EXHIBIT A-10: GENERAL NOTES

CPT GENERAL NOTES

DESCRIPTION OF MEASUREMENTS AND CALIBRATIONS

To be reported per ASTM D5778:

Uncorrected Tip Resistance, q_c
Measured force acting on the cone divided by the cone's projected area

Corrected Tip Resistance, q_t
Cone resistance corrected for porewater and net area ratio effects
$q_t = q_c + U2(1 - a)$
Where a is the net area ratio, a lab calibration of the cone typically between 0.70 and 0.85

Pore Pressure, U1/U2
Pore pressure generated during penetration
U1 - sensor on the face of the cone
U2 - sensor on the shoulder (more common)

Sleeve Friction, fs
Frictional force acting on the sleeve divided by its surface area

Normalized Friction Ratio, FR
The ratio as a percentage of fs to q_t, accounting for overburden pressure

To be reported per ASTM D7400, if collected:

Shear Wave Velocity, Vs
Measured in a Seismic CPT and provides direct measure of soil stiffness

DESCRIPTION OF GEOTECHNICAL CORRELATIONS

Normalized Tip Resistance, Q_t
$Q_t = (q_t - \sigma_{v0})/\sigma'_{v0}$

Over Consolidation Ratio, OCR
$OCR (1) = 0.25(Q_t)^{1.25}$
$OCR (2) = 0.33(Q_t)$

Undrained Shear Strength, Su
$Su = Q_t \times \sigma'_{v0}/N_{kt}$
N_{kt} is a geographical factor (shown on Su plot)

Sensitivy, St
$St = (q_t - \sigma_{v0}/N_{kt}) \times (1/fs)$

Effective Friction Angle, ϕ'
$\phi'(1) = \tan^{-1}(0.373[\log(q_t/\sigma'_{v0}) + 0.29])$
$\phi'(2) = 17.6 + 11[\log(Q_t)]$

Unit Weight
$UW = (0.27[\log(FR)]+0.36[\log(q_t/atm)]+1.236) \times UW_{water}$
σ_{v0} is taken as the incremental sum of the unit weights

Small Strain Shear Modulus, G_0
$G_0 (1) = \rho Vs^2$
$G_0 (2) = 0.015 \times 10^{(0.55Ic + 1.68)}(q_t - \sigma_{v0})$

Soil Behavior Type Index, Ic
$Ic = [(3.47 - \log(Q_t))^2 + (\log(FR) + 1.22)^2]^{0.5}$

SPT N_{60}
$N_{60} = (q_t/atm) / 10^{(1.1268 - 0.2817Ic)}$

Elastic Modulus, Es (assumes $q/q_{ultimate} \sim 0.3$, i.e. FS = 3)
$Es (1) = 2.6\Psi G_0$ where $\Psi = 0.56 - 0.33\log Q_{t,clean\ sand}$
$Es (2) = G_0$
$Es (3) = 0.015 \times 10^{(0.55Ic + 1.68)}(q_t - \sigma_{v0})$
$Es (4) = 2.5q_t$

Constrained Modulus, M
$M = \alpha_M(q_t - \sigma_{v0})$
For Ic > 2.2 (fine-grained soils)
$\alpha_M = Q_t$ with maximum of 14
For Ic < 2.2 (coarse-grained soils)
$\alpha_M = 0.0188 \times 10^{(0.55Ic + 1.68)}$

