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Calibration of Region-Specific Gates Pile Driving Formula for LRFD

by

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16. Abstract

This research project proposes new DOTD pile driving formulas for pile capacity verification using pile driving blow counts obtained at either end-of-initial driving (EOID) or at the beginning-of-restrike (BOR). The pile driving formulas were developed using a regional database containing 252 static load tests and 934 dynamic load tests (DLT) collected from DOTD projects. The DLTs were conducted on blow counts taken at EOID (183 CAPWAPs) and BOR (751 CAPWAPs). The pile driving formulas were developed by conducting a nonlinear regression analysis of the generic Gates formula. The LRFD resistance factors (φ) were calibrated using the Monte Carlo Simulation (MCS) method for the Strength I limit state with a reliability index (β_T) of 2.33 as recommended for pile groups in AASHTO specifications. The current LADOTD pile driving formula (FHWA Gates Formula) used to evaluate blow counts taken at EOID was evaluated; results show a best fit ratio of 0.80 with a resistance factor of 0.67—higher than the AASHTO specifications resistance factor (φ) of 0.40 for the same pile driving formula. The new EOID LADOTD Modified pile driving formula has a best fit ratio 0.91 with a resistance factor of 0.59. This study recognizes pile capacity setup can significantly affect pile driving formulas ability to predict pile capacity when using blow counts obtained at BOR. Pile capacity setup was evaluated by computing the Skov-Denver pile setup factors (A_Q) using total pile capacity (Q). A minimum of two pile setup categories (A and B) were identified in Louisiana. Pile setup category A is located in the coastal marshes along the gulf coast of Louisiana with setup factors (A_Q) ranging from 0.135 to 0.428. Pile setup category B was assigned to the remainder of the state with A_Q pile setup factors ranging from 0.021 to 0.108. An evaluation of the pile setup curves using the Skov-Denver model indicates that more than 90% of the long-term pile capacity (load test conducted at t = 14 days) can be obtained at $t \geq 6$ days for pile setup category A and $t \geq 3$ days for pile setup category B. A BOR pile driving formula was developed for setup category A with restrikes conducted at $t \geq 1$ days with a best fit ratio of 0.93 and a corresponding resistance factor (φ) of 0.64. A different BOR pile driving formula was developed for pile setup category B with restrikes conducted at $t \geq 1$ days with a best fit ratio of 0.92 and a corresponding resistance factor (φ) of 0.605. Recommendations on the implementation of these EOID and BOR pile driving formulas have been included in this study.

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May 2016

ABSTRACT

This research project proposes new DOTD pile driving formulas for pile capacity verification using pile driving blow counts obtained at either end-of-initial driving (EOID) or at the beginning-of-restrike (BOR). The pile driving formulas were developed using a regional database containing 252 static load tests and 934 dynamic load tests (DLT) collected from DOTD projects. The DLTs were conducted on blow counts taken at EOID (183 CAPWAPs) and BOR (751 CAPWAPs). The pile driving formulas were developed by conducting a nonlinear regression analysis of the generic Gates formula. The LRFD resistance factors (φ) were calibrated using the Monte Carlo Simulation (MCS) method for the Strength I limit state with a reliability index (β_T) of 2.33 as recommended for pile groups in AASHTO specifications. The current LADOTD pile driving formula (FHWA Gates Formula) was used to evaluate blow counts taken at EOID; results show a best fit predicted to measured ratio of 0.80 with a resistance factor of 0.67—higher than the AASHTO specifications resistance factor (φ) of 0.40 for the same pile driving formula. The new EOID LADOTD Modified pile driving formula has a best fit predicted to measured ratio 0.91 with a resistance factor of 0.59. This study recognizes pile capacity setup can significantly affect pile driving formulas ability to predict pile capacity when using blow counts obtained at BOR. Pile capacity setup was evaluated by computing the Skov-Denver pile setup factors (A_Q) using total pile capacity (Q). A minimum of two pile setup categories (A and B) were identified in Louisiana. Pile setup category A is located in the coastal marshes along the gulf coast of Louisiana with setup factors (A_Q) ranging from 0.135 to 0.428. Pile setup category B was assigned to the remainder of the state with A_Q pile setup factors ranging from 0.021 to 0.108. An evaluation of the pile setup curves using the Skov-Denver model indicates that more than 90% of the long-term pile capacity (load test conducted at t = 14 days) can be obtained at $t \geq 6$ days for pile setup category A and $t \geq 3$ days for pile setup category B. A BOR pile driving formula was developed for setup category A with restrikes conducted at $t \geq 1$ days with a best fit predicted to measured ratio of 0.93 and a corresponding resistance factor (φ) of 0.64. A different BOR pile driving formula was developed for pile setup category B with restrikes conducted at $t \geq 1$ days with a best fit predicted to measured ratio of 0.92 and a corresponding resistance factor (φ) of 0.605. This study recommends a resistance factor of 0.50 for EOID and a resistance factor of 0.60 for BOR pile driving formulas. The results of this study conclude that the economic benefit has the potential to exceed the economic costs by a margin of 3.5 to 6 within the first year of implementation of the improved DOTD pile driving formulas and updated LRFD resistance factors.

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IMPLEMENTATION STATEMENT

This research project proposes new DOTD pile driving formulas for pile capacity verification using pile driving blow counts obtained at either end-of-initial driving (EOID) or at the beginning-of-restrike (BOR). Recommendations are presented on the use and applicability of the proposed pile driving formulas on DOTD projects. The recommended pile driving formulas can readily be implemented in small bridge projects such as those projects that are included in the DOTD Off-System Bridge Program. Implementation of the pile driving formulas developed in this study will necessitate the development of a Bridge Design Technical Memorandum (BDTM) that outlines the design policy with respect to the types of projects it can be used with and pile design criteria associated with the resistance factor. Supplemental specifications will also need to be developed to modify Subsection 804.10(a) of the 2006 Louisiana Standard Specifications for Roads and Bridges to include the proposed pile driving formulas and present their applicability to different pile driving conditions. One aspect of the implementation that should not be overlooked is providing proper training to DOTD construction personnel on how to properly use the proposed pile driving formulas on bridge construction projects.

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INTRODUCTION

The Louisiana Department of Transportation and Development (DOTD) uses a variation of the Federal Highway Administration (FHWA) Gates Formula, hereinafter referred to as the LADOTD pile driving formula, to verify the long-term ultimate pile capacity with blow counts obtained during end-of-initial driving (EOID) in units of tons as per the 2006 Louisiana Standard Specifications for Roads and Bridges, Section 804.10 *[1]*. The LADOTD pile driving formula is typically used on smaller projects where static load tests and dynamic monitoring are not practical. The resistance factor (φ) for load and resistance factor design (LRFD) specified by the current American Association of State Highway and Transportation Officials (AASHTO) design guide for the FHWA Gates Formula is 0.40 *[2]*. LTRC conducted a study to evaluate different static pile capacity design methods and calibrate resistance factors (φ) with a reliability index (β_T) of 2.33 for LRFD design of driven piles *[3]*. DOTD used the results of this study to establish a policy to use a resistance factor (φ) of 0.50 for designs using static equilibrium methods. The goal of this study is to develop pile driving formulas using a regional pile load test database and calibrate the LRFD resistance factors that have the same reliability index (β_T) and probability of failure (P_f) that is being used in static equilibrium methods.

The LRFD resistance factor (φ) specified by the current AASHTO design guide for the FHWA Gates Formula is based on studies conducted by Paikowsky et al., (2004) and Allen (2005) to investigate the accuracy of the FHWA Gates Formula *[2, 4, 5]*. These studies were conducted using a national pile load test database. The AASHTO design guide recommends resistance factors based on these national studies unless region-specific resistance factors are developed based on substantial statistical data combined with calibration or substantial successful experience is available to justify higher values *[2]*. The LRFD calibration should be developed using the reliability index (β_T) and probability of failure (P_f) currently used with consideration to redundancy in foundation systems.

DOTD spent 2 to 3 million dollars annually over the previous three years on the construction of driven pile foundations. The current DOTD pile capacity verification practice for driven piles on small projects is to use the LADOTD pile driving formula with EOID blow counts, which requires the piles to be driven to a higher ultimate pile capacity than used by the DOTD's static pile capacity design methodology. Therefore, there is a need to evaluate the LADOTD pile driving formula using a regional database to evaluate its accuracy and determine if adjustments are necessary. This research is consistent with FHWA recommendations that "Highway agencies should establish long-term correlations between

pile capacity predictions from dynamic formulas and static load test results to failure" *[6]*. Improved consistency relative to the current design approaches will be achieved if the updated resistance factor matches or exceeds the worst-case resistance factor used by DOTD, reducing confusion among users. Updating the resistance factor will also serve to increase confidence in the LADOTD pile driving formula (FHWA Gates Formula) or other developed pile driving formulas, refine the state-of-practice in LRFD, optimize the efficiency of the piles, and reduce project costs. This research identifies the conditions where current or proposed pile driving formulas should be used and the associated LRFD resistance factors.

History of Pile Driving Formulas

Major John Stanton suggested the earliest and simplest forms of the pile driving formula in 1851 while driving 6,000 timber piles in the Fort Delaware project on Pea Patch Island in the Delaware River *[7]*. The formula is as follows:

$$\boldsymbol{R = \frac{wh}{8s}} \quad \textbf{(1)}$$

where, R = allowable load, w = ram weight, h = height of drop, and s = pile penetration per each blow. The factor of safety of eight in the denominator clearly indicates the uncertainty of this formula.

In the December 29, 1888, issue of *Engineering News*, an article titled "Formulas for the Safe Load of Bearing Piles" presented pile driving formulas that have later been referenced as the "Engineering News Formula." A. M. Wellington has been credited as the developer of this formula. The article suggests the following basic pile driving formula:

$$\boldsymbol{L = F\frac{wh}{s + c}} \quad \textbf{(2)}$$

where, L = safe load, w = weight of hammer, h = height of drop, s = pile penetration per each blow (last penetration), c = a constant (preferably 1 inch), and F = a constant determined from experience and allowable load. Based on this generic formula, the following driving formula was proposed for gravity hammers with safe working load that has an implied factor of safety of 6:

$$L = \frac{2wh}{s+1} \quad (3)$$

where, L = safe working load (pounds, tons or other units), w = weight of hammer (same unit as L), h = fall of hammer (feet), and s = the set (inches per blow).

In 1893, *Engineering News* published a document, edited by A. M. Wellington, titled "Piles and Pile Driving" that consisted of reprints of some articles which had appeared in *Engineering News*. The document included an article titled "Code of Rules for Safe Load of Piles" from the November 17, 1892 issue of the *Engineering News*. The intent of the article was to give a codified summary of rules for good practice in pile driving. The article describes "ordinary pile driving" as a hammer weighing 2,000 to 3,000 pounds dropped (free falling) 20 to 30 feet. The article also addresses steam pile drivers with hammer weights of 3,000 to 5,000 pounds with shorter falls, typically three feet. Diesel hammers or double acting hammers were not addressed in the article. The safe or working load for piles was recommended to be one sixth of the maximum or ultimate load. The article summarizes the *Engineering News* formulas as follows:

Ordinary Pile Driving (Gravity Hammers):

$$L = \frac{2wh}{s+1} \quad (4)$$

where, L = safe working load (pounds, tons or other units), w = weight of hammer (same unit as L), h = fall of hammer (feet), and s = the set (inches per blow).

Steam Pile Drivers:

Given that the interval of time between blows for steam pile drivers is not more than 1/10 to 1/20 as that for ordinary pile driving (i.e., gravity hammers) and the velocity impact is 1/3 as great, the constant (c) in equation (2), is set to 0.1 to account for the extra initial resistance of getting the pile in motion.

$$L = \frac{2wh}{s+0.1} \quad (5)$$

where, L = safe working load (pounds, tons or other units), w = weight of hammer (same unit as L), h = fall of hammer (feet), and s = the set (inches per blow).

Due to complications in predicting capacities using the available pile driving formulas, a committee comprised of well-known soil mechanics engineers like Terzaghi, Peck, Casagrande, Tschebotarioff, and Proctor investigated the accuracy of proposed formulas during the 1930s. In 2012, Likins et al. gathered two reports that were prepared by the committee that included an assessment and discussions of both pile driving formulas and static load tests, as well as an attempt to provide a recommended pile driving formula for use that matched closely with static load tests. (2012) *[7]*. Throughout these reports and discussions, serious problems were found with pile driving formulas from the earliest years of use and proper improvements had not been implemented yet. Largely, the committee members were divided, with one group placing emphasis on complicated formulas with more parameters, while the other group preferred simple formulas that included uncertainties. One of the main weaknesses of pile driving formulas was the hammer efficiency, which was not controlled. Due to all the deficiencies in the pile driving (dynamic) formulas, Karl Terzaghi said, "The use of the (dynamic) formula in the design of pile foundations is unsound on both economical and technical grounds." However, because of their simplicity, dynamic formulas continued to be used, with more than 30 different formulas were documented by R.D. Chellis in 1951, of which many are still used today *[8]*.

In 1943, Terzaghi wrote in his book *Theoretical Soil Mechanics [9]*:

> "In spite of their obvious deficiencies and their unreliability, the pile formulas still enjoy a great popularity among practicing engineers, because the use of these formulas reduces the design of pile foundations to a very simple procedure. The cost for this artificial simplification is very high. In some cases, the safety factor of foundations obtained by means of pile formulas is excessive and, in other cases, significant settlements have been experienced. The opinions regarding the conditions for the legitimate use of the formulas are still divided. In this connection, the reader is referred to a recent and very illuminating discussion in the Proceedings of the American Society of Civil Engineers (Pile Driving Formulas. Progress Report of the Committee on the Bearing Value of Pile Foundations, Proc. Am. Soc. C. E., May 1941; discussions in every issue from September to December 1941, from January to March 1942; closure in May 1942)."

Aside from unreliability and difference in predictions of early suggested dynamic pile formulas, it is noteworthy that those formulas were developed based on the studies of timber piles with diameters of 12 inches or less driven with a drop hammer. Moreover, there was no consensus on a criterion of failure for static load tests *[7]*.

Gates Formula

By analyzing several pile load tests, Marvin Gates proposed in 1957 an empirical formula to estimate ultimate pile capacity of driven piles *[10]*. The formula assumed that the resistance against penetration of the pile correlates to the energy used for driving.

$$R \sim \sqrt{E} \tag{6}$$

where, R = resistance against penetration, E = net hammer energy.

Moreover, for a specific hammer, plotting failure load versus logarithm of set of the piles resulted in a roughly linear relation:

$$R \sim log\ (s) \tag{7}$$

where, s = set of the pile.

Using statistical analysis Gates in 1957 further developed the formula for prediction of ultimate pile capacity, and Paikowsky et al. (2014) later presented a unit conversion to simplify the use of the Gates formula as follows *[11]*:

$$R_u = 27.11\sqrt{E_n \times e_h}(1 - log(s)) \tag{8}$$

where, R_u = ultimate pile capacity (kips), E_n = rated energy of hammer per blow (kips-ft), e_h = hammer efficiency (0.75 for drop hammers, 0.85 for all others), and s = final pile set per blow (inches).

The Gates formula is based on 100 observed piles. By incorporating more data into the analysis and correlating load at failure to net driving energy and set per blow, Gates believed he could improve the formula to predict capacity to within 20%.

Assessment of the 1957 Gates Formula

Several studies have been performed to evaluate the accuracy of the 1957 Gates formula for different types of piles *[4, 10, 12, and 13]*. The results of Paikowsky et al. (2009) study are presented in Table 1 *[13]*. Table 1 shows that for modern and higher energy hammers, the 1957 Gates formula yields considerably lower values of pile capacity than were measured *[10, 13]*.

Table 1
Gates 1957 Formula estimation for H and pipe piles
(summary of findings by Paikowsky et al., 2009 *[14]*)

Pile Type	Cases	Mean Bias Measured /Calculated (m_λ)	STD (σ_λ)	COV	BFL Equation	R^2	Resistance Factor φ β=2.33, pf=1%, Redundant			φ/λ Efficiency Factor (%)
							FOSM	MC	Recom	
H-Piles	135	1.447	0.521	0.360	Ru=0.612*Rs	0.88	0.697	0.781	0.75	51.8
H-Piles EOD	125	1.430	0.506	0.354	Ru=0.625*Rs	0.90	0.698	0.782	0.75	52.5
Pipe Piles	128	1.495	0.772	0.516	Ru=0.387*Rs	0.91	0.514	0.558	0.55	36.8
Pipe Piles EOD	102	1.575	0.831	0.528	Ru=0.570*Rs	0.85	0.527	0.572	0.55	34.9

Modified Gates Equation

Olson and Flaate (1967) proposed a modified form of the Gates formula by curve fitting the relationship between predicted capacities of timber, precast concrete, and steel piles and observed values *[14]*. Long et al. (2009) presented the Olson and Flaate (1967) equations in units that are consistent with the FHWA Gates Formula as follows *[14, 15]*:

For all piles: $$Ru = 1.55\sqrt{e \times Er}\,log(10N) - 96 \quad \textbf{(9)}$$

For concrete piles: $$Ru = 1.39\sqrt{e \times Er}\,log(10N) - 54 \quad \textbf{(10)}$$

For steel piles: $$Ru = 2.01\sqrt{e \times Er}\,log(10N) - 166 \quad \textbf{(11)}$$

For timber piles: $$Ru = 1.11\sqrt{e \times Er}\,log(10N) - 34 \quad \textbf{(12)}$$

where, R_u = ultimate pile capacity (kips), e = efficiency of the hammer (dimensionless ratio), E_r = rated or observed energy of hammer (ft-lbs), and N = number of blows per inch at final penetration (blows/in).

Limitations of the data lowered the accuracy of the study and, as discussed by Paikowsky et al. (2014), these limitations include: (1) undefined efficiency for several piles, (2) undefined material for cushion of the top of most of the piles, (3) the assumption of lack of cohesion for

most of the piles was not correct, and (4) the failure criteria for some of the piles were unclear *[11]*.

FHWA Gates Formula

In 1988, the Federal Highway Administration (FHWA) conducted a study led by Richard Cheney to modify the Gates formula to improve the prediction accuracy *[16]*. The following generic form of the Gates formula was used to develop the improved FHWA Gates Formula:

$$R_u = C_1\sqrt{E}\,log(C_2N) - C_3 \quad \textbf{(13)}$$

where, R_u = ultimate pile capacity (kips), E = manufacturers rated hammer energy (ft-lbs), N = number of blows per inch (blows/in.), and C_1, C_2, and C_3 are empirically derived coefficients. The statistical correlations were developed using static load tests.

The FHWA recommended the following modified form of the Gates formula that is referred in this document as the FHWA Gates Formula *[16, 11]*:

$$R_u = 1.75\sqrt{E}\,log(10N) - 100 \quad \textbf{(14)}$$

where, R_u = ultimate pile capacity (kips), E = manufacturers rated hammer energy (ft-lbs), N = number of blows per inch (blows/in.), with empirically derived coefficients: C_1 = 1.75, C_2 = 10, and C_3 = 100.

Several studies have been performed to evaluate the accuracy of the FHWA Gates Formula *[4, 12, 13, and 17]*. A summary of the 1988 FHWA Gates Formula statistical analyses performed by Paikowsky et al. (2004) and Paikowsky et al. (2009) are presented in Table 2 and Table 3, respectively *[4, 13]*.

Table 2
Performance of FHWA Gates Formula (1988)
(modified from Paikowsky et al., 2004) *[4]*

Time of Driving	No. of Cases	Mean	Standard Deviation	COV	Resistance Factors for a given Reliability Index, β		
					2.0	2.5	3.0
General	384	0.940	0.472	0.502	0.42	0.33	0.26
EOD	135	1.073	0.573	0.534	0.45	0.35	0.27
EOD BLC < 16 BP10cm	62	1.306	0.643	0.492	0.60	0.47	0.37

Notes: EOD=End-of-Driving; BLC = Blow Count; BP10cm = Blows per 10cm;
Mean = ratio of the static load test results (Davisson's Criterion) to the predicted capacity = K_{SX}= λ = bias
COV = Coefficient of Variation;

Table 3
FHWA Gates Formula (1988) performance for H and pipe piles
(summary of findings by Paikowsky et al., 2009) *[13]*

Pile Type	No. of Cases	m_λ	STD (σ_λ)	COV_λ	BFL Equation	r	Resistance Factor, φ β=2.33, p_f=1%, Redundant			φ/λ Efficiency Factor (%)
							FOSM	MC	Recom	
H-Piles	135	0.8182	0.3237	0.3956	$Ru=1.168R_s$	0.875	0.365	0.408 0.400	0.40	48.9
H-Piles EOD	125	0.8133	0.3229	0.3970	$Ru=1.118R_s$	0.893	0.362	0.404	0.40	49.2
Pipe Piles	128	0.8381	0.5031	0.6003	$Ru=1.132R_s$	0.874	0.2400	0.256	0.25	29.8
Pipe Piles EOD	102	0.8913	0.5454	0.6119	$Ru=1.079R_s$	0.841	0.248	0.265	0.25	28.0

Notes: R_u = calculated capacity using the dynamic formula;
R_s = static capacity of the pile determined by Davisson's Failure Criterion
EOD = End-of-Driving;
m_λ = Mean Bias = measured/calculated; STD = Standard Deviation
COV_λ = Coefficient of Variation of the bias; BFL Equation = Best Fit Line Equation (least squares)
r = Coefficient of Determination
FOSM = First-Order Second-Moment
MC = Monte Carlo Simulation upper values for 10,000 simulations, lower values for 100,000 simulations
Recom = Recommended Resistance Factor

AASHTO LRFD Bridge Design Specifications

Reliability-based LRFD methods were first adopted in the 1994 American Association of State Highway and Transportation Officials (AASHTO) *LRFD Bridge Design Specifications*. Concurrently with the development of the AASHTO LRFD specification, the FHWA issued a policy memorandum in June 2000 that stated that all new bridges on which states initiate preliminary engineering after October 1, 2007, shall be designed by the AASHTO LRFD Bridge Design Specification. The LRFD specifications were not widely used until AASHTO discontinued updating Standard Specifications for Highway Bridges (included ASD and LFD methodologies) in 2003.

The AASHTO LRFD Bridge Design Specifications (7th Edition, 2014) provides recommendations on the use of the FHWA Gates Formula based on studies conducted by Paikowsky et al., (2004) and Allen (2005) to investigate the accuracy of the FHWA Gates Formula *[2, 4, 17]*. AASHTO recommends resistance factors based on these national studies unless regionally specific resistance factors developed based on substantial statistical data

and combined with calibration or substantial successful experience to justify higher values are available.

The AASHTO (2014) specifications indicate that regionally specific resistance factors should be developed to account for regional practices using statistical data and calibration *[2]*. The LRFD calibration should be developed using the reliability index (β_T) and probability of failure (P_f) currently used with consideration to the redundancy in the foundation systems. LRFD calibration has traditionally been performed using the following β_T and P_f parameters indicated in Table 4.

Table 4
AASHTO LRFD calibration parameters

Reliability Index (β_T)	Probability of Failure (P_f)	Application
3.5	1 in 5,000	Bridge Structures
3.0	1 in 1,000	Geotechnical Design
2.3	1 in 100	Redundant Systems - Pile Groups[1]

[1] AASHTO indicates that the minimum size of a pile group necessary to provide significant opportunity for load sharing ranges from 2 to 3 (Isenhower and Long, 1997) to 5 (Paikowsky, et al., 2004). These pile foundations in these pile groups are typically considered redundant.

The AASHTO (2014) specifications include the FHWA Gates formula with a resistance factor (φ) of 0.40 for redundant piles for EOID pile driving conditions *[2]*. AASHTO (2014) Section C10.5.5.2.3 indicates that for small pile groups, typically considered to be pile groups with less than five piles, the resistance factor (φ) should be reduced by 20% to account for the reduced ability for load sharing of an individual foundation element with adjacent foundation elements *[2]*. The resistance factors for the FHWA Gates formula have been calibrated using static pile load test data to include the effects of soil setup, or relaxation, consistent with the Paikowsky (2004) database *[4]*. Pile driving resistances for BOR pile driving conditions typically include the effects of soil setup associated with the elapsed time since EOID. The FHWA Gates formula is not able to distinguish the time-dependent pile capacity increase due to setup for BOR pile driving conditions and may tend to over-predict pile capacity for BOR pile driving conditions. The use of FHWA Gates formula for BOR driving conditions where pile setup occurs may require either lowering the resistance factor or developing a region-specific pile driving formula and LRFD calibration.

State Departments of Transportation Pile Driving Formulas

State Departments of Transportation (DOTs) have been using pile driving formulas since their creation to evaluate pile capacity. The use of dynamic formulas is typically documented in each state's DOT Standard Specifications for Highway Construction and in Pile Driving Inspector's Guidance manuals.

NCHRP Synthesis 418 provides an overview of the current practices nationwide in production pile driving criteria used *[18]*. The synthesis indicates that approximately 33% of state DOTs (14 of 42) stated that the predominant criteria for installation of production piles is to drive the pile to a specified driving resistance (blow count) based on a pile driving formula. Table 5 shows the states using pile driving formulas and the percentage of application in their projects.

Table 5
Usage of Pile Driving Formula to evaluate the suitability of the driving system by state
(Brown and Thompson, 2011) *[18]*

State	Usage (%)	Note
Alabama	100	Not Available
California	90	Gates Formula
Georgia	24	S-pile
Illinois	90	WSDOT formula
Indiana	40	Not Available
Kansas	100	Modified ENR
Massachusetts	24	Not Available
Michigan	90	Not Available
Minnesota	10	Not Available
North Dakota	97	Modified ENR
Tennessee	50	ENR
Virginia	40	ENR (Gates Formula is used for LRFD projects).
Washington	10	WSDOT formula

The *NCHRP Synthesis 418* study indicated that State DOTs use dynamic formulas: (1) on small projects with no static or dynamic load testing, (2) where highly competent soil conditions are encountered, (3) because it is easier to implement this criteria with field personnel, and (4) because they lack resources to use more modern methods of pile capacity verification *[18]*.

State DOTs have historically used the original or modified versions of either the *Engineering News* formula (i.e., ENR) or the Gates dynamic formula. Because it has been recognized that

there is a poor correlation between the predicted and the measured pile capacity, several DOTs have conducted studies to develop or improve existing pile driving formulas..

DOTD Driven Pile Practice and Specifications

Pile Driving Construction Specifications (1940 – 1992)

In the mid-1990s, a review of existing construction practices with respect to pile driving formulas was undertaken by DOTD, Pavement and Geotechnical Design Section 67. The study revised the 1997 *Louisiana Standard Specifications for Roads and Bridges* (the Specifications were finalized in 2000). The study reviewed the *Louisiana Standard Specifications for Roads and Bridges* from 1940 through 1992 and evaluated the terminology, dynamic formulas, and application of pile driving dynamic formulas. The study revealed the *Engineering News* formulas shown in equations (4) and (5) were used with some modifications in terminology and application of the formulas. A summary of the pile specification review is provided in Appendix A. Some of the most notable changes in the specifications include:

1. The specifications remained the same from 1940 until 1966 with single and double-acting air hammers.
2. In 1966, diesel hammers were included in the specifications.
3. The specifications from 1940 until 1982 indicated that the pile capacity, P, obtained by the pile driving forumlas was the "safe load per pile" or "safe bearing power or value" or "safe bearing power or capacity" indicating that it included an acceptable factor of safety that was 6 based on the literature pertaining to the equation being used.
4. In 1982, it was stipulated that the "Safe bearing capacity of permanent piles is … ½ of the bearing obtained by the forgoing formula for test piles that were not required to be loaded." This requirement appears to recognize that an additional reduction of ½ of the safe bearing capacity was needed resulting in a factor of safety of 12 if a load test was not conducted.
5. In 1982, the pile driving formula for double acting steam or air hammer was removed and diesel hammers were required to have a rod for measuring the height of the fall of the ram.
6. In 1992, the pile capacity, P, obtained by the pile driving forumlas was renamed to be the capacity of the pile without any reference to it being "safe" and it retained that the safe bearing capacity of permanent piles was ½ the capacity obtained by the pile driving formula, resulting in a safety factor of 12 when used.

Modern Pile Installation and Capacity Evaluation Methods (1992 – 2014)

In the 1990s, DOTD underwent a significant transformation in pile driving construction practice. In the late 1980s and early 1990s, FHWA began the promotion of improved pile installation and capacity verification practices with respect to the following:

- Evaluation of pile driving equipment using wave equation analysis program (WEAP86-87) methodology
- Pile installation documentation
- Use of static load testing
- Use of dynamic load testing with the pile driving analyzer (PDA)

The DOTD implementation of these new pile installation, evaluation, and testing techniques began in 1995 with the development of Special Provisions that replaced Section 804 of the *Louisiana Standard Specifications for Roads and Bridges* with respect to wave equation and dynamic testing with the PDA. A complete revision of the 2000 *Louisiana Standard Specifications for Roads and Bridges* included the Special Provisions developed from 1995 to 1997, modern methods of approving pile driving equipment (wave equation), and the use of an improved dynamic pile driving formula (FHWA Gates formula). The 2006 *Louisiana Standard Specifications for Roads and Bridges*, currently being used at the time of printing, includes minor revisions to the 2000 *Louisiana Standard Specifications for Roads and Bridges*.

Modern Pile Driving Equipment Approval

The 2000 *Louisiana Standard Specifications for Roads and Bridges* introduced the following two methods to approve pile driving equipment:

- Wave Equation Hammer Approval Method
- Alternate Hammer Approval Method

In this version of the specifications, the Wave Equation method was the primary hammer approval method and the Alternate Hammer method shown in Table 804-1 was to be used if specified in the plans. In the 2006 *Louisiana Standard Specifications for Roads and Bridges* Table 804-01 was renamed the Hammer Approval method and was the primary method for hammer approval and the Wave Equation hammer approval method was used if specified in the plans. The main objectives of introducing an equipment approval procedure was to ensure that the pile driving system is sized properly for pile capacity verification.

Wave Equation Hammer Approval Method. This method required the use of the wave equation analysis program (WEAP, FHWA-WEAP87) methodology. The Contractor was required to submit a "Pile & Driving Equipment" form for use by DOTD in performing a WEAP analysis. The specifications required the number of hammer blows at the required

EOID pile driving condition to be from 36 to 146 blows per foot in order to mobilize the pile driving resistance. In addition to the pile driving resistance criteria at the required pile capacity, DOTD also would analyze the pile driving system to ensure that pile driving installation stresses were within acceptable limits. This procedure applied to projects that had large quantities of piles, concrete piles, complex pile installation, pile set-up, and high pile capacity requirements.

Alternate Hammer Approval Method. This method required the use of a table that provided the minimum manufacturer's rated hammer energy for external combustion hammers (ECH) and diesel hammers at various EOID pile capacities. This procedure applied to projects such as off-system bridges that had small quantities of piles (typically 14-in. precast prestressed concrete (PPC) piles) with ultimate pile capacities less than 300 tons, — without complicated pile installation requirements, and pile capacity verification by pile driving (dynamic) formula.

The table used for the Alternate Hammer Approval Method was developed by the DOTD Pavement and Geotechnical Design Section 67 based on conducting 192 wave equation sensitivity analyses. A total of 23 ECH hammers and 25 diesel hammers were used in the analyses based on hammer types that were commonly being used by contractors at the time. The WEAP analyses were conducted for the following pile driving scenarios:

- Shallow bearing piles (14-in. PPC, 50 feet length) piles — Diesel Hammers
- Shallow bearing piles (14-in. PPC, 50 feet length) piles — ECH Hammers
- Deep bearing piles (14-in. PPC, 81 feet length) piles — Diesel Hammers
- Deep bearing piles (14-in. PPC, 81 feet length) piles — ECH Hammers
- Shallow friction piles (14-in. PPC, 50 feet length) piles — Diesel Hammers
- Shallow friction piles (14-in. PPC, 50 feet length) piles — ECH Hammers
- Deep friction piles (14-in. PPC, 81 feet length) piles — Diesel Hammers
- Deep friction piles (14-in. PPC, 81 feet length) piles — ECH Hammers

Each of these analyses generated a bearing graph and the minimum and maximum bearing capacities that each hammer could achieve with 36 blows/foot and 143 blows/foot, respectively. Upon evaluation of the data, the following observations were made:

1. The hammer type (ECH vs. diesel) had the greatest influence on the range of hammer energies.
2. Very little difference in the range of hammer energies was observed between open-ended diesel (OED) and closed-ended diesel (CED) hammers.

3. Very little difference in the range of hammer energies was observed between the scenarios of bearing piles (shallow and deep) and friction piles (shallow and deep).

There was much internal discussion between the design and construction sections on how to implement the Alternate Hammer Approval Method within the specifications. Original choices included using a figure or table indicating the maximum and minimum hammer rated energies for a required EOID pile capacity. Ultimately, it was decided that the contractor would typically use the smallest pile driving hammer available for a small project to reduce the crane equipment requirements, and the consensus was to only include the "Minimum Manufacturer's Rated Hammer Energy" for either ECH or diesel hammers for the required EOID pile capacity. Additional details used for the development of this method are provided in Appendix B.

Improved Dynamic Pile Driving Formula

DOTD uses a variation of the FHWA Gates formula, hereinafter referred to as the LADOTD Dynamic Formula, to verify the long-term ultimate pile capacity in units of tons as per the 2000 and 2006 *Louisiana Standard Specifications for Roads and Bridges*, Section 804.10 *[19, 1]*. The objective of introducing a new pile driving formula was based on the improved reliability associated with the new FHWA Gates Formula as compared to the pile driving formulas contained in the 1992 *Louisiana Standard Specifications for Roads and Bridges*. The LADOTD Dynamic Formula was to be used on smaller projects such as the off-system bridge program where static load tests and/or dynamic testing with the pile driving analyzer are not practical.

The LADOTD Dynamic Formula is based on the FHWA Gates Formula with modification to account for changes in units as indicated below *[2, 19]*:

$$R = \frac{\left(1.75\sqrt{E_r}\, log(10\, N_b)\right) - 100}{2} \quad \textbf{(15)}$$

where, R = ultimate pile bearing capacity (tons), E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds), and N_b = number of hammer blows/inch.

DOTD selected to use the FHWA Gates formula based on an informal study performed in-house by the DOTD Pavement and Geotechnical Design Section. The presumed improved reliability of the formula was based on the AASHTO/FHWA recommendations that a safety factor of 3.5 should be used with FHWA Gates formula as compared to the safety factor of

12 being used at the time for the LADOTD pile formula in the 1992 *Louisiana Standard Specifications for Roads and Bridges*. The FHWA manual on the design and construction of driven pile foundations questioned the reliability of the *Engineering News* formula and reported that the safety factors could vary from ⅔ to 20 *[20, 21]*. DOTD conducted a comparison between the pile formula presented in the 1992 *Louisiana Standard Specifications for Roads and Bridges* and the proposed FHWA Gates formula. The results of the comparison indicated that both formulas using the corresponding factors of safety (SF = 12 for LADOTD Dynamic Formula and SF = 3.5 for FHWA Gates Formula) provided similar allowable load test capacities for pile driving hammers with rated energies ranging from 15,000 to 35,000 foot-pounds. The LADOTD pile driving formula (1992) tended to predict higher capacities than the FHWA Gates Formula at hammer energies greater than 35,000 foot-pounds and driving resistances greater than 50 blows/foot. The Pavement and Geotechnical Design Section also conducted a study using an in-house database that contained a total of 49 load tests to failure of which 24 were precast pre-stressed concrete piles (PPC), 20 cast-in-place concrete piles (CIP), and 5 timber piles. The study evaluated the FHWA Gates formula and the LADOTD dynamic formula used in the 1992 *Louisiana Standard Specifications for Roads and Bridges* by comparing predicted capacities to the measured failed load test capacity results of the 24 square precast pre-stressed concrete piles that had been loaded to failure. A safety factor of 12 was used to compute the ultimate pile capacity for the LADOTD Dynamic Formula (1992). The average ratio of predicted-to-measured pile capacity for the LADOTD Dynamic Formula (1992) was 5.25 with a best fit coefficient of 5.42. The FHWA Gates Formula average predicted-to-measured pile capacity ratio was 1.43 with a best fit coefficient of 1.17. Additional details of the study are provided in Appendix C.

State Department of Transportation LRFD Resistance Factor Studies

Because pile capacities determined by dynamic formulas have shown significant bias and scatter, FHWA and AASHTO have discouraged their use and have specified low resistance factors based on calibrations using national databases. Hannigan et al. (1998) indicated, "Therefore, except where well supported empirical correlations under a given set of physical and geological conditions are available, dynamic formulas should not be used" *[20]*. The AASHTO LRFD specifications commentary subsection C10.5.5.2.1 states that, "Regionally specific values should be determined based on substantial statistical data combined with calibration or substantial successful experience to justify higher values" *[2]*.

As a result of the extensive use of dynamic formulas for pile capacity verification and in order to reduce the consequences associated with using lower AASHTO resistance factors,

several state DOTs have conducted reliability-based studies to calibrate LRFD resistance factors based on local practices and regional factors affecting the accuracy of pile driving equations. The following state DOTs have either completed or begun research programs to calibrate dynamic formulas based on regional pile driving experience.

Washington State Department of Transportation (WSDOT)

Allen (2005) conducted a study for WSDOT to evaluate if the Gates Formula could be improved by making empirical improvements using the recently compiled database *[5]*. The data used to develop the WSDOT formula were obtained at EOID and BOR pile driving conditions. A hammer efficiency factor of 0.55 was recommended for all pile types driven with an air/steam hammer, 0.37 for open-ended diesel hammers for concrete and timber piles, 0.47 for steel piles driven with an open-ended diesel hammer, and 0.35 for all piles driven with a closed-ended diesel hammer. The WSDOT pile driving formula has the following form:

$$R_n = 6.6 \times F_{eff} \times E \times Ln(10N) \quad \textbf{(16)}$$

where, $R_n =$ ultimate pile bearing capacity (kips), $F_{eff} =$ hammer efficiency factor, $E =$ developed energy, W times H (ft-kips), $W =$ weight of ram (kips), $H =$ vertical drop of hammer or stroke of ram (feet), $Ln =$ the natural logarithm in base "e", and $N =$ average penetration resistance in blows per inch for the last four inches of driving.

The pile driving formula was simplified to the current form in the WSDOT Geotechnical Design Manual (M 46-03.09 Section 8.12.2.6.4 — Equation 8-6) *[22]*:

$$R_{ndr} = F \times E \times Ln(10N) \quad \textbf{(17)}$$

where, $R_{ndr} =$ ultimate pile bearing capacity (tons), $F = 1.8$ for air/steam hammers, 1.2 for open ended diesel hammers and precast concrete or timber piles, 1.6 for open ended diesel hammers and steel piles, 1.2 for closed ended diesel hammers, 1.9 for hydraulic hammers, and 0.9 for drop hammers.

Allen (2005) found that this equation should be used for ultimate pile bearing capacity of less than 1,200 kips and for piles with diameters less than 30 inches *[5]*. The recommended resistance factors for the WSDOT formula are 0.55 (0.55–0.60 calculated) for a target reliability of β = 2.33 and 0.45 for a target reliability of β = 3.0.

Nebraska Department of Roads (NDOR)

Nowak et al. (2007) conducted a study for NDOR to develop LRFD resistance factors, to conduct an evaluation of static load tests, CAPWAP results, wave equation, Gates formula,

and the Nebraska modified Engineering News Record (ENR) formula, and to develop a modified form of the ENR formula as shown below *[23]*:

$$P = \frac{6E}{(S + 0.5)} \quad \textbf{(18)}$$

where, P = ultimate pile capacity (kips), S = average penetration of the pile per blow for the last ten blows for steam or diesel hammers (inches), and E = energy per blow (ft-kips). This formula was developed for steel and concrete pile types and is not dependent on soil type. LRFD resistance factors were not computed using the formal reliability-based calibration procedure proposed by AASHTO. The resistance factors were selected based on engineering judgement so that the LRFD approach will result in a design that is comparable with the allowable stress design (ASD). Resistance factors computed for various pile types and soil conditions ranged from 0.70 to 0.85. The lowest resistance factors corresponded to design cases governed by dead load.

Wisconsin Department of Transportation (WisDOT)

Long et al. (2009) conducted a study for the WisDOT to compare five different methods of determining pile bearing capacities *[15]*. Four of the methods were pile driving formulas and the last method was the PDA. The study used 156 static load test results from databases developed by Flaate (1964), Olson and Flaate (1967), Fragaszy et al. (1988), FHWA (Rauche et al 1996), Allen (2007), and NCHRP 507 *[4, 14, 24, 25, 26, and 27]*. The authors recommended three dynamic methods including the WSDOT formula, the FHWA Gates formula, and a corrected FHWA Gates formula. The latter was determined to have the highest precision and the smallest covariance. A summary of the statistics and resistance factor computed for each dynamic formula is provided in Table 6.

Table 6
Statistical parameters and FORM resistance factors for three dynamic equation formulas based on fit of extremal data from two databases

Predictive Method	Bias, λ		COV		φ Resistance Factor for FORM and β_T=2.33	
	Database 1	Database 2	Database 1	Database 2	Database 1	Database 2
FHWA-Gates	0.89	0.96	0.34	0.41	0.50	0.46
Corrected - FHWA	1.04	1.01	0.31	0.33	0.63	0.59
WSDOT	0.88	1.02	0.28	0.27	0.56	0.54

Notes:
Database 1= International Database
Database 2= International Database, but Excluding Data from WSDOT

Finally, the recommended values provided by the authors for three dynamic equations for β = 2.33 in shown in Table 7.

Table 7
Recommended resistance factor for three dynamic equations

Method	φ
Corrected - FHWA	0.61
WSDOT	0.55
FHWA Gates	0.47

Iowa Department of Transportation (IOWADOT)

AbdelSalam et al. (2012) conducted a study for the Iowa DOT to investigate the accuracy of the following pile driving dynamic formulas: Gates formula, FHWA Gates, ENR, Iowa DOT ENR, Janbu, PCUBC, and WDDOT formula *[28]*.

Using a database of steel H-piles which included 17 H-piles in clay, 13 H-piles in sand, and 12 H-piles in mixed soil, the first order, second moment (FOSM) reliability method was applied for LRFD calibration. The recommended values of resistance factors are presented in Table 8 for steel H-piles. The Gates Formula has the highest resistance factors that ranged from 0.64 to 0.76 with a target reliability of β = 2.33 for all three different types of soil as shown in Table 8.

Table 8
LRFD resistance factors suggested by Iowa Institute for Transportation

Soil Type	Dynamic Formula	β = 2.33		β = 3.00	
		φ	φ/λ	φ	φ/λ
Sand	Gates	0.64	0.56	0.51	0.44
	FHWA Gates	0.39	0.53	0.30	0.41
	ENR	0.21	0.41	0.15	0.30
	Iowa DOT ENR	0.48	0.53	0.37	0.41
	Janbu	0.58	0.55	0.45	0.43
	PCUBC	0.60	0.54	0.47	0.42
	WSDOT	0.49	0.54	0.38	0.42
Clay	Gates	0.66	0.64	0.54	0.52
	FHWA Gates	0.43	0.64	0.35	0.52
	ENR	0.22	0.46	0.16	0.34
	Iowa DOT ENR	0.54	0.61	0.43	0.49
	Janbu	0.58	0.62	0.47	0.51
	PCUBC	0.60	0.61	0.48	0.49
	WSDOT	0.54	0.62	0.43	0.50
Mixed	Gates	0.76	0.58	0.60	0.46
	FHWA Gates	0.49	0.64	0.40	0.52
	ENR	0.26	0.47	0.20	0.35

Table 8
LRFD resistance factors suggested by Iowa Institute for Transportation

Soil Type	Dynamic Formula	β = 2.33		β = 3.00	
		φ	φ/λ	φ	φ/λ
	Iowa DOT ENR	0.60	0.57	0.47	0.45
	Janbu	0.67	0.60	0.54	0.49
	PCUBC	0.74	0.65	0.60	0.53
	WSDOT	0.66	0.67	0.55	0.55

In the study, nine timber piles, including four timber piles driven in clay, two in sand, and three in mixed soil were analyzed in addition to steel H-piles. The recommended values of resistance factors for timber piles are shown in Table 9. Again, the Gates Formula has the highest resistance factor—0.64 for a target reliability of β = 2.33 for all types of soil. Since the number of investigated timber piles was limited, the results were reported without considering the soil type.

Table 9
LRFD resistance factors suggested by Iowa Institute for Transportation for timber piles
(Abdel Salam et al., 2012) *[28]*

Soil Type	Dynamic Formula	β = 2.33		β = 3.00	
		φ	φ/λ	φ	φ/λ
All	Gates	0.64	0.56	0.50	0.44
	FHWA Gates	0.23	0.20	0.14	0.13
	ENR	0.26	0.42	0.19	0.30
	Iowa DOT ENR	0.35	0.36	0.24	0.26
	Janbu	0.57	0.47	0.43	0.36
	PCUBC	0.55	0.49	0.42	0.38
	WSDOT	0.60	0.50	0.46	0.39

Kansas Department of Transportation (KDOT)

Penfield et al. (2014) conducted a study for the KDOT compared the estimates between KDOT-ENR formula, PDA, and CAPWAP pile capacity predictions for 175 EOID and 189 BOR case histories *[29]*. KDOT has for many years used a version of the ENR Formula to predict pile capacity for driven piles. The KDOT-ENR pile capacity formula estimation has consistently predicted much lower pile capacities than the pile capacities measured using PDA and CAPWAP. The objective of the study was to perform statistical analysis to obtain LRFD resistance factors for the KDOT-ENR dynamic formula. The KDOT-ENR dynamic formula is presented below.

$$P_U = \frac{1.6\,WH}{(s + 0.1\left(\frac{X}{W}\right))} \quad \textbf{(19)}$$

where, P_u = ultimate pile capacity or target nominal capacity, W = weight of the hammer piston (kips), H = maximum hammer drop height (ft.), s = set per hammer blow which is for last 20 blows for EOID and first five blows for restrike (inches), and X is sum of pile weight and weight of pile cap and/or anvil (kips).

The researchers proposed resistance factors shown in Table 10 for the KDOT-ENR formula.

Table 10
KDOT-ENR resistance factors from Monte Carlo Simulation

	β = 1.5	β = 2.0	β = 2.5	β = 3.0	β = 3.5
End-of-Drive					
PDA	1.88	1.59	1.35	1.16	0.95
CAPWAP	2.02	1.76	1.53	1.35	1.17
Combined	1.95	1.68	1.45	1.25	1.07
Restrikes					
PDA	2.38	2.09	1.85	1.63	1.45
CAPWAP	1.91	1.68	1.47	1.28	1.13
Combined	1.90	1.65	1.43	1.24	1.09
End-of-Drive					
Gravity	2.64	2.43	2.25	2.07	1.94

The target Reliability Index (β_T) is determined by the expected probability of the failure (P_f).

Minnesota Department of Transportation (MnDOT)

Paikowsky, et al. (2009) and Paikowsky et al. (2014) conducted Phase I and Phase II studies, respectively, for the MnDOT to evaluate pile driving formulas and corresponding LRFD resistance factors *[13, 11]*. Phase I (2009) focused on establishing MnDOT practices, developing databases, evaluating existing pile driving formulas, and developing new equations. Phase II (2014) was conducted to re-evaluate resistance factors obtained in Phase I, examine other pile driving formulas and other Midwest states practices, and recommend MnDOT pile driving formulas and associated LRFD driving resistance factors.

Phase I Study (2009). The resistance factor associated with the use of the MnDOT driving formula was calibrated and established in 2009. Paikowsky et al. (2009) gathered data including static load tests, driving equipment properties, and driving resistance results for 166 H-pile and 104 pipe pile load tests *[13]*.

Five different pile driving formulas (i.e., ENR, Gates 1957, FHWA Gates Formula, WSDOT, and MnDOT) were compared with static load tests by applying the Davisson failure criterion. The ratio of capacity measured by static load test over the capacity predicted by each pile driving formula resulted in the bias of each equation.

All of the pile driving formulas exhibited coefficients of variation (COVs) of 0.35 to 0.40 for H-piles and 0.52 to 0.61 for pipe piles. Because the Gates Formula bias was high (1.43 to 1.58) while it is much lower for other equations (0.81 to 0.89), the authors decided to calibrate an existing MnDOT pile driving formula and then develop a new form of the formula.

The suggested calibrated MnDOT pile driving formula is shown below:

$$R_u = \frac{10.5E}{S + 0.2} x \frac{W + C * M}{W + M} \quad \textbf{(20)}$$

where, Ru = ultimate capacity of pile (kips), W = mass of the striking part of the hammer (lb.), M = sum of total mass of pile and mass of the driving cap (lb.), S = final set of pile (inches), E is energy per blow for each full stroke (lb.-ft.), and C is a constant equal to 0.1 for timber, concrete and shell type piles, and 0.2 for steel H-piles.

The authors then developed a new general MnDOT pile driving formula based on the Gates equation for the EOID pile driving condition (referred to as EOD by MnDOT) of all hammers with all energies and driving resistances. The new general MnDOT pile driving formula is presented below:

$$R_u = 35\sqrt{E_h} \times log(10N) \quad \textbf{(21)}$$

where, Ru = predicted pile capacity (kips), E_h = rated hammer energy (kips·ft.), and N = number of blows per inch at the End of Driving.

The authors also developed a new Specific MnDOT pile driving formula to accommodate MnDOT pile driving practices (diesel hammer and blow count, BLC ≥ 4 BPI) and is suitable for both H-piles and pipe piles. The new Specific MnDOT pile driving formula is presented below:

$$R_u = 30\sqrt{E_h} \times log(10N) \quad \textbf{(22)}$$

where, R_u = predicted pile capacity (kips), E_h = rated hammer energy (kips·ft.), and N = number of blows per inch at the End of Driving.

Paikowsky et al. (2009) computed resistance factors for the existing MnDOT pile driving formula and the new MnDOT pile driving formula *[13]*. The existing MnDOT pile driving formula resistance factor ranged from 0.25 to 0.30 for H-piles and the resistance factor ranged from 0.10 to 0.35 for pipe piles. The new MnDOT dynamic equation resistance factor ranged from 0.55 to 0.65 for H-piles and the resistance factor ranged from 0.35 to 0.90 for pipe piles. The resistance factors are summarized for H-piles in Table 11 and for pipe piles in Table 12.

Table 11
Resistance factors suggested for H-piles for MnDOT
(Paikowsky et al. 2009) *[13]*

Case No.	No. of Cases	Condition	Suggested Resistance Factor		New MnDOT Coeff.	Notes
			Existing MnDOT	New MnDOT		
1	125	All EOD	0.25	0.55	35	General Equation all EOD (Equation (21))
				0.60	30	Specific Equation for EOD, Diesel, and BC ≥ 4 BPI (Equation (22))
2	39	Diesel & B.C ≥ 4BPI	0.3	0.60	30	
3	38	Diesel & B.C ≥ 4BPI w/o Cook's Outlier	0.25	0.65	30	
4	13	Diesel & MnDOT Energy Range	0.25	0.55	30	
5	12	Diesel & MnDOT Energy Range w/o Cook's Outlier	0.25	0.6	30	
6	24	Control Database All EOD	0.2	0.5	35	General Equation EOD (Equation (21))
7	20	Control Database	0.5	0.6	30	Specific Equation (Equation (22))

Table 12
Resistance factors suggested for pipe piles for MnDOT
(Paikowsky et al. 2009) *[13]*

Case	No. of Cases	Condition	Suggested Resistance Factor		New MnDOT Coeff.	Notes
			Existing MnDOT	New MnDOT		
1	99	All EOD	0.1	0.35	35	General Equation all EOD (Equation (21))
				0.6	30	Specific Equation for EOD, Diesel, and BC ≥ 4 BPI (Equation (22))
2	41	Diesel & B.C ≥ 4BPI	0.2	0.4	30	
3	38	Diesel & B.C ≥ 4BPI w/o Cook's Outlier	0.25	0.45	30	
4	16	Diesel & MnDOT Energy Range	0.3	0.85	30	
5	14	Diesel & MnDOT Energy Range w/o Cook's Outlier	0.35	0.9	30	

Paikowsky, et al. (2009) recommended for the resistance factors with a target reliability $\beta = 2.33$ for either H-piles or pipe piles as shown in Table 13.

Table 13
Recommended resistance factors for MnDOT pile driving formula
(Paikowsky et al. 2009) *[13]*

Pile Type	Recommended ϕ		Assumptions
	Existing MnDOT (Equation (21))	New MnDOT (Equation (22))	
H-Piles	0.25	0.60	Resistance Factors were calculated for a target reliability β=2.33, probability of failure pf=1%, assuming redundant pile use
Pipe Piles	0.25	0.45	

Phase II Study (2014). Paikowsky et al. (2014) conducted another comprehensive study (Phase II) on the reliability and accuracy of MnDOT dynamic equations and assessed the previously proposed LRFD resistance factors and equation coefficients in the 2009 report (Phase I) *[11]*.

Illinois, Wisconsin, Iowa, and Washington pile driving processes as well as Gates (1957) and modified Gates equations were studied in the project *[10]*. While different forms of the Gates formula, including Gates (1957), Olson and Flaate (1967) modified Gates, and FHWA Gates Formula , showed satisfying correlation with the measured capacity of piles, none of them had a mean bias close to 1.0 *[10, 14, 16]*.

The database consisted of two databases that were aggregated to conduct the study. The first database contained a total of 156 load tests (included only steel H-piles, pipe piles, and metal shell piles) that included those cases obtained by Flaate (1964), Olson and Flaate (1967), Fragaszy et al. (1988), FHWA (Rausche et al., 1996), Allen (2007), and Paikowsky et al (2004) *[4*, *14*, *24*, *25*, *26*, *and 27]*. The second database contained a total of 316 piles driven in Wisconsin. Paikowsky et al. (2014) recommended that the database of MnDOT should be expanded by gathering more static load tests and CAPWAPs for a wide variety of pile types, sizes and geotechnical conditions *[11]*. Moreover, the study recommended reassessment and modification of formulas and resistance factors every one or two years.

After re-evaluating previous MnDOT pile driving formula, the authors suggested a new format for Minnesota Pile Formula 2012 (MPF 12) as follows:

For concrete and steel piles:

$$R_n = 20\sqrt{\frac{W \times H}{1000}} \times log\left(\frac{10}{s}\right) \quad \textbf{(23)}$$

For timber piles:

$$R_n = 10\sqrt{\frac{W \times H}{1000}} \times log\left(\frac{10}{s}\right) \quad \textbf{(24)}$$

Where, R_n = nominal pile resistance (tons), H = stroke or drop height (ft), W = weight of ram (lbs), and s = pile permanent set per blow (inch). The total energy (W x H) used in MPF12 pile driving formula should not exceed 85% of the manufacturer's maximum rated energy for the hammer used considering the settings used during driving. A summary of the recommended resistance factors for the MPF12 dynamic equation is provided in Table 14.

Table 14
Recommended resistance factors for MPF12 dynamic equations
(Paikowsky, et al 2014) [11]

Pile Type	Recommended φ MPF12	MPF12 Coefficient	Assumptions
Pipe Piles	0.50	20	2 < BC < 15 BPI
H-Pile		20	2 < BC < 15 BPI
Non-Voided PPC Piles	0.50	20	Pile Size < 24 in. For EOD and BOR; 2 < BC < 15 BPI (Equation (23))
Voided PPC Piles	0.80	20	20 in. ≤ PPC ≤ 54 in. Requires modification of the equation but as a first evaluation one can use ϕ for all cases. (Equation (23))
Timber Pile	0.60	10	Due to large damping and loss of energy when impacting timber, the MPF12 coefficient was reduced by multiplying it by 0.5 to improve pile capacity prediction. (Equation (24))

OBJECTIVE

The objectives of this project are to evaluate and, if necessary, develop new pile driving formulas based on the generic Gates formula using a regional Louisiana database with pile types and local soil conditions encountered in Louisiana. LRFD resistance factors (φ) will be calibrated using the Monte Carlo Simulation (MCS) method for the Strength I limit state with a reliability index (β_T) and probability of failure (P_f) currently used with consideration to redundancy in foundation systems. Another important goal of this research is to geographically organize historical pile load testing records for immediate use and for future enhancement of DOTD's geotechnical information database, linked to a geographic information system (GIS) platform that visually correlates test results with soil types across the state *[30]*. In this way, DOTD and its consultants will be provided a tool for design, as well as a platform for easily adding new information from future projects. The database and GIS platform will provide significant technical and economic advantages to the geotechnical community in Louisiana.

SCOPE

This research study includes a literature review in an effort to provide background information as to the basis and use of pile driving formulas within state Departments of Transportation (DOTs) across the United States. The literature review emphasizes LRFD implementation of pile driving formulas and efforts to modify and establish LRFD resistance factors based on regional experience and load tests. A pile load test database was compiled containing 804 piles installed and load tested on 194 DOTD projects. The database contains predominantly concrete piles (i.e., square precast prestressed concrete piles), with few steel piles. The database also allows for the inclusion of pile driving information pertaining to pile driving equipment used (i.e., hammer type, hammer cushion, pile cushion, etc.) and the field driving resistance observed at end-of-initial-driving (EOID) and beginning-of-restrike (BOR). During EOID the pile is first driven to tip elevation, and during BOR the pile is driven a limited distance below the tip elevation achieved during initial driving after an extended period of time (typically one to 14 days after EOID). Static load tests and DLTs with Case Pile Wave Analysis Program (CAPWAP) are included in the database. Based on the gathered pile load test and restrike data, the bias of the LADOTD pile driving formula was calculated. New LADOTD pile driving formulas for pile capacity verification were developed using pile driving blow counts recorded at EOID or at BOR. The new pile driving formulas were developed using a multivariate regression to recalibrate the FHWA Gates Formula to reduce the mean and standard deviation of the bias values. This was performed for several scenarios dependent on the amount of data available and the reliability of the results of the LADOTD pile driving formula. Updated values of the LRFD resistance factor for the LADOTD pile driving formula and the new LADOTD modified pile driving formulas are based on using the Monte Carlo Simulation (MCS) method for the Strength I limit state with a reliability index (β_T) of 2.33 as recommended for pile groups in AASHTO specifications. An implementation approach of the results of this research is presented along with a benefit-cost assessment associated with the research results implementation.

METHODOLOGY

Data Sources

A pile load test database was developed for this research project that will be designated in this document as the LADOTD Pile Load Test Database (LAPLTD). The design of the database is based on the DOTD Test Pile database that was developed by the DOTD Pavement and Geotechnical Design Section. Significant modifications were made to the database by adding new information fields, reorganizing data, and implementing data management controls to reduce the chances of data corruption. The LAPLTD developed for this research project contains data obtained only from DOTD pile load test case histories from the following three sources:

- DOTD Test Pile Database
- FHWA Deep Foundation Load Test Database (DFLTD) (Louisiana case histories only)
- LTRC 14-1GT Research Project

DOTD Test Pile Database

The LAPLTD developed for this research project was based on the design of the DOTD Test Pile Database that the Pavement & Geotechnical Design section has developed for internal purposes. The DOTD Test Pile Database with data current through December 4, 2014 was provided to the research team for inclusion in the LAPLTD research database.

A summary of the data that the DOTD Test Pile Database contributed to this research project is shown in Table 15.

Table 15
DOTD test pile database contribution to LAPLTD

Description	Quantity
Projects	35
Piles Tested	546
Static Load Tests	65
Dynamic Load Tests	797

FHWA Pile Database - Louisiana

During the 1990s and early 2000s, the FHWA developed the Deep Foundation Load Test Database (DFLTD) *[31]*. The DFLTD contains 1,307 load tests that were collected between the years 1985 and 2003 from reports provided by state DOTs and FHWA offices in the

United States, from overseas sources, and from some other smaller load test databases. A total of 1188 of the load tests contained in this database were performed in the United States. DOTD and LTRC contributed to the development of this database by collecting load test data from DOTD projects through FHWA Grant Agreement No. DTFH61-96-00002. The DOTD data was collected and documented in an LTRC report (Tumay and Titi, 1998) *[32]*. The LTRC report indicates that 269 pile load tests were collected from DOTD files and entered into the FHWA database. The DFLTD database released to all state DOTs and FHWA offices in 2014 indicates that 245 load tests were included in the final version of the DFLTD.

The research team has extracted pile load test data for concrete and steel driven piles contained in the DFLTD for use in this research. A summary of the data that the FHWA DFLTD contributed to this research project is shown in Table 16.

Table 16
FHWA pile database contribution to LAPLTD

Description	Quantity
Projects	125
Piles Tested	181
Static Load Tests	187
Dynamic Load Tests	11

Research 14-1GT Pile Database Information

The research team has collected a total of 146 load tests from DOTD projects and from GRL Engineers, Inc. Brent Robinson from the GRL office in Cleveland, Ohio provided 19 dynamic load testing reports (i.e., CAPWAP) that had been prepared for DOTD construction projects. The research team collected load test data and entered it directly into the LAPLTD. A summary of the load test data that this Research 14-1GT project contributed to the LAPLTD is shown in Table 17.

Table 17
Research 14-1GT of LAPLTD general statistics

Description	Quantity
Projects	34
Piles Tested	77
Static Load Tests	0
Dynamic Load Tests	146

LAPLTD Database Development

Database Design

The project team collaborated with the LTRC and the DOTD Pavement & Geotechnical Design Section to develop a database that includes known DOTD pile load test database sources, has capacity to add new pile load test data, can be used on this research project, and has potential to be used on future research projects. New data fields were added to the database to incorporate analysis parameters necessary for future evaluation of the reliability of the wave equation pile capacity prediction. The database was developed to be spatially enabled to allow DOTD to use GIS software to review and analyze the data. The database has also incorporated hyperlinks to the load test data reports and information that was available in PDF format. The database structural hierarchy of data entry is presented below:

1. *Projects* (Primary Entry) — General information about the project where the Pile Test is located.
2. *Pile Test Information* (Subset of Projects) — General information about the pile to be tested.
3. *Pile Test Event* (Subset of Pile Test) — Information pertinent to the pile load test.

The database design incorporated existing database fields, added new fields, and attempted to follow core principles of good data management that includes: (1) single-source data entry, (2) automated QA/QC via programmed validation rules, (3) development of detailed project technical specifications, (4) use of appropriate meta-data transfer standards to facilitate migration of data, and (5) provide proper documentation and training. The database design has been documented in Appendix D.

Database Implementation

The database design was implemented using Microsoft Access 2013. The database implementation included a menu-driven system to allow the user input, edit, delete, and browse capabilities. The database has an internal georeferenced capability to overlay pile load test site locations using KML tags within Google Earth mapping software. The database user manual has been included in Appendix E.

Data Collection and Merging Existing Databases

The final LAPLTD was developed by collecting and merging the following data:

1. DOTD Test Pile Database (December 4, 2014)
2. FHWA Deep Foundation Load Test Database (DFLTD) (Louisiana case histories only)
3. LTRC 14-1GT Research Project Data Collected

The merging of the FHWA DFLTD with the LAPLTD required extensive matching of fields and in many cases arbitrary values were entered to facilitate merging the majority of the information and then manual adjustments were made to complete the database.

A significant amount of effort has been expended by the research team in the development of the LAPLTD by collecting pile load test data, performing QA reviews of the data, cleansing the data, and standardizing the data. These efforts have been made to facilitate the collection of quality load test data for use in conducting this research project and hopefully facilitate future research projects.

Database Statistics

A summary of the information contained in the LAPLTD is provided in Table 18.

Table 18
Summary of LAPLTD general statistics

Description	Quantity
Projects	194
Piles Tested	804
Static Load Tests	252
Total Dynamic Load Tests (with CAPWAP)	934
EOID Dynamic Load Tests (with CAPWAP)	183
BOR Dynamic Load Tests (with CAPWAP)	751
Total Static & Dynamic Load Tests	1186

The test pile information has been further subdivided as indicated below by:

- Location
- Types of Piles
- Types of Pile Load Tests

Location. Each load tested pile has been identified with latitude and longitude coordinates. The location of the tested piles have been plotted on a Louisiana parish map (64 parishes) as shown in Figure 1. The number of piles tested by parish is provided in Appendix G. The data indicates that 85% of the piles load tested are in southern Louisiana using the southern border of Vernon, Rapides, Avoyelles, Tangipahoa, Washington, St. Helena, East Feliciana, and West Feliciana parishes as a boundary. The largest concentration of load tested piles are located in Lafourche parish with 57% of the piles. The second highest concentration (11%) of piles that were load tested are located in the following parishes: East Baton Rouge (4%), Orleans (3%), and St. Mary (4%). The remainder of the parishes that have load tests contain 2% or less per parish.

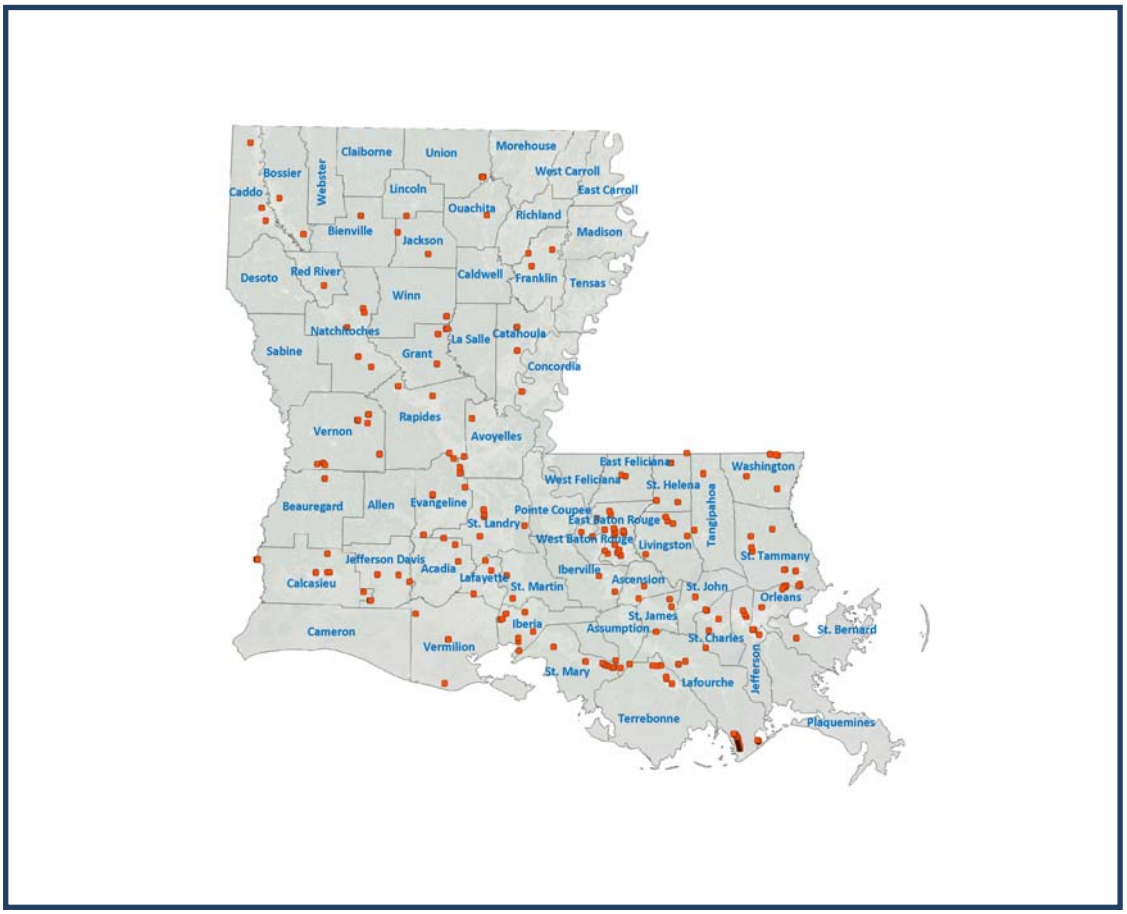

Figure 1
Pile load test locations on Louisiana parish map

Geology. The Louisiana Geologic Map shown in Figure 2 has been used to assign geologic site conditions to pile locations *[33]*. The geologic assignment of the test piles has not been included in the database but was incorporated into the evaluation of the data extracted from the database. Quaternary soil deposits of the Holocene and Pleistocene epochs are identified as Coastal Marshes (1), Terraces (2), Alluvium (3), and Terraced Braided Stream (6). Early Tertiary soil deposits of the Pliocene epoch are identified as the Citronelle and Willis Formations (4). Mid to Late Tertiary soil deposits of the Miocene, Oligocene, and Eocene epoch are designated together as geologic group 5 and consist of the Fleming Formation, Catahoula Formation, Vicksburg Group, Jackson Group, Claiborne Group, and Wilcox Group. Approximately 94% (1,112 load tests) of the database piles that were load tested are located in the Quaternary soil deposits as shown in Figure 2.

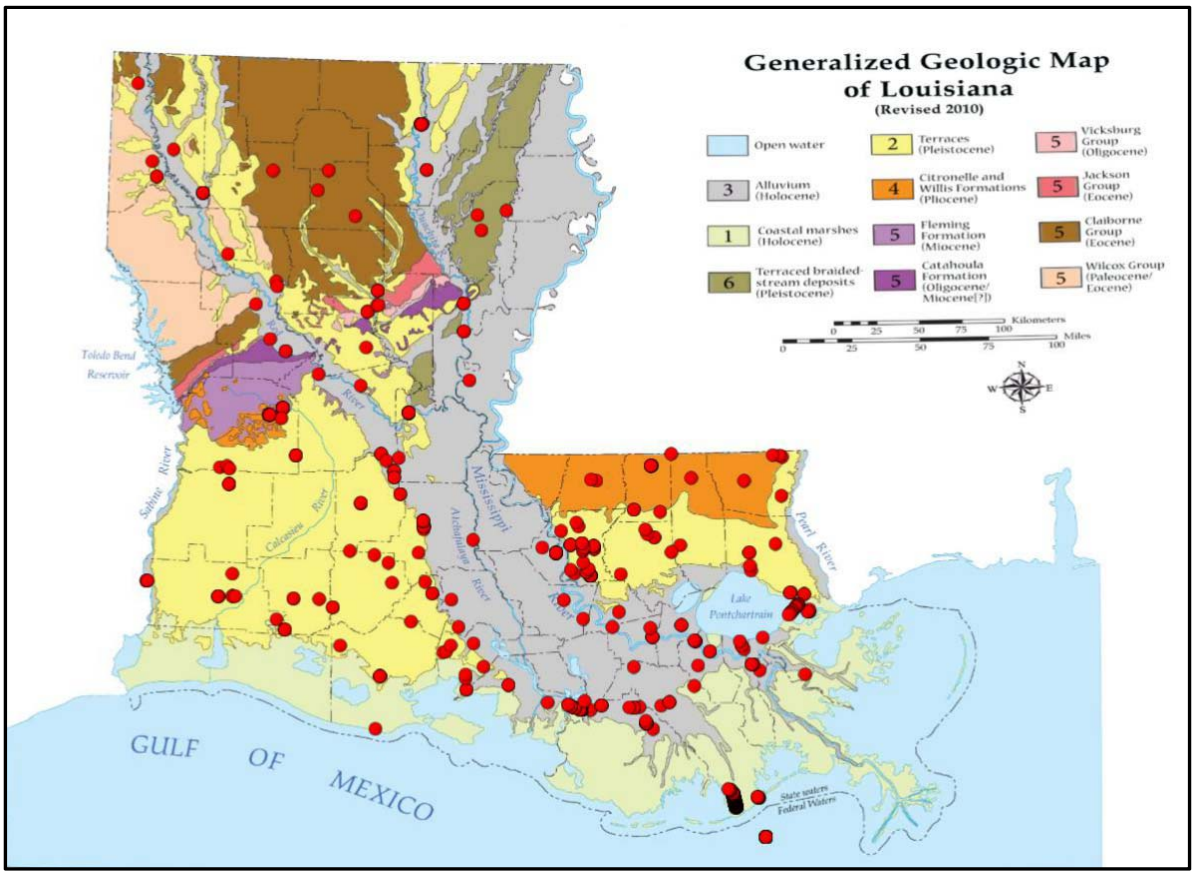

Figure 2
Louisiana geologic map of piles
(2010 Louisiana State University — Louisiana Geological Survey) *[33]*

Types of Piles. The types of piles in the database have been classified as either concrete piles or steel piles. Concrete piles are further subdivided as precast pre-stressed concrete (PPC) piles and concrete cylinder precast post-tensioned (CCP) piles. Steel piles are further subdivided as pipe piles and H-piles. The LAPLTD contains a total of 780 concrete piles and 23 steel piles that have been load tested. Approximately 96% of all of the piles load tested are PPC piles. The types of piles and quantity of piles that are contained in the LAPLTD are further subdivided as shown in Table 19.

Table 19
Pile statistics by types of pile

Concrete Piles	
Total Concrete Cylinder Precast Post-tensioned (CCP) Piles	6
54in. Cylinder Precast Post-tensioned Pile	2
66 in. Cylinder Precast Post-tensioned Pile	4
Total Square Precast Pre-tensioned Concrete (PPC) Piles	770
12 in. Solid Square PPC Pile	10
14 in. Solid Square PPC Pile	75
16 in. Solid Square PPC Pile	80
18 in. Solid Square PPC Pile	11
24 in. Solid Square PPC Pile	19
30 in. Solid Square PPC Pile	9
34 in. Solid Square PPC Pile	1
24 in. Voided Square PPC Pile	514
30 in. Voided Square PPC Pile	26
36 in. Voided Square PPC Pile	15
Solid Square PPC Pile (unknown pile size)	10
Total Round Precast Pre-tensioned Concrete (PPC) Piles	4
16 in. Round PPC Pile	1
30 in. Round PPC Pile	2
Round PPC Pile (unknown pile size)	1
Steel Piles	
Total H-piles	16
HP 14x73	5
10 in. Steel H-Pile	1
Steel H-Pile (unknown pile size)	10
Total Pipe Piles	7
24 in. Pipe Piles	5
30 in. Pipe Piles	2

There are a total of 780 concrete piles distributed over 47 parishes and 23 steel piles distributed over 12 parishes. Approximately 57% of the concrete piles are located in Lafourche parish and approximately 13% are located in East Baton Rouge, Orleans, St. Mary, and Terrebone parishes. The pile type distribution by parish is provided in Appendix G.

Types of Pile Load Tests. The pile capacity testing methods included in the database are Static, Dynamic, or Rapid Load Tests (i.e., Statnamic). The database contains a total of 1,223 pile load tests, of which 1,173 (96%) are concrete pile load tests and 50 (4%)

are steel pile load tests as detailed in Table 20. The primary types of pile load tests conducted on concrete piles are 921 (75%) dynamic load tests and 236 (19%) static load tests.

Table 20
Pile load test statistics by type of pile

Concrete Piles	
Static Load Tests	236
Dynamic Load Tests	921
Pile Driving Analyzer (CAPWAP)	901
Embedded Data Collector (EDC)	20
Rapid Load Tests (Statnamic)	10
Steel Piles	
Total Static Load Tests	16
Total Dynamic Load Tests	33
Pile Driving Analyzer (CAPWAP)	33
Embedded Data Collector (EDC)	0
Rapid Load Tests (Statnamic)	0

There are a total of 1,173 concrete pile load tests distributed over 47 parishes and 50 steel pile load tests distributed over 12 parishes. The type of pile load tests by parish is provided in Appendix G. Approximately 60% of the dynamic load tests are located in Lafourche parish and approximately 23% of dynamic load tests are located in Calcasieu, East Baton Rouge, Jefferson, Orleans, Quachita, Rapides, and St. Mary parishes. Approximately 50% of the static load tests are located in Calcasieu, East Baton Rouge, Jefferson, Lafourche, St. Landry, St. Mary, Terrebone, and Vernon parishes.

Pile Load Test Data Evaluation

Approach

The objectives of this research are to evaluate the accuracy of the current LADOTD pile driving formula [equation (15), i.e., FHWA Gates Formula] to predict the long-term ultimate pile bearing capacity and to calibrate or develop new pile driving formulas based on region-specific pile load test results for EOID and BOR pile driving conditions. The first step was to examine the pile load test database to identify anomalous data that could affect the results of this study. LAPLTD information was identified that could either directly or indirectly be used as indicators to evaluate the factors that may affect the accuracy of ultimate pile capacity prediction. These factors were investigated based on the current understanding of pile capacity determination, trends that have been identified from past research studies, and by the principal investigators' (PIs') experience in using driven piles in Louisiana. The

indicators that were found to significantly affect the reliability of the current LADOTD pile driving formula were used to develop filtered pile load test datasets for use in evaluating the current LADOTD pile driving formula and the development of new pile driving formulas for EOID and BOR pile driving conditions.

Pile Load Test Database Data Quality

The pile load test database has been developed from different sources that were not under the control of the PIs. Consequently, the pile load test data was scrutinized to identify anomalous data from a global perspective and throughout the development of datasets for evaluation. Information in the database was corrected if the original source of the data was available or if the PIs had sufficient personal knowledge about project such as location of the project (i.e., latitude and longitude). When poor quality data was encountered that could not be corrected, the data was omitted from the datasets used for subsequent evaluation. The following is a general list of data quality issues that were encountered:

1. EOID hammer energy computed by multiplying weight of ram times hammer stroke exceeded the manufacturer's maximum rated energy for 162 EOID pile load test events. This discrepancy could be due to either wrong hammer model/type or wrong stroke entered into the database.
2. BOR hammer energy computed by multiplying weight of ram times hammer stroke exceeded the manufacturer's maximum rated energy for 138 BOR pile load test events. These discrepancies could be due to either the wrong hammer model/type or wrong stroke entered into the database.
3. The latitude and/or longitude correspond to the wrong parish or an out-of-state location. The latitude and/or longitude were corrected when possible using available information or personal knowledge of the PI. When insufficient information was available to correct the latitude/longitude, coordinates were assigned off the Gulf Coast to preclude the appearance of accurate coordinates.
4. The FHWA pile load test database was missing dates of pile installation and dates of load testing. In order to use the static load test data included in the database, all static load tests were assumed to have occurred at 14 days after EOID. A pile installation date of January 12, 2014 (coincides with the release date of the FHWA database) was used for all test piles obtained from the FHWA database.
5. The GRLWEAP hammer database (February 22, 2013) was used for technical data related to hammer specifications.
6. Pile load test results that appeared as outliers were kept unless they were determined to be unreliable, questionable, or incorrect based on the PIs' experience. A total of five EOID pile load tests and six BOR pile load tests were

excluded from the pile load test dataset used for evaluation of pile driving formulas and calibration of LRFD resistance factors.

7. For more details concerning with the assumptions made during the development and population of the database from different sources see section "LADOTD Pile Load Test Database" and Appendices C and D.

Factors Influencing Pile Capacity Determination

Pile driving formulas such as the FHWA Gates formula are empirically derived and are dependent on the load test dataset used to develop the relationship between pile driving resistance and ultimate pile capacity. Factors that can affect pile capacity verification based on pile driving resistance obtained during EOID or BOR conditions can be subdivided into the following categories:

- Pile Driving System Efficiency
- Pile Shape
- Time Dependent Soil Response

These factors are discussed below.

Pile Driving System Efficiency

The rated transferred energy efficiency (measured energy/maximum rated energy) varies by the type of hammer and type of pile driven. Variations in energy delivered to the top of the pile directly affect the pile driving resistance observed. It has been well documented (Rausche and Klesney, 2007) that the hammer efficiency varies by type of hammer used *[34]*. Additionally, the pile driving hammer should be operating properly in accordance with the manufacturer's specifications to maintain the efficiency typically observed for that type of hammer. If the pile driving equipment is operating improperly, the pile driving trends observed in previous studies with respect to hammer efficiency will not be valid. The type of pile also has an effect on the energy delivered to the top of the pile. Concrete piles require pile cushions placed at the top of the pile to reduce compressive stresses from the pile hammer impact that may damage the pile top. Pile cushions reduce the rated transfer energy efficiency. Steel piles are not installed with pile cushions and consequently have a higher effective rated transfer energy compared to concrete piles during pile installation. Because the pile driving resistance is dependent on the energy delivered to the top of the pile, the type of pile driving hammer and the type of pile driven are significant factors that can influence the reliability of a pile driving formula. The hammer efficiency and transferred energy efficiency for various hammer and pile type combinations are summarized in Table 21.

Table 21
Hammer efficiency and transferred energy efficiency

Hammer and Pile Type Combination	Hammer Type	Hammer[1] Efficiency due to Energy Losses	Rated Transfer[2] Efficiency (Measured Energy/ Max. Rated Energy)
Hydraulic hammers with internal monitor	ECH	0.95	N/A
Hydraulic drop hammers	ECH	0.80	N/A
Hydraulic power assisted hammers	ECH	0.80	N/A
Double/Differential Acting Hydraulic Hammers	ECH	0.50	N/A
Single Acting Air/Steam Hammers on steel piles	ECH	0.67	0.50 (0.42 – 0.56)
Single Acting ECH Air/Steam Hammers on concrete/timber piles	ECH	0.67	0.40 (0.33 – 0.50)
Double Acting Air/Steam Hammers on steel piles	ECH	0.50	0.32 (0.25 – 0.38)
Double Acting Air/Steam Hammers on concrete/timber piles	ECH	0.50	0.28 (0.22 – 0.40)
Open ended diesel hammers with steel piles	OED	0.80	0.33 (0.26 – 0.40)
Open ended diesel hammers with concrete or timber piles	OED	0.80	0.25 (0.18 – 0.30)
Closed ended diesel hammers with steel piles	CED	0.80	0.36 (0.30 – 0.44)
Closed ended diesel hammers with concrete or timber piles	CED	0.80	0.26 (0.21 – 0.33)
Drop hammer with free release	Gravity	0.67	N/A
Drop hammer with winch released	Gravity	0.50	N/A

[1] Rausche and Klesney (2007)

[2] Tavera Personal Files (GRL Hammer Performance Results, 1993), Median value shown, range shown in parenthesis indicates 25% to 75% Percentile.

Properly sized pile driving equipment will produce a pile driving penetration resistance between 36 and 120 blows/ft *[6]*. If the pile driving hammer is too small, the pile driving resistance typically results in blow counts greater than 120 blows/ft (10 blows/inch), which risks the pile encountering refusal or near-refusal conditions that result in failure to mobilize the pile's total capacity during EOID or BOR pile driving conditions. If the pile driving hammer is too large, the pile driving resistance typically results in blow counts less than 36

blows/ft (3 blows/inch) where pile resistance becomes less reliable due to the inability to accurately evaluate the pile driving resistance at either EOID or BOR pile driving conditions. From a practical perspective, the minimum resistance that can be measured in the field is approximately 12 blows/ft (1 blow/inch).

A review of the pile database indicates that the majority of the piles in the database were installed and/or restriked using an open-ended diesel hammer (OED). A limited number of piles were installed and/or restriked with an external combustion hammer (ECH). Pile load tests that had pile driving resistances greater than 120 blows/foot (10 blows/inch) were considered to have reached refusal and were not included in the analyses. The minimum pile driving resistance considered was 12 blows/foot (1 blow/inch) in order to increase the size of the pile dataset, although a better correlation between the predicted ultimate pile capacity and the measured pile driving resistance occurs at a pile driving resistance of 24 blows/ft (2 blows/inch) or greater.

Pile Shape

Piles can be classified as either displacement piles or non-displacement piles based on the amount of soil disturbance that occurs during pile installation. Square precast pre-stressed concrete (PPC) piles and closed-end steel pipe piles are considered displacement piles due to the increased lateral stress during installation. Displacement piles typically densify cohesionless soils and remold and weaken cohesive soils during pile installation. Steel H-piles and open-end pipe piles typically produce significantly less soil disturbance during pile installation. H-piles and open-end pipe piles can be driven more easily through dense granular soils and very stiff clay than displacement piles. H-piles can "plug" during installation if the frictional resistance inside the flange and web is greater than the shear strength between the flanges, in this case the H-pile can become a displacement pile after the plug has formed. Open-end pipe piles can plug if the frictional resistance inside the pipe exceeds the soil bearing capacity at the pile tip during pile installation. A review of the pile load test database indicates that the majority of the piles in the database are PPC piles.

Time-Dependent Pile-Soil Response

Pile Capacity Soil Setup. Pile driving tends to increase the pore water pressure in the soil. The excess pore water pressure then dissipates over time after pile driving has ceased. Soil setup is the increase in pile capacity over time as excess pore water pressure dissipates. The pile setup factor is the ratio of increased skin friction at a particular time after EOID to the skin friction at the end of initial driving. The pile tip bearing capacity is typically not susceptible to significant increase in pile capacity after EOID. Rausche et al.

(1996) reported soil setup ranges and recommended soil setup factors based on the predominant soil type along the pile shaft as shown in Table 22 *[26]*.

Table 22
Soil setup factors
(after Rausche et al., 1996) *[26]*

Soil Type	Range in Soil Setup Factors	Recommended Soil Setup Factor
Clay	1.2 – 5.5	2.0
Silt – Clay	1.0 – 2.0	1.0
Silt	1.5 – 5.0	1.5
Sand – Clay	1.0 – 6.0	1.5
Sand – Silt	1.2 – 2.0	1.2
Fine Sand	1.2 – 2.0	1.2
Sand	0.8 – 2.0	1.0
Sand – Gravel	1.2 – 2.0	1.0

Pile setup in Louisiana has been investigated by Wang et al., (2009) using pile load tests conducted on DOTD projects *[35]*. Soil setup factors computed by Wang et al., (2009) are plotted in Figure 3. The setup factors increase from 1.0 to 3.2 with time, with the majority of setup factors less than approximately 2.0.

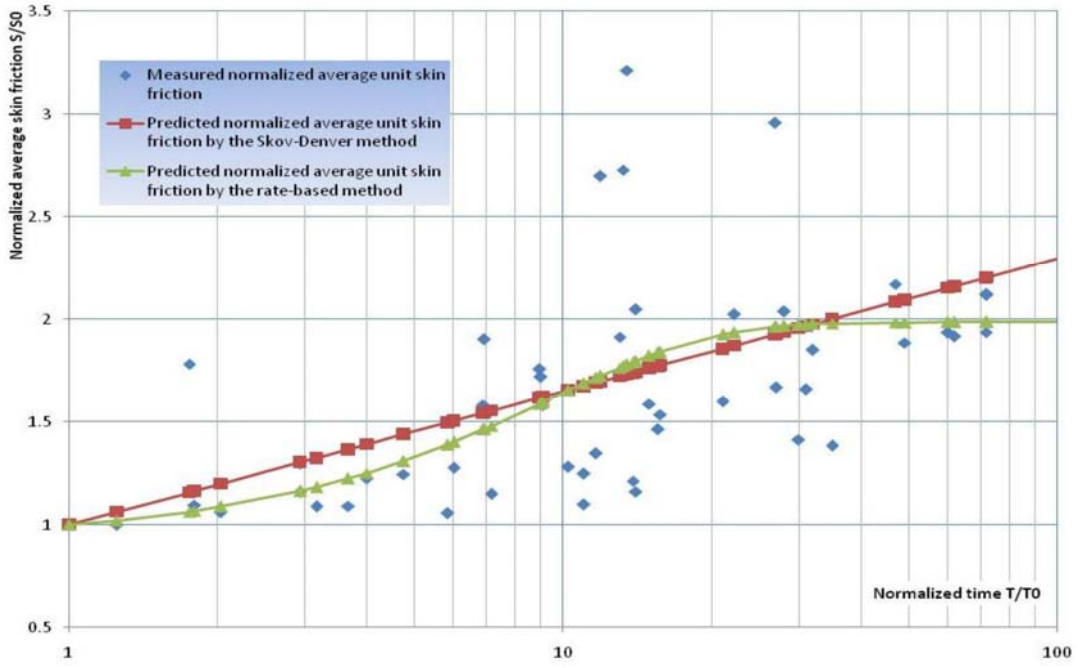

Figure 3
Louisiana pile setup factors
(Wang et al., 2009) *[35]*

Pile setup prediction models proposed by Wang et al., 2009 for the Skov-Denver method and the rate-based method are plotted in Figure 3 and the model parameters and equations are presented in Table 23 *[35]*.

Table 23
Louisiana pile setup prediction models Wang et al., 2009 *[35]*

Mathematical model for pile setup prediction	Parameters			Equations
Skov-Denver method	Setup factor A		Reference time t_0 (hrs)	$S(t) = S_0 * (0.648 * Log\left(\frac{t}{t_0}\right) + 1)$
	0.648		24	
Rate-based method	Initial pile setup growth rate r_0	Ultimate normalized unit skin friction q(∞)	Reference time t_0 (hrs)	$q(t) = \frac{1.985 q_0}{(q_0 + (1.985 - q_0) * e^{-0.172\left(\frac{t}{t_0}-1\right)})}$
	0.172	1.985	24	Note: $q = \frac{S(t)}{S_0}$, q_0=1

For the purposes of this research, the Skov-Denver model was used to evaluate if pile setup over time can be predicted using pile driving formulas developed for BOR pile driving conditions *[36]*. The Skov-Denver model is typically evaluated using the pile skin friction resistances obtained from CAPWAP analyses to compute a skin friction setup factor, A_S, using the following equation.

$$A_S = \frac{\frac{s(t)}{s_o} - 1}{log\left(\frac{t}{t_o}\right)} \quad \textbf{(25)}$$

where, *s(t)* is the skin friction resistance distribution at time t and s_o is the skin friction resistance at a reference time of t_o. A reference time of 1 day has been used by various researchers, including Wang et al. (2009). For this study a reference time of t_o = 1 day is defined as any pile restrikes performed from 20 to 28 hours (0.8 to 1.2 days) after EOID.

Since dynamic testing and CAPWAP analyses are not typically performed on projects that will be using a pile driving formula, the effects of pile setup were evaluated by using the total pile setup factor, A_Q, using the following equation.

$$A_Q = \frac{\frac{Q(t)}{Q_o} - 1}{log\left(\frac{t}{t_o}\right)} \quad \textbf{(26)}$$

where, $Q(t)$ is the total pile resistance at time t and Q_o is the total pile resistance at a reference time of t_o. Pile setup can be evaluated by measuring pile capacity at BOR with time after EOID and evaluating the rate of pile capacity increase over log time.

The long-term ultimate pile bearing capacity has traditionally been defined by DOTD as the pile capacity obtained at 14 days after pile installation. Wang et al. (2009) have indicated that at the LA 1 relocation project the piles reached 90% to 95% of the ultimate skin friction at 14 days *[35]*. In order to obtain a sufficient number of cases to evaluate the long-term ultimate pile capacity, this study used datasets with data collected 6 to 22 days after EOID to establish the long-term ultimate pile capacity of piles installed in Louisiana's coastal marshes (i.e., LA 1 projects). It is estimated that 6 days after EOID the ultimate pile capacity is 90% or more of the ultimate pile capacity at 14 days.

In order to evaluate geologic regions within Louisiana that experience pile setup, Figure 2 was used to assign pile load tests to geologic regions that can provide an indication of the piles' propensity to experience pile setup. It would be reasonable to assume that piles installed in Coastal Marshes (1) that are underlain by under-consolidated to normally consolidated cohesive soils would tend to experience larger magnitudes of soil setup when compared to Alluvium (3) and Terraced Braided Stream deposits (6) that contain a mixture of sands and clay soils. Mid-to-late Tertiary soil deposits are also less likely to experience significant increases in pile capacity over time due to soil setup.

Soil Relaxation. Pile capacity that decreases with time after pile installation is considered soil relaxation. Pile capacity decrease due to soil relaxation has been observed in dense, saturated, fine-grained soils such as non-cohesive silts and fine sands. Soil relaxation is thought to be the result of dense soil at the pile tip that dilates and generates negative pore pressure. The negative pore pressure increases the effective stress resulting in higher soil strength and pile capacity. As the negative pore pressure returns to equilibrium, the effective stress decreases and the pile capacity also decreases. Relaxation factors of 0.5 and 0.8 have been observed in piles driven into dense sand and extremely dense silts, respectively *[6, 20]*. Pore water pressure equilibrium in dense silts and fine sands may take up to seven days to occur *[6, 20]*. The soil relaxation phenomenon cannot be directly accounted for since there is an insufficient knowledgebase to evaluate soil relaxation in Louisiana and therefore is

beyond the scope of this investigation. The PIs has observed soil relaxation in Louisiana soils when driving PPC piles within alluvial deposits. The most practical approach to identify soil relaxation after pile installation is to perform pile restrikes to evaluate pile tip capacity reductions over time.

Method of Pile Capacity Verification

The LAPLTD has pile load test results obtained from either static load tests (SLT), DLTs with CAPWAP (CW), or a combination of both methods. CW analyses are typically performed for EOID conditions and BOR at time intervals after pile installation (including BOR obtained before or after a SLT).

The average sample bias ($\lambda_{SLT\text{-}CW}$) between CW and SLT was evaluated when the CW and SLT results were measured within a reasonable time from each other.

$$\lambda_{SLT-CW} = \frac{CW}{SLT} \quad \textbf{(27)}$$

where, CW = CAPWAP ultimate pile capacity; SLT = Davisson ultimate pile capacity

The sample bias was used to compute an adjusted CAPWAP (CW_{adj}) resistance that correlates the CW results to an equivalent SLT result.

Static Load Test

Static load tests are considered to be the most reliable method of determining the load carrying capacity of a driven pile foundation. Static load tests are used to evaluate static pile design methods and develop empirical pile driving formulas by evaluating the bias between the predicted pile capacity and the measured pile capacity. Static load tests at DOTD are conducted in accordance with *DOTD Standard Construction Specifications* under Section 804.11(g). The SLT results are presented as load-settlement curve plot with the load (Q) in kips and settlement (S) in inches.

The measured ultimate pile capacity is determined using the Davisson method (1972) for piles 24 inches or less *[37]*. The ultimate pile capacity using the Davisson method is determined from the intersection between the load-settlement curve and a straight line with a slope of L/AE. An initial settlement intercept is defined as the Davisson Offset using the following equation.

$$Davisson\ Offset = 0.15 + \left(\frac{D}{120}\right) \quad \textbf{(28)}$$

where, L = length of pile (inches), A = cross-sectional are of the pile (in^2), E = Young's elastic modulus of the pile (ksi), and D = pile diameter (inches). The Davisson offset method to determine the ultimate pile capacity is illustrated in Figure 4.

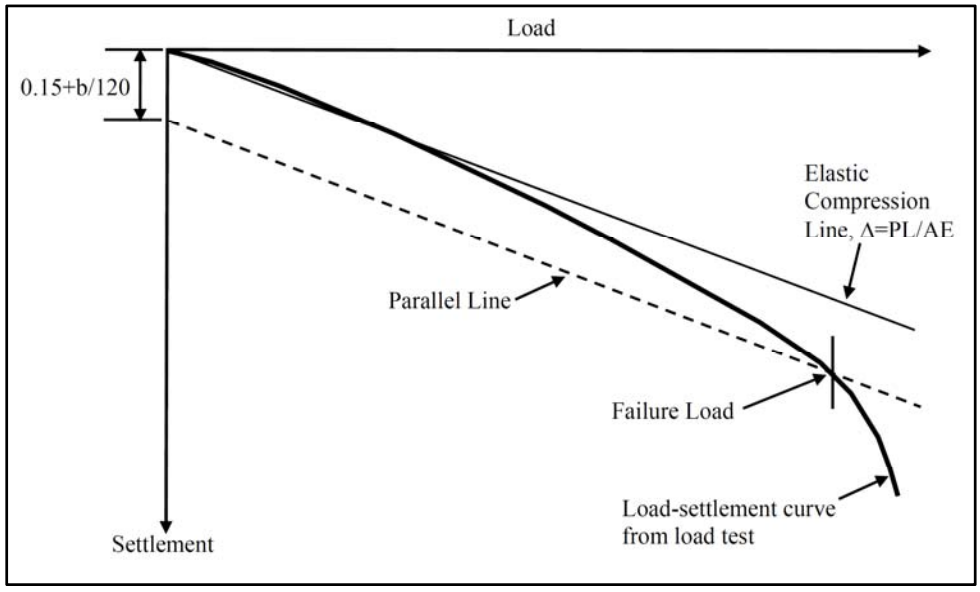

Figure 4
Davisson method of determining failure load
(FHWA NHI-06-089, 2006) *[38]*

For piles that are larger than 24 inches, the Davisson method is modified based on the method proposed by Kyfor et al. (1992) where the initial settlement intercept is defined as the Kyfor Offset using the following equation *[39]*.

$$Kyfor\ Offset = \left(\frac{D}{30}\right) \quad \textbf{(29)}$$

Some of the pile load tests contained in the database cannot be strictly evaluated using the Davisson and Kyfor offset criteria due to plunging failure where the failure load could not be maintained. In these cases the last load held prior to the plunging failure load is considered the ultimate pile capacity. The only SLTs that were used to evaluate pile driving formulas were those that either meet the offset criteria or that have a plunging failure.

Dynamic Load Tests with CAPWAP

Dynamic testing consists of attaching a minimum of two strain transducers and two accelerometers approximately two pile diameters below the pile top on opposite sides of the pile and attaching the instrumentation to a Pile Driving Analyzer (PDA). Dynamic load testing requirements for DOTD projects are governed by the *DOTD Standard Construction Specifications* under Section 804.11. The PDA receives the signals from each hammer blow and converts strain and acceleration signals to force and velocity records versus time in accordance with ASTM D 4945. The force and velocity versus time records are then stored on the PDA for later reprocessing and analysis by CAPWAP to evaluate the static ultimate pile capacity. CAPWAP is a rigorous numerical analysis procedure that uses the measured force and velocity records obtained by the PDA from one hammer blow that is representative of the ultimate pile capacity observed at either EOID or BOR. The CAPWAP software uses the force and velocity dynamic measurements with wave equation models of the pile and soil to calculate the ultimate static pile capacity, the relative soil resistance distribution, the dynamic soil properties (i.e., quake and damping), and driving stresses throughout the pile. CAPWAP analyses that were performed with a driving resistance of less than 120 blows/ft (10 blows/inch) were considered to have fully mobilized pile capacity.

Pile Driving Formula Evaluation of Bias

The evaluation of the sample bias ($\bar{\lambda}_{SLT-DF}$) between the pile driving formula (DF) and the static load test ultimate pile capacity SLT was evaluated as shown in the following equation:

$$\bar{\lambda}_{SLT-DF} = \frac{DF}{SLT} \quad \textbf{(30)}$$

The total sample bias using the DLT with CAPWAP analyses (CW) was evaluated as shown in the following equation.

$$\bar{\lambda}_{SLT-DF} = \frac{DF}{CW} \cdot \lambda_{SLT-CW} \quad \textbf{(31)}$$

where, $\lambda_{\text{SLT-CW}}$ is obtained from equation (27).

Pile Driving Formula

The current LADOTD pile driving formula computes the long-term ultimate pile capacity in tons and is the equivalent to the FHWA Gates Formula except with a modification to convert pile capacity from kips to tons. The Gates pile driving formula was originally developed and calibrated to a database by using the generic Gates formula that included three variables as follows [same as equation (15)]:

$$R_u = 0.5 \times \left[C_1\sqrt{E}\, log(C_2 N) - C_3\right] \quad \textbf{(32)}$$

where, R_u is ultimate pile capacity (tons — adjusted by the coefficient of 0.5 at the beginning of the equation), E is the hammer energy (ft-lbs), N is number of blows per inch (blows/in), and C_1, C_2, and C_3 are empirically derived coefficients.

New pile driving formulas for EOID and BOR pile driving conditions were developed through statistical analyses by conducting multivariate, nonlinear regression analyses using the Gates pile driving formula shown in equation (32).

EOID Prediction of Long-Term Ultimate Pile Capacity. Pile driving formulas are typically developed to predict the long-term ultimate pile capacity using EOID pile resistance. The FHWA Gates formula does not limit its use with respect to soil type, pile type, or pile driving hammer type. Consequently, the evaluation and development of new empirical coefficients for the EOID pile driving formula did not limit the pile load test dataset and used the Gates pile driving formula form presented in equation (32) with EOID driving resistance and pile load tests with measured long-term ultimate pile capacity (R_u). A sensitivity analysis was conducted to evaluate if changes could be made to improve the accuracy of the EOID pile driving formula.

BOR Prediction of Ultimate Pile Capacity at Time t. The goal of this type of pile driving formula is to be able to estimate the ultimate pile capacity at time t using BOR pile driving resistances. In order to develop BOR pile driving formulas with improved accuracy, the pile load test dataset needs to be representative of the pile evaluated for ultimate pile capacity with respect to geology, pile type, pile driving hammer type, and days since EOID.

A BOR pile driving formula of the form presented in equation (32) was developed to predict the long-term pile capacity R_u after obtaining BOR driving resistance at time t where the ultimate pile capacity is at least 90% of the ultimate capacity at 14 days (R_{14}). A BOR pile driving formula also of the form presented equation (32) was developed for time t equal to 1 day. The BOR pile driving formulas were developed using the parameters presented in Table 24.

Table 24
Pile driving formulas criteria and target load tests

Ultimate Pile Capacity	Driving Condition	Time (days)	Calibration Load Test Type
R_u	BOR	t = when $R_u \geq 90\% R_{14}$	SLT and CW
R_1	BOR	t = 1 day	CW

Evaluation of Pile Load Test Data and Factors Affecting Pile Driving Formulas

The first step taken in evaluation of pile driving formulas is to extract from the database basic parameters necessary for prediction of ultimate pile bearing capacity and then to evaluate effects of various indicators on the accuracy of ultimate pile bearing capacity prediction. The indicators selected from the database to evaluate prediction accuracy are presented below:

- Pile Type (i.e., PPC, H-pile, Pipe Pile, etc.)
- Geology (i.e., 1, 2, 3, 4, 5, 6)
- Hammer Type (i.e., OED, CED, ECH, etc.)
- Hammer Energy (at EOID or BOR)
- Blow Count
- Days Since EOID
- Measured Ultimate Pile Capacity (SLT or Adjusted CW)

The accuracy of the prediction was evaluated by computing the ratio (bias) of predicted capacity to measured capacity ($\lambda_{Predicted/Measured}$) as a function of the various indicators that affect prediction of ultimate pile capacity at either EOID or BOR pile driving conditions. The effects of these indicators on the bias ($\lambda_{Predicted/Measured}$) were investigated using all of the EOID data and BOR data. The current LADOTD pile driving formula was used to evaluate bias trends for each parameter evaluated.

LRFD Resistance Factor Calibration

Approach

The subsequent determination of LRFD resistance factors will follow the procedures and guidelines in Transportation Research Circular E-C079 *[5]*. The basic approach embodied in LRFD is given by the following:

$$\sum_i \eta_i \gamma_i Q_{ni} \leq \varphi R_n \qquad \textbf{(33)}$$

where, η is the load modifier, γ is the load factor, Q_n is the nominal load, φ is the resistance factor, and R_n is the nominal resistance. The load modifier is a factor related to the ductility, redundancy, and operational importance of the structure and is assumed to equal 1.0 for typical structures.

For pile design, the load is considered to be the sum of dead and live loads. Thus equation (33) may be written as follows:

$$\gamma_D Q_{nD} + \gamma_L Q_{nL} \leq \varphi R_n \quad \textbf{(34)}$$

The load and resistance factors in equation (34) are selected in such a manner to achieve a desired probability of failure (or reliability index β_T) for various strength, service, extreme event, and fatigue limit states. This process is illustrated conceptually in Figure 5.

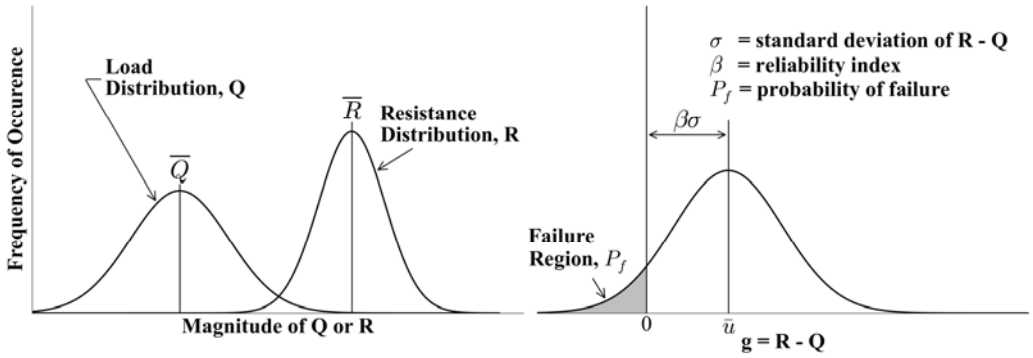

Figure 5
Conceptual illustration of the LRFD methodology (from *[5]*)

The load factors for the Strength I limit state suggested by AASHTO are shown in Table 25:

Table 25
Load factors for the strength I limit state (from *[2]*)

Type of Load	Load Factor
Dead Load	1.25
Live Load	1.75

The resistance factor corresponding to a particular design method, including pile-driving formulas, was determined by applying formal reliability-based methods as detailed in *[5]*. The first step was to define a *limit state equation*, which expresses the failure condition. The following general equation is commonly used:

$$g(R, Q) = R - (Q_D + Q_L) = 0 \quad \textbf{(35)}$$

where, R is the resistance and Q_D and Q_L are the dead and live loads, respectively. All were considered to be independent, random variables due to uncertainties in the physical processes that govern each. If the limit state equation is less than 0, failure occurs.

The resistances and loads were expressed as the products of the nominal values introduced previously and random bias factors:

$$\begin{aligned} R &= R_n \lambda_R \\ Q_D &= Q_{nD} \lambda_D \\ Q_L &= Q_{nL} \lambda_L \end{aligned} \quad \textbf{(36)}$$

where, λ_R, λ_D, and λ_L are the bias factors for resistance, dead load, and live load, respectively. Each bias factor is essentially the ratio of the actual resistance or load to the nominal or predicted value.

equation (34) can be rearranged as follows:

$$R_n = \frac{\gamma_D Q_{nD} + \gamma_L Q_{nL}}{\varphi} \quad \textbf{(37)}$$

Substituting equations (36) and (37) into equation (35) yields the following limit state equation:

$$\begin{aligned} g(\lambda_R, \lambda_D, \lambda_L) &= \left(\frac{\gamma_D Q_{nD} + \gamma_L Q_{nL}}{\varphi}\right)\lambda_R - (Q_{nD}\lambda_D + Q_{nL}\lambda_L) \\ &= \left(\frac{\gamma_D \dfrac{Q_{nD}}{Q_{nL}} + \gamma_L}{\varphi}\right)\lambda_R - \left(\frac{Q_{nD}}{Q_{nL}}\lambda_D + \lambda_L\right) \end{aligned} \quad \textbf{(38)}$$

Reliability-Based Approach

Several reliability-based approaches are available to evaluate the resistance factor based on equation (38) including first order, second moment (FOSM), first order reliability (FORM), and Monte Carlo simulation (MCS) methods. In this study, the project team used MCS as explained below because the method is insensitive to the form of the limit state equation and allows one to estimate the probability of failure directly *[5]*. Furthermore, MCS allows one to easily use different types of probability distributions (e.g., normal or lognormal) for the three bias factors. Other recent studies performed for LTRC have also employed MCS as the preferred method to develop resistance factors for LRFD *[40]*.

Monte Carlo Simulation

To implement the MCS method, values of the bias factors (λ_R, λ_D, and λ_L) were randomly selected from assumed probability distributions for each factor. The bias factors for dead and live loads were assumed to be normally distributed random values with means and coefficients of variation shown in Table 26 *[41]*. These values have been used in previous LTRC studies and are used herein for consistency.

Table 26
Load statistics from *[2]*

Type of Load	Mean Bias Factor	Coefficient of Variation
Dead	1.08	0.13
Live	1.15	0.18

The mean, coefficient of variation, and probability distribution of the bias factor for the resistance were determined from the comparisons of the nominal (i.e., predicted) resistance calculated using different forms of pile driving equations (i.e., the LADOTD pile driving formula and a Modified LADOTD Gates pile driving formula) with the measured resistance from pile load tests for the datasets collected from the developed database. An example of the comparison between measured and predicted resistance is shown in Figure 6.

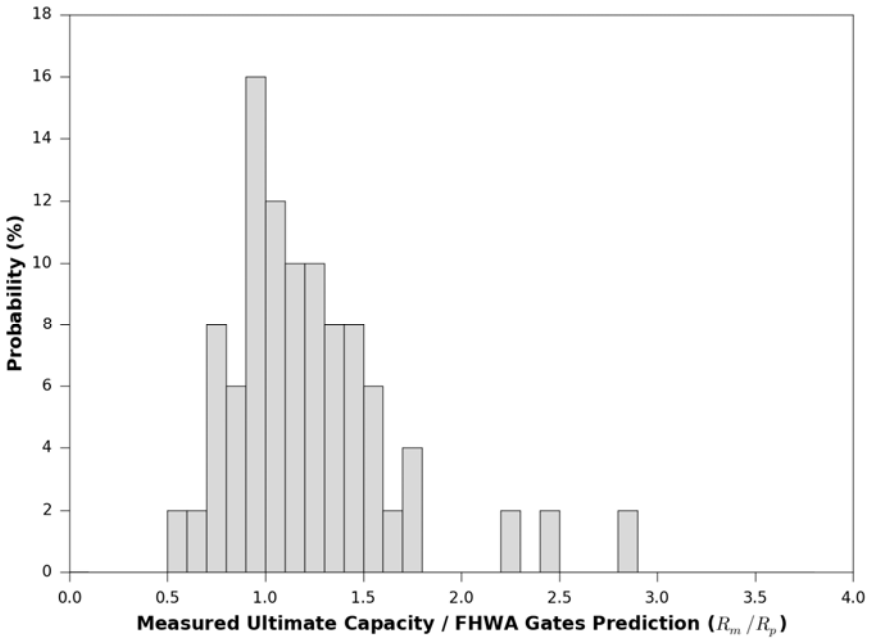

Figure 6
Histogram of ratio of ultimate and predicted resistance

To evaluate the mean and coefficient of variation of the ratio of ultimate and predicted resistances, the first step was to determine what type of probability distribution best describes

the data. In this study normal and lognormal distributions were considered. Figure 7 shows probability plots of the data for both types of distributions. The probability plot compares the data with the quantiles of the theoretical probability distribution and calculates a best-fit line. For this example, the lognormal distribution provides a better fit to the data as indicated by the higher coefficient of determination (R^2).

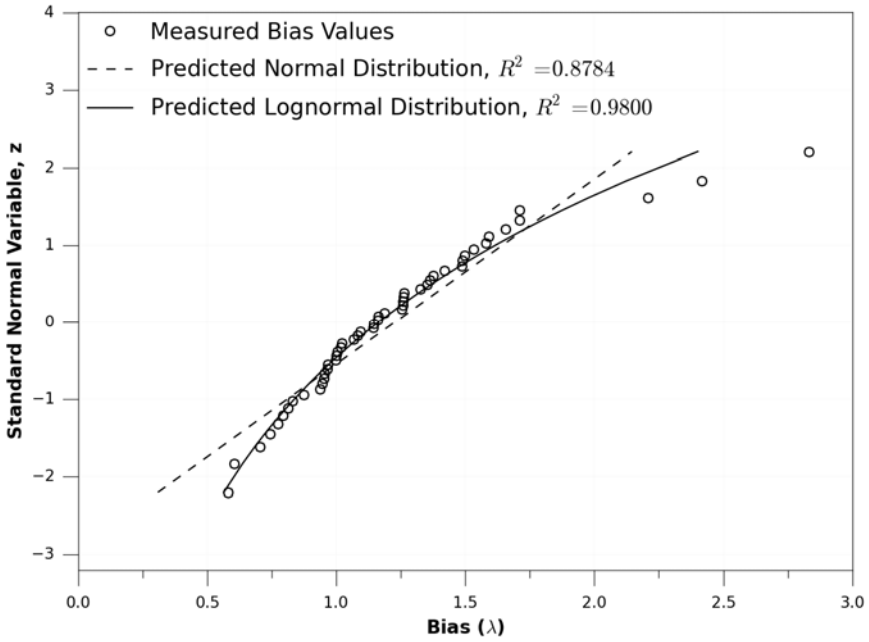

Figure 7
Probability plot for normal and lognormal distributions

Figure 8 shows a comparison of the histogram of the data (i.e., Figure 6) and the normal and lognormal distribution curves. The parameters of the lognormal distribution, which best fits the data based on the probability plot as shown in Figure 7, are given by the median value and the standard deviation (in natural log units) of 1.16 and 0.32, respectively. These parameters were used to randomly select values of the bias factor for resistance for the MCS approach.

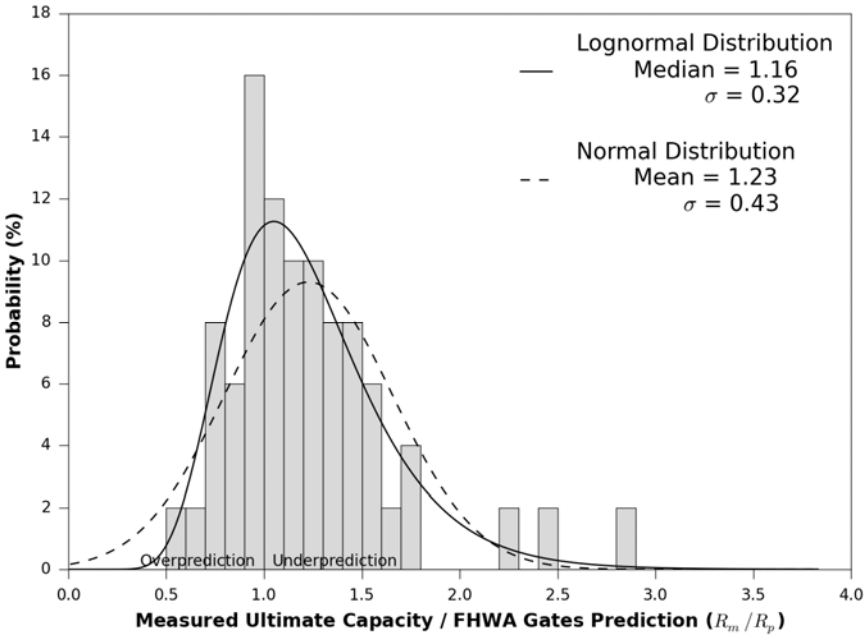

Figure 8
Comparison of histogram and best-fit lognormal distribution

For most of the cases considered, a lognormal distribution provided a better fit to the data than a normal distribution. However, for several cases a normal fit appeared to be a better fit based on the probability plots. An issue associated with the use of a normal distribution is that it is possible to generate random values of the resistance bias factor that are near zero or even less than zero, which is physically unrealistic. These very low or negative values of the resistance bias factor exert a large influence on the calculated resistance factor. For that reason, we chose to use a lognormal distribution, which does not admit the possibility of values of the resistance bias factor less than zero, for all cases. This also provides greater consistency across all of the cases considered in this study.

The ratio of Q_{nD}/Q_{nL} in equation (38) is the ratio of dead-to-live loads and varies according to the length of the bridge. Calibrations to determine the resistance factor were performed for several values of the ratio ranging from 2.0 to 5.0 to cover a variety of scenarios.

Resistance Factors

For an assumed value of the resistance factor, φ, the probability of failure may be estimated via:

$$P_f = P[g < 0] \approx \frac{1}{N}\sum_{i=1}^{N} I_{\{0\}}(\lambda_{Ri}, \lambda_{Di}, \lambda_{Li}) \qquad \textbf{(39)}$$

where, $I_{\{0\}}(\lambda_{Ri}, \lambda_{Di}, \lambda_{Li})$ is an indicator function:

$$I_{\{0\}}(\lambda_{Ri}, \lambda_{Di}, \lambda_{Li}) = \begin{cases} 1 \; if \; g(\lambda_{Ri}, \lambda_{Di}, \lambda_{Li}) < 0 \\ 0 \; if \; g(\lambda_{Ri}, \lambda_{Di}, \lambda_{Li}) \geq 0 \end{cases} \quad \textbf{(40)}$$

In other words, the indicator function is equal to 1 if failure occurs and 0 otherwise. The number of Monte Carlo simulations N is selected to achieve a desired confidence level in the estimated probability of failure. In this study, N = 1,000,000 simulations were used.

Once the probability of failure is calculated, the corresponding reliability index may be obtained via:

$$\beta = \Phi^{-1}(1 - P_f) \quad \textbf{(41)}$$

where, Φ^{-1} is the inverse of the cumulative distribution function (CDF) for the standard normal distribution. The simulations were repeated for different assumed values of the resistance factor to calculate the corresponding probability of failure (or reliability index). Plots of the probability of failure vs. resistance factor for values of Q_{nD}/Q_{nL} ranging from 2.0 to 5.0 are shown in Figure 9.

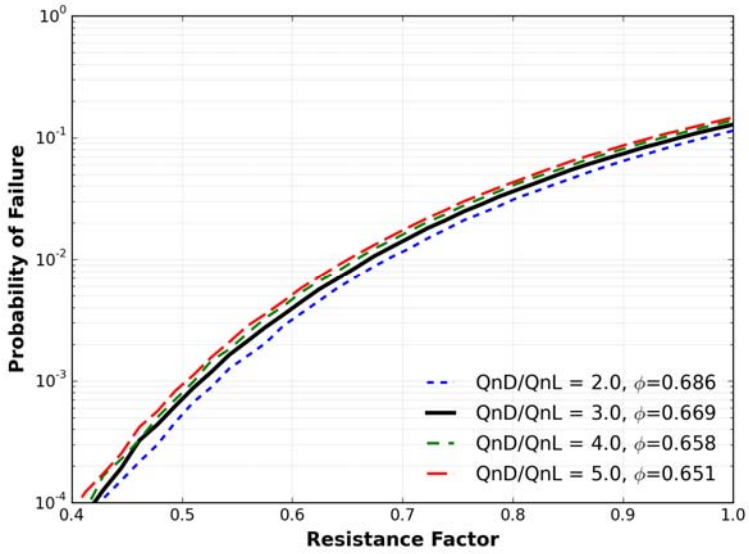

Figure 9
Probability of failure vs. resistance factor

From this information, the appropriate resistance factor can be chosen for a desired probability of failure or reliability index.

In general, resistance factors for bridge and other structure design have been derived to achieve a reliability index (β_T) of 3.5, which corresponds to a probability of failure (P_f) of approximately 1 in 5,000 (2.0×10^{-4}). However, past geotechnical design practice has resulted in an effective reliability index of 3.0, or an approximate probability of a failure of 1 in 1,000 (1.0×10^{-3}), for foundations in general, and an approximate reliability index of 2.3, an approximate probability of failure of 1 in 100 (1.0×10^{-2}) for highly redundant systems such as pile groups *[2]*.

DISCUSSION OF RESULTS

Correlation of CAPWAP with Static Load Test

The LAPLTD contains a total of 252 static load tests (SLT) and 934 DLTs with CAPWAP (CW) analyses, for a total of 1,186 pile load tests. The CW results enhance the database by not only increasing the total number of pile load tests by 370% of the number of SLT but also by allowing a broader evaluation of pile capacities at EOID conditions and at BOR at time intervals after pile installation, including before and after any SLT have been conducted.

In order to use all of the 1,186 pile load test results, the *CW* results need to be adjusted to be equivalent to the *SLT* results. This adjustment was developed by determining the average sample bias ($\lambda_{SLT\text{-}CW}$) between the *CW* pile capacity results and the *SLT* pile capacity results as shown in the following equation.

$$\lambda_{SLT-CW} = \frac{CW}{SLT} \quad \textbf{(42)}$$

where, CW = CAPWAP ultimate pile capacity; SLT = Davisson ultimate pile capacity.

In order to develop this correlation the LAPLTD was queried to obtain a dataset of piles tested that had both SLT and CW results. The dataset was further filtered to obtain datasets that meet the following criteria:

1. PPC piles only (with both CW and SLT load test results).
2. Dynamic load tests must fully mobilize the ultimate pile capacity; thus only load tests with BOR blow counts ≤ 120 blows/ft were considered.
3. CW and SLT results measured within a reasonable time period from each other. Ideally, the DLT occurs immediately after the SLT is conducted. This is not always possible due to construction constraints and may even be undesirable in sensitive soils where remolding of soils would result in a lower capacity. Based on available load test results BOR CW were limited to those conducted no more than five days prior to the SLT and no more than 26 days after the SLT.

The resulting dataset obtained based on the filter criteria presented above is provided in Table 27.

Table 27
Data used to correlate CW results to SLT results

Sample No.	Case No.	Pile ID	SLT Hours After EOID	PDA Hours After EOID	Days[1] Difference	Time[2] Ratio	BOR Blow Count (bl/ft)	BOR CW Ultimate Capacity (tons)	SLT Ultimate Capacity (tons)	$\frac{CW}{SLT}$
1	1	6	336	360	1.0	0.9	75	291	241	0.83
2	2	7	336	360	1.0	0.9	120	438	366	0.84
3	3	9	360	432	3.0	0.8	120	483	361	0.75
4	8	14	744	768	1.0	1.0	72	475	475	1.00
5	9	15	360	984	26.0	0.4	48	575	500	0.87
6	11	17	147	151	0.1	1.0	120	403	387	0.96
7	12	18	192	218	1.1	0.9	80	370	347	0.94
8	15	21	167	72	-4.0	2.3	48	180	137	0.76
9	29	251	332	356	1.0	0.9	48	388	296	0.76
10	41	490	504	528	1.0	1.0	100	551	525	0.95
11	45	503	336	456	5.0	0.7	24	409	354	0.87

[1] Negative (-) values indicates number days BOR CW prior to SLT and positive (+) values indicate number of days BOR CW after SLT.

[2] Time Ratio = SLT Time after EOID/BOR CW Time after EOID

The dataset contains BOR CW results that are not more than five days prior to the *SLT* and not more than 26 days after the SLT as shown in Figure 10. The time ratio ranged from 0.4 to 2.3. A total of one sample of BOR CW data was obtained prior to the SLT and 10 samples of BOR CW data were obtained after the *SLT*.

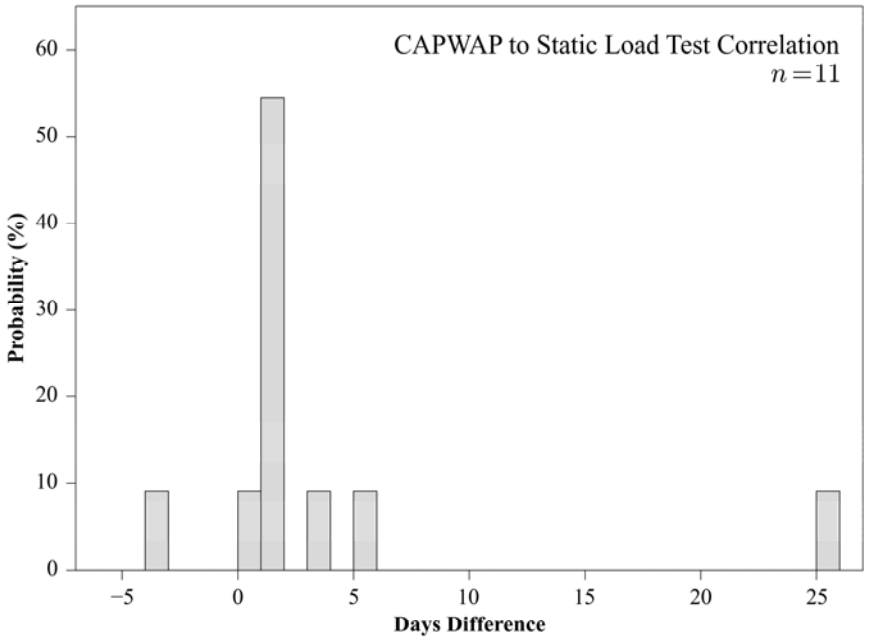

Figure 10
Histogram of days difference

A review of the ratio of CW/SLT vs days elapsed before or after SLT load testing is shown in in Figure 11. The arithmetic mean of the $\lambda_{SLT\text{-}CW}$ bias is computed as 0.866 for all data with a standard deviation of 0.084 and COV of 0.097. The trend line shows no significant slope indicating that the ratio of CW/SLT is not affected by the selection in time of conducting the BOR dynamic testing.

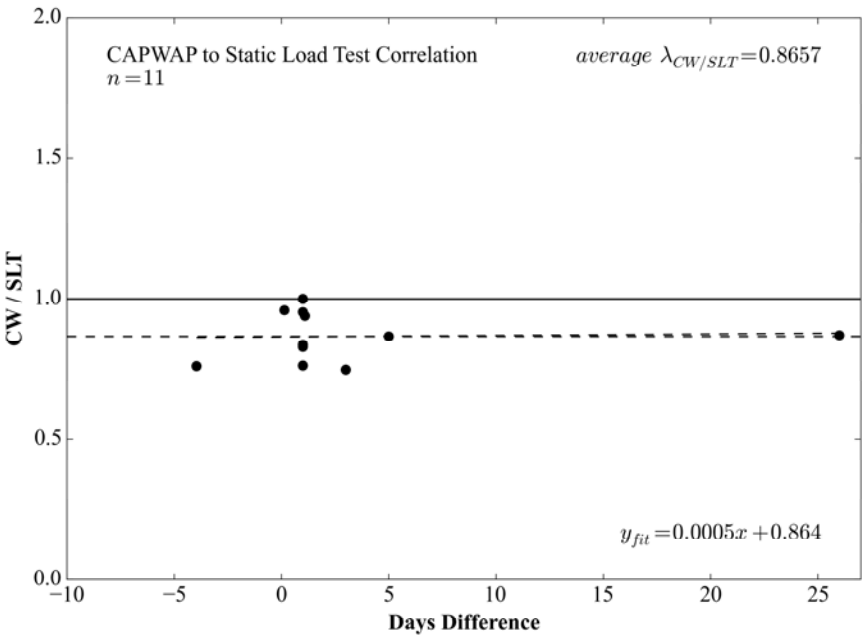

Figure 11
CW/SLT to days difference

The 11 datasets were plotted as shown in Figure 12 to evaluate the correlation between CW and SLT using the best fit method. The best fit coefficient (R_{fit}/R_{SLT}) is 0.880 with a standard deviation of 0.084 and COV of 0.097. Likins, Hussein, and Rausche (2004) reported a sample bias ($\lambda_{SLT\text{-}CW}$) of 0.98 with a COV of 0.169 *[42]*. This suggests that the correlation between CW and SLT for pile load tests conducted in Louisiana needs regional adjustment. Based on the results of this study the adjusted CW (CW_{Adj}) can be computed as indicated below.

$$CW_{Adj} = \frac{CW}{(R_{fit}/R_{SLT})} = 1.14CW \qquad \textbf{(43)}$$

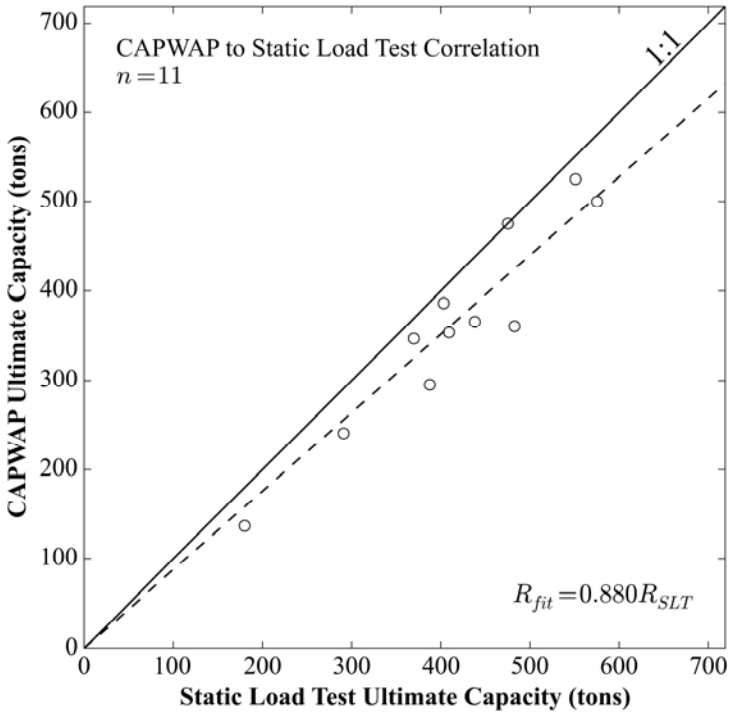

Figure 12
CAPWAP vs. SLT

Pile Setup

Skov-Denver Setup Factor

The Skov-Denver pile setup factor using skin friction only (A_S) and pile setup factor using total pile capacity (A_Q) were evaluated at different locations based on multiple BOR restrikes performed on the same pile load tested. Pile setup factor A_s is based on the increase in skin friction and pile setup factor A_Q is based on the increase in total pile capacity (skin friction + pile tip capacity) over time as defined by in equations (25) and (26), respectively The setup factors were divided into two groups based on generalized geologic groupings where Group A contains the coastal marshes of geologic region 1 that typically have a higher degree of pile setup. Group B applies to geologic regions 2, 3, 4, and 5 that tend to experience significantly less pile setup. The computed pile setup factors are provided in Table 28.

Table 28
Skov-Denver pile setup factors A_Q

Case No.	TP ID	Setup Category	% Tip Bearing	*Log(t/to)*	*S/So*	A_S	*Q/Qo*	A_Q
27	15	A	23%	1.61	2.08	0.670	1.54	0.334
37	17	A	14%	0.30	1.01	0.019	1.04	0.135
38	17	A	15%	0.48	1.04	0.081	1.09	0.192
40	17	A	12%	0.80	1.15	0.190	1.17	0.219
46	18	A	16%	0.48	1.10	0.199	1.08	0.178
48	18	A	18%	0.96	1.17	0.176	1.19	0.196
68	21	A	16%	0.48	1.28	0.583	1.20	0.428
70	21	A	13%	1.70	1.55	0.324	1.42	0.247
139	30	A	17%	0.30	1.09	0.305	1.07	0.244
140	30	A	16%	0.48	1.16	0.328	1.13	0.268
699	35	A	26%	1.23	1.36	0.295	1.50	0.406
586	472	A	15%	0.30	1.07	0.230	1.08	0.276
587	472	A	12%	0.48	1.18	0.385	1.15	0.313
593	473	A	11%	0.30	1.13	0.435	1.12	0.408
594	473	A	14%	0.48	1.16	0.339	1.19	0.396
619	1036	A	22%	1.34	1.38	0.284	1.35	0.261
714	478	B	20%	1.46	1.14	0.098	1.05	0.032
835	1001	B	20%	1.20	---[1]	---[1]	1.02	0.021
857	1037	B	14%	1.26	1.20	0.158	1.14	0.108
868	9	B	60%	1.26	1.29	0.231	1.07	0.057
893	504	B	33%	1.38	1.16	0.115	1.10	0.071
1,052	1008	B	34%	1.15	1.10	0.089	1.12	0.101

1 Results omitted. Skin friction distribution ratio S/So resulted in an unreasonable A_S value, probably due to poor CAPWAP match.

The setup factor A_S for Setup Category A ranges from 0.019 to 0.670 with an average of 0.303. The setup factor A_S for Setup Category B ranges from 0.089 to 0.231 with an average of 0.174. The setup factor A_Q for Setup Category A ranges from 0.135 to 0.428 with an average of 0.281. The setup factor A_Q for Setup Category B ranges from 0.021 to 0.108 with an average of 0.065. Even though both types of setup factors have been provided, only pile setup factor A_Q will be used in this study since differentiation between skin friction and pile tip capacity is not possible when using pile driving formulas. The histogram for Setup Categories A and B in Table 28 are shown in Figure 13 and Figure 14, respectively. The A_Q setup factors presented in Table 28 have been plotted in Figure 15 and on a generalized geologic map in Figure 16.

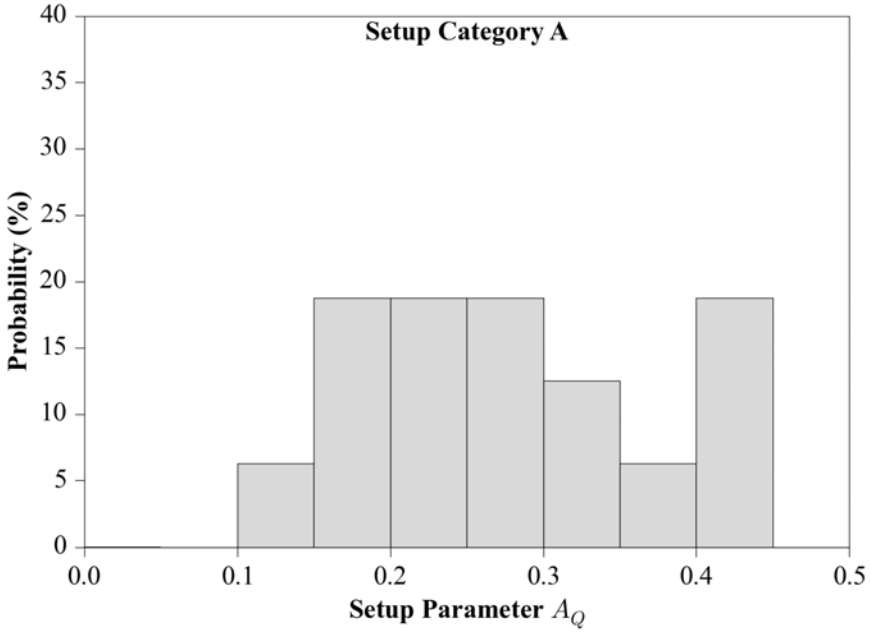

Figure 13
Setup factors A_Q frequecy — setup category A

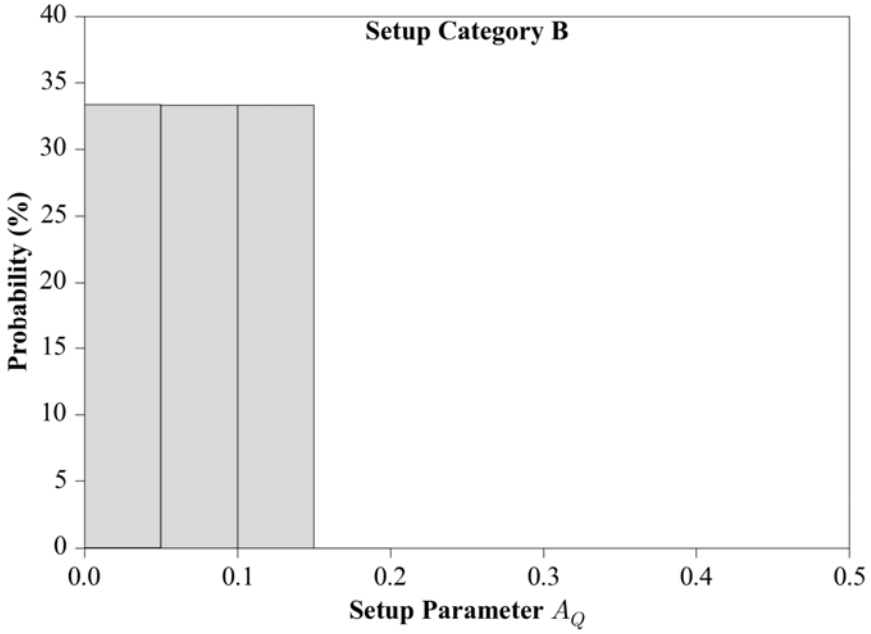

Figure 14
Setup factors A_Q frequecy — setup category B

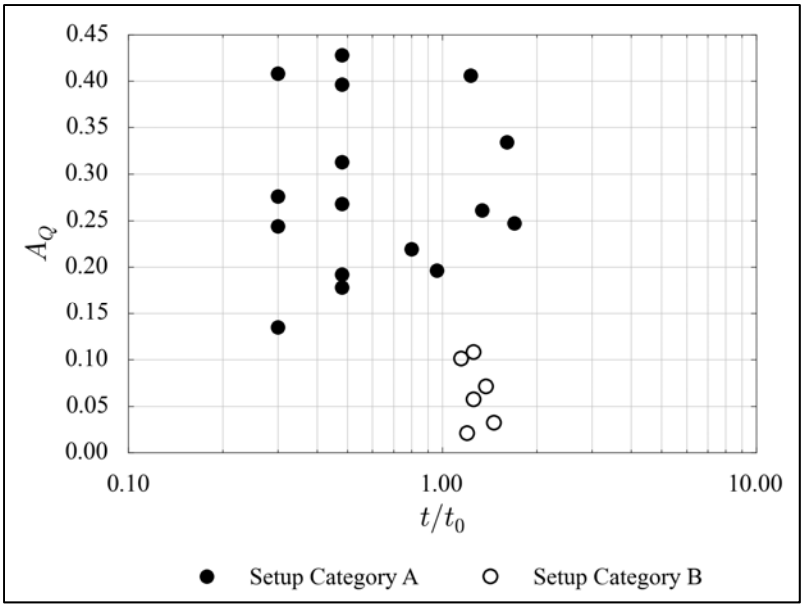

Figure 15
Pile setup factors A_Q for setup categories A and B

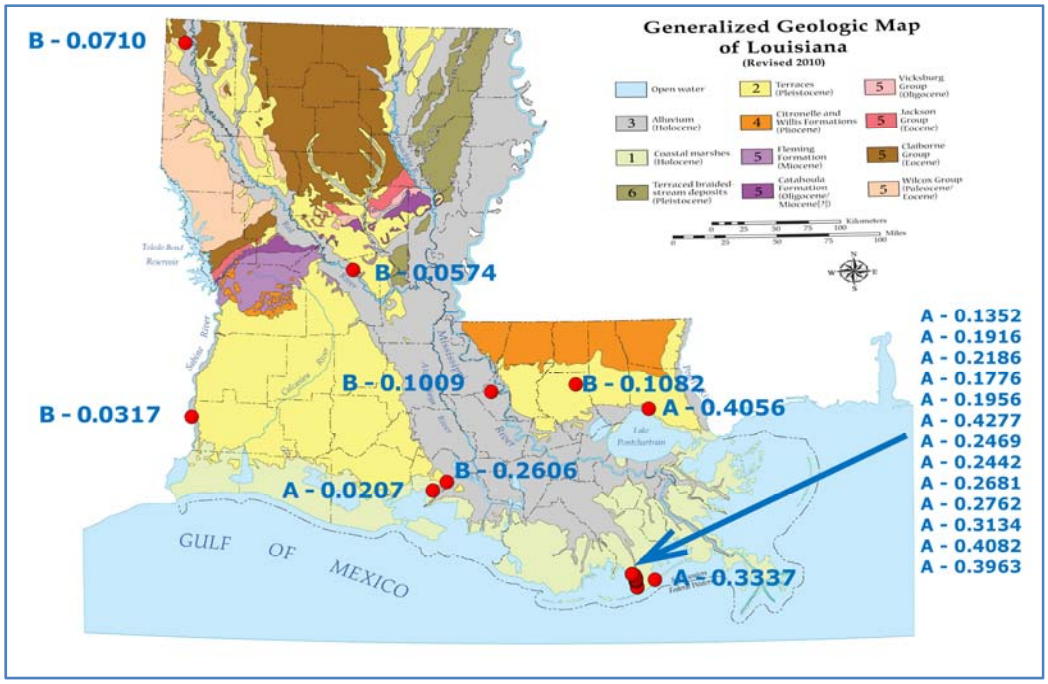

Figure 16
Map of Louisiana pile setup factors, A_Q

Setup Factor Effects on Ultimate Pile Bearing Capacity over Time

The ultimate pile bearing capacity increase over time for several setup factors has been evaluated by varying setup factors A_Q to compute the ratio of total pile bearing capacity at

time t over total pile bearing capacity at 14 days (Q_t/Q_{14}) as a function of time (t) from 1 day to 14 days. The ratio (Q_t/Q_{14}) has been developed by using equation (44) for Q_t/Q_0 and equation (45) for Q_{14}/Q_0.

$$\frac{Q_t}{Q_o} = A_Q log\left(\frac{t}{t_o}\right) + 1 \quad \textbf{(44)}$$

$$\frac{Q_{14}}{Q_o} = A_Q log\left(\frac{14}{t_o}\right) + 1 \quad \textbf{(45)}$$

where, Q_t is the total pile resistance at time *t*, Q_{14} is the total pile resistance at time = 14 days Q_o is the total pile resistance at a reference time of t_o, A_Q is the setup factor, and the reference time for this study is one day.

The ratio of (Q_t/Q_{14}) has been developed by dividing equation (44) for Q_t/Q_0 by equation (45) for Q_{14}/Q_0 to obtain the following equation:

$$\frac{Q_t}{Q_{14}}\ (\%) = \left(\frac{A_Q log\left(\frac{t}{t_o}\right) + 1}{A_Q log\left(\frac{14}{t_o}\right) + 1}\right) \times 100 \quad \textbf{(46)}$$

where, Q_t is the total pile resistance at time *t*, Q_{14} is the total pile resistance at time 14 days, A_Q is the setup factor, and the reference time for this study is one day.

The ratio of (Q_t/Q_{14}) has been plotted as a function of time since EOID for Group A setup factors on Figure 17 and for Group B setup factors in Figure 18. Upper bound A_Q ($A_{Q\text{-}UB}$), average A_Q ($A_{Q\text{-}average}$), and lower bound A_Q ($A_{Q\text{-}LB}$) for each setup category were developed from the data in Figure 15.

Table 29
Setup factors

	$A_{Q\text{-}LB}$	$A_{Q\text{-}average}$	$A_{Q\text{-}UB}$
Setup Category A	0.15	0.28	0.45
Setup Category B	0.02	0.065	0.15

The results of these analyses indicates that approximately 90% of the Q_{14} total pile bearing capacity is obtained at six to seven days for piles installed within soils having Group A setup factors and approximately three days for piles having Group B setup factors.

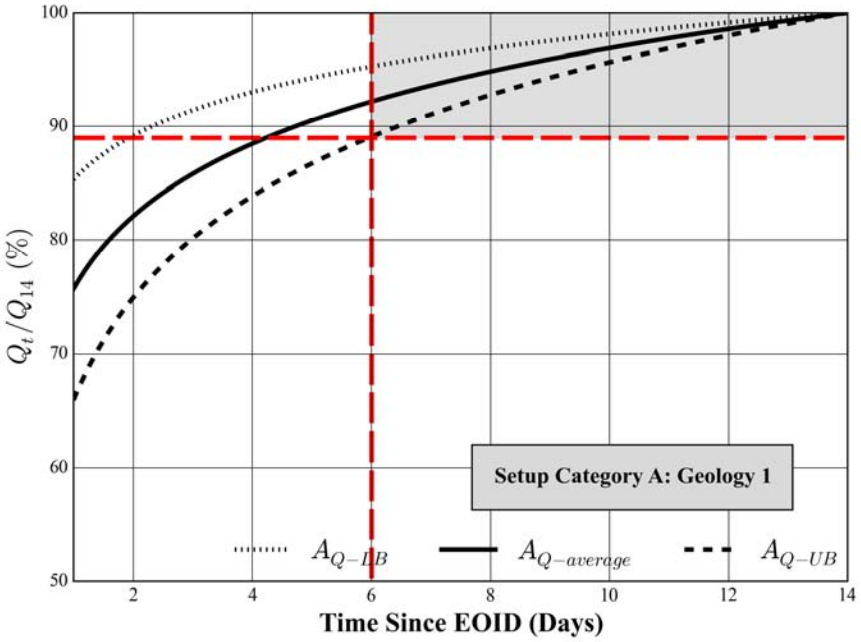

Figure 17
Ratio of (Q_t/Q_{14}) for various setup factors in group A

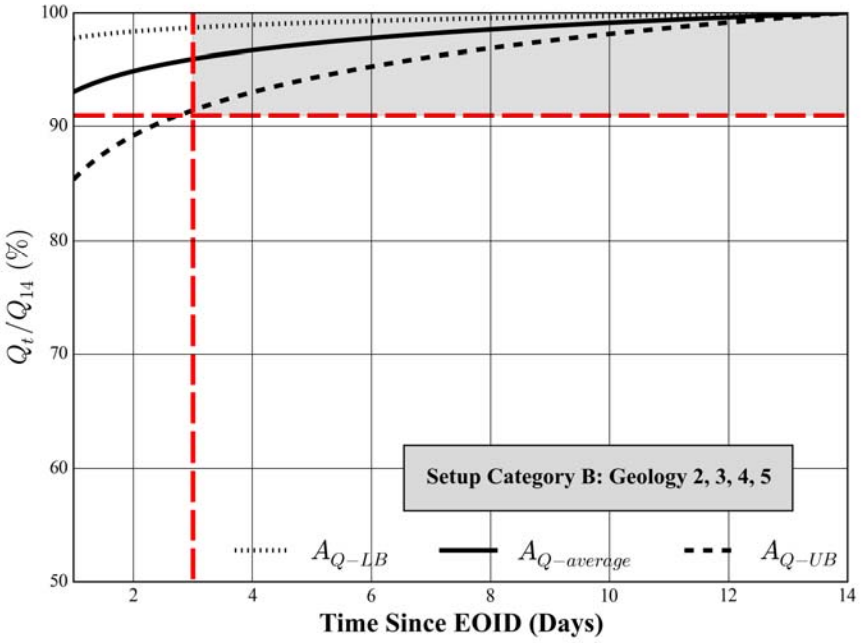

Figure 18
Ratio of (Q_t/Q_{14}) for various setup factors in group B

Evaluation of Pile Load Test Data and Factors Affecting Pile Bearing Capacity Prediction

The LADOTD pile driving formula (FHWA Gates Formula) was used to evaluate the accuracy of ultimate pile bearing capacity prediction with respect to various indicators that may affect ultimate pile capacity. The indicators used to evaluate accuracy of ultimate pile capacity prediction are presented below:

- Pile Type (i.e., PPC, H-pile, Pipe Pile, etc.) — This indicator was used to evaluate the effects of the pile driving system efficiency and the pile shape.
- Geology (i.e., 1, 2, 3, 4, 5, and 6) — This indicator was used to evaluate the time dependent soil response.
- Hammer Type (i.e., OED, CED, ECH, etc.) — This indicator was used to evaluate the pile driving system efficiency.
- Hammer Energy (EOID or BOR) — This indicator was used to evaluate the pile driving system efficiency and to evaluate pile driving formula limitations in ultimate pile capacity prediction.
- Blow Count — This indicator was used to evaluate the pile driving system efficiency and its ability to accurately represent the pile penetration resistance at EOID or BOR pile driving conditions.
- Days Since EOID — This indicator was used to evaluate the time dependent soil response.
- Measured Ultimate Pile Bearing Capacity (*SLT* or CW_{Adj}) — This indicator was used to evaluate pile driving formula limitations in ultimate pile capacity prediction.

The accuracy of the prediction was evaluated by computing the ratio (bias) of predicted capacity to measured capacity ($\lambda_{Predicted/Measured}$) as a function of the various indicators that may affect prediction of ultimate pile bearing capacity. The predicted ultimate bearing capacity was obtained by using the current LADOTD pile driving formula (i.e. FHWA Gates Formula). The measured ultimate pile bearing capacity was obtained from either SLT or CW_{adj}. The results of the pile load test data evaluation using penetration results obtained from EOID and BOR pile driving conditions are presented below.

EOID Pile Bearing Capacity Determination

The data selected for development of an EOID pile driving formula for prediction of long-term ultimate pile bearing capacity requires EOID pile installation records (blow counts, hammer stroke, hammer energy) and measured long-term ultimate pile bearing capacity. The measured ultimate pile bearing capacity was based on either SLT or CW results.

Table 30 presents statistics of the data extracted from LAPLTD for evaluation of factors affecting ultimate pile bearing capacity prediction using pile installation results obtained from EOID pile driving conditions.

Table 30
Dataset statistics for EOID pile driving formulas

Parameters Description	Database Filtered Criteria
Pile Type	PPC, H-Pile, Pipe Pile
Geology	1, 2, 3, 4, 5
Hammer Type	OED, ECH, CED
EOID Energy, E (ft-kip)	$7 \leq E \leq 183$
EOID Blow Count (N_{EOID})	$3 \leq N \leq 120$
Load Test Conducted - Days Since EOID	$7.0 \leq t \leq 21.0$
Load Testing	SLT, CW
SLT Failure	Yes
CW Mobilized	Yes ($\leq$ 120 bl/ft)
No. SLT	54
No. CW	14
Pile Load Test Cases	68

A total of 68 pile load test cases were obtained by filtering the database as indicated in Table 30 for EOID prediction of the long-term ultimate pile bearing capacity. A review of Figure 19 indicates that 93% of the dataset (63 cases) are PPC piles and 7% of the dataset (5 cases) are steel piles. As a result of the disproportionate number of PPC piles compared to other types of piles and after discussions with DOTD that the use of pile driving formulas would most likely be confined to PPC piles, our evaluation of EOID pile driving formulas for prediction of long-term ultimate pile bearing capacity will only include pile load test cases for PPC piles.

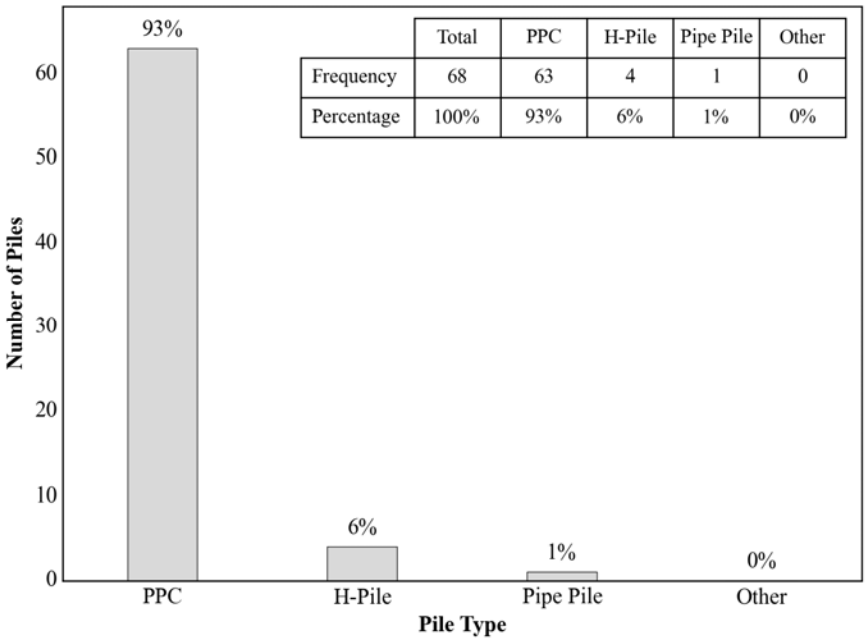

Figure 19
Pile Types - EOID prediction of long-term ultimate pile bearing capacity

The Generalized Geologic Louisiana map shown in Figure 20 and the pile frequency per geology type shown in Figure 21 indicate that even though piles are located in geologic areas designated as 1, 2, 3, 4, and 5 it is consistent with the general composition of the database that most of the datasets are located within southern Louisiana and are were installed within soil formations of Quaternary period. A review of the geology bias in Figure 22 suggests that median bias for geologic area 1 tends to similarly overpredict and underpredict. The median bias for geologic areas 2, 3, 4, and 5 tends to predict less than geologic area 1. Even though there are no pile load tests in geologic area 6, it is expected to behave similarly to geologic areas 2, 3, 4, and 5. This suggests that even though geologic area 1 is different than the other areas, pile driving formulas developed using all geologic areas will tend to be conservative when used in geologic areas 2, 3, 4, 5, and 6.

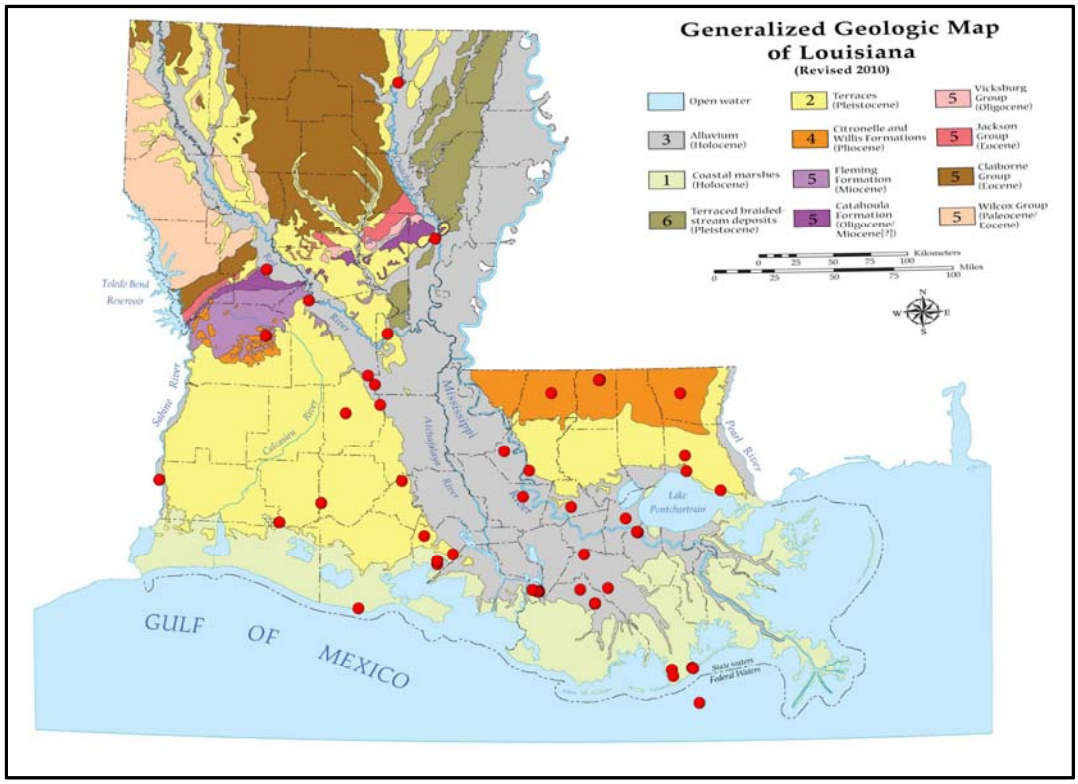

Figure 20
Louisiana geologic map of piles - EOID
(2010 Louisiana State University — Louisiana Geological Survey) ***[33]***

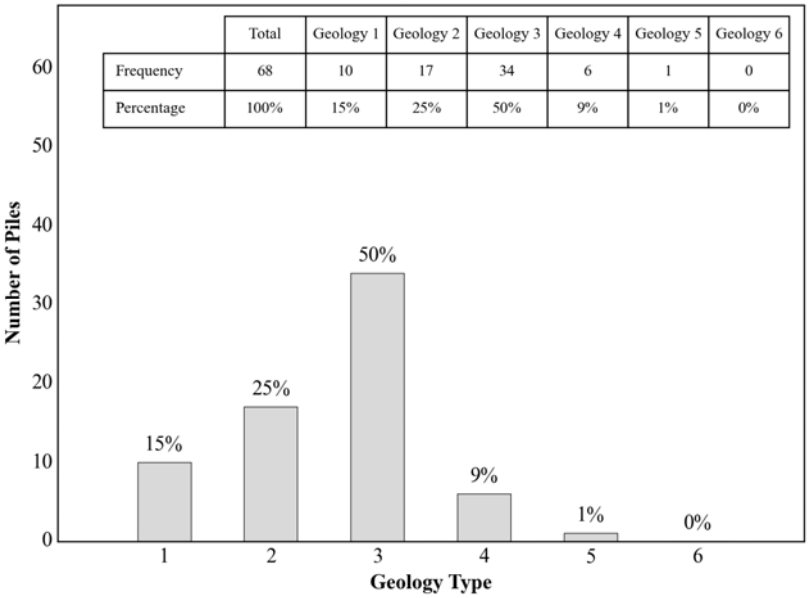

Figure 21
Geology - EOID prediction of long-term ultimate pile capacity

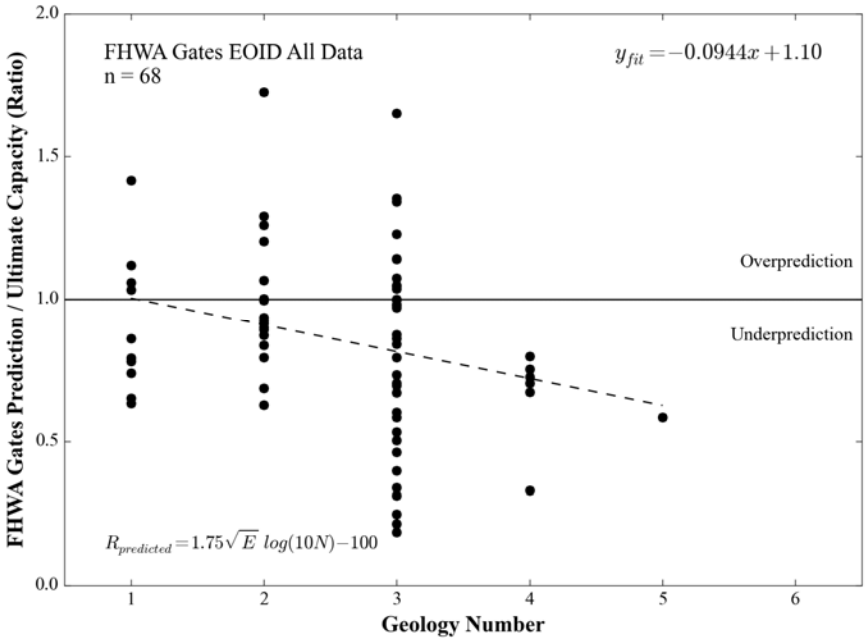

Figure 22
Bias $\lambda_{Predicted/Measured}$ for geology

Figure 23 indicates that 60% of the piles (41 cases) were driven with open-ended diesel hammers (OED), 34% of the piles (23 cases) were driven with external combustion hammers (ECH) hammer, and 6% of piles (4 cases) were driven with closed-end diesel (CED) hammers. The observed distribution of types of hammers in the database was discussed with DOTD. DOTD indicated that this distribution was consistent with the current trend of encountering more OED hammers than ECH hammers on DOTD projects. They noted that CED hammers have not been seen on projects built in recent years. A review of the hammer type bias in Figure 23 suggests that median bias for OED hammers tends to similarly overpredict and underpredict. The median bias for ECH hammers tends to predict less than OED hammers. This observation is most likely due to the differing hammer efficiencies between the two types of pile driving hammers. This suggests that even though OED and ECH hammers operate differently, pile driving formulas developed using all types of hammers will tend to be conservative when piles are installed with ECH hammers. As a result of these observations, OED and ECH pile driving hammers were grouped together for evaluation and development of EOID pile driving formulas. CED pile driving hammers were not included in this study.

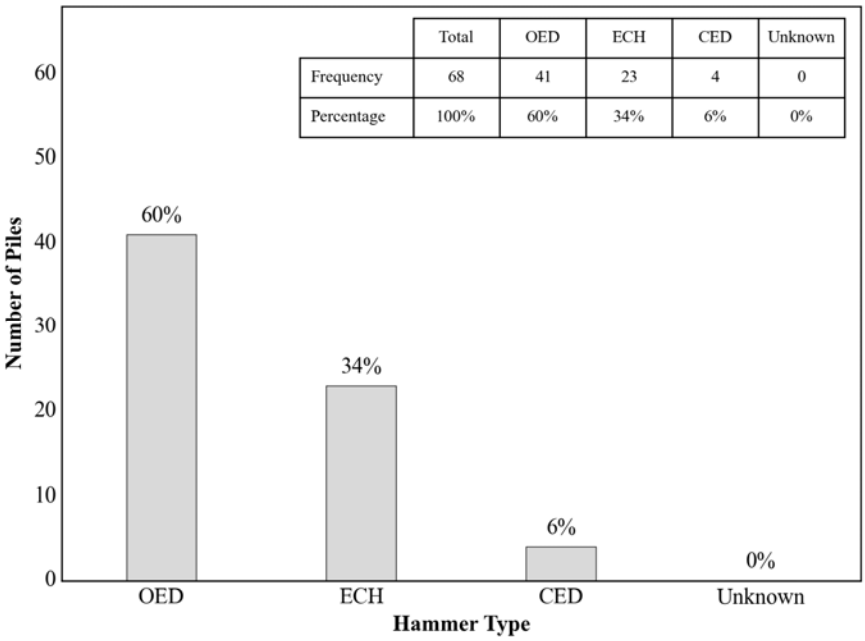

Figure 23
EOID hammer type statistics

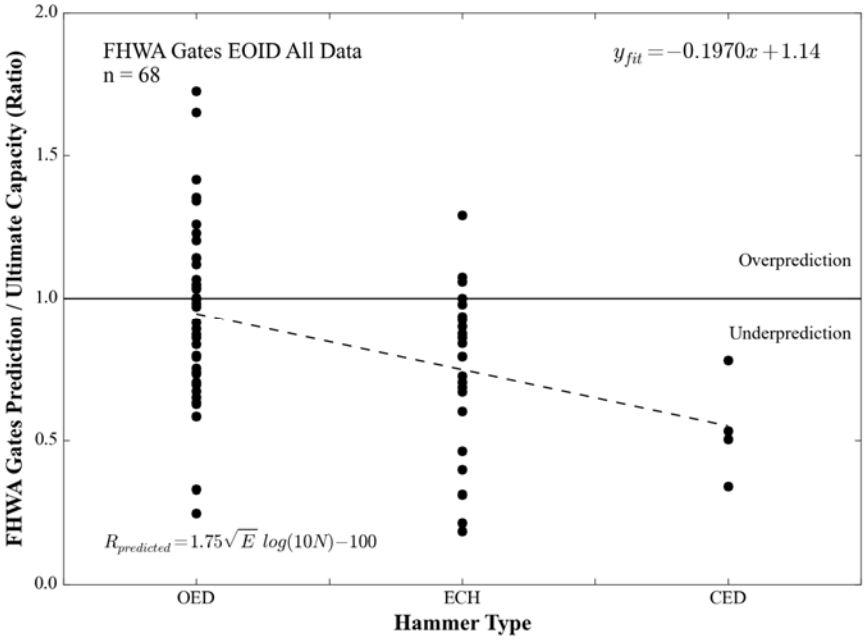

Figure 24
Bias $\lambda_{Predicted/Measured}$ for type of hammer

A review of Figure 25 indicates that 87% of the cases had a hammer energy (WH) delivered at EOID that was less than 83 kip-ft and none exceeded 183 kip-ft. A review of Figure 26 indicates a possible trend of the bias increasing from under predicting to over predicting as

rated hammer energy increases. This trend cannot be confirmed because the number of cases for EOID hammer energy greater than 90 kip-ft is substantially less than the number of cases for lower hammer energies.

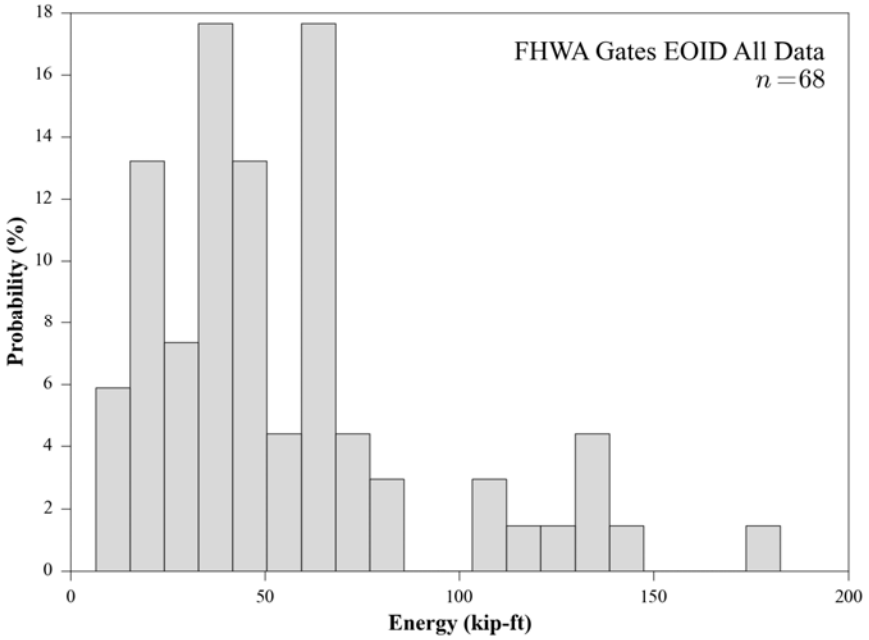

Figure 25
Histogram of EOID hammer energy (WH)

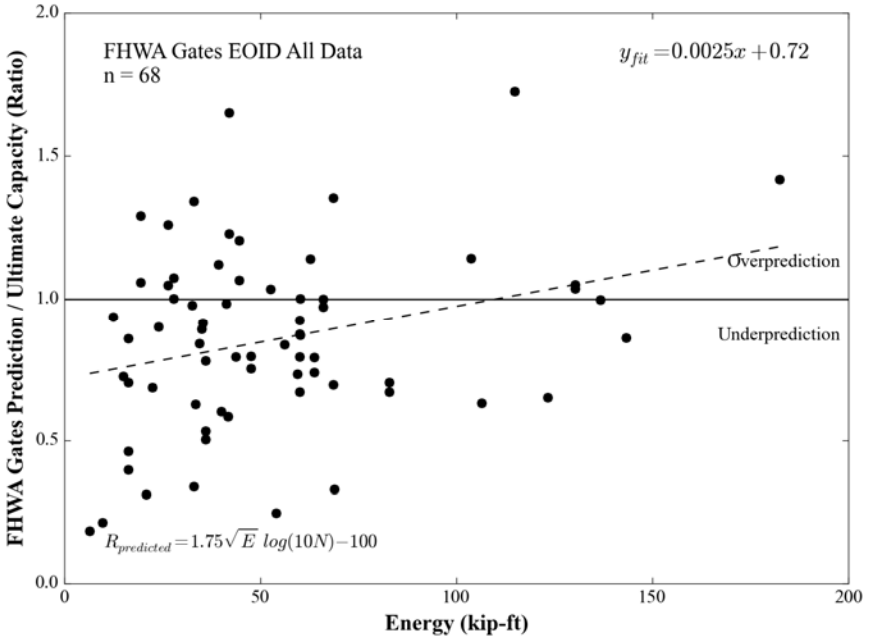

Figure 26
Bias $\lambda_{Predicted/Measured}$ vs. EOID energy (WH)

A review of Figure 27 indicates that 90% of the cases had EOID blows counts less than 60 blows/ft. The dataset was filtered to limit the EOID blow counts to 120 blows/ft (10 blows/inch) and no limits were placed on the minimum blow count. Calculations using the dataset resulted in a mean bias $\lambda_{Predicted/Measured}$ of 0.68 for all blow counts less than 12 blows/ft, a mean bias $\lambda_{Predicted/Measured}$ of 0.90 for blow counts ranging from 12 to 24 blows/ft, and a mean bias $\lambda_{Predicted/Measured}$ of 0.93 for all blow counts greater than 24 blows/ft. This suggests that a lower limit of 12 blows/ft to 24 blow/ft should produce predictions of the ultimate pile bearing capacity with increased accuracy and less scatter. These results are consistent with the accepted practice of sizing a pile driving hammer with a minimum blow count of 36 blows/ft. A review of Figure 28 indicates that the pile driving formula used for evaluation generally under predicts the EOID long-term ultimate pile bearing capacity.

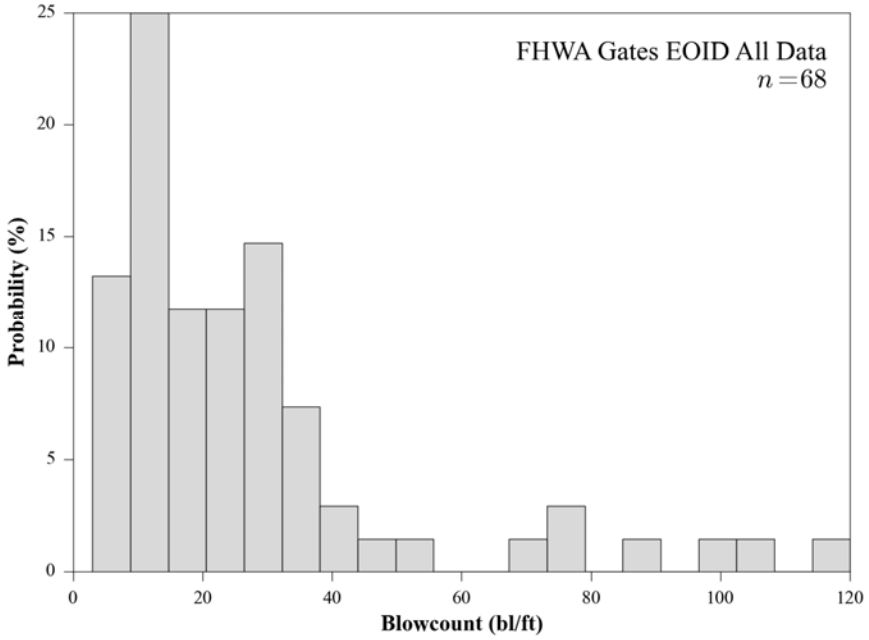

Figure 27
Histogram of EOID blow counts

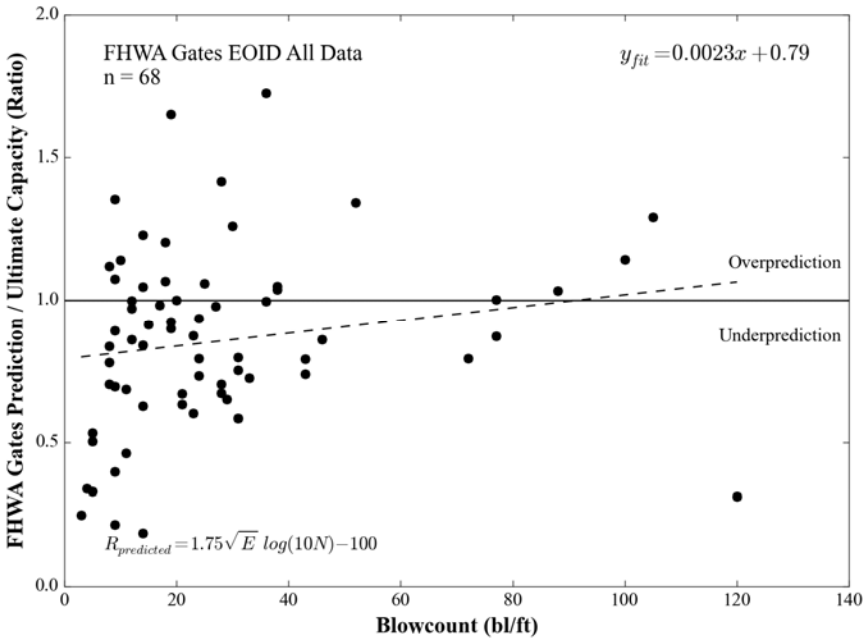

Figure 28
Bias $\lambda_{Predicted/Measured}$ vs. EOID blow counts

Since DOTD typically defines the long-term ultimate pile bearing capacity at 14 days, the dataset was selected to include all data that had measured (CW or SLT) ultimate pile bearing capacity within 7 to 21 days (14 ±7 days). The lower limit of 7 days is consistent with the pile setup discussion in this report that indicates that 90% of 14 day ultimate pile bearing capacity can be obtained at 6 to 7 days for pile installed in setup category A. A review of the data contained in Figure 29 indicates that 79% of the dataset was obtained between 11 to 17 days (14 ±3 days) after EOID. These results may be misleading since the FHWA Deep Foundation Load Test Database (DFLTD) did not include the time elapsed since EOID when the load test was conducted and these load tests in the database were assumed to have been conducted 14 days after pile installation based on the PIs having worked for DOTD during that time period that these load test were conducted. A review of the days since EOID bias in Figure 30 indicates a mean bias of 0.85 for all data from 7 – 21 days after EOID. This observation suggests that the current pile driving formula can be improved by using regional pile load tests data to improve the reliability of the pile driving formula. These results indicate that the ultimate pile bearing capacity prediction bias over a period 14 ±7 days is relatively constant due to having the majority of the ultimate pile bearing capacity obtained within this period and the effects of pile setup are therefore lessened as compared to the pile setup that occurs within the first 7 days after EOID. This observation is consistent with the pile setup discussion in this report.

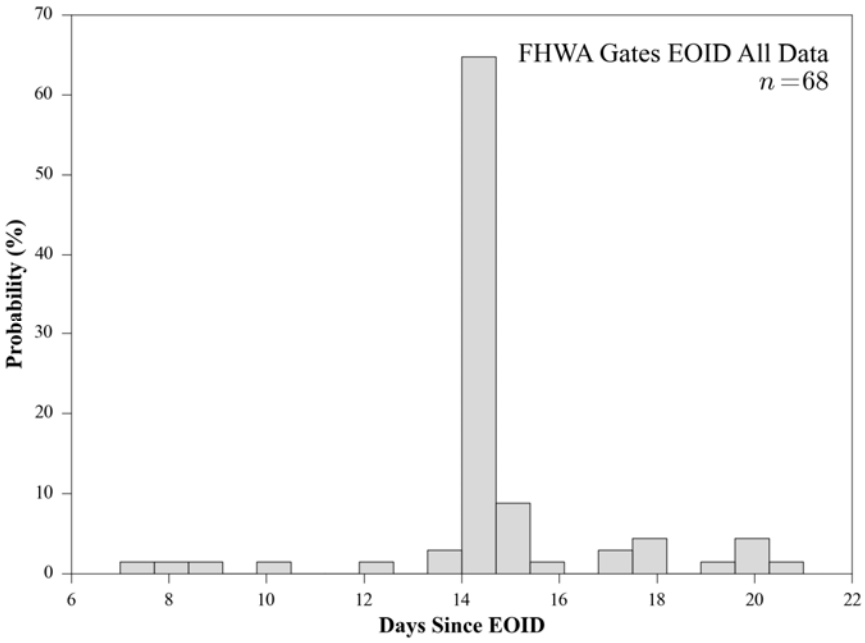

Figure 29
Histogram of days since EOID

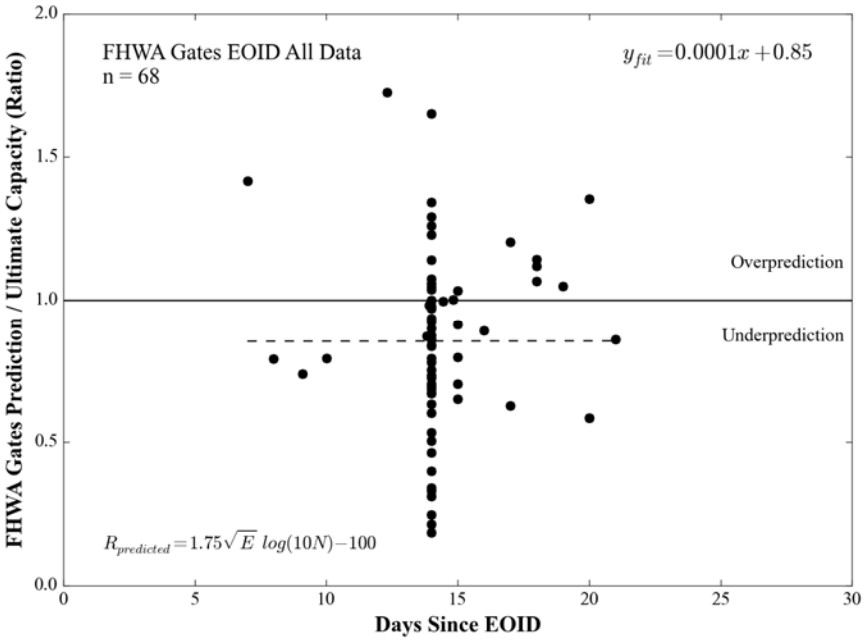

Figure 30
Bias $\lambda_{Predicted/Measured}$ vs. days since EOID

A review of the dataset contained in Figure 32 indicates that 94% of the dataset includes measured ultimate pile bearing capacity between 50 to 450 tons. A review of Figure 31 indicates a mean bias $\lambda_{Predicted/Measured}$ based on the best fit line ranging from 0.92 to 0.80 for measured long-term ultimate pile capacities ranging from 50 to 450 tons, respectively. This observation suggests that the current pile driving formula can be improved by using regional pile load tests data to improve the reliability of the pile driving formula.

