

# Suretech Infrastructure: How to select the right sheet piles & driving machine?



**What is sheet piling?** Sheet piles are sections of sheets of Steel or PVC with interlocking edges that are driven into the ground to provide earth retention and excavation support. Vibratory Hammers are usually used to install sheet piles, and Impact Hammers can be used if soils are too hard or dense.

On building projects, sheet piling is often done to provide temporary retention for construction of basement. On civil projects, sheet piling is commonly used for riverbank protection, seawalls, cofferdams, etc.

Unlike other retention/shoring techniques, sheet piles can be reused, which brings additional value to projects. PVC sheet piles are a cost-effective alternative to steel sheets if their requirement is in permanent works.

**Why PVC sheet piles?** These are the most durable synthetic pile products in the world. PVC is the material of choice when environmental factors require that sheet pile wall structures will not rot, decay, rust, or spall. PVC sheet piles are specifically designed to replace conventional sheet piles.

## Advantages of PVC sheet piling: Durable & Attractive

In corrosive environments, PVC protects assets as wood rots, concrete spalls, and steel rusts. Based on independent testing and analysis, PVC walls can last 75+ years when properly designed and

installed. You do not need any other equipment for installation of these sheet piles. PVC sheet piles can be driven with vibratory hammers.



By using an attractive graphite gray colour, sheet piling blends perfectly with marine applications, while customised or matching colours can greatly enhance the look of your project.

Applications of sheet piles:

- Retaining Walls
- Foundation Support
- Wharf and Quay Walls
- Bridge Abutments
- Trench Shoring



- Cofferdams
- Underground Parking
- Riverbank Stabilisation
- Pipeline Installation

Popular equipment used for driving sheet piles:

**I. Vibratory Hammers:** Vibratory hammers are highly effective for sheet pile driving in soft and granular soils. Their unique feature lies in harnessing vibrational energy through eccentric weights or hydraulic motors, creating high-frequency vibrations that reduce friction during penetration. Resonance Free Vibratory hammers can be used in urban areas because of their ability to minimize soil disturbance and noise. This characteristic of RF hammers make them invaluable in urban settings or projects adhering to strict environmental regulations. The rapid installation in specific soil types further enhances their appeal for efficient and eco-friendly sheet pile driving, especially where minimizing environmental impact is important.

Vibratory Hammers can be Crane suspended or Excavator mounted.



**Crane Suspended Vibro hammers:** These are more powerful as they get their power from a dedicated powerpack and allow you to drive sheet piles to a depth of even upto 35-40m. This set up is more expensive as you will need a crane with a double winch, a vibro with a powerpack, and a team of crew members for operation of the set up. If you need to drive sheet piles deeper and in hard soils, this is the best set up.

**Excavator Mounted:** These Hammers have evolved tremendously over the years. There is also now one available with a tilting mechanism to hold, lift and drive sheet piles in a single operation. If you need to drive upto 8m, you can opt for a unit suitable for a 20T excavator, while a 30T and a 40T excavator with gooseneck extensions or Vibro boom attachment can allow you to drive sheet piles upto a depth of 14-16m. Excavator mounted set ups incur lesser investment and operating costs and are more popular all over the globe due to their ease and speed of operation.

**II. Side Grip Hammers:** The excavator mounted side grip vibro hammers are preferred where there are space constraints. For e.g. if you need to drive sheet piles under a bridge or a flyover, you cannot use a crane or a large excavator. Here, a side grip mounted hammer on a 20T or a 30T excavator can be used to drive even upto 14m sheet piles.



**III. Impact Hammers:** Impact hammers are characterized by a striking mechanism where the ram weight of the hammer drops on the sheet piles with gravity. It is pulled up with hydraulic force and dropped repeatedly with concentrated impact energy, driving the sheets into the ground. Their key feature lies in high driving efficiency, making them suitable for harder soil conditions. The robust construction and adaptability of impact hammers make them highly reliable in diverse construction scenarios. Whether facing challenging ground conditions or requiring versatility in soil types, impact hammers are an effective and dependable solution for sheet pile driving. Impact hammers are also useful if you need to drive deeper sheet piles.

Impact hammers can be Hydraulic, Pneumatic or Diesel. However, diesel hammers are no longer preferred due to their high pollution and pneumatic hammers are not as powerful or efficient as their hydraulic counterparts.

#### IV. Hydraulic Pile Pressing machines:

Also known as silent piler or still worker, these machines use reactionary force to press the sheet piles silently without any noise or vibration. The most expensive set-up of all, these equipment are used wherever environmental disturbances are prohibited, like in eco-sensitive marine areas, dense urban locations, etc.



*Suretech Infrastructure, specialist in pile driving equipment for over 30 years, is installing all types of temporary and permanent sheet piles and casings. The company has a wealth of experience in helping clients select the equipment most suitable for their project, and provides value engineered solutions no matter the scale or complexity of the project. Suretech's product quality and product support are second to none in India.*

