

GLOSSARY OF TERMINOLOGY

AUTHORIZED PILE LENGTHS - (a.k.a. Authorized Pile Lengths letter) Official letter stating Engineer's recommended length of concrete piles to be cast for construction of foundation. Authorized pile lengths are based on, but not limited to, test pile program results. See Section 455-5.14.3 for further information.

BATTERED PILE -A pile driven on an angle. Usually expressed as a ratio of rise to run (vertical to horizontal). Example 12:1 is a 1-foot rise (vertical) to 12 foot run (horizontal), and is denoted on plans with an arrow to indicate the direction of the batter. Metric equivalent is 1:12.

BLOW COUNT - A so called **Driving Resistance** -- not to be confused with "N" value for SPT's. The number of hammer impacts or blows required to move the pile a given unit of measurement -- most commonly 1 foot (also could be 1 inch or other increment).

BONNET - Also called **Helmet** or **Pile Cap**; cast steel housing which fits over the pile top and houses the pile cushion for concrete piles. See Section 455-5.3.3 for further information.

BUILD-UPS - Refers to non-driven cast-in-place or precast extensions to concrete piles. See Sections 455-7.7.1 and 455-7.7.3. This term is used in the 455 as build-up, extension and splice.

CAP BLOCK - Cast steel insert between the hammer and the helmet which houses the hammer cushion. See Section 455-5.3.1 for further information. Also called **Bonnet**, **Helmet**, **Pile Cap**.

CUT-OFF ELEVATION - The finish elevation of the pile top as shown in the Plans.

DRIVING CRITERIA - Official letter stating Engineer's recommended blow count for piles to provide the bearing capacities required for carrying the design loads shown in the plans. The driving criteria also includes such items as pile and hammer cushion types, thicknesses, hammer stroke or fuel pump settings to be used, jetting or predrilling amounts, restrikes, etc. The driving criteria letter can also be used to address any peculiarities discovered in the Pile Load Test Program.

ELEVATION - The height above or depth below sea level. Also, may be a "job" elevation where an arbitrary level is set as a "reference elevation".

END BEARING - The pile capacity gained from pile tip reacting against the soil (or rock). This loading is similar to that of a spread footing and is also known as point bearing capacity.

ENGINEER - When the Engineer is referred to in the Specifications or Plans, the State Construction

Engineer or his duly authorized representative is responsible. The State Construction Engineer delegates some of this authority to the District Construction Engineer who in turn delegates some authority to his Resident Engineers.

FOLLOWERS – An extension, usually steel, used between the top of the pile and the hammer to extend the driving range of the pile (usually below water).

HELMET - This is the section of the pile driving system which rests between the hammer and the pile. For concrete piles, it contains the striker plate, a hammer cushion, and the pile cushion. For steel piles, it will contain the striker plate and hammer cushion only; no pile cushion is used on steel piles. It can also be referred to as the Drive Head, Drive Cap, **Bonnet**, Hood, Primary Cap, Insert or Hood.

JETTING - Consists of a jet pump, supply lines and one or more jet pipes which use water to displace soil and advance a pile into the ground. See 455-5.7 for further information.

LEADS - Swinging Leads - These leads are attached to the crane at the top by the main cable. They have a gate at the bottom which holds the leads around the pile and will sometimes have spikes on the bottom which are stuck into the ground or template to assist in aligning the hammer. This type of lead is best suited for piles with little or no batter. The advantages of this type of lead include allowing the crane to be used for other activities, they can be swung into areas with difficult access, and they are relatively easy to set up. A template must be used in conjunction with swinging leads.

Semi-fixed Leads - This type of lead has a pivot or sliding connection to the crane at either the top or bottom of the leads. Normally the connection is at the top of the leads. Semi-fixed leads can accommodate a greater batter than swinging leads, however, they limit what the crane can do and are more difficult to set up. This type of lead also requires the use of a template.

Fixed Leads - This type of lead has connections at both the top or mid point and the bottom of the leads. The connection at the top is normally a pivot or rotational type connection, at the bottom there is normally a brace which extends from the crane to the leads. This connection normally has a method for adjusting the in or out from the crane and left or right. This allows any type of batter to be used. This system severely limits what the crane can do and in general requires the most set-up time. No template is required for fixed leads.

MINIMUM PENETRATION - Minimum depth below ground surface, scour elevation, or bottom of excavation, to which a pile must be driven. When a minimum pile tip elevation is not shown in the plans, then refer to definition in 455-5.8. Do not confuse this term with **Minimum Pile Tip Elevation**.