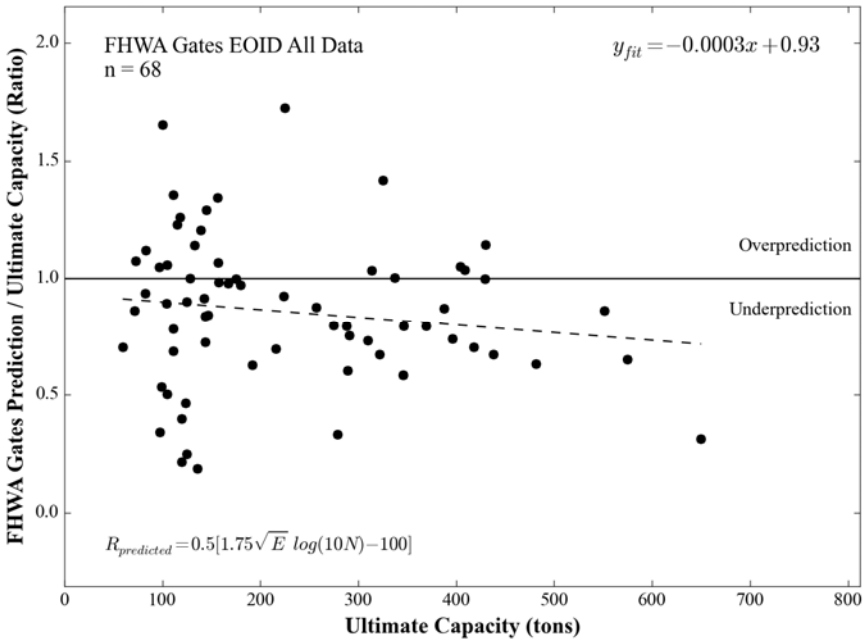

Figure 31
Bias $\lambda_{Predicted/Measured}$ vs. measured ultimate pile capacity

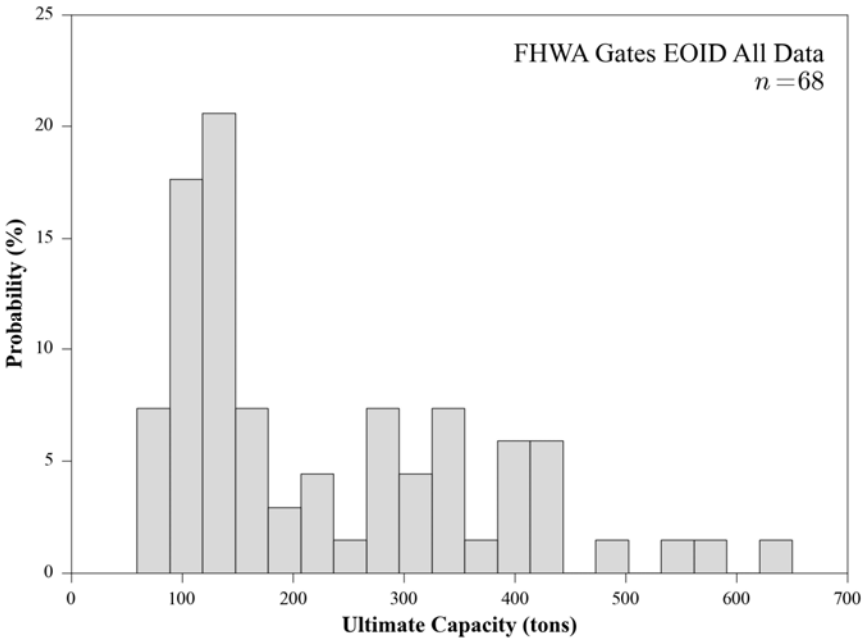

Figure 32
Histogram of measured ultimate pile capacity

BOR Ultimate Pile Bearing Capacity Determination

The data selected for the development of BOR pile driving formulas for the prediction of the ultimate pile bearing capacity when the pile restrike is performed requires BOR pile restrike records (blow counts, hammer stroke, hammer energy) and measured ultimate pile bearing capacity at the time that the pile restrike is performed. The measured ultimate pile bearing capacity was typically based on SLT and CW_{adj} load test results. The BOR pile dataset filtered from the LAPLTD to evaluate the ultimate pile bearing capacity from BOR pile restrikes obtained at $t \geq 1$ day.

Table 31 presents statistics of the data extracted from the LAPLTD for evaluation of factors affecting pile bearing capacity prediction using pile installation results obtained from BOR pile driving conditions. To provide be able to evaluate the distribution of the BOR data, Table 31 includes for BOR conducted at $t \geq 1$ day and for BOR conducted at $t \approx 1$ day.

Table 31
Dataset statistics for BOR pile driving formulas

Parameters Description	Database Filtered Criteria	
	BOR Prediction of $t \geq 1$ Day Restrike Ultimate Pile Capacity	BOR Prediction of $t \approx 1$ Day Restrike Ultimate Pile Capacity
Pile Type	PPC, H-Pile, Pipe Pile	PPC, H-Pile
Geology	1, 2, 3, 4, 5	1, 2, 3, 4, 5
Hammer Type	OED, ECH	OED, ECH
BOR Energy, E (ft-kip)	$7 \leq E \leq 221$	$11 \leq E \leq 154$
BOR Blow Count (N_{BOR})	$12 \leq N \leq 120$	$12 \leq N \leq 120$
BOR Conducted - Days Since EOID	$0.8 \leq t \leq 57.0$	$0.8 \leq t \leq 1.2$
Load Testing	SLT, CW	CW
SLT Failure	Yes	Yes
CW Mobilized	Yes ($\leq$ 120 bl/ft)	Yes ($\leq$ 120 bl/ft)
No. SLT	26	0
No. CW	448	333
Pile Load Test Cases	474	333

A total of 474 pile load test cases were obtained for BOR with $t \geq 1$ day and 333 pile load test cases were obtained for BOR with $t \approx 1$ day this indicates that approximately 70% of the BOR pile load test results were obtained from BOR pile load tests conducted at $1 \approx$ day. Since the dataset for BOR with $t \approx 1$ day is a subset of the larger dataset of BOR with $t \geq 1$ day the evaluation was confined to the primary dataset for BOR with $t \geq 1$ day. A review of Figure 33 indicates that 99% of the dataset (470 cases) are PPC piles and 1% of the dataset (6 cases) are for steel piles. As a result of the disproportionate number of PPC piles compared to other types of piles and after discussions with DOTD that the use of pile driving formulas would most likely be confined to PPC piles, our evaluation of BOR pile driving formulas for prediction of ultimate pile bearing capacity will only include pile load test cases for PPC piles.

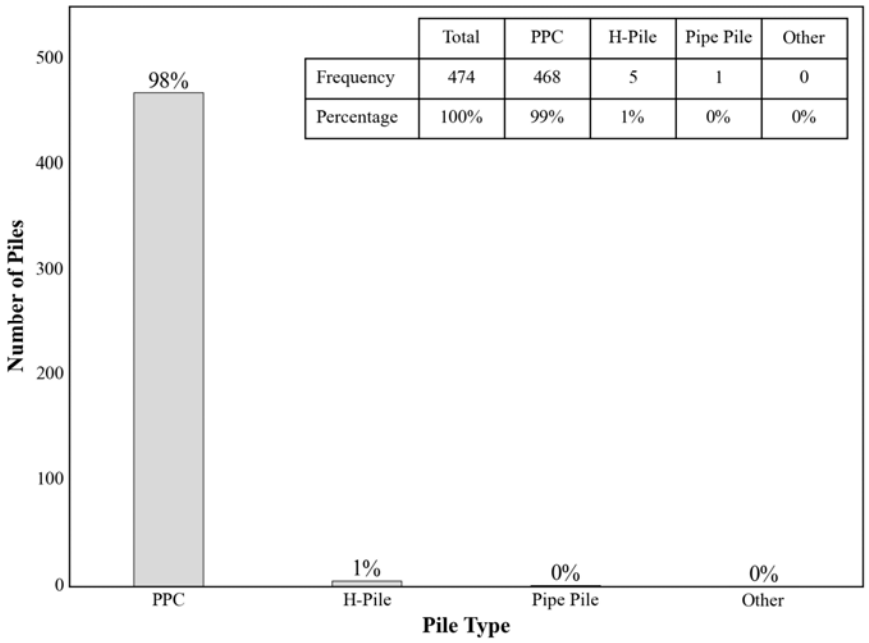

Figure 33
Pile Types — BOR prediction of ultimate pile capacity

The Generalized Geologic Louisiana map shown in Figure 34 and the pile frequency per geology type shown in Figure 34 show that, even though piles are located in geologic areas designated as 1, 2, 3, 4, and 5, it is consistent with the general composition of the database that most of the datasets are located within southern Louisiana and are were installed within soil formations of Quaternary period. A review of Figure 21 indicates that 83% of the dataset (393 cases) are located in Geology 1 area that tends to experience the highest degree of pile setup. A review of the geology bias in Figure 35 suggests that median bias for the geologic area 1 tends to similarly overpredict and underpredict. The median bias for geologic areas 2, 3, 4, and 5 tends to predict significantly more than in geologic area 1. Even though there are no pile load tests in geologic area 6, it is expected to behave similar to geologic areas 2, 3, 4, and 5. As a result of the overprediction of pile capacity in geologic areas 2, 3, 4, and 5, different types of pile driving formulas will need to be developed for geologic area 1 (Group A) and for geologic areas 2, 3, 4, 5, and 6 (Group B).

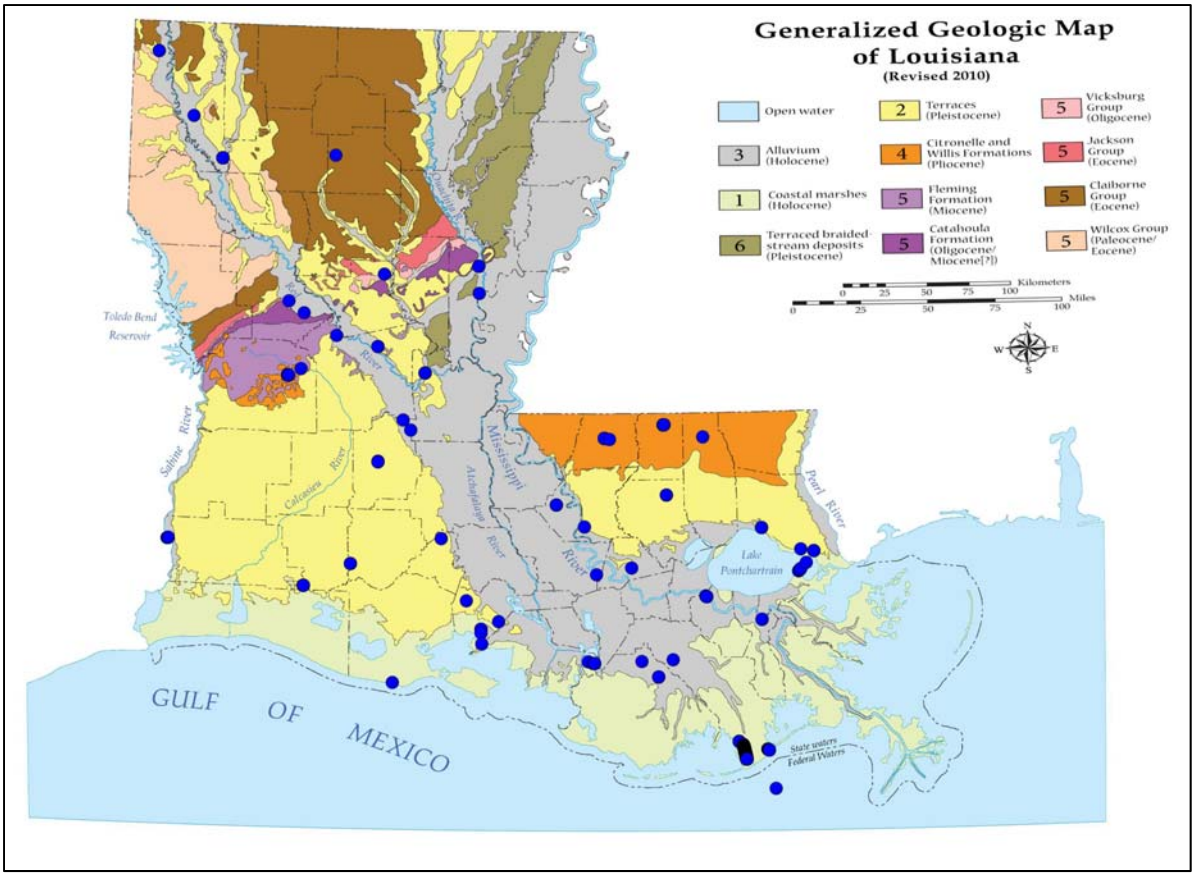

Figure 34
Louisiana geologic map of piles — BOR
(2010 Louisiana State University — Louisiana Geological Survey) *[33]*

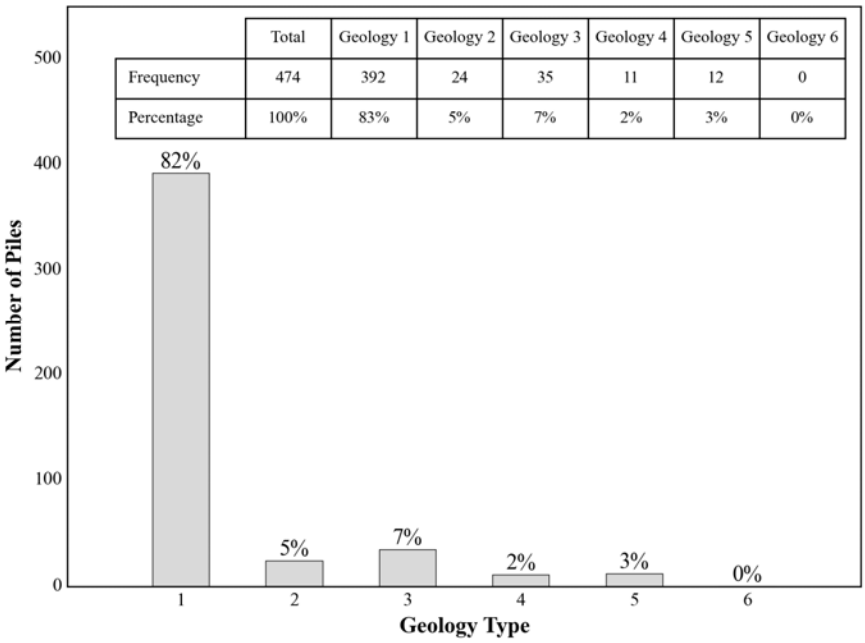

Figure 35
Geology — BOR prediction of ultimate pile capacity

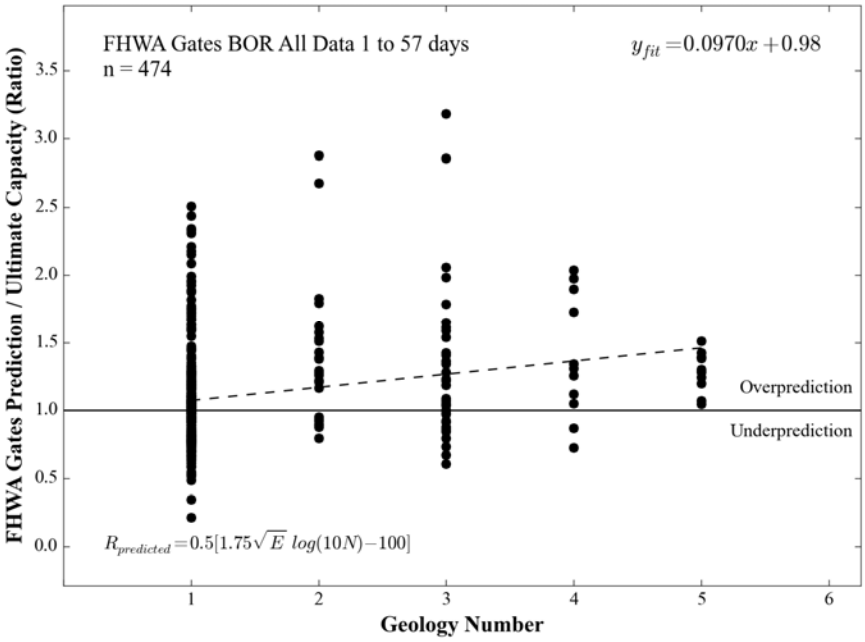

Figure 36
BOR — Bias $\lambda_{Predicted/Measured}$ for geology

Figure 37 indicates that 95% of the piles (450 cases) were driven with an OED hammer and 5% of the piles (26 datasets) were driven with an ECH hammer. The observed distribution of types of hammers in the database was discussed with DOTD. DOTD indicated that this distribution was consistent with the current trends of encountering on DOTD projects more OED hammers than ECH hammers. A review of the hammer type bias in Figure 38 suggests that ECH hammers tend to predict less than OED hammer.

As a result of the disproportionate number of OED pile hammer cases compared to ECH hammer cases, the evaluation of BOR pile driving formulas for prediction of ultimate pile capacity will only include pile load test cases for piles installed using OED pile driving hammers.

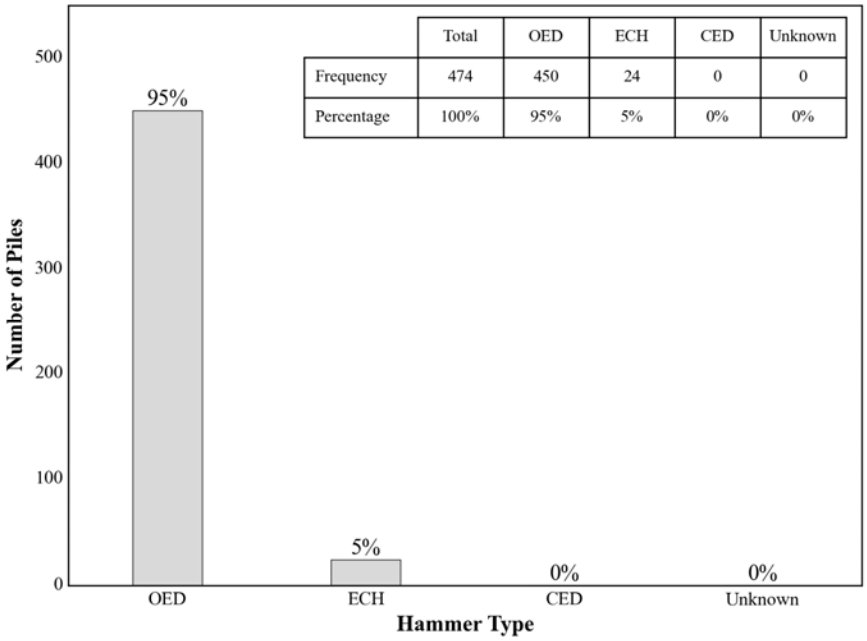

Figure 37
BOR hammer type statistics

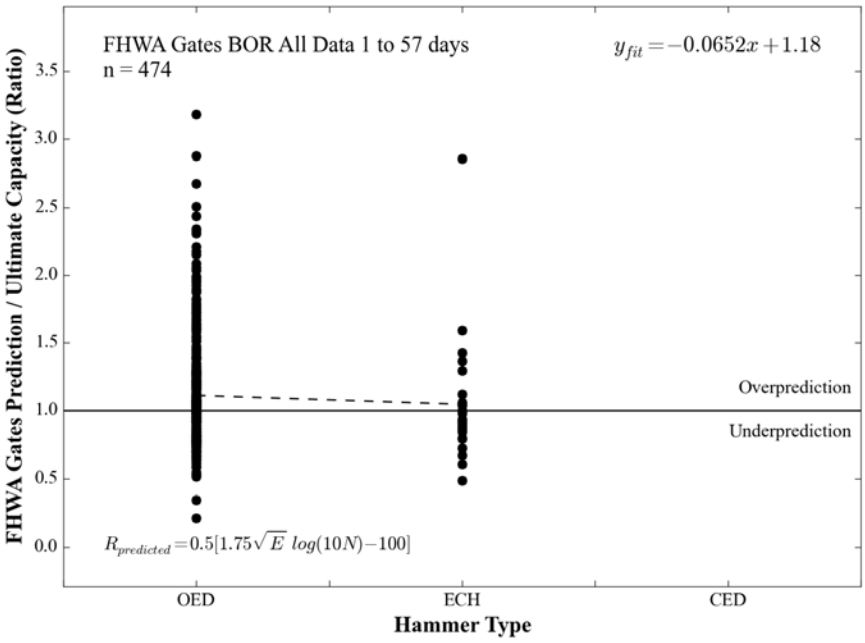

Figure 38
BOR — Bias $\lambda_{Predicted/Measured}$ for type of hammer

A review of Figure 39 indicates that 97% of the cases had a hammer energy (WH) delivered at BOR that were less than 125 kip-ft and none exceeding 225 kip-ft. A review of Figure 40 indicates a possible trend of the bias increasing form under predicting to over predicting as the rated hammer energy increases. This trend cannot be confirmed because the number of cases for BOR hammer energy greater than 125 kip-ft is substantially less than the number of cases for the lower hammer energies.

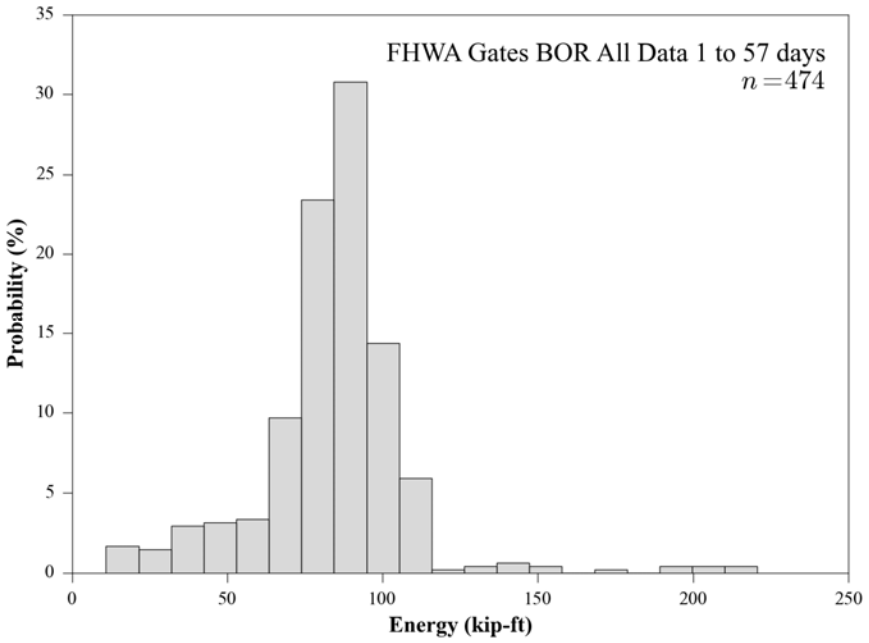

Figure 39
Histogram of BOR hammer energy (WH)

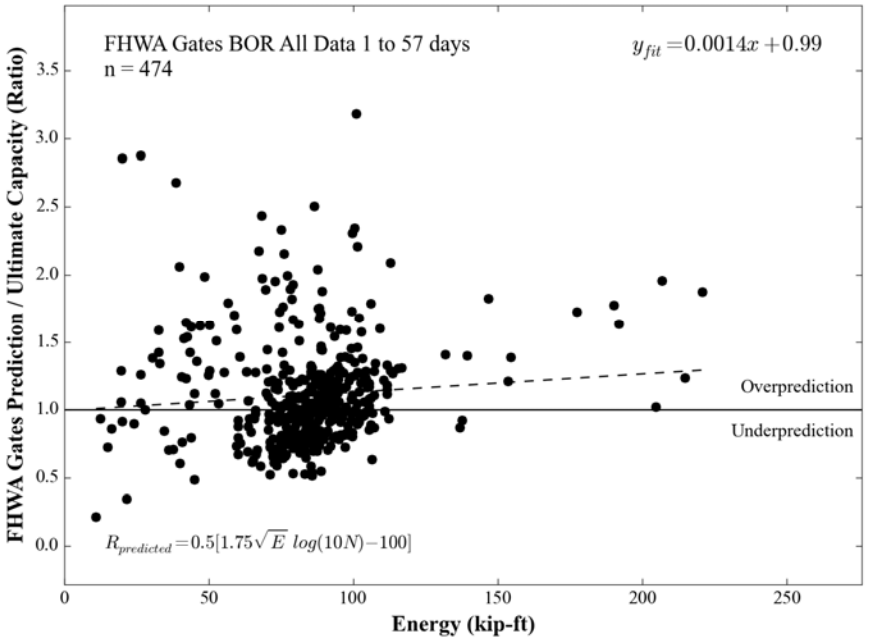

Figure 40
Bias $\lambda_{Predicted/Measured}$ vs. BOR energy (WH)

A review of Figure 41 indicates that 90% of the cases had BOR blows counts less than 80 blows/ft. The dataset was filtered to limit the EOID blow counts to range from 12 to 120 blows/ft (1 blow/inch to 10 blows/inch). A review of Figure 42 indicates that the mean bias $\lambda_{Predicted/Measured}$ based on the best fit line for blow counts ranging from 12 to 24 blows/ft ranged from 0.98 to 1.05. This suggest that a lower limit of 12 blows/ft to 24 blow/ft should produce BOR predictions of the ultimate pile bearing capacity with increased accuracy and less scatter. These results are consistent with accepted practice of sizing a pile driving hammer with a minimum blow count of 36 blows/ft. A review of Figure 42 indicates a possible trend of the bias increasing from under predicting to over predicting as blow counts increases. This trend cannot be confirmed because the pile driving formula used for evaluation was developed for EOID pile driving conditions that predict the long-term ultimate pile bearing capacity and therefore includes pile setup that would occur over time. This observation suggests that a pile driving formula for BOR pile driving conditions should be developed using regional pile load tests data.

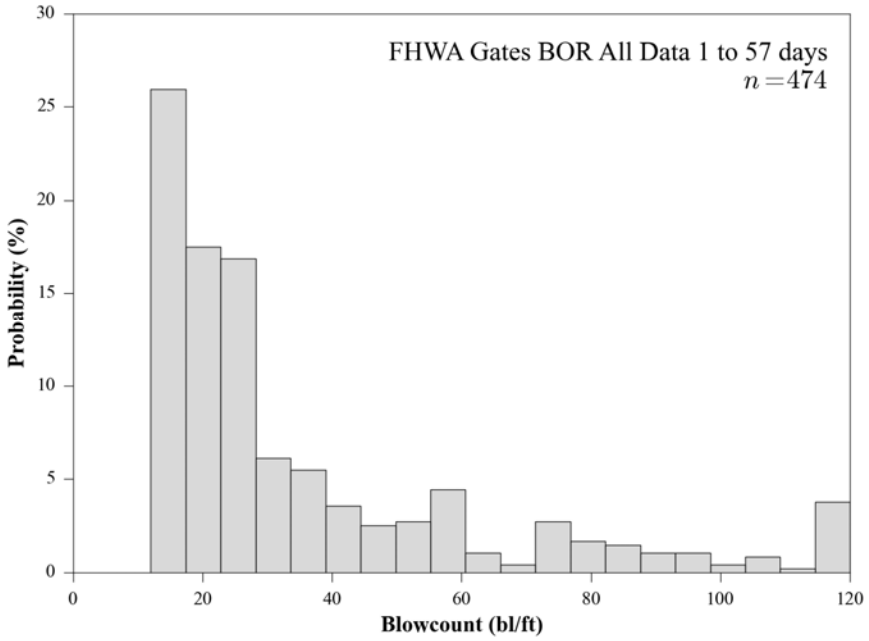

Figure 41
Histogram of BOR blow counts

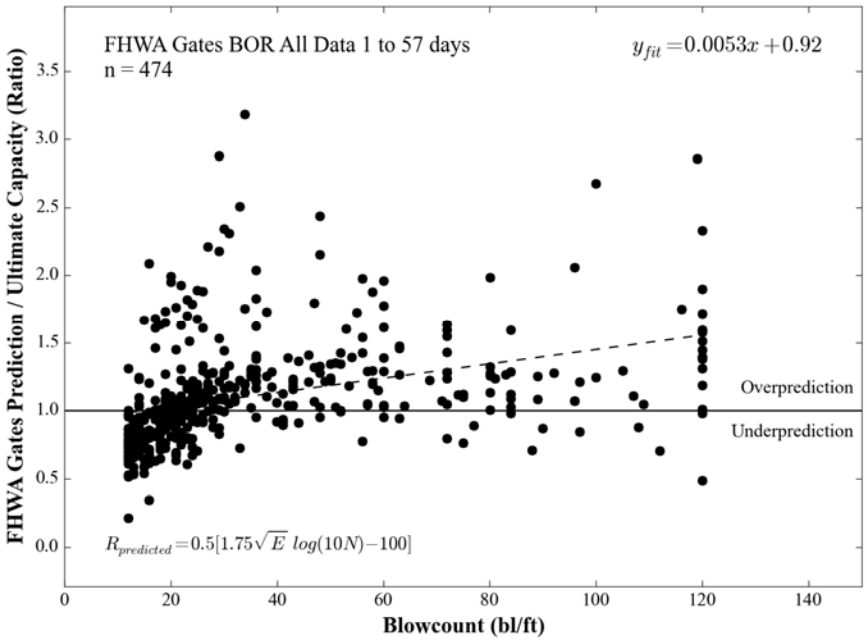

Figure 42
Bias $\lambda_{Predicted/Measured}$ vs. BOR blow counts

A review of the dataset contained in Figure 43 indicates that 89% of the dataset was obtained within the first 7 days after EOID and 8% was obtained from 7 to 21 days after EOID. A review of Figure 44 indicates a possible trend of the bias increasing from a mean bias based on the best fit line of 1.07 at 1 day to a mean bias of 1.34 at 21 days. This trend cannot be confirmed because the pile driving formula used for evaluation was developed for EOID pile driving conditions that predicts the ultimate pile bearing capacity and therefore includes pile setup that would occur over time. This observation suggests that a pile driving formula for BOR pile driving conditions are sensitive to pile setup as indicated in Figure 36.

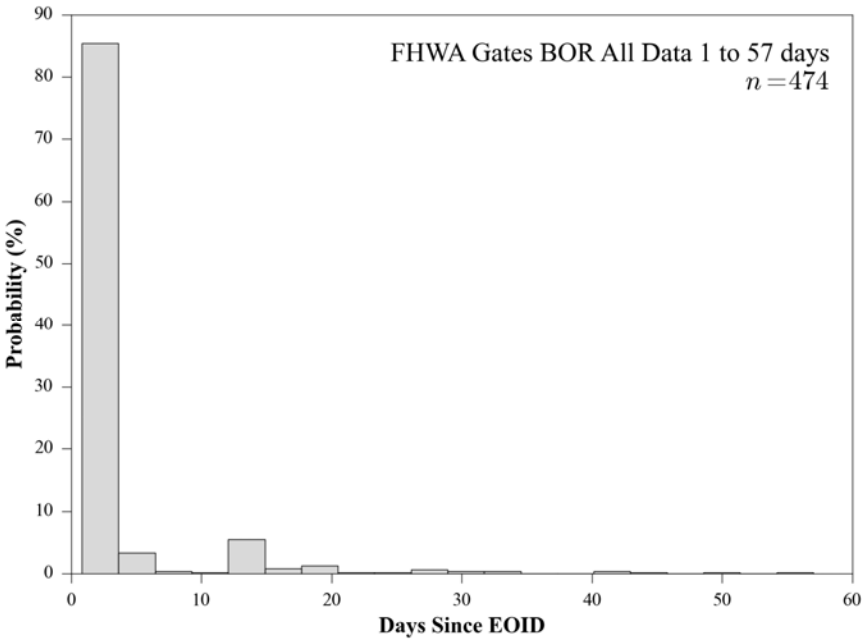

Figure 43
BOR — Histogram of days since EOID

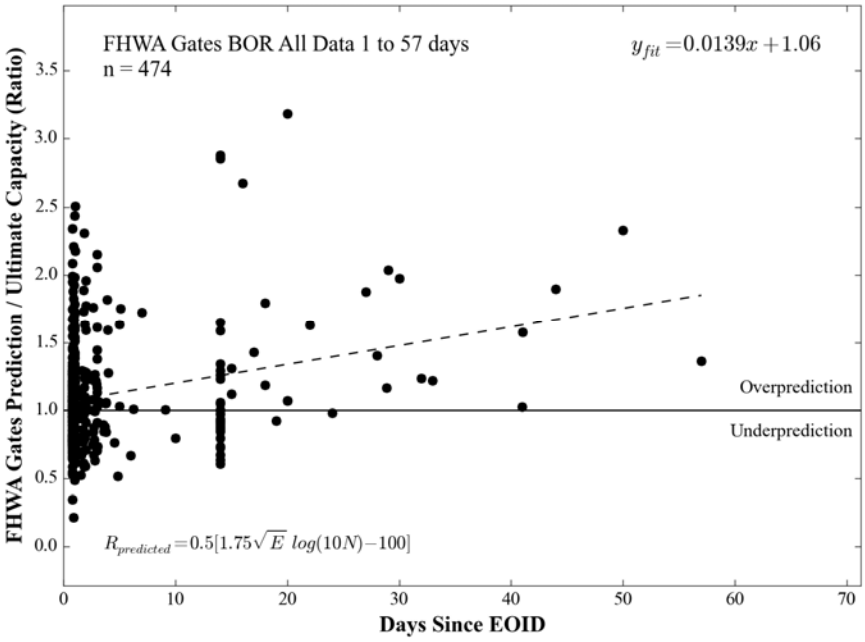

Figure 44
BOR — Bias $\lambda_{Predicted/Measured}$ vs. days since EOID

A review of the dataset contained in Figure 46 indicates that 98% of the dataset includes measured ultimate pile bearing capacity between 50 to 450 tons. A review of Figure 45 indicates a mean bias $\lambda_{Predicted/Measured}$ based on the best fit line ranging from 1.66 to 0.70 for measured ultimate pile capacities ranging from 50 to 450 tons, respectively. This trend ranging from over predicting at 50 tons to under predicting at 450 tons cannot be confirmed because the pile driving formula used for evaluation was developed for EOID pile driving conditions that predicts the ultimate pile bearing capacity and therefore includes pile setup that would occur over time.

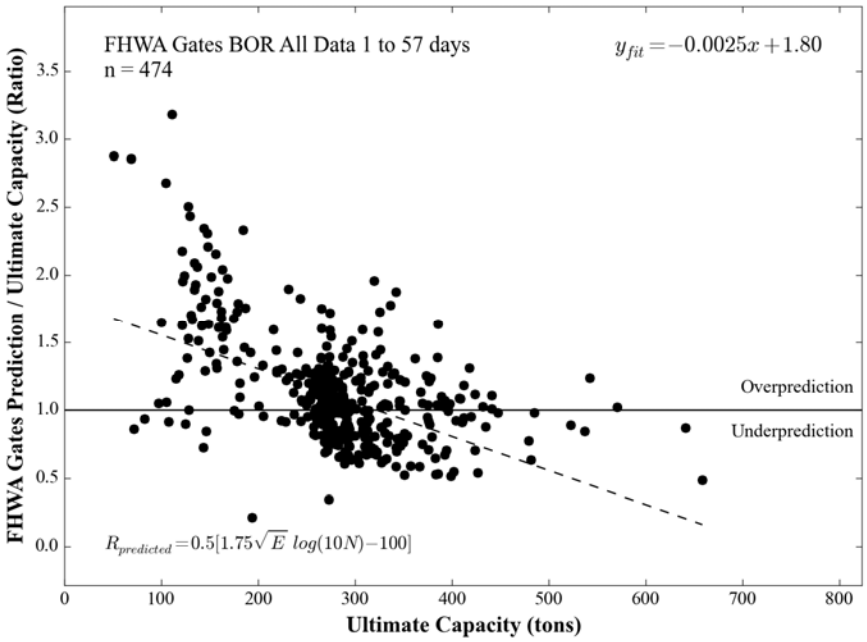

Figure 45
BOR — Bias $\lambda_{Predicted/Measured}$ vs. ultimate capacity

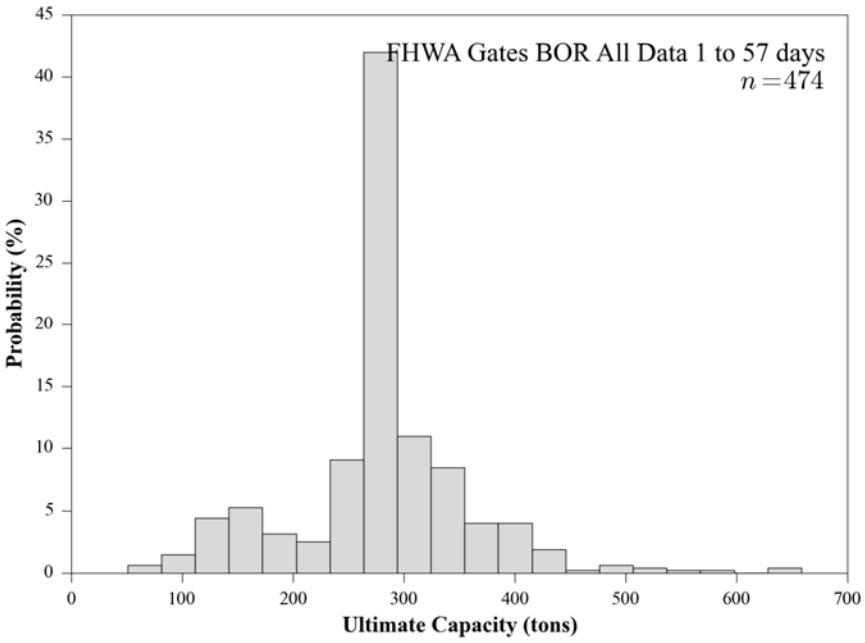

Figure 46
BOR — Histogram of ultimate capacity

EOID Pile Driving Formula for Prediction of Long-Term Ultimate Pile Capacity

This EOID pile driving formula uses EOID pile driving conditions to predict the long-term ultimate pile bearing capacity. The current EOID LADOTD pile driving formula (FHWA Gates formula) and the EOID LADOTD Modified Gates pile driving formula developed for this study were evaluated and compared using regional pile load test data to determine the accuracy and reliability of the two pile driving formulas.

The statistics of the LAPLTD dataset that was used to evaluate the current EOID pile driving formula and develop a modified pile driving formula is presented in Table 32.

Table 32
Dataset statistics for EOID prediction of long-term ultimate pile capacity

Pile Type:	PPC	E_{EOID} (ft-kip)	$13 \leq E \leq 183$
Geology:	1, 2, 3, 4, 5	N_{EOID}	$23 \leq N \leq 105$
Geology 1	13	Days Since EOID	$6.0 \leq t \leq 22.0$
Geology 2	13		
Geology 3	18		
Geology 4	5	Load Testing	SLT, CW
Geology 5	1	SLT Failure	Yes
Geology 6	0	CW Mobilized	Yes (≤ 120 bl/ft)
Hammer Type:	OED & ECH	No. SLT	35
OED	36	No. CW	15
ECH	14	Datasets	50

The results of the statistical evaluation for the LADOTD pile driving formula (FHWA Gates formula) and the LADOTD Modified pile driving formula developed in this study are presented below.

EOID LADOTD Pile Driving Formula

The current EOID LADOTD pile driving formula has been statistically evaluated using the regional pile load test dataset described in Table 32 without any limitations on geology or hammer type. The LADOTD pile driving formula (DFEOID) is based on the FHWA Modified Gates equation with modification to account for changes in units as indicated below *[2]*:

$$R_u = 0.5\left[\left(1.75\sqrt{E_r}\, log(10\, N_b)\right) - 100\right] \quad \textbf{(47)}$$

where, R_u = long-term ultimate pile bearing capacity (tons), E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds), and N_b = number of hammer blows/inch. The measured long-term ultimate pile bearing capacity (R_m) is plotted against the predicted long-term ultimate pile bearing capacity (R_p) in Figure 47.

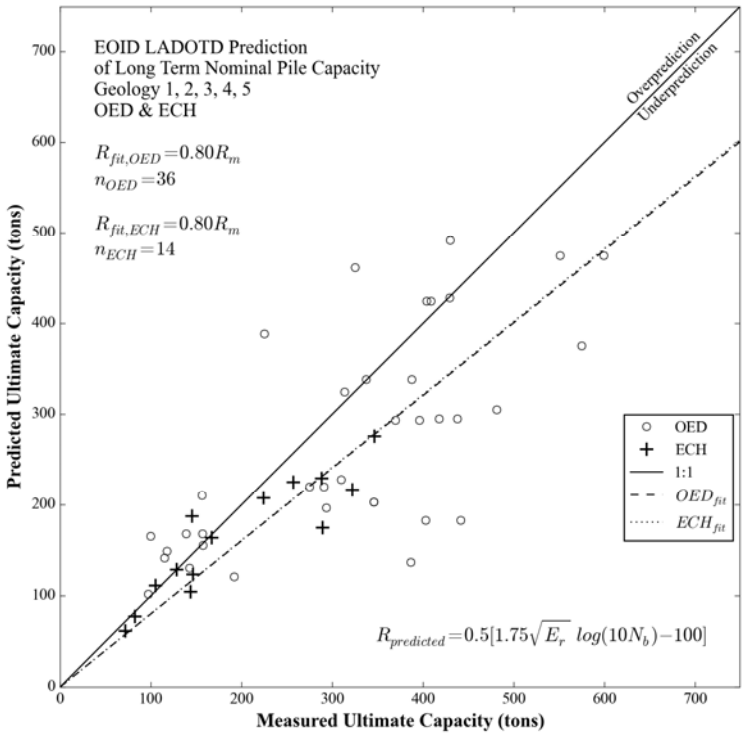

Figure 47
R_m versus R_p: EOID prediction of long-term ultimate pile capacity

The statistics for the current LADOTD pile driving formula are presented in Table 33. The results of the best fit evaluation indicates the current LADOTD pile driving formula tends to under estimate the long-term ultimate pile capacity with a best fit ratio of 0.80 (R_{fit}/R_m) with a standard deviation of 0.429 and COV of 0.349.

Table 33
Statistics for Current LADOTD pile driving formula

Gates Pile Driving Formula Coefficients	C1 =	1.75
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	1.227
	Standard Deviation	0.429
	COV	0.349
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.802
	R^2	0.547
	Correlation	0.740
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	89.8
	Mean overprediction (tons)	39.7

The resistance factors corresponding to the LADOTD pile driving formula (DFEOID) were derived using the Monte Carlo Simulation (MCS) reliability method to achieve the desired probability of failure (or reliability index β_T) for the Strength I limit state. Resistance factors were computed for various dead to live load ratios Q_{nD}/Q_{nL} ranging from 2.0 to 5.0 to cover a variety of scenarios throughout the bridge. A histogram of the measured pile capacity to predicted capacity (R_m/R_p) bias ratio is provided in Figure 48. The probability plot for the normal and lognormal distributions are shown in Figure 49. The lognormal distribution of the bias (R_m/R_p) was selected as having the best fit with median of 1.16 and standard deviation of 0.32.

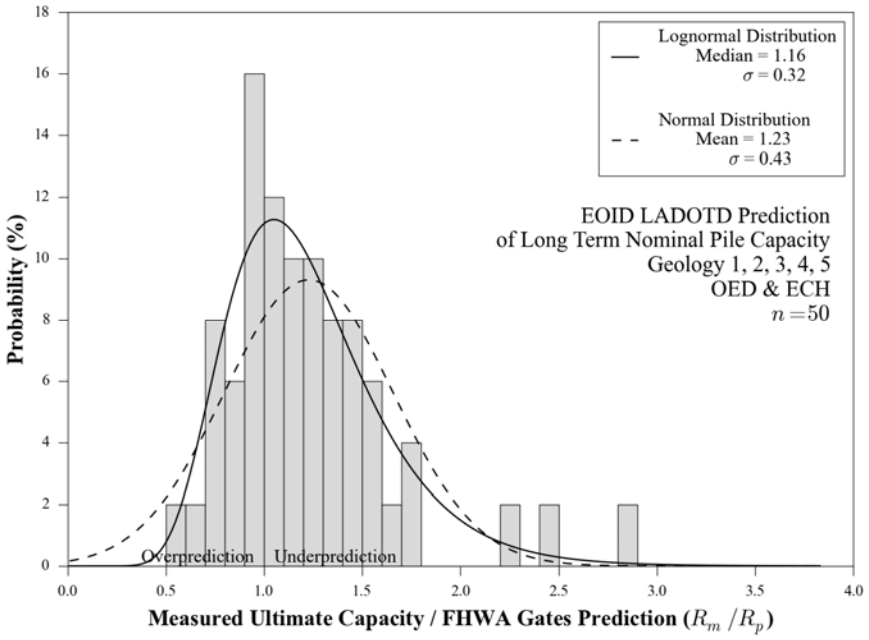

Figure 48
Histogram with normal and lognormal distributions

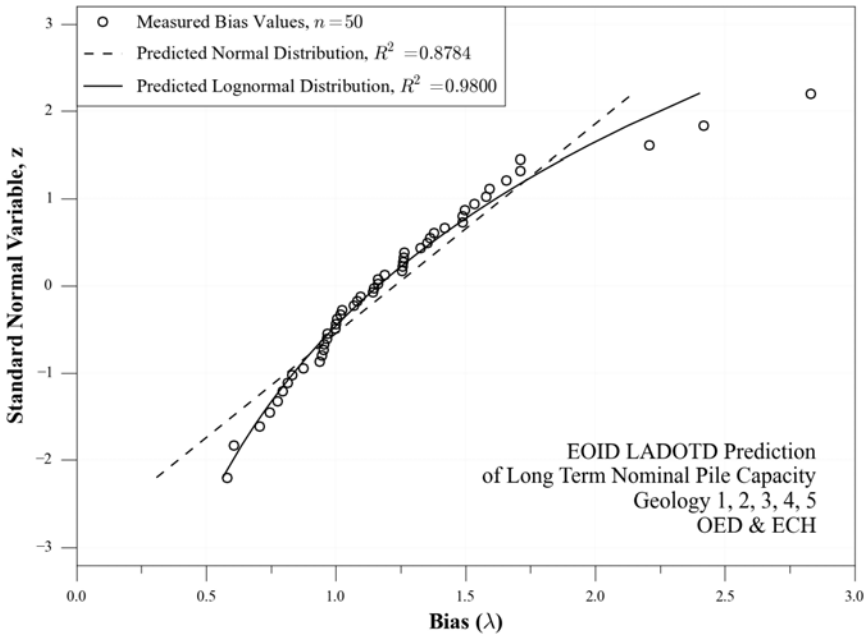

Figure 49
Probability plot for normal and lognormal distributions

The computed resistance factors ranged from 0.651 to 0.686 for the dead to live load ratios (Q_{nD}/Q_{nL}) of 2.0 to 5.0. The probability of failure vs. resistance factor for the various dead to live load ratios (Q_{nD}/Q_{nL}) is shown in Figure 50. A resistance factor of 0.669 was computed for a dead to live ratio (Q_{nD}/Q_{nL}) of 3.0. A summary of the statistics and resistance factors for the LADOTD pile driving formula (DFEOID) is provided in Table 34.

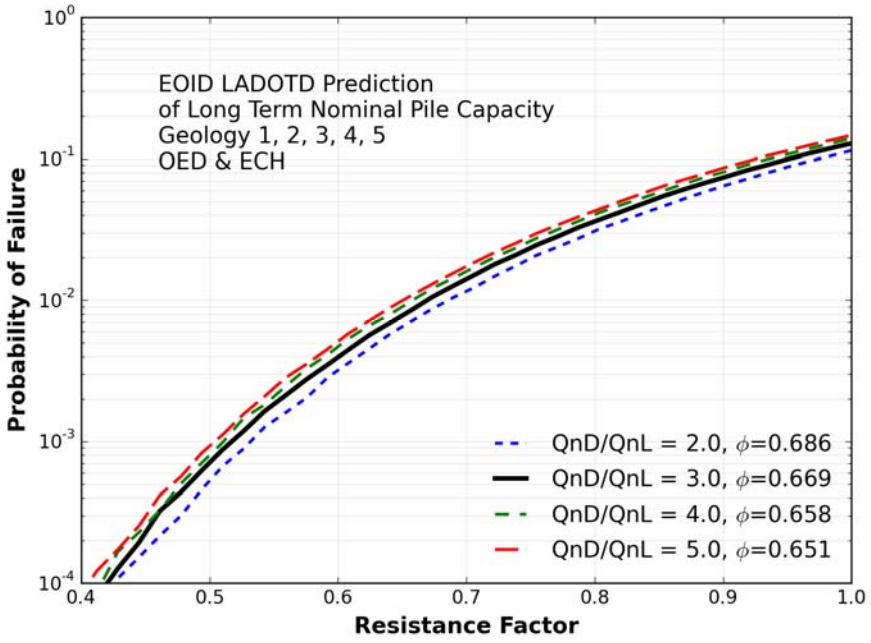

Figure 50
DFEOID resistance factors for various dead to live load ratios

Table 34
Statistics and resistance factors for the LADOTD pile driving formula (DFEOID)

Case Category:		EOID
Description:		FHWA Gates
Geology:		1, 2, 3, 4, 5
Hammer Type:		OED & ECH
Number of Cases:		50
Lognormal distribution fit Parameters	R^2	0.980
	Median	1.164
	Sigma	0.320
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.651
	$Q_{nD}/Q_{nL} = 4.0$	0.658
	$Q_{nD}/Q_{nL} = 3.0$	0.669
	$Q_{nD}/Q_{nL} = 2.0$	0.686

EOID LADOTD Modified Gates Pile Driving Formula

The LADOTD EOID Modified Gates (DFEOID-MOD) pile driving formula is based on the generic Gates formula where *C1*, *C2*, and *C3* are empirical equation coefficients derived by conducting a multivariate regression to recalibrate the Gates Formula so that bias (λ) values between predicted and measured pile capacities have a mean closest to unity with the lowest standard deviation and COV. A sensitivity analysis was performed to evaluate 7 different scenarios in which pile load test datasets were developed and grouped by Geology and Hammer Type. The results of this sensitivity analysis on geology, hammer type, resulted in increased the complexity of the pile driving formulas without any significant improvement to the reliability and accuracy. The EOID LADOTD Modified Gates pile driving formula presented in this report does not place limitations on geology or hammer type.

The EOID LADOTD Modified Gates pile driving formula (DFEOID-MOD) is presented below:

$$R_u = 0.5\left[\left(1.95\sqrt{E_r}\, log(10\, N_b)\right) - 100\right] \qquad \textbf{(48)}$$

where, R_u = long-term ultimate pile bearing capacity (tons), E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds), and N_b = number of hammer blows/inch. The measured ultimate pile bearing capacity (R_m) is plotted against the predicted long-term ultimate pile bearing capacity (R_p) in Figure 51.

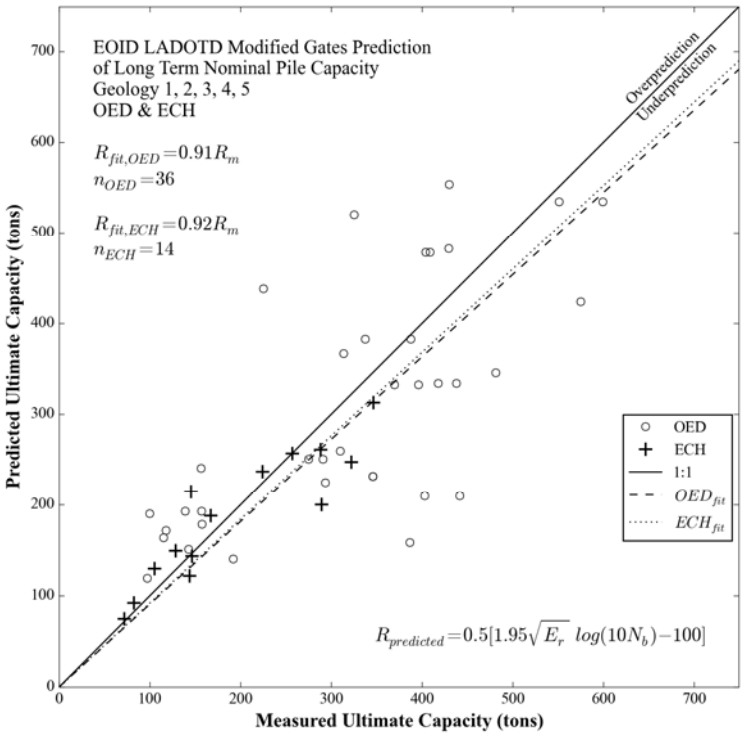

Figure 51
R_m versus R_p: EOID prediction of long-term ultimate pile capacity

The statistics for the EOID LADOTD Modified Gates pile driving formula are presented in Table 35. The results of the best fit evaluation indicates that the EOID LADOTD Modified Gates pile driving formula tends to underestimate the long-term ultimate pile bearing capacity with a best fit ratio of 0.91 (R_{fit}/R_p) with a standard deviation of 0.373 and COV of 0.348.

Table 35
Statistics for EOID LADOTD Modified Gates Pile Driving Formula

Gates Pile Driving Formula Coefficients	C1 =	1.95
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	1.072
	Standard Deviation	0.373
	COV	0.348
Best Fit Linear Equation OED	Best Fit R_{fit} / R_m	0.909
	R^2	0.539
	Correlation	0.734
Best Fit Linear Equation ECH	Best Fit R_{fit} / R_m	0.920
	R^2	0.720
	Correlation	0.848
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	78.3
	Mean overprediction (tons)	58.4

The resistance factors corresponding to the EOID LADOTD Modified Gates (DFEOID-MOD) pile driving formula were derived using the Monte Carlo Simulation (MCS) reliability method to achieve the desired probability of failure (or reliability index β_T) for the Strength I limit state. Resistance factors were computed for various dead to live load ratios Q_{nD}/Q_{nL} ranging from 2.0 to 5.0 to cover a variety of scenarios throughout the bridge. A histogram of the measured capacity to predicted capacity (R_m/R_p) bias ratio is provided in Figure 52. The probability plot for the normal and lognormal distributions are shown in Figure 53. The lognormal distribution of the bias (R_m/R_p) was selected as having the best fit with mean of 1.02 and standard deviation of 0.32.

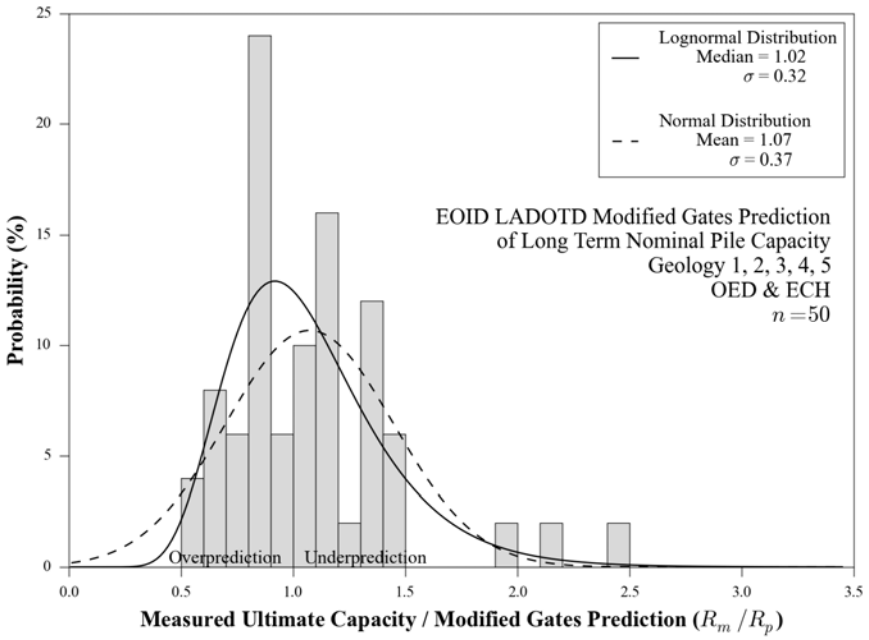

Figure 52
Histogram with normal and lognormal distributions

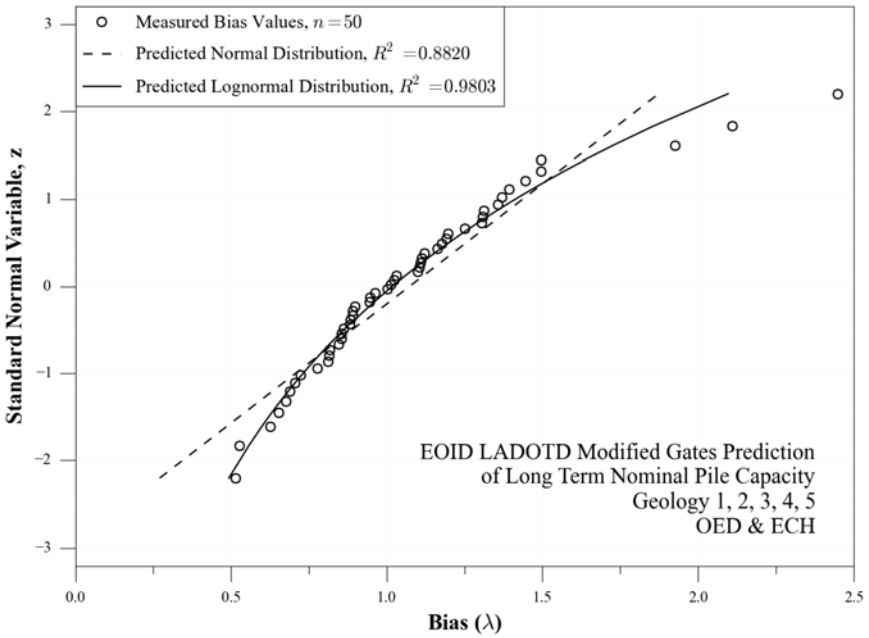

Figure 53
Probability plot for normal and lognormal distributions

The computed resistance factors ranged from 0.570 to 0.600 for the dead to live load ratios (Q_{nD}/Q_{nL}) of 2.0 to 5.0. The probability of failure vs. resistance factor for the various dead to live load ratios (Q_{nD}/Q_{nL}) is shown in Figure 54. A resistance factor of 0.586 was computed for a dead to live ratio (Q_{nD}/Q_{nL}) of 3.0. A summary of the statistics and resistance factors for the EOID LADOTD Modified Gates (DFEOID-MOD pile driving formula is provided in Table 36.

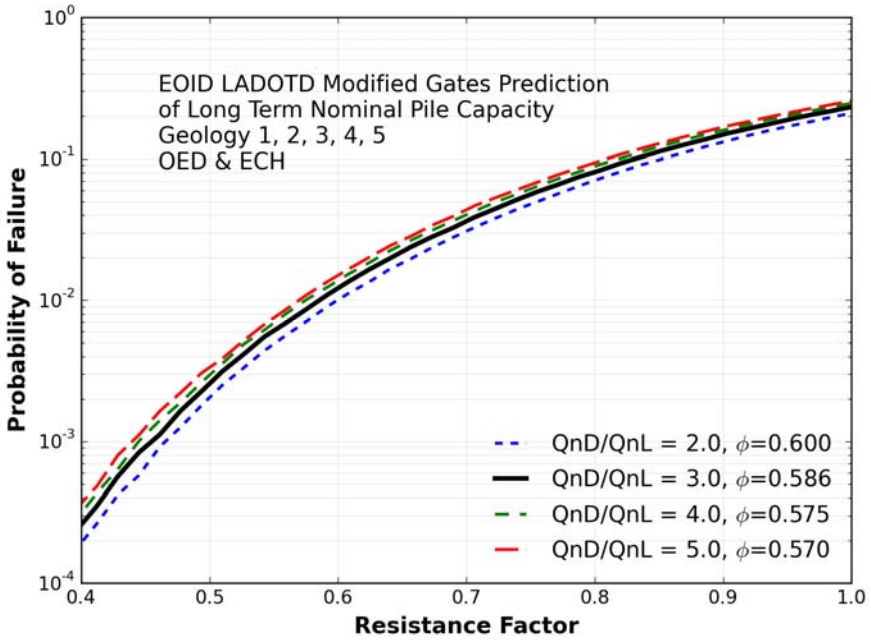

Figure 54
DFEOID-MOD resistance factors for various dead to live load ratios

Table 36
Statistics and resistance factors for the EOID LADOTD Modified Gates Pile Driving Formula (DFEOID-MOD)

Pile Driving Condition:		EOID
Description:		LADOTD Modified Gates
Geology:		1, 2, 3, 4, 5
Hammer Type:		OED & ECH
Number of Cases:		50
Lognormal distribution fit Parameters	R^2	0.980
	Median	1.017
	Sigma	0.320
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.570
	$Q_{nD}/Q_{nL} = 4.0$	0.575
	$Q_{nD}/Q_{nL} = 3.0$	0.586
	$Q_{nD}/Q_{nL} = 2.0$	0.600

Summary of EOID Pile Driving Formulas for Prediction of Long-Term Ultimate Pile Bearing Capacity

A summary of the EOID pile driving formulas and resistance factors that were evaluated is presented in Table 37.

Table 37
Summary of EOID pile driving formulas and resistance factors

EOID Pile Driving Formulas	EOID LADOTD Pile Driving Formula (DFEOID)	EOID Modified Gates Pile Driving Formula (DFEOID-MOD)
Prediction	Long-Term Ultimate Pile Capacity	Long-Term Ultimate Pile Capacity
EOID Data	t = 0	t = 0
Geology	1, 2, 3, 4, 5	1, 2, 3, 4, 5
Hammer Type	OED & ECH	OED & ECH
Equation No.	(47)	(48)
Equation	$R_u = 0.5\left[\left(1.75\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$	$R_u = 0.5\left[\left(1.95\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$
n	50	50
$\phi_{QnD/QnL=5.0} - \phi_{QnD/QnL=2.0}$	0.651 – 0.686	0.570 – 0.600
$\phi_{QnD/QnL=3.0}$	0.669	0.586

A summary of the statistics for the EOID pile driving formulas are presented in Table 38.

Table 38
Summary statistics for EOID Pile Driving Formlas

EOID Pile Driving Formulas		EOID LADOTD Pile Driving Formula (DFEOID)	EOID Modified Gates Pile Driving Formula (DFEOID-MOD)
	Equation No.	(47)	(48)
Gates Pile Driving Formula Coefficients	C1 =	1.75	1.95
	C2 =	10	10
	C3 =	100	100
Arithmetic Mean	Mean R_m/R_p	1.227	1.072
	Standard Deviation	0.429	0.373
	COV	0.349	0.348
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.802	0.909
	R^2	0.547	0.539
	Correlation	0.740	0.734
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	89.8	78.3
	Mean overprediction (tons)	39.7	58.4

BOR Pile Driving Formula for Prediction of Ultimate Pile Capacity

BOR pile driving formulas use BOR pile driving conditions to predict ultimate pile bearing capacity at the time the pile restrike was conducted. This type of pile driving formula is currently not used by DOTD and was not found in our literature search. Pile load test datasets were developed by performing a sensitivity analysis to determine which factors affect pile bearing capacity determination. Significant bias in the ultimate pile bearing capacity prediction was observed between the following two geology groups: Pile Setup Category A (Geology 1) and Pile Setup Category B (Geology 2, 3, 4, 5). The Pile Setup Category A (Geology 1) dataset includes 387 OED hammers and 5 ECH hammers. Pile Setup Category B (Geology 2, 3, 4, 5) include 63 OED hammers and 19 ECH hammers. As a result of the greater number of OED hammers in the dataset than ECH hammers, this study has focused on developing BOR pile driving formulas to predict the ultimate pile bearing capacity at time of pile restrike using only OED pile driving hammers for the two pile setup categories.

Pile Setup Category A (Geology 1) — OED Hammer

The LAPLTD dataset used to develop this BOR pile driving formula uses only OED pile hammers, Geology 1, and BOR pile restrike data obtained at $t \geq 1$ days to predict the ultimate

pile bearing capacity. The statistics of the dataset that was used to develop this BOR pile driving formula is presented in Table 39.

Table 39
Dataset statistics for BOR t ≥ 1 day prediction of ultimate pile capacity

Pile Type:	PPC	E_{BOR} (ft-kip)	11 ≤ E ≤ 221
Geology:	1	N_{BOR}	12 ≤ N ≤ 120
Geology 1	304	Days Since EOID	0.8 ≤ t ≤ 50.0
Geology 2	0		
Geology 3	0		
Geology 4	0	Load Testing	SLT, CW
Geology 5	0	SLT Failure	Yes
Geology 6	0	CW Mobilized	Yes (≤ 120 bl/ft)
Hammer Type:	OED	No. SLT	1
OED	304	No. CW	303
ECH	0	Datasets	304

The BOR Modified Gates pile driving formula to predict ultimate pile bearing capacity (DF1+BORSCA) is based on the generic Gates formula where *C1*, *C2*, and *C3* are empirical equation coefficients derived by conducting a multivariate regression to calibrate the Gates Formula so that bias (λ) values between predicted and measured pile capacities have a mean closest to unity with the lowest standard deviation and COV.

The BOR Modified Gates pile driving formula (DF1+BORSCA) for setup category A is presented below:

$$R_u = 0.5\left[\left(1.65\sqrt{E_r}\ log(10\ N_b)\right) - 100\right] \qquad \textbf{(49)}$$

where, R_u = ultimate pile bearing capacity (tons), E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds), and N_b = number of hammer blows/inch. The measured ultimate pile bearing capacity (R_m) is plotted against the predicted ultimate pile bearing capacity (R_p) in Figure 55.

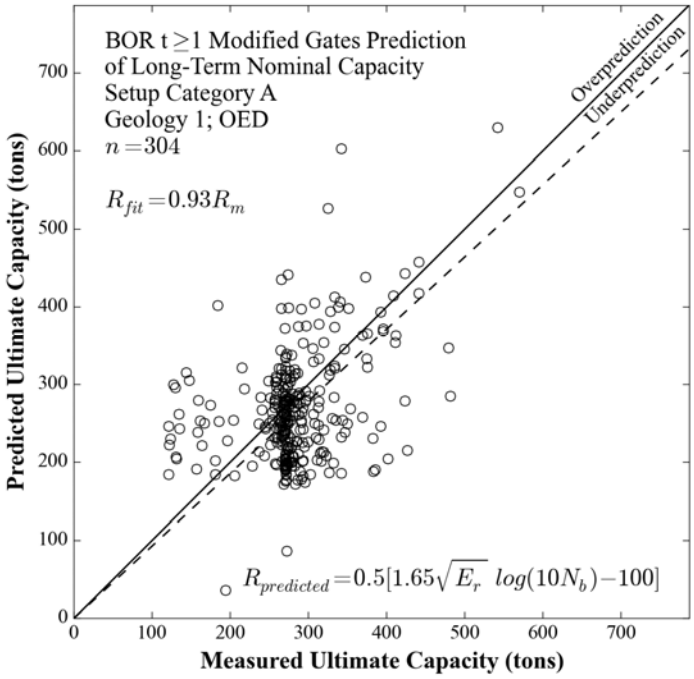

Figure 55
Measured ultimate capacity vs. predicted ultimate capacity

The statistics for the BOR Modified Gates pile driving formula (DF1+BORSCA) for setup category A are presented in Table 40. The results of the best fit evaluation indicates that the BOR Modified Gates pile driving formula tends to underestimate the ultimate pile bearing capacity with a best fit coefficient of 0.93 (R_{fit}/R_m) with a standard deviation of 0.396 and COV of 0.356.

Table 40
Statistics for BOR Modified Gates Pile Driving Formula (Setup Category A)

Gates Pile Driving Formula Coefficients	C1 =	1.65
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	1.110
	Standard Deviation	0.396
	COV	0.356
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.929
	R^2	0.007
	Correlation	0.086
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	58.6
	Mean overprediction (tons)	55.89

The resistance factors corresponding to the BOR Modified Gates pile driving formula (DF1+BORSCA) were derived using the Monte Carlo Simulation (MCS) reliability method to achieve the desired probability of failure (or reliability index β_T) for the Strength I limit state. Resistance factors were computed for various dead to live load ratios Q_{nD}/Q_{nL} ranging from 2.0 to 5.0 to cover a variety of scenarios throughout the bridge. A histogram of the measured capacity to predicted capacity (R_m/R_p) bias ratio is provided in Figure 56. The probability plot for the normal and lognormal distributions are shown in Figure 57. The lognormal distribution of the bias (R_m/R_p) was selected as having the best fit with mean of 1.06 and standard deviation of 0.30.

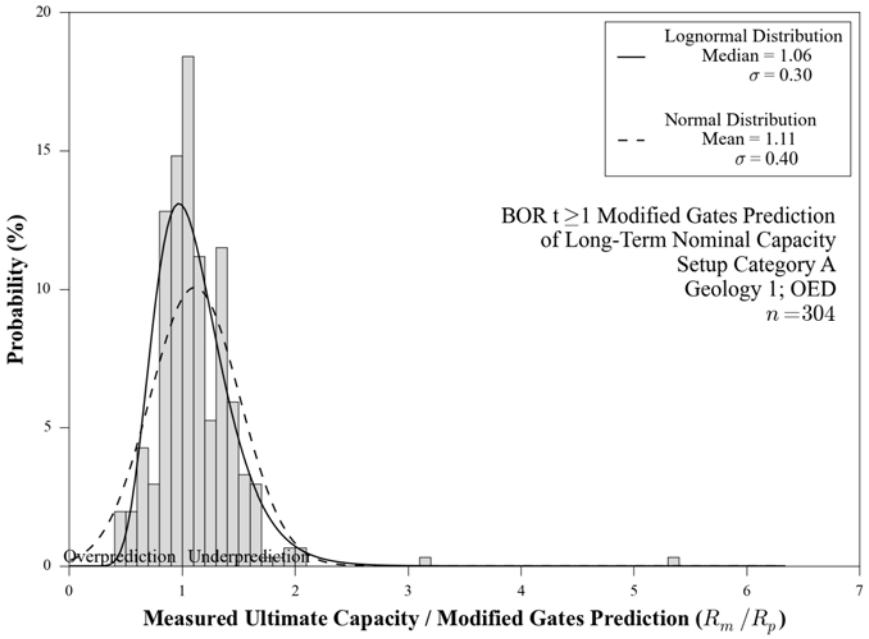

Figure 56
Histogram with normal and lognormal distributions

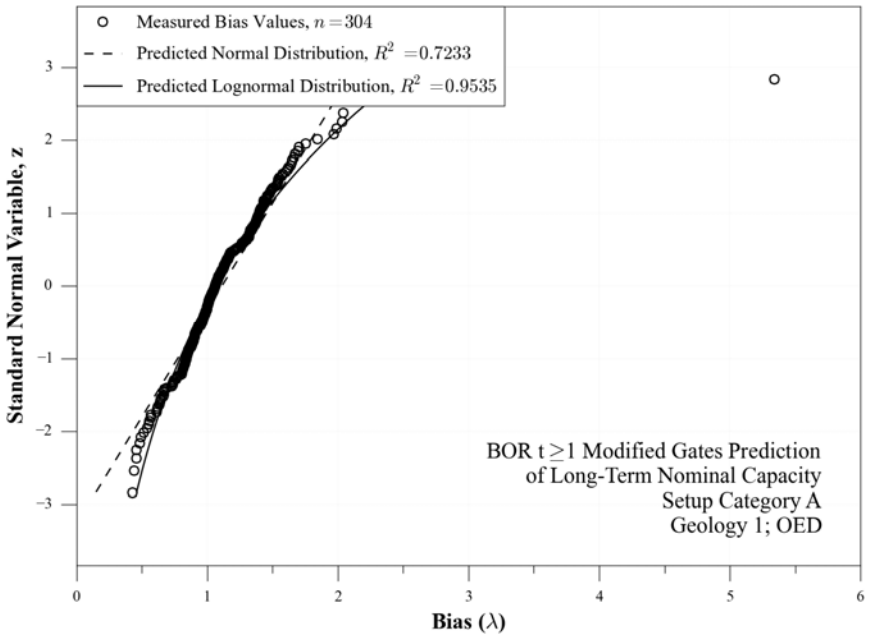

Figure 57
Probability plot for normal and lognormal distributions

The computed resistance factors ranged from 0.623 to 0.657 for the dead to live load ratios (Q_{nD}/Q_{nL}) of 2.0 to 5.0. The probability of failure vs. resistance factor for the various dead to live load ratios (Q_{nD}/Q_{nL}) is shown in Figure 58. A resistance factor of 0.642 was computed for a dead to live ratio (Q_{nD}/Q_{nL}) of 3.0. A summary of the statistics and resistance factors for the BOR Modified Gates pile driving formula (DF1+BORSCA) is provided in Table 41.

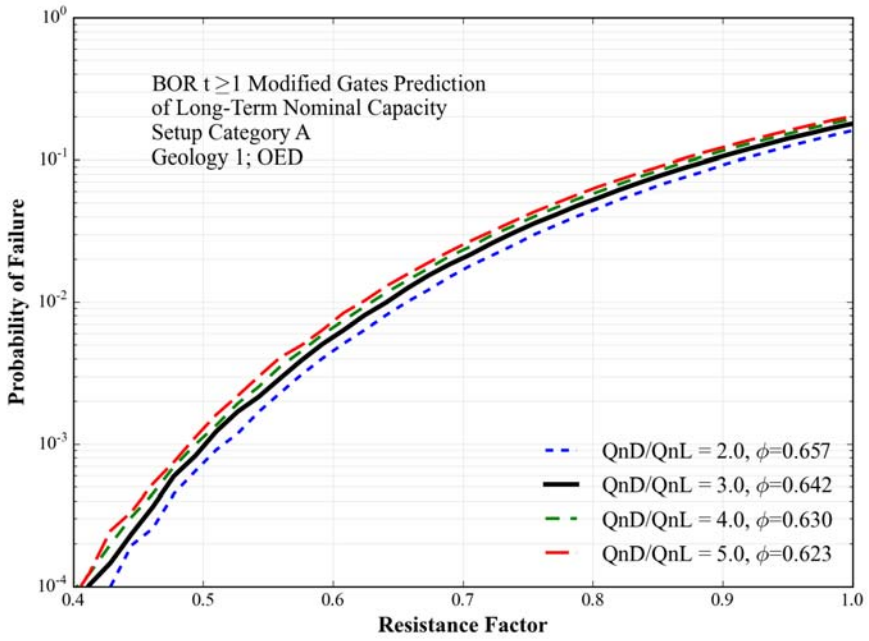

Figure 58
Probability of failure vs. resistance factor

Table 41
Statistics and resistance factors for BOR
Modified Gates Pile Driving Formula (DF1+BORSCA)

Pile Driving Condition:		BOR
Restrike Data:		t ≥ 1 days
Description:		BOR Modified Gates
Geology:		1
Hammer Type:		OED
Number of Cases:		304
Lognormal distribution fit Parameters	R^2	0.953
	Median	1.063
	Sigma	0.300
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.623
	$Q_{nD}/Q_{nL} = 4.0$	0.630
	$Q_{nD}/Q_{nL} = 3.0$	0.642
	$Q_{nD}/Q_{nL} = 2.0$	0.657

Pile Setup Category B (Geology 2, 3, 4, 5) — OED Hammer

The LAPLTD dataset used to develop this BOR pile driving formula uses only OED pile hammers, Geology 2, 3, 4, 5, and BOR pile restrike data obtained at t ≥ 1 days to predict the ultimate pile bearing capacity. The statistics of the dataset that was used to develop this BOR pile driving formula is presented in Table 42.

Table 42
Dataset statistics for BOR t ≥ 1 day prediction of BOR ultimate pile capacity

Pile Type:	PPC	E_{BOR} (ft-kip)	26 ≤ E ≤ 170
Geology:	2, 3, 4, 5	N_{BOR}	14 ≤ N ≤ 120
Geology 1	0	Days Since EOID	0.8 ≤ t ≤ 44.0
Geology 2	21		
Geology 3	18		
Geology 4	10	Load Testing	SLT, CW
Geology 5	12	SLT Failure	Yes
Geology 6	0	CW Mobilized	Yes (≤ 120 bl/ft)
Hammer Type:	OED	No. SLT	7
OED	61	No. CW	54
ECH	0	Datasets	61

The BOR Modified Gates pile driving formula to predict ultimate pile bearing capacity (DF1+BORSCB) is based on the generic Gates formula where *C1*, *C2*, and C3 are empirical equation coefficients derived by conducting a multivariate regression to calibrate the Gates Formula so that bias (λ) values between predicted and measured pile capacities have a mean closest to unity with the lowest standard deviation and COV.

The BOR Modified Gates pile driving formula (DF1+BORSCB) for setup category B is presented below:

$$R_u = 0.5\left[\left(1.40\sqrt{E_r}\ log(10\ N_b)\right) - 100\right] \quad \textbf{(50)}$$

where, R_u = ultimate pile bearing capacity (tons), E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds), and N_b = number of hammer blows/inch. The measured ultimate pile bearing capacity (R_m) is plotted against the predicted ultimate pile bearing capacity (R_p) in in Figure 59.

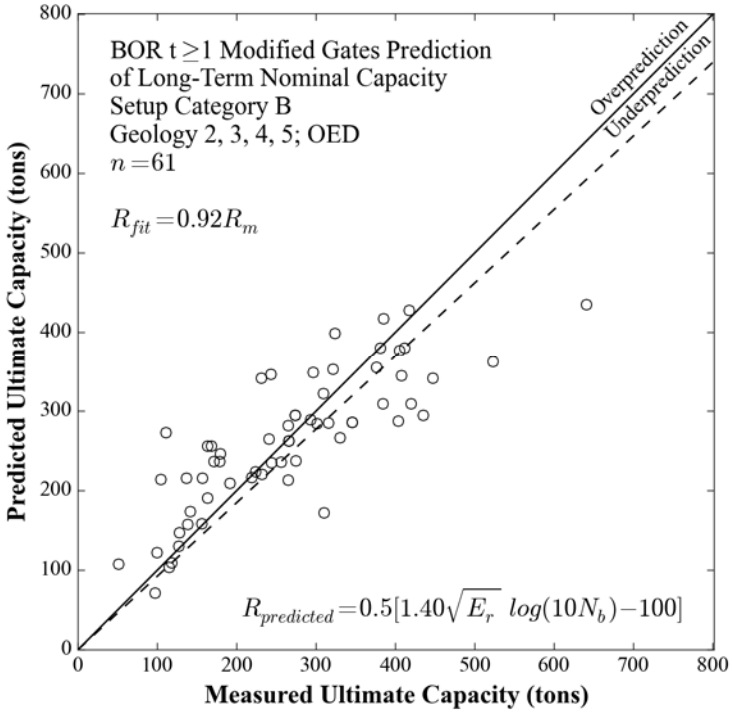

Figure 59
Measured ultimate capacity vs. predicted ultimate capacity

The statistics for the BOR Modified Gates pile driving formula (DF1+BORSCB) for setup category B are presented in Table 43. The results of the best fit evaluation indicates that the BOR Modified Gates pile driving formula tends to underestimate the ultimate pile bearing capacity with a best fit coefficient of 0.92 (R_{fit}/R_m) with a standard deviation of 0.261 and COV of 0.262.

Table 43
Statistics for BOR Modified Gates Pile Driving Formula (Setup Category B)

Gates Pile Driving Formula Coefficients	C1 =	1.4
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	0.997
	Standard Deviation	0.261
	COV	0.262
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.924
	R^2	0.405
	Correlation	0.636
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	52.36
	Mean overprediction (tons)	49.56

The resistance factors corresponding to the BOR Modified Gates pile driving formula (DF1+BORSCB) were derived using the Monte Carlo Simulation (MCS) reliability method to achieve the desired probability of failure (or reliability index β_T) for the Strength I limit state. Resistance factors were computed for various dead to live load ratios Q_{nD}/Q_{nL} ranging from 2.0 to 5.0 to cover a variety of scenarios throughout the bridge. A histogram of the measured capacity to predicted capacity (R_m/R_p) bias ratio is provided in Figure 60. The probability plot for the normal and lognormal distributions are shown in Figure 61. The lognormal distribution of the bias (R_m/R_p) was selected with a median of 0.96 and standard deviation of 0.28. Even though the normal distribution has a better fit than the lognormal distribution, the lognormal distribution better fits most of the other datasets, historically has better fit this type of data, and avoids generation of physically unrealistic data in the Monte Carlo Simulation (MCS).

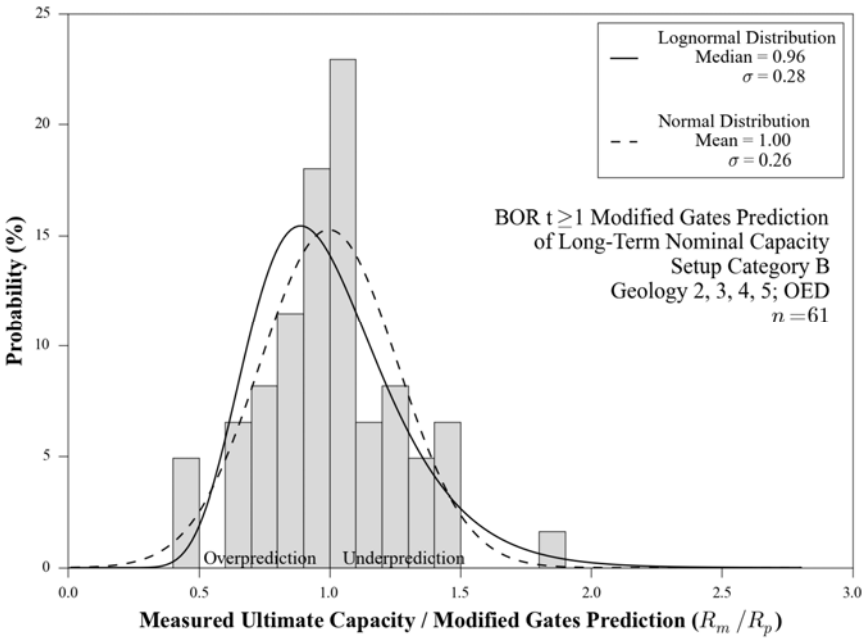

Figure 60
Histogram with normal and lognormal distributions

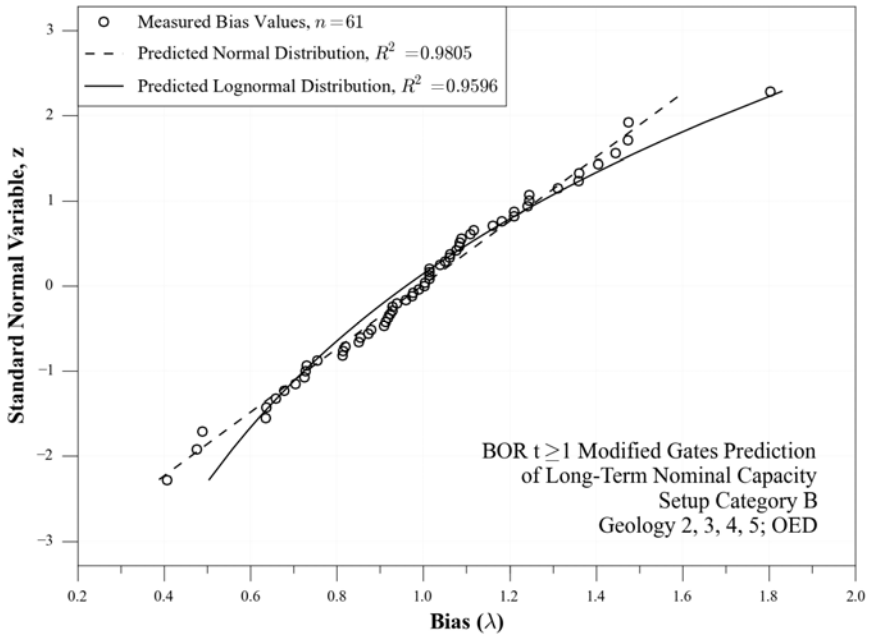

Figure 61
Probability plot for normal and lognormal distributions

The computed resistance factors ranged from 0.587 to 0.620 for the dead to live load ratios (Q_{nD}/Q_{nL}) of 2.0 to 5.0. The probability of failure vs. resistance factor for the various dead to live load ratios (Q_{nD}/Q_{nL}) is shown in Figure 62. A resistance factor of 0.605 was computed for a dead to live ratio (Q_{nD}/Q_{nL}) of 3.0. A summary of the statistics and resistance factors for the LADOTD BOR Modified Gates pile driving formula (DF1+BORSCB) is provided in Table 44.

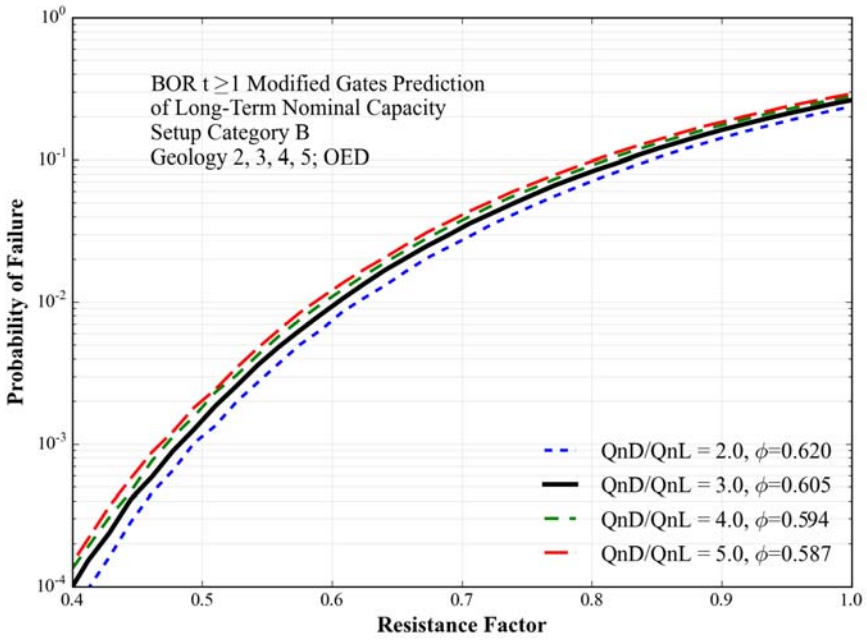

Figure 62
Probability of failure vs. resistance factor

Table 44
Statistics and resistance factors for BOR
Modified Gates Pile Driving Formla (DF1+BORSCB)

Pile Driving Condition:		BOR
Restrike Data:		t ≥ 1 days
Description:		Modified Gates
Geology:		2, 3, 4, 5
Hammer Type:		OED
Number of Cases:		61
Lognormal distribution fit Parameters	R^2	0.960
	Median	0.961
	Standard Deviation	0.280
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.587
	$Q_{nD}/Q_{nL} = 4.0$	0.594
	$Q_{nD}/Q_{nL} = 3.0$	0.605
	$Q_{nD}/Q_{nL} = 2.0$	0.620

Summary of BOR Pile Driving Formulas for Prediction of Ultimate Pile Capacity

A summary of the BOR pile driving formulas and resistance factors that were evaluated is presented in Table 45.

Table 45
Summary of BOR pile driving formulas and resistance factors

BOR Pile Driving Formulas	BOR Modified Gates Pile Driving Formula (DF1+BORSCA)	BOR Modified Gates Pile Driving Formula (DF1+BORSCB)
Prediction	Ultimate Pile Capacity	Ultimate Pile Capacity
BOR Data	t ≥ 1 day	t ≥ 1 day
Setup Category	A	B
Geology	1	2, 3, 4, 5
Hammer Type	OED	OED
Equation No.	**(49)**	**(50)**
Equation	$R_u = 0.5\left[\left(1.65\sqrt{E_r}\, log(10\, N_b)\right) - 100\right]$	$R_u = 0.5\left[\left(1.40\sqrt{E_r}\, log(10\, N_b)\right) - 100\right]$
n	304	61
$\phi_{QnD/QnL=5.0} - \phi_{QnD/QnL=2.0}$	0.623 – 0.657	0.587 – 0.620
$\phi_{QnD/QnL=3.0}$	0.642	0.605

A summary of the statistics for the BOR pile driving formulas are presented in Table 46.

Table 46
Summary statistics for BOR pile driving formulas

BOR Pile Driving Formulas		BOR Modified Gates Pile Driving Formula (DF1+BORSCA)	BOR Modified Gates Pile Driving Formula (DF1+BORSCB)
Equation No.		(49)	(50)
Gates Pile Driving Formula Coefficients	C1 =	1.65	1.40
	C2 =	10	10
	C3 =	100	100
Arithmetic Mean	Mean R_m/R_p	1.110	0.997
	Standard Deviation	0.396	0.261
	COV	0.356	0.262
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.929	0.924
	R^2	0.007	0.405
	Correlation	0.086	0.636
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	58.6	52.36
	Mean overprediction (tons)	55.89	49.56

The pile dataset that was used to develop these pile driving formulas only included piles installed with OED pile driving hammers since ECH hammers were under-represented in the

database. In order to have sufficient data to evaluate BOR pile driving formulas for ECH, the pile load test database needs to be improved by adding additional pile load test data to represent ECH pile driving hammers (especially in setup category A) through one of the following methods:

1. As has been documented in this study, the LAPLTD included approximately 162 EOID and 138 BOR pile load tests that had recorded hammer energies (WH) at the time of testing that exceeded the manufacturer's maximum rated hammer energy. These pile load tests appeared to have either the wrong stroke or the wrong hammer identification. By updating these records, the database may have additional pile load tests with ECH hammers that could be used for additional evaluation.
2. A concerted effort could be made to either add pile load test data for ECH hammers from archived data or from new projects.

Alternatively, there are some observations that have been made that seem to indicate that the BOR pile driving formulas developed for OED hammers could also be used for ECH hammers as a result of the following trends:

1. The pile load test evaluation of the hammer type bias for EOID (Figure 24) and BOR (Figure 38) suggest that ECH hammers tend to predict less ultimate pile bearing capacity than predicted with OED hammer.
2. Plots of measured to predicted BOR ultimate pile bearing capacity are shown in Figure 63 and Figure 64 for OED pile load tests in setup categories A and B, respectively. Also shown on these plots are ECH pile load tests that have been plotted using the BOR pile driving formulas developed for OED hammers. The measured to predicted BOR ultimate pile capacity for ECH hammers tend to either fall within in the OED range of prediction or underpredict as shown in Figure 64.

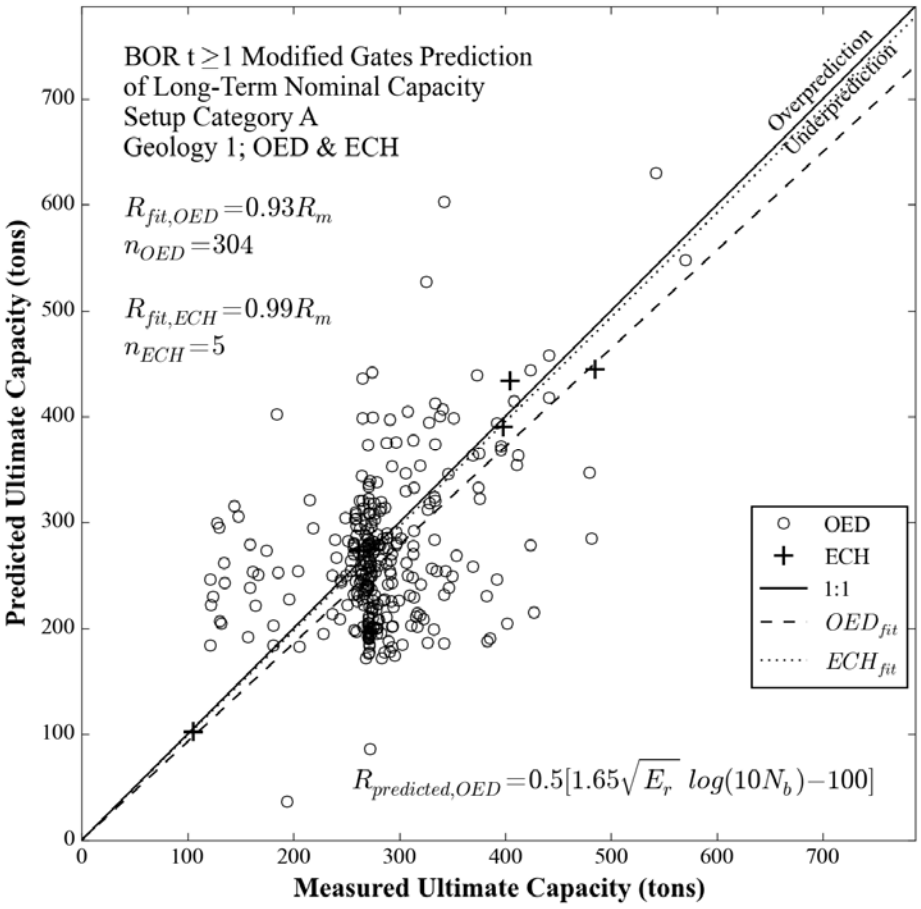

Figure 63
BOR1+SCA t≥1 days - measured vs. predicted

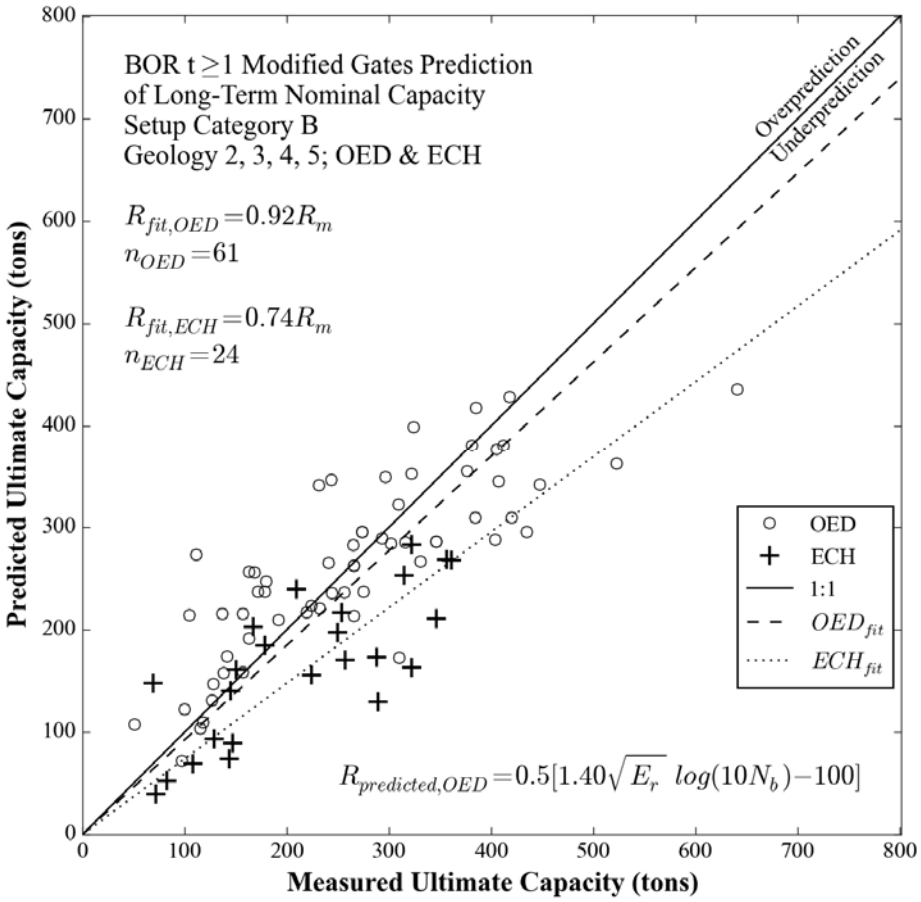

Figure 64
BOR1+SCB t≥1 days - measured vs. predicted

RECOMMENDATIONS

LRFD Pile Bearing Capacity Verification with Pile Driving Formulas

Pile driving formulas can be used in LRFD geotechnical design for pile bearing capacity verification. The basic LRFD equation is presented below:

$$Q_r = \sum_i \eta_i \gamma_i Q_{ni} \leq \varphi R_n = R_r \quad \textbf{(51)}$$

where, Q_r is the total factored Load, η_i is the load modifier, γ_i is the load factor, Q_{ni} is the nominal force effect, φ is the resistance factor, R_n is the nominal resistance, and R_r is the factored resistance. The load modifier is a factor related to the ductility, redundancy, and operational importance of the structure and is assumed to equal 1.0 for typical structures. The load and resistance factors are selected based on the governing limit state—typically the Strength I limit state governs pile design for small projects. The nominal resistance, R_n, used in pile bearing capacity verification is the long-term ultimate pile bearing capacity, R_u.

The long-term ultimate pile bearing capacity can be computed using the recommended pile driving formulas. The pile driving formula that should be used is dependent on the time at which the pile bearing capacity verification is being performed. If the pile bearing capacity is being verified at EOID then the recommended EOID LADOTD Modified pile driving formula (DFEOID-MOD) should be used. If pile bearing capacity is not achieved at EOID, pile restrikes can be performed after EOID to evaluate the nominal pile bearing capacity after pile setup has occurred by using the recommended BOR Modified Gates pile driving formulas dependent on the location of the pile if it is installed in setup category A soils (DF1+BORSCA) or setup category B soils (DF1+BORSCB).

Pile Driving Equipment Approval

Successful pile bearing capacity verification by either the use of pile driving formulas or dynamic load testing with the Pile Driving Analyzer (PDA) is dependent on the use of pile driving equipment capable of fully mobilizing the pile resistance encountered at the time pile capacity verification (EOID or BOR). The 2006 *Louisiana Standard Specifications for Roads and Bridges*, Subsection 804.05(c) governs the pile driving equipment approval. These specifications require that the pile driving system be approved by (1) Hammer Approval Method (Table 804-1) or by (2) Wave Equation Hammer Approval Method. The wave equation hammer approval method states "The required number of hammer blows at the required end-of-driving pile bearing capacity shall be from 36 to 146 blows per foot."

The Alternate Hammer Approval method used in the 2000 *Louisiana Standard Specifications* and documented in Appendix B indicates that 143 blows per foot was used in the alternate hammer approval method. The Alternate Hammer Approval method in the 2000 *Louisiana Standard Specifications* is the same as the Hammer Approval method in the 2006 *Louisiana Standard Specifications*. It is recommended that the criteria for the hammer approval method and the wave equation method be revised to "The required number of hammer blows for pile verification of the nominal resistance at either EOID or BOR shall be from 36 to 110 blows per foot." In order to reduce the potential for pile damage during pile installation or during pile restrikes, the pile driving approval should also include criteria to prevent pile driving stresses during pile installation or pile restrikes to exceed the allowable values indicated in Subsection 804.08(g) of the standard specifications.

EOID Pile Driving Formulas

The recommended EOID pile driving formula for determination of long-term ultimate pile bearing capacity is the EOID Modified Gates Pile Driving Formula (DFEOID-MOD) presented below:

$$R_u = 0.5\left[\left(1.95\sqrt{E_r}\, log(10\, N_b)\right) - 100\right] \quad \textbf{(52)}$$

where, R_u = long-term ultimate pile bearing capacity (tons), E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds), and N_b = EOID number of hammer blows/inch. The recommend LRFD resistance factor (φ) for the Strength I limit state using Modified Gates Pile Driving Formula is 0.50.

This EOID pile driving formula can be used provided that the pile installation meets the following criteria:

- Pile Type: Precast Prestressed Concrete (PPC) pile
- Pile Size: 14- in. PPC, 16-in. PPC, and 24-in. PPC
- Geology: Statewide — Geology 1, 2, 3, 4, 5, and 6
- Hammer Type: Open end diesel (OED) and External Combustion Hammer (ECH)
- Maximum Hammer Energy: 190 ft-kips
- Maximum EOID Long-Term Ultimate Pile Capacity: 400 tons
- Blow Counts obtained at EOID
- EOID Blow Counts (N_b): 24 blows/ft ≤ N_b ≤ 120 blows/ft

BOR Pile Driving Formulas

The recommended BOR pile driving formula for determination of ultimate pile bearing capacity at the time of pile restrike (BOR performed after EOID) is dependent on the geological location.

BOR obtained at time t: t ≥ 1 day and Setup Category A

The following pile driving formula corresponds to piles located within setup category A (Geology 1). Use the BOR Modified Gates pile driving formula (DF1+BORSCA) presented below:

$$R_u = 0.5\left[\left(1.65\sqrt{E_r}\ log(10\ N_b)\right) - 100\right] \quad \textbf{(53)}$$

where, R_u = ultimate pile bearing capacity (tons), E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds), and N_b = BOR number of hammer blows/inch. The recommend LRFD resistance factor (φ) for the Strength I limit state using Modified Gates Pile Driving Formula is 0.60.

BOR obtained at time t: t ≥ 1 day and Setup Category B

The following pile driving formula corresponds to piles located within setup category B (Geology 2, 3, 4, 5, and 6). Use the BOR Modified Gates pile driving formula (DF1+BORSCB) presented below:

$$R_u = 0.5\left[\left(1.40\sqrt{E_r}\ log(10\ N_b)\right) - 100\right] \quad \textbf{(54)}$$

where, R_u = ultimate pile bearing capacity (tons), E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds), and N_b = BOR number of hammer blows/inch. The recommend LRFD resistance factor (φ) for the Strength I limit state using Modified Gates Pile Driving Formula is 0.60.

The BOR pile driving formulas can be used provided that the pile restrikes meets the following criteria:

- Pile Type: Precast Prestressed Concrete (PPC) pile
- Pile Size: 14-in. PPC, 16-in. PPC, and 24-in. PPC
- Geology: 1 for Setup Category A — Use BOR pile driving formula DF1+BORSCA
- Geology 2, 3, 4, 5, and 6 for Setup Category B — Use BOR pile driving formula DF1+BORSCB

- Hammer Type: Open end diesel (OED). External Combustion Hammer (ECH) can only be used with these BOR pile driving formulas with approval of DOTD.
- Maximum Hammer Energy: 190 ft-kips
- Maximum BOR Ultimate Pile Capacity: 400 tons
- Blow Counts obtained at BOR at t ≥ 1 day after EOID
- BOR Blow Counts (N_b): 24 blows/ft ≤ N_b ≤ 120 blows/ft

BENEFIT COST ASSESSMENT

The benefit cost assessment conducted in this study is based on quantifying the benefit to DOTD in implementing the improved DOTD pile driving formulas and updated LRFD resistance factors developed in this study contrasted with the costs associated with the development and implementation of the improved pile driving formulas. EOID pile driving formulas are typically used on small projects to verify pile bearing capacity in lieu of conducting more expensive static or dynamic load testing methods that are not cost effective due to the project size and place an additional strain on DOTD resources. The economic benefit and cost associated with implementing the results of this study are presented in the following sections:

Economic Benefit

Since DOTD uses and will continue to use pile driving formulas due to their simplicity and cost effectiveness compared to other more reliable pile capacity verification methods, the realized economic benefits presented are the direct result of using EOID pile driving formulas and resistance factors that have improved accuracy and reliability compared to the existing EOID pile driving formulas currently being used.

The economic benefits primarily arise from using the recommended resistance factor (φ) of 0.50 for EOID conditions based on this study compared to the DOTD (per AASHTO specifications) resistance factor (φ) of 0.40. The use of the proposed resistance factor (φ) of 0.50 when using the proposed equation results in predicting approximately 40% more pile capacity than when using the current resistance factor (φ) of 0.40 with the current equation. Continued use of the current LADOTD pile driving formula (FHWA Gates Formula) with the current resistance factor (φ) may cause driven pile foundations to be driven deeper than necessary to obtain the required ultimate pile bearing capacity and cause project overruns. The economic benefit resulting from the implementation of the findings in this study can be validated by performing a sensitivity analysis on the potential pile foundation cost savings that can be made by implementing the proposed EOID LADOTD Modified Gates pile driving formula (equation (48)) when compared to continued use of the current EOID LADOTD pile driving formula (equation (47)).

A sensitivity analysis has been conducted to evaluate the potential pile length savings based on the following factors:

- Pile Type: Precast Prestressed Concrete (PPC) piles
- Pile Size/Perimeter: 14 in. PPC/4.67 ft, 16 in. PPC/5.33 ft, and 24 in. PPC/8.00 ft.
- Estimated Factored Load: 14 in. (55 tons), 16 in. (70 tons), 24 in. (120 tons)
- Pile Cost: Typical unit pile length costs shown in Table 47 are based on DOTD Bid History Estimate Tool (7/30/2015).

Table 47
DOTD average pile unit costs

Pile Type/Size	Item No.	Unit Cost
14 in. PPC	804-01-00200	$65/linear foot
16 in. PPC	804-01-00300	$75/linear foot
24 in. PPC	804-01-00600	$155/linear foot

- Pile driving resistance range investigated from 36 blows/ft to 120 blows/foot
- Hammer energy (WH) ranges: 20-50 ft-kips (14 in. PPC), 25-70 ft-kips (16 in. PPC), and 65-150 ft-kips (24 in. PPC)
- Soil Shear Strength/Soil-Pile Adhesion for Concrete Piles: See Table 48.

Table 48
Typical cohesive adhesion for concrete piles
(based on Tomlinson 1980 *[43])*

Soil Cohesion (psf)	Soil-Pile Adhesion (psf)
500	500
750	750
1000	1000
1250	1250
1500	1500
1750	1750
2000	1800

The potential pile cost savings between the current EOID LADOTD pile driving formula and the proposed EOID LADOTD Modified Gates pile driving formula was obtained as indicated below:

1. Compute the pile bearing capacity difference between the EOID LADOTD pile driving formula [equation (47)] with a resistance factor of 0.40 and the EOID LADOTD Modified Gates pile driving formula [equation (48)] with a resistance factor of 0.50 for the ranges of pile driving resistance and hammer energy shown in Figure 65. (Example: For a pile driving resistance of 66 blows/foot (corresponding to the mid-range of blow counts), the pile capacity difference ranged from 28.8 tons to 48.5 tons over a hammer energy range of 20 to 50 kip-ft (the range used for 14-in. PPC piles).

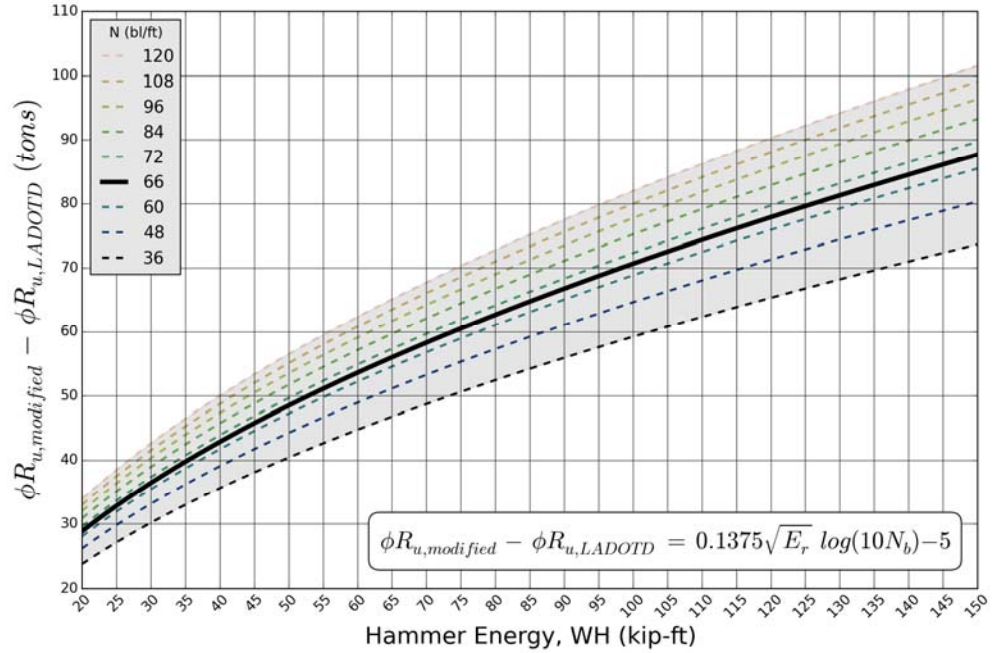

Figure 65
Energy vs. capacity difference

2. Calculate the pile length savings between the EOID LADOTD and EOID LADOTD Modified Gates pile driving formulas for specific pile sizes by using the average pile capacity difference computed in step 1 (assumed to be in skin friction) and then computing the corresponding average length savings for soil cohesions ranging from 500 psf to 2000 psf at various hammer energies. The average length difference for a 14 in. PPC pile for various cohesions over a range of energies is shown in Figure 66. (Example: If the average capacity difference for a hammer energy of 50 kip-ft is 48.5 tons, the average pile length savings for a pile driven into a soil with an average adhesion of 1,000 psf would be 20.8 feet as indicated below).

$$Average\ Pile\ Length\ Savings = \frac{48.5\ tons * 2000}{4.67\ ft\ x\ 1{,}000\ psf} = 20.8\ feet$$

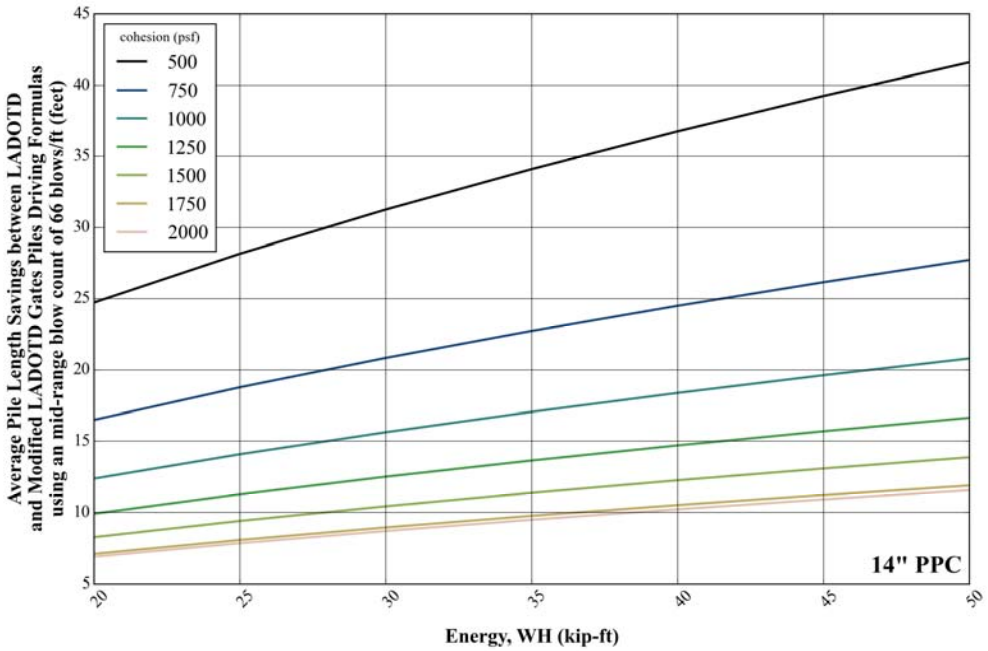

Figure 66
14-in. PPC energy vs average pile length decrease

3. Calculate the pile cost savings between the EOID LADOTD and EOID LADOTD Modified Gates pile driving formulas for specific pile sizes by using the average pile length savings computed in step 2 and then multiplying it by the average pile unit rate. The average pile unit rate used was obtained from the DOTD Bid History Estimate Tool (7/30/2015) as shown in Table 47. The average pile cost savings for soil cohesions ranging from 500 psf to 2000 psf at various hammer energies of a 14 in. PPC pile are shown in Figure 67. (Example: If the average pile length savings is 20.8 ft, the average pile cost savings for a pile that costs $65 per linear foot (14 in. PPC) would be $1,352 as indicated below).

$$Average\ Pile\ Cost\ Savings = 20.8\ feet\ \times \frac{\$65}{linear\ foot} = \$1{,}352$$

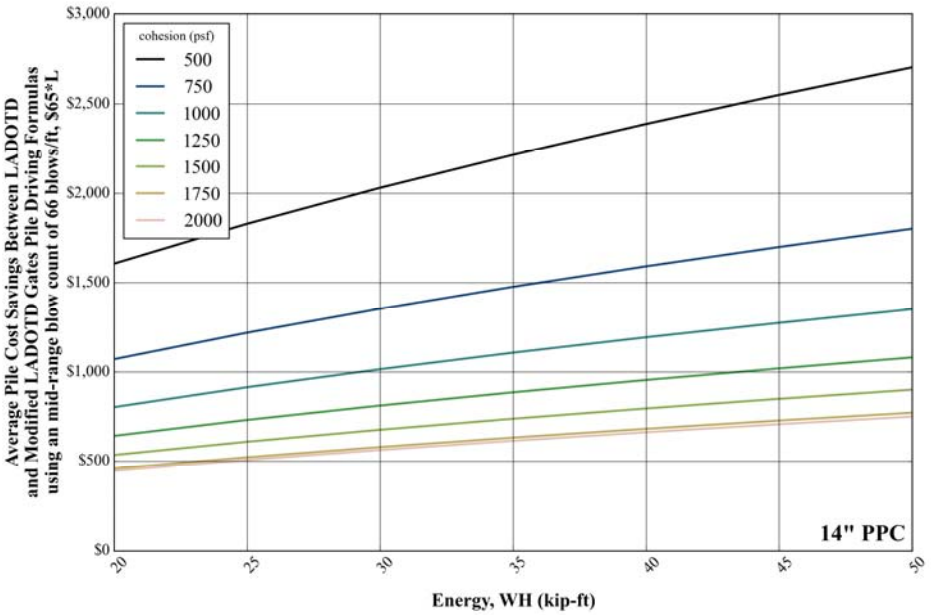

Figure 67
14-in. PPC energy vs average pile cost savings

A conservative estimate of the potential range in pile length and cost savings per pile is shown in Table 49. Note that the softer the soil, the larger the pile length savings and conversely, the stiffer the soils, the less pile length savings occurs between the two pile driving formulas. All of the analyses conducted to develop the potential pile length and cost savings are included in Appendix I.

Table 49
Potential pile length and cost savings per PPC pile

Pile Type	Energy, WH (ft-kips)	Soil Consistency /Cohesion	Pile Length Savings per Pile (feet)	Pile Unit Rate ($/linear foot)	Cost Savings per Pile ($)
14 in. PPC	20-50	Soft / 750 psf	16.5 - 27.7	$65	$1,073 - $1,801
		Firm / 1000 psf	12.4 - 20.8		$806 - $1,352
		Stiff / 2000 psf	6.9 - 11.6		$449 - $754
16 in. PPC	25-70	Soft / 750 psf	16.4 - 29.2	$75	$1,230 - $2,190
		Firm / 1000 psf	12.3 - 21.9		$923 - $1,643
		Stiff / 2000 psf	6.8 - 12.2		$510 - $915
24 in. PPC	65-150	Soft / 750 psf	18.7 - 29.2	$155	$2,899 - $4,526
		Firm / 1000 psf	14.0 - 21.9		$2,170 - $3,395
		Stiff / 2000 psf	7.8 - 12.2		$1,209 - $1,891

In order to demonstrate benefit cost in a more realistic setting, the potential cost savings of the implementation of this study has been applied to the DOTD Off-System Bridge Program estimated bridge quantities for State Fiscal Year 2015-2016 (July 1, 2015 – June 30, 2016). Estimated pile quantities for projects planned for the state financial year 2015 -2016 are shown in Table 50. Since the number of piles was not provided in the DOTD Off-System Bridge Program, the number of piles was estimated based on region and total linear feet listed.

Table 50
DOTD estimated bridge quantities for state FY year 2015 -2016

Project No.	Project Name	Parish	Piles 14in. PPC (linear feet)	No. 14in. PPC Piles	Piles 16in. PPC (linear feet)	No. 16in. PPC Piles	Piles 24in. PPC (linear feet)	No. 24in. PPC Piles
H.010024	SMITHVILLE ROAD / BRALY CREEK	Webster			752	15.0		
H.010032	SHUTEYE ROAD & MARTHAVILLE ROAD	Sabine			2656	40.0		
H.010033	PIONEER ROAD & LAKESIDE LOOP BRIDGES	Sabine						
H.010034	JOE W ROAD & GALLOW ROAD BRIDGES	St. Landry	1040	20			1040	20
H.010035	ANDREPONT RD & BAYOU GERMOND RD BRIDGES	St. Landry	1260	20			1040	20
H.010040	BUD ROAD & BONNE IDEE ROAD BRIDGES	Morehouse						
H.010054	PARK ROAD BRIDGES	Allen						
H.010055	CHERRY WITCHIE & N. CARPENTER RD BRIDGES	Allen						
H.010061	N. RIVER ROAD AND DURBIN ROAD BRIDGES	Tangipahoa	1168	20				
H.010062	WEINBERGER RD & JERUSALEM CH RD BRIDGES	Tangipahoa	2448	40				
H.010068	BUSH ROAD AND LISHMAN ROAD BRIDGES	Franklin						
H.010150	S. AVENUE F & NAPP STREET BRIDGES	Acadia					1440	20
H.010559	BAYOU MERCIER ROAD / BERARD CANAL BAYOU	St. Martin						
H.010561	CASTOR CK RD/BEAR CK RD/DANIEL ST BRDGS	Bienville						
H.010592	WILLET LOOP RD & ROCK HILL RD BRIDGES	Grant						
H.010659	RAFE-MEYER ROAD BRIDGES	East Baton Rouge			2464	40.0		
	BRIDGE MATERIAL TOTALS =		**5,916**	**100**	**5,872**	**95**	**3,520**	**60**

The potential savings in pile length and cost per pile shown in Table 49 were used to estimate potential savings in pile length and cost per project in Table 51 based on the estimated number of piles per project and the assumed site soil type. The estimated project cost savings presented in Table 51 does not account for site specific conditions that may affect the actual costs associated with implementation of this study.

Table 51
DOTD state FY 15 – 16 estimated cost savings

Project No.	Soil Site Type	No. 14in. PPC Piles	14in. PPC Cost Savings Range ($)	14in. PPC Percent Savings (%)	No. 16in. PPC Piles	16in. PPC Cost Savings Range ($)	16in. PPC Percent Savings (%)	No. 24in. PPC Piles	24in. PPC Cost Savings Range ($)	24in. PPC Percent Savings (%)
H.010024	stiff		-		15	$13,847 - $24,654	25% to 44%		-	
H.010032	stiff		-		40	$36,900 - $65,700	19% to 33%		-	
H.010033	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010034	stiff	20	$16,120 - $27,040	24% to 40%		-		20	$43,400 - $67,890	27% to 42%
H.010035	stiff	20	$16,120 - $27,040	20% to 33%		-		20	$43,400 - $67,890	27% to 42%
H.010040	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010054	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010055	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010061	stiff	20	$16,120 - $27,040	21% to 36%		-			-	
H.010062	stiff	40	$32,240 - $54,080	20% to 34%		-			-	
H.010068	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010150	stiff		-			-		20	$43,400 - $67,890	19% to 30%
H.010559	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010561	stiff	20[1]	$24,180 - $40,560	36% to 60%		-			-	
H.010592	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010659	stiff		-		40	$36,900 - $65,700	20% to 36%		-	
TOTALS		270	$217,620 - $365,040	21% to 40%	95	$87,647 - $156,054	21% to 37%	60	$130,200 - $203,670	24% to 38%

[1] Assumed 20 14in. PPC 52’ piles per project

The total estimated savings using the EOID Modified LADOTD pile driving formula with a resistance factor of 0.5 instead of the LADOTD pile driving formula with a resistance factor of 0.4 for projects listed in state financial year 2015 – 2016 range from $435,467 to $724,764, which corresponds to a 20% to 40% savings.

Economic Cost

The cost associated with the development and implementation of the improved LADOTD pile driving formulas and updated LRFD resistance factors should include the following:

1. Research Project: Cost associated with the development of the improved LADOTD pile driving formulas and updated LRFD resistance factors (Research Project: LTRC 14-1GT)
2. Bridge Design Technical Memorandum: Cost associated with the development of a Bridge Design Technical Memorandum (BDTM) that outlines the design policy with respect to the use of types of projects where pile driving formulas will be used and the associated resistance factors.
3. Supplemental Specifications: Cost associated with the preparation of Supplemental Specifications until the pile driving formulas can be included in the Standard Specifications.
4. Training DOTD Personnel: Cost associated with the training of DOTD Construction personnel on the use of the new pile driving formulas. This includes developing training materials and possibly conducting half-day training seminars at all nine construction districts.
5. Expenses: This cost includes travel to all nine districts, lodging (as needed), and per diem allowance.

The DOTD personnel implementation costs have been estimated by assuming that the development of policies will be performed at Senior Engineer rate of $175/hour and that the field training of construction personnel would be conducted at a Supervisor Engineer rate of $145/hour. Travel expenses have been estimated using the 2014-2015 Louisiana Travel Guide. The implementation costs have been summarized in Table 52.

Table 52
Summary implementation costs

Implementation Activity	Units	Average Unit Rate	Total Cost
Research Project (LTRC Research 14-1GT)			$90,000
Bridge Design Technical Memorandum	16 hours	$175/hour	$2,800
Supplemental Specifications	24 hours	$175/hour	$4,200
Training DOTD Personnel	100 hours	$145/hour	$14,500
Expenses	Estimated -See Appendix I for Details		$1,500
	Estimated Total Implementation Cost =		**$113,000**

The total estimated cost for the development and implementation of the improved DOTD pile driving formulas and updated LRFD resistance factors is **$113,000**.

Benefit Cost Comparison

The results of this study conclude that the economic benefit ($435,467 to $724,764) has the potential to exceed the economic costs ($113,000) by a margin of 3.5 to 6 within the first year of implementation of the improved DOTD pile driving formulas and updated LRFD resistance factors. The economic costs associated are not only recovered within the first year after implementation of this study but the economic benefits will continue to occur in the following years after the implementation of this study.

Since the benefits of using the proposed EOID pile driving formulas are significant within the first year, the additional economic benefits that can be realized by using BOR pile driving formulas have not been evaluated. Since BOR pile driving formulas are not currently the standard of practice, any improvements in the use of BOR pile driving formulas are likely to have a significant impact on the current practice of installing additional piling until the required ultimate pile capacity at the EOID is achieved or the additional cost of conducting static or dynamic load tests that were not anticipated. Either of these current standard practices would cause unanticipated project cost overruns.

CONCLUSIONS

This study proposes new DOTD pile driving formulas for pile capacity verification using pile driving blow counts obtained at either EOID or at BOR. The proposed formulas were developed for this study using a regional pile load test database. The new pile driving equations are only valid for PPC piles since steel piles were significantly underrepresented and DOTD concurred that the predominant pile type driven in Louisiana are PPC piles. Resistance factors (φ) have been evaluated for pile capacity verification when designing driven pile foundations using LRFD design methodology. The resistance factors have been calibrated using the Monte Carlo Simulation (MCS) method for the Strength I limit state with a reliability index (β_T) of 2.3, with a corresponding probability of failure of approximately 1 in 100 (1.0×10^{-2}).

Pile Load Test Database

This research project is based on a regional pile load test database (LAPLTD) that has 1,186 pile load test results from DOTD projects. The database includes the results of recent pile load tests and legacy pile load test results. The database structure and menu functionality has been improved to minimize the possibility of inadvertently compromising the integrity of the database data once it has been entered. Additional input fields and functionality have been included to improve the quality of the data entered. The database pile load tests have been geographically referenced by using latitude and longitude and by association with Louisiana Parishes. The LAPLTD has also been enhanced to accept pile information, pile driving equipment, and wave equation analysis program (WEAP) soil models for future research in the reliability and calibration of LRFD resistance factors for WEAP pile driving capacity predictions using standard WEAP input parameters.

EOID Pile Driving Formulas

The current DOTD pile driving formula (FHWA Gates Formula) that uses blow counts obtained at EOID was found to have a best fit ratio of 0.80, a median bias (λ) of measured to predicted of 1.23, and a corresponding resistance factor of 0.65 (calculated 0.67) using the regional database, which is higher than the AASHTO specifications resistance factor (φ) of 0.40 for the same pile driving formula using a national database. The new EOID LADOTD Modified pile driving formula has a best fit ratio 0.91, a median bias (λ) of measured to predicted of 1.07, and corresponding resistance factor of 0.60 (calculated 0.59). Because the proposed EOID Modified Gates pile driving formula is a more accurate pile driving formula, the adoption of this new pile driving formula will result in more cost-effective foundations that will meet the reliability target index (β_T) without excessive conservativeness associated

with the current pile driving formula and the AASHTO resistance factor (φ). As discussed previously, there is uncertainty in the magnitude of pile capacity setup that may have not been captured by all of the pile load tests, specifically since the EOID pile driving formula can be used statewide; therefore, it would be prudent to select a reduced resistance factor (φ) of 0.50 for the EOID Modified pile driving formula (approximately a 20% reduction with an approximate reliability index (β_T) of 3.0).

BOR Pile Driving Formulas

DOTD's current practice does not include pile driving formulas that can be used with BOR pile driving conditions (i.e., pile set-checks) to evaluate the increase in pile capacity after EOID. Consequently, the only accurate method of pile capacity verification with the current state of practice is to obtain the required ultimate pile bearing capacity during pile installation or perform dynamic testing when the required ultimate capacity is not obtained at EOID pile driving conditions. EOID pile driving formulas should not be used for BOR pile capacity verification since they tend to overpredict the ultimate pile capacity due to the presence of pile capacity setup within the equation. This overprediction would be even greater for piles installed with setup category A.

Pile setup curves have been evaluated using the Skov-Denver model with pile setup factor (A_Q) obtained from a limited amount of pile setup data. The pile setup models indicate that more than 90% of the long-term pile bearing capacity (load test conducted at t = 14 days) can be obtained at $t \geq 6$ days for setup category A and at $t \geq 3$ days for setup category B. These pile capacity setup trends show how important it is to be able to evaluate the ultimate pile capacity from pile restrikes performed after EOID. To mitigate the deficiencies in the current practice of not having a method to evaluate BOR ultimate pile capacities, BOR pile driving formulas were developed to evaluate ultimate pile capacity from restrikes.

BOR pile driving formulas have been developed for piles installed using OED hammers in setup category A and for setup category B. The pile driving formula statistics, calculated resistance factors, and the recommended resistance factor is presented in Table 53. Similar to the EOID pile driving formulas, there is uncertainty in the magnitude of pile capacity setup that may not have been captured by all of the pile load tests within setup category A; therefore, it would be prudent to select a reduced resistance factor (φ) of 0.60 for the BOR Modified pile driving formula (approximately a 10% reduction with an approximate reliability target index (β_T) from 2.3 to 3.0). Piles installed in setup category B are less likely to have large uncertainties in the pile capacity setup when compared to setup category A; therefore, it is recommended that the resistance factor (φ) of 0.60 not be further reduced.

Table 53
BOR Pile Driving Formulas statistics and resistance factor

BOR Pile Driving Formula Parameters	Setup Category A	Setup Category B
	Ultimate Pile Capacity $t \geq 1$ days	Ultimate Pile Capacity $t \geq 1$ days
Equation No.	(49)	(50)
n	304	61
Best Fit Ratio	0.929	0.924
Median Bias (λ) of Measured to Predicted	1.110	0.997
Resistance Factor (φ)	0.65 (calculated 0.642)	0.60 (calculated 0.605)
Recommended Resistance Factor (φ)	0.60	0.60

Benefit Cost Assessment

The results of this study conclude that the economic benefit ($242,090 to $403,974) has the potential to exceed the economic costs ($113,000) by a margin of 2 to 3.5 within the first year of implementation of the improved DOTD pile driving formulas and updated LRFD resistance factors. The economic costs associated are not only recovered within the first year after implementation of this study but the economic benefits will continue to occur in the following years after the implementation of this study. Additional economic benefits can be realized by using the recommended BOR pile driving formulas.

ACRONYMS, ABBREVIATIONS, AND SYMBOLS

AASHTO	American Association of State Highway and Transportation Officials
ASD	Allowable Stress Design
BOR	Beginning of Restrike
CAPWAP	Case Pile Wave Analysis Program
CDF	Cumulative Distribution Function
COV	Coefficient of Variation
CW	CAPWAP
DOT	Department of Transportation
DOTD	Louisiana Department of Transportation and Development
DLT	Dynamic Load Test
EOD	End of Driving
EOID	End of Initial Driving
FHWA	Federal Highway Administration
FOSM	First Order Second Moment
FS	Factor of Safety
ft.	foot (feet)
in.	inch(es)
LADOTD	Louisiana Department of Transportation and Development
LAPLTD	LADOTD Pile Load Test Database
lb.	pound(s)
LRFD	Load and Resistance Factor Design
LTRC	Louisiana Transportation Research Center
MCS	Monte Carlo Simulation
PDF	Probability Density Function
PPC	Precast-Prestressed Concrete
SLT	Static Load Test

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APPENDIX A

DOTD PILE DRIVING FORMULA

SPECIFICATIONS SUMMARY (1940 – 1992)

DOTD Pile Driving Formula specifications summary (1940 – 1992)

Year	Dynamic Formula	Remarks	Apparent SF[1]
1940	For gravity hammers — Equation (4) For single-acting steam hammers — Equation (5) For double-acting steam hammers — Equation (5) (with $WH = E$ = energy based on blow rate from manufacturer catalog)	1. P = Safe load per pile	6
1947	Same as 1940	1. P = Safe load per pile	6
1955	Same as 1940	1. P = Safe bearing power or value	6
1966	For gravity hammers — Equation (4) For single-acting steam or air hammers — Equation (5) For double-acting steam or air hammers — Equation (5) (with WH = W+Ap, where W = weight of striking parts of hammer; A = area of piston, and p steam pressure)	1. P = Safe bearing power or capacity 2. "Diesel hammers will be permitted. The formula applicable to the type hammer approved for use will be developed on construction."	6
1971	For gravity hammers — Equation (4) For single-acting steam or air hammers — Equation (5)	1. P = Safe bearing power or capacity 2. Removed formula for double-acting steam or air hammers. 3. "Diesel hammers will be permitted. The formula applicable to the type hammer approved for use will be developed on construction."	6
1982	Same as 1971	1. P = Safe bearing power or capacity. Added "The safe bearing capacity of permanent piles is … ½ of the bearing obtained under the hammer by the foregoing formula for test piles that were not required to be loaded."	12

DOTD Pile Driving Formula specifications summary (1940 – 1992)

Year	Dynamic Formula	Remarks	Apparent SF[1]
		2. No formula for double-acting steam or air hammers included. 3. "Diesel hammers will be permitted. The hammer must be equipped with an attached measuring rod calibrated in 0.5 foot increments to determine the height of fall of the ram. The safe bearing capacity will be calculated by the formula above for single-acting steam or air hammers."	
1992	Same as 1982	1. P = Capacity. Added "The safe bearing capacity of permanent piles is … ½ of the bearing obtained under the hammer by the foregoing formula for test piles that were not required to be loaded." 2. No formula for double-acting steam or air hammers included. 3. "Diesel hammers will be permitted. The hammer must be equipped with an attached measuring rod calibrated in 0.5 foot increments to determine the height of fall of the ram. The safe bearing capacity will be calculated by the formula above for single-acting steam or air hammers."	12

[1] The apparent safety factor (SF) is shown based on the assumptions used in the development of the equation and the method applied in the DOTD specifications.

APPENDIX B

ALTERNATE HAMMER APPROVAL METHOD

(1997)

ALTERNATE

HAMMER APPROVAL METHOD

PAVEMENT AND GEOTECHNICAL
DESIGN SECTION

LOUISIANA DEPARTMENT OF
TRANSPORTATION AND DEVELOPMENT

LOUISIANA
STANDARD SPECIFICATIONS
FOR
ROADS AND BRIDGES
2000 EDITION

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION
AND DEVELOPMENT
BATON ROUGE

This public document was published at a total cost of $20,945.00. Five thousand copies of this public document were published in this first printing at a cost of $20,945.00. The total cost of all printings of this document, including reprints is $20,945.00. This document was published by the Department of Transportation and Development and printed by Rose Printing Company, Tallahassee, Florida to provide revised specifications for the construction of the state transportation infrastructure under authority of Revised Statutes 48:1 et seq., 38:2211 et seq., and 36:501 et seq. This material was printed in accordance with the standards for printing by state agencies established pursuant to Revised Statute 43:31. Printing of this material was purchased in accordance with the provisions of Title 43 of the Louisiana Revised Statutes.

proposed pile driving equipment for each unique pile driving system that wi be used on the project. When a hammer cushion or pile cushion is compose of differing materials with varying properties the contractor shall provide detailed description of the composite cushion. Composite cushion descriptio shall include material type, layout, and thickness of each cushion compone

(2) A list detailing the type and size of the proposed pile drivi equipment, including hammer, leads, jetting equipment, compressors, a drilling equipment for preboring. Include hammer manufacturer's operati manual and compressor data sheets. If a mandrel is used to install piles, complete description shall be provided including size and weight components.

(3) Proposed pile driving methods that may be required to facilitate p driving installation such as preboring or jetting.

(4) Methods to determine hammer energy in the field for determinati of the pile bearing capacity. When pressure measuring equipment will be us to determine hammer energy, the submittal shall include hose length, ho diameter, equivalent energy charts, and calibrations.

(5) Detailed drawings of any proposed followers.

(6) Detailed drawings of templates.

(7) Required shop drawings for pile splices, shoring, sheet pili cofferdams, etc.

(8) Pile driving sequence for each unique pile layout configuration.

(9) Details of proposed static load test system, equipment, a procedures in accordance with Subsection 804.11. The load test system deta shall include information pertaining to ground excavations or casings, bea plates, layout of reaction piles, reaction beams, deflection monitoring refere beam, etc. The load test equipment details shall include jack size, length jack hose, and type of deflection monitoring instrumentation to be us General load testing procedures should be provided concerning load increments, sequence of loading, etc. If a load cell is required, calibration load cell information shall be submitted.

(10) Proposed schedule for test pile and/or indicator pile program production pile driving.

(11) Details of the access system for attaching instrumentatio dynamic monitoring.

(12) Other information shown in the plans or required by the eng

(c) Pile Driving Equipment Approval: Unless shown otherwise plans or directed by the engineer, the approval of the pile driving system be made by the Wave Equation Hammer Approval Method. This app

shall be based on the contractor's proposed pile driving equipment and pile installation method.

If the plans specify the Alternate Hammer Approval Method, the engineer shall evaluate the contractor's proposed pile driving system in accordance with the requirements stated herein for the minimum hammer rated energy. The Wave Equation Hammer Approval Method may be substituted for the Alternate Hammer Approval Method if pile driving problems arise after approval with the Alternate Hammer Approval Method or when, in the opinion of the engineer, a more rigorous method of analysis is required to review the contractor's proposed pile driving system.

(1) Wave Equation Hammer Approval Method: Approval of the contractor's pile driving equipment will be based on the wave equation analysis computer program (FHWA-WEAP87 or newer version) and as required elsewhere in this subsection. A wave equation analysis will be performed by the Department for each pile type and size required in the plans. Approval of the pile driving system does not relinquish the contractor's responsibility from driving the piles to the required pile tip elevation without damage.

The criteria the engineer will use to evaluate the pile driving equipment from the wave equation shall be the pile driving resistance. The required number of hammer blows at the required end-of-driving pile capacity shall be from 36 to 146 blows per foot (30 to 120 blows per 0.25 m). The pile driving resistance at any depth above the required pile tip elevation shall be achieved with a reasonable driving resistance of less than 300 blows per foot (250 blows per 0.25 m).

Additional criteria that the engineer will use for the pile driving equipment to be acceptable are the pile driving stresses that are indicated by the wave equation analysis to be generated during pile driving. The pile driving stresses shall not exceed the allowable values as required in Subsection 804.08(g).

When the wave equation analysis shows that the contractor's proposed equipment or methods will result in either the inability to drive the pile with a reasonable driving resistance to the desired pile bearing capacity or will exceed the maximum allowable pile driving stresses, the contractor shall modify or replace the proposed methods or equipment at his expense until subsequent wave equation analyses indicates that the contractor's proposed pile driving equipment and driving methods meet the required criteria for acceptability stated herein.

(2) Alternate Hammer Approval Method: The Alternate Hammer Approval method is based on the required end-of-driving pile capacity, hammer

type, and the minimum required hammer rated energy. This alternate method shall not be used if the required end-of-driving pile capacity is greater than 300 tons (2650 kN). Table 804-1 provides the minimum Manufacturer's Rated Hammer Energy that is required. The Manufacturer's Rated Hammer Energy shall be based on the theoretical potential energy of the ram at impact.

Table 804-1
Alternate Hammer Approval Method
Minimum Manufacturer's Rated Hammer Energy

End-Of-Driving Pile Capacity		Minimum Manufacturer's Rated Hammer Energy			
		(ft-kip)		(kilojoules)	
(tons)	(kilonewtons)	ECH*	Diesel	ECH*	Diesel
≤ 60	≤ 535	6	8	8	11
80	710	8	11	11	15
100	890	11	14	15	19
120	1070	13	17	18	23
140	1245	16	21	22	29
160	1425	20	24	27	33
180	1600	24	29	33	39
200	1780	29	34	39	46
220	1960	35	40	48	54
240	2135	43	47	58	64
260	2315	52	57	71	77
280	2490	59	67	80	91
300	2670	64	74	87	100

* ECH = External Combustion Hammers

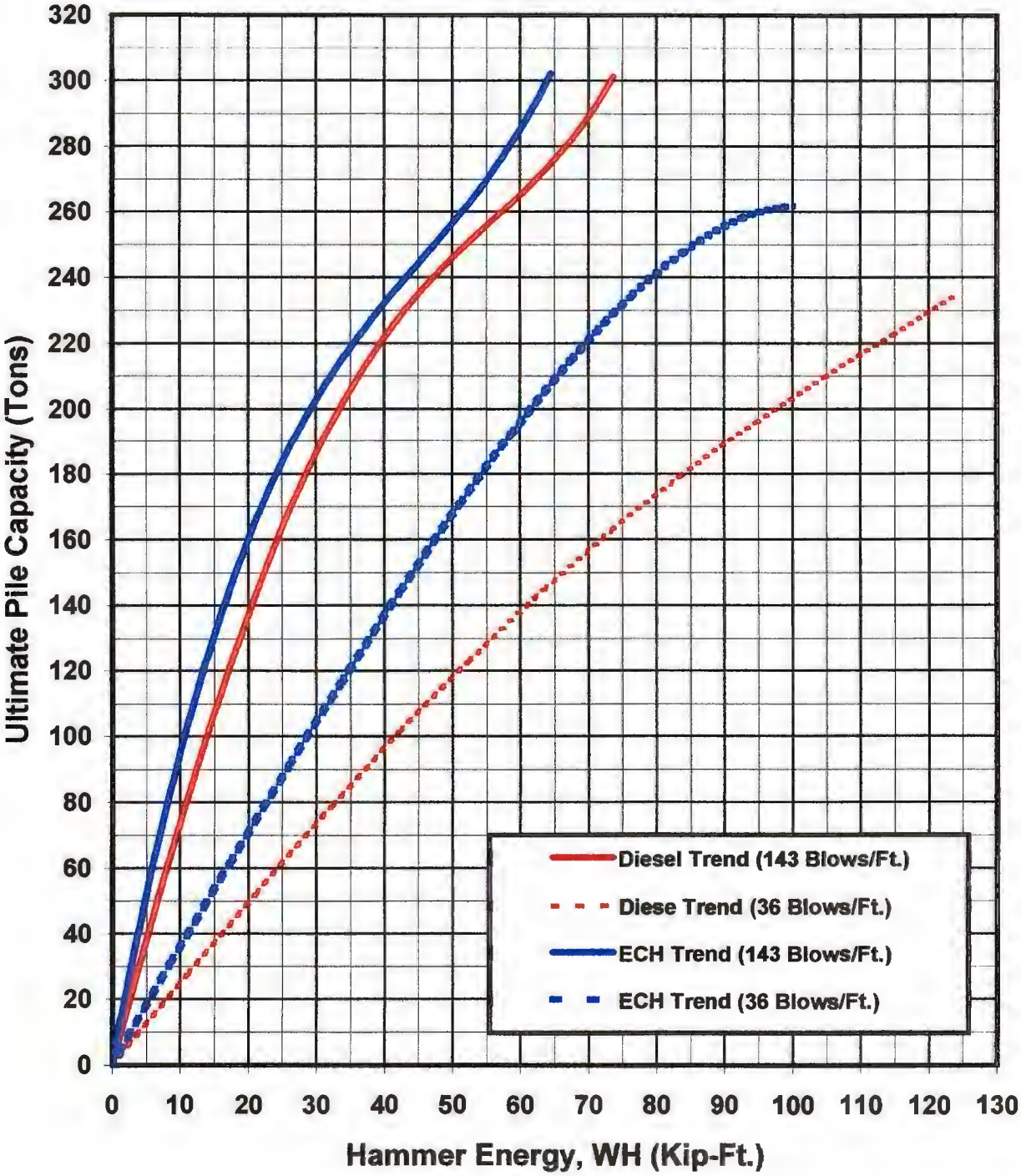
804.06 PILE DRIVING EQUIPMENT.

(a) Hammers: Piles may be driven with either diesel hammers or external combustion hammers (ECH) such as hammers driven by steam, air, or hydraulic power. Non-impact hammers such as vibratory hammers shall not be used unless specified in the plans or permitted in writing by the engineer. Hammers shall be rated based on the theoretical potential energy of the ram at impact.

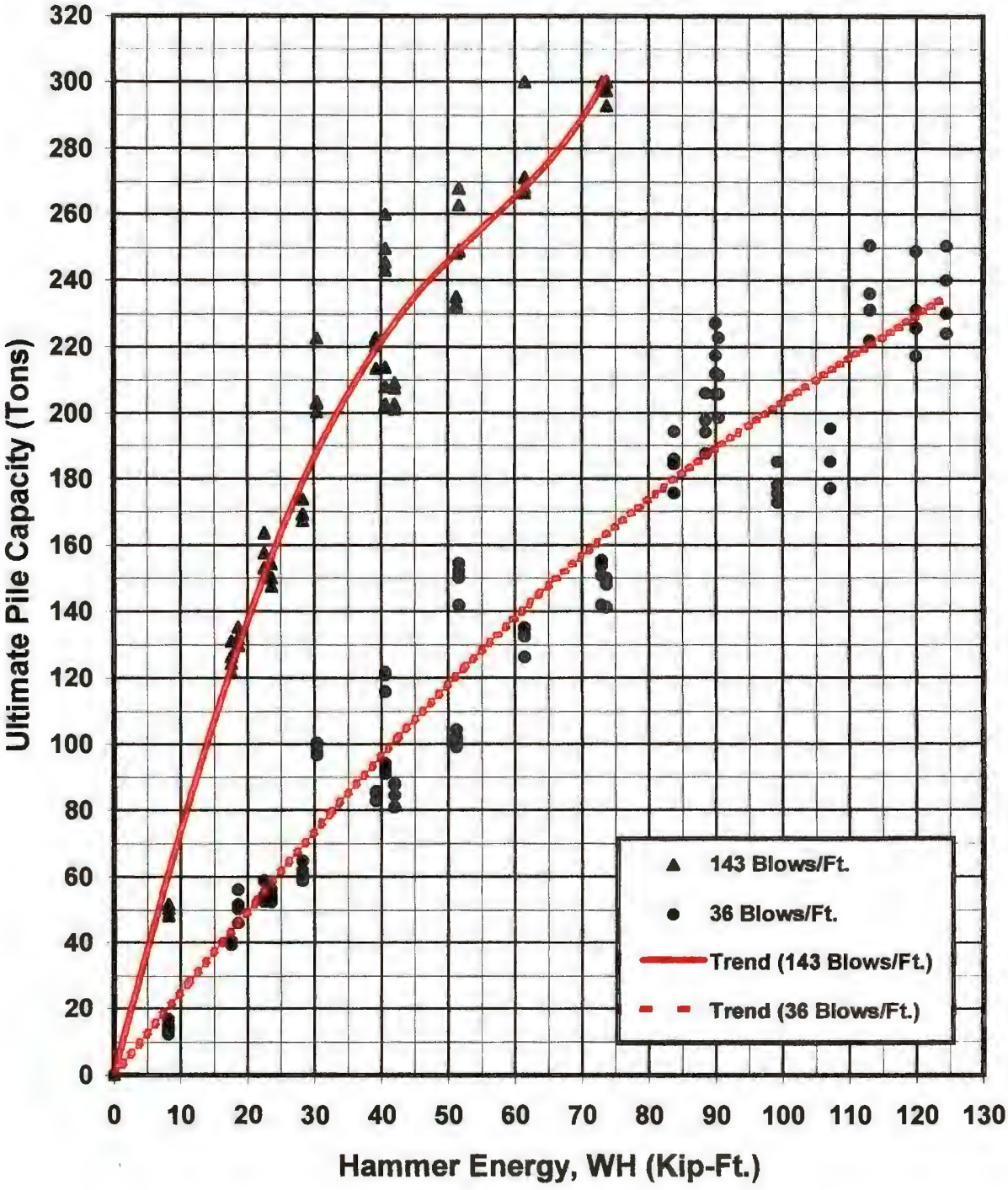
A variable energy hammer shall be used to drive precast concrete piles.

(1) Steam and Air Hammers: Steam and air hammers that are used to drive precast concrete piles shall be capable of providing at least two ram stroke lengths. The short ram stroke length shall be approximately half of the full stroke. Reductions in steam or air pressures to produce reduced hamm

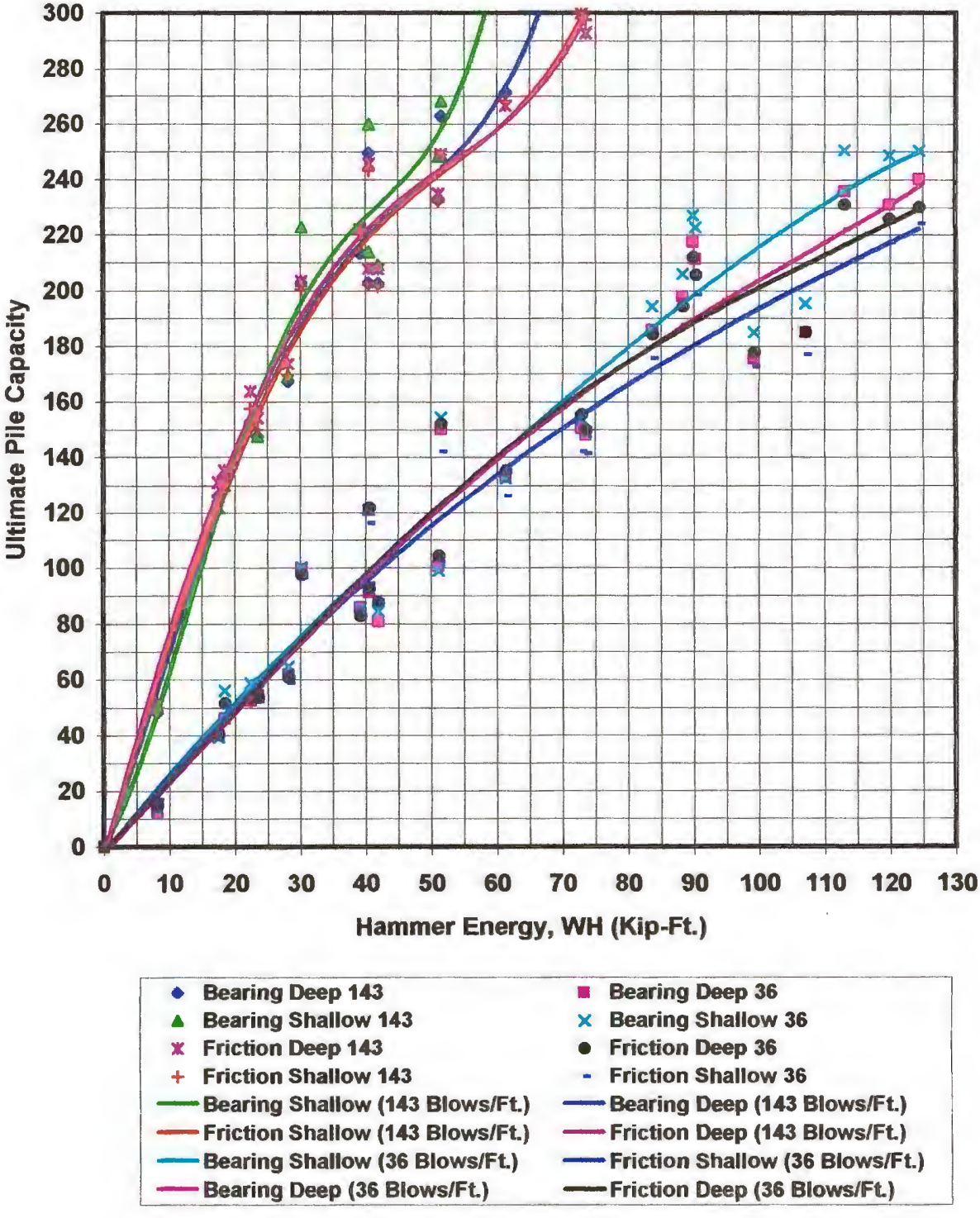
DIESEL AND ECH HAMMERS
ALTERNATE HAMMER APPROVAL
SELECTION CHART



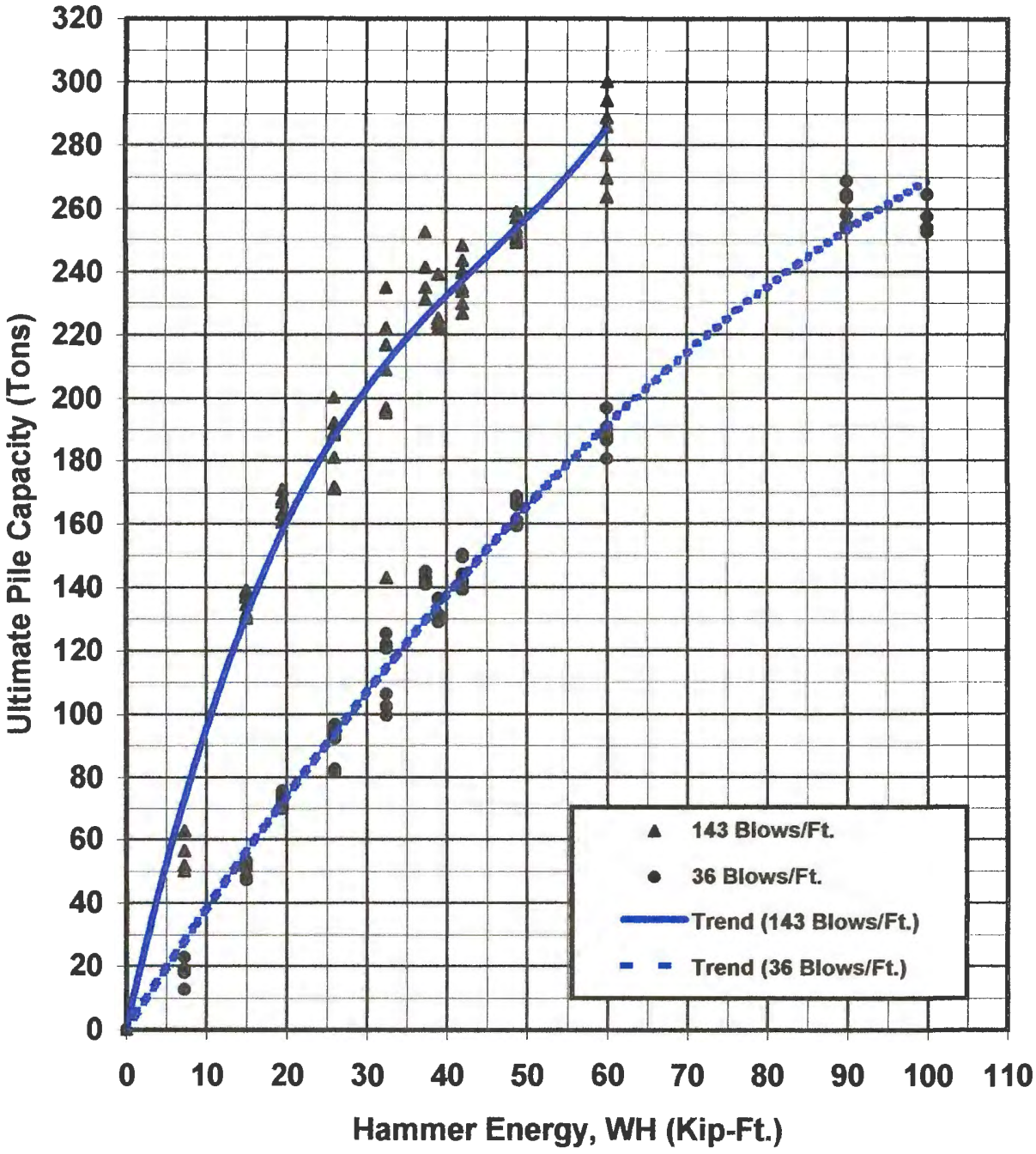
DIESEL HAMMERS
ALTERNATE HAMMER APPROVAL
SELECTION CHART



DIESEL HAMMERS
ALTERNATE HAMMER APPROVAL SELECTION CHART



ECH HAMMERS
ALTERNATE HAMMER APPROVAL
SELECTION CHART



ECH HAMMERS
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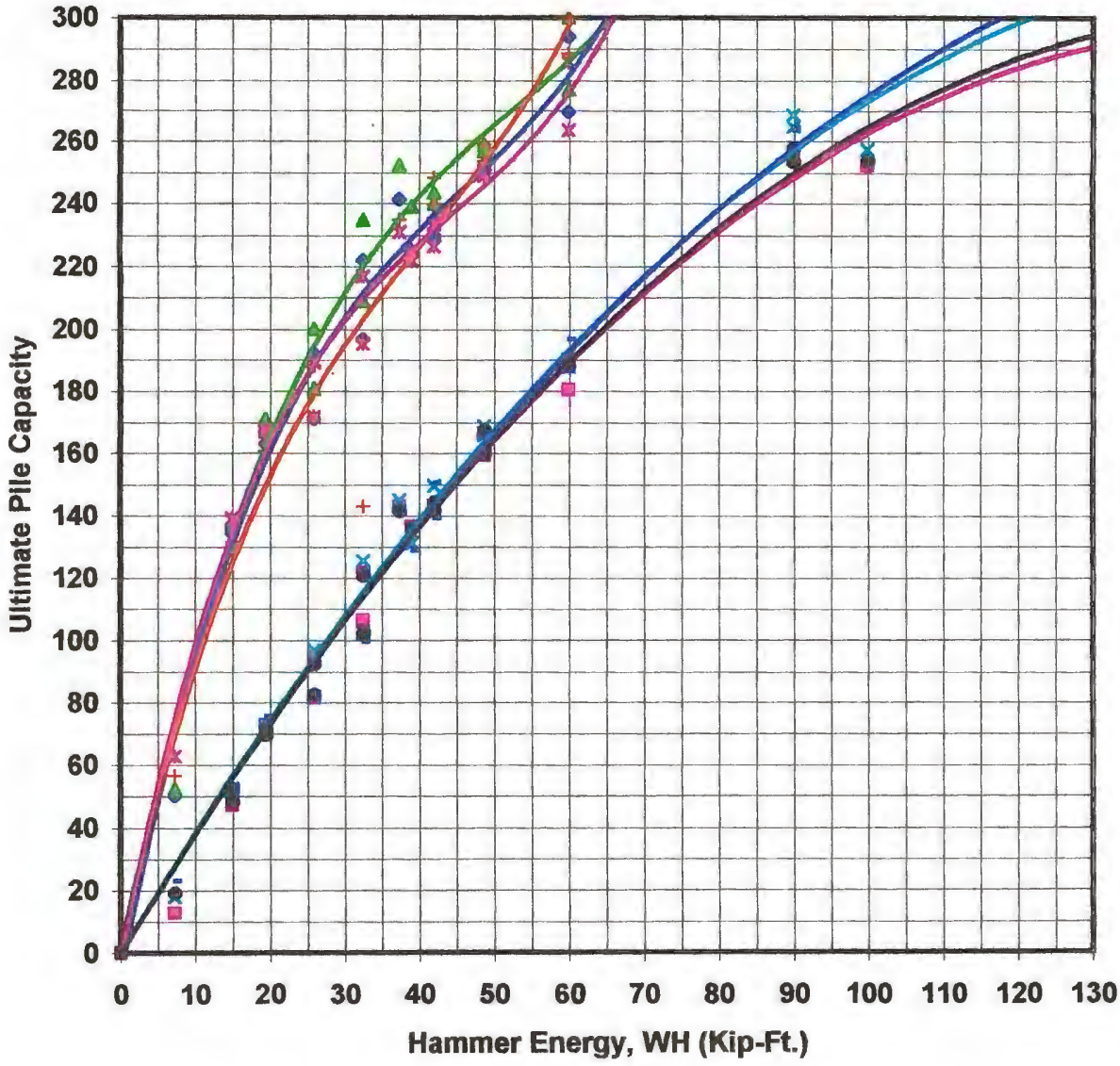


Summary of Wave Equation Results
For Alternate Hammer Approval Method

HAMMER ID.	RATED ENERGY (Kip-Ft.)	Bearing Deep		Bearing Shallow		Friction Deep		Friction Shallow		HAMMER TYPE
		143 HIGH (Tons)	36 LOW (Tons)	143 HIGH (Tons)	36 LOW (Tons)	143 HIGH (Tons)	36 LOW (Tons)	143 HIGH (Tons)	36 LOW (Tons)	
1	8.23	48.3	12.2	50.5	13.3	51.8	14.8	48.5	16.7	DIESEL
2	17.60	126.3	39.9	121.7	39.3	131.0	40.2	124.2	40.6	DIESEL
3	23.59	147.6	54.4	147.5	56.2	154.2	53.7	150.0	52.3	DIESEL
4	28.31	167.1	61.7	169.0	64.7	173.6	60.8	169.3	58.7	DIESEL
5	39.25	213.4	85.7	222.9	85.3	222.1	82.7	220.2	85.0	DIESEL
6	40.61	202.7	91.0	213.7	92.3	207.8	92.4	202.1	94.1	DIESEL
7	51.26	233.0	100.7	248.3	99.0	235.0	104.3	232.0	102.2	DIESEL
8	61.49	271.2	132.9	300.0	132.5	266.5	135.1	268.1	126.1	DIESEL
9	73.66	300.0	147.9	300.0	149.1	292.8	149.8	297.4	141.2	DIESEL
10	83.82	300.0	185.8	300.0	194.3	300.0	184.3	300.0	175.6	DIESEL
11	88.50	300.0	197.7	300.0	206.0	300.0	194.2	300.0	187.5	DIESEL
12	90.44	300.0	211.4	300.0	222.8	300.0	205.7	300.0	198.5	DIESEL
13	107.18	300.0	185.1	300.0	195.3	300.0	185.0	300.0	177.0	DIESEL
14	113.16	300.0	235.9	300.0	250.6	300.0	231.0	300.0	222.0	DIESEL
15	124.53	300.0	240.1	300.0	250.5	300.0	230.1	300.0	224.1	DIESEL
16	18.56	131.9	46.0	129.9	56.0	135.3	51.6	129.7	50.3	DIESEL
17	30.37	202.9	99.5	222.7	100.3	203.4	97.5	200.3	96.6	DIESEL
18	40.62	249.6	120.9	259.9	120.8	245.6	121.6	243.1	115.9	DIESEL
19	51.63	262.7	150.0	268.0	154.4	249.2	152.1	248.9	141.8	DIESEL
20	22.50	152.8	52.5	153.1	58.6	163.6	53.5	157.6	54.3	DIESEL
21	42.00	202.6	80.7	209.2	84.4	207.6	87.5	201.3	88.0	DIESEL
22	72.94	300.0	150.6	300.0	153.8	299.9	155.3	300.0	141.8	DIESEL
23	99.33	300.0	175.4	300.0	185.0	300.0	177.9	300.0	172.5	DIESEL
24	90.00	300.0	217.4	300.0	227.2	300.0	211.9	300.0	205.6	DIESEL
25	120.00	300.0	231.0	300.0	248.8	300.0	225.9	300.0	217.2	DIESEL
26	15.00	136.8	50.9	137.2	52.3	139.1	52.1	131.6	53.2	ECH
27	19.50	167.0	72.9	171.0	72.8	167.9	71.3	163.3	75.7	ECH
28	26.00	192.0	95.0	200.2	96.8	189.1	92.3	188.2	93.3	ECH
29	32.50	222.0	121.7	234.8	125.5	216.8	120.7	143.0	122.1	ECH
30	37.39	241.3	142.9	252.4	145.0	231.0	141.4	234.8	140.7	ECH
31	42.00	234.8	142.0	239.9	149.6	233.5	141.7	248.2	150.4	ECH
32	48.75	252.4	159.2	256.9	165.9	250.1	159.7	258.9	166.7	ECH
33	60.00	294.0	188.1	300.0	187.7	285.8	190.7	300.0	196.7	ECH
34	90.00	300.0	254.7	300.0	264.7	300.0	253.5	300.0	264.5	ECH
35	100.00	300.0	252.4	300.0	257.4	300.0	253.9	300.0	264.5	ECH
36	150.00	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	ECH
37	15.00	134.4	47.2	130.7	51.1	138.6	48.2	130.1	51.8	ECH
38	7.26	50.3	12.7	52.0	17.9	62.8	19.1	56.4	23.0	ECH
39	19.50	163.0	70.1	166.9	71.5	166.9	69.8	160.5	74.2	ECH
40	26.00	171.2	81.6	180.9	81.9	171.8	82.4	171.6	81.6	ECH
41	32.50	196.8	106.3	208.9	102.5	195.2	102.3	196.4	99.7	ECH
42	39.00	225.0	136.4	239.0	131.3	221.8	135.9	223.5	128.9	ECH
43	42.00	229.7	143.3	243.4	141.8	226.6	144.2	239.6	139.1	ECH
44	48.75	250.3	166.5	259.0	168.8	249.0	167.6	253.8	161.2	ECH
45	60.00	269.6	180.5	276.9	190.1	263.7	188.0	288.6	186.4	ECH
46	90.00	300.0	254.5	300.0	268.8	300.0	257.9	300.0	263.6	ECH
47	120.00	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	ECH
48	180.00	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	ECH

TYPICAL HAMMERS

Hammer No.	GRL ID No.	Hammer MFG	Hammer Name	Max. Rated Energy (ft-kip)	Hammer Type
1	1	Delmag	D5	8.23	OED
2	2	Delmag	D8-22	17.60	OED
3	3	Delmag	D12	23.59	OED
4	4	Delmag	D15	28.31	OED
5	5	Delmag	D16-32	39.25	OED
6	6	Delmag	D22	40.61	OED
7	9	Delmag	D22-23	51.26	OED
8	10	Delmag	D25-32	61.49	OED
9	15	Delmag	D30-32	73.66	OED
10	16	Delmag	D36	83.82	OED
11	20	Delmag	D36-32	88.50	OED
12	21	Delmag	D44	90.44	OED
13	22	Delmag	D46	107.18	OED
14	26	Delmag	D46-32	113.16	OED
15	27	Delmag	D55	124.53	OED
16	122	ICE	440	18.56	CED
17	123	ICE	520	30.37	CED
18	124	ICE	640	40.62	CED
19	125	ICE	660	51.63	CED
20	127	ICE	30-S	22.50	OED
21	129	ICE	42-S	42.00	OED
22	130	ICE	60-S	72.94	OED
23	132	ICE	80-S	99.33	OED
24	133	ICE	90-S	90.00	OED
25	134	ICE	100-S	120.00	OED
26	171	Conmaco	C50	15.00	ECH
27	172	Conmaco	C65	19.50	ECH
28	175	Conmaco	C80	26.00	ECH
29	176	Conmaco	C100	32.50	ECH
30	177	Conmaco	C115	37.38	ECH

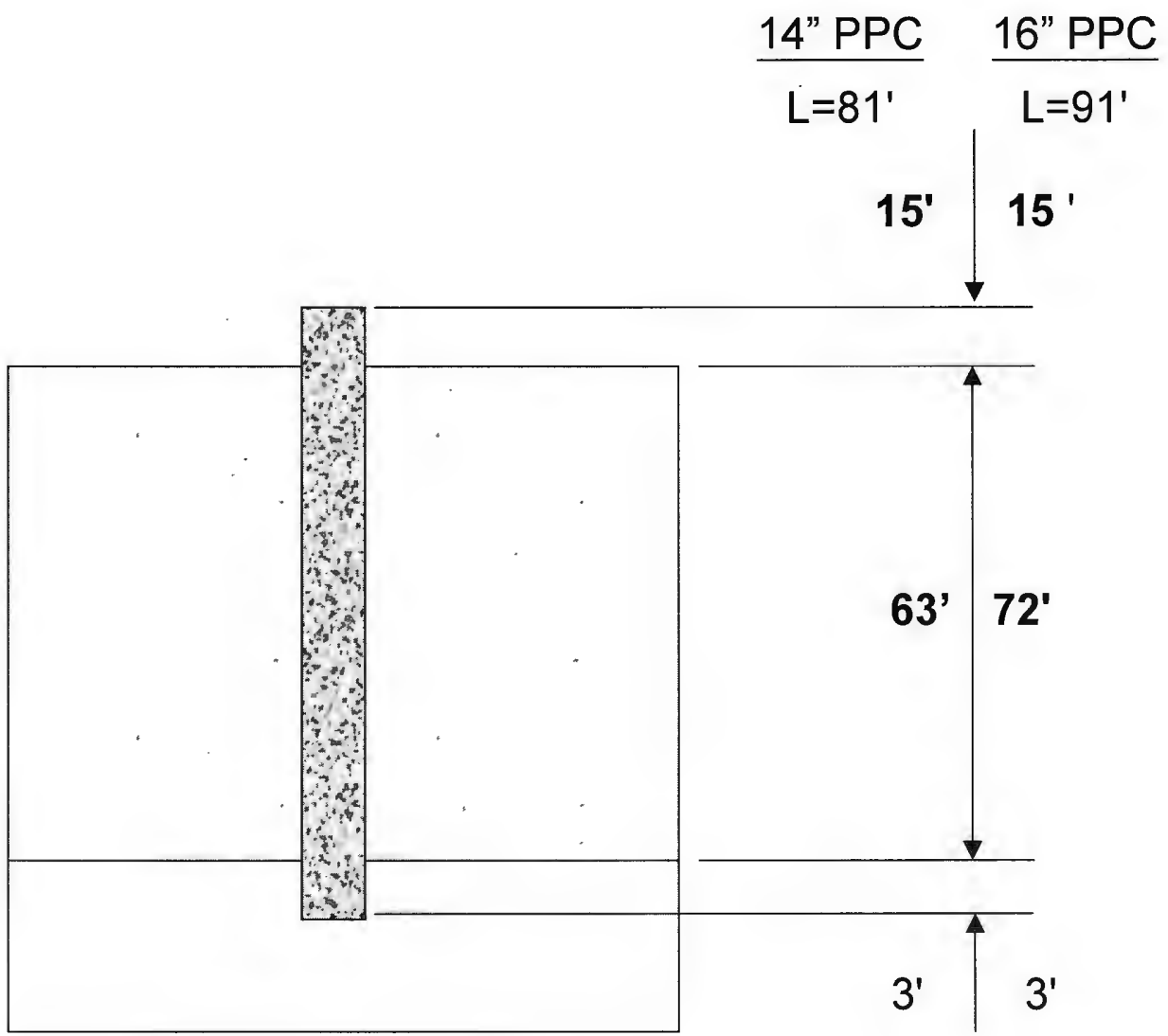
Hammer No.	GRL ID No.	Hammer MFG	Hammer Name	Max. Rated Energy (ft-kip)	Hammer Type
31	182	Conmaco	C140	42.00	ECH
32	183	Conmaco	C160	48.75	ECH
33	184	Conmaco	C200	60.00	ECH
34	185	Conmaco	C300	90.00	ECH
35	186	Conmaco	C5200	100.00	ECH
36	187	Conmaco	C5300	150.00	ECH
37	204	Vulcan	01	15.00	ECH
38	205	Vulcan	02	7.26	ECH
39	206	Vulcan	06	19.50	ECH
40	207	Vulcan	08	26.00	ECH
41	208	Vulcan	010	32.50	ECH
42	209	Vulcan	012	39.00	ECH
43	210	Vulcan	014	42.00	ECH
44	211	Vulcan	016	48.75	ECH
45	212	Vulcan	020	60.00	ECH
46	213	Vulcan	030	90.00	ECH
47	214	Vulcan	040	120.00	ECH
48	215	Vulcan	060	180.00	ECH

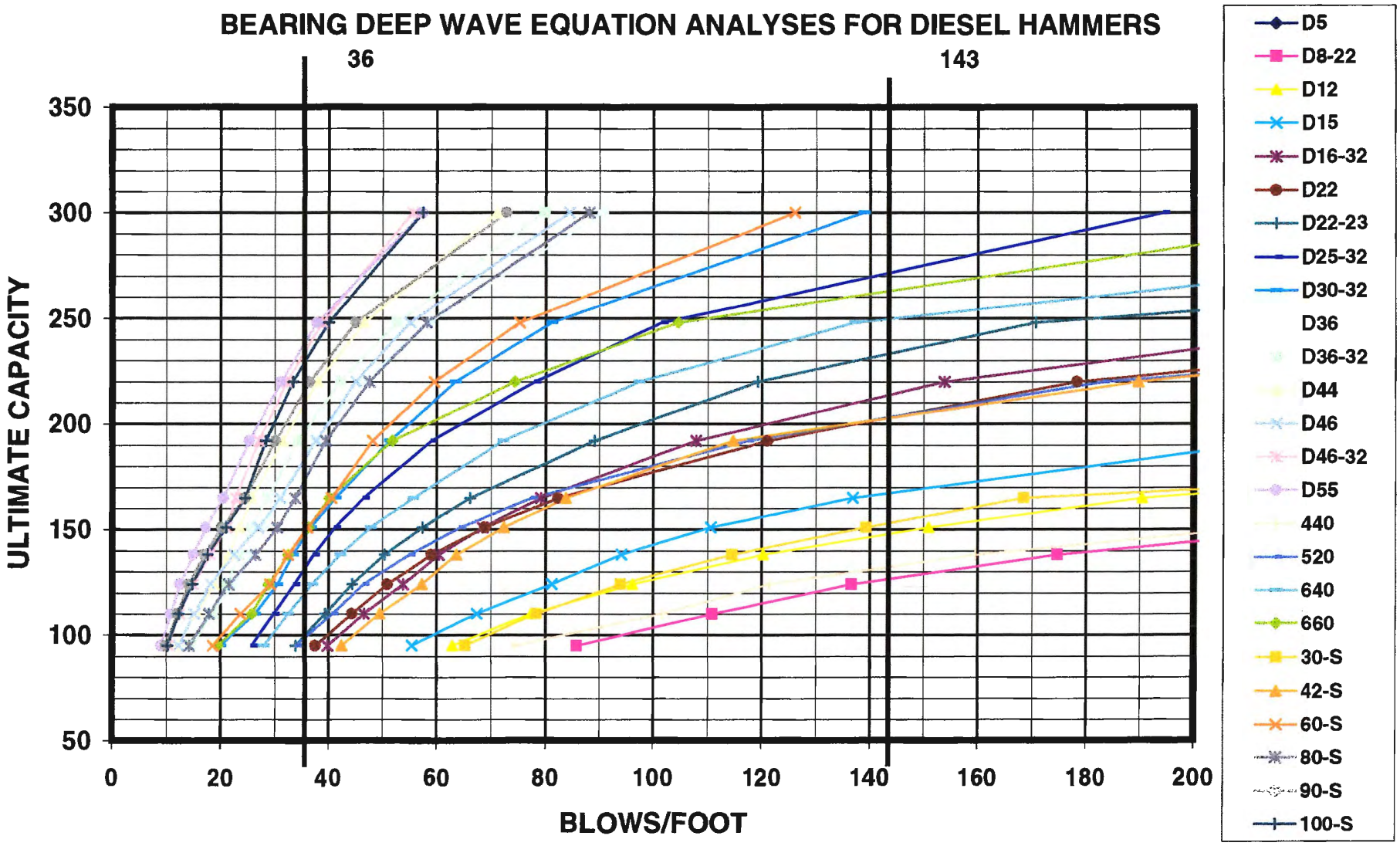
PILE CAPACITIES

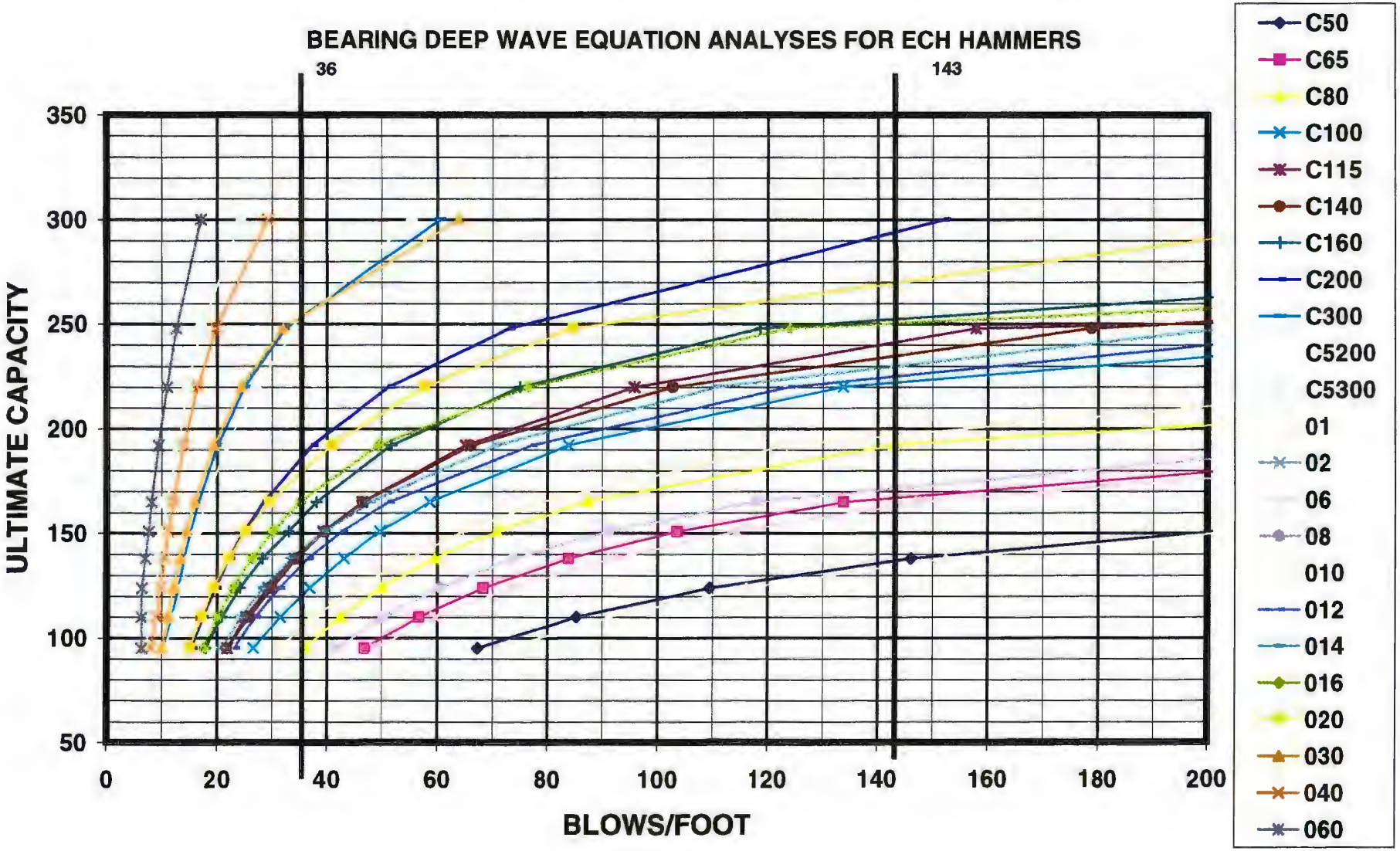
Design Load: 40 Tons		
Safety Factor	Ultimate Pile Capacity (Tons)	Ultimate Pile Capacity (kips)
1.00	40	80
2.00	80	16
2.25	90	180
2.50	100	200
2.75	110	220
3.00	120	240
3.50	140	280
4.00	160	320
4.50	180	360
5.00	200	400

