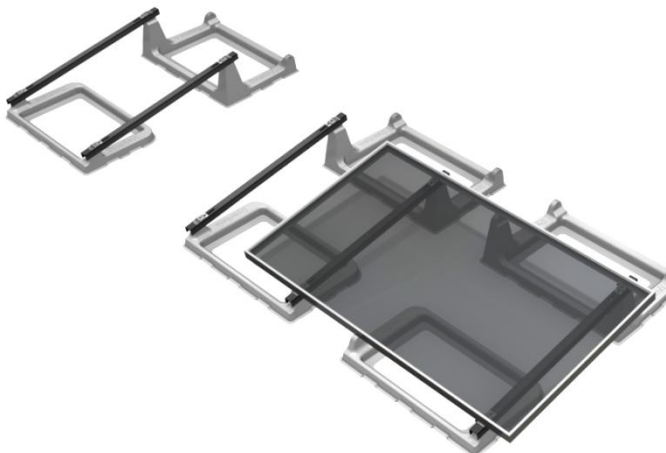


Step 3



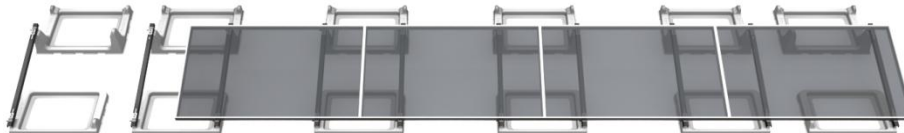
Step 4

**Step 7:** Place the third set of Baskets approximately two feet (2') west of the second set and reposition them so that the second solar panel bisects the legs on this set of baskets in the same fashion as step 6.

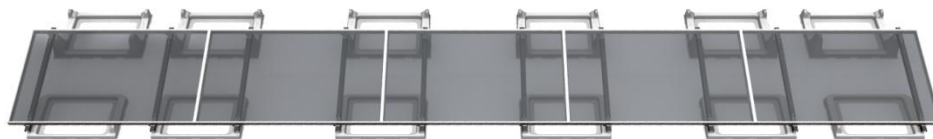




**Step 8:** Continue the row in the same manner as step 7. Position the last basket three inches (3") in from the western edge of the system. Make sure to follow module manufacturer's minimum required distance and to only install one rail on the last basket.