MINIMUM PILE TIP ELEVATION - If required, they should be shown in the plans. Minimum elevation to which piles must be driven to assure design requirements are met. When compression loads govern depth, no minimum tip elevation is usually given. Minimum tip is specified because of lateral loads and does not depend on the compression capacity of a pile. Do not confuse this term with pile penetration.

MPO - Metropolitan Planning Organization. An organization involved in the identification and planning of future transportation needs.

PD&E – Project Development and Environmental (FDOT Work Type 2.0).

PILE CUSHION - Used to protect pile top and help control pile stresses in concrete piles. Steel and timber piles do not use a pile cushion. Pile cushions are addressed in Section 455-5.3.2.

PILE DRIVING LOG - Includes all of the information on the driven pile and serves as an as-built record for future use. It can also help pinpoint the cause of any problems that may occur during driving. Will also be used to document levels of the pile capacity during production pile driving. The pile driving record may also be used as evidence in contract proceedings.

PILE INSTALLATION PLAN - A Contractor's submittal to the Engineer for approval prior to test pile or production pile driving. Includes a detailed list of all the Contractor's proposed pile driving equipment, details on how the Contractor will drive the piles and the proposed schedule for driving. See Section 455-10 for further information.

PILE SPLICE - Piles that do not achieve the required driving criteria or are driven below the cut-off elevation need to be extended. A splice is a structural connection between the original pile and another. Spliced piles may be driven or non-driven. See Section 455-11.8 for further information.

PILE TIP ELEVATION - The elevation of the pile tip (bottom). Number obtained by subtracting the depth driven below the reference elevation from the reference elevation.

PLUMB PILE - From the survey term "plumb line", it is a pile driven vertically or true.

PRACTICAL REFUSAL - Defined as 20 blows per inch [20 blows per 25mm] with the hammer operating at the highest fuel setting or at setting determined by the Engineer and less than 1/4 inch [6mm] rebound per blow.

PREDRILLING - Drilling a hole to place pile in. Do not confuse with preforming. There are two reasons for predrilling. 1) A 4 foot [1.2 m] maximum depth starter hole. 2) Holes drilled through embankment fill material to reach natural ground surface. Be careful with terminology. Predrilling is not a Pay Item, Preforming is. See 455-5.1.1.

PREFORMED HOLE (Preforming) - Used when rock or strong soil strata will not permit the piles to penetrate to the required depth. Preformed holes are a penetration aid when all other installation methods fail or is specified in the plans. Do not confuse with Predrilling. Preforming is a Pay Item, Predrilling is not. See 455-5.9 for further information.

PRODUCTION PILE - Term given to all permanent piles that are not test piles. Note: test piles are usually at production pile locations.

PSC – Prestressed concrete.

RAM - Striking part of the hammer. The weight (pounds) of the Ram is a part of the equation for Hammer Energy.

REDRIVE - Striking the pile with the hammer 72 hours or more after the end of the initial drive. A redrive is an extra and therefore the Contractor is entitled to extra payment. Be careful in terminology and documentation. This term is sometimes confused with set-check. See 455-5.10.4 for further information.

SAXIMETER – A battery powered unit used for determining the stroke height of an open-end diesel hammer or blows per minute (operating rate) of any other hammer. Used to average stroke and blows per foot.

SCOUR - Soil being washed away from channel bottom due to the movement of water. You can experience "scour" by simply standing in the shallow waves on the beach and feel the sand wash out below your feet as the waves move past.

SET-CHECK - Striking the pile with the hammer up to 72 hours after the end of the initial drive. Contractor is not paid for an initial set check within the first 15 minutes after initial drive. Additional set-checks up to 72 hours after initial drive are paid for as piling furnished. See 455-5.10.4 for further information. (Also see **Redrive**).

SPECIFICATIONS - Refers to the "Standard Specifications for Road and Bridge (**Standard**) Construction" (SSRBC). This book contains the Department's Standard Specifications. Always check which edition is to be used on your job and if there are any Supplemental Specifications and Technical Special Provisions which may replace portions of the Standard Specifications.

STROKE - This is the term used to describe the height or length of the ram drop. With diesel hammers, stroke is dependent upon fuel and resistance. Air and hydraulic hammers have a set stroke independent of resistance.

TEMPLATE - Used to maintain the pile in the proper position and alignment during driving with swinging or semi-fixed leads. It should be constructed of steel and be rigid enough to hold the pile in place. It must be placed within 5 feet of the pile cut-off elevation or water or ground surface. A drawing of the proposed template should be submitted with the Pile Installation Plan. See 455-5.6

TEST PILE - An exploratory pile driven to develop recommendations for the installation of permanent piles, to determine information on the pile, soil, hammer and method of installation. Test pile information is used to determine pile lengths and driving criteria for all production piles. See 455-5.12 for further information.