Design Load: 55 Tons		
Safety Factor	Ultimate Pile Capacity (Tons)	Ultimate Pile Capacity (kips)
1.00	55	110
2.00	110	220
2.25	124	248
2.50	138	276
2.75	151	302
3.00	165	330
3.50	192	384
4.00	220	440
4.50	248	496
5.00	275	550

BEARING DEEP (BD)




BEARING DEEP WAVE EQUATION ANALYSES FOR DIESEL HAMMERS
36
143
350
300
250
200
150
100
50
ULTIMATE CAPACITY
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
D5
D8-22
D12
D15
D16-32
D22
D22-23
D25-32
D30-32
D36
D36-32
D44
D46
D46-32
D55
440
520
640
660
30-S
42-S
60-S
80-S
90-S
100-S


BEARING DEEP WAVE EQUATION ANALYSES FOR ECH HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
50
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
C50
C65
C80
C100
C115
C140
C160
C200
C300
C5200
C5300
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02
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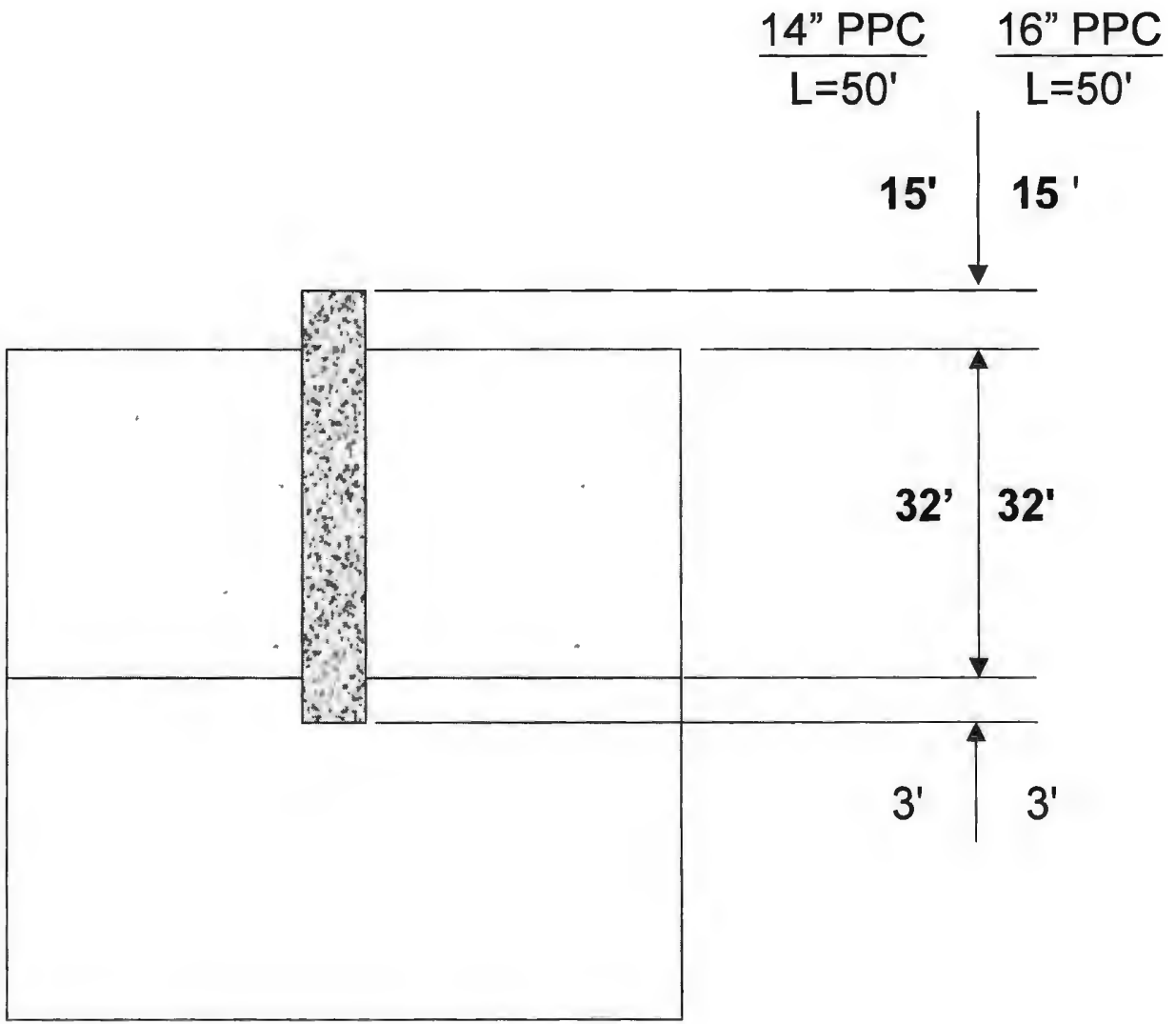
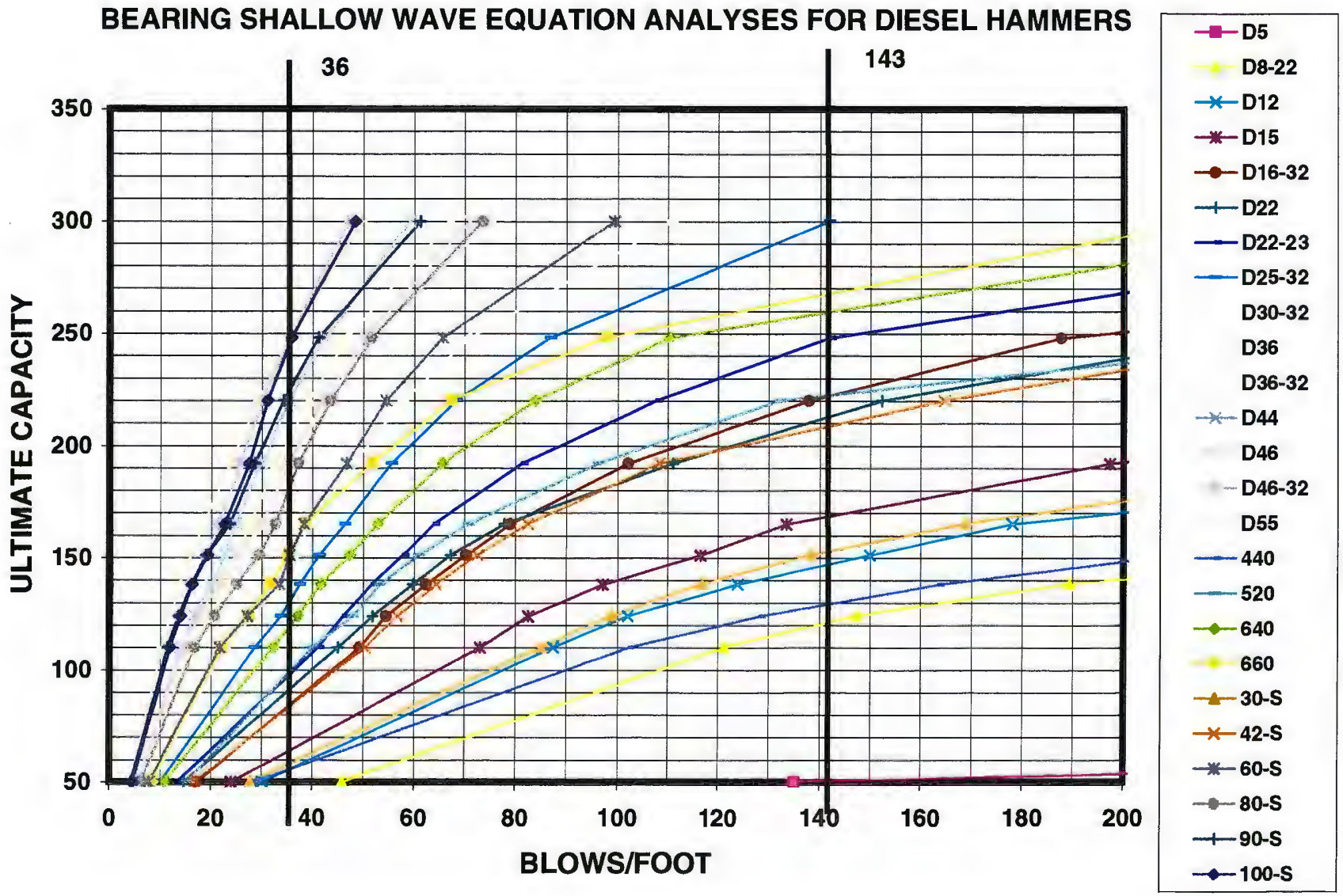
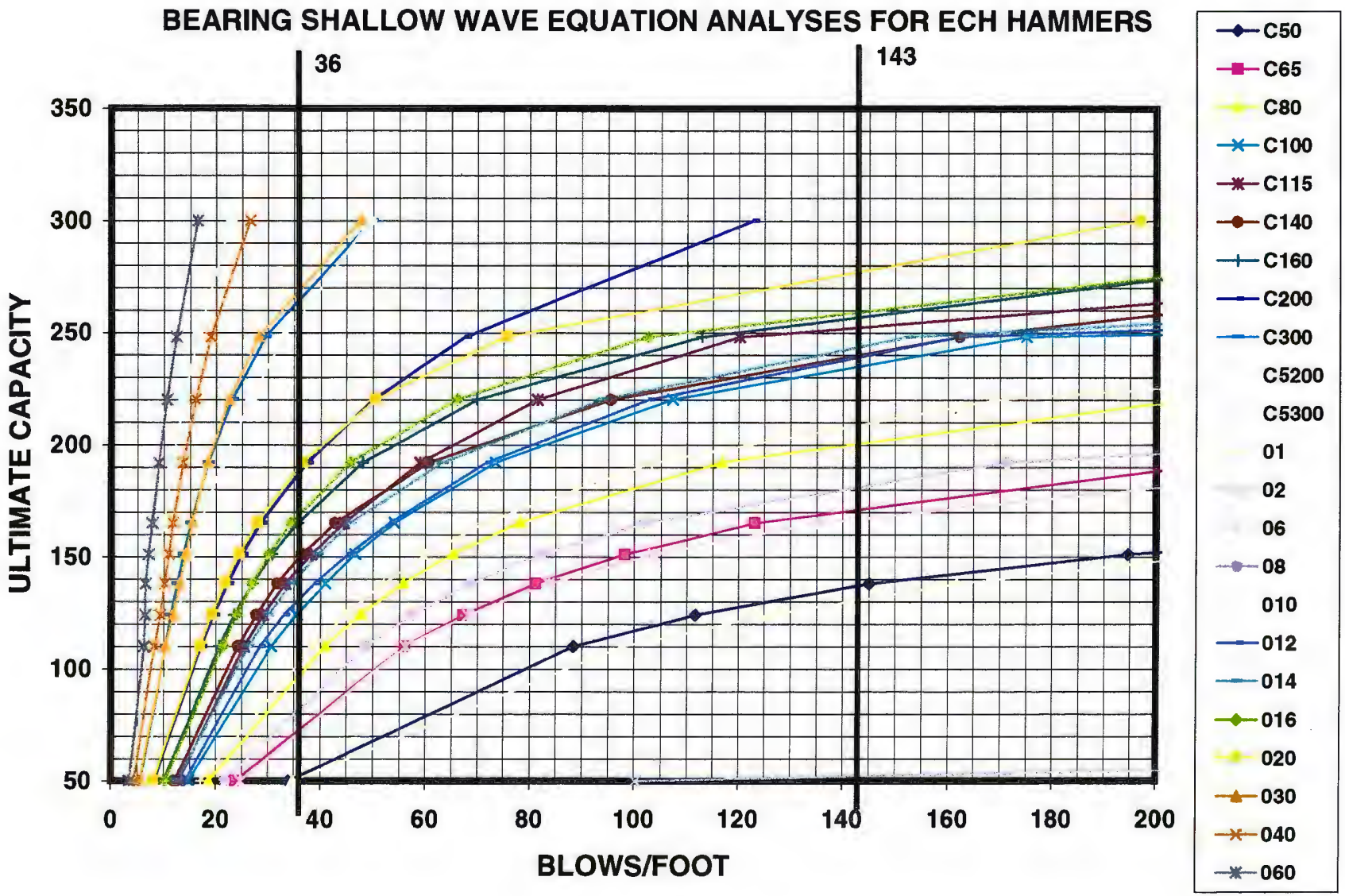
BEARING DEEP
ULTIMATE CAPACITY RANGE

HAMMER ID.	143 HIGH	36 LOW	MAX	RATED ENERGY	MIN	RATED ENERGY
1	48.3	12.2	48.3	8.23	12.2	8.2
2	126.3	39.9	126.3	17.60	39.9	17.6
3	147.6	54.4	147.6	23.59	54.4	23.6
4	167.1	61.7	167.1	28.31	61.7	28.3
5	213.4	85.7	213.4	39.25	85.7	39.3
6	202.7	91.0	202.7	40.61	91.0	40.6
7	233.0	100.7	233.0	51.26	100.7	51.3
8	271.2	132.9	271.2	61.49	132.9	61.5
9	300.0	147.9	300.0	73.66	147.9	73.7
10	300.0	185.8	300.0	83.82	185.8	83.8
11	300.0	197.7	300.0	88.50	197.7	88.5
12	300.0	211.4	300.0	90.44	211.4	90.4
13	300.0	185.1	300.0	107.18	185.1	107.2
14	300.0	235.9	300.0	113.16	235.9	113.2
15	300.0	240.1	300.0	124.53	240.1	124.5
16	131.9	46.0	131.9	18.56	46.0	18.6
17	202.9	99.5	202.9	30.37	99.5	30.4
18	249.6	120.9	249.6	40.62	120.9	40.6
19	262.7	150.0	262.7	51.63	150.0	51.6
20	152.8	52.5	152.8	22.50	52.5	22.5
21	202.6	80.7	202.6	42.00	80.7	42.0
22	300.0	150.6	300.0	72.94	150.6	72.9
23	300.0	175.4	300.0	99.33	175.4	99.3
24	300.0	217.4	300.0	90.00	217.4	90.0
25	300.0	231.0	300.0	120.00	231.0	120.0
26	136.8	50.9	136.8	15.00	50.9	15.0
27	167.0	72.9	167.0	19.50	72.9	19.5
28	192.0	95.0	192.0	26.00	95.0	26.0
29	222.0	121.7	222.0	32.50	121.7	32.5
30	241.3	142.9	241.3	37.39	142.9	37.4
31	234.8	142.0	234.8	42.00	142.0	42.0
32	252.4	159.2	252.4	48.75	159.2	48.8
33	294.0	188.1	294.0	60.00	188.1	60.0
34	300.0	254.7	300.0	90.00	254.7	90.0
35	300.0	252.4	300.0	100.00	252.4	100.0
36	300.0	300.0	300.0	150.00	300.0	150.0
37	134.4	47.2	134.4	15.00	47.2	15.0
38	50.3	12.7	50.3	7.26	12.7	7.3
39	163.0	70.1	163.0	19.50	70.1	19.5
40	171.2	81.6	171.2	26.00	81.6	26.0
41	196.8	106.3	196.8	32.50	106.3	32.5
42	225.0	136.4	225.0	39.00	136.4	39.0
43	229.7	143.3	229.7	42.00	143.3	42.0
44	250.3	166.5	250.3	48.75	166.5	48.8
45	269.6	180.5	269.6	60.00	180.5	60.0
46	300.0	254.5	300.0	90.00	254.5	90.0
47	300.0	300.0	300.0	120.00	300.0	120.0
48	300.0	300.0	300.0	180.00	300.0	180.0

BEARING SHALLOW (BS)




BEARING SHALLOW WAVE EQUATION ANALYSES FOR DIESEL HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
50
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
D5
D8-22
D12
D15
D16-32
D22
D22-23
D25-32
D30-32
D36
D36-32
D44
D46
D46-32
D55
440
520
640
660
30-S
42-S
60-S
80-S
90-S
100-S


BEARING SHALLOW WAVE EQUATION ANALYSES FOR ECH HAMMERS
36
143
350
300
250
200
150
100
50
ULTIMATE CAPACITY
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
C50
C65
C80
C100
C115
C140
C160
C200
C300
C5200
C5300
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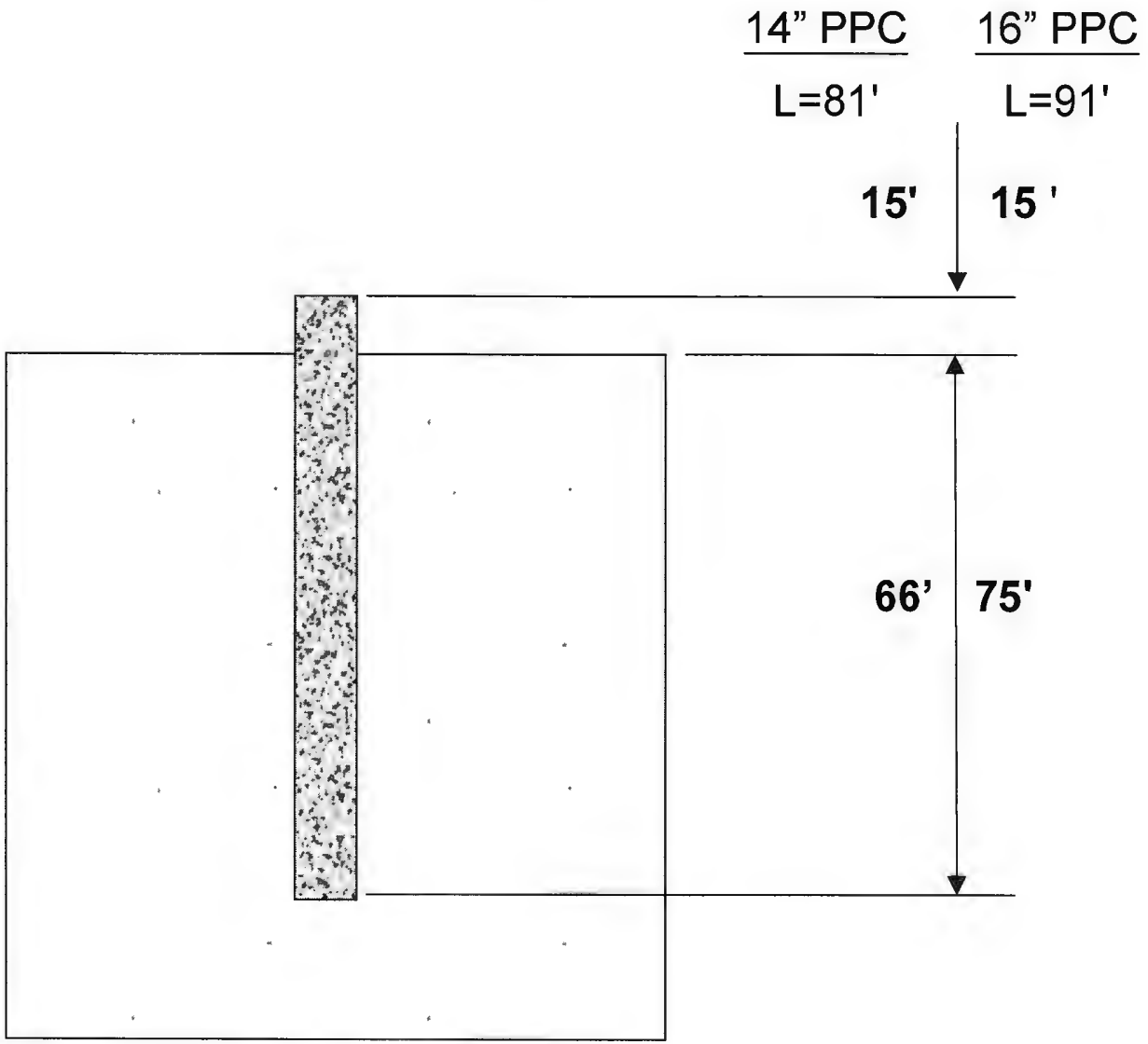
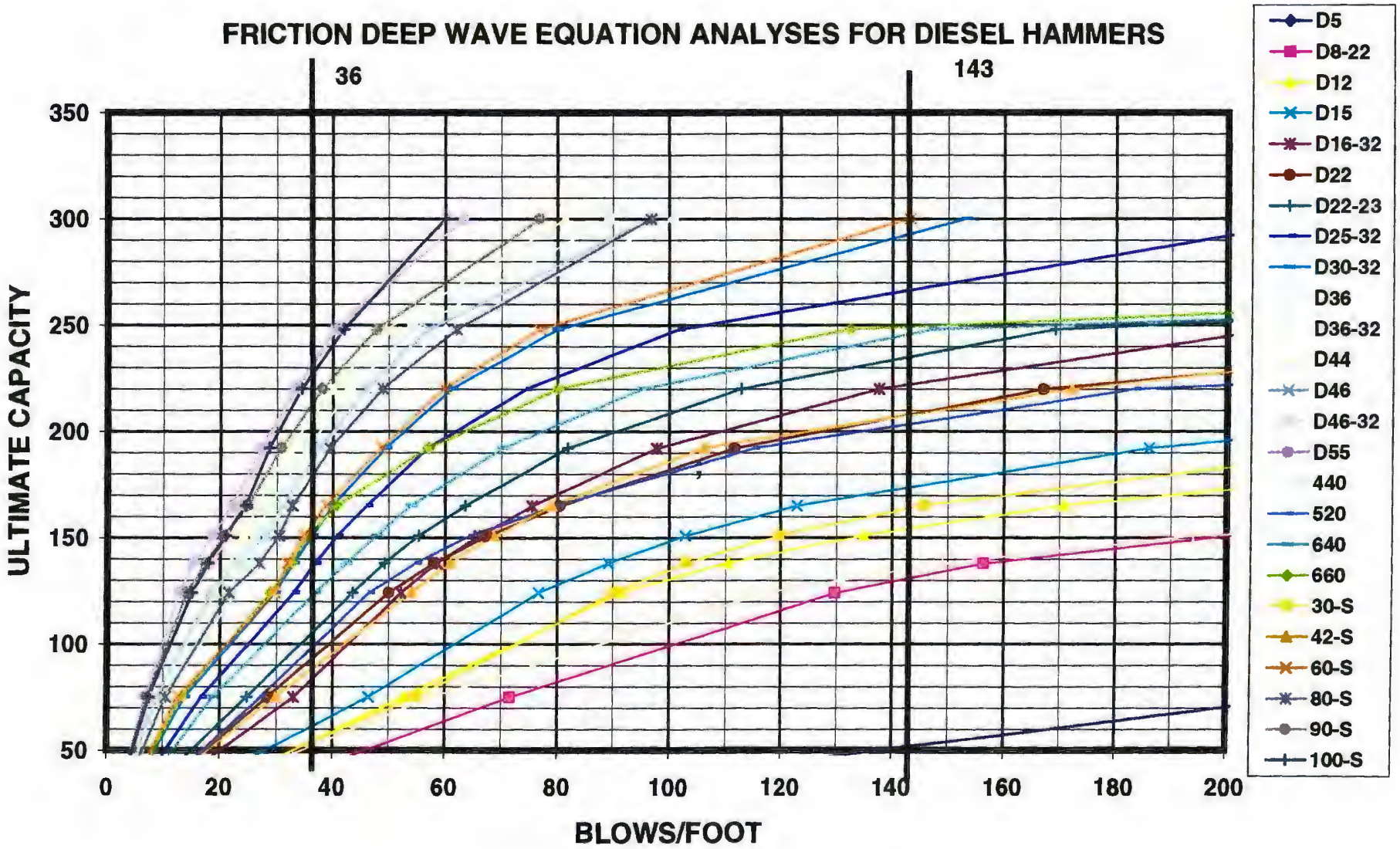
060

BEARING SHALLOW
ULTIMATE CAPACITY RANGE

HAMMER ID.	143 HIGH	36 LOW	MAX	RATED ENERGY	MIN	RATED ENERGY
1	50.5	13.3	50.5	8.23	13.3	8.2
2	121.7	39.3	121.7	17.60	39.3	17.6
3	147.5	56.2	147.5	23.59	56.2	23.6
4	169.0	64.7	169.0	28.31	64.7	28.3
5	222.9	85.3	222.9	39.25	85.3	39.3
6	213.7	92.3	213.7	40.61	92.3	40.6
7	248.3	99.0	248.3	51.26	99.0	51.3
8	300.0	132.5	300.0	61.49	132.5	61.5
9	300.0	149.1	300.0	73.66	149.1	73.7
10	300.0	194.3	300.0	83.82	194.3	83.8
11	300.0	206.0	300.0	88.50	206.0	88.5
12	300.0	222.8	300.0	90.44	222.8	90.4
13	300.0	195.3	300.0	107.18	195.3	107.2
14	300.0	250.6	300.0	113.16	250.6	113.2
15	300.0	250.5	300.0	124.53	250.5	124.5
16	129.9	56.0	129.9	18.56	56.0	18.6
17	222.7	100.3	222.7	30.37	100.3	30.4
18	259.9	120.8	259.9	40.62	120.8	40.6
19	268.0	154.4	268.0	51.63	154.4	51.6
20	153.1	58.6	153.1	22.50	58.6	22.5
21	209.2	84.4	209.2	42.00	84.4	42.0
22	300.0	153.8	300.0	72.94	153.8	72.9
23	300.0	185.0	300.0	99.33	185.0	99.3
24	300.0	227.2	300.0	90.00	227.2	90.0
25	300.0	248.8	300.0	120.00	248.8	120.0
26	137.2	52.3	137.2	15.00	52.3	15.0
27	171.0	72.8	171.0	19.50	72.8	19.5
28	200.2	96.8	200.2	26.00	96.8	26.0
29	234.8	125.5	234.8	32.50	125.5	32.5
30	252.4	145.0	252.4	37.39	145.0	37.4
31	239.9	149.6	239.9	42.00	149.6	42.0
32	256.9	165.9	256.9	48.75	165.9	48.8
33	300.0	187.7	300.0	60.00	187.7	60.0
34	300.0	264.7	300.0	90.00	264.7	90.0
35	300.0	257.4	300.0	100.00	257.4	100.0
36	300.0	300.0	300.0	150.00	300.0	150.0
37	130.7	51.1	130.7	15.00	51.1	15.0
38	52.0	17.9	52.0	7.26	17.9	7.3
39	166.9	71.5	166.9	19.50	71.5	19.5
40	180.9	81.9	180.9	26.00	81.9	26.0
41	208.9	102.5	208.9	32.50	102.5	32.5
42	239.0	131.3	239.0	39.00	131.3	39.0
43	243.4	141.8	243.4	42.00	141.8	42.0
44	259.0	168.8	259.0	48.75	168.8	48.8
45	276.9	190.1	276.9	60.00	190.1	60.0
46	300.0	268.8	300.0	90.00	268.8	90.0
47	300.0	300.0	300.0	120.00	300.0	120.0
48	300.0	300.0	300.0	180.00	300.0	180.0

FRICTION DEEP (FD)




FRICTION DEEP WAVE EQUATION ANALYSES FOR DIESEL HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
50
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
D5
D8-22
D12
D15
D16-32
D22
D22-23
D25-32
D30-32
D36
D36-32
D44
D46
D46-32
D55
440
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30-S
42-S
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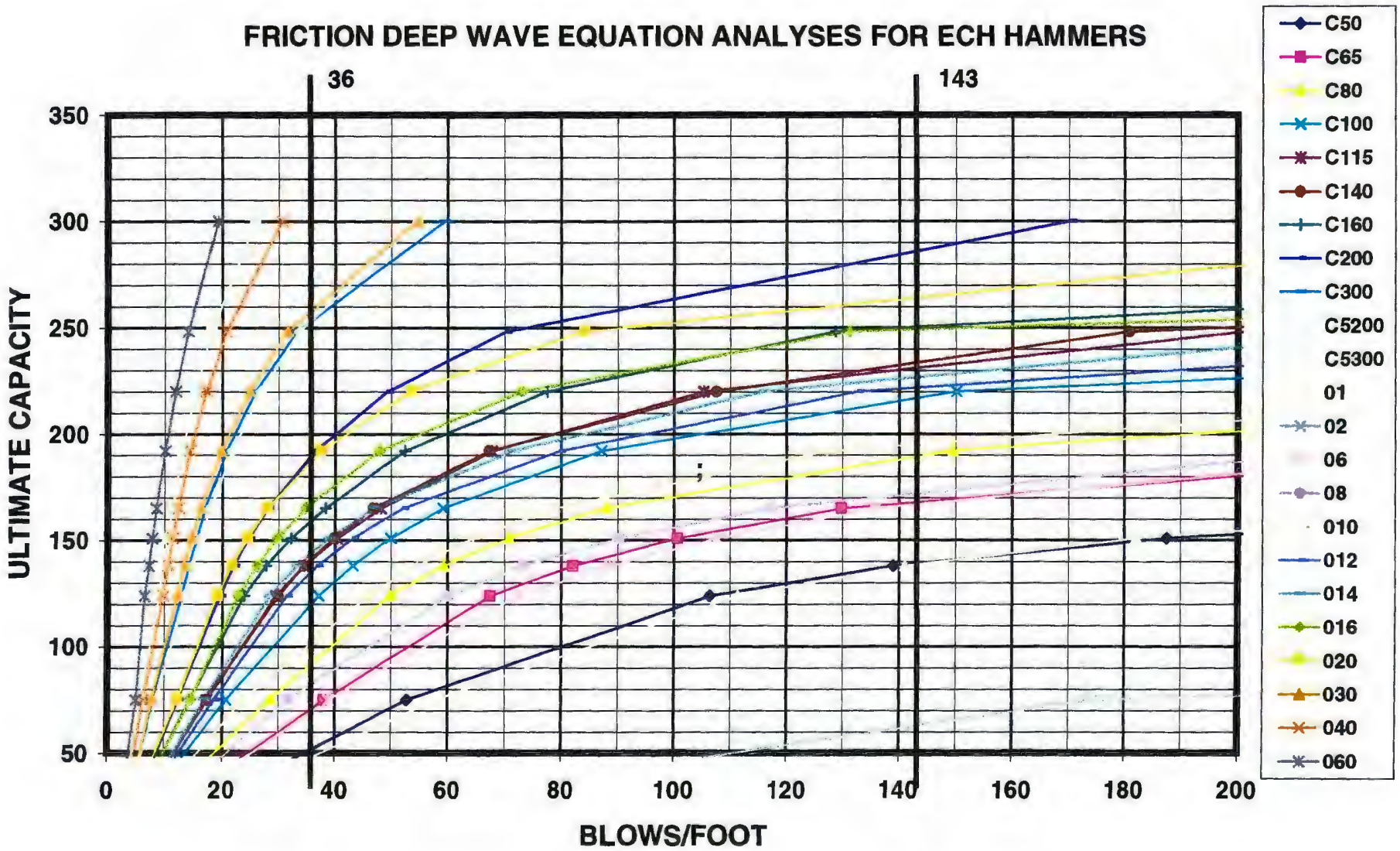
90-S
100-S


FRICTION DEEP WAVE EQUATION ANALYSES FOR ECH HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
50
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20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
C50
C65
C80
C100
C115
C140
C160
C200
C300
C5200
C5300
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02
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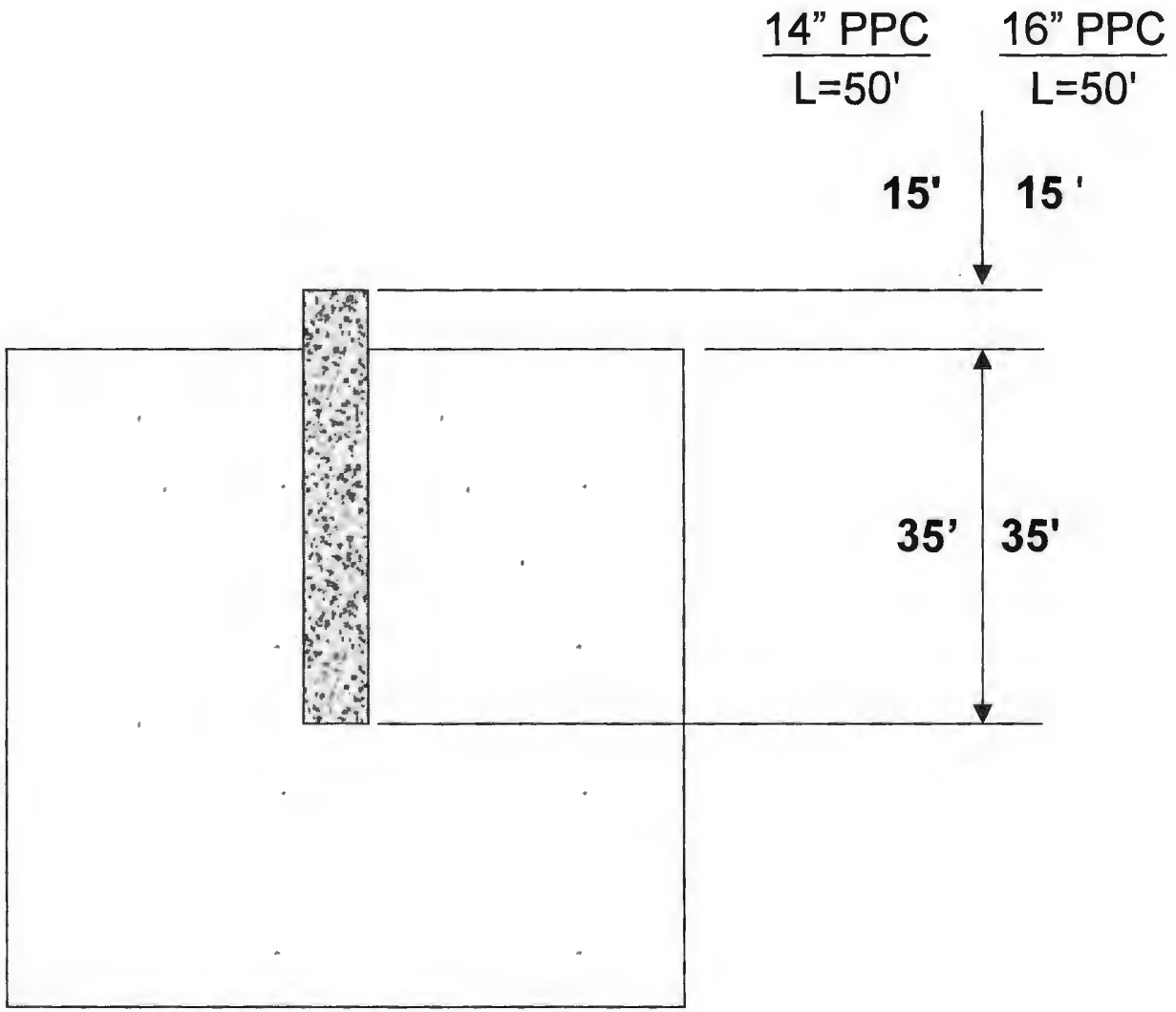
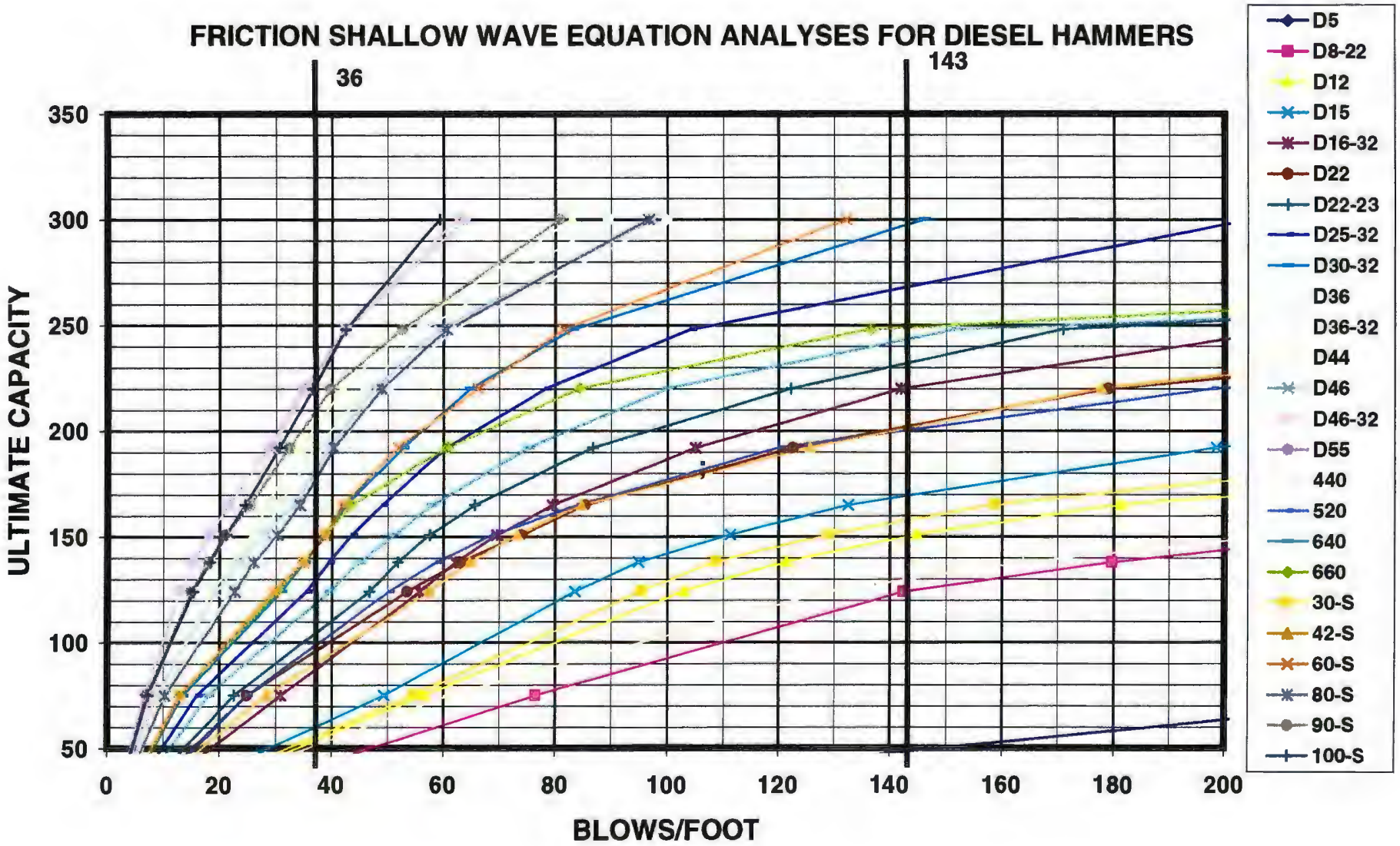
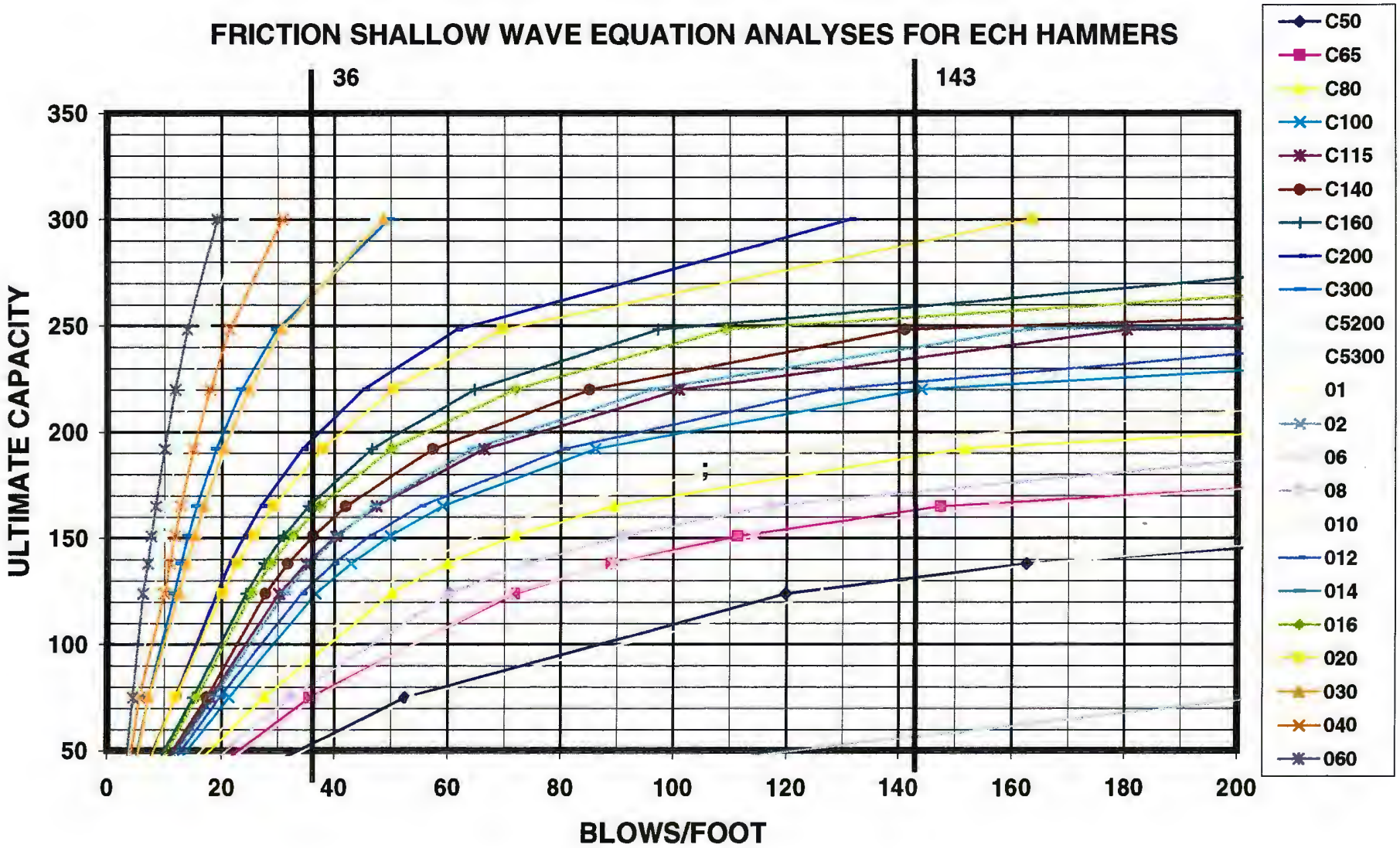
FRICTION DEEP
ULTIMATE CAPACITY RANGE

HAMMER ID.	143 HIGH	36 LOW	MAX	RATED ENERGY	MIN	RATED ENERGY
1	51.8	14.8	51.8	8.23	14.8	8.2
2	131.0	40.2	131.0	17.60	40.2	17.6
3	154.2	53.7	154.2	23.59	53.7	23.6
4	173.6	60.8	173.6	28.31	60.8	28.3
5	222.1	82.7	222.1	39.25	82.7	39.3
6	207.8	92.4	207.8	40.61	92.4	40.6
7	235.0	104.3	235.0	51.26	104.3	51.3
8	266.5	135.1	266.5	61.49	135.1	61.5
9	292.8	149.8	292.8	73.66	149.8	73.7
10	300.0	184.3	300.0	83.82	184.3	83.8
11	300.0	194.2	300.0	88.50	194.2	88.5
12	300.0	205.7	300.0	90.44	205.7	90.4
13	300.0	185.0	300.0	107.18	185.0	107.2
14	300.0	231.0	300.0	113.16	231.0	113.2
15	300.0	230.1	300.0	124.53	230.1	124.5
16	135.3	51.6	135.3	18.56	51.6	18.6
17	203.4	97.5	203.4	30.37	97.5	30.4
18	245.6	121.6	245.6	40.62	121.6	40.6
19	249.2	152.1	249.2	51.63	152.1	51.6
20	163.6	53.5	163.6	22.50	53.5	22.5
21	207.6	87.5	207.6	42.00	87.5	42.0
22	299.9	155.3	299.9	72.94	155.3	72.9
23	300.0	177.9	300.0	99.33	177.9	99.3
24	300.0	211.9	300.0	90.00	211.9	90.0
25	300.0	225.9	300.0	120.00	225.9	120.0
26	139.1	52.1	139.1	15.00	52.1	15.0
27	167.9	71.3	167.9	19.50	71.3	19.5
28	189.1	92.3	189.1	26.00	92.3	26.0
29	216.8	120.7	216.8	32.50	120.7	32.5
30	231.0	141.4	231.0	37.38	141.4	37.4
31	233.5	141.7	233.5	42.00	141.7	42.0
32	250.1	159.7	250.1	48.75	159.7	48.8
33	285.8	190.7	285.8	60.00	190.7	60.0
34	300.0	253.5	300.0	90.00	253.5	90.0
35	300.0	253.9	300.0	100.00	253.9	100.0
36	300.0	300.0	300.0	150.00	300.0	150.0
37	138.6	48.2	138.6	15.00	48.2	15.0
38	62.8	19.1	62.8	7.26	19.1	7.3
39	166.9	69.8	166.9	19.50	69.8	19.5
40	171.8	82.4	171.8	26.00	82.4	26.0
41	195.2	102.3	195.2	32.50	102.3	32.5
42	221.8	135.9	221.8	39.00	135.9	39.0
43	226.6	144.2	226.6	42.00	144.2	42.0
44	249.0	167.6	249.0	48.75	167.6	48.8
45	263.7	188.0	263.7	60.00	188.0	60.0
46	300.0	257.9	300.0	90.00	257.9	90.0
47	300.0	300.0	300.0	120.00	300.0	120.0
48	300.0	300.0	300.0	180.00	300.0	180.0

FRICTION SHALLOW (FS)




FRICTION SHALLOW WAVE EQUATION ANALYSES FOR DIESEL HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
50
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
D5
D8-22
D12
D15
D16-32
D22
D22-23
D25-32
D30-32
D36
D36-32
D44
D46
D46-32
D55
440
520
640
660
30-S
42-S
60-S
80-S
90-S
100-S

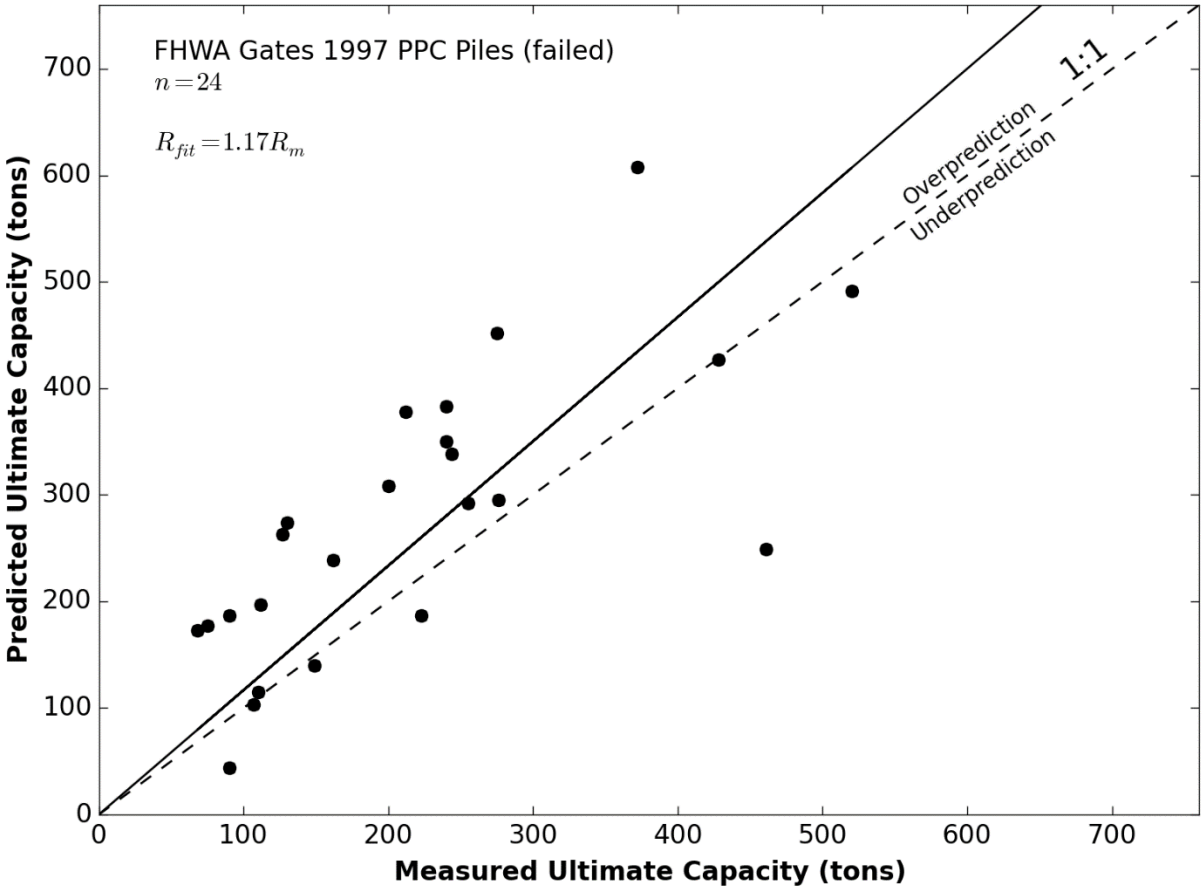

FRICTION SHALLOW WAVE EQUATION ANALYSES FOR ECH HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
50
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
C50
C65
C80
C100
C115
C140
C160
C200
C300
C5200
C5300
01
02
06
08
010
012
014
016
020
030
040
060

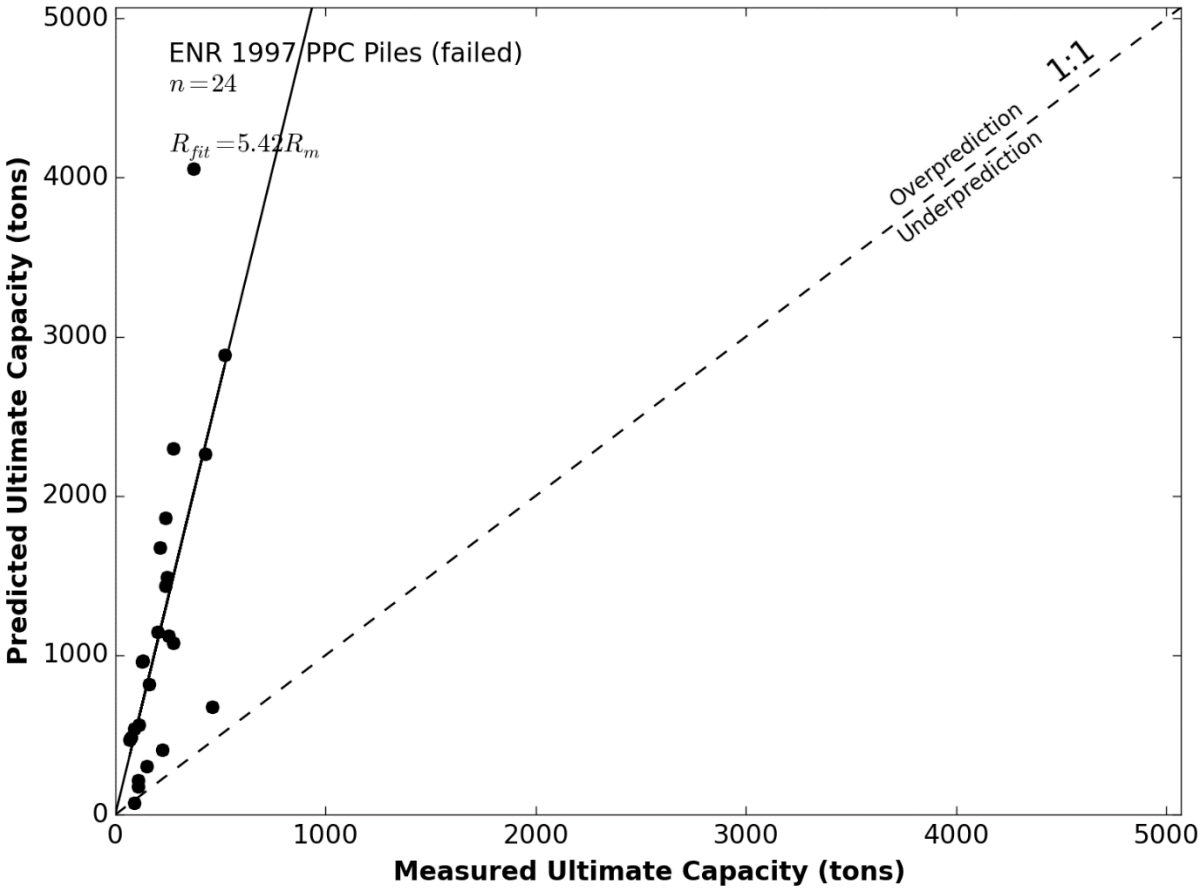
FRICTION SHALLOW
ULTIMATE CAPACITY RANGE

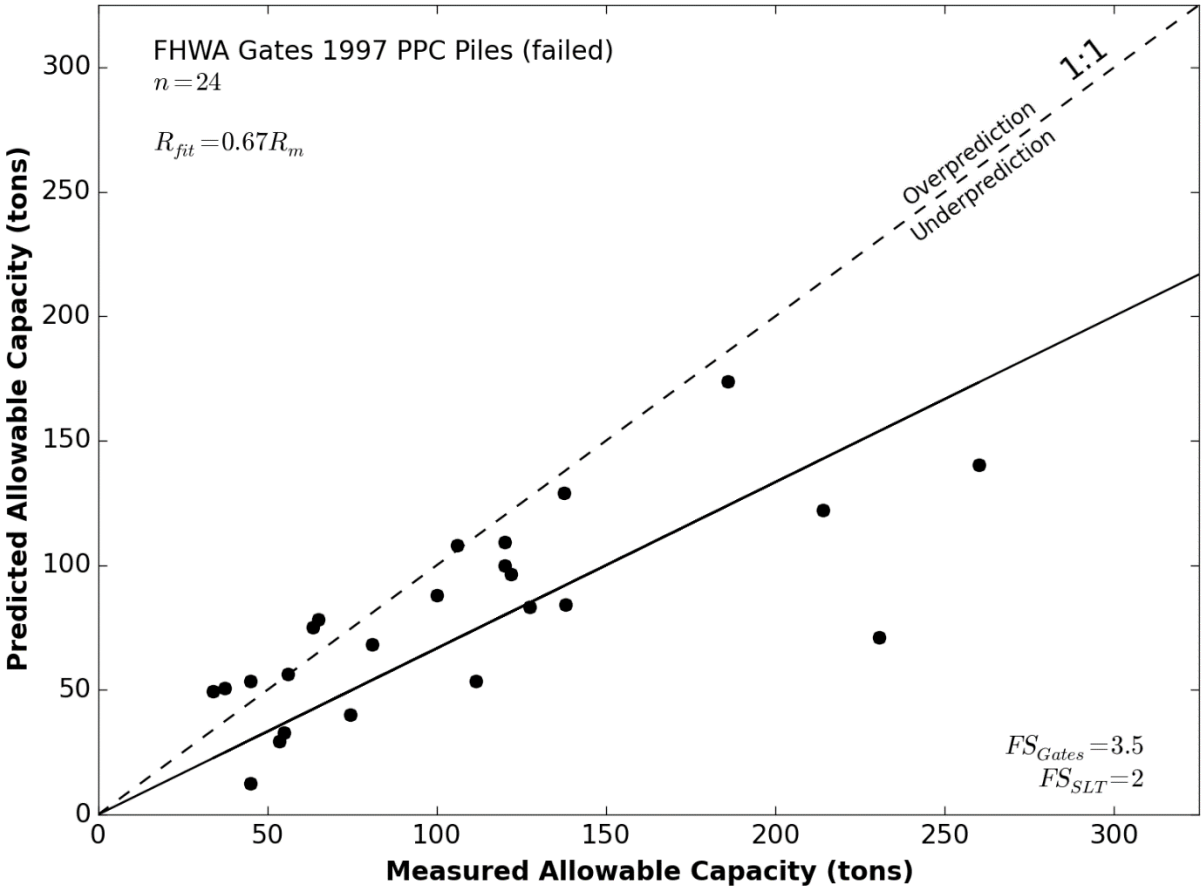
HAMMER ID.	143 HIGH	36 LOW	MAX	RATED ENERGY	MIN	RATED ENERGY
1	48.5	16.7	48.5	8.23	16.7	8.2
2	124.2	40.6	124.2	17.60	40.6	17.6
3	150.0	52.3	150.0	23.59	52.3	23.6
4	169.3	58.7	169.3	28.31	58.7	28.3
5	220.2	85.0	220.2	39.25	85.0	39.3
6	202.1	94.1	202.1	40.61	94.1	40.6
7	232.0	102.2	232.0	51.26	102.2	51.3
8	268.1	126.1	268.1	61.49	126.1	61.5
9	297.4	141.2	297.4	73.66	141.2	73.7
10	300.0	175.6	300.0	83.82	175.6	83.8
11	300.0	187.5	300.0	88.50	187.5	88.5
12	300.0	198.5	300.0	90.44	198.5	90.4
13	300.0	177.0	300.0	107.18	177.0	107.2
14	300.0	222.0	300.0	113.16	222.0	113.2
15	300.0	224.1	300.0	124.53	224.1	124.5
16	129.7	50.3	129.7	18.56	50.3	18.6
17	200.3	96.6	200.3	30.37	96.6	30.4
18	243.1	115.9	243.1	40.62	115.9	40.6
19	248.9	141.8	248.9	51.63	141.8	51.6
20	157.6	54.3	157.6	22.50	54.3	22.5
21	201.3	88.0	201.3	42.00	88.0	42.0
22	300.0	141.8	300.0	72.94	141.8	72.9
23	300.0	172.5	300.0	99.33	172.5	99.3
24	300.0	205.6	300.0	90.00	205.6	90.0
25	300.0	217.2	300.0	120.00	217.2	120.0
26	131.6	53.2	131.6	15.00	53.2	15.0
27	163.3	75.7	163.3	19.50	75.7	19.5
28	188.2	93.3	188.2	26.00	93.3	26.0
29	143.0	122.1	143.0	32.50	122.1	32.5
30	234.8	140.7	234.8	37.38	140.7	37.4
31	248.2	150.4	248.2	42.00	150.4	42.0
32	258.9	166.7	258.9	48.75	166.7	48.8
33	300.0	196.7	300.0	60.00	196.7	60.0
34	300.0	264.5	300.0	90.00	264.5	90.0
35	300.0	264.5	300.0	100.00	264.5	100.0
36	300.0	300.0	300.0	150.00	300.0	150.0
37	130.1	51.8	130.1	15.00	51.8	15.0
38	56.4	23.0	56.4	7.26	23.0	7.3
39	160.5	74.2	160.5	19.50	74.2	19.5
40	171.6	81.6	171.6	26.00	81.6	26.0
41	196.4	99.7	196.4	32.50	99.7	32.5
42	223.5	128.9	223.5	39.00	128.9	39.0
43	239.6	139.1	239.6	42.00	139.1	42.0
44	253.8	161.2	253.8	48.75	161.2	48.8
45	288.6	186.4	288.6	60.00	186.4	60.0
46	300.0	263.6	300.0	90.00	263.6	90.0
47	300.0	300.0	300.0	120.00	300.0	120.0
48	300.0	300.0	300.0	180.00	300.0	180.0

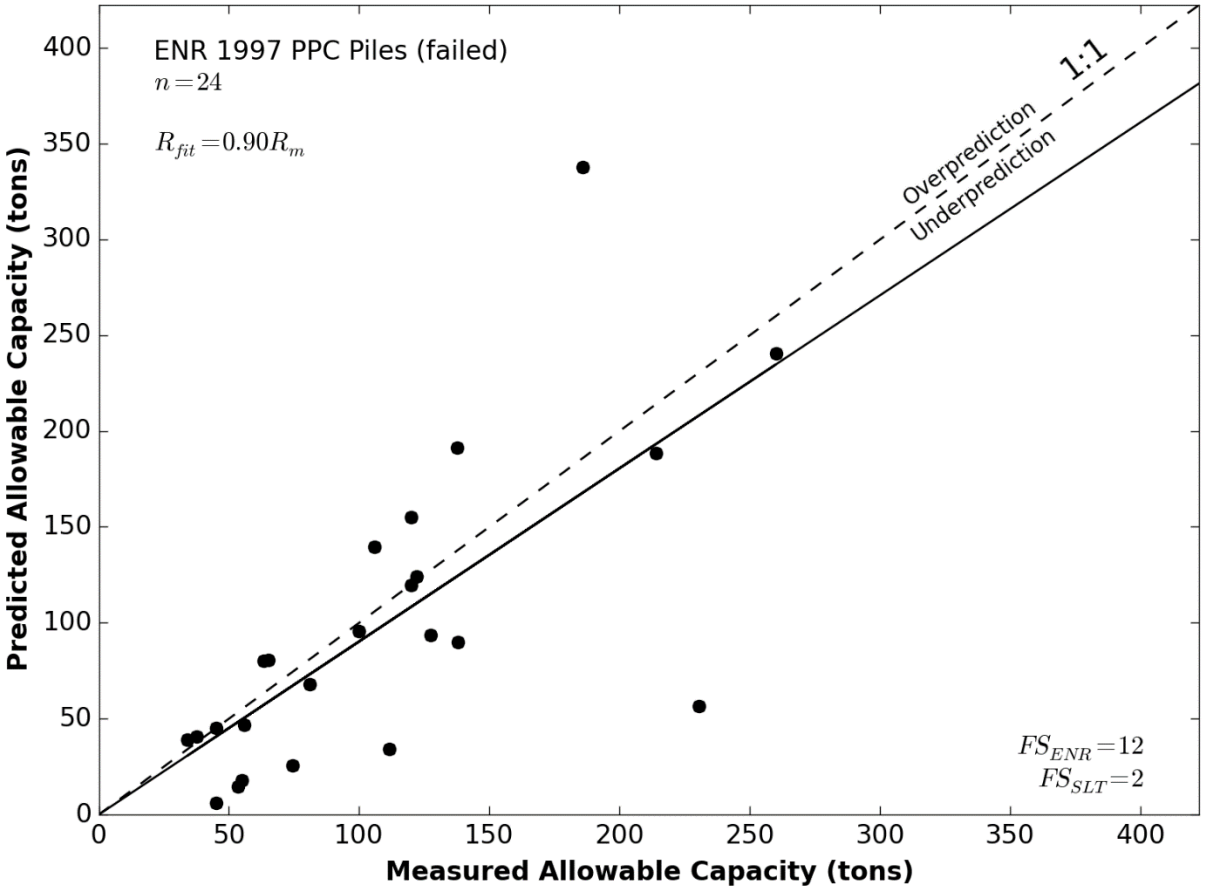
APPENDIX C

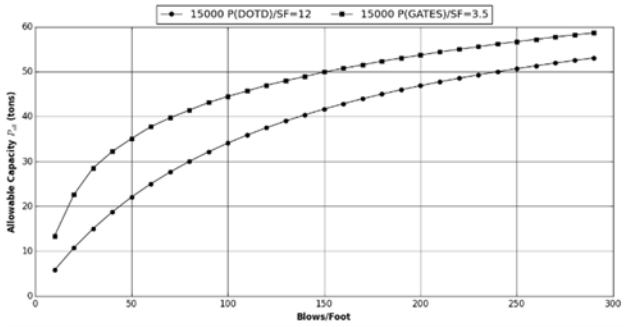
DOTD EVALUATION OF FHWA MODIFIED GATES FORMULA (1997)

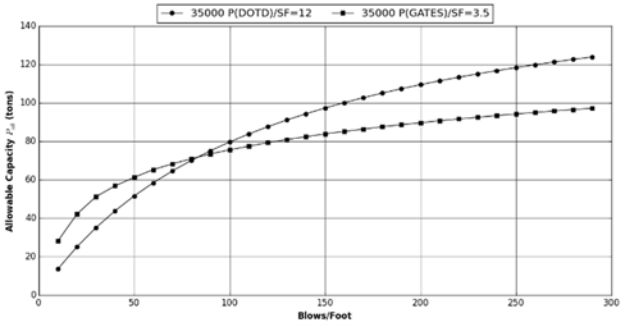

FHWA Gates 1997 PPC Piles (failed)
$n = 24$
$R_{fit} = 1.17 R_m$
1:1
Overprediction
Underprediction
Predicted Ultimate Capacity (tons)
Measured Ultimate Capacity (tons)
0
100
200
300
400
500
600
700

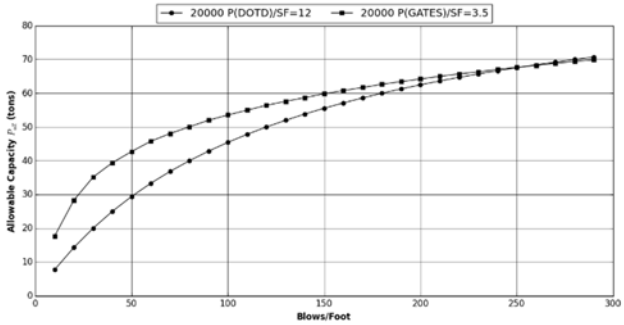

ENR 1997 PPC Piles (failed)
$n = 24$
$R_{fit} = 5.42 R_m$
1:1
Overprediction
Underprediction
Predicted Ultimate Capacity (tons)
Measured Ultimate Capacity (tons)
0
1000
2000
3000
4000
5000

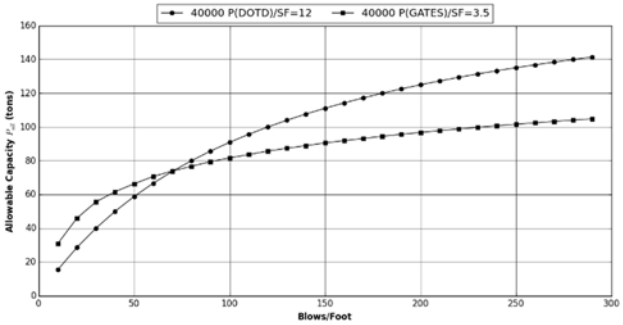

FHWA Gates 1997 PPC Piles (failed)
$n = 24$
$R_{fit} = 0.67 R_m$
1:1
Overprediction
Underprediction
$FS_{Gates} = 3.5$
$FS_{SLT} = 2$
Predicted Allowable Capacity (tons)
Measured Allowable Capacity (tons)
0
50
100
150
200
250
300

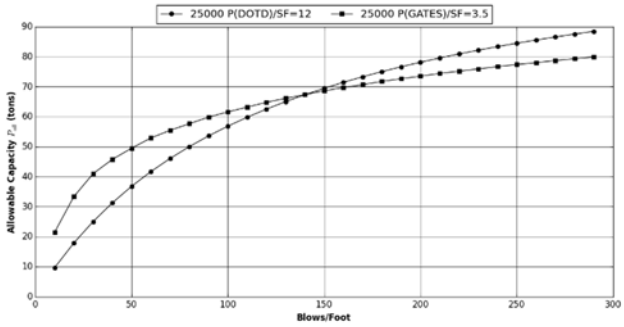

ENR 1997 PPC Piles (failed)
$n=24$
$R_{fit}=0.90R_m$
1:1
Overprediction
Underprediction
$FS_{ENR}=12$
$FS_{SLT}=2$
Predicted Allowable Capacity (tons)
Measured Allowable Capacity (tons)
0
50
100
150
200
250
300
350
400

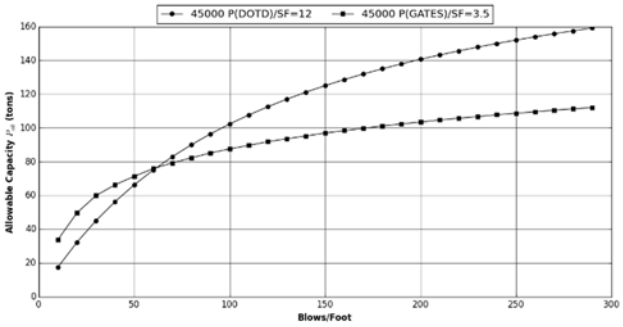

15000 P(DOTD)/SF=12
15000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

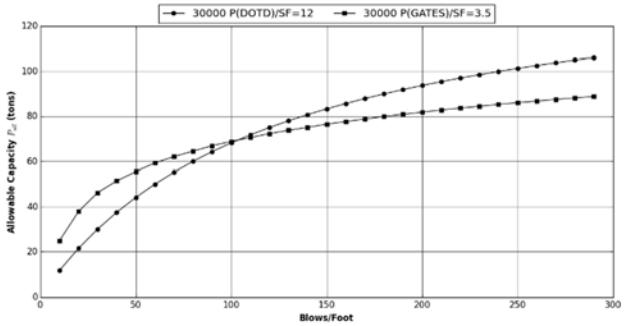

35000 P(DOTD)/SF=12
35000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

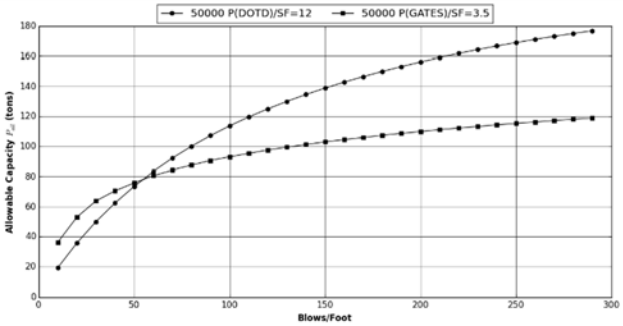

20000 P(DOTD)/SF=12
20000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

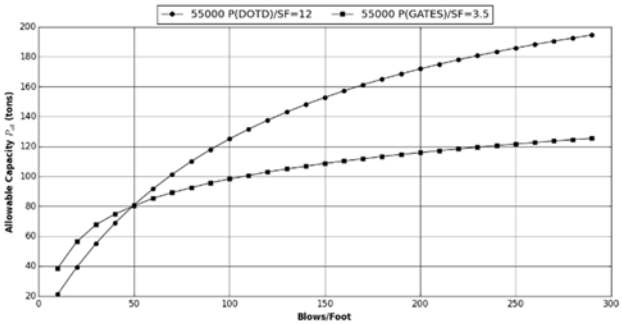

40000 P(DOTD)/SF=12
40000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

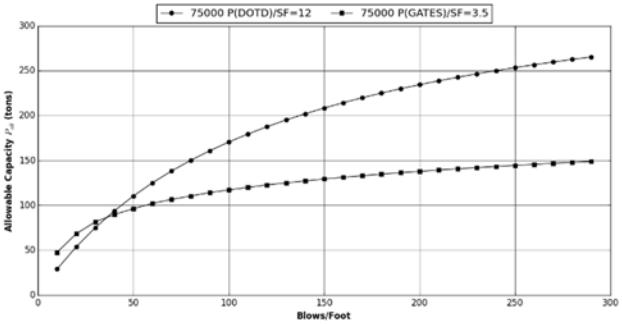

25000 P(DOTD)/SF=12
25000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


45000 P(DOTD)/SF=12
45000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


30000 P(DOTD)/SF=12
30000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


50000 P(DOTD)/SF=12
50000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


55000 P(DOTD)/SF=12
55000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot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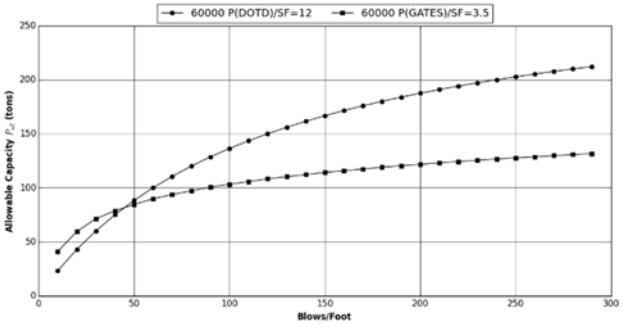
75000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot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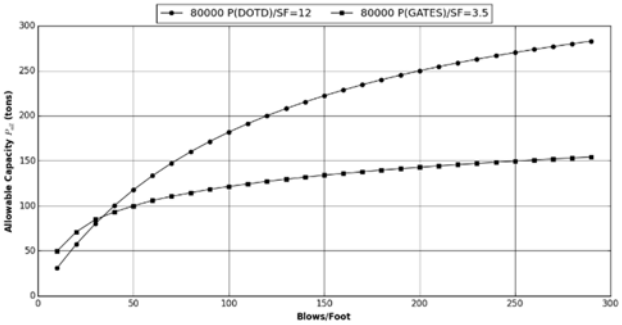
60000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot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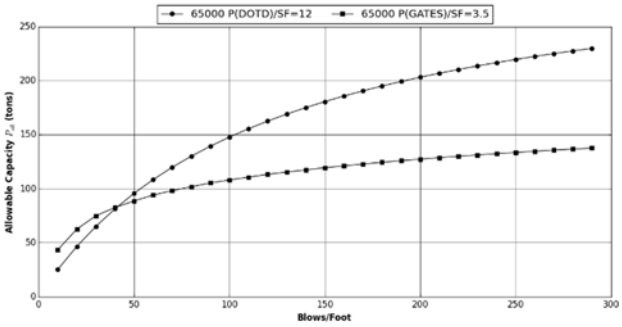
80000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot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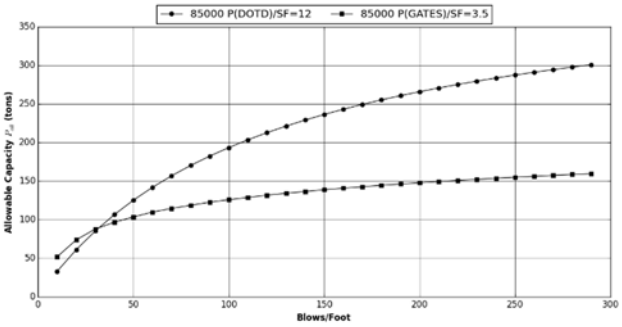
65000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot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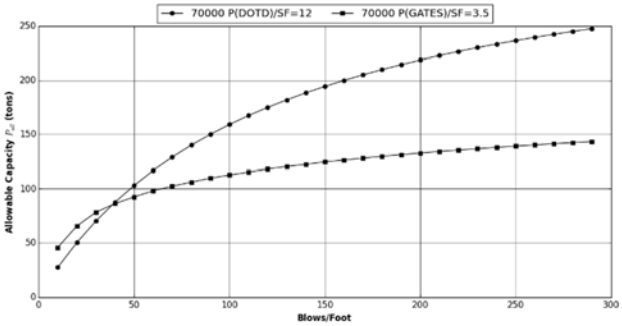
85000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


70000 P(DOTD)/SF=12
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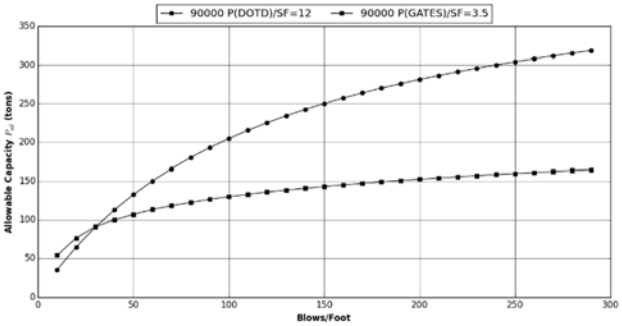
Blows/Foot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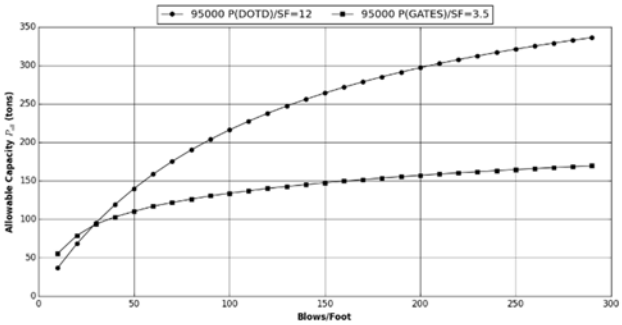
90000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot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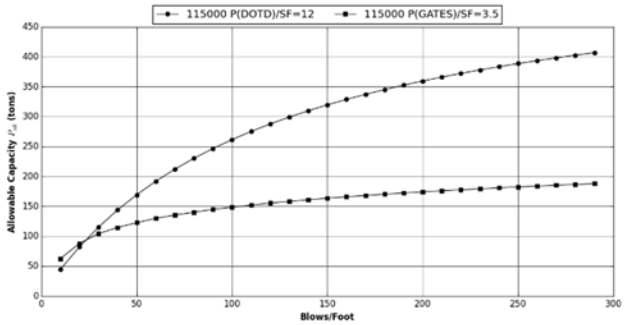
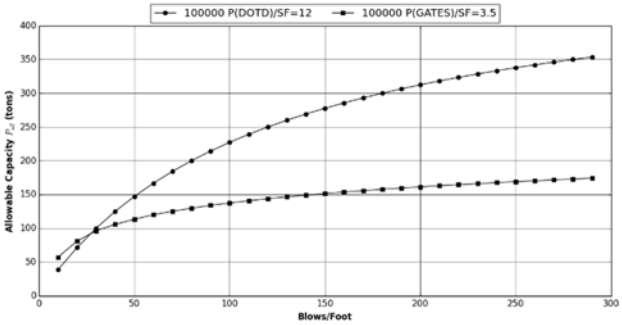
95000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


115000 P(DOTD)/SF=12
115000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot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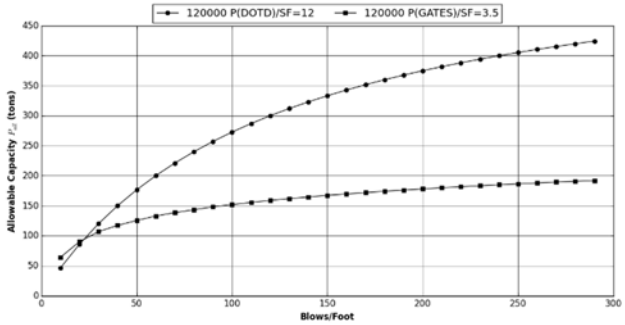
100000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot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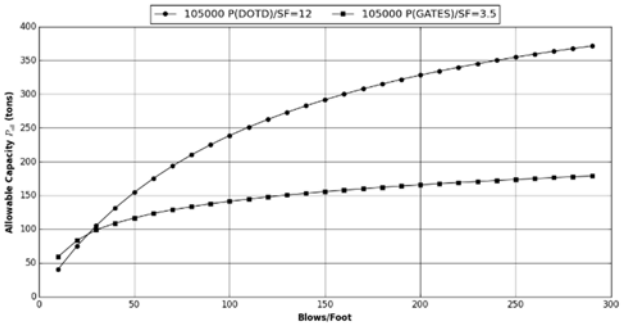
Blows/Foot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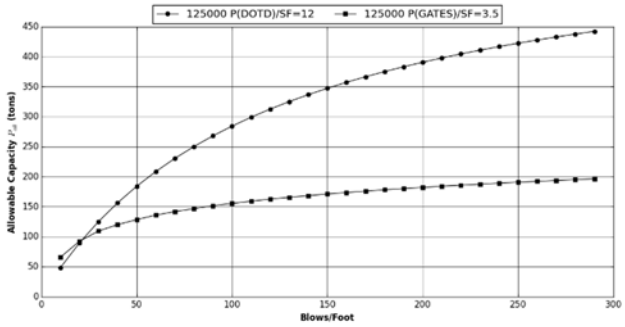
Blows/Foot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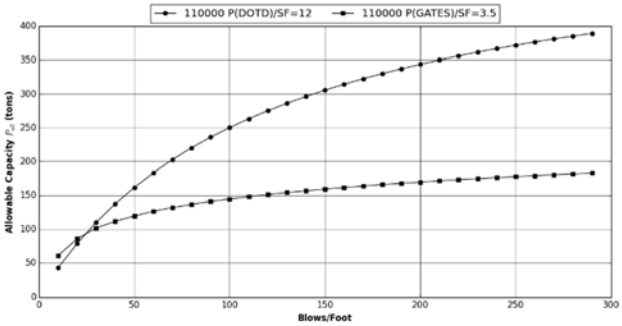
Allowable Capacity P_{all} (tons)
Blows/Foot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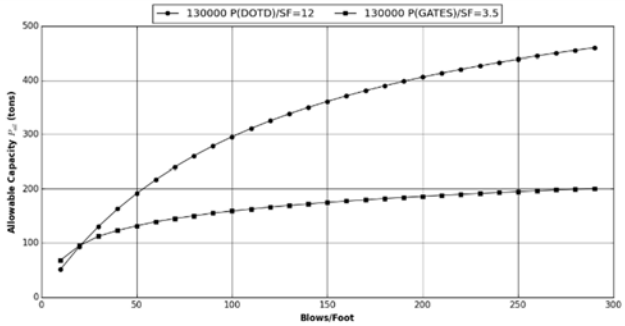
Allowable Capacity P_{all} (tons)
Blows/Foot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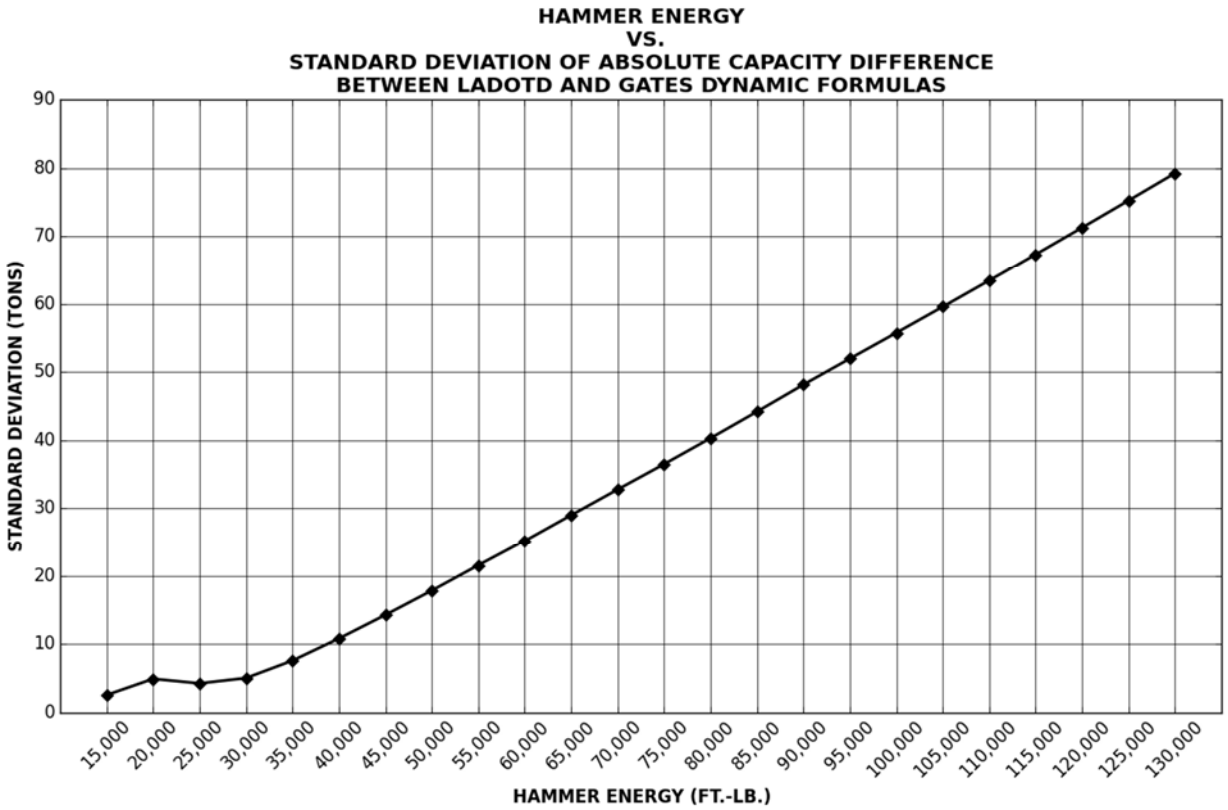
Allowable Capacity P_{all} (tons)
Blows/Foot


HAMMER ENERGY
VS.
STANDARD DEVIATION OF ABSOLUTE CAPACITY DIFFERENCE
BETWEEN LADOTD AND GATES DYNAMIC FORMULAS
STANDARD DEVIATION (TONS)
0
10
20
30
40
50
60
70
80
90
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
55,000
60,000
65,000
70,000
75,000
80,000
85,000
90,000
95,000
100,000
105,000
110,000
115,000
120,000
125,000
130,000
HAMMER ENERGY (FT.-LB.)

APPENDIX D

DATABASE DESIGN

LAPLTD Documentation

Louisiana Department of Transportation and Development Pile Load Test Database

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Introduction

LAPLTD: Louisiana Department of Transportation and Development Pile Load Test Database

Background

Purpose: To collect pile load testing information using a standard approach for use in evaluating pile capacity testing methods and pile capacity prediction methods.

Objectives: To standardize data collection for static load tests and dynamic load tests (CAPWAP Analyses).

Created with Access 2013.

Hierarchy

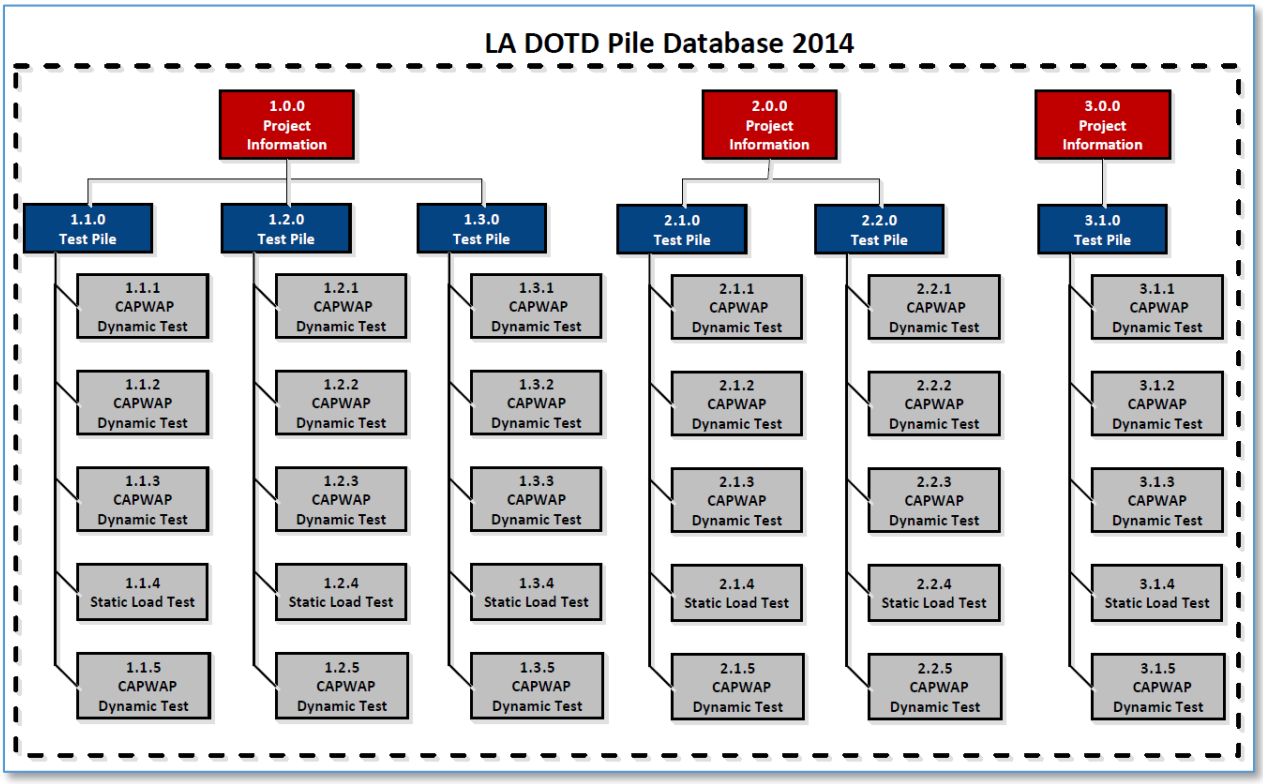

Figure 1: LAPLTD Hierarchy levels

Hierarchy level 1: Projects

Unique names/project numbers.

Hierarchy level 2: Test Piles

Each test pile must be tied to a project. There may exist many test piles for each project.

Hierarchy level 3: Test Events

Each test event must be tied to a test pile. There may exist many test events for each test pile.

Tables

dtProjects

Hierarchy Level 1

Fields

Table 1. dtProjects Fields

Name	Caption (*=field required)	Description	Comments
Project_Num_H	H Number	H Number (required field)	Project identification number for newer projects. Input mask “H.” followed by six digits.
Project_Num_old	Project Number (old)	Project Number (old)	Project identification number for older projects. Input mask 000-00-0000 (9 digits).
Project_Name	Project Name *	Project Name (required field)	Descriptive project name. Usually includes road name and/or name of feature the road crosses.
Totals_TP	Test Piles	Test Pile Records	
Path_Network	Network Path	Location of file folder on T:\ drive	
Contractor	Contractor *	Contractor performing foundation work (required field)	Contractor performing foundation work for the project. Must be one of contractors listed. Add new contractor names to “Contractors” list in Database Maintenance as needed.
Parish_1	Parish 1 *	Primary parish in which the project is located (required field)	Parish in which the project resides or the primary parish in which the project is located.
Parish_2	Parish 2	Secondary parish in which the project is located	Secondary parish in which the project is located if the project spans two parishes.
Date_Latest	Latest	Drive date of latest test pile	
Totals_MP	Monitor Piles	Monitor Pile Records	
Totals_IP	Indicator Piles	Indicator Pile Records	
Totals_Other	Other Pile Types	Other Pile Type Records	
Totals_TS	Test Shafts	Test Shafts Records	
Source	Source *	Source *	Source of information for the project data inputted. Must be one of the sources listed. Add new sources to the “Sources” list in Database Maintenance as needed.

Name	Caption (*=field required)	Description	Comments
Route	Route	Route foundation supports	
Notes			

Table 2. dtProjects Unknown Default Values

Field	Value
H Number	H.000000
Project Number	000-00-0000
Contractor	Unknown
Parish	Unknown

dtTestPiles

Hierarchy Level 2

Fields

Table 3. dtTestPiles Fields

Name	Caption (*=field required)	Description	Comments
Pile_Name	Pile Name*		
Latitude	Lat [deg] *	Latitude [decimal degrees] (required field)	North/South geographic coordinate for position of pile. Input as decimal; use as much detail as possible. Unacceptable latitude values will be met with the error: “Warning – Latitude must be located within the state of Louisiana (>28.89 And <33.03)”. See Table 4 for unknown values.
Longitude	Long [deg] *	Longitude [decimal degrees] (required field)	East/West geographic coordinate for position of pile. Input as decimal; use as much detail as possible. Unacceptable longitude values will be met with the error: “Warning – Longitude must be located within the state of Louisiana (>-93.9 And <-88.96)”. See Table 4 for unknown values.
Station	Station [ft]	Station [ft]	Station feet position of pile. Use notation 00+00.00.

Name	Caption (*=field required)	Description	Comments
Sta_offset	Sta Offset	Station Offset	Feet offset from station for location of pile. Use notation 00 RT or 00 LT.
Near_Boring	Nearest Boring	Name of the nearest soil boring	Name of boring nearest to pile. (Ex. SPT-01)
Near_CPT	Nearest CPT	Name of the nearest CPT sounding	Name of CPT nearest to pile. (Ex. CPT-01)
Date_Driven	Date Driven *	Date initial pile driving completed (required field)	Date and time at which pile was installed. Input mask: "__/__/____ __:__:__ __" (MM/DD/YYYY HH:MM:SS AM/PM). See Table 4 for unknown value of time.
Length	Length [ft] *	Total pile length [ft] (required field)	Total length of pile in feet.
Elev_Reference	Elev. Reference *	Reference Elevation: Measured, Estimated, or Unknown?	Description of the nature of ground surface elevation and other elevation values: Measured, Estimated, or Unknown.
Elev_GS	GS Elev [ft] *	Ground surface elevation [ft] (required field)	Ground surface elevation in feet. See Table 4 for unknown values.
Elev_Casing	Casing Elev [ft]	Elevation of bottom of casing [ft]	Elevation in feet of bottom of pile casing. Usually similar to Scour elevation. Must be blank or less than ground surface elevation or error message will appear: "Warning – Casing elevation must be below ground elevation."
Elev_Cutoff	Cutoff Elev [ft]	Pile cutoff elevation [ft]	Top of pile elevation in feet.
Elev_Splice	Splice Elev [ft]	Pile splice elevation [ft]	Elevation of pile splice, usually applicable to longer piles that need to be spliced together during driving.
Elev_TipEOD	EOD Tip Elev [ft] *	Pile tip elevation at end-of-drive [ft] (required field)	Elevation in feet of the tip of pile at the end of driving. (Negative of the pile length if no other pile elevation values are known.)
Elev_TipDesign	Design Tip Elev [ft] (req)	Design pile tip elevation [ft] (required field)	Elevation in feet of the tip of pile specified in the design.
Notes	Notes	Test pile notes	
LRFD	LRFD	Pile designed according to LRFD?	Pile designed according to LRFD? Yes (checked) or No (Unchecked).
Load_Factored	Factored Load [tons]	Factored load used in LRFD design [tons]	Factored load used in LRFD design in tons.
Resist_Factor	Resistance Factor	Resistance factor used in LRFD design	Resistance factor used in LRFD design.
Load_Design	Design Load [tons]	Design load used in ASD design [tons]	Design load used in ASD design in tons.

Name	Caption (*=field required)	Description	Comments
Load_Target	Target Load [tons]	Ultimate pile resistance needed to verify design [tons]	Ultimate pile resistance needed to verify design in tons.
Setup_Factor	Setup Factor	Pile setup factor	Pile Setup Factor.
Designer	Designer	EOR for pile design	Engineer on record for pile design.
Instrumented	Instrumented	Was the pile instrumented?	Was the pile instrumented? Yes (checked) or No (Unchecked).
Elev_Scour	Scour Elevation [ft]	Scour Elevation [ft]	Elevation in feet of pile scour. Usually similar to Bottom of Casing elevation.
Modulus	Modulus [ksi]	Elastic modulus of pile [ksi]	Elastic Modulus of the pile in ksi.
Project_ID	Project *	Project name (required field)	
Hammer	Hammer *	Type of hammer used to drive pile	Hammer used to drive the pile during initial install. Begin typing the hammer manufacturer and the first hammer of that manufacturer will appear. Use the pull-down to see other hammers. Must be one of the hammers on the list. Add new hammers to the “Hammers” list in Database Maintenance as needed.
Pile_Type	Pile Type*	Type/Size of pile (required field)	Type of pile. For example, ‘12” Solid Sq. PPC’. Must be one of the pile types listed. Add new pile types to the “Pile Types” list in Database Maintenance as needed.
TP_Category	TP Category *	Type of test pile (required field)	Pile Type: Test Pile, Monitor Pile, Indicator Pile, Other, or Test Shaft. Most likely “Test Pile” (pile which has undergone a load test) or “Monitor Pile” (production pile).
Soil_Type	Soil Type	Type of soil pile is tipped into	Type of soil the tip of the pile: Unknown, Clay, Sand, or Gravel. Must be one of the soil types listed. Add new soil types to the “Soil Types” list in Database Maintenance as needed.
Steel_Yield_Strength	Steel Yield Strength [ksi]	Steel Pile Yield Strength, Fy [ksi]	Yield strength of the steel used for the pile in ksi.
Concrete_Strength	Concrete Strength [ksi]	Concrete Pile Yield Strength, Fy [ksi]	Yield strength of the concrete used for the pile in ksi.
Pile_Splice	Pile Spliced	Is the pile spliced?	Was the pile spliced? Yes (checked) or No (Unchecked).
Stroke_EOID	Stroke [ft]	Stroke [ft] closest available data to EOID	Stroke in feet recorded in end of initial drive test event or the closest test event to the initial drive.

Name	Caption (*=field required)	Description	Comments
Blowcount_EOID	BC_EOID	Blow Count - closest available data to EOID	Blow count in blows per foot recorded in end of initial drive test event or the closest test event to the initial drive.
StokeBlCnt_Notes	Stroke and Blow Count Notes	Notes for Stroke and Blow Count Values	Notes for EOID Stroke and EOID Blow count values

Table 4. dtTestPiles Unknown Default Values

Field	Value
Date Driven – Time	__/__/____ 00:00:00 AM
Latitude	29
Longitude	-90
Elevation Reference	Unknown
Ground Surface Elevation	0

dtTestEvents

Hierarchy Level 3

Fields

Table 5. dtTestEvents Fields

Name	Caption (*=field required)	Description	Comments
Date_Tested	Date Tested *	Date of test event (required field)	Date and time at which pile was tested. Input mask: "__/__/____ __:__:__ __" (MM/DD/YYYY HH:MM:SS AM/PM). See Table 6 for unknown value of time.
Time_Elapsed	Elapsed time [hours] (req)	Elapsed time since EOD [hours] (required field)	Elapsed time in hours from when the pile was installed to when the pile was tested. Auto-calculated when the record is saved. Displays 0.01 hours if time elapsed is zero or negative.
Capacity_Ult	Ultimate Capacity [tons]	Ultimate capacity derived from test event [tons]	Ultimate capacity of the pile derived from the test event in tons.

Name	Caption (*=field required)	Description	Comments
Capacity_End	End Bearing [tons]	End bearing capacity derived from test event [tons]	End bearing capacity of the pile derived from the test event in tons.
Capacity_Skin	Skin Friction [tons]	Skin Friction capacity derived from test event [tons]	Skin friction capacity of the pile derived from the test event in tons. Auto-calculated based on Ultimate Capacity and End Bearing.
Stroke	Stroke [ft]	Observed stroke [ft]	Observed stroke in feet.
Blow_Count	Blow Count [bl/ft]	Observed blow count at time of event [blows/ft]	Observed blow count at time of event in blows/ft.
Jc	JRx	Damping constant associated with PDA capacity associated with Rx method	Damping constant associated with PDA capacity associated with Rx method.
JRs	JRs	Damping constant associated with PDA capacity associated with Rs method	Damping constant associated with PDA capacity associated with Rs method.
MQ	Match Quality	Match quality from CAPWAP analysis	Match quality from CAPWAP analysis.
Failure	Failure	Did static load test fail the pile?	Did the static load test fail the pile? Yes (checked) or No (unchecked).
Ult_Cap_Method	Ultimate Capacity Determination Method	Butler-Hoy, Davisson (piles up to 24"), Modified Davisson (piles larger than 24")	Method used for determining the ultimate capacity of the pile: Davisson (for piles up to 24”), Modified Davisson (for piles larger than 24”), or Butler-Hoy.
Notes	Notes	Field testing notes	Field testing notes
EMX	EMX [kip-ft]	Hammer Enargy [kip-ft]	Hammer Energy in kip-feet.
Pile_Name	Pile Name *	Name of the test pile (required field)	Pile name of the test pile chosen from drop-down list #2. Autocompleted when the New Test button is clicked.
Event_Type	Event Type *	Type of test event used	Type of test event; brings up relevant data entry forms when chosen. Choices: see lstEventtype. Only two event types are given detailed data input forms in the database: Static and CAPWAP. The other event types, when selected for a new test event, bring up the File Locations tab through which data in PDF files can be linked.

Name	Caption (*=field required)	Description	Comments
Loc_Boring_Log	Loc Boring Log	Location of File: Boring Log	Location of the PDF file including boring log information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.
Loc_Pile_Install_Records	Loc Pile Install Records	Location of File: Pile Installation Records	Location of the PDF file including pile installation record information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.
Loc_Load_Test_Records	Loc Load Test Records	Location of File: Load Testing Records	Location of the PDF file including load test record information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.
Hammer	Hammer	Hammer	Name of the hammer used during the pile test event. Begin typing the hammer manufacturer and the first hammer of that manufacturer will appear. Use the pull-down to see other hammers. Must be one of the hammers on the list. Add new hammers to the “Hammers” list in Database Maintenance as needed.
SP_Weight	SP Weight [kips]	Striker Plate Weight [kips]	Weight of striker plate in kips.
SP_Diameter	SP Diameter [in]	Striker Plate Diameter [in]	Diameter of striker plate in inches.
SP_Thickness	SP Thickness [in]	Striker Plate Thickness [in]	Thickness of striker plate in inches.
HC1_Material	HC1 Material	Hammer Cushion 1 Material	Description of hammer cushion material.
HC1_Layers	HC1 Layers	Hammer Cushion 1 Layers	Number of layers of hammer cushion material specified.
HC1_Thickness	HC1 Thickness [in]	Hammer Cushion 1 Thickness [in]	Total thickness of the hammer cushion material specified.
HC2_Material	HC2 Material	Hammer Cushion 2 Material	Description of hammer cushion material.
HC2_Layers	HC2 Layers	Hammer Cushion 2 Layers	Number of layers of hammer cushion material specified.
HC2_Thickness	HC2 Thickness [in]	Hammer Cushion 2 Thickness [in]	Total thickness of the hammer cushion material specified.
Hammer_Cushion	Hammer Cushion	Hammer Cushion	A drop-down menu of cushions from the WEAP database. Use the M1/M2 ratio to help guide cushion selection.
HC_Modulus_OR	HC Modulus OR [ksi]	Hammer Cushion Modulus of Elasticity [ksi] OVERRIDE	Elastic modulus of the hammer cushion. WEAP value Override (OR).
HC_CoR_OR	HC CoR OR	Hammer Cushion Coefficient of Restitution OVERRIDE	Coefficient of Restitution (COR) of the hammer cushion. WEAP value Override (OR).

Name	Caption (*=field required)	Description	Comments
M1_M2_Ratio	M1/M2 Ratio	M1/M2 Thickness Ratio	Ratio of the thickness of hammer cushion material 1 to the thickness of hammer cushion material 2. Auto-calculated based on thickness input.
Helmet_Dimension	Helmet Dimension	Helmet (Pile Cap) Dimension	Description of pile cap (or pile helmet) material.
Helmet_Weight	Helmet Weight [kips]	Helmet (Pile Cap) Weight [kips]	Weight of pile cap in kips.
Helmet_Ins_Weight	Helmet Inserts Weight [kips]	Helmet (Pile Cap) Inserts Weight [kips]	Weight of pile cap inserts in kips.
PC_Material	PC Material	Pile Cushion Material	Pile cushion material description.
PC_Thickness	PC Thickness [in]	Pile Cushion Thickness [in]	Total thickness of the pile cushion material.
PC_Area	PC Area [sq.in.]	Pile Cushion Area [sq.in.]	Area of the of the pile cushion.
Pile_Cushion	Pile Cushion	Pile Cushion	A drop-down menu of cushions from the WEAP database.
PC_Modulus_OR	PC Modulus OR [ksi]	Pile Cushion Modulus OVERRIDE [ksi]	Elastic modulus of the pile cushion. WEAP value Override (OR).
PC_CoR_OR	PC CoR OR	Pile Cushion Coefficient of Restitution OVERRIDE	Coefficient of Restitution (COR) of the pile cushion. WEAP value Override (OR).
Quake_Shaft	Shaft Quake [in]	Soil Parameter: Shaft Quake [in]	Shaft quake soil parameter in inches.
Quake_Toe	Toe Quake [in]	Soil Parameter: Toe Quake [in]	Toe quake soil parameter in inches.
Damping_Shaft	Damping Shaft [s/ft]	Soil Parameter: Damping Shaft [s/ft]	Shaft damping soil parameter in s/ft.
Damping_Toe	Toe Damping [s/ft]	Soil Parameter: Toe Damping [s/ft]	Toe damping soil parameter in s/ft.
Percentage_Shaft_Resistance	Shaft Resistance Percentage	Shaft Resistance Percentage [%]	Percentage (%) of shaft resistance.
Dist_Shape_Number	Distribution Shape Number	Distribution Shape Number	Distribution shape number.
Resistance_Distribution_Opt	Resistance Distribution Option	Proportional Shaft Resistance, Constant Shaft Resistance, or Constant End Resistance	Proportional shaft resistance, Constant shaft resistance, or Constant end resistance.
Ult_Capacity_1	Ult Capacity 1 [kips]	Ultimate Capacity 1 [kips]	Ultimate Capacity 1 [kips]

Name	Caption (*=field required)	Description	Comments
Ult_Capacity_2	Ult Capacity 2 [kips]	Ultimate Capacity 2 [kips]	Ultimate Capacity 2 [kips]
Ult_Capacity_3	Ult Capacity 3 [kips]	Ultimate Capacity 3 [kips]	Ultimate Capacity 3 [kips]
Ult_Capacity_4	Ult Capacity 4 [kips]	Ultimate Capacity 4 [kips]	Ultimate Capacity 4 [kips]
Ult_Capacity_5	Ult Capacity 5 [kips]	Ultimate Capacity 5 [kips]	Ultimate Capacity 5 [kips]
Ult_Capacity_6	Ult Capacity 6 [kips]	Ultimate Capacity 6 [kips]	Ultimate Capacity 6 [kips]
Ult_Capacity_7	Ult Capacity 7 [kips]	Ultimate Capacity 7 [kips]	Ultimate Capacity 7 [kips]
Ult_Capacity_8	Ult Capacity 8 [kips]	Ultimate Capacity 8 [kips]	Ultimate Capacity 8 [kips]
Ult_Capacity_9	Ult Capacity 9 [kips]	Ultimate Capacity 9 [kips]	Ultimate Capacity 9 [kips]
Ult_Capacity_10	Ult Capacity 10 [kips]	Ultimate Capacity 10 [kips]	Ultimate Capacity 10 [kips]
WEAP_Hammer_Option	Diesel Hammer Operation Option	Diesel Hammer Operation Option	Diesel Hammer Operation Option
WEAP_Pressure_FS	Diesel Hammer Pressure Fuel Setting	Diesel Hammer Pressure Fuel Setting	Fuel setting for diesel hammers: Max = Pressure_FS1 Max-1 = Pressure_FS2 Max-2 = Pressure_FS3 Max-3 = Pressure_FS4 Min = Pressure_FS5
Override_Pressure_FS	Override Diesel Hammer Pressure For Fuel Setting	Override Diesel Hammer Pressure Fuel Setting	Pressure in psi corresponding to fuel setting selected for diesel hammer. Default value changes according to the selection made in the Diesel Hammer Pressure Fuel Setting drop-down list.
Override_Efficiency	Override Hammer Efficiency	Override Hammer Efficiency	Efficiency of hammer. Default value is automatically filled in from data in the hammer database.
Override_Stroke	Override Stroke (ft.)	Hammer Equivalent Maximum Stroke [ft]	Hammer equivalent maximum stroke in feet.

Name	Caption (*=field required)	Description	Comments
Override_Frequency	Override Frequency (Hz)	Frequency for VIB hammer [Hz]	Frequency in hertz for vibratory hammers.
Elev_TipEOD	EOD Tip Elev [ft]	Pile tip elevation at end-of-drive [ft] (required field)	Pile tip elevation at the end of drive in feet.
Quake_Shaft	Shaft Quake [in]	Soil Parameter: Shaft Quake [in]	Average skin quake in inches.
Quake_Toe	Toe Quake [in]	Soil Parameter: Toe Quake [in]	Average toe quake in inches.
Damping_Shaft	Damping Shaft [s/ft]	Soil Parameter: Damping Shaft [s/ft]	Average skin smith damping in s/ft.
Damping_Toe	Toe Damping [s/ft]	Soil Parameter: Toe Damping [s/ft]	Average toe smith damping in s/ft.

Table 6. dtTestEvents Unknown Default Values

Field	Value
Date Tested – Time	__/__/____ 00:00:00 AM

dtStaticData

Static data is only used for static test events. The table appears as a datasheet in the static test record form.

Table 7. dtStaticData Fields

Name	Caption (*=field required)	Description	Comments
lt_Time	Time [min] *	Elapsed time [min] (required field)	Start with 0.
lt_Load	Load [tons] *	Applied Load [tons] (required field)	Start with 0.
lt_Deflection	Deflection [in] *	Pile top deflection [in] (required field)	Start with 0.
Notes	Notes	Loading increment notes	Ex. “Failure” or “Unloading”
lt_Event	Test Event	Test Event	Corresponding Test Event ID

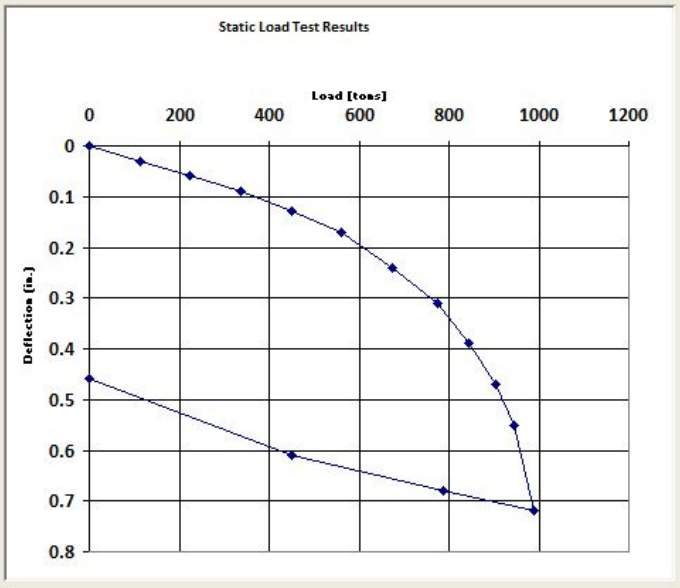

Figure 2. Static Load Test Results Plot - Load vs. Deflection Curve

Lists

lstSource

Table 8. lstSource Data

Data Source
FHWA Database (1998)
LADOTD Database
LTRC No. 14-1GT

lstContractors

Table 9. lstContractors Data

L & A Construction
Boh Bros
Johnson Bros
Jensen Construction
Gilchrist
James Construction
Traylor Bros.
Unknown
Traylor/Massman
Testing
J. B. James Construction
Coastal Bridge
W.E. McDonald
Massman Construction
Gulf South Piling and Construction
Angelo Iafrate Construction
Martin Marietta Materials of LA
W.R. Fairchild Construction
Guinn Brothers
Shappert Engineering Co
T.L. Wallace Construction
Ardaman AND ASSOCIATED
Eustis Engineering Company
Chambers construction company

Tolunay-wong engineers

lstParishes

Table 10. lstParishes Data

Parish Name	Parish Number	District Number
Acadia	1	03
Allen	2	07
Ascension	3	61
Assumption	4	61
Avoyelles	5	08
Beauregard	6	07
Bienville	7	04
Bossier	8	04
Caddo	9	04
Calcasieu	10	07
Caldwell	11	58
Cameron	12	07
Catahoula	13	58
Claiborne	14	04
Concordia	15	58
Desoto	16	04
East Baton Rouge	17	61
East Carroll	18	05
East Feliciana	19	61
Evangeline	20	03
Franklin	21	58
Grant	22	08
Iberia	23	03
Iberville	24	61
Jackson	25	05
Jefferson	26	02
Jefferson Davis	27	07
Lafayette	28	03
Lafourche	29	02
La Salle	30	58
Lincoln	31	05
Livingston	32	62
Madison	33	05
Morehouse	34	05
Natchitoches	35	08
Orleans	36	02

Parish Name	Parish Number	District Number
Ouachita	37	05
Plaquemines	38	02
Pointe Coupee	39	61
Rapides	40	08
Red River	41	04
Richland	42	05
Sabine	43	08
St. Bernard	44	02
St. Charles	45	02
St. Helena	46	62
St. James	47	61
St. John	48	62
St. Landry	49	03
St. Martin	50	03
St. Mary	51	03
St. Tammany	52	62
Tangipahoa	53	62
Tensas	54	58
Terrebonne	55	02
Union	56	05
Vermillion	57	03
Vernon	58	08
Washington	59	62
Webster	60	04
West Baton Rouge	61	61
West Carroll	62	05
West Feliciana	63	61
Winn	64	08
Unknown	99	0

lstPiletype

Table 11. lstPiletype Fields

Name	Caption	Description
Name		Name of pile type
Diam_Pile		Diameter of pile [in]
Diam_Void		Diameter of void [in]
Pile_Shape		Shape of pile
Pile_Type		Type of pile
Voided		Voided Pile
Perimeter	Perimeter [in]	Pile perimeter [in]
Area_Gross	Gross Area [in2]	Gross area of pile, not including void [in2]
Area_Void	Void Area [in2]	Area of circular void [in2]
Area_Section	Section Area [in2]	Area of pile cross-section [in2]
Area_End	End Area [in2]	Area considered in end bearing [in2]
Pile_Material	Pile Material	Pile Material
Pile_Emod	Pile Elastic Modulus [ksi]	Pile Elastic Modulus [ksi]
Pile_SW	Pile Specific Weight [lb/ft3]	Pile Specific Weight [lb/ft3]

Table 12. lstPiletype Data

Name	Diam Pile	Diam Void	Pile Shape	Pile Type	Voided	Perimeter [in]	Gross Area [in2]	Void Area [in2]	Section Area [in2]	End Area [in2]	Pile Material	Pile Elastic Modulus [ksi]	Pile Specific Weight [lb/ft3]
Name of pile type	Diameter of pile [in]	Diameter of void [in]	Shape of pile	Type of pile	Voided Pile	Pile perimeter [in]	Gross area of pile, not including void [in2]	Area of circular void [in2]	Area of pile cross-section [in2]	Area considered in end bearing [in2]	Pile Material	Pile Elastic Modulus [ksi]	Pile Specific Weight [lb/ft3]
12" Solid Sq. PPC	12.00	0	Square	PPC	FALSE	48.00	144.00	0.00	144.00	144.00	Concrete	5000	150
14" Solid Sq. PPC	14.00	0	Square	PPC	FALSE	56.00	196.00	0.00	196.00	196.00	Concrete	5000	150
18" Solid Sq. PPC	18.00	0	Square	PPC	FALSE	72.00	324.00	0.00	324.00	324.00	Concrete	5000	150
24" Solid Sq. PPC	24.00	0	Square	PPC	FALSE	96.00	576.00	0.00	576.00	576.00	Concrete	5000	150
30" Solid Sq. PPC	30.00	0	Square	PPC	FALSE	120.00	900.00	0.00	900.00	900.00	Concrete	5000	150
36" Solid Sq. PPC	36.00	0	Square	PPC	FALSE	144.00	1,296.00	0.00	1,296.00	1,296.00	Concrete	5000	150
24" Voided Sq. PPC	24.00	10.5	Square	PPC	TRUE	96.00	576.00	86.59	489.41	576.00	Concrete	5000	150
30" Voided Sq. PPC	30.00	16.5	Square	PPC	TRUE	120.00	900.00	213.82	686.18	900.00	Concrete	5000	150
36" Voided Sq. PPC	36.00	22	Square	PPC	TRUE	144.00	1,296.00	380.13	915.87	1,296.00	Concrete	5000	150
16" Solid Sq. PPC	16.00	0	Square	PPC	FALSE	64.00	256.00	0.00	256.00	256.00	Concrete	5000	150

Name	Diam Pile	Diam Void	Pile Shape	Pile Type	Voided	Perimeter [in]	Gross Area [in2]	Void Area [in2]	Section Area [in2]	End Area [in2]	Pile Material	Pile Elastic Modulus [ksi]	Pile Specific Weight [lb/ft3]
Name of pile type	Diameter of pile [in]	Diameter of void [in]	Shape of pile	Type of pile	Voided Pile	Pile perimeter [in]	Gross area of pile, not including void [in2]	Area of circular void [in2]	Area of pile cross-section [in2]	Area considered in end bearing [in2]	Pile Material	Pile Elastic Modulus [ksi]	Pile Specific Weight [lb/ft3]
54" Cylinder PPC	54.00	42	Open-Ended Pipe	PPC	TRUE	169.65	2,290.22	1,385.44	904.78	904.78	Concrete	5000	150
30" Steel Pipe	30.00	28.75	Open-Ended Pipe	Steel	TRUE	94.25	706.86	649.18	57.68	57.68	Steel	30000	492
36" Drilled Shaft	36.00	0	Shaft	CIP Concrete	FALSE	113.10	1,017.88	0.00	1,017.88	1,017.88	Concrete	5000	150
42" Drilled Shaft	42.00	0	Shaft	CIP Concrete	FALSE	131.95	1,385.44	0.00	1,385.44	1,385.44	Concrete	5000	150
48" Drilled Shaft	48.00	0	Shaft	CIP Concrete	FALSE	150.80	1,809.56	0.00	1,809.56	1,809.56	Concrete	5000	150
54" Drilled Shaft	54.00	0	Shaft	CIP Concrete	FALSE	169.65	2,290.22	0.00	2,290.22	2,290.22	Concrete	5000	150
60" Drilled Shaft	60.00	0	Shaft	CIP Concrete	FALSE	188.50	2,827.43	0.00	2,827.43	2,827.43	Concrete	5000	150
66" Drilled Shaft	66.00	0	Shaft	CIP Concrete	FALSE	207.34	3,421.19	0.00	3,421.19	3,421.19	Concrete	5000	150
72" Drilled Shaft	72.00	0	Shaft	CIP Concrete	FALSE	226.19	4,071.50	0.00	4,071.50	4,071.50	Concrete	5000	150

lstPileMaterial

Table 13. lstPileMaterial Data

Concrete
Steel
Timber

lstTPType

Table 14. lstTPType Data

Test Pile
Monitor Pile
Indicator Pile
Other
Test Shaft

lstEventtype

Table 15. lstEventtype Data

Static
CAPWAP
Case/RMX
Statnamic
Gates
Other
EDC (Embedded Data Collector)
APPLE/Drop
O-Cell
Static (Uplift)
Static (Lateral)

lstSoilType

Table 16. lstSoilType Data

Unknown
Clay
Sand
Gravel

CH
CL
CL-ML
GC
ML
"OH, ABOVE ""A"" LINE "
S/C
SC
SC-SM
SM
SP

lstHammerMakers

Table 17. lstHammerMakers Data

APE
BANUT
BERMINGH
BRUCE
BSP
CONMACO
DAWSON
DELMAG
DKH
FAIRCHLD
FEC
HERA
HITACHI
HMC
HPSI
HYPOTHET
ICE
IHC
J&M
JUNTTAN
KOBE
LINKBELT
MAIT
MENCK
MGF

MITSUBIS
MKT
Mueller
MVE
PILECO
Pilemast
PVE
VULCAN
OTHER
RAYMOND
Self
Twinwood
UDDCOMB
UNKNOWN

lstHammers

Table 18. lstHammers Fields

Name	Caption	Description
Model	Manufacturer	Model/maker of hammer
Type	Model	Type of hammer
Power	Type	Type of power used
Energy		Energy per blow [kip-ft]
Ram_Weight		Ram weight [kips]
Hammer_Name		
WEAP_ID	WEAP ID	WEAP Hammer Number ID
WEAP_ID_2003		
Efficiency		
EqMax Stroke		
Pressure_FS1		
Pressure_FS2		
Pressure_FS3		
Pressure_FS4		
Pressure_FS5		
Frequency		

lstHammerOptions_Fuel

Table 19. lstHammerOptions_Fuel Data

Max = Pressure_FS1
Max-1 = Pressure_FS2
Max-2 = Pressure_FS3
Max-3 = Pressure_FS4
Min = Pressure_FS5

lstHammerOptions_Operation

Table 20. lstHammerOptions_Operation Data

Convergence of stroke with fixed pressure
Convergence of pressure with fixed stroke
Single analysis with fixed stroke and pressure

lstCushion

Table 21. lstCushion Data

Cushion Name	Cushion Modulus [ksi]	Cushion Specific Weight [lb/ft3]	Cushion CoR
1" Aluminum per 1" Conbest *	545		0.8
1" Aluminum per 1" Micarta *	440	126	0.8
3/4" Aluminum per 1" Conbest *	480	123	0.8
1/2" Aluminum per 1" Conbest *	414	116	0.8
1/2" Aluminum per 1" Micarta *	334	113	0.8
1/4" Aluminum per 1" Micarta *	280	103	0.8
5.0"Hamortex + 1.5" Plywood (new)	72		0.7
5.0"Hamortex + 1.5" Plywood (used) **	108		0.7
2.5"Hamortex + 1.5" Plywood (new)	57		0.66
2.5"Hamortex + 1.5" Plywood (used) **	100		0.66
Acculam	500	87.4	0.8
Aluminum	10000	165	0.8
Bongossi Wood (parallel)	290	72	0.75
Conbest	280	91	0.8
Concrete-Grout (protected by cushion)	4500	135	1
Concrete-Regular (protected by cushion)	5000	150	1
Concrete-Spun Cylinder (protected by cushion)	6000	155	1

Cushion Name	Cushion Modulus [ksi]	Cushion Specific Weight [lb/ft3]	Cushion CoR
Duracush	35	70	0.82
Ecoboard (recycled plastic piles)	330	50	0.8
Fir, Douglas	1700	33	0.5
Forbon	400	78	0.85
Force 10	142		0.6
Fosterlon	380		0.85
Hamortex	125		0.77
Klinger	25	119	0.6
Lancaster	2800	140	0.8
MC-904(P) Blue Nylon	175	72	0.92
Micarta	225	87	0.8
MMPAC	367		0.88
Nycast 6MPB Cast Nylon	207	72	0.91
Nylon/Klinger	171		0.84
Oak boards - new (transverse)	60	44	0.5
Oak boards - used (transverse) **	90	44	0.5
Oak (parallel)	750	44	0.5
Oak (transverse)	60	44	0.5
Pine, White, dry (parallel)	1300	26	0.5
Pine, Yellow Northern, dry (parallel)	1300	34	0.5
Pine, Yellow Southern, dry (parallel)	1300	45	0.5
Plywood - new (transverse)	30	38	0.5
Plywood - used (transverse) **	75	38	0.5
Plywood - Impr. S-539/S-530	200	38	0.84
Plywood - Non-Impr. S-542/S-540	200	38	0.9
PPI (recycled plastic with steel rebar)	1860	51	0.8
Ryertex	43	78	0.93
Seaward	1240	54	0.8
Steel	30000	492	0.85
Timber (generic-parallel)	1800	57	0.5
Trimax	420	50	0.8
Urethane	175	69	0.72
Wire Rope	150	490	0.8
Ductile Cast Iron -Low	20000	442	0.85
Ductile Cast Iron -High	24000	442	0.85
Rubber	15	94	0.5

lstResistDist

Table 22. lst ResistDist Data

Proportional shaft resistance
Constant shaft resistance
Constant end resistance

Minimum required data for one test event record

- Project Info
  - Project Name
  - Contractor
  - Parish
  - Data Source
- Pile Info
  - Pile Name
  - Length
  - Pile Installation Hammer
  - Type [of test pile]
  - Pile Type (size and material)
  - Date Driven
  - Latitude
  - Longitude
  - Elev. Reference (Measured, Estimated, or Unknown?)
  - Ground Surface Elevation
  - EOD (End of Drive) Tip Elevation
- Test Event Info
  - Date Tested
  - Event Type (Static, CAPWAP, …)

APPENDIX E

DATABASE USER MANUAL

LADOTD Pile Load Test Database User Guide

Louisiana Department of Transportation and Development Pile Load Test Database (LAPLTD)

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Introduction

Background

Purpose: To collect pile load testing information using a standard approach for use in evaluating pile capacity testing methods and pile capacity prediction methods.

Objectives: To standardize data collection for static load tests and dynamic load tests (CAPWAP Analyses).

Created with Access 2013.

Hierarchy

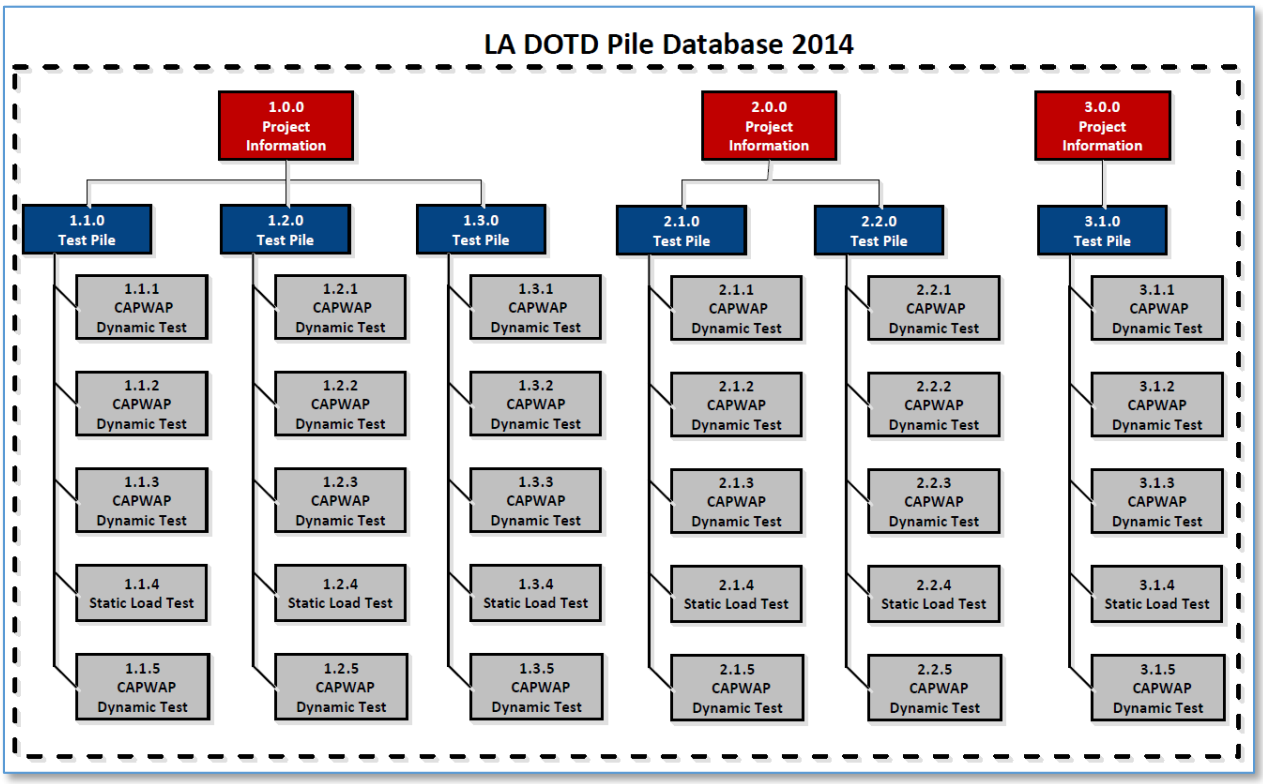


Figure 1: LAPLTD Hierarchy levels

Hierarchy level 1: Projects

Unique names/project numbers.

Hierarchy level 2: Test Piles

Each test pile must be tied to a project. There may exist many test piles for each project.

Hierarchy level 3: Test Events

Each test event must be tied to a test pile. There may exist many test events for each test pile.

Creating new records:

When creating new records (Project → Test Pile → Test Event), each preceding hierarchy level record must be saved before creating the connected record in the subsequent hierarchy level.

Deleting records:

When deleting records, all records in the lower hierarchy levels connected to the record you wish to delete must be deleted first. (Test Event → Test Pile → Project)

Validation and Input Restriction

Some fields included in the forms require input with certain restrictions. For example, **Latitude** and **Longitude** under location information for test piles. An error dialog box explaining the restrictions will appear after data not meeting these restrictions is entered into one of these fields and the field is deselected. The user may correct the data to satisfy the requirements or undo the data field change by pressing the "Esc" key.

Operational tip: *Occasionally while using the forms, some fields may not be able to be selected. If this happens, click on a large field like* Notes *or* Data*, and the glitch should stop, allowing you to select the other fields again.*

Main Menu

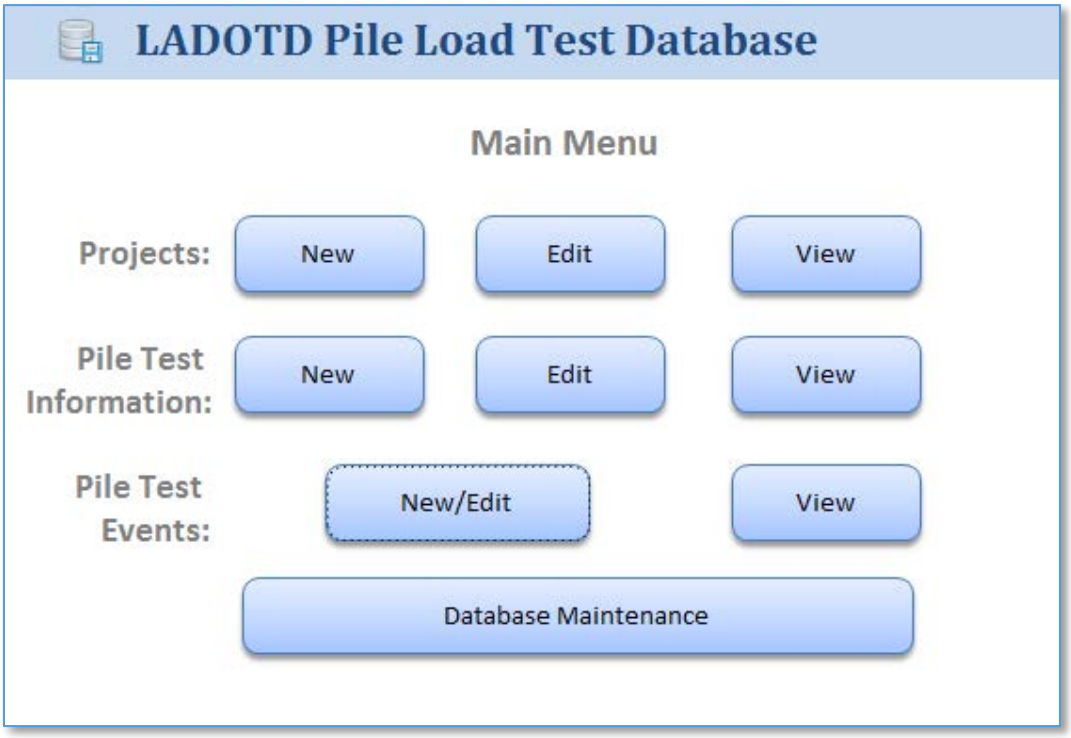


Figure 2: Main Menu

Projects

Hierarchy Level 1

New Project

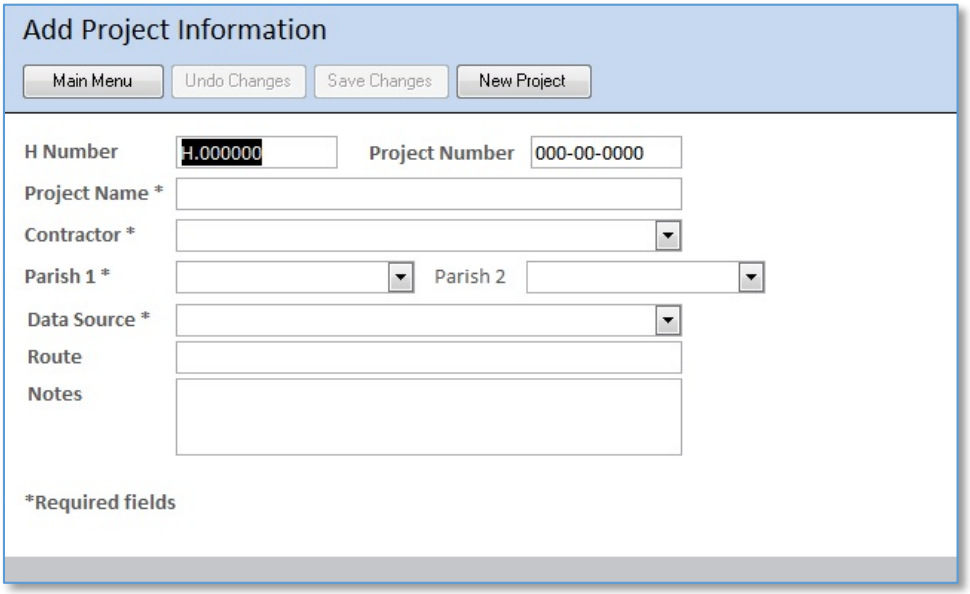


Figure 3: Add Project Information (opens in new window)

Required Fields (designated with * on input forms)

- Project Name
- Contractor
- Parish 1
- Data Source

Table 1: Project Information Default/Unknown Values

Field	Value
H Number	H.000000
Project Number	000-00-0000
Contractor	Unknown
Parish	Unknown

Project Fields

H Number – Project identification number for newer projects. Input mask "H." followed by six digits.

Project Number - Project identification number for older projects. Input mask 000-00-0000 (9 digits).

*Project Name** – Descriptive project name. Usually includes road name and/or name of feature the road crosses.

*Contractor** – Contractor performing foundation work for the project. Must be one of contractors listed. Add new contractor names to "Contractors" list in Database Maintenance as needed.

*Parish 1** – Parish in which the project resides or the primary parish in which the project is located.

Parish 2 – Secondary parish in which the project is located if the project spans two parishes.

*Data Source** – Source of information for the project data inputted. Must be one of the sources listed. Add new sources to the "Sources" list in Database Maintenance as needed.

Route – Route on which project is located.

Notes – Any additional project information.

Click SAVE CHANGES when done entering data.

Click NEW PROJECT if adding another project, otherwise click MAIN MENU to return to the main menu. Clicking UNDO CHANGES will erase all unsaved data in the form.

Edit Project

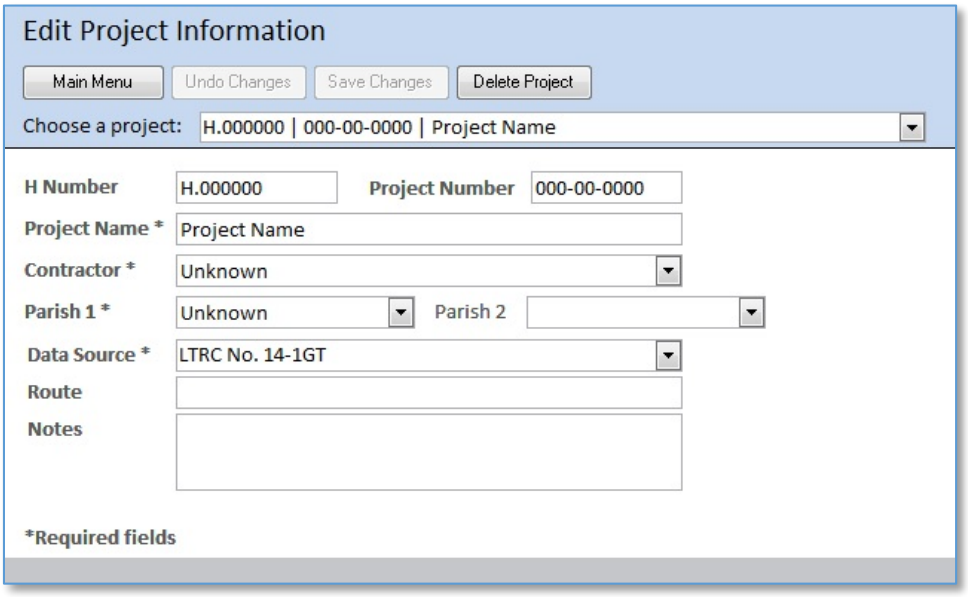
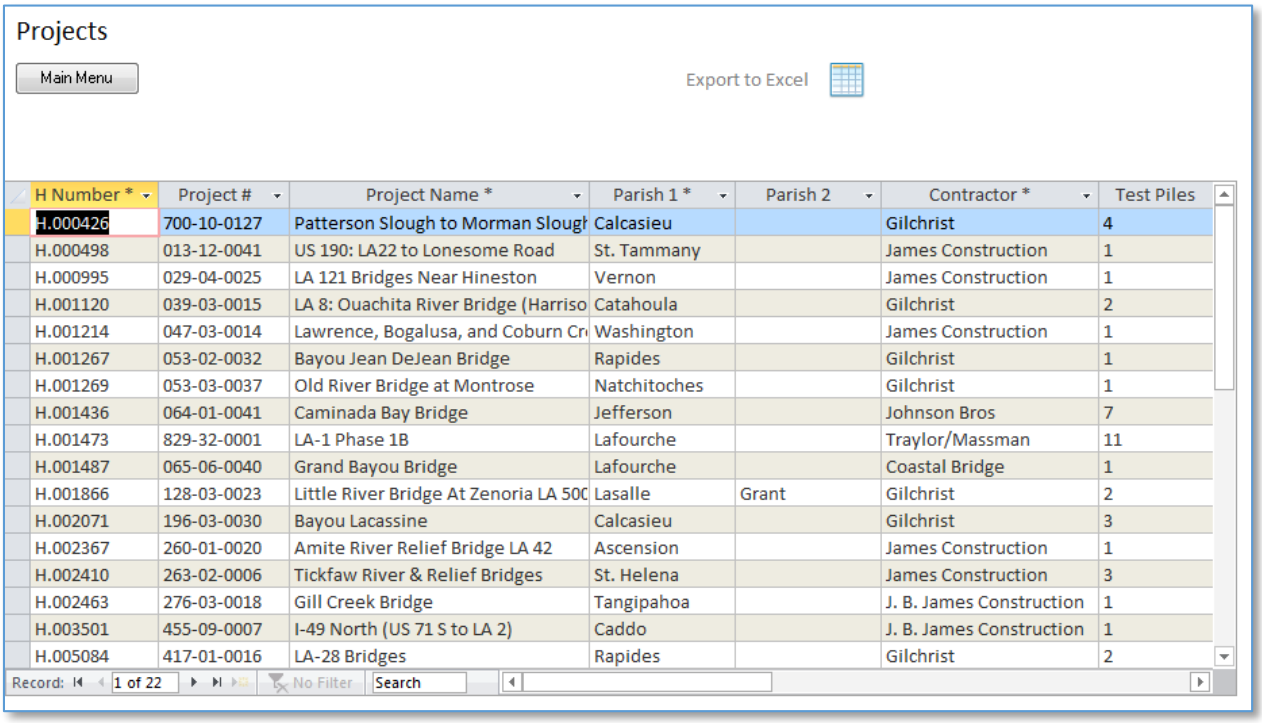


Figure 4: Edit Project Information (opens in new window)

This form includes the same fields as the **Add Project Information** form, except you must choose an existing project record to edit. Projects in the drop-down list are sorted by *H Number* first and *Project Number* second.

View Projects



H Number *	Project #	Project Name *	Parish 1 *	Parish 2	Contractor *	Test Piles
H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu		Gilchrist	4
H.000498	013-12-0041	US 190: LA22 to Lonesome Road	St. Tammany		James Construction	1
H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon		James Construction	1
H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harriso	Catahoula		Gilchrist	2
H.001214	047-03-0014	Lawrence, Bogalusa, and Coburn Cr	Washington		James Construction	1
H.001267	053-02-0032	Bayou Jean DeJean Bridge	Rapides		Gilchrist	1
H.001269	053-03-0037	Old River Bridge at Montrose	Natchitoches		Gilchrist	1
H.001436	064-01-0041	Caminada Bay Bridge	Jefferson		Johnson Bros	7
H.001473	829-32-0001	LA-1 Phase 1B	Lafourche		Traylor/Massman	11
H.001487	065-06-0040	Grand Bayou Bridge	Lafourche		Coastal Bridge	1
H.001866	128-03-0023	Little River Bridge At Zenoria LA 500	Lasalle	Grant	Gilchrist	2
H.002071	196-03-0030	Bayou Lacassine	Calcasieu		Gilchrist	3
H.002367	260-01-0020	Amite River Relief Bridge LA 42	Ascension		James Construction	1
H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena		James Construction	3
H.002463	276-03-0018	Gill Creek Bridge	Tangipahoa		J. B. James Construction	1
H.003501	455-09-0007	I-49 North (US 71 S to LA 2)	Caddo		J. B. James Construction	1
H.005084	417-01-0016	LA-28 Bridges	Rapides		Gilchrist	2

Record: 1 of 22 No Filter Search

Figure 5: View Projects

Shows all project records. Use the EXPORT TO EXCEL button to export all data into an Excel spreadsheet. Each field may be sorted and filtered using the triangular buttons (▼) next to the field caption.

Piles

Hierarchy Level 2

Add Pile

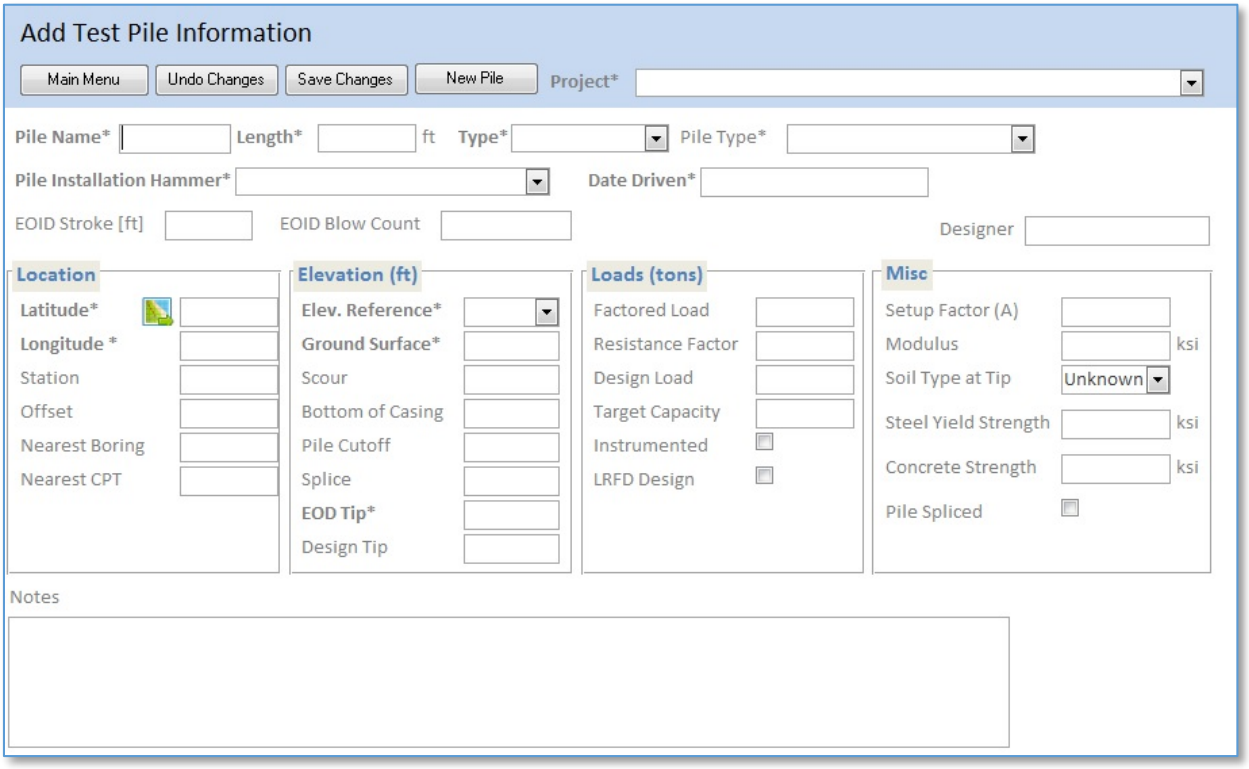


Figure 6: Add Pile Information

Start by selecting an existing project record. Projects in the drop-down list are sorted by *H Number* first and *Project Number* second.

Required Fields (designated with * on input forms)

- Pile Name
- Length
- Pile Installation Hammer
- Type
- Pile Type
- Date Driven
- Latitude
- Longitude
- Elev. Reference
- Ground Surface
- EOD Tip

Table 2: Pile Default/Unknown Values

Field	Value
Date Driven – Time	__/__/____ 00:00:00 AM
Latitude	29
Longitude	-90
Elev. Reference	Unknown
Ground Surface	0

Pile Fields

Pile info

*Pile Name** – Unique name of pile. (Ex. TP-03)

*Length** – Total length of pile in feet.

*Type** – Pile Type: Test Pile, Monitor Pile, Indicator Pile, Other, or Test Shaft. Most likely "Test Pile" (pile which has undergone a load test) or "Monitor Pile" (production pile).

*Pile Type** – Type of pile. For example, '12" Solid Sq. PPC'. Must be one of the pile types listed. Add new pile types to the "Pile Types" list in Database Maintenance as needed.

*Pile Installation Hammer** – Hammer used to drive the pile during initial install. Begin typing the hammer manufacturer and the first hammer of that manufacturer will appear. Use the pull-down to see other hammers. Must be one of the hammers on the list. Add new hammers to the "Hammers" list in Database Maintenance as needed.

*Date Driven** – Date and time at which pile was installed. Input mask: "__/__/____ __:__:__ __" (MM/DD/YYYY HH:MM:SS AM/PM). See Table 2 for unknown value of time.

EOID Stroke – End of Initial Drive (EOID) stroke in feet.

EOID Blow Count – End of Initial Drive (EOID) blow count.

Designer – Name of engineer on record for pile design.

Location

*Latitude** – North/South geographic coordinate for position of pile. Input as decimal; use as much detail as possible. Unacceptable latitude values will be met with the error: "Warning – Latitude must be located within the state of Louisiana (>28.89 And <33.03)". See Table 2 for unknown values.

*Longitude** – East/West geographic coordinate for position of pile. Input as decimal; use as much detail as possible. Unacceptable longitude values will be met with the error: "Warning – Longitude must be located within the state of Louisiana (>-93.9 And <-88.96)". See Table 2 for unknown values.

Station – Station feet position of pile. Use notation 00+00.00.

Offset – Station Offset. Feet offset from station for location of pile. Use notation 00 RT or 00 LT.

Nearest Boring – Name of boring nearest to pile. (Ex. SPT-01)

Nearest CPT – Name of CPT nearest to pile. (Ex. CPT-01)

Elevation (ft)

*Elev. Reference** – Description of the nature of ground surface elevation and other elevation values: Measured, Estimated, or Unknown.

*Ground Surface** – Ground surface elevation in feet. See Table 2 for unknown values.

Scour – Elevation in feet of pile scour. Usually similar to Bottom of Casing elevation.

Bottom of Casing - Elevation in feet of bottom of pile casing. Usually similar to Scour elevation. Must be blank or less than ground surface elevation or error message will appear: "Warning – Casing elevation must be below ground elevation."

Pile Cutoff – Top of pile elevation in feet.

Splice – Elevation of pile splice, usually applicable to longer piles that need to be spliced together during driving.

*EOD Tip** – Elevation in feet of the tip of pile at the end of driving. (Negative of the pile length if no other pile elevation values are known.)

Design Tip – Elevation in feet of the tip of pile specified in the design.

Loads (tons)

Factored Load – Factored load used in LRFD design in tons.

Resistance Factor – Resistance factor used in LRFD design.

Design Load – Design load used in ASD design in tons.

Target Capacity – Ultimate pile resistance needed to verify design in tons.

Instrumented – Was the pile instrumented? Yes (checked) or No (Unchecked).

LRFD Design – Pile designed according to LRFD? Yes (checked) or No (Unchecked).

Misc

Setup Factor (A) – Pile Setup Factor.

Modulus – Elastic Modulus of the pile in ksi.

Soil Type at Tip – Type of soil the tip of the pile: Unknown, Clay, Sand, or Gravel. Must be one of the soil types listed. Add new soil types to the "Soil Types" list in Database Maintenance as needed.

Steel Yield Strength – Yield strength of the steel used for the pile in ksi.

Concrete Strength – Yield strength of the concrete used for the pile in ksi.

Pile Spliced – Was the pile spliced? Yes (checked) or No (Unchecked).

Click SAVE CHANGES when done entering data.

Click NEW PILE if adding another pile, otherwise click MAIN MENU to return to the main menu. Clicking UNDO CHANGES will erase all unsaved data in the form.

Edit Pile

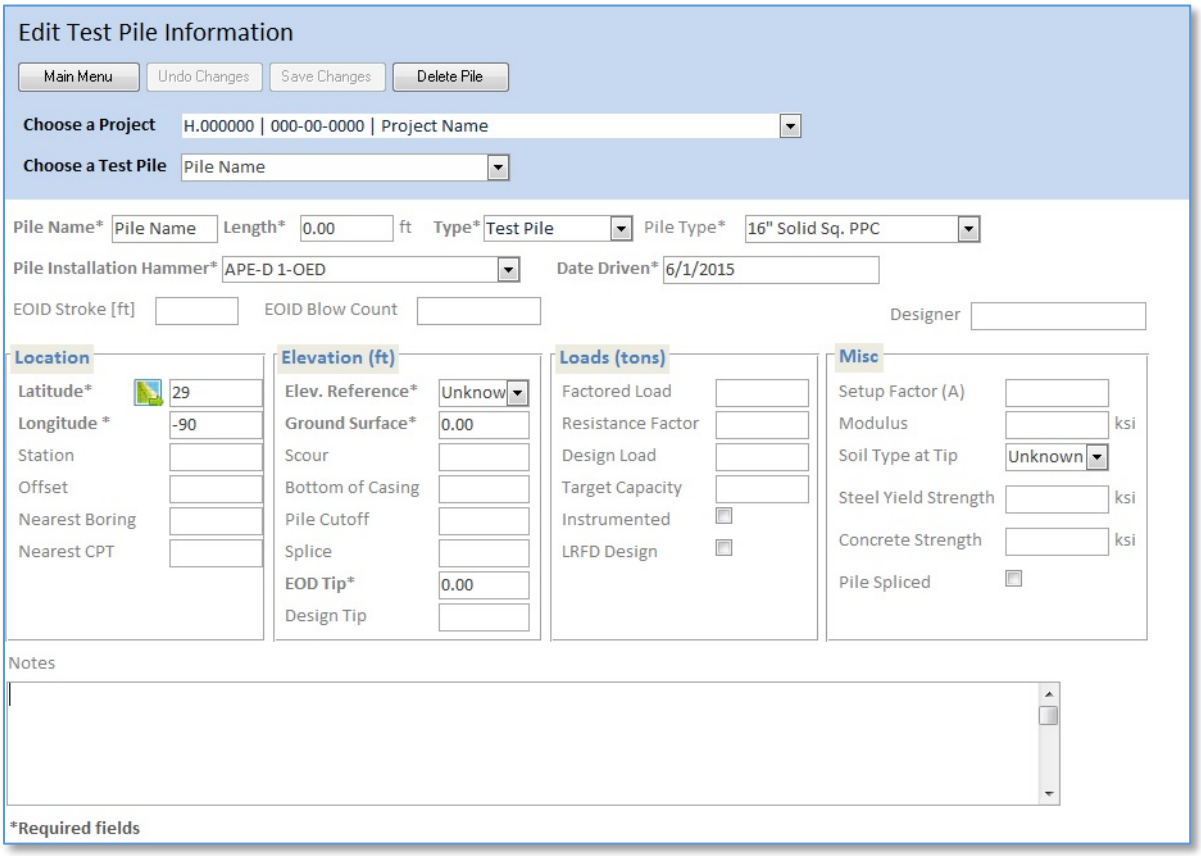


Figure 7: Edit Pile Information

This form includes the same fields as the **Add Test Pile Information** form, except you must choose an existing pile record to edit. Projects in the drop-down list are sorted by *H Number* first and *Project Number* second. Test piles in the drop down list are sorted in alphabetical order.

View Piles

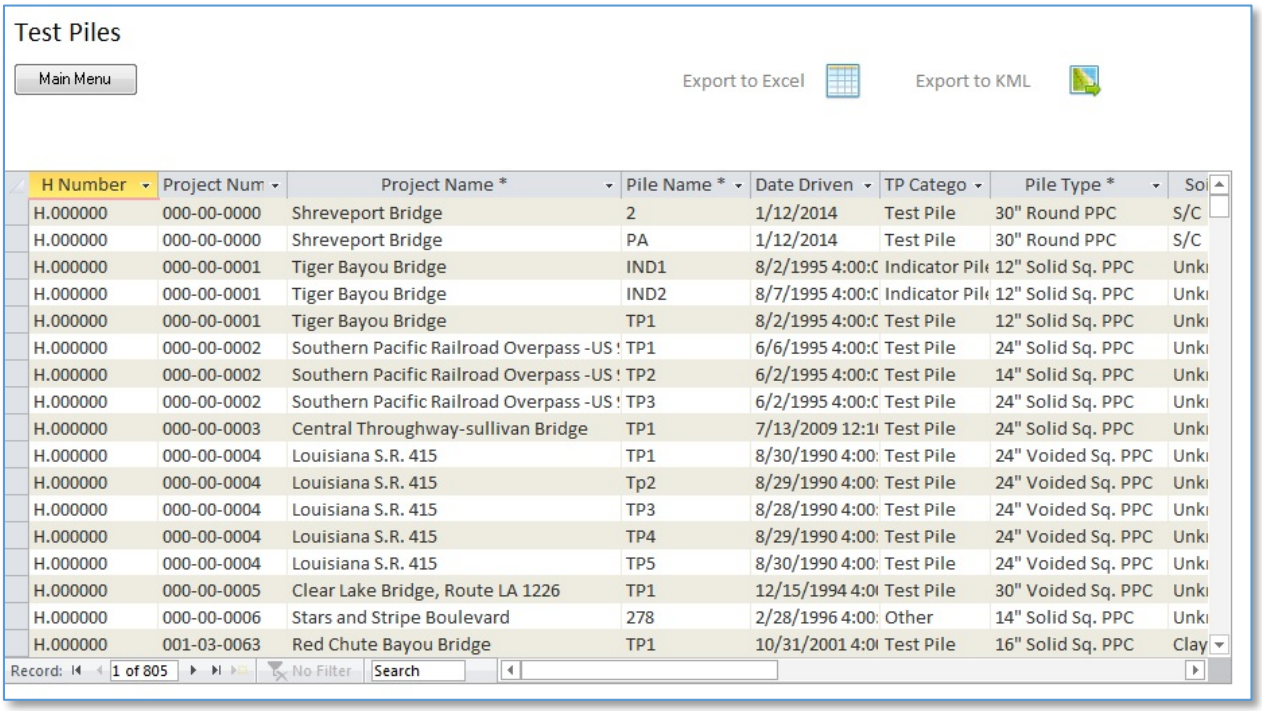


Figure 8: View Piles

Shows all pile records. Use the EXPORT TO EXCEL button to export all data into an Excel spreadsheet.

Use the EXPORT TO KML button to generate a Google Earth KML file with the filename “Piles_Export.kml” in the same directory as the database. The file generated will include all piles in the database and will overwrite any file in the directory with the same name. Use Google Earth to open the KML file and view the pile locations.

Each field may be sorted and filtered using the triangular buttons (▼) next to the field caption.

Test Events

Hierarchy Level 3

New/Edit Pile Test Events

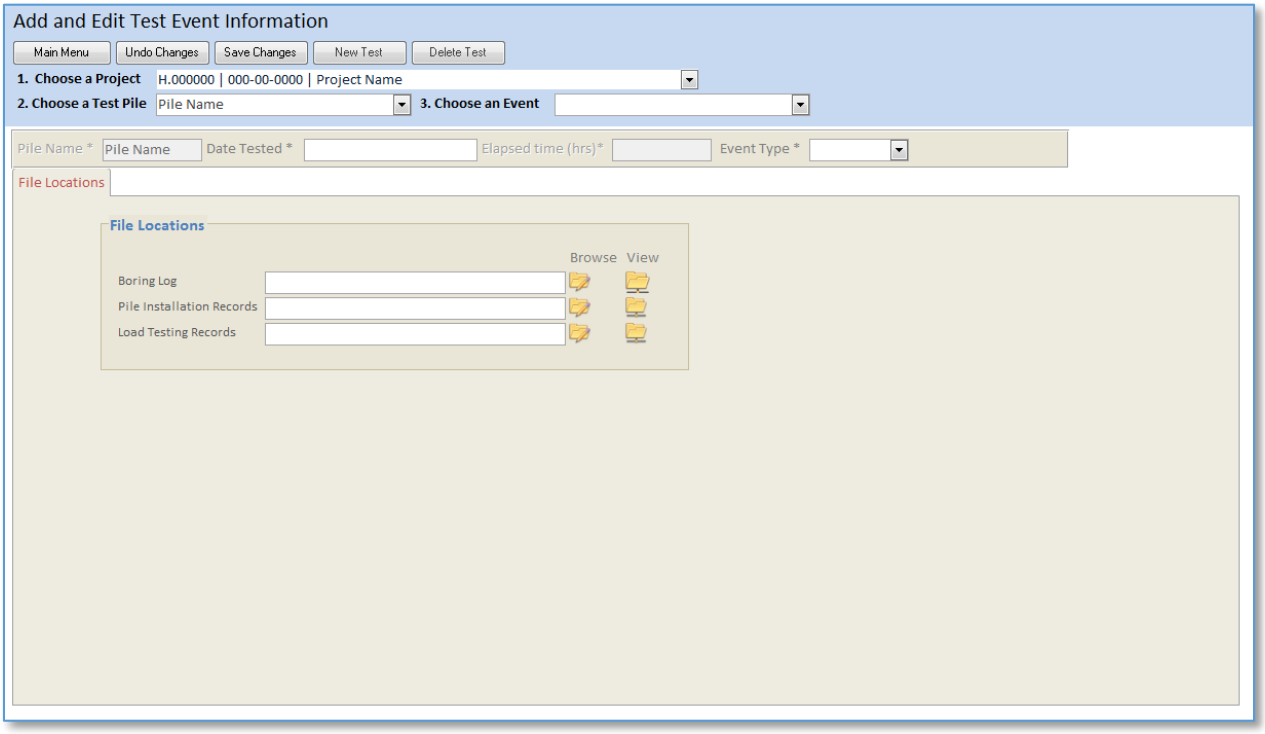


Figure 9: New/Edit Pile Test Events

Start by selecting a project record, then a test pile record. Projects in the drop-down list are sorted by *H Number* first and *Project Number* second. Test piles in the drop down list are sorted in alphabetical order.

Click NEW TEST to create a new test event record.

To edit an existing record, select a test event record from the **Choose an Event** drop-down list.

Required Fields (designated with * on input forms)

- Date Tested
- Event Type

Table 3: Test Event Default/Unknown Values

Field	Value
Date Tested – Time	__/__/____ 00:00:00 AM

Test Event Fields

Test Event Info

Pile name – Pile name of the test pile chosen from drop-down list #2. Autocompleted when the New Test button is clicked.

*Date Tested** – Date and time at which pile was tested. Input mask: "__/__/____ __:__:__ __" (MM/DD/YYYY HH:MM:SS AM/PM). See Table 3 for unknown value of time.

Elapsed time – Elapsed time in hours from when the pile was installed to when the pile was tested. Auto-calculated when the record is saved. Displays 0.01 hours if time elapsed is zero or negative.

*Event Type** – Type of test event; brings up relevant data entry forms when chosen. Choices: Static, CAPWAP, Case/RMX, Statnamic, Gates, Other, EDC (Embedded Data Collector), APPLE/Drop, O-Cell, Static (Uplift), or Static (Lateral). Only two event types are given detailed data input forms in the database: **Static** (Figure 10) and **CAPWAP** (Figure 11). The other event types, when selected for a new test event, bring up the *File Locations* tab (Figure 9) through which data in PDF files can be linked.

File locations

Boring Log – Location of the PDF file including boring log information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.

Pile Installation Records – Location of the PDF file including pile installation record information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.

Load Testing Records – Location of the PDF file including load test record information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.

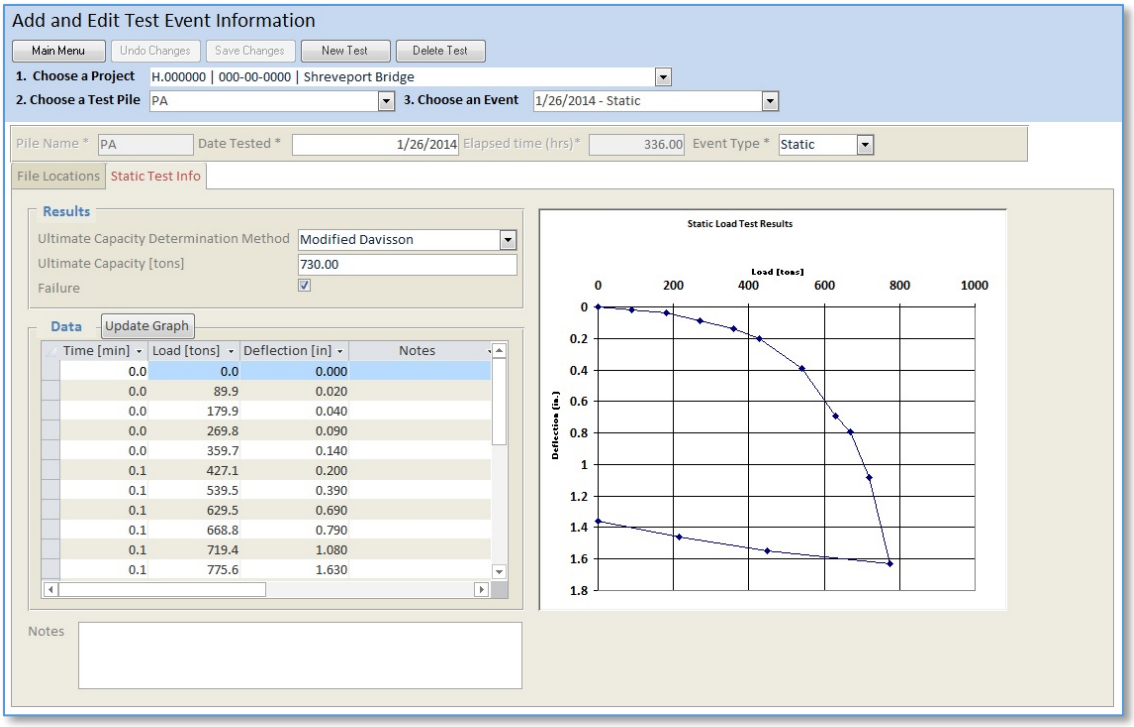


Figure 10: New/Edit Pile Test Event – Static

Test Event Fields (continued)

Static Test Event Info

Ultimate Capacity Determination Method – Method used for determining the ultimate capacity of the pile: Davisson (for piles up to 24”), Modified Davisson (for piles larger than 24”), or Butler-Hoy.

Ultimate Capacity – Ultimate capacity of the pile derived from the test event in tons.

Failure – Did the static load test data meet the failure criteria? Yes (checked) or No (unchecked).

Data – Data input table for static load test. Time (minutes), Load (tons), Deflection (inches), Notes. Start data with a 0 minutes, 0 tons, 0 inches record. Click the UPDATE GRAPH button at any time to plot the data.

Notes – Additional static test event or ultimate capacity determination method information such as “Selected ultimate capacity at load before pile plunge.”

If opening an existing record to edit, you may have to click the UPDATE GRAPH button to get the existing data to plot correctly.

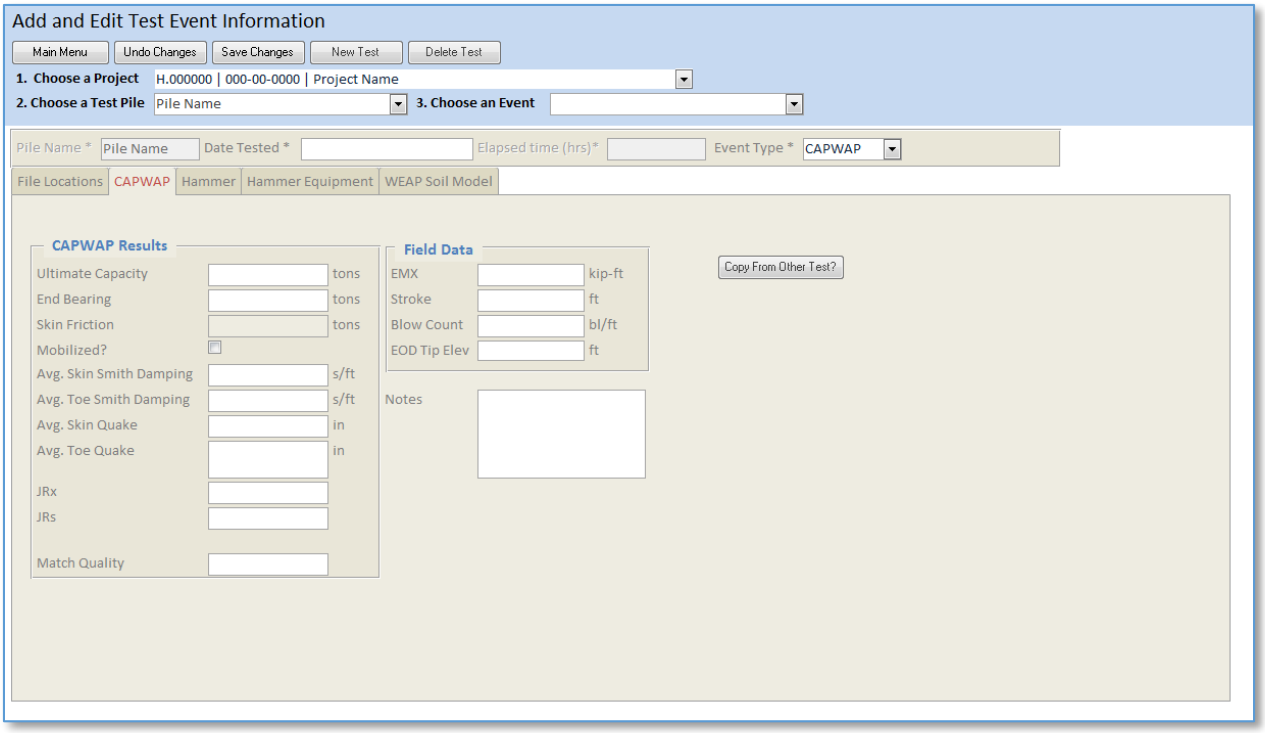


Figure 11: New/Edit Pile Test Event – CAPWAP

Test Event Fields (continued)

CAPWAP Test Event Info

CAPWAP Results

Ultimate Capacity – Ultimate capacity of the pile derived from the test event in tons.

End Bearing – End bearing capacity of the pile derived from the test event in tons.

Skin Friction – Skin friction capacity of the pile derived from the test event in tons. Auto-calculated based on *Ultimate Capacity* and *End Bearing*.

Mobilized? – Was skin resistance mobilized? (less than 180 blows/ft) Yes (checked) or No (unchecked).

Avg. Skin Smith Damping – Average skin smith damping in s/ft.

Avg. Toe Smith Damping – Average toe smith damping in s/ft.

Avg. Skin Quake – Average skin quake in inches.

Avg. Toe Quake – Average toe quake in inches.

JRx – Damping constant associated with PDA capacity associated with Rx method.

JRs – Damping constant associated with PDA capacity associated with Rs method.

Match Quality – Match quality from CAPWAP analysis.

Field Data

EMX – Hammer Energy in kip-feet.

Stroke – Observed stroke in feet.

Blow count – Observed blow count at time of event in blows/ft.

EOD Tip Elev – Pile tip elevation at the end of drive in feet.

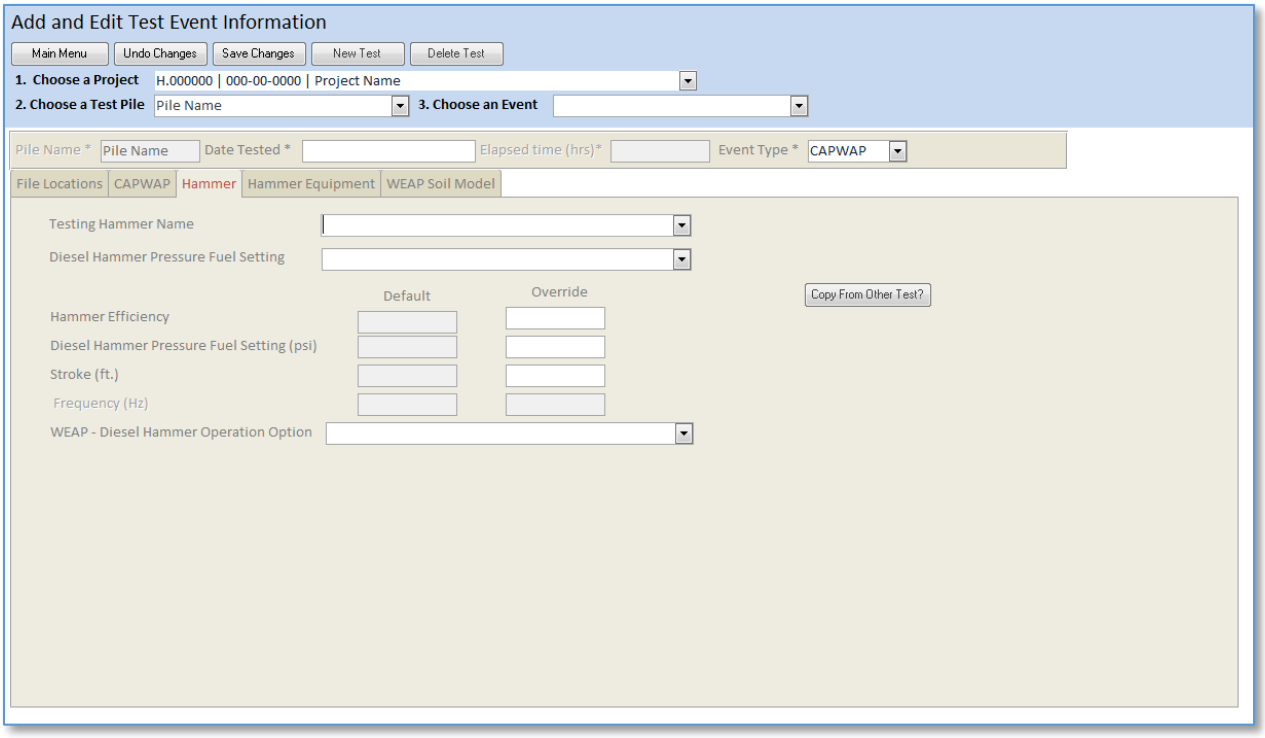


Figure 12: New/Edit Pile Test Event – CAPWAP – Hammer

Test Event Fields (continued)

CAPWAP Test Event Info - Hammer

Testing Hammer Name – Name of the hammer used during the pile test event. Begin typing the hammer manufacturer and the first hammer of that manufacturer will appear. Use the pull-down to see other hammers. Must be one of the hammers on the list. Add new hammers to the "Hammers" list in Database Maintenance as needed.

Diesel Hammer Pressure Fuel Setting – Fuel setting for diesel hammers:

WEAP	Pressure
Max	Pressure_FS1
Max-1	Pressure_FS2
Max-2	Pressure_FS3
Max-3	Pressure_FS4
Min	Pressure_FS5

Hammer Efficiency – Efficiency of hammer. Default value is automatically filled in from data in the hammer database.

Diesel Hammer Pressure Fuel Setting (psi) – Pressure in psi corresponding to fuel setting selected for diesel hammer. Default value changes according to the selection made in the *Diesel Hammer Pressure Fuel Setting* drop-down list.

Stroke (ft.) – Hammer equivalent maximum stroke in feet.

Frequency (Hz) – Frequency in hertz for vibratory hammers.

WEAP – Diesel Hammer Operation Option – WEAP options for hammer operation: convergence of stroke with fixed pressure, convergence of pressure with fixed stroke, or single analysis with fixed stroke and pressure.

Helpful feature: Data can be copied from previously entered test event records for the test pile. Use the COPY FROM OTHER TEST? *button and select the other test event from which you would like to copy the data. Then click* APPLY RESULTS.

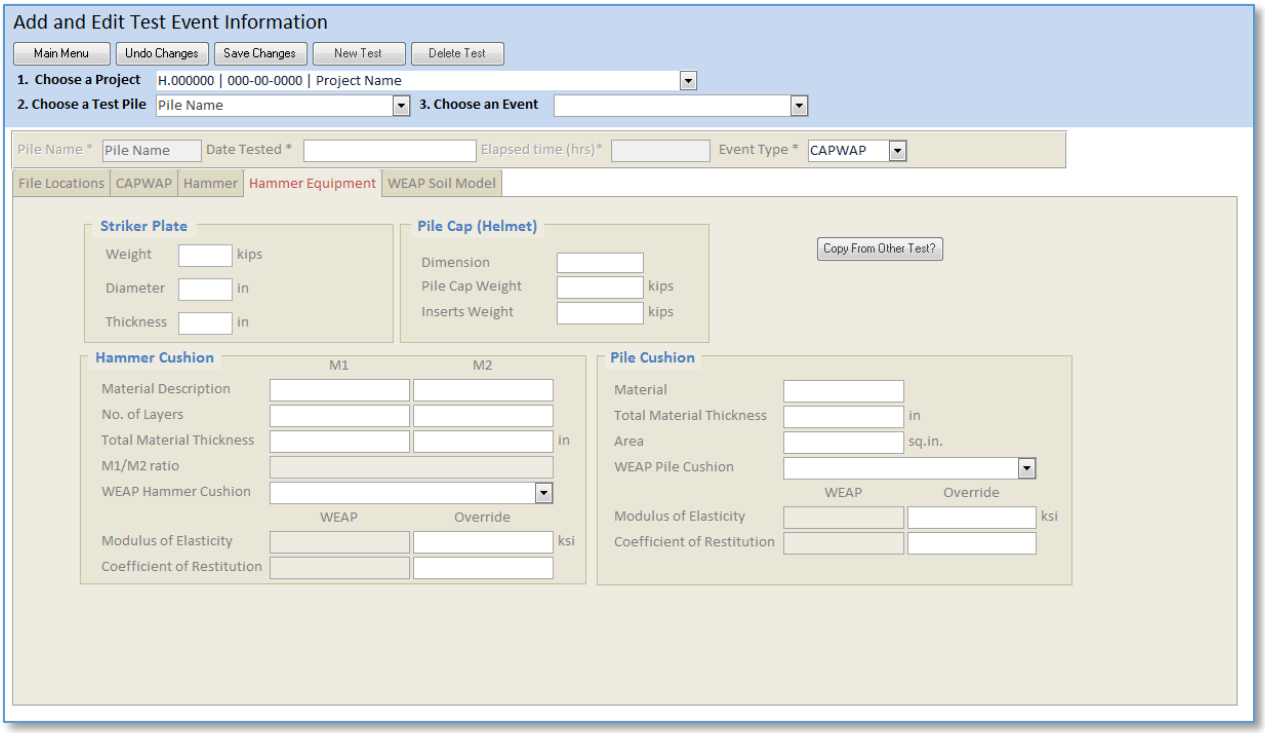


Figure 13: New/Edit Pile Test Event – CAPWAP – Hammer Equipment

Test Event Fields (continued)

CAPWAP Test Event Info – Hammer Equipment

Striker Plate

Weight – Weight of striker plate in kips.

