


<p>GEOTECHNICAL</p> 	<p><i>Section</i></p> <p>PILE & DRILLED SHAFT DESIGN</p>
	<p><i>Subject</i></p> <p>Pile Dynamic Analysis & Constructability Considerations</p>

ESTIMATING

DRIVING STRESS: Piles can be damaged when stresses induced during pile driving exceed the structural capacity of the pile. A wave equation analysis can be used during the design phase (and reevaluated during construction, if necessary) to estimate the pile driving stresses, the pile penetration per blow, and ultimate capacity of the pile.

DYNAMIC

PILE TESTING: Dynamic testing with signal matching may be used during construction to measure the energy imparted to the pile by the hammer, the stresses in the pile during driving, and the ultimate capacity of the pile.

DAMAGE

AVOIDANCE: In cases where piles must penetrate layers of dense granular soils, resistance to pile driving may become so great that the piles could be damaged by the driving process. Piles that are intended to bear upon rock must reach the bedrock surface. Friction piles will have some minimum tip elevation that must be reached in order to allow the piles to resist anticipated lateral loads and/or to have adequate axial or lateral load-carrying capacity in the event that much of the material in which they are embedded is removed by scour. In such cases, predrilling at the pile locations, or jetting performed during the driving process, may be necessary to allow the pile tips to penetrate the required distance.

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