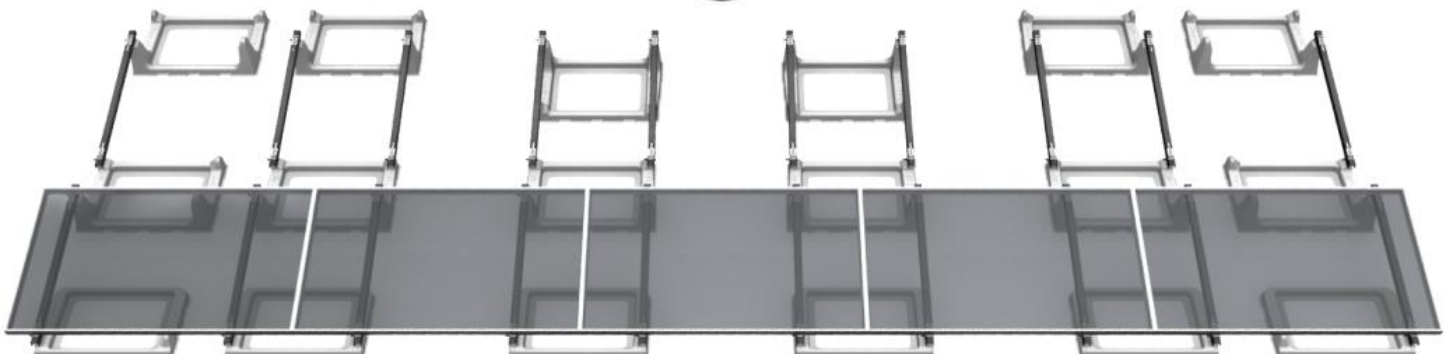


Step 1

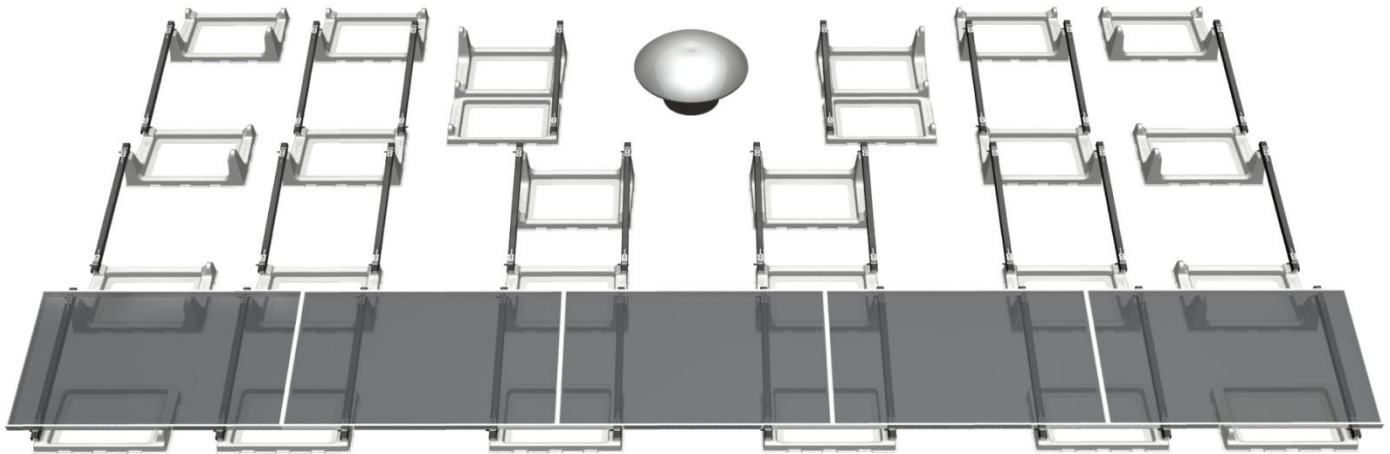


Step 2

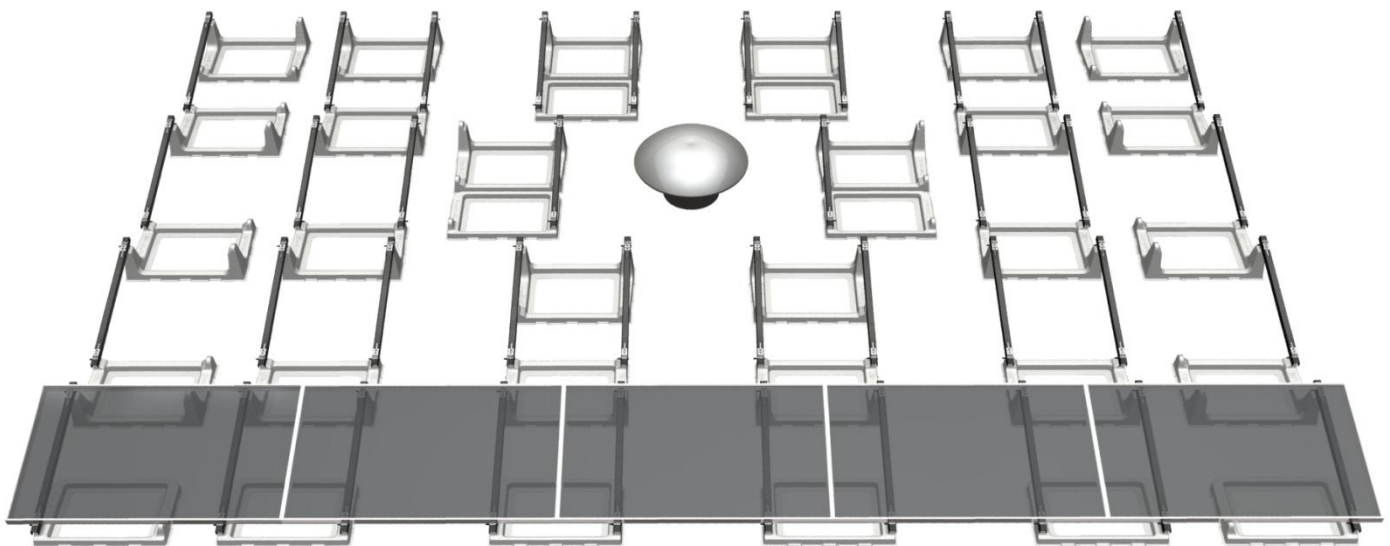
**Step 9:** Once the first row of modules is in place the racking for the remainder of the system can be installed. Start every additional row beginning on the eastern side of the array. Place a four leg basket positioned with the tall legs facing south and attach rails in the same pattern as on the first row. When an obstacle impedes further progression of a column, end the column by placing a four leg basket oriented with the short legs facing south. Make sure to attach rails to the tall portion of the legs.



**Step 10:** When an obstacle impedes the progress of a row, end the row in the same manner as task eight, being sure to only use one rail on the last basket set. A two leg basket must be used to support the south side of this last basket set. Since this final basket set will be shifted, place a four leg basket with the short legs facing south to immediately end the column.