Diameter – Diameter of striker plate in inches.

Thickness – Thickness of striker plate in inches.

Pile Cap (Helmet)

Dimension – Description of pile cap (or pile helmet) material.

Pile Cap Weight – Weight of pile cap in kips.

Inserts Weight – Weight of pile cap inserts in kips.

Hammer Cushion

Material Description – Description of hammer cushion material.

No. of layers – Number of layers of hammer cushion material specified.

Total Material Thickness – Total thickness of the hammer cushion material specified.

M1/M2 ratio – Ratio of the thickness of hammer cushion material 1 to the thickness of hammer cushion material 2. Auto-calculated based on thickness input.

WEAP Hammer Cushion – A drop-down menu of cushions from the WEAP database. Use the *M1/M2 ratio* to help guide cushion selection.

Modulus of Elasticity – Elastic modulus of the hammer cushion.

Coefficient of Restitution – Coefficient of Restitution (COR) of the hammer cushion.

***Pile* Cushion**

Material – Pile cushion material description.

Total Material Thickness – Total thickness of the pile cushion material.

Area – Area of the of the pile cushion.

WEAP Pile Cushion – A drop-down menu of cushions from the WEAP database.

Modulus of Elasticity – Elastic modulus of the pile cushion.

Coefficient of Restitution – Coefficient of Restitution (COR) of the pile cushion.

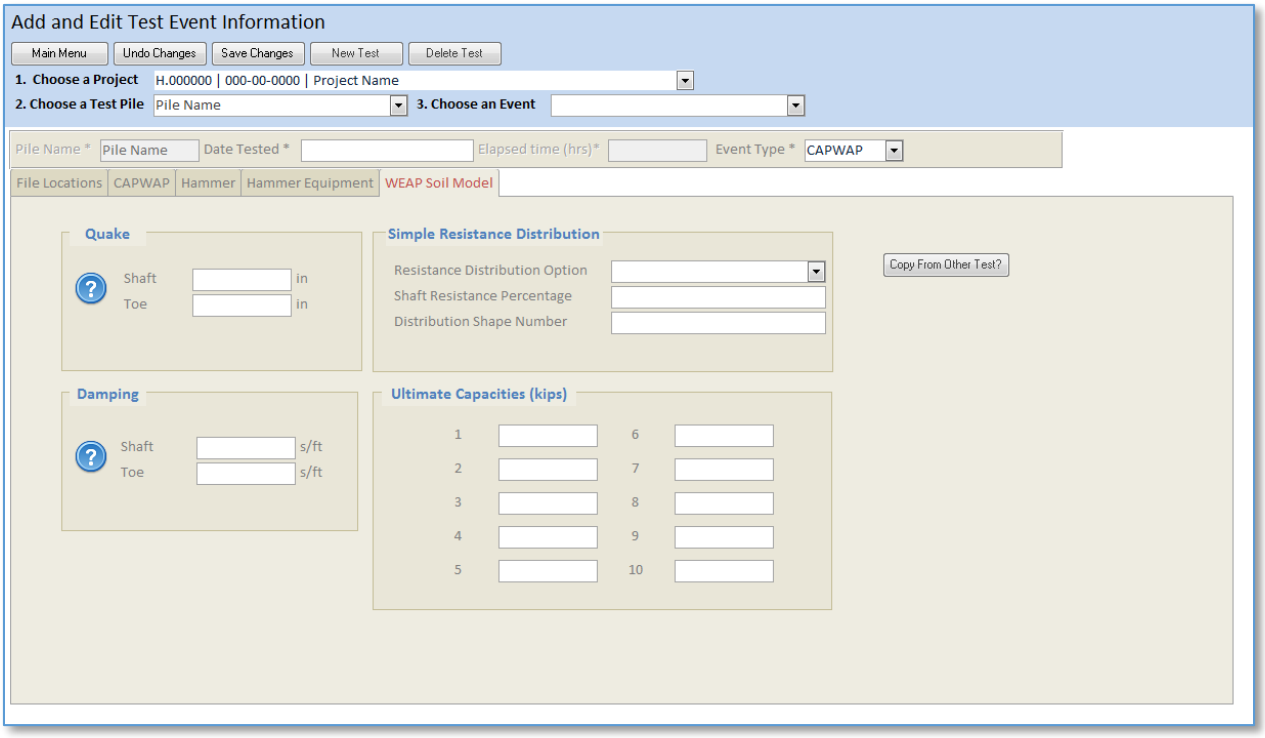


Figure 14: New/Edit Pile Test Event – CAPWAP – WEAP Soil Model

Test Event Fields (continued)

CAPWAP Test Event Info – WEAP Soil Model

Quake (click blue circled question mark "?" for help about typical values)

Shaft – Shaft quake soil parameter in inches.

Toe – Toe quake soil parameter in inches.

Damping (click blue circled question mark "?" for help about typical values)

Shaft – Shaft damping soil parameter in s/ft.

Toe – Toe damping soil parameter in s/ft.

Simple Resistance Distribution

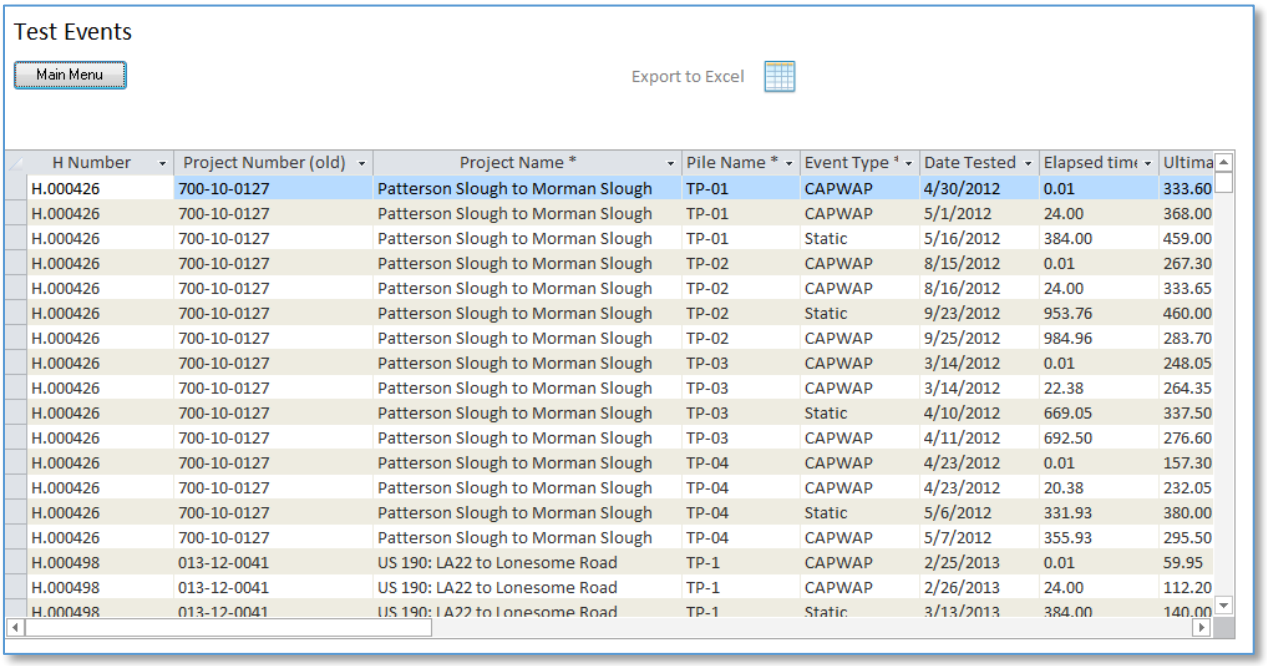
Resistance Distribution Option – Proportional shaft resistance, Constant shaft resistance, or Constant end resistance.

Shaft Resistance Percentage – Percentage (%) of shaft resistance.

Distribution Shape Number - Distribution shape number.

Ultimate Capacities (kips) – *1* through *10*.

View Pile Test Events



H Number	Project Number (old)	Project Name *	Pile Name *	Event Type	Date Tested	Elapsed time	Ultima
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-01	CAPWAP	4/30/2012	0.01	333.60
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-01	CAPWAP	5/1/2012	24.00	368.00
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-01	Static	5/16/2012	384.00	459.00
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-02	CAPWAP	8/15/2012	0.01	267.30
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-02	CAPWAP	8/16/2012	24.00	333.65
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-02	Static	9/23/2012	953.76	460.00
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-02	CAPWAP	9/25/2012	984.96	283.70
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-03	CAPWAP	3/14/2012	0.01	248.05
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-03	CAPWAP	3/14/2012	22.38	264.35
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-03	Static	4/10/2012	669.05	337.50
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-03	CAPWAP	4/11/2012	692.50	276.60
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-04	CAPWAP	4/23/2012	0.01	157.30
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-04	CAPWAP	4/23/2012	20.38	232.05
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-04	Static	5/6/2012	331.93	380.00
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-04	CAPWAP	5/7/2012	355.93	295.50
H.000498	013-12-0041	US 190: LA22 to Lonesome Road	TP-1	CAPWAP	2/25/2013	0.01	59.95
H.000498	013-12-0041	US 190: LA22 to Lonesome Road	TP-1	CAPWAP	2/26/2013	24.00	112.20
H.000498	013-12-0041	US 190: LA22 to Lonesome Road	TP-1	Static	3/13/2013	384.00	140.00

Figure 15: View Test Events

Shows all test event records. Use the EXPORT TO EXCEL button to export all data into an Excel spreadsheet. Each field may be sorted and filtered using the triangular buttons (▼) next to the field caption.

Database Maintenance

The Database Maintenance menu allows for modification and addition to lists used throughout the database.

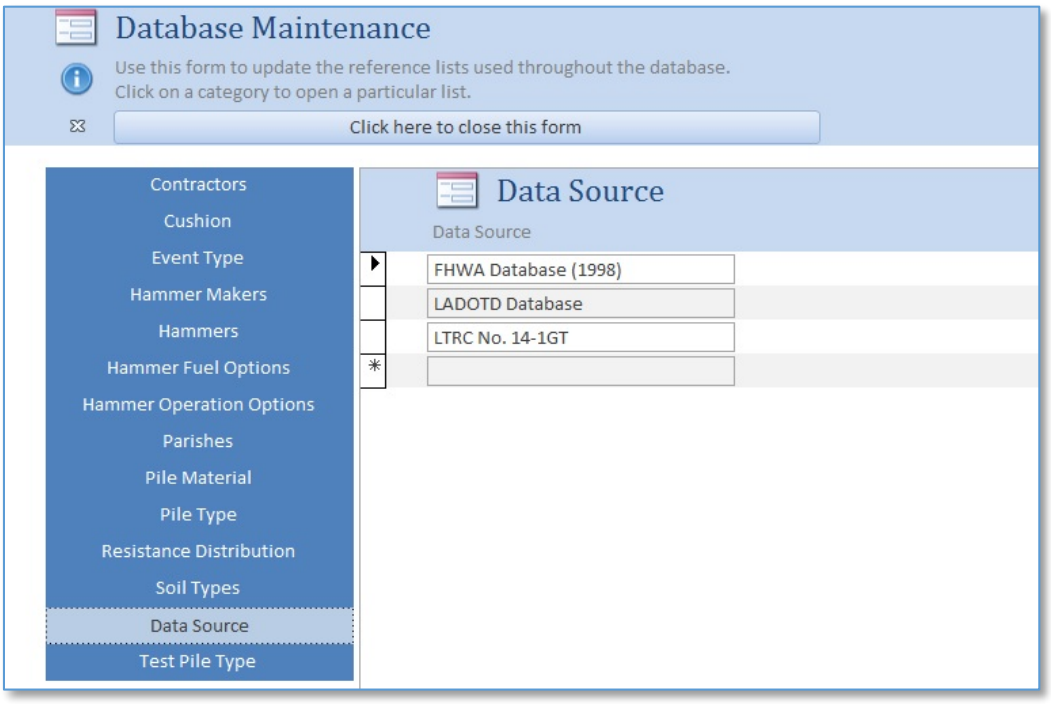


Figure 16: Database Maintenance - Source

- **Data Source**
  - FHWA Database (1998)
  - LADOTD Database
  - LTRC No. 14-1GT
- **Contractors**
- **Parishes**
- **Pile Type**
- **Pile Material**
  - Concrete
  - Steel
  - Timber
- **Test Pile Type**
  - Test Pile
  - Monitor Pile
  - Indicator Pile
  - Other
  - Test Shaft
- **Event Type**

    - Static
    - CAPWAP
    - Case/RMX
    - Statnamic
    - Gates
    - Other
    - EDC (Embedded Data Collector)
    - APPLE/Drop
    - O-Cell
    - Static (Uplift)
    - Static (Lateral)
- **Soil Type**
    - Unknown
    - Clay
    - Sand
    - Gravel
    - CH
    - CL
    - CL-ML
    - GC
    - ML
    - OH, ABOVE "A" LINE
    - S/C
    - SC
    - SC-SM
    - SM
    - SP
- **Hammer Manufacturers**
- **Hammer Information**
- **Hammer Fuel Options**
    - Max = Pressure_FS1
    - Max-1 = Pressure_FS2
    - Max-2 = Pressure_FS3
    - Max-3 = Pressure_FS4
    - Min = Pressure_FS5
- **Hammer Operation Options**
    - Convergence of stroke with fixed pressure
    - Convergence of pressure with fixed stroke
    - Single analysis with fixed stroke and pressure.
- **Cushion Information**
- **Resistance Distribution**
    - Proportional shaft resistance
    - Constant shaft resistance
    - Constant end resistance

Minimum required data for one test event record

- **Project Info**
  - Project Name
  - Contractor
  - Parish
  - Data Source
- **Pile Info**
  - Pile Name
  - Length
  - Pile Installation Hammer
  - Type [of test pile]
  - Pile Type (size and material)
  - Date Driven
  - Latitude
  - Longitude
  - Elev. Reference (Measured, Estimated, or Unknown?)
  - Ground Surface Elevation
  - EOD (End of Drive) Tip Elevation
- **Test Event Info**
  - Date Tested
  - Event Type (Static, CAPWAP, …)

APPENDIX F

LADOTD PILE LOAD TEST DATABASE

(LAPLTD) DATA SUMMARY

All Events by Case Number

Case #	dtProjects.ID	dtTestPiles.ID	dtTestEvents.ID	H Number	Project Number (old)	Project Name *	Parish 1 *	Source *	Pile Name *	TP_Type	Name	Event Type *	Date Driven *	Date Tested *	Elapsed time [hours] (req)	Ultimate Capacity [tons]	Notes
1	4	1	244	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	57-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/13/2009	2/16/2009	50.00	221.2	
2	4	2	245	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	58-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/18/2009	2/19/2009	22.00	225.3	
3	4	3	246	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	59-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/20/2009	2/21/2009	22.00	230.0	
4	4	4	247	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	60-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/25/2009	2/26/2009	20.00	232.5	
5	4	5	248	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	61-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/27/2009	2/28/2009	23.00	243.6	
6	1	10	13	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	1/25/2010	0.10	225.0	CAPWAP of EOD
7	1	10	14	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	2/1/2010	168.00	285.0	CAPWAP of 7-day restrike
8	1	10	16	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	Static	1/25/2010	2/20/2010	624.00	279.0	Selected ultimate capacity at load before pile plunge
9	1	10	15	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	2/21/2010	648.00	300.0	CAPWAP of 27-day restrike (after load test)
10	1	12	22	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-03	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	1/25/2010	0.10	63.0	CAPWAP of EOD
11	1	12	23	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-03	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	1/27/2010	48.00	295.0	CAPWAP of 2-day restrike
12	1	12	25	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-03	Test Pile	30" Voided Sq. PPC	Static	1/25/2010	3/21/2010	1320.00	700.0	Pile did not fail
13	1	12	24	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-03	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	3/22/2010	1344.00	700.0	CAPWAP of 56-day restrike
14	1	13	26	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-04	Test Pile	30" Voided Sq. PPC	CAPWAP	2/2/2010	2/2/2010	0.10	259.6	CAPWAP of EOD
15	1	13	27	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-04	Test Pile	30" Voided Sq. PPC	CAPWAP	2/2/2010	2/2/2010	1.00	310.0	CAPWAP of 1-hr restrike
16	1	13	28	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-04	Test Pile	30" Voided Sq. PPC	CAPWAP	2/2/2010	2/20/2010	432.00	612.2	CAPWAP of 18-day restrike
17	1	13	29	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-04	Test Pile	30" Voided Sq. PPC	Static	2/2/2010	3/6/2010	768.00	675.0	Pile did not fail
18	1	14	30	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	2/1/2010	2/1/2010	0.10	80.0	CAPWAP of EOD
19	1	14	31	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	2/1/2010	2/1/2010	1.00	132.4	CAPWAP of 1-hr restrike. Stroke taken from different blow
20	1	14	32	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	2/1/2010	2/3/2010	48.00	280.0	CAPWAP of 2-day restrike
21	1	14	34	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	Static	2/1/2010	3/4/2010	744.00	475.0	Selected ultimate capacity at load before pile plunge
22	1	14	33	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	2/1/2010	3/5/2010	768.00	475.2	CAPWAP of 32-day restrike (after load test)
23	1	15	35	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-06	Test Pile	30" Voided Sq. PPC	CAPWAP	1/26/2010	1/26/2010	0.10	63.5	CAPWAP of EOD
24	1	15	36	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-06	Test Pile	30" Voided Sq. PPC	CAPWAP	1/26/2010	1/26/2010	1.00	200.0	CAPWAP of 1-hr restrike
25	1	15	37	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-06	Test Pile	30" Voided Sq. PPC	CAPWAP	1/26/2010	1/27/2010	24.00	325.0	CAPWAP of 24-hr restrike
26	1	15	39	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-06	Test Pile	30" Voided Sq. PPC	Static	1/26/2010	2/10/2010	360.00	575.0	Selected ultimate capacity at load before pile plunge
27	1	15	38	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-06	Test Pile	30" Voided Sq. PPC	CAPWAP	1/26/2010	3/8/2010	984.00	499.9	CAPWAP of 41-day restrike (after load test)
28	1	16	40	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-07	Test Pile	30" Voided Sq. PPC	CAPWAP	1/27/2010	1/27/2010	0.10	25.0	CAPWAP of EOD
29	1	16	41	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-07	Test Pile	30" Voided Sq. PPC	CAPWAP	1/27/2010	1/27/2010	1.00	182.5	CAPWAP of 1-hr restrike
30	1	16	43	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-07	Test Pile	30" Voided Sq. PPC	Static	1/27/2010	2/24/2010	672.00	325.0	
31	1	16	42	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-07	Test Pile	30" Voided Sq. PPC	CAPWAP	1/27/2010	2/24/2010	672.00	270.0	CAPWAP of 28-day restrike (after load test)
32	4	17	44	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/6/2010	0.10	91.0	CAPWAP of EOD
33	4	17	45	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/6/2010	2.00	199.4	CAPWAP of 2-hr restrike
34	4	17	46	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/6/2010	3.90	241.8	CAPWAP of 4-hr restrike
35	4	17	47	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/6/2010	6.00	257.2	CAPWAP of 6-hr restrike
36	4	17	48	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/7/2010	24.00	329.3	CAPWAP of 24-hr restrike
37	4	17	49	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/8/2010	48.00	342.7	CAPWAP of 48-hr restrike
38	4	17	50	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/9/2010	72.00	359.4	CAPWAP of 72-hr restrike
39	4	17	52	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	Static	11/6/2010	11/12/2010	147.30	403.0	Selected ultimate capacity at load before pile plunge
40	4	17	51	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/12/2010	150.50	386.7	CAPWAP of 5-day restrike
41	4	18	751	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/7/2010	0.10	150.1	CAPWAP of EOD
42	4	18	53	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/7/2010	0.25	178.6	CAPWAP of 15-min restrike

All Events by Case Number

43	4	18	54	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/7/2010	1.00	193.2	CAPWAP of 1-hr restrike
44	4	18	55	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/7/2010	2.00	220.5	CAPWAP of 2-hr restrike
45	4	18	56	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/8/2010	24.10	292.3	CAPWAP of 24-hr restrike
46	4	18	57	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/10/2010	72.10	317.1	CAPWAP of 72-hr restrike
47	4	18	59	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	Static	8/7/2010	8/15/2010	192.00	369.5	
48	4	18	58	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/16/2010	218.20	347.1	CAPWAP of 9-day restrike
49	4	19	60	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/10/2010	0.10	175.3	CAPWAP of EOD
50	4	19	61	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/10/2010	2.00	310.1	CAPWAP of 2-hr restrike
51	4	19	62	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/10/2010	4.00	351.5	CAPWAP of 4-hr restrike
52	4	19	63	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/11/2010	24.00	394.8	CAPWAP of 24-hr restrike
53	4	19	64	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/13/2010	72.00	450.9	CAPWAP of 72-hr restrike
54	4	19	66	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	Static	3/10/2010	3/17/2010	168.00	504.0	Pile did not fail
55	4	19	65	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/18/2010	192.00	520.7	CAPWAP of 8-day restrike
56	4	20	67	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/1/2009	0.10	434.8	CAPWAP of EOD
57	4	20	68	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/1/2009	2.00	534.0	CAPWAP of 2-hr restrike
58	4	20	69	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/1/2009	4.00	446.3	CAPWAP of 4-hr restrike
59	4	20	70	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/1/2009	8.00	418.1	CAPWAP of 8-hr restrike
60	4	20	71	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/2/2009	24.00	464.9	CAPWAP of 24-hr restrike
61	4	20	72	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/4/2009	72.00	486.5	CAPWAP of 72-hr restrike
62	4	20	74	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	Static	6/1/2009	6/8/2009	168.00	498.0	Pile did not fail
63	4	20	73	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/9/2009	192.00	520.6	CAPWAP of 8-day restrike
64	4	21	75	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	10/9/2007	2.00	58.6	CAPWAP of 2-hr restrike
65	4	21	76	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	10/9/2007	4.00	82.7	CAPWAP of 4-hr restrike
66	4	21	77	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	10/9/2007	7.00	102.2	CAPWAP of 7-hr restrike
67	4	21	78	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	10/10/2007	24.00	113.7	CAPWAP of 24-hr restrike
68	4	21	79	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	10/12/2007	72.00	136.9	CAPWAP of 72-hr restrike
69	4	21	81	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	Static	10/9/2007	10/15/2007	167.00	180.0	
70	4	21	80	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	11/28/2007	1200.00	161.4	CAPWAP of 50-day restrike
71	4	22	750	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	CAPWAP	10/29/2008	10/29/2008	0.10	131.4	CAPWAP of EOD
72	4	22	82	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	CAPWAP	10/29/2008	10/29/2008	2.00	195.5	CAPWAP of 2-hr restrike
73	4	22	83	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	CAPWAP	10/29/2008	10/29/2008	4.00	212.4	CAPWAP of 4-hr restrike
74	4	22	84	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	CAPWAP	10/29/2008	10/29/2008	23.50	255.9	CAPWAP of 24-hr restrike
75	4	22	86	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	Static	10/29/2008	11/13/2008	360.00	313.5	
76	4	22	85	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	CAPWAP	10/29/2008	11/20/2008	528.00	340.8	CAPWAP of 22-day restrike
77	5	23	87	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/9/2004	0.10	177.0	
78	5	23	88	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/9/2004	2.00	313.8	
79	5	23	89	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/9/2004	5.00	430.2	
80	5	23	90	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/9/2004	23.00	509.3	
81	5	23	91	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/10/2004	46.00	593.5	
82	5	23	92	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/11/2004	70.00	617.1	
83	5	23	93	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/12/2004	93.00	639.7	
84	5	24	95	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/7/2004	0.10	43.7	
85	5	24	96	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/7/2004	2.20	93.5	

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86	5	24	97	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/7/2004	3.90	118.9	
87	5	24	98	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/7/2004	6.00	139.2	
88	5	24	99	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/7/2004	21.60	161.9	
89	5	24	100	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/9/2004	56.00	169.0	
90	5	24	101	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/10/2004	76.90	191.9	
91	5	24	102	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/11/2004	96.90	201.8	
92	5	24	103	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	Static	7/7/2004	7/14/2004	168.00	213.5	Static load test curve approximated from field notes
93	5	25	104	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/6/2004	0.10	181.2	
94	5	25	105	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/6/2004	2.00	375.7	
95	5	25	106	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/6/2004	3.90	399.9	
96	5	25	107	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/7/2004	24.70	515.2	
97	5	25	108	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/7/2004	44.20	563.7	
98	5	25	109	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/9/2004	72.40	616.6	
99	5	25	110	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/10/2004	117.40	646.8	Unable to locate CAPWAP file
100	5	25	111	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/17/2004	287.70	640.6	
101	5	26	113	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	CAPWAP	6/4/2004	6/4/2004	0.10	350.5	
102	5	26	114	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	CAPWAP	6/4/2004	6/4/2004	2.00	435.7	
103	5	26	115	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	CAPWAP	6/4/2004	6/4/2004	23.60	505.6	
104	5	26	116	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	CAPWAP	6/4/2004	6/6/2004	69.20	543.1	
105	5	26	117	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	CAPWAP	6/4/2004	6/10/2004	162.40	578.0	
106	5	26	118	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	Static	6/4/2004	6/17/2004	312.00	826.5	Static load test data points estimated from image of the test curve
107	5	27	119	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/1/2004	0.10	134.0	
108	5	27	120	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/1/2004	2.30	308.4	
109	5	27	121	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/1/2004	4.10	419.4	
110	5	27	122	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/2/2004	24.10	539.1	
111	5	27	123	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/3/2004	48.90	548.5	
112	5	27	124	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/4/2004	76.30	489.1	
113	5	27	125	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/8/2004	172.50	508.3	
114	5	27	126	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	Static	6/1/2004	6/16/2004	360.00	796.0	Static load test data points estimated from image of the test curve
115	5	28	127	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	0.10	358.6	
116	5	28	128	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	3.10	477.8	
117	5	28	129	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	4.40	442.9	
118	5	28	130	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	6.60	435.0	
119	5	28	131	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	8.40	489.9	
120	5	28	132	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	23.70	612.3	
121	5	28	133	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/26/2004	48.20	669.3	
122	5	28	134	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/27/2004	72.30	633.8	
123	5	28	135	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/27/2004	92.90	781.6	
124	5	28	136	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	Static	7/24/2004	7/30/2004	144.00	828.0	Static load test data and curves could not be located
125	5	29	137	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/27/2004	0.10	86.7	Start with VUL 020, switch to VUL 025 at EOD
126	5	29	138	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/27/2004	2.00	221.6	
127	5	29	139	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/27/2004	3.60	272.9	
128	5	29	140	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/27/2004	5.80	280.2	

129	5	29	141	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/27/2004	20.60	347.0	
130	5	29	142	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/28/2004	44.90	377.9	
131	5	29	143	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/29/2004	68.50	395.2	
132	5	29	144	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/30/2004	89.20	414.0	
133	5	29	145	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	Static	7/27/2004	8/2/2004	144.00	445.0	Static load test data points estimated from image of the test curve -- Selected ultimate capacity at load before pile plunge
134	5	30	146	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	0.10	189.1	
135	5	30	147	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	3.20	276.6	
136	5	30	148	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	5.30	281.7	
137	5	30	149	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	7.50	294.3	
138	5	30	150	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	23.60	306.5	
139	5	30	151	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/11/2004	48.10	329.1	
140	5	30	152	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/12/2004	72.00	345.7	
141	5	30	153	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/12/2004	92.20	362.2	
142	5	30	154	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	Static	8/9/2004	8/15/2004	144.00	386.5	Static load test data points estimated from image of the test curve -- Selected ultimate capacity at load before pile plunge
143	5	31	155	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	0.10	88.7	
144	5	31	156	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	2.60	170.0	
145	5	31	157	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	4.20	195.8	
146	5	31	158	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	21.70	277.7	
147	5	31	159	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/10/2004	46.60	297.0	
148	5	31	160	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/11/2004	70.00	318.0	
149	5	31	161	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/12/2004	90.60	329.4	
150	5	31	162	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	Static	8/9/2004	8/15/2004	144.00	380.0	Static load test data points estimated from image of the test curve -- Selected ultimate capacity at load before pile plunge
151	4	37	491	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	1A-10	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/11/2010	11/12/2010	20.00	268.4	
152	4	38	482	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	1C-05	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/23/2010	10/25/2010	40.00	303.1	
153	4	39	187	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	1D-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/5/2008	2/6/2008	21.00	420.0	
154	4	40	188	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	1E-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/15/2008	2/16/2008	21.00	139.4	
155	4	41	189	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	1F-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/27/2008	2/28/2008	22.00	135.0	
156	4	42	190	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	2-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/12/2008	3/13/2008	20.00	125.6	
157	4	43	191	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	3-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/6/2008	4/7/2008	19.00	117.7	
158	4	44	192	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	4-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/17/2008	4/18/2008	20.00	126.5	
159	4	45	193	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	5-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/22/2008	4/23/2008	24.00	169.3	
160	4	46	194	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	6-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/29/2008	4/30/2008	22.00	137.8	
161	4	47	195	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	7-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/1/2008	5/2/2008	20.00	161.6	
162	4	48	196	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	8-05	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/8/2008	5/9/2008	20.00	117.8	
163	4	49	197	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	9-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/20/2008	5/21/2008	24.00	132.5	
164	4	50	198	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	10-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/28/2008	5/29/2008	22.00	169.9	
165	4	51	199	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	11-06	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/29/2008	5/30/2008	20.00	180.1	
166	4	52	200	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	12-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/3/2008	6/4/2008	20.00	189.0	
167	4	53	201	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	13-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/12/2008	6/16/2008	74.00	257.7	
168	4	54	202	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	14-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/19/2008	6/20/2008	20.00	200.2	
169	4	55	203	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	15-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/10/2008	7/11/2008	20.00	162.5	
170	4	56	204	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	16-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/12/2008	7/14/2008	43.00	142.0	
171	4	57	205	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	17-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/18/2008	7/21/2008	52.00	118.5	

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172	4	58	206	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	18-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/23/2008	7/28/2008	112.00	170.8	
173	4	59	207	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	19-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/5/2008	8/6/2008	20.00	137.5	
174	4	60	208	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	20-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/9/2008	8/11/2008	42.00	142.7	
175	4	61	209	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	21-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/16/2008	8/18/2008	45.00	142.9	
176	4	62	210	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	22-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/20/2008	8/21/2008	22.00	165.0	
177	4	63	211	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	23-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/27/2008	8/28/2008	20.00	144.0	
178	4	64	212	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	25-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/24/2008	9/25/2008	23.00	207.6	
179	4	65	213	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	26-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/29/2008	9/30/2008	20.00	126.2	
180	4	66	214	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	27-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/1/2008	10/2/2008	21.00	141.7	
181	4	67	215	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	28-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/8/2008	10/10/2008	46.00	130.2	
182	4	68	216	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	29-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/14/2008	10/15/2008	20.00	158.4	
183	4	69	217	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	30-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/17/2008	10/18/2008	22.00	158.5	
184	4	70	218	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	31-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/12/2008	11/18/2008	122.50	163.5	
185	4	71	219	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	32-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/8/2008	11/10/2008	43.00	117.8	
186	4	72	220	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	33-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/19/2008	11/20/2008	20.00	171.9	
187	4	73	221	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	34-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/24/2008	11/25/2008	20.00	108.6	
188	4	74	222	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	35-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/26/2008	12/1/2008	120.00	175.6	
189	4	75	223	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	36-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/3/2008	12/4/2008	20.00	117.6	
190	4	76	224	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	37-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/4/2008	12/5/2008	20.00	112.8	
191	4	77	225	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	38-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/9/2008	12/12/2008	64.00	123.8	
192	4	78	226	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	39-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/12/2008	12/13/2008	23.00	118.5	
193	4	79	227	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	40-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/15/2008	12/16/2008	19.00	119.2	
194	4	80	228	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	41-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/17/2008	12/18/2008	20.00	110.4	
195	4	81	229	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	42-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/6/2009	1/7/2009	22.50	114.5	
196	4	82	230	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	43-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/7/2009	1/8/2009	24.00	139.1	
197	4	83	231	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	44-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/9/2009	1/10/2009	23.00	115.4	
198	4	84	232	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	45-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/10/2009	1/12/2009	25.00	112.0	
199	4	85	233	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	46-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/13/2009	1/14/2009	20.00	153.0	
200	4	86	234	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	47-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/14/2009	1/15/2009	22.00	124.1	
201	4	87	235	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	48-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/16/2009	1/20/2009	94.00	127.5	
202	4	88	236	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	49-06	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/21/2009	1/22/2009	22.00	179.2	
203	4	89	237	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	50-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/24/2009	1/26/2009	45.00	129.0	
204	4	90	238	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	51-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/26/2009	1/27/2009	20.00	146.1	
205	4	91	239	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	52-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/30/2009	1/31/2009	22.00	129.6	
206	4	92	240	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	53-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/3/2009	2/4/2009	20.00	107.1	
207	4	93	241	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	54-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/3/2009	2/5/2009	25.00	106.2	
208	4	94	242	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	55-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/6/2009	2/10/2009	92.00	253.6	
209	4	95	243	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	56-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/11/2009	2/12/2009	20.00	269.9	
210	4	96	249	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	62-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/3/2009	3/4/2009	20.50	232.4	
211	4	97	250	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	63-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/5/2009	3/9/2009	75.00	269.1	
212	4	98	251	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	64-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/10/2009	3/11/2009	20.00	227.9	
213	4	99	252	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	65-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/11/2009	3/12/2009	21.00	371.4	
214	4	100	253	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	66-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/17/2009	3/18/2009	20.50	220.7	

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215	4	101	254	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	67-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/19/2009	3/20/2009	20.00	232.9	
216	4	102	255	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	68-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/23/2009	3/24/2009	20.00	232.6	
217	4	103	256	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	69-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/25/2009	3/27/2009	24.50	255.2	
218	4	104	257	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	70-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/3/2009	4/4/2009	23.00	222.5	
219	4	105	258	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	71-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/15/2009	4/16/2009	22.50	233.7	
220	4	106	259	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	72-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/20/2009	4/21/2009	22.00	233.5	
221	4	107	260	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	73-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/22/2009	4/23/2009	21.00	235.5	
222	4	108	261	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	74-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/29/2009	4/30/2009	22.00	214.9	
223	4	109	262	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	75-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/2/2009	5/4/2009	40.00	231.4	
224	4	110	263	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	76-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/5/2009	5/6/2009	20.00	210.6	
225	4	111	264	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	77-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/6/2009	5/7/2009	20.00	225.0	
226	4	112	265	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	78-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/11/2009	5/12/2009	20.00	232.5	
227	4	113	266	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	79-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/15/2009	5/18/2009	61.00	235.0	
228	4	114	267	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	80-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/27/2009	5/28/2009	20.00	232.6	
229	4	115	268	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	81-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/30/2009	5/31/2009	21.00	191.5	
230	4	116	269	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	82-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/12/2009	6/13/2009	20.00	227.3	
231	4	117	270	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	83-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/9/2009	6/10/2009	20.00	218.2	
232	4	118	271	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	84-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/13/2009	6/14/2009	20.00	227.4	
233	4	119	272	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	85-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/15/2009	6/16/2009	20.00	222.5	
234	4	120	273	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	86-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/17/2009	6/18/2009	20.00	234.9	
235	4	121	274	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	87-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/18/2009	6/19/2009	20.00	230.9	
236	4	122	275	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	88-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/22/2009	6/23/2009	20.00	214.5	
237	4	123	276	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	89-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/23/2009	6/24/2009	20.00	264.0	
238	4	124	277	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	90-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/27/2009	6/28/2009	20.00	219.0	
239	4	125	278	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	91-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/29/2009	6/30/2009	20.00	241.5	
240	4	126	279	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	92-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/12/2009	7/13/2009	20.00	220.1	
241	4	127	280	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	93-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/12/2009	7/13/2009	20.00	240.0	
242	4	128	281	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	94-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/12/2009	7/13/2009	21.00	213.7	
243	4	129	282	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	95-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/13/2009	7/14/2009	20.00	229.5	
244	4	130	283	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	96-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/19/2009	7/20/2009	20.00	230.0	
245	4	131	284	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	97-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/20/2009	7/21/2009	20.00	233.5	
246	4	132	285	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	98-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/21/2009	7/22/2009	22.00	257.0	
247	4	133	286	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	99-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/28/2009	7/29/2009	20.00	255.5	
248	4	134	287	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	100-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/29/2009	7/30/2009	20.00	252.0	
249	4	135	288	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	101-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/2/2009	8/3/2009	20.00	224.9	
250	4	136	289	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	102-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/5/2009	8/6/2009	20.00	241.1	
251	4	137	290	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	103-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/7/2009	8/8/2009	20.00	252.7	
252	4	138	291	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	104-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/11/2009	8/12/2009	24.00	237.9	
253	4	139	292	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	105-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/13/2009	8/14/2009	20.00	227.6	
254	4	140	293	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	106-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/17/2009	8/19/2009	38.00	247.5	
255	4	141	294	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	107-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/20/2009	8/21/2009	22.00	252.5	
256	4	142	295	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	108-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/24/2009	8/25/2009	20.00	249.5	
257	4	143	296	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	109-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/25/2009	8/26/2009	20.00	249.5	

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258	4	144	297	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	110-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/27/2009	8/28/2009	20.00	256.9	
259	4	145	298	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	111-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/29/2009	8/30/2009	20.00	274.1	
260	4	146	299	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	112-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/1/2009	9/2/2009	21.00	240.1	
261	4	147	300	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	113-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/2/2009	9/3/2009	20.00	243.0	
262	4	148	301	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	114-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/3/2009	9/4/2009	20.00	239.9	
263	4	149	302	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	115-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/8/2009	9/9/2009	21.00	226.8	
264	4	150	303	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	116-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/17/2009	9/18/2009	23.00	241.6	
265	4	151	304	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	117-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/19/2009	9/20/2009	20.00	239.1	
266	4	152	305	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	118-05	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/21/2009	9/22/2009	20.00	235.2	
267	4	153	306	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	119-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/23/2009	9/24/2009	20.00	240.0	
268	4	154	307	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	120-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/25/2009	9/26/2009	20.00	280.5	
269	4	155	308	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	121-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/28/2009	9/29/2009	20.00	245.6	
270	4	156	309	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	122-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/30/2009	10/1/2009	20.00	231.3	
271	4	157	310	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	123-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/6/2009	10/7/2009	20.00	233.4	
272	4	158	311	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	124-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/7/2009	10/8/2009	24.00	227.5	
273	4	159	312	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	125-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/12/2009	10/13/2009	20.00	242.0	
274	4	160	313	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	126-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/14/2009	10/15/2009	20.00	230.3	
275	4	161	314	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	127-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/18/2009	10/21/2009	68.00	271.2	
276	4	162	315	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	128-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/21/2009	10/23/2009	43.00	247.5	
277	4	163	316	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	129-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/23/2009	10/24/2009	20.00	234.8	
278	4	164	317	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	130-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/26/2009	10/28/2009	42.00	233.9	
279	4	165	318	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	131-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/29/2009	10/30/2009	24.00	275.2	
280	4	166	319	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	132-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/1/2009	11/2/2009	20.00	235.0	
281	4	167	320	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	133-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/2/2009	11/3/2009	20.00	242.6	
282	4	168	321	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	134-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/5/2009	11/6/2009	20.00	255.4	
283	4	169	322	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	135-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/6/2009	11/7/2009	20.00	231.6	
284	4	170	323	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	136-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/12/2009	11/13/2009	20.00	253.5	
285	4	171	324	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	137-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/13/2009	11/14/2009	20.00	233.1	
286	4	172	325	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	138-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/15/2009	11/16/2009	20.00	239.4	
287	4	173	326	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	139-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/17/2009	11/18/2009	20.00	244.8	
288	4	174	327	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	140-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/19/2009	11/20/2009	20.00	293.5	
289	4	175	328	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	141-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/21/2009	11/23/2009	46.00	238.8	
290	4	176	329	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	142-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/29/2009	11/30/2009	20.00	241.0	
291	4	177	330	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	143-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/30/2009	12/2/2009	48.00	274.2	
292	4	178	331	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	144-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/4/2009	12/5/2009	20.00	247.0	
293	4	179	332	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	145-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/5/2009	12/6/2009	21.00	242.5	
294	4	180	333	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	146-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/9/2009	12/10/2009	20.00	209.5	
295	4	181	334	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	147-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/17/2009	12/18/2009	20.00	207.2	
296	4	182	335	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	148-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/21/2009	12/22/2009	20.00	237.8	
297	4	183	336	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	149-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/28/2009	12/29/2009	21.00	248.0	
298	4	184	337	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	150-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/29/2009	12/30/2009	20.00	289.8	
299	4	185	338	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	151-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/7/2010	1/9/2010	48.00	253.0	
300	4	186	339	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	152-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/11/2010	1/12/2010	20.00	246.1	Problems with accelerometers

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301	4	187	340	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	153-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/14/2010	1/15/2010	22.00	260.5	
302	4	188	341	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	154-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/19/2010	1/20/2010	20.00	237.2	
303	4	189	342	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	155-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/22/2010	1/23/2010	20.00	237.6	
304	4	190	343	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	156-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/25/2010	1/26/2010	20.00	234.6	
305	4	191	344	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	157-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/27/2010	1/28/2010	22.00	237.3	
306	4	192	345	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	158-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/28/2010	1/29/2010	20.00	236.4	
307	4	193	346	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	159-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/31/2010	2/1/2010	20.00	235.9	
308	4	194	347	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	160-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/1/2010	2/2/2010	20.00	227.0	
309	4	195	348	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	161-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/2/2010	2/3/2010	24.00	229.3	
310	4	196	349	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	162-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/5/2010	2/8/2010	71.00	237.6	
311	4	197	350	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	163-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/8/2010	2/10/2010	45.00	245.8	
312	4	198	351	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	164-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/13/2010	2/14/2010	21.00	237.5	
313	4	199	352	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	165-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/14/2010	2/17/2010	72.00	240.0	
314	4	200	353	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	166-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/19/2010	2/20/2010	20.00	236.9	
315	4	201	354	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	167-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/20/2010	2/22/2010	40.00	251.3	
316	4	202	355	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	168-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/23/2010	2/24/2010	20.00	250.0	
317	4	203	356	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	169-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/25/2010	2/26/2010	22.00	237.8	
318	4	204	357	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	170-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/28/2010	3/3/2010	64.00	234.0	
319	4	205	358	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	171-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/4/2010	3/5/2010	20.00	238.7	
320	4	206	359	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	172-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/5/2010	3/6/2010	20.00	252.5	
321	4	207	360	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	173-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/7/2010	3/8/2010	24.00	241.9	
322	4	208	361	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	174-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/14/2010	3/15/2010	20.00	287.7	
323	4	209	362	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	175-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/17/2010	3/19/2010	26.00	308.0	
324	4	210	363	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	176-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/19/2010	3/23/2010	87.00	470.5	
325	4	211	364	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	177-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/25/2010	3/26/2010	20.00	296.5	
326	4	212	365	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	178-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/26/2010	3/27/2010	20.00	251.4	
327	4	213	366	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	179-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/27/2010	3/28/2010	20.00	241.1	
328	4	214	367	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	180-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/28/2010	3/29/2010	20.00	310.2	
329	4	215	368	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	181-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/30/2010	3/31/2010	20.00	251.3	
330	4	216	369	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	182-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/31/2010	4/1/2010	20.00	298.6	
331	4	217	370	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	183-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/1/2010	4/2/2010	20.00	343.8	
332	4	218	371	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	184-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/3/2010	4/5/2010	46.00	341.2	
333	4	219	372	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	185-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/5/2010	4/6/2010	20.00	292.5	
334	4	220	373	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	186-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/7/2010	4/8/2010	20.00	303.6	
335	4	221	374	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	187-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/8/2010	4/9/2010	20.00	329.0	
336	4	222	375	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	188-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/9/2010	4/10/2010	24.00	360.4	
337	4	223	376	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	189-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/10/2010	4/12/2010	26.00	361.0	
338	4	224	377	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	190-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/13/2010	4/16/2010	72.00	378.5	
339	4	225	378	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	191-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/16/2010	4/17/2010	20.00	386.6	
340	4	226	379	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	192-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/17/2010	4/18/2010	23.00	358.0	
341	4	227	380	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	193-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/18/2010	4/19/2010	23.00	371.3	
342	4	228	381	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	194-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/19/2010	4/20/2010	21.00	323.6	
343	4	229	382	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	195-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/21/2010	4/22/2010	22.00	327.2	

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344	4	230	383	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	196-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/22/2010	4/25/2010	62.00	331.2	
345	4	231	479	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	290-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/20/2010	10/21/2010	20.00	225.7	
346	4	232	480	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	291-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/21/2010	10/22/2010	20.00	291.8	
347	4	233	481	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	292-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/22/2010	10/23/2010	20.00	239.2	
348	4	234	483	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	293-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/23/2010	10/25/2010	40.00	293.3	
349	4	235	484	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	294-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/25/2010	10/26/2010	20.00	271.0	
350	4	236	485	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	295-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/26/2010	10/27/2010	20.00	236.6	
351	4	237	486	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	296-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/27/2010	10/29/2010	40.00	359.2	
352	4	238	487	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	297-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/29/2010	10/30/2010	20.00	301.0	
353	4	239	488	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	298-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/1/2010	11/3/2010	40.00	273.8	
354	4	240	489	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	299-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/3/2010	11/5/2010	40.00	261.3	
355	4	241	492	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	300-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/17/2010	11/18/2010	23.00	316.3	
356	4	242	490	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	301-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/9/2010	11/10/2010	20.00	291.2	
357	4	243	493	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	302-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/22/2010	11/23/2010	20.00	323.7	
358	4	244	494	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	303-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/23/2010	11/24/2010	20.00	335.1	
359	4	245	495	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	304-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/1/2010	12/2/2010	20.00	292.3	
360	4	246	496	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	305-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/2/2010	12/3/2010	21.00	276.5	
361	4	247	497	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	306-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/4/2010	12/6/2010	46.00	250.5	
362	4	248	498	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	307-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/5/2010	12/7/2010	26.00	257.2	
363	4	249	499	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	308-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/7/2010	12/9/2010	46.00	251.4	
364	4	250	500	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	309-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/8/2010	12/9/2010	23.00	279.0	
365	4	254	384	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	197-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/25/2010	4/26/2010	21.00	260.0	
366	4	255	385	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	198-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/26/2010	4/27/2010	20.00	286.1	
367	4	256	386	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	199-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/28/2010	4/29/2010	20.00	236.7	
368	4	257	387	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	200-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/29/2010	5/3/2010	86.00	330.5	
369	4	258	388	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	201-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/3/2010	5/4/2010	20.00	352.0	
370	4	259	389	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	202-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/5/2010	5/6/2010	20.00	225.7	
371	4	260	390	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	203-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/6/2010	5/7/2010	20.00	226.2	
372	4	261	391	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	204-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/6/2010	5/7/2010	23.00	242.2	
373	4	262	392	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	205-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/8/2010	5/10/2010	45.00	250.5	
374	4	263	393	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	206-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/10/2010	5/11/2010	20.00	237.0	
375	4	264	394	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	207-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/12/2010	5/13/2010	20.00	257.0	
376	4	265	395	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	208-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/13/2010	5/14/2010	20.00	232.0	
377	4	266	396	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	209-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/14/2010	5/17/2010	65.00	241.5	
378	4	267	397	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	210-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/17/2010	5/18/2010	20.00	274.5	
379	4	268	398	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	211-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/18/2010	5/19/2010	20.00	374.0	
380	4	269	399	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	212-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/20/2010	5/21/2010	20.00	260.4	
381	4	270	400	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	213-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/22/2010	5/24/2010	45.00	321.0	
382	4	271	401	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	214-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/25/2010	5/26/2010	20.00	268.1	
383	4	272	402	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	215-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/26/2010	5/27/2010	20.00	303.9	
384	4	273	403	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	216-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/27/2010	6/1/2010	110.00	292.0	
385	4	274	404	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	217-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/28/2010	6/1/2010	93.00	262.0	
386	4	275	405	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	218-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/3/2010	6/4/2010	20.00	258.7	

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387	4	276	407	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	219-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/4/2010	6/4/2010	0.01	203.2	CAPWAP performed for a penetration depth of 127 ft
388	4	276	406	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	219-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/4/2010	6/5/2010	20.00	244.4	
389	4	278	408	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	220-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/7/2010	6/8/2010	21.00	328.4	
390	4	279	409	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	221-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/7/2010	6/8/2010	20.00	239.5	
391	4	280	410	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	222-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/7/2010	6/9/2010	28.00	346.9	
392	4	281	411	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	222-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/8/2010	6/11/2010	63.00	308.0	
393	4	282	412	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	223-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/11/2010	6/13/2010	37.00	332.3	
394	4	283	413	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	224-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/13/2010	6/14/2010	20.00	232.7	
395	4	284	414	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	225-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/14/2010	6/15/2010	20.00	282.8	
396	4	285	415	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	226-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/16/2010	6/18/2010	48.00	307.5	
397	4	286	416	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	227-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/17/2010	6/18/2010	22.00	343.9	
398	4	287	417	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	228-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/18/2010	6/19/2010	20.00	252.6	
399	4	288	418	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	229-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/21/2010	6/22/2010	22.00	255.2	
400	4	289	419	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	230-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/21/2010	6/23/2010	42.00	257.7	
401	4	290	420	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	231-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/23/2010	6/24/2010	20.00	299.7	
402	4	291	421	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	232-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/24/2010	6/25/2010	21.00	240.3	
403	4	292	422	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	233-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/25/2010	6/28/2010	63.00	237.6	
404	4	293	423	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	234-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/27/2010	6/30/2010	50.00	244.0	
405	4	294	424	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	235-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/29/2010	7/2/2010	70.00	248.4	
406	4	295	425	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	236-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/7/2010	7/8/2010	20.00	238.5	
407	4	296	426	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	237-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/8/2010	7/9/2010	20.00	254.9	
408	4	297	427	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	238-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/9/2010	7/10/2010	20.00	335.9	
409	4	298	428	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	239-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/10/2010	7/12/2010	40.00	300.6	
410	4	299	429	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	240-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/12/2010	7/13/2010	20.00	252.0	
411	4	300	430	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	241-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/18/2010	7/19/2010	20.00	238.0	
412	4	301	431	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	242-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/19/2010	7/20/2010	20.00	247.7	
413	4	302	432	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	243-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/20/2010	7/21/2010	20.00	237.5	
414	4	303	433	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	244-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/26/2010	7/27/2010	20.00	280.0	
415	4	304	434	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	245-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/29/2010	7/30/2010	20.00	262.8	
416	4	305	435	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	246-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/31/2010	8/1/2010	20.00	277.9	
417	4	306	436	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	247-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/1/2010	8/2/2010	20.00	274.2	
418	4	307	437	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	248-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/3/2010	8/4/2010	20.00	245.0	
419	4	308	438	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	249-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/4/2010	8/5/2010	20.00	300.1	
420	4	309	439	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	250-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/5/2010	8/6/2010	20.00	238.0	
421	4	310	440	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	251-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/10/2010	8/13/2010	68.00	288.5	
422	4	311	441	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	252-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/16/2010	8/18/2010	42.00	276.0	
423	4	312	442	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	253-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/18/2010	8/19/2010	21.00	272.8	
424	4	313	443	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	254-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/19/2010	8/20/2010	21.00	237.4	
425	4	314	444	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	255-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/20/2010	8/21/2010	20.00	237.2	
426	4	315	445	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	256-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/21/2010	8/23/2010	39.00	265.8	
427	4	316	446	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	257-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/23/2010	8/24/2010	20.00	247.1	
428	4	317	447	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	258-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/24/2010	8/25/2010	20.00	237.4	
429	4	318	448	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	259-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/25/2010	8/27/2010	37.00	307.6	

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430	4	319	449	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	260-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/30/2010	8/31/2010	20.00	337.8	
431	4	320	450	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	261-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/1/2010	9/2/2010	20.00	245.1	
432	4	321	451	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	262-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/2/2010	9/3/2010	20.00	239.6	
433	4	322	452	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	263-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/7/2010	9/8/2010	20.00	238.5	
434	4	323	453	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	264-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/10/2010	9/11/2010	20.00	240.9	
435	4	324	454	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	265-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/12/2010	9/13/2010	20.00	241.5	
436	4	325	455	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	266-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/14/2010	9/15/2010	20.00	271.7	
437	4	326	456	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	267-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/15/2010	9/16/2010	20.00	239.6	
438	4	327	457	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	268-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/16/2010	9/17/2010	20.00	250.8	
439	4	328	458	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	269-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/17/2010	9/18/2010	21.00	237.4	
440	4	329	459	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	270-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/18/2010	9/20/2010	41.00	251.0	
441	4	330	460	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	271-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/20/2010	9/21/2010	21.00	259.3	
442	4	331	461	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	272-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/21/2010	9/22/2010	20.00	247.3	
443	4	332	462	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	273-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/22/2010	9/23/2010	20.00	238.1	
444	4	333	463	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	274-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/23/2010	9/24/2010	20.00	229.2	
445	4	334	464	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	275-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/24/2010	9/27/2010	63.00	296.9	
446	4	335	465	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	276-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/27/2010	9/28/2010	23.00	254.4	
447	4	336	466	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	277-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/28/2010	9/29/2010	20.00	267.3	
448	4	337	467	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	278-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/29/2010	9/30/2010	20.00	260.1	
449	4	338	468	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	279-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/30/2010	10/1/2010	20.00	253.7	
450	4	339	469	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	280-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/1/2010	10/4/2010	65.00	272.9	
451	4	340	470	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	281-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/4/2010	10/5/2010	20.00	277.7	
452	4	341	471	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	282-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/5/2010	10/6/2010	21.00	275.1	
453	4	342	472	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	283-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/6/2010	10/7/2010	20.00	252.6	
454	4	343	473	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	284-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/7/2010	10/8/2010	20.00	237.5	
455	4	344	474	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	285-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/8/2010	10/11/2010	67.00	250.8	
456	4	345	475	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	286-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/11/2010	10/12/2010	20.00	237.5	
457	4	346	476	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	287-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/12/2010	10/13/2010	20.00	246.3	
458	4	347	477	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	288-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/13/2010	10/14/2010	20.00	268.6	
459	4	348	478	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	289-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/18/2010	10/19/2010	20.00	246.6	
460	4	349	501	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	310-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/10/2010	12/15/2010	117.00	349.3	
461	4	350	502	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	311-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/15/2010	12/17/2010	47.00	313.0	
462	4	351	503	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	312-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/16/2010	12/17/2010	22.00	237.3	
463	4	352	504	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	313-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/19/2010	12/20/2010	20.00	248.0	
464	4	353	505	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	314-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/20/2010	12/21/2010	22.00	237.4	
465	4	354	506	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	315-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/21/2010	12/22/2010	20.00	233.4	
466	4	355	507	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	316-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/22/2010	12/23/2010	20.00	237.4	
467	4	356	508	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	317-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/23/2010	12/27/2010	95.00	239.9	
468	4	357	509	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	318-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/27/2010	12/28/2010	20.00	237.5	
469	4	358	510	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	319-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/28/2010	12/29/2010	24.00	237.2	
470	4	359	511	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	320-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/30/2010	1/4/2011	118.00	237.6	
471	4	360	512	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	321-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/5/2011	1/6/2011	22.00	238.2	
472	4	361	513	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	322-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/6/2011	1/7/2011	21.00	237.5	

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473	4	362	514	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	323-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/7/2011	1/8/2011	21.00	237.7	
474	4	363	515	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	324-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/8/2011	1/10/2011	41.00	244.7	
475	4	364	516	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	325-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/11/2011	1/12/2011	23.00	240.6	
476	4	365	517	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	326-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/12/2011	1/13/2011	20.00	235.5	
477	4	366	518	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	327-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/14/2011	1/17/2011	70.00	263.7	
478	4	367	519	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	328-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/17/2011	1/18/2011	20.00	265.4	
479	4	368	520	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	329-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/18/2011	1/19/2011	20.00	287.8	
480	4	369	521	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	330-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/19/2011	1/20/2011	20.00	260.0	
481	4	370	522	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	331-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/22/2011	1/23/2011	20.00	235.5	
482	4	371	523	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	332-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/23/2011	1/24/2011	20.00	256.3	
483	4	372	524	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	333-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/24/2011	1/25/2011	21.00	227.1	
484	4	373	525	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	334-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/25/2011	1/26/2011	20.00	301.9	
485	4	374	526	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	335-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/26/2011	1/27/2011	20.00	256.7	
486	4	375	527	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	336-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/27/2011	1/28/2011	20.00	237.6	
487	4	376	528	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	337-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/28/2011	1/29/2011	20.00	244.5	
488	4	377	529	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	338-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/31/2011	2/1/2011	20.00	239.2	
489	4	378	530	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	339-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/3/2011	2/7/2011	90.00	246.2	
490	4	379	531	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	340-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/8/2011	2/9/2011	20.00	237.5	
491	4	380	532	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	341-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/9/2011	2/11/2011	44.00	247.3	
492	4	381	533	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	342-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/19/2011	2/20/2011	20.00	275.0	
493	4	382	534	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	343-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/20/2011	2/21/2011	20.00	239.6	
494	4	383	535	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	344-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/21/2011	2/23/2011	29.00	292.8	
495	4	384	536	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	345-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/22/2011	2/23/2011	21.00	237.5	
496	4	385	537	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	346-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/23/2011	2/24/2011	24.00	272.2	
497	4	386	538	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	347-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/24/2011	2/26/2011	45.00	239.7	
498	4	387	539	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	348-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/25/2011	2/26/2011	23.00	248.1	
499	4	388	540	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	349-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/28/2011	3/1/2011	21.00	241.3	
500	4	389	541	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	350-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/1/2011	3/2/2011	20.00	237.5	
501	4	390	542	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	351-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/2/2011	3/3/2011	21.00	237.5	
502	4	391	543	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	352-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/4/2011	3/10/2011	144.00	238.8	
503	4	392	544	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	353-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/10/2011	3/11/2011	20.00	233.6	
504	4	393	545	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	354-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/11/2011	3/12/2011	21.00	242.1	
505	4	394	546	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	355-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/12/2011	3/13/2011	22.00	241.2	
506	4	395	547	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	356-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/13/2011	3/14/2011	20.00	233.1	
507	4	396	548	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	357-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/16/2011	3/17/2011	20.00	250.5	
508	4	397	549	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	358-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/17/2011	3/19/2011	45.00	268.0	
509	4	398	550	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	359-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/17/2011	3/19/2011	27.00	286.5	
510	4	399	551	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	360-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/19/2011	3/20/2011	21.00	245.0	
511	4	400	552	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	361-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/20/2011	3/21/2011	21.00	240.0	
512	4	401	553	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	362-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/21/2011	3/22/2011	21.00	254.0	
513	4	402	554	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	363-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/22/2011	3/23/2011	22.00	237.0	
514	4	403	555	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	364-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/23/2011	3/24/2011	20.00	249.0	
515	4	404	556	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	365-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/24/2011	3/25/2011	20.00	237.0	

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516	4	405	557	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	366-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/25/2011	3/28/2011	65.00	237.5	
517	4	406	558	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	367-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/28/2011	3/29/2011	20.00	237.5	
518	4	407	559	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	368-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/29/2011	3/31/2011	40.00	252.5	
519	4	408	560	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	369-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/31/2011	4/1/2011	20.00	233.5	
520	4	409	561	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	370-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/1/2011	4/2/2011	20.00	237.6	
521	4	410	562	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	371-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/2/2011	4/6/2011	91.00	237.0	
522	4	411	563	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	372-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/6/2011	4/7/2011	20.00	237.0	
523	4	412	564	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	373-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/7/2011	4/8/2011	20.00	237.5	
524	4	413	565	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	374-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/8/2011	4/9/2011	20.00	247.8	
525	4	414	566	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	375-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/9/2011	4/12/2011	64.00	238.0	
526	4	415	567	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	376-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/12/2011	4/13/2011	20.00	243.5	
527	4	416	568	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	377-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/13/2011	4/14/2011	22.00	237.5	
528	4	417	569	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	378-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/14/2011	4/17/2011	62.00	237.5	
529	4	418	570	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	379-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/17/2011	4/18/2011	21.00	237.5	
530	4	419	571	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	380-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/19/2011	4/20/2011	23.00	236.9	
531	4	420	572	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	381-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/20/2011	4/25/2011	120.00	246.3	
532	4	421	573	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	382-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/26/2011	4/28/2011	46.00	243.7	
533	4	422	574	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	383-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/29/2011	4/30/2011	20.00	243.8	
534	4	423	575	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	384-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/30/2011	5/1/2011	20.00	228.0	
535	4	424	576	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	385-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/1/2011	5/2/2011	22.00	237.4	
536	4	425	577	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	386-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/2/2011	5/3/2011	20.00	237.5	
537	4	426	578	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	387-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/3/2011	5/5/2011	45.00	235.5	
538	4	427	579	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	388-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/5/2011	5/6/2011	21.00	237.5	
539	4	428	580	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	389-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/6/2011	5/7/2011	20.00	236.5	
540	4	429	581	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	390-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/8/2011	5/10/2011	25.00	238.0	
541	4	430	582	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	391-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/9/2011	5/10/2011	20.00	237.5	
542	4	431	583	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	392-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/10/2011	5/11/2011	21.00	225.0	
543	4	432	584	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	393-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/11/2011	5/12/2011	21.00	238.0	
544	4	433	585	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	394-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/12/2011	5/16/2011	88.00	237.5	
545	4	434	586	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	395-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/16/2011	5/17/2011	20.00	241.5	
546	4	435	587	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	396-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/17/2011	5/18/2011	20.00	237.0	
547	4	436	588	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	397-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/18/2011	5/19/2011	20.00	236.5	
548	4	437	589	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	398-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/19/2011	5/20/2011	20.00	238.0	
549	4	438	590	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	399-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/20/2011	5/23/2011	66.00	237.0	
550	4	439	591	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	400-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/23/2011	5/25/2011	41.00	237.5	
551	4	440	592	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	401-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/24/2011	5/25/2011	23.00	234.5	
552	4	441	593	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	402-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/25/2011	5/26/2011	20.00	238.0	
553	4	442	594	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	403-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/26/2011	5/27/2011	21.00	237.5	
554	4	443	595	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	404-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/27/2011	5/31/2011	89.00	287.4	
555	4	444	596	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	405-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/31/2011	6/1/2011	20.00	237.7	
556	4	445	597	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	406-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/1/2011	6/2/2011	20.00	268.2	
557	4	446	598	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	407-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/2/2011	6/3/2011	20.00	242.7	
558	4	447	599	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	408-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/3/2011	6/6/2011	65.00	286.1	

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559	4	448	600	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	409-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/4/2011	6/6/2011	44.00	266.6	
560	4	449	601	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	410-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/7/2011	6/8/2011	20.00	238.9	
561	4	450	602	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	411-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/8/2011	6/9/2011	22.00	238.4	
562	4	451	603	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	412-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/9/2011	6/10/2011	20.00	266.5	
563	4	452	604	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	413-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/10/2011	6/13/2011	67.00	252.6	
564	4	453	605	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	414-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/14/2011	6/15/2011	20.00	258.5	
565	4	454	606	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	415-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/15/2011	6/16/2011	20.00	258.2	
566	4	455	607	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	416-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/16/2011	6/17/2011	20.00	236.5	
567	4	456	626	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	417-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/17/2011	6/18/2011	20.00	237.5	
568	4	457	627	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	418-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/18/2011	6/20/2011	42.00	235.0	
569	4	458	628	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	419-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/20/2011	6/21/2011	20.00	237.5	
570	4	459	629	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	420-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/22/2011	6/23/2011	21.00	238.0	
571	4	460	630	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	421-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/23/2011	6/27/2011	92.00	269.5	
572	4	461	631	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	422-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/27/2011	6/28/2011	20.00	237.5	
573	4	462	632	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	423-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/28/2011	6/29/2011	20.00	237.5	
574	4	463	633	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	424-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/29/2011	7/5/2011	144.00	257.0	
575	4	464	634	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	425-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/6/2011	7/7/2011	20.00	237.0	
576	4	465	635	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	426-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/7/2011	7/8/2011	20.00	274.5	
577	4	466	636	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	427-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/9/2011	7/11/2011	48.00	237.5	
578	4	467	637	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	428-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/11/2011	7/13/2011	44.00	237.0	
579	4	468	638	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	429-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/20/2011	7/21/2011	20.00	240.0	
580	4	469	639	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	430-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/25/2011	7/26/2011	21.00	237.0	
581	5	472	647	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/20/2006	0.10	89.6	
582	5	472	648	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/20/2006	2.00	164.7	
583	5	472	649	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/20/2006	4.00	207.3	
584	5	472	650	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/20/2006	8.00	252.5	
585	5	472	651	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/21/2006	24.00	280.2	
586	5	472	652	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/22/2006	48.00	303.5	
587	5	472	653	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/23/2006	72.00	322.1	
588	5	473	655	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/13/2006	0.10	71.4	
589	5	473	656	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/13/2006	2.00	157.2	
590	5	473	657	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/13/2006	4.00	172.1	
591	5	473	658	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/13/2006	8.00	212.9	
592	5	473	659	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/14/2006	24.00	240.1	
593	5	473	608	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/15/2006	48.00	269.6	
594	5	473	609	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/16/2006	72.00	285.5	
595	5	473	610	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/22/2006	216.00	351.0	
596	1	490	712	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	1/20/2010	1/20/2010	0.10	108.0	CAPWAP of EOD
597	1	490	713	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	1/20/2010	1/20/2010	1.00	145.0	CAPWAP of 1-hr restrike
598	1	490	714	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	1/20/2010	1/25/2010	120.00	338.0	CAPWAP of 5-day restrike
599	1	490	716	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	Static	1/20/2010	2/10/2010	504.00	551.0	Selected ultimate capacity at load before pile plunge
600	1	490	715	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	1/20/2010	2/11/2010	528.00	525.0	CAPWAP of 22-da restrike (after load test)
601	116	661	772	H.000000	857-66-0002	Pecan Island, LA 3147	Vermilion	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	105.0	Selected ultimate capacity at load before pile plunge

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602	64	714	824	H.000000	424-05-0087	Bayou Ramos Bridge, US 90	St. Mary	FHWA Database (1998)	92 TP2	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	517.5	Used ID lookup for hammer
603	64	716	826	H.000000	424-05-0087	Bayou Ramos Bridge, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	481.5	
604	64	717	827	H.000000	424-05-0087	Bayou Ramos Bridge, US 90	St. Mary	FHWA Database (1998)	TP6	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	450.0	Pile did not fail
605	64	718	828	H.000000	424-05-0087	Bayou Ramos Bridge, US 90	St. Mary	FHWA Database (1998)	TP5	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	564.0	
606	64	719	829	H.000000	424-05-0087	Bayou Ramos Bridge, US 90	St. Mary	FHWA Database (1998)	TP7	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	111.0	
607	198	745	858	H.000000	845-07-0011	Bayou Gauche Paradis Highway, LA 306	St. Charles	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Pile did not fail
608	239	786	901	H.000000	713-49-0066	Parish Road No. 617 Bridge	Lafourche	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	87.5	Pile did not fail
609	241	788	903	H.000000	284-01-0013	LA 46 Bridge	St. Bernard	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	143.0	Pile did not fail
610	243	790	905	H.000000	713-48-0091	Bridge Over Drainage Canal	Plaquemines	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	82.5	Pile did not fail
611	293	914	1099	H.000000	239-01-0077	Intracoastal Waterway Bridge	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	30" Steel Pipe	CAPWAP	8/9/2000	8/9/2000	0.08	212.1	CAPWAP of EOD
612	293	914	1098	H.000000	239-01-0077	Intracoastal Waterway Bridge	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	30" Steel Pipe	CAPWAP	8/9/2000	8/10/2000	24.00	401.3	CAPWAP of 24hr RS
613	293	915	1095	H.000000	239-01-0077	Intracoastal Waterway Bridge	St. Mary	LTRC No. 14-1GT	TP2	Test Pile	18" Solid Sq. PPC	CAPWAP	8/10/2000	8/10/2000	0.08	60.3	CAPWAP of EOD
614	293	915	1097	H.000000	239-01-0077	Intracoastal Waterway Bridge	St. Mary	LTRC No. 14-1GT	TP2	Test Pile	18" Solid Sq. PPC	CAPWAP	8/10/2000	8/11/2000	24.00	188.8	CAPWAP of 24hr RS
615	340	1018	1167	H.000000	000-00-0001	Tiger Bayou Bridge	Terrebonne	LTRC No. 14-1GT	IND1	Indicator Pile	12" Solid Sq. PPC	CAPWAP	8/2/1995	8/2/1995	0.08	174.2	CAPWAP of EOID
616	438	1036	1190	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	Patout-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2010	2/25/2010	0.01	45.6	CAPWAP of EOD
617	438	1036	1193	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	Patout-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2010	2/26/2010	24.00	78.8	
618	438	1036	1188	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	Patout-1	Test Pile	16" Solid Sq. PPC	Static	2/25/2010	3/15/2010	432.00	83.0	Selected ultimate capacity at load before pile plunge
619	438	1036	1192	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	Patout-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2010	3/19/2010	528.00	106.3	
620	445	1052	1252	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	2/21/2005	2/21/2005	0.01	495.9	CAPWAP by GRL
621	445	1052	1253	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	2/21/2005	2/21/2005	0.01	453.1	CAPWAP by GRL
622	445	1052	1243	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	2/21/2005	2/21/2005	0.01	391.1	CAPWAP by GRL
623	445	1052	1251	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	2/21/2005	2/22/2005	24.00	581.6	CAPWAP by GRL
624	445	1052	1250	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	Static	2/21/2005	3/7/2005	336.00	585.0	Pile did not fail
625	445	1053	1256	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	Bent 5 MP	Indicator Pile	16" Solid Sq. PPC	CAPWAP	10/9/2014	10/13/2014	96.00	192.0	
626	445	1054	1248	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-02	Test Pile	66" Concrete Cylinder	CAPWAP	3/30/2005	3/30/2005	0.01	856.0	CAPWAP by GRL
627	445	1054	1247	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-02	Test Pile	66" Concrete Cylinder	CAPWAP	3/30/2005	4/1/2005	48.00	622.5	CAPWAP by GRL
628	445	1055	1244	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-03	Test Pile	66" Concrete Cylinder	CAPWAP	4/26/2005	4/26/2005	0.01	350.0	CAPWAP by GRL
629	445	1055	1254	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-03	Test Pile	66" Concrete Cylinder	CAPWAP	4/26/2005	4/27/2005	24.00	1015.0	CAPWAP by GRL. Stroke estimated from PDA record with similar EMX.
630	445	1056	1242	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-04	Test Pile	66" Concrete Cylinder	CAPWAP	4/25/2005	4/25/2005	0.01	353.0	CAPWAP by GRL
631	445	1056	1240	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-04	Test Pile	66" Concrete Cylinder	CAPWAP	4/25/2005	4/27/2005	48.00	1058.0	CAPWAP by GRL
632	445	1056	1249	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-04	Test Pile	66" Concrete Cylinder	CAPWAP	4/25/2005	6/6/2005	1008.00	1504.6	CAPWAP by GRL
633	445	1057	1239	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	12/13/2005	12/13/2005	0.01	560.0	CAPWAP by GRL
634	445	1057	1238	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	12/13/2005	12/14/2005	24.00	620.7	CAPWAP by GRL
635	446	1058	1237	H.009309	000-00-0000	Summit Blvd.	St. Tammany	LADOTD Database	IP-01	Indicator Pile	66" Concrete Cylinder	CAPWAP	5/2/2005	5/2/2005	0.01	300.0	CAPWAP by GRL
636	446	1058	1236	H.009309	000-00-0000	Summit Blvd.	St. Tammany	LADOTD Database	IP-01	Indicator Pile	66" Concrete Cylinder	CAPWAP	5/2/2005	5/3/2005	24.00	748.0	CAPWAP by GRL. Could not find CAPWAP data.
637	447	1060	1274	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	8/21/2006	0.01	226.6	EOD. CAPWAP by Fugro.
638	447	1060	1269	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	8/21/2006	0.01	168.8	Set Check 1. CAPWAP by Fugro.
639	447	1060	1277	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	8/21/2006	0.01	190.0	Set Check 2. CAPWAP by Fugro
640	447	1060	1276	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	8/22/2006	24.00	229.1	1-day Restrike. CAPWAP by Fugro.
641	447	1060	1271	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	Static	8/21/2006	9/11/2006	504.00	570.0	Static load testing by Eustis. -- Selected ultimate capacity at load before pile plunge
642	447	1060	1275	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	9/12/2006	528.00	638.5	22-day Restrike. CAPWAP by Fugro.
643	447	1060	1272	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	9/14/2006	576.00	503.5	24-day Restrike. CAPWAP by Fugro.
644	447	1061	1258	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	10/2/2006	10/2/2006	0.01	206.5	EOD. CAPWAP by Fugro.

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645	447	1061	1278	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	10/2/2006	10/2/2006	0.01	225.0	Set Check 2. CAPWAP by Fugro.
646	447	1061	1268	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	10/2/2006	10/2/2006	0.01	222.0	Set Check 1. CAPWAP by Fugro.
647	447	1061	1267	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	10/2/2006	10/3/2006	24.00	425.0	1-day Restrike. CAPWAP by Fugro.
648	447	1061	1266	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	10/2/2006	11/18/2006	1128.00	824.5	47-day Restrike. CAPWAP by Fugro.
649	447	1062	1264	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	9/29/2006	0.01	188.0	EOD. CAPWAP by Fugro.
650	447	1062	1262	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	9/29/2006	0.01	199.0	Set Check 2. CAPWAP by Fugro.
651	447	1062	1263	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	9/29/2006	0.01	192.5	Set Check 1. CAPWAP by Fugro.
652	447	1062	1261	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	9/30/2006	24.00	348.5	1-day Restrike. CAPWAP by Fugro.
653	447	1062	1273	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	Static	9/29/2006	10/31/2006	768.00	807.5	Static load test by Eustis. -- Selected ultimate capacity at load before pile plunge
654	447	1062	1260	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	11/1/2006	792.00	807.0	33-day Restrike. CAPWAP by Fugro.
655	447	1062	1259	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	11/3/2006	840.00	801.5	35-day Restrike. CAPWAP by Fugro.
656	447	1063	1294	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-04	Test Pile	36" Voided Sq. PPC	CAPWAP	9/27/2006	9/27/2006	0.01	288.0	EOID
657	447	1063	1295	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-04	Test Pile	36" Voided Sq. PPC	CAPWAP	9/27/2006	9/28/2006	24.00	477.5	BOR-1
658	447	1063	1296	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-04	Test Pile	36" Voided Sq. PPC	CAPWAP	9/27/2006	11/10/2006	1056.00	749.0	BOR-2
659	447	1063	1297	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-04	Test Pile	36" Voided Sq. PPC	CAPWAP	9/27/2006	11/17/2006	1224.00	872.0	BOR-3
660	447	1064	1298	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-05	Test Pile	36" Voided Sq. PPC	CAPWAP	10/9/2006	10/9/2006	0.01	162.5	EOID
661	447	1064	1299	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-05	Test Pile	36" Voided Sq. PPC	CAPWAP	10/9/2006	10/10/2006	24.00	354.5	BOR-1
662	447	1064	1300	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-05	Test Pile	36" Voided Sq. PPC	CAPWAP	10/9/2006	11/7/2006	696.00	566.0	BOR-2
663	447	1066	1301	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-06	Test Pile	36" Voided Sq. PPC	CAPWAP	8/23/2006	8/23/2006	0.01	659.0	EOID
664	447	1066	1302	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-06	Test Pile	36" Voided Sq. PPC	CAPWAP	8/23/2006	8/24/2006	24.00	1008.5	BOR-1
665	447	1066	1303	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-06	Test Pile	36" Voided Sq. PPC	CAPWAP	8/23/2006	9/22/2006	720.00	1153.5	BOR-2
666	447	1070	1304	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-07	Test Pile	36" Voided Sq. PPC	CAPWAP	8/25/2006	8/25/2006	0.01	617.0	EOID
667	447	1070	1305	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-07	Test Pile	36" Voided Sq. PPC	CAPWAP	8/25/2006	8/26/2006	24.00	820.0	BOR-1
668	447	1070	1306	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-07	Test Pile	36" Voided Sq. PPC	CAPWAP	8/25/2006	9/16/2006	528.00	963.0	BOR-2
669	447	1071	1307	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-08	Test Pile	36" Voided Sq. PPC	CAPWAP	8/28/2006	8/28/2006	0.01	235.5	EOID
670	447	1071	1308	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-08	Test Pile	36" Voided Sq. PPC	CAPWAP	8/28/2006	8/29/2006	24.00	577.0	BOR-1
671	447	1071	1309	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-08	Test Pile	36" Voided Sq. PPC	CAPWAP	8/28/2006	9/19/2006	528.00	724.5	BOR-2
672	447	1074	1310	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-01	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/27/2006	11/27/2006	0.01	639.5	EOID
673	447	1074	1311	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-01	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/27/2006	11/28/2006	24.00	689.0	BOR-1
674	447	1075	1312	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-02	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/21/2006	11/21/2006	0.01	734.5	EOID
675	447	1075	1313	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-02	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/21/2006	11/22/2006	24.00	818.5	BOR-1
676	447	1076	1314	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-03	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/4/2006	11/4/2006	0.01	688.0	EOID
677	447	1076	1315	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-03	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/4/2006	11/6/2006	48.00	721.5	BOR-1
678	447	1077	1316	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-04	Indicator Pile	36" Voided Sq. PPC	CAPWAP	9/25/2006	9/25/2006	0.01	648.5	EOID
679	447	1077	1317	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-04	Indicator Pile	36" Voided Sq. PPC	CAPWAP	9/25/2006	9/26/2006	24.00	705.5	BOR-1
680	447	1078	1318	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-05	Indicator Pile	36" Voided Sq. PPC	CAPWAP	10/4/2006	10/4/2006	0.01	771.5	EOID
681	447	1078	1319	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-05	Indicator Pile	36" Voided Sq. PPC	CAPWAP	10/4/2006	10/5/2006	24.00	830.0	BOR-1
682	6	32	163	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	CAPWAP	10/4/2012	10/4/2012	0.01	180.0	CAPWAP of EOD
683	6	32	165	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	CAPWAP	10/4/2012	10/4/2012	0.43	184.9	CAPWAP of 26-min restrike
684	6	32	167	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	CAPWAP	10/4/2012	10/4/2012	22.00	213.4	CAPWAP of 22-hr restrike
685	6	32	169	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	Static	10/4/2012	10/16/2012	295.68	225.0	1st instrumented static load test -- Selected ultimate capacity at load before pile plunge
686	6	32	170	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	Static	10/4/2012	11/25/2012	1255.68	260.0	2nd instrumented static load test
687	6	33	178	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-2	Test Pile	30" Voided Sq. PPC	CAPWAP	8/22/2012	8/22/2012	0.01	220.8	CAPWAP of EOD

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688	6	33	179	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-2	Test Pile	30" Voided Sq. PPC	CAPWAP	8/22/2012	8/22/2012	0.25	236.8	CAPWAP of 15-min restrike
689	6	33	180	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-2	Test Pile	30" Voided Sq. PPC	CAPWAP	8/22/2012	8/22/2012	22.00	329.7	CAPWAP of 22-hr restrike
690	6	33	181	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-2	Test Pile	30" Voided Sq. PPC	CAPWAP	8/22/2012	9/13/2012	537.17	374.3	CAPWAP of 22-day restrike
691	6	33	182	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-2	Test Pile	30" Voided Sq. PPC	Static	8/22/2012	9/29/2012	921.17	380.0	
692	6	34	171	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-3	Test Pile	30" Voided Sq. PPC	CAPWAP	9/18/2012	9/18/2012	0.01	246.6	CAPWAP of EOD
693	6	34	173	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-3	Test Pile	30" Voided Sq. PPC	CAPWAP	9/18/2012	9/18/2012	2.13	278.3	CAPWAP of 2-hr restrike
694	6	34	175	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-3	Test Pile	30" Voided Sq. PPC	CAPWAP	9/18/2012	9/18/2012	23.82	337.4	CAPWAP of 24-hr restrike
695	6	34	177	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-3	Test Pile	30" Voided Sq. PPC	Static	9/18/2012	10/2/2012	346.52	429.5	
696	7	35	183	H.000498	013-12-0041	US 190: LA22 to Lonesome Road	St. Tammany	LADOTD Database	TP-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2013	2/25/2013	0.01	60.0	CAPWAP of EOD
697	7	35	184	H.000498	013-12-0041	US 190: LA22 to Lonesome Road	St. Tammany	LADOTD Database	TP-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2013	2/26/2013	24.00	112.2	CAPWAP of 24-hr restrike
698	7	35	644	H.000498	013-12-0041	US 190: LA22 to Lonesome Road	St. Tammany	LADOTD Database	TP-1	Test Pile	16" Solid Sq. PPC	Static	2/25/2013	3/13/2013	384.00	140.0	Pile did not fail
699	7	35	643	H.000498	013-12-0041	US 190: LA22 to Lonesome Road	St. Tammany	LADOTD Database	TP-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2013	3/14/2013	408.00	168.2	CAPWAP of 17-day restrike
700	11	251	678	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-04	Test Pile	24" Voided Sq. PPC	CAPWAP	4/23/2012	4/23/2012	0.01	157.3	CAPWAP of EOD
701	11	251	679	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-04	Test Pile	24" Voided Sq. PPC	CAPWAP	4/23/2012	4/23/2012	20.38	232.1	
702	11	251	681	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-04	Test Pile	24" Voided Sq. PPC	Static	4/23/2012	5/6/2012	331.93	387.5	
703	11	251	680	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-04	Test Pile	24" Voided Sq. PPC	CAPWAP	4/23/2012	5/7/2012	355.93	295.5	
704	11	476	667	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-01	Test Pile	24" Voided Sq. PPC	CAPWAP	4/30/2012	4/30/2012	0.01	333.6	CAPWAP of EOD
705	11	476	668	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-01	Test Pile	24" Voided Sq. PPC	CAPWAP	4/30/2012	5/1/2012	24.00	368.0	
706	11	476	669	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-01	Test Pile	24" Voided Sq. PPC	Static	4/30/2012	5/16/2012	384.00	459.0	Reaction system failed at 459 tons and 0.52" movement -- Pile did not fail
707	11	477	670	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-02	Test Pile	24" Voided Sq. PPC	CAPWAP	8/15/2012	8/15/2012	0.01	267.3	CAPWAP of EOD
708	11	477	671	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-02	Test Pile	24" Voided Sq. PPC	CAPWAP	8/15/2012	8/16/2012	24.00	333.7	
709	11	477	673	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-02	Test Pile	24" Voided Sq. PPC	Static	8/15/2012	9/23/2012	953.76	436.0	
710	11	477	672	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-02	Test Pile	24" Voided Sq. PPC	CAPWAP	8/15/2012	9/25/2012	984.96	283.7	
711	11	478	674	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	3/14/2012	3/14/2012	0.01	248.1	CAPWAP of EOD
712	11	478	675	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	3/14/2012	3/14/2012	22.38	264.4	
713	11	478	677	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	Static	3/14/2012	4/10/2012	669.05	336.5	
714	11	478	676	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	3/14/2012	4/11/2012	692.50	276.6	
715	14	480	690	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/27/2009	4/27/2009	0.01	346.9	CAPWAP of EOD
716	14	480	691	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/27/2009	4/27/2009	20.00	458.1	
717	14	480	693	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	Static	4/27/2009	5/15/2009	432.00	331.0	Pile did not fail
718	14	480	692	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/27/2009	5/16/2009	456.00	619.7	
719	14	481	694	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	CAPWAP	4/30/2009	4/30/2009	0.10	484.6	CAPWAP of EOD
720	14	481	695	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	CAPWAP	4/30/2009	5/4/2009	96.00	684.4	
721	14	481	697	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	Static	4/30/2009	5/16/2009	384.00	331.0	Pile did not fail
722	14	481	696	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	CAPWAP	4/30/2009	5/17/2009	408.00	835.7	
723	14	483	699	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB03-P04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/7/2009	10/7/2009	23.50	390.0	
724	14	484	701	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB07-P04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/4/2009	9/8/2009	96.00	477.3	
725	14	485	703	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB12-P03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/29/2009	9/1/2009	72.00	496.4	
726	14	486	706	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB17-P04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/18/2009	8/18/2009	0.01	282.7	
727	14	486	705	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB17-P04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/18/2009	8/18/2009	20.00	355.4	
728	14	487	707	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB18-P04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/15/2009	8/18/2009	72.00	440.7	CAPWAP performed due to low EOD blow count (from inspector).
729	14	488	708	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB11-P02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/25/2009	9/8/2009	336.00	468.2	CAPWAP performed due to low EOD capacity (from inspector).
730	16	489	711	H.008434	857-02-0006	Maree Michel Canal Bridge	Vermilion	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	CAPWAP	3/20/2014	3/20/2014	0.01	47.2	

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731	16	489	709	H.008434	857-02-0006	Maree Michel Canal Bridge	Vermilion	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	CAPWAP	3/20/2014	3/21/2014	24.00	150.2	
732	16	489	710	H.008434	857-02-0006	Maree Michel Canal Bridge	Vermilion	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	Static	3/20/2014	6/10/2014	1968.00	200.0	
733	16	489	719	H.008434	857-02-0006	Maree Michel Canal Bridge	Vermilion	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	CAPWAP	3/20/2014	6/12/2014	2016.00	198.0	
734	27	500	739	H.002367	260-01-0020	Amite River Relief Bridge LA 42	Ascension	LADOTD Database	Test Pile 1	Test Pile	24" Voided Sq. PPC	Static	10/4/2010	10/18/2010	336.00	415.0	Pile did not fail
735	127	672	783	H.000000	028-04-0017	Bundick Creek Bridge, LA 26	Beauregard	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.0	Pile did not fail
736	62	674	785	H.000000	003-07-0016	Bayou and Canal Approaches, US 90	Jefferson Davis	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	118.8	Used ID lookup for hammer -- Pile did not fail
737	127	676	787	H.000000	028-04-0017	Bundick Creek Bridge, LA 26	Beauregard	FHWA Database (1998)	TP3	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.5	Pile did not fail
738	99	677	806	H.000000	209-01-0006	LA 101 Bridge	Calcasieu	FHWA Database (1998)	TP1	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	102.2	Pile did not fail
739	38	678	788	H.000000	450-91-0025	Southern Pacific Railroad Overpass	Calcasieu	FHWA Database (1998)	TP4	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Pile did not fail
740	127	679	789	H.000000	028-04-0017	Bundick Creek Bridge, LA 26	Beauregard	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.5	Pile did not fail
741	38	680	790	H.000000	450-91-0025	Southern Pacific Railroad Overpass	Calcasieu	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	137.5	Pile did not fail
742	38	681	791	H.000000	450-91-0025	Southern Pacific Railroad Overpass	Calcasieu	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	130.0	Pile did not fail
743	38	683	792	H.000000	450-91-0025	Southern Pacific Railroad Overpass	Calcasieu	FHWA Database (1998)	TP1	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	92.5	Pile did not fail
744	62	685	794	H.000000	003-07-0016	Bayou and Canal Approaches, US 90	Jefferson Davis	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	118.8	Used ID lookup for hammer -- Pile did not fail
745	199	686	795	H.000000	080-01-0010	Coulee Le des Cannes Bridge, US 167	Vermilion	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Pile did not fail
746	142	695	804	H.000000	262-04-0005	West Hog Bridge, LA 16	St. Helena	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	
747	100	700	811	H.000000	003-08-0006	Mermentau River Bridge, US 90	Jefferson Davis	FHWA Database (1998)	TP1	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	288.0	Selected ultimate capacity at load before pile plunge
748	100	701	812	H.000000	003-08-0006	Mermentau River Bridge, US 90	Jefferson Davis	FHWA Database (1998)	TP2	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	224.0	Selected ultimate capacity at load before pile plunge
749	51	710	820	H.000000	832-01-0003	Bear Creek Bridge, LA 1036	Livingston	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Pile did not fail
750	79	711	821	H.000000	832-01-0003	East Hog Branch, LA 1036	Livingston	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Pile did not fail
751	95	712	1288	H.000000	024-01-0034	Southern Pacific Railroad Bridge, US 171	Calcasieu	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/12/2014	0.01	295.0	End of Driving - inconsistent skin/toe capacity data (145/27.5)
752	95	712	822	H.000000	024-01-0034	Southern Pacific Railroad Bridge, US 171	Calcasieu	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	156.0	Selected ultimate capacity at load before pile plunge
753	104	724	835	H.000000	055-07-0032	Bayou Petite Anse Bridge, LA 14	Iberia	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	107.0	Pile did not fail
754	105	725	836	H.000000	392-01-0014	Drainage Canal Bridges, LA 95	Acadia	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	112.1	Pile did not fail
755	108	728	839	H.000000	801-32-0005	Wikoff Bayou Bridge, LA 1101	Acadia	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Pile did not fail
756	98	729	840	H.000000	012-10-0011	Bayou Des Cannes, US 190	St. Landry	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	118.8	Pile did not fail
757	74	734	845	H.000000	386-03-0003	Bayou Mallet Bridge, LA 367	Acadia	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Pile did not fail
758	188	735	846	H.000000	742-01-0039	Lee Drive Extension, W Lee Dr	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	82.5	
759	193	740	852	H.000000	714-23-0083	Railroad Overpass, Shattuck Street	Calcasieu	FHWA Database (1998)	TP2	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	283.0	Pile did not fail
760	193	742	855	H.000000	714-23-0083	Railroad Overpass, Shattuck Street	Calcasieu	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	134.0	Pile did not fail
761	208	743	856	H.000000	852-21-0009	Bayou Liberty Bridge and Approaches, LA 433	St. Tammany	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	111.0	Pile did not fail
762	208	744	857	H.000000	852-21-0009	Bayou Liberty Bridge and Approaches, LA 433	St. Tammany	FHWA Database (1998)	TP3	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	111.0	Selected ultimate capacity at load before pile plunge
763	238	751	865	H.000000	013-10-0037	Bogue Falaya Bridge, US 190 (Covington)	St. Mary	FHWA Database (1998)	PA	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	180.0	Pile did not fail
764	159	753	867	H.000000	262-06-0009	Killian Branch Bridge, LA 16	St. Helena	FHWA Database (1998)	TP1 B2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.0	Hammer Matched to Pile 842 - Project 94 -- Pile did not fail
765	78	754	868	H.000000	057-06-0020	Reddell-Turkey Creek Bridge, LA 13	Evangeline	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	118.0	
766	78	755	869	H.000000	057-06-0020	Reddell-Turkey Creek Bridge, LA 13	Evangeline	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	63.8	Pile did not fail
767	78	756	870	H.000000	057-06-0020	Reddell-Turkey Creek Bridge, LA 13	Evangeline	FHWA Database (1998)	TP3	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	51.0	Hammer Matched to Pile 755 -- Selected ultimate capacity at load before pile plunge
768	212	759	873	H.000000	504-41-0032	Grand Bayou Reservoir Bridge Alterations, LA 784	Red River	FHWA Database (1998)	TP1	Test Pile	24" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	240.0	Pile did not fail
769	217	764	877	H.000000	024-02-0014	Diamond Gully Bridge, US 171	Calcasieu	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	152.3	Pile did not fail
770	219	766	879	H.000000	253-02-1106	Baton Rouge Bayou Bridge, US 61	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	183.0	Pile did not fail
771	221	768	881	H.000000	060-02-0025	White Bayou Bridge, Lower Zachary Rd	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	108.8	Pile did not fail
772	222	769	882	H.000000	817-08-0021	Hurricane Creek Bridge, LA 946	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.5	Pile did not fail
773	223	770	883	H.000000	450-10-0096	I-10 Bridge over LA 3246	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.5	Pile did not fail

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774	223	771	884	H.000000	450-10-0096	I-10 Bridge over LA 3246	East Baton Rouge	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.5	Pile did not fail
775	225	772	885	H.000000	817-08-0021	Roberts Canal Bridge, LA 946	East Baton Rouge	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	102.3	Pile did not fail
776	226	773	886	H.000000	817-08-0021	Jones Bayou Bridge, LA 946	East Baton Rouge	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Pile did not fail
777	227	774	887	H.000000	452-90-0017	Wardline Road Interchange Bridge, LA 3234	Tangipahoa	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	165.0	Pile did not fail
778	235	782	896	H.000000	858-01-0008	Bundick Creek Bridge, LA 1146	Vernon	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	120.5	Pile did not fail
779	236	783	897	H.000000	858-01-0008	Hurricane Creek Bridge, LA 1146	Vernon	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	120.5	Pile did not fail
780	238	785	900	H.000000	013-10-0037	Bogue Falaya Bridge, US 190 (Covington)	St. Mary	FHWA Database (1998)	PB	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	144.0	Selected ultimate capacity at load before pile plunge
781	242	789	904	H.000000	455-01-0030	Coulee Beau Bridge, I-49	Lafayette	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	145.0	Selected ultimate capacity at load before pile plunge
782	246	793	908	H.000000	032-01-0024	Southern Pacific Transportation Co. Underpass	Lafayette	FHWA Database (1998)	TP3	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	125.0	Selected ultimate capacity at load before pile plunge
783	157	798	913	H.000000	055-07-0032	Bayou Poufette Bridge, LA 14	Iberia	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	128.0	Selected ultimate capacity at load before pile plunge
784	56	804	920	H.000000	207-01-0022	Intercoastal Waterway Bridge, LA 82	Vermilion	FHWA Database (1998)	TP4	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	127.5	Pile did not fail
785	56	812	928	H.000000	207-01-0022	Intercoastal Waterway Bridge, LA 82	Vermilion	FHWA Database (1998)	TP5	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	255.0	Pile did not fail
786	56	814	929	H.000000	207-01-0022	Intercoastal Waterway Bridge, LA 82	Vermilion	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	127.5	Pile did not fail
787	56	817	931	H.000000	207-01-0022	Intercoastal Waterway Bridge, LA 82	Vermilion	FHWA Database (1998)	TP1	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	221.3	Pile did not fail
788	81	844	960	H.000000	060-02-0022	White Creek Bridge, LA 67	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	114.5	Used ID lookup for hammer -- Pile did not fail
789	82	845	961	H.000000	255-02-0025	Comite River Bridge, LA 408 (Hooper Rd)	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	24" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	312.5	Used ID lookup for hammer -- Selected ultimate capacity at load before pile plunge
790	82	846	962	H.000000	255-02-0025	Comite River Bridge, LA 408 (Hooper Rd)	East Baton Rouge	FHWA Database (1998)	TP2	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	172.5	Used ID lookup for hammer -- Pile did not fail
791	85	848	964	H.000000	817-09-0023	North Branch Ward Creek Bridge, LA 426	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Used ID lookup for hammer -- Pile did not fail
792	150	850	966	H.000000	257-04-0016	Elbow Bayou Bridge, LA 42	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	108.8	Used ID lookup for hammer -- Pile did not fail
793	139	851	967	H.000000	853-10-0009	Natalbany River Bridge, LA 1040	Tangipahoa	FHWA Database (1998)	TP1	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	180.0	Used ID lookup for hammer -- Pile did not fail
794	153	853	969	H.000000	859-22-0009	Bogue Lusa Creek Bridge, LA 439	Washington	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	180.0	Used ID lookup for hammer -- Pile did not fail
795	170	856	972	H.000000	450-33-0056	I-110 LA 408 Interchange	East Baton Rouge	FHWA Database (1998)	TP4A	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Used ID lookup for hammer -- Pile did not fail
796	170	857	973	H.000000	450-33-0056	I-110 LA 408 Interchange	East Baton Rouge	FHWA Database (1998)	TP3A	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Used ID lookup for hammer -- Pile did not fail
797	170	858	974	H.000000	450-33-0056	I-110 LA 408 Interchange	East Baton Rouge	FHWA Database (1998)	TP2A	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Used ID lookup for hammer -- Pile did not fail
798	249	867	983	H.000000	007-08-0026	Claycut Bayou Bridge, Siegen Ln (LA 3246)	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	107.0	Hammer: BOH 08 -- Pile did not fail
799	254	872	988	H.000000	024-06-0014	Flat Creek Bridge, US 171	Vernon	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Used ID lookup for hammer -- Pile did not fail
800	258	875	991	H.000000	281-04-0017	Double Creek Bridge and Approaches, LA 435	St. Tammany	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	108.0	Used ID lookup for hammer
801	277	876	992	H.000000	013-11-0014	Fairway Drive Overpass, US 190	St. Tammany	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	119.0	Used ID lookup for hammer -- Pile did not fail
802	268	886	1002	H.000000	455-05-0033	Alexandria Urban Section	Rapides	FHWA Database (1998)	TP6	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	96.0	Used ID lookup for hammer
803	273	891	1007	H.000000	140-01-0007	Tenmile Creek and Drainage Bridges, LA 113	Vernon	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	124.5	Used ID lookup for hammer -- Pile did not fail
804	273	892	1008	H.000000	140-01-0007	Tenmile Creek and Drainage Bridges, LA 113	Vernon	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Used ID lookup for hammer -- Pile did not fail
805	273	893	1009	H.000000	140-01-0007	Tenmile Creek and Drainage Bridges, LA 113	Vernon	FHWA Database (1998)	TP3	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	99.6	Pile did not fail
806	320	919	1048	H.000000	015-04-0038	Indian Creek Bridge	Grant	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	6/26/2005	6/26/2005	0.08	210.7	CAPWAP of INI
807	320	919	1047	H.000000	015-04-0038	Indian Creek Bridge	Grant	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	6/26/2005	6/27/2005	24.00	256.7	CAPWAP of Restrike after 24hr
808	320	920	1046	H.000000	015-04-0038	Indian Creek Bridge	Grant	LTRC No. 14-1GT	TP1 (2)	Test Pile	24" Voided Sq. PPC	CAPWAP	6/6/2005	6/6/2005	0.08	213.4	CAPWAP of INI
809	320	920	1049	H.000000	015-04-0038	Indian Creek Bridge	Grant	LTRC No. 14-1GT	TP1 (2)	Test Pile	24" Voided Sq. PPC	CAPWAP	6/6/2005	6/7/2005	24.00	368.3	CAPWAP of Restrike after 24hr
810	329	925	1057	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	5/19/2008	5/19/2008	0.08	129.0	CAPWAP of INI
811	329	925	1059	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	5/19/2008	5/20/2008	24.00	231.7	CAPWAP of Restrike after 1day
812	329	925	1062	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	5/19/2008	6/6/2008	432.00	309.8	CAPWAP of Restrike after 18 day
813	329	926	1060	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP2	Test Pile	30" Voided Sq. PPC	CAPWAP	5/19/2008	5/19/2008	0.08	263.0	CAPWAP of INI
814	329	926	1061	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP2	Test Pile	30" Voided Sq. PPC	CAPWAP	5/19/2008	5/20/2008	24.00	129.0	CAPWAP of Restrike after 1day
815	329	926	1058	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP2	Test Pile	30" Voided Sq. PPC	CAPWAP	5/19/2008	6/5/2008	408.00	533.9	CAPWAP of Restrike after 17 day
816	332	927	1063	H.000000	262-04-0005	Weiss to Pinegrove LA 16	St. Helena	LTRC No. 14-1GT	TP1	Test Pile	12" Solid Sq. PPC	CAPWAP	11/11/1996	11/11/1996	0.08	112.3	CAPWAP of INI

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817	334	929	1066	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	EB12	Other	16" Solid Sq. PPC	CAPWAP	10/14/2011	10/20/2011	144.33	125.0	CAPWAP OF 5 to 7 days Restrike
818	334	930	1074	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	EB22	Other	30" Solid Sq. PPC	CAPWAP	10/12/2011	10/18/2011	138.07	334.8	CAPWAP OF 5 to 7 days Restrike
819	334	931	1072	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	EP32	Other	30" Solid Sq. PPC	CAPWAP	9/30/2011	10/6/2011	128.78	317.0	CAPWAP OF 5 to 7 days Restrike
820	334	932	1073	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	EB43	Other	30" Solid Sq. PPC	CAPWAP	10/25/2011	10/31/2011	142.85	314.7	CAPWAP OF 5 to 7 days Restrike
821	334	933	1070	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	WB13	Other	16" Solid Sq. PPC	CAPWAP	10/14/2011	10/20/2011	143.97	131.7	CAPWAP OF 5 to 7 days Restrike
822	334	934	1069	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	WP-31-RS	Other	30" Solid Sq. PPC	CAPWAP	9/28/2011	9/28/2011	1.00	151.8	CAPWAP of 30 minutes Restrike
823	334	935	1068	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	WP-31-RS (5days RS)	Other	30" Solid Sq. PPC	CAPWAP	9/27/2011	10/3/2011	137.68	279.0	CAPWAP of 5 to 7 days Restrike
824	334	936	1065	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	WP52	Other	30" Solid Sq. PPC	CAPWAP	10/29/2011	11/4/2011	141.82	147.3	CAPWAP OF 5 to 7 days Restrike
825	334	937	1071	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	EB64	Other	16" Solid Sq. PPC	CAPWAP	11/9/2011	11/14/2011	113.60	147.3	CAPWAP OF 4 to 5 days Restrike
826	334	938	1067	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	WB65	Other	16" Solid Sq. PPC	CAPWAP	11/9/2011	11/14/2011	113.95	142.9	CAPWAP OF 4 to 5 days Restrike
827	335	939	1077	H.000000	000-00-0003	Central Throughway-sullivan Bridge	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	7/13/2009	7/13/2009	0.08	280.4	CAPWAP of INI
828	335	939	1075	H.000000	000-00-0003	Central Throughway-sullivan Bridge	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	7/13/2009	7/15/2009	55.80	379.5	CAPWAP of Restrike after 1day
829	335	939	1076	H.000000	000-00-0003	Central Throughway-sullivan Bridge	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	7/13/2009	7/28/2009	369.02	472.8	CAPWAP of Restrike after 15 day
830	339	947	1092	H.000000	742-17-0166	LA 37 @ Central Throughway - Greenwell Springs Road Bridge	East Baton Rouge	LTRC No. 14-1GT	Testpile-EOID	Test Pile	24" Voided Sq. PPC	CAPWAP	5/30/2012	5/30/2012	0.10	200.9	CAPWAP of EOID
831	339	948	1091	H.000000	742-17-0166	LA 37 @ Central Throughway - Greenwell Springs Road Bridge	East Baton Rouge	LTRC No. 14-1GT	Testpile-BOR-1	Test Pile	24" Voided Sq. PPC	CAPWAP	5/30/2012	5/30/2012	0.10	401.8	CAPWAP of -BOR-1 after 16 hours
832	339	949	1093	H.000000	742-17-0166	LA 37 @ Central Throughway - Greenwell Springs Road Bridge	East Baton Rouge	LTRC No. 14-1GT	Testpile-BOR-2	Test Pile	24" Voided Sq. PPC	CAPWAP	5/30/2012	5/31/2012	16.43	492.4	CAPWAP of BOR-2 after 16 days
833	301	1001	1131	H.000000	424-04-0026	US 90 & LA 668 Interchange	Iberia	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	8/20/2001	8/20/2001	0.08	22.3	
834	301	1001	1130	H.000000	424-04-0026	US 90 & LA 668 Interchange	Iberia	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	8/20/2001	8/21/2001	24.00	89.3	
835	301	1001	1129	H.000000	424-04-0026	US 90 & LA 668 Interchange	Iberia	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	8/20/2001	9/5/2001	384.00	91.5	CAPWAP of RSAL
836	304	1004	1136	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	6/6/2002	6/6/2002	0.08	223.2	CAPWAP of EOD
837	304	1004	1138	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	6/6/2002	6/7/2002	24.00	299.1	CAPWAP of Restrike 24hr
838	304	1004	1144	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	6/6/2002	6/24/2002	432.00	312.5	CAPWAP of Restrike 14days
839	304	1005	1140	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND1	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/11/2002	0.01	214.3	CAPWAP of Restrike 24hr
840	304	1005	1139	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND1	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/10/2002	0.01	133.9	CAPWAP of EOD
841	304	1005	1137	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND1	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/25/2002	0.08	245.5	CAPWAP of Restrike 14days
842	304	1006	1143	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND2	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/12/2002	0.01	214.3	CAPWAP of Restrike 24hr
843	304	1006	1142	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND2	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/11/2002	0.01	84.8	CAPWAP of EOD
844	304	1006	1141	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND2	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/25/2002	0.08	154.0	CAPWAP of Restrike 14days
845	307	1009	1151	H.000000	015-04-0037	US 165 @ LA 524	Grant	LTRC No. 14-1GT	IND1	Indicator Pile	24" Solid Sq. PPC	CAPWAP	9/30/2004	9/30/2004	0.08	185.7	CAPWAP of INI
846	309	1013	1158	H.000000	450-05-0034	Louisiana Ave. Overpass	Lafayette	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	1/22/2002	1/22/2002	0.08	111.6	CAPWAP-INI
847	309	1013	1155	H.000000	450-05-0034	Louisiana Ave. Overpass	Lafayette	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	1/22/2002	1/23/2002	24.00	125.0	CAPWAP-24h RS
848	309	1013	1159	H.000000	450-05-0034	Louisiana Ave. Overpass	Lafayette	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	1/22/2002	2/7/2002	384.00	120.5	CAPWAP- 14d RS (16 days after installation)
849	309	1014	1156	H.000000	450-05-0034	Louisiana Ave. Overpass	Lafayette	LTRC No. 14-1GT	TP2	Test Pile	14" Solid Sq. PPC	CAPWAP	1/23/2002	1/23/2002	0.08	111.5	CAPWAP-INI
850	309	1014	1157	H.000000	450-05-0034	Louisiana Ave. Overpass	Lafayette	LTRC No. 14-1GT	TP2	Test Pile	14" Solid Sq. PPC	CAPWAP	1/23/2002	2/7/2002	360.00	152.2	CAPWAP- ALRS (After Load Restrike) (15 days after installation)
851	310	1015	1161	H.000000	003-07-0019	Southern Pacific PR Overpass (Jennings)	Jefferson	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2000	8/2/2000	0.08	67.0	CAPWAP of INI (EOD)
852	310	1015	1162	H.000000	003-07-0019	Southern Pacific PR Overpass (Jennings)	Jefferson	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2000	8/3/2000	24.00	198.7	CAPWAP of 24h RS (BOR)
853	310	1015	1160	H.000000	003-07-0019	Southern Pacific PR Overpass (Jennings)	Jefferson	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2000	8/21/2000	456.00	213.4	CAPWAP of BO2R (2th Restrike)
854	439	1037	1191	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	Stumpy-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/22/2010	2/22/2010	0.01	72.5	CAPWAP of EOD
855	439	1037	1194	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	Stumpy-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/22/2010	2/23/2010	24.00	121.2	
856	439	1037	1189	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	Stumpy-1	Test Pile	16" Solid Sq. PPC	Static	2/22/2010	3/11/2010	408.00	139.0	
857	439	1037	1187	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	Stumpy-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/22/2010	3/12/2010	432.00	137.6	
858	439	1038	1195	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	1/27/2010	1/29/2010	48.00	402.8	
859	439	1038	1200	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	Static	1/27/2010	2/11/2010	360.00	330.0	Pile did not fail

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860	443	1050	1233	H.005424	852-21-0024	Bayou Liberty Bridge & Approaches	St. Tammany	LADOTD Database	TP-1	Test Pile	14" Solid Sq. PPC	CAPWAP	12/20/2006	12/20/2006	0.01	57.5	CAPWAP by GRL
861	443	1050	1232	H.005424	852-21-0024	Bayou Liberty Bridge & Approaches	St. Tammany	LADOTD Database	TP-1	Test Pile	14" Solid Sq. PPC	CAPWAP	12/20/2006	12/21/2006	24.00	124.0	CAPWAP by GRL
862	443	1050	1234	H.005424	852-21-0024	Bayou Liberty Bridge & Approaches	St. Tammany	LADOTD Database	TP-1	Test Pile	14" Solid Sq. PPC	Static	12/20/2006	1/4/2007	360.00	142.5	
863	444	1051	1257	H.002878	424-04-0034	US 90 at LA 675	Iberia	LADOTD Database	Indicator Pile 1	Indicator Pile	16" Solid Sq. PPC	CAPWAP	8/13/2014	8/13/2014	0.01	387.5	
864	444	1051	1255	H.002878	424-04-0034	US 90 at LA 675	Iberia	LADOTD Database	Indicator Pile 1	Indicator Pile	16" Solid Sq. PPC	CAPWAP	8/13/2014	8/14/2014	24.00	381.0	
865	3	9	642	H.008273	840-43-0001	Fort Buhlow Bridge	Rapides	LADOTD Database	TP-11	Test Pile	30" Voided Sq. PPC	CAPWAP	7/18/2011	7/18/2011	0.10	283.1	CAPWAP of EOD
866	3	9	9	H.008273	840-43-0001	Fort Buhlow Bridge	Rapides	LADOTD Database	TP-11	Test Pile	30" Voided Sq. PPC	CAPWAP	7/18/2011	7/19/2011	24.00	336.9	CAPWAP of 24-hr restrike
867	3	9	8	H.008273	840-43-0001	Fort Buhlow Bridge	Rapides	LADOTD Database	TP-11	Test Pile	30" Voided Sq. PPC	Static	7/18/2011	8/2/2011	360.00	482.5	
868	3	9	10	H.008273	840-43-0001	Fort Buhlow Bridge	Rapides	LADOTD Database	TP-11	Test Pile	30" Voided Sq. PPC	CAPWAP	7/18/2011	8/5/2011	432.00	361.1	
869	15	11	20	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	1/2/2014	1/2/2014	0.01	78.3	CAPWAP of EOD
870	15	11	18	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	1/2/2014	1/3/2014	24.00	157.2	CAPWAP of 1-day restrike
871	15	11	21	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	Static	1/2/2014	1/16/2014	336.00	216.0	
872	15	11	17	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	1/2/2014	1/22/2014	480.00	97.4	CAPWAP of 20-day restrike (after load test)
873	12	252	682	H.001487	065-06-0040	Grand Bayou Bridge	Lafourche	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	CAPWAP	6/16/2011	6/16/2011	0.01	58.0	CAPWAP of EOD
874	12	252	683	H.001487	065-06-0040	Grand Bayou Bridge	Lafourche	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	CAPWAP	6/16/2011	6/19/2011	93.30	126.8	
875	12	252	684	H.001487	065-06-0040	Grand Bayou Bridge	Lafourche	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	Static	6/16/2011	6/29/2011	334.10	157.5	
876	10	475	663	H.001267	053-02-0032	Bayou Jean DeJean Bridge	Rapides	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	10/10/2012	10/10/2012	0.01	202.9	CAPWAP of EOD
877	10	475	664	H.001267	053-02-0032	Bayou Jean DeJean Bridge	Rapides	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	10/10/2012	10/11/2012	24.00	281.8	CAPWAP of 1-day restrike
878	10	475	666	H.001267	053-02-0032	Bayou Jean DeJean Bridge	Rapides	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	Static	10/10/2012	10/28/2012	432.00	430.0	
879	10	475	665	H.001267	053-02-0032	Bayou Jean DeJean Bridge	Rapides	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	10/10/2012	11/1/2012	528.00	338.7	CAPWAP of 22-day restrike
880	15	482	718	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-04	Test Pile	14" Solid Sq. PPC	CAPWAP	1/3/2014	1/6/2014	72.00	87.5	
881	15	482	698	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-04	Test Pile	14" Solid Sq. PPC	Static	1/3/2014	4/3/2014	2160.00	143.0	
882	15	482	717	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-04	Test Pile	14" Solid Sq. PPC	CAPWAP	1/3/2014	4/10/2014	2328.00	86.8	
883	18	491	720	H.005683	804-25-0009	Bayou L'Ourse	Assumption	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	6/11/2014	6/11/2014	0.10	48.9	EOID Blow #1078
884	18	491	721	H.005683	804-25-0009	Bayou L'Ourse	Assumption	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	6/11/2014	6/12/2014	24.00	92.8	24 HR RE Blow #88
885	18	491	727	H.005683	804-25-0009	Bayou L'Ourse	Assumption	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	Static	6/11/2014	6/25/2014	336.00	240.5	
886	30	503	742	H.001269	053-03-0037	Old River Bridge at Montrose	Natchitoches	LADOTD Database	Test Pile 1	Test Pile	30" Solid Sq. PPC	CAPWAP	10/28/2010	10/28/2010	0.01	335.0	
887	30	503	743	H.001269	053-03-0037	Old River Bridge at Montrose	Natchitoches	LADOTD Database	Test Pile 1	Test Pile	30" Solid Sq. PPC	CAPWAP	10/28/2010	10/28/2010	22.00	355.0	
888	30	503	745	H.001269	053-03-0037	Old River Bridge at Montrose	Natchitoches	LADOTD Database	Test Pile 1	Test Pile	30" Solid Sq. PPC	Static	10/28/2010	11/11/2010	336.00	409.0	
889	30	503	744	H.001269	053-03-0037	Old River Bridge at Montrose	Natchitoches	LADOTD Database	Test Pile 1	Test Pile	30" Solid Sq. PPC	CAPWAP	10/28/2010	11/16/2010	456.00	354.0	
890	31	504	746	H.003501	455-09-0007	I-49 North (US 71 S to LA 2)	Caddo	LADOTD Database	Test Pile 1	Test Pile	24" Voided Sq. PPC	CAPWAP	5/11/2010	5/11/2010	0.01	360.0	
891	31	504	747	H.003501	455-09-0007	I-49 North (US 71 S to LA 2)	Caddo	LADOTD Database	Test Pile 1	Test Pile	24" Voided Sq. PPC	CAPWAP	5/11/2010	5/12/2010	24.00	357.0	
892	31	504	749	H.003501	455-09-0007	I-49 North (US 71 S to LA 2)	Caddo	LADOTD Database	Test Pile 1	Test Pile	24" Voided Sq. PPC	Static	5/11/2010	6/4/2010	576.00	395.0	Pile did not fail
893	31	504	748	H.003501	455-09-0007	I-49 North (US 71 S to LA 2)	Caddo	LADOTD Database	Test Pile 1	Test Pile	24" Voided Sq. PPC	CAPWAP	5/11/2010	6/4/2010	576.00	392.0	
894	111	522	1283	H.000000	013-01-0024	Missouri Pacific Railroad Overpass, LA 415	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	24" Solid Sq. PPC	CAPWAP	1/12/2014	1/12/2014	0.01	68.0	End of Driving - assumed 0 hours elapsed
895	111	522	1284	H.000000	013-01-0024	Missouri Pacific Railroad Overpass, LA 415	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	24" Solid Sq. PPC	CAPWAP	1/12/2014	1/13/2014	24.00	136.0	Beginning of first redrive - assumed 1 day elapsed
896	111	522	1285	H.000000	013-01-0024	Missouri Pacific Railroad Overpass, LA 415	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	24" Solid Sq. PPC	CAPWAP	1/12/2014	1/26/2014	336.00	175.0	Beginning of second redrive - assumed 14 days elapsed
897	111	522	766	H.000000	013-01-0024	Missouri Pacific Railroad Overpass, LA 415	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	24" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	195.0	
898	167	658	805	H.000000	008-04-0052	Atchafalaya River Bridge, US 190 (Krotz Springs)	St. Landry	FHWA Database (1998)	TP4	Test Pile	30" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	396.6	Pile did not fail
899	167	658	769	H.000000	008-04-0052	Atchafalaya River Bridge, US 190 (Krotz Springs)	St. Landry	FHWA Database (1998)	TP4	Test Pile	30" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	583.0	Pile did not fail
900	46	662	773	H.000000	455-03-0002	Washington-Meeker Highway, I-49	Avoyelles	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	75.0	Hammer Matched to Pile 664 -- Selected ultimate capacity at load before pile plunge
901	61	663	774	H.000000	455-06-0006	I-49 Bridges	Natchitoches	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	69.0	
902	46	664	775	H.000000	455-03-0002	Washington-Meeker Highway, I-49	Avoyelles	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	75.5	Selected ultimate capacity at load before pile plunge

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903	120	665	776	H.000000	178-01-0025	Channel Bridge and Approaches, LA 129	Concordia	FHWA Database (1998)	TP1	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	187.5	Pile did not fail
904	121	666	777	H.000000	455-04-0005	Washington-Meeker Highway, I-49	Avoyelles	FHWA Database (1998)	TP3	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	156.5	
905	121	667	778	H.000000	455-04-0005	Washington-Meeker Highway, I-49	Avoyelles	FHWA Database (1998)	TP4	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	219.0	Hammer Matched to Pile 666
906	124	669	780	H.000000	455-03-0004	Washington-Meeker Highway, I-49	Avoyelles	FHWA Database (1998)	TP33	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	97.0	
907	125	670	781	H.000000	713-44-0018	Bayou De Glaises Diversion Channel Bridge	Avoyelles	FHWA Database (1998)	PA	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	86.8	Pile did not fail
908	126	671	782	H.000000	008-07-0018	Missouri Pacific Railroad Overpass, US 71 (Bunkie)	Avoyelles	FHWA Database (1998)	TP1	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	275.0	Pile did not fail
909	61	684	793	H.000000	455-06-0006	I-49 Bridges	Natchitoches	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	115.0	Pile did not fail
910	49	688	797	H.000000	426-31-0002	Sunshine Bridge	St. James	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	120.5	Selected ultimate capacity at load before pile plunge
911	117	689	798	H.000000	434-02-0001	Mississippi River Bridge in Gramercy	St. James	FHWA Database (1998)	TP S-1	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	375.0	Pile did not fail
912	137	690	799	H.000000	050-06-0037	Bayou la Butte, LA 1	Iberville	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	72.5	
913	117	692	801	H.000000	434-02-0001	Mississippi River Bridge in Gramercy	St. James	FHWA Database (1998)	TP P-4	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	450.0	Selected ultimate capacity at load before pile plunge
914	117	693	802	H.000000	434-02-0001	Mississippi River Bridge in Gramercy	St. James	FHWA Database (1998)	TP P-1	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	450.0	Pile did not fail
915	141	694	803	H.000000	847-02-0018	LA 641 Bridge	St. James	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	111.5	Pile did not fail
916	113	696	807	H.000000	455-02-0004	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP2	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	209.0	Hammer Matched to Pile 822
917	45	709	819	H.000000	050-05-0015	Rocky and Ascension Canal Bridges, LA 1	Ascension	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	107.5	
918	96	713	823	H.000000	424-05-0087	Texas Gas Pipeline Bridge, US 90	St. Mary	FHWA Database (1998)	92 TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	105.0	Used ID lookup for hammer -- Pile did not fail
919	63	715	825	H.000000	424-05-0087	Roderick Street Bridge, US 90	St. Mary	FHWA Database (1998)	91 TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	112.5	Pile did not fail
920	69	721	832	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	165.0	Used ID lookup for hammer -- Selected ultimate capacity at load before pile plunge
921	70	722	1286	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/13/2014	24.00	113.5	Beginning of first redrive
922	70	722	833	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	115.0	Selected ultimate capacity at load before pile plunge
923	70	723	1287	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP4	Test Pile	16" Solid Sq. PPC	CAPWAP	1/12/2014	1/13/2014	24.00	96.0	Beginning of first redrive
924	70	723	834	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP4	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.0	Hammer Matched to Pile 722 -- Selected ultimate capacity at load before pile plunge
925	71	726	837	H.000000	424-07-0013	US 90 Bridge over LA 24	Terrebonne	FHWA Database (1998)	TP2	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	261.5	Selected ultimate capacity at load before pile plunge
926	107	727	838	H.000000	424-07-0011	US 90 Bridge over LA 316	Terrebonne	FHWA Database (1998)	TP3	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	147.5	Selected ultimate capacity at load before pile plunge
927	71	730	841	H.000000	424-07-0013	US 90 Bridge over LA 24	Terrebonne	FHWA Database (1998)	TP5	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	227.4	Pile did not fail
928	71	731	842	H.000000	424-07-0013	US 90 Bridge over LA 24	Terrebonne	FHWA Database (1998)	TP1	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	143.0	Selected ultimate capacity at load before pile plunge
929	140	736	847	H.000000	855-14-0007	Interacoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	123.5	
930	190	737	849	H.000000	855-14-0006	Intracoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	143.2	Pile did not fail
931	190	737	848	H.000000	855-14-0006	Intracoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	71.5	Selected ultimate capacity at load before pile plunge
932	190	738	850	H.000000	855-14-0006	Intracoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	136.0	
933	140	739	851	H.000000	855-14-0007	Interacoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	119.5	
934	190	741	853	H.000000	855-14-0006	Intracoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	59.5	Selected ultimate capacity at load before pile plunge
935	190	741	854	H.000000	855-14-0006	Intracoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	148.3	Pile did not fail
936	140	746	859	H.000000	855-14-0007	Interacoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP4	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	149.3	Pile did not fail
937	69	747	1289	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	Steel H-Pile	CAPWAP	1/12/2014	1/12/2014	0.01	147.5	End of Driving - assumed 0 hours elapsed
938	69	747	860	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	180.0	Selected ultimate capacity at load before pile plunge
939	69	747	861	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	355.0	Pile did not fail
940	196	748	862	H.000000	829-07-0013	Bayou Lafourche Bridge	St. Mary	FHWA Database (1998)	PA	Test Pile	Round PPC	Static	1/12/2014	1/26/2014	336.00	55.0	Used ID lookup for hammer -- Pile did not fail
941	210	757	871	H.000000	400-30-0025	Bayou Teche Bridge and Approaches, LA 351 (Ruth)	St. Martin	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.0	Pile did not fail
942	197	758	872	H.000000	424-05-0087	Morgan City Bridge -- Roderick St. - Bayou Boeuf	St. Mary	FHWA Database (1998)	PA	Test Pile	16" Round PPC	Static	1/12/2014	1/26/2014	336.00	575.0	Used ID lookup for hammer
943	213	760	874	H.000000	021-05-0042	Red River Bridge at Coushatta	Red River	FHWA Database (1998)	PA	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	237.5	Used ID lookup for hammer -- Pile did not fail
944	214	761	875	H.000000	021-05-0020	Red River Bridge at Coushatta	Red River	FHWA Database (1998)	PA	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	240.8	Pile did not fail
945	218	765	878	H.000000	266-01-0009	Bayou Conway Bridge, LA 22	Ascension	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	128.5	Selected ultimate capacity at load before pile plunge

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946	228	775	888	H.000000	424-05-0087	Roderick Street Bridge, US 90	St. Mary	FHWA Database (1998)	91 TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Used ID lookup for hammer -- Pile did not fail
947	69	776	889	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP4	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	180.0	Selected ultimate capacity at load before pile plunge
948	69	776	890	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP4	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	175.0	Selected ultimate capacity at load before pile plunge
949	69	777	1290	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP5	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/12/2014	0.01	73.7	End of Driving - assumed 0 hours elapsed
950	69	777	891	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP5	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	122.0	Used ID lookup for hammer
951	231	778	892	H.000000	424-06-0005	Bayou Boeuf Bridge East Approach, US 90	St. Mary	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	105.0	Selected ultimate capacity at load before pile plunge
952	231	778	893	H.000000	424-06-0005	Bayou Boeuf Bridge East Approach, US 90	St. Mary	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	99.0	
953	231	779	894	H.000000	424-06-0005	Bayou Boeuf Bridge East Approach, US 90	St. Mary	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	97.5	
954	231	780	895	H.000000	424-06-0005	Bayou Boeuf Bridge East Approach, US 90	St. Mary	FHWA Database (1998)	TP5	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	90.0	Selected ultimate capacity at load before pile plunge
955	70	781	1291	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/12/2014	0.01	66.5	End of Driving - assumed 0 hours elapsed
956	70	781	1292	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/13/2014	24.00	149.5	Beginning of first redrive - assumed 1 day elapsed
957	70	781	899	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	165.0	Hammer Matched to Pile 722
958	70	781	1293	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/26/2014	336.00	159.0	Beginning of second redrive - assumed 14 days elapsed
959	111	784	898	H.000000	013-01-0024	Missouri Pacific Railroad Overpass, LA 415	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	222.5	Selected ultimate capacity at load before pile plunge
960	240	787	902	H.000000	977-29-0006	Bushnell Road	Lafourche	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	105.8	Pile did not fail
961	101	791	906	H.000000	424-02-0047	I-49 Bridge over LA 167	Lafayette	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	137.5	Pile did not fail
962	101	792	907	H.000000	424-02-0047	I-49 Bridge over LA 167	Lafayette	FHWA Database (1998)	PA	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	137.5	Hammer Matched to Pile 791 -- Pile did not fail
963	238	794	909	H.000000	013-10-0037	Bogue Falaya Bridge, US 190 (Covington)	St. Mary	FHWA Database (1998)	TP1	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	310.0	Hammer Matched to Pile 785 -- Selected ultimate capacity at load before pile plunge
964	102	795	910	H.000000	424-08-0012	US 90 Bridge over LA 1 and LA 308	Lafourche	FHWA Database (1998)	PA	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	178.5	Duplicate of TP6? - Used ID lookup for hammer -- Pile did not fail
965	204	797	912	H.000000	450-13-0011	I-10 Overpass, LA 3188	St. John	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	133.0	Selected ultimate capacity at load before pile plunge
966	158	799	914	H.000000	713-46-0037	Bridge Over Bayou Teche, Belle Place	Iberia	FHWA Database (1998)	PA	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	128.0	Pile did not fail
967	204	800	915	H.000000	450-13-0011	I-10 Overpass, LA 3188	St. John	FHWA Database (1998)	TP2	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	186.0	
968	204	800	916	H.000000	450-13-0011	I-10 Overpass, LA 3188	St. John	FHWA Database (1998)	TP2	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	212.0	
969	50	801	917	H.000000	424-07-0012	US 90 Bridge over LA 311	Terrebonne	FHWA Database (1998)	TP8	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	146.5	Selected ultimate capacity at load before pile plunge
970	140	802	918	H.000000	855-14-0007	Interacoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	119.5	
971	57	805	921	H.000000	455-02-0034	Bonnet Carre Bridges, US 61	East Baton Rouge	FHWA Database (1998)	TP4	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	289.0	Selected ultimate capacity at load before pile plunge
972	54	806	922	H.000000	450-38-0001	LA 3127 US 90 I-310 Interchange	St. Charles	FHWA Database (1998)	TP4	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	200.0	Pile did not fail
973	58	807	923	H.000000	007-03-0040	Bonnet Carre Bridges, US 61	St. Charles	FHWA Database (1998)	TP5	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	322.0	Selected ultimate capacity at load before pile plunge
974	87	810	926	H.000000	213-08-0006	Bayou Teche Bridge and Approaches, LA 92-1	St. Martin	FHWA Database (1998)	PA	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	109.0	Pile did not fail
975	58	813	930	H.000000	007-03-0040	Bonnet Carre Bridges, US 61	St. Charles	FHWA Database (1998)	TP3	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	289.0	Pile did not fail
976	58	815	932	H.000000	007-03-0040	Bonnet Carre Bridges, US 61	St. Charles	FHWA Database (1998)	TP1	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	257.0	
977	114	818	933	H.000000	455-02-0037	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP2	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	97.0	Pile did not fail
978	114	818	934	H.000000	455-02-0037	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP2	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	83.0	Selected ultimate capacity at load before pile plunge
979	132	819	935	H.000000	713-49-0019	Parish Board Bridge	St. Landry	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	103.0	Used ID lookup for hammer -- Pile did not fail
980	143	821	937	H.000000	455-02-0035	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP2	Test Pile	24" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	239.0	Selected ultimate capacity at load before pile plunge
981	113	822	938	H.000000	455-02-0004	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP3	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	256.5	
982	162	824	940	H.000000	455-02-0003	I-49 Bridges -- Opelousas to Washington	St. Landry	FHWA Database (1998)	TP8	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Pile did not fail
983	163	825	941	H.000000	455-02-0038	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP2	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.0	Pile did not fail
984	163	826	942	H.000000	455-02-0038	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Selected ultimate capacity at load before pile plunge
985	112	827	943	H.000000	424-01-0023	I-49 Bridge over Harry Guilbeau Rd	St. Landry	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Pile did not fail
986	101	828	944	H.000000	424-02-0047	I-49 Bridge over LA 167	Lafayette	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	137.5	Hammer Matched to Pile 791 -- Pile did not fail
987	102	829	945	H.000000	424-08-0012	US 90 Bridge over LA 1 and LA 308	Lafourche	FHWA Database (1998)	TP6	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	178.5	Used ID lookup for hammer -- Pile did not fail
988	255	873	989	H.000000	450-36-0006	Luling Bridge, I-310	St. Charles	FHWA Database (1998)	TP11	Test Pile	34" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	265.5	Used ID lookup for hammer -- Selected ultimate capacity at load before pile plunge

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989	256	874	990	H.000000	742-05-0080	Bayou Fatma Bridge, Wall Blvd	Jefferson	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Used ID lookup for hammer -- Selected ultimate capacity at load before pile plunge
990	255	877	993	H.000000	450-36-0006	Luling Bridge, I-310	St. Charles	FHWA Database (1998)	TP12	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	296.0	Used ID lookup for hammer -- Pile did not fail
991	261	879	995	H.000000	455-05-0004	Washington-Meeker Highway, I-49	Rapides	FHWA Database (1998)	TP4	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.0	Used ID lookup for hammer
992	266	884	1000	H.000000	713-46-0040	Bayou Teche Bridge, Bridge Road (in Patterson)	St. Mary	FHWA Database (1998)	TP2	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	357.8	Used ID lookup for hammer -- Pile did not fail
993	261	890	1006	H.000000	455-05-0004	Washington-Meeker Highway, I-49	Rapides	FHWA Database (1998)	TP3	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	111.5	Used ID lookup for hammer
994	285	905	1021	H.000000	424-07-0021	Bayou L'Ourse Drainage Canal	Terrebonne	LTRC No. 14-1GT	IP1	Indicator Pile	30" Solid Sq. PPC	CAPWAP	1/31/1996	1/8/1996	0.01	240.9	CAPWAP of Initial drive
995	285	905	1025	H.000000	424-07-0021	Bayou L'Ourse Drainage Canal	Terrebonne	LTRC No. 14-1GT	IP1	Indicator Pile	30" Solid Sq. PPC	CAPWAP	1/31/1996	2/7/1996	168.00	776.0	Capwap of 18days RS
996	291	906	1041	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP5	Indicator Pile	24" Voided Sq. PPC	CAPWAP	6/17/1997	6/17/1997	0.08	267.9	CAPWAP of INI - Blow Count estimated from calibrated wave equation
997	291	906	1042	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP5	Indicator Pile	24" Voided Sq. PPC	CAPWAP	6/17/1997	6/18/1997	24.00	312.1	RS24 - Blow Count estimated from calibrated wave equation
998	291	906	1040	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP5	Indicator Pile	24" Voided Sq. PPC	CAPWAP	6/17/1997	6/23/1997	144.00	316.0	RS7day - Blow Count estimated from calibrated wave equation
999	291	907	1034	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP2	Indicator Pile	24" Voided Sq. PPC	CAPWAP	2/4/1997	2/5/1997	24.00	218.8	CAPWAP of 24hr RS
1000	291	907	1037	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP2	Indicator Pile	24" Voided Sq. PPC	CAPWAP	2/4/1997	4/2/1997	1368.00	156.3	CAPWAP of INI
1001	291	908	1038	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP1	Indicator Pile	24" Voided Sq. PPC	CAPWAP	11/19/1996	11/19/1996	0.08	124.8	CAPWAP of EOID
1002	291	908	1030	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP1	Indicator Pile	24" Voided Sq. PPC	CAPWAP	11/19/1996	11/20/1996	24.00	183.0	CAPWAP of Beginning of Restrike
1003	291	908	1039	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP1	Indicator Pile	24" Voided Sq. PPC	CAPWAP	11/19/1996	12/4/1996	360.00	267.9	CAPWAP of Begin Restrike after 14days
1004	291	908	1036	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP1	Indicator Pile	24" Voided Sq. PPC	CAPWAP	11/19/1996	12/4/1996	360.00	195.6	CAPWAP of End of Drive after 14 days Restrike
1005	291	908	1043	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP1	Indicator Pile	24" Voided Sq. PPC	CAPWAP	11/19/1996	12/11/1996	528.00	275.5	CAPWAP of 21 days Restrike
1006	291	909	1035	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/16/1997	4/16/1997	0.08	217.0	CAPWAP of Initial drive
1007	291	909	1028	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/16/1997	4/17/1997	24.00	221.9	CAPWAP of Restrike after 24Hrs
1008	291	910	1032	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP2 AD	Test Pile	24" Voided Sq. PPC	CAPWAP	9/3/1996	9/3/1996	0.08	291.3	CAPWAP of EOID for AD
1009	291	910	1031	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP2 AD	Test Pile	24" Voided Sq. PPC	CAPWAP	9/3/1996	9/4/1996	24.00	281.8	CAPWAP of Beginning of Restrike for AD
1010	291	911	1029	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP2 (2)	Test Pile	24" Voided Sq. PPC	CAPWAP	8/11/1996	8/11/1996	0.08	101.6	CAPWAP of BOR
1011	291	911	1027	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP2 (2)	Test Pile	24" Voided Sq. PPC	CAPWAP	8/11/1996	8/12/1996	24.17	140.5	CAPWAP of EOR
1012	291	912	1033	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	Tp2 (3)	Test Pile	24" Voided Sq. PPC	CAPWAP	2/3/1997	2/13/1997	240.08	303.4	CAPWAP of 10 days RS
1013	292	913	1044	H.000000	033-03-0032	Red River Bridge Approach at Moncla	Avoyelles	LTRC No. 14-1GT	MP1	Monitor Pile	14" Solid Sq. PPC	CAPWAP	9/22/1998	9/22/1998	0.08	181.1	CAPWAP of INI
1014	295	916	1104	H.000000	022-07-0057	Black River Bridge in Jonesville	Catahoula	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	2/28/2001	2/28/2001	0.08	123.5	CAPWAP of INI
1015	295	916	1102	H.000000	022-07-0057	Black River Bridge in Jonesville	Catahoula	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	2/28/2001	3/1/2001	24.00	220.7	CAPWAP of 24hr RS
1016	295	916	1103	H.000000	022-07-0057	Black River Bridge in Jonesville	Catahoula	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	2/28/2001	3/23/2001	552.00	220.7	CAPWAP of Restrike after load test
1017	295	916	1100	H.000000	022-07-0057	Black River Bridge in Jonesville	Catahoula	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	2/28/2001	4/2/2001	792.00	200.5	CAPWAP of Restrike after uplift test
1018	295	917	1101	H.000000	022-07-0057	Black River Bridge in Jonesville	Catahoula	LTRC No. 14-1GT	TP2	Test Pile	24" Steel pipe	CAPWAP	3/1/2001	3/1/2001	0.08	481.6	CAPWAP of INI
1019	319	918	1045	H.000000	835-20-0001	Cane River Bridge	Natchitoches	LTRC No. 14-1GT	Mon-24	Monitor Pile	24" Solid Sq. PPC	CAPWAP	4/18/2002	4/18/2002	0.08	256.7	CAPWAP of INI
1020	321	921	1051	H.000000	450-15-0089	Causeway Blvd – 17th St. Canal	Jefferson	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	10/19/2005	10/19/2005	0.08	229.5	CAPWAP of INI
1021	321	921	1052	H.000000	450-15-0089	Causeway Blvd – 17th St. Canal	Jefferson	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	10/19/2005	12/15/2005	1368.00	169.6	CAPWAP of Restrike after 57days
1022	321	922	1050	H.000000	450-15-0089	Causeway Blvd – 17th St. Canal	Jefferson	LTRC No. 14-1GT	TP2	Test Pile	24" Voided Sq. PPC	CAPWAP	10/19/2005	10/19/2005	0.08	210.7	CAPWAP of INI
1023	322	923	1053	H.000000	427-01-0029	Route 3132 – Inner Loop Extension	Caddo	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	10/20/2005	10/20/2005	0.08	56.3	CAPWAP of INI
1024	322	923	1055	H.000000	427-01-0029	Route 3132 – Inner Loop Extension	Caddo	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	10/20/2005	10/21/2005	24.00	102.7	CAPWAP of Restrike after 24hr
1025	322	924	1056	H.000000	427-01-0029	Route 3132 – Inner Loop Extension	Caddo	LTRC No. 14-1GT	TP2	Test Pile	14" Solid Sq. PPC	CAPWAP	10/20/2005	10/20/2005	0.08	162.1	CAPWAP of INI
1026	322	924	1054	H.000000	427-01-0029	Route 3132 – Inner Loop Extension	Caddo	LTRC No. 14-1GT	TP2	Test Pile	14" Solid Sq. PPC	CAPWAP	10/20/2005	10/21/2005	24.00	186.2	CAPWAP of Restrike after 24hr
1027	333	928	1064	H.000000	836-05-0005	17th Street Canal Bridge	Jefferson	LTRC No. 14-1GT	METRS1	Other	12" Solid Sq. PPC	CAPWAP	9/14/1998	9/15/1998	24.00	194.4	CAPWAP of 1 day Restrike
1028	336	940	1081	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/30/1990	8/30/1990	0.08	234.8	CAPWAP of EOD
1029	336	941	1080	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	Tp2	Test Pile	24" Voided Sq. PPC	CAPWAP	8/29/1990	8/29/1990	0.08	249.6	CAPWAP of EOD
1030	336	941	1085	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	Tp2	Test Pile	24" Voided Sq. PPC	CAPWAP	8/29/1990	8/31/1990	48.00	288.0	CAPWAP of BOR (after 48hr)
1031	336	942	1087	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP3	Test Pile	24" Voided Sq. PPC	CAPWAP	8/28/1990	8/28/1990	0.08	60.7	CAPWAP of EOD

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1032	336	942	1079	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP3	Test Pile	24" Voided Sq. PPC	CAPWAP	8/28/1990	8/29/1990	24.00	121.4	CAPWAP of BOR (after 24hr)
1033	336	942	1084	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP3	Test Pile	24" Voided Sq. PPC	CAPWAP	8/28/1990	9/7/1990	240.00	156.3	CAPWAP of BOR (after 9days)
1034	336	942	1086	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP3	Test Pile	24" Voided Sq. PPC	CAPWAP	8/28/1990	9/17/1990	480.00	289.3	CAPWAP of BOR (after 7days)
1035	336	943	1083	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP4	Test Pile	24" Voided Sq. PPC	CAPWAP	8/29/1990	8/29/1990	0.08	229.5	CAPWAP of EOD
1036	336	943	1078	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP4	Test Pile	24" Voided Sq. PPC	CAPWAP	8/29/1990	8/31/1990	48.00	296.6	CAPWAP of BOR (after 48hr)
1037	336	944	1082	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP5	Test Pile	24" Voided Sq. PPC	CAPWAP	8/30/1990	8/30/1990	0.08	225.9	CAPWAP of EOD
1038	336	944	1088	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP5	Test Pile	24" Voided Sq. PPC	CAPWAP	8/30/1990	8/31/1990	24.00	287.1	CAPWAP of BOR (after 24hr)
1039	337	945	1089	H.000000	000-00-0005	Clear Lake Bridge, Route LA 1226	Natchitoches	LTRC No. 14-1GT	TP1	Test Pile	30" Voided Sq. PPC	CAPWAP	12/15/1994	10/11/1994	0.01	99.1	CAPWAP of Initial Drive
1040	338	946	1090	H.000000	000-00-0006	Stars and Stripe Boulevard	Orleans	LTRC No. 14-1GT	278	Other	14" Solid Sq. PPC	CAPWAP	2/28/1996	2/28/1996	0.08	113.8	CAPWAP of INI
1041	300	999	1125	H.000000	424-05-0097	US 90 Interchange at LA3211	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	12" Solid Sq. PPC	CAPWAP	6/9/1999	5/24/1999	0.01	97.1	CAPWAP of INI
1042	300	999	1128	H.000000	424-05-0097	US 90 Interchange at LA3211	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	12" Solid Sq. PPC	CAPWAP	6/9/1999	5/25/1999	0.01	355.6	CAPWAP of Restrike 24hr
1043	300	1000	1127	H.000000	424-05-0097	US 90 Interchange at LA3211	St. Mary	LTRC No. 14-1GT	TP2	Test Pile	12" Solid Sq. PPC	CAPWAP	6/9/1999	6/9/1999	0.02	79.3	CAPWAP of INI
1044	300	1000	1126	H.000000	424-05-0097	US 90 Interchange at LA3211	St. Mary	LTRC No. 14-1GT	TP2	Test Pile	12" Solid Sq. PPC	CAPWAP	6/9/1999	6/10/1999	24.00	135.1	CAPWAP of Restrike 24hr
1045	302	1002	1133	H.000000	001-03-0063	Red Chute Bayou Bridge	Bossier	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	10/31/2001	10/31/2001	0.08	87.5	CAPWAP of INI
1046	302	1002	1132	H.000000	001-03-0063	Red Chute Bayou Bridge	Bossier	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	10/31/2001	11/1/2001	24.00	142.9	CAPWAP of Restrike 24
1047	305	1007	1145	H.000000	005-05-0065	St. Louis Canal Bridge	Terrebonne	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	5/27/2003	5/13/2003	0.01	58.0	CAPWAP of Restrike 24hr
1048	305	1007	1146	H.000000	005-05-0065	St. Louis Canal Bridge	Terrebonne	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	5/27/2003	5/12/2003	0.01	17.9	CAPWAP of INI
1049	305	1007	1147	H.000000	005-05-0065	St. Louis Canal Bridge	Terrebonne	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	5/27/2003	5/27/2003	0.08	62.5	CAPWAP of After Load Restrike
1050	306	1008	1148	H.000000	008-01-0043	Tiger Bayou Bridge	West Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	9/11/2003	9/11/2003	0.08	74.1	CAPWAP of INI
1051	306	1008	1149	H.000000	008-01-0043	Tiger Bayou Bridge	West Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	9/11/2003	9/12/2003	24.00	131.3	CAPWAP of Restrike 24hr
1052	306	1008	1150	H.000000	008-01-0043	Tiger Bayou Bridge	West Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	9/11/2003	9/25/2003	336.00	146.4	CAPWAP of Restrike 14days
1053	308	1010	1153	H.000000	424-05-0081	Bayou Boeuf West Approaches	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	12" Solid Sq. PPC	CAPWAP	8/24/1994	8/24/1994	0.08	0.0	
1054	308	1011	1152	H.000000	424-05-0081	Bayou Boeuf West Approaches	St. Mary	LTRC No. 14-1GT	TP3	Test Pile	12" Solid Sq. PPC	CAPWAP	8/24/1994	8/24/1994	0.08	0.0	
1055	308	1012	1154	H.000000	424-05-0081	Bayou Boeuf West Approaches	St. Mary	LTRC No. 14-1GT	TP4	Test Pile	12" Solid Sq. PPC	CAPWAP	8/24/1994	8/24/1994	0.08	0.0	
1056	311	1016	1164	H.000000	070-06-0024	Ouacita River Bridge	Ouachita	LTRC No. 14-1GT	TP5	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/27/2007	0.08	109.4	CAPWAP of INI
1057	311	1016	1165	H.000000	070-06-0024	Ouacita River Bridge	Ouachita	LTRC No. 14-1GT	TP5	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/28/2007	24.00	123.7	CAPWAP of Restrike 24hr
1058	311	1017	1166	H.000000	070-06-0024	Ouacita River Bridge	Ouachita	LTRC No. 14-1GT	TP6	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/27/2007	0.08	93.8	CAPWAP of INI
1059	311	1017	1163	H.000000	070-06-0024	Ouacita River Bridge	Ouachita	LTRC No. 14-1GT	TP6	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/28/2007	24.00	132.6	CAPWAP of Restrike 24hr
1060	340	1019	1169	H.000000	000-00-0001	Tiger Bayou Bridge	Terrebonne	LTRC No. 14-1GT	TP1	Test Pile	12" Solid Sq. PPC	CAPWAP	8/2/1995	8/9/1995	168.00	272.0	CAPWAP of RTP
1061	340	1020	1168	H.000000	000-00-0001	Tiger Bayou Bridge	Terrebonne	LTRC No. 14-1GT	IND2	Indicator Pile	12" Solid Sq. PPC	CAPWAP	8/7/1995	8/4/1995	0.01	237.1	CAPWAP of EOID
1062	341	1021	1170	H.000000	000-00-0002	Southern Pacific Railroad Overpass -US 90	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	6/6/1995	6/6/1995	0.08	63.2	CAPWAP of BOR
1063	341	1022	1171	H.000000	000-00-0002	Southern Pacific Railroad Overpass -US 90	St. Mary	LTRC No. 14-1GT	TP2	Test Pile	14" Solid Sq. PPC	CAPWAP	6/2/1995	6/2/1995	0.08	90.6	CAPWAP of BOR
1064	341	1023	1172	H.000000	000-00-0002	Southern Pacific Railroad Overpass -US 90	St. Mary	LTRC No. 14-1GT	TP3	Test Pile	24" Solid Sq. PPC	CAPWAP	6/2/1995	6/2/1995	0.08	48.1	CAPWAP of EOD
1065	436	1030	1226	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/3/2014	0.01	89.0	
1066	436	1030	1225	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/4/2014	24.00	232.9	
1067	436	1030	1224	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/23/2014	480.00	303.1	
1068	436	1031	1183	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/19/2014	0.01	107.7	
1069	436	1031	1184	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/19/2014	0.01	92.2	
1070	436	1031	1185	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/19/2014	0.01	38.6	
1071	436	1031	1180	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/20/2014	24.00	133.0	
1072	436	1031	1179	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/22/2014	72.00	141.7	
1073	436	1031	1178	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/26/2014	168.00	155.8	
1074	436	1032	1173	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-2-13	Monitor Pile	HP 14x73	CAPWAP	9/2/2014	9/2/2014	0.01	154.2	

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1075	436	1033	1174	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-2-1	Monitor Pile	HP 14x73	CAPWAP	8/27/2014	8/27/2014	0.01	51.5	CAPWAP of EOD
1076	436	1033	1176	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-2-1	Monitor Pile	HP 14x73	CAPWAP	8/27/2014	8/27/2014	0.01	154.1	Restrike actually performed on P7-2-13 on 9/2/2014.
1077	438	1035	1177	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	7-5-1	Monitor Pile	HP 14x73	CAPWAP	10/2/2014	10/2/2014	0.01	67.5	CAPWAP of EOD
1078	438	1035	1181	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	7-5-1	Monitor Pile	HP 14x73	CAPWAP	10/2/2014	10/2/2014	0.01	130.7	1-hour restrike
1079	441	1041	1219	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-04	Test Pile	24" Steel Pipe	CAPWAP	1/8/2008	1/8/2008	0.01	292.5	CAPWAP of EOD
1080	441	1041	1220	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-04	Test Pile	24" Steel Pipe	CAPWAP	1/8/2008	1/9/2008	24.00	406.5	
1081	441	1041	1213	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-04	Test Pile	24" Steel Pipe	Static	1/8/2008	1/22/2008	336.00	650.0	Static load test did not fail pile, but failure appears imminent on the load test plot -- Selected ultimate capacity at load before pile plunge
1082	441	1042	1217	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-01	Test Pile	24" Solid Sq. PPC	CAPWAP	8/23/2006	8/23/2006	0.01	276.3	CAPWAP by GRL
1083	441	1042	1216	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-01	Test Pile	24" Solid Sq. PPC	CAPWAP	8/23/2006	8/24/2006	24.00	393.2	CAPWAP by GRL
1084	441	1043	1215	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-02	Test Pile	14" Solid Sq. PPC	CAPWAP	5/15/2006	5/15/2006	0.01	201.5	CAPWAP by GRL
1085	441	1043	1214	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-02	Test Pile	14" Solid Sq. PPC	CAPWAP	5/15/2006	5/16/2006	24.00	341.5	CAPWAP by GRL
1086	441	1044	1223	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	Bent 4 MP	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/8/2014	10/8/2014	0.01	0.0	
1087	441	1045	1222	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	Bent 4	Indicator Pile	24" Voided Sq. PPC	CAPWAP	10/8/2014	10/8/2014	0.01	317.0	Pile was 5' from plan tip
1088	441	1045	1227	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	Bent 4	Indicator Pile	24" Voided Sq. PPC	CAPWAP	10/8/2014	10/8/2014	0.01	361.0	Pile was 4' from plan tip
1089	442	1046	1221	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-03	Test Pile	24" Steel Pipe	CAPWAP	12/5/2006	12/5/2006	0.01	368.3	Blow count estimated from PDA
1090	442	1046	1212	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-03	Test Pile	24" Steel Pipe	Static	12/5/2006	12/16/2006	264.00	510.0	
1091	442	1047	1211	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-05	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/27/2007	0.01	122.5	CAPWAP by GRL
1092	442	1047	1210	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-05	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/28/2007	24.00	138.5	CAPWAP by GRL
1093	442	1047	1208	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-05	Test Pile	14" Solid Sq. PPC	Static	8/27/2007	9/25/2007	696.00	152.5	
1094	442	1047	1209	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-05	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	10/10/2007	1056.00	69.5	CAPWAP by GRL. Extraction of reaction piles may have weakened test pile.
1095	442	1048	1207	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-06	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/27/2007	0.01	105.0	CAPWAP by GRL
1096	442	1048	1206	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-06	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/27/2007	0.01	148.5	CAPWAP by GRL
1097	442	1048	1204	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-06	Test Pile	14" Solid Sq. PPC	Static	8/27/2007	9/25/2007	696.00	130.0	Date of loading estimated.
1098	442	1048	1205	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-06	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	10/9/2007	1032.00	122.0	CAPWAP by GRL. Extraction of reaction piles may have weakened test pile.
1099	442	1049	1230	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-1	Test Pile	24" Solid Sq. PPC	CAPWAP	3/2/2007	3/2/2007	0.01	40.0	CAPWAP by GRL
1100	442	1049	1231	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-1	Test Pile	24" Solid Sq. PPC	CAPWAP	3/2/2007	3/5/2007	72.00	120.0	CAPWAP by GRL
1101	442	1049	1229	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-1	Test Pile	24" Solid Sq. PPC	CAPWAP	3/2/2007	3/16/2007	336.00	204.5	CAPWAP by GRL
1102	442	1049	1228	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-1	Test Pile	24" Solid Sq. PPC	Static	3/2/2007	3/19/2007	408.00	180.0	Pile did not fail
1103	446	1059	1279	H.009309	000-00-0000	Summit Blvd.	St. Tammany	LADOTD Database	TP4	Test Pile	16" Solid Sq. PPC	Static	11/5/2014	11/5/2014	0.01	156.0	Pile did not fail
1104	448	1065	1175	H.006138	000-00-0000	Poplar St. Bridge Over Bonnabel Canal	Orleans	LADOTD Database	7-8-1	Monitor Pile	HP 14x73	CAPWAP	11/7/2014	11/7/2014	0.01	73.3	
1105	448	1065	1182	H.006138	000-00-0000	Poplar St. Bridge Over Bonnabel Canal	Orleans	LADOTD Database	7-8-1	Monitor Pile	HP 14x73	CAPWAP	11/7/2014	11/7/2014	0.01	26.2	Sample rate too high, pile still moving at EOD.
1106	2	6	6	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-02	Test Pile	16" Solid Sq. PPC	CAPWAP	7/11/2012	7/11/2012	0.10	222.9	CAPWAP of EOD
1107	2	6	3	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-02	Test Pile	16" Solid Sq. PPC	CAPWAP	7/11/2012	7/12/2012	24.00	213.9	CAPWAP of 24-hr restrike
1108	2	6	1	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-02	Test Pile	16" Solid Sq. PPC	Static	7/11/2012	7/25/2012	336.00	291.0	
1109	2	6	2	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-02	Test Pile	16" Solid Sq. PPC	CAPWAP	7/11/2012	7/26/2012	360.00	241.0	CAPWAP of 15-day restrike
1110	2	7	5	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2012	8/2/2012	0.10	118.6	CAPWAP of EOD
1111	2	7	4	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2012	8/3/2012	24.00	270.8	CAPWAP of 24-hr restrike
1112	2	7	11	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	Static	8/2/2012	8/16/2012	336.00	438.0	
1113	2	7	12	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2012	8/17/2012	360.00	366.0	CAPWAP of 15-day restrike
1114	2	8	186	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-01	Test Pile	24" Voided Sq. PPC	CAPWAP	7/5/2012	7/5/2012	0.10	280.0	
1115	2	8	7	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-01	Test Pile	24" Voided Sq. PPC	CAPWAP	7/5/2012	7/6/2012	24.00	561.6	
1116	2	36	185	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	BR2P5A	Monitor Pile	16" Solid Sq. PPC	CAPWAP	3/18/2013	3/18/2013	0.01	394.9	CAPWAP of end-of-drive
1117	2	253	685	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	BR1P4C	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/29/2013	5/29/2013	0.01	175.6	CAPWAP of EOD

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1118	9	474	660	H.002463	276-03-0018	Gill Creek Bridge	Tangipahoa	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	CAPWAP	2/4/2013	2/4/2013	0.01	214.5	CAPWAP of EOD
1119	9	474	661	H.002463	276-03-0018	Gill Creek Bridge	Tangipahoa	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	CAPWAP	2/4/2013	2/5/2013	24.00	232.5	
1120	9	474	662	H.002463	276-03-0018	Gill Creek Bridge	Tangipahoa	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	Static	2/4/2013	3/6/2013	720.00	242.5	
1121	13	479	686	H.001214	047-03-0014	Lawrence, Bogalusa, and Coburn Creek Bridges	Washington	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	7/2/2013	7/2/2013	0.10	48.5	CAPWAP of EOD
1122	13	479	687	H.001214	047-03-0014	Lawrence, Bogalusa, and Coburn Creek Bridges	Washington	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	7/2/2013	7/2/2013	1.50	116.5	CAPWAP 1.5 HR after EOID
1123	13	479	688	H.001214	047-03-0014	Lawrence, Bogalusa, and Coburn Creek Bridges	Washington	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	Static	7/2/2013	7/16/2013	336.00	279.0	
1124	13	479	689	H.001214	047-03-0014	Lawrence, Bogalusa, and Coburn Creek Bridges	Washington	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	7/2/2013	7/18/2013	384.00	296.0	After Load Restrike
1125	94	752	866	H.000000	262-06-0009	LA 16 Bridges	St. Helena	FHWA Database (1998)	TP1 B1	Test Pile	24" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	209.5	Hammer Matched to Pile 842
1126	220	767	880	H.000000	853-26-0007	Haw Branch and Line Creek Bridges, LA 1053	Tangipahoa	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Pile did not fail
1127	155	796	911	H.000000	060-03-0012	Plank Rd Bridge, LA 67	East Feliciana	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	143.5	Selected ultimate capacity at load before pile plunge
1128	94	842	958	H.000000	262-06-0009	LA 16 Bridges	St. Helena	FHWA Database (1998)	TP1	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.0	Pile did not fail
1129	84	847	963	H.000000	274-03-0006	Ditch Creek Bridge, LA 438	Washington	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	105.0	Used ID lookup for hammer -- Selected ultimate capacity at load before pile plunge
1130	86	849	965	H.000000	274-03-0006	Thomas Creek Bridge, LA 438	Washington	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	107.5	Used ID lookup for hammer -- Pile did not fail
1131	152	852	968	H.000000	274-03-0006	Monroe Creek Bridge, LA 438	Washington	FHWA Database (1998)	TP1A	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	107.5	Used ID lookup for hammer -- Pile did not fail
1132	253	871	987	H.000000	741-03-0043	Wadesboro Bridge	Tangipahoa	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	75.0	Used ID lookup for hammer -- Pile did not fail
1133	298	992	1109	H.000000	061-05-0044	LA 10 - LA 68 (Clinton)	East Feliciana	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/27/2003	8/27/2003	0.08	93.8	CAPWAP of INI
1134	298	992	1106	H.000000	061-05-0044	LA 10 - LA 68 (Clinton)	East Feliciana	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/27/2003	8/28/2003	24.00	156.3	CAPWAP of Restrike
1135	298	992	1108	H.000000	061-05-0044	LA 10 - LA 68 (Clinton)	East Feliciana	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/27/2003	9/25/2003	696.08	142.9	CAPWAP of INI
1136	298	992	1107	H.000000	061-05-0044	LA 10 - LA 68 (Clinton)	East Feliciana	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/27/2003	9/26/2003	720.00	147.3	CAPWAP of Restrike 24hr
1137	298	992	1105	H.000000	061-05-0044	LA 10 - LA 68 (Clinton)	East Feliciana	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/27/2003	10/10/2003	1056.00	202.7	CAPWAP of Restrike 14d
1138	20	493	724	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 6	Test Pile	16" Solid Sq. PPC	CAPWAP	5/22/2014	5/22/2014	0.01	115.5	
1139	20	493	725	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 6	Test Pile	16" Solid Sq. PPC	CAPWAP	5/22/2014	5/22/2014	22.00	192.0	
1140	20	493	726	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 6	Test Pile	16" Solid Sq. PPC	Static	5/22/2014	6/23/2014	768.00	200.0	Pile did not fail
1141	20	495	728	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/3/2014	0.01	89.0	
1142	20	495	729	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/4/2014	24.00	232.9	
1143	20	495	730	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/23/2014	480.00	303.1	
1144	20	496	731	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 3	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2014	6/25/2014	0.01	115.0	
1145	20	496	732	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 3	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2014	6/25/2014	23.00	239.8	
1146	20	498	736	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 3	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2014	6/25/2014	0.01	114.5	
1147	20	498	737	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 3	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2014	6/25/2014	23.00	239.8	
1148	20	498	738	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 3	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2014	7/10/2014	360.00	344.8	
1149	29	501	740	H.001866	128-03-0023	Little River Bridge At Zenoria LA 500	La Salle	LADOTD Database	Test Pile 2	Test Pile	30" Voided Sq. PPC	Static	2/23/2014	3/17/2014	528.00	585.0	Pile did not fail
1150	29	502	741	H.001866	128-03-0023	Little River Bridge At Zenoria LA 500	La Salle	LADOTD Database	Test Pile 1	Test Pile	36" Voided Sq. PPC	Static	1/13/2010	1/27/2010	336.00	525.0	Selected ultimate capacity at load before pile plunge
1151	115	660	771	H.000000	124-03-0017	Dry Creek Bridge, LA 34	Jackson	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	115.0	Pile did not fail
1152	216	763	876	H.000000	455-08-0019	Shreveport Urban Segment, I-49	Caddo	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	137.5	Selected ultimate capacity at load before pile plunge
1153	250	868	984	H.000000	713-46-0026	Bridge Over Bundick Creek	Vernon	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	96.3	Used ID lookup for hammer -- Pile did not fail
1154	267	885	1001	H.000000	427-01-0013	Bridge over Walker Road	Caddo	FHWA Database (1998)	TP1	Test Pile	10" Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	100.0	Used ID lookup for hammer
1155	278	899	1015	H.000000	000-00-0000	Shreveport Bridge	Caddo	FHWA Database (1998)	2	Test Pile	30" Round PPC	Static	1/12/2014	1/26/2014	336.00	990.3	Pile did not fail
1156	278	900	1016	H.000000	000-00-0000	Shreveport Bridge	Caddo	FHWA Database (1998)	PA	Test Pile	30" Round PPC	Static	1/12/2014	1/26/2014	336.00	730.0	
1157	299	993	1110	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	5/3/2001	5/3/2001	0.08	133.9	CAPWAP of EOD
1158	299	993	1122	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	5/3/2001	5/4/2001	24.00	196.4	CAPWAP of 1-day restrike
1159	299	994	1121	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP2	Test Pile	24" Solid Sq. PPC	CAPWAP	5/9/2001	5/9/2001	0.08	53.6	CAPWAP of EOD
1160	299	994	1120	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP2	Test Pile	24" Solid Sq. PPC	CAPWAP	5/9/2001	5/10/2001	24.00	111.2	CAPWAP of 1-day restrike

All Events by Case Number

1161	299	994	1116	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP2	Test Pile	24" Solid Sq. PPC	CAPWAP	5/9/2001	5/24/2001	360.08	53.6	
1162	299	994	1124	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP2	Test Pile	24" Solid Sq. PPC	CAPWAP	5/9/2001	5/25/2001	384.00	156.3	CAPWAP of Restrike after loading
1163	299	995	1113	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP3	Test Pile	24" Solid Sq. PPC	CAPWAP	5/14/2001	5/14/2001	0.08	176.3	
1164	299	995	1114	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP3	Test Pile	24" Solid Sq. PPC	CAPWAP	5/14/2001	5/15/2001	24.00	225.0	
1165	299	996	1115	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP4	Test Pile	24" Solid Sq. PPC	CAPWAP	5/14/2001	5/14/2001	0.08	245.5	
1166	299	996	1123	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP4	Test Pile	24" Solid Sq. PPC	CAPWAP	5/14/2001	5/15/2001	24.00	241.1	
1167	299	997	1111	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP5	Test Pile	24" Solid Sq. PPC	CAPWAP	5/15/2001	5/15/2001	0.08	292.4	
1168	299	997	1112	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP5	Test Pile	24" Solid Sq. PPC	CAPWAP	5/15/2001	5/16/2001	24.00	259.8	
1169	299	998	1118	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP6	Test Pile	24" Solid Sq. PPC	CAPWAP	5/16/2001	5/16/2001	0.08	165.2	CAPWAP of INI
1170	299	998	1117	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP6	Test Pile	24" Solid Sq. PPC	CAPWAP	5/16/2001	5/17/2001	24.00	203.1	CAPWAP of Restrike 24hr
1171	299	998	1119	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP6	Test Pile	24" Solid Sq. PPC	CAPWAP	5/16/2001	5/28/2001	288.00	212.1	CAPWAP of RSAL (11days)
1172	303	1003	1135	H.000000	023-06-0047	Junction LA 3061	Lincoln	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	5/20/2003	5/20/2003	0.08	148.7	CAPWAP of INI
1173	303	1003	1134	H.000000	023-06-0047	Junction LA 3061	Lincoln	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	5/20/2003	5/21/2003	24.00	280.4	CAPWAPof Restrike 24hr
1174	437	1034	1186	H.000101	000-00-0000	UP Railroad Overpass Near Greenwood	Caddo	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	Static	8/28/2014	9/15/2014	432.00	370.5	
1175	440	1039	1197	H.000830	023-06-0060	North Hodge - Quitman Ph2	Jackson	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	CAPWAP	1/28/2010	1/29/2010	24.00	210.9	CAPWAP of EOD
1176	440	1039	1198	H.000830	023-06-0060	North Hodge - Quitman Ph2	Jackson	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	CAPWAP	1/28/2010	1/29/2010	24.00	224.7	
1177	440	1039	1199	H.000830	023-06-0060	North Hodge - Quitman Ph2	Jackson	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	Static	1/28/2010	2/11/2010	336.00	330.0	Pile did not fail
1178	441	1040	1202	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	CAPWAP	1/15/2008	1/15/2008	0.01	242.4	CAPWAP of EOD
1179	441	1040	1201	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	CAPWAP	1/15/2008	1/16/2008	24.00	289.7	
1180	441	1040	1203	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	Static	1/15/2008	2/13/2008	696.00	258.0	Pile did not fail
1181	25	497	733	H.008008	821-24-0007	Turkey Creek Bridge LA 3201	Franklin	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/16/2014	4/16/2014	0.01	215.4	
1182	25	497	734	H.008008	821-24-0007	Turkey Creek Bridge LA 3201	Franklin	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/16/2014	4/16/2014	1.00	241.8	
1183	25	497	735	H.008008	821-24-0007	Turkey Creek Bridge LA 3201	Franklin	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	Static	4/16/2014	5/22/2014	864.00	431.0	
1184	48	687	796	H.000000	026-07-0011	Ash Slough Bridge, US 425 (LA 15)	Franklin	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.5	Pile did not fail
1185	68	720	830	H.000000	344-02-0007	Bayou, Macon Bridge, LA 577	Franklin	FHWA Database (1998)	PA	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	236.5	
1186	68	720	831	H.000000	344-02-0007	Bayou, Macon Bridge, LA 577	Franklin	FHWA Database (1998)	PA	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	306.0	Pile did not fail

APPENDIX G

LAPLTD STATISTICS PARISH TABLES

Summary of Database Piles Tested by Louisiana Parishes

Parish	Test Pile	Indicator Pile	Monitor Pile	Other	Total Piles Tested
Acadia	3	---	---	---	3
Allen	---	---	---	---	0
Ascension	3	---	---	---	3
Assumption	1	---	---	---	1
Avoyelles	11	3	1	---	15
Beauregard	3	---	---	---	3
Bienville	---	---	---	---	0
Bossier	7	---	---	---	7
Caddo	9	---	---	---	9
Calcasieu	16	---	---	---	16
Caldwell	---	---	---	---	0
Cameron	---	---	---	---	0
Catahoula	4	---	---	---	4
Claiborne	---	---	---	---	0
Concordia	1	---	---	---	1
Desoto	---	---	---	---	0
East Baton Rouge	26	---	---	10	36
East Carroll	---	---	---	---	0
East Feliciana	2	---	---	---	2
Evangeline	3	---	---	---	3
Franklin	3	---	---	---	3
Grant	2	1	---	---	3
Iberia	5	1	1	---	7
Iberville	1	---	---	---	1
Jackson	2	---	---	---	2
Jefferson	11	2	3	1	17
Jefferson Davis	4	---	---	---	4
La Salle	2	---	---	---	2
Lafayette	7	---	---	---	7
Lafourche	22	---	434	---	456
Lincoln	1	---	---	---	1
Livingston	4	---	---	---	4
Madison	---	---	---	---	0

Summary of Database Piles Tested by Louisiana Parishes

Parish	Test Pile	Indicator Pile	Monitor Pile	Other	Total Piles Tested
Morehouse	---	---	---	---	0
Natchitoches	5	---	1	---	6
Orleans	13	6	1	1	21
Ouachita	10	1	1	---	12
Plaquemines	1	---	---	---	1
Pointe Coupee	---	---	---	---	0
Rapides	7	---	6	---	13
Red River	3	---	---	---	3
Richland	---	---	---	---	0
Sabine	---	---	---	---	0
St. Bernard	1	---	---	---	1
St. Charles	8	---	---	---	8
St. Helena	8	---	2	---	10
St. James	5	---	---	---	5
St. John	2	---	---	---	2
St. Landry	11	---	---	---	11
St. Martin	2	---	---	---	2
St. Mary	34	---	---	---	34
St. Tammany	7	1	---	---	8
Tangipahoa	5	---	---	---	5
Tensas	---	---	---	---	0
Terrebonne	14	3	---	---	17
Union	---	---	---	---	0
Unknown	---	---	---	---	0
Vermilion	7	---	---	---	7
Vernon	8	5	---	---	13
Washington	5	---	---	---	5
Webster	---	---	---	---	0
West Baton Rouge	6	---	---	---	6
West Carroll	---	---	---	---	0
West Feliciana	---	---	---	---	0
Winn	1	2	---	---	3

Summary of Database Piles Tested by Louisiana Parishes

Louisiana Parish	Concrete Piles	Steel Piles
Acadia	3	---
Allen	---	---
Ascension	3	---
Assumption	1	---
Avoyelles	15	---
Beauregard	3	---
Bienville	---	---
Bossier	7	---
Caddo	8	1
Calcasieu	15	1
Caldwell	---	---
Cameron	---	---
Catahoula	2	2
Claiborne	---	---
Concordia	1	---
Desoto	---	---
East Baton Rouge	36	---
East Carroll	---	---
East Feliciana	2	---
Evangeline	3	---
Franklin	3	---
Grant	3	---
Iberia	6	1
Iberville	1	---
Jackson	2	---
Jefferson	13	4
Jefferson Davis	4	---
La Salle	2	---
Lafayette	6	1
Lafourche	455	1
Lincoln	1	---
Livingston	4	---
Madison	---	---
Morehouse	---	---

Summary of Database Piles Tested by Louisiana Parishes

Louisiana Parish	Concrete Piles	Steel Piles
Natchitoches	6	---
Orleans	20	1
Ouachita	10	2
Plaquemines	1	---
Pointe Coupee	---	---
Rapides	13	---
Red River	1	2
Richland	---	---
Sabine	---	---
St. Bernard	1	---
St. Charles	8	---
St. Helena	10	---
St. James	2	3
St. John	2	---
St. Landry	11	---
St. Martin	2	---
St. Mary	30	4
St. Tammany	8	---
Tangipahoa	5	---
Tensas	---	---
Terrebonne	17	---
Union	---	---
Unknown	---	---
Vermilion	7	---
Vernon	13	---
Washington	5	---
Webster	---	---
West Baton Rouge	6	---
West Carroll	---	---
West Feliciana	---	---
Winn	3	---

Summary of Database Piles Tested by Louisiana Parishes

Louisiana Parish	Dynamic Load Test	Static Load Test
Acadia	---	3
Allen	---	---
Ascension	---	3
Assumption	2	1
Avoyelles	18	7
Beauregard	---	3
Bienville	---	---
Bossier	17	---
Caddo	7	6
Calcasieu	22	17
Caldwell	---	---
Cameron	---	---
Catahoula	10	2
Claiborne	---	---
Concordia	---	1
Desoto	---	---
East Baton Rouge	25	20
East Carroll	---	---
East Feliciana	5	1
Evangeline	---	3
Franklin	2	4
Grant	5	---
Iberia	10	4
Iberville	---	1
Jackson	2	2
Jefferson	43	8
Jefferson Davis	---	4
La Salle	---	2
Lafayette	5	5
Lafourche	558	18
Lincoln	2	---
Livingston	4	4
Madison	---	---
Morehouse	---	---
Natchitoches	5	3
Orleans	60	3
Ouachita	25	6
Plaquemines	---	1
Pointe Coupee	---	---
Rapides	19	7
Red River	---	3
Richland	---	---

Summary of Database Piles Tested by Louisiana Parishes

Louisiana Parish	Dynamic Load Test	Static Load Test
Sabine	---	---
St. Bernard	---	1
St. Charles	---	7
St. Helena	11	6
St. James	---	5
St. John	---	3
St. Landry	---	13
St. Martin	---	2
St. Mary	21	27
St. Tammany	7	7
Tangipahoa	2	5
Tensas	---	---
Terrebonne	8	14
Union	---	---
Unknown	---	---
Vermilion	3	7
Vernon	10	8
Washington	3	5
Webster	---	---
West Baton Rouge	14	---
West Carroll	---	---
West Feliciana	---	---
Winn	9	---

APPENDIX H

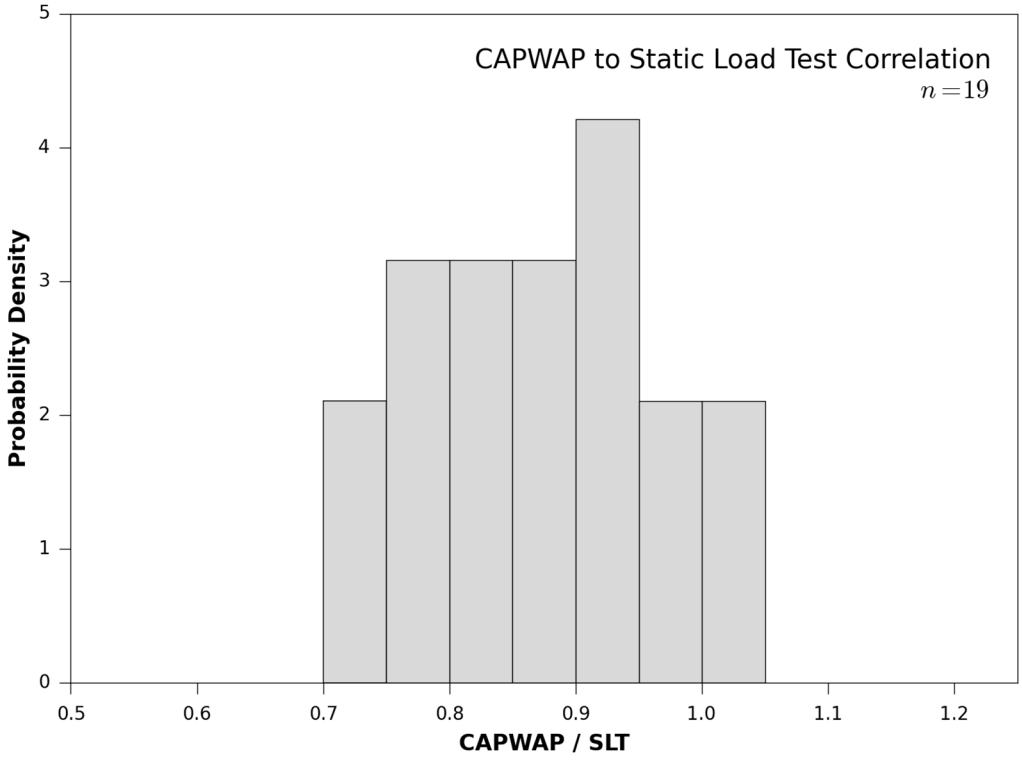
PILE DRIVING FORMULA AND LRFD

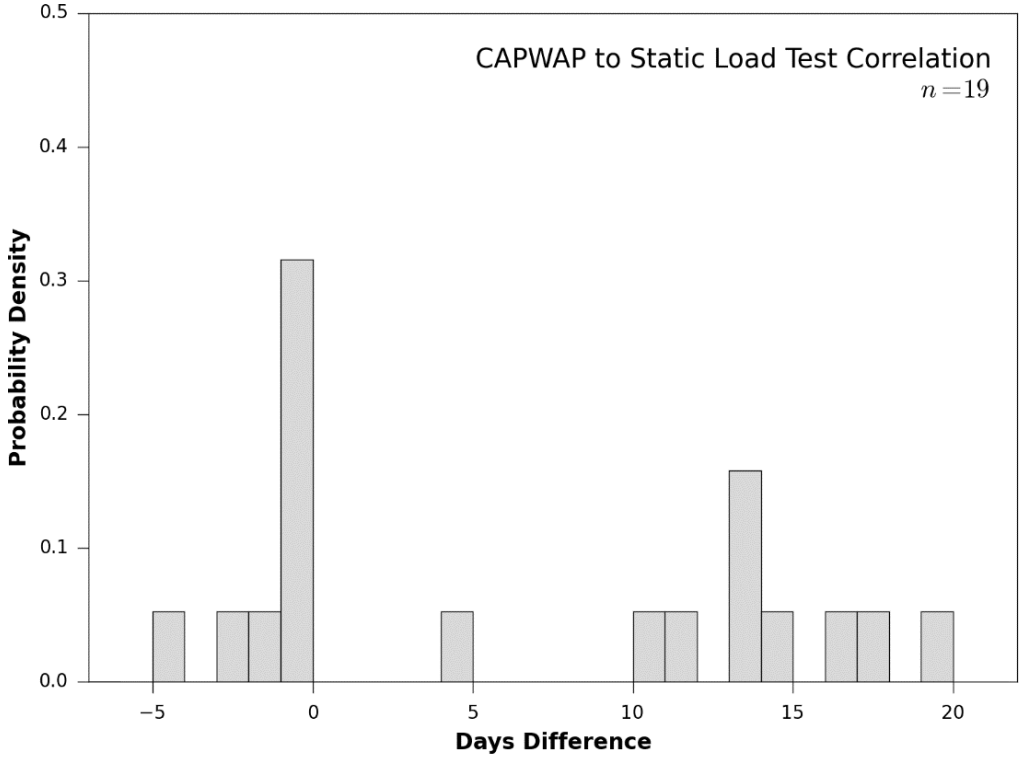
RESISTANCE FACTORS RESULTS

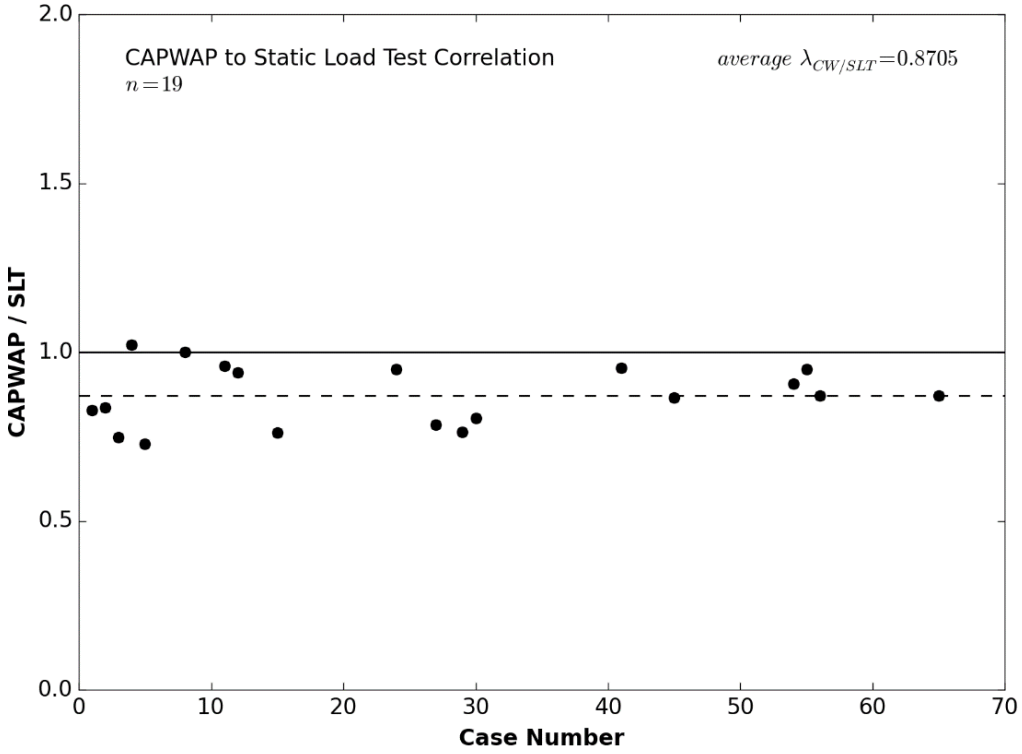
Summary of Modified Pile Driving Dynamic Formulas

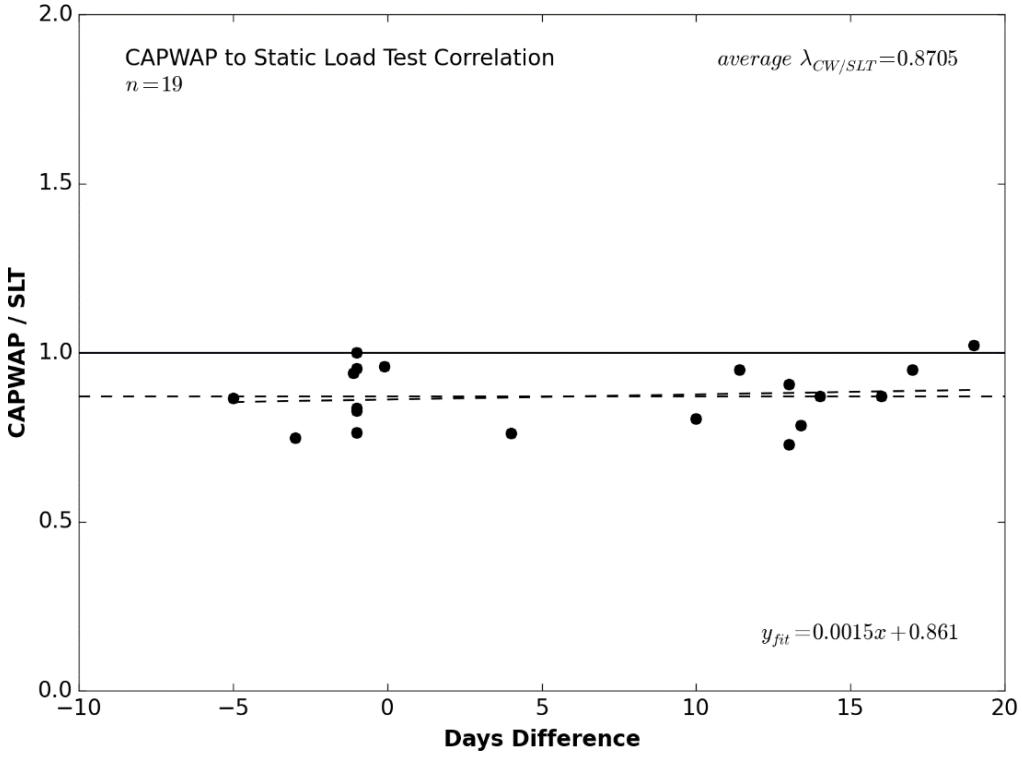
Equation No.	Type of Pile Driving Dynamic Formula	n	Formula	Resistance Factor (ϕ) $\phi_{QnD/QnL=5.0} - \phi_{QnD/QnL=2.0}$ ($\phi_{QnD/QnL=3.0}$)
47	EOID LADOTD Prediction of Long-Term Nominal Pile Capacity Geology 1,2, 3, 4, 5; OED & ECH (DFEOID)	50	$R_u = 0.5\left[\left(1.75\sqrt{E_r}\, log(10\, N_b)\right) - 100\right]$	0.651 – 0.686 (0.669)
48	EOID LADOTD Modified Gates Prediction of Long-Term Nominal Pile Capacity Geology 1,2, 3, 4, 5; OED & ECH (DFEOID-MOD)	50	$R_u = 0.5\left[\left(1.95\sqrt{E_r}\, log(10\, N_b)\right) - 100\right]$	0.570 – 0.600 (0.586)
49	BOR t ≥ 1 Day LADOTD Modified Gates Prediction of Restrike Nominal Capacity Geology 1; OED (DF1+BORSCA)	304	$R_u = 0.5\left[\left(1.65\sqrt{E_r}\, log(10\, N_b)\right) - 100\right]$	0.623 – 0.657 (0.642)
50	BOR t ≥ 1 Day Modified Gates Prediction of Restrike Nominal Capacity Geology 2, 3, 4, 5; OED (DF1+BORSCB)	61	$R_u = 0.5\left[\left(1.40\sqrt{E_r}\, log(10\, N_b)\right) - 100\right]$	0.587 – 0.620 (0.605)

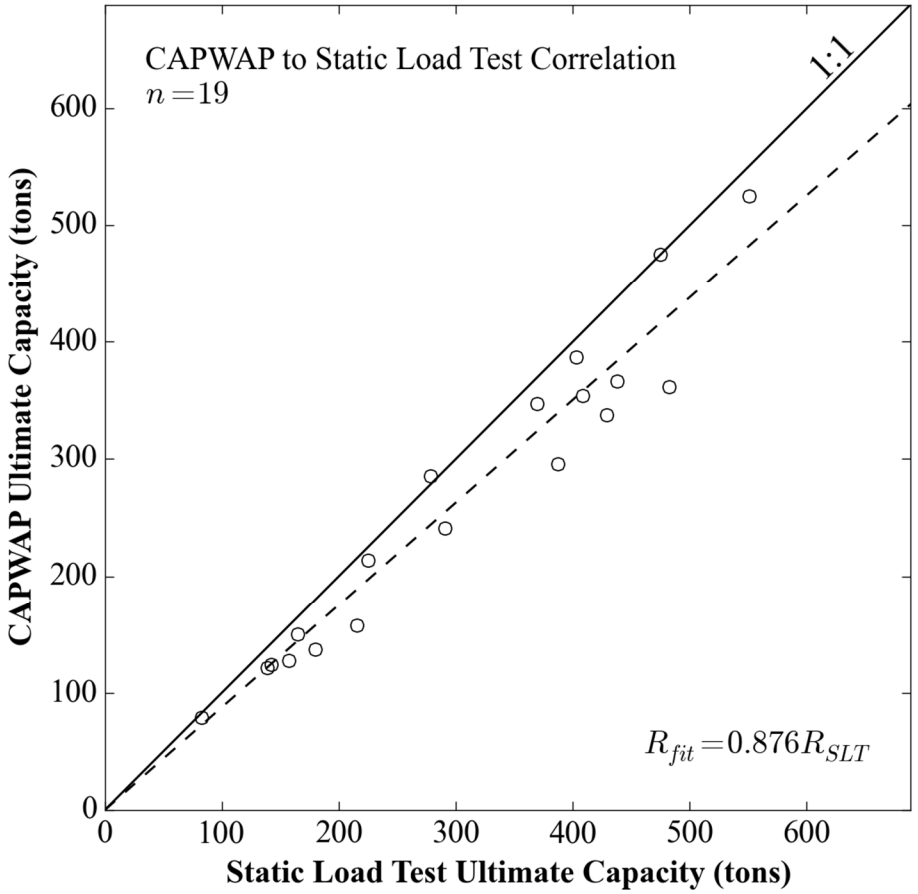
Correlation of CAPWAP with Static Load Test






CAPWAP to Static Load Test Correlation
$n=19$
$average\ \lambda_{CW/SLT}=0.8705$
CAPWAP / SLT
Case Number
2.0
1.5
1.0
0.5
0.0
0
10
20
30
40
50
60
70


CAPWAP to Static Load Test Correlation
$n=19$
$average\ \lambda_{CW/SLT}=0.8705$
$y_{fit}=0.0015x+0.861$
CAPWAP / SLT
Days Difference
2.0
1.5
1.0
0.5
0.0
−10
−5
0
5
10
15
20



Data Used to Correlate CW Results to SLT Results

Sample No.	Case No.	Pile ID	SLT Hours After EOID	PDA Hours After EOID	Days[1] Difference	Time[2] Ratio	BOR Blow Count (bl/ft)	BOR CW Ultimate Capacity (tons)	SLT Ultimate Capacity (tons)	$\frac{CW}{SLT}$
1	1	6	336	360	-1.0	0.9	75	241	291	0.83
2	2	7	336	360	-1.0	0.9	120	366	438	0.84
3	3	9	360	432	-3.0	0.8	120	361	483	0.75
4	4	10	624	168	19.0	3.7	55	285	279	1.02
5	5	11	336	24	13.0	14.0	24	157	216	0.73
6	8	14	744	768	-1.0	1.0	72	475	475	1.00
7	11	17	147	151	-0.1	1.0	120	387	403	0.96
8	12	18	192	218	-1.1	0.9	80	347	370	0.94
9	15	21	167	72	4.0	2.3	48	137	180	0.76
10	24	32	296	22	11.4	13.4	36	213	225	0.95
11	27	34	347	24	13.4	14.5	60	337	430	0.79
12	29	251	332	356	-1.0	0.9	48	296	388	0.76
13	30	252	334	93	10.0	3.6	48	127	158	0.80
14	41	490	504	528	-1.0	1.0	100	525	551	0.95
15	45	503	336	456	-5.0	0.7	24	354	409	0.87
16	54	781	336	24	13.0	14.0	0	150	165	0.91
17	55	1036	432	24	17.0	18.0	20	79	83	0.95
18	56	1037	408	24	16.0	17.0	24	121	139	0.87
19	65	1050	360	24	14.0	15.0	36	124	143	0.87

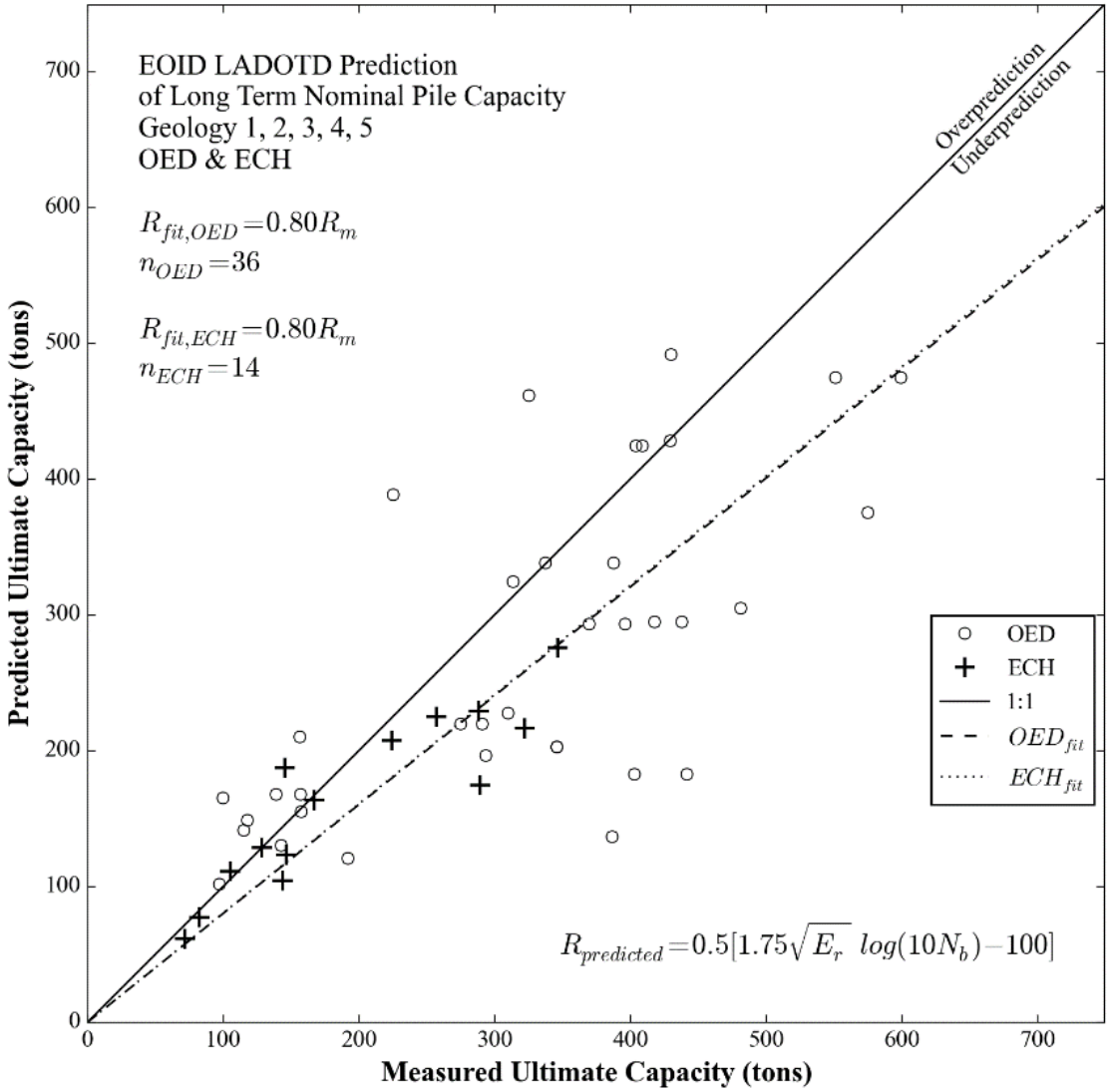
[1] Negative (-) values indicates number days BOR CW prior to SLT and positive (+) values indicate number of days BOR CW after SLT.

