GERDAU SHEET PILING

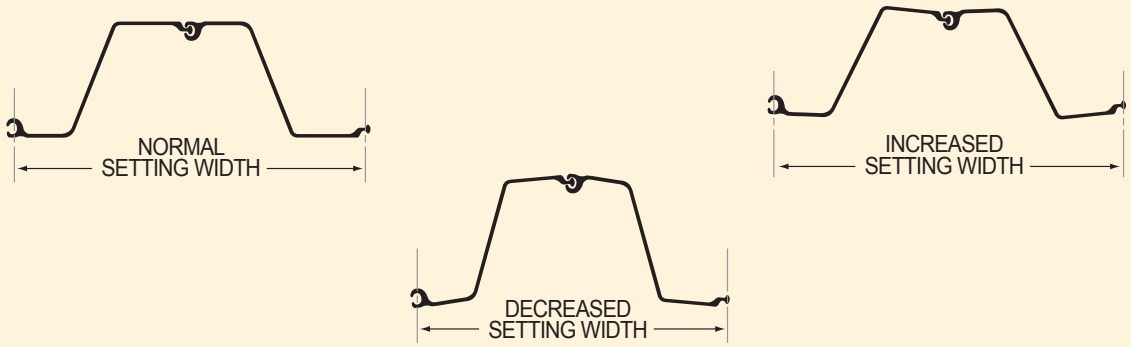
SETTING AND DRIVING TIPS FOR Z-PROFILE SHEET PILING:

Proper setting and driving techniques are beneficial to both the project and the contractor. Improper practices result in problems and costs that far out-weigh the initial expense of applying correct methods from the start. Although setting and driving techniques may vary according to the site conditions and/or the contractor's level of experience, several basic principles can be applied as outlined below.

Use an adequate template: The utilization of an adequate steel template will facilitate the installation process and result in a superior end product. The purpose of the template is to both properly align the sheet pile during the setting process as well as to keep the piling in alignment during the driving phase. Since a typical sheet pile weighs one ton or more, the template needs to be of rugged construction. Also, bear in mind that the template will normally be used and moved multiple times at the job site; this is another reason for a well-designed and solidly constructed template. Template must also be of correct dimensions for the piling section. An improperly dimensioned template could cause sheet binding and increase driving difficulty.

Mark the template: To maintain the published laying width of the piling, it is very important to mark the template for each pile, or pair. By following this procedure, the contractor can observe whether the line being set is gaining or losing wall length. This procedure is important for installations such as: cofferdams, which must be closed; or anchored bulkheads, where tie-rod locations are critical. Depending upon the length of the piling, the template might be one, or two or more tiers high. In order to maintain a plumb wall when installing piling lengths in excess of 50 feet (15 meters), a two-tier template is **always** suggested as a minimum.

Set a panel of piling: The length of the panel will vary depending upon site conditions, the contractor's experience, and other factors. In general, you might expect a panel length of 25 to 45 feet (8 to 14 meters). As each pile, or pair, is set, they may be rotated as necessary in the interlock (as shown below) in order to match the marks on the template.



Sheet piling supplied with the interlocks crimped or welded does not offer this advantage.

Keep the piling plumb: It's of utmost importance that, as each pile or pair is set, it is plumb and secured before the next is set. Once the wall is allowed to get out of vertical alignment, the mistake will only get worse; and at some point the contractor will simply have to quit, extract the out of plumb piling, and start over. The most important tool of the pile driving crew is a long level: 4 feet (1.25 meter) or more in length, or a vertical laser.

Set and drive with the ball-end leading: When the piling is set and driven with socket-end leading, the socket becomes clogged with soil and the ball must force the soil out of the opening. In some types of soils, such as very fine and dense sand, the resistance of the soil in the socket can be such that driving becomes impossible without damaging the piling. Under such conditions, particularly with a vibratory hammer, it is possible to actually weld interlocks together.

If for some reason the piling must be driven with the socket-end leading, such is the case when using an interlock sealant, then place a bolt or some object in the socket at the bottom end to minimize clogging.

Drive the panel of piling in stages: Piles driven full length in one operation are more prone to deflect and go off line. This is particularly true when the soil contains debris, boulders, or other obstructions. Subsequent piles are guided by the deflected section, and within a short length of wall, pile driving comes to a halt. The piling must then be pulled, and the wall has to be restarted.

The preferred process to minimize, if not eliminate, this problem is to first set a panel of piling and then work the panel down as a unit. This is accomplished by driving the piling (singles or paired), in increments using a defined sequence. The magnitude of the increment will be determined by the soil conditions. In general, the harder the driving, the less the driving increment, perhaps 6 feet (2 meters) in easy driving, versus 3 feet (1 meter), or less, in denser soil.

Panel driving allows the piling to be guided by previously driven vertical piles, and it lessens the possibility of driving the piling out of interlock. During this phase, as during the setting process, it's important that constant attention be paid to maintaining a plumb wall. Any deviations from being plumb should be quickly corrected before things get out of hand.

Driving is ideally, and normally, accomplished by driving pairs. However, if driving becomes difficult due to obstructions or pockets of dense soil, simply drop back and drive single sheets. This is another advantage of not crimping or welding pairs.

Avoid splicing if possible: Randomly selecting Z-piles to splice could result in attempting to splice two cross sections together that do not match. This results in added time and costs.

If splicing is required, then the piling should be ordered full length from the production mill. They should be cut and match-marked at the site. These sections can then be spliced back together to reconstruct the original piling. This procedure reduces the mismatching of cross sections and improves section geometry alignment.

In order to avoid creating a plane of weakness in the wall, the splices on adjacent piling must be staggered by a minimum of 3 feet (1 meter), if feasible.

When splicing the piling, it's impossible to weld in the interlocks due to both the difficulty of welding in this area and the distortion caused by the heat from the welding. If full section modulus is required at the splice, it will be necessary to provide flange plates to make up for the loss of section modulus in the interlocks. Normal practice allows for a combination of butt-welding of the flanges and web, along with the addition of flange plates by fillet welding. Light "seal" welds around the perimeter of the interlocks will prevent the flow of water and soil through the splice.