

## BEST PRACTICES IN SUBSTRUCTURE SET-UP FOR GROUND MOUNT SYSTEMS



*This document shows you how to support the substructure in your Ground Mount System while the concrete cures. It covers two options available at different price points. Depending on how often you perform ground-based installations, there is a solution for you.*

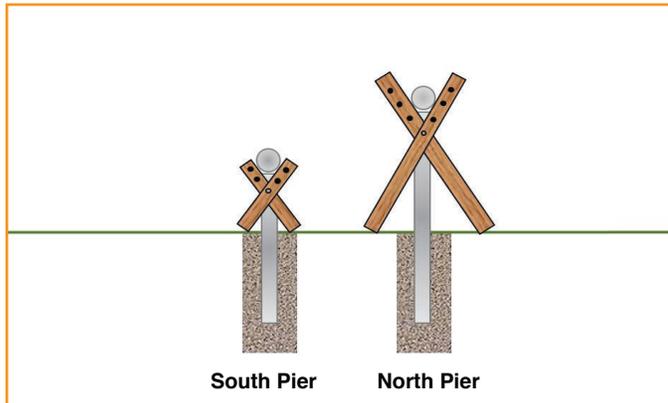
### PREPARING THE SUBSTRUCTURE

When setting up the substructure for a Ground Mount System, installers can be tempted to simply place vertical piers directly in the foundation holes before pouring concrete. This practice leads to structural deficiencies and pipe corrosion, because the pipe is not suspended in the middle of the concrete. Additionally, this will often require cutting the top of piers in order to level them.

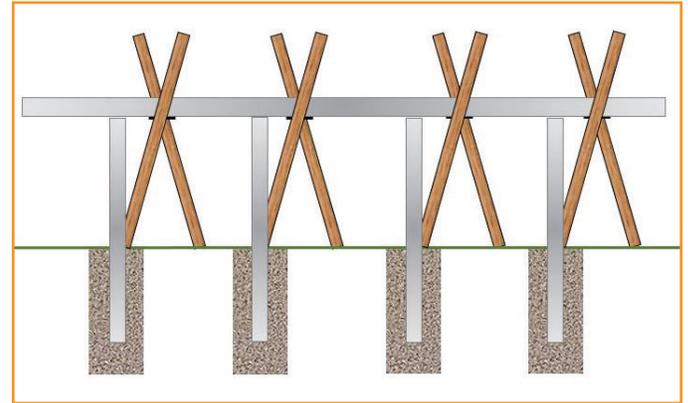
To avoid this, you should hold up the substructure so that it does not collapse or move out of alignment while the concrete cures. We recommend using adjustable forms that prop up and keep the horizontal cross pipes level, while the vertical piers are suspended in the foundation holes. This document addresses two options: building lumber forms and investing in pipe stands.



## LUMBER SCAFFOLDING



*Side View*



*Front View*

1. Use 2x4 lumber to build x-shaped forms (one per vertical pier). Drill several 3/8" holes, spaced 4-5 inches apart. This allows you to fasten the lumber using a carriage bolt at different locations to accommodate different pier heights.
2. Open up the lumber forms and use them to prop up your horizontal cross pipe, ensuring that the pipe is level. Connect two lumber forms with a small section of plywood in order to provide lateral stability.
3. Mount a Top Cap onto each vertical pier. Install U-bolts in order to attach vertical piers to the horizontal cross pipe. Ensure that vertical piers are plumb, centered, and suspended in the foundation holes.
4. Install 2-3 rails across the horizontal cross pipes to increase rigidity and stability.
5. After your substructure and foundation holes have been inspected, pour concrete into foundation holes. Leave the substructure and forms set up while the concrete cures.
6. Once concrete has fully cured, perform a final check of torque values on all substructure components. Tighten to specifications required by the [installation manual](#). Take apart lumber forms and store them for your next job.

## PIPE STANDS

If you install Ground Mount Systems often, it may be worthwhile to invest in pipe stands. These are easily adjustable, durable, and will hold up the substructure while concrete is poured and cures. This option is costlier but can be reused over and over again without re-assembly—saving time on larger projects.

There are a lot of pipe stand manufacturers in the market. Some well-known brands are [Sumner](#) and [Ridgid](#). Pipe stands can also be purchased through tool suppliers such as [Northern Tool](#) and home improvement stores, including [The Home Depot](#). They can also be ordered through online retailers, such as [Amazon.com](#).

Two types of pipe stands will be necessary. South piers need a short stand that can support pipe at about 30" above grade. For the north pipe, the height is dependent on the tilt angle of the array and could be as high as 4 to



6 feet. Pipe stands with rollers are not needed in most cases, as a "V" style stand works just fine. Additional features, such as foldable legs and a quick slide along with a screw for height adjustment, are also helpful.