[2] Time Ratio = SLT Time after EOID/BOR CW Time after EOID

EOID Prediction of Long Term Nominal Pile Capacity

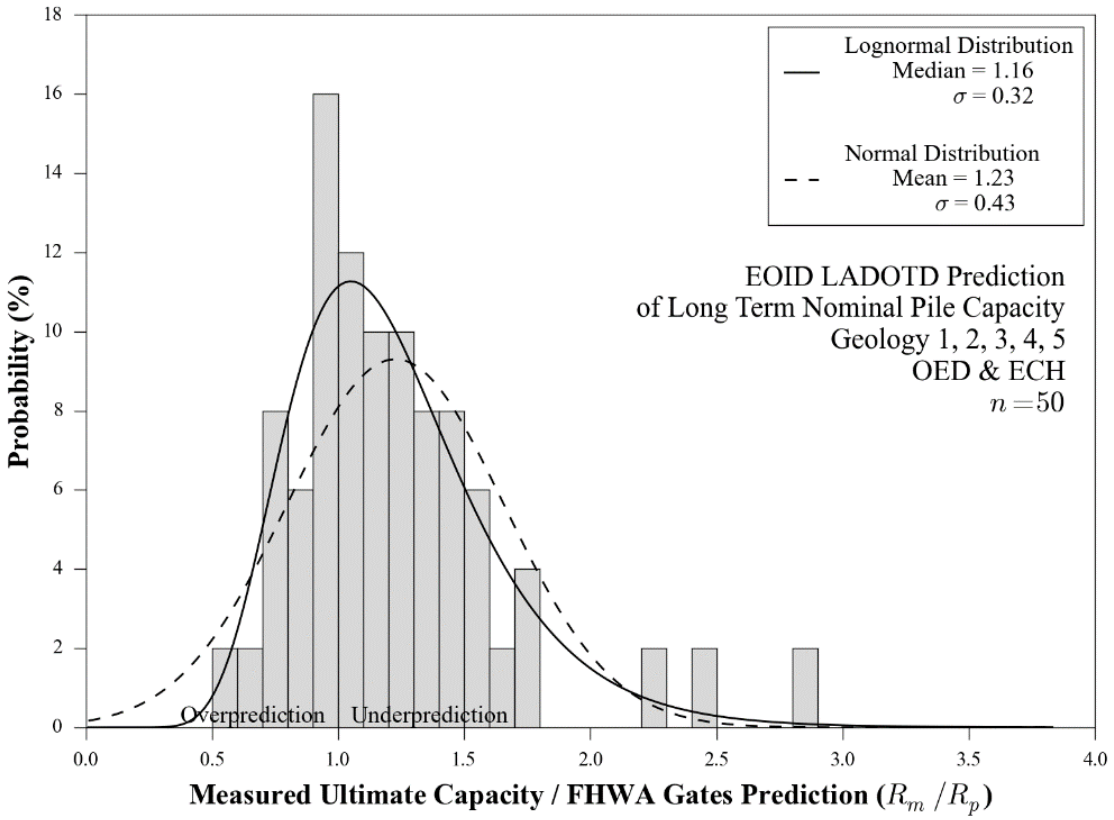
Dataset Statistics for EOID Prediction of Long Term Nominal Pile Capacity

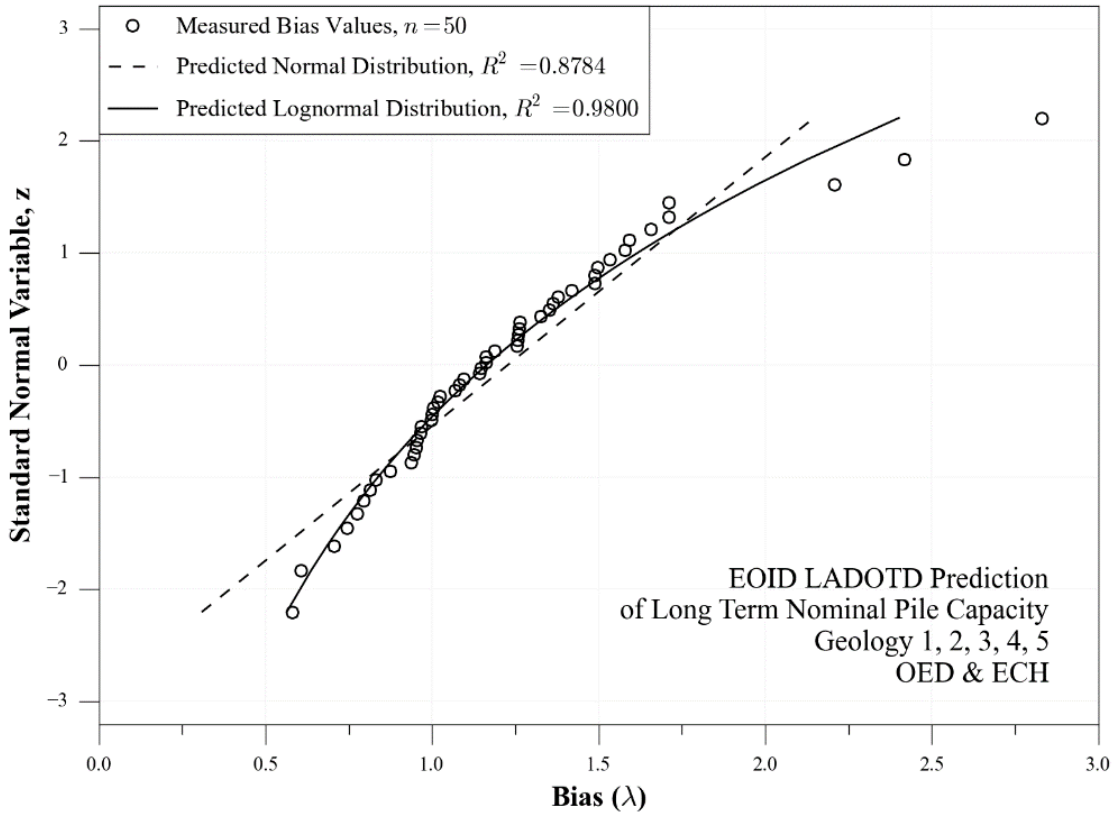
Pile Type	PPC	**E_{EOID} (ft-kip)**	$13 \leq E \leq 183$
Geology	1, 2, 3, 4, 5	**N_{EOID}**	$23 \leq N \leq 105$
Geology 1	13	**Days Since EOID**	$6.0 \leq t \leq 22.0$
Geology 2	13		
Geology 3	18		
Geology 4	5	**Load Testing**	SLT, CW
Geology 5	1	**SLT Failure**	Yes
Geology 6	0	**CW Mobilized**	Yes (≤ 120 bl/ft)
Hammer Type	OED & ECH	**No. SLT**	35
OED	36	**No. CW**	15
ECH	14	**Data Sets**	50

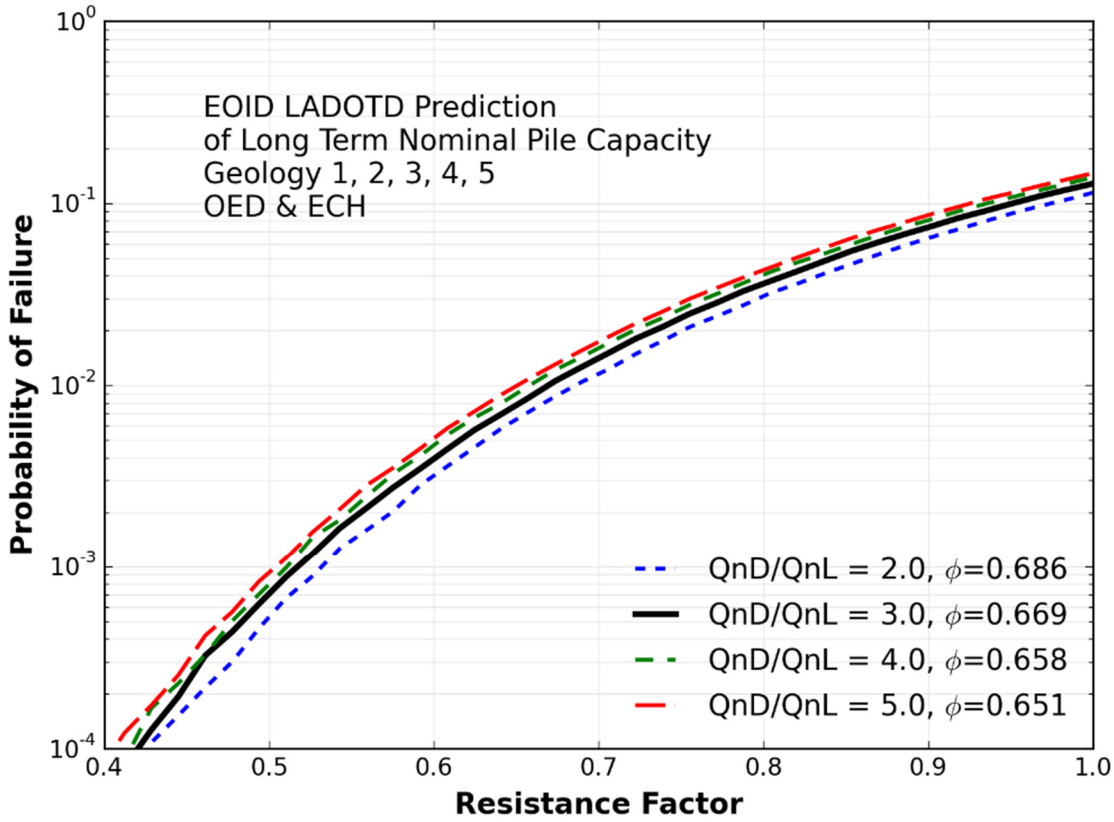


Statistics for Current LADOTD Pile Driving Formula

Gates Pile Driving Formula Coefficients	C1 =	1.75
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	1.227
	Standard Deviation	0.429
	COV	0.349
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.802
	R^2	0.547
	Correlation	0.740
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	89.8
	Mean overprediction (tons)	39.7




Measured Bias Values, $n = 50$
Predicted Normal Distribution, $R^2 = 0.8784$
Predicted Lognormal Distribution, $R^2 = 0.9800$
EOID LADOTD Prediction
of Long Term Nominal Pile Capacity
Geology 1, 2, 3, 4, 5
OED & ECH
Standard Normal Variable, z
Bias (λ)

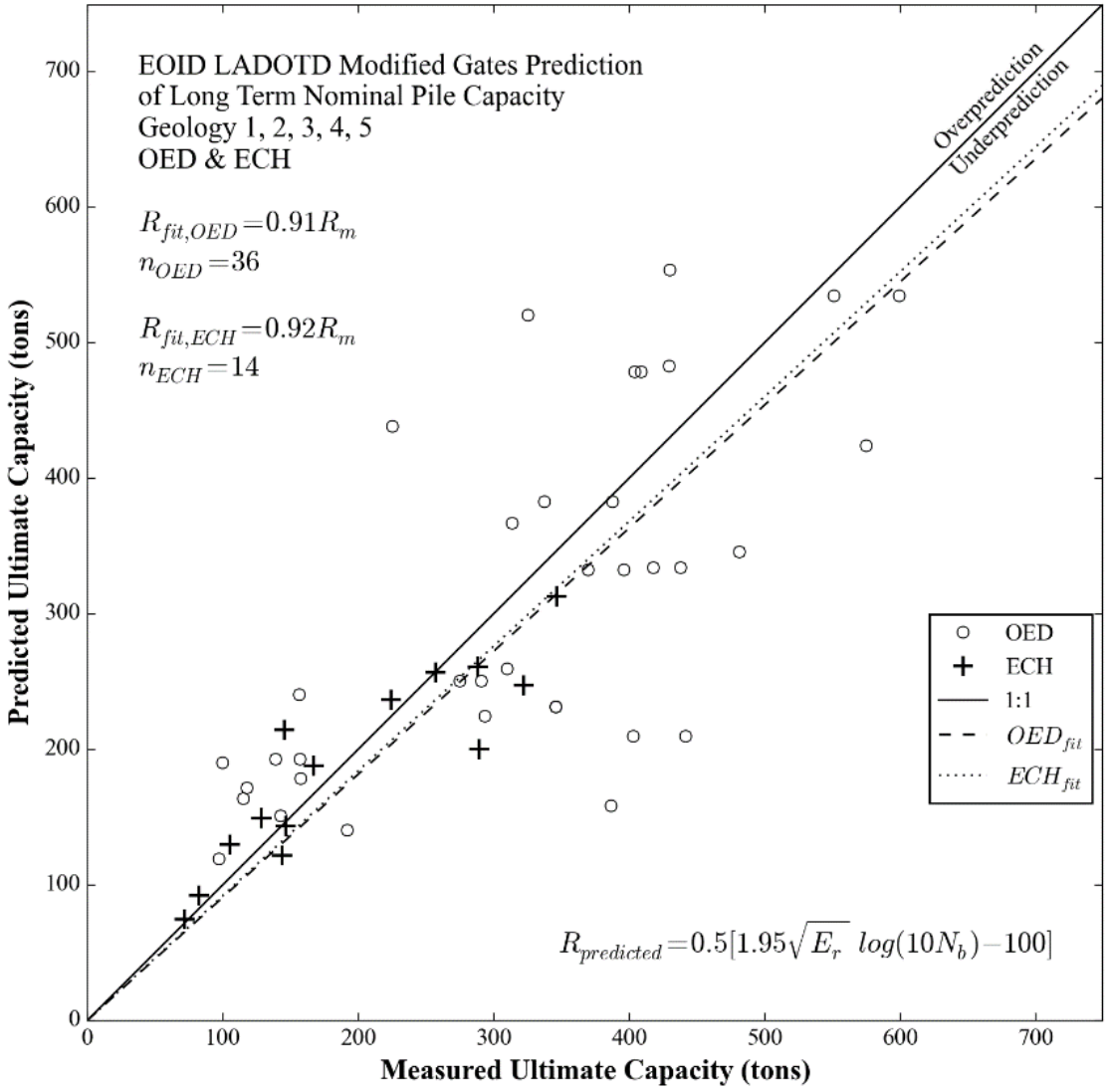

EOID LADOTD Prediction
of Long Term Nominal Pile Capacity
Geology 1, 2, 3, 4, 5
OED & ECH
QnD/QnL = 2.0, ϕ=0.686
QnD/QnL = 3.0, ϕ=0.669
QnD/QnL = 4.0, ϕ=0.658
QnD/QnL = 5.0, ϕ=0.651
Probability of Failure
Resistance Factor

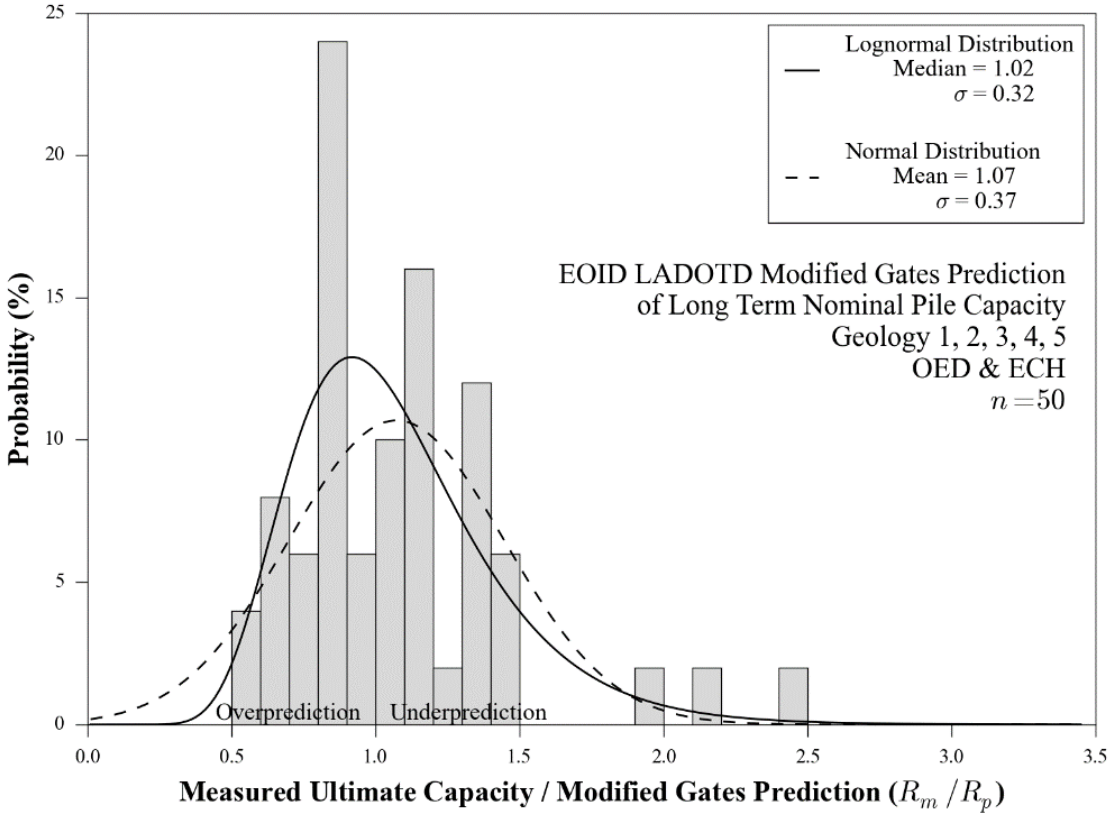
Statistics and Resistance Factors for the LADOTD Pile Driving Formula (DFEOID)

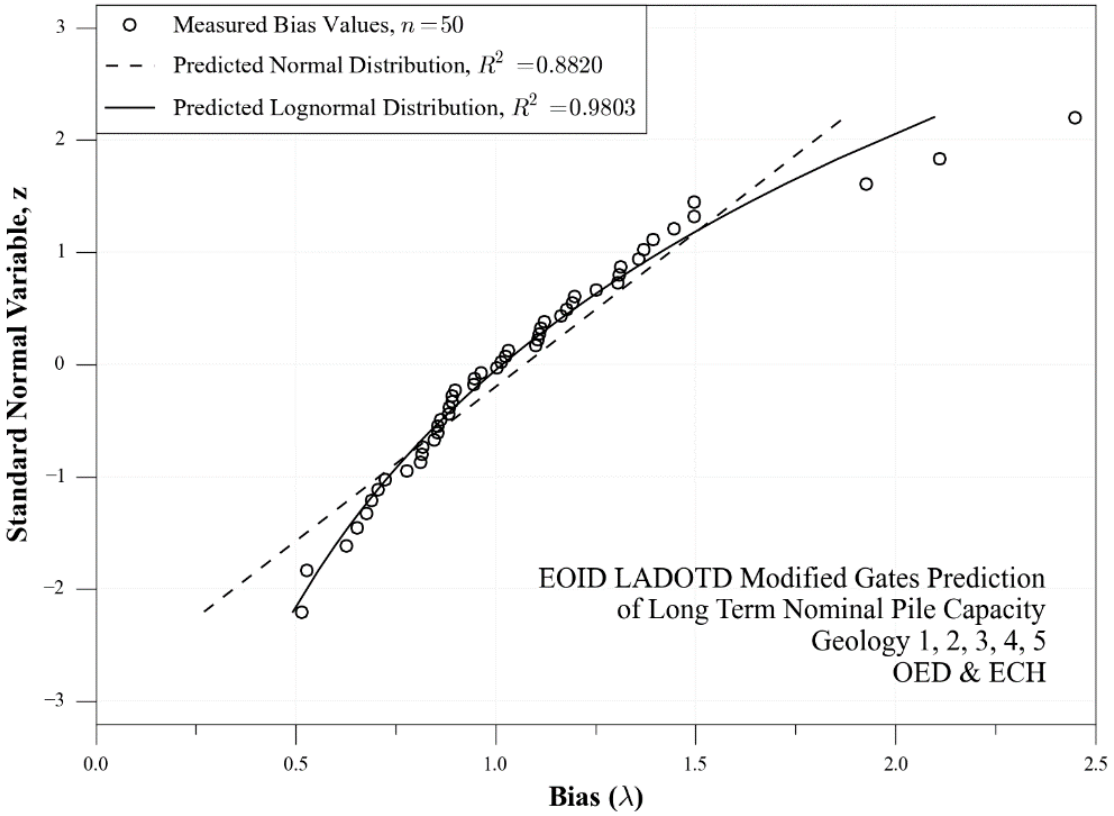
Case Category:		EOID
Description:		FHWA Gates
Geology:		1, 2, 3, 4, 5
Hammer Type:		OED & ECH
Number of Cases:		50
Lognormal distribution fit Parameters	R^2	0.980
	Median	1.164
	Sigma	0.320
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.651
	$Q_{nD}/Q_{nL} = 4.0$	0.658
	$Q_{nD}/Q_{nL} = 3.0$	0.669
	$Q_{nD}/Q_{nL} = 2.0$	0.686

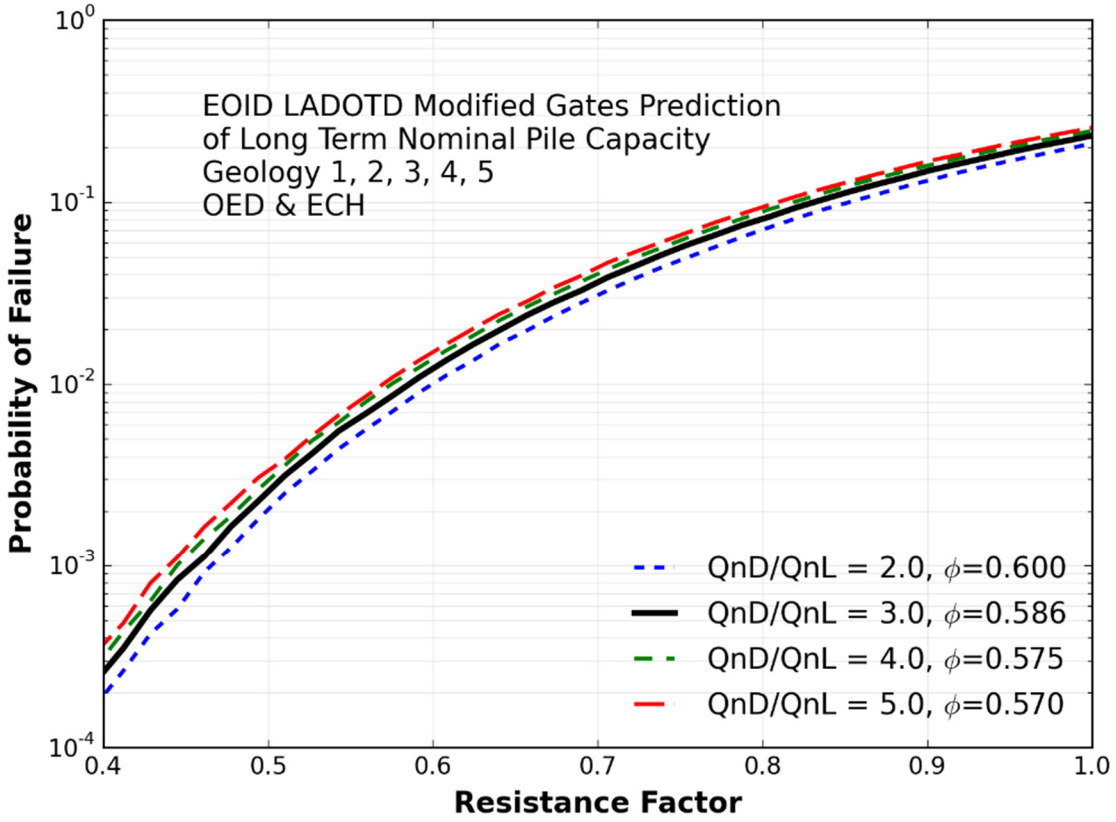
Statistics for EOID LADOTD Modified Gates Pile Driving Formula

Gates Pile Driving Formula Coefficients	C1 =	1.95
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	1.072
	Standard Deviation	0.373
	COV	0.348
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.909
	R^2	0.539
	Correlation	0.734
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	78.3
	Mean overprediction (tons)	58.4




Lognormal Distribution
Median = 1.02
σ = 0.32
Normal Distribution
Mean = 1.07
σ = 0.37
EOID LADOTD Modified Gates Prediction
of Long Term Nominal Pile Capacity
Geology 1, 2, 3, 4, 5
OED & ECH
n = 50
Overprediction
Underprediction
Probability (%)
Measured Ultimate Capacity / Modified Gates Prediction (R_m / R_p)


Measured Bias Values, n = 50
Predicted Normal Distribution, R² = 0.8820
Predicted Lognormal Distribution, R² = 0.9803
EOID LADOTD Modified Gates Prediction
of Long Term Nominal Pile Capacity
Geology 1, 2, 3, 4, 5
OED & ECH
Standard Normal Variable, z
Bias (λ)



Statistics and Resistance Factors for the EOID LADOTD Modified Gates Pile Driving Formula (DFEOID-MOD)

Pile Driving Condition:		EOID
Description:		LADOTD Modified Gates
Geology:		1, 2, 3, 4, 5
Hammer Type:		OED & ECH
Number of Cases:		50
Lognormal distribution fit Parameters	R^2	0.980
	Median	1.017
	Sigma	0.320
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.570
	$Q_{nD}/Q_{nL} = 4.0$	0.575
	$Q_{nD}/Q_{nL} = 3.0$	0.586
	$Q_{nD}/Q_{nL} = 2.0$	0.600

Summary of EOID Pile Driving Formulas and Resistance Factors

EOID Pile Driving Formulas	EOID LADOTD Pile Driving Formula (DFEOID)	EOID Modified Gates Pile Driving Formula (DFEOID-MOD)
Prediction	Long-Term Ultimate Pile Capacity	Long-Term Ultimate Pile Capacity
EOID Data	t = 0	t = 0
Geology	1, 2, 3, 4, 5	1, 2, 3, 4, 5
Hammer Type	OED & ECH	OED & ECH
Equation No.	47	48
Equation	$R_u = 0.5\left[\left(1.75\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$	$R_u = 0.5\left[\left(1.95\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$
n	50	50
$\phi_{QnD/QnL=5.0} - \phi_{QnD/QnL=2.0}$	0.651 – 0.686	0.570 – 0.600
$\phi_{QnD/QnL=3.0}$	0.669	0.586

Summary Statistics for EOID Pile Driving Formlas

EOID Pile Driving Formulas		EOID LADOTD Pile Driving Formula (DFEOID)	EOID Modified Gates Pile Driving Formula (DFEOID-MOD)
	Equation No.	47	48
Gates Pile Driving Formula Coefficients	C1 =	1.75	1.95
	C2 =	10	10
	C3 =	100	100
Arithmetic Mean	Mean R_m/R_p	1.227	1.072
	Standard Deviation	0.429	0.373
	COV	0.349	0.348
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.802	0.909
	R^2	0.547	0.539
	Correlation	0.740	0.734
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	89.8	78.3
	Mean overprediction (tons)	39.7	58.4

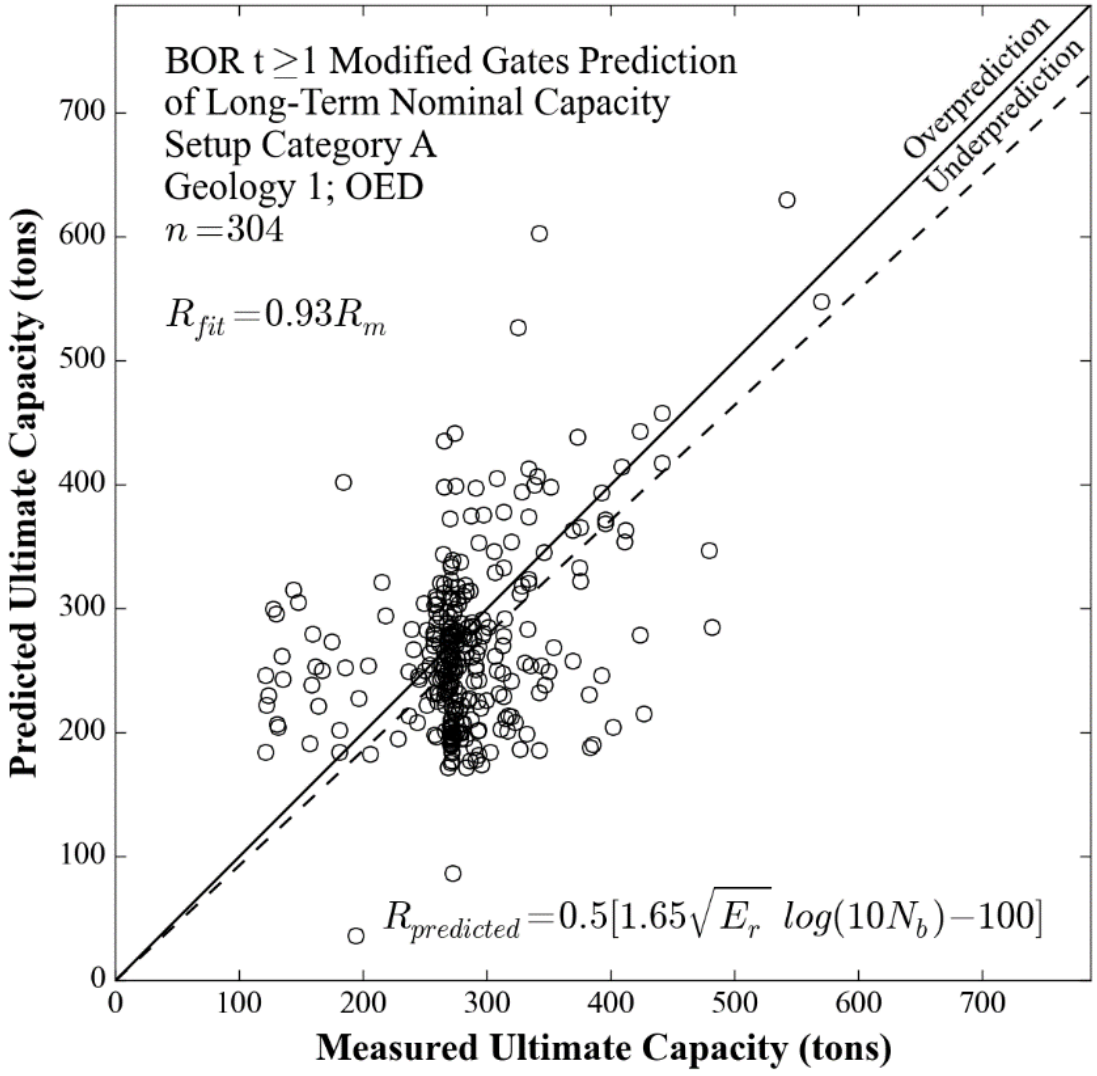
Measured						FHWA Gates			Modified Gates		
Case #	EEOID (ft-lbs)	EEOID (ft-kip)	NEOID (blows/in)	NEOID (blows/ft)	Ultimate Capacity (tons)	EOID FHWA Gates (tons)	EOID FHWA GATES / Ultimate Capacity	Ultimate Capacity / EOID FHWA GATES	EOID Mod Gates (tons)	EOID Mod Gates / Ultimate Capacity	Ultimate Capacity / EOID Mod Gates
7	182,518.90	182.52	2.33	28.00	325.27	461.4	1.418	0.705	519.8	1.598	0.626
26	123,371.30	123.37	2.42	29.00	575.00	375.1	0.652	1.533	423.7	0.737	1.357
39	66,011.40	66.01	1.08	13.00	403.00	182.6	0.453	2.207	209.2	0.519	1.926
40	66,011.40	66.01	1.08	13.00	441.34	182.6	0.414	2.417	209.2	0.474	2.110
47	63,679.20	63.68	3.58	43.00	369.50	293.2	0.793	1.260	332.4	0.900	1.112
48	63,679.20	63.68	3.58	43.00	396.14	293.2	0.740	1.351	332.4	0.839	1.192
75	52,525.20	52.53	7.33	88.00	313.50	324.1	1.034	0.967	366.8	1.170	0.855
142	28,486.70	28.49	1.83	22.00	386.50	136.6	0.353	2.830	157.9	0.408	2.448
574	73,819.20	73.82	1.08	13.00	293.31	196.0	0.668	1.496	224.1	0.764	1.309
599	143,260.00	143.26	3.83	46.00	551.00	474.5	0.861	1.161	534.4	0.970	1.031
600	143,260.00	143.26	3.83	46.00	599.18	474.5	0.792	1.263	534.4	0.892	1.121
601	19,500.00	19.50	2.08	25.00	105.00	111.1	1.058	0.945	129.6	1.234	0.810
603	106,470.00	106.47	1.75	21.00	481.50	304.9	0.633	1.579	345.5	0.717	1.394
685	114,902.00	114.90	3.00	36.00	225.00	388.1	1.725	0.580	438.2	1.947	0.513
695	136,802.00	136.80	3.00	36.00	429.50	428.0	0.997	1.003	482.7	1.124	0.890
699	33,390.60	33.39	1.17	14.00	191.96	120.6	0.628	1.592	140.1	0.730	1.370
702	60,189.50	60.19	6.42	77.00	387.50	338.0	0.872	1.147	382.3	0.987	1.014
703	60,189.50	60.19	6.42	77.00	337.25	338.0	1.002	0.998	382.3	1.134	0.882
747	60,000.00	60.00	2.00	24.00	288.00	228.9	0.795	1.258	260.7	0.905	1.105
748	60,000.00	60.00	1.58	19.00	224.00	207.1	0.925	1.082	236.5	1.056	0.947
758	12,500.00	12.50	2.00	24.00	82.50	77.3	0.937	1.068	91.8	1.113	0.898
765	26,400.00	26.40	2.50	30.00	118.00	148.7	1.261	0.793	171.5	1.453	0.688
781	19,500.00	19.50	8.75	105.00	145.00	187.3	1.292	0.774	214.4	1.479	0.676
856	44,660.00	44.66	1.50	18.00	139.00	167.5	1.205	0.830	192.3	1.384	0.723
857	44,660.00	44.66	1.50	18.00	157.04	167.5	1.066	0.938	192.3	1.225	0.817
862	35,284.60	35.28	1.25	15.00	142.50	130.3	0.914	1.094	150.9	1.059	0.944
875	41,375.00	41.38	1.42	17.00	157.50	154.9	0.984	1.017	178.3	1.132	0.883
878	103,806.00	103.81	8.33	100.00	430.00	491.5	1.143	0.875	553.4	1.287	0.777
888	130,378.00	130.38	3.17	38.00	409.00	424.1	1.037	0.964	478.3	1.169	0.855
889	130,378.00	130.38	3.17	38.00	404.02	424.1	1.050	0.953	478.3	1.184	0.845
904	33,000.00	33.00	4.33	52.00	156.50	210.2	1.343	0.745	239.9	1.533	0.652

Measured						FHWA Gates			Modified Gates		
Case #	EEOID (ft-lbs)	EEOID (ft-kip)	NEOID (blows/in)	NEOID (blows/ft)	Ultimate Capacity (tons)	EOID FHWA Gates (tons)	EOID FHWA GATES / Ultimate Capacity	Ultimate Capacity / EOID FHWA GATES	EOID Mod Gates (tons)	EOID Mod Gates / Ultimate Capacity	Ultimate Capacity / EOID Mod Gates
906	26,400.00	26.40	1.17	14.00	97.00	101.7	1.048	0.954	119.0	1.227	0.815
922	42,000.00	42.00	1.17	14.00	115.00	141.3	1.229	0.814	163.2	1.419	0.705
924	42,000.00	42.00	1.58	19.00	100.00	165.1	1.651	0.606	189.7	1.897	0.527
931	16,250.00	16.25	1.00	12.00	71.50	61.5	0.861	1.162	74.3	1.039	0.962
945	27,900.00	27.90	1.67	20.00	128.50	128.6	1.001	0.999	149.0	1.159	0.862
963	59,400.00	59.40	2.00	24.00	310.00	227.5	0.734	1.363	259.2	0.836	1.196
969	34,500.00	34.50	1.17	14.00	146.50	123.4	0.842	1.187	143.2	0.978	1.023
971	40,000.00	40.00	1.92	23.00	289.00	174.4	0.604	1.657	200.1	0.692	1.444
973	60,000.00	60.00	1.75	21.00	322.00	216.4	0.672	1.488	246.9	0.767	1.304
976	60,000.00	60.00	1.92	23.00	257.00	224.9	0.875	1.143	256.3	0.997	1.003
1012	43,736.00	43.74	6.00	72.00	346.31	275.4	0.795	1.258	312.6	0.903	1.108
1052	32,550.00	32.55	2.25	27.00	167.12	163.5	0.978	1.022	187.9	1.124	0.890
1067	41,706.00	41.71	2.58	31.00	345.92	202.3	0.585	1.710	231.2	0.668	1.496
1108	47,531.60	47.53	2.58	31.00	291.00	219.4	0.754	1.326	250.2	0.860	1.163
1109	47,531.60	47.53	2.58	31.00	275.05	219.4	0.798	1.254	250.2	0.910	1.099
1112	82,840.20	82.84	2.33	28.00	438.00	294.5	0.672	1.487	333.9	0.762	1.312
1113	82,840.20	82.84	2.33	28.00	417.71	294.5	0.705	1.418	333.9	0.799	1.251
1127	15,000.00	15.00	2.75	33.00	143.50	104.2	0.726	1.377	121.9	0.849	1.177
1143	41,706.00	41.71	2.58	31.00	345.92	202.3	0.585	1.710	231.2	0.668	1.496

BOR t ≥ 1 day Prediction of Ultimate Pile Capacity

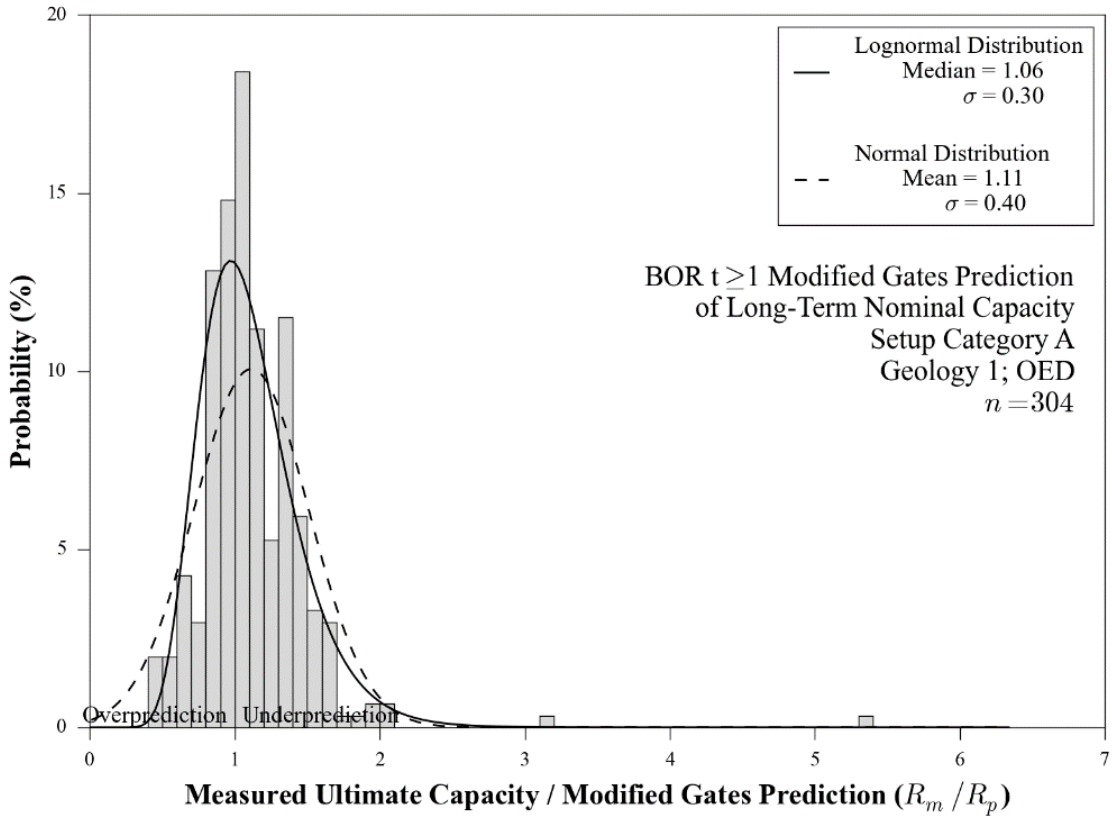
Dataset Statistics for BOR t ≥ 1 day Prediction of Ultimate Pile Capacity

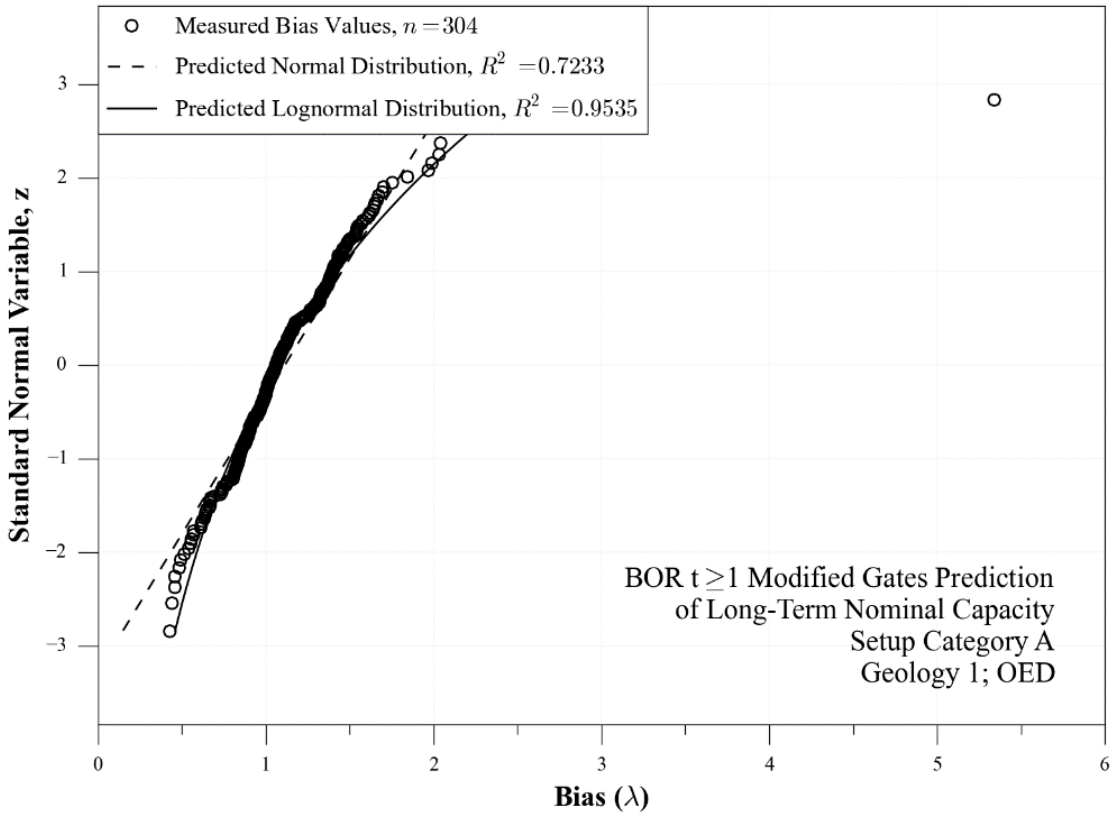
Pile Type:	PPC	E_{BOR} (ft-kip)	11 ≤ E ≤ 221
Geology:	1	N_{BOR}	12 ≤ N ≤ 120
Geology 1	304	Days Since EOID	0.8 ≤ t ≤ 50.0
Geology 2	0		
Geology 3	0		
Geology 4	0	Load Testing	SLT, CW
Geology 5	0	SLT Failure	Yes
Geology 6	0	CW Mobilized	Yes (≤ 120 bl/ft)
Hammer Type:	OED	No. SLT	1
OED	304	No. CW	303
ECH	0	Datasets	304

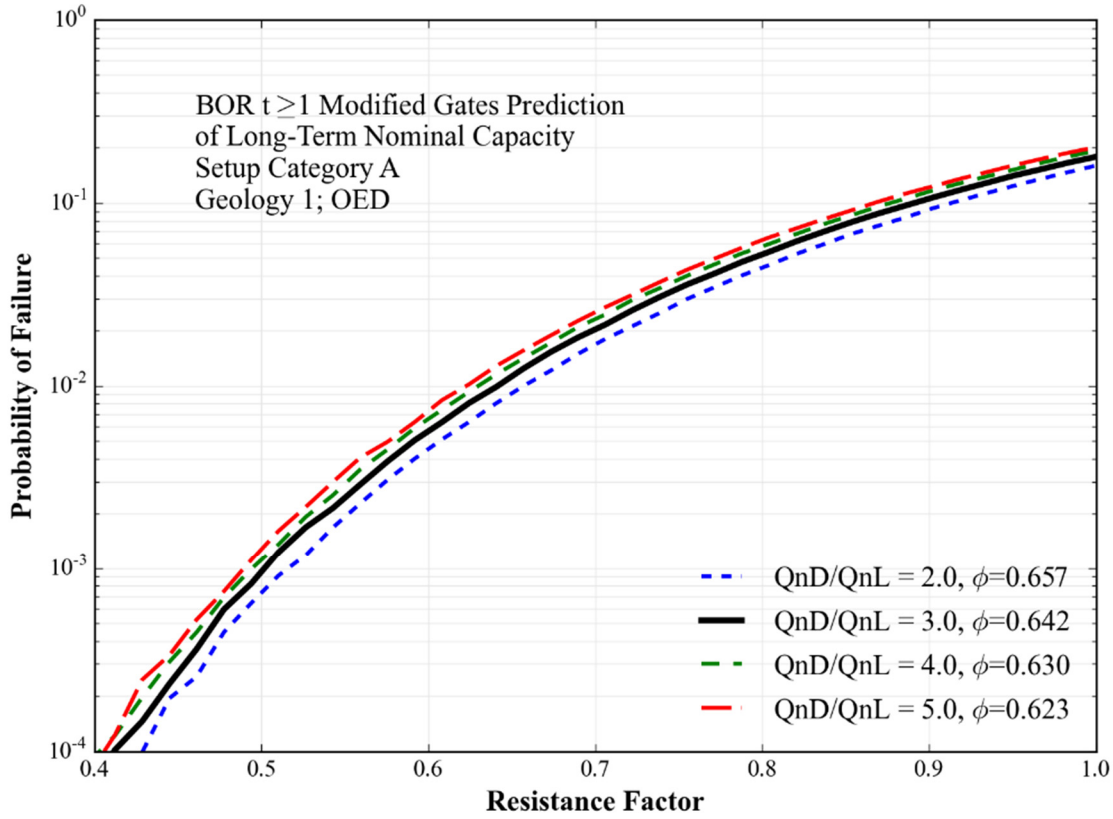


Statistics for BOR Modified Gates Pile Driving Formula (Setup Category A)

Gates Pile Driving Formula Coefficients	C1 =	1.65
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	1.110
	Standard Deviation	0.396
	COV	0.356
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.929
	R^2	0.007
	Correlation	0.086
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	58.6
	Mean overprediction (tons)	55.89




Measured Bias Values, $n = 304$
Predicted Normal Distribution, $R^2 = 0.7233$
Predicted Lognormal Distribution, $R^2 = 0.9535$
BOR t ≥1 Modified Gates Prediction
of Long-Term Nominal Capacity
Setup Category A
Geology 1; OED
Standard Normal Variable, z
Bias (λ)


BOR t ≥1 Modified Gates Prediction
of Long-Term Nominal Capacity
Setup Category A
Geology 1; OED
QnD/QnL = 2.0, ϕ=0.657
QnD/QnL = 3.0, ϕ=0.642
QnD/QnL = 4.0, ϕ=0.630
QnD/QnL = 5.0, ϕ=0.623
Probability of Failure
Resistance Factor

Statistics and Resistance Factors for BOR
Modified Gates Pile Driving Formula (DF1+BORSCA)

Pile Driving Condition:		BOR
Restrike Data:		$t \geq 1$ days
Description:		BOR Modified Gates
Geology:		1
Hammer Type:		OED
Number of Cases:		304
Lognormal distribution fit Parameters	R^2	0.953
	Median	1.063
	Sigma	0.300
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.623
	$Q_{nD}/Q_{nL} = 4.0$	0.630
	$Q_{nD}/Q_{nL} = 3.0$	0.642
	$Q_{nD}/Q_{nL} = 2.0$	0.657

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
7	177,222.10	177.22	4.58	55.00	325.27	439.5	1.351	0.740
9	220,700.00	220.70	4.83	58.00	342.39	503.9	1.472	0.680
22	214,741.10	214.74	6.00	72.00	542.34	526.8	0.971	1.030
27	204,588.90	204.59	4.00	48.00	570.53	457.2	0.801	1.248
31	139,261.70	139.26	3.00	36.00	308.15	335.9	1.090	0.917
40	80,207.40	80.21	10.00	120.00	441.34	346.5	0.785	1.274
48	78,585.00	78.59	6.67	80.00	396.14	307.9	0.777	1.287
70	75,036.00	75.04	10.00	120.00	184.20	333.5	1.810	0.552
574	73,819.20	73.82	1.08	13.00	293.31	146.8	0.500	1.998
603	106,470.00	106.47	1.75	21.00	481.50	233.9	0.486	2.058
619	50,260.00	50.26	1.83	22.00	121.32	148.2	1.222	0.818
2	70,777.20	70.78	1.92	23.00	257.08	240.0	0.934	1.071
3	93,997.80	94.00	2.92	35.00	262.50	331.8	1.264	0.791
4	89,637.60	89.64	1.67	20.00	265.35	260.9	0.983	1.017
5	79,396.20	79.40	1.42	17.00	278.02	225.7	0.812	1.232
36	87,812.40	87.81	3.33	40.00	375.83	333.6	0.888	1.127
45	94,504.80	94.50	6.67	80.00	333.60	426.6	1.279	0.782
67	68,242.20	68.24	4.00	48.00	129.76	305.7	2.356	0.424
138	40,718.90	40.72	6.25	75.00	349.81	258.0	0.738	1.356
151	73,819.20	73.82	4.92	59.00	306.27	340.7	1.112	0.899
153	83,148.00	83.15	4.67	56.00	479.34	359.1	0.749	1.335
154	89,130.60	89.13	2.17	26.00	159.04	289.0	1.817	0.550

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
160	85,581.60	85.58	1.00	12.00	157.21	198.7	1.264	0.791
164	10,951.20	10.95	1.00	12.00	193.91	39.0	0.201	4.978
165	79,396.20	79.40	1.00	12.00	205.55	189.5	0.922	1.085
168	82,235.40	82.24	1.08	13.00	228.43	202.2	0.885	1.130
169	101,400.00	101.40	1.42	17.00	185.46	261.6	1.411	0.709
177	70,067.40	70.07	1.75	21.00	164.29	229.7	1.398	0.715
178	101,907.00	101.91	1.00	12.00	236.93	221.3	0.934	1.070
179	100,284.60	100.28	2.50	30.00	143.97	326.3	2.266	0.441
180	101,907.00	101.91	1.42	17.00	161.72	262.4	1.622	0.616
182	70,473.00	70.47	1.17	14.00	180.78	190.8	1.055	0.948
183	73,819.20	73.82	1.33	16.00	180.84	209.8	1.160	0.862
186	99,169.20	99.17	1.17	14.00	196.19	235.6	1.201	0.833
187	77,064.00	77.06	1.67	20.00	123.94	238.3	1.923	0.520
189	112,756.80	112.76	1.33	16.00	134.16	271.1	2.021	0.495
192	78,990.60	78.99	1.83	22.00	135.19	251.8	1.862	0.537
195	58,812.00	58.81	1.92	23.00	130.62	214.4	1.641	0.609
196	91,969.80	91.97	1.42	17.00	158.75	246.8	1.554	0.643
197	78,990.60	78.99	1.25	15.00	131.65	212.0	1.611	0.621
198	86,494.20	86.49	2.75	33.00	127.82	309.8	2.424	0.413
199	88,218.00	88.22	2.08	25.00	174.56	282.9	1.621	0.617
202	75,948.60	75.95	2.17	26.00	204.52	262.9	1.285	0.778
204	74,224.80	74.22	2.17	26.00	166.74	259.3	1.555	0.643
205	101,400.00	101.40	2.25	27.00	147.85	316.0	2.137	0.468

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
206	72,805.20	72.81	1.67	20.00	122.18	230.2	1.884	0.531
207	67,228.20	67.23	2.42	29.00	121.20	254.8	2.103	0.476
209	85,581.60	85.58	1.75	21.00	308.03	259.1	0.841	1.189
210	99,169.20	99.17	1.17	14.00	265.18	235.6	0.888	1.126
212	78,280.80	78.28	1.67	20.00	260.04	240.6	0.925	1.081
213	91,057.20	91.06	2.08	25.00	423.88	288.3	0.680	1.470
214	88,725.00	88.73	2.25	27.00	251.88	292.4	1.161	0.862
215	88,218.00	88.22	1.92	23.00	265.75	273.8	1.030	0.971
216	112,756.80	112.76	2.17	26.00	265.41	331.3	1.248	0.801
217	77,875.20	77.88	2.08	25.00	291.20	262.8	0.903	1.108
218	88,218.00	88.22	1.75	21.00	253.94	263.8	1.039	0.963
219	86,190.00	86.19	1.67	20.00	266.72	254.9	0.956	1.046
220	88,218.00	88.22	1.42	17.00	266.49	240.7	0.903	1.107
221	79,801.80	79.80	1.67	20.00	268.77	243.4	0.906	1.104
222	87,812.40	87.81	1.58	19.00	245.26	252.2	1.028	0.973
224	89,637.60	89.64	1.92	23.00	240.36	276.4	1.150	0.870
225	91,969.80	91.97	2.00	24.00	256.73	285.4	1.112	0.900
226	109,005.00	109.01	4.42	53.00	265.29	411.7	1.552	0.644
228	87,812.40	87.81	9.67	116.00	265.41	450.1	1.696	0.590
229	89,130.60	89.13	2.50	30.00	218.50	304.7	1.395	0.717
230	102,515.40	102.52	2.25	27.00	259.36	318.0	1.226	0.816
231	115,494.60	115.49	1.83	22.00	248.97	314.9	1.265	0.791
232	91,564.20	91.56	2.25	27.00	259.47	297.8	1.148	0.871

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
233	83,046.60	83.05	2.08	25.00	253.94	273.0	1.075	0.930
234	88,725.00	88.73	2.58	31.00	268.09	307.5	1.147	0.872
235	84,770.40	84.77	1.83	22.00	263.47	262.6	0.997	1.003
236	89,130.60	89.13	1.58	19.00	244.81	254.4	1.039	0.962
237	87,812.40	87.81	2.33	28.00	301.24	294.6	0.978	1.023
238	99,676.20	99.68	1.42	17.00	249.89	259.0	1.036	0.965
239	85,581.60	85.58	1.08	13.00	275.56	207.3	0.752	1.329
240	95,518.80	95.52	1.17	14.00	251.20	230.3	0.917	1.091
241	99,169.20	99.17	1.42	17.00	273.91	258.2	0.943	1.061
242	70,777.20	70.78	1.50	18.00	243.89	216.0	0.885	1.129
243	96,025.80	96.03	1.25	15.00	261.93	238.9	0.912	1.096
244	102,515.40	102.52	2.00	24.00	262.50	304.1	1.158	0.863
245	77,064.00	77.06	1.75	21.00	266.49	243.3	0.913	1.095
246	84,162.00	84.16	1.67	20.00	293.31	251.3	0.857	1.167
247	81,120.00	81.12	2.17	26.00	291.60	273.4	0.938	1.067
248	71,994.00	71.99	1.50	18.00	287.61	218.2	0.759	1.318
249	97,546.80	97.55	1.92	23.00	256.68	290.5	1.132	0.884
250	98,053.80	98.05	1.17	14.00	275.17	234.0	0.850	1.176
251	103,630.80	103.63	1.83	22.00	288.35	295.7	1.025	0.975
252	101,400.00	101.40	1.58	19.00	271.46	274.7	1.012	0.988
253	110,526.00	110.53	1.83	22.00	259.70	307.0	1.182	0.846
255	95,011.80	95.01	1.67	20.00	288.18	270.1	0.937	1.067
256	87,812.40	87.81	2.33	28.00	284.75	294.6	1.034	0.967

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
257	88,218.00	88.22	1.33	16.00	284.69	234.0	0.822	1.217
258	104,239.20	104.24	1.58	19.00	293.20	279.2	0.952	1.050
259	84,162.00	84.16	1.75	21.00	312.83	256.5	0.820	1.219
260	97,546.80	97.55	1.50	18.00	273.97	262.2	0.957	1.045
261	106,571.40	106.57	1.33	16.00	277.33	262.2	0.945	1.058
262	88,218.00	88.22	1.67	20.00	273.80	258.5	0.944	1.059
263	101,400.00	101.40	2.33	28.00	258.79	320.3	1.238	0.808
264	87,204.00	87.20	2.08	25.00	275.68	281.0	1.019	0.981
265	82,641.00	82.64	2.42	29.00	272.83	288.0	1.056	0.947
266	92,476.80	92.48	2.00	24.00	268.37	286.3	1.067	0.937
267	90,144.60	90.14	2.58	31.00	273.91	310.4	1.133	0.882
268	93,997.80	94.00	1.42	17.00	320.13	250.0	0.781	1.280
269	110,830.20	110.83	1.33	16.00	280.30	268.3	0.957	1.045
270	85,987.20	85.99	1.67	20.00	263.92	254.5	0.964	1.037
271	92,983.80	92.98	1.50	18.00	266.38	254.8	0.957	1.045
272	85,581.60	85.58	2.92	35.00	259.59	314.3	1.211	0.826
273	93,997.80	94.00	1.92	23.00	276.19	284.2	1.029	0.972
274	74,529.00	74.53	2.00	24.00	262.78	251.9	0.959	1.043
277	105,963.00	105.96	1.58	19.00	267.97	281.9	1.052	0.951
279	93,997.80	94.00	2.25	27.00	314.03	302.4	0.963	1.039
280	89,130.60	89.13	1.50	18.00	268.20	248.5	0.926	1.080
281	105,354.60	105.35	2.08	25.00	276.82	313.8	1.134	0.882
282	92,476.80	92.48	1.58	19.00	291.49	260.1	0.892	1.121

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
283	85,987.20	85.99	1.75	21.00	264.27	259.8	0.983	1.017
284	97,546.80	97.55	1.83	22.00	289.26	285.4	0.987	1.014
285	85,581.60	85.58	1.92	23.00	265.98	268.9	1.011	0.989
286	85,176.00	85.18	1.92	23.00	273.17	268.2	0.982	1.019
287	93,997.80	94.00	2.17	26.00	279.33	298.1	1.067	0.937
288	84,770.40	84.77	1.83	22.00	334.97	262.6	0.784	1.275
290	105,354.60	105.35	1.67	20.00	275.05	287.1	1.044	0.958
292	93,490.80	93.49	2.00	24.00	281.90	288.1	1.022	0.978
293	83,046.60	83.05	2.00	24.00	276.71	268.7	0.971	1.030
294	113,466.60	113.47	1.58	19.00	239.10	293.5	1.227	0.815
295	91,564.20	91.56	1.58	19.00	236.48	258.5	1.093	0.915
296	99,169.20	99.17	1.75	21.00	271.34	282.7	1.042	0.960
297	105,354.60	105.35	1.50	18.00	282.98	274.5	0.970	1.031
298	99,676.20	99.68	1.50	18.00	330.75	265.6	0.803	1.245
300	89,130.60	89.13	2.17	26.00	280.81	289.0	1.029	0.972
301	97,546.80	97.55	1.92	23.00	297.31	290.5	0.977	1.023
302	94,504.80	94.50	2.08	25.00	270.66	294.6	1.088	0.919
303	90,550.20	90.55	1.75	21.00	271.17	267.9	0.988	1.012
304	89,637.60	89.64	2.33	28.00	267.75	298.1	1.113	0.898
305	107,179.80	107.18	1.67	20.00	270.83	290.0	1.071	0.934
306	99,676.20	99.68	1.83	22.00	269.74	289.0	1.071	0.933
307	89,130.60	89.13	1.83	22.00	269.23	270.6	1.005	0.995
308	91,564.20	91.56	1.50	18.00	259.07	252.5	0.975	1.026

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
309	87,305.40	87.31	2.08	25.00	261.64	281.2	1.075	0.930
312	90,144.60	90.14	2.00	24.00	271.06	282.0	1.040	0.961
314	86,494.20	86.49	1.67	20.00	270.31	255.4	0.945	1.058
316	91,969.80	91.97	2.00	24.00	285.32	285.4	1.000	1.000
317	91,057.20	91.06	1.58	19.00	271.40	257.7	0.949	1.053
319	111,540.00	111.54	2.58	31.00	272.37	350.9	1.288	0.776
320	95,011.80	95.01	2.08	25.00	288.18	295.5	1.025	0.975
321	90,144.60	90.14	2.17	26.00	276.08	290.9	1.054	0.949
322	85,176.00	85.18	7.00	84.00	328.29	407.7	1.242	0.805
323	81,018.60	81.02	8.08	97.00	351.52	411.5	1.171	0.854
325	87,812.40	87.81	6.92	83.00	338.34	413.4	1.222	0.818
327	93,490.80	93.49	6.00	72.00	275.17	412.1	1.498	0.668
328	96,532.80	96.53	1.75	21.00	354.03	278.3	0.786	1.272
329	85,176.00	85.18	3.25	39.00	286.75	325.1	1.134	0.882
330	91,969.80	91.97	6.67	80.00	340.73	420.2	1.233	0.811
331	91,969.80	91.97	5.92	71.00	392.38	406.8	1.037	0.965
333	92,983.80	92.98	4.83	58.00	333.77	386.5	1.158	0.863
334	90,550.20	90.55	3.92	47.00	346.44	357.4	1.032	0.969
335	90,144.60	90.14	4.75	57.00	375.48	377.9	1.006	0.994
336	101,907.00	101.91	3.42	41.00	411.26	366.1	0.890	1.123
337	84,770.40	84.77	5.25	63.00	411.95	375.7	0.912	1.096
339	99,676.20	99.68	8.92	107.00	441.17	473.4	1.073	0.932
340	90,550.20	90.55	7.42	89.00	408.58	428.4	1.048	0.954

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
341	111,540.00	111.54	6.17	74.00	423.70	458.2	1.081	0.925
342	89,130.60	89.13	4.75	57.00	369.26	375.5	1.017	0.983
343	100,284.60	100.28	7.42	89.00	373.43	453.4	1.214	0.824
345	96,532.80	96.53	1.92	23.00	257.59	288.7	1.121	0.892
346	91,564.20	91.56	2.17	26.00	333.03	293.6	0.882	1.134
352	82,235.40	82.24	1.92	23.00	343.47	262.6	0.765	1.308
356	75,644.40	75.64	1.25	15.00	332.34	206.4	0.621	1.610
357	87,305.40	87.31	1.83	22.00	369.44	267.3	0.723	1.382
358	83,452.20	83.45	1.50	18.00	382.45	238.8	0.624	1.602
359	84,770.40	84.77	3.58	43.00	333.54	334.7	1.003	0.997
360	78,990.60	78.99	1.33	16.00	315.51	218.7	0.693	1.442
362	86,899.80	86.90	1.08	13.00	293.54	209.3	0.713	1.403
365	85,581.60	85.58	2.58	31.00	296.74	301.2	1.015	0.985
366	89,637.60	89.64	2.92	35.00	326.47	322.8	0.989	1.011
367	103,630.80	103.63	1.25	15.00	270.09	250.1	0.926	1.080
369	88,725.00	88.73	1.08	13.00	401.73	212.0	0.528	1.895
370	90,144.60	90.14	1.00	12.00	257.53	205.2	0.797	1.255
371	85,176.00	85.18	2.92	35.00	258.10	313.4	1.214	0.824
372	82,235.40	82.24	3.58	43.00	276.36	328.9	1.190	0.840
374	69,763.20	69.76	3.42	41.00	270.43	294.3	1.088	0.919
375	104,239.20	104.24	3.25	39.00	293.31	364.9	1.244	0.804
376	95,518.80	95.52	3.50	42.00	264.78	355.6	1.343	0.745
378	95,518.80	95.52	4.75	57.00	313.28	390.5	1.246	0.802

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
379	85,581.60	85.58	1.25	15.00	426.84	222.8	0.522	1.916
380	100,284.60	100.28	4.25	51.00	297.13	388.3	1.307	0.765
382	91,969.80	91.97	3.83	46.00	305.92	358.2	1.171	0.854
383	88,218.00	88.22	1.50	18.00	346.84	246.9	0.712	1.405
388	77,875.20	77.88	4.83	58.00	278.93	349.5	1.253	0.798
389	74,529.00	74.53	5.00	60.00	374.80	344.2	0.918	1.089
390	72,805.20	72.81	3.58	43.00	273.34	306.5	1.121	0.892
391	96,025.80	96.03	4.33	52.00	395.91	381.1	0.963	1.039
394	88,725.00	88.73	3.00	36.00	265.58	324.0	1.220	0.820
395	63,375.00	63.38	1.75	21.00	322.76	216.0	0.669	1.494
397	75,948.60	75.95	2.00	24.00	392.43	254.8	0.649	1.540
398	83,046.60	83.05	2.67	32.00	288.29	299.3	1.038	0.963
399	99,169.20	99.17	5.25	63.00	291.20	410.4	1.409	0.709
401	67,836.60	67.84	1.25	15.00	342.04	192.8	0.564	1.774
402	85,581.60	85.58	1.25	15.00	274.25	222.8	0.812	1.231
406	77,875.20	77.88	3.58	43.00	272.20	318.7	1.171	0.854
407	76,354.20	76.35	1.00	12.00	290.86	184.9	0.636	1.573
408	83,046.60	83.05	1.00	12.00	383.30	195.0	0.509	1.966
410	97,039.80	97.04	4.50	54.00	287.61	387.7	1.348	0.742
411	66,619.80	66.62	1.17	14.00	271.57	184.1	0.678	1.475
412	70,473.00	70.47	4.83	58.00	282.70	330.0	1.167	0.857
413	85,176.00	85.18	4.00	48.00	271.00	347.4	1.282	0.780
414	73,109.40	73.11	1.50	18.00	319.56	220.3	0.689	1.451

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
415	74,934.60	74.93	1.67	20.00	299.87	234.3	0.781	1.280
416	71,081.40	71.08	1.58	19.00	317.11	221.8	0.700	1.429
417	84,263.40	84.26	2.17	26.00	312.88	279.6	0.894	1.119
418	70,473.00	70.47	1.75	21.00	279.56	230.5	0.824	1.213
419	97,039.80	97.04	1.25	15.00	342.50	240.4	0.702	1.424
420	81,018.60	81.02	2.42	29.00	271.57	284.7	1.048	0.954
423	87,305.40	87.31	1.08	13.00	311.34	209.9	0.674	1.483
424	60,941.40	60.94	1.50	18.00	270.89	196.8	0.726	1.377
425	83,452.20	83.45	2.17	26.00	270.66	278.0	1.027	0.974
428	78,585.00	78.59	1.08	13.00	270.89	196.6	0.726	1.378
430	78,990.60	78.99	1.08	13.00	385.53	197.2	0.512	1.955
431	77,064.00	77.06	1.33	16.00	279.73	215.4	0.770	1.298
432	83,452.20	83.45	1.33	16.00	273.45	226.2	0.827	1.209
433	80,613.00	80.61	1.17	14.00	272.20	207.5	0.762	1.312
434	82,235.40	82.24	1.25	15.00	274.88	217.4	0.791	1.265
435	86,494.20	86.49	1.08	13.00	275.56	208.7	0.757	1.321
436	75,238.80	75.24	1.75	21.00	310.09	239.8	0.773	1.293
437	77,875.20	77.88	1.17	14.00	273.45	203.1	0.743	1.347
438	75,644.40	75.64	1.00	12.00	286.24	183.8	0.642	1.557
439	64,591.80	64.59	1.75	21.00	270.94	218.5	0.807	1.240
441	73,819.20	73.82	1.00	12.00	295.94	180.9	0.611	1.636
448	82,641.00	82.64	2.42	29.00	296.79	288.0	0.970	1.031
449	86,494.20	86.49	1.58	19.00	289.49	249.9	0.863	1.159

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
451	81,424.20	81.42	1.17	14.00	316.94	208.8	0.659	1.518
452	95,011.80	95.01	1.25	15.00	313.91	237.4	0.756	1.322
454	98,358.00	98.36	2.42	29.00	271.06	318.7	1.176	0.850
456	84,770.40	84.77	1.00	12.00	271.00	197.5	0.729	1.372
457	81,018.60	81.02	1.25	15.00	281.10	215.4	0.766	1.305
458	81,829.80	81.83	2.08	25.00	306.49	270.7	0.883	1.132
459	78,990.60	78.99	3.58	43.00	281.39	321.3	1.142	0.876
463	111,540.00	111.54	2.08	25.00	283.04	324.4	1.146	0.873
464	85,176.00	85.18	3.92	47.00	270.89	345.2	1.274	0.785
466	74,934.60	74.93	1.00	12.00	270.94	182.7	0.674	1.483
469	87,305.40	87.31	1.08	13.00	270.66	209.9	0.775	1.290
471	79,801.80	79.80	1.00	12.00	271.80	190.1	0.699	1.430
472	88,725.00	88.73	1.75	21.00	271.00	264.7	0.977	1.024
473	88,218.00	88.22	3.17	38.00	271.23	328.8	1.212	0.825
475	88,725.00	88.73	2.25	27.00	274.59	292.4	1.065	0.939
476	72,095.40	72.10	1.00	12.00	268.72	178.2	0.663	1.508
478	75,238.80	75.24	1.08	13.00	302.90	191.3	0.631	1.584
479	83,452.20	83.45	3.50	42.00	328.41	329.1	1.002	0.998
481	100,791.60	100.79	1.42	17.00	268.77	260.7	0.970	1.031
482	97,546.80	97.55	1.17	14.00	292.46	233.2	0.798	1.254
483	83,452.20	83.45	1.08	13.00	259.19	204.1	0.787	1.270
485	81,424.20	81.42	1.17	14.00	292.97	208.8	0.713	1.403
486	75,948.60	75.95	1.17	14.00	271.11	199.9	0.737	1.356

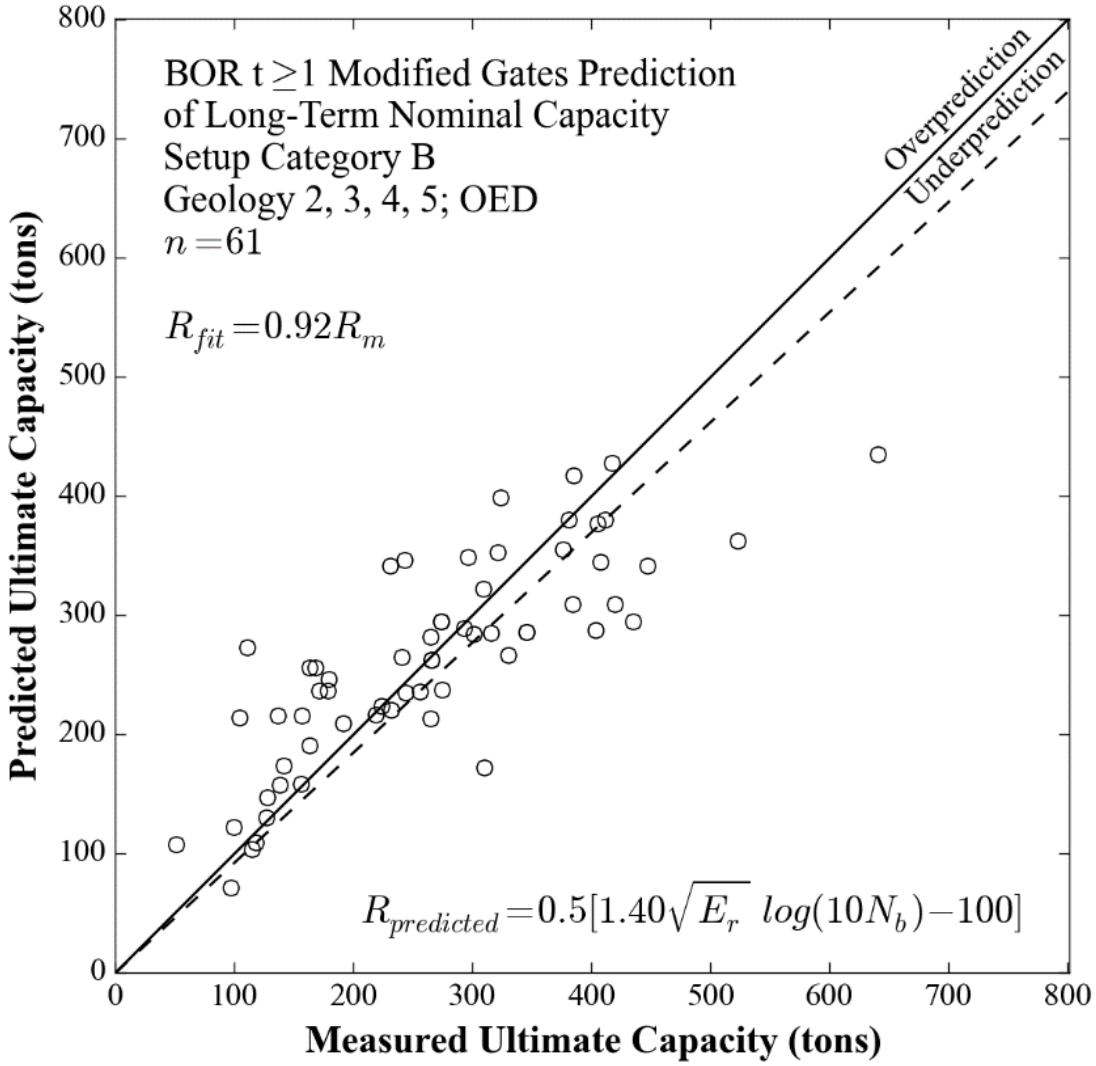
Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
487	82,235.40	82.24	1.08	13.00	278.99	202.2	0.725	1.380
488	79,801.80	79.80	1.17	14.00	272.94	206.2	0.755	1.324
490	83,857.80	83.86	1.08	13.00	271.00	204.7	0.755	1.324
492	101,907.00	101.91	2.83	34.00	313.85	344.1	1.096	0.912
494	75,948.60	75.95	4.25	51.00	334.11	331.4	0.992	1.008
498	72,095.40	72.10	1.00	12.00	283.10	178.2	0.630	1.588
501	75,644.40	75.64	1.33	16.00	271.00	213.0	0.786	1.272
503	101,400.00	101.40	1.08	13.00	266.61	230.1	0.863	1.159
504	89,130.60	89.13	2.83	34.00	276.25	318.5	1.153	0.867
505	84,263.40	84.26	1.33	16.00	275.22	227.6	0.827	1.209
506	81,424.20	81.42	1.17	14.00	266.03	208.8	0.785	1.274
507	105,354.60	105.35	1.08	13.00	285.89	235.5	0.824	1.214
509	64,896.00	64.90	1.33	16.00	326.98	193.6	0.592	1.689
510	85,581.60	85.58	1.08	13.00	279.56	207.3	0.742	1.349
512	83,046.60	83.05	1.00	12.00	289.89	195.0	0.673	1.487
515	95,518.80	95.52	1.00	12.00	270.49	212.7	0.786	1.272
517	83,452.20	83.45	1.08	13.00	271.06	204.1	0.753	1.328
520	85,176.00	85.18	1.00	12.00	271.11	198.1	0.731	1.369
522	71,081.40	71.08	1.25	15.00	270.49	198.6	0.734	1.362
523	87,305.40	87.31	1.00	12.00	271.06	201.2	0.742	1.348
524	88,218.00	88.22	1.00	12.00	282.81	202.5	0.716	1.397
526	85,581.60	85.58	1.08	13.00	277.90	207.3	0.746	1.341
527	76,354.20	76.35	1.83	22.00	271.06	246.7	0.910	1.099

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
530	94,504.80	94.50	2.25	27.00	270.37	303.3	1.122	0.891
533	85,176.00	85.18	1.08	13.00	278.25	206.7	0.743	1.346
534	92,476.80	92.48	1.25	15.00	260.21	233.5	0.897	1.114
535	98,053.80	98.05	1.00	12.00	270.89	216.2	0.798	1.253
536	103,022.40	103.02	1.25	15.00	271.06	249.3	0.920	1.087
539	112,148.40	112.15	1.08	13.00	269.92	244.5	0.906	1.104
540	77,469.60	77.47	1.17	14.00	271.63	202.4	0.745	1.342
541	81,018.60	81.02	2.50	30.00	271.06	288.2	1.063	0.940
542	84,263.40	84.26	2.17	26.00	256.79	279.6	1.089	0.918
543	107,179.80	107.18	1.00	12.00	271.63	228.3	0.840	1.190
548	75,644.40	75.64	1.08	13.00	271.63	191.9	0.707	1.415
551	76,759.80	76.76	2.33	28.00	267.63	272.2	1.017	0.983
552	83,452.20	83.45	1.17	14.00	271.63	212.0	0.780	1.281
555	83,046.60	83.05	1.08	13.00	271.28	203.5	0.750	1.333
557	83,857.80	83.86	1.50	18.00	276.93	239.5	0.865	1.156
560	21,496.80	21.50	1.33	16.00	272.65	90.2	0.331	3.023
561	86,899.80	86.90	1.92	23.00	272.08	271.4	0.997	1.003
565	93,997.80	94.00	1.17	14.00	294.68	228.0	0.774	1.292
566	73,819.20	73.82	1.75	21.00	269.92	237.1	0.878	1.139
567	72,095.40	72.10	4.17	50.00	271.06	319.7	1.179	0.848
569	95,011.80	95.01	2.92	35.00	271.06	333.8	1.232	0.812
573	77,875.20	77.88	2.67	32.00	271.06	288.2	1.063	0.940
575	77,875.20	77.88	1.83	22.00	270.49	249.6	0.923	1.083

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
576	72,399.60	72.40	3.00	36.00	313.28	287.8	0.919	1.088
579	75,238.80	75.24	1.83	22.00	273.91	244.5	0.893	1.120
580	88,725.00	88.73	5.25	63.00	270.49	385.5	1.425	0.702
585	88,015.20	88.02	4.46	53.50	319.79	365.9	1.144	0.874
592	88,623.60	88.62	10.00	120.00	274.02	456.1	1.664	0.601
614	59,400.00	59.40	7.00	84.00	215.52	332.2	1.542	0.649

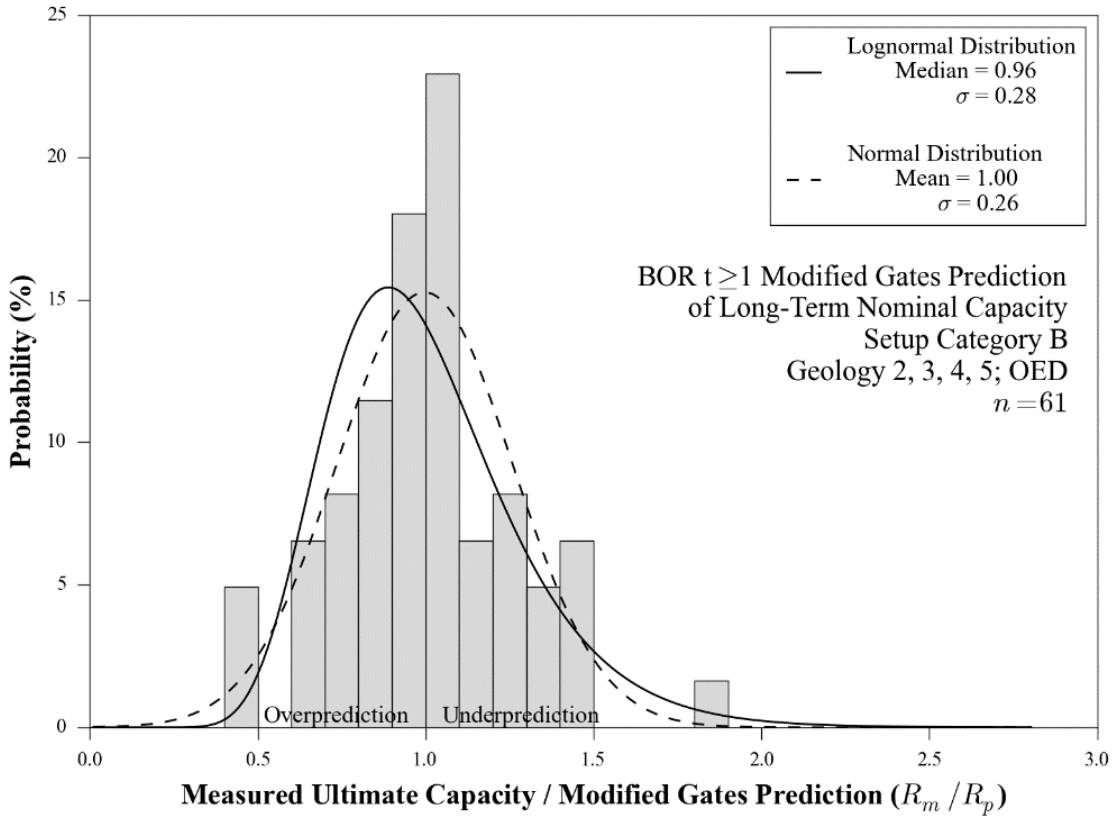
Dataset Statistics for BOR t ≥ 1 day Prediction of BOR Ultimate Pile Capacity

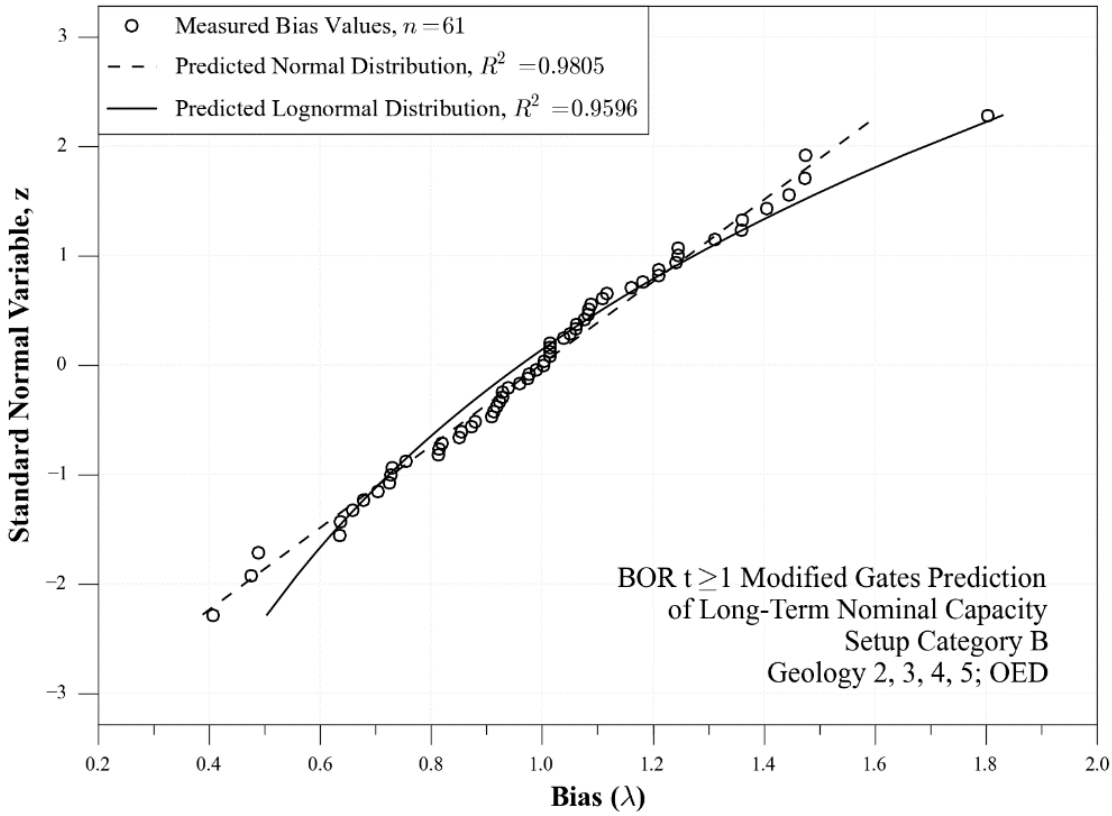
Pile Type:	PPC	E_{BOR} (ft-kip)	26 ≤ E ≤ 170
Geology:	2, 3, 4, 5	N_{BOR}	14 ≤ N ≤ 120
Geology 1	0	Days Since EOID	0.8 ≤ t ≤ 44.0
Geology 2	21		
Geology 3	18		
Geology 4	10	Load Testing	SLT, CW
Geology 5	12	SLT Failure	Yes
Geology 6	0	CW Mobilized	Yes (≤ 120 bl/ft)
Hammer Type:	OED	No. SLT	7
OED	61	No. CW	54
ECH	0	Datasets	61

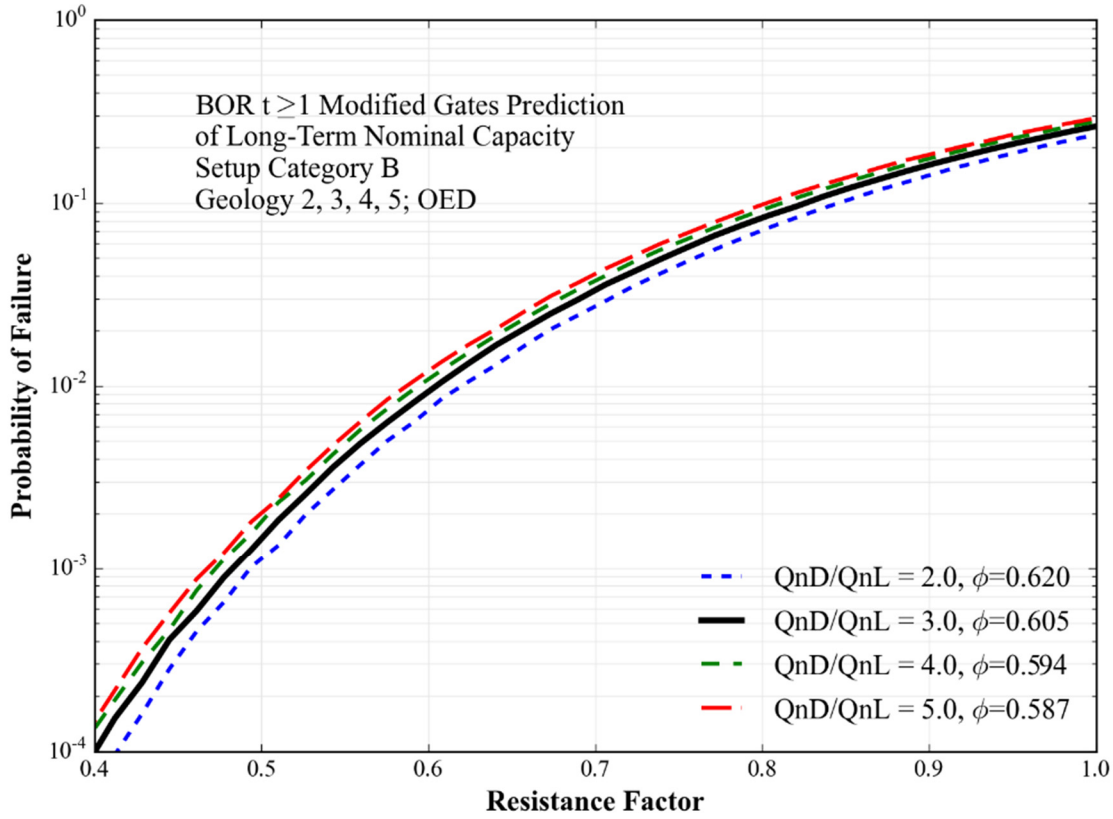


Statistics for BOR Modified Gates Pile Driving Formula (Setup Category B)

Gates Pile Driving Formula Coefficients	C1 =	1.4
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	0.997
	Standard Deviation	0.261
	COV	0.262
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.924
	R^2	0.405
	Correlation	0.636
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	52.36
	Mean overprediction (tons)	49.56




Measured Bias Values, $n = 61$
Predicted Normal Distribution, $R^2 = 0.9805$
Predicted Lognormal Distribution, $R^2 = 0.9596$
BOR t ≥1 Modified Gates Prediction
of Long-Term Nominal Capacity
Setup Category B
Geology 2, 3, 4, 5; OED
Standard Normal Variable, z
Bias (λ)


BOR t ≥1 Modified Gates Prediction
of Long-Term Nominal Capacity
Setup Category B
Geology 2, 3, 4, 5; OED
QnD/QnL = 2.0, ϕ=0.620
QnD/QnL = 3.0, ϕ=0.605
QnD/QnL = 4.0, ϕ=0.594
QnD/QnL = 5.0, ϕ=0.587
Probability of Failure
Resistance Factor

Statistics and Resistance Factors for BOR
Modified Gates Pile Driving Formla (DF1+BORSCB)

Pile Driving Condition:		BOR
Restrike Data:		$t \geq 1$ days
Description:		Modified Gates
Geology:		2, 3, 4, 5
Hammer Type:		OED
Number of Cases:		61
Lognormal distribution fit Parameters	R^2	0.960
	Median	0.961
	Standard Deviation	0.280
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.587
	$Q_{nD}/Q_{nL} = 4.0$	0.594
	$Q_{nD}/Q_{nL} = 3.0$	0.605
	$Q_{nD}/Q_{nL} = 2.0$	0.620

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
699	43,363.70	43.36	6.00	72.00	191.96	199.9	1.042	0.960
710	102,616.50	102.62	10.00	120.00	323.78	382.5	1.181	0.847
714	104,849.50	104.85	3.00	36.00	315.68	272.9	0.864	1.157
765	26,400.00	26.40	2.50	30.00	118.00	103.3	0.876	1.142
767	26,400.00	26.40	2.42	29.00	51.00	101.7	1.994	0.501
835	38,500.00	38.50	8.33	100.00	104.45	204.4	1.957	0.511
857	56,630.00	56.63	3.92	47.00	157.04	205.9	1.311	0.763
868	94,504.80	94.50	10.00	120.00	412.12	365.0	0.886	1.129
872	100,891.00	100.89	2.83	34.00	111.10	261.4	2.353	0.425
889	137,532.00	137.53	2.00	24.00	404.02	275.7	0.682	1.466
893	91,767.00	91.77	7.00	84.00	447.39	327.3	0.732	1.367
904	33,000.00	33.00	4.33	52.00	156.50	150.7	0.963	1.038

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
906	26,400.00	26.40	1.17	14.00	97.00	67.0	0.691	1.447
922	42,000.00	42.00	1.17	14.00	115.00	97.6	0.849	1.178
924	42,000.00	42.00	1.58	19.00	100.00	115.9	1.159	0.863
963	59,400.00	59.40	2.00	24.00	310.00	164.0	0.529	1.890
1067	63,552.00	63.55	8.00	96.00	345.92	273.8	0.792	1.263
1100	39,732.00	39.73	8.00	96.00	136.95	206.1	1.505	0.665
1109	52,099.40	52.10	6.25	75.00	275.05	226.7	0.824	1.213
1113	116,605.10	116.61	10.00	120.00	417.71	411.0	0.984	1.016
1135	87,600.00	87.60	3.00	36.00	163.04	245.1	1.503	0.665
1136	68,400.00	68.40	4.67	56.00	168.13	244.6	1.455	0.687
1137	78,000.00	78.00	10.00	120.00	231.32	327.0	1.414	0.707
1143	63,552.00	63.55	8.00	96.00	345.92	273.8	0.792	1.263
684	146,730.00	146.73	3.00	36.00	243.55	360.2	1.479	0.676
689	153,446.00	153.45	3.00	36.00	376.28	369.5	0.982	1.018
694	154,322.00	154.32	5.00	60.00	385.07	433.9	1.127	0.888
697	41,269.90	41.27	2.42	29.00	128.05	153.7	1.200	0.833
701	103,124.00	103.12	3.00	36.00	264.84	293.9	1.110	0.901
705	102,616.50	102.62	4.00	48.00	419.99	322.1	0.767	1.304
708	110,939.50	110.94	7.00	84.00	380.79	395.6	1.039	0.963
712	104,342.00	104.34	3.00	36.00	301.70	295.9	0.981	1.020
716	106,067.50	106.07	6.42	77.00	522.77	376.7	0.721	1.388
731	74,410.00	74.41	3.17	38.00	171.36	246.8	1.440	0.694
807	66,000.00	66.00	7.67	92.00	292.97	301.0	1.027	0.973

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
855	52,500.00	52.50	1.96	23.50	138.27	164.6	1.190	0.840
861	46,869.60	46.87	3.00	36.00	141.52	181.8	1.285	0.778
864	63,588.20	63.59	9.00	108.00	434.83	307.3	0.707	1.415
866	91,057.20	91.06	5.00	60.00	384.44	321.7	0.837	1.195
870	106,067.50	106.07	2.00	24.00	179.35	257.2	1.434	0.697
877	131,838.00	131.84	3.83	46.00	321.62	366.9	1.141	0.877
887	170,236.00	170.24	3.00	36.00	405.16	391.9	0.967	1.034
891	93,490.80	93.49	7.00	84.00	407.44	359.0	0.881	1.135
1046	42,500.00	42.50	4.67	56.00	163.04	199.5	1.223	0.817
1066	62,890.00	62.89	6.00	72.00	265.81	273.3	1.028	0.973
1107	49,848.60	49.85	6.67	80.00	244.12	245.2	1.005	0.995
1111	107,582.90	107.58	4.17	50.00	309.00	335.2	1.085	0.922
1115	136,700.00	136.70	7.50	90.00	640.95	452.6	0.706	1.416
1119	83,449.40	83.45	2.00	24.00	265.29	222.5	0.839	1.192
1134	74,400.00	74.40	3.17	38.00	178.33	246.7	1.384	0.723
1139	50,113.40	50.11	5.00	60.00	219.13	225.7	1.030	0.971
1142	62,890.00	62.89	6.00	72.00	265.81	273.3	1.028	0.973
1145	60,705.40	60.71	10.00	120.00	273.62	307.3	1.123	0.891
1147	60,705.40	60.71	10.00	120.00	273.62	307.3	1.123	0.891
1158	69,966.00	69.97	3.00	36.00	224.18	233.3	1.041	0.961
1160	30,420.00	30.42	3.00	36.00	126.87	136.8	1.078	0.928
1168	81,120.00	81.12	10.00	120.00	296.53	363.0	1.224	0.817
1170	40,560.00	40.56	8.33	100.00	231.83	230.5	0.994	1.006

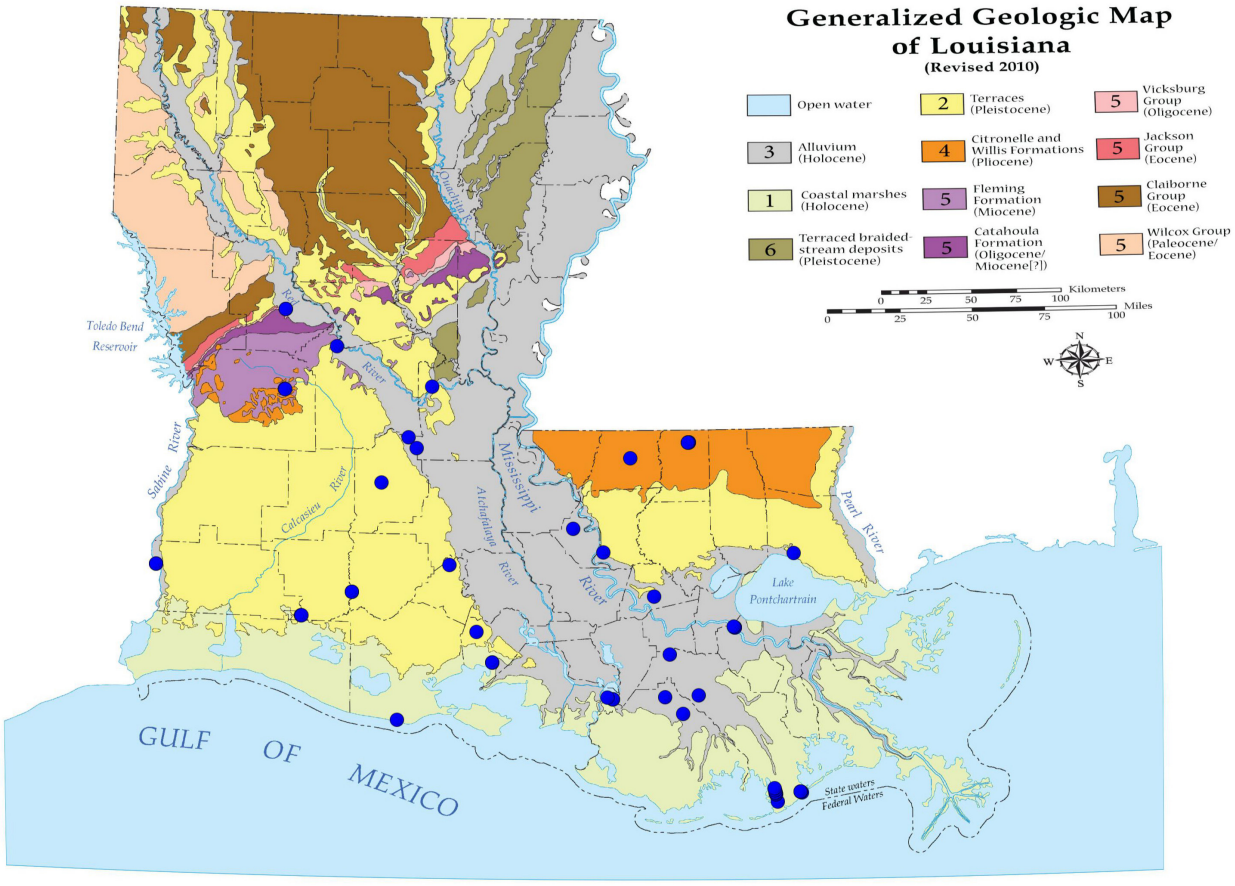
Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
1175	75,441.60	75.44	4.33	52.00	240.64	275.9	1.147	0.872
1176	78,990.60	78.99	2.83	34.00	256.39	245.9	0.959	1.043
1179	53,291.00	53.29	9.08	109.00	330.63	277.7	0.840	1.190

Summary of BOR Pile Driving Formulas and Resistance Factors

BOR Pile Driving Formulas	BOR Modified Gates Pile Driving Formula (DF1+BORSCA)	BOR Modified Gates Pile Driving Formula (DF1+BORSCB)
Prediction	Ultimate Pile Capacity	Ultimate Pile Capacity
BOR Data	t ≥ 1 day	t ≥ 1 day
Setup Category	A	B
Geology	1	1, 2, 3, 4, 5
Hammer Type	OED	OED
Equation No.	49	50
Equation	$R_u = 0.5\left[\left(1.65\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$	$R_u = 0.5\left[\left(1.40\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$
n	304	61
$\phi_{QnD/QnL=5.0} - \phi_{QnD/QnL=2.0}$	0.623 – 0.657	0.587 – 0.620
$\phi_{QnD/QnL=3.0}$	0.642	0.605

Summary Statistics for BOR Pile Driving Formlas

BOR Pile Driving Formulas		BOR Modified Gates Pile Driving Formula (DF1+BORSCA)	BOR Modified Gates Pile Driving Formula (DF1+BORSCB)
Equation No.		49	50
Gates Pile Driving Formula Coefficients	C1 =	1.65	1.40
	C2 =	10	10
	C3 =	100	100
Arithmetic Mean	Mean R_m/R_p	1.110	0.997
	Standard Deviation	0.396	0.261
	COV	0.356	0.262
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.929	0.924
	R^2	0.007	0.405
	Correlation	0.086	0.636
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	58.6	52.36
	Mean overprediction (tons)	55.89	49.56

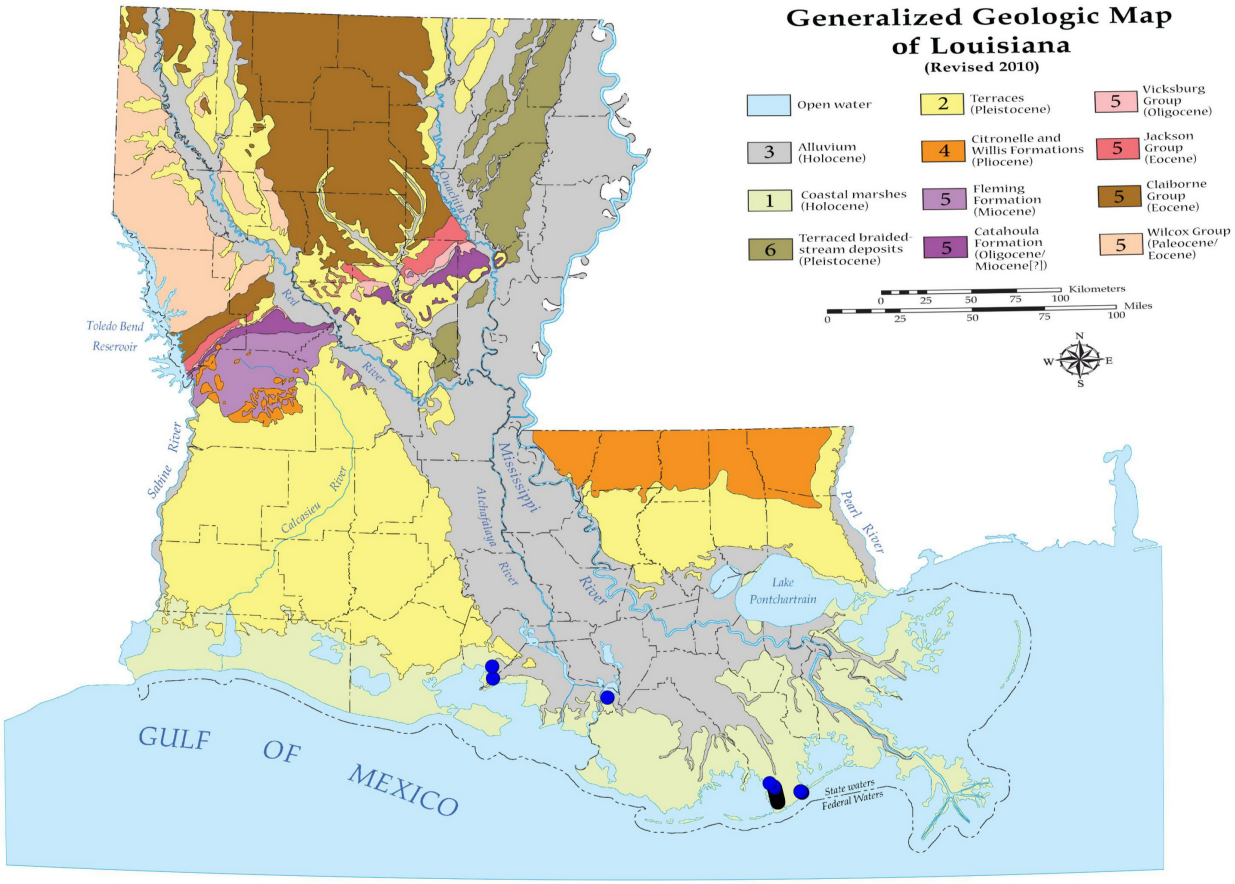


EOID LADOTD Modified Gates Prediction of Long Term Nominal Pile Capacity

Geology 1, 2, 3, 4, 5

OED & ECH

(DFEOID-MOD)

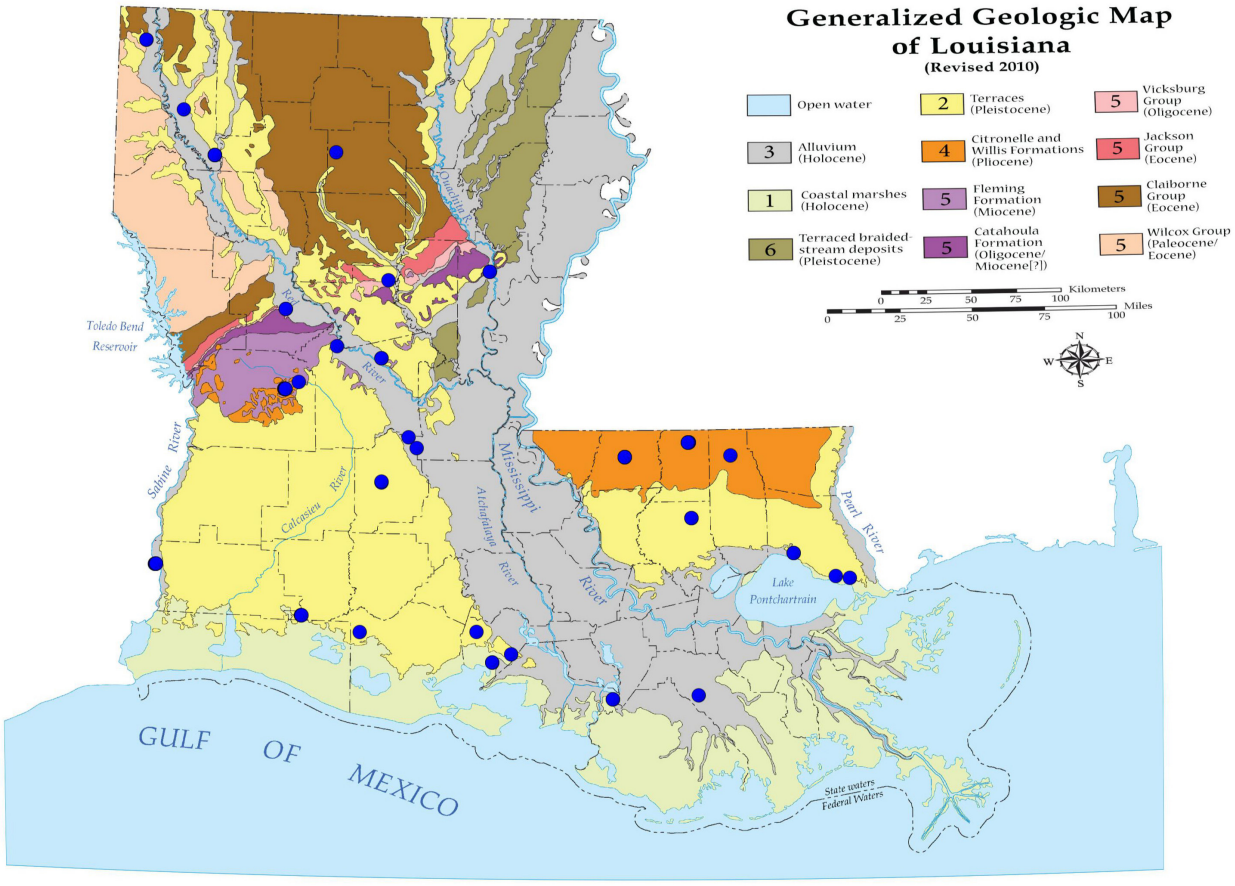


BOR t ≥ 1 Day LADOTD Modified Gates Prediction of Restrike Nominal Capacity

Geology 1

OED

(DF1+BORSCA)



BOR t ≥ 1 Day Modified Gates Prediction of Restrike Nominal Capacity

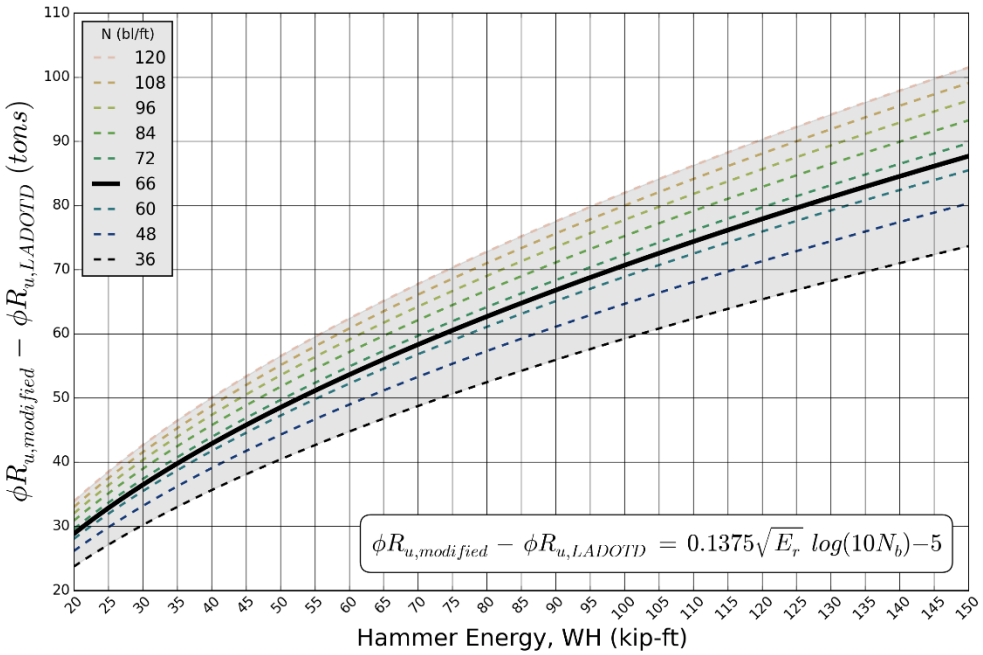
Geology 2, 3, 4, 5

OED

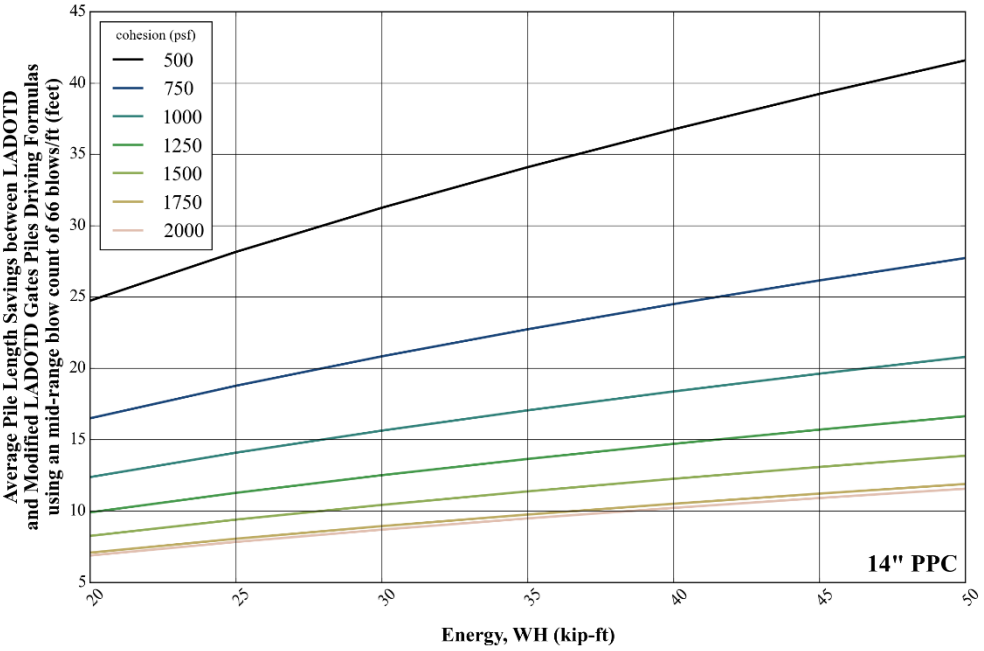
(DF1+BORSCB)

APPENDIX I

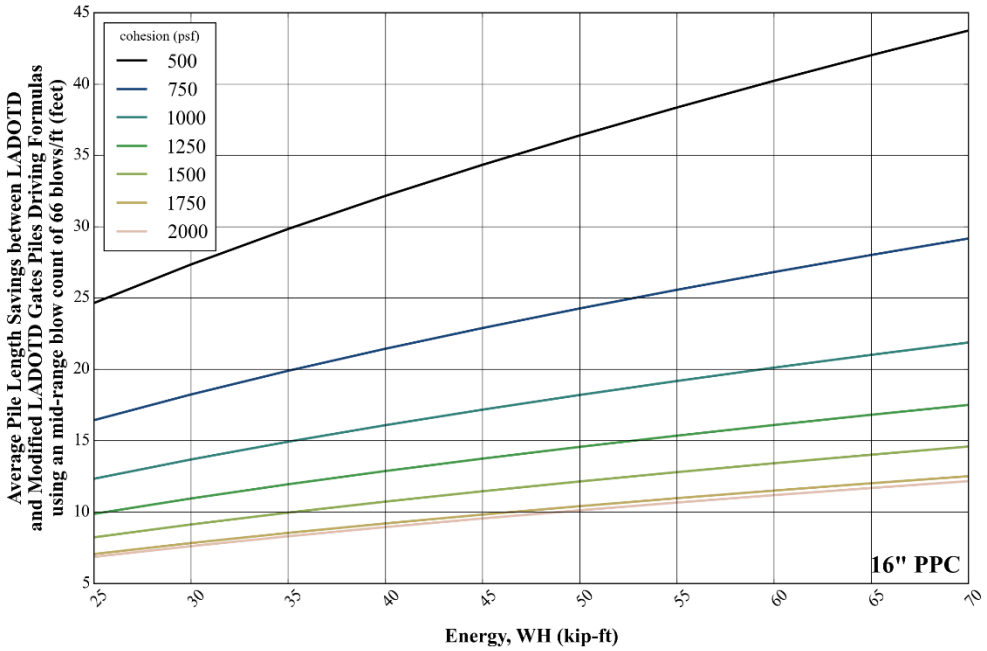
BENEFIT COST ASSESSMENT ANALYSIS



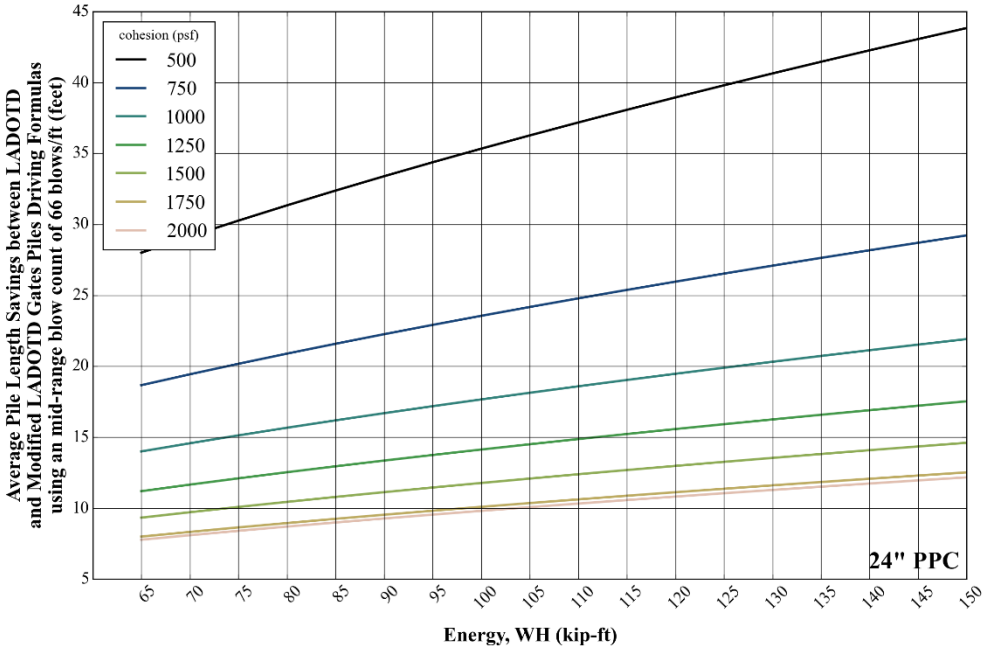
Energy vs. Capacity Difference



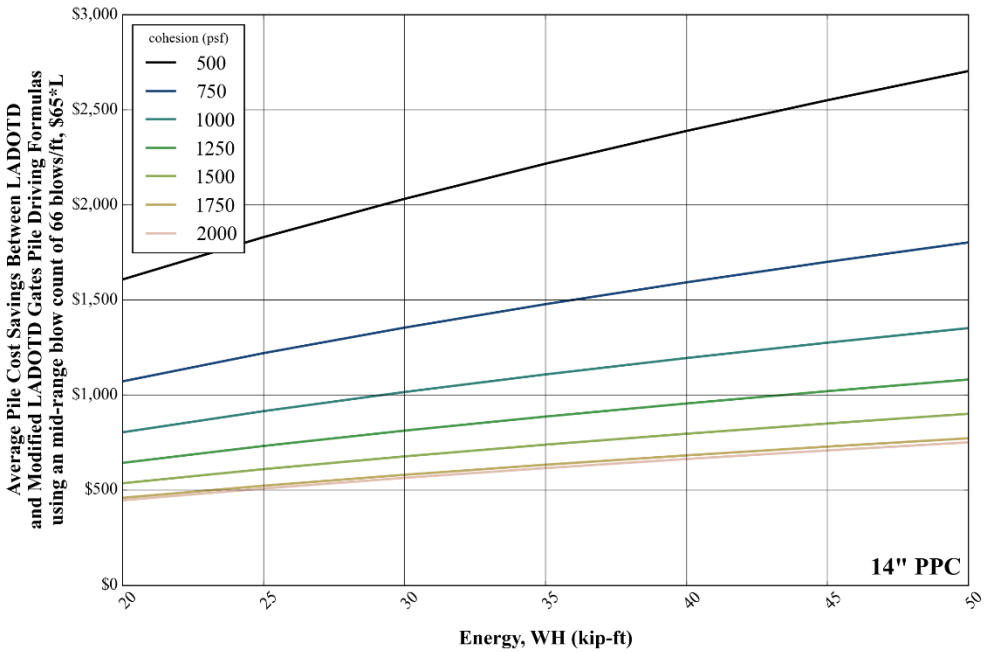
14" PPC Energy vs Average Pile Length Decrease



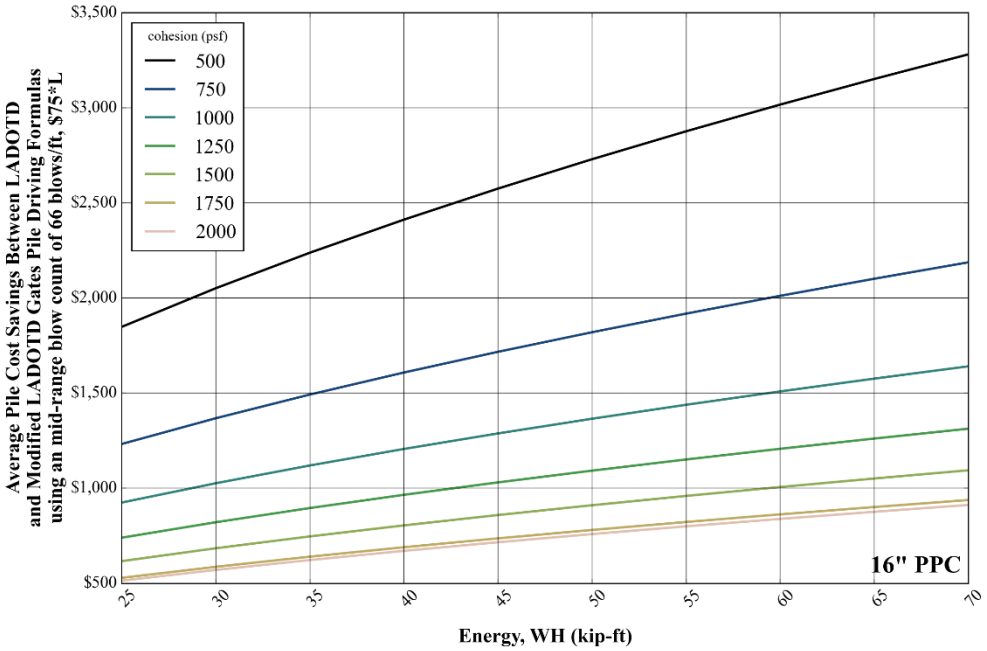
16" PPC Energy vs Average Pile Length Decrease



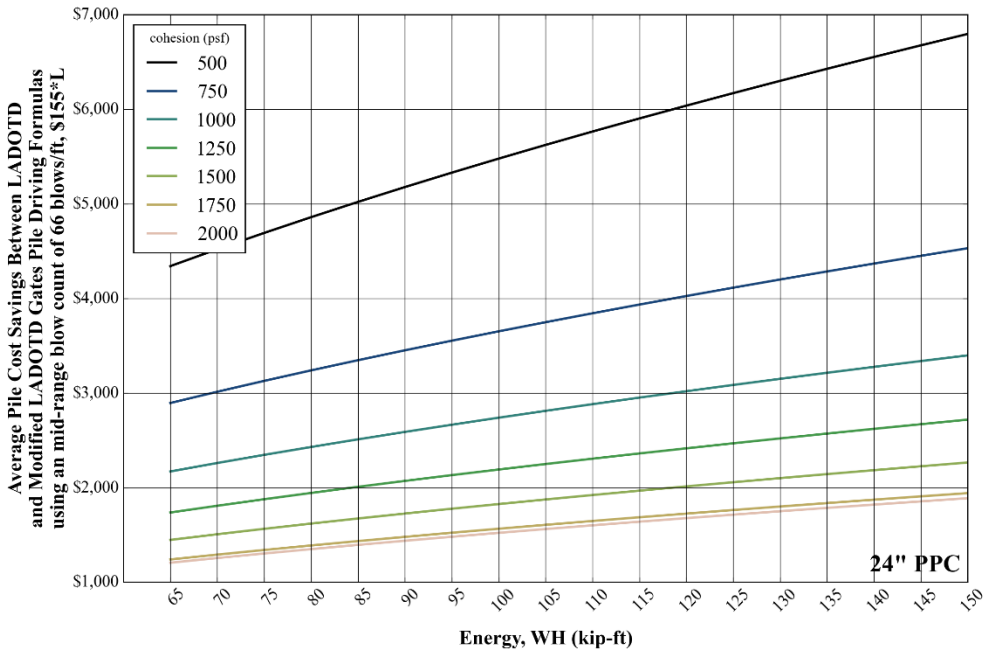
24" PPC Energy vs Average Pile Length Decrease



14" PPC Energy vs Average Pile Cost Savings



16" PPC Energy vs Average Pile Cost Savings



24" PPC Energy vs Average Pile Cost Savings

Potential Pile Length and Cost Savings per PPC Pile

Pile Type	Energy, WH (ft-kips)	Soil Consistency /Cohesion	Pile Length Savings per Pile (feet)	Pile Unit Rate ($/linear foot)	Cost Savings per Pile ($)
14" PPC	20-50	Soft / 750 psf	16.5 - 27.7	$65	$1,073 - $1,801
		Firm / 1000 psf	12.4 - 20.8		$806 - $1,352
		Stiff / 2000 psf	6.9 - 11.6		$449 - $754
16" PPC	25-70	Soft / 750 psf	16.4 - 29.2	$75	$1,230 - $2,190
		Firm / 1000 psf	12.3 - 21.9		$923 - $1,643
		Stiff / 2000 psf	6.8 - 12.2		$510 - $915
24" PPC	65-150	Soft / 750 psf	18.7 - 29.2	$155	$2,899 - $4,526
		Firm / 1000 psf	14.0 - 21.9		$2,170 - $3,395
		Stiff / 2000 psf	7.8 - 12.2		$1,209 - $1,891

LA DOTD Estimated Bridge Quantities for State FY Year 2015 -2016

Project No.	Project Name	Parish	Piles 14" PPC (linear feet)	No. 14" PPC Piles	Piles 16" PPC (linear feet)	No. 16" PPC Piles	Piles 24" PPC (linear feet)	No. 24" PPC Piles
H.010024	SMITHVILLE ROAD / BRALY CREEK	Webster			752	15.0		
H.010032	SHUTEYE ROAD & MARTHAVILLE ROAD	Sabine			2656	40.0		
H.010033	PIONEER ROAD & LAKESIDE LOOP BRIDGES	Sabine						
H.010034	JOE W ROAD & GALLOW ROAD BRIDGES	St. Landry	1040	20			1040	20
H.010035	ANDREPONT RD & BAYOU GERMOND RD BRIDGES	St. Landry	1260	20			1040	20
H.010040	BUD ROAD & BONNE IDEE ROAD BRIDGES	Morehouse						
H.010054	PARK ROAD BRIDGES	Allen						
H.010055	CHERRY WITCHIE & N. CARPENTER RD BRIDGES	Allen						
H.010061	N. RIVER ROAD AND DURBIN ROAD BRIDGES	Tangipahoa	1168	20				
H.010062	WEINBERGER RD & JERUSALEM CH RD BRIDGES	Tangipahoa	2448	40				
H.010068	BUSH ROAD AND LISHMAN ROAD BRIDGES	Franklin						
H.010150	S. AVENUE F & NAPP STREET BRIDGES	Acadia					1440	20
H.010559	BAYOU MERCIER ROAD / BERARD CANAL BAYOU	St. Martin						
H.010561	CASTOR CK RD/BEAR CK RD/DANIEL ST BRDGS	Bienville						
H.010592	WILLET LOOP RD & ROCK HILL RD BRIDGES	Grant						
H.010659	RAFE-MEYER ROAD BRIDGES	East Baton Rouge			2464	40.0		
	BRIDGE MATERIAL TOTALS =		**5,916**	**100**	**5,872**	**95**	**3,520**	**60**

LA DOTD State FY 15 – 16 Estimated Cost Savings

Project No.	Soil Site Type	No. 14" PPC Piles	14" PPC Cost Savings Range ($)	14" PPC Percent Savings (%)	No. 16" PPC Piles	16" PPC Cost Savings Range ($)	16" PPC Percent Savings (%)	No. 24" PPC Piles	24" PPC Cost Savings Range ($)	24" PPC Percent Savings (%)
H.010024	stiff		-		15	$13,847 - $24,654	25% to 44%		-	
H.010032	stiff		-		40	$36,900 - $65,700	19% to 33%		-	
H.010033	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010034	stiff	20	$16,120 - $27,040	24% to 40%		-		20	$43,400 - $67,890	27% to 42%
H.010035	stiff	20	$16,120 - $27,040	20% to 33%		-		20	$43,400 - $67,890	27% to 42%
H.010040	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010054	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010055	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010061	stiff	20	$16,120 - $27,040	21% to 36%		-			-	
H.010062	stiff	40	$32,240 - $54,080	20% to 34%		-			-	
H.010068	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010150	stiff		-			-		20	$43,400 - $67,890	19% to 30%
H.010559	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010561	stiff	20[1]	$24,180 - $40,560	36% to 60%		-			-	
H.010592	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010659	stiff		-		40	$36,900 - $65,700	20% to 36%		-	
TOTALS		**270**	**$217,620 - $365,040**	**21% to 40%**	**95**	**$87,647 - $156,054**	**21% to 37%**	**60**	**$130,200 - $203,670**	**24% to 38%**

[1] Assumed 20 14" PPC 52’ piles per project

Implementation Costs - Expenses

RT = Round Trip

District	District Engineer	RT Miles	RT Time (hrs)	Mileage Cost	Overnight?	Lodging	Per Diem
2	Chris Morvant District Engineer Administrator 1440 US Hwy 90 Bridge City, LA 70094	158	2.57	$ 90.85	No		
3	William J. Oliver, Jr District Engineer Administrator 428 Hugh Wallis Rd Lafayette, LA 70508	117.2	1.87	$ 67.39	No		
4	David North District Engineer Administrator 3339 Industrial Drive Bossier City, LA 71112	504	7.03	$ 289.80	Yes	$ 83.00	$ 51.00
5	Marshall Hill District Engineer Administrator 8010 Desiard Monroe, LA 71203	366	6	$ 210.45	Yes	$ 83.00	$ 51.00
7	Todd Landry District Engineer Administrator 5827 Hwy 90 East Lake Charles, LA 70615	252	3.6	$ 144.90	No		
8	Murphy Ledoux District Engineer Administrator 3300 MacArthur Dr Alexandria, LA 71301	250	3.7	$ 143.75	No		
58	Kenneth Mason District Engineer Administrator 6217 Hwy 15 Chase, LA 71324	274	4.47	$ 157.55	No		
61	Chad Vosburg District Engineer Administrator 8100 Airline Hwy Baton Rouge, LA 70815	18.8	0.43	$ 10.81	No		
62	Allison Schilling District Engineer Administrator 685 N Morrison Blvd Hammond, LA 70401	94.8	1.6	$ 54.51	No		

Total miles:	2034.8
2015 mileage rate:	$ 0.575
Total Mileage Cost:	**$ 1,170.01**
Total Lodging:	**$ 166.00**
Total Per Diem:	**$ 102.00**
Grand total:	**$ 1,438.01**

APPENDIX J

RECOMMENDED EQUATION REFERENCE SHEET

Recommended Pile Driving Formulas

EOID

EOID pile driving formula for determination of long-term ultimate pile bearing capacity

EOID Modified Gates Pile Driving Formula (DFEOID-MOD): Strength I limit state LRFD resistance factor (φ): 0.50.

$$R_u = 0.5\left[\left(1.95\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$$

R_u = long-term ultimate pile bearing capacity (tons)

E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds)

N_b = EOID number of hammer blows/inch

Pile installation criteria:

- Pile Type: Precast Prestressed Concrete (PPC) pile
- Pile Size: 14 PPC, 16 PPC, and 24" PPC
- Geology: Statewide — Geology 1, 2, 3, 4, 5, and 6
- Hammer Type: Open end diesel (OED) and External Combustion Hammer (ECH)
- Maximum Hammer Energy: 190 ft-kips
- Maximum EOID Long-Term Ultimate Pile Capacity: 400 tons
- Blow Counts obtained at EOID
- EOID Blow Counts (N_b): 24 blows/ft ≤ N_b ≤ 120 blows/ft

BOR

BOR pile driving formula for determination of ultimate pile bearing capacity at the time of pile restrike (BOR performed after EOID) is dependent on the geological location.

BOR obtained at time t: t ≥ 1 day and Setup Category A:

BOR Modified Gates pile driving formula (DF1+BORSCA) Strength I limit state LRFD resistance factor (φ): 0.60:

$$R_u = 0.5\left[\left(1.65\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$$

BOR obtained at time t: t ≥ 1 day and Setup Category B:

For piles located within setup category B (Geology 2, 3, 4, 5, and 6)—BOR Modified Gates pile driving formula (DF1+BORSCB) Strength I limit state LRFD resistance factor (φ): 0.60:

$$R_u = 0.5\left[\left(1.40\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$$

R_u = ultimate pile bearing capacity (tons)

E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds)

N_b = BOR number of hammer blows/inch

Pile restrike criteria:

- Pile Type: Precast Prestressed Concrete (PPC) pile
- Pile Size: 14 PPC, 16 PPC, and 24" PPC
- Geology: 1 for Setup Category A — Use BOR pile driving formula DF1+BORSCA
- Geology 2, 3, 4, 5, and 6 for Setup Category B — Use BOR pile driving formula DF1+BORSCB
- Hammer Type: Open end diesel (OED). External Combustion Hammer (ECH) can only be used with these BOR pile driving formulas with approval of LADOTD.
- Maximum Hammer Energy: 190 ft-kips
- Maximum BOR Ultimate Pile Capacity: 400 tons
- Blow Counts obtained at BOR at t ≥ 1 day after EOID
- BOR Blow Counts (N_b): 24 blows/ft ≤ N_b ≤ 120 blows/ft

APPENDIX J

RECOMMENDED EQUATION REFERENCE SHEET

APPENDIX A

DOTD PILE DRIVING FORMULA

SPECIFICATIONS SUMMARY (1940 – 1992)

DOTD Pile Driving Formula specifications summary (1940 – 1992)

Year	Dynamic Formula	Remarks	Apparent SF[1]
1940	For gravity hammers — Equation (4) For single-acting steam hammers — Equation (5) For double-acting steam hammers — Equation (5) (with $WH = E$ = energy based on blow rate from manufacturer catalog)	1. P = Safe load per pile	6
1947	Same as 1940	1. P = Safe load per pile	6
1955	Same as 1940	1. P = Safe bearing power or value	6
1966	For gravity hammers — Equation (4) For single-acting steam or air hammers — Equation (5) For double-acting steam or air hammers — Equation (5) (with WH = W+Ap, where W = weight of striking parts of hammer; A = area of piston, and p steam pressure)	1. P = Safe bearing power or capacity 2. "Diesel hammers will be permitted. The formula applicable to the type hammer approved for use will be developed on construction."	6
1971	For gravity hammers — Equation (4) For single-acting steam or air hammers — Equation (5)	1. P = Safe bearing power or capacity 2. Removed formula for double-acting steam or air hammers. 3. "Diesel hammers will be permitted. The formula applicable to the type hammer approved for use will be developed on construction."	6
1982	Same as 1971	1. P = Safe bearing power or capacity. Added "The safe bearing capacity of permanent piles is … ½ of the bearing obtained under the hammer by the foregoing formula for test piles that were not required to be loaded."	12

DOTD Pile Driving Formula specifications summary (1940 – 1992)

Year	Dynamic Formula	Remarks	Apparent SF[1]
		2. No formula for double-acting steam or air hammers included. 3. "Diesel hammers will be permitted. The hammer must be equipped with an attached measuring rod calibrated in 0.5 foot increments to determine the height of fall of the ram. The safe bearing capacity will be calculated by the formula above for single-acting steam or air hammers."	
1992	Same as 1982	1. P = Capacity. Added "The safe bearing capacity of permanent piles is … ½ of the bearing obtained under the hammer by the foregoing formula for test piles that were not required to be loaded." 2. No formula for double-acting steam or air hammers included. 3. "Diesel hammers will be permitted. The hammer must be equipped with an attached measuring rod calibrated in 0.5 foot increments to determine the height of fall of the ram. The safe bearing capacity will be calculated by the formula above for single-acting steam or air hammers."	12

[1] The apparent safety factor (SF) is shown based on the assumptions used in the development of the equation and the method applied in the DOTD specifications.

APPENDIX B

ALTERNATE HAMMER APPROVAL METHOD

(1997)

ALTERNATE

HAMMER APPROVAL METHOD

PAVEMENT AND GEOTECHNICAL
DESIGN SECTION

LOUISIANA DEPARTMENT OF
TRANSPORTATION AND DEVELOPMENT

LOUISIANA
STANDARD SPECIFICATIONS
FOR
ROADS AND BRIDGES
2000 EDITION

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION
AND DEVELOPMENT
BATON ROUGE

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proposed pile driving equipment for each unique pile driving system that wi be used on the project. When a hammer cushion or pile cushion is compose of differing materials with varying properties the contractor shall provide detailed description of the composite cushion. Composite cushion descriptio shall include material type, layout, and thickness of each cushion compone

(2) A list detailing the type and size of the proposed pile drivi equipment, including hammer, leads, jetting equipment, compressors, a drilling equipment for preboring. Include hammer manufacturer's operati manual and compressor data sheets. If a mandrel is used to install piles, complete description shall be provided including size and weight components.

(3) Proposed pile driving methods that may be required to facilitate p driving installation such as preboring or jetting.

(4) Methods to determine hammer energy in the field for determinati of the pile bearing capacity. When pressure measuring equipment will be us to determine hammer energy, the submittal shall include hose length, ho diameter, equivalent energy charts, and calibrations.

(5) Detailed drawings of any proposed followers.

(6) Detailed drawings of templates.

(7) Required shop drawings for pile splices, shoring, sheet pili cofferdams, etc.

(8) Pile driving sequence for each unique pile layout configuration.

(9) Details of proposed static load test system, equipment, a procedures in accordance with Subsection 804.11. The load test system deta shall include information pertaining to ground excavations or casings, bea plates, layout of reaction piles, reaction beams, deflection monitoring refere beam, etc. The load test equipment details shall include jack size, length jack hose, and type of deflection monitoring instrumentation to be us General load testing procedures should be provided concerning load increments, sequence of loading, etc. If a load cell is required, calibration load cell information shall be submitted.

(10) Proposed schedule for test pile and/or indicator pile program production pile driving.

(11) Details of the access system for attaching instrumentatio dynamic monitoring.

(12) Other information shown in the plans or required by the eng

(c) Pile Driving Equipment Approval: Unless shown otherwise plans or directed by the engineer, the approval of the pile driving system be made by the Wave Equation Hammer Approval Method. This app

shall be based on the contractor's proposed pile driving equipment and pile installation method.

If the plans specify the Alternate Hammer Approval Method, the engineer shall evaluate the contractor's proposed pile driving system in accordance with the requirements stated herein for the minimum hammer rated energy. The Wave Equation Hammer Approval Method may be substituted for the Alternate Hammer Approval Method if pile driving problems arise after approval with the Alternate Hammer Approval Method or when, in the opinion of the engineer, a more rigorous method of analysis is required to review the contractor's proposed pile driving system.

(1) Wave Equation Hammer Approval Method: Approval of the contractor's pile driving equipment will be based on the wave equation analysis computer program (FHWA-WEAP87 or newer version) and as required elsewhere in this subsection. A wave equation analysis will be performed by the Department for each pile type and size required in the plans. Approval of the pile driving system does not relinquish the contractor's responsibility from driving the piles to the required pile tip elevation without damage.

The criteria the engineer will use to evaluate the pile driving equipment from the wave equation shall be the pile driving resistance. The required number of hammer blows at the required end-of-driving pile capacity shall be from 36 to 146 blows per foot (30 to 120 blows per 0.25 m). The pile driving resistance at any depth above the required pile tip elevation shall be achieved with a reasonable driving resistance of less than 300 blows per foot (250 blows per 0.25 m).

Additional criteria that the engineer will use for the pile driving equipment to be acceptable are the pile driving stresses that are indicated by the wave equation analysis to be generated during pile driving. The pile driving stresses shall not exceed the allowable values as required in Subsection 804.08(g).

When the wave equation analysis shows that the contractor's proposed equipment or methods will result in either the inability to drive the pile with a reasonable driving resistance to the desired pile bearing capacity or will exceed the maximum allowable pile driving stresses, the contractor shall modify or replace the proposed methods or equipment at his expense until subsequent wave equation analyses indicates that the contractor's proposed pile driving equipment and driving methods meet the required criteria for acceptability stated herein.

(2) Alternate Hammer Approval Method: The Alternate Hammer Approval method is based on the required end-of-driving pile capacity, hammer

type, and the minimum required hammer rated energy. This alternate method shall not be used if the required end-of-driving pile capacity is greater than 300 tons (2650 kN). Table 804-1 provides the minimum Manufacturer's Rated Hammer Energy that is required. The Manufacturer's Rated Hammer Energy shall be based on the theoretical potential energy of the ram at impact.

Table 804-1
Alternate Hammer Approval Method
Minimum Manufacturer's Rated Hammer Energy

End-Of-Driving Pile Capacity		Minimum Manufacturer's Rated Hammer Energy			
		(ft-kip)		(kilojoules)	
(tons)	(kilonewtons)	ECH*	Diesel	ECH*	Diesel
≤ 60	≤ 535	6	8	8	11
80	710	8	11	11	15
100	890	11	14	15	19
120	1070	13	17	18	23
140	1245	16	21	22	29
160	1425	20	24	27	33
180	1600	24	29	33	39
200	1780	29	34	39	46
220	1960	35	40	48	54
240	2135	43	47	58	64
260	2315	52	57	71	77
280	2490	59	67	80	91
300	2670	64	74	87	100

* ECH = External Combustion Hammers

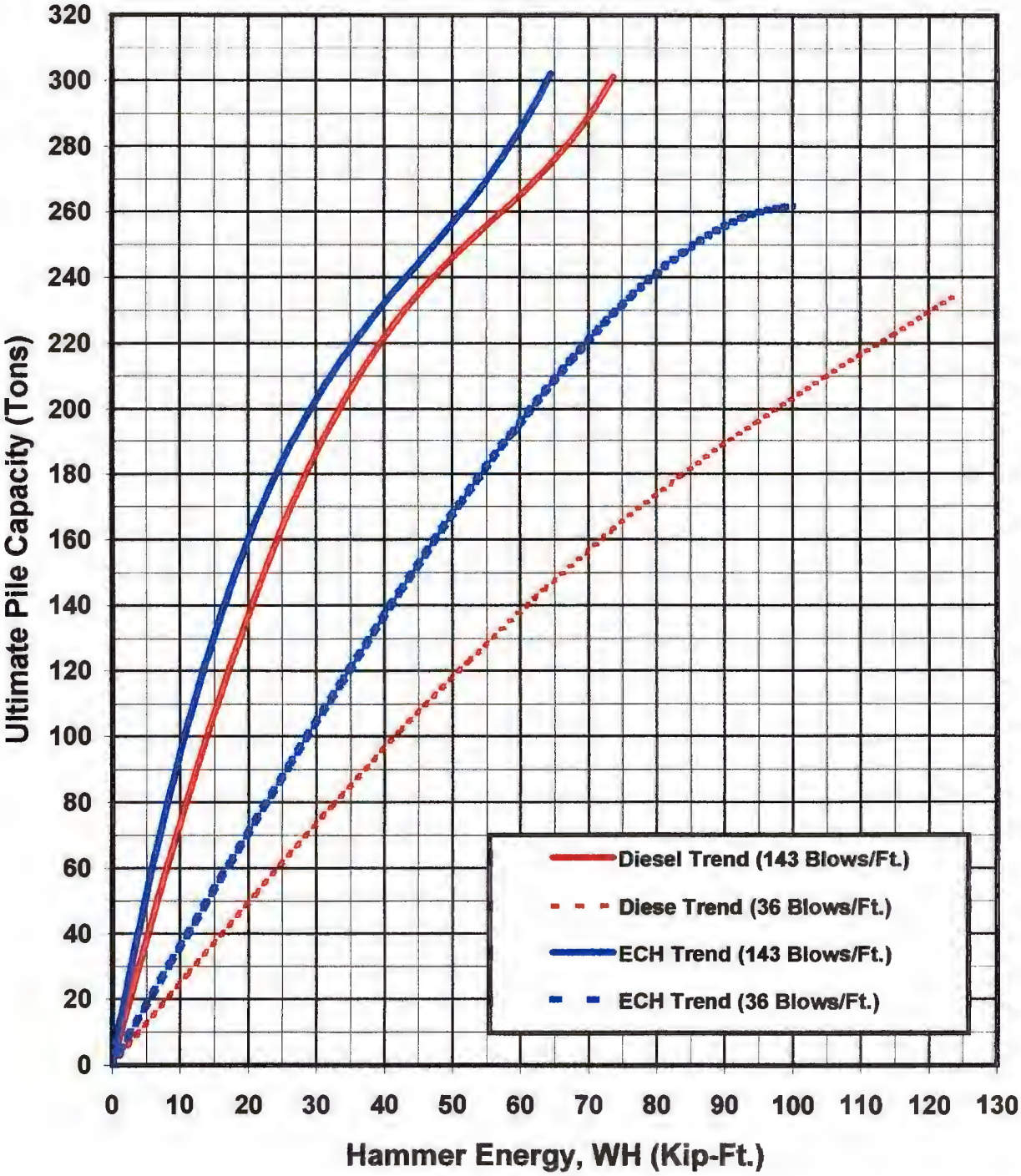
804.06 PILE DRIVING EQUIPMENT.

(a) Hammers: Piles may be driven with either diesel hammers or external combustion hammers (ECH) such as hammers driven by steam, air, or hydraulic power. Non-impact hammers such as vibratory hammers shall not be used unless specified in the plans or permitted in writing by the engineer. Hammers shall be rated based on the theoretical potential energy of the ram at impact.

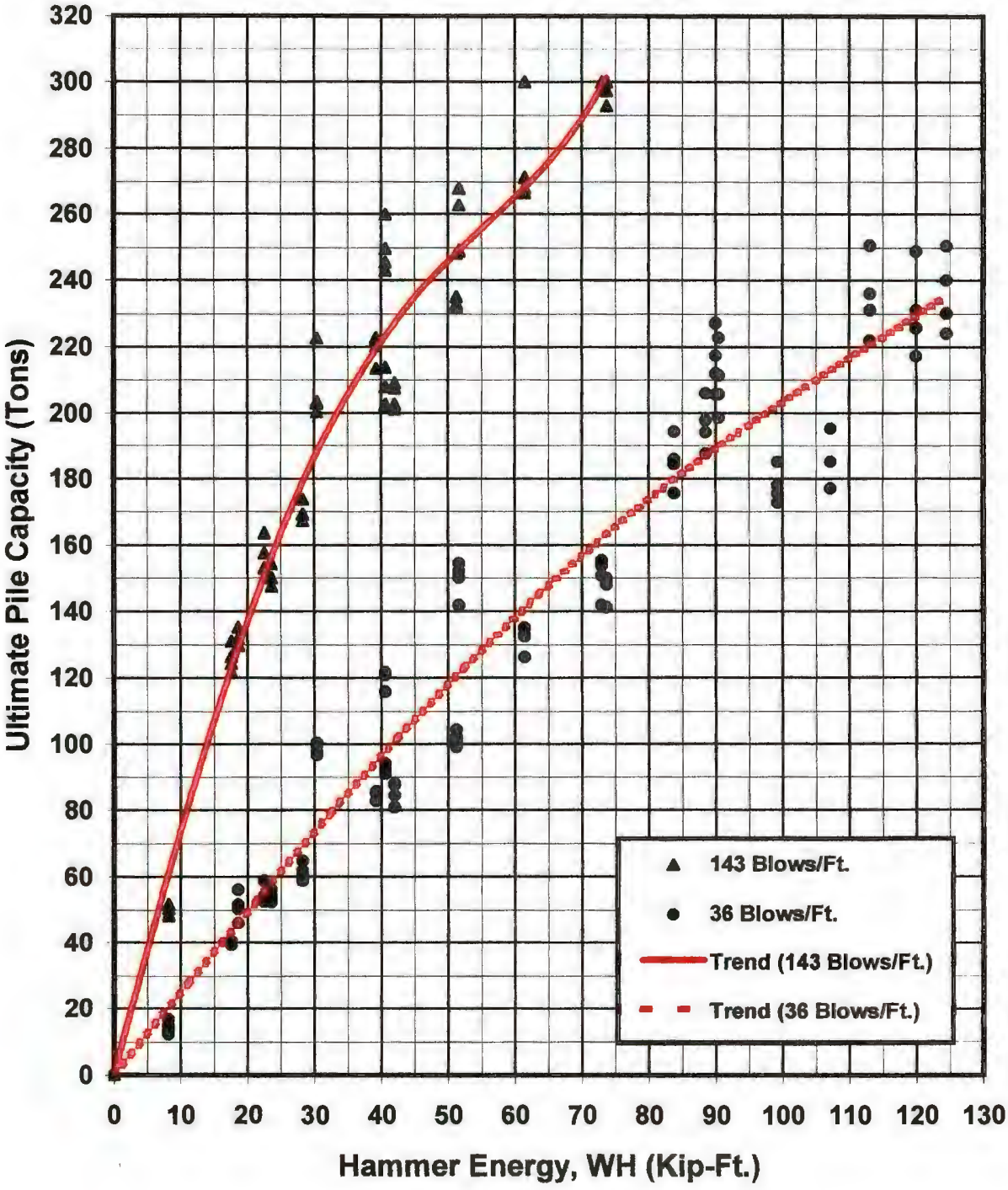
A variable energy hammer shall be used to drive precast concrete piles.

