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TYPES OF PIERS USED IN NORTH AND EAST TEXAS RESIDENTIAL FOUNDATION REPAIR

If you listen to the hype, it sounds like there must be 20 or 30 different types of piers out there. Company A says they have an exclusive Super-Duper Pier that nobody else has, and they claim it's the only one that really works. Company B, however, has "invented" the Ultra Fantastic Pier that you can only get from them, and they claim that it is the strongest pier on the market. "All others pale in comparison", they say.

But in all honesty, there are really only 3 basic types of piers available and used by all companies to perform foundation repairs in Dallas, Fort Worth, East Texas, and surrounding areas: Pressed Pilings, Drilled Piers, and Steel Piers.
The small variations found in each of the 3 main types make very little difference to the overall effectiveness of the pier.

Below, you will find discussions of all 3 basic pier types.

CONCRETE PRESSED PILINGS:

The Pressed Piling, the most used and most cost-effective pier on the market, consists of pre-made concrete cylinders which are pressed into the ground by hydraulic rams. The weight of the house is used to push against, and the piers are installed with about 3+ times the force they will experience when holding up the house. Often the cylinders will have a steel cable or steel rods in the center to help keep the cylinders in alignment both during and after installation, but this addition has not been proven to make a difference in pier alignment or long-term stability. In most cases, the piers can be driven to the depth necessary to reach a layer of load-bearing rock, or at a minimum to an acceptable stratum of stable soils.

ADVANTAGES OF PRESSED PILINGS:
* The most cost-effective system is also the fastest to install, which decreases mess and inconvenience.
* The piers are adjustable by almost every company in the industry.
* The piers are installed directly under the grade beam load. Nothing is required to transfer the load laterally.
* In the unlikely event of pier failure, a new pier can be installed quickly next to the existing pier.
* The piers can be driven to any depth necessary. We have driven these as deep as 38 feet in the past.

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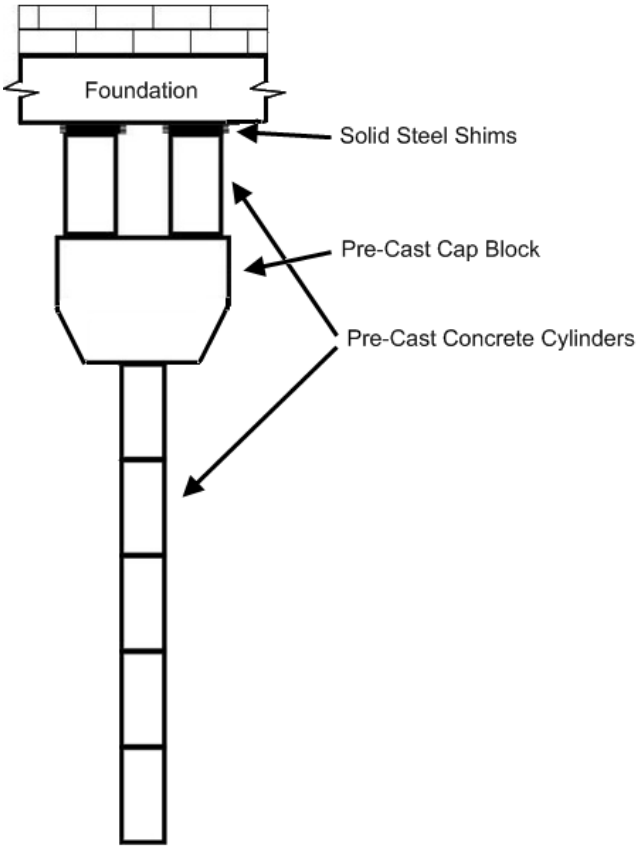
DISADVANTAGES OF PRESSED PILINGS:

* By using the weight of the house to push against, new cracks can sometimes form during pier installation.
* Many companies only push piers a minimum lift depth (enough resistance to raise the house), which can allow the piers to settle in the future with seasonal soil movements. Piers must be driven to complete refusal to ensure long-term stability.

Overall, Concrete Pressed Pilings are a very good foundation repair system if properly installed.

Pressed Piling Drawing:



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DRILLED CONCRETE PIERS:

The Drilled Concrete Pier is created by digging a starter hole, called a footing. This is common to all types of piers. From there, an auger is used to drill out a hole in the ground as deep as possible. The dirt is removed from the hole, thus leaving an empty shaft extending into the ground. Some drilled pier designs use 1 shaft while others use 2 shafts in each pier. These pier shafts can vary in diameter from 6" to 18" or more, and some are even belled at the bottom to give more bearing area. Single 12" diameter shaft piers and single-or-double 8" diameter shaft piers are the most common installed for residential foundation repair. Steel rebar is installed in the pier shafts in order to add strength and flexibility. Fresh wet concrete is then poured into the holes, filing them to about 1' below the bottom of the foundation. After allowing this concrete to dry and harden for approximately one week, the house is then lifted and stabilized on these piers and dirt is back-filled to cover the remaining hole.