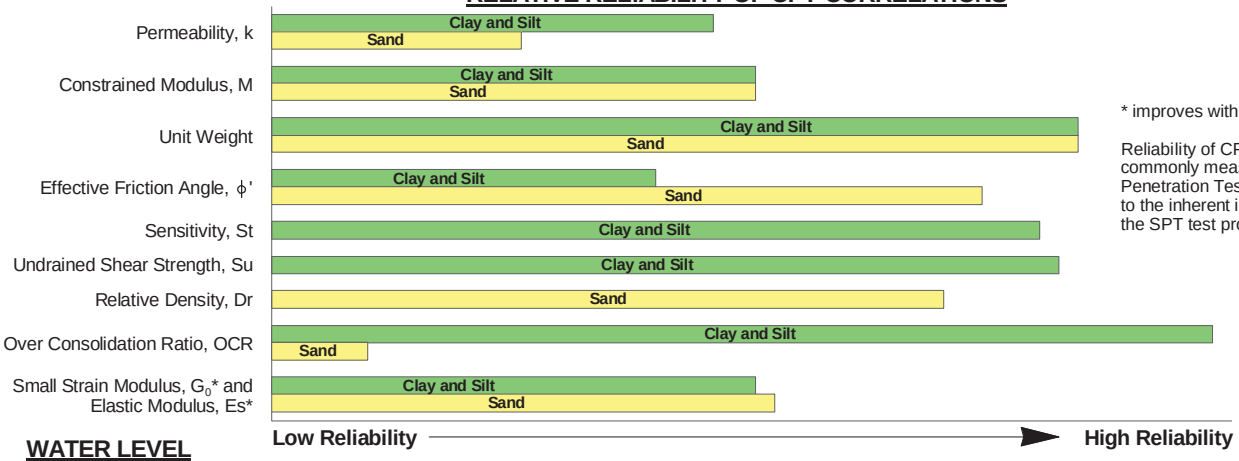
Hydraulic Conductivity, k
For $1.0 < Ic < 3.27$ $k = 10^{(0.952 - 3.04Ic)}$
For $3.27 < Ic < 4.0$ $k = 10^{(-4.52 - 1.37Ic)}$

Relative Density, Dr
$Dr = (Q_t / 350)^{0.5} \times 100$

REPORTED PARAMETERS

CPT logs as provided, at a minimum, report the data as required by ASTM D5778 and ASTM D7400 (if applicable). This minimum data include tip resistance, sleeve resistance, and porewater pressure. Other correlated parameters may also be provided. These other correlated parameters are interpretations of the measured data based upon published and reliable references, but they do not necessarily represent the actual values that would be derived from direct testing to determine the various parameters. The following chart illustrates estimates of reliability associated with correlated parameters based upon the literature referenced below.

RELATIVE RELIABILITY OF CPT CORRELATIONS



* improves with seismic Vs measurements

Reliability of CPT-predicted N_{60} values as commonly measured by the Standard Penetration Test (SPT) is not provided due to the inherent inaccuracy associated with the SPT test procedure.

WATER LEVEL

The groundwater level at the CPT location is used to normalize the measurements for vertical overburden pressures and as a result influences the normalized soil behavior type classification and correlated soil parameters. The water level may either be "measured" or "estimated:"

Measured - Depth to water directly measured in the field

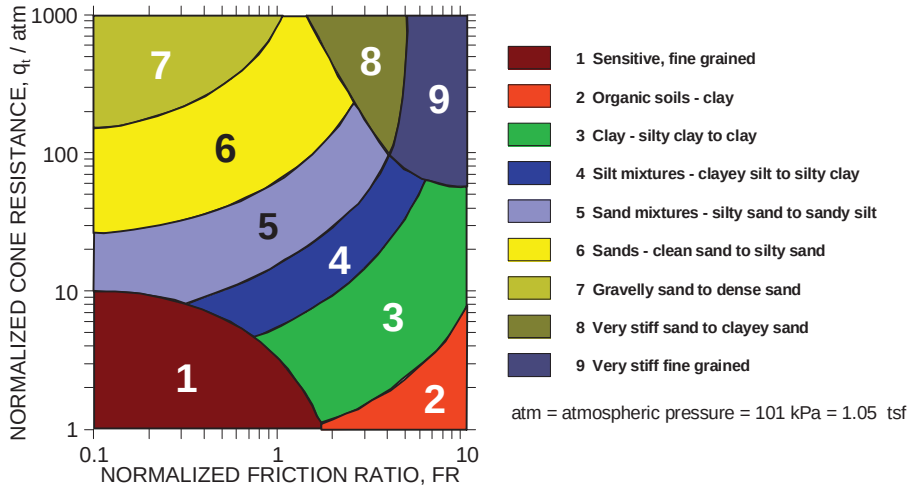
Estimated - Depth to water interpolated by the practitioner using pore pressure measurements in coarse grained soils and known site conditions

While groundwater levels displayed as "measured" more accurately represent site conditions at the time of testing than those "estimated," in either case the groundwater should be further defined prior to construction as groundwater level variations will occur over time.