(1) Steam and Air Hammers: Steam and air hammers that are used to drive precast concrete piles shall be capable of providing at least two ram stroke lengths. The short ram stroke length shall be approximately half of the full stroke. Reductions in steam or air pressures to produce reduced hamm

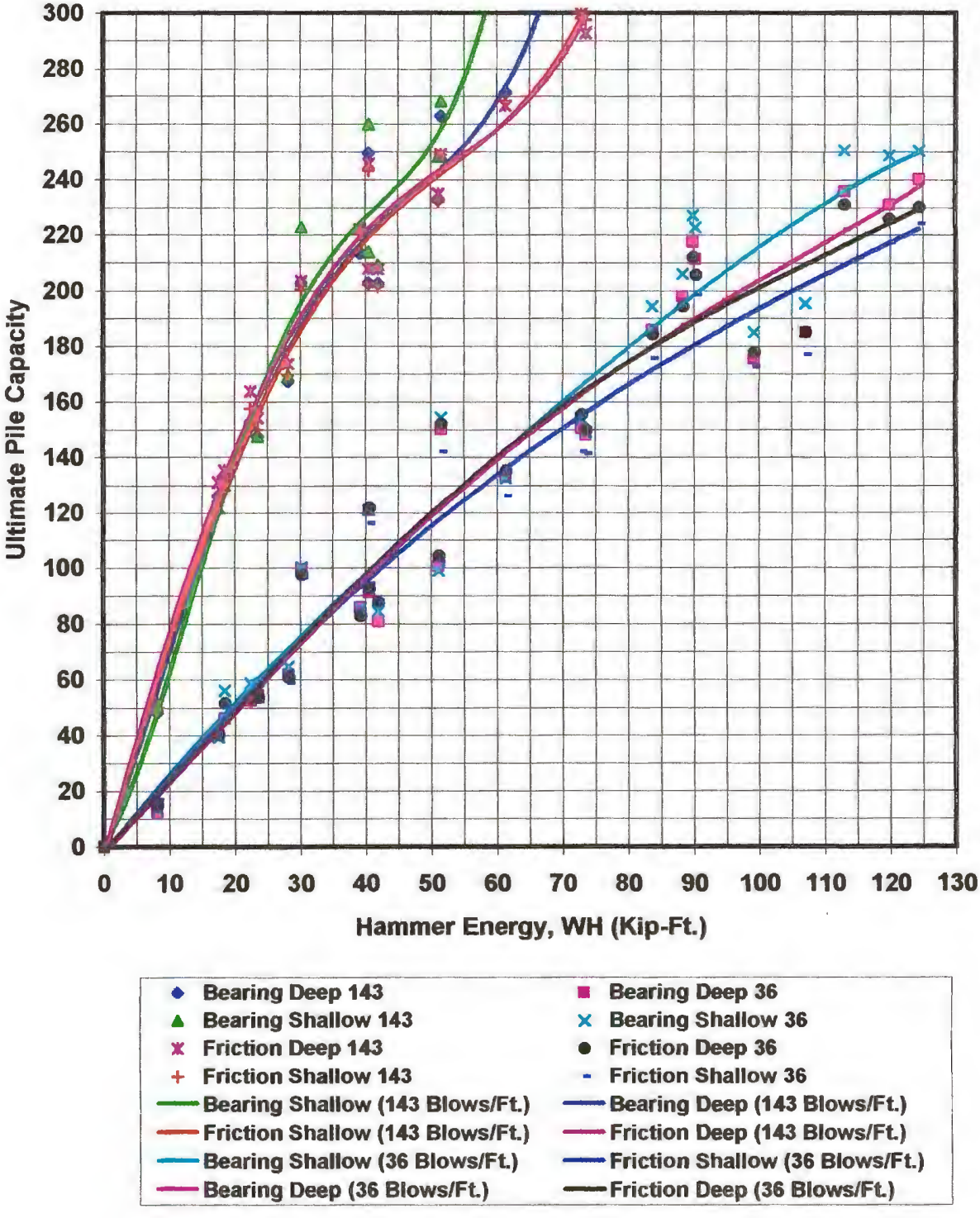
DIESEL AND ECH HAMMERS
ALTERNATE HAMMER APPROVAL
SELECTION CHART



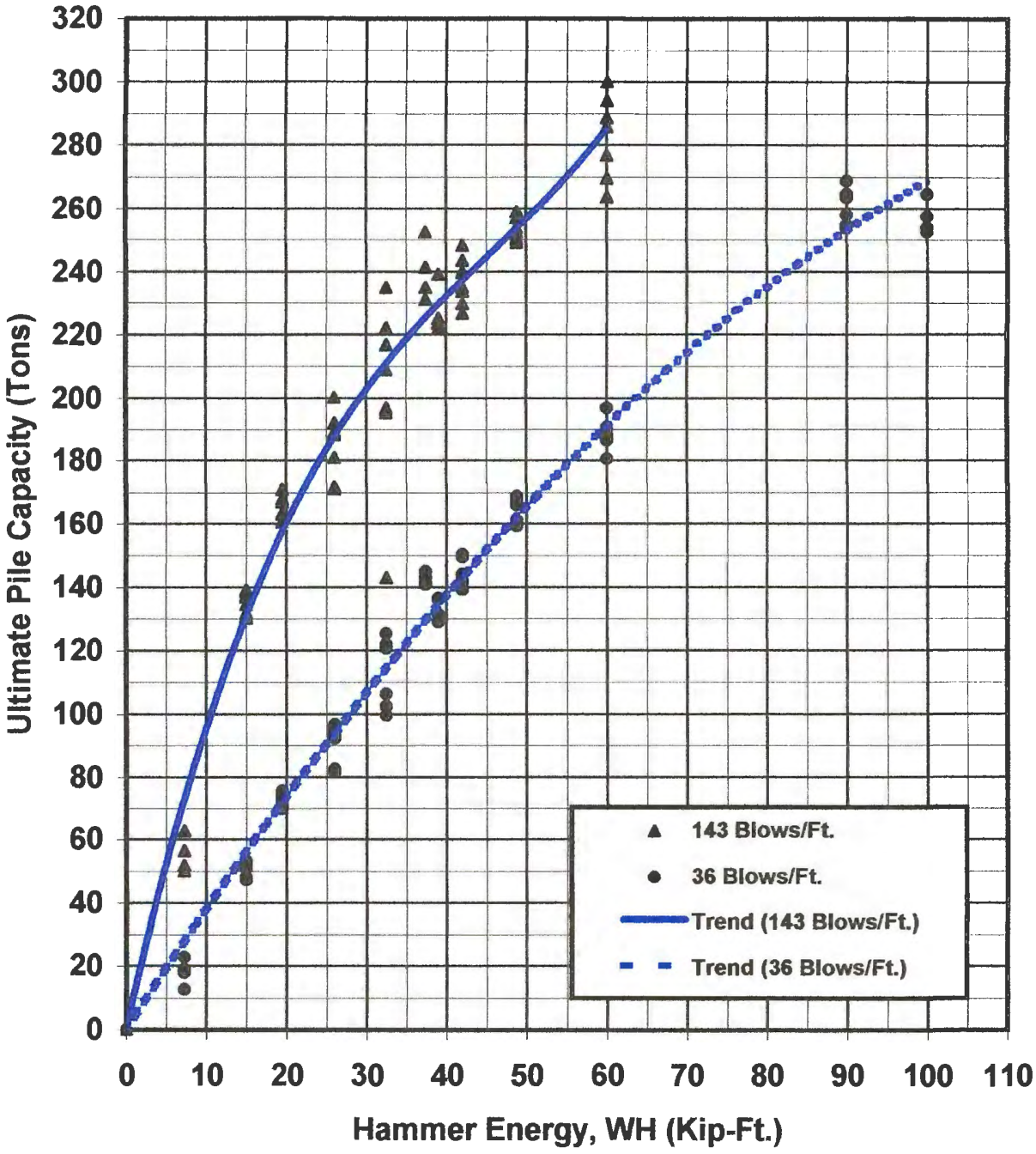
DIESEL HAMMERS
ALTERNATE HAMMER APPROVAL
SELECTION CHART



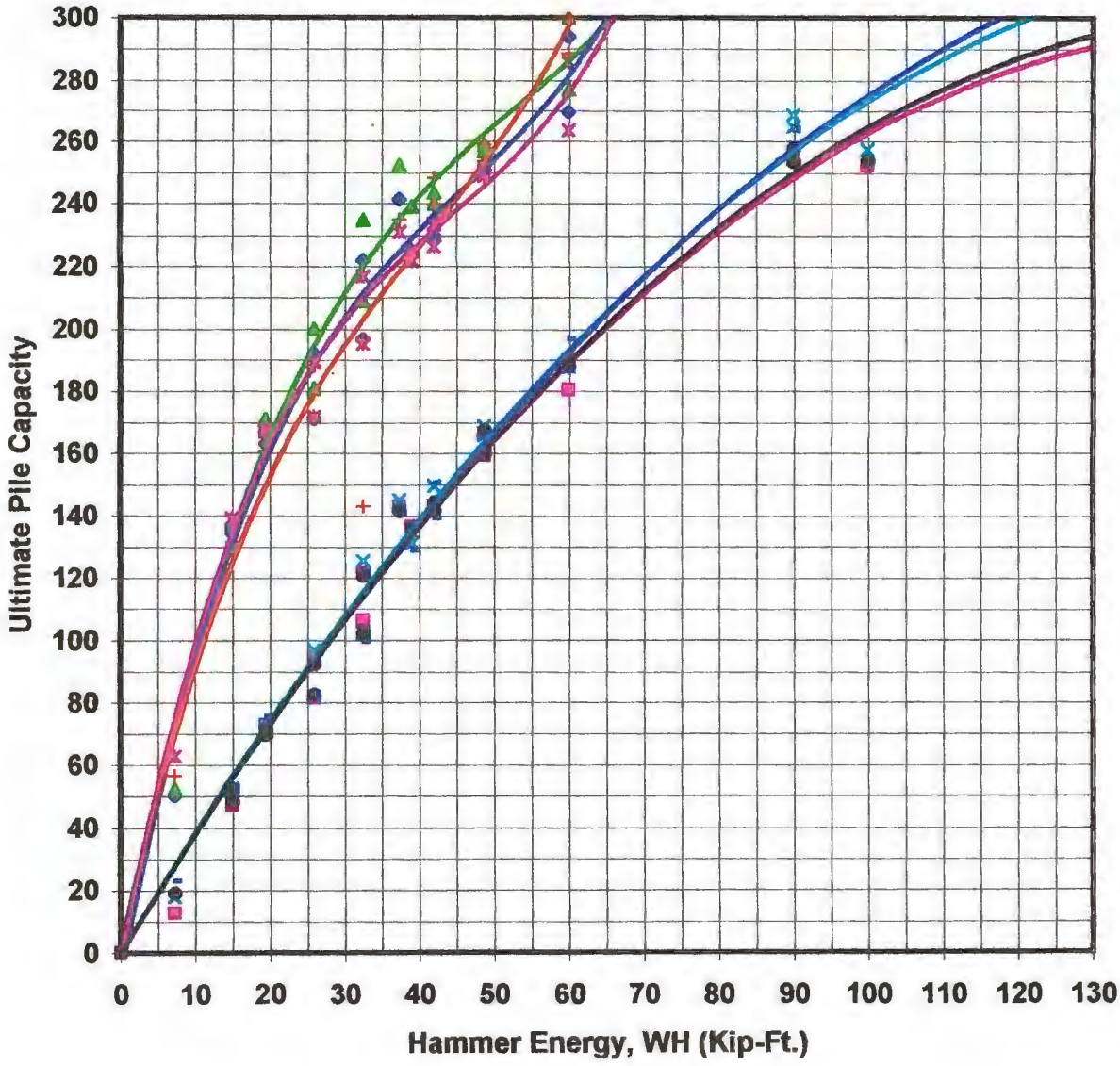
DIESEL HAMMERS
ALTERNATE HAMMER APPROVAL SELECTION CHART



ECH HAMMERS
ALTERNATE HAMMER APPROVAL
SELECTION CHART



ECH HAMMERS
ALTERNATE HAMMER APPROVAL SELECTION CHART



Summary of Wave Equation Results
For Alternate Hammer Approval Method

HAMMER ID.	RATED ENERGY (Kip-Ft.)	Bearing Deep		Bearing Shallow		Friction Deep		Friction Shallow		HAMMER TYPE
		143 HIGH (Tons)	36 LOW (Tons)	143 HIGH (Tons)	36 LOW (Tons)	143 HIGH (Tons)	36 LOW (Tons)	143 HIGH (Tons)	36 LOW (Tons)	
1	8.23	48.3	12.2	50.5	13.3	51.8	14.8	48.5	16.7	DIESEL
2	17.60	126.3	39.9	121.7	39.3	131.0	40.2	124.2	40.6	DIESEL
3	23.59	147.6	54.4	147.5	56.2	154.2	53.7	150.0	52.3	DIESEL
4	28.31	167.1	61.7	169.0	64.7	173.6	60.8	169.3	58.7	DIESEL
5	39.25	213.4	85.7	222.9	85.3	222.1	82.7	220.2	85.0	DIESEL
6	40.61	202.7	91.0	213.7	92.3	207.8	92.4	202.1	94.1	DIESEL
7	51.26	233.0	100.7	248.3	99.0	235.0	104.3	232.0	102.2	DIESEL
8	61.49	271.2	132.9	300.0	132.5	266.5	135.1	268.1	126.1	DIESEL
9	73.66	300.0	147.9	300.0	149.1	292.8	149.8	297.4	141.2	DIESEL
10	83.82	300.0	185.8	300.0	194.3	300.0	184.3	300.0	175.6	DIESEL
11	88.50	300.0	197.7	300.0	206.0	300.0	194.2	300.0	187.5	DIESEL
12	90.44	300.0	211.4	300.0	222.8	300.0	205.7	300.0	198.5	DIESEL
13	107.18	300.0	185.1	300.0	195.3	300.0	185.0	300.0	177.0	DIESEL
14	113.16	300.0	235.9	300.0	250.6	300.0	231.0	300.0	222.0	DIESEL
15	124.53	300.0	240.1	300.0	250.5	300.0	230.1	300.0	224.1	DIESEL
16	18.56	131.9	46.0	129.9	56.0	135.3	51.6	129.7	50.3	DIESEL
17	30.37	202.9	99.5	222.7	100.3	203.4	97.5	200.3	96.6	DIESEL
18	40.62	249.6	120.9	259.9	120.8	245.6	121.6	243.1	115.9	DIESEL
19	51.63	262.7	150.0	268.0	154.4	249.2	152.1	248.9	141.8	DIESEL
20	22.50	152.8	52.5	153.1	58.6	163.6	53.5	157.6	54.3	DIESEL
21	42.00	202.6	80.7	209.2	84.4	207.6	87.5	201.3	88.0	DIESEL
22	72.94	300.0	150.6	300.0	153.8	299.9	155.3	300.0	141.8	DIESEL
23	99.33	300.0	175.4	300.0	185.0	300.0	177.9	300.0	172.5	DIESEL
24	90.00	300.0	217.4	300.0	227.2	300.0	211.9	300.0	205.6	DIESEL
25	120.00	300.0	231.0	300.0	248.8	300.0	225.9	300.0	217.2	DIESEL
26	15.00	136.8	50.9	137.2	52.3	139.1	52.1	131.6	53.2	ECH
27	19.50	167.0	72.9	171.0	72.8	167.9	71.3	163.3	75.7	ECH
28	26.00	192.0	95.0	200.2	96.8	189.1	92.3	188.2	93.3	ECH
29	32.50	222.0	121.7	234.8	125.5	216.8	120.7	143.0	122.1	ECH
30	37.39	241.3	142.9	252.4	145.0	231.0	141.4	234.8	140.7	ECH
31	42.00	234.8	142.0	239.9	149.6	233.5	141.7	248.2	150.4	ECH
32	48.75	252.4	159.2	256.9	165.9	250.1	159.7	258.9	166.7	ECH
33	60.00	294.0	188.1	300.0	187.7	285.8	190.7	300.0	196.7	ECH
34	90.00	300.0	254.7	300.0	264.7	300.0	253.5	300.0	264.5	ECH
35	100.00	300.0	252.4	300.0	257.4	300.0	253.9	300.0	264.5	ECH
36	150.00	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	ECH
37	15.00	134.4	47.2	130.7	51.1	138.6	48.2	130.1	51.8	ECH
38	7.26	50.3	12.7	52.0	17.9	62.8	19.1	56.4	23.0	ECH
39	19.50	163.0	70.1	166.9	71.5	166.9	69.8	160.5	74.2	ECH
40	26.00	171.2	81.6	180.9	81.9	171.8	82.4	171.6	81.6	ECH
41	32.50	196.8	106.3	208.9	102.5	195.2	102.3	196.4	99.7	ECH
42	39.00	225.0	136.4	239.0	131.3	221.8	135.9	223.5	128.9	ECH
43	42.00	229.7	143.3	243.4	141.8	226.6	144.2	239.6	139.1	ECH
44	48.75	250.3	166.5	259.0	168.8	249.0	167.6	253.8	161.2	ECH
45	60.00	269.6	180.5	276.9	190.1	263.7	188.0	288.6	186.4	ECH
46	90.00	300.0	254.5	300.0	268.8	300.0	257.9	300.0	263.6	ECH
47	120.00	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	ECH
48	180.00	300.0	300.0	300.0	300.0	300.0	300.0	300.0	300.0	ECH

TYPICAL HAMMERS

Hammer No.	GRL ID No.	Hammer MFG	Hammer Name	Max. Rated Energy (ft-kip)	Hammer Type
1	1	Delmag	D5	8.23	OED
2	2	Delmag	D8-22	17.60	OED
3	3	Delmag	D12	23.59	OED
4	4	Delmag	D15	28.31	OED
5	5	Delmag	D16-32	39.25	OED
6	6	Delmag	D22	40.61	OED
7	9	Delmag	D22-23	51.26	OED
8	10	Delmag	D25-32	61.49	OED
9	15	Delmag	D30-32	73.66	OED
10	16	Delmag	D36	83.82	OED
11	20	Delmag	D36-32	88.50	OED
12	21	Delmag	D44	90.44	OED
13	22	Delmag	D46	107.18	OED
14	26	Delmag	D46-32	113.16	OED
15	27	Delmag	D55	124.53	OED
16	122	ICE	440	18.56	CED
17	123	ICE	520	30.37	CED
18	124	ICE	640	40.62	CED
19	125	ICE	660	51.63	CED
20	127	ICE	30-S	22.50	OED
21	129	ICE	42-S	42.00	OED
22	130	ICE	60-S	72.94	OED
23	132	ICE	80-S	99.33	OED
24	133	ICE	90-S	90.00	OED
25	134	ICE	100-S	120.00	OED
26	171	Conmaco	C50	15.00	ECH
27	172	Conmaco	C65	19.50	ECH
28	175	Conmaco	C80	26.00	ECH
29	176	Conmaco	C100	32.50	ECH
30	177	Conmaco	C115	37.38	ECH

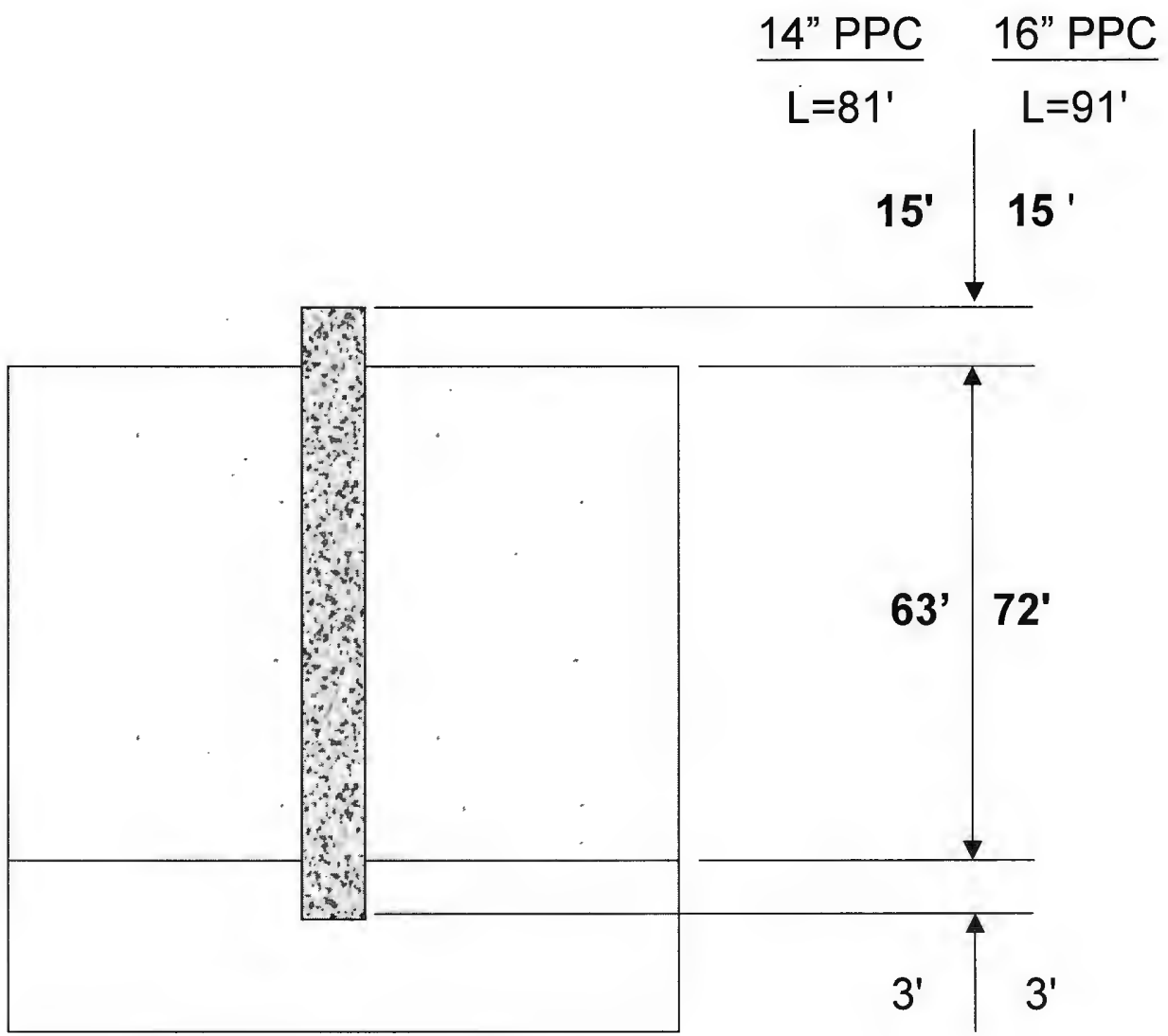
Hammer No.	GRL ID No.	Hammer MFG	Hammer Name	Max. Rated Energy (ft-kip)	Hammer Type
31	182	Conmaco	C140	42.00	ECH
32	183	Conmaco	C160	48.75	ECH
33	184	Conmaco	C200	60.00	ECH
34	185	Conmaco	C300	90.00	ECH
35	186	Conmaco	C5200	100.00	ECH
36	187	Conmaco	C5300	150.00	ECH
37	204	Vulcan	01	15.00	ECH
38	205	Vulcan	02	7.26	ECH
39	206	Vulcan	06	19.50	ECH
40	207	Vulcan	08	26.00	ECH
41	208	Vulcan	010	32.50	ECH
42	209	Vulcan	012	39.00	ECH
43	210	Vulcan	014	42.00	ECH
44	211	Vulcan	016	48.75	ECH
45	212	Vulcan	020	60.00	ECH
46	213	Vulcan	030	90.00	ECH
47	214	Vulcan	040	120.00	ECH
48	215	Vulcan	060	180.00	ECH

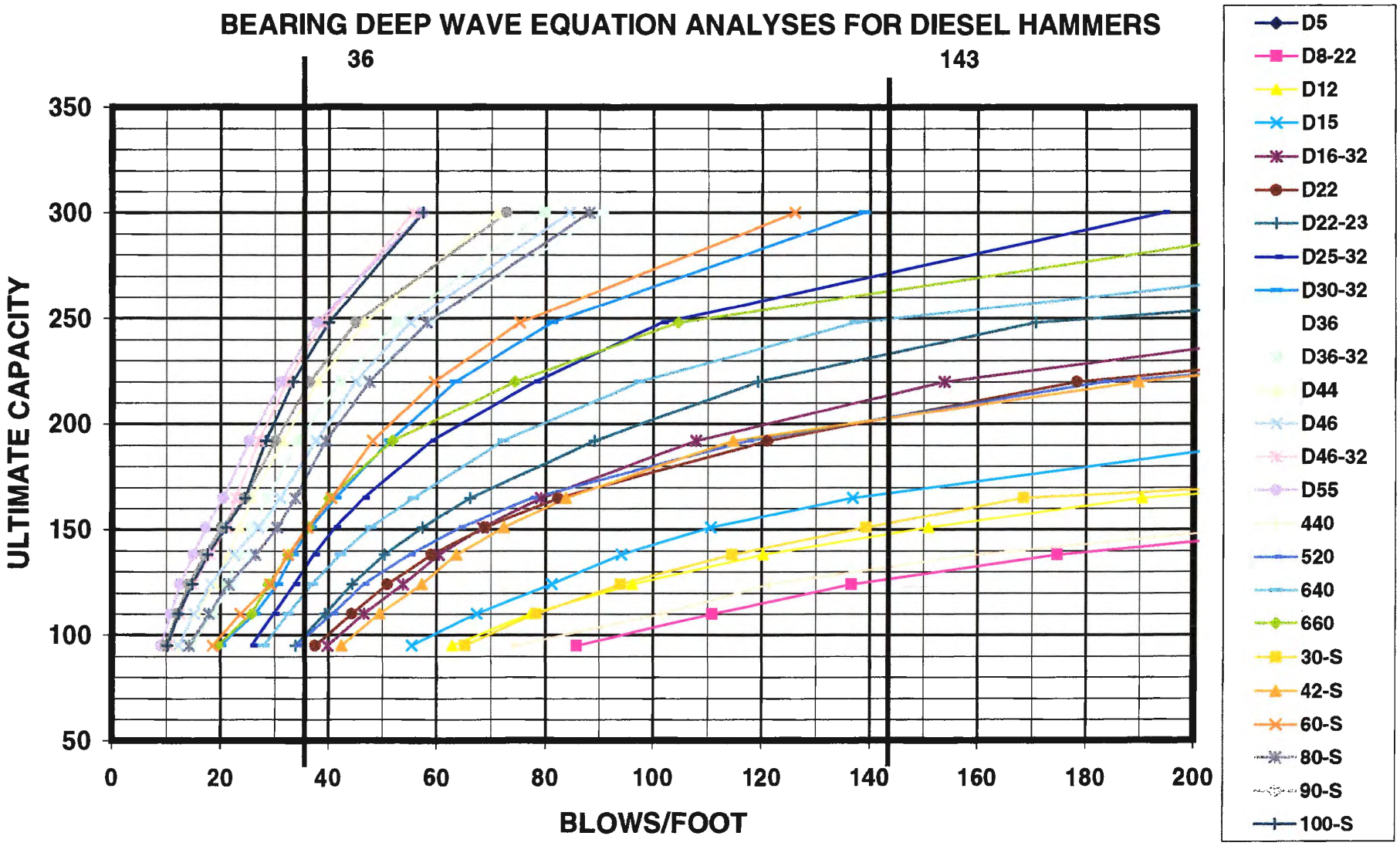
PILE CAPACITIES

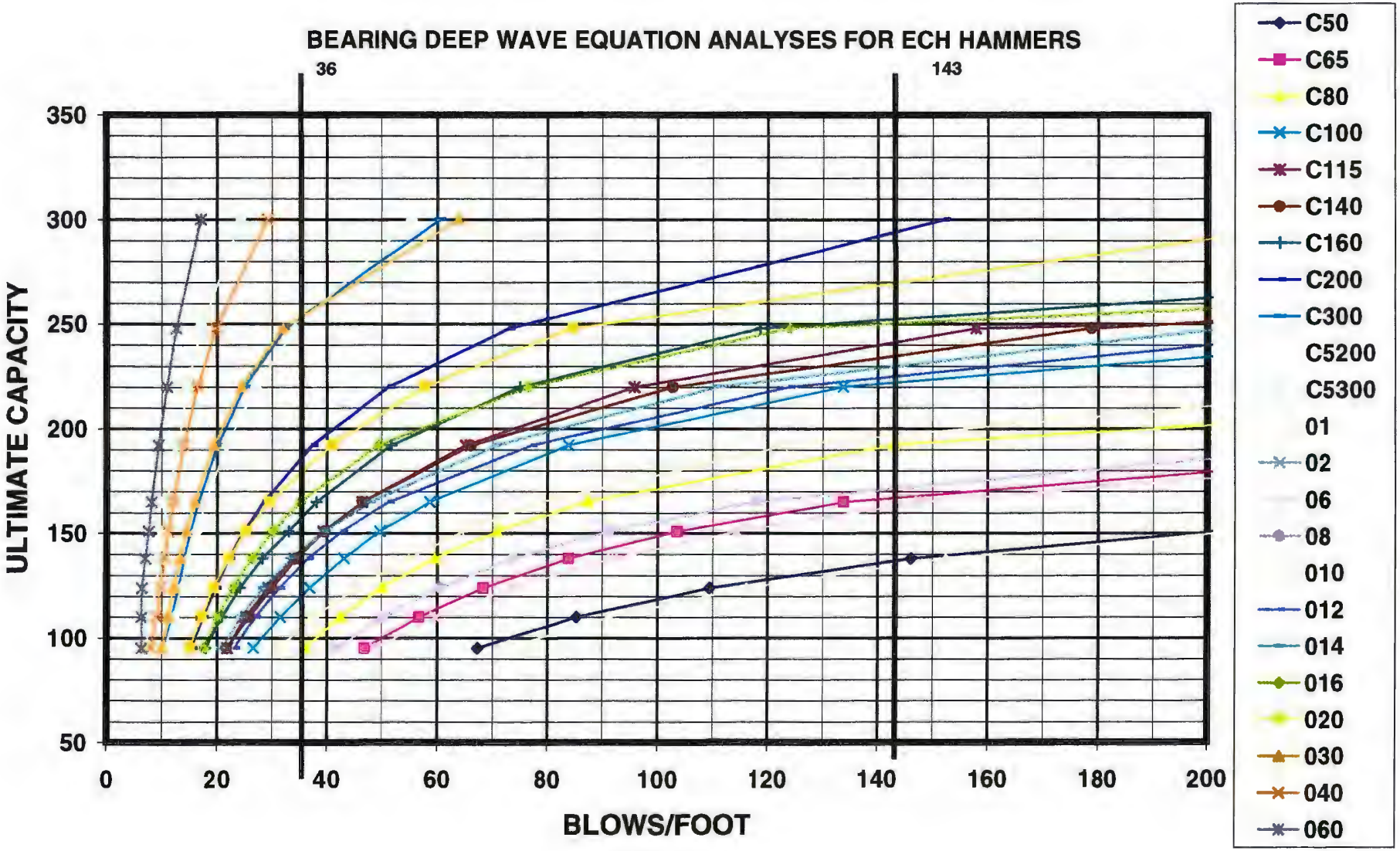
Design Load: 40 Tons		
Safety Factor	Ultimate Pile Capacity (Tons)	Ultimate Pile Capacity (kips)
1.00	40	80
2.00	80	16
2.25	90	180
2.50	100	200
2.75	110	220
3.00	120	240
3.50	140	280
4.00	160	320
4.50	180	360
5.00	200	400

Design Load: 55 Tons		
Safety Factor	Ultimate Pile Capacity (Tons)	Ultimate Pile Capacity (kips)
1.00	55	110
2.00	110	220
2.25	124	248
2.50	138	276
2.75	151	302
3.00	165	330
3.50	192	384
4.00	220	440
4.50	248	496
5.00	275	550

BEARING DEEP (BD)



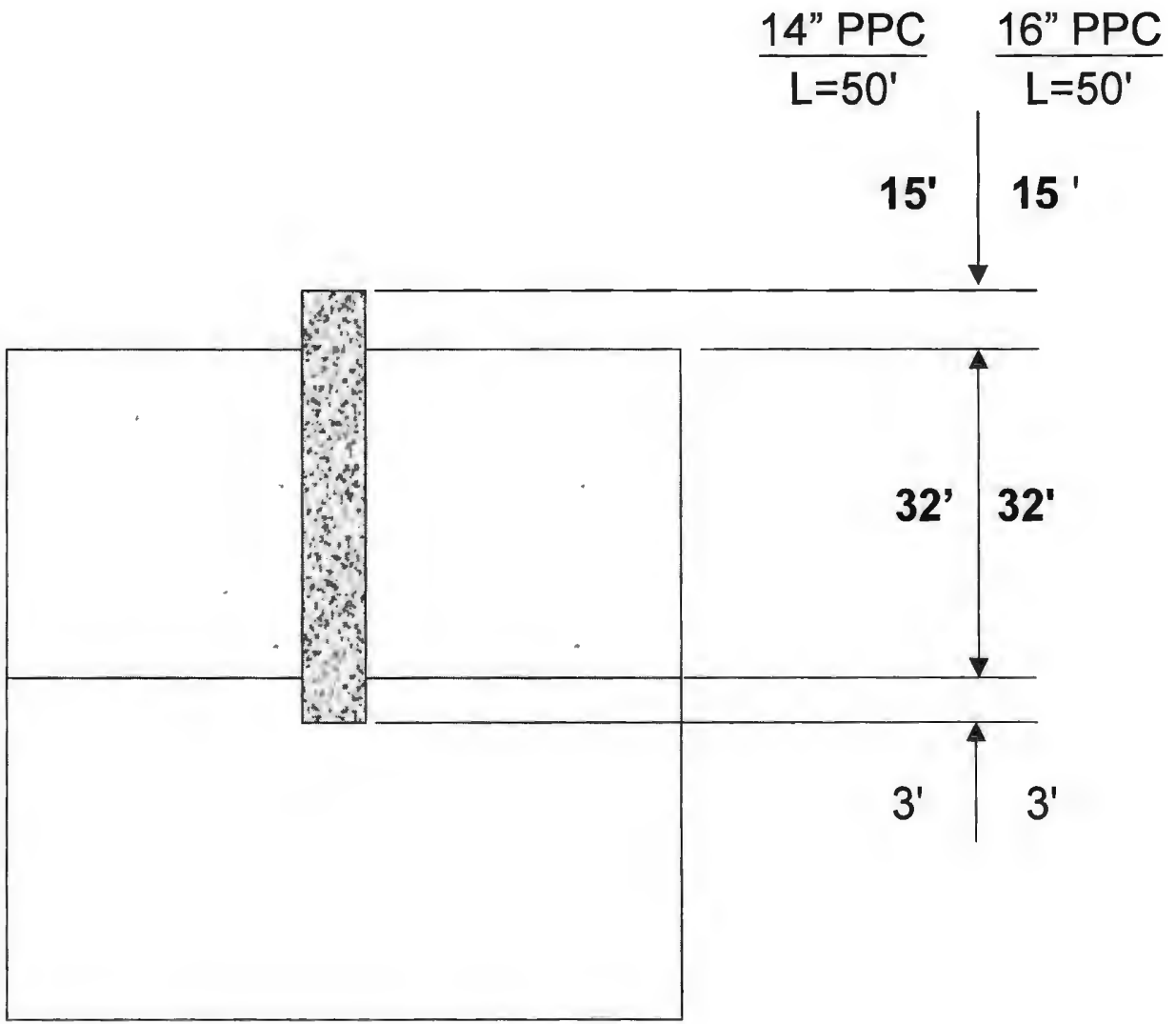

BEARING DEEP WAVE EQUATION ANALYSES FOR DIESEL HAMMERS
36
143
350
300
250
200
150
100
50
ULTIMATE CAPACITY
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
D5
D8-22
D12
D15
D16-32
D22
D22-23
D25-32
D30-32
D36
D36-32
D44
D46
D46-32
D55
440
520
640
660
30-S
42-S
60-S
80-S
90-S
100-S

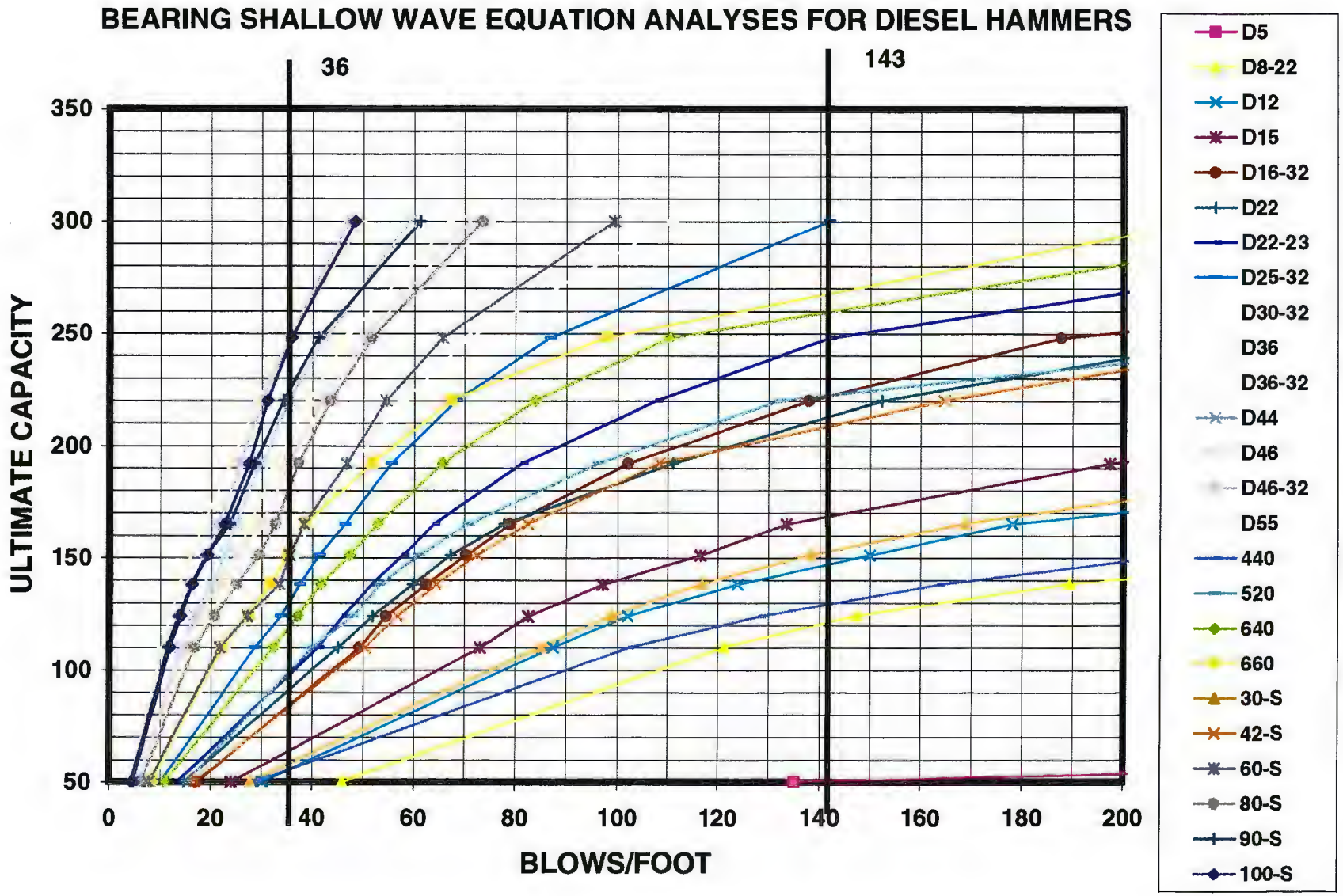

BEARING DEEP WAVE EQUATION ANALYSES FOR ECH HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
50
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
C50
C65
C80
C100
C115
C140
C160
C200
C300
C5200
C5300
01
02
06
08
010
012
014
016
020
030
040
060

BEARING DEEP
ULTIMATE CAPACITY RANGE

HAMMER ID.	143 HIGH	36 LOW	MAX	RATED ENERGY	MIN	RATED ENERGY
1	48.3	12.2	48.3	8.23	12.2	8.2
2	126.3	39.9	126.3	17.60	39.9	17.6
3	147.6	54.4	147.6	23.59	54.4	23.6
4	167.1	61.7	167.1	28.31	61.7	28.3
5	213.4	85.7	213.4	39.25	85.7	39.3
6	202.7	91.0	202.7	40.61	91.0	40.6
7	233.0	100.7	233.0	51.26	100.7	51.3
8	271.2	132.9	271.2	61.49	132.9	61.5
9	300.0	147.9	300.0	73.66	147.9	73.7
10	300.0	185.8	300.0	83.82	185.8	83.8
11	300.0	197.7	300.0	88.50	197.7	88.5
12	300.0	211.4	300.0	90.44	211.4	90.4
13	300.0	185.1	300.0	107.18	185.1	107.2
14	300.0	235.9	300.0	113.16	235.9	113.2
15	300.0	240.1	300.0	124.53	240.1	124.5
16	131.9	46.0	131.9	18.56	46.0	18.6
17	202.9	99.5	202.9	30.37	99.5	30.4
18	249.6	120.9	249.6	40.62	120.9	40.6
19	262.7	150.0	262.7	51.63	150.0	51.6
20	152.8	52.5	152.8	22.50	52.5	22.5
21	202.6	80.7	202.6	42.00	80.7	42.0
22	300.0	150.6	300.0	72.94	150.6	72.9
23	300.0	175.4	300.0	99.33	175.4	99.3
24	300.0	217.4	300.0	90.00	217.4	90.0
25	300.0	231.0	300.0	120.00	231.0	120.0
26	136.8	50.9	136.8	15.00	50.9	15.0
27	167.0	72.9	167.0	19.50	72.9	19.5
28	192.0	95.0	192.0	26.00	95.0	26.0
29	222.0	121.7	222.0	32.50	121.7	32.5
30	241.3	142.9	241.3	37.39	142.9	37.4
31	234.8	142.0	234.8	42.00	142.0	42.0
32	252.4	159.2	252.4	48.75	159.2	48.8
33	294.0	188.1	294.0	60.00	188.1	60.0
34	300.0	254.7	300.0	90.00	254.7	90.0
35	300.0	252.4	300.0	100.00	252.4	100.0
36	300.0	300.0	300.0	150.00	300.0	150.0
37	134.4	47.2	134.4	15.00	47.2	15.0
38	50.3	12.7	50.3	7.26	12.7	7.3
39	163.0	70.1	163.0	19.50	70.1	19.5
40	171.2	81.6	171.2	26.00	81.6	26.0
41	196.8	106.3	196.8	32.50	106.3	32.5
42	225.0	136.4	225.0	39.00	136.4	39.0
43	229.7	143.3	229.7	42.00	143.3	42.0
44	250.3	166.5	250.3	48.75	166.5	48.8
45	269.6	180.5	269.6	60.00	180.5	60.0
46	300.0	254.5	300.0	90.00	254.5	90.0
47	300.0	300.0	300.0	120.00	300.0	120.0
48	300.0	300.0	300.0	180.00	300.0	180.0

BEARING SHALLOW (BS)




BEARING SHALLOW WAVE EQUATION ANALYSES FOR DIESEL HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
50
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
D5
D8-22
D12
D15
D16-32
D22
D22-23
D25-32
D30-32
D36
D36-32
D44
D46
D46-32
D55
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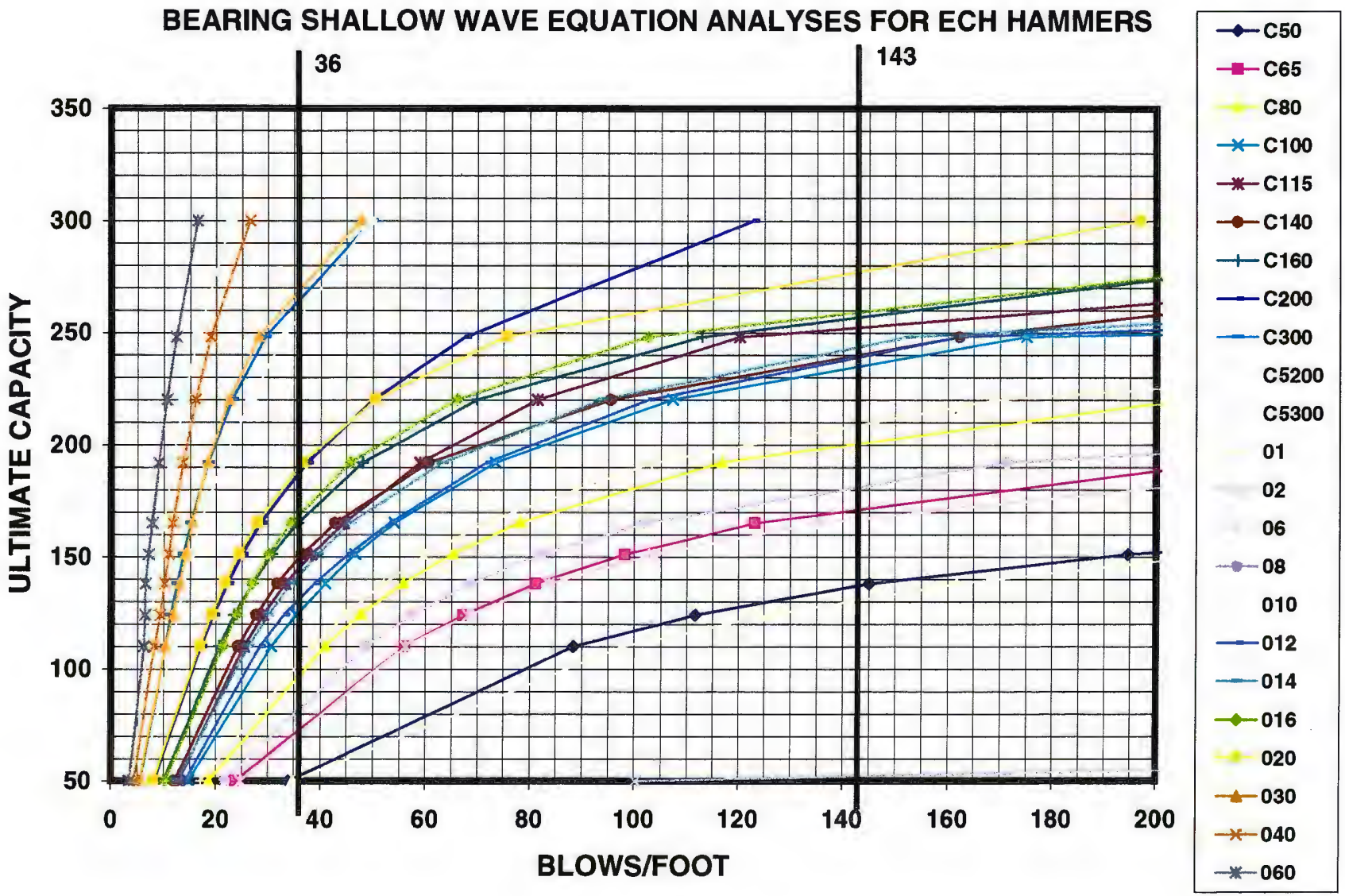
30-S
42-S
60-S
80-S
90-S
100-S


BEARING SHALLOW WAVE EQUATION ANALYSES FOR ECH HAMMERS
36
143
350
300
250
200
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100
50
ULTIMATE CAPACITY
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
C50
C65
C80
C100
C115
C140
C160
C200
C300
C5200
C5300
01
02
06
08
010
012
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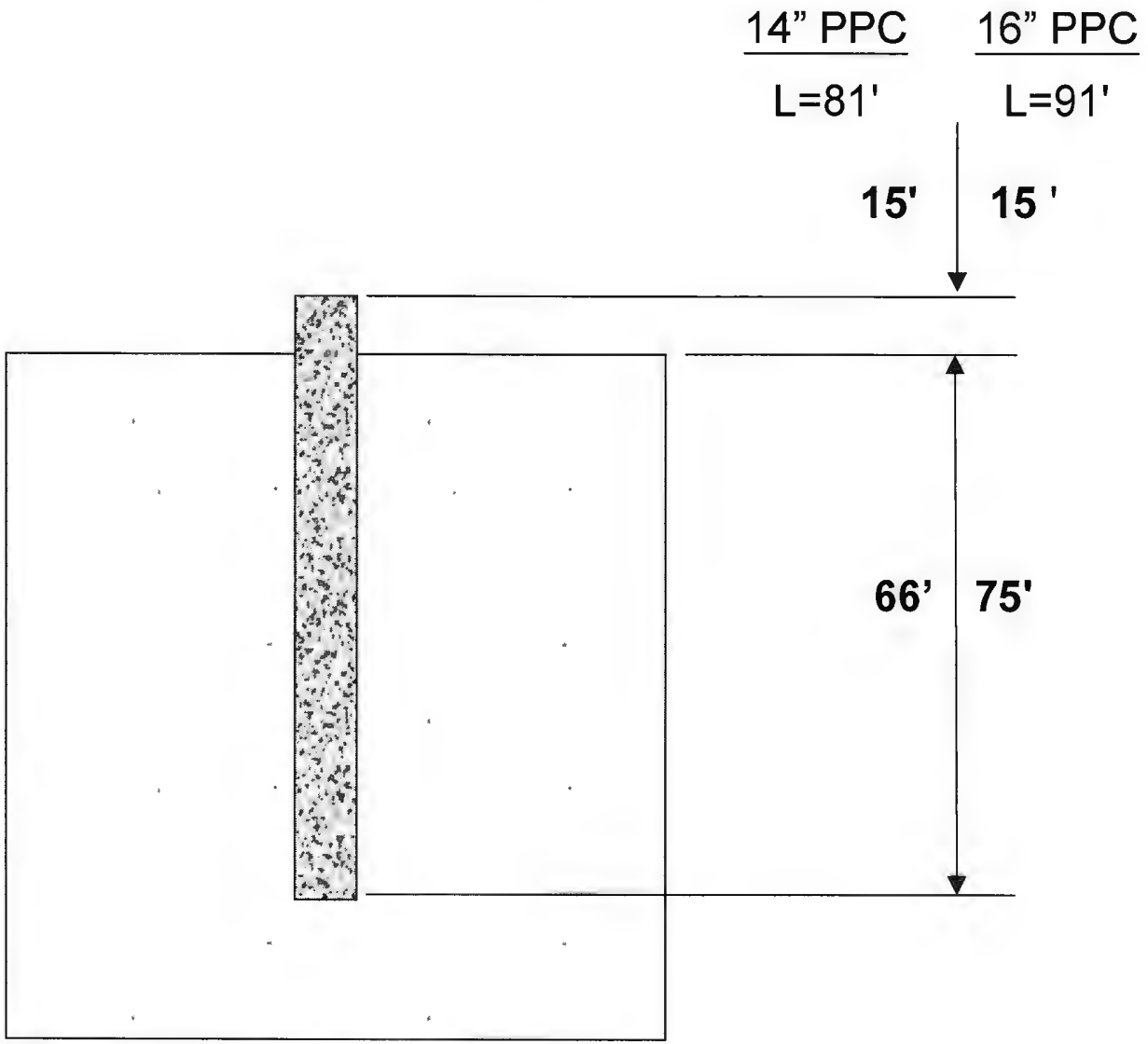
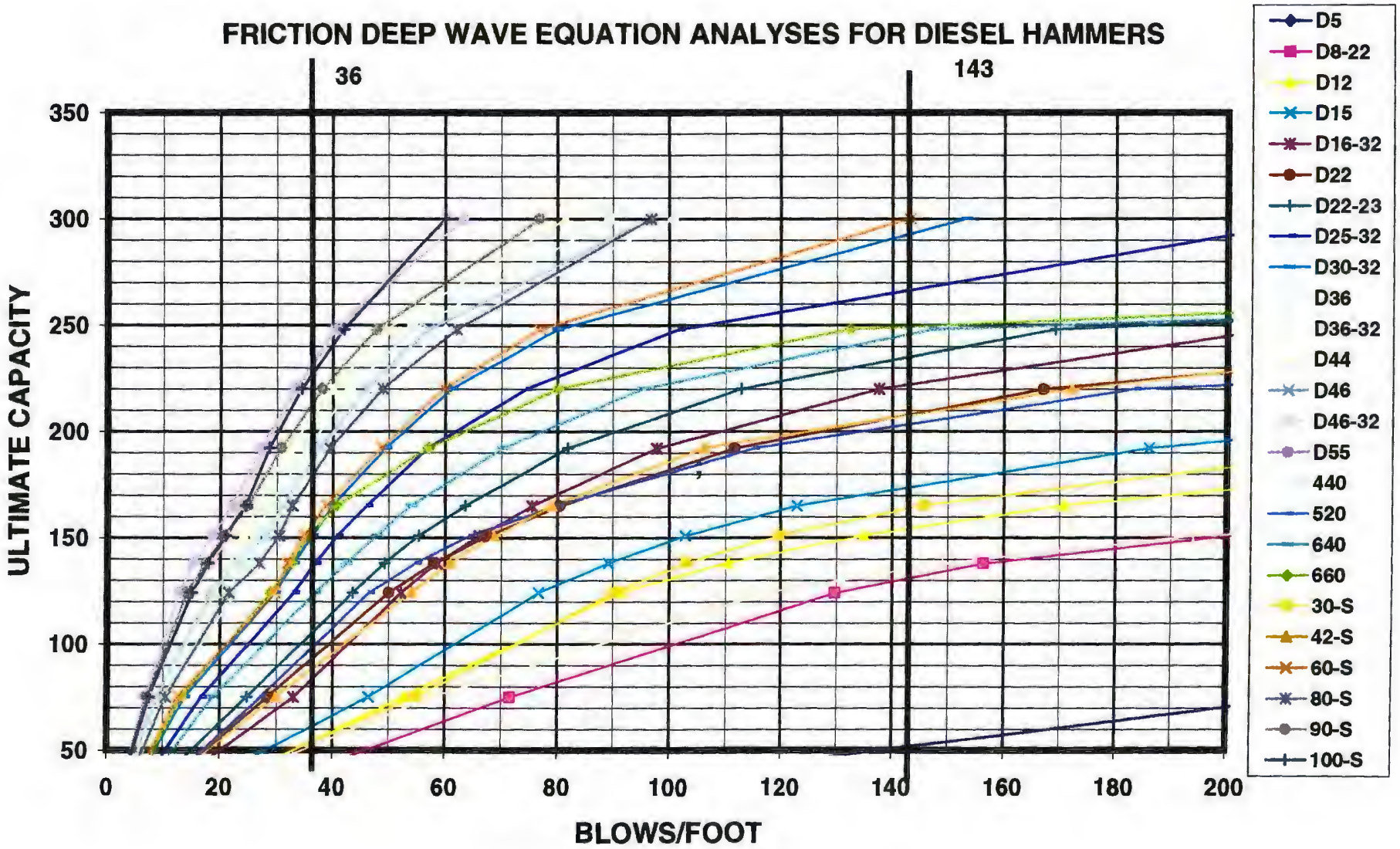
BEARING SHALLOW
ULTIMATE CAPACITY RANGE

HAMMER ID.	143 HIGH	36 LOW	MAX	RATED ENERGY	MIN	RATED ENERGY
1	50.5	13.3	50.5	8.23	13.3	8.2
2	121.7	39.3	121.7	17.60	39.3	17.6
3	147.5	56.2	147.5	23.59	56.2	23.6
4	169.0	64.7	169.0	28.31	64.7	28.3
5	222.9	85.3	222.9	39.25	85.3	39.3
6	213.7	92.3	213.7	40.61	92.3	40.6
7	248.3	99.0	248.3	51.26	99.0	51.3
8	300.0	132.5	300.0	61.49	132.5	61.5
9	300.0	149.1	300.0	73.66	149.1	73.7
10	300.0	194.3	300.0	83.82	194.3	83.8
11	300.0	206.0	300.0	88.50	206.0	88.5
12	300.0	222.8	300.0	90.44	222.8	90.4
13	300.0	195.3	300.0	107.18	195.3	107.2
14	300.0	250.6	300.0	113.16	250.6	113.2
15	300.0	250.5	300.0	124.53	250.5	124.5
16	129.9	56.0	129.9	18.56	56.0	18.6
17	222.7	100.3	222.7	30.37	100.3	30.4
18	259.9	120.8	259.9	40.62	120.8	40.6
19	268.0	154.4	268.0	51.63	154.4	51.6
20	153.1	58.6	153.1	22.50	58.6	22.5
21	209.2	84.4	209.2	42.00	84.4	42.0
22	300.0	153.8	300.0	72.94	153.8	72.9
23	300.0	185.0	300.0	99.33	185.0	99.3
24	300.0	227.2	300.0	90.00	227.2	90.0
25	300.0	248.8	300.0	120.00	248.8	120.0
26	137.2	52.3	137.2	15.00	52.3	15.0
27	171.0	72.8	171.0	19.50	72.8	19.5
28	200.2	96.8	200.2	26.00	96.8	26.0
29	234.8	125.5	234.8	32.50	125.5	32.5
30	252.4	145.0	252.4	37.39	145.0	37.4
31	239.9	149.6	239.9	42.00	149.6	42.0
32	256.9	165.9	256.9	48.75	165.9	48.8
33	300.0	187.7	300.0	60.00	187.7	60.0
34	300.0	264.7	300.0	90.00	264.7	90.0
35	300.0	257.4	300.0	100.00	257.4	100.0
36	300.0	300.0	300.0	150.00	300.0	150.0
37	130.7	51.1	130.7	15.00	51.1	15.0
38	52.0	17.9	52.0	7.26	17.9	7.3
39	166.9	71.5	166.9	19.50	71.5	19.5
40	180.9	81.9	180.9	26.00	81.9	26.0
41	208.9	102.5	208.9	32.50	102.5	32.5
42	239.0	131.3	239.0	39.00	131.3	39.0
43	243.4	141.8	243.4	42.00	141.8	42.0
44	259.0	168.8	259.0	48.75	168.8	48.8
45	276.9	190.1	276.9	60.00	190.1	60.0
46	300.0	268.8	300.0	90.00	268.8	90.0
47	300.0	300.0	300.0	120.00	300.0	120.0
48	300.0	300.0	300.0	180.00	300.0	180.0

FRICTION DEEP (FD)




FRICTION DEEP WAVE EQUATION ANALYSES FOR DIESEL HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
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20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
D5
D8-22
D12
D15
D16-32
D22
D22-23
D25-32
D30-32
D36
D36-32
D44
D46
D46-32
D55
440
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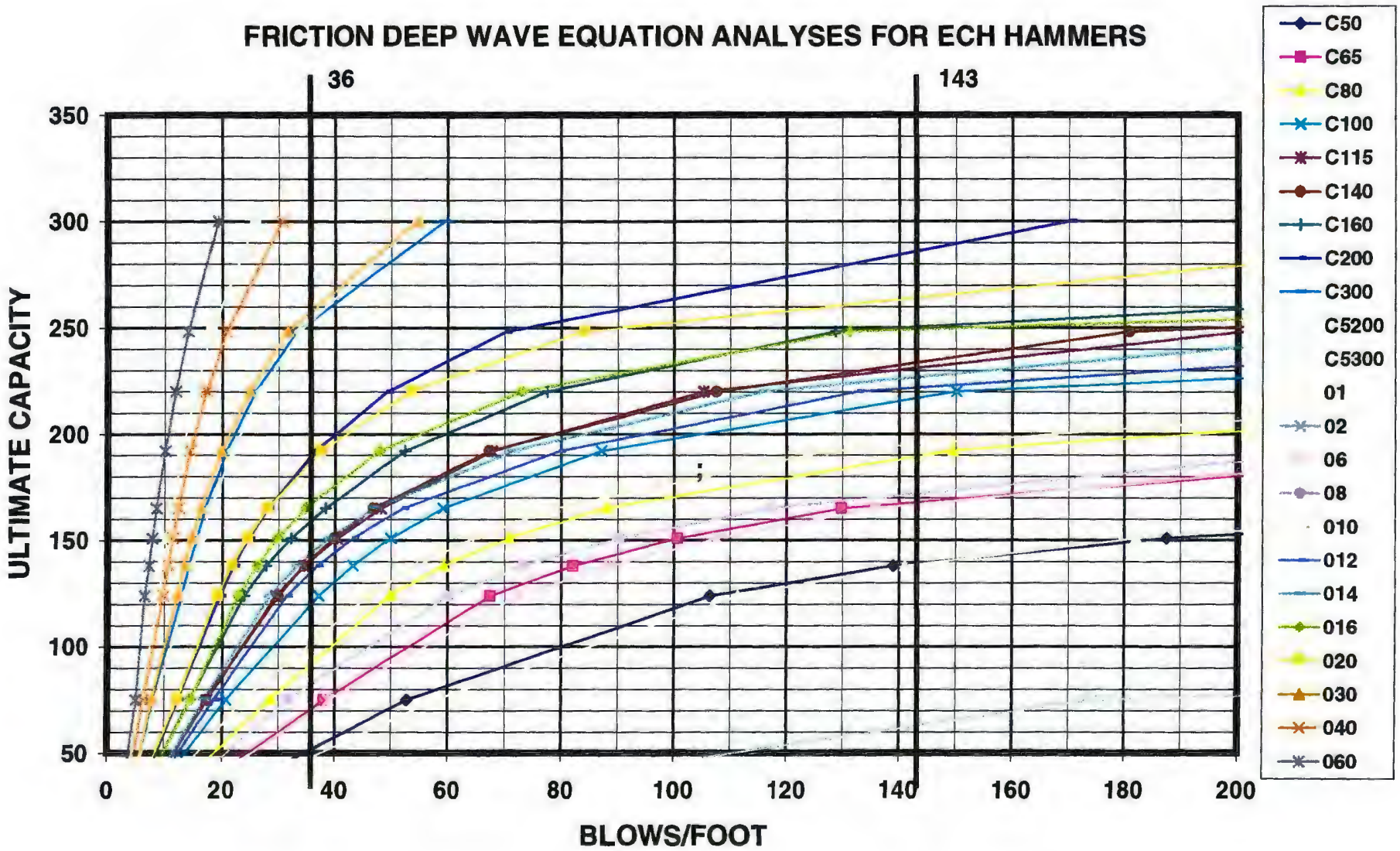
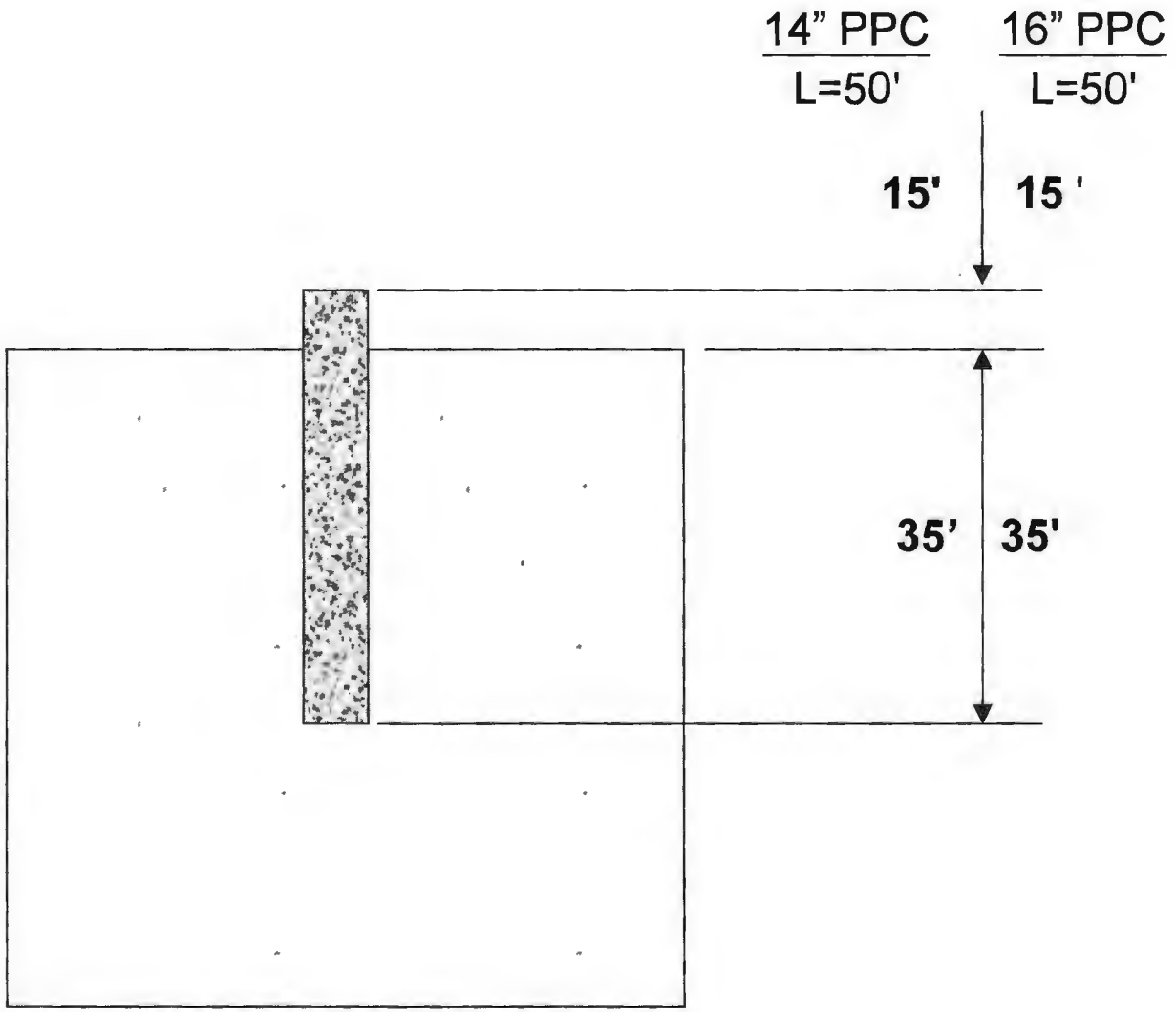
30-S
42-S
60-S
80-S
90-S
100-S

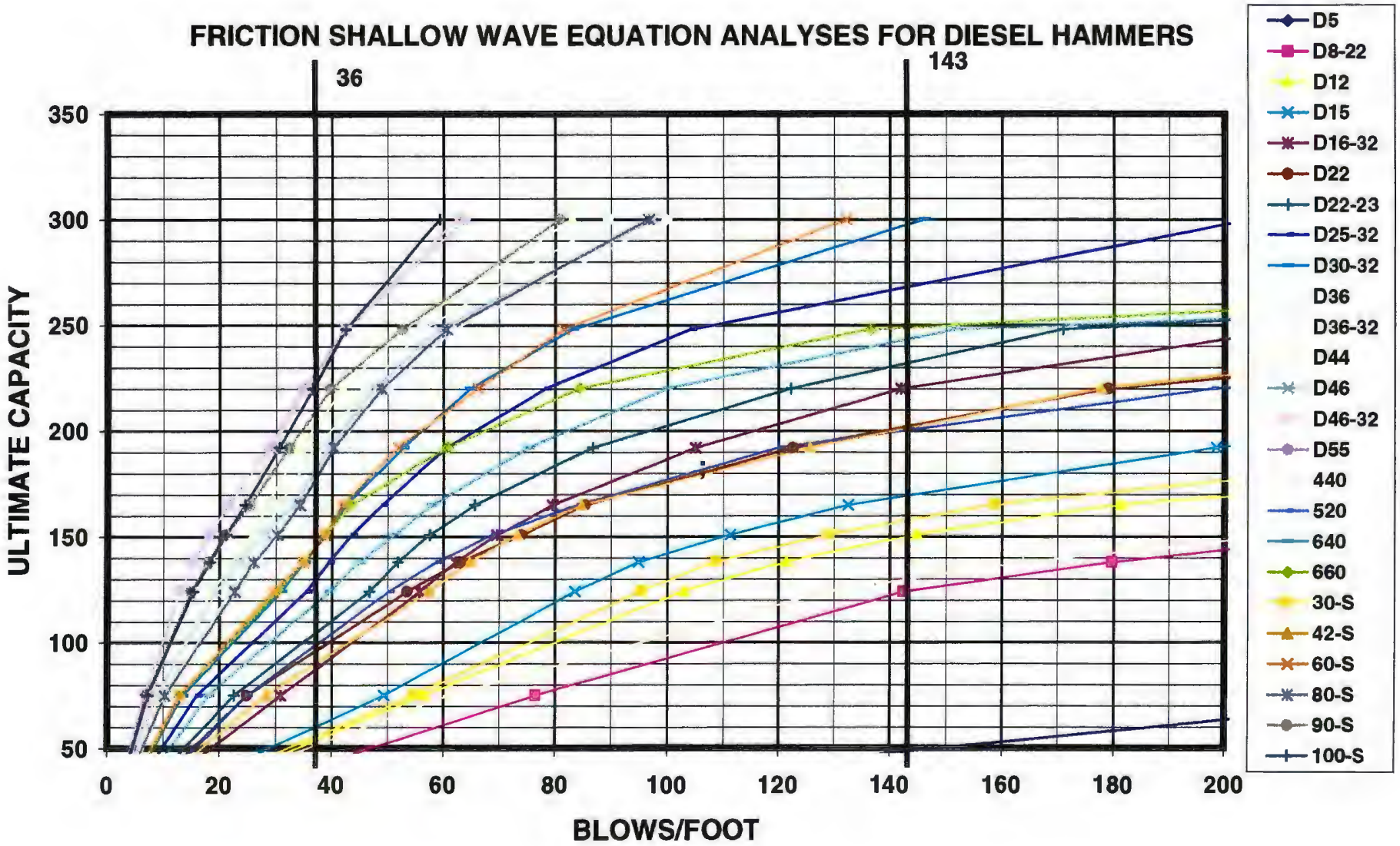

FRICTION DEEP WAVE EQUATION ANALYSES FOR ECH HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
50
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
C50
C65
C80
C100
C115
C140
C160
C200
C300
C5200
C5300
01
02
06
08
010
012
014
016
020
030
040
060

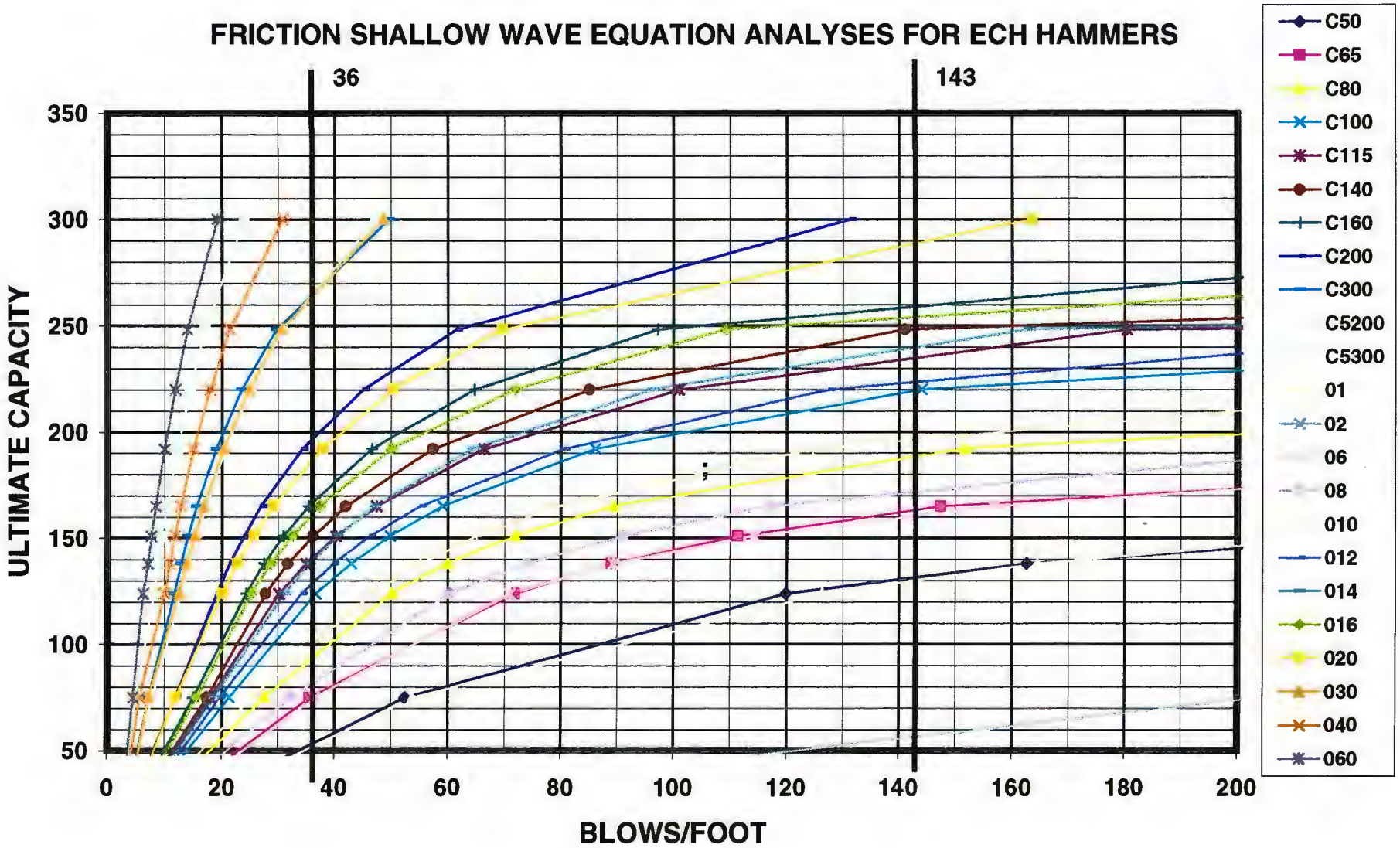
FRICTION DEEP
ULTIMATE CAPACITY RANGE

HAMMER ID.	143 HIGH	36 LOW	MAX	RATED ENERGY	MIN	RATED ENERGY
1	51.8	14.8	51.8	8.23	14.8	8.2
2	131.0	40.2	131.0	17.60	40.2	17.6
3	154.2	53.7	154.2	23.59	53.7	23.6
4	173.6	60.8	173.6	28.31	60.8	28.3
5	222.1	82.7	222.1	39.25	82.7	39.3
6	207.8	92.4	207.8	40.61	92.4	40.6
7	235.0	104.3	235.0	51.26	104.3	51.3
8	266.5	135.1	266.5	61.49	135.1	61.5
9	292.8	149.8	292.8	73.66	149.8	73.7
10	300.0	184.3	300.0	83.82	184.3	83.8
11	300.0	194.2	300.0	88.50	194.2	88.5
12	300.0	205.7	300.0	90.44	205.7	90.4
13	300.0	185.0	300.0	107.18	185.0	107.2
14	300.0	231.0	300.0	113.16	231.0	113.2
15	300.0	230.1	300.0	124.53	230.1	124.5
16	135.3	51.6	135.3	18.56	51.6	18.6
17	203.4	97.5	203.4	30.37	97.5	30.4
18	245.6	121.6	245.6	40.62	121.6	40.6
19	249.2	152.1	249.2	51.63	152.1	51.6
20	163.6	53.5	163.6	22.50	53.5	22.5
21	207.6	87.5	207.6	42.00	87.5	42.0
22	299.9	155.3	299.9	72.94	155.3	72.9
23	300.0	177.9	300.0	99.33	177.9	99.3
24	300.0	211.9	300.0	90.00	211.9	90.0
25	300.0	225.9	300.0	120.00	225.9	120.0
26	139.1	52.1	139.1	15.00	52.1	15.0
27	167.9	71.3	167.9	19.50	71.3	19.5
28	189.1	92.3	189.1	26.00	92.3	26.0
29	216.8	120.7	216.8	32.50	120.7	32.5
30	231.0	141.4	231.0	37.38	141.4	37.4
31	233.5	141.7	233.5	42.00	141.7	42.0
32	250.1	159.7	250.1	48.75	159.7	48.8
33	285.8	190.7	285.8	60.00	190.7	60.0
34	300.0	253.5	300.0	90.00	253.5	90.0
35	300.0	253.9	300.0	100.00	253.9	100.0
36	300.0	300.0	300.0	150.00	300.0	150.0
37	138.6	48.2	138.6	15.00	48.2	15.0
38	62.8	19.1	62.8	7.26	19.1	7.3
39	166.9	69.8	166.9	19.50	69.8	19.5
40	171.8	82.4	171.8	26.00	82.4	26.0
41	195.2	102.3	195.2	32.50	102.3	32.5
42	221.8	135.9	221.8	39.00	135.9	39.0
43	226.6	144.2	226.6	42.00	144.2	42.0
44	249.0	167.6	249.0	48.75	167.6	48.8
45	263.7	188.0	263.7	60.00	188.0	60.0
46	300.0	257.9	300.0	90.00	257.9	90.0
47	300.0	300.0	300.0	120.00	300.0	120.0
48	300.0	300.0	300.0	180.00	300.0	180.0

FRICTION SHALLOW (FS)




FRICTION SHALLOW WAVE EQUATION ANALYSES FOR DIESEL HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
50
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
D5
D8-22
D12
D15
D16-32
D22
D22-23
D25-32
D30-32
D36
D36-32
D44
D46
D46-32
D55
440
520
640
660
30-S
42-S
60-S
80-S
90-S
100-S

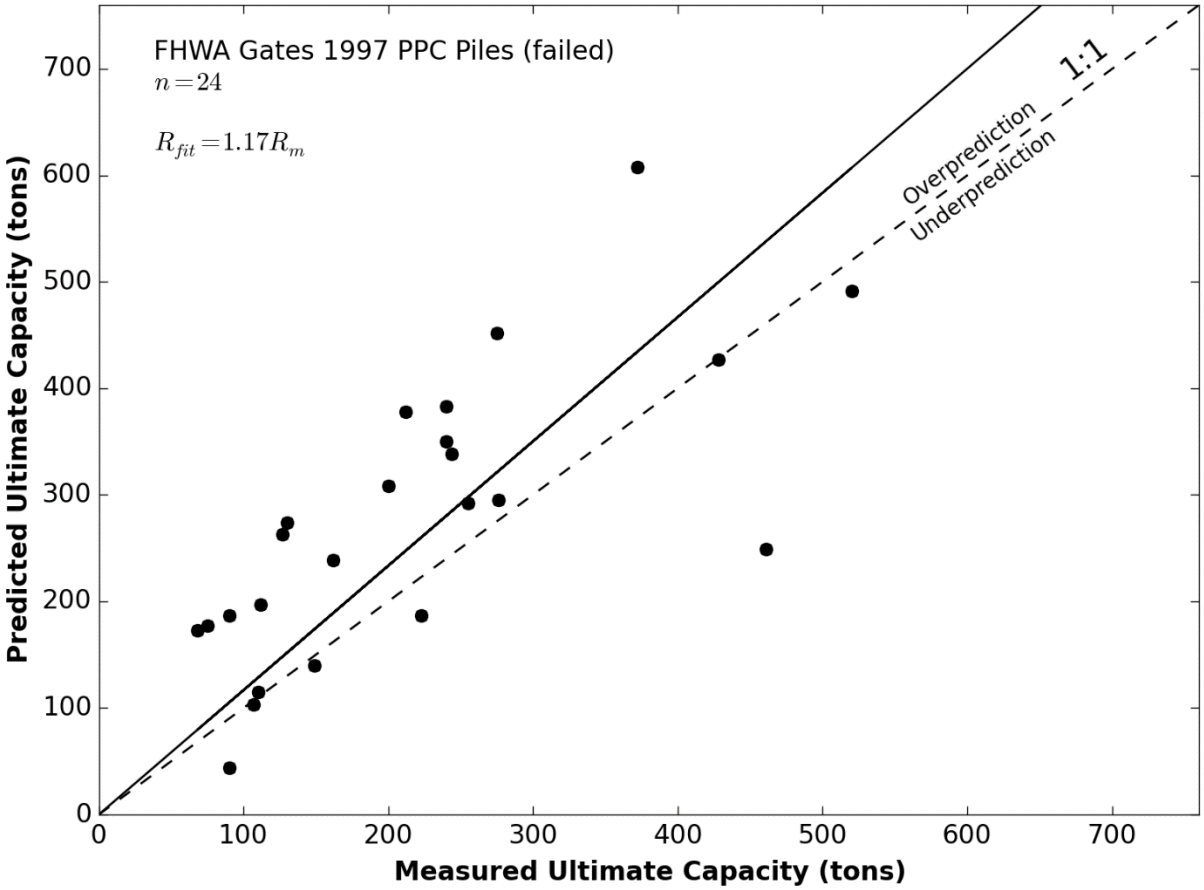

FRICTION SHALLOW WAVE EQUATION ANALYSES FOR ECH HAMMERS
36
143
ULTIMATE CAPACITY
350
300
250
200
150
100
50
0
20
40
60
80
100
120
140
160
180
200
BLOWS/FOOT
C50
C65
C80
C100
C115
C140
C160
C200
C300
C5200
C5300
01
02
06
08
010
012
014
016
020
030
040
060

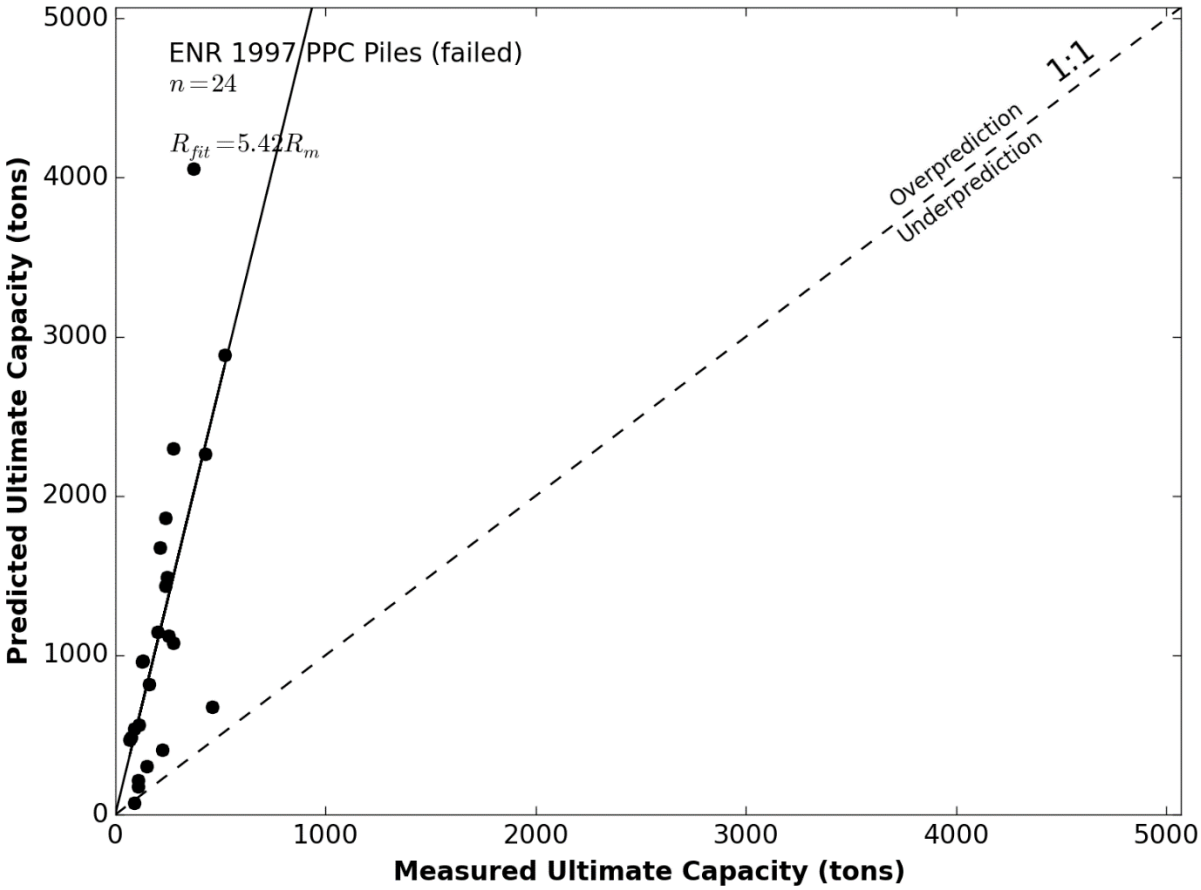
FRICTION SHALLOW
ULTIMATE CAPACITY RANGE

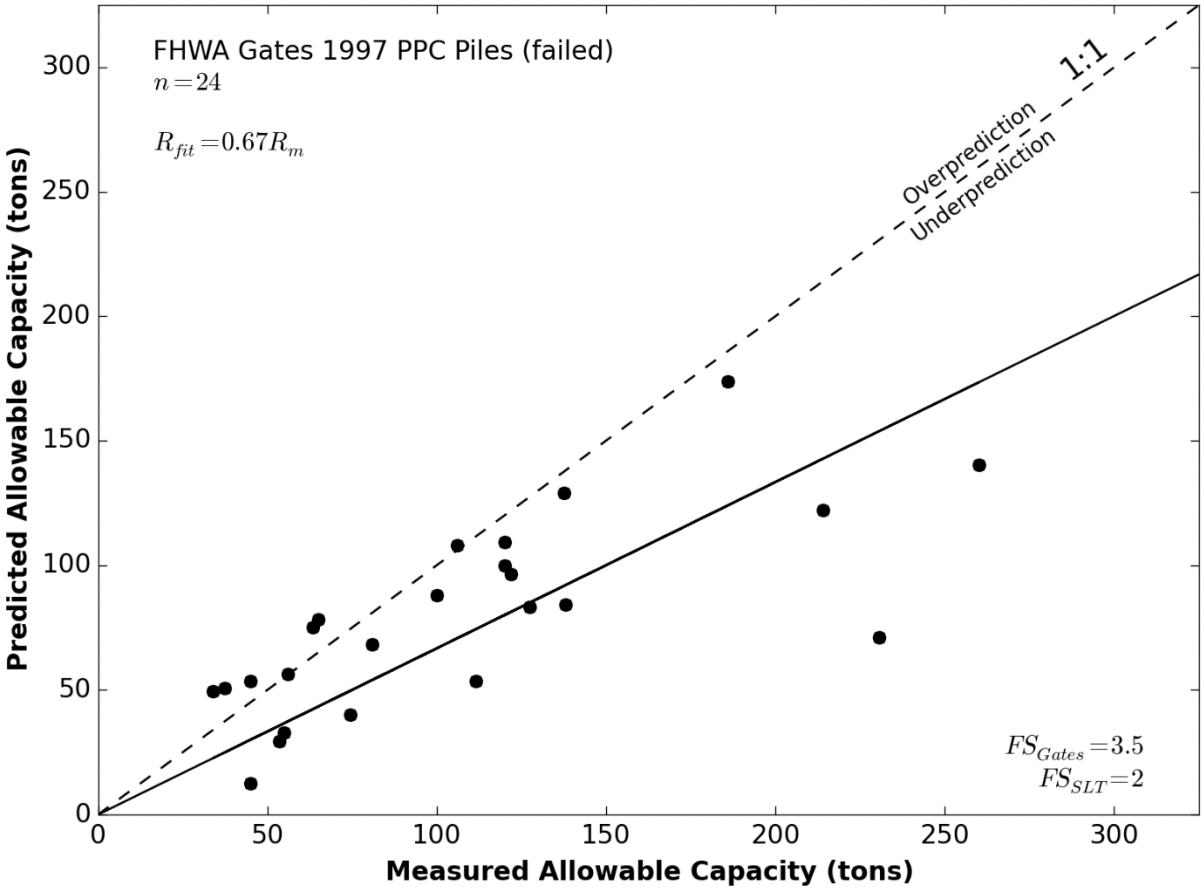
HAMMER ID.	143 HIGH	36 LOW	MAX	RATED ENERGY	MIN	RATED ENERGY
1	48.5	16.7	48.5	8.23	16.7	8.2
2	124.2	40.6	124.2	17.60	40.6	17.6
3	150.0	52.3	150.0	23.59	52.3	23.6
4	169.3	58.7	169.3	28.31	58.7	28.3
5	220.2	85.0	220.2	39.25	85.0	39.3
6	202.1	94.1	202.1	40.61	94.1	40.6
7	232.0	102.2	232.0	51.26	102.2	51.3
8	268.1	126.1	268.1	61.49	126.1	61.5
9	297.4	141.2	297.4	73.66	141.2	73.7
10	300.0	175.6	300.0	83.82	175.6	83.8
11	300.0	187.5	300.0	88.50	187.5	88.5
12	300.0	198.5	300.0	90.44	198.5	90.4
13	300.0	177.0	300.0	107.18	177.0	107.2
14	300.0	222.0	300.0	113.16	222.0	113.2
15	300.0	224.1	300.0	124.53	224.1	124.5
16	129.7	50.3	129.7	18.56	50.3	18.6
17	200.3	96.6	200.3	30.37	96.6	30.4
18	243.1	115.9	243.1	40.62	115.9	40.6
19	248.9	141.8	248.9	51.63	141.8	51.6
20	157.6	54.3	157.6	22.50	54.3	22.5
21	201.3	88.0	201.3	42.00	88.0	42.0
22	300.0	141.8	300.0	72.94	141.8	72.9
23	300.0	172.5	300.0	99.33	172.5	99.3
24	300.0	205.6	300.0	90.00	205.6	90.0
25	300.0	217.2	300.0	120.00	217.2	120.0
26	131.6	53.2	131.6	15.00	53.2	15.0
27	163.3	75.7	163.3	19.50	75.7	19.5
28	188.2	93.3	188.2	26.00	93.3	26.0
29	143.0	122.1	143.0	32.50	122.1	32.5
30	234.8	140.7	234.8	37.38	140.7	37.4
31	248.2	150.4	248.2	42.00	150.4	42.0
32	258.9	166.7	258.9	48.75	166.7	48.8
33	300.0	196.7	300.0	60.00	196.7	60.0
34	300.0	264.5	300.0	90.00	264.5	90.0
35	300.0	264.5	300.0	100.00	264.5	100.0
36	300.0	300.0	300.0	150.00	300.0	150.0
37	130.1	51.8	130.1	15.00	51.8	15.0
38	56.4	23.0	56.4	7.26	23.0	7.3
39	160.5	74.2	160.5	19.50	74.2	19.5
40	171.6	81.6	171.6	26.00	81.6	26.0
41	196.4	99.7	196.4	32.50	99.7	32.5
42	223.5	128.9	223.5	39.00	128.9	39.0
43	239.6	139.1	239.6	42.00	139.1	42.0
44	253.8	161.2	253.8	48.75	161.2	48.8
45	288.6	186.4	288.6	60.00	186.4	60.0
46	300.0	263.6	300.0	90.00	263.6	90.0
47	300.0	300.0	300.0	120.00	300.0	120.0
48	300.0	300.0	300.0	180.00	300.0	180.0

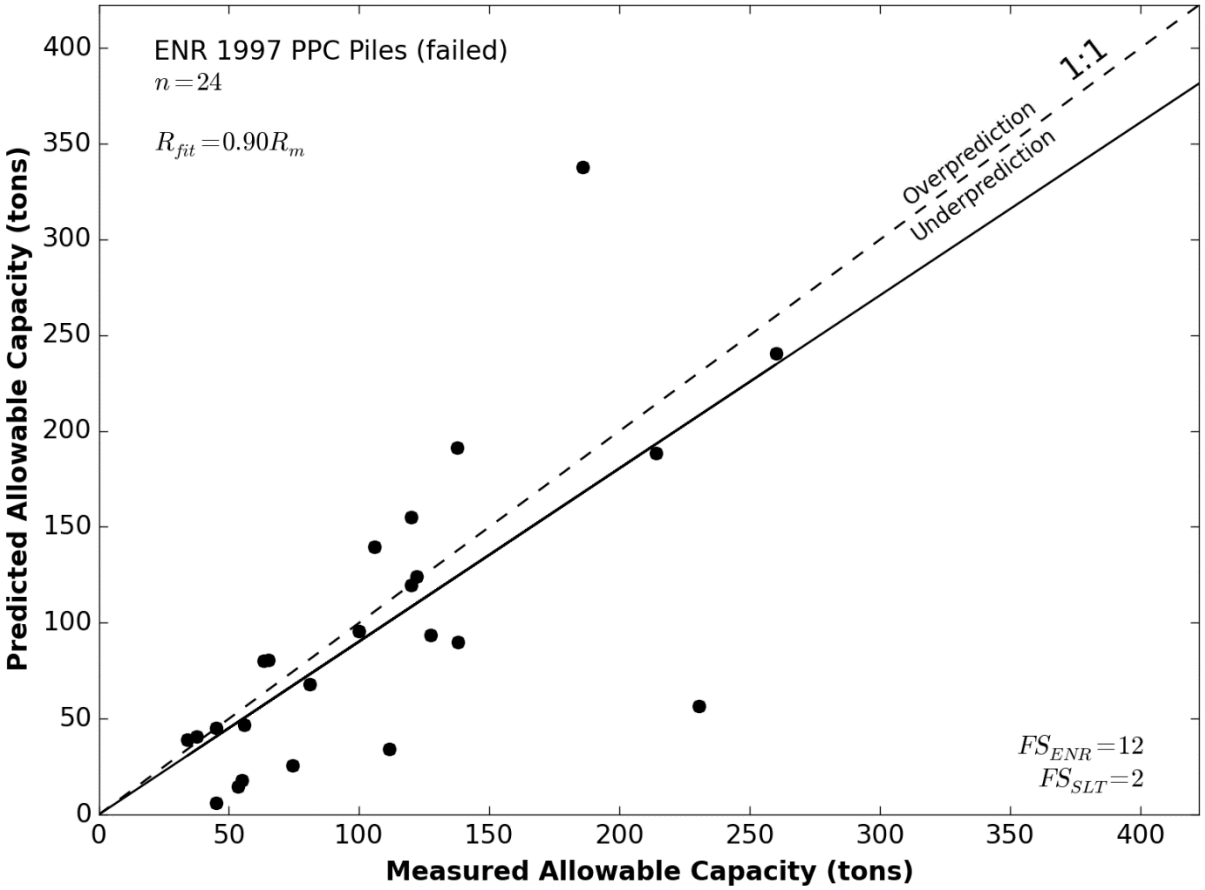
APPENDIX C

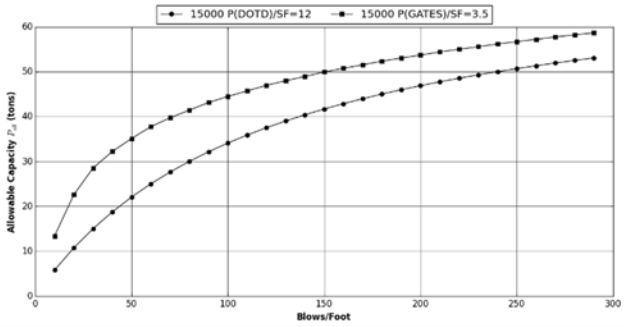
DOTD EVALUATION OF FHWA MODIFIED GATES FORMULA (1997)

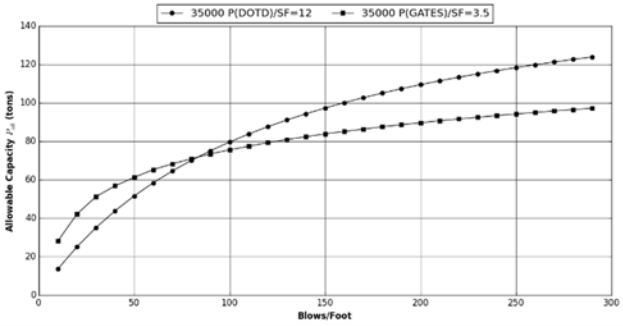

FHWA Gates 1997 PPC Piles (failed)
$n = 24$
$R_{fit} = 1.17 R_m$
1:1
Overprediction
Underprediction
Predicted Ultimate Capacity (tons)
Measured Ultimate Capacity (tons)
0
100
200
300
400
500
600
700

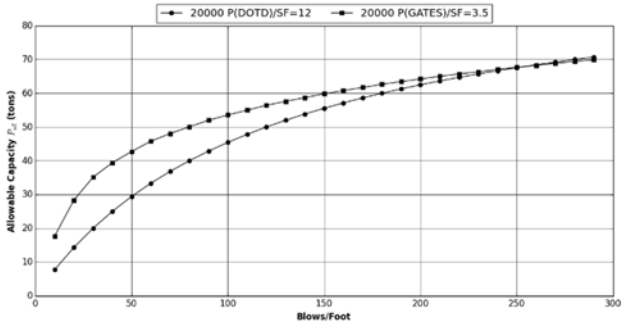

ENR 1997 PPC Piles (failed)
$n = 24$
$R_{fit} = 5.42 R_m$
1:1
Overprediction
Underprediction
Predicted Ultimate Capacity (tons)
Measured Ultimate Capacity (tons)
0
1000
2000
3000
4000
5000

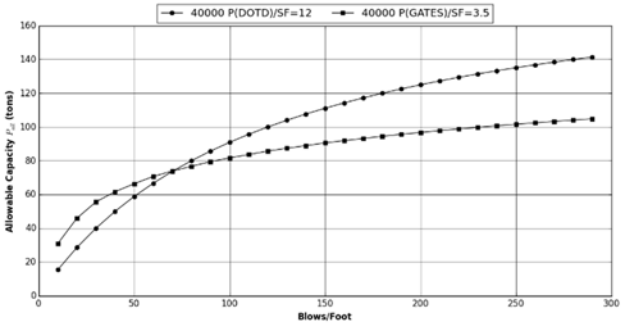

FHWA Gates 1997 PPC Piles (failed)
$n = 24$
$R_{fit} = 0.67 R_m$
1:1
Overprediction
Underprediction
$FS_{Gates} = 3.5$
$FS_{SLT} = 2$
Predicted Allowable Capacity (tons)
Measured Allowable Capacity (tons)
0
50
100
150
200
250
300

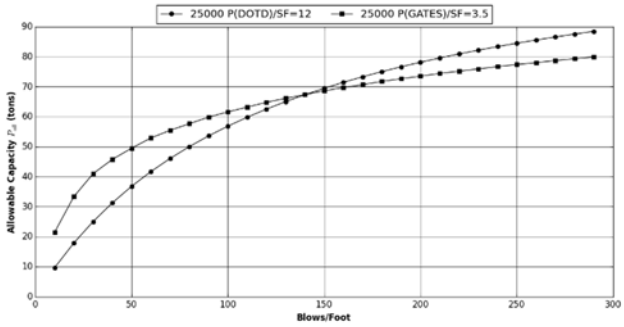

ENR 1997 PPC Piles (failed)
$n=24$
$R_{fit}=0.90R_m$
1:1
Overprediction
Underprediction
$FS_{ENR}=12$
$FS_{SLT}=2$
Predicted Allowable Capacity (tons)
Measured Allowable Capacity (tons)
0
50
100
150
200
250
300
350
400

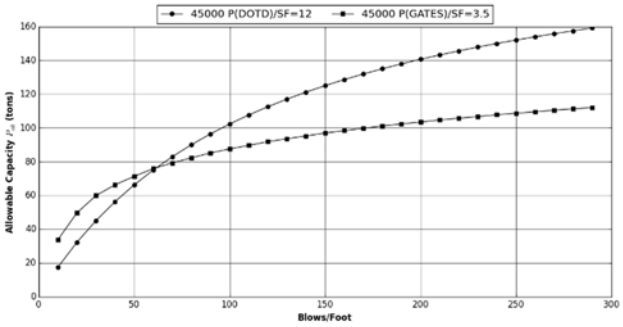

15000 P(DOTD)/SF=12
15000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

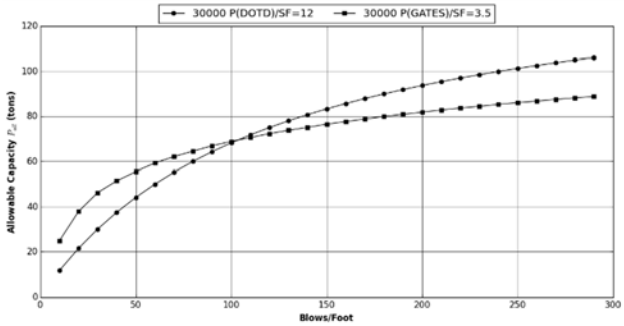

35000 P(DOTD)/SF=12
35000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

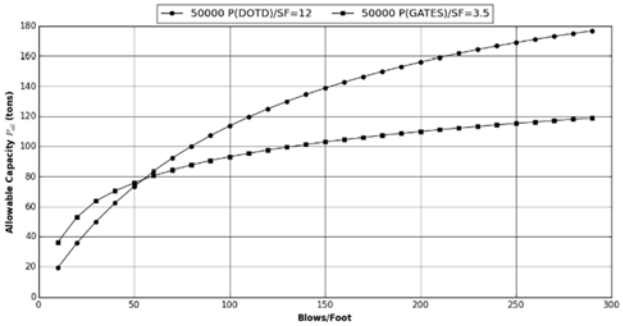

20000 P(DOTD)/SF=12
20000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

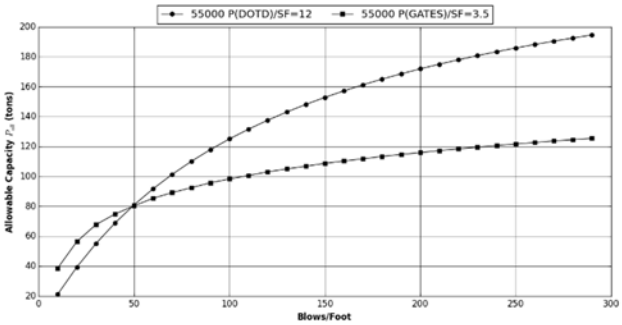

40000 P(DOTD)/SF=12
40000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

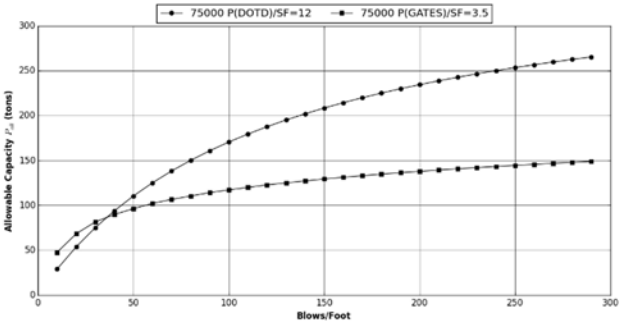

25000 P(DOTD)/SF=12
25000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

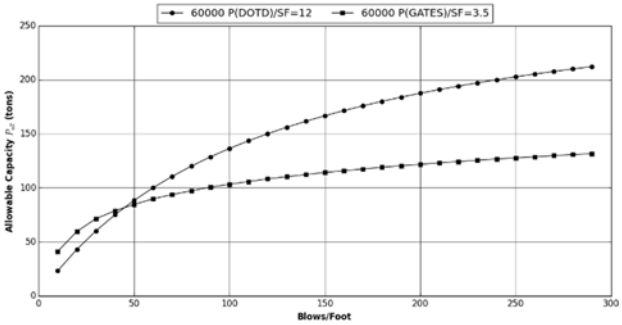

45000 P(DOTD)/SF=12
45000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

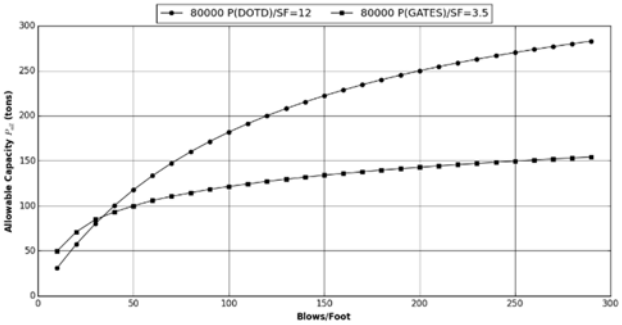

30000 P(DOTD)/SF=12
30000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

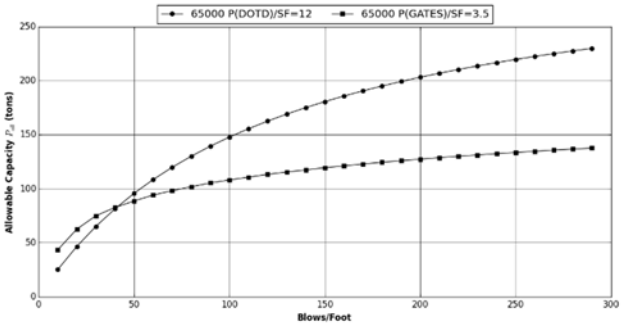

50000 P(DOTD)/SF=12
50000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

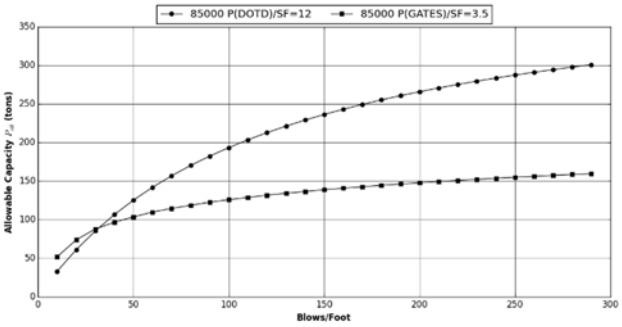

55000 P(DOTD)/SF=12
55000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

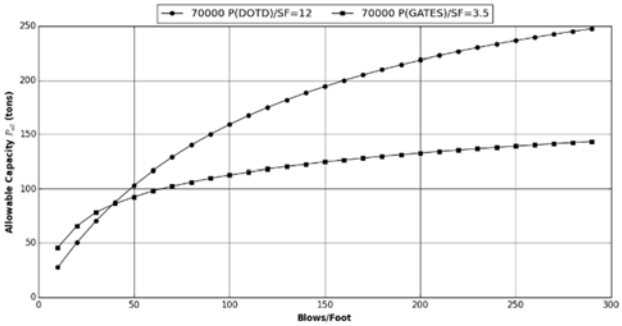

75000 P(DOTD)/SF=12
75000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

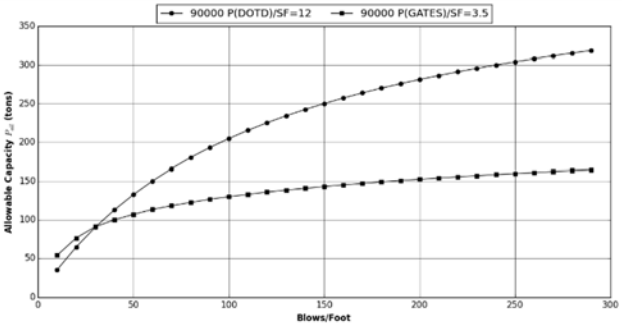

60000 P(DOTD)/SF=12
60000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

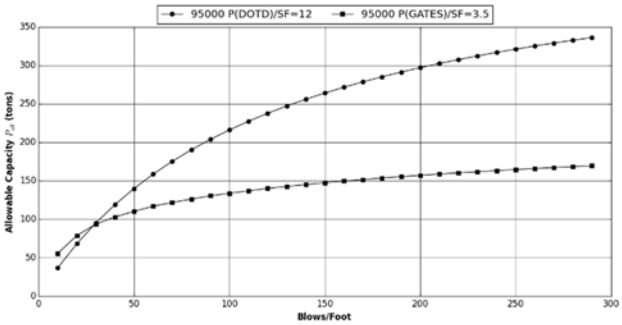

80000 P(DOTD)/SF=12
80000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

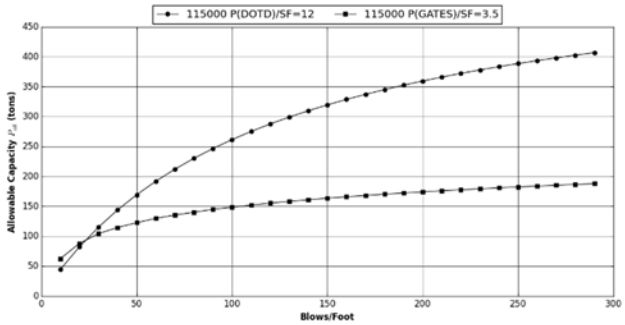

65000 P(DOTD)/SF=12
65000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

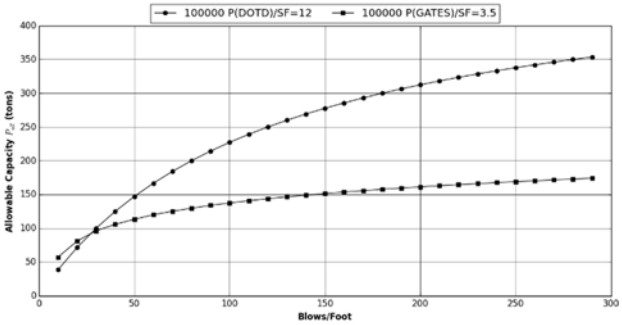

85000 P(DOTD)/SF=12
85000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot

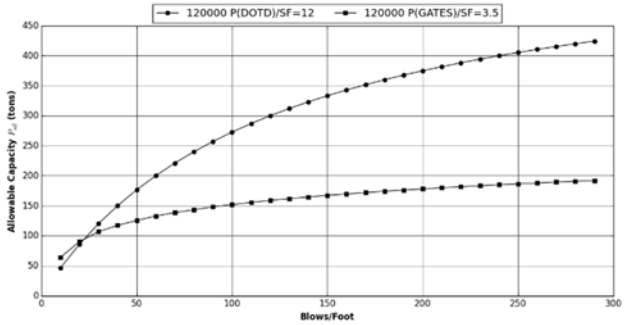

70000 P(DOTD)/SF=12
70000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


90000 P(DOTD)/SF=12
90000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


95000 P(DOTD)/SF=12
95000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


115000 P(DOTD)/SF=12
115000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


100000 P(DOTD)/SF=12
100000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot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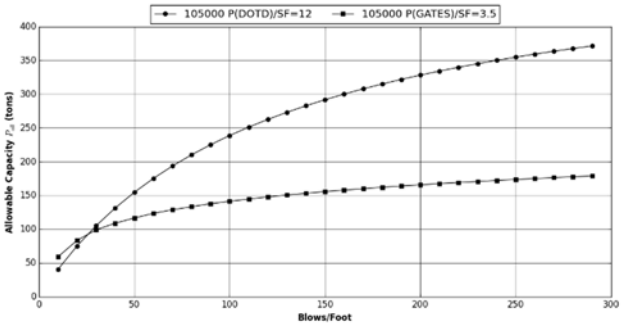
Blows/Foot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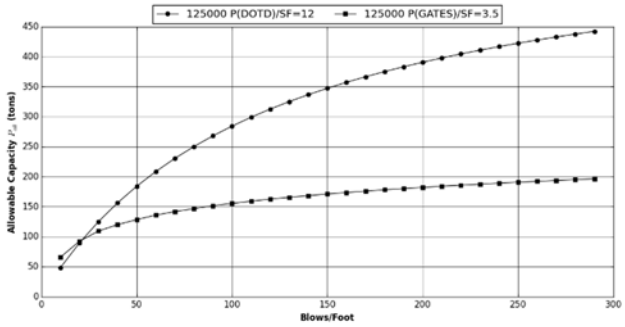
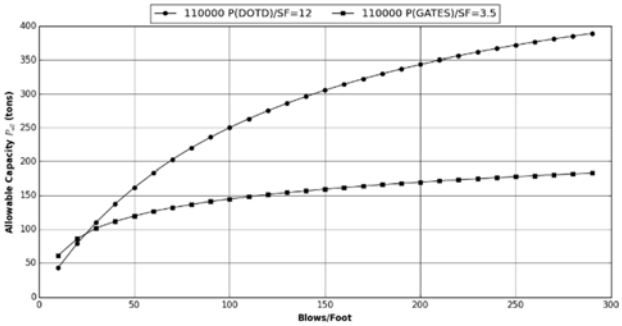
105000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


125000 P(DOTD)/SF=12
125000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot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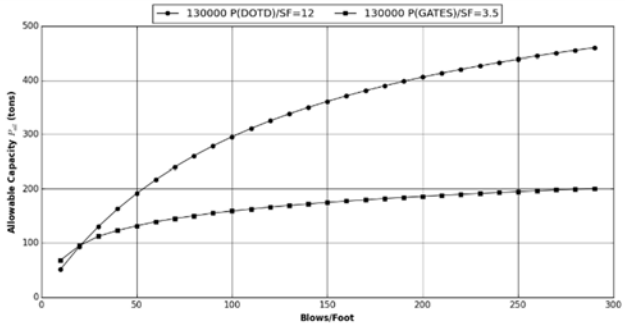
110000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot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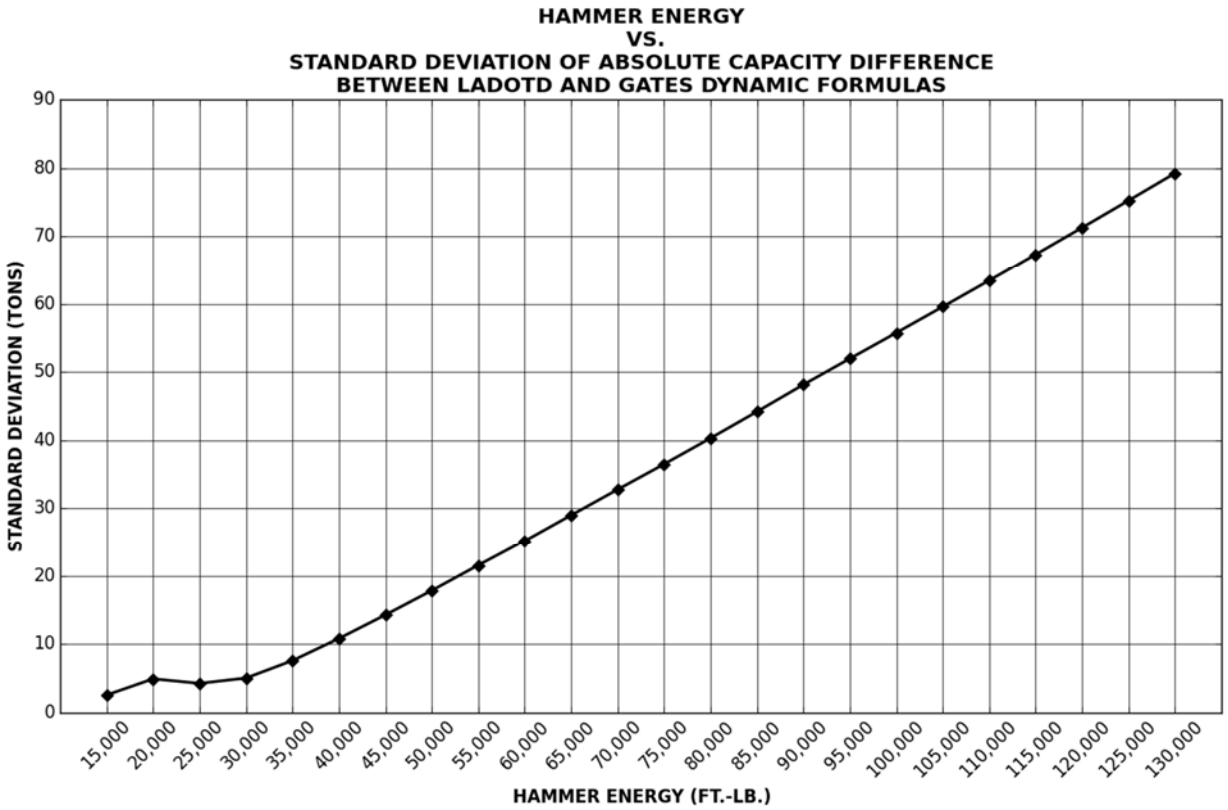
130000 P(GATES)/SF=3.5
Allowable Capacity P_{all} (tons)
Blows/Foot


HAMMER ENERGY
VS.
STANDARD DEVIATION OF ABSOLUTE CAPACITY DIFFERENCE
BETWEEN LADOTD AND GATES DYNAMIC FORMULAS
STANDARD DEVIATION (TONS)
0
10
20
30
40
50
60
70
80
90
15,000
20,000
25,000
30,000
35,000
40,000
45,000
50,000
55,000
60,000
65,000
70,000
75,000
80,000
85,000
90,000
95,000
100,000
105,000
110,000
115,000
120,000
125,000
130,000
HAMMER ENERGY (FT.-LB.)

APPENDIX D

DATABASE DESIGN

LAPLTD Documentation

Louisiana Department of Transportation and Development Pile Load Test Database

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Introduction

LAPLTD: Louisiana Department of Transportation and Development Pile Load Test Database

Background

Purpose: To collect pile load testing information using a standard approach for use in evaluating pile capacity testing methods and pile capacity prediction methods.

Objectives: To standardize data collection for static load tests and dynamic load tests (CAPWAP Analyses).

Created with Access 2013.

Hierarchy

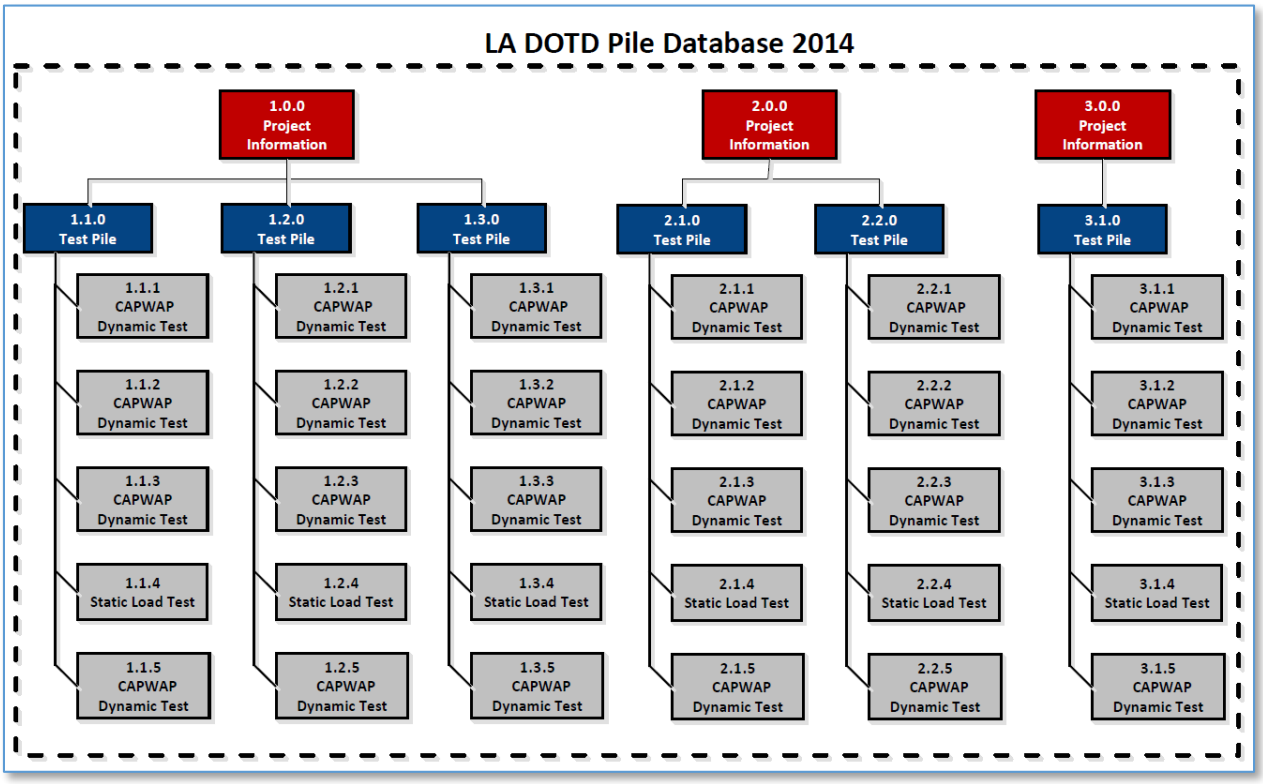

Figure 1: LAPLTD Hierarchy levels

Hierarchy level 1: Projects

Unique names/project numbers.

Hierarchy level 2: Test Piles

Each test pile must be tied to a project. There may exist many test piles for each project.

Hierarchy level 3: Test Events

Each test event must be tied to a test pile. There may exist many test events for each test pile.

Tables

dtProjects

Hierarchy Level 1

Fields

Table 1. dtProjects Fields

Name	Caption (*=field required)	Description	Comments
Project_Num_H	H Number	H Number (required field)	Project identification number for newer projects. Input mask “H.” followed by six digits.
Project_Num_old	Project Number (old)	Project Number (old)	Project identification number for older projects. Input mask 000-00-0000 (9 digits).
Project_Name	Project Name *	Project Name (required field)	Descriptive project name. Usually includes road name and/or name of feature the road crosses.
Totals_TP	Test Piles	Test Pile Records	
Path_Network	Network Path	Location of file folder on T:\ drive	
Contractor	Contractor *	Contractor performing foundation work (required field)	Contractor performing foundation work for the project. Must be one of contractors listed. Add new contractor names to “Contractors” list in Database Maintenance as needed.
Parish_1	Parish 1 *	Primary parish in which the project is located (required field)	Parish in which the project resides or the primary parish in which the project is located.
Parish_2	Parish 2	Secondary parish in which the project is located	Secondary parish in which the project is located if the project spans two parishes.
Date_Latest	Latest	Drive date of latest test pile	
Totals_MP	Monitor Piles	Monitor Pile Records	
Totals_IP	Indicator Piles	Indicator Pile Records	
Totals_Other	Other Pile Types	Other Pile Type Records	
Totals_TS	Test Shafts	Test Shafts Records	
Source	Source *	Source *	Source of information for the project data inputted. Must be one of the sources listed. Add new sources to the “Sources” list in Database Maintenance as needed.

Name	Caption (*=field required)	Description	Comments
Route	Route	Route foundation supports	
Notes			

Table 2. dtProjects Unknown Default Values

Field	Value
H Number	H.000000
Project Number	000-00-0000
Contractor	Unknown
Parish	Unknown

dtTestPiles

Hierarchy Level 2

Fields

Table 3. dtTestPiles Fields

Name	Caption (*=field required)	Description	Comments
Pile_Name	Pile Name*		
Latitude	Lat [deg] *	Latitude [decimal degrees] (required field)	North/South geographic coordinate for position of pile. Input as decimal; use as much detail as possible. Unacceptable latitude values will be met with the error: “Warning – Latitude must be located within the state of Louisiana (>28.89 And <33.03)”. See Table 4 for unknown values.
Longitude	Long [deg] *	Longitude [decimal degrees] (required field)	East/West geographic coordinate for position of pile. Input as decimal; use as much detail as possible. Unacceptable longitude values will be met with the error: “Warning – Longitude must be located within the state of Louisiana (>-93.9 And <-88.96)”. See Table 4 for unknown values.
Station	Station [ft]	Station [ft]	Station feet position of pile. Use notation 00+00.00.

Name	Caption (*=field required)	Description	Comments
Sta_offset	Sta Offset	Station Offset	Feet offset from station for location of pile. Use notation 00 RT or 00 LT.
Near_Boring	Nearest Boring	Name of the nearest soil boring	Name of boring nearest to pile. (Ex. SPT-01)
Near_CPT	Nearest CPT	Name of the nearest CPT sounding	Name of CPT nearest to pile. (Ex. CPT-01)
Date_Driven	Date Driven *	Date initial pile driving completed (required field)	Date and time at which pile was installed. Input mask: "__/__/____ __:__:__ __" (MM/DD/YYYY HH:MM:SS AM/PM). See Table 4 for unknown value of time.
Length	Length [ft] *	Total pile length [ft] (required field)	Total length of pile in feet.
Elev_Reference	Elev. Reference *	Reference Elevation: Measured, Estimated, or Unknown?	Description of the nature of ground surface elevation and other elevation values: Measured, Estimated, or Unknown.
Elev_GS	GS Elev [ft] *	Ground surface elevation [ft] (required field)	Ground surface elevation in feet. See Table 4 for unknown values.
Elev_Casing	Casing Elev [ft]	Elevation of bottom of casing [ft]	Elevation in feet of bottom of pile casing. Usually similar to Scour elevation. Must be blank or less than ground surface elevation or error message will appear: "Warning – Casing elevation must be below ground elevation."
Elev_Cutoff	Cutoff Elev [ft]	Pile cutoff elevation [ft]	Top of pile elevation in feet.
Elev_Splice	Splice Elev [ft]	Pile splice elevation [ft]	Elevation of pile splice, usually applicable to longer piles that need to be spliced together during driving.
Elev_TipEOD	EOD Tip Elev [ft] *	Pile tip elevation at end-of-drive [ft] (required field)	Elevation in feet of the tip of pile at the end of driving. (Negative of the pile length if no other pile elevation values are known.)
Elev_TipDesign	Design Tip Elev [ft] (req)	Design pile tip elevation [ft] (required field)	Elevation in feet of the tip of pile specified in the design.
Notes	Notes	Test pile notes	
LRFD	LRFD	Pile designed according to LRFD?	Pile designed according to LRFD? Yes (checked) or No (Unchecked).
Load_Factored	Factored Load [tons]	Factored load used in LRFD design [tons]	Factored load used in LRFD design in tons.
Resist_Factor	Resistance Factor	Resistance factor used in LRFD design	Resistance factor used in LRFD design.
Load_Design	Design Load [tons]	Design load used in ASD design [tons]	Design load used in ASD design in tons.

Name	Caption (*=field required)	Description	Comments
Load_Target	Target Load [tons]	Ultimate pile resistance needed to verify design [tons]	Ultimate pile resistance needed to verify design in tons.
Setup_Factor	Setup Factor	Pile setup factor	Pile Setup Factor.
Designer	Designer	EOR for pile design	Engineer on record for pile design.
Instrumented	Instrumented	Was the pile instrumented?	Was the pile instrumented? Yes (checked) or No (Unchecked).
Elev_Scour	Scour Elevation [ft]	Scour Elevation [ft]	Elevation in feet of pile scour. Usually similar to Bottom of Casing elevation.
Modulus	Modulus [ksi]	Elastic modulus of pile [ksi]	Elastic Modulus of the pile in ksi.
Project_ID	Project *	Project name (required field)	
Hammer	Hammer *	Type of hammer used to drive pile	Hammer used to drive the pile during initial install. Begin typing the hammer manufacturer and the first hammer of that manufacturer will appear. Use the pull-down to see other hammers. Must be one of the hammers on the list. Add new hammers to the “Hammers” list in Database Maintenance as needed.
Pile_Type	Pile Type*	Type/Size of pile (required field)	Type of pile. For example, ‘12” Solid Sq. PPC’. Must be one of the pile types listed. Add new pile types to the “Pile Types” list in Database Maintenance as needed.
TP_Category	TP Category *	Type of test pile (required field)	Pile Type: Test Pile, Monitor Pile, Indicator Pile, Other, or Test Shaft. Most likely “Test Pile” (pile which has undergone a load test) or “Monitor Pile” (production pile).
Soil_Type	Soil Type	Type of soil pile is tipped into	Type of soil the tip of the pile: Unknown, Clay, Sand, or Gravel. Must be one of the soil types listed. Add new soil types to the “Soil Types” list in Database Maintenance as needed.
Steel_Yield_Strength	Steel Yield Strength [ksi]	Steel Pile Yield Strength, Fy [ksi]	Yield strength of the steel used for the pile in ksi.
Concrete_Strength	Concrete Strength [ksi]	Concrete Pile Yield Strength, Fy [ksi]	Yield strength of the concrete used for the pile in ksi.
Pile_Splice	Pile Spliced	Is the pile spliced?	Was the pile spliced? Yes (checked) or No (Unchecked).
Stroke_EOID	Stroke [ft]	Stroke [ft] closest available data to EOID	Stroke in feet recorded in end of initial drive test event or the closest test event to the initial drive.

Name	Caption (*=field required)	Description	Comments
Blowcount_EOID	BC_EOID	Blow Count - closest available data to EOID	Blow count in blows per foot recorded in end of initial drive test event or the closest test event to the initial drive.
StokeBlCnt_Notes	Stroke and Blow Count Notes	Notes for Stroke and Blow Count Values	Notes for EOID Stroke and EOID Blow count values

Table 4. dtTestPiles Unknown Default Values

Field	Value
Date Driven – Time	__/__/____ 00:00:00 AM
Latitude	29
Longitude	-90
Elevation Reference	Unknown
Ground Surface Elevation	0

dtTestEvents

Hierarchy Level 3

Fields

Table 5. dtTestEvents Fields

Name	Caption (*=field required)	Description	Comments
Date_Tested	Date Tested *	Date of test event (required field)	Date and time at which pile was tested. Input mask: "__/__/____ __:__:__ __" (MM/DD/YYYY HH:MM:SS AM/PM). See Table 6 for unknown value of time.
Time_Elapsed	Elapsed time [hours] (req)	Elapsed time since EOD [hours] (required field)	Elapsed time in hours from when the pile was installed to when the pile was tested. Auto-calculated when the record is saved. Displays 0.01 hours if time elapsed is zero or negative.
Capacity_Ult	Ultimate Capacity [tons]	Ultimate capacity derived from test event [tons]	Ultimate capacity of the pile derived from the test event in tons.

Name	Caption (*=field required)	Description	Comments
Capacity_End	End Bearing [tons]	End bearing capacity derived from test event [tons]	End bearing capacity of the pile derived from the test event in tons.
Capacity_Skin	Skin Friction [tons]	Skin Friction capacity derived from test event [tons]	Skin friction capacity of the pile derived from the test event in tons. Auto-calculated based on Ultimate Capacity and End Bearing.
Stroke	Stroke [ft]	Observed stroke [ft]	Observed stroke in feet.
Blow_Count	Blow Count [bl/ft]	Observed blow count at time of event [blows/ft]	Observed blow count at time of event in blows/ft.
Jc	JRx	Damping constant associated with PDA capacity associated with Rx method	Damping constant associated with PDA capacity associated with Rx method.
JRs	JRs	Damping constant associated with PDA capacity associated with Rs method	Damping constant associated with PDA capacity associated with Rs method.
MQ	Match Quality	Match quality from CAPWAP analysis	Match quality from CAPWAP analysis.
Failure	Failure	Did static load test fail the pile?	Did the static load test fail the pile? Yes (checked) or No (unchecked).
Ult_Cap_Method	Ultimate Capacity Determination Method	Butler-Hoy, Davisson (piles up to 24"), Modified Davisson (piles larger than 24")	Method used for determining the ultimate capacity of the pile: Davisson (for piles up to 24”), Modified Davisson (for piles larger than 24”), or Butler-Hoy.
Notes	Notes	Field testing notes	Field testing notes
EMX	EMX [kip-ft]	Hammer Enargy [kip-ft]	Hammer Energy in kip-feet.
Pile_Name	Pile Name *	Name of the test pile (required field)	Pile name of the test pile chosen from drop-down list #2. Autocompleted when the New Test button is clicked.
Event_Type	Event Type *	Type of test event used	Type of test event; brings up relevant data entry forms when chosen. Choices: see lstEventtype. Only two event types are given detailed data input forms in the database: Static and CAPWAP. The other event types, when selected for a new test event, bring up the File Locations tab through which data in PDF files can be linked.

Name	Caption (*=field required)	Description	Comments
Loc_Boring_Log	Loc Boring Log	Location of File: Boring Log	Location of the PDF file including boring log information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.
Loc_Pile_Install_Records	Loc Pile Install Records	Location of File: Pile Installation Records	Location of the PDF file including pile installation record information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.
Loc_Load_Test_Records	Loc Load Test Records	Location of File: Load Testing Records	Location of the PDF file including load test record information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.
Hammer	Hammer	Hammer	Name of the hammer used during the pile test event. Begin typing the hammer manufacturer and the first hammer of that manufacturer will appear. Use the pull-down to see other hammers. Must be one of the hammers on the list. Add new hammers to the “Hammers” list in Database Maintenance as needed.
SP_Weight	SP Weight [kips]	Striker Plate Weight [kips]	Weight of striker plate in kips.
SP_Diameter	SP Diameter [in]	Striker Plate Diameter [in]	Diameter of striker plate in inches.
SP_Thickness	SP Thickness [in]	Striker Plate Thickness [in]	Thickness of striker plate in inches.
HC1_Material	HC1 Material	Hammer Cushion 1 Material	Description of hammer cushion material.
HC1_Layers	HC1 Layers	Hammer Cushion 1 Layers	Number of layers of hammer cushion material specified.
HC1_Thickness	HC1 Thickness [in]	Hammer Cushion 1 Thickness [in]	Total thickness of the hammer cushion material specified.
HC2_Material	HC2 Material	Hammer Cushion 2 Material	Description of hammer cushion material.
HC2_Layers	HC2 Layers	Hammer Cushion 2 Layers	Number of layers of hammer cushion material specified.
HC2_Thickness	HC2 Thickness [in]	Hammer Cushion 2 Thickness [in]	Total thickness of the hammer cushion material specified.
Hammer_Cushion	Hammer Cushion	Hammer Cushion	A drop-down menu of cushions from the WEAP database. Use the M1/M2 ratio to help guide cushion selection.
HC_Modulus_OR	HC Modulus OR [ksi]	Hammer Cushion Modulus of Elasticity [ksi] OVERRIDE	Elastic modulus of the hammer cushion. WEAP value Override (OR).
HC_CoR_OR	HC CoR OR	Hammer Cushion Coefficient of Restitution OVERRIDE	Coefficient of Restitution (COR) of the hammer cushion. WEAP value Override (OR).

Name	Caption (*=field required)	Description	Comments
M1_M2_Ratio	M1/M2 Ratio	M1/M2 Thickness Ratio	Ratio of the thickness of hammer cushion material 1 to the thickness of hammer cushion material 2. Auto-calculated based on thickness input.
Helmet_Dimension	Helmet Dimension	Helmet (Pile Cap) Dimension	Description of pile cap (or pile helmet) material.
Helmet_Weight	Helmet Weight [kips]	Helmet (Pile Cap) Weight [kips]	Weight of pile cap in kips.
Helmet_Ins_Weight	Helmet Inserts Weight [kips]	Helmet (Pile Cap) Inserts Weight [kips]	Weight of pile cap inserts in kips.
PC_Material	PC Material	Pile Cushion Material	Pile cushion material description.
PC_Thickness	PC Thickness [in]	Pile Cushion Thickness [in]	Total thickness of the pile cushion material.
PC_Area	PC Area [sq.in.]	Pile Cushion Area [sq.in.]	Area of the of the pile cushion.
Pile_Cushion	Pile Cushion	Pile Cushion	A drop-down menu of cushions from the WEAP database.
PC_Modulus_OR	PC Modulus OR [ksi]	Pile Cushion Modulus OVERRIDE [ksi]	Elastic modulus of the pile cushion. WEAP value Override (OR).
PC_CoR_OR	PC CoR OR	Pile Cushion Coefficient of Restitution OVERRIDE	Coefficient of Restitution (COR) of the pile cushion. WEAP value Override (OR).
Quake_Shaft	Shaft Quake [in]	Soil Parameter: Shaft Quake [in]	Shaft quake soil parameter in inches.
Quake_Toe	Toe Quake [in]	Soil Parameter: Toe Quake [in]	Toe quake soil parameter in inches.
Damping_Shaft	Damping Shaft [s/ft]	Soil Parameter: Damping Shaft [s/ft]	Shaft damping soil parameter in s/ft.
Damping_Toe	Toe Damping [s/ft]	Soil Parameter: Toe Damping [s/ft]	Toe damping soil parameter in s/ft.
Percentage_Shaft_Resistance	Shaft Resistance Percentage	Shaft Resistance Percentage [%]	Percentage (%) of shaft resistance.
Dist_Shape_Number	Distribution Shape Number	Distribution Shape Number	Distribution shape number.
Resistance_Distribution_Opt	Resistance Distribution Option	Proportional Shaft Resistance, Constant Shaft Resistance, or Constant End Resistance	Proportional shaft resistance, Constant shaft resistance, or Constant end resistance.
Ult_Capacity_1	Ult Capacity 1 [kips]	Ultimate Capacity 1 [kips]	Ultimate Capacity 1 [kips]

Name	Caption (*=field required)	Description	Comments
Ult_Capacity_2	Ult Capacity 2 [kips]	Ultimate Capacity 2 [kips]	Ultimate Capacity 2 [kips]
Ult_Capacity_3	Ult Capacity 3 [kips]	Ultimate Capacity 3 [kips]	Ultimate Capacity 3 [kips]
Ult_Capacity_4	Ult Capacity 4 [kips]	Ultimate Capacity 4 [kips]	Ultimate Capacity 4 [kips]
Ult_Capacity_5	Ult Capacity 5 [kips]	Ultimate Capacity 5 [kips]	Ultimate Capacity 5 [kips]
Ult_Capacity_6	Ult Capacity 6 [kips]	Ultimate Capacity 6 [kips]	Ultimate Capacity 6 [kips]
Ult_Capacity_7	Ult Capacity 7 [kips]	Ultimate Capacity 7 [kips]	Ultimate Capacity 7 [kips]
Ult_Capacity_8	Ult Capacity 8 [kips]	Ultimate Capacity 8 [kips]	Ultimate Capacity 8 [kips]
Ult_Capacity_9	Ult Capacity 9 [kips]	Ultimate Capacity 9 [kips]	Ultimate Capacity 9 [kips]
Ult_Capacity_10	Ult Capacity 10 [kips]	Ultimate Capacity 10 [kips]	Ultimate Capacity 10 [kips]
WEAP_Hammer_Option	Diesel Hammer Operation Option	Diesel Hammer Operation Option	Diesel Hammer Operation Option
WEAP_Pressure_FS	Diesel Hammer Pressure Fuel Setting	Diesel Hammer Pressure Fuel Setting	Fuel setting for diesel hammers: Max = Pressure_FS1 Max-1 = Pressure_FS2 Max-2 = Pressure_FS3 Max-3 = Pressure_FS4 Min = Pressure_FS5
Override_Pressure_FS	Override Diesel Hammer Pressure For Fuel Setting	Override Diesel Hammer Pressure Fuel Setting	Pressure in psi corresponding to fuel setting selected for diesel hammer. Default value changes according to the selection made in the Diesel Hammer Pressure Fuel Setting drop-down list.
Override_Efficiency	Override Hammer Efficiency	Override Hammer Efficiency	Efficiency of hammer. Default value is automatically filled in from data in the hammer database.
Override_Stroke	Override Stroke (ft.)	Hammer Equivalent Maximum Stroke [ft]	Hammer equivalent maximum stroke in feet.

Name	Caption (*=field required)	Description	Comments
Override_Frequency	Override Frequency (Hz)	Frequency for VIB hammer [Hz]	Frequency in hertz for vibratory hammers.
Elev_TipEOD	EOD Tip Elev [ft]	Pile tip elevation at end-of-drive [ft] (required field)	Pile tip elevation at the end of drive in feet.
Quake_Shaft	Shaft Quake [in]	Soil Parameter: Shaft Quake [in]	Average skin quake in inches.
Quake_Toe	Toe Quake [in]	Soil Parameter: Toe Quake [in]	Average toe quake in inches.
Damping_Shaft	Damping Shaft [s/ft]	Soil Parameter: Damping Shaft [s/ft]	Average skin smith damping in s/ft.
Damping_Toe	Toe Damping [s/ft]	Soil Parameter: Toe Damping [s/ft]	Average toe smith damping in s/ft.

Table 6. dtTestEvents Unknown Default Values

Field	Value
Date Tested – Time	__/__/____ 00:00:00 AM

dtStaticData

Static data is only used for static test events. The table appears as a datasheet in the static test record form.

Table 7. dtStaticData Fields

Name	Caption (*=field required)	Description	Comments
lt_Time	Time [min] *	Elapsed time [min] (required field)	Start with 0.
lt_Load	Load [tons] *	Applied Load [tons] (required field)	Start with 0.
lt_Deflection	Deflection [in] *	Pile top deflection [in] (required field)	Start with 0.
Notes	Notes	Loading increment notes	Ex. “Failure” or “Unloading”
lt_Event	Test Event	Test Event	Corresponding Test Event ID

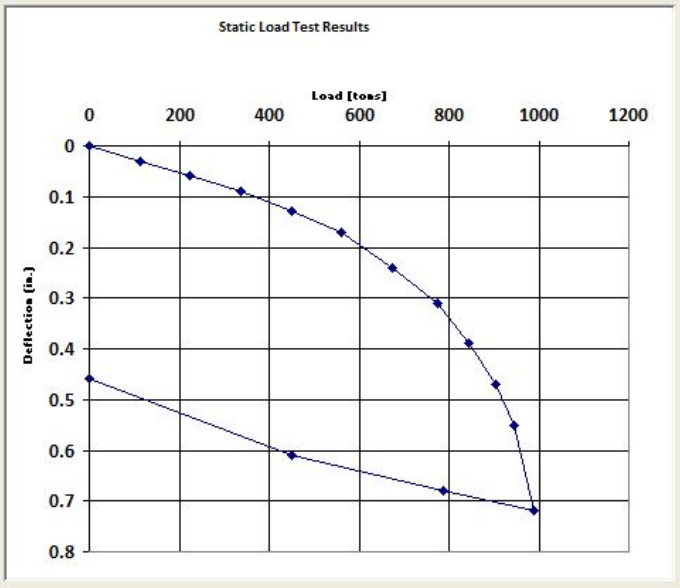

Figure 2. Static Load Test Results Plot - Load vs. Deflection Curve

Lists

lstSource

Table 8. lstSource Data

Data Source
FHWA Database (1998)
LADOTD Database
LTRC No. 14-1GT

lstContractors

Table 9. lstContractors Data

L & A Construction
Boh Bros
Johnson Bros
Jensen Construction
Gilchrist
James Construction
Traylor Bros.
Unknown
Traylor/Massman
Testing
J. B. James Construction
Coastal Bridge
W.E. McDonald
Massman Construction
Gulf South Piling and Construction
Angelo Iafrate Construction
Martin Marietta Materials of LA
W.R. Fairchild Construction
Guinn Brothers
Shappert Engineering Co
T.L. Wallace Construction
Ardaman AND ASSOCIATED
Eustis Engineering Company
Chambers construction company

Tolunay-wong engineers

lstParishes

Table 10. lstParishes Data

Parish Name	Parish Number	District Number
Acadia	1	03
Allen	2	07
Ascension	3	61
Assumption	4	61
Avoyelles	5	08
Beauregard	6	07
Bienville	7	04
Bossier	8	04
Caddo	9	04
Calcasieu	10	07
Caldwell	11	58
Cameron	12	07
Catahoula	13	58
Claiborne	14	04
Concordia	15	58
Desoto	16	04
East Baton Rouge	17	61
East Carroll	18	05
East Feliciana	19	61
Evangeline	20	03
Franklin	21	58
Grant	22	08
Iberia	23	03
Iberville	24	61
Jackson	25	05
Jefferson	26	02
Jefferson Davis	27	07
Lafayette	28	03
Lafourche	29	02
La Salle	30	58
Lincoln	31	05
Livingston	32	62
Madison	33	05
Morehouse	34	05
Natchitoches	35	08
Orleans	36	02

Parish Name	Parish Number	District Number
Ouachita	37	05
Plaquemines	38	02
Pointe Coupee	39	61
Rapides	40	08
Red River	41	04
Richland	42	05
Sabine	43	08
St. Bernard	44	02
St. Charles	45	02
St. Helena	46	62
St. James	47	61
St. John	48	62
St. Landry	49	03
St. Martin	50	03
St. Mary	51	03
St. Tammany	52	62
Tangipahoa	53	62
Tensas	54	58
Terrebonne	55	02
Union	56	05
Vermillion	57	03
Vernon	58	08
Washington	59	62
Webster	60	04
West Baton Rouge	61	61
West Carroll	62	05
West Feliciana	63	61
Winn	64	08
Unknown	99	0

lstPiletype

Table 11. lstPiletype Fields

Name	Caption	Description
Name		Name of pile type
Diam_Pile		Diameter of pile [in]
Diam_Void		Diameter of void [in]
Pile_Shape		Shape of pile
Pile_Type		Type of pile
Voided		Voided Pile
Perimeter	Perimeter [in]	Pile perimeter [in]
Area_Gross	Gross Area [in2]	Gross area of pile, not including void [in2]
Area_Void	Void Area [in2]	Area of circular void [in2]
Area_Section	Section Area [in2]	Area of pile cross-section [in2]
Area_End	End Area [in2]	Area considered in end bearing [in2]
Pile_Material	Pile Material	Pile Material
Pile_Emod	Pile Elastic Modulus [ksi]	Pile Elastic Modulus [ksi]
Pile_SW	Pile Specific Weight [lb/ft3]	Pile Specific Weight [lb/ft3]

Table 12. lstPiletype Data

Name	Diam Pile	Diam Void	Pile Shape	Pile Type	Voided	Perimeter [in]	Gross Area [in2]	Void Area [in2]	Section Area [in2]	End Area [in2]	Pile Material	Pile Elastic Modulus [ksi]	Pile Specific Weight [lb/ft3]
Name of pile type	Diameter of pile [in]	Diameter of void [in]	Shape of pile	Type of pile	Voided Pile	Pile perimeter [in]	Gross area of pile, not including void [in2]	Area of circular void [in2]	Area of pile cross-section [in2]	Area considered in end bearing [in2]	Pile Material	Pile Elastic Modulus [ksi]	Pile Specific Weight [lb/ft3]
12" Solid Sq. PPC	12.00	0	Square	PPC	FALSE	48.00	144.00	0.00	144.00	144.00	Concrete	5000	150
14" Solid Sq. PPC	14.00	0	Square	PPC	FALSE	56.00	196.00	0.00	196.00	196.00	Concrete	5000	150
18" Solid Sq. PPC	18.00	0	Square	PPC	FALSE	72.00	324.00	0.00	324.00	324.00	Concrete	5000	150
24" Solid Sq. PPC	24.00	0	Square	PPC	FALSE	96.00	576.00	0.00	576.00	576.00	Concrete	5000	150
30" Solid Sq. PPC	30.00	0	Square	PPC	FALSE	120.00	900.00	0.00	900.00	900.00	Concrete	5000	150
36" Solid Sq. PPC	36.00	0	Square	PPC	FALSE	144.00	1,296.00	0.00	1,296.00	1,296.00	Concrete	5000	150
24" Voided Sq. PPC	24.00	10.5	Square	PPC	TRUE	96.00	576.00	86.59	489.41	576.00	Concrete	5000	150
30" Voided Sq. PPC	30.00	16.5	Square	PPC	TRUE	120.00	900.00	213.82	686.18	900.00	Concrete	5000	150
36" Voided Sq. PPC	36.00	22	Square	PPC	TRUE	144.00	1,296.00	380.13	915.87	1,296.00	Concrete	5000	150
16" Solid Sq. PPC	16.00	0	Square	PPC	FALSE	64.00	256.00	0.00	256.00	256.00	Concrete	5000	150

Name	Diam Pile	Diam Void	Pile Shape	Pile Type	Voided	Perimeter [in]	Gross Area [in2]	Void Area [in2]	Section Area [in2]	End Area [in2]	Pile Material	Pile Elastic Modulus [ksi]	Pile Specific Weight [lb/ft3]
Name of pile type	Diameter of pile [in]	Diameter of void [in]	Shape of pile	Type of pile	Voided Pile	Pile perimeter [in]	Gross area of pile, not including void [in2]	Area of circular void [in2]	Area of pile cross-section [in2]	Area considered in end bearing [in2]	Pile Material	Pile Elastic Modulus [ksi]	Pile Specific Weight [lb/ft3]
54" Cylinder PPC	54.00	42	Open-Ended Pipe	PPC	TRUE	169.65	2,290.22	1,385.44	904.78	904.78	Concrete	5000	150
30" Steel Pipe	30.00	28.75	Open-Ended Pipe	Steel	TRUE	94.25	706.86	649.18	57.68	57.68	Steel	30000	492
36" Drilled Shaft	36.00	0	Shaft	CIP Concrete	FALSE	113.10	1,017.88	0.00	1,017.88	1,017.88	Concrete	5000	150
42" Drilled Shaft	42.00	0	Shaft	CIP Concrete	FALSE	131.95	1,385.44	0.00	1,385.44	1,385.44	Concrete	5000	150
48" Drilled Shaft	48.00	0	Shaft	CIP Concrete	FALSE	150.80	1,809.56	0.00	1,809.56	1,809.56	Concrete	5000	150
54" Drilled Shaft	54.00	0	Shaft	CIP Concrete	FALSE	169.65	2,290.22	0.00	2,290.22	2,290.22	Concrete	5000	150
60" Drilled Shaft	60.00	0	Shaft	CIP Concrete	FALSE	188.50	2,827.43	0.00	2,827.43	2,827.43	Concrete	5000	150
66" Drilled Shaft	66.00	0	Shaft	CIP Concrete	FALSE	207.34	3,421.19	0.00	3,421.19	3,421.19	Concrete	5000	150
72" Drilled Shaft	72.00	0	Shaft	CIP Concrete	FALSE	226.19	4,071.50	0.00	4,071.50	4,071.50	Concrete	5000	150

lstPileMaterial

Table 13. lstPileMaterial Data

Concrete
Steel
Timber

lstTPType

Table 14. lstTPType Data

Test Pile
Monitor Pile
Indicator Pile
Other
Test Shaft

lstEventtype

Table 15. lstEventtype Data

Static
CAPWAP
Case/RMX
Statnamic
Gates
Other
EDC (Embedded Data Collector)
APPLE/Drop
O-Cell
Static (Uplift)
Static (Lateral)

lstSoilType

Table 16. lstSoilType Data

Unknown
Clay
Sand
Gravel

CH
CL
CL-ML
GC
ML
"OH, ABOVE ""A"" LINE "
S/C
SC
SC-SM
SM
SP

lstHammerMakers

Table 17. lstHammerMakers Data

APE
BANUT
BERMINGH
BRUCE
BSP
CONMACO
DAWSON
DELMAG
DKH
FAIRCHLD
FEC
HERA
HITACHI
HMC
HPSI
HYPOTHET
ICE
IHC
J&M
JUNTTAN
KOBE
LINKBELT
MAIT
MENCK
MGF

MITSUBIS
MKT
Mueller
MVE
PILECO
Pilemast
PVE
VULCAN
OTHER
RAYMOND
Self
Twinwood
UDDCOMB
UNKNOWN

lstHammers

Table 18. lstHammers Fields

Name	Caption	Description
Model	Manufacturer	Model/maker of hammer
Type	Model	Type of hammer
Power	Type	Type of power used
Energy		Energy per blow [kip-ft]
Ram_Weight		Ram weight [kips]
Hammer_Name		
WEAP_ID	WEAP ID	WEAP Hammer Number ID
WEAP_ID_2003		
Efficiency		
EqMax Stroke		
Pressure_FS1		
Pressure_FS2		
Pressure_FS3		
Pressure_FS4		
Pressure_FS5		
Frequency		

lstHammerOptions_Fuel

Table 19. lstHammerOptions_Fuel Data

Max = Pressure_FS1
Max-1 = Pressure_FS2
Max-2 = Pressure_FS3
Max-3 = Pressure_FS4
Min = Pressure_FS5

lstHammerOptions_Operation

Table 20. lstHammerOptions_Operation Data

Convergence of stroke with fixed pressure
Convergence of pressure with fixed stroke
Single analysis with fixed stroke and pressure

lstCushion

Table 21. lstCushion Data

Cushion Name	Cushion Modulus [ksi]	Cushion Specific Weight [lb/ft3]	Cushion CoR
1" Aluminum per 1" Conbest *	545		0.8
1" Aluminum per 1" Micarta *	440	126	0.8
3/4" Aluminum per 1" Conbest *	480	123	0.8
1/2" Aluminum per 1" Conbest *	414	116	0.8
1/2" Aluminum per 1" Micarta *	334	113	0.8
1/4" Aluminum per 1" Micarta *	280	103	0.8
5.0"Hamortex + 1.5" Plywood (new)	72		0.7
5.0"Hamortex + 1.5" Plywood (used) **	108		0.7
2.5"Hamortex + 1.5" Plywood (new)	57		0.66
2.5"Hamortex + 1.5" Plywood (used) **	100		0.66
Acculam	500	87.4	0.8
Aluminum	10000	165	0.8
Bongossi Wood (parallel)	290	72	0.75
Conbest	280	91	0.8
Concrete-Grout (protected by cushion)	4500	135	1
Concrete-Regular (protected by cushion)	5000	150	1
Concrete-Spun Cylinder (protected by cushion)	6000	155	1

Cushion Name	Cushion Modulus [ksi]	Cushion Specific Weight [lb/ft3]	Cushion CoR
Duracush	35	70	0.82
Ecoboard (recycled plastic piles)	330	50	0.8
Fir, Douglas	1700	33	0.5
Forbon	400	78	0.85
Force 10	142		0.6
Fosterlon	380		0.85
Hamortex	125		0.77
Klinger	25	119	0.6
Lancaster	2800	140	0.8
MC-904(P) Blue Nylon	175	72	0.92
Micarta	225	87	0.8
MMPAC	367		0.88
Nycast 6MPB Cast Nylon	207	72	0.91
Nylon/Klinger	171		0.84
Oak boards - new (transverse)	60	44	0.5
Oak boards - used (transverse) **	90	44	0.5
Oak (parallel)	750	44	0.5
Oak (transverse)	60	44	0.5
Pine, White, dry (parallel)	1300	26	0.5
Pine, Yellow Northern, dry (parallel)	1300	34	0.5
Pine, Yellow Southern, dry (parallel)	1300	45	0.5
Plywood - new (transverse)	30	38	0.5
Plywood - used (transverse) **	75	38	0.5
Plywood - Impr. S-539/S-530	200	38	0.84
Plywood - Non-Impr. S-542/S-540	200	38	0.9
PPI (recycled plastic with steel rebar)	1860	51	0.8
Ryertex	43	78	0.93
Seaward	1240	54	0.8
Steel	30000	492	0.85
Timber (generic-parallel)	1800	57	0.5
Trimax	420	50	0.8
Urethane	175	69	0.72
Wire Rope	150	490	0.8
Ductile Cast Iron -Low	20000	442	0.85
Ductile Cast Iron -High	24000	442	0.85
Rubber	15	94	0.5

lstResistDist

Table 22. lst ResistDist Data

Proportional shaft resistance
Constant shaft resistance
Constant end resistance

Minimum required data for one test event record

- Project Info
  - Project Name
  - Contractor
  - Parish
  - Data Source
- Pile Info
  - Pile Name
  - Length
  - Pile Installation Hammer
  - Type [of test pile]
  - Pile Type (size and material)
  - Date Driven
  - Latitude
  - Longitude
  - Elev. Reference (Measured, Estimated, or Unknown?)
  - Ground Surface Elevation
  - EOD (End of Drive) Tip Elevation
- Test Event Info
  - Date Tested
  - Event Type (Static, CAPWAP, …)

APPENDIX E

DATABASE USER MANUAL

LADOTD Pile Load Test Database User Guide

Louisiana Department of Transportation and Development Pile Load Test Database (LAPLTD)

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Introduction

Background

Purpose: To collect pile load testing information using a standard approach for use in evaluating pile capacity testing methods and pile capacity prediction methods.

Objectives: To standardize data collection for static load tests and dynamic load tests (CAPWAP Analyses).

Created with Access 2013.

Hierarchy

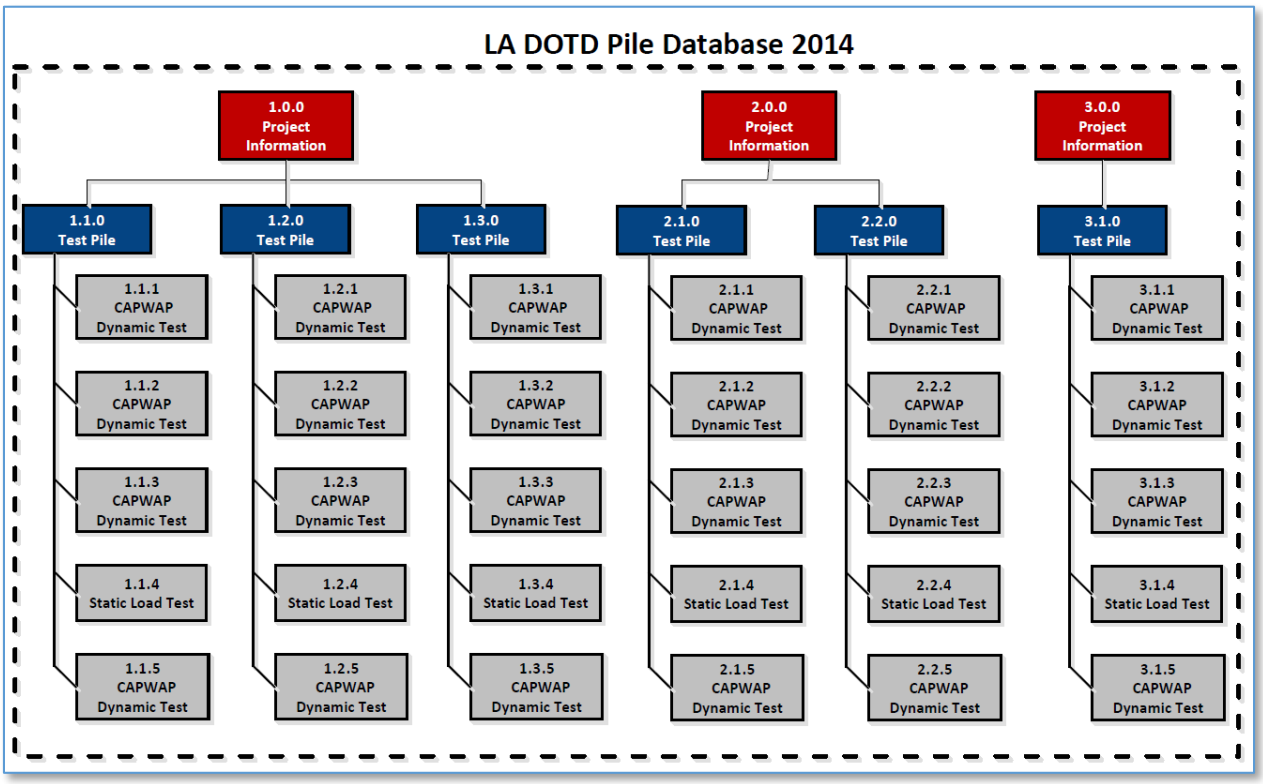


Figure 1: LAPLTD Hierarchy levels

Hierarchy level 1: Projects

Unique names/project numbers.

Hierarchy level 2: Test Piles

Each test pile must be tied to a project. There may exist many test piles for each project.

Hierarchy level 3: Test Events

Each test event must be tied to a test pile. There may exist many test events for each test pile.

Creating new records:

When creating new records (Project → Test Pile → Test Event), each preceding hierarchy level record must be saved before creating the connected record in the subsequent hierarchy level.

Deleting records:

When deleting records, all records in the lower hierarchy levels connected to the record you wish to delete must be deleted first. (Test Event → Test Pile → Project)

Validation and Input Restriction

Some fields included in the forms require input with certain restrictions. For example, **Latitude** and **Longitude** under location information for test piles. An error dialog box explaining the restrictions will appear after data not meeting these restrictions is entered into one of these fields and the field is deselected. The user may correct the data to satisfy the requirements or undo the data field change by pressing the "Esc" key.

Operational tip: *Occasionally while using the forms, some fields may not be able to be selected. If this happens, click on a large field like* Notes *or* Data*, and the glitch should stop, allowing you to select the other fields again.*

Main Menu

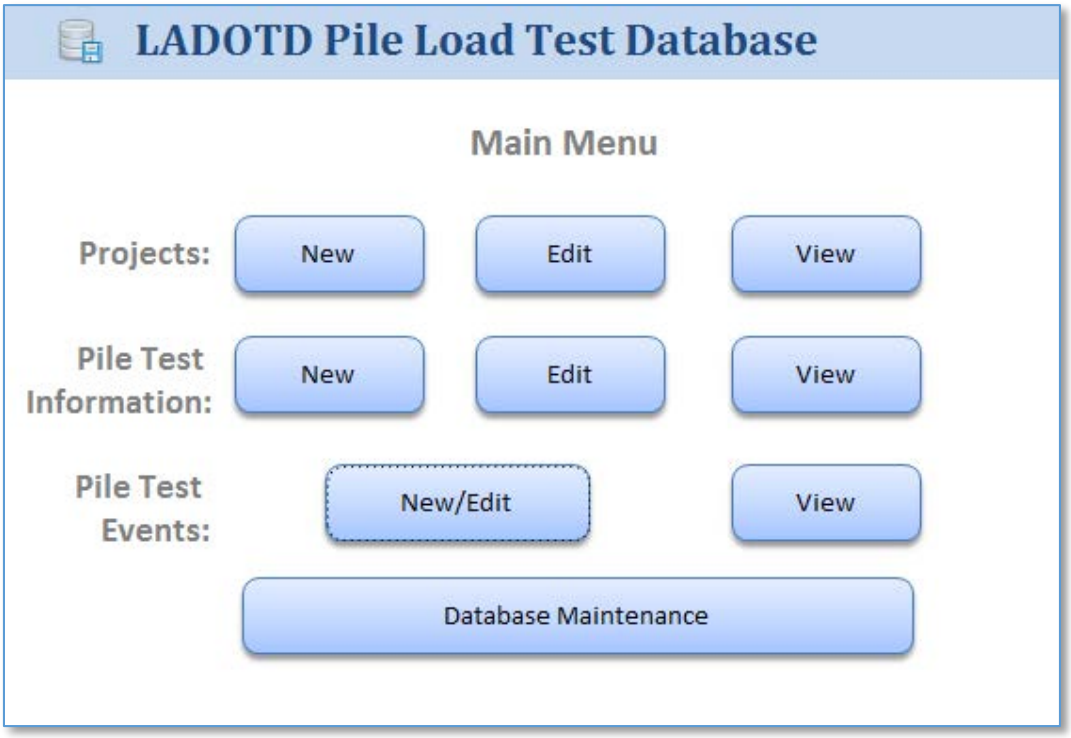


Figure 2: Main Menu

Projects

Hierarchy Level 1

New Project

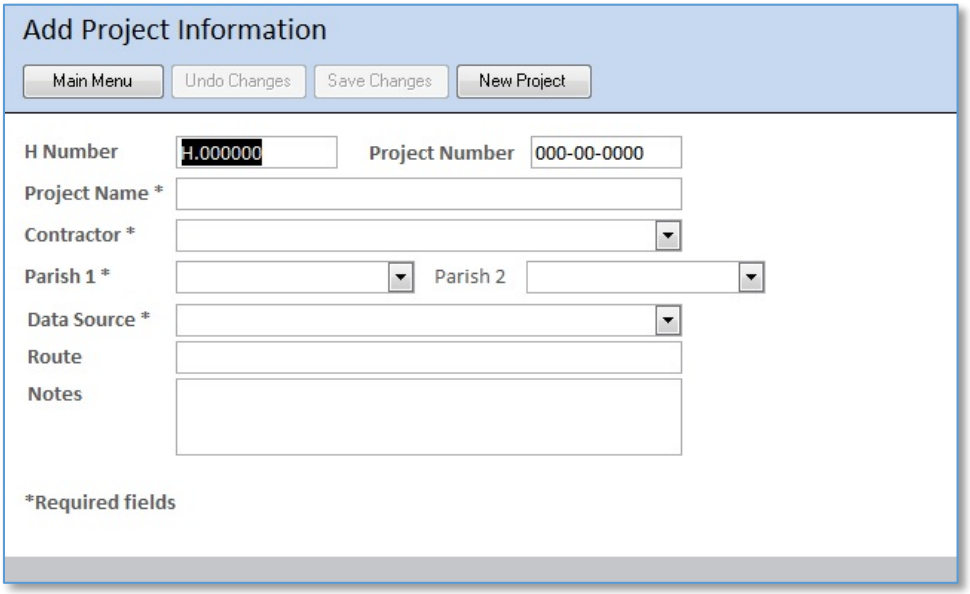


Figure 3: Add Project Information (opens in new window)

Required Fields (designated with * on input forms)

- Project Name
- Contractor
- Parish 1
- Data Source

Table 1: Project Information Default/Unknown Values

Field	Value
H Number	H.000000
Project Number	000-00-0000
Contractor	Unknown
Parish	Unknown

Project Fields

H Number – Project identification number for newer projects. Input mask "H." followed by six digits.

Project Number - Project identification number for older projects. Input mask 000-00-0000 (9 digits).

*Project Name** – Descriptive project name. Usually includes road name and/or name of feature the road crosses.

*Contractor** – Contractor performing foundation work for the project. Must be one of contractors listed. Add new contractor names to "Contractors" list in Database Maintenance as needed.

*Parish 1** – Parish in which the project resides or the primary parish in which the project is located.

Parish 2 – Secondary parish in which the project is located if the project spans two parishes.

*Data Source** – Source of information for the project data inputted. Must be one of the sources listed. Add new sources to the "Sources" list in Database Maintenance as needed.

Route – Route on which project is located.

Notes – Any additional project information.

Click SAVE CHANGES when done entering data.

Click NEW PROJECT if adding another project, otherwise click MAIN MENU to return to the main menu. Clicking UNDO CHANGES will erase all unsaved data in the form.

Edit Project

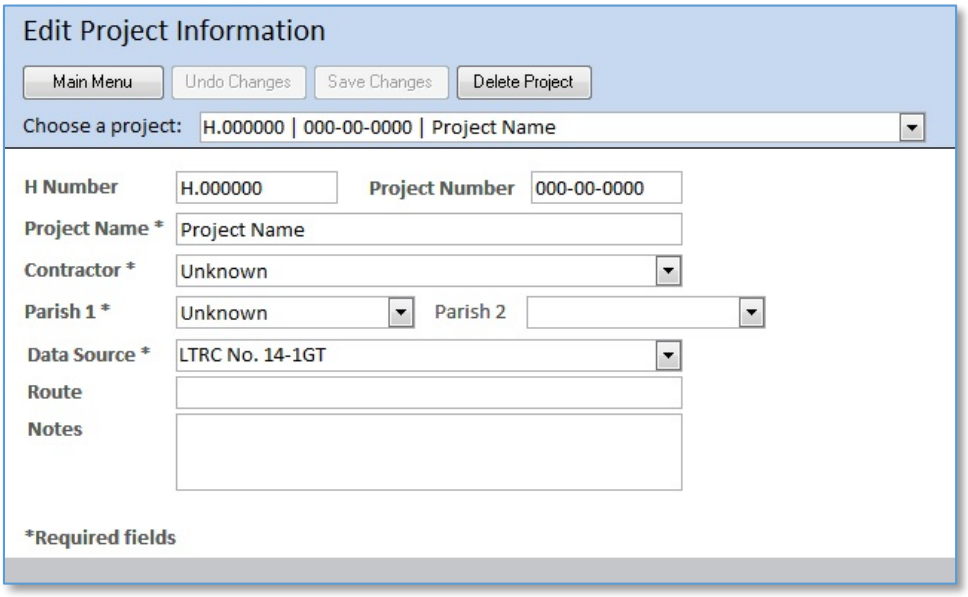
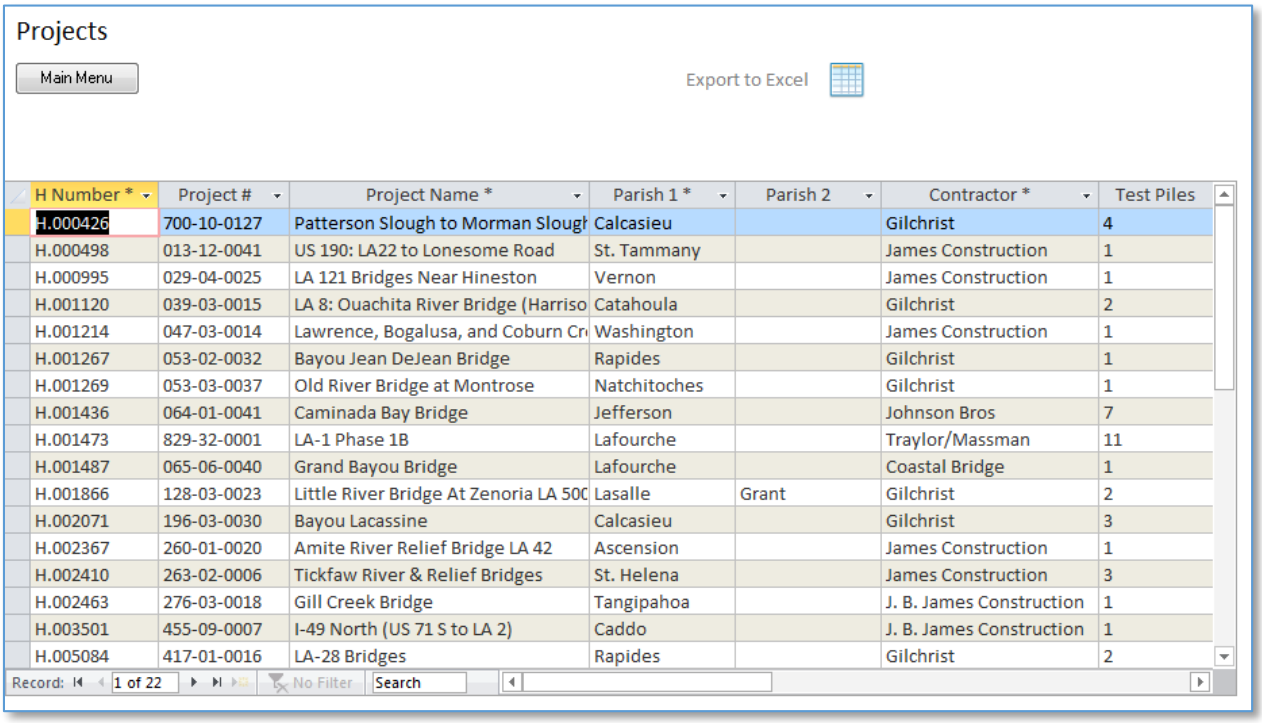


Figure 4: Edit Project Information (opens in new window)

This form includes the same fields as the **Add Project Information** form, except you must choose an existing project record to edit. Projects in the drop-down list are sorted by *H Number* first and *Project Number* second.

View Projects



H Number *	Project #	Project Name *	Parish 1 *	Parish 2	Contractor *	Test Piles
H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu		Gilchrist	4
H.000498	013-12-0041	US 190: LA22 to Lonesome Road	St. Tammany		James Construction	1
H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon		James Construction	1
H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harriso	Catahoula		Gilchrist	2
H.001214	047-03-0014	Lawrence, Bogalusa, and Coburn Cr	Washington		James Construction	1
H.001267	053-02-0032	Bayou Jean DeJean Bridge	Rapides		Gilchrist	1
H.001269	053-03-0037	Old River Bridge at Montrose	Natchitoches		Gilchrist	1
H.001436	064-01-0041	Caminada Bay Bridge	Jefferson		Johnson Bros	7
H.001473	829-32-0001	LA-1 Phase 1B	Lafourche		Traylor/Massman	11
H.001487	065-06-0040	Grand Bayou Bridge	Lafourche		Coastal Bridge	1
H.001866	128-03-0023	Little River Bridge At Zenoria LA 500	Lasalle	Grant	Gilchrist	2
H.002071	196-03-0030	Bayou Lacassine	Calcasieu		Gilchrist	3
H.002367	260-01-0020	Amite River Relief Bridge LA 42	Ascension		James Construction	1
H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena		James Construction	3
H.002463	276-03-0018	Gill Creek Bridge	Tangipahoa		J. B. James Construction	1
H.003501	455-09-0007	I-49 North (US 71 S to LA 2)	Caddo		J. B. James Construction	1
H.005084	417-01-0016	LA-28 Bridges	Rapides		Gilchrist	2

Record: 1 of 22 No Filter Search

Figure 5: View Projects

Shows all project records. Use the EXPORT TO EXCEL button to export all data into an Excel spreadsheet. Each field may be sorted and filtered using the triangular buttons (▼) next to the field caption.

Piles

Hierarchy Level 2

Add Pile

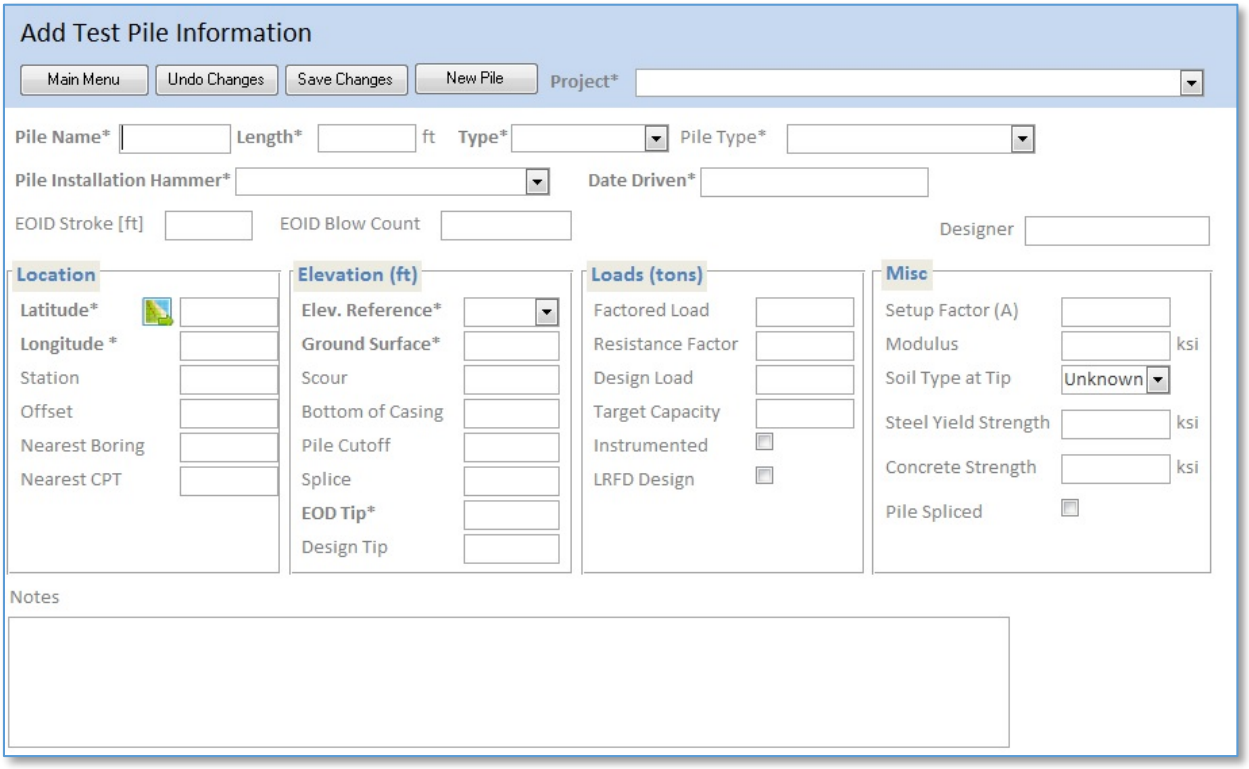


Figure 6: Add Pile Information

Start by selecting an existing project record. Projects in the drop-down list are sorted by *H Number* first and *Project Number* second.

Required Fields (designated with * on input forms)

- Pile Name
- Length
- Pile Installation Hammer
- Type
- Pile Type
- Date Driven
- Latitude
- Longitude
- Elev. Reference
- Ground Surface
- EOD Tip

Table 2: Pile Default/Unknown Values

Field	Value
Date Driven – Time	__/__/____ 00:00:00 AM
Latitude	29
Longitude	-90
Elev. Reference	Unknown
Ground Surface	0

Pile Fields

Pile info

*Pile Name** – Unique name of pile. (Ex. TP-03)

*Length** – Total length of pile in feet.

*Type** – Pile Type: Test Pile, Monitor Pile, Indicator Pile, Other, or Test Shaft. Most likely "Test Pile" (pile which has undergone a load test) or "Monitor Pile" (production pile).

*Pile Type** – Type of pile. For example, '12" Solid Sq. PPC'. Must be one of the pile types listed. Add new pile types to the "Pile Types" list in Database Maintenance as needed.

*Pile Installation Hammer** – Hammer used to drive the pile during initial install. Begin typing the hammer manufacturer and the first hammer of that manufacturer will appear. Use the pull-down to see other hammers. Must be one of the hammers on the list. Add new hammers to the "Hammers" list in Database Maintenance as needed.

*Date Driven** – Date and time at which pile was installed. Input mask: "__/__/____ __:__:__ __" (MM/DD/YYYY HH:MM:SS AM/PM). See Table 2 for unknown value of time.

EOID Stroke – End of Initial Drive (EOID) stroke in feet.

EOID Blow Count – End of Initial Drive (EOID) blow count.

Designer – Name of engineer on record for pile design.

Location

*Latitude** – North/South geographic coordinate for position of pile. Input as decimal; use as much detail as possible. Unacceptable latitude values will be met with the error: "Warning – Latitude must be located within the state of Louisiana (>28.89 And <33.03)". See Table 2 for unknown values.

*Longitude** – East/West geographic coordinate for position of pile. Input as decimal; use as much detail as possible. Unacceptable longitude values will be met with the error: "Warning – Longitude must be located within the state of Louisiana (>-93.9 And <-88.96)". See Table 2 for unknown values.

Station – Station feet position of pile. Use notation 00+00.00.

Offset – Station Offset. Feet offset from station for location of pile. Use notation 00 RT or 00 LT.

Nearest Boring – Name of boring nearest to pile. (Ex. SPT-01)

Nearest CPT – Name of CPT nearest to pile. (Ex. CPT-01)

Elevation (ft)

*Elev. Reference** – Description of the nature of ground surface elevation and other elevation values: Measured, Estimated, or Unknown.

*Ground Surface** – Ground surface elevation in feet. See Table 2 for unknown values.

Scour – Elevation in feet of pile scour. Usually similar to Bottom of Casing elevation.

Bottom of Casing - Elevation in feet of bottom of pile casing. Usually similar to Scour elevation. Must be blank or less than ground surface elevation or error message will appear: "Warning – Casing elevation must be below ground elevation."

Pile Cutoff – Top of pile elevation in feet.

Splice – Elevation of pile splice, usually applicable to longer piles that need to be spliced together during driving.

*EOD Tip** – Elevation in feet of the tip of pile at the end of driving. (Negative of the pile length if no other pile elevation values are known.)

Design Tip – Elevation in feet of the tip of pile specified in the design.

Loads (tons)

Factored Load – Factored load used in LRFD design in tons.

Resistance Factor – Resistance factor used in LRFD design.

Design Load – Design load used in ASD design in tons.

Target Capacity – Ultimate pile resistance needed to verify design in tons.

Instrumented – Was the pile instrumented? Yes (checked) or No (Unchecked).

LRFD Design – Pile designed according to LRFD? Yes (checked) or No (Unchecked).

Misc

Setup Factor (A) – Pile Setup Factor.

Modulus – Elastic Modulus of the pile in ksi.

Soil Type at Tip – Type of soil the tip of the pile: Unknown, Clay, Sand, or Gravel. Must be one of the soil types listed. Add new soil types to the "Soil Types" list in Database Maintenance as needed.

Steel Yield Strength – Yield strength of the steel used for the pile in ksi.

Concrete Strength – Yield strength of the concrete used for the pile in ksi.

Pile Spliced – Was the pile spliced? Yes (checked) or No (Unchecked).

Click SAVE CHANGES when done entering data.

Click NEW PILE if adding another pile, otherwise click MAIN MENU to return to the main menu. Clicking UNDO CHANGES will erase all unsaved data in the form.

Edit Pile

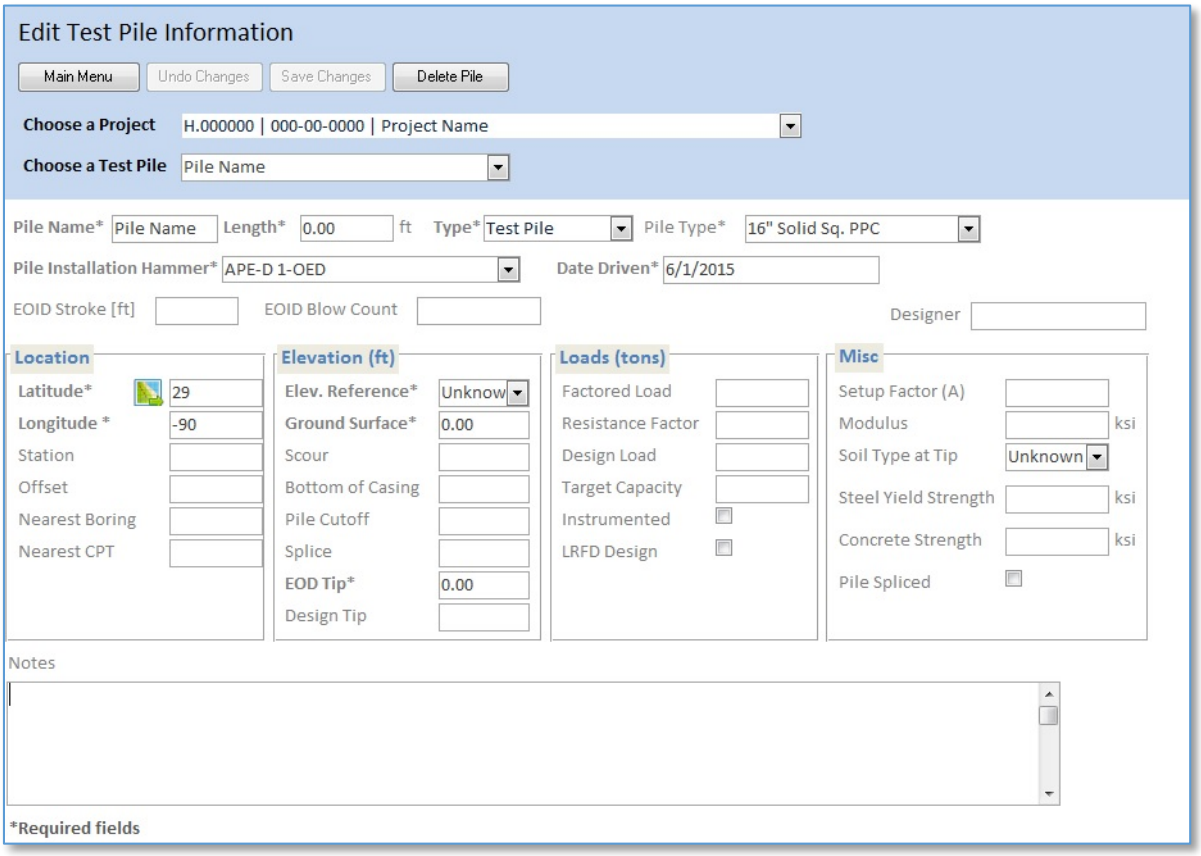


Figure 7: Edit Pile Information

This form includes the same fields as the **Add Test Pile Information** form, except you must choose an existing pile record to edit. Projects in the drop-down list are sorted by *H Number* first and *Project Number* second. Test piles in the drop down list are sorted in alphabetical order.

View Piles

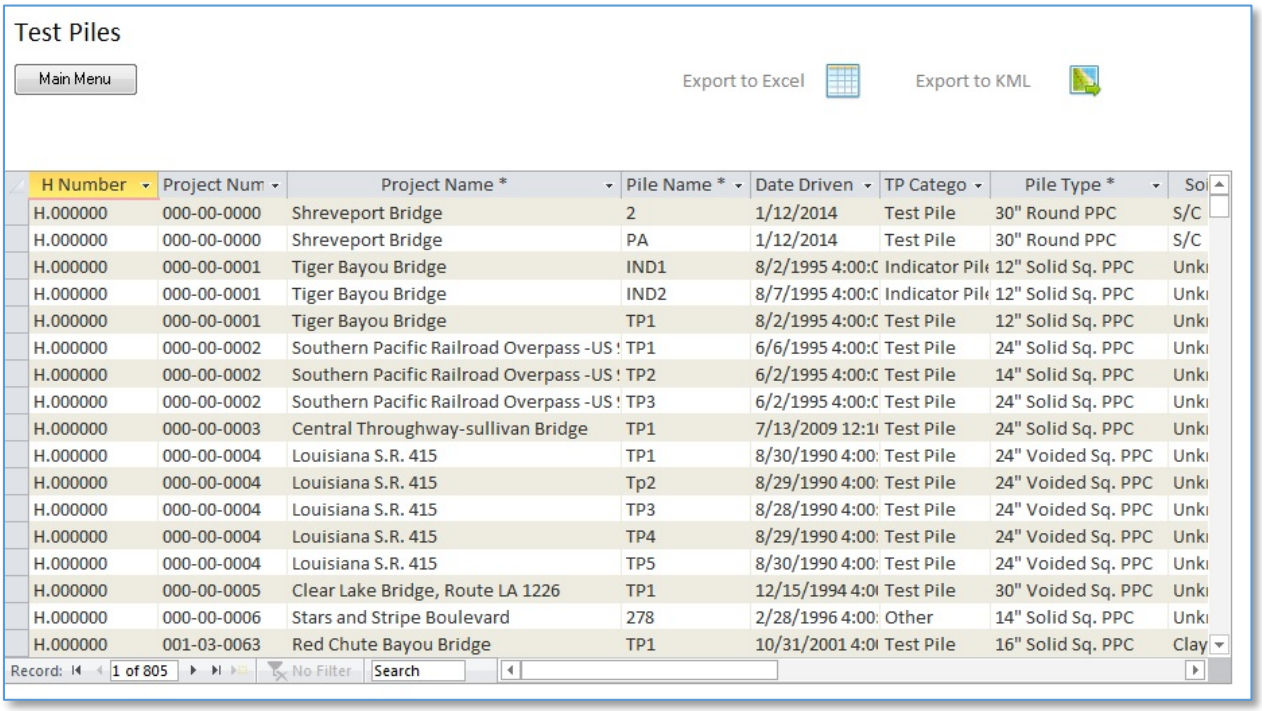


Figure 8: View Piles

Shows all pile records. Use the EXPORT TO EXCEL button to export all data into an Excel spreadsheet.

