



Typical Installation Instructions

Preparation

- 1. Utility Lines** – Contact “Utility Locator” to have all underground power lines marked BEFORE beginning install.
- 2. Grade** – For best results, the ground should be prepared to a grade 4” below final grade. Standard footing forms are generally 3” tall and most customers prefer to see bury of the first 1” of the wall.
- 3. Stake Fence Line** – Determine the project’s fence line as it relates to property lines, sidewalks, etc. While every project is different almost all can be broken down into a series of straight line runs. Stake the first run by placing two stakes (Fence Line Stakes) in the ground on opposite sides of the run in line with where the wall will go. Each stake should be approximately 2’ beyond the first and last post in the run. String a line between the two stakes to make the line of the wall.

Footings

- 4. Mark Footing Holes** – Drive an additional stake (called a distance stake) in the ground in the center of where you would like the first post to be (i.e. if your fence will be inside the property line, then the center of the first post should be 10” from the property line). Attach measuring tape to this stake. Every 13’ 2” (*see note) mark a line on the ground with paint perpendicular to the wall line and then another one that is in line with the string (i.e. wall line) to mark an “X” where the center of the post will be.

Distance between Posts: 13' 2" versus 13' 1"

Because most projects have some slight change in grade, 13' 2" is generally the most practical measurement to use. If a project were completely level, 13' 1" would be the right distance to mark off. Care should be taken when installing on steeper inclines to keep the distance between posts a minimum of 13' 1". There will be a tendency to make the distance too short.

- 5. Dig Footings-** Dig each footing with the center on each "X". Depending on soil conditions and engineering requirements, footing holes may demand special equipment. For most typical applications, a 24-inch auger attachment with a standard skid steer (e.g. Bobcat) can be used to drill each footing. Pay special attention to avoid underground and above ground utilities. Footings close to underground utilities will need to be dug carefully, possibly by hand.
- 6. Form Footings-** Footing design will vary by region depending on local engineering requirements. For most applications a 2-inch by 2-inch form made from angle iron will work best. Make sure the angle iron has been slightly expanded to make approximately 95-degree angle rather than a standard 90-degree angle to facilitate stripping. Secure the forms with stakes where necessary to ensure the proper height and to ensure the form remains level.
- 7. Pour Footing-** Place reinforcing steel (varies with engineering requirements) into footing hole and pour concrete (typically minimum 3000 psi - refer to engineering), finishing so that it is level and even with top of form. Rebar anchors maybe integral with footing cage, if not, be sure to proceed to next step before concrete becomes too firm.
- 8. Place Rebar Anchors-** Reattach a nylon string to the fence line stakes. With tape measure and marking paint, paint a mark on the string every 13' 2" (or applicable distance) on the string, making sure your first mark is exactly where you want the first post to be centered. Insert the rebar anchors 2 to 3 inches apart from each other on either side of the fence line string; the mark on the string should be directly between the rebar anchors. Engineering requirements will vary by region for overall rebar length - a typical example of a 6' tall wall will call for two 6-foot lengths of #4 rebar that will be inserted 3 feet into the footing.

9. Elevation Notch- When there is an elevation change between two footings there will need to be a modification made to either the panel or the footing to keep the panel level as it spans across the two footings. The bottom corner of the uphill side of the panel may be cut using a concrete saw.

However, in most applications removing a notch from the higher of the two footings while the concrete is firm but still green is the best solution. To do so, first remove the footing form. With a square nosed shovel, scoop out a notch of concrete from the downhill side of the footing. After removing the concrete there should be a notch that is the width of a shovel, which extends approximately 8 inches from the edge of the footing and deep enough so that the bottom of the notch is a quarter of an inch below the grade of the next footing downhill. Verify the depth of the notch with a laser level. Additional steps may be necessary depending on the rebar requirements in the footing. If the footing is to be cut after the concrete is cured make sure to allow enough space in the cut for the proper panel thickness which varies depending on architectural pattern.

10. Delivery- Panels are generally delivered to the site on A-frames on the back of a flat bed semi trailer. Posts are generally delivered laying down on the same type of truck.

Setting

11. Set Post- Before installing any posts, mark two paint lines on the edge of each footing to indicate the center coordinate of the rebar. It will be useful to see where the center should be on each footing as you move down the line. Using a 10,000 lbs. all terrain fork lift or similar lifting equipment, place the first post in position over the protruding rebar on each footing. A burke bar can be used to make final adjustments. Shim as necessary to make level.