CONE PENETRATION SOIL BEHAVIOR TYPE

The estimated stratigraphic profiles included in the CPT logs are based on relationships between corrected tip resistance (q_t), friction resistance (fs), and porewater pressure (U2). The normalized friction ratio (FR) is used to classify the soil behavior type.

Typically, silts and clays have high FR values and generate large excess penetration porewater pressures; sands have lower FRs and do not generate excess penetration porewater pressures. Negative pore pressure measurements are indicative of fissured fine-grained material. The adjacent graph (Robertson et al.) presents the soil behavior type correlation used for the logs. This normalized SBT chart, generally considered the most reliable, does not use pore pressure to determine SBT due to its lack of repeatability in onshore CPTs.



atm = atmospheric pressure = 101 kPa = 1.05 tsf

REFERENCES

Kulhawy, F.H., Mayne, P.W., (1997). "Manual on Estimating Soil Properties for Foundation Design," Electric Power Research Institute, Palo Alto, CA.
Mayne, P.W., (2013). "Geotechnical Site Exploration in the Year 2013," Georgia Institue of Technology, Atlanta, GA.
Robertson, P.K., Cabal, K.L. (2012). "Guide to Cone Penetration Testing for Geotechnical Engineering," Signal Hill, CA.
Schmertmann, J.H., (1970). "Static Cone to Compute Static Settlement over Sand," *Journal of the Soil Mechanics and Foundations Division*, 96(SM3), 1011-1043.

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GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING

- Auger
- Split Spoon
- Shelby Tube
- Macro Core
- Ring Sampler
- Rock Core
- Grab Sample
- No Recovery

WATER LEVEL

- Water Initially Encountered
- Water Level After a Specified Period of Time
- Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

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Exhibit C-2

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.