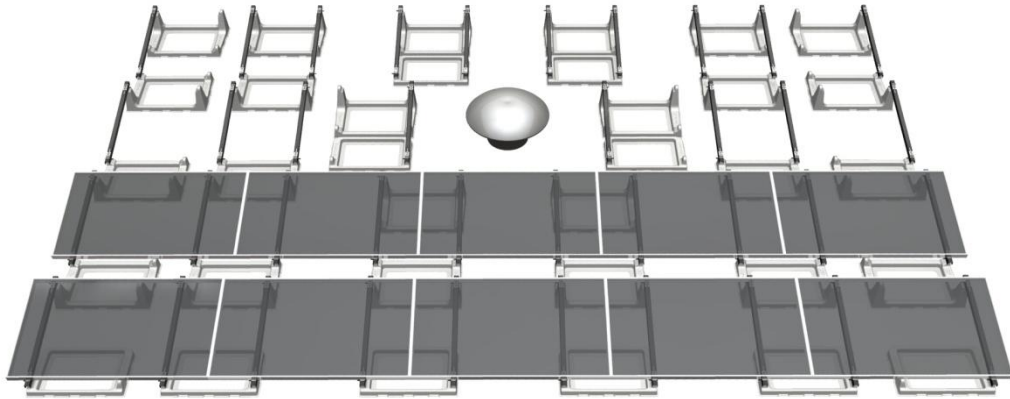


**Step 11:** To finish the racking for the array place four leg baskets on the north edge with the short legs facing south. Use two leg baskets in areas of column misalignment caused by the previously discussed obstacle.

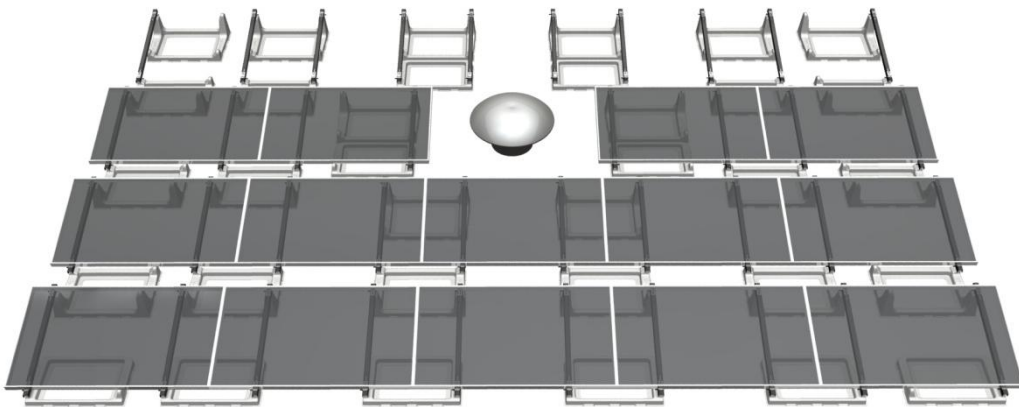




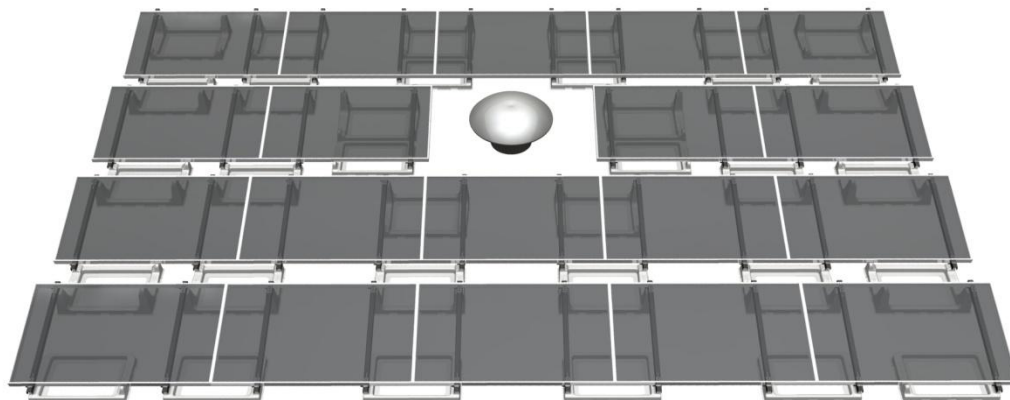
**Step 10:** When racking is completed. Install remaining modules and required ballast.



Step 1



Step 2



Step 3