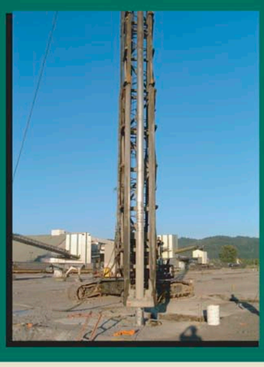

DeWitt's Driven Grout Pile

DeWITT CONSTRUCTION INC.

PILEDRIVING
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1.800.952.8808
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Driven Grout Pile Offers Substantial Savings in Time and Dollars

The Driven Grout Pile was conceived to provide an economical pile capable of supporting loads in excess of 100 tons. In most situations it will provide a cost saving pile in lieu of the normal precast-prestressed concrete pile, H-pile, pipe pile or augercast pile.

The pile offers many advantages over these piles. The material required is most always immediately and locally available. The pre-manufacture and delivery is minimal compared to rolling and shipment of steel pile and casting of PC-PS pile. The pile offers a great savings in job time as well as dollars.

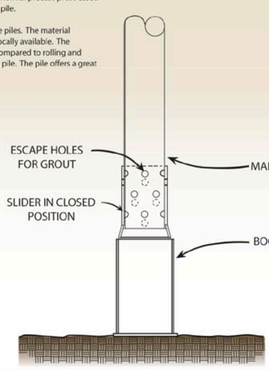


Figure 1
Inserting Mandrel and Slider Into Boot

Examining the Unique Driven Grout Pile Process

A Pile is started by placing a "boot" on the correct location (Figure 1). This boot consists of a short piece of pipe with an end plate attached and serves to contain the grout at the onset and also protects the tip of the mandrel during driving. The mandrel is placed in the boot, then charged with fluid grout at pressures ranging to 200 psi. At this point the driving commences. The grout injected prior to and during driving escapes under pressure from the tip serving to maintain the diameter of the shaft and provides lubrication to facilitate extraction of the mandrel. Once bearing is met (terminal driving criteria), the grout is injected as required under pressure as the mandrel is extracted (Figure 4). The design of the mandrel keeps soil from entering the grout column.

Hammer Energy Goes Directly to the Tip of the Pile

The Pile is completed by installing a rebar cage and a Sonotube sleeve. Since there are no spoils that accumulate, this sleeve forms the top of the piling where it enters the pile cap.

Since the mandrel is continuously being driven through an annular column of fluid grout, the only resistance encountered during driving is that which is localized at the tip of the pile. All hammer energy therefore goes directly to the tip of the pile, conforming neatly to the wave equation. It is after the grout column gains strength that the skin friction develops. This phenomenon imparts an inherent conservatism to the ultimate capacity of the piling.

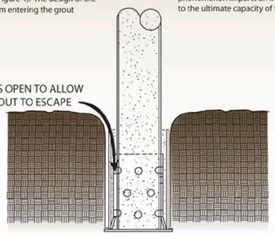


Figure 2
Ready to Drive

Densification Increases Load Carrying Capacity

Pile length adjustment is simply cone by decreasing or increasing the number of strokes from the pre-calibrated grout pump; therefore, there is little waste and cut off is accomplished by striking off the top sono-tube form.

Driving these piles with the conventional equipment results in a large load carrying capacity due to a densification of the soil at the tip, also increasing the friction factor around the perimeter of the pile.

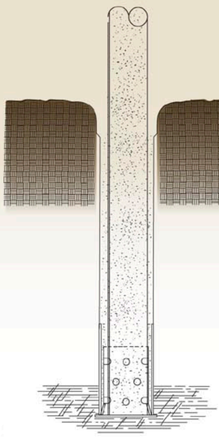


Figure 3
Driven to Bearing

No Spoils, No Cut-Off & Little Material Waste During Installation

The process produces virtually no spoils, which is very significant in contaminated construction sites. It is a concrete pile, and therefore is resistant to most all corrosive conditions which otherwise may attack steel piles. Since the pilling is cast in place, there is no cut off and there is little waste of material during the installation. This efficient process has installed up to twenty 110-foot piles per day with a design load of 220 tons.