ADVANTAGES OF DRILLED PIERS:

* This method does not rely on the weight of the house for installation, so works very well on lighter structures such as wing walls, fence columns, and sometimes even patio slabs.
* The piers are adjustable by almost every company in the industry.
* As the home is not utilized for downward force, no new cosmetic damages are created in the installation of drilled piers.

DISADVANTAGES OF DRILLED PIERS:

* This is by far the messiest and most time-consuming method on the market.
* Drilled piers are limited in depth and rarely extend deeper than 10' which is not deep enough to reach rock in many areas of Texas, so are more prone to failure.
* If the pier holes are not properly cleaned of loose soil before pouring the concrete, the piers can compress into this loose dirt when lifting the house which can at times cause the pier shaft to break and the pier to fail.
* Open pier holes are exposed around the home for 6-10 days, thus increasing the risk of injury.
* Dirt piled in the yard for a week increases the chances of killing vegetation.
* This system is typically more expensive than pressed pilings.

Overall, Drilled Piers can be a very good foundation repair system if installed properly and used in the proper areas and applications.

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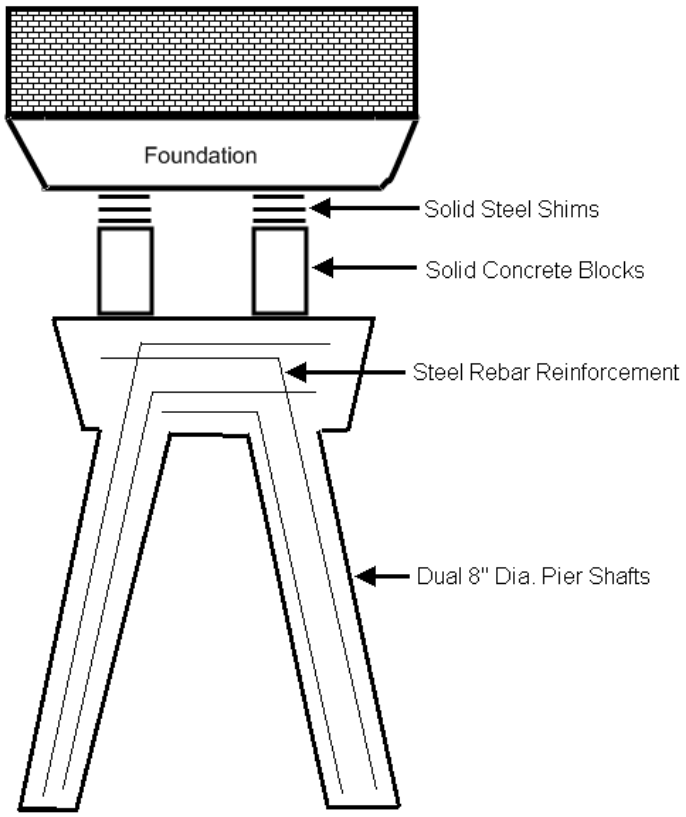
Drilled Pier Drawing:



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STEEL PIERS:

The steel pier, like the drilled concrete pier, has been around for a very long time. And there are as many different designs of steel piers as there are foundation repair companies! But basically the designs all fall into 2 basic design groups: Those with brackets and those installed directly under the grade beam.

Older-style steel piers are installed outside the foundation perimeter of the home. After the pier is installed by pressing the pipe into the ground with hydraulic rams (again utilizing the weight of the house to push the piers), a bracket is used to transfer the weight of the home to the pipe. This involves bolting brackets to the concrete foundation, which can weaken it, and also creates a tremendous bending moment on the pipe just below the bracket. Many steel piers have been known to fail at this point. Also, the bracket, pipe, and bolts often stick out of the soil around the home creating an unattractive and often dangerous situation.

Newer-style steel piers are installed directly under the perimeter grade beam. These piers do not involve drilling into the concrete foundation, and do not rely on a bracket to transfer the load of the house onto the pipe. This style of steel pier sits directly below the weight of the house, just like a drilled pier or pressed piling. Nothing remains above ground level. Many times, these piers are designed with 1 pipe inside of another to add strength and allow for flexibility of section lengths. This double-walled steel pier is significantly stronger and longer-lasting than the traditional single-walled steel piers. This is the only steel pier type installed by Williamson Foundation Repair.