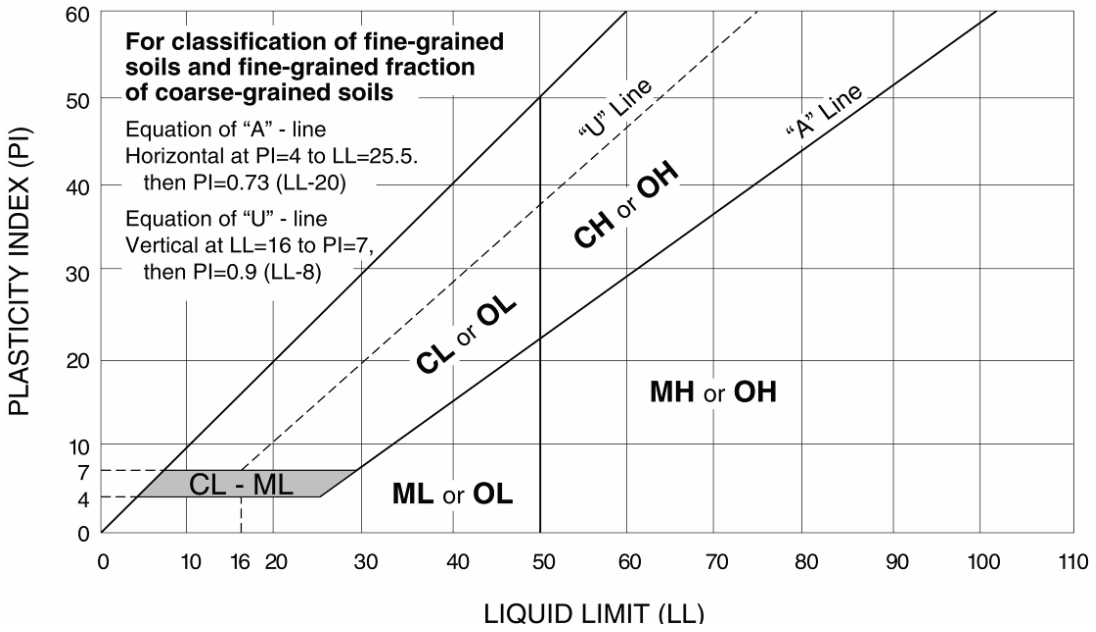

Exhibit A-10

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EXHIBIT A-11: SPT RIG CALIBRATION

DRILL RIG SPT HAMMER ENERGY CALIBRATION REPORT

Drill Rig Model CME-55 SN 359485
Terracon Drill Rig No. 727
Columbia, SC
July 09, 2015

Project No. 73155070A

Prepared for:
Terracon Consultants, Inc.
Columbia, SC

Prepared by:
Terracon Consultants, Inc.
North Charleston, SC

Offices Nationwide Established in 1965
Employee-Owned terracon.com
Terracon
Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

July 09, 2015

Terracon Consultants Inc.
521 Clemson Road
Columbia, SC 29229

Attn: Mr. Phillip Morris
P: (803) 212-0062
M: (803) 518-3788
E: Phillip.Morrison@terracon.com

Re: SPT Rig Calibration Report
Columbia, SC
Terracon Project Number: 73155070A

Mr. Morrison:

The Charleston office of Terracon Consultants, Inc. (Terracon) has completed the SPT rig calibration for the above referenced rig. This report provides Energy Transfer Ratio (ETR) for the SPT hammer found on CME-55 (Serial Number 359485).

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Yulian A. Kebede,
Project Manager
Geotechnical Services

Bryan T. Shiver, P.E.
Department Manager
Geotechnical Services
SC Registration No. 27816

1.0 PROJECT INFORMATION

ITEM	DESCRIPTION
Drill Rig Identification	CME-55, SN: 359485 (see photograph on cover page)
Drill Rig Owner	Terracon
Drill Rig Operator	Craig Fredrychowsky
Testing Date	July 2, 2015
Testing Location	Columbia, SC
Terracon Project Number	73155070A
Boring Identification	Test Hole (1)
Energy Measurement Depths	23.5 ft., 28.5 ft., 33.5 ft.
Hammer Type	Automatic
Boring Method	Mud Rotary
Drill Rods	■AWJ ■1¾" outside diameter ■3/16" wall thickness
SPT Calibration Testing Equipment	■2 foot AWJ rod instrumented w/ 2 strain gauges and 2 accelerometers ■Model PAX Pile Driving Analyzer™ (PDA)
SPT Calibration Personnel	Kenneth Zur

2.0 TEST RESULTS

Table 1:
SPT Hammer Energy Calibration Testing Summary.

Boring	Start Depth[1] (ft)	Rod Length[2] (ft)	Rod Sections[3]			Measured Blow Counts (blows/6 inches)				SPT N_m (bpf)	Soil Type[4]
			2 ft	5 ft	10 ft	1st Inc.	2nd Inc.	3rd Inc.	4th Inc.		
Test Hole (1)	23.5	28.63	0	5	0	14	17	21	-	38	Sand
	28.5	33.65	0	6	0	6	12	12	-	24	Sand
	33.5	38.63	0	7	0	6	10	12	-	22	Sand

1. Depth from existing ground surface to bottom of drill rods at the beginning of SPT
2. Total rod length measured from instrumentation to bottom of sampler
3. Two foot section is instrumented and is located at top of drill rods
4. Soil type provided by Terracon personnel.

Table 2:
Energy Measurement and Analysis Summary.