12. Set Panel- Using a 10,000 lbs. all terrain forklift or similar lifting equipment, carefully lower each panel within the notch of the first post. You should not have to lift the panel more than a few inches off the ground. The panel should fit easily within the notches on each post. The down line panel should rest on the footing where the next post will be placed. Use a burke bar for adjustments and shim as necessary to make level. The panel should be level and square before disconnecting the lifting hooks. The panel will temporarily be supported by only one post. Caution should be used during this time.

*Post and Panels should not be lifted from a horizontal position using embedded coil loops.

- 13. Repeat-** Repeat steps 11 and 12 as necessary until all posts and panels are in place. Finish the wall with a post.

Alternate Installation Method

Instead of setting as described above, you may set all the posts first and set the panels after all the posts are in place. However, there are several disadvantages to this method; first, it increases wear on the joint where the panel slides into the post; second, extra care and precision is necessary in setting the panel because it needs to fit into the notches on both ends not just one.

Secure

- 14. Level-** Make a final check to ensure that each panel and post is level and square.
- 15. Fill Posts-** Fill each post with concrete to anchor it to the footing. Fill each post at least to the height of the rebar. When anchoring items such as gate hardware or wrought iron fencing, the post must be filled to the top. Posts should not be left unattended until they are filled with concrete or properly braced.
- 16. Set Caps-** After filling the post with concrete, secure a cap to the top of each post with a standard masonry glue or urethane caulk. Place generous amounts to the top four corners of the post and then set the cap in place.

Stain

- 17. Stain-** Most applications include a neutral tan, taupe or grey color for the base coat plus two to four accent colors. The base coat is generally diluted with water at a ratio of two parts water with one part stain. The accent colors can be diluted as well depending on the desired look. The base coat is applied with an airless spray gun. Accent colors are applied by hand shortly thereafter with sponges and rags. Consult with manufacturer for additional information and staining video.

Common Challenges and Solutions

Step Down

A step down or step up is necessary when there is a change in elevation. In order for each panel to sit level, it is necessary to ensure that the edges of the panel rest at equal heights. To accomplish this the pier footings can be altered immediately after it has been poured.

Generally it is easiest to block out the concrete on the higher side rather than build up the footing on the shorter side. While the concrete is still wet, use a narrow square nose shovel to scoop out enough concrete to make the area that will rest under the panel level with the lower footing.

45 Degree Turn

Our fences can typically accommodate turns up to 15 degrees without making any alteration to the posts or panels. For fencing requiring turns greater than 15 degrees, it will be necessary to cut the post notches on an angle using a concrete saw.

Stacked Fence

For fences over 8' tall, it is often preferable - or necessary - to stack two shorter panels rather than cast one taller one. For example, to stack a twelve-foot tall fence one would stack four-foot and eight-foot tall pieces. It is preferred to stagger the heights of the panels and posts. There are variations in which this type of installation can be accomplished. One method includes installing taller bottom post and shorter panels, (grouting lower posts maybe required) then installing taller upper panel and shorter posts. With proper engineering, these staggered fences are just as structurally sound as there solid counterparts.

Depending on the architectural pattern selected, panels and/or posts may need to be rotated or installed upside down to achieve best finished look. When stacking panels and posts a proper intermediary product should be used at horizontal joints to obtain flatness and alleviate point loading. Due to casting process, stacking surfaces on both posts and panels may not be perfectly level so grouting is recommended during and/or after installation.

When stacking columns / panels, shims and non-shrink grout are typically used. This allows you to plumb the unit with the shims (no grout) while still rigged to the lift. After the unit is plumb, it is lifted and the grout spread (but clear of the shims) making sure the perimeter is grouted. Then the unit is set back on the shims (being careful to make sure that grout is NOT lapping over the shim).

The joint is then struck or tooled. This forms a grout line which looks better and also guarantees the unit is plumb resting on the shims (so you can go to the next one) but then the grout hardens and completes the permanency of the work. It usually only takes a couple of lift/adjust-shim cycles to achieve plumb. This is only several minutes even with the several "adjust" lifts.

For additional information or questions please view the website or contact main office.

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