

### COMMERCIAL INSTALLATION INSTRUCTIONS

#### For Foundations Requiring Site-Specific or Project-Specific Review

The following are generic instructions only for applications that have been specifically reviewed by Pin Foundations, Inc. They may be varied for specific projects or unique applications as necessary. For applications in frost heaving or expansive soils, see the Heave & Expansion information on the website. See also the Installation Video on the website.

#### Installation Instructions

**You will need:** A two or three person crew for installation, Diamond Pier foundations, each with a concrete pier head and the corresponding number of bearing pins and pin caps, a shovel, an automatic driving hammer with driving bit, a sledge hammer or sliding post driver, a small level, a tamping plate, and a steel cutting saw. (Note: *Most applications will not require a saw or tamping plate.*) Check all concrete piers for cracks or structural damage before installing. Surface chips or spalls are not typically considered structural damage. A cracked pier must be replaced, and the supplier or manufacturer notified.

**Note:** Check for buried utilities before beginning to dig or driving pins. Wear safety goggles, steel toe work boots, and rubber-insulated work gloves.

**Step 1:** Dig a conical hole that is approximately the shape of the bottom half of the concrete pier and slightly deeper than the pier itself, leaving loose soils directly below the pier. (*On sloping terrain, dig the hole deeper on the uphill side so that the concrete pier sits level.*)

**Step 2:** Following safe lifting procedures, position the concrete pier in the hole to its midpoint, level and centered on its alignment. Replace some of the removed soils back around the sides of the pier at grade, just enough, without packing hard, to maintain level and alignment during pin driving. See Notes below. (*The piers may also be fully buried for aesthetic considerations if preferred.*)

**Step 3:** Slide opposing pins through the driving cavities in the concrete pier, and, making sure to support them in the center of the driving cavities, set the pins a foot or two into the soil with the sledge hammer or sliding post driver. Then drive each pin alternately in increments with the automatic hammer, periodically checking for leveling and alignment. Do not hit the concrete pier with the automatic hammer. Do not attempt to drive the pins all the way down just with the sledge hammer, or allow the weight of the auto-hammer to force the pin against the lower half of the driving cavity. The piers are concrete and may crack if subjected to continued impact blows with the pin in this orientation. A cracked pier must be replaced.

**Step 4:** Finish driving the pin with the automatic hammer, leaving 1 inch protruding from the top of the cavity and being careful not to damage the precast pier or upper ends of the pin. If the soils are soft, or the piers will be supporting vehicle loads, affix the tamping plate to the top of the pier, and, using the automatic hammer and plumb, downward pressure, vibrate the pier to "seat" it fully on the interlocking pins. Once the dead loads of the structure have been applied, verify the length of the protruding pin, adjust as necessary by tapping with the sledge hammer, and cover the exposed end of the pin with the cap, sealing it against the concrete with a 50-year, siliconized adhesive caulk, or equal.

Repeat steps 1 through 4 for the remaining Diamond Pier foundations.

## COMMERCIAL INSTALLATION INSTRUCTIONS

### For Foundations Requiring Site-Specific or Project-Specific Review (Continued)

#### Installation Instructions (continued)

##### Notes

**Note 1:** Do not drive a pin all the way down at once if this causes the pier to be pulled to one side. (The piers should not be installed more than 5 degrees out of level.) Continue to rotate around the pier, driving the pins in increments, until the growing strength in the pile group is sufficient to allow final driving. If loss of level is not a problem, the pins may be driven all the way one at a time. Do not continue to hammer away at a pin that is bouncing or rattling against an impassable object if it causes the pier to ride up the pin, pushes the pier to one side, or risks cracking the pier. Ensure that the pier will remain in place when encountering difficulties in the soil, and when following the steps in Note 2.

**Note 2:** If a pin meets substantial resistance in the soil before it has been driven its full length, it may be left in this partially driven position and cut off, provided it has been driven at least 60% of its length\* and (1) using caution to avoid cracking the pier, the pin will not drive more than a half inch during a full 30 seconds of uninterrupted automatic hammering, (2) using caution to avoid cracking the pier, attempts to drive the pin with single sudden sledge hammer blows have been made, and (3) after a reasonable period, attempts to redrive the pin using both methods have been made without success.

\*In frost zones, the pin must be driven to at least 85% of its length if it is to be cut off. If this is not possible, the obstruction may be close enough to the surface that it may be dug up and removed, the soils recompact, the pier reset and the pin redriven. The pins may also be removed and the pier turned or relocated within the parameters of your superstructure design to avoid underground obstacles. See Pin Removal Video on the website. Length and location of cut pins should be recorded, mapped, and forwarded to the project engineer.

#### Temporary Product Storage

To avoid the bulky white deposit known as “wet-storage stain,” all galvanized products shipped in bundles, stacks, or cardboard cartons should be protected from moisture until they are separated and put to use in exposed environments. If products are shipped wet, they must be separated and thoroughly dried before restacking or rebundling. If indoor storage of the products is not possible, they must be kept off the ground, covered with an opaque plastic or canvas tarpaulin covering, and the bundles or stacks slanted slightly to allow condensation to drain. (Reference: American Society for Metals, Metals Handbook Ninth Edition, Vol. I [USA, 1978], p. 169.)