ADVANTAGES OF STEEL PIERS:

* Reduced skin friction allows for much deeper installation where rock is very deep. We have installed our double-walled steel piers to a depth of 54 feet in the past.
* Excellent inter-locking characteristics make these piers preferred in areas with a lot of ground water and, thus, lateral soil drift.
* Relatively quick installation time, as no concrete drying is required.
* Very little soil is removed, which makes this a relatively clean pier to install.

DISADVANTAGES OF STEEL PIERS:

* Cost. A good steel pier will cost approximately twice that of a concrete pressed piling pier.
* To compete on price, many companies use thin, inferior grade steel which will bend and break over time.
* As many companies utilize proprietary bracket designs (for older-style steel piers), other companies may not be able to adjust these piers if the original installation company either refuses service or goes out of business.

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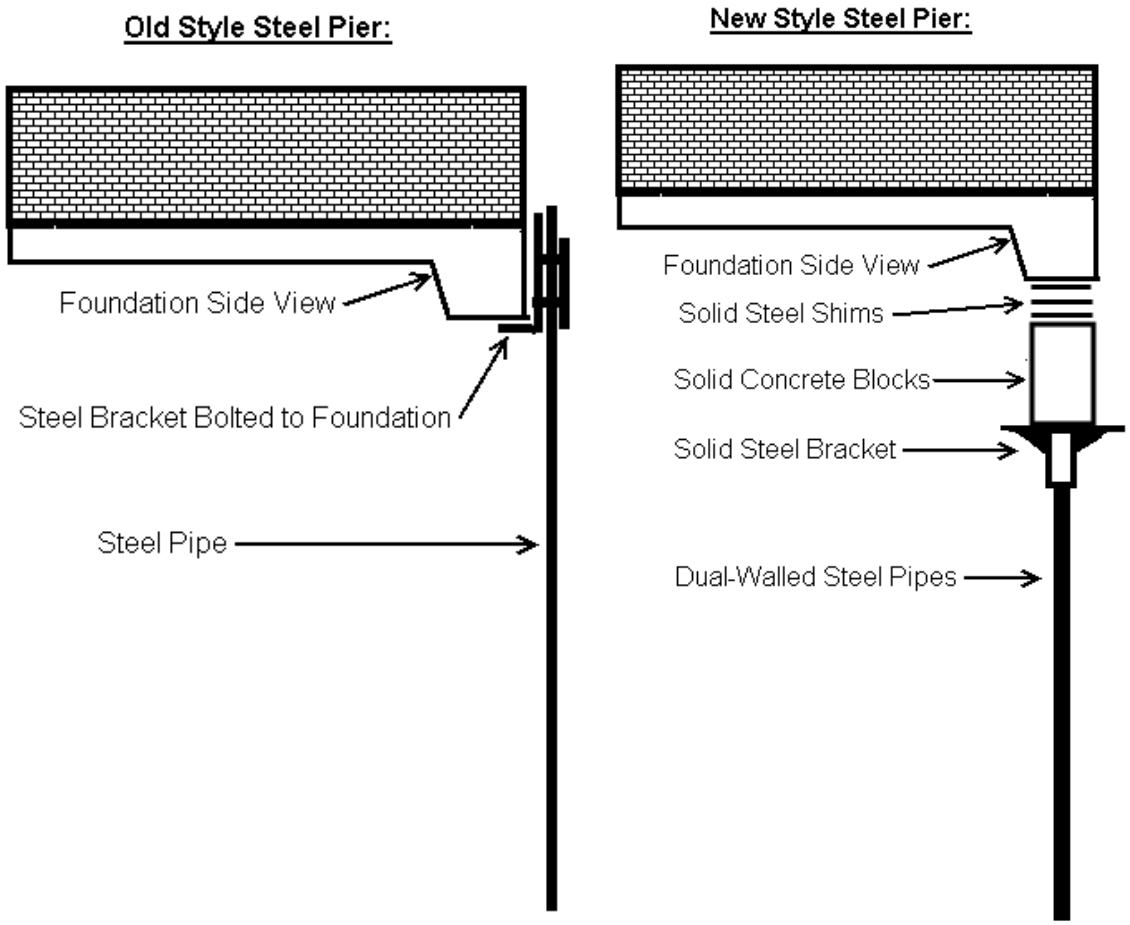
* Older style steel piers often break at the base of the bracket due to the extreme bending moment induced by the design and the inferior thin-walled steel pipe used for cost savings.

Overall, Steel Piers are a very good foundation repair system where needed. However, older-style steel piers with a bracket bolted into the foundation should be avoided if possible.



I hope you have found this information helpful! Please contact us if you have any questions about foundation repair piers, or anything else having to do with foundations or drainage. We'll do our best to find you the answers.