Use the EXPORT TO KML button to generate a Google Earth KML file with the filename “Piles_Export.kml” in the same directory as the database. The file generated will include all piles in the database and will overwrite any file in the directory with the same name. Use Google Earth to open the KML file and view the pile locations.

Each field may be sorted and filtered using the triangular buttons (▼) next to the field caption.

Test Events

Hierarchy Level 3

New/Edit Pile Test Events

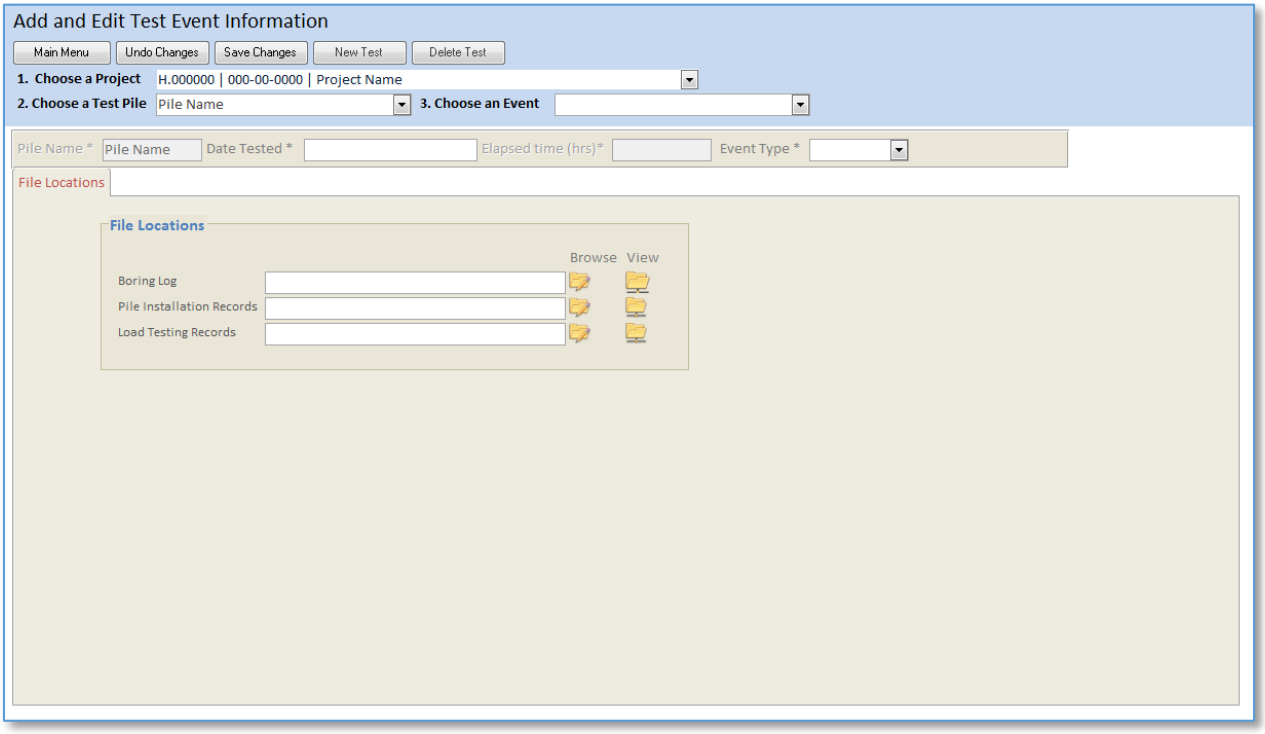


Figure 9: New/Edit Pile Test Events

Start by selecting a project record, then a test pile record. Projects in the drop-down list are sorted by *H Number* first and *Project Number* second. Test piles in the drop down list are sorted in alphabetical order.

Click NEW TEST to create a new test event record.

To edit an existing record, select a test event record from the **Choose an Event** drop-down list.

Required Fields (designated with * on input forms)

- Date Tested
- Event Type

Table 3: Test Event Default/Unknown Values

Field	Value
Date Tested – Time	__/__/____ 00:00:00 AM

Test Event Fields

Test Event Info

Pile name – Pile name of the test pile chosen from drop-down list #2. Autocompleted when the New Test button is clicked.

*Date Tested** – Date and time at which pile was tested. Input mask: "__/__/____ __:__:__ __" (MM/DD/YYYY HH:MM:SS AM/PM). See Table 3 for unknown value of time.

Elapsed time – Elapsed time in hours from when the pile was installed to when the pile was tested. Auto-calculated when the record is saved. Displays 0.01 hours if time elapsed is zero or negative.

*Event Type** – Type of test event; brings up relevant data entry forms when chosen. Choices: Static, CAPWAP, Case/RMX, Statnamic, Gates, Other, EDC (Embedded Data Collector), APPLE/Drop, O-Cell, Static (Uplift), or Static (Lateral). Only two event types are given detailed data input forms in the database: **Static** (Figure 10) and **CAPWAP** (Figure 11). The other event types, when selected for a new test event, bring up the *File Locations* tab (Figure 9) through which data in PDF files can be linked.

File locations

Boring Log – Location of the PDF file including boring log information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.

Pile Installation Records – Location of the PDF file including pile installation record information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.

Load Testing Records – Location of the PDF file including load test record information. Click the browse icon to search for a file path. Click the view icon to view the file if a file path has been specified.

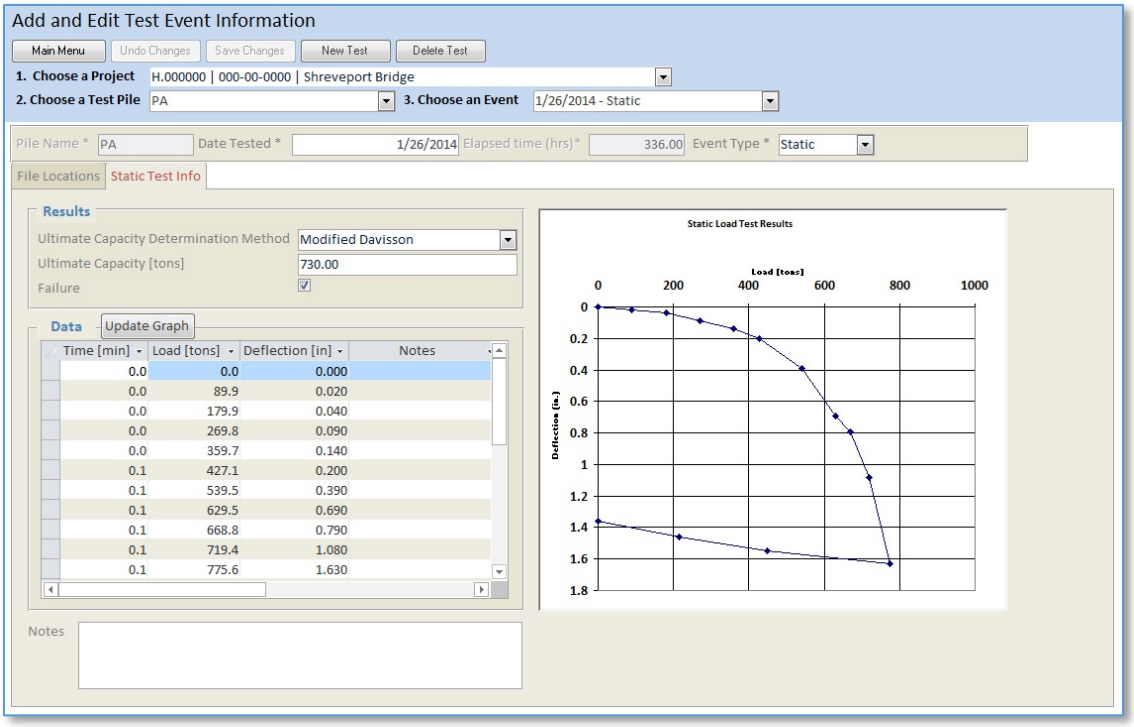


Figure 10: New/Edit Pile Test Event – Static

Test Event Fields (continued)

Static Test Event Info

Ultimate Capacity Determination Method – Method used for determining the ultimate capacity of the pile: Davisson (for piles up to 24”), Modified Davisson (for piles larger than 24”), or Butler-Hoy.

Ultimate Capacity – Ultimate capacity of the pile derived from the test event in tons.

Failure – Did the static load test data meet the failure criteria? Yes (checked) or No (unchecked).

Data – Data input table for static load test. Time (minutes), Load (tons), Deflection (inches), Notes. Start data with a 0 minutes, 0 tons, 0 inches record. Click the UPDATE GRAPH button at any time to plot the data.

Notes – Additional static test event or ultimate capacity determination method information such as “Selected ultimate capacity at load before pile plunge.”

If opening an existing record to edit, you may have to click the UPDATE GRAPH button to get the existing data to plot correctly.

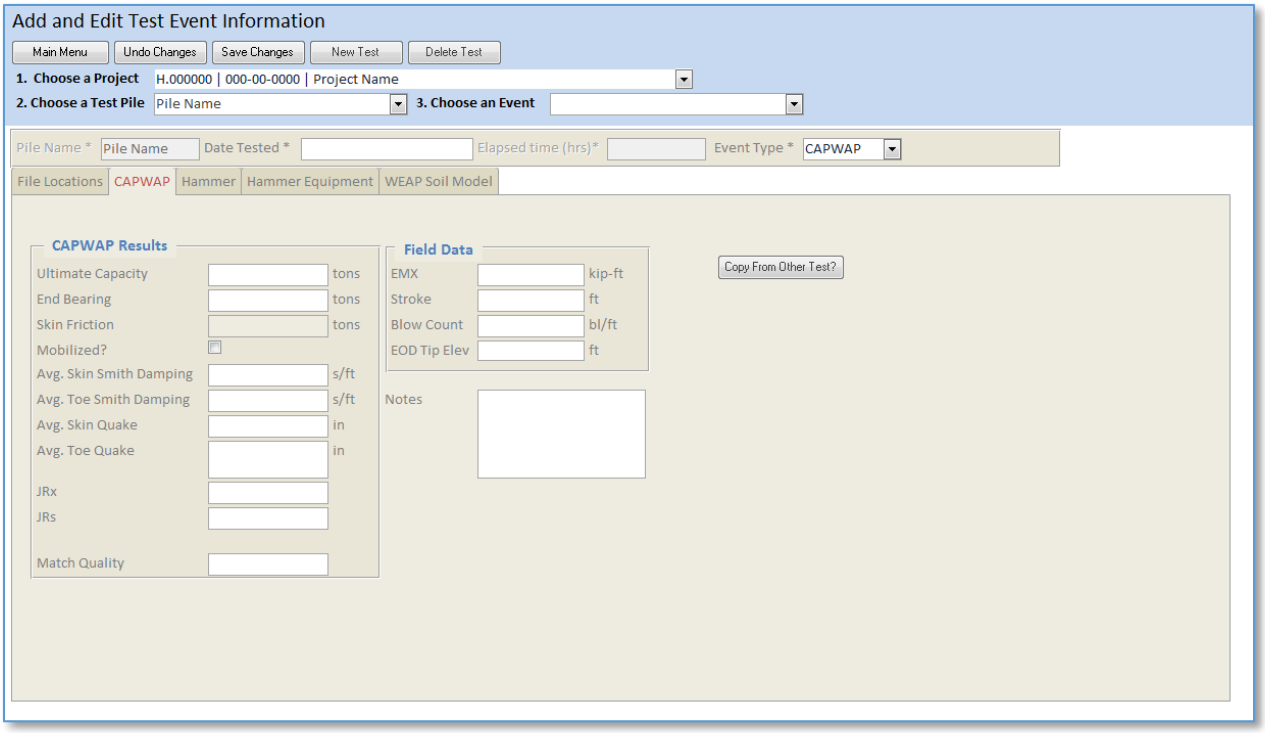


Figure 11: New/Edit Pile Test Event – CAPWAP

Test Event Fields (continued)

CAPWAP Test Event Info

CAPWAP Results

Ultimate Capacity – Ultimate capacity of the pile derived from the test event in tons.

End Bearing – End bearing capacity of the pile derived from the test event in tons.

Skin Friction – Skin friction capacity of the pile derived from the test event in tons. Auto-calculated based on *Ultimate Capacity* and *End Bearing*.

Mobilized? – Was skin resistance mobilized? (less than 180 blows/ft) Yes (checked) or No (unchecked).

Avg. Skin Smith Damping – Average skin smith damping in s/ft.

Avg. Toe Smith Damping – Average toe smith damping in s/ft.

Avg. Skin Quake – Average skin quake in inches.

Avg. Toe Quake – Average toe quake in inches.

JRx – Damping constant associated with PDA capacity associated with Rx method.

JRs – Damping constant associated with PDA capacity associated with Rs method.

Match Quality – Match quality from CAPWAP analysis.

Field Data

EMX – Hammer Energy in kip-feet.

Stroke – Observed stroke in feet.

Blow count – Observed blow count at time of event in blows/ft.

EOD Tip Elev – Pile tip elevation at the end of drive in feet.

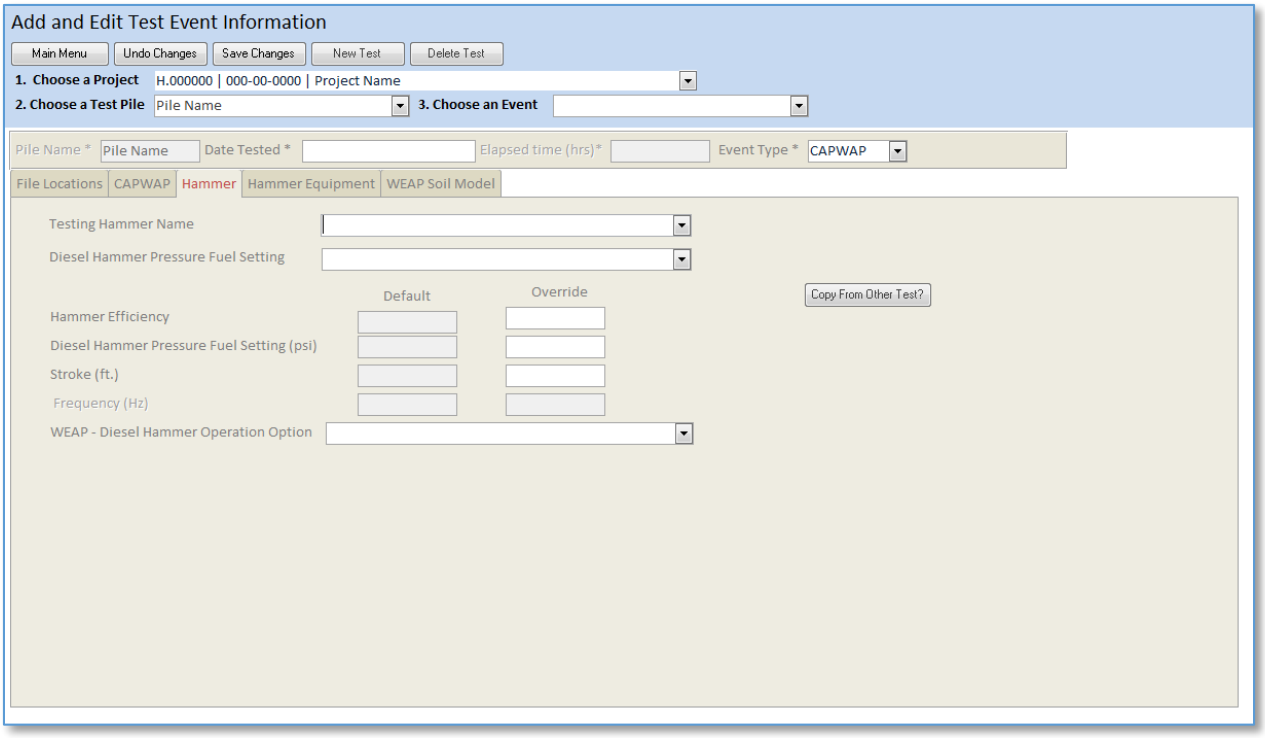


Figure 12: New/Edit Pile Test Event – CAPWAP – Hammer

Test Event Fields (continued)

CAPWAP Test Event Info - Hammer

Testing Hammer Name – Name of the hammer used during the pile test event. Begin typing the hammer manufacturer and the first hammer of that manufacturer will appear. Use the pull-down to see other hammers. Must be one of the hammers on the list. Add new hammers to the "Hammers" list in Database Maintenance as needed.

Diesel Hammer Pressure Fuel Setting – Fuel setting for diesel hammers:

WEAP	Pressure
Max	Pressure_FS1
Max-1	Pressure_FS2
Max-2	Pressure_FS3
Max-3	Pressure_FS4
Min	Pressure_FS5

Hammer Efficiency – Efficiency of hammer. Default value is automatically filled in from data in the hammer database.

Diesel Hammer Pressure Fuel Setting (psi) – Pressure in psi corresponding to fuel setting selected for diesel hammer. Default value changes according to the selection made in the *Diesel Hammer Pressure Fuel Setting* drop-down list.

Stroke (ft.) – Hammer equivalent maximum stroke in feet.

Frequency (Hz) – Frequency in hertz for vibratory hammers.

WEAP – Diesel Hammer Operation Option – WEAP options for hammer operation: convergence of stroke with fixed pressure, convergence of pressure with fixed stroke, or single analysis with fixed stroke and pressure.

Helpful feature: Data can be copied from previously entered test event records for the test pile. Use the COPY FROM OTHER TEST? *button and select the other test event from which you would like to copy the data. Then click* APPLY RESULTS.

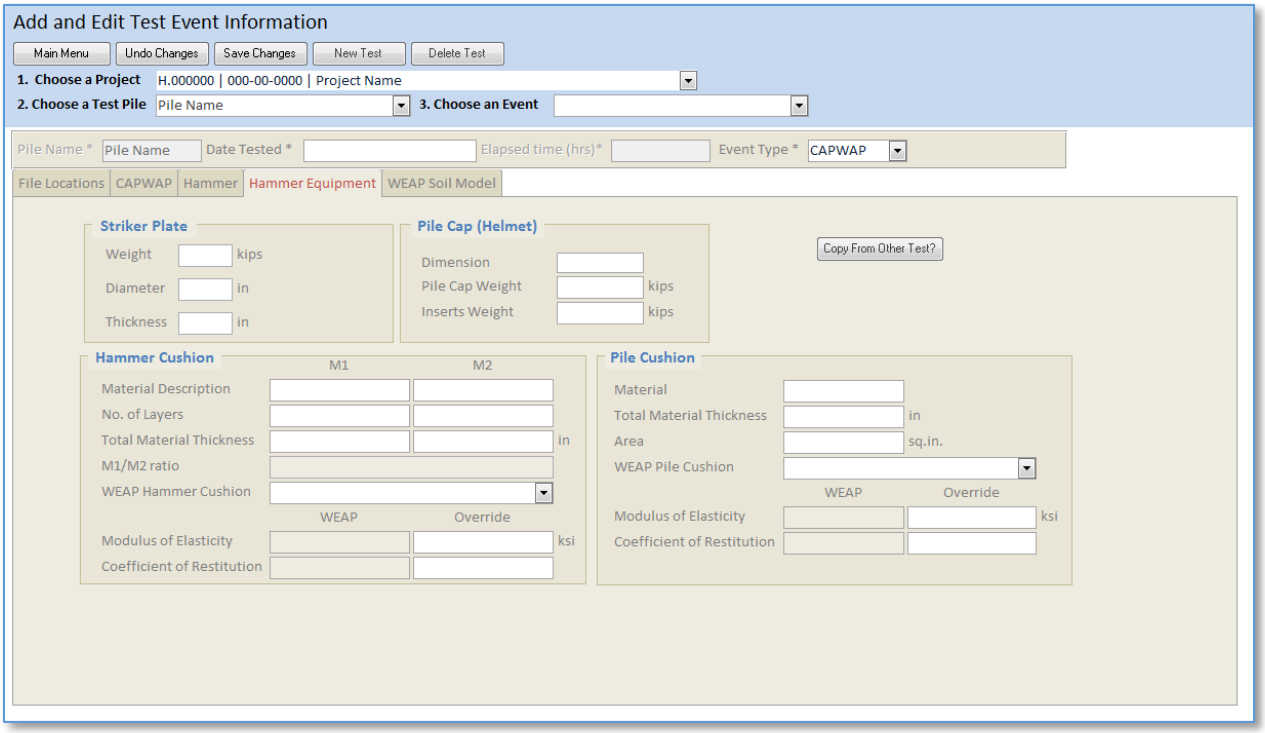


Figure 13: New/Edit Pile Test Event – CAPWAP – Hammer Equipment

Test Event Fields (continued)

CAPWAP Test Event Info – Hammer Equipment

Striker Plate

Weight – Weight of striker plate in kips.

Diameter – Diameter of striker plate in inches.

Thickness – Thickness of striker plate in inches.

Pile Cap (Helmet)

Dimension – Description of pile cap (or pile helmet) material.

Pile Cap Weight – Weight of pile cap in kips.

Inserts Weight – Weight of pile cap inserts in kips.

Hammer Cushion

Material Description – Description of hammer cushion material.

No. of layers – Number of layers of hammer cushion material specified.

Total Material Thickness – Total thickness of the hammer cushion material specified.

M1/M2 ratio – Ratio of the thickness of hammer cushion material 1 to the thickness of hammer cushion material 2. Auto-calculated based on thickness input.

WEAP Hammer Cushion – A drop-down menu of cushions from the WEAP database. Use the *M1/M2 ratio* to help guide cushion selection.

Modulus of Elasticity – Elastic modulus of the hammer cushion.

Coefficient of Restitution – Coefficient of Restitution (COR) of the hammer cushion.

***Pile* Cushion**

Material – Pile cushion material description.

Total Material Thickness – Total thickness of the pile cushion material.

Area – Area of the of the pile cushion.

WEAP Pile Cushion – A drop-down menu of cushions from the WEAP database.

Modulus of Elasticity – Elastic modulus of the pile cushion.

Coefficient of Restitution – Coefficient of Restitution (COR) of the pile cushion.

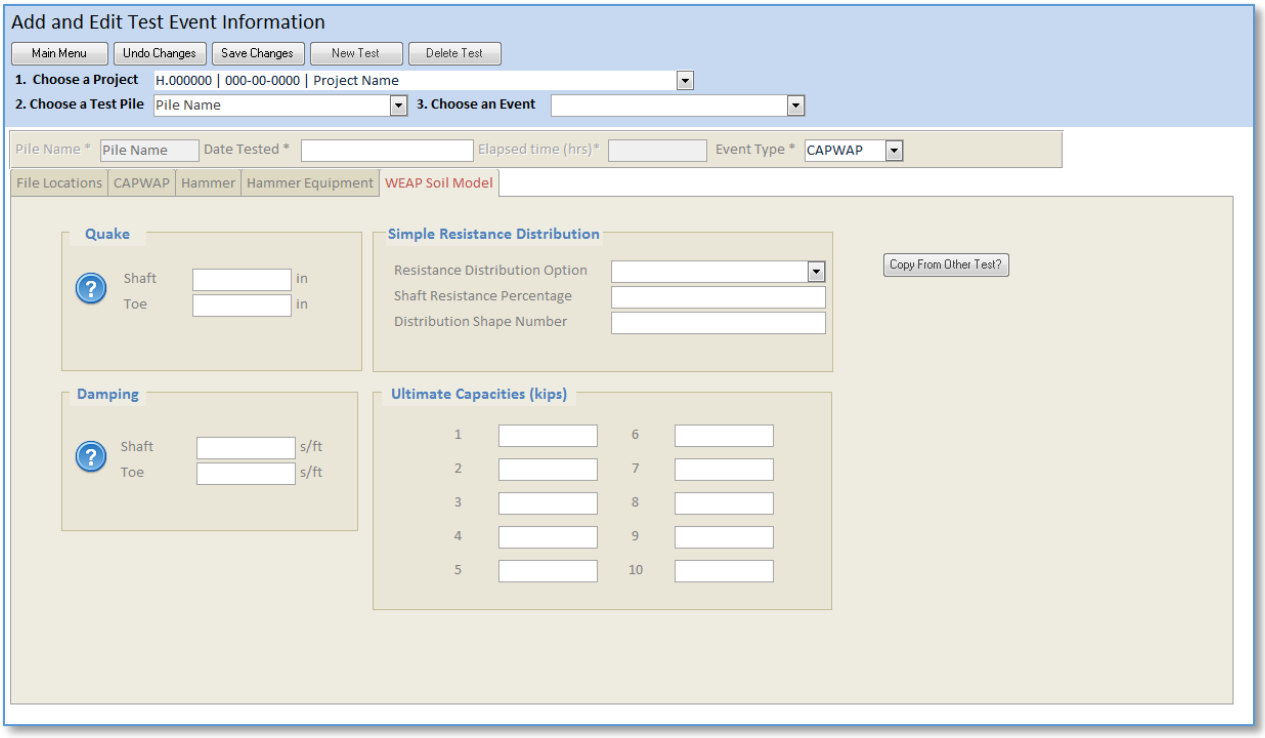


Figure 14: New/Edit Pile Test Event – CAPWAP – WEAP Soil Model

Test Event Fields (continued)

CAPWAP Test Event Info – WEAP Soil Model

Quake (click blue circled question mark "?" for help about typical values)

Shaft – Shaft quake soil parameter in inches.

Toe – Toe quake soil parameter in inches.

Damping (click blue circled question mark "?" for help about typical values)

Shaft – Shaft damping soil parameter in s/ft.

Toe – Toe damping soil parameter in s/ft.

Simple Resistance Distribution

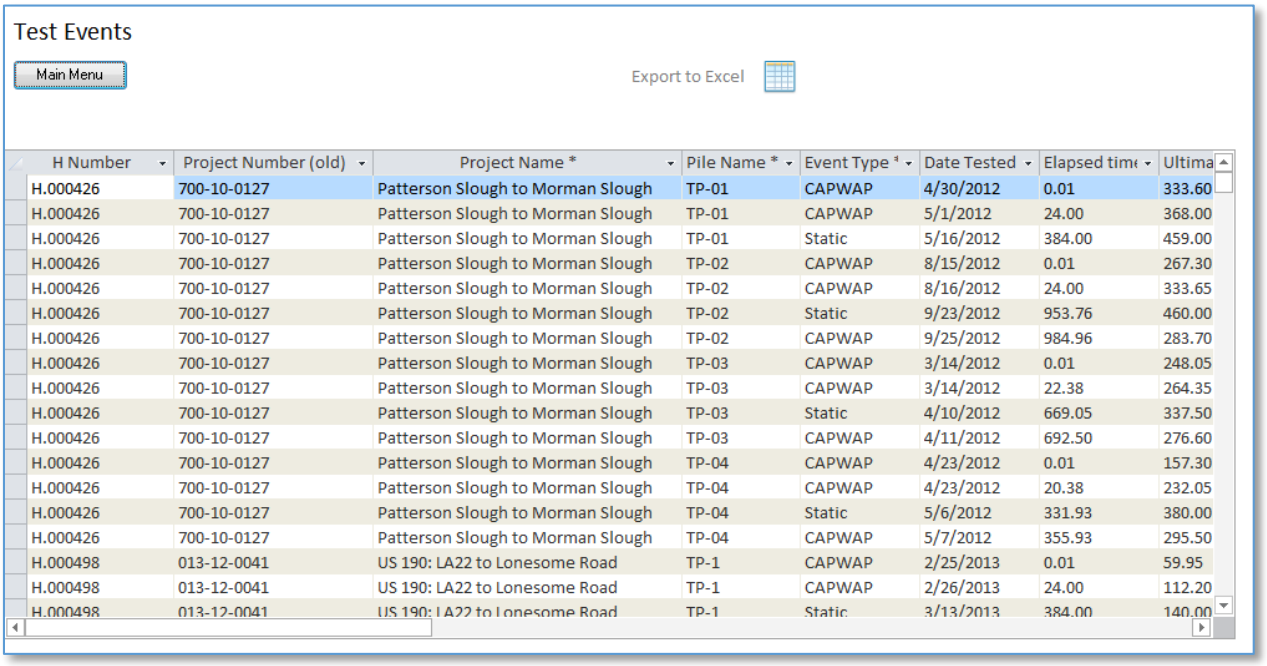
Resistance Distribution Option – Proportional shaft resistance, Constant shaft resistance, or Constant end resistance.

Shaft Resistance Percentage – Percentage (%) of shaft resistance.

Distribution Shape Number - Distribution shape number.

Ultimate Capacities (kips) – *1* through *10*.

View Pile Test Events



H Number	Project Number (old)	Project Name *	Pile Name *	Event Type	Date Tested	Elapsed time	Ultima
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-01	CAPWAP	4/30/2012	0.01	333.60
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-01	CAPWAP	5/1/2012	24.00	368.00
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-01	Static	5/16/2012	384.00	459.00
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-02	CAPWAP	8/15/2012	0.01	267.30
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-02	CAPWAP	8/16/2012	24.00	333.65
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-02	Static	9/23/2012	953.76	460.00
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-02	CAPWAP	9/25/2012	984.96	283.70
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-03	CAPWAP	3/14/2012	0.01	248.05
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-03	CAPWAP	3/14/2012	22.38	264.35
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-03	Static	4/10/2012	669.05	337.50
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-03	CAPWAP	4/11/2012	692.50	276.60
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-04	CAPWAP	4/23/2012	0.01	157.30
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-04	CAPWAP	4/23/2012	20.38	232.05
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-04	Static	5/6/2012	331.93	380.00
H.000426	700-10-0127	Patterson Slough to Morman Slough	TP-04	CAPWAP	5/7/2012	355.93	295.50
H.000498	013-12-0041	US 190: LA22 to Lonesome Road	TP-1	CAPWAP	2/25/2013	0.01	59.95
H.000498	013-12-0041	US 190: LA22 to Lonesome Road	TP-1	CAPWAP	2/26/2013	24.00	112.20
H.000498	013-12-0041	US 190: LA22 to Lonesome Road	TP-1	Static	3/13/2013	384.00	140.00

Figure 15: View Test Events

Shows all test event records. Use the EXPORT TO EXCEL button to export all data into an Excel spreadsheet. Each field may be sorted and filtered using the triangular buttons (▼) next to the field caption.

Database Maintenance

The Database Maintenance menu allows for modification and addition to lists used throughout the database.

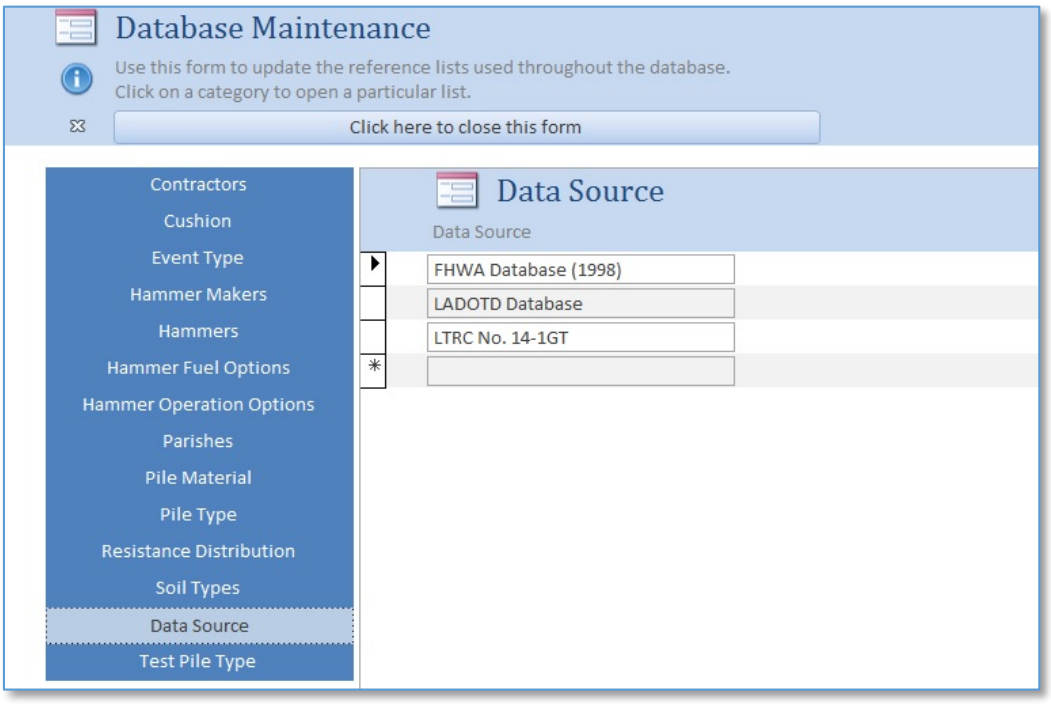


Figure 16: Database Maintenance - Source

- **Data Source**
  - FHWA Database (1998)
  - LADOTD Database
  - LTRC No. 14-1GT
- **Contractors**
- **Parishes**
- **Pile Type**
- **Pile Material**
  - Concrete
  - Steel
  - Timber
- **Test Pile Type**
  - Test Pile
  - Monitor Pile
  - Indicator Pile
  - Other
  - Test Shaft
- **Event Type**

    - Static
    - CAPWAP
    - Case/RMX
    - Statnamic
    - Gates
    - Other
    - EDC (Embedded Data Collector)
    - APPLE/Drop
    - O-Cell
    - Static (Uplift)
    - Static (Lateral)
- **Soil Type**
    - Unknown
    - Clay
    - Sand
    - Gravel
    - CH
    - CL
    - CL-ML
    - GC
    - ML
    - OH, ABOVE "A" LINE
    - S/C
    - SC
    - SC-SM
    - SM
    - SP
- **Hammer Manufacturers**
- **Hammer Information**
- **Hammer Fuel Options**
    - Max = Pressure_FS1
    - Max-1 = Pressure_FS2
    - Max-2 = Pressure_FS3
    - Max-3 = Pressure_FS4
    - Min = Pressure_FS5
- **Hammer Operation Options**
    - Convergence of stroke with fixed pressure
    - Convergence of pressure with fixed stroke
    - Single analysis with fixed stroke and pressure.
- **Cushion Information**
- **Resistance Distribution**
    - Proportional shaft resistance
    - Constant shaft resistance
    - Constant end resistance

Minimum required data for one test event record

- **Project Info**
  - Project Name
  - Contractor
  - Parish
  - Data Source
- **Pile Info**
  - Pile Name
  - Length
  - Pile Installation Hammer
  - Type [of test pile]
  - Pile Type (size and material)
  - Date Driven
  - Latitude
  - Longitude
  - Elev. Reference (Measured, Estimated, or Unknown?)
  - Ground Surface Elevation
  - EOD (End of Drive) Tip Elevation
- **Test Event Info**
  - Date Tested
  - Event Type (Static, CAPWAP, …)

APPENDIX F

LADOTD PILE LOAD TEST DATABASE

(LAPLTD) DATA SUMMARY

All Events by Case Number

Case #	dtProjects.ID	dtTestPiles.ID	dtTestEvents.ID	H Number	Project Number (old)	Project Name *	Parish 1 *	Source *	Pile Name *	TP_Type	Name	Event Type *	Date Driven *	Date Tested *	Elapsed time [hours] (req)	Ultimate Capacity [tons]	Notes
1	4	1	244	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	57-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/13/2009	2/16/2009	50.00	221.2	
2	4	2	245	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	58-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/18/2009	2/19/2009	22.00	225.3	
3	4	3	246	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	59-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/20/2009	2/21/2009	22.00	230.0	
4	4	4	247	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	60-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/25/2009	2/26/2009	20.00	232.5	
5	4	5	248	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	61-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/27/2009	2/28/2009	23.00	243.6	
6	1	10	13	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	1/25/2010	0.10	225.0	CAPWAP of EOD
7	1	10	14	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	2/1/2010	168.00	285.0	CAPWAP of 7-day restrike
8	1	10	16	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	Static	1/25/2010	2/20/2010	624.00	279.0	Selected ultimate capacity at load before pile plunge
9	1	10	15	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	2/21/2010	648.00	300.0	CAPWAP of 27-day restrike (after load test)
10	1	12	22	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-03	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	1/25/2010	0.10	63.0	CAPWAP of EOD
11	1	12	23	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-03	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	1/27/2010	48.00	295.0	CAPWAP of 2-day restrike
12	1	12	25	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-03	Test Pile	30" Voided Sq. PPC	Static	1/25/2010	3/21/2010	1320.00	700.0	Pile did not fail
13	1	12	24	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-03	Test Pile	30" Voided Sq. PPC	CAPWAP	1/25/2010	3/22/2010	1344.00	700.0	CAPWAP of 56-day restrike
14	1	13	26	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-04	Test Pile	30" Voided Sq. PPC	CAPWAP	2/2/2010	2/2/2010	0.10	259.6	CAPWAP of EOD
15	1	13	27	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-04	Test Pile	30" Voided Sq. PPC	CAPWAP	2/2/2010	2/2/2010	1.00	310.0	CAPWAP of 1-hr restrike
16	1	13	28	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-04	Test Pile	30" Voided Sq. PPC	CAPWAP	2/2/2010	2/20/2010	432.00	612.2	CAPWAP of 18-day restrike
17	1	13	29	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-04	Test Pile	30" Voided Sq. PPC	Static	2/2/2010	3/6/2010	768.00	675.0	Pile did not fail
18	1	14	30	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	2/1/2010	2/1/2010	0.10	80.0	CAPWAP of EOD
19	1	14	31	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	2/1/2010	2/1/2010	1.00	132.4	CAPWAP of 1-hr restrike. Stroke taken from different blow
20	1	14	32	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	2/1/2010	2/3/2010	48.00	280.0	CAPWAP of 2-day restrike
21	1	14	34	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	Static	2/1/2010	3/4/2010	744.00	475.0	Selected ultimate capacity at load before pile plunge
22	1	14	33	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	2/1/2010	3/5/2010	768.00	475.2	CAPWAP of 32-day restrike (after load test)
23	1	15	35	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-06	Test Pile	30" Voided Sq. PPC	CAPWAP	1/26/2010	1/26/2010	0.10	63.5	CAPWAP of EOD
24	1	15	36	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-06	Test Pile	30" Voided Sq. PPC	CAPWAP	1/26/2010	1/26/2010	1.00	200.0	CAPWAP of 1-hr restrike
25	1	15	37	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-06	Test Pile	30" Voided Sq. PPC	CAPWAP	1/26/2010	1/27/2010	24.00	325.0	CAPWAP of 24-hr restrike
26	1	15	39	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-06	Test Pile	30" Voided Sq. PPC	Static	1/26/2010	2/10/2010	360.00	575.0	Selected ultimate capacity at load before pile plunge
27	1	15	38	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-06	Test Pile	30" Voided Sq. PPC	CAPWAP	1/26/2010	3/8/2010	984.00	499.9	CAPWAP of 41-day restrike (after load test)
28	1	16	40	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-07	Test Pile	30" Voided Sq. PPC	CAPWAP	1/27/2010	1/27/2010	0.10	25.0	CAPWAP of EOD
29	1	16	41	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-07	Test Pile	30" Voided Sq. PPC	CAPWAP	1/27/2010	1/27/2010	1.00	182.5	CAPWAP of 1-hr restrike
30	1	16	43	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-07	Test Pile	30" Voided Sq. PPC	Static	1/27/2010	2/24/2010	672.00	325.0	
31	1	16	42	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-07	Test Pile	30" Voided Sq. PPC	CAPWAP	1/27/2010	2/24/2010	672.00	270.0	CAPWAP of 28-day restrike (after load test)
32	4	17	44	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/6/2010	0.10	91.0	CAPWAP of EOD
33	4	17	45	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/6/2010	2.00	199.4	CAPWAP of 2-hr restrike
34	4	17	46	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/6/2010	3.90	241.8	CAPWAP of 4-hr restrike
35	4	17	47	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/6/2010	6.00	257.2	CAPWAP of 6-hr restrike
36	4	17	48	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/7/2010	24.00	329.3	CAPWAP of 24-hr restrike
37	4	17	49	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/8/2010	48.00	342.7	CAPWAP of 48-hr restrike
38	4	17	50	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/9/2010	72.00	359.4	CAPWAP of 72-hr restrike
39	4	17	52	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	Static	11/6/2010	11/12/2010	147.30	403.0	Selected ultimate capacity at load before pile plunge
40	4	17	51	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-06	Test Pile	24" Voided Sq. PPC	CAPWAP	11/6/2010	11/12/2010	150.50	386.7	CAPWAP of 5-day restrike
41	4	18	751	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/7/2010	0.10	150.1	CAPWAP of EOD
42	4	18	53	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/7/2010	0.25	178.6	CAPWAP of 15-min restrike

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43	4	18	54	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/7/2010	1.00	193.2	CAPWAP of 1-hr restrike
44	4	18	55	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/7/2010	2.00	220.5	CAPWAP of 2-hr restrike
45	4	18	56	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/8/2010	24.10	292.3	CAPWAP of 24-hr restrike
46	4	18	57	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/10/2010	72.10	317.1	CAPWAP of 72-hr restrike
47	4	18	59	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	Static	8/7/2010	8/15/2010	192.00	369.5	
48	4	18	58	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-07	Test Pile	24" Voided Sq. PPC	CAPWAP	8/7/2010	8/16/2010	218.20	347.1	CAPWAP of 9-day restrike
49	4	19	60	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/10/2010	0.10	175.3	CAPWAP of EOD
50	4	19	61	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/10/2010	2.00	310.1	CAPWAP of 2-hr restrike
51	4	19	62	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/10/2010	4.00	351.5	CAPWAP of 4-hr restrike
52	4	19	63	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/11/2010	24.00	394.8	CAPWAP of 24-hr restrike
53	4	19	64	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/13/2010	72.00	450.9	CAPWAP of 72-hr restrike
54	4	19	66	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	Static	3/10/2010	3/17/2010	168.00	504.0	Pile did not fail
55	4	19	65	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-08	Test Pile	24" Voided Sq. PPC	CAPWAP	3/10/2010	3/18/2010	192.00	520.7	CAPWAP of 8-day restrike
56	4	20	67	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/1/2009	0.10	434.8	CAPWAP of EOD
57	4	20	68	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/1/2009	2.00	534.0	CAPWAP of 2-hr restrike
58	4	20	69	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/1/2009	4.00	446.3	CAPWAP of 4-hr restrike
59	4	20	70	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/1/2009	8.00	418.1	CAPWAP of 8-hr restrike
60	4	20	71	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/2/2009	24.00	464.9	CAPWAP of 24-hr restrike
61	4	20	72	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/4/2009	72.00	486.5	CAPWAP of 72-hr restrike
62	4	20	74	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	Static	6/1/2009	6/8/2009	168.00	498.0	Pile did not fail
63	4	20	73	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-09	Test Pile	24" Voided Sq. PPC	CAPWAP	6/1/2009	6/9/2009	192.00	520.6	CAPWAP of 8-day restrike
64	4	21	75	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	10/9/2007	2.00	58.6	CAPWAP of 2-hr restrike
65	4	21	76	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	10/9/2007	4.00	82.7	CAPWAP of 4-hr restrike
66	4	21	77	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	10/9/2007	7.00	102.2	CAPWAP of 7-hr restrike
67	4	21	78	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	10/10/2007	24.00	113.7	CAPWAP of 24-hr restrike
68	4	21	79	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	10/12/2007	72.00	136.9	CAPWAP of 72-hr restrike
69	4	21	81	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	Static	10/9/2007	10/15/2007	167.00	180.0	
70	4	21	80	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10	Test Pile	24" Voided Sq. PPC	CAPWAP	10/9/2007	11/28/2007	1200.00	161.4	CAPWAP of 50-day restrike
71	4	22	750	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	CAPWAP	10/29/2008	10/29/2008	0.10	131.4	CAPWAP of EOD
72	4	22	82	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	CAPWAP	10/29/2008	10/29/2008	2.00	195.5	CAPWAP of 2-hr restrike
73	4	22	83	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	CAPWAP	10/29/2008	10/29/2008	4.00	212.4	CAPWAP of 4-hr restrike
74	4	22	84	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	CAPWAP	10/29/2008	10/29/2008	23.50	255.9	CAPWAP of 24-hr restrike
75	4	22	86	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	Static	10/29/2008	11/13/2008	360.00	313.5	
76	4	22	85	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	T-10.5	Test Pile	24" Voided Sq. PPC	CAPWAP	10/29/2008	11/20/2008	528.00	340.8	CAPWAP of 22-day restrike
77	5	23	87	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/9/2004	0.10	177.0	
78	5	23	88	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/9/2004	2.00	313.8	
79	5	23	89	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/9/2004	5.00	430.2	
80	5	23	90	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/9/2004	23.00	509.3	
81	5	23	91	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/10/2004	46.00	593.5	
82	5	23	92	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/11/2004	70.00	617.1	
83	5	23	93	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 a	Test Pile	54" Concrete Cylinder	CAPWAP	7/9/2004	7/12/2004	93.00	639.7	
84	5	24	95	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/7/2004	0.10	43.7	
85	5	24	96	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/7/2004	2.20	93.5	

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86	5	24	97	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/7/2004	3.90	118.9	
87	5	24	98	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/7/2004	6.00	139.2	
88	5	24	99	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/7/2004	21.60	161.9	
89	5	24	100	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/9/2004	56.00	169.0	
90	5	24	101	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/10/2004	76.90	191.9	
91	5	24	102	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	CAPWAP	7/7/2004	7/11/2004	96.90	201.8	
92	5	24	103	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-02 b	Test Pile	16" Solid Sq. PPC	Static	7/7/2004	7/14/2004	168.00	213.5	Static load test curve approximated from field notes
93	5	25	104	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/6/2004	0.10	181.2	
94	5	25	105	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/6/2004	2.00	375.7	
95	5	25	106	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/6/2004	3.90	399.9	
96	5	25	107	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/7/2004	24.70	515.2	
97	5	25	108	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/7/2004	44.20	563.7	
98	5	25	109	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/9/2004	72.40	616.6	
99	5	25	110	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/10/2004	117.40	646.8	Unable to locate CAPWAP file
100	5	25	111	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 a	Test Pile	54" Concrete Cylinder	CAPWAP	6/6/2004	6/17/2004	287.70	640.6	
101	5	26	113	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	CAPWAP	6/4/2004	6/4/2004	0.10	350.5	
102	5	26	114	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	CAPWAP	6/4/2004	6/4/2004	2.00	435.7	
103	5	26	115	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	CAPWAP	6/4/2004	6/4/2004	23.60	505.6	
104	5	26	116	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	CAPWAP	6/4/2004	6/6/2004	69.20	543.1	
105	5	26	117	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	CAPWAP	6/4/2004	6/10/2004	162.40	578.0	
106	5	26	118	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 b	Test Pile	30" Voided Sq. PPC	Static	6/4/2004	6/17/2004	312.00	826.5	Static load test data points estimated from image of the test curve
107	5	27	119	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/1/2004	0.10	134.0	
108	5	27	120	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/1/2004	2.30	308.4	
109	5	27	121	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/1/2004	4.10	419.4	
110	5	27	122	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/2/2004	24.10	539.1	
111	5	27	123	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/3/2004	48.90	548.5	
112	5	27	124	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/4/2004	76.30	489.1	
113	5	27	125	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	CAPWAP	6/1/2004	6/8/2004	172.50	508.3	
114	5	27	126	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-03 c	Test Pile	30" Steel Pipe	Static	6/1/2004	6/16/2004	360.00	796.0	Static load test data points estimated from image of the test curve
115	5	28	127	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	0.10	358.6	
116	5	28	128	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	3.10	477.8	
117	5	28	129	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	4.40	442.9	
118	5	28	130	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	6.60	435.0	
119	5	28	131	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	8.40	489.9	
120	5	28	132	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/24/2004	23.70	612.3	
121	5	28	133	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/26/2004	48.20	669.3	
122	5	28	134	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/27/2004	72.30	633.8	
123	5	28	135	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	CAPWAP	7/24/2004	7/27/2004	92.90	781.6	
124	5	28	136	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 a	Test Pile	24" Voided Sq. PPC	Static	7/24/2004	7/30/2004	144.00	828.0	Static load test data and curves could not be located
125	5	29	137	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/27/2004	0.10	86.7	Start with VUL 020, switch to VUL 025 at EOD
126	5	29	138	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/27/2004	2.00	221.6	
127	5	29	139	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/27/2004	3.60	272.9	
128	5	29	140	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/27/2004	5.80	280.2	

129	5	29	141	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/27/2004	20.60	347.0	
130	5	29	142	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/28/2004	44.90	377.9	
131	5	29	143	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/29/2004	68.50	395.2	
132	5	29	144	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	CAPWAP	7/27/2004	7/30/2004	89.20	414.0	
133	5	29	145	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-04 b	Test Pile	24" Voided Sq. PPC	Static	7/27/2004	8/2/2004	144.00	445.0	Static load test data points estimated from image of the test curve -- Selected ultimate capacity at load before pile plunge
134	5	30	146	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	0.10	189.1	
135	5	30	147	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	3.20	276.6	
136	5	30	148	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	5.30	281.7	
137	5	30	149	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	7.50	294.3	
138	5	30	150	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	23.60	306.5	
139	5	30	151	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/11/2004	48.10	329.1	
140	5	30	152	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/12/2004	72.00	345.7	
141	5	30	153	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/12/2004	92.20	362.2	
142	5	30	154	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 a	Test Pile	24" Voided Sq. PPC	Static	8/9/2004	8/15/2004	144.00	386.5	Static load test data points estimated from image of the test curve -- Selected ultimate capacity at load before pile plunge
143	5	31	155	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	0.10	88.7	
144	5	31	156	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	2.60	170.0	
145	5	31	157	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	4.20	195.8	
146	5	31	158	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/9/2004	21.70	277.7	
147	5	31	159	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/10/2004	46.60	297.0	
148	5	31	160	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/11/2004	70.00	318.0	
149	5	31	161	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	CAPWAP	8/9/2004	8/12/2004	90.60	329.4	
150	5	31	162	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-05 b	Test Pile	24" Voided Sq. PPC	Static	8/9/2004	8/15/2004	144.00	380.0	Static load test data points estimated from image of the test curve -- Selected ultimate capacity at load before pile plunge
151	4	37	491	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	1A-10	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/11/2010	11/12/2010	20.00	268.4	
152	4	38	482	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	1C-05	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/23/2010	10/25/2010	40.00	303.1	
153	4	39	187	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	1D-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/5/2008	2/6/2008	21.00	420.0	
154	4	40	188	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	1E-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/15/2008	2/16/2008	21.00	139.4	
155	4	41	189	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	1F-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/27/2008	2/28/2008	22.00	135.0	
156	4	42	190	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	2-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/12/2008	3/13/2008	20.00	125.6	
157	4	43	191	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	3-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/6/2008	4/7/2008	19.00	117.7	
158	4	44	192	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	4-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/17/2008	4/18/2008	20.00	126.5	
159	4	45	193	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	5-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/22/2008	4/23/2008	24.00	169.3	
160	4	46	194	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	6-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/29/2008	4/30/2008	22.00	137.8	
161	4	47	195	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	7-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/1/2008	5/2/2008	20.00	161.6	
162	4	48	196	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	8-05	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/8/2008	5/9/2008	20.00	117.8	
163	4	49	197	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	9-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/20/2008	5/21/2008	24.00	132.5	
164	4	50	198	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	10-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/28/2008	5/29/2008	22.00	169.9	
165	4	51	199	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	11-06	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/29/2008	5/30/2008	20.00	180.1	
166	4	52	200	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	12-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/3/2008	6/4/2008	20.00	189.0	
167	4	53	201	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	13-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/12/2008	6/16/2008	74.00	257.7	
168	4	54	202	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	14-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/19/2008	6/20/2008	20.00	200.2	
169	4	55	203	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	15-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/10/2008	7/11/2008	20.00	162.5	
170	4	56	204	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	16-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/12/2008	7/14/2008	43.00	142.0	
171	4	57	205	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	17-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/18/2008	7/21/2008	52.00	118.5	

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172	4	58	206	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	18-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/23/2008	7/28/2008	112.00	170.8	
173	4	59	207	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	19-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/5/2008	8/6/2008	20.00	137.5	
174	4	60	208	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	20-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/9/2008	8/11/2008	42.00	142.7	
175	4	61	209	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	21-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/16/2008	8/18/2008	45.00	142.9	
176	4	62	210	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	22-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/20/2008	8/21/2008	22.00	165.0	
177	4	63	211	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	23-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/27/2008	8/28/2008	20.00	144.0	
178	4	64	212	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	25-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/24/2008	9/25/2008	23.00	207.6	
179	4	65	213	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	26-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/29/2008	9/30/2008	20.00	126.2	
180	4	66	214	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	27-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/1/2008	10/2/2008	21.00	141.7	
181	4	67	215	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	28-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/8/2008	10/10/2008	46.00	130.2	
182	4	68	216	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	29-08	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/14/2008	10/15/2008	20.00	158.4	
183	4	69	217	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	30-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/17/2008	10/18/2008	22.00	158.5	
184	4	70	218	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	31-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/12/2008	11/18/2008	122.50	163.5	
185	4	71	219	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	32-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/8/2008	11/10/2008	43.00	117.8	
186	4	72	220	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	33-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/19/2008	11/20/2008	20.00	171.9	
187	4	73	221	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	34-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/24/2008	11/25/2008	20.00	108.6	
188	4	74	222	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	35-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/26/2008	12/1/2008	120.00	175.6	
189	4	75	223	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	36-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/3/2008	12/4/2008	20.00	117.6	
190	4	76	224	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	37-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/4/2008	12/5/2008	20.00	112.8	
191	4	77	225	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	38-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/9/2008	12/12/2008	64.00	123.8	
192	4	78	226	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	39-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/12/2008	12/13/2008	23.00	118.5	
193	4	79	227	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	40-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/15/2008	12/16/2008	19.00	119.2	
194	4	80	228	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	41-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/17/2008	12/18/2008	20.00	110.4	
195	4	81	229	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	42-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/6/2009	1/7/2009	22.50	114.5	
196	4	82	230	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	43-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/7/2009	1/8/2009	24.00	139.1	
197	4	83	231	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	44-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/9/2009	1/10/2009	23.00	115.4	
198	4	84	232	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	45-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/10/2009	1/12/2009	25.00	112.0	
199	4	85	233	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	46-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/13/2009	1/14/2009	20.00	153.0	
200	4	86	234	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	47-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/14/2009	1/15/2009	22.00	124.1	
201	4	87	235	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	48-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/16/2009	1/20/2009	94.00	127.5	
202	4	88	236	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	49-06	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/21/2009	1/22/2009	22.00	179.2	
203	4	89	237	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	50-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/24/2009	1/26/2009	45.00	129.0	
204	4	90	238	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	51-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/26/2009	1/27/2009	20.00	146.1	
205	4	91	239	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	52-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/30/2009	1/31/2009	22.00	129.6	
206	4	92	240	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	53-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/3/2009	2/4/2009	20.00	107.1	
207	4	93	241	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	54-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/3/2009	2/5/2009	25.00	106.2	
208	4	94	242	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	55-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/6/2009	2/10/2009	92.00	253.6	
209	4	95	243	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	56-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/11/2009	2/12/2009	20.00	269.9	
210	4	96	249	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	62-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/3/2009	3/4/2009	20.50	232.4	
211	4	97	250	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	63-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/5/2009	3/9/2009	75.00	269.1	
212	4	98	251	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	64-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/10/2009	3/11/2009	20.00	227.9	
213	4	99	252	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	65-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/11/2009	3/12/2009	21.00	371.4	
214	4	100	253	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	66-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/17/2009	3/18/2009	20.50	220.7	

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215	4	101	254	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	67-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/19/2009	3/20/2009	20.00	232.9	
216	4	102	255	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	68-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/23/2009	3/24/2009	20.00	232.6	
217	4	103	256	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	69-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/25/2009	3/27/2009	24.50	255.2	
218	4	104	257	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	70-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/3/2009	4/4/2009	23.00	222.5	
219	4	105	258	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	71-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/15/2009	4/16/2009	22.50	233.7	
220	4	106	259	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	72-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/20/2009	4/21/2009	22.00	233.5	
221	4	107	260	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	73-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/22/2009	4/23/2009	21.00	235.5	
222	4	108	261	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	74-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/29/2009	4/30/2009	22.00	214.9	
223	4	109	262	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	75-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/2/2009	5/4/2009	40.00	231.4	
224	4	110	263	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	76-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/5/2009	5/6/2009	20.00	210.6	
225	4	111	264	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	77-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/6/2009	5/7/2009	20.00	225.0	
226	4	112	265	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	78-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/11/2009	5/12/2009	20.00	232.5	
227	4	113	266	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	79-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/15/2009	5/18/2009	61.00	235.0	
228	4	114	267	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	80-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/27/2009	5/28/2009	20.00	232.6	
229	4	115	268	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	81-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/30/2009	5/31/2009	21.00	191.5	
230	4	116	269	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	82-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/12/2009	6/13/2009	20.00	227.3	
231	4	117	270	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	83-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/9/2009	6/10/2009	20.00	218.2	
232	4	118	271	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	84-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/13/2009	6/14/2009	20.00	227.4	
233	4	119	272	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	85-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/15/2009	6/16/2009	20.00	222.5	
234	4	120	273	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	86-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/17/2009	6/18/2009	20.00	234.9	
235	4	121	274	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	87-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/18/2009	6/19/2009	20.00	230.9	
236	4	122	275	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	88-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/22/2009	6/23/2009	20.00	214.5	
237	4	123	276	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	89-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/23/2009	6/24/2009	20.00	264.0	
238	4	124	277	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	90-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/27/2009	6/28/2009	20.00	219.0	
239	4	125	278	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	91-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/29/2009	6/30/2009	20.00	241.5	
240	4	126	279	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	92-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/12/2009	7/13/2009	20.00	220.1	
241	4	127	280	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	93-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/12/2009	7/13/2009	20.00	240.0	
242	4	128	281	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	94-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/12/2009	7/13/2009	21.00	213.7	
243	4	129	282	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	95-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/13/2009	7/14/2009	20.00	229.5	
244	4	130	283	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	96-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/19/2009	7/20/2009	20.00	230.0	
245	4	131	284	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	97-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/20/2009	7/21/2009	20.00	233.5	
246	4	132	285	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	98-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/21/2009	7/22/2009	22.00	257.0	
247	4	133	286	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	99-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/28/2009	7/29/2009	20.00	255.5	
248	4	134	287	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	100-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/29/2009	7/30/2009	20.00	252.0	
249	4	135	288	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	101-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/2/2009	8/3/2009	20.00	224.9	
250	4	136	289	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	102-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/5/2009	8/6/2009	20.00	241.1	
251	4	137	290	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	103-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/7/2009	8/8/2009	20.00	252.7	
252	4	138	291	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	104-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/11/2009	8/12/2009	24.00	237.9	
253	4	139	292	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	105-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/13/2009	8/14/2009	20.00	227.6	
254	4	140	293	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	106-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/17/2009	8/19/2009	38.00	247.5	
255	4	141	294	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	107-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/20/2009	8/21/2009	22.00	252.5	
256	4	142	295	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	108-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/24/2009	8/25/2009	20.00	249.5	
257	4	143	296	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	109-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/25/2009	8/26/2009	20.00	249.5	

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258	4	144	297	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	110-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/27/2009	8/28/2009	20.00	256.9	
259	4	145	298	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	111-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/29/2009	8/30/2009	20.00	274.1	
260	4	146	299	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	112-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/1/2009	9/2/2009	21.00	240.1	
261	4	147	300	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	113-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/2/2009	9/3/2009	20.00	243.0	
262	4	148	301	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	114-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/3/2009	9/4/2009	20.00	239.9	
263	4	149	302	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	115-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/8/2009	9/9/2009	21.00	226.8	
264	4	150	303	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	116-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/17/2009	9/18/2009	23.00	241.6	
265	4	151	304	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	117-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/19/2009	9/20/2009	20.00	239.1	
266	4	152	305	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	118-05	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/21/2009	9/22/2009	20.00	235.2	
267	4	153	306	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	119-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/23/2009	9/24/2009	20.00	240.0	
268	4	154	307	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	120-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/25/2009	9/26/2009	20.00	280.5	
269	4	155	308	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	121-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/28/2009	9/29/2009	20.00	245.6	
270	4	156	309	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	122-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/30/2009	10/1/2009	20.00	231.3	
271	4	157	310	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	123-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/6/2009	10/7/2009	20.00	233.4	
272	4	158	311	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	124-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/7/2009	10/8/2009	24.00	227.5	
273	4	159	312	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	125-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/12/2009	10/13/2009	20.00	242.0	
274	4	160	313	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	126-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/14/2009	10/15/2009	20.00	230.3	
275	4	161	314	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	127-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/18/2009	10/21/2009	68.00	271.2	
276	4	162	315	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	128-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/21/2009	10/23/2009	43.00	247.5	
277	4	163	316	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	129-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/23/2009	10/24/2009	20.00	234.8	
278	4	164	317	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	130-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/26/2009	10/28/2009	42.00	233.9	
279	4	165	318	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	131-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/29/2009	10/30/2009	24.00	275.2	
280	4	166	319	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	132-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/1/2009	11/2/2009	20.00	235.0	
281	4	167	320	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	133-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/2/2009	11/3/2009	20.00	242.6	
282	4	168	321	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	134-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/5/2009	11/6/2009	20.00	255.4	
283	4	169	322	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	135-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/6/2009	11/7/2009	20.00	231.6	
284	4	170	323	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	136-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/12/2009	11/13/2009	20.00	253.5	
285	4	171	324	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	137-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/13/2009	11/14/2009	20.00	233.1	
286	4	172	325	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	138-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/15/2009	11/16/2009	20.00	239.4	
287	4	173	326	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	139-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/17/2009	11/18/2009	20.00	244.8	
288	4	174	327	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	140-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/19/2009	11/20/2009	20.00	293.5	
289	4	175	328	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	141-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/21/2009	11/23/2009	46.00	238.8	
290	4	176	329	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	142-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/29/2009	11/30/2009	20.00	241.0	
291	4	177	330	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	143-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/30/2009	12/2/2009	48.00	274.2	
292	4	178	331	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	144-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/4/2009	12/5/2009	20.00	247.0	
293	4	179	332	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	145-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/5/2009	12/6/2009	21.00	242.5	
294	4	180	333	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	146-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/9/2009	12/10/2009	20.00	209.5	
295	4	181	334	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	147-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/17/2009	12/18/2009	20.00	207.2	
296	4	182	335	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	148-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/21/2009	12/22/2009	20.00	237.8	
297	4	183	336	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	149-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/28/2009	12/29/2009	21.00	248.0	
298	4	184	337	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	150-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/29/2009	12/30/2009	20.00	289.8	
299	4	185	338	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	151-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/7/2010	1/9/2010	48.00	253.0	
300	4	186	339	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	152-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/11/2010	1/12/2010	20.00	246.1	Problems with accelerometers

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301	4	187	340	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	153-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/14/2010	1/15/2010	22.00	260.5	
302	4	188	341	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	154-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/19/2010	1/20/2010	20.00	237.2	
303	4	189	342	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	155-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/22/2010	1/23/2010	20.00	237.6	
304	4	190	343	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	156-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/25/2010	1/26/2010	20.00	234.6	
305	4	191	344	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	157-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/27/2010	1/28/2010	22.00	237.3	
306	4	192	345	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	158-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/28/2010	1/29/2010	20.00	236.4	
307	4	193	346	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	159-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/31/2010	2/1/2010	20.00	235.9	
308	4	194	347	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	160-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/1/2010	2/2/2010	20.00	227.0	
309	4	195	348	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	161-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/2/2010	2/3/2010	24.00	229.3	
310	4	196	349	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	162-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/5/2010	2/8/2010	71.00	237.6	
311	4	197	350	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	163-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/8/2010	2/10/2010	45.00	245.8	
312	4	198	351	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	164-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/13/2010	2/14/2010	21.00	237.5	
313	4	199	352	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	165-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/14/2010	2/17/2010	72.00	240.0	
314	4	200	353	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	166-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/19/2010	2/20/2010	20.00	236.9	
315	4	201	354	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	167-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/20/2010	2/22/2010	40.00	251.3	
316	4	202	355	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	168-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/23/2010	2/24/2010	20.00	250.0	
317	4	203	356	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	169-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/25/2010	2/26/2010	22.00	237.8	
318	4	204	357	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	170-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/28/2010	3/3/2010	64.00	234.0	
319	4	205	358	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	171-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/4/2010	3/5/2010	20.00	238.7	
320	4	206	359	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	172-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/5/2010	3/6/2010	20.00	252.5	
321	4	207	360	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	173-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/7/2010	3/8/2010	24.00	241.9	
322	4	208	361	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	174-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/14/2010	3/15/2010	20.00	287.7	
323	4	209	362	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	175-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/17/2010	3/19/2010	26.00	308.0	
324	4	210	363	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	176-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/19/2010	3/23/2010	87.00	470.5	
325	4	211	364	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	177-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/25/2010	3/26/2010	20.00	296.5	
326	4	212	365	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	178-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/26/2010	3/27/2010	20.00	251.4	
327	4	213	366	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	179-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/27/2010	3/28/2010	20.00	241.1	
328	4	214	367	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	180-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/28/2010	3/29/2010	20.00	310.2	
329	4	215	368	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	181-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/30/2010	3/31/2010	20.00	251.3	
330	4	216	369	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	182-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/31/2010	4/1/2010	20.00	298.6	
331	4	217	370	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	183-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/1/2010	4/2/2010	20.00	343.8	
332	4	218	371	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	184-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/3/2010	4/5/2010	46.00	341.2	
333	4	219	372	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	185-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/5/2010	4/6/2010	20.00	292.5	
334	4	220	373	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	186-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/7/2010	4/8/2010	20.00	303.6	
335	4	221	374	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	187-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/8/2010	4/9/2010	20.00	329.0	
336	4	222	375	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	188-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/9/2010	4/10/2010	24.00	360.4	
337	4	223	376	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	189-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/10/2010	4/12/2010	26.00	361.0	
338	4	224	377	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	190-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/13/2010	4/16/2010	72.00	378.5	
339	4	225	378	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	191-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/16/2010	4/17/2010	20.00	386.6	
340	4	226	379	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	192-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/17/2010	4/18/2010	23.00	358.0	
341	4	227	380	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	193-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/18/2010	4/19/2010	23.00	371.3	
342	4	228	381	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	194-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/19/2010	4/20/2010	21.00	323.6	
343	4	229	382	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	195-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/21/2010	4/22/2010	22.00	327.2	

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344	4	230	383	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	196-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/22/2010	4/25/2010	62.00	331.2	
345	4	231	479	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	290-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/20/2010	10/21/2010	20.00	225.7	
346	4	232	480	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	291-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/21/2010	10/22/2010	20.00	291.8	
347	4	233	481	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	292-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/22/2010	10/23/2010	20.00	239.2	
348	4	234	483	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	293-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/23/2010	10/25/2010	40.00	293.3	
349	4	235	484	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	294-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/25/2010	10/26/2010	20.00	271.0	
350	4	236	485	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	295-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/26/2010	10/27/2010	20.00	236.6	
351	4	237	486	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	296-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/27/2010	10/29/2010	40.00	359.2	
352	4	238	487	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	297-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/29/2010	10/30/2010	20.00	301.0	
353	4	239	488	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	298-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/1/2010	11/3/2010	40.00	273.8	
354	4	240	489	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	299-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/3/2010	11/5/2010	40.00	261.3	
355	4	241	492	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	300-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/17/2010	11/18/2010	23.00	316.3	
356	4	242	490	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	301-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/9/2010	11/10/2010	20.00	291.2	
357	4	243	493	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	302-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/22/2010	11/23/2010	20.00	323.7	
358	4	244	494	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	303-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	11/23/2010	11/24/2010	20.00	335.1	
359	4	245	495	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	304-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/1/2010	12/2/2010	20.00	292.3	
360	4	246	496	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	305-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/2/2010	12/3/2010	21.00	276.5	
361	4	247	497	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	306-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/4/2010	12/6/2010	46.00	250.5	
362	4	248	498	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	307-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/5/2010	12/7/2010	26.00	257.2	
363	4	249	499	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	308-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/7/2010	12/9/2010	46.00	251.4	
364	4	250	500	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	309-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/8/2010	12/9/2010	23.00	279.0	
365	4	254	384	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	197-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/25/2010	4/26/2010	21.00	260.0	
366	4	255	385	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	198-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/26/2010	4/27/2010	20.00	286.1	
367	4	256	386	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	199-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/28/2010	4/29/2010	20.00	236.7	
368	4	257	387	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	200-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/29/2010	5/3/2010	86.00	330.5	
369	4	258	388	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	201-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/3/2010	5/4/2010	20.00	352.0	
370	4	259	389	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	202-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/5/2010	5/6/2010	20.00	225.7	
371	4	260	390	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	203-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/6/2010	5/7/2010	20.00	226.2	
372	4	261	391	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	204-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/6/2010	5/7/2010	23.00	242.2	
373	4	262	392	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	205-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/8/2010	5/10/2010	45.00	250.5	
374	4	263	393	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	206-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/10/2010	5/11/2010	20.00	237.0	
375	4	264	394	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	207-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/12/2010	5/13/2010	20.00	257.0	
376	4	265	395	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	208-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/13/2010	5/14/2010	20.00	232.0	
377	4	266	396	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	209-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/14/2010	5/17/2010	65.00	241.5	
378	4	267	397	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	210-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/17/2010	5/18/2010	20.00	274.5	
379	4	268	398	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	211-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/18/2010	5/19/2010	20.00	374.0	
380	4	269	399	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	212-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/20/2010	5/21/2010	20.00	260.4	
381	4	270	400	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	213-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/22/2010	5/24/2010	45.00	321.0	
382	4	271	401	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	214-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/25/2010	5/26/2010	20.00	268.1	
383	4	272	402	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	215-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/26/2010	5/27/2010	20.00	303.9	
384	4	273	403	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	216-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/27/2010	6/1/2010	110.00	292.0	
385	4	274	404	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	217-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/28/2010	6/1/2010	93.00	262.0	
386	4	275	405	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	218-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/3/2010	6/4/2010	20.00	258.7	

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387	4	276	407	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	219-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/4/2010	6/4/2010	0.01	203.2	CAPWAP performed for a penetration depth of 127 ft
388	4	276	406	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	219-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/4/2010	6/5/2010	20.00	244.4	
389	4	278	408	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	220-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/7/2010	6/8/2010	21.00	328.4	
390	4	279	409	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	221-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/7/2010	6/8/2010	20.00	239.5	
391	4	280	410	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	222-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/7/2010	6/9/2010	28.00	346.9	
392	4	281	411	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	222-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/8/2010	6/11/2010	63.00	308.0	
393	4	282	412	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	223-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/11/2010	6/13/2010	37.00	332.3	
394	4	283	413	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	224-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/13/2010	6/14/2010	20.00	232.7	
395	4	284	414	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	225-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/14/2010	6/15/2010	20.00	282.8	
396	4	285	415	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	226-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/16/2010	6/18/2010	48.00	307.5	
397	4	286	416	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	227-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/17/2010	6/18/2010	22.00	343.9	
398	4	287	417	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	228-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/18/2010	6/19/2010	20.00	252.6	
399	4	288	418	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	229-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/21/2010	6/22/2010	22.00	255.2	
400	4	289	419	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	230-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/21/2010	6/23/2010	42.00	257.7	
401	4	290	420	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	231-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/23/2010	6/24/2010	20.00	299.7	
402	4	291	421	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	232-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/24/2010	6/25/2010	21.00	240.3	
403	4	292	422	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	233-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/25/2010	6/28/2010	63.00	237.6	
404	4	293	423	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	234-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/27/2010	6/30/2010	50.00	244.0	
405	4	294	424	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	235-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/29/2010	7/2/2010	70.00	248.4	
406	4	295	425	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	236-03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/7/2010	7/8/2010	20.00	238.5	
407	4	296	426	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	237-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/8/2010	7/9/2010	20.00	254.9	
408	4	297	427	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	238-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/9/2010	7/10/2010	20.00	335.9	
409	4	298	428	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	239-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/10/2010	7/12/2010	40.00	300.6	
410	4	299	429	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	240-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/12/2010	7/13/2010	20.00	252.0	
411	4	300	430	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	241-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/18/2010	7/19/2010	20.00	238.0	
412	4	301	431	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	242-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/19/2010	7/20/2010	20.00	247.7	
413	4	302	432	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	243-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/20/2010	7/21/2010	20.00	237.5	
414	4	303	433	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	244-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/26/2010	7/27/2010	20.00	280.0	
415	4	304	434	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	245-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/29/2010	7/30/2010	20.00	262.8	
416	4	305	435	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	246-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/31/2010	8/1/2010	20.00	277.9	
417	4	306	436	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	247-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/1/2010	8/2/2010	20.00	274.2	
418	4	307	437	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	248-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/3/2010	8/4/2010	20.00	245.0	
419	4	308	438	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	249-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/4/2010	8/5/2010	20.00	300.1	
420	4	309	439	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	250-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/5/2010	8/6/2010	20.00	238.0	
421	4	310	440	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	251-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/10/2010	8/13/2010	68.00	288.5	
422	4	311	441	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	252-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/16/2010	8/18/2010	42.00	276.0	
423	4	312	442	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	253-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/18/2010	8/19/2010	21.00	272.8	
424	4	313	443	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	254-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/19/2010	8/20/2010	21.00	237.4	
425	4	314	444	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	255-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/20/2010	8/21/2010	20.00	237.2	
426	4	315	445	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	256-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/21/2010	8/23/2010	39.00	265.8	
427	4	316	446	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	257-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/23/2010	8/24/2010	20.00	247.1	
428	4	317	447	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	258-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/24/2010	8/25/2010	20.00	237.4	
429	4	318	448	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	259-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/25/2010	8/27/2010	37.00	307.6	

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430	4	319	449	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	260-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/30/2010	8/31/2010	20.00	337.8	
431	4	320	450	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	261-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/1/2010	9/2/2010	20.00	245.1	
432	4	321	451	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	262-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/2/2010	9/3/2010	20.00	239.6	
433	4	322	452	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	263-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/7/2010	9/8/2010	20.00	238.5	
434	4	323	453	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	264-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/10/2010	9/11/2010	20.00	240.9	
435	4	324	454	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	265-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/12/2010	9/13/2010	20.00	241.5	
436	4	325	455	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	266-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/14/2010	9/15/2010	20.00	271.7	
437	4	326	456	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	267-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/15/2010	9/16/2010	20.00	239.6	
438	4	327	457	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	268-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/16/2010	9/17/2010	20.00	250.8	
439	4	328	458	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	269-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/17/2010	9/18/2010	21.00	237.4	
440	4	329	459	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	270-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/18/2010	9/20/2010	41.00	251.0	
441	4	330	460	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	271-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/20/2010	9/21/2010	21.00	259.3	
442	4	331	461	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	272-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/21/2010	9/22/2010	20.00	247.3	
443	4	332	462	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	273-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/22/2010	9/23/2010	20.00	238.1	
444	4	333	463	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	274-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/23/2010	9/24/2010	20.00	229.2	
445	4	334	464	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	275-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/24/2010	9/27/2010	63.00	296.9	
446	4	335	465	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	276-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/27/2010	9/28/2010	23.00	254.4	
447	4	336	466	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	277-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/28/2010	9/29/2010	20.00	267.3	
448	4	337	467	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	278-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/29/2010	9/30/2010	20.00	260.1	
449	4	338	468	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	279-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/30/2010	10/1/2010	20.00	253.7	
450	4	339	469	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	280-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/1/2010	10/4/2010	65.00	272.9	
451	4	340	470	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	281-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/4/2010	10/5/2010	20.00	277.7	
452	4	341	471	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	282-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/5/2010	10/6/2010	21.00	275.1	
453	4	342	472	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	283-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/6/2010	10/7/2010	20.00	252.6	
454	4	343	473	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	284-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/7/2010	10/8/2010	20.00	237.5	
455	4	344	474	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	285-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/8/2010	10/11/2010	67.00	250.8	
456	4	345	475	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	286-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/11/2010	10/12/2010	20.00	237.5	
457	4	346	476	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	287-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/12/2010	10/13/2010	20.00	246.3	
458	4	347	477	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	288-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/13/2010	10/14/2010	20.00	268.6	
459	4	348	478	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	289-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/18/2010	10/19/2010	20.00	246.6	
460	4	349	501	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	310-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/10/2010	12/15/2010	117.00	349.3	
461	4	350	502	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	311-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/15/2010	12/17/2010	47.00	313.0	
462	4	351	503	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	312-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/16/2010	12/17/2010	22.00	237.3	
463	4	352	504	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	313-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/19/2010	12/20/2010	20.00	248.0	
464	4	353	505	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	314-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/20/2010	12/21/2010	22.00	237.4	
465	4	354	506	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	315-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/21/2010	12/22/2010	20.00	233.4	
466	4	355	507	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	316-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/22/2010	12/23/2010	20.00	237.4	
467	4	356	508	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	317-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/23/2010	12/27/2010	95.00	239.9	
468	4	357	509	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	318-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/27/2010	12/28/2010	20.00	237.5	
469	4	358	510	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	319-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/28/2010	12/29/2010	24.00	237.2	
470	4	359	511	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	320-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	12/30/2010	1/4/2011	118.00	237.6	
471	4	360	512	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	321-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/5/2011	1/6/2011	22.00	238.2	
472	4	361	513	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	322-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/6/2011	1/7/2011	21.00	237.5	

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473	4	362	514	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	323-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/7/2011	1/8/2011	21.00	237.7	
474	4	363	515	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	324-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/8/2011	1/10/2011	41.00	244.7	
475	4	364	516	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	325-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/11/2011	1/12/2011	23.00	240.6	
476	4	365	517	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	326-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/12/2011	1/13/2011	20.00	235.5	
477	4	366	518	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	327-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/14/2011	1/17/2011	70.00	263.7	
478	4	367	519	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	328-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/17/2011	1/18/2011	20.00	265.4	
479	4	368	520	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	329-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/18/2011	1/19/2011	20.00	287.8	
480	4	369	521	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	330-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/19/2011	1/20/2011	20.00	260.0	
481	4	370	522	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	331-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/22/2011	1/23/2011	20.00	235.5	
482	4	371	523	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	332-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/23/2011	1/24/2011	20.00	256.3	
483	4	372	524	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	333-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/24/2011	1/25/2011	21.00	227.1	
484	4	373	525	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	334-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/25/2011	1/26/2011	20.00	301.9	
485	4	374	526	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	335-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/26/2011	1/27/2011	20.00	256.7	
486	4	375	527	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	336-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/27/2011	1/28/2011	20.00	237.6	
487	4	376	528	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	337-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/28/2011	1/29/2011	20.00	244.5	
488	4	377	529	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	338-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	1/31/2011	2/1/2011	20.00	239.2	
489	4	378	530	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	339-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/3/2011	2/7/2011	90.00	246.2	
490	4	379	531	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	340-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/8/2011	2/9/2011	20.00	237.5	
491	4	380	532	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	341-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/9/2011	2/11/2011	44.00	247.3	
492	4	381	533	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	342-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/19/2011	2/20/2011	20.00	275.0	
493	4	382	534	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	343-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/20/2011	2/21/2011	20.00	239.6	
494	4	383	535	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	344-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/21/2011	2/23/2011	29.00	292.8	
495	4	384	536	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	345-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/22/2011	2/23/2011	21.00	237.5	
496	4	385	537	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	346-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/23/2011	2/24/2011	24.00	272.2	
497	4	386	538	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	347-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/24/2011	2/26/2011	45.00	239.7	
498	4	387	539	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	348-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/25/2011	2/26/2011	23.00	248.1	
499	4	388	540	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	349-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	2/28/2011	3/1/2011	21.00	241.3	
500	4	389	541	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	350-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/1/2011	3/2/2011	20.00	237.5	
501	4	390	542	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	351-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/2/2011	3/3/2011	21.00	237.5	
502	4	391	543	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	352-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/4/2011	3/10/2011	144.00	238.8	
503	4	392	544	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	353-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/10/2011	3/11/2011	20.00	233.6	
504	4	393	545	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	354-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/11/2011	3/12/2011	21.00	242.1	
505	4	394	546	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	355-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/12/2011	3/13/2011	22.00	241.2	
506	4	395	547	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	356-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/13/2011	3/14/2011	20.00	233.1	
507	4	396	548	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	357-01	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/16/2011	3/17/2011	20.00	250.5	
508	4	397	549	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	358-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/17/2011	3/19/2011	45.00	268.0	
509	4	398	550	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	359-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/17/2011	3/19/2011	27.00	286.5	
510	4	399	551	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	360-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/19/2011	3/20/2011	21.00	245.0	
511	4	400	552	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	361-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/20/2011	3/21/2011	21.00	240.0	
512	4	401	553	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	362-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/21/2011	3/22/2011	21.00	254.0	
513	4	402	554	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	363-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/22/2011	3/23/2011	22.00	237.0	
514	4	403	555	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	364-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/23/2011	3/24/2011	20.00	249.0	
515	4	404	556	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	365-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/24/2011	3/25/2011	20.00	237.0	

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516	4	405	557	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	366-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/25/2011	3/28/2011	65.00	237.5	
517	4	406	558	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	367-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/28/2011	3/29/2011	20.00	237.5	
518	4	407	559	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	368-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/29/2011	3/31/2011	40.00	252.5	
519	4	408	560	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	369-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	3/31/2011	4/1/2011	20.00	233.5	
520	4	409	561	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	370-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/1/2011	4/2/2011	20.00	237.6	
521	4	410	562	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	371-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/2/2011	4/6/2011	91.00	237.0	
522	4	411	563	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	372-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/6/2011	4/7/2011	20.00	237.0	
523	4	412	564	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	373-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/7/2011	4/8/2011	20.00	237.5	
524	4	413	565	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	374-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/8/2011	4/9/2011	20.00	247.8	
525	4	414	566	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	375-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/9/2011	4/12/2011	64.00	238.0	
526	4	415	567	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	376-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/12/2011	4/13/2011	20.00	243.5	
527	4	416	568	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	377-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/13/2011	4/14/2011	22.00	237.5	
528	4	417	569	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	378-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/14/2011	4/17/2011	62.00	237.5	
529	4	418	570	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	379-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/17/2011	4/18/2011	21.00	237.5	
530	4	419	571	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	380-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/19/2011	4/20/2011	23.00	236.9	
531	4	420	572	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	381-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/20/2011	4/25/2011	120.00	246.3	
532	4	421	573	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	382-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/26/2011	4/28/2011	46.00	243.7	
533	4	422	574	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	383-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/29/2011	4/30/2011	20.00	243.8	
534	4	423	575	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	384-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	4/30/2011	5/1/2011	20.00	228.0	
535	4	424	576	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	385-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/1/2011	5/2/2011	22.00	237.4	
536	4	425	577	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	386-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/2/2011	5/3/2011	20.00	237.5	
537	4	426	578	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	387-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/3/2011	5/5/2011	45.00	235.5	
538	4	427	579	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	388-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/5/2011	5/6/2011	21.00	237.5	
539	4	428	580	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	389-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/6/2011	5/7/2011	20.00	236.5	
540	4	429	581	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	390-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/8/2011	5/10/2011	25.00	238.0	
541	4	430	582	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	391-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/9/2011	5/10/2011	20.00	237.5	
542	4	431	583	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	392-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/10/2011	5/11/2011	21.00	225.0	
543	4	432	584	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	393-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/11/2011	5/12/2011	21.00	238.0	
544	4	433	585	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	394-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/12/2011	5/16/2011	88.00	237.5	
545	4	434	586	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	395-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/16/2011	5/17/2011	20.00	241.5	
546	4	435	587	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	396-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/17/2011	5/18/2011	20.00	237.0	
547	4	436	588	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	397-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/18/2011	5/19/2011	20.00	236.5	
548	4	437	589	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	398-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/19/2011	5/20/2011	20.00	238.0	
549	4	438	590	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	399-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/20/2011	5/23/2011	66.00	237.0	
550	4	439	591	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	400-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/23/2011	5/25/2011	41.00	237.5	
551	4	440	592	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	401-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/24/2011	5/25/2011	23.00	234.5	
552	4	441	593	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	402-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/25/2011	5/26/2011	20.00	238.0	
553	4	442	594	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	403-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/26/2011	5/27/2011	21.00	237.5	
554	4	443	595	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	404-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/27/2011	5/31/2011	89.00	287.4	
555	4	444	596	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	405-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/31/2011	6/1/2011	20.00	237.7	
556	4	445	597	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	406-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/1/2011	6/2/2011	20.00	268.2	
557	4	446	598	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	407-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/2/2011	6/3/2011	20.00	242.7	
558	4	447	599	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	408-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/3/2011	6/6/2011	65.00	286.1	

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559	4	448	600	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	409-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/4/2011	6/6/2011	44.00	266.6	
560	4	449	601	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	410-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/7/2011	6/8/2011	20.00	238.9	
561	4	450	602	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	411-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/8/2011	6/9/2011	22.00	238.4	
562	4	451	603	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	412-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/9/2011	6/10/2011	20.00	266.5	
563	4	452	604	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	413-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/10/2011	6/13/2011	67.00	252.6	
564	4	453	605	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	414-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/14/2011	6/15/2011	20.00	258.5	
565	4	454	606	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	415-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/15/2011	6/16/2011	20.00	258.2	
566	4	455	607	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	416-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/16/2011	6/17/2011	20.00	236.5	
567	4	456	626	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	417-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/17/2011	6/18/2011	20.00	237.5	
568	4	457	627	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	418-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/18/2011	6/20/2011	42.00	235.0	
569	4	458	628	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	419-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/20/2011	6/21/2011	20.00	237.5	
570	4	459	629	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	420-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/22/2011	6/23/2011	21.00	238.0	
571	4	460	630	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	421-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/23/2011	6/27/2011	92.00	269.5	
572	4	461	631	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	422-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/27/2011	6/28/2011	20.00	237.5	
573	4	462	632	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	423-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/28/2011	6/29/2011	20.00	237.5	
574	4	463	633	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	424-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	6/29/2011	7/5/2011	144.00	257.0	
575	4	464	634	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	425-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/6/2011	7/7/2011	20.00	237.0	
576	4	465	635	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	426-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/7/2011	7/8/2011	20.00	274.5	
577	4	466	636	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	427-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/9/2011	7/11/2011	48.00	237.5	
578	4	467	637	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	428-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/11/2011	7/13/2011	44.00	237.0	
579	4	468	638	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	429-04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/20/2011	7/21/2011	20.00	240.0	
580	4	469	639	H.008142	829-32-0006	LA-1 Phase 1A	Lafourche	LADOTD Database	430-02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	7/25/2011	7/26/2011	21.00	237.0	
581	5	472	647	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/20/2006	0.10	89.6	
582	5	472	648	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/20/2006	2.00	164.7	
583	5	472	649	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/20/2006	4.00	207.3	
584	5	472	650	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/20/2006	8.00	252.5	
585	5	472	651	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/21/2006	24.00	280.2	
586	5	472	652	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/22/2006	48.00	303.5	
587	5	472	653	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-01	Test Pile	24" Voided Sq. PPC	CAPWAP	6/20/2006	6/23/2006	72.00	322.1	
588	5	473	655	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/13/2006	0.10	71.4	
589	5	473	656	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/13/2006	2.00	157.2	
590	5	473	657	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/13/2006	4.00	172.1	
591	5	473	658	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/13/2006	8.00	212.9	
592	5	473	659	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/14/2006	24.00	240.1	
593	5	473	608	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/15/2006	48.00	269.6	
594	5	473	609	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/16/2006	72.00	285.5	
595	5	473	610	H.001473	829-32-0001	LA-1 Phase 1B	Lafourche	LADOTD Database	T-11	Test Pile	24" Voided Sq. PPC	CAPWAP	6/13/2006	6/22/2006	216.00	351.0	
596	1	490	712	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	1/20/2010	1/20/2010	0.10	108.0	CAPWAP of EOD
597	1	490	713	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	1/20/2010	1/20/2010	1.00	145.0	CAPWAP of 1-hr restrike
598	1	490	714	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	1/20/2010	1/25/2010	120.00	338.0	CAPWAP of 5-day restrike
599	1	490	716	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	Static	1/20/2010	2/10/2010	504.00	551.0	Selected ultimate capacity at load before pile plunge
600	1	490	715	H.001436	064-01-0041	Caminada Bay Bridge	Jefferson	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	1/20/2010	2/11/2010	528.00	525.0	CAPWAP of 22-da restrike (after load test)
601	116	661	772	H.000000	857-66-0002	Pecan Island, LA 3147	Vermilion	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	105.0	Selected ultimate capacity at load before pile plunge

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602	64	714	824	H.000000	424-05-0087	Bayou Ramos Bridge, US 90	St. Mary	FHWA Database (1998)	92 TP2	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	517.5	Used ID lookup for hammer
603	64	716	826	H.000000	424-05-0087	Bayou Ramos Bridge, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	481.5	
604	64	717	827	H.000000	424-05-0087	Bayou Ramos Bridge, US 90	St. Mary	FHWA Database (1998)	TP6	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	450.0	Pile did not fail
605	64	718	828	H.000000	424-05-0087	Bayou Ramos Bridge, US 90	St. Mary	FHWA Database (1998)	TP5	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	564.0	
606	64	719	829	H.000000	424-05-0087	Bayou Ramos Bridge, US 90	St. Mary	FHWA Database (1998)	TP7	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	111.0	
607	198	745	858	H.000000	845-07-0011	Bayou Gauche Paradis Highway, LA 306	St. Charles	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Pile did not fail
608	239	786	901	H.000000	713-49-0066	Parish Road No. 617 Bridge	Lafourche	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	87.5	Pile did not fail
609	241	788	903	H.000000	284-01-0013	LA 46 Bridge	St. Bernard	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	143.0	Pile did not fail
610	243	790	905	H.000000	713-48-0091	Bridge Over Drainage Canal	Plaquemines	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	82.5	Pile did not fail
611	293	914	1099	H.000000	239-01-0077	Intracoastal Waterway Bridge	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	30" Steel Pipe	CAPWAP	8/9/2000	8/9/2000	0.08	212.1	CAPWAP of EOD
612	293	914	1098	H.000000	239-01-0077	Intracoastal Waterway Bridge	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	30" Steel Pipe	CAPWAP	8/9/2000	8/10/2000	24.00	401.3	CAPWAP of 24hr RS
613	293	915	1095	H.000000	239-01-0077	Intracoastal Waterway Bridge	St. Mary	LTRC No. 14-1GT	TP2	Test Pile	18" Solid Sq. PPC	CAPWAP	8/10/2000	8/10/2000	0.08	60.3	CAPWAP of EOD
614	293	915	1097	H.000000	239-01-0077	Intracoastal Waterway Bridge	St. Mary	LTRC No. 14-1GT	TP2	Test Pile	18" Solid Sq. PPC	CAPWAP	8/10/2000	8/11/2000	24.00	188.8	CAPWAP of 24hr RS
615	340	1018	1167	H.000000	000-00-0001	Tiger Bayou Bridge	Terrebonne	LTRC No. 14-1GT	IND1	Indicator Pile	12" Solid Sq. PPC	CAPWAP	8/2/1995	8/2/1995	0.08	174.2	CAPWAP of EOID
616	438	1036	1190	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	Patout-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2010	2/25/2010	0.01	45.6	CAPWAP of EOD
617	438	1036	1193	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	Patout-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2010	2/26/2010	24.00	78.8	
618	438	1036	1188	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	Patout-1	Test Pile	16" Solid Sq. PPC	Static	2/25/2010	3/15/2010	432.00	83.0	Selected ultimate capacity at load before pile plunge
619	438	1036	1192	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	Patout-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2010	3/19/2010	528.00	106.3	
620	445	1052	1252	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	2/21/2005	2/21/2005	0.01	495.9	CAPWAP by GRL
621	445	1052	1253	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	2/21/2005	2/21/2005	0.01	453.1	CAPWAP by GRL
622	445	1052	1243	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	2/21/2005	2/21/2005	0.01	391.1	CAPWAP by GRL
623	445	1052	1251	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	2/21/2005	2/22/2005	24.00	581.6	CAPWAP by GRL
624	445	1052	1250	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	Static	2/21/2005	3/7/2005	336.00	585.0	Pile did not fail
625	445	1053	1256	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	Bent 5 MP	Indicator Pile	16" Solid Sq. PPC	CAPWAP	10/9/2014	10/13/2014	96.00	192.0	
626	445	1054	1248	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-02	Test Pile	66" Concrete Cylinder	CAPWAP	3/30/2005	3/30/2005	0.01	856.0	CAPWAP by GRL
627	445	1054	1247	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-02	Test Pile	66" Concrete Cylinder	CAPWAP	3/30/2005	4/1/2005	48.00	622.5	CAPWAP by GRL
628	445	1055	1244	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-03	Test Pile	66" Concrete Cylinder	CAPWAP	4/26/2005	4/26/2005	0.01	350.0	CAPWAP by GRL
629	445	1055	1254	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-03	Test Pile	66" Concrete Cylinder	CAPWAP	4/26/2005	4/27/2005	24.00	1015.0	CAPWAP by GRL. Stroke estimated from PDA record with similar EMX.
630	445	1056	1242	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-04	Test Pile	66" Concrete Cylinder	CAPWAP	4/25/2005	4/25/2005	0.01	353.0	CAPWAP by GRL
631	445	1056	1240	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-04	Test Pile	66" Concrete Cylinder	CAPWAP	4/25/2005	4/27/2005	48.00	1058.0	CAPWAP by GRL
632	445	1056	1249	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-04	Test Pile	66" Concrete Cylinder	CAPWAP	4/25/2005	6/6/2005	1008.00	1504.6	CAPWAP by GRL
633	445	1057	1239	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	12/13/2005	12/13/2005	0.01	560.0	CAPWAP by GRL
634	445	1057	1238	H.000268	006-05-0076	Rigolets Pass Bridge & Approaches	Orleans	LADOTD Database	TP-05	Test Pile	30" Voided Sq. PPC	CAPWAP	12/13/2005	12/14/2005	24.00	620.7	CAPWAP by GRL
635	446	1058	1237	H.009309	000-00-0000	Summit Blvd.	St. Tammany	LADOTD Database	IP-01	Indicator Pile	66" Concrete Cylinder	CAPWAP	5/2/2005	5/2/2005	0.01	300.0	CAPWAP by GRL
636	446	1058	1236	H.009309	000-00-0000	Summit Blvd.	St. Tammany	LADOTD Database	IP-01	Indicator Pile	66" Concrete Cylinder	CAPWAP	5/2/2005	5/3/2005	24.00	748.0	CAPWAP by GRL. Could not find CAPWAP data.
637	447	1060	1274	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	8/21/2006	0.01	226.6	EOD. CAPWAP by Fugro.
638	447	1060	1269	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	8/21/2006	0.01	168.8	Set Check 1. CAPWAP by Fugro.
639	447	1060	1277	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	8/21/2006	0.01	190.0	Set Check 2. CAPWAP by Fugro
640	447	1060	1276	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	8/22/2006	24.00	229.1	1-day Restrike. CAPWAP by Fugro.
641	447	1060	1271	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	Static	8/21/2006	9/11/2006	504.00	570.0	Static load testing by Eustis. -- Selected ultimate capacity at load before pile plunge
642	447	1060	1275	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	9/12/2006	528.00	638.5	22-day Restrike. CAPWAP by Fugro.
643	447	1060	1272	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-01	Test Pile	36" Voided Sq. PPC	CAPWAP	8/21/2006	9/14/2006	576.00	503.5	24-day Restrike. CAPWAP by Fugro.
644	447	1061	1258	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	10/2/2006	10/2/2006	0.01	206.5	EOD. CAPWAP by Fugro.

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645	447	1061	1278	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	10/2/2006	10/2/2006	0.01	225.0	Set Check 2. CAPWAP by Fugro.
646	447	1061	1268	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	10/2/2006	10/2/2006	0.01	222.0	Set Check 1. CAPWAP by Fugro.
647	447	1061	1267	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	10/2/2006	10/3/2006	24.00	425.0	1-day Restrike. CAPWAP by Fugro.
648	447	1061	1266	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-02	Test Pile	36" Voided Sq. PPC	CAPWAP	10/2/2006	11/18/2006	1128.00	824.5	47-day Restrike. CAPWAP by Fugro.
649	447	1062	1264	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	9/29/2006	0.01	188.0	EOD. CAPWAP by Fugro.
650	447	1062	1262	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	9/29/2006	0.01	199.0	Set Check 2. CAPWAP by Fugro.
651	447	1062	1263	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	9/29/2006	0.01	192.5	Set Check 1. CAPWAP by Fugro.
652	447	1062	1261	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	9/30/2006	24.00	348.5	1-day Restrike. CAPWAP by Fugro.
653	447	1062	1273	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	Static	9/29/2006	10/31/2006	768.00	807.5	Static load test by Eustis. -- Selected ultimate capacity at load before pile plunge
654	447	1062	1260	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	11/1/2006	792.00	807.0	33-day Restrike. CAPWAP by Fugro.
655	447	1062	1259	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-03	Test Pile	36" Voided Sq. PPC	CAPWAP	9/29/2006	11/3/2006	840.00	801.5	35-day Restrike. CAPWAP by Fugro.
656	447	1063	1294	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-04	Test Pile	36" Voided Sq. PPC	CAPWAP	9/27/2006	9/27/2006	0.01	288.0	EOID
657	447	1063	1295	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-04	Test Pile	36" Voided Sq. PPC	CAPWAP	9/27/2006	9/28/2006	24.00	477.5	BOR-1
658	447	1063	1296	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-04	Test Pile	36" Voided Sq. PPC	CAPWAP	9/27/2006	11/10/2006	1056.00	749.0	BOR-2
659	447	1063	1297	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-04	Test Pile	36" Voided Sq. PPC	CAPWAP	9/27/2006	11/17/2006	1224.00	872.0	BOR-3
660	447	1064	1298	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-05	Test Pile	36" Voided Sq. PPC	CAPWAP	10/9/2006	10/9/2006	0.01	162.5	EOID
661	447	1064	1299	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-05	Test Pile	36" Voided Sq. PPC	CAPWAP	10/9/2006	10/10/2006	24.00	354.5	BOR-1
662	447	1064	1300	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-05	Test Pile	36" Voided Sq. PPC	CAPWAP	10/9/2006	11/7/2006	696.00	566.0	BOR-2
663	447	1066	1301	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-06	Test Pile	36" Voided Sq. PPC	CAPWAP	8/23/2006	8/23/2006	0.01	659.0	EOID
664	447	1066	1302	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-06	Test Pile	36" Voided Sq. PPC	CAPWAP	8/23/2006	8/24/2006	24.00	1008.5	BOR-1
665	447	1066	1303	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-06	Test Pile	36" Voided Sq. PPC	CAPWAP	8/23/2006	9/22/2006	720.00	1153.5	BOR-2
666	447	1070	1304	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-07	Test Pile	36" Voided Sq. PPC	CAPWAP	8/25/2006	8/25/2006	0.01	617.0	EOID
667	447	1070	1305	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-07	Test Pile	36" Voided Sq. PPC	CAPWAP	8/25/2006	8/26/2006	24.00	820.0	BOR-1
668	447	1070	1306	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-07	Test Pile	36" Voided Sq. PPC	CAPWAP	8/25/2006	9/16/2006	528.00	963.0	BOR-2
669	447	1071	1307	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-08	Test Pile	36" Voided Sq. PPC	CAPWAP	8/28/2006	8/28/2006	0.01	235.5	EOID
670	447	1071	1308	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-08	Test Pile	36" Voided Sq. PPC	CAPWAP	8/28/2006	8/29/2006	24.00	577.0	BOR-1
671	447	1071	1309	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	TP-08	Test Pile	36" Voided Sq. PPC	CAPWAP	8/28/2006	9/19/2006	528.00	724.5	BOR-2
672	447	1074	1310	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-01	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/27/2006	11/27/2006	0.01	639.5	EOID
673	447	1074	1311	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-01	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/27/2006	11/28/2006	24.00	689.0	BOR-1
674	447	1075	1312	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-02	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/21/2006	11/21/2006	0.01	734.5	EOID
675	447	1075	1313	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-02	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/21/2006	11/22/2006	24.00	818.5	BOR-1
676	447	1076	1314	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-03	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/4/2006	11/4/2006	0.01	688.0	EOID
677	447	1076	1315	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-03	Indicator Pile	36" Voided Sq. PPC	CAPWAP	11/4/2006	11/6/2006	48.00	721.5	BOR-1
678	447	1077	1316	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-04	Indicator Pile	36" Voided Sq. PPC	CAPWAP	9/25/2006	9/25/2006	0.01	648.5	EOID
679	447	1077	1317	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-04	Indicator Pile	36" Voided Sq. PPC	CAPWAP	9/25/2006	9/26/2006	24.00	705.5	BOR-1
680	447	1078	1318	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-05	Indicator Pile	36" Voided Sq. PPC	CAPWAP	10/4/2006	10/4/2006	0.01	771.5	EOID
681	447	1078	1319	H.003090	450-17-0028	I-10 Bridge over Lake Pontchartrain (Twin Spans)	Orleans	LADOTD Database	IP-05	Indicator Pile	36" Voided Sq. PPC	CAPWAP	10/4/2006	10/5/2006	24.00	830.0	BOR-1
682	6	32	163	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	CAPWAP	10/4/2012	10/4/2012	0.01	180.0	CAPWAP of EOD
683	6	32	165	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	CAPWAP	10/4/2012	10/4/2012	0.43	184.9	CAPWAP of 26-min restrike
684	6	32	167	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	CAPWAP	10/4/2012	10/4/2012	22.00	213.4	CAPWAP of 22-hr restrike
685	6	32	169	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	Static	10/4/2012	10/16/2012	295.68	225.0	1st instrumented static load test -- Selected ultimate capacity at load before pile plunge
686	6	32	170	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	Static	10/4/2012	11/25/2012	1255.68	260.0	2nd instrumented static load test
687	6	33	178	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-2	Test Pile	30" Voided Sq. PPC	CAPWAP	8/22/2012	8/22/2012	0.01	220.8	CAPWAP of EOD

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688	6	33	179	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-2	Test Pile	30" Voided Sq. PPC	CAPWAP	8/22/2012	8/22/2012	0.25	236.8	CAPWAP of 15-min restrike
689	6	33	180	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-2	Test Pile	30" Voided Sq. PPC	CAPWAP	8/22/2012	8/22/2012	22.00	329.7	CAPWAP of 22-hr restrike
690	6	33	181	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-2	Test Pile	30" Voided Sq. PPC	CAPWAP	8/22/2012	9/13/2012	537.17	374.3	CAPWAP of 22-day restrike
691	6	33	182	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-2	Test Pile	30" Voided Sq. PPC	Static	8/22/2012	9/29/2012	921.17	380.0	
692	6	34	171	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-3	Test Pile	30" Voided Sq. PPC	CAPWAP	9/18/2012	9/18/2012	0.01	246.6	CAPWAP of EOD
693	6	34	173	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-3	Test Pile	30" Voided Sq. PPC	CAPWAP	9/18/2012	9/18/2012	2.13	278.3	CAPWAP of 2-hr restrike
694	6	34	175	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-3	Test Pile	30" Voided Sq. PPC	CAPWAP	9/18/2012	9/18/2012	23.82	337.4	CAPWAP of 24-hr restrike
695	6	34	177	H.002071	196-03-0030	Bayou Lacassine	Calcasieu	LADOTD Database	TP-3	Test Pile	30" Voided Sq. PPC	Static	9/18/2012	10/2/2012	346.52	429.5	
696	7	35	183	H.000498	013-12-0041	US 190: LA22 to Lonesome Road	St. Tammany	LADOTD Database	TP-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2013	2/25/2013	0.01	60.0	CAPWAP of EOD
697	7	35	184	H.000498	013-12-0041	US 190: LA22 to Lonesome Road	St. Tammany	LADOTD Database	TP-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2013	2/26/2013	24.00	112.2	CAPWAP of 24-hr restrike
698	7	35	644	H.000498	013-12-0041	US 190: LA22 to Lonesome Road	St. Tammany	LADOTD Database	TP-1	Test Pile	16" Solid Sq. PPC	Static	2/25/2013	3/13/2013	384.00	140.0	Pile did not fail
699	7	35	643	H.000498	013-12-0041	US 190: LA22 to Lonesome Road	St. Tammany	LADOTD Database	TP-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/25/2013	3/14/2013	408.00	168.2	CAPWAP of 17-day restrike
700	11	251	678	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-04	Test Pile	24" Voided Sq. PPC	CAPWAP	4/23/2012	4/23/2012	0.01	157.3	CAPWAP of EOD
701	11	251	679	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-04	Test Pile	24" Voided Sq. PPC	CAPWAP	4/23/2012	4/23/2012	20.38	232.1	
702	11	251	681	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-04	Test Pile	24" Voided Sq. PPC	Static	4/23/2012	5/6/2012	331.93	387.5	
703	11	251	680	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-04	Test Pile	24" Voided Sq. PPC	CAPWAP	4/23/2012	5/7/2012	355.93	295.5	
704	11	476	667	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-01	Test Pile	24" Voided Sq. PPC	CAPWAP	4/30/2012	4/30/2012	0.01	333.6	CAPWAP of EOD
705	11	476	668	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-01	Test Pile	24" Voided Sq. PPC	CAPWAP	4/30/2012	5/1/2012	24.00	368.0	
706	11	476	669	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-01	Test Pile	24" Voided Sq. PPC	Static	4/30/2012	5/16/2012	384.00	459.0	Reaction system failed at 459 tons and 0.52" movement -- Pile did not fail
707	11	477	670	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-02	Test Pile	24" Voided Sq. PPC	CAPWAP	8/15/2012	8/15/2012	0.01	267.3	CAPWAP of EOD
708	11	477	671	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-02	Test Pile	24" Voided Sq. PPC	CAPWAP	8/15/2012	8/16/2012	24.00	333.7	
709	11	477	673	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-02	Test Pile	24" Voided Sq. PPC	Static	8/15/2012	9/23/2012	953.76	436.0	
710	11	477	672	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-02	Test Pile	24" Voided Sq. PPC	CAPWAP	8/15/2012	9/25/2012	984.96	283.7	
711	11	478	674	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	3/14/2012	3/14/2012	0.01	248.1	CAPWAP of EOD
712	11	478	675	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	3/14/2012	3/14/2012	22.38	264.4	
713	11	478	677	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	Static	3/14/2012	4/10/2012	669.05	336.5	
714	11	478	676	H.000426	700-10-0127	Patterson Slough to Morman Slough	Calcasieu	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	3/14/2012	4/11/2012	692.50	276.6	
715	14	480	690	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/27/2009	4/27/2009	0.01	346.9	CAPWAP of EOD
716	14	480	691	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/27/2009	4/27/2009	20.00	458.1	
717	14	480	693	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	Static	4/27/2009	5/15/2009	432.00	331.0	Pile did not fail
718	14	480	692	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/27/2009	5/16/2009	456.00	619.7	
719	14	481	694	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	CAPWAP	4/30/2009	4/30/2009	0.10	484.6	CAPWAP of EOD
720	14	481	695	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	CAPWAP	4/30/2009	5/4/2009	96.00	684.4	
721	14	481	697	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	Static	4/30/2009	5/16/2009	384.00	331.0	Pile did not fail
722	14	481	696	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	CAPWAP	4/30/2009	5/17/2009	408.00	835.7	
723	14	483	699	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB03-P04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/7/2009	10/7/2009	23.50	390.0	
724	14	484	701	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB07-P04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	9/4/2009	9/8/2009	96.00	477.3	
725	14	485	703	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB12-P03	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/29/2009	9/1/2009	72.00	496.4	
726	14	486	706	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB17-P04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/18/2009	8/18/2009	0.01	282.7	
727	14	486	705	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB17-P04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/18/2009	8/18/2009	20.00	355.4	
728	14	487	707	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB18-P04	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/15/2009	8/18/2009	72.00	440.7	CAPWAP performed due to low EOD blow count (from inspector).
729	14	488	708	H.005084	417-01-0016	LA-28 Bridges	Rapides	LADOTD Database	CalcB11-P02	Monitor Pile	24" Voided Sq. PPC	CAPWAP	8/25/2009	9/8/2009	336.00	468.2	CAPWAP performed due to low EOD capacity (from inspector).
730	16	489	711	H.008434	857-02-0006	Maree Michel Canal Bridge	Vermilion	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	CAPWAP	3/20/2014	3/20/2014	0.01	47.2	

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731	16	489	709	H.008434	857-02-0006	Maree Michel Canal Bridge	Vermilion	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	CAPWAP	3/20/2014	3/21/2014	24.00	150.2	
732	16	489	710	H.008434	857-02-0006	Maree Michel Canal Bridge	Vermilion	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	Static	3/20/2014	6/10/2014	1968.00	200.0	
733	16	489	719	H.008434	857-02-0006	Maree Michel Canal Bridge	Vermilion	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	CAPWAP	3/20/2014	6/12/2014	2016.00	198.0	
734	27	500	739	H.002367	260-01-0020	Amite River Relief Bridge LA 42	Ascension	LADOTD Database	Test Pile 1	Test Pile	24" Voided Sq. PPC	Static	10/4/2010	10/18/2010	336.00	415.0	Pile did not fail
735	127	672	783	H.000000	028-04-0017	Bundick Creek Bridge, LA 26	Beauregard	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.0	Pile did not fail
736	62	674	785	H.000000	003-07-0016	Bayou and Canal Approaches, US 90	Jefferson Davis	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	118.8	Used ID lookup for hammer -- Pile did not fail
737	127	676	787	H.000000	028-04-0017	Bundick Creek Bridge, LA 26	Beauregard	FHWA Database (1998)	TP3	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.5	Pile did not fail
738	99	677	806	H.000000	209-01-0006	LA 101 Bridge	Calcasieu	FHWA Database (1998)	TP1	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	102.2	Pile did not fail
739	38	678	788	H.000000	450-91-0025	Southern Pacific Railroad Overpass	Calcasieu	FHWA Database (1998)	TP4	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Pile did not fail
740	127	679	789	H.000000	028-04-0017	Bundick Creek Bridge, LA 26	Beauregard	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.5	Pile did not fail
741	38	680	790	H.000000	450-91-0025	Southern Pacific Railroad Overpass	Calcasieu	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	137.5	Pile did not fail
742	38	681	791	H.000000	450-91-0025	Southern Pacific Railroad Overpass	Calcasieu	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	130.0	Pile did not fail
743	38	683	792	H.000000	450-91-0025	Southern Pacific Railroad Overpass	Calcasieu	FHWA Database (1998)	TP1	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	92.5	Pile did not fail
744	62	685	794	H.000000	003-07-0016	Bayou and Canal Approaches, US 90	Jefferson Davis	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	118.8	Used ID lookup for hammer -- Pile did not fail
745	199	686	795	H.000000	080-01-0010	Coulee Le des Cannes Bridge, US 167	Vermilion	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Pile did not fail
746	142	695	804	H.000000	262-04-0005	West Hog Bridge, LA 16	St. Helena	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	
747	100	700	811	H.000000	003-08-0006	Mermentau River Bridge, US 90	Jefferson Davis	FHWA Database (1998)	TP1	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	288.0	Selected ultimate capacity at load before pile plunge
748	100	701	812	H.000000	003-08-0006	Mermentau River Bridge, US 90	Jefferson Davis	FHWA Database (1998)	TP2	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	224.0	Selected ultimate capacity at load before pile plunge
749	51	710	820	H.000000	832-01-0003	Bear Creek Bridge, LA 1036	Livingston	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Pile did not fail
750	79	711	821	H.000000	832-01-0003	East Hog Branch, LA 1036	Livingston	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Pile did not fail
751	95	712	1288	H.000000	024-01-0034	Southern Pacific Railroad Bridge, US 171	Calcasieu	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/12/2014	0.01	295.0	End of Driving - inconsistent skin/toe capacity data (145/27.5)
752	95	712	822	H.000000	024-01-0034	Southern Pacific Railroad Bridge, US 171	Calcasieu	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	156.0	Selected ultimate capacity at load before pile plunge
753	104	724	835	H.000000	055-07-0032	Bayou Petite Anse Bridge, LA 14	Iberia	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	107.0	Pile did not fail
754	105	725	836	H.000000	392-01-0014	Drainage Canal Bridges, LA 95	Acadia	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	112.1	Pile did not fail
755	108	728	839	H.000000	801-32-0005	Wikoff Bayou Bridge, LA 1101	Acadia	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Pile did not fail
756	98	729	840	H.000000	012-10-0011	Bayou Des Cannes, US 190	St. Landry	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	118.8	Pile did not fail
757	74	734	845	H.000000	386-03-0003	Bayou Mallet Bridge, LA 367	Acadia	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Pile did not fail
758	188	735	846	H.000000	742-01-0039	Lee Drive Extension, W Lee Dr	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	82.5	
759	193	740	852	H.000000	714-23-0083	Railroad Overpass, Shattuck Street	Calcasieu	FHWA Database (1998)	TP2	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	283.0	Pile did not fail
760	193	742	855	H.000000	714-23-0083	Railroad Overpass, Shattuck Street	Calcasieu	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	134.0	Pile did not fail
761	208	743	856	H.000000	852-21-0009	Bayou Liberty Bridge and Approaches, LA 433	St. Tammany	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	111.0	Pile did not fail
762	208	744	857	H.000000	852-21-0009	Bayou Liberty Bridge and Approaches, LA 433	St. Tammany	FHWA Database (1998)	TP3	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	111.0	Selected ultimate capacity at load before pile plunge
763	238	751	865	H.000000	013-10-0037	Bogue Falaya Bridge, US 190 (Covington)	St. Mary	FHWA Database (1998)	PA	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	180.0	Pile did not fail
764	159	753	867	H.000000	262-06-0009	Killian Branch Bridge, LA 16	St. Helena	FHWA Database (1998)	TP1 B2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.0	Hammer Matched to Pile 842 - Project 94 -- Pile did not fail
765	78	754	868	H.000000	057-06-0020	Reddell-Turkey Creek Bridge, LA 13	Evangeline	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	118.0	
766	78	755	869	H.000000	057-06-0020	Reddell-Turkey Creek Bridge, LA 13	Evangeline	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	63.8	Pile did not fail
767	78	756	870	H.000000	057-06-0020	Reddell-Turkey Creek Bridge, LA 13	Evangeline	FHWA Database (1998)	TP3	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	51.0	Hammer Matched to Pile 755 -- Selected ultimate capacity at load before pile plunge
768	212	759	873	H.000000	504-41-0032	Grand Bayou Reservoir Bridge Alterations, LA 784	Red River	FHWA Database (1998)	TP1	Test Pile	24" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	240.0	Pile did not fail
769	217	764	877	H.000000	024-02-0014	Diamond Gully Bridge, US 171	Calcasieu	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	152.3	Pile did not fail
770	219	766	879	H.000000	253-02-1106	Baton Rouge Bayou Bridge, US 61	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	183.0	Pile did not fail
771	221	768	881	H.000000	060-02-0025	White Bayou Bridge, Lower Zachary Rd	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	108.8	Pile did not fail
772	222	769	882	H.000000	817-08-0021	Hurricane Creek Bridge, LA 946	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.5	Pile did not fail
773	223	770	883	H.000000	450-10-0096	I-10 Bridge over LA 3246	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.5	Pile did not fail

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774	223	771	884	H.000000	450-10-0096	I-10 Bridge over LA 3246	East Baton Rouge	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.5	Pile did not fail
775	225	772	885	H.000000	817-08-0021	Roberts Canal Bridge, LA 946	East Baton Rouge	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	102.3	Pile did not fail
776	226	773	886	H.000000	817-08-0021	Jones Bayou Bridge, LA 946	East Baton Rouge	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Pile did not fail
777	227	774	887	H.000000	452-90-0017	Wardline Road Interchange Bridge, LA 3234	Tangipahoa	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	165.0	Pile did not fail
778	235	782	896	H.000000	858-01-0008	Bundick Creek Bridge, LA 1146	Vernon	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	120.5	Pile did not fail
779	236	783	897	H.000000	858-01-0008	Hurricane Creek Bridge, LA 1146	Vernon	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	120.5	Pile did not fail
780	238	785	900	H.000000	013-10-0037	Bogue Falaya Bridge, US 190 (Covington)	St. Mary	FHWA Database (1998)	PB	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	144.0	Selected ultimate capacity at load before pile plunge
781	242	789	904	H.000000	455-01-0030	Coulee Beau Bridge, I-49	Lafayette	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	145.0	Selected ultimate capacity at load before pile plunge
782	246	793	908	H.000000	032-01-0024	Southern Pacific Transportation Co. Underpass	Lafayette	FHWA Database (1998)	TP3	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	125.0	Selected ultimate capacity at load before pile plunge
783	157	798	913	H.000000	055-07-0032	Bayou Poufette Bridge, LA 14	Iberia	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	128.0	Selected ultimate capacity at load before pile plunge
784	56	804	920	H.000000	207-01-0022	Intercoastal Waterway Bridge, LA 82	Vermilion	FHWA Database (1998)	TP4	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	127.5	Pile did not fail
785	56	812	928	H.000000	207-01-0022	Intercoastal Waterway Bridge, LA 82	Vermilion	FHWA Database (1998)	TP5	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	255.0	Pile did not fail
786	56	814	929	H.000000	207-01-0022	Intercoastal Waterway Bridge, LA 82	Vermilion	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	127.5	Pile did not fail
787	56	817	931	H.000000	207-01-0022	Intercoastal Waterway Bridge, LA 82	Vermilion	FHWA Database (1998)	TP1	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	221.3	Pile did not fail
788	81	844	960	H.000000	060-02-0022	White Creek Bridge, LA 67	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	114.5	Used ID lookup for hammer -- Pile did not fail
789	82	845	961	H.000000	255-02-0025	Comite River Bridge, LA 408 (Hooper Rd)	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	24" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	312.5	Used ID lookup for hammer -- Selected ultimate capacity at load before pile plunge
790	82	846	962	H.000000	255-02-0025	Comite River Bridge, LA 408 (Hooper Rd)	East Baton Rouge	FHWA Database (1998)	TP2	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	172.5	Used ID lookup for hammer -- Pile did not fail
791	85	848	964	H.000000	817-09-0023	North Branch Ward Creek Bridge, LA 426	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Used ID lookup for hammer -- Pile did not fail
792	150	850	966	H.000000	257-04-0016	Elbow Bayou Bridge, LA 42	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	108.8	Used ID lookup for hammer -- Pile did not fail
793	139	851	967	H.000000	853-10-0009	Natalbany River Bridge, LA 1040	Tangipahoa	FHWA Database (1998)	TP1	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	180.0	Used ID lookup for hammer -- Pile did not fail
794	153	853	969	H.000000	859-22-0009	Bogue Lusa Creek Bridge, LA 439	Washington	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	180.0	Used ID lookup for hammer -- Pile did not fail
795	170	856	972	H.000000	450-33-0056	I-110 LA 408 Interchange	East Baton Rouge	FHWA Database (1998)	TP4A	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Used ID lookup for hammer -- Pile did not fail
796	170	857	973	H.000000	450-33-0056	I-110 LA 408 Interchange	East Baton Rouge	FHWA Database (1998)	TP3A	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Used ID lookup for hammer -- Pile did not fail
797	170	858	974	H.000000	450-33-0056	I-110 LA 408 Interchange	East Baton Rouge	FHWA Database (1998)	TP2A	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Used ID lookup for hammer -- Pile did not fail
798	249	867	983	H.000000	007-08-0026	Claycut Bayou Bridge, Siegen Ln (LA 3246)	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	107.0	Hammer: BOH 08 -- Pile did not fail
799	254	872	988	H.000000	024-06-0014	Flat Creek Bridge, US 171	Vernon	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Used ID lookup for hammer -- Pile did not fail
800	258	875	991	H.000000	281-04-0017	Double Creek Bridge and Approaches, LA 435	St. Tammany	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	108.0	Used ID lookup for hammer
801	277	876	992	H.000000	013-11-0014	Fairway Drive Overpass, US 190	St. Tammany	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	119.0	Used ID lookup for hammer -- Pile did not fail
802	268	886	1002	H.000000	455-05-0033	Alexandria Urban Section	Rapides	FHWA Database (1998)	TP6	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	96.0	Used ID lookup for hammer
803	273	891	1007	H.000000	140-01-0007	Tenmile Creek and Drainage Bridges, LA 113	Vernon	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	124.5	Used ID lookup for hammer -- Pile did not fail
804	273	892	1008	H.000000	140-01-0007	Tenmile Creek and Drainage Bridges, LA 113	Vernon	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Used ID lookup for hammer -- Pile did not fail
805	273	893	1009	H.000000	140-01-0007	Tenmile Creek and Drainage Bridges, LA 113	Vernon	FHWA Database (1998)	TP3	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	99.6	Pile did not fail
806	320	919	1048	H.000000	015-04-0038	Indian Creek Bridge	Grant	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	6/26/2005	6/26/2005	0.08	210.7	CAPWAP of INI
807	320	919	1047	H.000000	015-04-0038	Indian Creek Bridge	Grant	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	6/26/2005	6/27/2005	24.00	256.7	CAPWAP of Restrike after 24hr
808	320	920	1046	H.000000	015-04-0038	Indian Creek Bridge	Grant	LTRC No. 14-1GT	TP1 (2)	Test Pile	24" Voided Sq. PPC	CAPWAP	6/6/2005	6/6/2005	0.08	213.4	CAPWAP of INI
809	320	920	1049	H.000000	015-04-0038	Indian Creek Bridge	Grant	LTRC No. 14-1GT	TP1 (2)	Test Pile	24" Voided Sq. PPC	CAPWAP	6/6/2005	6/7/2005	24.00	368.3	CAPWAP of Restrike after 24hr
810	329	925	1057	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	5/19/2008	5/19/2008	0.08	129.0	CAPWAP of INI
811	329	925	1059	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	5/19/2008	5/20/2008	24.00	231.7	CAPWAP of Restrike after 1day
812	329	925	1062	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	5/19/2008	6/6/2008	432.00	309.8	CAPWAP of Restrike after 18 day
813	329	926	1060	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP2	Test Pile	30" Voided Sq. PPC	CAPWAP	5/19/2008	5/19/2008	0.08	263.0	CAPWAP of INI
814	329	926	1061	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP2	Test Pile	30" Voided Sq. PPC	CAPWAP	5/19/2008	5/20/2008	24.00	129.0	CAPWAP of Restrike after 1day
815	329	926	1058	H.000000	742-17-0150	Central Throughway	East Baton Rouge	LTRC No. 14-1GT	TP2	Test Pile	30" Voided Sq. PPC	CAPWAP	5/19/2008	6/5/2008	408.00	533.9	CAPWAP of Restrike after 17 day
816	332	927	1063	H.000000	262-04-0005	Weiss to Pinegrove LA 16	St. Helena	LTRC No. 14-1GT	TP1	Test Pile	12" Solid Sq. PPC	CAPWAP	11/11/1996	11/11/1996	0.08	112.3	CAPWAP of INI

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817	334	929	1066	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	EB12	Other	16" Solid Sq. PPC	CAPWAP	10/14/2011	10/20/2011	144.33	125.0	CAPWAP OF 5 to 7 days Restrike
818	334	930	1074	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	EB22	Other	30" Solid Sq. PPC	CAPWAP	10/12/2011	10/18/2011	138.07	334.8	CAPWAP OF 5 to 7 days Restrike
819	334	931	1072	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	EP32	Other	30" Solid Sq. PPC	CAPWAP	9/30/2011	10/6/2011	128.78	317.0	CAPWAP OF 5 to 7 days Restrike
820	334	932	1073	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	EB43	Other	30" Solid Sq. PPC	CAPWAP	10/25/2011	10/31/2011	142.85	314.7	CAPWAP OF 5 to 7 days Restrike
821	334	933	1070	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	WB13	Other	16" Solid Sq. PPC	CAPWAP	10/14/2011	10/20/2011	143.97	131.7	CAPWAP OF 5 to 7 days Restrike
822	334	934	1069	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	WP-31-RS	Other	30" Solid Sq. PPC	CAPWAP	9/28/2011	9/28/2011	1.00	151.8	CAPWAP of 30 minutes Restrike
823	334	935	1068	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	WP-31-RS (5days RS)	Other	30" Solid Sq. PPC	CAPWAP	9/27/2011	10/3/2011	137.68	279.0	CAPWAP of 5 to 7 days Restrike
824	334	936	1065	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	WP52	Other	30" Solid Sq. PPC	CAPWAP	10/29/2011	11/4/2011	141.82	147.3	CAPWAP OF 5 to 7 days Restrike
825	334	937	1071	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	EB64	Other	16" Solid Sq. PPC	CAPWAP	11/9/2011	11/14/2011	113.60	147.3	CAPWAP OF 4 to 5 days Restrike
826	334	938	1067	H.000000	450-10-0159	I-10 Widening Project - Siegen Lane to Highland Road	East Baton Rouge	LTRC No. 14-1GT	WB65	Other	16" Solid Sq. PPC	CAPWAP	11/9/2011	11/14/2011	113.95	142.9	CAPWAP OF 4 to 5 days Restrike
827	335	939	1077	H.000000	000-00-0003	Central Throughway-sullivan Bridge	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	7/13/2009	7/13/2009	0.08	280.4	CAPWAP of INI
828	335	939	1075	H.000000	000-00-0003	Central Throughway-sullivan Bridge	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	7/13/2009	7/15/2009	55.80	379.5	CAPWAP of Restrike after 1day
829	335	939	1076	H.000000	000-00-0003	Central Throughway-sullivan Bridge	East Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	7/13/2009	7/28/2009	369.02	472.8	CAPWAP of Restrike after 15 day
830	339	947	1092	H.000000	742-17-0166	LA 37 @ Central Throughway - Greenwell Springs Road Bridge	East Baton Rouge	LTRC No. 14-1GT	Testpile-EOID	Test Pile	24" Voided Sq. PPC	CAPWAP	5/30/2012	5/30/2012	0.10	200.9	CAPWAP of EOID
831	339	948	1091	H.000000	742-17-0166	LA 37 @ Central Throughway - Greenwell Springs Road Bridge	East Baton Rouge	LTRC No. 14-1GT	Testpile-BOR-1	Test Pile	24" Voided Sq. PPC	CAPWAP	5/30/2012	5/30/2012	0.10	401.8	CAPWAP of -BOR-1 after 16 hours
832	339	949	1093	H.000000	742-17-0166	LA 37 @ Central Throughway - Greenwell Springs Road Bridge	East Baton Rouge	LTRC No. 14-1GT	Testpile-BOR-2	Test Pile	24" Voided Sq. PPC	CAPWAP	5/30/2012	5/31/2012	16.43	492.4	CAPWAP of BOR-2 after 16 days
833	301	1001	1131	H.000000	424-04-0026	US 90 & LA 668 Interchange	Iberia	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	8/20/2001	8/20/2001	0.08	22.3	
834	301	1001	1130	H.000000	424-04-0026	US 90 & LA 668 Interchange	Iberia	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	8/20/2001	8/21/2001	24.00	89.3	
835	301	1001	1129	H.000000	424-04-0026	US 90 & LA 668 Interchange	Iberia	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	8/20/2001	9/5/2001	384.00	91.5	CAPWAP of RSAL
836	304	1004	1136	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	6/6/2002	6/6/2002	0.08	223.2	CAPWAP of EOD
837	304	1004	1138	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	6/6/2002	6/7/2002	24.00	299.1	CAPWAP of Restrike 24hr
838	304	1004	1144	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	6/6/2002	6/24/2002	432.00	312.5	CAPWAP of Restrike 14days
839	304	1005	1140	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND1	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/11/2002	0.01	214.3	CAPWAP of Restrike 24hr
840	304	1005	1139	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND1	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/10/2002	0.01	133.9	CAPWAP of EOD
841	304	1005	1137	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND1	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/25/2002	0.08	245.5	CAPWAP of Restrike 14days
842	304	1006	1143	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND2	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/12/2002	0.01	214.3	CAPWAP of Restrike 24hr
843	304	1006	1142	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND2	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/11/2002	0.01	84.8	CAPWAP of EOD
844	304	1006	1141	H.000000	022-03-0039	Joyce-LasSalle Bridges	Winn	LTRC No. 14-1GT	IND2	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2002	6/25/2002	0.08	154.0	CAPWAP of Restrike 14days
845	307	1009	1151	H.000000	015-04-0037	US 165 @ LA 524	Grant	LTRC No. 14-1GT	IND1	Indicator Pile	24" Solid Sq. PPC	CAPWAP	9/30/2004	9/30/2004	0.08	185.7	CAPWAP of INI
846	309	1013	1158	H.000000	450-05-0034	Louisiana Ave. Overpass	Lafayette	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	1/22/2002	1/22/2002	0.08	111.6	CAPWAP-INI
847	309	1013	1155	H.000000	450-05-0034	Louisiana Ave. Overpass	Lafayette	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	1/22/2002	1/23/2002	24.00	125.0	CAPWAP-24h RS
848	309	1013	1159	H.000000	450-05-0034	Louisiana Ave. Overpass	Lafayette	LTRC No. 14-1GT	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	1/22/2002	2/7/2002	384.00	120.5	CAPWAP- 14d RS (16 days after installation)
849	309	1014	1156	H.000000	450-05-0034	Louisiana Ave. Overpass	Lafayette	LTRC No. 14-1GT	TP2	Test Pile	14" Solid Sq. PPC	CAPWAP	1/23/2002	1/23/2002	0.08	111.5	CAPWAP-INI
850	309	1014	1157	H.000000	450-05-0034	Louisiana Ave. Overpass	Lafayette	LTRC No. 14-1GT	TP2	Test Pile	14" Solid Sq. PPC	CAPWAP	1/23/2002	2/7/2002	360.00	152.2	CAPWAP- ALRS (After Load Restrike) (15 days after installation)
851	310	1015	1161	H.000000	003-07-0019	Southern Pacific PR Overpass (Jennings)	Jefferson	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2000	8/2/2000	0.08	67.0	CAPWAP of INI (EOD)
852	310	1015	1162	H.000000	003-07-0019	Southern Pacific PR Overpass (Jennings)	Jefferson	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2000	8/3/2000	24.00	198.7	CAPWAP of 24h RS (BOR)
853	310	1015	1160	H.000000	003-07-0019	Southern Pacific PR Overpass (Jennings)	Jefferson	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2000	8/21/2000	456.00	213.4	CAPWAP of BO2R (2th Restrike)
854	439	1037	1191	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	Stumpy-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/22/2010	2/22/2010	0.01	72.5	CAPWAP of EOD
855	439	1037	1194	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	Stumpy-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/22/2010	2/23/2010	24.00	121.2	
856	439	1037	1189	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	Stumpy-1	Test Pile	16" Solid Sq. PPC	Static	2/22/2010	3/11/2010	408.00	139.0	
857	439	1037	1187	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	Stumpy-1	Test Pile	16" Solid Sq. PPC	CAPWAP	2/22/2010	3/12/2010	432.00	137.6	
858	439	1038	1195	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	1/27/2010	1/29/2010	48.00	402.8	
859	439	1038	1200	H.002442	270-02-0018	Tickfaw River Bridge Near Starns	Livingston	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	Static	1/27/2010	2/11/2010	360.00	330.0	Pile did not fail

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860	443	1050	1233	H.005424	852-21-0024	Bayou Liberty Bridge & Approaches	St. Tammany	LADOTD Database	TP-1	Test Pile	14" Solid Sq. PPC	CAPWAP	12/20/2006	12/20/2006	0.01	57.5	CAPWAP by GRL
861	443	1050	1232	H.005424	852-21-0024	Bayou Liberty Bridge & Approaches	St. Tammany	LADOTD Database	TP-1	Test Pile	14" Solid Sq. PPC	CAPWAP	12/20/2006	12/21/2006	24.00	124.0	CAPWAP by GRL
862	443	1050	1234	H.005424	852-21-0024	Bayou Liberty Bridge & Approaches	St. Tammany	LADOTD Database	TP-1	Test Pile	14" Solid Sq. PPC	Static	12/20/2006	1/4/2007	360.00	142.5	
863	444	1051	1257	H.002878	424-04-0034	US 90 at LA 675	Iberia	LADOTD Database	Indicator Pile 1	Indicator Pile	16" Solid Sq. PPC	CAPWAP	8/13/2014	8/13/2014	0.01	387.5	
864	444	1051	1255	H.002878	424-04-0034	US 90 at LA 675	Iberia	LADOTD Database	Indicator Pile 1	Indicator Pile	16" Solid Sq. PPC	CAPWAP	8/13/2014	8/14/2014	24.00	381.0	
865	3	9	642	H.008273	840-43-0001	Fort Buhlow Bridge	Rapides	LADOTD Database	TP-11	Test Pile	30" Voided Sq. PPC	CAPWAP	7/18/2011	7/18/2011	0.10	283.1	CAPWAP of EOD
866	3	9	9	H.008273	840-43-0001	Fort Buhlow Bridge	Rapides	LADOTD Database	TP-11	Test Pile	30" Voided Sq. PPC	CAPWAP	7/18/2011	7/19/2011	24.00	336.9	CAPWAP of 24-hr restrike
867	3	9	8	H.008273	840-43-0001	Fort Buhlow Bridge	Rapides	LADOTD Database	TP-11	Test Pile	30" Voided Sq. PPC	Static	7/18/2011	8/2/2011	360.00	482.5	
868	3	9	10	H.008273	840-43-0001	Fort Buhlow Bridge	Rapides	LADOTD Database	TP-11	Test Pile	30" Voided Sq. PPC	CAPWAP	7/18/2011	8/5/2011	432.00	361.1	
869	15	11	20	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	1/2/2014	1/2/2014	0.01	78.3	CAPWAP of EOD
870	15	11	18	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	1/2/2014	1/3/2014	24.00	157.2	CAPWAP of 1-day restrike
871	15	11	21	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	Static	1/2/2014	1/16/2014	336.00	216.0	
872	15	11	17	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	1/2/2014	1/22/2014	480.00	97.4	CAPWAP of 20-day restrike (after load test)
873	12	252	682	H.001487	065-06-0040	Grand Bayou Bridge	Lafourche	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	CAPWAP	6/16/2011	6/16/2011	0.01	58.0	CAPWAP of EOD
874	12	252	683	H.001487	065-06-0040	Grand Bayou Bridge	Lafourche	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	CAPWAP	6/16/2011	6/19/2011	93.30	126.8	
875	12	252	684	H.001487	065-06-0040	Grand Bayou Bridge	Lafourche	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	Static	6/16/2011	6/29/2011	334.10	157.5	
876	10	475	663	H.001267	053-02-0032	Bayou Jean DeJean Bridge	Rapides	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	10/10/2012	10/10/2012	0.01	202.9	CAPWAP of EOD
877	10	475	664	H.001267	053-02-0032	Bayou Jean DeJean Bridge	Rapides	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	10/10/2012	10/11/2012	24.00	281.8	CAPWAP of 1-day restrike
878	10	475	666	H.001267	053-02-0032	Bayou Jean DeJean Bridge	Rapides	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	Static	10/10/2012	10/28/2012	432.00	430.0	
879	10	475	665	H.001267	053-02-0032	Bayou Jean DeJean Bridge	Rapides	LADOTD Database	TP-01	Test Pile	30" Voided Sq. PPC	CAPWAP	10/10/2012	11/1/2012	528.00	338.7	CAPWAP of 22-day restrike
880	15	482	718	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-04	Test Pile	14" Solid Sq. PPC	CAPWAP	1/3/2014	1/6/2014	72.00	87.5	
881	15	482	698	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-04	Test Pile	14" Solid Sq. PPC	Static	1/3/2014	4/3/2014	2160.00	143.0	
882	15	482	717	H.001120	039-03-0015	LA 8: Ouachita River Bridge (Harrisonburg)	Catahoula	LADOTD Database	TP-04	Test Pile	14" Solid Sq. PPC	CAPWAP	1/3/2014	4/10/2014	2328.00	86.8	
883	18	491	720	H.005683	804-25-0009	Bayou L'Ourse	Assumption	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	6/11/2014	6/11/2014	0.10	48.9	EOID Blow #1078
884	18	491	721	H.005683	804-25-0009	Bayou L'Ourse	Assumption	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	6/11/2014	6/12/2014	24.00	92.8	24 HR RE Blow #88
885	18	491	727	H.005683	804-25-0009	Bayou L'Ourse	Assumption	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	Static	6/11/2014	6/25/2014	336.00	240.5	
886	30	503	742	H.001269	053-03-0037	Old River Bridge at Montrose	Natchitoches	LADOTD Database	Test Pile 1	Test Pile	30" Solid Sq. PPC	CAPWAP	10/28/2010	10/28/2010	0.01	335.0	
887	30	503	743	H.001269	053-03-0037	Old River Bridge at Montrose	Natchitoches	LADOTD Database	Test Pile 1	Test Pile	30" Solid Sq. PPC	CAPWAP	10/28/2010	10/28/2010	22.00	355.0	
888	30	503	745	H.001269	053-03-0037	Old River Bridge at Montrose	Natchitoches	LADOTD Database	Test Pile 1	Test Pile	30" Solid Sq. PPC	Static	10/28/2010	11/11/2010	336.00	409.0	
889	30	503	744	H.001269	053-03-0037	Old River Bridge at Montrose	Natchitoches	LADOTD Database	Test Pile 1	Test Pile	30" Solid Sq. PPC	CAPWAP	10/28/2010	11/16/2010	456.00	354.0	
890	31	504	746	H.003501	455-09-0007	I-49 North (US 71 S to LA 2)	Caddo	LADOTD Database	Test Pile 1	Test Pile	24" Voided Sq. PPC	CAPWAP	5/11/2010	5/11/2010	0.01	360.0	
891	31	504	747	H.003501	455-09-0007	I-49 North (US 71 S to LA 2)	Caddo	LADOTD Database	Test Pile 1	Test Pile	24" Voided Sq. PPC	CAPWAP	5/11/2010	5/12/2010	24.00	357.0	
892	31	504	749	H.003501	455-09-0007	I-49 North (US 71 S to LA 2)	Caddo	LADOTD Database	Test Pile 1	Test Pile	24" Voided Sq. PPC	Static	5/11/2010	6/4/2010	576.00	395.0	Pile did not fail
893	31	504	748	H.003501	455-09-0007	I-49 North (US 71 S to LA 2)	Caddo	LADOTD Database	Test Pile 1	Test Pile	24" Voided Sq. PPC	CAPWAP	5/11/2010	6/4/2010	576.00	392.0	
894	111	522	1283	H.000000	013-01-0024	Missouri Pacific Railroad Overpass, LA 415	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	24" Solid Sq. PPC	CAPWAP	1/12/2014	1/12/2014	0.01	68.0	End of Driving - assumed 0 hours elapsed
895	111	522	1284	H.000000	013-01-0024	Missouri Pacific Railroad Overpass, LA 415	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	24" Solid Sq. PPC	CAPWAP	1/12/2014	1/13/2014	24.00	136.0	Beginning of first redrive - assumed 1 day elapsed
896	111	522	1285	H.000000	013-01-0024	Missouri Pacific Railroad Overpass, LA 415	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	24" Solid Sq. PPC	CAPWAP	1/12/2014	1/26/2014	336.00	175.0	Beginning of second redrive - assumed 14 days elapsed
897	111	522	766	H.000000	013-01-0024	Missouri Pacific Railroad Overpass, LA 415	East Baton Rouge	FHWA Database (1998)	PA	Test Pile	24" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	195.0	
898	167	658	805	H.000000	008-04-0052	Atchafalaya River Bridge, US 190 (Krotz Springs)	St. Landry	FHWA Database (1998)	TP4	Test Pile	30" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	396.6	Pile did not fail
899	167	658	769	H.000000	008-04-0052	Atchafalaya River Bridge, US 190 (Krotz Springs)	St. Landry	FHWA Database (1998)	TP4	Test Pile	30" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	583.0	Pile did not fail
900	46	662	773	H.000000	455-03-0002	Washington-Meeker Highway, I-49	Avoyelles	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	75.0	Hammer Matched to Pile 664 -- Selected ultimate capacity at load before pile plunge
901	61	663	774	H.000000	455-06-0006	I-49 Bridges	Natchitoches	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	69.0	
902	46	664	775	H.000000	455-03-0002	Washington-Meeker Highway, I-49	Avoyelles	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	75.5	Selected ultimate capacity at load before pile plunge

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903	120	665	776	H.000000	178-01-0025	Channel Bridge and Approaches, LA 129	Concordia	FHWA Database (1998)	TP1	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	187.5	Pile did not fail
904	121	666	777	H.000000	455-04-0005	Washington-Meeker Highway, I-49	Avoyelles	FHWA Database (1998)	TP3	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	156.5	
905	121	667	778	H.000000	455-04-0005	Washington-Meeker Highway, I-49	Avoyelles	FHWA Database (1998)	TP4	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	219.0	Hammer Matched to Pile 666
906	124	669	780	H.000000	455-03-0004	Washington-Meeker Highway, I-49	Avoyelles	FHWA Database (1998)	TP33	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	97.0	
907	125	670	781	H.000000	713-44-0018	Bayou De Glaises Diversion Channel Bridge	Avoyelles	FHWA Database (1998)	PA	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	86.8	Pile did not fail
908	126	671	782	H.000000	008-07-0018	Missouri Pacific Railroad Overpass, US 71 (Bunkie)	Avoyelles	FHWA Database (1998)	TP1	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	275.0	Pile did not fail
909	61	684	793	H.000000	455-06-0006	I-49 Bridges	Natchitoches	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	115.0	Pile did not fail
910	49	688	797	H.000000	426-31-0002	Sunshine Bridge	St. James	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	120.5	Selected ultimate capacity at load before pile plunge
911	117	689	798	H.000000	434-02-0001	Mississippi River Bridge in Gramercy	St. James	FHWA Database (1998)	TP S-1	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	375.0	Pile did not fail
912	137	690	799	H.000000	050-06-0037	Bayou la Butte, LA 1	Iberville	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	72.5	
913	117	692	801	H.000000	434-02-0001	Mississippi River Bridge in Gramercy	St. James	FHWA Database (1998)	TP P-4	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	450.0	Selected ultimate capacity at load before pile plunge
914	117	693	802	H.000000	434-02-0001	Mississippi River Bridge in Gramercy	St. James	FHWA Database (1998)	TP P-1	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	450.0	Pile did not fail
915	141	694	803	H.000000	847-02-0018	LA 641 Bridge	St. James	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	111.5	Pile did not fail
916	113	696	807	H.000000	455-02-0004	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP2	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	209.0	Hammer Matched to Pile 822
917	45	709	819	H.000000	050-05-0015	Rocky and Ascension Canal Bridges, LA 1	Ascension	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	107.5	
918	96	713	823	H.000000	424-05-0087	Texas Gas Pipeline Bridge, US 90	St. Mary	FHWA Database (1998)	92 TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	105.0	Used ID lookup for hammer -- Pile did not fail
919	63	715	825	H.000000	424-05-0087	Roderick Street Bridge, US 90	St. Mary	FHWA Database (1998)	91 TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	112.5	Pile did not fail
920	69	721	832	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	165.0	Used ID lookup for hammer -- Selected ultimate capacity at load before pile plunge
921	70	722	1286	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/13/2014	24.00	113.5	Beginning of first redrive
922	70	722	833	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	115.0	Selected ultimate capacity at load before pile plunge
923	70	723	1287	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP4	Test Pile	16" Solid Sq. PPC	CAPWAP	1/12/2014	1/13/2014	24.00	96.0	Beginning of first redrive
924	70	723	834	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP4	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.0	Hammer Matched to Pile 722 -- Selected ultimate capacity at load before pile plunge
925	71	726	837	H.000000	424-07-0013	US 90 Bridge over LA 24	Terrebonne	FHWA Database (1998)	TP2	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	261.5	Selected ultimate capacity at load before pile plunge
926	107	727	838	H.000000	424-07-0011	US 90 Bridge over LA 316	Terrebonne	FHWA Database (1998)	TP3	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	147.5	Selected ultimate capacity at load before pile plunge
927	71	730	841	H.000000	424-07-0013	US 90 Bridge over LA 24	Terrebonne	FHWA Database (1998)	TP5	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	227.4	Pile did not fail
928	71	731	842	H.000000	424-07-0013	US 90 Bridge over LA 24	Terrebonne	FHWA Database (1998)	TP1	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	143.0	Selected ultimate capacity at load before pile plunge
929	140	736	847	H.000000	855-14-0007	Interacoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	123.5	
930	190	737	849	H.000000	855-14-0006	Intracoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	143.2	Pile did not fail
931	190	737	848	H.000000	855-14-0006	Intracoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	71.5	Selected ultimate capacity at load before pile plunge
932	190	738	850	H.000000	855-14-0006	Intracoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	136.0	
933	140	739	851	H.000000	855-14-0007	Interacoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	119.5	
934	190	741	853	H.000000	855-14-0006	Intracoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	59.5	Selected ultimate capacity at load before pile plunge
935	190	741	854	H.000000	855-14-0006	Intracoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	148.3	Pile did not fail
936	140	746	859	H.000000	855-14-0007	Interacoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP4	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	149.3	Pile did not fail
937	69	747	1289	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	Steel H-Pile	CAPWAP	1/12/2014	1/12/2014	0.01	147.5	End of Driving - assumed 0 hours elapsed
938	69	747	860	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	180.0	Selected ultimate capacity at load before pile plunge
939	69	747	861	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	355.0	Pile did not fail
940	196	748	862	H.000000	829-07-0013	Bayou Lafourche Bridge	St. Mary	FHWA Database (1998)	PA	Test Pile	Round PPC	Static	1/12/2014	1/26/2014	336.00	55.0	Used ID lookup for hammer -- Pile did not fail
941	210	757	871	H.000000	400-30-0025	Bayou Teche Bridge and Approaches, LA 351 (Ruth)	St. Martin	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.0	Pile did not fail
942	197	758	872	H.000000	424-05-0087	Morgan City Bridge -- Roderick St. - Bayou Boeuf	St. Mary	FHWA Database (1998)	PA	Test Pile	16" Round PPC	Static	1/12/2014	1/26/2014	336.00	575.0	Used ID lookup for hammer
943	213	760	874	H.000000	021-05-0042	Red River Bridge at Coushatta	Red River	FHWA Database (1998)	PA	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	237.5	Used ID lookup for hammer -- Pile did not fail
944	214	761	875	H.000000	021-05-0020	Red River Bridge at Coushatta	Red River	FHWA Database (1998)	PA	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	240.8	Pile did not fail
945	218	765	878	H.000000	266-01-0009	Bayou Conway Bridge, LA 22	Ascension	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	128.5	Selected ultimate capacity at load before pile plunge

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946	228	775	888	H.000000	424-05-0087	Roderick Street Bridge, US 90	St. Mary	FHWA Database (1998)	91 TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Used ID lookup for hammer -- Pile did not fail
947	69	776	889	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP4	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	180.0	Selected ultimate capacity at load before pile plunge
948	69	776	890	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP4	Test Pile	Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	175.0	Selected ultimate capacity at load before pile plunge
949	69	777	1290	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP5	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/12/2014	0.01	73.7	End of Driving - assumed 0 hours elapsed
950	69	777	891	H.000000	424-05-0078	Bayou Boeuf Bridge Main Span, US 90	St. Mary	FHWA Database (1998)	TP5	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	122.0	Used ID lookup for hammer
951	231	778	892	H.000000	424-06-0005	Bayou Boeuf Bridge East Approach, US 90	St. Mary	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	105.0	Selected ultimate capacity at load before pile plunge
952	231	778	893	H.000000	424-06-0005	Bayou Boeuf Bridge East Approach, US 90	St. Mary	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	99.0	
953	231	779	894	H.000000	424-06-0005	Bayou Boeuf Bridge East Approach, US 90	St. Mary	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	97.5	
954	231	780	895	H.000000	424-06-0005	Bayou Boeuf Bridge East Approach, US 90	St. Mary	FHWA Database (1998)	TP5	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	90.0	Selected ultimate capacity at load before pile plunge
955	70	781	1291	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/12/2014	0.01	66.5	End of Driving - assumed 0 hours elapsed
956	70	781	1292	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/13/2014	24.00	149.5	Beginning of first redrive - assumed 1 day elapsed
957	70	781	899	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	165.0	Hammer Matched to Pile 722
958	70	781	1293	H.000000	424-05-0081	Bayou Boeuf Bridge West Approach, US 90	St. Mary	FHWA Database (1998)	TP3	Test Pile	14" Solid Sq. PPC	CAPWAP	1/12/2014	1/26/2014	336.00	159.0	Beginning of second redrive - assumed 14 days elapsed
959	111	784	898	H.000000	013-01-0024	Missouri Pacific Railroad Overpass, LA 415	East Baton Rouge	FHWA Database (1998)	TP1	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	222.5	Selected ultimate capacity at load before pile plunge
960	240	787	902	H.000000	977-29-0006	Bushnell Road	Lafourche	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	105.8	Pile did not fail
961	101	791	906	H.000000	424-02-0047	I-49 Bridge over LA 167	Lafayette	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	137.5	Pile did not fail
962	101	792	907	H.000000	424-02-0047	I-49 Bridge over LA 167	Lafayette	FHWA Database (1998)	PA	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	137.5	Hammer Matched to Pile 791 -- Pile did not fail
963	238	794	909	H.000000	013-10-0037	Bogue Falaya Bridge, US 190 (Covington)	St. Mary	FHWA Database (1998)	TP1	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	310.0	Hammer Matched to Pile 785 -- Selected ultimate capacity at load before pile plunge
964	102	795	910	H.000000	424-08-0012	US 90 Bridge over LA 1 and LA 308	Lafourche	FHWA Database (1998)	PA	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	178.5	Duplicate of TP6? - Used ID lookup for hammer -- Pile did not fail
965	204	797	912	H.000000	450-13-0011	I-10 Overpass, LA 3188	St. John	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	133.0	Selected ultimate capacity at load before pile plunge
966	158	799	914	H.000000	713-46-0037	Bridge Over Bayou Teche, Belle Place	Iberia	FHWA Database (1998)	PA	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	128.0	Pile did not fail
967	204	800	915	H.000000	450-13-0011	I-10 Overpass, LA 3188	St. John	FHWA Database (1998)	TP2	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	186.0	
968	204	800	916	H.000000	450-13-0011	I-10 Overpass, LA 3188	St. John	FHWA Database (1998)	TP2	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	212.0	
969	50	801	917	H.000000	424-07-0012	US 90 Bridge over LA 311	Terrebonne	FHWA Database (1998)	TP8	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	146.5	Selected ultimate capacity at load before pile plunge
970	140	802	918	H.000000	855-14-0007	Interacoastal Waterway Bridge, LA 24	Terrebonne	FHWA Database (1998)	TP	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	119.5	
971	57	805	921	H.000000	455-02-0034	Bonnet Carre Bridges, US 61	East Baton Rouge	FHWA Database (1998)	TP4	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	289.0	Selected ultimate capacity at load before pile plunge
972	54	806	922	H.000000	450-38-0001	LA 3127 US 90 I-310 Interchange	St. Charles	FHWA Database (1998)	TP4	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	200.0	Pile did not fail
973	58	807	923	H.000000	007-03-0040	Bonnet Carre Bridges, US 61	St. Charles	FHWA Database (1998)	TP5	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	322.0	Selected ultimate capacity at load before pile plunge
974	87	810	926	H.000000	213-08-0006	Bayou Teche Bridge and Approaches, LA 92-1	St. Martin	FHWA Database (1998)	PA	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	109.0	Pile did not fail
975	58	813	930	H.000000	007-03-0040	Bonnet Carre Bridges, US 61	St. Charles	FHWA Database (1998)	TP3	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	289.0	Pile did not fail
976	58	815	932	H.000000	007-03-0040	Bonnet Carre Bridges, US 61	St. Charles	FHWA Database (1998)	TP1	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	257.0	
977	114	818	933	H.000000	455-02-0037	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP2	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	97.0	Pile did not fail
978	114	818	934	H.000000	455-02-0037	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP2	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	83.0	Selected ultimate capacity at load before pile plunge
979	132	819	935	H.000000	713-49-0019	Parish Board Bridge	St. Landry	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	103.0	Used ID lookup for hammer -- Pile did not fail
980	143	821	937	H.000000	455-02-0035	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP2	Test Pile	24" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	239.0	Selected ultimate capacity at load before pile plunge
981	113	822	938	H.000000	455-02-0004	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP3	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	256.5	
982	162	824	940	H.000000	455-02-0003	I-49 Bridges -- Opelousas to Washington	St. Landry	FHWA Database (1998)	TP8	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Pile did not fail
983	163	825	941	H.000000	455-02-0038	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP2	Test Pile	18" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.0	Pile did not fail
984	163	826	942	H.000000	455-02-0038	Washington-Meeker Highway, I-49	St. Landry	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	125.0	Selected ultimate capacity at load before pile plunge
985	112	827	943	H.000000	424-01-0023	I-49 Bridge over Harry Guilbeau Rd	St. Landry	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Pile did not fail
986	101	828	944	H.000000	424-02-0047	I-49 Bridge over LA 167	Lafayette	FHWA Database (1998)	TP2	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	137.5	Hammer Matched to Pile 791 -- Pile did not fail
987	102	829	945	H.000000	424-08-0012	US 90 Bridge over LA 1 and LA 308	Lafourche	FHWA Database (1998)	TP6	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	178.5	Used ID lookup for hammer -- Pile did not fail
988	255	873	989	H.000000	450-36-0006	Luling Bridge, I-310	St. Charles	FHWA Database (1998)	TP11	Test Pile	34" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	265.5	Used ID lookup for hammer -- Selected ultimate capacity at load before pile plunge

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989	256	874	990	H.000000	742-05-0080	Bayou Fatma Bridge, Wall Blvd	Jefferson	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.5	Used ID lookup for hammer -- Selected ultimate capacity at load before pile plunge
990	255	877	993	H.000000	450-36-0006	Luling Bridge, I-310	St. Charles	FHWA Database (1998)	TP12	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	296.0	Used ID lookup for hammer -- Pile did not fail
991	261	879	995	H.000000	455-05-0004	Washington-Meeker Highway, I-49	Rapides	FHWA Database (1998)	TP4	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	95.0	Used ID lookup for hammer
992	266	884	1000	H.000000	713-46-0040	Bayou Teche Bridge, Bridge Road (in Patterson)	St. Mary	FHWA Database (1998)	TP2	Test Pile	30" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	357.8	Used ID lookup for hammer -- Pile did not fail
993	261	890	1006	H.000000	455-05-0004	Washington-Meeker Highway, I-49	Rapides	FHWA Database (1998)	TP3	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	111.5	Used ID lookup for hammer
994	285	905	1021	H.000000	424-07-0021	Bayou L'Ourse Drainage Canal	Terrebonne	LTRC No. 14-1GT	IP1	Indicator Pile	30" Solid Sq. PPC	CAPWAP	1/31/1996	1/8/1996	0.01	240.9	CAPWAP of Initial drive
995	285	905	1025	H.000000	424-07-0021	Bayou L'Ourse Drainage Canal	Terrebonne	LTRC No. 14-1GT	IP1	Indicator Pile	30" Solid Sq. PPC	CAPWAP	1/31/1996	2/7/1996	168.00	776.0	Capwap of 18days RS
996	291	906	1041	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP5	Indicator Pile	24" Voided Sq. PPC	CAPWAP	6/17/1997	6/17/1997	0.08	267.9	CAPWAP of INI - Blow Count estimated from calibrated wave equation
997	291	906	1042	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP5	Indicator Pile	24" Voided Sq. PPC	CAPWAP	6/17/1997	6/18/1997	24.00	312.1	RS24 - Blow Count estimated from calibrated wave equation
998	291	906	1040	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP5	Indicator Pile	24" Voided Sq. PPC	CAPWAP	6/17/1997	6/23/1997	144.00	316.0	RS7day - Blow Count estimated from calibrated wave equation
999	291	907	1034	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP2	Indicator Pile	24" Voided Sq. PPC	CAPWAP	2/4/1997	2/5/1997	24.00	218.8	CAPWAP of 24hr RS
1000	291	907	1037	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP2	Indicator Pile	24" Voided Sq. PPC	CAPWAP	2/4/1997	4/2/1997	1368.00	156.3	CAPWAP of INI
1001	291	908	1038	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP1	Indicator Pile	24" Voided Sq. PPC	CAPWAP	11/19/1996	11/19/1996	0.08	124.8	CAPWAP of EOID
1002	291	908	1030	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP1	Indicator Pile	24" Voided Sq. PPC	CAPWAP	11/19/1996	11/20/1996	24.00	183.0	CAPWAP of Beginning of Restrike
1003	291	908	1039	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP1	Indicator Pile	24" Voided Sq. PPC	CAPWAP	11/19/1996	12/4/1996	360.00	267.9	CAPWAP of Begin Restrike after 14days
1004	291	908	1036	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP1	Indicator Pile	24" Voided Sq. PPC	CAPWAP	11/19/1996	12/4/1996	360.00	195.6	CAPWAP of End of Drive after 14 days Restrike
1005	291	908	1043	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	IP1	Indicator Pile	24" Voided Sq. PPC	CAPWAP	11/19/1996	12/11/1996	528.00	275.5	CAPWAP of 21 days Restrike
1006	291	909	1035	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/16/1997	4/16/1997	0.08	217.0	CAPWAP of Initial drive
1007	291	909	1028	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/16/1997	4/17/1997	24.00	221.9	CAPWAP of Restrike after 24Hrs
1008	291	910	1032	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP2 AD	Test Pile	24" Voided Sq. PPC	CAPWAP	9/3/1996	9/3/1996	0.08	291.3	CAPWAP of EOID for AD
1009	291	910	1031	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP2 AD	Test Pile	24" Voided Sq. PPC	CAPWAP	9/3/1996	9/4/1996	24.00	281.8	CAPWAP of Beginning of Restrike for AD
1010	291	911	1029	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP2 (2)	Test Pile	24" Voided Sq. PPC	CAPWAP	8/11/1996	8/11/1996	0.08	101.6	CAPWAP of BOR
1011	291	911	1027	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	TP2 (2)	Test Pile	24" Voided Sq. PPC	CAPWAP	8/11/1996	8/12/1996	24.17	140.5	CAPWAP of EOR
1012	291	912	1033	H.000000	033-03-0033	Red River Bridge	Avoyelles	LTRC No. 14-1GT	Tp2 (3)	Test Pile	24" Voided Sq. PPC	CAPWAP	2/3/1997	2/13/1997	240.08	303.4	CAPWAP of 10 days RS
1013	292	913	1044	H.000000	033-03-0032	Red River Bridge Approach at Moncla	Avoyelles	LTRC No. 14-1GT	MP1	Monitor Pile	14" Solid Sq. PPC	CAPWAP	9/22/1998	9/22/1998	0.08	181.1	CAPWAP of INI
1014	295	916	1104	H.000000	022-07-0057	Black River Bridge in Jonesville	Catahoula	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	2/28/2001	2/28/2001	0.08	123.5	CAPWAP of INI
1015	295	916	1102	H.000000	022-07-0057	Black River Bridge in Jonesville	Catahoula	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	2/28/2001	3/1/2001	24.00	220.7	CAPWAP of 24hr RS
1016	295	916	1103	H.000000	022-07-0057	Black River Bridge in Jonesville	Catahoula	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	2/28/2001	3/23/2001	552.00	220.7	CAPWAP of Restrike after load test
1017	295	916	1100	H.000000	022-07-0057	Black River Bridge in Jonesville	Catahoula	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	2/28/2001	4/2/2001	792.00	200.5	CAPWAP of Restrike after uplift test
1018	295	917	1101	H.000000	022-07-0057	Black River Bridge in Jonesville	Catahoula	LTRC No. 14-1GT	TP2	Test Pile	24" Steel pipe	CAPWAP	3/1/2001	3/1/2001	0.08	481.6	CAPWAP of INI
1019	319	918	1045	H.000000	835-20-0001	Cane River Bridge	Natchitoches	LTRC No. 14-1GT	Mon-24	Monitor Pile	24" Solid Sq. PPC	CAPWAP	4/18/2002	4/18/2002	0.08	256.7	CAPWAP of INI
1020	321	921	1051	H.000000	450-15-0089	Causeway Blvd – 17th St. Canal	Jefferson	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	10/19/2005	10/19/2005	0.08	229.5	CAPWAP of INI
1021	321	921	1052	H.000000	450-15-0089	Causeway Blvd – 17th St. Canal	Jefferson	LTRC No. 14-1GT	TP1	Test Pile	24" Steel pipe	CAPWAP	10/19/2005	12/15/2005	1368.00	169.6	CAPWAP of Restrike after 57days
1022	321	922	1050	H.000000	450-15-0089	Causeway Blvd – 17th St. Canal	Jefferson	LTRC No. 14-1GT	TP2	Test Pile	24" Voided Sq. PPC	CAPWAP	10/19/2005	10/19/2005	0.08	210.7	CAPWAP of INI
1023	322	923	1053	H.000000	427-01-0029	Route 3132 – Inner Loop Extension	Caddo	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	10/20/2005	10/20/2005	0.08	56.3	CAPWAP of INI
1024	322	923	1055	H.000000	427-01-0029	Route 3132 – Inner Loop Extension	Caddo	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	10/20/2005	10/21/2005	24.00	102.7	CAPWAP of Restrike after 24hr
1025	322	924	1056	H.000000	427-01-0029	Route 3132 – Inner Loop Extension	Caddo	LTRC No. 14-1GT	TP2	Test Pile	14" Solid Sq. PPC	CAPWAP	10/20/2005	10/20/2005	0.08	162.1	CAPWAP of INI
1026	322	924	1054	H.000000	427-01-0029	Route 3132 – Inner Loop Extension	Caddo	LTRC No. 14-1GT	TP2	Test Pile	14" Solid Sq. PPC	CAPWAP	10/20/2005	10/21/2005	24.00	186.2	CAPWAP of Restrike after 24hr
1027	333	928	1064	H.000000	836-05-0005	17th Street Canal Bridge	Jefferson	LTRC No. 14-1GT	METRS1	Other	12" Solid Sq. PPC	CAPWAP	9/14/1998	9/15/1998	24.00	194.4	CAPWAP of 1 day Restrike
1028	336	940	1081	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/30/1990	8/30/1990	0.08	234.8	CAPWAP of EOD
1029	336	941	1080	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	Tp2	Test Pile	24" Voided Sq. PPC	CAPWAP	8/29/1990	8/29/1990	0.08	249.6	CAPWAP of EOD
1030	336	941	1085	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	Tp2	Test Pile	24" Voided Sq. PPC	CAPWAP	8/29/1990	8/31/1990	48.00	288.0	CAPWAP of BOR (after 48hr)
1031	336	942	1087	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP3	Test Pile	24" Voided Sq. PPC	CAPWAP	8/28/1990	8/28/1990	0.08	60.7	CAPWAP of EOD

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1032	336	942	1079	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP3	Test Pile	24" Voided Sq. PPC	CAPWAP	8/28/1990	8/29/1990	24.00	121.4	CAPWAP of BOR (after 24hr)
1033	336	942	1084	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP3	Test Pile	24" Voided Sq. PPC	CAPWAP	8/28/1990	9/7/1990	240.00	156.3	CAPWAP of BOR (after 9days)
1034	336	942	1086	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP3	Test Pile	24" Voided Sq. PPC	CAPWAP	8/28/1990	9/17/1990	480.00	289.3	CAPWAP of BOR (after 7days)
1035	336	943	1083	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP4	Test Pile	24" Voided Sq. PPC	CAPWAP	8/29/1990	8/29/1990	0.08	229.5	CAPWAP of EOD
1036	336	943	1078	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP4	Test Pile	24" Voided Sq. PPC	CAPWAP	8/29/1990	8/31/1990	48.00	296.6	CAPWAP of BOR (after 48hr)
1037	336	944	1082	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP5	Test Pile	24" Voided Sq. PPC	CAPWAP	8/30/1990	8/30/1990	0.08	225.9	CAPWAP of EOD
1038	336	944	1088	H.000000	000-00-0004	Louisiana S.R. 415	West Baton Rouge	LTRC No. 14-1GT	TP5	Test Pile	24" Voided Sq. PPC	CAPWAP	8/30/1990	8/31/1990	24.00	287.1	CAPWAP of BOR (after 24hr)
1039	337	945	1089	H.000000	000-00-0005	Clear Lake Bridge, Route LA 1226	Natchitoches	LTRC No. 14-1GT	TP1	Test Pile	30" Voided Sq. PPC	CAPWAP	12/15/1994	10/11/1994	0.01	99.1	CAPWAP of Initial Drive
1040	338	946	1090	H.000000	000-00-0006	Stars and Stripe Boulevard	Orleans	LTRC No. 14-1GT	278	Other	14" Solid Sq. PPC	CAPWAP	2/28/1996	2/28/1996	0.08	113.8	CAPWAP of INI
1041	300	999	1125	H.000000	424-05-0097	US 90 Interchange at LA3211	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	12" Solid Sq. PPC	CAPWAP	6/9/1999	5/24/1999	0.01	97.1	CAPWAP of INI
1042	300	999	1128	H.000000	424-05-0097	US 90 Interchange at LA3211	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	12" Solid Sq. PPC	CAPWAP	6/9/1999	5/25/1999	0.01	355.6	CAPWAP of Restrike 24hr
1043	300	1000	1127	H.000000	424-05-0097	US 90 Interchange at LA3211	St. Mary	LTRC No. 14-1GT	TP2	Test Pile	12" Solid Sq. PPC	CAPWAP	6/9/1999	6/9/1999	0.02	79.3	CAPWAP of INI
1044	300	1000	1126	H.000000	424-05-0097	US 90 Interchange at LA3211	St. Mary	LTRC No. 14-1GT	TP2	Test Pile	12" Solid Sq. PPC	CAPWAP	6/9/1999	6/10/1999	24.00	135.1	CAPWAP of Restrike 24hr
1045	302	1002	1133	H.000000	001-03-0063	Red Chute Bayou Bridge	Bossier	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	10/31/2001	10/31/2001	0.08	87.5	CAPWAP of INI
1046	302	1002	1132	H.000000	001-03-0063	Red Chute Bayou Bridge	Bossier	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	10/31/2001	11/1/2001	24.00	142.9	CAPWAP of Restrike 24
1047	305	1007	1145	H.000000	005-05-0065	St. Louis Canal Bridge	Terrebonne	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	5/27/2003	5/13/2003	0.01	58.0	CAPWAP of Restrike 24hr
1048	305	1007	1146	H.000000	005-05-0065	St. Louis Canal Bridge	Terrebonne	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	5/27/2003	5/12/2003	0.01	17.9	CAPWAP of INI
1049	305	1007	1147	H.000000	005-05-0065	St. Louis Canal Bridge	Terrebonne	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	5/27/2003	5/27/2003	0.08	62.5	CAPWAP of After Load Restrike
1050	306	1008	1148	H.000000	008-01-0043	Tiger Bayou Bridge	West Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	9/11/2003	9/11/2003	0.08	74.1	CAPWAP of INI
1051	306	1008	1149	H.000000	008-01-0043	Tiger Bayou Bridge	West Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	9/11/2003	9/12/2003	24.00	131.3	CAPWAP of Restrike 24hr
1052	306	1008	1150	H.000000	008-01-0043	Tiger Bayou Bridge	West Baton Rouge	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	9/11/2003	9/25/2003	336.00	146.4	CAPWAP of Restrike 14days
1053	308	1010	1153	H.000000	424-05-0081	Bayou Boeuf West Approaches	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	12" Solid Sq. PPC	CAPWAP	8/24/1994	8/24/1994	0.08	0.0	
1054	308	1011	1152	H.000000	424-05-0081	Bayou Boeuf West Approaches	St. Mary	LTRC No. 14-1GT	TP3	Test Pile	12" Solid Sq. PPC	CAPWAP	8/24/1994	8/24/1994	0.08	0.0	
1055	308	1012	1154	H.000000	424-05-0081	Bayou Boeuf West Approaches	St. Mary	LTRC No. 14-1GT	TP4	Test Pile	12" Solid Sq. PPC	CAPWAP	8/24/1994	8/24/1994	0.08	0.0	
1056	311	1016	1164	H.000000	070-06-0024	Ouacita River Bridge	Ouachita	LTRC No. 14-1GT	TP5	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/27/2007	0.08	109.4	CAPWAP of INI
1057	311	1016	1165	H.000000	070-06-0024	Ouacita River Bridge	Ouachita	LTRC No. 14-1GT	TP5	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/28/2007	24.00	123.7	CAPWAP of Restrike 24hr
1058	311	1017	1166	H.000000	070-06-0024	Ouacita River Bridge	Ouachita	LTRC No. 14-1GT	TP6	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/27/2007	0.08	93.8	CAPWAP of INI
1059	311	1017	1163	H.000000	070-06-0024	Ouacita River Bridge	Ouachita	LTRC No. 14-1GT	TP6	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/28/2007	24.00	132.6	CAPWAP of Restrike 24hr
1060	340	1019	1169	H.000000	000-00-0001	Tiger Bayou Bridge	Terrebonne	LTRC No. 14-1GT	TP1	Test Pile	12" Solid Sq. PPC	CAPWAP	8/2/1995	8/9/1995	168.00	272.0	CAPWAP of RTP
1061	340	1020	1168	H.000000	000-00-0001	Tiger Bayou Bridge	Terrebonne	LTRC No. 14-1GT	IND2	Indicator Pile	12" Solid Sq. PPC	CAPWAP	8/7/1995	8/4/1995	0.01	237.1	CAPWAP of EOID
1062	341	1021	1170	H.000000	000-00-0002	Southern Pacific Railroad Overpass -US 90	St. Mary	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	6/6/1995	6/6/1995	0.08	63.2	CAPWAP of BOR
1063	341	1022	1171	H.000000	000-00-0002	Southern Pacific Railroad Overpass -US 90	St. Mary	LTRC No. 14-1GT	TP2	Test Pile	14" Solid Sq. PPC	CAPWAP	6/2/1995	6/2/1995	0.08	90.6	CAPWAP of BOR
1064	341	1023	1172	H.000000	000-00-0002	Southern Pacific Railroad Overpass -US 90	St. Mary	LTRC No. 14-1GT	TP3	Test Pile	24" Solid Sq. PPC	CAPWAP	6/2/1995	6/2/1995	0.08	48.1	CAPWAP of EOD
1065	436	1030	1226	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/3/2014	0.01	89.0	
1066	436	1030	1225	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/4/2014	24.00	232.9	
1067	436	1030	1224	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/23/2014	480.00	303.1	
1068	436	1031	1183	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/19/2014	0.01	107.7	
1069	436	1031	1184	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/19/2014	0.01	92.2	
1070	436	1031	1185	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/19/2014	0.01	38.6	
1071	436	1031	1180	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/20/2014	24.00	133.0	
1072	436	1031	1179	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/22/2014	72.00	141.7	
1073	436	1031	1178	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-1-1	Monitor Pile	HP 14x73	CAPWAP	8/19/2014	8/26/2014	168.00	155.8	
1074	436	1032	1173	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-2-13	Monitor Pile	HP 14x73	CAPWAP	9/2/2014	9/2/2014	0.01	154.2	

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1075	436	1033	1174	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-2-1	Monitor Pile	HP 14x73	CAPWAP	8/27/2014	8/27/2014	0.01	51.5	CAPWAP of EOD
1076	436	1033	1176	H.009933	000-00-0000	MacArthur Drive, Ph. 1B	Jefferson	LADOTD Database	7-2-1	Monitor Pile	HP 14x73	CAPWAP	8/27/2014	8/27/2014	0.01	154.1	Restrike actually performed on P7-2-13 on 9/2/2014.
1077	438	1035	1177	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	7-5-1	Monitor Pile	HP 14x73	CAPWAP	10/2/2014	10/2/2014	0.01	67.5	CAPWAP of EOD
1078	438	1035	1181	H.002215	240-03-0027	Weeks Island Bridges	Iberia	LADOTD Database	7-5-1	Monitor Pile	HP 14x73	CAPWAP	10/2/2014	10/2/2014	0.01	130.7	1-hour restrike
1079	441	1041	1219	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-04	Test Pile	24" Steel Pipe	CAPWAP	1/8/2008	1/8/2008	0.01	292.5	CAPWAP of EOD
1080	441	1041	1220	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-04	Test Pile	24" Steel Pipe	CAPWAP	1/8/2008	1/9/2008	24.00	406.5	
1081	441	1041	1213	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-04	Test Pile	24" Steel Pipe	Static	1/8/2008	1/22/2008	336.00	650.0	Static load test did not fail pile, but failure appears imminent on the load test plot -- Selected ultimate capacity at load before pile plunge
1082	441	1042	1217	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-01	Test Pile	24" Solid Sq. PPC	CAPWAP	8/23/2006	8/23/2006	0.01	276.3	CAPWAP by GRL
1083	441	1042	1216	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-01	Test Pile	24" Solid Sq. PPC	CAPWAP	8/23/2006	8/24/2006	24.00	393.2	CAPWAP by GRL
1084	441	1043	1215	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-02	Test Pile	14" Solid Sq. PPC	CAPWAP	5/15/2006	5/15/2006	0.01	201.5	CAPWAP by GRL
1085	441	1043	1214	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-02	Test Pile	14" Solid Sq. PPC	CAPWAP	5/15/2006	5/16/2006	24.00	341.5	CAPWAP by GRL
1086	441	1044	1223	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	Bent 4 MP	Monitor Pile	24" Voided Sq. PPC	CAPWAP	10/8/2014	10/8/2014	0.01	0.0	
1087	441	1045	1222	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	Bent 4	Indicator Pile	24" Voided Sq. PPC	CAPWAP	10/8/2014	10/8/2014	0.01	317.0	Pile was 5' from plan tip
1088	441	1045	1227	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	Bent 4	Indicator Pile	24" Voided Sq. PPC	CAPWAP	10/8/2014	10/8/2014	0.01	361.0	Pile was 4' from plan tip
1089	442	1046	1221	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-03	Test Pile	24" Steel Pipe	CAPWAP	12/5/2006	12/5/2006	0.01	368.3	Blow count estimated from PDA
1090	442	1046	1212	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-03	Test Pile	24" Steel Pipe	Static	12/5/2006	12/16/2006	264.00	510.0	
1091	442	1047	1211	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-05	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/27/2007	0.01	122.5	CAPWAP by GRL
1092	442	1047	1210	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-05	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/28/2007	24.00	138.5	CAPWAP by GRL
1093	442	1047	1208	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-05	Test Pile	14" Solid Sq. PPC	Static	8/27/2007	9/25/2007	696.00	152.5	
1094	442	1047	1209	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-05	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	10/10/2007	1056.00	69.5	CAPWAP by GRL. Extraction of reaction piles may have weakened test pile.
1095	442	1048	1207	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-06	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/27/2007	0.01	105.0	CAPWAP by GRL
1096	442	1048	1206	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-06	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	8/27/2007	0.01	148.5	CAPWAP by GRL
1097	442	1048	1204	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-06	Test Pile	14" Solid Sq. PPC	Static	8/27/2007	9/25/2007	696.00	130.0	Date of loading estimated.
1098	442	1048	1205	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-06	Test Pile	14" Solid Sq. PPC	CAPWAP	8/27/2007	10/9/2007	1032.00	122.0	CAPWAP by GRL. Extraction of reaction piles may have weakened test pile.
1099	442	1049	1230	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-1	Test Pile	24" Solid Sq. PPC	CAPWAP	3/2/2007	3/2/2007	0.01	40.0	CAPWAP by GRL
1100	442	1049	1231	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-1	Test Pile	24" Solid Sq. PPC	CAPWAP	3/2/2007	3/5/2007	72.00	120.0	CAPWAP by GRL
1101	442	1049	1229	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-1	Test Pile	24" Solid Sq. PPC	CAPWAP	3/2/2007	3/16/2007	336.00	204.5	CAPWAP by GRL
1102	442	1049	1228	H.006205	000-00-0000	Moore Road Bridge	Ouachita	LADOTD Database	TP-1	Test Pile	24" Solid Sq. PPC	Static	3/2/2007	3/19/2007	408.00	180.0	Pile did not fail
1103	446	1059	1279	H.009309	000-00-0000	Summit Blvd.	St. Tammany	LADOTD Database	TP4	Test Pile	16" Solid Sq. PPC	Static	11/5/2014	11/5/2014	0.01	156.0	Pile did not fail
1104	448	1065	1175	H.006138	000-00-0000	Poplar St. Bridge Over Bonnabel Canal	Orleans	LADOTD Database	7-8-1	Monitor Pile	HP 14x73	CAPWAP	11/7/2014	11/7/2014	0.01	73.3	
1105	448	1065	1182	H.006138	000-00-0000	Poplar St. Bridge Over Bonnabel Canal	Orleans	LADOTD Database	7-8-1	Monitor Pile	HP 14x73	CAPWAP	11/7/2014	11/7/2014	0.01	26.2	Sample rate too high, pile still moving at EOD.
1106	2	6	6	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-02	Test Pile	16" Solid Sq. PPC	CAPWAP	7/11/2012	7/11/2012	0.10	222.9	CAPWAP of EOD
1107	2	6	3	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-02	Test Pile	16" Solid Sq. PPC	CAPWAP	7/11/2012	7/12/2012	24.00	213.9	CAPWAP of 24-hr restrike
1108	2	6	1	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-02	Test Pile	16" Solid Sq. PPC	Static	7/11/2012	7/25/2012	336.00	291.0	
1109	2	6	2	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-02	Test Pile	16" Solid Sq. PPC	CAPWAP	7/11/2012	7/26/2012	360.00	241.0	CAPWAP of 15-day restrike
1110	2	7	5	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2012	8/2/2012	0.10	118.6	CAPWAP of EOD
1111	2	7	4	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2012	8/3/2012	24.00	270.8	CAPWAP of 24-hr restrike
1112	2	7	11	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	Static	8/2/2012	8/16/2012	336.00	438.0	
1113	2	7	12	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-03	Test Pile	24" Voided Sq. PPC	CAPWAP	8/2/2012	8/17/2012	360.00	366.0	CAPWAP of 15-day restrike
1114	2	8	186	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-01	Test Pile	24" Voided Sq. PPC	CAPWAP	7/5/2012	7/5/2012	0.10	280.0	
1115	2	8	7	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	TP-01	Test Pile	24" Voided Sq. PPC	CAPWAP	7/5/2012	7/6/2012	24.00	561.6	
1116	2	36	185	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	BR2P5A	Monitor Pile	16" Solid Sq. PPC	CAPWAP	3/18/2013	3/18/2013	0.01	394.9	CAPWAP of end-of-drive
1117	2	253	685	H.002410	263-02-0006	Tickfaw River & Relief Bridges	St. Helena	LADOTD Database	BR1P4C	Monitor Pile	24" Voided Sq. PPC	CAPWAP	5/29/2013	5/29/2013	0.01	175.6	CAPWAP of EOD

