APE BOTTOM DRIVE WICK DRAIN INSTALLATION RIG

WHAT IS WICK DRAIN

Laborious consolidation of Water saturated Clays or soils is a progression that normally takes decades to achieve. By adding ground pressure to the area that you wish to build a structure on, the water will makes its way to surface by seepage and the soils will naturally start to compress and settle from the weight that has been mechanically applied. The soil Matrix gradually takes up the pressure change and shrinks in volume. This procedure can take decades of time before the desired consolidation is achieved and will surely delay all future plans for development in that area until the proper soil density required is reached through settlement. This timely procedure can be vastly changed by adding PVD (Prefabricated Vertical Drain) into the ground and the seepage of water vacating the soils will accelerate the "settlement time" from decades to mere months, and the prevention of damages to roadways, embankments, and structures due to the shrinkage of soils will be near non existent. This will expedite schedules creating extremely lower costs and Leave structures for centuries to come in a "Non Tower of Pisa state"

INSTALLATION PLANNING

An APE Rep can always be present if required, and a devised plan can be discussed with engineers and clients on the most practical solutions and changes when required for our clients to execute the wick installation in a safe engineered manner.

All soils are different, and a devised plan of execution based on every job specific geotechnical challenge can always be addressed so the project can move forward in a timely fashion.

WICK DRAIN INSTALLATION RIG

The wick drain installation equipment consists of APE's Nissha Rig. The Rig supplies all the necessary hydraulics to the bottom drive machine. The Rig also has a built in Computer system that is Operator friendly and easy to use. The Computer System has built in safety features for raising and lowering of the mast, as well as safety features for safely installing wick and operating the Rig during installation. The rig has built in Inclinometers that will notify the Operator of the degree of installation as well as the degree of the mast during operation and traveling. This Computer System will give a Data stick at the end of every day's installation that will give all the information of depths as well as time of installation of each installed wick with the drive pressures used as well.
The bottom drive wick machine is made up of five major components: 1) the center hole vibro driver/extractor, 2) the sprocket drive, 3) the suppressor housing. 4) the mandrel, and 5) the mast or leader. A wick drain mast is attached to the machine and comes in various lengths according to the desired depth of the wick.

Ground Preparation

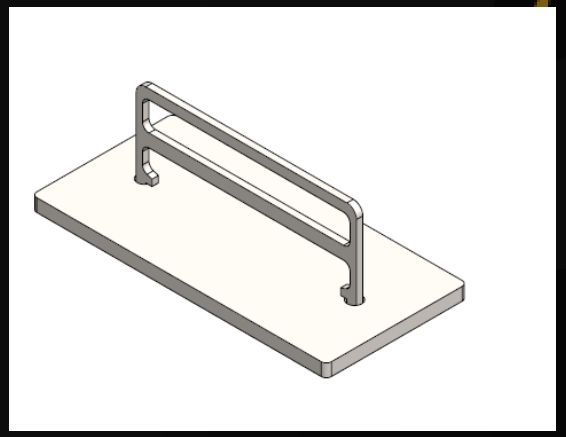
A working platform with sufficient bearing capacity for the Rig is mandatory for a safe operation. Generally Sand with a minimum of 1.5 Meters depth over the area that requires the installation of wick. The working platform should be kept free of standing water at all instances, and the ground must be firm with no holes or soft spots and generally is packed to achieve these conditions required.

The Mechanics and use of APE's Bottom Drive System

2 mandrel Sprocket Motors providing 26.19 tons of down Crowd Force, and for the dense layers that need a little assistance pushing through, the Bottom Driver is equipped with an APE 200 Vibratory hammer that will provide 170 tons of driving force when needed, and once you break through that layer just revert back to crowd force without the use of the Vibratory hammer.

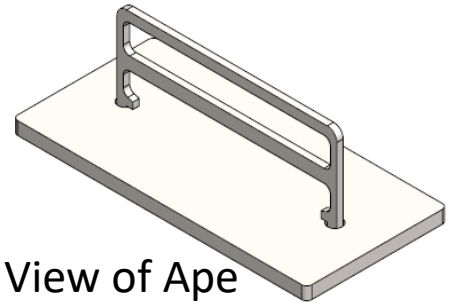
The APE Anchoring Shoe

Anchor Shoes is a very important part of Driving Wick. Standard Archaic Shoes require staples or just folding and inserting the wick into the mandrel which has proven to be an ineffective procedure that costs the client time and money with delays of jammed wick or repairs needed to be done. The APE anchoring Shoe is an essential design for all wicking to be done in a timely manner. It works off of a Patented wick cinching buckle style system that speeds the process up, and requires no staples, and is much more secure. Ape's new Buckle Style Cynching shoe can only be sourced out through APE and will surely save you headache's, aggravation, and money.

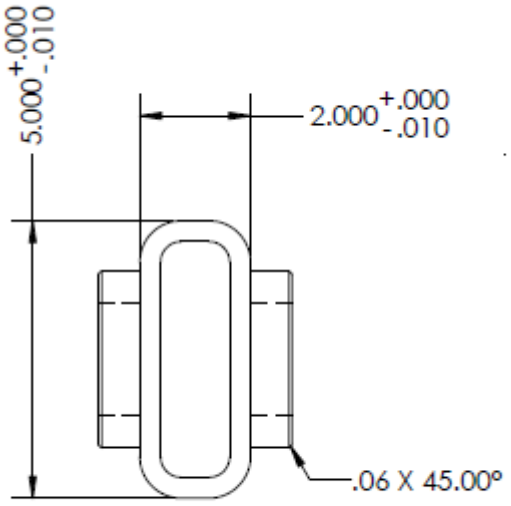


APE Mandrel & Shoe Dimensions

The APE Anchor Shoe is 2.75”x5.75”. This gives a surface area of 10,201 mm². The Mandrel has a surface area of 9,538 mm². the Deformation that the shoe will receive on its decent will almost render it the size of the mandrel itself. In any case the surface area puncturing the soils will be no greater than 10,201 mm². Please keep in mind that the soils recovery will be very fast as water/clay soils has zero memory.



View of Ape Buckle Wick Shoe



Top View of Mandrel