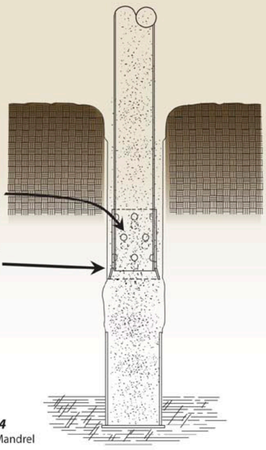


Figure 4
Withdrawing Mandrel

Downdrag Loads Can Reduce Allowable Capacities

Settlement of soils surrounding piles can induce frictional downdrag loads that essentially reduce the allowable pile capacity. Driving a steel casing in the upper soils precludes soil/grout interacting, reducing downdrag loads. In most situations the steel casing can replace the need for a rebar cage.

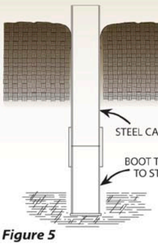


Figure 5

Investigating the Distinctive Sleeved Driven Grout Pile Process

A *Sleeved Driven Grout Pile* is started by first driving a steel sleeve with the "boot" tack welded to the bottom (figure 5). The sleeve is driven to a predetermined depth. The mandrel is now placed in the sleeve, then grout is injected and the driving begins. The driving breaks the "boot" away from the sleeve. The sleeve remains in place and forms the top of the pile where it enters the pile cap (figure 6). The process is completed like a typical Driven Grout pile.

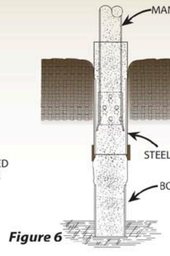
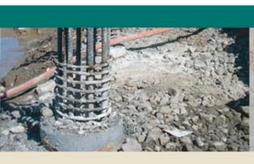
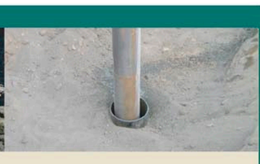


Figure 6





Setting the Rebar Cage/Center Bar Completes the Driven Grout Pile

After the mandrel is withdrawn, to form the top of the pile on a "Typical" Driven Grout Pile, a sono-tube is set at the correct elevation. With the Sleeved Pile, the steel casing forms the top. The Center bar and Rebar cage are now set in place (figure 7). In most circumstances the rebar cage can be deleted and replaced by the sleeve. Unlike auger-cast pile, there is little or no spoils to be removed, saving time and money. The piles are now ready to be formed into a pile cap.

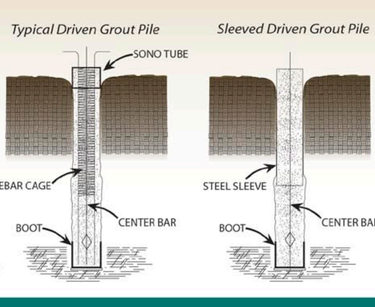
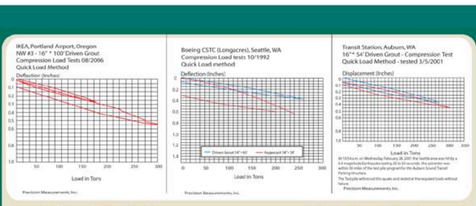
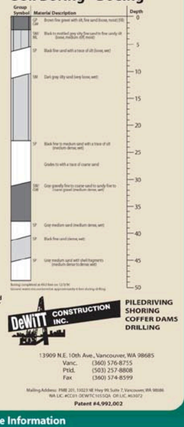


Figure 7



Soil Boring - IKEA

Soil Boring - Boeing



Pile Qty. & Diameter	
540	16" - 1/8" x 125'
476	16" x 75'-95'
244	16" - 1/8" x 50'
148	14" x 70'
500	14" x 45'
600	14" x 65'
1887	16" x 75'
200	12" x 40'
166	16" x 72'
1500	14" x 95'
1600	14" x 45'
193	16" x 69'
774	16" x 100' w/steel sleeve
1770	16" x 75'

Project & Location
Port Westward, Clatskanie, OR
Ore, Steel Mill, Portland, OR
Hilton Hotel, Issaquah, WA
Hampton Inn, Portland, OR
Oregon State Office Building, Portland, OR
U.S. Post office, Seattle, WA
G-P Wauna Mill, Clatskanie, OR
Lincoln Development, Beaverton, OR
Auburn Parking, Auburn WA
Pacair / Kenworth, Renton, WA
Boeing 25-01 Building, Renton, WA
Kent Transit Station, Renton, WA
IKEA Store, Portland, OR
Impertium Bio Fuels, Hoquiam, WA

Design Load
100 ton
100 ton
80 ton
60 ton
110 ton
100 ton
100 ton
80 ton
135 ton
220 ton
120 ton
135 ton
90 ton
90 ton

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Patent #4,992,002

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