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1118	9	474	660	H.002463	276-03-0018	Gill Creek Bridge	Tangipahoa	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	CAPWAP	2/4/2013	2/4/2013	0.01	214.5	CAPWAP of EOD
1119	9	474	661	H.002463	276-03-0018	Gill Creek Bridge	Tangipahoa	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	CAPWAP	2/4/2013	2/5/2013	24.00	232.5	
1120	9	474	662	H.002463	276-03-0018	Gill Creek Bridge	Tangipahoa	LADOTD Database	TP-01	Test Pile	16" Solid Sq. PPC	Static	2/4/2013	3/6/2013	720.00	242.5	
1121	13	479	686	H.001214	047-03-0014	Lawrence, Bogalusa, and Coburn Creek Bridges	Washington	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	7/2/2013	7/2/2013	0.10	48.5	CAPWAP of EOD
1122	13	479	687	H.001214	047-03-0014	Lawrence, Bogalusa, and Coburn Creek Bridges	Washington	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	7/2/2013	7/2/2013	1.50	116.5	CAPWAP 1.5 HR after EOID
1123	13	479	688	H.001214	047-03-0014	Lawrence, Bogalusa, and Coburn Creek Bridges	Washington	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	Static	7/2/2013	7/16/2013	336.00	279.0	
1124	13	479	689	H.001214	047-03-0014	Lawrence, Bogalusa, and Coburn Creek Bridges	Washington	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	7/2/2013	7/18/2013	384.00	296.0	After Load Restrike
1125	94	752	866	H.000000	262-06-0009	LA 16 Bridges	St. Helena	FHWA Database (1998)	TP1 B1	Test Pile	24" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	209.5	Hammer Matched to Pile 842
1126	220	767	880	H.000000	853-26-0007	Haw Branch and Line Creek Bridges, LA 1053	Tangipahoa	FHWA Database (1998)	PA	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	150.0	Pile did not fail
1127	155	796	911	H.000000	060-03-0012	Plank Rd Bridge, LA 67	East Feliciana	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	143.5	Selected ultimate capacity at load before pile plunge
1128	94	842	958	H.000000	262-06-0009	LA 16 Bridges	St. Helena	FHWA Database (1998)	TP1	Test Pile	Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	100.0	Pile did not fail
1129	84	847	963	H.000000	274-03-0006	Ditch Creek Bridge, LA 438	Washington	FHWA Database (1998)	TP2	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	105.0	Used ID lookup for hammer -- Selected ultimate capacity at load before pile plunge
1130	86	849	965	H.000000	274-03-0006	Thomas Creek Bridge, LA 438	Washington	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	107.5	Used ID lookup for hammer -- Pile did not fail
1131	152	852	968	H.000000	274-03-0006	Monroe Creek Bridge, LA 438	Washington	FHWA Database (1998)	TP1A	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	107.5	Used ID lookup for hammer -- Pile did not fail
1132	253	871	987	H.000000	741-03-0043	Wadesboro Bridge	Tangipahoa	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	75.0	Used ID lookup for hammer -- Pile did not fail
1133	298	992	1109	H.000000	061-05-0044	LA 10 - LA 68 (Clinton)	East Feliciana	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/27/2003	8/27/2003	0.08	93.8	CAPWAP of INI
1134	298	992	1106	H.000000	061-05-0044	LA 10 - LA 68 (Clinton)	East Feliciana	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/27/2003	8/28/2003	24.00	156.3	CAPWAP of Restrike
1135	298	992	1108	H.000000	061-05-0044	LA 10 - LA 68 (Clinton)	East Feliciana	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/27/2003	9/25/2003	696.08	142.9	CAPWAP of INI
1136	298	992	1107	H.000000	061-05-0044	LA 10 - LA 68 (Clinton)	East Feliciana	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/27/2003	9/26/2003	720.00	147.3	CAPWAP of Restrike 24hr
1137	298	992	1105	H.000000	061-05-0044	LA 10 - LA 68 (Clinton)	East Feliciana	LTRC No. 14-1GT	TP1	Test Pile	24" Voided Sq. PPC	CAPWAP	8/27/2003	10/10/2003	1056.00	202.7	CAPWAP of Restrike 14d
1138	20	493	724	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 6	Test Pile	16" Solid Sq. PPC	CAPWAP	5/22/2014	5/22/2014	0.01	115.5	
1139	20	493	725	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 6	Test Pile	16" Solid Sq. PPC	CAPWAP	5/22/2014	5/22/2014	22.00	192.0	
1140	20	493	726	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 6	Test Pile	16" Solid Sq. PPC	Static	5/22/2014	6/23/2014	768.00	200.0	Pile did not fail
1141	20	495	728	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/3/2014	0.01	89.0	
1142	20	495	729	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/4/2014	24.00	232.9	
1143	20	495	730	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 4	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/3/2014	6/23/2014	480.00	303.1	
1144	20	496	731	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 3	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2014	6/25/2014	0.01	115.0	
1145	20	496	732	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 3	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2014	6/25/2014	23.00	239.8	
1146	20	498	736	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 3	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2014	6/25/2014	0.01	114.5	
1147	20	498	737	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 3	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2014	6/25/2014	23.00	239.8	
1148	20	498	738	H.000995	029-04-0025	LA 121 Bridges Near Hineston	Vernon	LADOTD Database	Test Pile 3	Indicator Pile	16" Solid Sq. PPC	CAPWAP	6/25/2014	7/10/2014	360.00	344.8	
1149	29	501	740	H.001866	128-03-0023	Little River Bridge At Zenoria LA 500	La Salle	LADOTD Database	Test Pile 2	Test Pile	30" Voided Sq. PPC	Static	2/23/2014	3/17/2014	528.00	585.0	Pile did not fail
1150	29	502	741	H.001866	128-03-0023	Little River Bridge At Zenoria LA 500	La Salle	LADOTD Database	Test Pile 1	Test Pile	36" Voided Sq. PPC	Static	1/13/2010	1/27/2010	336.00	525.0	Selected ultimate capacity at load before pile plunge
1151	115	660	771	H.000000	124-03-0017	Dry Creek Bridge, LA 34	Jackson	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	115.0	Pile did not fail
1152	216	763	876	H.000000	455-08-0019	Shreveport Urban Segment, I-49	Caddo	FHWA Database (1998)	PA	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	137.5	Selected ultimate capacity at load before pile plunge
1153	250	868	984	H.000000	713-46-0026	Bridge Over Bundick Creek	Vernon	FHWA Database (1998)	TP1	Test Pile	14" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	96.3	Used ID lookup for hammer -- Pile did not fail
1154	267	885	1001	H.000000	427-01-0013	Bridge over Walker Road	Caddo	FHWA Database (1998)	TP1	Test Pile	10" Steel H-Pile	Static	1/12/2014	1/26/2014	336.00	100.0	Used ID lookup for hammer
1155	278	899	1015	H.000000	000-00-0000	Shreveport Bridge	Caddo	FHWA Database (1998)	2	Test Pile	30" Round PPC	Static	1/12/2014	1/26/2014	336.00	990.3	Pile did not fail
1156	278	900	1016	H.000000	000-00-0000	Shreveport Bridge	Caddo	FHWA Database (1998)	PA	Test Pile	30" Round PPC	Static	1/12/2014	1/26/2014	336.00	730.0	
1157	299	993	1110	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	5/3/2001	5/3/2001	0.08	133.9	CAPWAP of EOD
1158	299	993	1122	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP1	Test Pile	24" Solid Sq. PPC	CAPWAP	5/3/2001	5/4/2001	24.00	196.4	CAPWAP of 1-day restrike
1159	299	994	1121	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP2	Test Pile	24" Solid Sq. PPC	CAPWAP	5/9/2001	5/9/2001	0.08	53.6	CAPWAP of EOD
1160	299	994	1120	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP2	Test Pile	24" Solid Sq. PPC	CAPWAP	5/9/2001	5/10/2001	24.00	111.2	CAPWAP of 1-day restrike

All Events by Case Number

1161	299	994	1116	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP2	Test Pile	24" Solid Sq. PPC	CAPWAP	5/9/2001	5/24/2001	360.08	53.6	
1162	299	994	1124	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP2	Test Pile	24" Solid Sq. PPC	CAPWAP	5/9/2001	5/25/2001	384.00	156.3	CAPWAP of Restrike after loading
1163	299	995	1113	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP3	Test Pile	24" Solid Sq. PPC	CAPWAP	5/14/2001	5/14/2001	0.08	176.3	
1164	299	995	1114	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP3	Test Pile	24" Solid Sq. PPC	CAPWAP	5/14/2001	5/15/2001	24.00	225.0	
1165	299	996	1115	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP4	Test Pile	24" Solid Sq. PPC	CAPWAP	5/14/2001	5/14/2001	0.08	245.5	
1166	299	996	1123	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP4	Test Pile	24" Solid Sq. PPC	CAPWAP	5/14/2001	5/15/2001	24.00	241.1	
1167	299	997	1111	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP5	Test Pile	24" Solid Sq. PPC	CAPWAP	5/15/2001	5/15/2001	0.08	292.4	
1168	299	997	1112	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP5	Test Pile	24" Solid Sq. PPC	CAPWAP	5/15/2001	5/16/2001	24.00	259.8	
1169	299	998	1118	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP6	Test Pile	24" Solid Sq. PPC	CAPWAP	5/16/2001	5/16/2001	0.08	165.2	CAPWAP of INI
1170	299	998	1117	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP6	Test Pile	24" Solid Sq. PPC	CAPWAP	5/16/2001	5/17/2001	24.00	203.1	CAPWAP of Restrike 24hr
1171	299	998	1119	H.000000	090-01-0015	Lake Bistineau Bridge	Bossier	LTRC No. 14-1GT	TP6	Test Pile	24" Solid Sq. PPC	CAPWAP	5/16/2001	5/28/2001	288.00	212.1	CAPWAP of RSAL (11days)
1172	303	1003	1135	H.000000	023-06-0047	Junction LA 3061	Lincoln	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	5/20/2003	5/20/2003	0.08	148.7	CAPWAP of INI
1173	303	1003	1134	H.000000	023-06-0047	Junction LA 3061	Lincoln	LTRC No. 14-1GT	TP1	Test Pile	16" Solid Sq. PPC	CAPWAP	5/20/2003	5/21/2003	24.00	280.4	CAPWAPof Restrike 24hr
1174	437	1034	1186	H.000101	000-00-0000	UP Railroad Overpass Near Greenwood	Caddo	LADOTD Database	TP-1	Test Pile	30" Voided Sq. PPC	Static	8/28/2014	9/15/2014	432.00	370.5	
1175	440	1039	1197	H.000830	023-06-0060	North Hodge - Quitman Ph2	Jackson	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	CAPWAP	1/28/2010	1/29/2010	24.00	210.9	CAPWAP of EOD
1176	440	1039	1198	H.000830	023-06-0060	North Hodge - Quitman Ph2	Jackson	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	CAPWAP	1/28/2010	1/29/2010	24.00	224.7	
1177	440	1039	1199	H.000830	023-06-0060	North Hodge - Quitman Ph2	Jackson	LADOTD Database	TP-2	Test Pile	24" Voided Sq. PPC	Static	1/28/2010	2/11/2010	336.00	330.0	Pile did not fail
1178	441	1040	1202	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	CAPWAP	1/15/2008	1/15/2008	0.01	242.4	CAPWAP of EOD
1179	441	1040	1201	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	CAPWAP	1/15/2008	1/16/2008	24.00	289.7	
1180	441	1040	1203	H.001569	070-06-0022	Ouachita River Bridge at Sterlington	Ouachita	LADOTD Database	TP-1	Test Pile	18" Solid Sq. PPC	Static	1/15/2008	2/13/2008	696.00	258.0	Pile did not fail
1181	25	497	733	H.008008	821-24-0007	Turkey Creek Bridge LA 3201	Franklin	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/16/2014	4/16/2014	0.01	215.4	
1182	25	497	734	H.008008	821-24-0007	Turkey Creek Bridge LA 3201	Franklin	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	CAPWAP	4/16/2014	4/16/2014	1.00	241.8	
1183	25	497	735	H.008008	821-24-0007	Turkey Creek Bridge LA 3201	Franklin	LADOTD Database	TP-1	Test Pile	24" Voided Sq. PPC	Static	4/16/2014	5/22/2014	864.00	431.0	
1184	48	687	796	H.000000	026-07-0011	Ash Slough Bridge, US 425 (LA 15)	Franklin	FHWA Database (1998)	TP1	Test Pile	16" Solid Sq. PPC	Static	1/12/2014	1/26/2014	336.00	142.5	Pile did not fail
1185	68	720	830	H.000000	344-02-0007	Bayou, Macon Bridge, LA 577	Franklin	FHWA Database (1998)	PA	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	236.5	
1186	68	720	831	H.000000	344-02-0007	Bayou, Macon Bridge, LA 577	Franklin	FHWA Database (1998)	PA	Test Pile	24" Voided Sq. PPC	Static	1/12/2014	1/26/2014	336.00	306.0	Pile did not fail

APPENDIX G

LAPLTD STATISTICS PARISH TABLES

Summary of Database Piles Tested by Louisiana Parishes

Parish	Test Pile	Indicator Pile	Monitor Pile	Other	Total Piles Tested
Acadia	3	---	---	---	3
Allen	---	---	---	---	0
Ascension	3	---	---	---	3
Assumption	1	---	---	---	1
Avoyelles	11	3	1	---	15
Beauregard	3	---	---	---	3
Bienville	---	---	---	---	0
Bossier	7	---	---	---	7
Caddo	9	---	---	---	9
Calcasieu	16	---	---	---	16
Caldwell	---	---	---	---	0
Cameron	---	---	---	---	0
Catahoula	4	---	---	---	4
Claiborne	---	---	---	---	0
Concordia	1	---	---	---	1
Desoto	---	---	---	---	0
East Baton Rouge	26	---	---	10	36
East Carroll	---	---	---	---	0
East Feliciana	2	---	---	---	2
Evangeline	3	---	---	---	3
Franklin	3	---	---	---	3
Grant	2	1	---	---	3
Iberia	5	1	1	---	7
Iberville	1	---	---	---	1
Jackson	2	---	---	---	2
Jefferson	11	2	3	1	17
Jefferson Davis	4	---	---	---	4
La Salle	2	---	---	---	2
Lafayette	7	---	---	---	7
Lafourche	22	---	434	---	456
Lincoln	1	---	---	---	1
Livingston	4	---	---	---	4
Madison	---	---	---	---	0

Summary of Database Piles Tested by Louisiana Parishes

Parish	Test Pile	Indicator Pile	Monitor Pile	Other	Total Piles Tested
Morehouse	---	---	---	---	0
Natchitoches	5	---	1	---	6
Orleans	13	6	1	1	21
Ouachita	10	1	1	---	12
Plaquemines	1	---	---	---	1
Pointe Coupee	---	---	---	---	0
Rapides	7	---	6	---	13
Red River	3	---	---	---	3
Richland	---	---	---	---	0
Sabine	---	---	---	---	0
St. Bernard	1	---	---	---	1
St. Charles	8	---	---	---	8
St. Helena	8	---	2	---	10
St. James	5	---	---	---	5
St. John	2	---	---	---	2
St. Landry	11	---	---	---	11
St. Martin	2	---	---	---	2
St. Mary	34	---	---	---	34
St. Tammany	7	1	---	---	8
Tangipahoa	5	---	---	---	5
Tensas	---	---	---	---	0
Terrebonne	14	3	---	---	17
Union	---	---	---	---	0
Unknown	---	---	---	---	0
Vermilion	7	---	---	---	7
Vernon	8	5	---	---	13
Washington	5	---	---	---	5
Webster	---	---	---	---	0
West Baton Rouge	6	---	---	---	6
West Carroll	---	---	---	---	0
West Feliciana	---	---	---	---	0
Winn	1	2	---	---	3

Summary of Database Piles Tested by Louisiana Parishes

Louisiana Parish	Concrete Piles	Steel Piles
Acadia	3	---
Allen	---	---
Ascension	3	---
Assumption	1	---
Avoyelles	15	---
Beauregard	3	---
Bienville	---	---
Bossier	7	---
Caddo	8	1
Calcasieu	15	1
Caldwell	---	---
Cameron	---	---
Catahoula	2	2
Claiborne	---	---
Concordia	1	---
Desoto	---	---
East Baton Rouge	36	---
East Carroll	---	---
East Feliciana	2	---
Evangeline	3	---
Franklin	3	---
Grant	3	---
Iberia	6	1
Iberville	1	---
Jackson	2	---
Jefferson	13	4
Jefferson Davis	4	---
La Salle	2	---
Lafayette	6	1
Lafourche	455	1
Lincoln	1	---
Livingston	4	---
Madison	---	---
Morehouse	---	---

Summary of Database Piles Tested by Louisiana Parishes

Louisiana Parish	Concrete Piles	Steel Piles
Natchitoches	6	---
Orleans	20	1
Ouachita	10	2
Plaquemines	1	---
Pointe Coupee	---	---
Rapides	13	---
Red River	1	2
Richland	---	---
Sabine	---	---
St. Bernard	1	---
St. Charles	8	---
St. Helena	10	---
St. James	2	3
St. John	2	---
St. Landry	11	---
St. Martin	2	---
St. Mary	30	4
St. Tammany	8	---
Tangipahoa	5	---
Tensas	---	---
Terrebonne	17	---
Union	---	---
Unknown	---	---
Vermilion	7	---
Vernon	13	---
Washington	5	---
Webster	---	---
West Baton Rouge	6	---
West Carroll	---	---
West Feliciana	---	---
Winn	3	---

Summary of Database Piles Tested by Louisiana Parishes

Louisiana Parish	Dynamic Load Test	Static Load Test
Acadia	---	3
Allen	---	---
Ascension	---	3
Assumption	2	1
Avoyelles	18	7
Beauregard	---	3
Bienville	---	---
Bossier	17	---
Caddo	7	6
Calcasieu	22	17
Caldwell	---	---
Cameron	---	---
Catahoula	10	2
Claiborne	---	---
Concordia	---	1
Desoto	---	---
East Baton Rouge	25	20
East Carroll	---	---
East Feliciana	5	1
Evangeline	---	3
Franklin	2	4
Grant	5	---
Iberia	10	4
Iberville	---	1
Jackson	2	2
Jefferson	43	8
Jefferson Davis	---	4
La Salle	---	2
Lafayette	5	5
Lafourche	558	18
Lincoln	2	---
Livingston	4	4
Madison	---	---
Morehouse	---	---
Natchitoches	5	3
Orleans	60	3
Ouachita	25	6
Plaquemines	---	1
Pointe Coupee	---	---
Rapides	19	7
Red River	---	3
Richland	---	---

Summary of Database Piles Tested by Louisiana Parishes

Louisiana Parish	Dynamic Load Test	Static Load Test
Sabine	---	---
St. Bernard	---	1
St. Charles	---	7
St. Helena	11	6
St. James	---	5
St. John	---	3
St. Landry	---	13
St. Martin	---	2
St. Mary	21	27
St. Tammany	7	7
Tangipahoa	2	5
Tensas	---	---
Terrebonne	8	14
Union	---	---
Unknown	---	---
Vermilion	3	7
Vernon	10	8
Washington	3	5
Webster	---	---
West Baton Rouge	14	---
West Carroll	---	---
West Feliciana	---	---
Winn	9	---

APPENDIX H

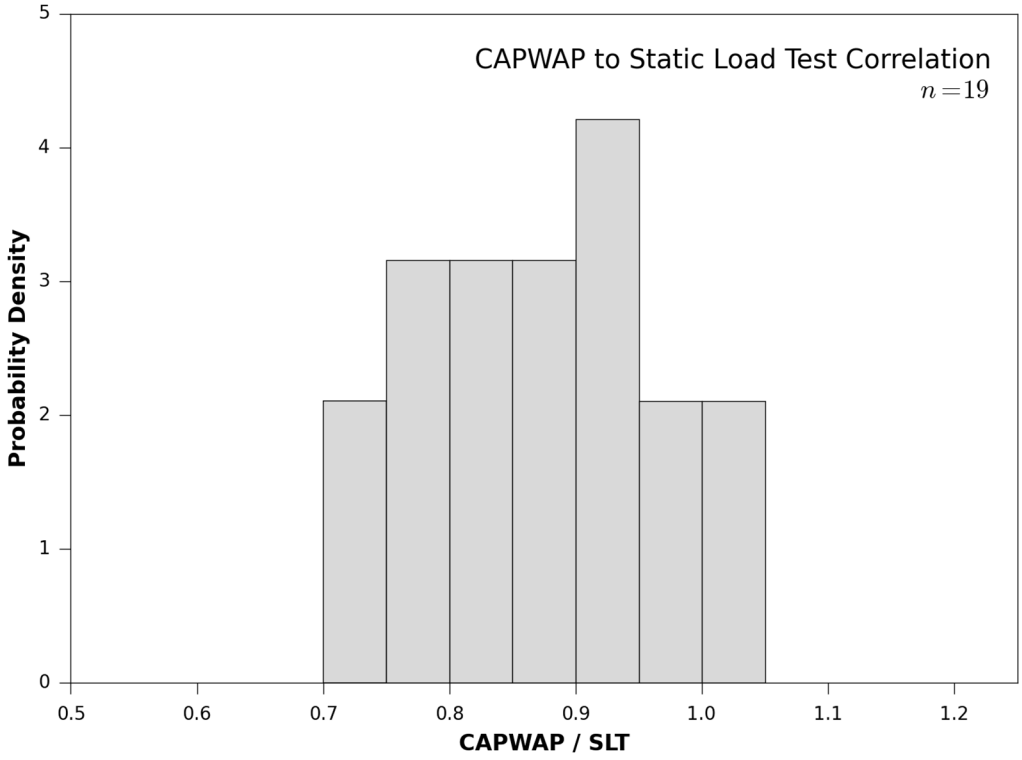
PILE DRIVING FORMULA AND LRFD

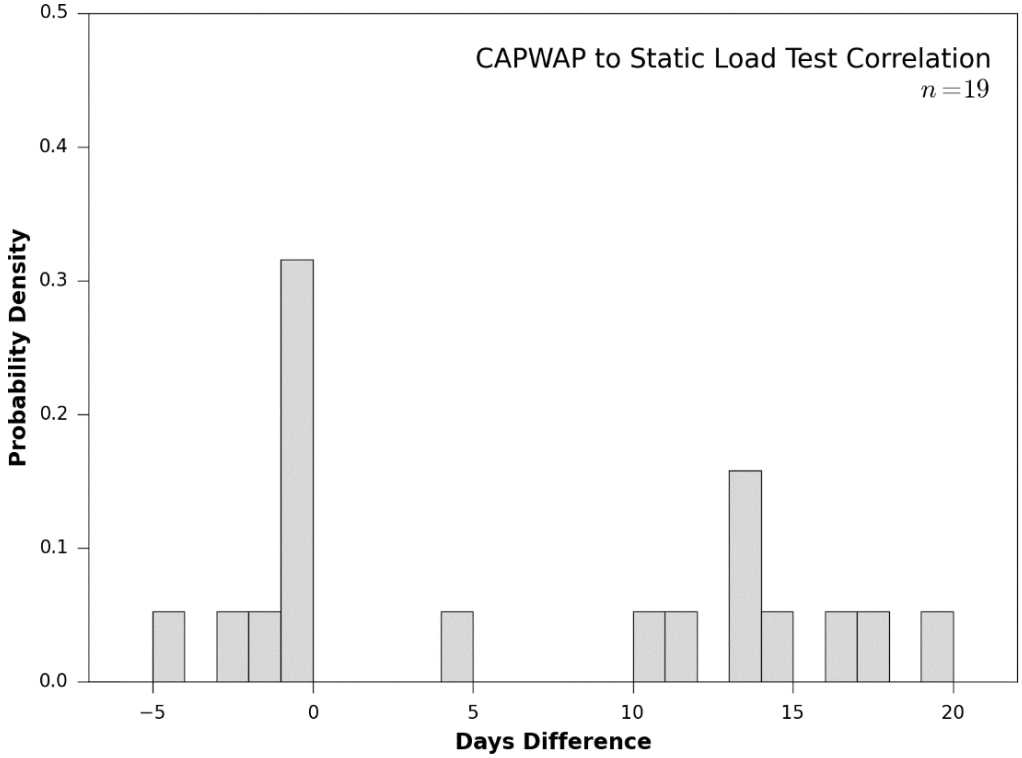
RESISTANCE FACTORS RESULTS

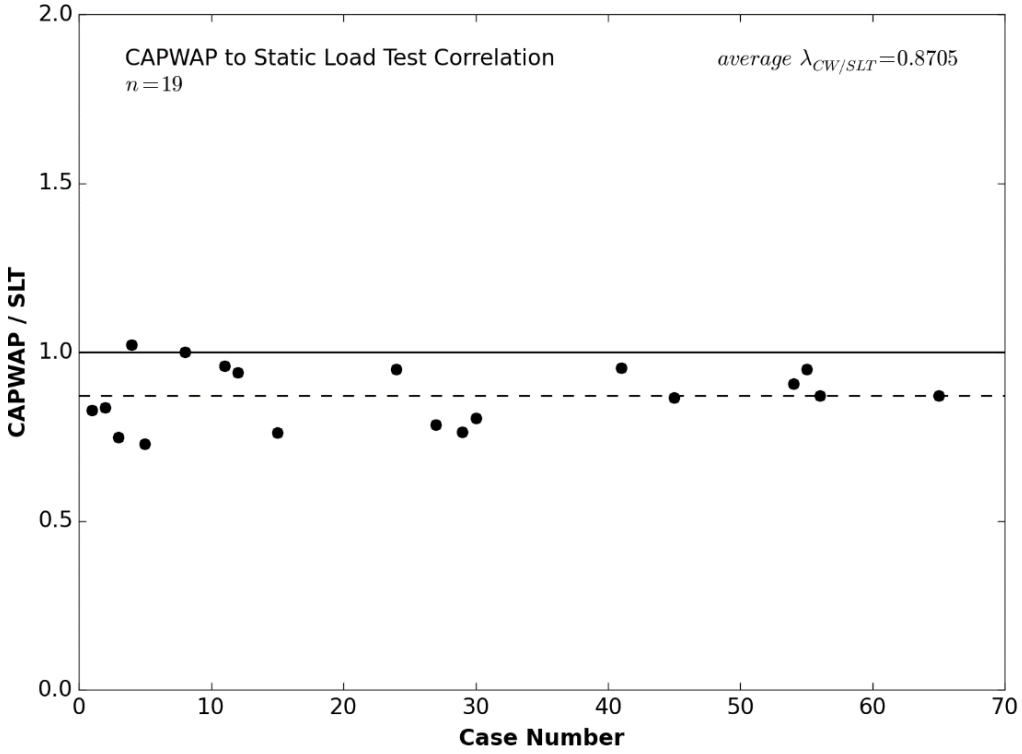
Summary of Modified Pile Driving Dynamic Formulas

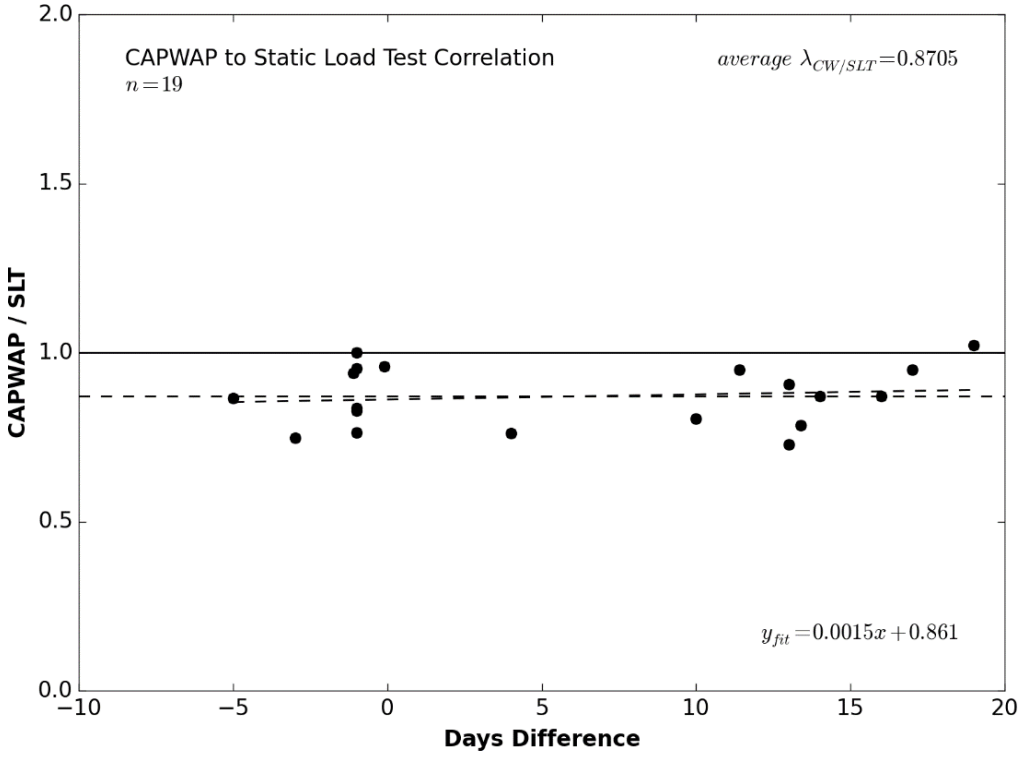
Equation No.	Type of Pile Driving Dynamic Formula	n	Formula	Resistance Factor (ϕ) $\phi_{QnD/QnL=5.0} - \phi_{QnD/QnL=2.0}$ ($\phi_{QnD/QnL=3.0}$)
47	EOID LADOTD Prediction of Long-Term Nominal Pile Capacity Geology 1,2, 3, 4, 5; OED & ECH (DFEOID)	50	$R_u = 0.5\left[\left(1.75\sqrt{E_r}\, log(10\, N_b)\right) - 100\right]$	0.651 – 0.686 (0.669)
48	EOID LADOTD Modified Gates Prediction of Long-Term Nominal Pile Capacity Geology 1,2, 3, 4, 5; OED & ECH (DFEOID-MOD)	50	$R_u = 0.5\left[\left(1.95\sqrt{E_r}\, log(10\, N_b)\right) - 100\right]$	0.570 – 0.600 (0.586)
49	BOR t ≥ 1 Day LADOTD Modified Gates Prediction of Restrike Nominal Capacity Geology 1; OED (DF1+BORSCA)	304	$R_u = 0.5\left[\left(1.65\sqrt{E_r}\, log(10\, N_b)\right) - 100\right]$	0.623 – 0.657 (0.642)
50	BOR t ≥ 1 Day Modified Gates Prediction of Restrike Nominal Capacity Geology 2, 3, 4, 5; OED (DF1+BORSCB)	61	$R_u = 0.5\left[\left(1.40\sqrt{E_r}\, log(10\, N_b)\right) - 100\right]$	0.587 – 0.620 (0.605)

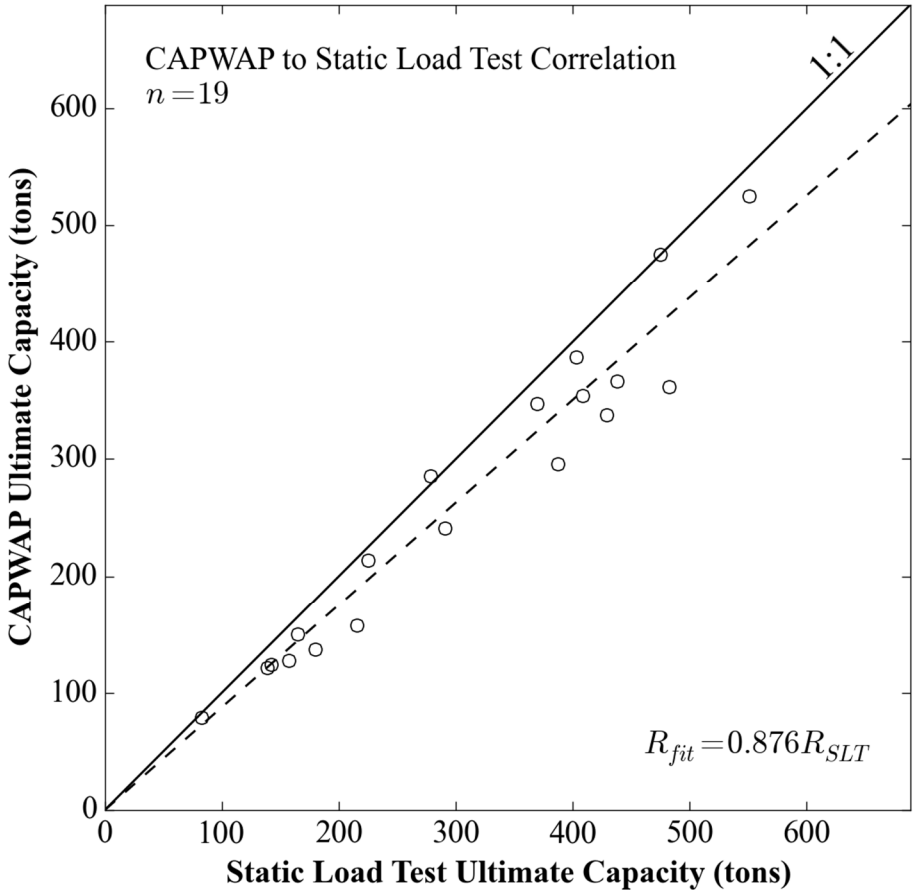
Correlation of CAPWAP with Static Load Test






CAPWAP to Static Load Test Correlation
$n=19$
$average\ \lambda_{CW/SLT}=0.8705$
CAPWAP / SLT
Case Number
2.0
1.5
1.0
0.5
0.0
0
10
20
30
40
50
60
70


CAPWAP to Static Load Test Correlation
$n=19$
$average\ \lambda_{CW/SLT}=0.8705$
$y_{fit}=0.0015x+0.861$
CAPWAP / SLT
Days Difference
2.0
1.5
1.0
0.5
0.0
−10
−5
0
5
10
15
20



Data Used to Correlate CW Results to SLT Results

Sample No.	Case No.	Pile ID	SLT Hours After EOID	PDA Hours After EOID	Days[1] Difference	Time[2] Ratio	BOR Blow Count (bl/ft)	BOR CW Ultimate Capacity (tons)	SLT Ultimate Capacity (tons)	$\frac{CW}{SLT}$
1	1	6	336	360	-1.0	0.9	75	241	291	0.83
2	2	7	336	360	-1.0	0.9	120	366	438	0.84
3	3	9	360	432	-3.0	0.8	120	361	483	0.75
4	4	10	624	168	19.0	3.7	55	285	279	1.02
5	5	11	336	24	13.0	14.0	24	157	216	0.73
6	8	14	744	768	-1.0	1.0	72	475	475	1.00
7	11	17	147	151	-0.1	1.0	120	387	403	0.96
8	12	18	192	218	-1.1	0.9	80	347	370	0.94
9	15	21	167	72	4.0	2.3	48	137	180	0.76
10	24	32	296	22	11.4	13.4	36	213	225	0.95
11	27	34	347	24	13.4	14.5	60	337	430	0.79
12	29	251	332	356	-1.0	0.9	48	296	388	0.76
13	30	252	334	93	10.0	3.6	48	127	158	0.80
14	41	490	504	528	-1.0	1.0	100	525	551	0.95
15	45	503	336	456	-5.0	0.7	24	354	409	0.87
16	54	781	336	24	13.0	14.0	0	150	165	0.91
17	55	1036	432	24	17.0	18.0	20	79	83	0.95
18	56	1037	408	24	16.0	17.0	24	121	139	0.87
19	65	1050	360	24	14.0	15.0	36	124	143	0.87

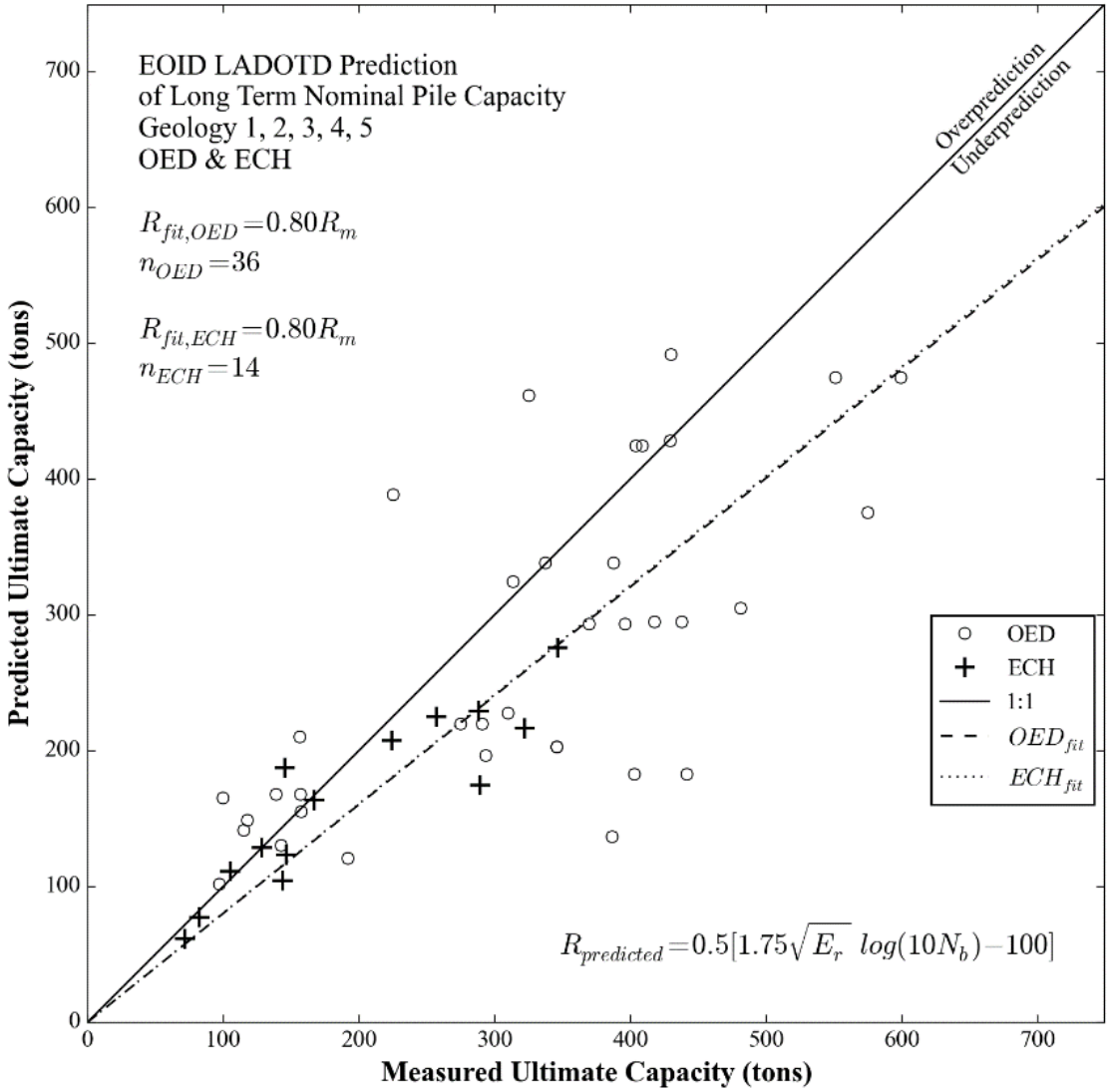
[1] Negative (-) values indicates number days BOR CW prior to SLT and positive (+) values indicate number of days BOR CW after SLT.

[2] Time Ratio = SLT Time after EOID/BOR CW Time after EOID

EOID Prediction of Long Term Nominal Pile Capacity

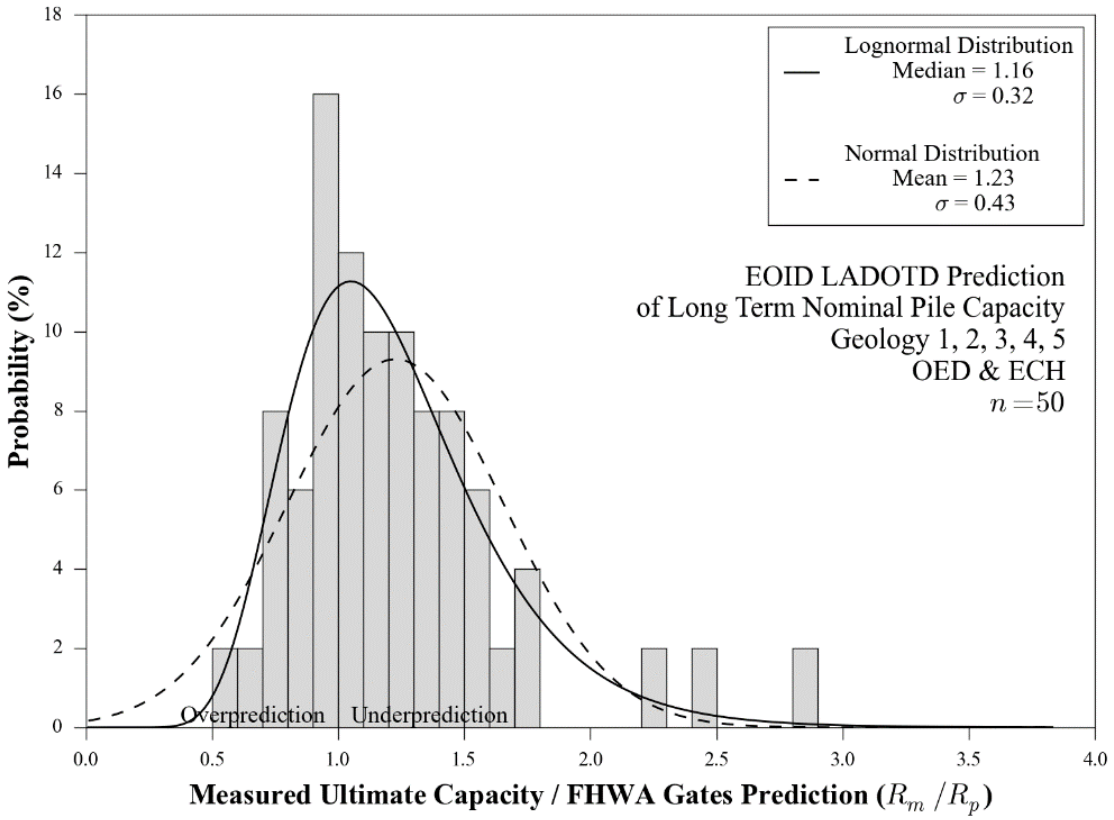
Dataset Statistics for EOID Prediction of Long Term Nominal Pile Capacity

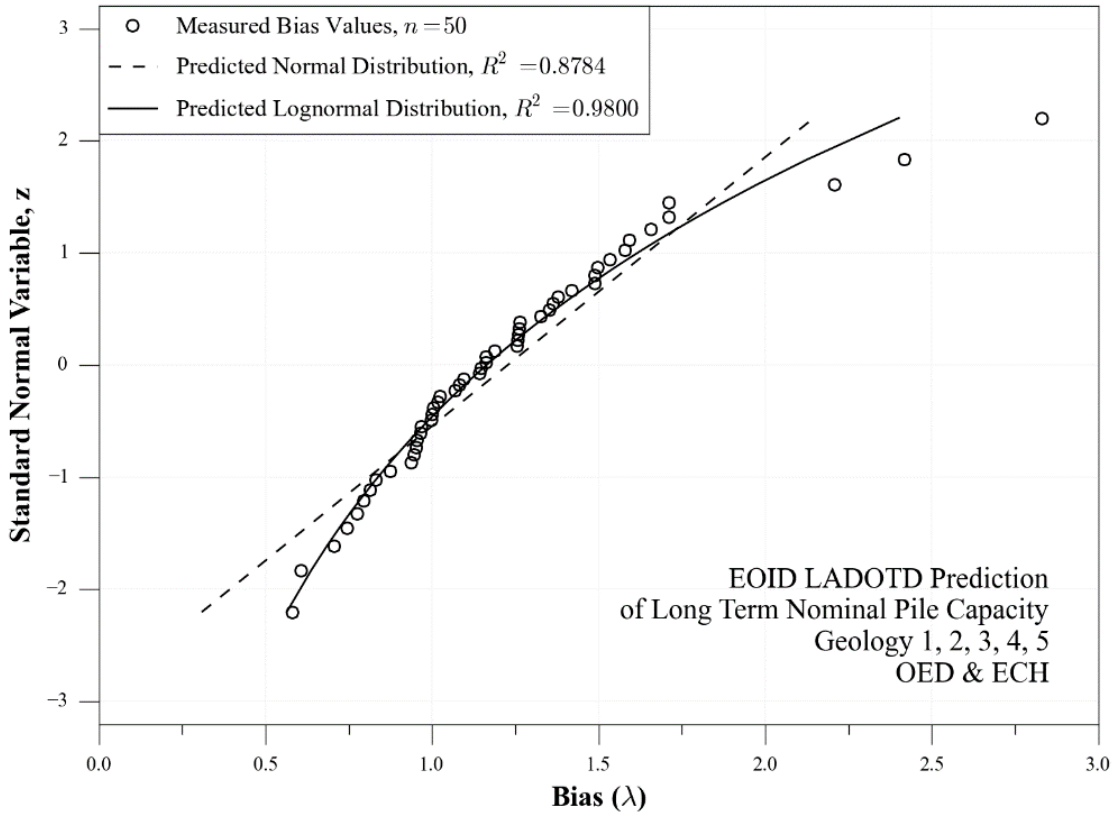
Pile Type	PPC	**E_{EOID} (ft-kip)**	$13 \leq E \leq 183$
Geology	1, 2, 3, 4, 5	**N_{EOID}**	$23 \leq N \leq 105$
Geology 1	13	**Days Since EOID**	$6.0 \leq t \leq 22.0$
Geology 2	13		
Geology 3	18		
Geology 4	5	**Load Testing**	SLT, CW
Geology 5	1	**SLT Failure**	Yes
Geology 6	0	**CW Mobilized**	Yes (≤ 120 bl/ft)
Hammer Type	OED & ECH	**No. SLT**	35
OED	36	**No. CW**	15
ECH	14	**Data Sets**	50

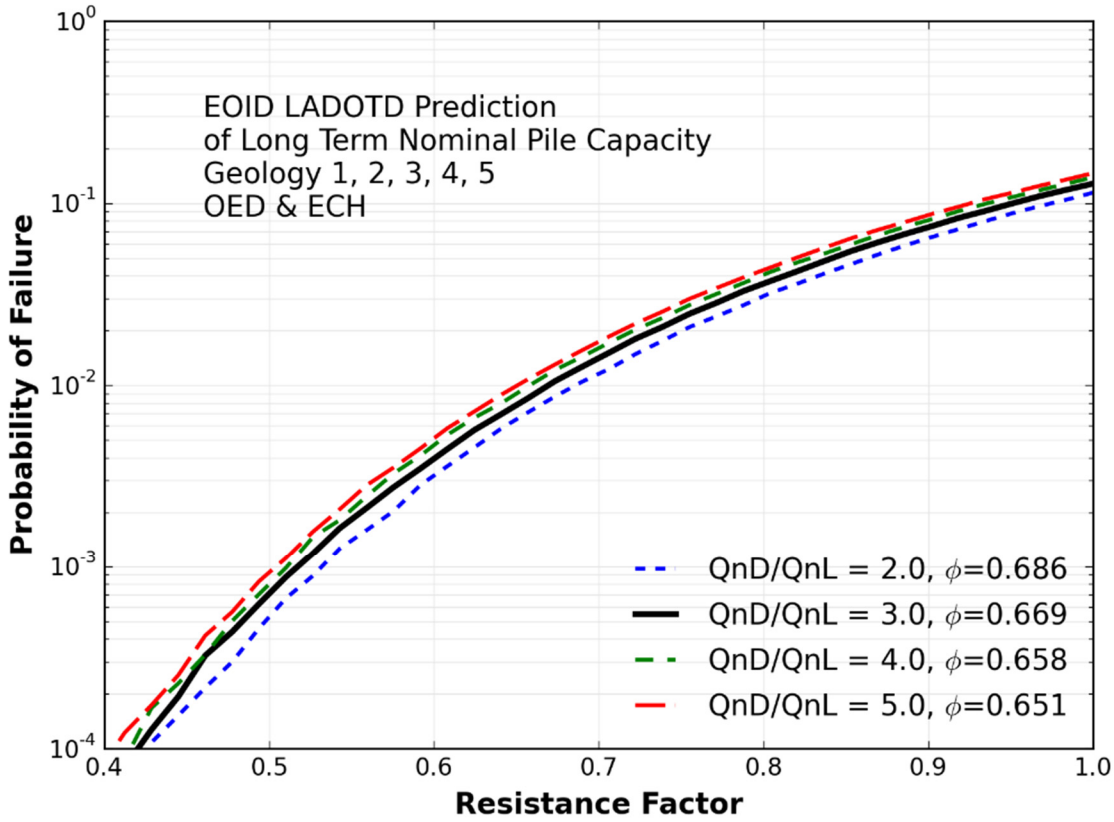


Statistics for Current LADOTD Pile Driving Formula

Gates Pile Driving Formula Coefficients	C1 =	1.75
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	1.227
	Standard Deviation	0.429
	COV	0.349
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.802
	R^2	0.547
	Correlation	0.740
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	89.8
	Mean overprediction (tons)	39.7




Measured Bias Values, $n = 50$
Predicted Normal Distribution, $R^2 = 0.8784$
Predicted Lognormal Distribution, $R^2 = 0.9800$
EOID LADOTD Prediction
of Long Term Nominal Pile Capacity
Geology 1, 2, 3, 4, 5
OED & ECH
Standard Normal Variable, z
Bias (λ)

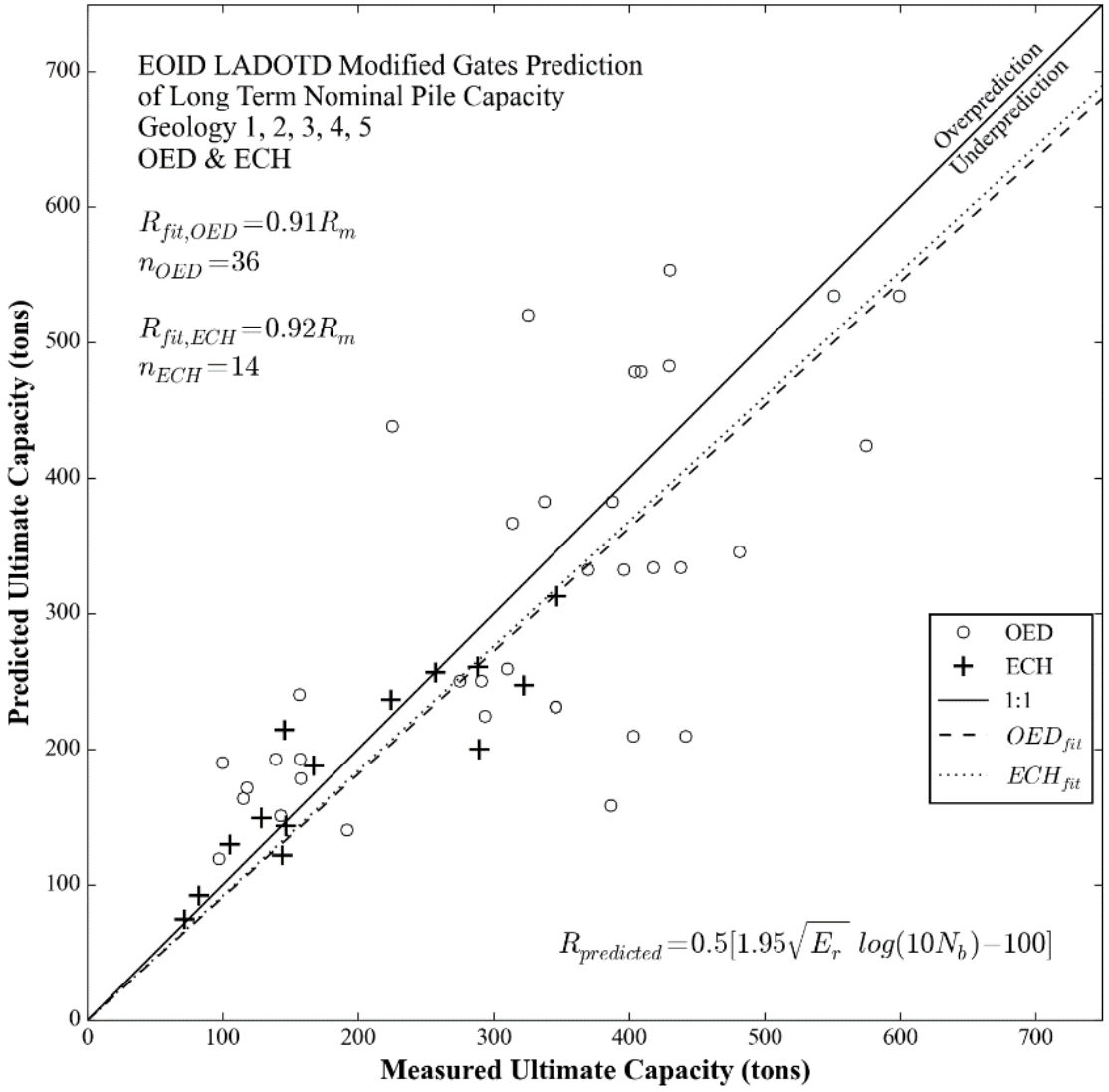

EOID LADOTD Prediction
of Long Term Nominal Pile Capacity
Geology 1, 2, 3, 4, 5
OED & ECH
QnD/QnL = 2.0, ϕ=0.686
QnD/QnL = 3.0, ϕ=0.669
QnD/QnL = 4.0, ϕ=0.658
QnD/QnL = 5.0, ϕ=0.651
Probability of Failure
Resistance Factor

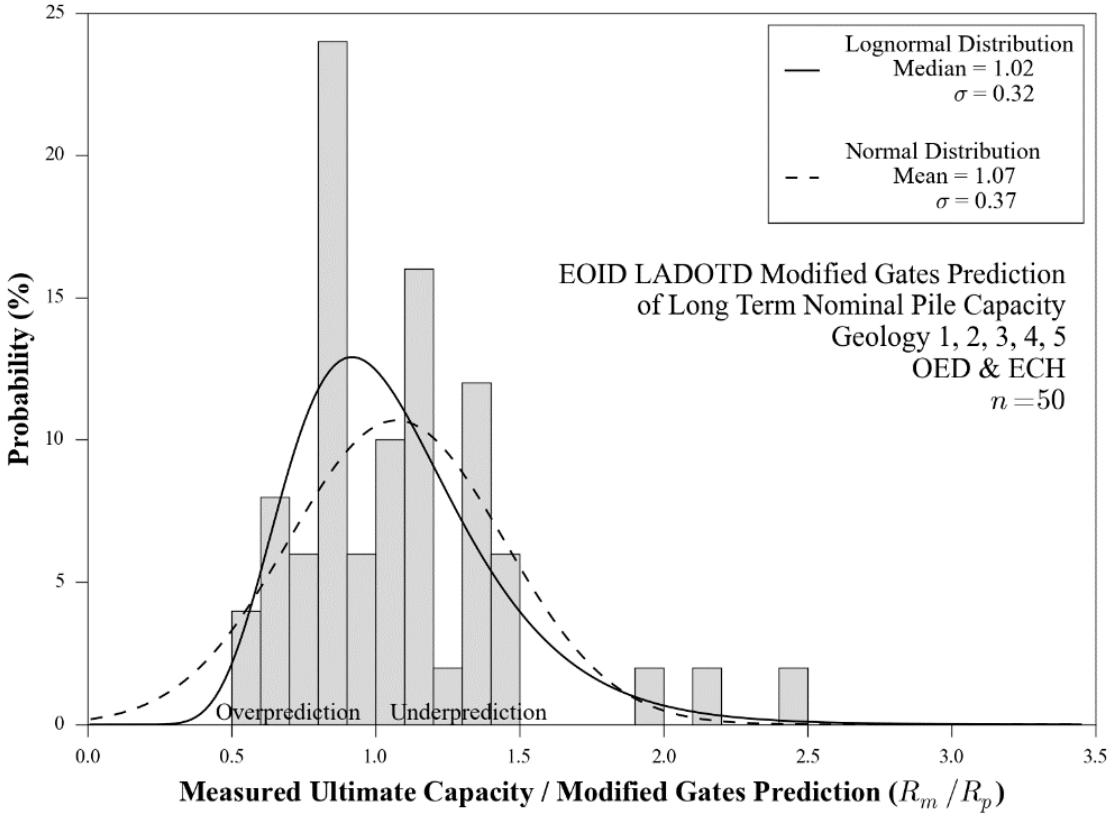
Statistics and Resistance Factors for the LADOTD Pile Driving Formula (DFEOID)

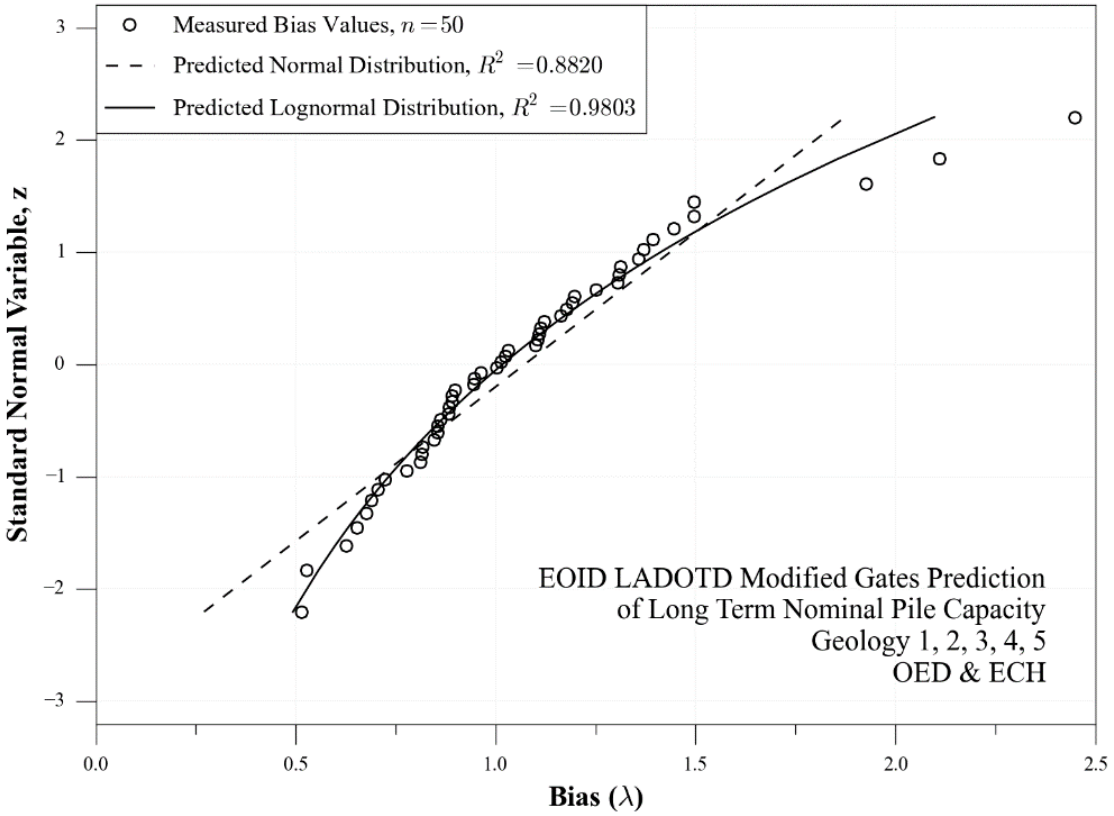
Case Category:		EOID
Description:		FHWA Gates
Geology:		1, 2, 3, 4, 5
Hammer Type:		OED & ECH
Number of Cases:		50
Lognormal distribution fit Parameters	R^2	0.980
	Median	1.164
	Sigma	0.320
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.651
	$Q_{nD}/Q_{nL} = 4.0$	0.658
	$Q_{nD}/Q_{nL} = 3.0$	0.669
	$Q_{nD}/Q_{nL} = 2.0$	0.686

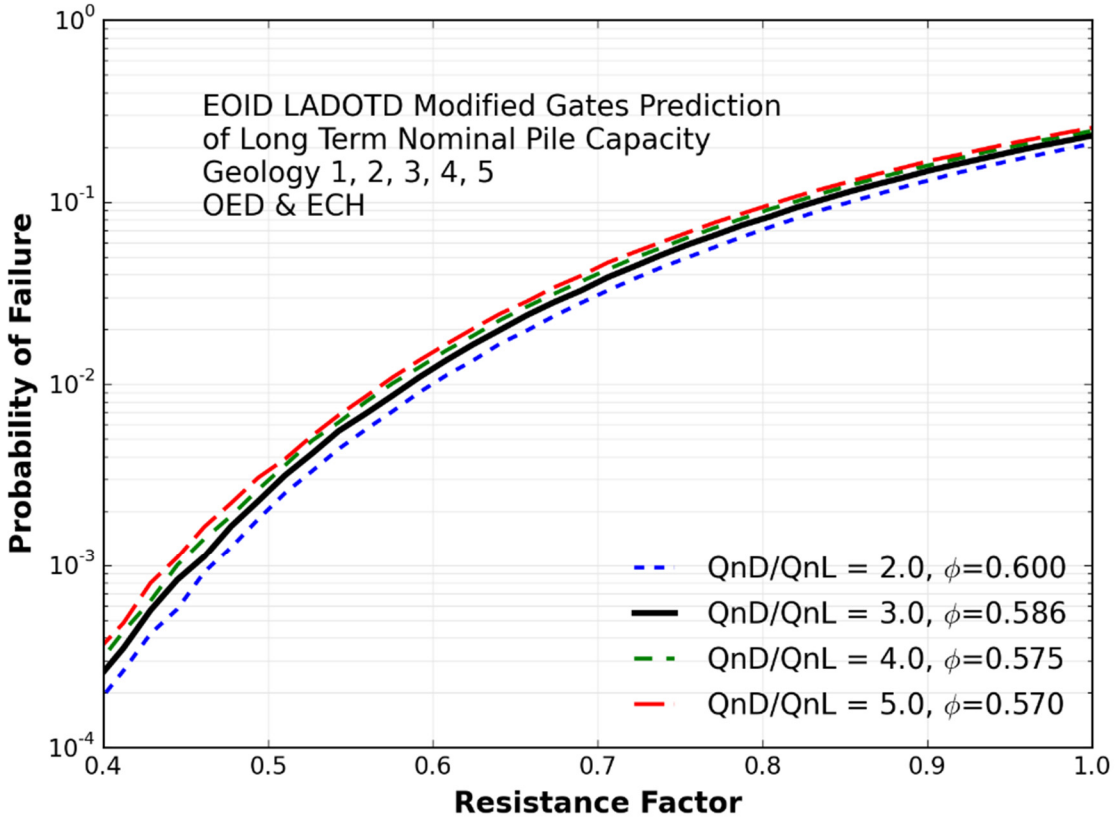
Statistics for EOID LADOTD Modified Gates Pile Driving Formula

Gates Pile Driving Formula Coefficients	C1 =	1.95
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	1.072
	Standard Deviation	0.373
	COV	0.348
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.909
	R^2	0.539
	Correlation	0.734
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	78.3
	Mean overprediction (tons)	58.4




Lognormal Distribution
Median = 1.02
σ = 0.32
Normal Distribution
Mean = 1.07
σ = 0.37
EOID LADOTD Modified Gates Prediction
of Long Term Nominal Pile Capacity
Geology 1, 2, 3, 4, 5
OED & ECH
n = 50
Overprediction
Underprediction
Probability (%)
Measured Ultimate Capacity / Modified Gates Prediction (R_m / R_p)


Measured Bias Values, n = 50
Predicted Normal Distribution, R² = 0.8820
Predicted Lognormal Distribution, R² = 0.9803
EOID LADOTD Modified Gates Prediction
of Long Term Nominal Pile Capacity
Geology 1, 2, 3, 4, 5
OED & ECH
Standard Normal Variable, z
Bias (λ)



Statistics and Resistance Factors for the EOID LADOTD Modified Gates Pile Driving Formula (DFEOID-MOD)

Pile Driving Condition:		EOID
Description:		LADOTD Modified Gates
Geology:		1, 2, 3, 4, 5
Hammer Type:		OED & ECH
Number of Cases:		50
Lognormal distribution fit Parameters	R^2	0.980
	Median	1.017
	Sigma	0.320
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.570
	$Q_{nD}/Q_{nL} = 4.0$	0.575
	$Q_{nD}/Q_{nL} = 3.0$	0.586
	$Q_{nD}/Q_{nL} = 2.0$	0.600

Summary of EOID Pile Driving Formulas and Resistance Factors

EOID Pile Driving Formulas	EOID LADOTD Pile Driving Formula (DFEOID)	EOID Modified Gates Pile Driving Formula (DFEOID-MOD)
Prediction	Long-Term Ultimate Pile Capacity	Long-Term Ultimate Pile Capacity
EOID Data	t = 0	t = 0
Geology	1, 2, 3, 4, 5	1, 2, 3, 4, 5
Hammer Type	OED & ECH	OED & ECH
Equation No.	47	48
Equation	$R_u = 0.5\left[\left(1.75\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$	$R_u = 0.5\left[\left(1.95\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$
n	50	50
$\phi_{QnD/QnL=5.0} - \phi_{QnD/QnL=2.0}$	0.651 – 0.686	0.570 – 0.600
$\phi_{QnD/QnL=3.0}$	0.669	0.586

Summary Statistics for EOID Pile Driving Formlas

EOID Pile Driving Formulas		EOID LADOTD Pile Driving Formula (DFEOID)	EOID Modified Gates Pile Driving Formula (DFEOID-MOD)
	Equation No.	47	48
Gates Pile Driving Formula Coefficients	C1 =	1.75	1.95
	C2 =	10	10
	C3 =	100	100
Arithmetic Mean	Mean R_m/R_p	1.227	1.072
	Standard Deviation	0.429	0.373
	COV	0.349	0.348
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.802	0.909
	R^2	0.547	0.539
	Correlation	0.740	0.734
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	89.8	78.3
	Mean overprediction (tons)	39.7	58.4

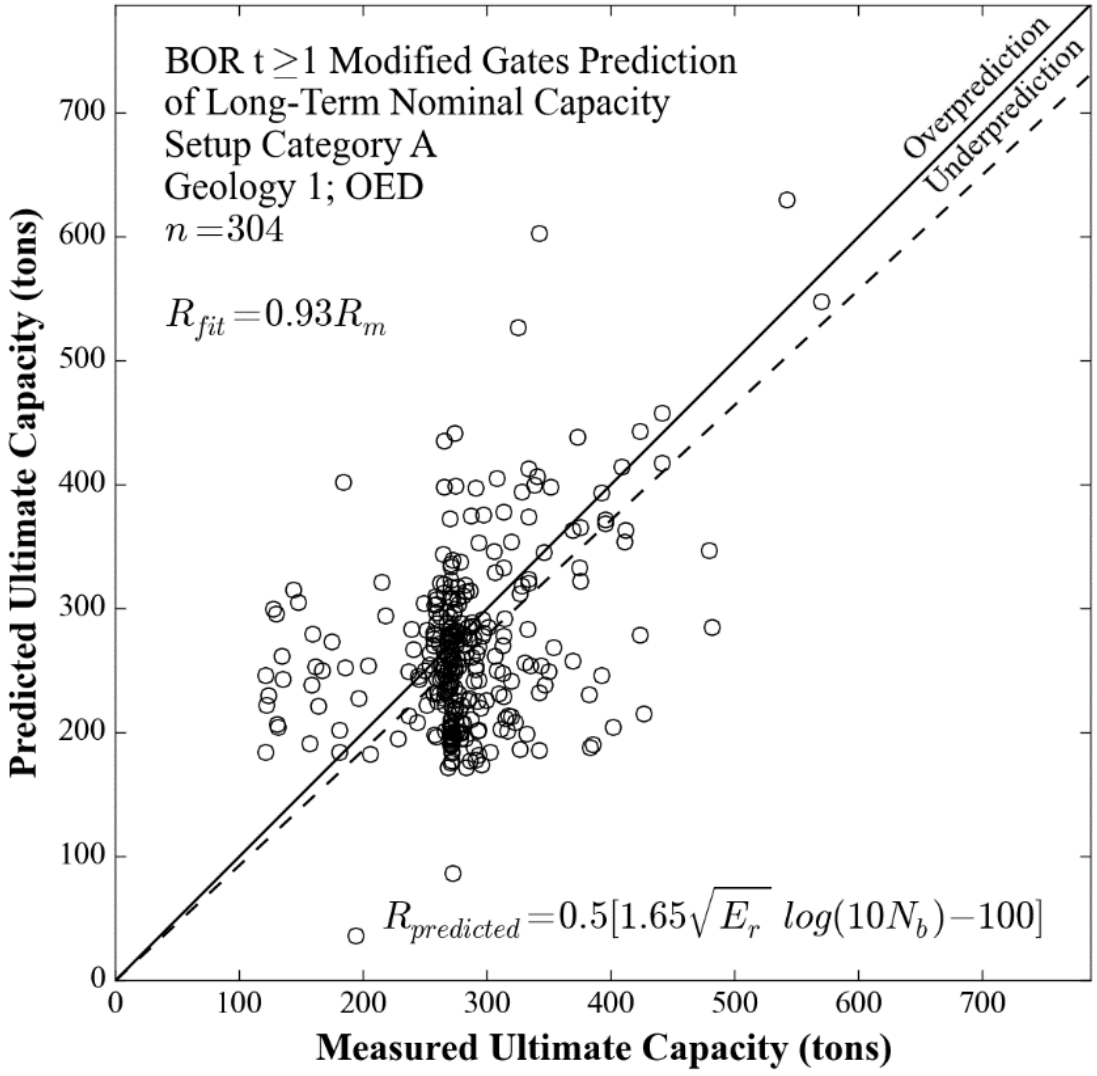
Measured						FHWA Gates			Modified Gates		
Case #	EEOID (ft-lbs)	EEOID (ft-kip)	NEOID (blows/in)	NEOID (blows/ft)	Ultimate Capacity (tons)	EOID FHWA Gates (tons)	EOID FHWA GATES / Ultimate Capacity	Ultimate Capacity / EOID FHWA GATES	EOID Mod Gates (tons)	EOID Mod Gates / Ultimate Capacity	Ultimate Capacity / EOID Mod Gates
7	182,518.90	182.52	2.33	28.00	325.27	461.4	1.418	0.705	519.8	1.598	0.626
26	123,371.30	123.37	2.42	29.00	575.00	375.1	0.652	1.533	423.7	0.737	1.357
39	66,011.40	66.01	1.08	13.00	403.00	182.6	0.453	2.207	209.2	0.519	1.926
40	66,011.40	66.01	1.08	13.00	441.34	182.6	0.414	2.417	209.2	0.474	2.110
47	63,679.20	63.68	3.58	43.00	369.50	293.2	0.793	1.260	332.4	0.900	1.112
48	63,679.20	63.68	3.58	43.00	396.14	293.2	0.740	1.351	332.4	0.839	1.192
75	52,525.20	52.53	7.33	88.00	313.50	324.1	1.034	0.967	366.8	1.170	0.855
142	28,486.70	28.49	1.83	22.00	386.50	136.6	0.353	2.830	157.9	0.408	2.448
574	73,819.20	73.82	1.08	13.00	293.31	196.0	0.668	1.496	224.1	0.764	1.309
599	143,260.00	143.26	3.83	46.00	551.00	474.5	0.861	1.161	534.4	0.970	1.031
600	143,260.00	143.26	3.83	46.00	599.18	474.5	0.792	1.263	534.4	0.892	1.121
601	19,500.00	19.50	2.08	25.00	105.00	111.1	1.058	0.945	129.6	1.234	0.810
603	106,470.00	106.47	1.75	21.00	481.50	304.9	0.633	1.579	345.5	0.717	1.394
685	114,902.00	114.90	3.00	36.00	225.00	388.1	1.725	0.580	438.2	1.947	0.513
695	136,802.00	136.80	3.00	36.00	429.50	428.0	0.997	1.003	482.7	1.124	0.890
699	33,390.60	33.39	1.17	14.00	191.96	120.6	0.628	1.592	140.1	0.730	1.370
702	60,189.50	60.19	6.42	77.00	387.50	338.0	0.872	1.147	382.3	0.987	1.014
703	60,189.50	60.19	6.42	77.00	337.25	338.0	1.002	0.998	382.3	1.134	0.882
747	60,000.00	60.00	2.00	24.00	288.00	228.9	0.795	1.258	260.7	0.905	1.105
748	60,000.00	60.00	1.58	19.00	224.00	207.1	0.925	1.082	236.5	1.056	0.947
758	12,500.00	12.50	2.00	24.00	82.50	77.3	0.937	1.068	91.8	1.113	0.898
765	26,400.00	26.40	2.50	30.00	118.00	148.7	1.261	0.793	171.5	1.453	0.688
781	19,500.00	19.50	8.75	105.00	145.00	187.3	1.292	0.774	214.4	1.479	0.676
856	44,660.00	44.66	1.50	18.00	139.00	167.5	1.205	0.830	192.3	1.384	0.723
857	44,660.00	44.66	1.50	18.00	157.04	167.5	1.066	0.938	192.3	1.225	0.817
862	35,284.60	35.28	1.25	15.00	142.50	130.3	0.914	1.094	150.9	1.059	0.944
875	41,375.00	41.38	1.42	17.00	157.50	154.9	0.984	1.017	178.3	1.132	0.883
878	103,806.00	103.81	8.33	100.00	430.00	491.5	1.143	0.875	553.4	1.287	0.777
888	130,378.00	130.38	3.17	38.00	409.00	424.1	1.037	0.964	478.3	1.169	0.855
889	130,378.00	130.38	3.17	38.00	404.02	424.1	1.050	0.953	478.3	1.184	0.845
904	33,000.00	33.00	4.33	52.00	156.50	210.2	1.343	0.745	239.9	1.533	0.652

Measured						FHWA Gates			Modified Gates		
Case #	EEOID (ft-lbs)	EEOID (ft-kip)	NEOID (blows/in)	NEOID (blows/ft)	Ultimate Capacity (tons)	EOID FHWA Gates (tons)	EOID FHWA GATES / Ultimate Capacity	Ultimate Capacity / EOID FHWA GATES	EOID Mod Gates (tons)	EOID Mod Gates / Ultimate Capacity	Ultimate Capacity / EOID Mod Gates
906	26,400.00	26.40	1.17	14.00	97.00	101.7	1.048	0.954	119.0	1.227	0.815
922	42,000.00	42.00	1.17	14.00	115.00	141.3	1.229	0.814	163.2	1.419	0.705
924	42,000.00	42.00	1.58	19.00	100.00	165.1	1.651	0.606	189.7	1.897	0.527
931	16,250.00	16.25	1.00	12.00	71.50	61.5	0.861	1.162	74.3	1.039	0.962
945	27,900.00	27.90	1.67	20.00	128.50	128.6	1.001	0.999	149.0	1.159	0.862
963	59,400.00	59.40	2.00	24.00	310.00	227.5	0.734	1.363	259.2	0.836	1.196
969	34,500.00	34.50	1.17	14.00	146.50	123.4	0.842	1.187	143.2	0.978	1.023
971	40,000.00	40.00	1.92	23.00	289.00	174.4	0.604	1.657	200.1	0.692	1.444
973	60,000.00	60.00	1.75	21.00	322.00	216.4	0.672	1.488	246.9	0.767	1.304
976	60,000.00	60.00	1.92	23.00	257.00	224.9	0.875	1.143	256.3	0.997	1.003
1012	43,736.00	43.74	6.00	72.00	346.31	275.4	0.795	1.258	312.6	0.903	1.108
1052	32,550.00	32.55	2.25	27.00	167.12	163.5	0.978	1.022	187.9	1.124	0.890
1067	41,706.00	41.71	2.58	31.00	345.92	202.3	0.585	1.710	231.2	0.668	1.496
1108	47,531.60	47.53	2.58	31.00	291.00	219.4	0.754	1.326	250.2	0.860	1.163
1109	47,531.60	47.53	2.58	31.00	275.05	219.4	0.798	1.254	250.2	0.910	1.099
1112	82,840.20	82.84	2.33	28.00	438.00	294.5	0.672	1.487	333.9	0.762	1.312
1113	82,840.20	82.84	2.33	28.00	417.71	294.5	0.705	1.418	333.9	0.799	1.251
1127	15,000.00	15.00	2.75	33.00	143.50	104.2	0.726	1.377	121.9	0.849	1.177
1143	41,706.00	41.71	2.58	31.00	345.92	202.3	0.585	1.710	231.2	0.668	1.496

BOR t ≥ 1 day Prediction of Ultimate Pile Capacity

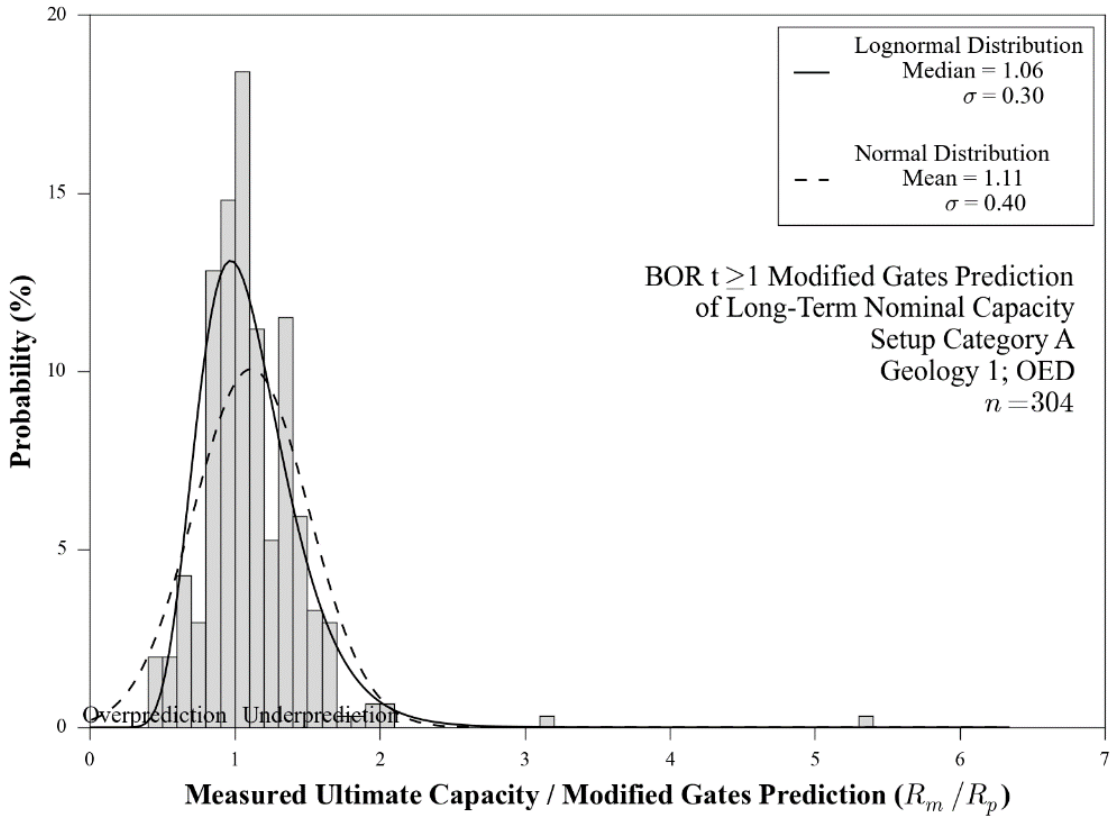
Dataset Statistics for BOR t ≥ 1 day Prediction of Ultimate Pile Capacity

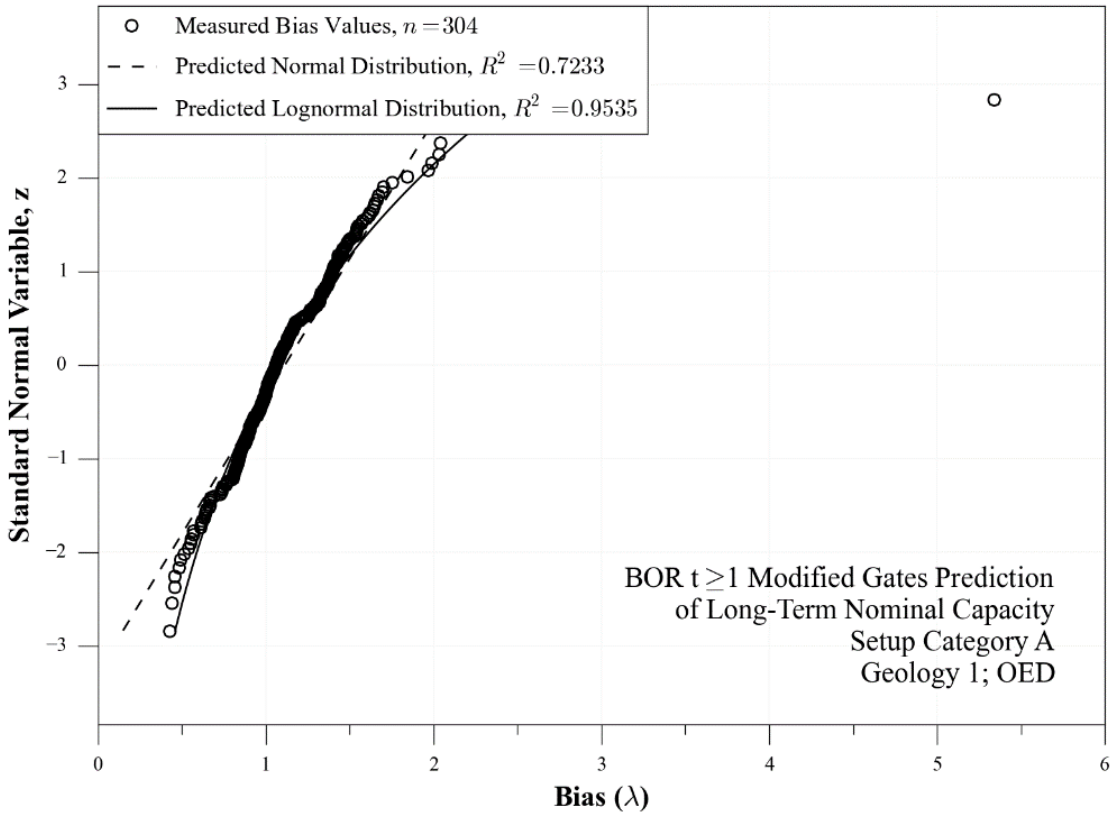
Pile Type:	PPC	E_{BOR} (ft-kip)	11 ≤ E ≤ 221
Geology:	1	N_{BOR}	12 ≤ N ≤ 120
Geology 1	304	Days Since EOID	0.8 ≤ t ≤ 50.0
Geology 2	0		
Geology 3	0		
Geology 4	0	Load Testing	SLT, CW
Geology 5	0	SLT Failure	Yes
Geology 6	0	CW Mobilized	Yes (≤ 120 bl/ft)
Hammer Type:	OED	No. SLT	1
OED	304	No. CW	303
ECH	0	Datasets	304

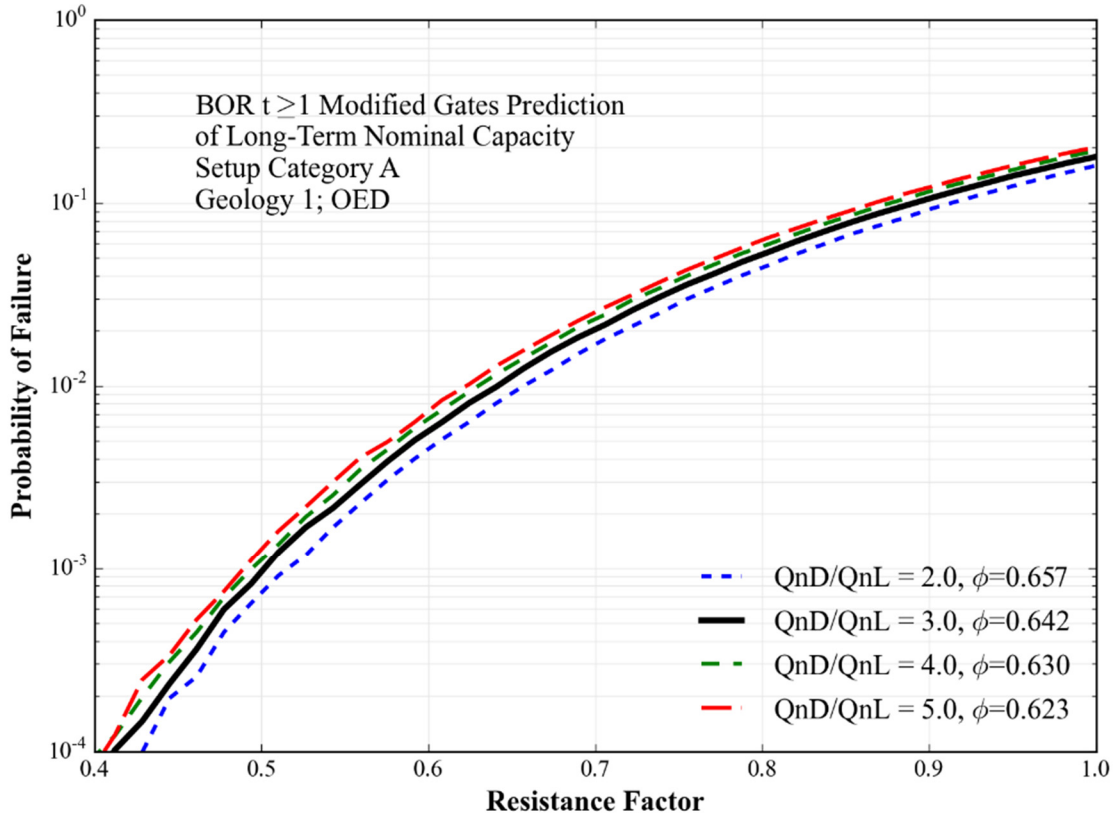


Statistics for BOR Modified Gates Pile Driving Formula (Setup Category A)

Gates Pile Driving Formula Coefficients	C1 =	1.65
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	1.110
	Standard Deviation	0.396
	COV	0.356
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.929
	R^2	0.007
	Correlation	0.086
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	58.6
	Mean overprediction (tons)	55.89




Measured Bias Values, $n = 304$
Predicted Normal Distribution, $R^2 = 0.7233$
Predicted Lognormal Distribution, $R^2 = 0.9535$
BOR t ≥1 Modified Gates Prediction
of Long-Term Nominal Capacity
Setup Category A
Geology 1; OED
Standard Normal Variable, z
Bias (λ)


BOR t ≥1 Modified Gates Prediction
of Long-Term Nominal Capacity
Setup Category A
Geology 1; OED
QnD/QnL = 2.0, ϕ=0.657
QnD/QnL = 3.0, ϕ=0.642
QnD/QnL = 4.0, ϕ=0.630
QnD/QnL = 5.0, ϕ=0.623
Probability of Failure
Resistance Factor

Statistics and Resistance Factors for BOR
Modified Gates Pile Driving Formula (DF1+BORSCA)

Pile Driving Condition:		BOR
Restrike Data:		$t \geq 1$ days
Description:		BOR Modified Gates
Geology:		1
Hammer Type:		OED
Number of Cases:		304
Lognormal distribution fit Parameters	R^2	0.953
	Median	1.063
	Sigma	0.300
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.623
	$Q_{nD}/Q_{nL} = 4.0$	0.630
	$Q_{nD}/Q_{nL} = 3.0$	0.642
	$Q_{nD}/Q_{nL} = 2.0$	0.657

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
7	177,222.10	177.22	4.58	55.00	325.27	439.5	1.351	0.740
9	220,700.00	220.70	4.83	58.00	342.39	503.9	1.472	0.680
22	214,741.10	214.74	6.00	72.00	542.34	526.8	0.971	1.030
27	204,588.90	204.59	4.00	48.00	570.53	457.2	0.801	1.248
31	139,261.70	139.26	3.00	36.00	308.15	335.9	1.090	0.917
40	80,207.40	80.21	10.00	120.00	441.34	346.5	0.785	1.274
48	78,585.00	78.59	6.67	80.00	396.14	307.9	0.777	1.287
70	75,036.00	75.04	10.00	120.00	184.20	333.5	1.810	0.552
574	73,819.20	73.82	1.08	13.00	293.31	146.8	0.500	1.998
603	106,470.00	106.47	1.75	21.00	481.50	233.9	0.486	2.058
619	50,260.00	50.26	1.83	22.00	121.32	148.2	1.222	0.818
2	70,777.20	70.78	1.92	23.00	257.08	240.0	0.934	1.071
3	93,997.80	94.00	2.92	35.00	262.50	331.8	1.264	0.791
4	89,637.60	89.64	1.67	20.00	265.35	260.9	0.983	1.017
5	79,396.20	79.40	1.42	17.00	278.02	225.7	0.812	1.232
36	87,812.40	87.81	3.33	40.00	375.83	333.6	0.888	1.127
45	94,504.80	94.50	6.67	80.00	333.60	426.6	1.279	0.782
67	68,242.20	68.24	4.00	48.00	129.76	305.7	2.356	0.424
138	40,718.90	40.72	6.25	75.00	349.81	258.0	0.738	1.356
151	73,819.20	73.82	4.92	59.00	306.27	340.7	1.112	0.899
153	83,148.00	83.15	4.67	56.00	479.34	359.1	0.749	1.335
154	89,130.60	89.13	2.17	26.00	159.04	289.0	1.817	0.550

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
160	85,581.60	85.58	1.00	12.00	157.21	198.7	1.264	0.791
164	10,951.20	10.95	1.00	12.00	193.91	39.0	0.201	4.978
165	79,396.20	79.40	1.00	12.00	205.55	189.5	0.922	1.085
168	82,235.40	82.24	1.08	13.00	228.43	202.2	0.885	1.130
169	101,400.00	101.40	1.42	17.00	185.46	261.6	1.411	0.709
177	70,067.40	70.07	1.75	21.00	164.29	229.7	1.398	0.715
178	101,907.00	101.91	1.00	12.00	236.93	221.3	0.934	1.070
179	100,284.60	100.28	2.50	30.00	143.97	326.3	2.266	0.441
180	101,907.00	101.91	1.42	17.00	161.72	262.4	1.622	0.616
182	70,473.00	70.47	1.17	14.00	180.78	190.8	1.055	0.948
183	73,819.20	73.82	1.33	16.00	180.84	209.8	1.160	0.862
186	99,169.20	99.17	1.17	14.00	196.19	235.6	1.201	0.833
187	77,064.00	77.06	1.67	20.00	123.94	238.3	1.923	0.520
189	112,756.80	112.76	1.33	16.00	134.16	271.1	2.021	0.495
192	78,990.60	78.99	1.83	22.00	135.19	251.8	1.862	0.537
195	58,812.00	58.81	1.92	23.00	130.62	214.4	1.641	0.609
196	91,969.80	91.97	1.42	17.00	158.75	246.8	1.554	0.643
197	78,990.60	78.99	1.25	15.00	131.65	212.0	1.611	0.621
198	86,494.20	86.49	2.75	33.00	127.82	309.8	2.424	0.413
199	88,218.00	88.22	2.08	25.00	174.56	282.9	1.621	0.617
202	75,948.60	75.95	2.17	26.00	204.52	262.9	1.285	0.778
204	74,224.80	74.22	2.17	26.00	166.74	259.3	1.555	0.643
205	101,400.00	101.40	2.25	27.00	147.85	316.0	2.137	0.468

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
206	72,805.20	72.81	1.67	20.00	122.18	230.2	1.884	0.531
207	67,228.20	67.23	2.42	29.00	121.20	254.8	2.103	0.476
209	85,581.60	85.58	1.75	21.00	308.03	259.1	0.841	1.189
210	99,169.20	99.17	1.17	14.00	265.18	235.6	0.888	1.126
212	78,280.80	78.28	1.67	20.00	260.04	240.6	0.925	1.081
213	91,057.20	91.06	2.08	25.00	423.88	288.3	0.680	1.470
214	88,725.00	88.73	2.25	27.00	251.88	292.4	1.161	0.862
215	88,218.00	88.22	1.92	23.00	265.75	273.8	1.030	0.971
216	112,756.80	112.76	2.17	26.00	265.41	331.3	1.248	0.801
217	77,875.20	77.88	2.08	25.00	291.20	262.8	0.903	1.108
218	88,218.00	88.22	1.75	21.00	253.94	263.8	1.039	0.963
219	86,190.00	86.19	1.67	20.00	266.72	254.9	0.956	1.046
220	88,218.00	88.22	1.42	17.00	266.49	240.7	0.903	1.107
221	79,801.80	79.80	1.67	20.00	268.77	243.4	0.906	1.104
222	87,812.40	87.81	1.58	19.00	245.26	252.2	1.028	0.973
224	89,637.60	89.64	1.92	23.00	240.36	276.4	1.150	0.870
225	91,969.80	91.97	2.00	24.00	256.73	285.4	1.112	0.900
226	109,005.00	109.01	4.42	53.00	265.29	411.7	1.552	0.644
228	87,812.40	87.81	9.67	116.00	265.41	450.1	1.696	0.590
229	89,130.60	89.13	2.50	30.00	218.50	304.7	1.395	0.717
230	102,515.40	102.52	2.25	27.00	259.36	318.0	1.226	0.816
231	115,494.60	115.49	1.83	22.00	248.97	314.9	1.265	0.791
232	91,564.20	91.56	2.25	27.00	259.47	297.8	1.148	0.871

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
233	83,046.60	83.05	2.08	25.00	253.94	273.0	1.075	0.930
234	88,725.00	88.73	2.58	31.00	268.09	307.5	1.147	0.872
235	84,770.40	84.77	1.83	22.00	263.47	262.6	0.997	1.003
236	89,130.60	89.13	1.58	19.00	244.81	254.4	1.039	0.962
237	87,812.40	87.81	2.33	28.00	301.24	294.6	0.978	1.023
238	99,676.20	99.68	1.42	17.00	249.89	259.0	1.036	0.965
239	85,581.60	85.58	1.08	13.00	275.56	207.3	0.752	1.329
240	95,518.80	95.52	1.17	14.00	251.20	230.3	0.917	1.091
241	99,169.20	99.17	1.42	17.00	273.91	258.2	0.943	1.061
242	70,777.20	70.78	1.50	18.00	243.89	216.0	0.885	1.129
243	96,025.80	96.03	1.25	15.00	261.93	238.9	0.912	1.096
244	102,515.40	102.52	2.00	24.00	262.50	304.1	1.158	0.863
245	77,064.00	77.06	1.75	21.00	266.49	243.3	0.913	1.095
246	84,162.00	84.16	1.67	20.00	293.31	251.3	0.857	1.167
247	81,120.00	81.12	2.17	26.00	291.60	273.4	0.938	1.067
248	71,994.00	71.99	1.50	18.00	287.61	218.2	0.759	1.318
249	97,546.80	97.55	1.92	23.00	256.68	290.5	1.132	0.884
250	98,053.80	98.05	1.17	14.00	275.17	234.0	0.850	1.176
251	103,630.80	103.63	1.83	22.00	288.35	295.7	1.025	0.975
252	101,400.00	101.40	1.58	19.00	271.46	274.7	1.012	0.988
253	110,526.00	110.53	1.83	22.00	259.70	307.0	1.182	0.846
255	95,011.80	95.01	1.67	20.00	288.18	270.1	0.937	1.067
256	87,812.40	87.81	2.33	28.00	284.75	294.6	1.034	0.967

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
257	88,218.00	88.22	1.33	16.00	284.69	234.0	0.822	1.217
258	104,239.20	104.24	1.58	19.00	293.20	279.2	0.952	1.050
259	84,162.00	84.16	1.75	21.00	312.83	256.5	0.820	1.219
260	97,546.80	97.55	1.50	18.00	273.97	262.2	0.957	1.045
261	106,571.40	106.57	1.33	16.00	277.33	262.2	0.945	1.058
262	88,218.00	88.22	1.67	20.00	273.80	258.5	0.944	1.059
263	101,400.00	101.40	2.33	28.00	258.79	320.3	1.238	0.808
264	87,204.00	87.20	2.08	25.00	275.68	281.0	1.019	0.981
265	82,641.00	82.64	2.42	29.00	272.83	288.0	1.056	0.947
266	92,476.80	92.48	2.00	24.00	268.37	286.3	1.067	0.937
267	90,144.60	90.14	2.58	31.00	273.91	310.4	1.133	0.882
268	93,997.80	94.00	1.42	17.00	320.13	250.0	0.781	1.280
269	110,830.20	110.83	1.33	16.00	280.30	268.3	0.957	1.045
270	85,987.20	85.99	1.67	20.00	263.92	254.5	0.964	1.037
271	92,983.80	92.98	1.50	18.00	266.38	254.8	0.957	1.045
272	85,581.60	85.58	2.92	35.00	259.59	314.3	1.211	0.826
273	93,997.80	94.00	1.92	23.00	276.19	284.2	1.029	0.972
274	74,529.00	74.53	2.00	24.00	262.78	251.9	0.959	1.043
277	105,963.00	105.96	1.58	19.00	267.97	281.9	1.052	0.951
279	93,997.80	94.00	2.25	27.00	314.03	302.4	0.963	1.039
280	89,130.60	89.13	1.50	18.00	268.20	248.5	0.926	1.080
281	105,354.60	105.35	2.08	25.00	276.82	313.8	1.134	0.882
282	92,476.80	92.48	1.58	19.00	291.49	260.1	0.892	1.121

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
283	85,987.20	85.99	1.75	21.00	264.27	259.8	0.983	1.017
284	97,546.80	97.55	1.83	22.00	289.26	285.4	0.987	1.014
285	85,581.60	85.58	1.92	23.00	265.98	268.9	1.011	0.989
286	85,176.00	85.18	1.92	23.00	273.17	268.2	0.982	1.019
287	93,997.80	94.00	2.17	26.00	279.33	298.1	1.067	0.937
288	84,770.40	84.77	1.83	22.00	334.97	262.6	0.784	1.275
290	105,354.60	105.35	1.67	20.00	275.05	287.1	1.044	0.958
292	93,490.80	93.49	2.00	24.00	281.90	288.1	1.022	0.978
293	83,046.60	83.05	2.00	24.00	276.71	268.7	0.971	1.030
294	113,466.60	113.47	1.58	19.00	239.10	293.5	1.227	0.815
295	91,564.20	91.56	1.58	19.00	236.48	258.5	1.093	0.915
296	99,169.20	99.17	1.75	21.00	271.34	282.7	1.042	0.960
297	105,354.60	105.35	1.50	18.00	282.98	274.5	0.970	1.031
298	99,676.20	99.68	1.50	18.00	330.75	265.6	0.803	1.245
300	89,130.60	89.13	2.17	26.00	280.81	289.0	1.029	0.972
301	97,546.80	97.55	1.92	23.00	297.31	290.5	0.977	1.023
302	94,504.80	94.50	2.08	25.00	270.66	294.6	1.088	0.919
303	90,550.20	90.55	1.75	21.00	271.17	267.9	0.988	1.012
304	89,637.60	89.64	2.33	28.00	267.75	298.1	1.113	0.898
305	107,179.80	107.18	1.67	20.00	270.83	290.0	1.071	0.934
306	99,676.20	99.68	1.83	22.00	269.74	289.0	1.071	0.933
307	89,130.60	89.13	1.83	22.00	269.23	270.6	1.005	0.995
308	91,564.20	91.56	1.50	18.00	259.07	252.5	0.975	1.026

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
309	87,305.40	87.31	2.08	25.00	261.64	281.2	1.075	0.930
312	90,144.60	90.14	2.00	24.00	271.06	282.0	1.040	0.961
314	86,494.20	86.49	1.67	20.00	270.31	255.4	0.945	1.058
316	91,969.80	91.97	2.00	24.00	285.32	285.4	1.000	1.000
317	91,057.20	91.06	1.58	19.00	271.40	257.7	0.949	1.053
319	111,540.00	111.54	2.58	31.00	272.37	350.9	1.288	0.776
320	95,011.80	95.01	2.08	25.00	288.18	295.5	1.025	0.975
321	90,144.60	90.14	2.17	26.00	276.08	290.9	1.054	0.949
322	85,176.00	85.18	7.00	84.00	328.29	407.7	1.242	0.805
323	81,018.60	81.02	8.08	97.00	351.52	411.5	1.171	0.854
325	87,812.40	87.81	6.92	83.00	338.34	413.4	1.222	0.818
327	93,490.80	93.49	6.00	72.00	275.17	412.1	1.498	0.668
328	96,532.80	96.53	1.75	21.00	354.03	278.3	0.786	1.272
329	85,176.00	85.18	3.25	39.00	286.75	325.1	1.134	0.882
330	91,969.80	91.97	6.67	80.00	340.73	420.2	1.233	0.811
331	91,969.80	91.97	5.92	71.00	392.38	406.8	1.037	0.965
333	92,983.80	92.98	4.83	58.00	333.77	386.5	1.158	0.863
334	90,550.20	90.55	3.92	47.00	346.44	357.4	1.032	0.969
335	90,144.60	90.14	4.75	57.00	375.48	377.9	1.006	0.994
336	101,907.00	101.91	3.42	41.00	411.26	366.1	0.890	1.123
337	84,770.40	84.77	5.25	63.00	411.95	375.7	0.912	1.096
339	99,676.20	99.68	8.92	107.00	441.17	473.4	1.073	0.932
340	90,550.20	90.55	7.42	89.00	408.58	428.4	1.048	0.954

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
341	111,540.00	111.54	6.17	74.00	423.70	458.2	1.081	0.925
342	89,130.60	89.13	4.75	57.00	369.26	375.5	1.017	0.983
343	100,284.60	100.28	7.42	89.00	373.43	453.4	1.214	0.824
345	96,532.80	96.53	1.92	23.00	257.59	288.7	1.121	0.892
346	91,564.20	91.56	2.17	26.00	333.03	293.6	0.882	1.134
352	82,235.40	82.24	1.92	23.00	343.47	262.6	0.765	1.308
356	75,644.40	75.64	1.25	15.00	332.34	206.4	0.621	1.610
357	87,305.40	87.31	1.83	22.00	369.44	267.3	0.723	1.382
358	83,452.20	83.45	1.50	18.00	382.45	238.8	0.624	1.602
359	84,770.40	84.77	3.58	43.00	333.54	334.7	1.003	0.997
360	78,990.60	78.99	1.33	16.00	315.51	218.7	0.693	1.442
362	86,899.80	86.90	1.08	13.00	293.54	209.3	0.713	1.403
365	85,581.60	85.58	2.58	31.00	296.74	301.2	1.015	0.985
366	89,637.60	89.64	2.92	35.00	326.47	322.8	0.989	1.011
367	103,630.80	103.63	1.25	15.00	270.09	250.1	0.926	1.080
369	88,725.00	88.73	1.08	13.00	401.73	212.0	0.528	1.895
370	90,144.60	90.14	1.00	12.00	257.53	205.2	0.797	1.255
371	85,176.00	85.18	2.92	35.00	258.10	313.4	1.214	0.824
372	82,235.40	82.24	3.58	43.00	276.36	328.9	1.190	0.840
374	69,763.20	69.76	3.42	41.00	270.43	294.3	1.088	0.919
375	104,239.20	104.24	3.25	39.00	293.31	364.9	1.244	0.804
376	95,518.80	95.52	3.50	42.00	264.78	355.6	1.343	0.745
378	95,518.80	95.52	4.75	57.00	313.28	390.5	1.246	0.802

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
379	85,581.60	85.58	1.25	15.00	426.84	222.8	0.522	1.916
380	100,284.60	100.28	4.25	51.00	297.13	388.3	1.307	0.765
382	91,969.80	91.97	3.83	46.00	305.92	358.2	1.171	0.854
383	88,218.00	88.22	1.50	18.00	346.84	246.9	0.712	1.405
388	77,875.20	77.88	4.83	58.00	278.93	349.5	1.253	0.798
389	74,529.00	74.53	5.00	60.00	374.80	344.2	0.918	1.089
390	72,805.20	72.81	3.58	43.00	273.34	306.5	1.121	0.892
391	96,025.80	96.03	4.33	52.00	395.91	381.1	0.963	1.039
394	88,725.00	88.73	3.00	36.00	265.58	324.0	1.220	0.820
395	63,375.00	63.38	1.75	21.00	322.76	216.0	0.669	1.494
397	75,948.60	75.95	2.00	24.00	392.43	254.8	0.649	1.540
398	83,046.60	83.05	2.67	32.00	288.29	299.3	1.038	0.963
399	99,169.20	99.17	5.25	63.00	291.20	410.4	1.409	0.709
401	67,836.60	67.84	1.25	15.00	342.04	192.8	0.564	1.774
402	85,581.60	85.58	1.25	15.00	274.25	222.8	0.812	1.231
406	77,875.20	77.88	3.58	43.00	272.20	318.7	1.171	0.854
407	76,354.20	76.35	1.00	12.00	290.86	184.9	0.636	1.573
408	83,046.60	83.05	1.00	12.00	383.30	195.0	0.509	1.966
410	97,039.80	97.04	4.50	54.00	287.61	387.7	1.348	0.742
411	66,619.80	66.62	1.17	14.00	271.57	184.1	0.678	1.475
412	70,473.00	70.47	4.83	58.00	282.70	330.0	1.167	0.857
413	85,176.00	85.18	4.00	48.00	271.00	347.4	1.282	0.780
414	73,109.40	73.11	1.50	18.00	319.56	220.3	0.689	1.451

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
415	74,934.60	74.93	1.67	20.00	299.87	234.3	0.781	1.280
416	71,081.40	71.08	1.58	19.00	317.11	221.8	0.700	1.429
417	84,263.40	84.26	2.17	26.00	312.88	279.6	0.894	1.119
418	70,473.00	70.47	1.75	21.00	279.56	230.5	0.824	1.213
419	97,039.80	97.04	1.25	15.00	342.50	240.4	0.702	1.424
420	81,018.60	81.02	2.42	29.00	271.57	284.7	1.048	0.954
423	87,305.40	87.31	1.08	13.00	311.34	209.9	0.674	1.483
424	60,941.40	60.94	1.50	18.00	270.89	196.8	0.726	1.377
425	83,452.20	83.45	2.17	26.00	270.66	278.0	1.027	0.974
428	78,585.00	78.59	1.08	13.00	270.89	196.6	0.726	1.378
430	78,990.60	78.99	1.08	13.00	385.53	197.2	0.512	1.955
431	77,064.00	77.06	1.33	16.00	279.73	215.4	0.770	1.298
432	83,452.20	83.45	1.33	16.00	273.45	226.2	0.827	1.209
433	80,613.00	80.61	1.17	14.00	272.20	207.5	0.762	1.312
434	82,235.40	82.24	1.25	15.00	274.88	217.4	0.791	1.265
435	86,494.20	86.49	1.08	13.00	275.56	208.7	0.757	1.321
436	75,238.80	75.24	1.75	21.00	310.09	239.8	0.773	1.293
437	77,875.20	77.88	1.17	14.00	273.45	203.1	0.743	1.347
438	75,644.40	75.64	1.00	12.00	286.24	183.8	0.642	1.557
439	64,591.80	64.59	1.75	21.00	270.94	218.5	0.807	1.240
441	73,819.20	73.82	1.00	12.00	295.94	180.9	0.611	1.636
448	82,641.00	82.64	2.42	29.00	296.79	288.0	0.970	1.031
449	86,494.20	86.49	1.58	19.00	289.49	249.9	0.863	1.159

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
451	81,424.20	81.42	1.17	14.00	316.94	208.8	0.659	1.518
452	95,011.80	95.01	1.25	15.00	313.91	237.4	0.756	1.322
454	98,358.00	98.36	2.42	29.00	271.06	318.7	1.176	0.850
456	84,770.40	84.77	1.00	12.00	271.00	197.5	0.729	1.372
457	81,018.60	81.02	1.25	15.00	281.10	215.4	0.766	1.305
458	81,829.80	81.83	2.08	25.00	306.49	270.7	0.883	1.132
459	78,990.60	78.99	3.58	43.00	281.39	321.3	1.142	0.876
463	111,540.00	111.54	2.08	25.00	283.04	324.4	1.146	0.873
464	85,176.00	85.18	3.92	47.00	270.89	345.2	1.274	0.785
466	74,934.60	74.93	1.00	12.00	270.94	182.7	0.674	1.483
469	87,305.40	87.31	1.08	13.00	270.66	209.9	0.775	1.290
471	79,801.80	79.80	1.00	12.00	271.80	190.1	0.699	1.430
472	88,725.00	88.73	1.75	21.00	271.00	264.7	0.977	1.024
473	88,218.00	88.22	3.17	38.00	271.23	328.8	1.212	0.825
475	88,725.00	88.73	2.25	27.00	274.59	292.4	1.065	0.939
476	72,095.40	72.10	1.00	12.00	268.72	178.2	0.663	1.508
478	75,238.80	75.24	1.08	13.00	302.90	191.3	0.631	1.584
479	83,452.20	83.45	3.50	42.00	328.41	329.1	1.002	0.998
481	100,791.60	100.79	1.42	17.00	268.77	260.7	0.970	1.031
482	97,546.80	97.55	1.17	14.00	292.46	233.2	0.798	1.254
483	83,452.20	83.45	1.08	13.00	259.19	204.1	0.787	1.270
485	81,424.20	81.42	1.17	14.00	292.97	208.8	0.713	1.403
486	75,948.60	75.95	1.17	14.00	271.11	199.9	0.737	1.356

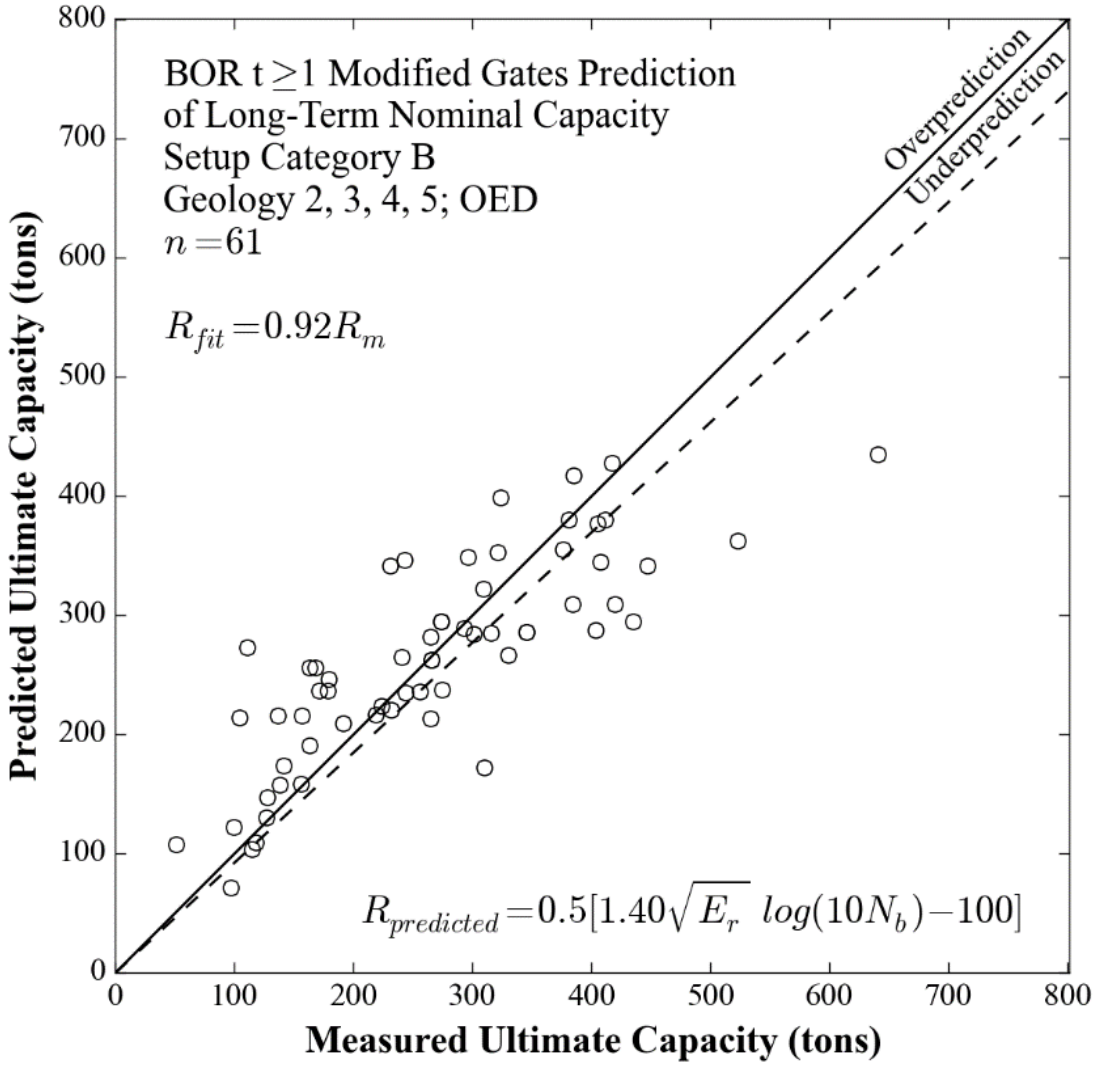
Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
487	82,235.40	82.24	1.08	13.00	278.99	202.2	0.725	1.380
488	79,801.80	79.80	1.17	14.00	272.94	206.2	0.755	1.324
490	83,857.80	83.86	1.08	13.00	271.00	204.7	0.755	1.324
492	101,907.00	101.91	2.83	34.00	313.85	344.1	1.096	0.912
494	75,948.60	75.95	4.25	51.00	334.11	331.4	0.992	1.008
498	72,095.40	72.10	1.00	12.00	283.10	178.2	0.630	1.588
501	75,644.40	75.64	1.33	16.00	271.00	213.0	0.786	1.272
503	101,400.00	101.40	1.08	13.00	266.61	230.1	0.863	1.159
504	89,130.60	89.13	2.83	34.00	276.25	318.5	1.153	0.867
505	84,263.40	84.26	1.33	16.00	275.22	227.6	0.827	1.209
506	81,424.20	81.42	1.17	14.00	266.03	208.8	0.785	1.274
507	105,354.60	105.35	1.08	13.00	285.89	235.5	0.824	1.214
509	64,896.00	64.90	1.33	16.00	326.98	193.6	0.592	1.689
510	85,581.60	85.58	1.08	13.00	279.56	207.3	0.742	1.349
512	83,046.60	83.05	1.00	12.00	289.89	195.0	0.673	1.487
515	95,518.80	95.52	1.00	12.00	270.49	212.7	0.786	1.272
517	83,452.20	83.45	1.08	13.00	271.06	204.1	0.753	1.328
520	85,176.00	85.18	1.00	12.00	271.11	198.1	0.731	1.369
522	71,081.40	71.08	1.25	15.00	270.49	198.6	0.734	1.362
523	87,305.40	87.31	1.00	12.00	271.06	201.2	0.742	1.348
524	88,218.00	88.22	1.00	12.00	282.81	202.5	0.716	1.397
526	85,581.60	85.58	1.08	13.00	277.90	207.3	0.746	1.341
527	76,354.20	76.35	1.83	22.00	271.06	246.7	0.910	1.099

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
530	94,504.80	94.50	2.25	27.00	270.37	303.3	1.122	0.891
533	85,176.00	85.18	1.08	13.00	278.25	206.7	0.743	1.346
534	92,476.80	92.48	1.25	15.00	260.21	233.5	0.897	1.114
535	98,053.80	98.05	1.00	12.00	270.89	216.2	0.798	1.253
536	103,022.40	103.02	1.25	15.00	271.06	249.3	0.920	1.087
539	112,148.40	112.15	1.08	13.00	269.92	244.5	0.906	1.104
540	77,469.60	77.47	1.17	14.00	271.63	202.4	0.745	1.342
541	81,018.60	81.02	2.50	30.00	271.06	288.2	1.063	0.940
542	84,263.40	84.26	2.17	26.00	256.79	279.6	1.089	0.918
543	107,179.80	107.18	1.00	12.00	271.63	228.3	0.840	1.190
548	75,644.40	75.64	1.08	13.00	271.63	191.9	0.707	1.415
551	76,759.80	76.76	2.33	28.00	267.63	272.2	1.017	0.983
552	83,452.20	83.45	1.17	14.00	271.63	212.0	0.780	1.281
555	83,046.60	83.05	1.08	13.00	271.28	203.5	0.750	1.333
557	83,857.80	83.86	1.50	18.00	276.93	239.5	0.865	1.156
560	21,496.80	21.50	1.33	16.00	272.65	90.2	0.331	3.023
561	86,899.80	86.90	1.92	23.00	272.08	271.4	0.997	1.003
565	93,997.80	94.00	1.17	14.00	294.68	228.0	0.774	1.292
566	73,819.20	73.82	1.75	21.00	269.92	237.1	0.878	1.139
567	72,095.40	72.10	4.17	50.00	271.06	319.7	1.179	0.848
569	95,011.80	95.01	2.92	35.00	271.06	333.8	1.232	0.812
573	77,875.20	77.88	2.67	32.00	271.06	288.2	1.063	0.940
575	77,875.20	77.88	1.83	22.00	270.49	249.6	0.923	1.083

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
576	72,399.60	72.40	3.00	36.00	313.28	287.8	0.919	1.088
579	75,238.80	75.24	1.83	22.00	273.91	244.5	0.893	1.120
580	88,725.00	88.73	5.25	63.00	270.49	385.5	1.425	0.702
585	88,015.20	88.02	4.46	53.50	319.79	365.9	1.144	0.874
592	88,623.60	88.62	10.00	120.00	274.02	456.1	1.664	0.601
614	59,400.00	59.40	7.00	84.00	215.52	332.2	1.542	0.649

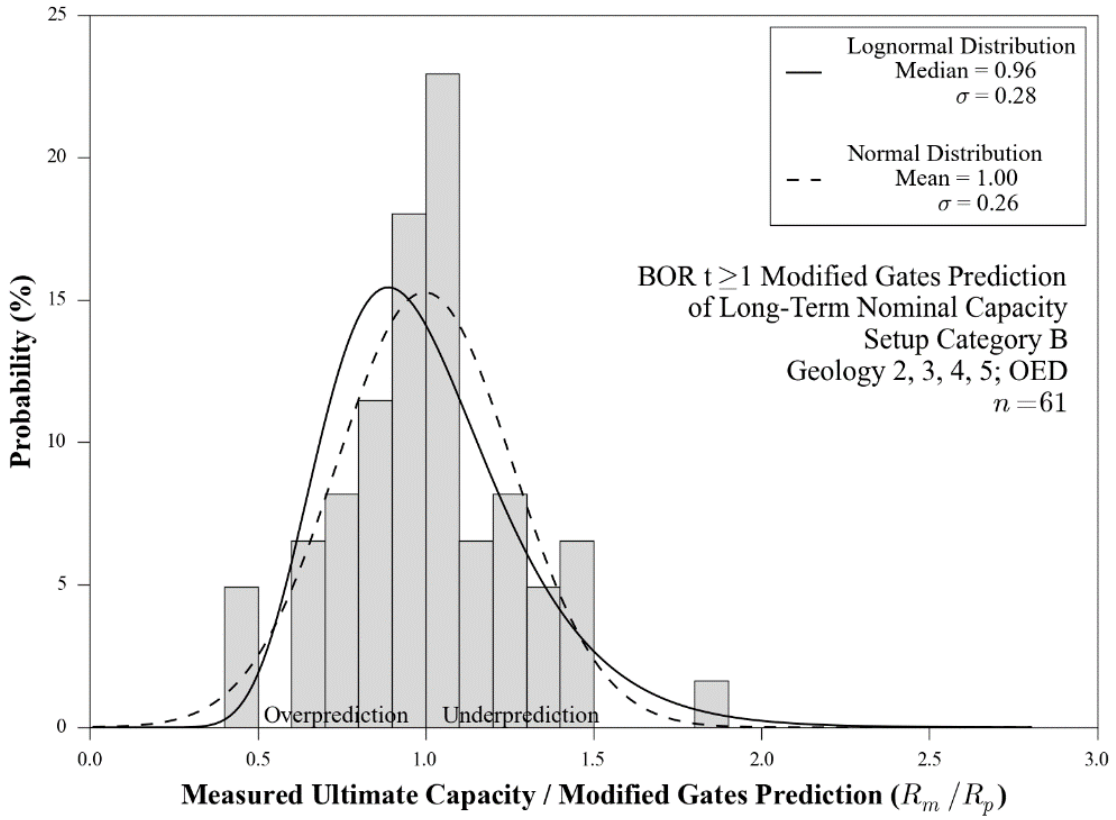
Dataset Statistics for BOR t ≥ 1 day Prediction of BOR Ultimate Pile Capacity

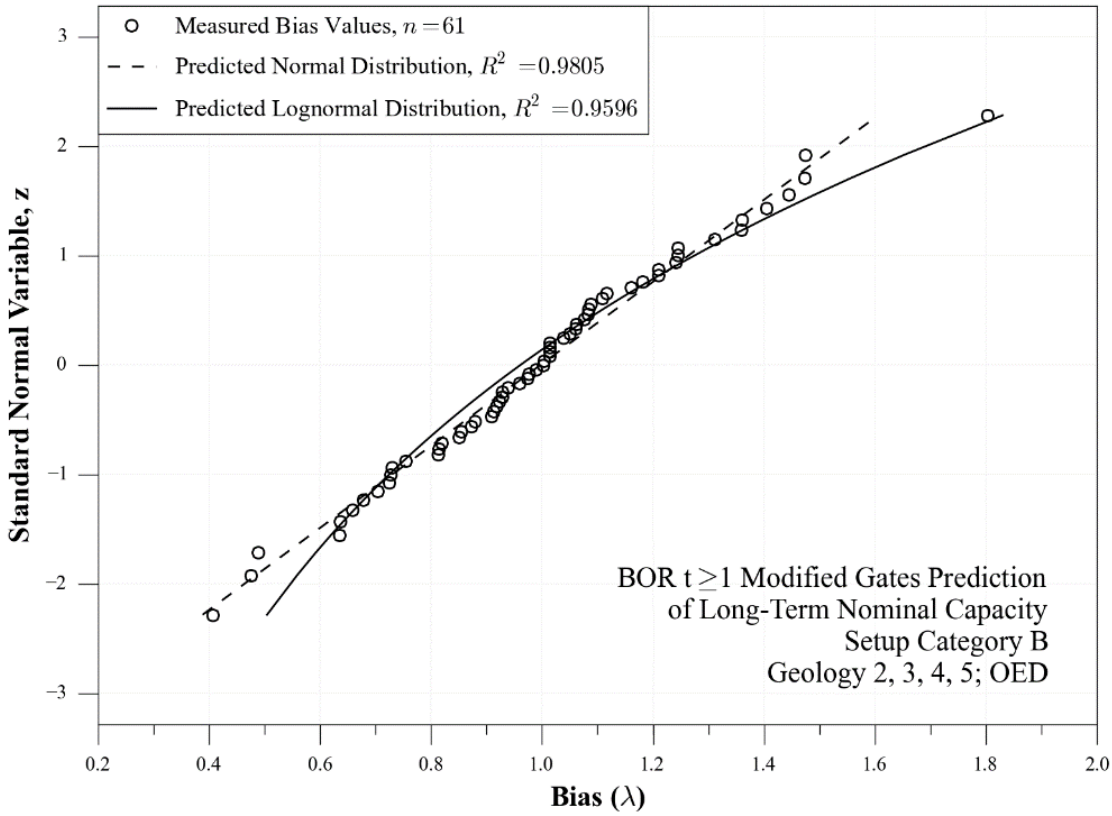
Pile Type:	PPC	E_{BOR} (ft-kip)	26 ≤ E ≤ 170
Geology:	2, 3, 4, 5	N_{BOR}	14 ≤ N ≤ 120
Geology 1	0	Days Since EOID	0.8 ≤ t ≤ 44.0
Geology 2	21		
Geology 3	18		
Geology 4	10	Load Testing	SLT, CW
Geology 5	12	SLT Failure	Yes
Geology 6	0	CW Mobilized	Yes (≤ 120 bl/ft)
Hammer Type:	OED	No. SLT	7
OED	61	No. CW	54
ECH	0	Datasets	61

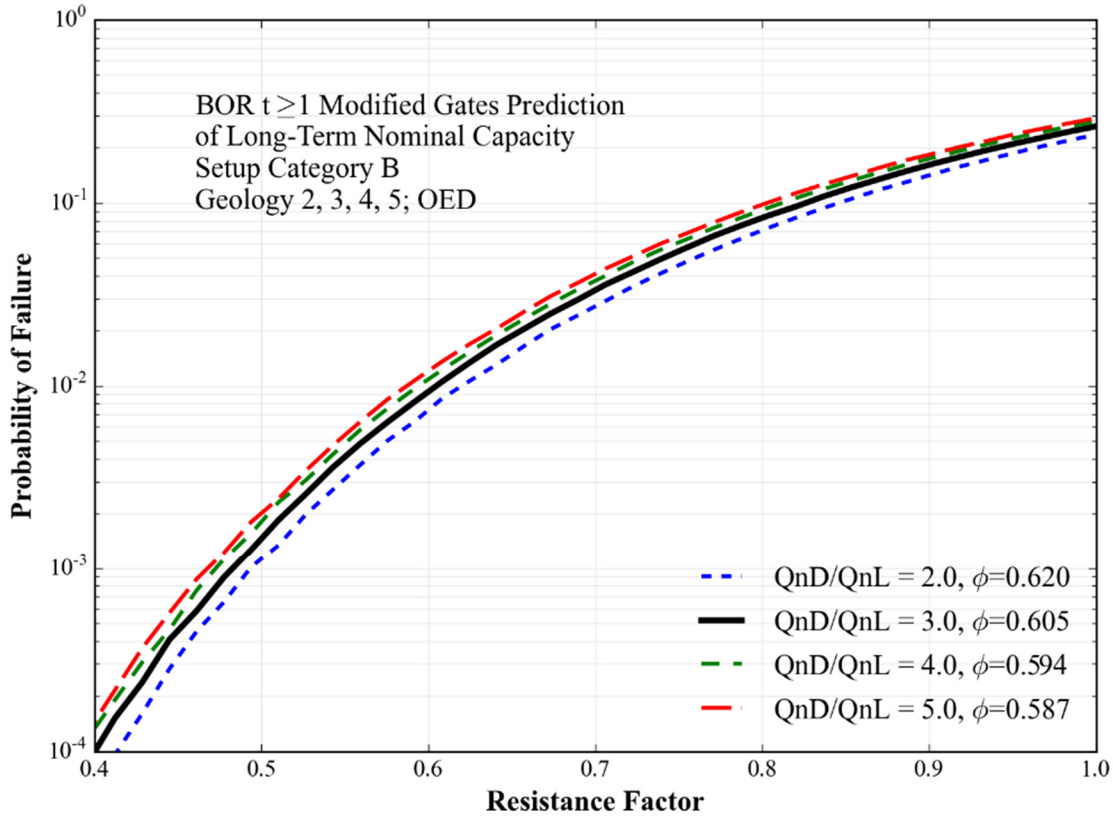


Statistics for BOR Modified Gates Pile Driving Formula (Setup Category B)

Gates Pile Driving Formula Coefficients	C1 =	1.4
	C2 =	10
	C3 =	100
Arithmetic Mean	Mean R_m/R_p	0.997
	Standard Deviation	0.261
	COV	0.262
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.924
	R^2	0.405
	Correlation	0.636
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	52.36
	Mean overprediction (tons)	49.56




Measured Bias Values, $n = 61$
Predicted Normal Distribution, $R^2 = 0.9805$
Predicted Lognormal Distribution, $R^2 = 0.9596$
BOR t ≥1 Modified Gates Prediction
of Long-Term Nominal Capacity
Setup Category B
Geology 2, 3, 4, 5; OED
Standard Normal Variable, z
Bias (λ)


BOR t ≥1 Modified Gates Prediction
of Long-Term Nominal Capacity
Setup Category B
Geology 2, 3, 4, 5; OED
QnD/QnL = 2.0, ϕ=0.620
QnD/QnL = 3.0, ϕ=0.605
QnD/QnL = 4.0, ϕ=0.594
QnD/QnL = 5.0, ϕ=0.587
Probability of Failure
Resistance Factor

Statistics and Resistance Factors for BOR
Modified Gates Pile Driving Formla (DF1+BORSCB)

Pile Driving Condition:		BOR
Restrike Data:		$t \geq 1$ days
Description:		Modified Gates
Geology:		2, 3, 4, 5
Hammer Type:		OED
Number of Cases:		61
Lognormal distribution fit Parameters	R^2	0.960
	Median	0.961
	Standard Deviation	0.280
Resistance Factors for $P_f = 0.01$	$Q_{nD}/Q_{nL} = 5.0$	0.587
	$Q_{nD}/Q_{nL} = 4.0$	0.594
	$Q_{nD}/Q_{nL} = 3.0$	0.605
	$Q_{nD}/Q_{nL} = 2.0$	0.620

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
699	43,363.70	43.36	6.00	72.00	191.96	199.9	1.042	0.960
710	102,616.50	102.62	10.00	120.00	323.78	382.5	1.181	0.847
714	104,849.50	104.85	3.00	36.00	315.68	272.9	0.864	1.157
765	26,400.00	26.40	2.50	30.00	118.00	103.3	0.876	1.142
767	26,400.00	26.40	2.42	29.00	51.00	101.7	1.994	0.501
835	38,500.00	38.50	8.33	100.00	104.45	204.4	1.957	0.511
857	56,630.00	56.63	3.92	47.00	157.04	205.9	1.311	0.763
868	94,504.80	94.50	10.00	120.00	412.12	365.0	0.886	1.129
872	100,891.00	100.89	2.83	34.00	111.10	261.4	2.353	0.425
889	137,532.00	137.53	2.00	24.00	404.02	275.7	0.682	1.466
893	91,767.00	91.77	7.00	84.00	447.39	327.3	0.732	1.367
904	33,000.00	33.00	4.33	52.00	156.50	150.7	0.963	1.038

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
906	26,400.00	26.40	1.17	14.00	97.00	67.0	0.691	1.447
922	42,000.00	42.00	1.17	14.00	115.00	97.6	0.849	1.178
924	42,000.00	42.00	1.58	19.00	100.00	115.9	1.159	0.863
963	59,400.00	59.40	2.00	24.00	310.00	164.0	0.529	1.890
1067	63,552.00	63.55	8.00	96.00	345.92	273.8	0.792	1.263
1100	39,732.00	39.73	8.00	96.00	136.95	206.1	1.505	0.665
1109	52,099.40	52.10	6.25	75.00	275.05	226.7	0.824	1.213
1113	116,605.10	116.61	10.00	120.00	417.71	411.0	0.984	1.016
1135	87,600.00	87.60	3.00	36.00	163.04	245.1	1.503	0.665
1136	68,400.00	68.40	4.67	56.00	168.13	244.6	1.455	0.687
1137	78,000.00	78.00	10.00	120.00	231.32	327.0	1.414	0.707
1143	63,552.00	63.55	8.00	96.00	345.92	273.8	0.792	1.263
684	146,730.00	146.73	3.00	36.00	243.55	360.2	1.479	0.676
689	153,446.00	153.45	3.00	36.00	376.28	369.5	0.982	1.018
694	154,322.00	154.32	5.00	60.00	385.07	433.9	1.127	0.888
697	41,269.90	41.27	2.42	29.00	128.05	153.7	1.200	0.833
701	103,124.00	103.12	3.00	36.00	264.84	293.9	1.110	0.901
705	102,616.50	102.62	4.00	48.00	419.99	322.1	0.767	1.304
708	110,939.50	110.94	7.00	84.00	380.79	395.6	1.039	0.963
712	104,342.00	104.34	3.00	36.00	301.70	295.9	0.981	1.020
716	106,067.50	106.07	6.42	77.00	522.77	376.7	0.721	1.388
731	74,410.00	74.41	3.17	38.00	171.36	246.8	1.440	0.694
807	66,000.00	66.00	7.67	92.00	292.97	301.0	1.027	0.973

Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
855	52,500.00	52.50	1.96	23.50	138.27	164.6	1.190	0.840
861	46,869.60	46.87	3.00	36.00	141.52	181.8	1.285	0.778
864	63,588.20	63.59	9.00	108.00	434.83	307.3	0.707	1.415
866	91,057.20	91.06	5.00	60.00	384.44	321.7	0.837	1.195
870	106,067.50	106.07	2.00	24.00	179.35	257.2	1.434	0.697
877	131,838.00	131.84	3.83	46.00	321.62	366.9	1.141	0.877
887	170,236.00	170.24	3.00	36.00	405.16	391.9	0.967	1.034
891	93,490.80	93.49	7.00	84.00	407.44	359.0	0.881	1.135
1046	42,500.00	42.50	4.67	56.00	163.04	199.5	1.223	0.817
1066	62,890.00	62.89	6.00	72.00	265.81	273.3	1.028	0.973
1107	49,848.60	49.85	6.67	80.00	244.12	245.2	1.005	0.995
1111	107,582.90	107.58	4.17	50.00	309.00	335.2	1.085	0.922
1115	136,700.00	136.70	7.50	90.00	640.95	452.6	0.706	1.416
1119	83,449.40	83.45	2.00	24.00	265.29	222.5	0.839	1.192
1134	74,400.00	74.40	3.17	38.00	178.33	246.7	1.384	0.723
1139	50,113.40	50.11	5.00	60.00	219.13	225.7	1.030	0.971
1142	62,890.00	62.89	6.00	72.00	265.81	273.3	1.028	0.973
1145	60,705.40	60.71	10.00	120.00	273.62	307.3	1.123	0.891
1147	60,705.40	60.71	10.00	120.00	273.62	307.3	1.123	0.891
1158	69,966.00	69.97	3.00	36.00	224.18	233.3	1.041	0.961
1160	30,420.00	30.42	3.00	36.00	126.87	136.8	1.078	0.928
1168	81,120.00	81.12	10.00	120.00	296.53	363.0	1.224	0.817
1170	40,560.00	40.56	8.33	100.00	231.83	230.5	0.994	1.006

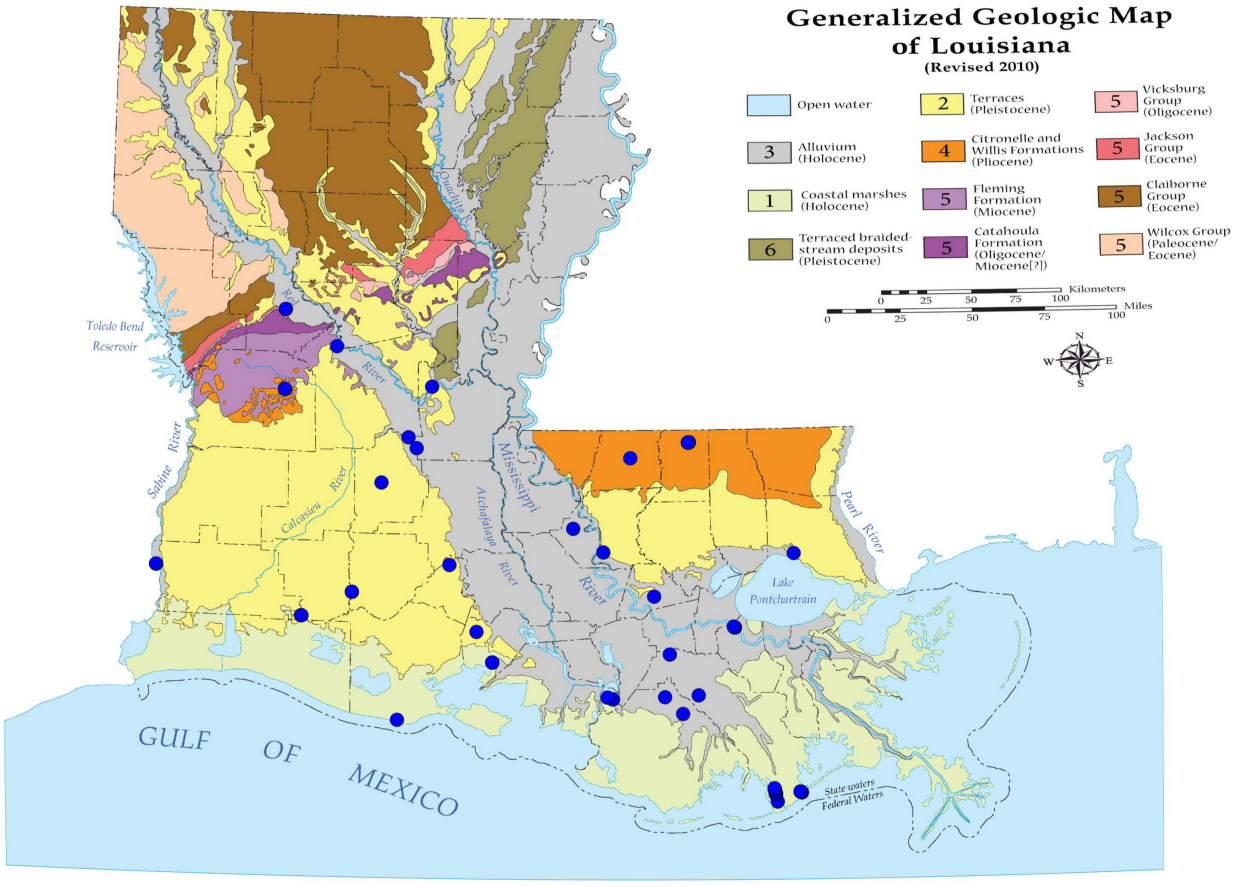
Measured						Modified Gates		
Case #	EBOR (ft-lbs)	EBOR (ft-kip)	NBOR (blows/in)	NBOR (blows/ft)	Ultimate Capacity (tons)	BOR Mod Gates (tons)	BOR Mod Gates / Ultimate Capacity	Ultimate Capacity / BOR Mod Gates
1175	75,441.60	75.44	4.33	52.00	240.64	275.9	1.147	0.872
1176	78,990.60	78.99	2.83	34.00	256.39	245.9	0.959	1.043
1179	53,291.00	53.29	9.08	109.00	330.63	277.7	0.840	1.190

Summary of BOR Pile Driving Formulas and Resistance Factors

BOR Pile Driving Formulas	BOR Modified Gates Pile Driving Formula (DF1+BORSCA)	BOR Modified Gates Pile Driving Formula (DF1+BORSCB)
Prediction	Ultimate Pile Capacity	Ultimate Pile Capacity
BOR Data	t ≥ 1 day	t ≥ 1 day
Setup Category	A	B
Geology	1	1, 2, 3, 4, 5
Hammer Type	OED	OED
Equation No.	49	50
Equation	$R_u = 0.5\left[\left(1.65\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$	$R_u = 0.5\left[\left(1.40\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$
n	304	61
$\phi_{QnD/QnL=5.0} - \phi_{QnD/QnL=2.0}$	0.623 – 0.657	0.587 – 0.620
$\phi_{QnD/QnL=3.0}$	0.642	0.605

Summary Statistics for BOR Pile Driving Formlas

BOR Pile Driving Formulas		BOR Modified Gates Pile Driving Formula (DF1+BORSCA)	BOR Modified Gates Pile Driving Formula (DF1+BORSCB)
Equation No.		49	50
Gates Pile Driving Formula Coefficients	C1 =	1.65	1.40
	C2 =	10	10
	C3 =	100	100
Arithmetic Mean	Mean R_m/R_p	1.110	0.997
	Standard Deviation	0.396	0.261
	COV	0.356	0.262
Best Fit Linear Equation	Best Fit R_{fit} / R_m	0.929	0.924
	R^2	0.007	0.405
	Correlation	0.086	0.636
Difference between Predicted and Measured Capacities	Mean underprediction (tons)	58.6	52.36
	Mean overprediction (tons)	55.89	49.56

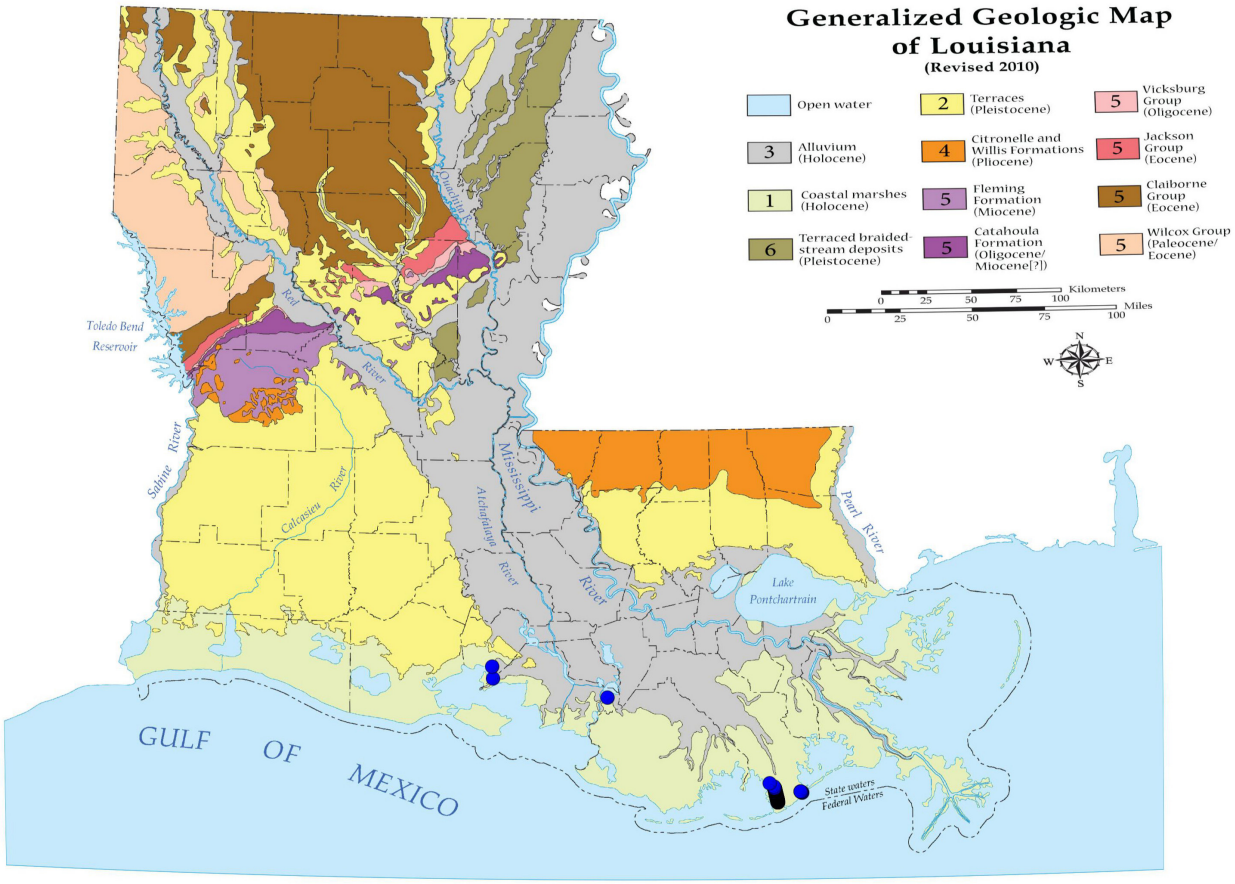


EOID LADOTD Modified Gates Prediction of Long Term Nominal Pile Capacity

Geology 1, 2, 3, 4, 5

OED & ECH

(DFEOID-MOD)

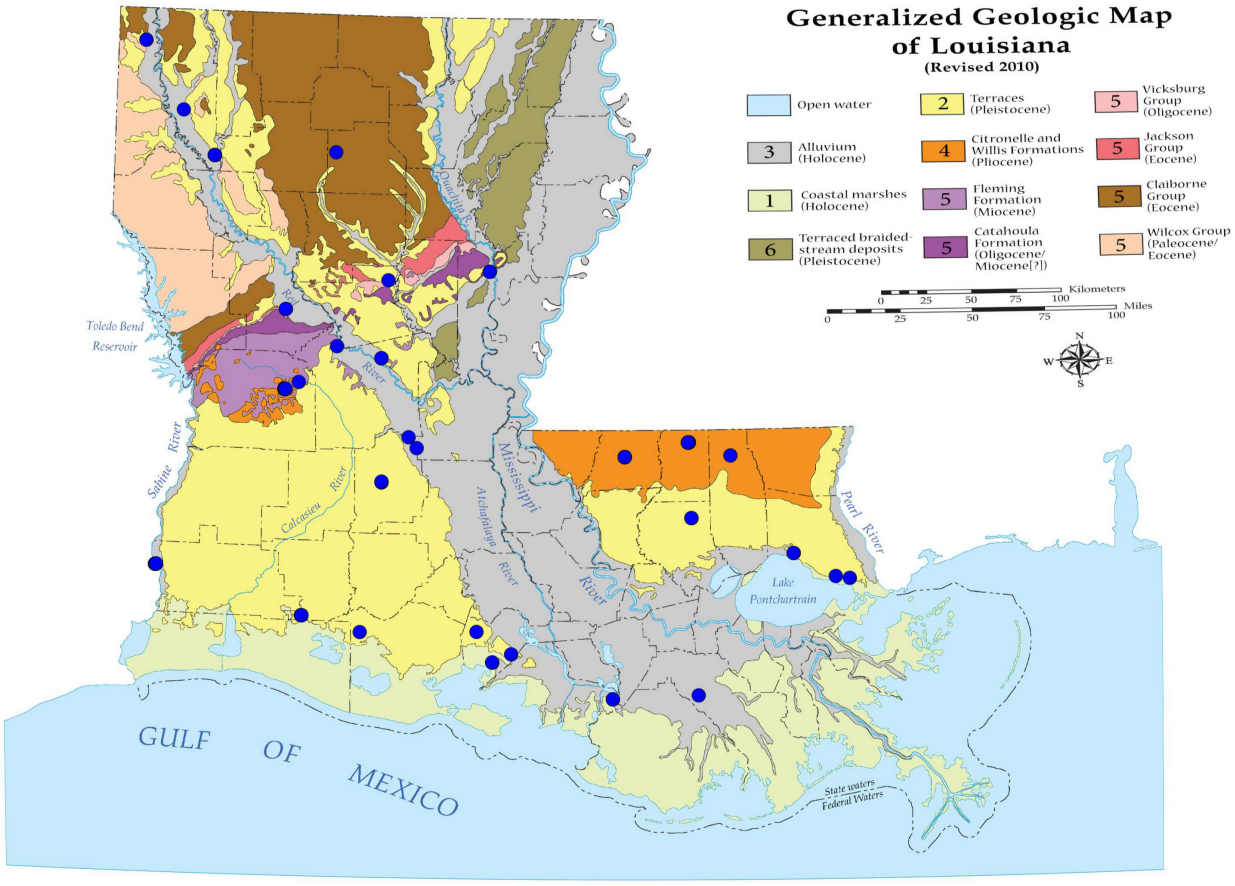


BOR t ≥ 1 Day LADOTD Modified Gates Prediction of Restrike Nominal Capacity

Geology 1

OED

(DF1+BORSCA)



BOR t ≥ 1 Day Modified Gates Prediction of Restrike Nominal Capacity

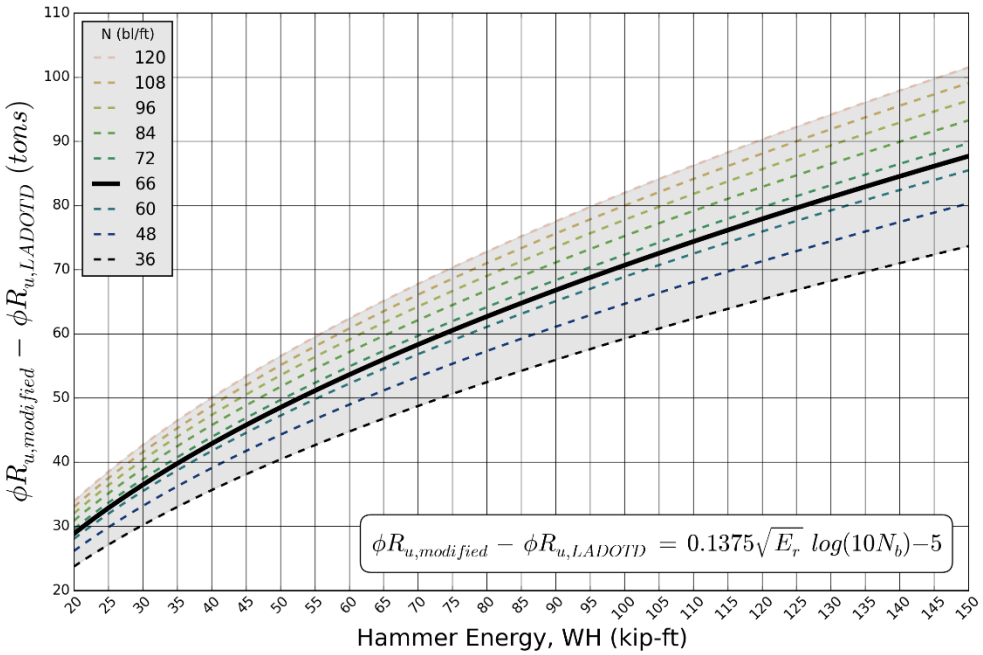
Geology 2, 3, 4, 5

OED

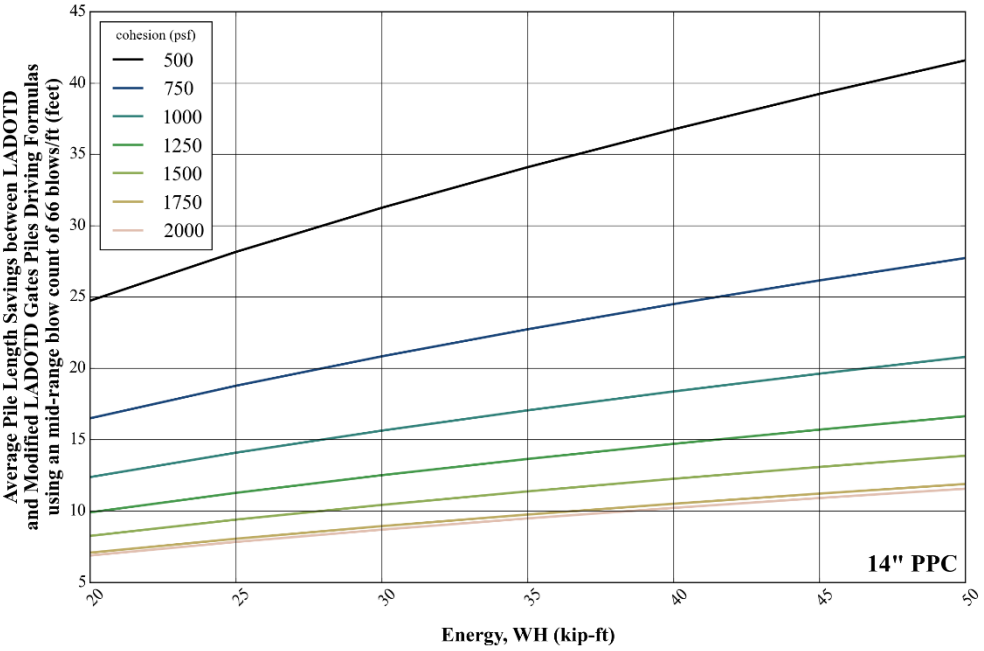
(DF1+BORSCB)

APPENDIX I

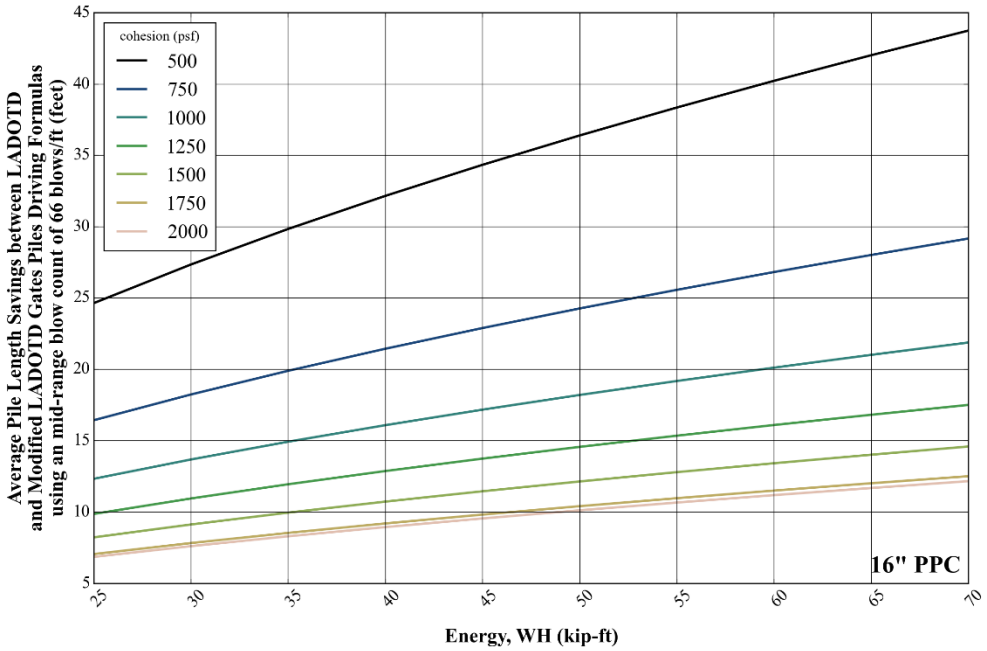
BENEFIT COST ASSESSMENT ANALYSIS



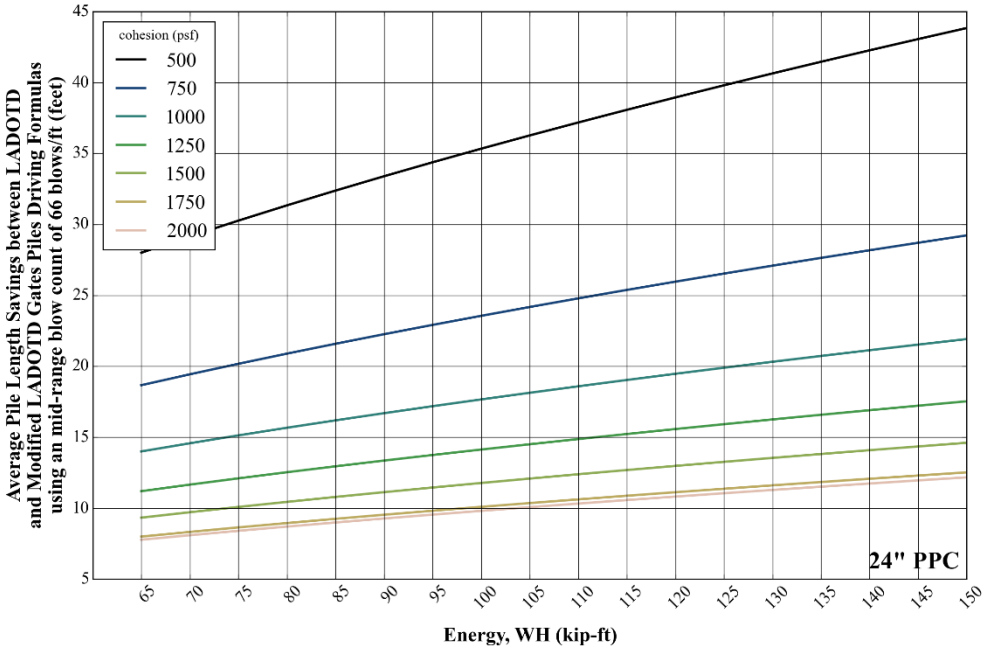
Energy vs. Capacity Difference



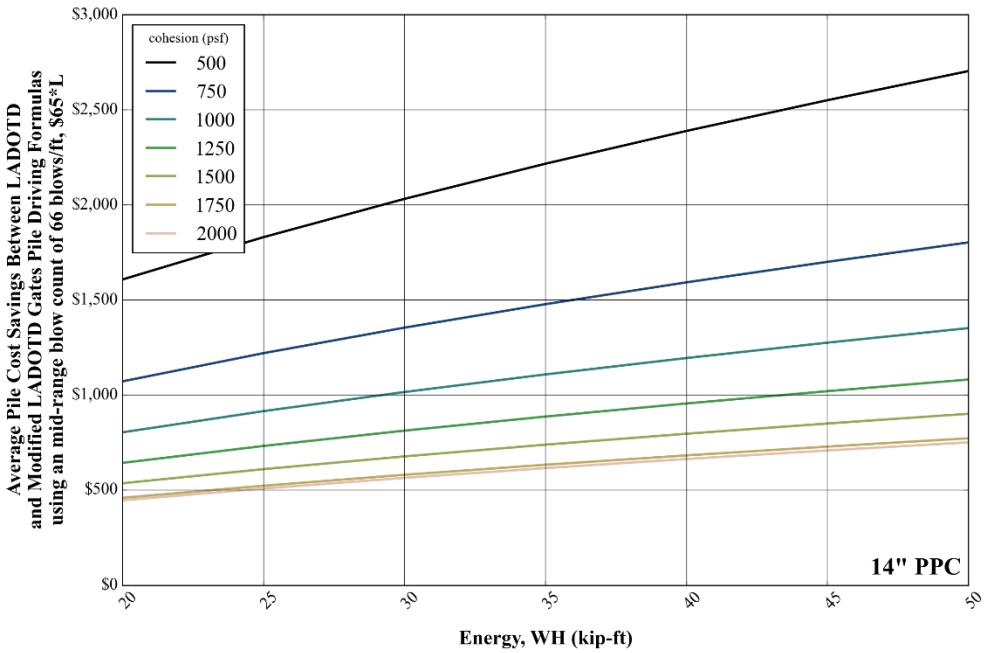
14" PPC Energy vs Average Pile Length Decrease



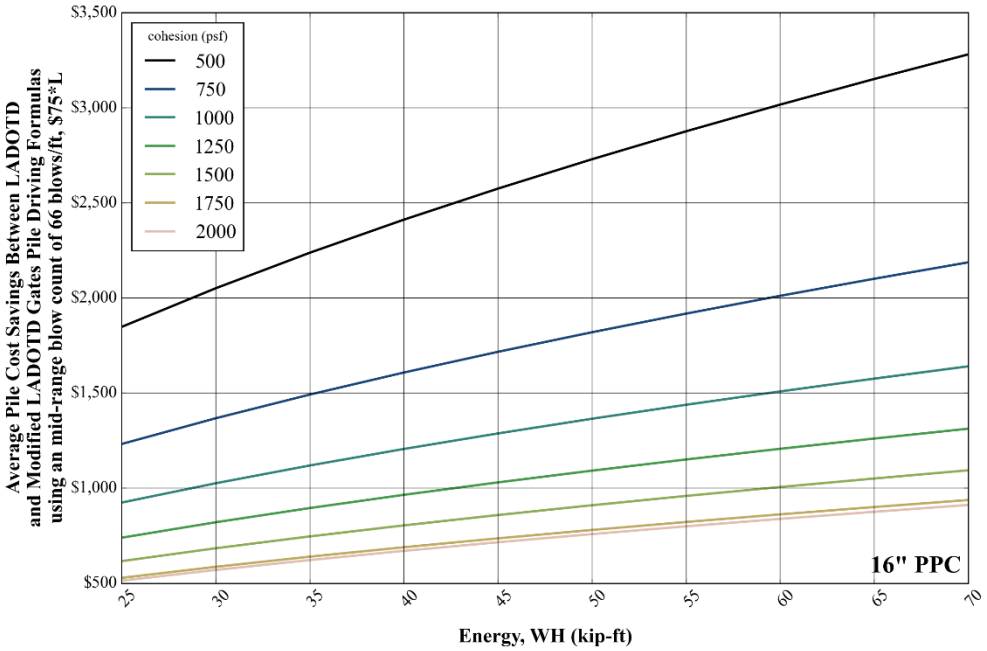
16" PPC Energy vs Average Pile Length Decrease



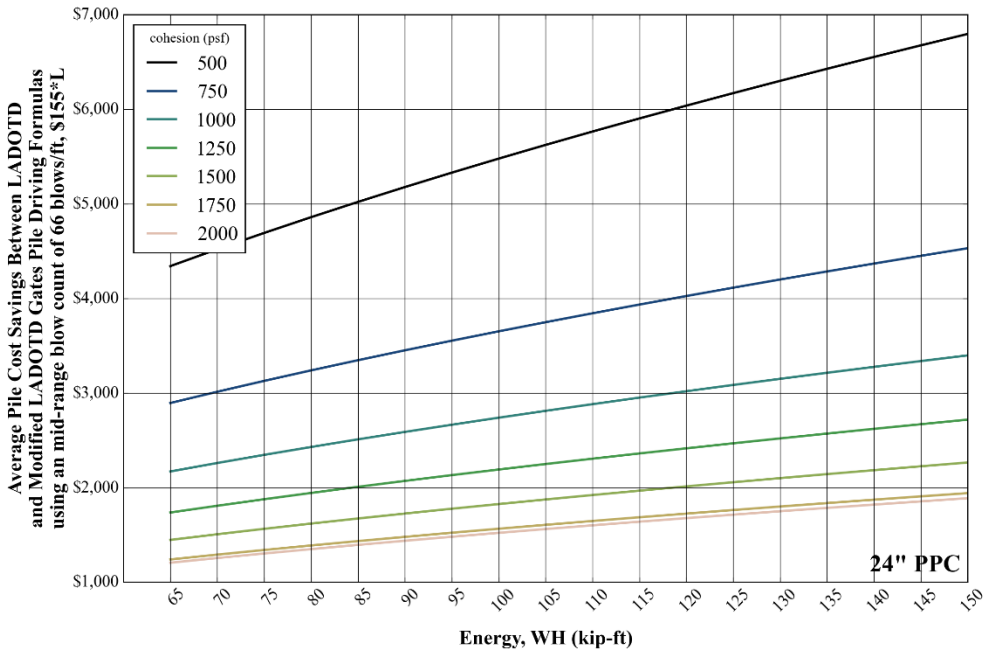
24" PPC Energy vs Average Pile Length Decrease



14" PPC Energy vs Average Pile Cost Savings



16" PPC Energy vs Average Pile Cost Savings



24" PPC Energy vs Average Pile Cost Savings

Potential Pile Length and Cost Savings per PPC Pile

Pile Type	Energy, WH (ft-kips)	Soil Consistency /Cohesion	Pile Length Savings per Pile (feet)	Pile Unit Rate ($/linear foot)	Cost Savings per Pile ($)
14" PPC	20-50	Soft / 750 psf	16.5 - 27.7	$65	$1,073 - $1,801
		Firm / 1000 psf	12.4 - 20.8		$806 - $1,352
		Stiff / 2000 psf	6.9 - 11.6		$449 - $754
16" PPC	25-70	Soft / 750 psf	16.4 - 29.2	$75	$1,230 - $2,190
		Firm / 1000 psf	12.3 - 21.9		$923 - $1,643
		Stiff / 2000 psf	6.8 - 12.2		$510 - $915
24" PPC	65-150	Soft / 750 psf	18.7 - 29.2	$155	$2,899 - $4,526
		Firm / 1000 psf	14.0 - 21.9		$2,170 - $3,395
		Stiff / 2000 psf	7.8 - 12.2		$1,209 - $1,891

LA DOTD Estimated Bridge Quantities for State FY Year 2015 -2016

Project No.	Project Name	Parish	Piles 14" PPC (linear feet)	No. 14" PPC Piles	Piles 16" PPC (linear feet)	No. 16" PPC Piles	Piles 24" PPC (linear feet)	No. 24" PPC Piles
H.010024	SMITHVILLE ROAD / BRALY CREEK	Webster			752	15.0		
H.010032	SHUTEYE ROAD & MARTHAVILLE ROAD	Sabine			2656	40.0		
H.010033	PIONEER ROAD & LAKESIDE LOOP BRIDGES	Sabine						
H.010034	JOE W ROAD & GALLOW ROAD BRIDGES	St. Landry	1040	20			1040	20
H.010035	ANDREPONT RD & BAYOU GERMOND RD BRIDGES	St. Landry	1260	20			1040	20
H.010040	BUD ROAD & BONNE IDEE ROAD BRIDGES	Morehouse						
H.010054	PARK ROAD BRIDGES	Allen						
H.010055	CHERRY WITCHIE & N. CARPENTER RD BRIDGES	Allen						
H.010061	N. RIVER ROAD AND DURBIN ROAD BRIDGES	Tangipahoa	1168	20				
H.010062	WEINBERGER RD & JERUSALEM CH RD BRIDGES	Tangipahoa	2448	40				
H.010068	BUSH ROAD AND LISHMAN ROAD BRIDGES	Franklin						
H.010150	S. AVENUE F & NAPP STREET BRIDGES	Acadia					1440	20
H.010559	BAYOU MERCIER ROAD / BERARD CANAL BAYOU	St. Martin						
H.010561	CASTOR CK RD/BEAR CK RD/DANIEL ST BRDGS	Bienville						
H.010592	WILLET LOOP RD & ROCK HILL RD BRIDGES	Grant						
H.010659	RAFE-MEYER ROAD BRIDGES	East Baton Rouge			2464	40.0		
	BRIDGE MATERIAL TOTALS =		**5,916**	**100**	**5,872**	**95**	**3,520**	**60**

LA DOTD State FY 15 – 16 Estimated Cost Savings

Project No.	Soil Site Type	No. 14" PPC Piles	14" PPC Cost Savings Range ($)	14" PPC Percent Savings (%)	No. 16" PPC Piles	16" PPC Cost Savings Range ($)	16" PPC Percent Savings (%)	No. 24" PPC Piles	24" PPC Cost Savings Range ($)	24" PPC Percent Savings (%)
H.010024	stiff		-		15	$13,847 - $24,654	25% to 44%		-	
H.010032	stiff		-		40	$36,900 - $65,700	19% to 33%		-	
H.010033	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010034	stiff	20	$16,120 - $27,040	24% to 40%		-		20	$43,400 - $67,890	27% to 42%
H.010035	stiff	20	$16,120 - $27,040	20% to 33%		-		20	$43,400 - $67,890	27% to 42%
H.010040	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010054	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010055	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010061	stiff	20	$16,120 - $27,040	21% to 36%		-			-	
H.010062	stiff	40	$32,240 - $54,080	20% to 34%		-			-	
H.010068	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010150	stiff		-			-		20	$43,400 - $67,890	19% to 30%
H.010559	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010561	stiff	20[1]	$24,180 - $40,560	36% to 60%		-			-	
H.010592	stiff	20[1]	$16,120 - $27,040	24% to 40%		-			-	
H.010659	stiff		-		40	$36,900 - $65,700	20% to 36%		-	
TOTALS		**270**	**$217,620 - $365,040**	**21% to 40%**	**95**	**$87,647 - $156,054**	**21% to 37%**	**60**	**$130,200 - $203,670**	**24% to 38%**

[1] Assumed 20 14" PPC 52’ piles per project

Implementation Costs - Expenses

RT = Round Trip

District	District Engineer	RT Miles	RT Time (hrs)	Mileage Cost	Overnight?	Lodging	Per Diem
2	Chris Morvant District Engineer Administrator 1440 US Hwy 90 Bridge City, LA 70094	158	2.57	$ 90.85	No		
3	William J. Oliver, Jr District Engineer Administrator 428 Hugh Wallis Rd Lafayette, LA 70508	117.2	1.87	$ 67.39	No		
4	David North District Engineer Administrator 3339 Industrial Drive Bossier City, LA 71112	504	7.03	$ 289.80	Yes	$ 83.00	$ 51.00
5	Marshall Hill District Engineer Administrator 8010 Desiard Monroe, LA 71203	366	6	$ 210.45	Yes	$ 83.00	$ 51.00
7	Todd Landry District Engineer Administrator 5827 Hwy 90 East Lake Charles, LA 70615	252	3.6	$ 144.90	No		
8	Murphy Ledoux District Engineer Administrator 3300 MacArthur Dr Alexandria, LA 71301	250	3.7	$ 143.75	No		
58	Kenneth Mason District Engineer Administrator 6217 Hwy 15 Chase, LA 71324	274	4.47	$ 157.55	No		
61	Chad Vosburg District Engineer Administrator 8100 Airline Hwy Baton Rouge, LA 70815	18.8	0.43	$ 10.81	No		
62	Allison Schilling District Engineer Administrator 685 N Morrison Blvd Hammond, LA 70401	94.8	1.6	$ 54.51	No		

Total miles:	2034.8
2015 mileage rate:	$ 0.575
Total Mileage Cost:	**$ 1,170.01**
Total Lodging:	**$ 166.00**
Total Per Diem:	**$ 102.00**
Grand total:	**$ 1,438.01**

APPENDIX J

RECOMMENDED EQUATION REFERENCE SHEET

Recommended Pile Driving Formulas

EOID

EOID pile driving formula for determination of long-term ultimate pile bearing capacity

EOID Modified Gates Pile Driving Formula (DFEOID-MOD): Strength I limit state LRFD resistance factor (φ): 0.50.

$$R_u = 0.5\left[\left(1.95\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$$

R_u = long-term ultimate pile bearing capacity (tons)

E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds)

N_b = EOID number of hammer blows/inch

Pile installation criteria:

- Pile Type: Precast Prestressed Concrete (PPC) pile
- Pile Size: 14 PPC, 16 PPC, and 24" PPC
- Geology: Statewide — Geology 1, 2, 3, 4, 5, and 6
- Hammer Type: Open end diesel (OED) and External Combustion Hammer (ECH)
- Maximum Hammer Energy: 190 ft-kips
- Maximum EOID Long-Term Ultimate Pile Capacity: 400 tons
- Blow Counts obtained at EOID
- EOID Blow Counts (N_b): 24 blows/ft ≤ N_b ≤ 120 blows/ft

BOR

BOR pile driving formula for determination of ultimate pile bearing capacity at the time of pile restrike (BOR performed after EOID) is dependent on the geological location.

BOR obtained at time t: t ≥ 1 day and Setup Category A:

BOR Modified Gates pile driving formula (DF1+BORSCA) Strength I limit state LRFD resistance factor (φ): 0.60:

$$R_u = 0.5\left[\left(1.65\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$$

BOR obtained at time t: t ≥ 1 day and Setup Category B:

For piles located within setup category B (Geology 2, 3, 4, 5, and 6)—BOR Modified Gates pile driving formula (DF1+BORSCB) Strength I limit state LRFD resistance factor (φ): 0.60:

$$R_u = 0.5\left[\left(1.40\sqrt{E_r}\ log(10\ N_b)\right) - 100\right]$$

R_u = ultimate pile bearing capacity (tons)

E_r = manufacturer's rated energy at the field observed ram stroke (foot-pounds)

N_b = BOR number of hammer blows/inch

Pile restrike criteria:

- Pile Type: Precast Prestressed Concrete (PPC) pile
- Pile Size: 14 PPC, 16 PPC, and 24" PPC
- Geology: 1 for Setup Category A — Use BOR pile driving formula DF1+BORSCA
- Geology 2, 3, 4, 5, and 6 for Setup Category B — Use BOR pile driving formula DF1+BORSCB
- Hammer Type: Open end diesel (OED). External Combustion Hammer (ECH) can only be used with these BOR pile driving formulas with approval of LADOTD.
- Maximum Hammer Energy: 190 ft-kips
- Maximum BOR Ultimate Pile Capacity: 400 tons
- Blow Counts obtained at BOR at t ≥ 1 day after EOID
- BOR Blow Counts (N_b): 24 blows/ft ≤ N_b ≤ 120 blows/ft

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RECOMMENDED EQUATION REFERENCE SHEET

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