Boring	Start Depth[1] (ft)	SPT N_m (bpf)	No. of Blows[2]	EFV (kip-ft)[3]				ETR (%)[3]	
				Max.	Min.	Ave.	Std. Dev.	Ave.	Std. Dev.
Test Hole (1)	23.5	38	50	0.29	0.27	0.28	0.01	81.3	1.93
	28.5	24	20	0.30	0.27	0.30	0.01	84.6	2.35
	33.5	22	6	0.29	0.26	0.28	0.01	80.0	3.13
		Average:	25	0.29	0.27	0.29	0.01	81.9	2.47

1. Boring ID and depth from existing ground surface to bottom of drill rods at the beginning of SPT
2. Number of blows used in energy calibration analysis; limited to measurements recorded during the second and third 6-inch sampling intervals at each depth or during the first increment if refusal were encountered
3. EFV = Measured Transferred Energy, ETR = Energy Transfer Ratio.

Table 3:
Hammer Blow Rate Summary.

Boring	Start Depth[1] (ft)	SPT N_m (bpf)	No. of Blows[2]	BPM[3]			
				Max.	Min.	Ave.	Std. Dev.
Test Hole (1)	23.5	38	50	54.50	2.00	52.40	7.28
	28.5	24	20	54.50	1.90	51.46	11.67
	33.5	22	6	52.20	46.40	50.57	2.34
		Average:	25	53.73	16.77	51.48	7.10

1. Boring ID and depth from existing ground surface to bottom of drill rods at the beginning of SPT.
2. Number of blows used in energy calibration analysis. Limited to measurements recorded during the second and third 6-inch sampling intervals at each depth or during the 1st increment if refusal conditions were encountered.
3. BPM = Blows per minute

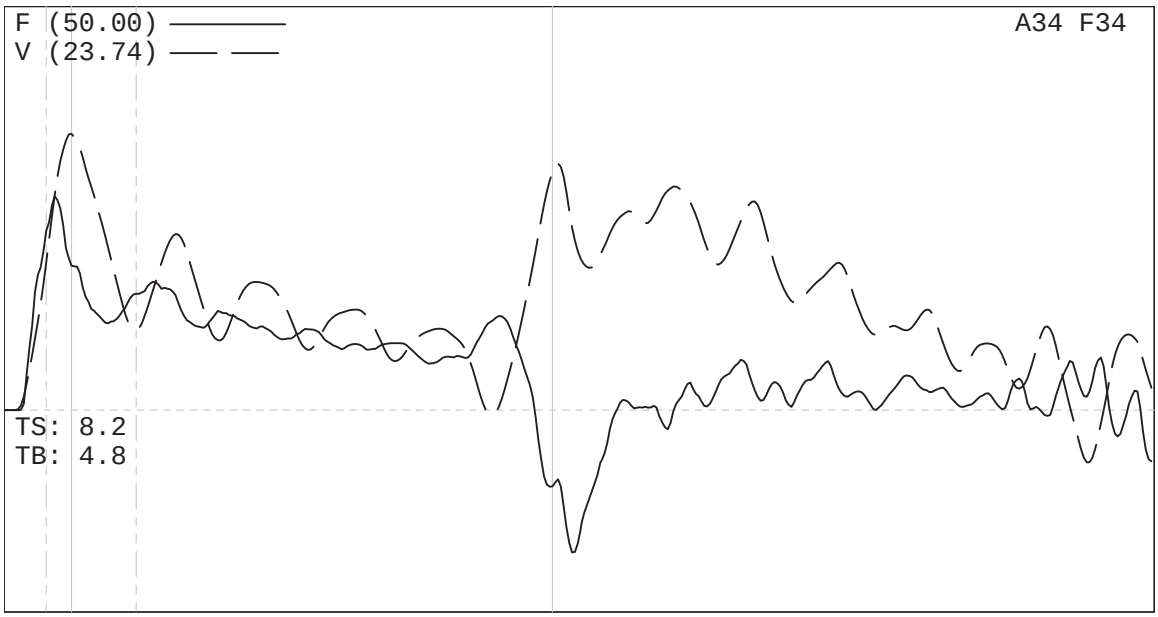
3.0 CONCLUSIONS

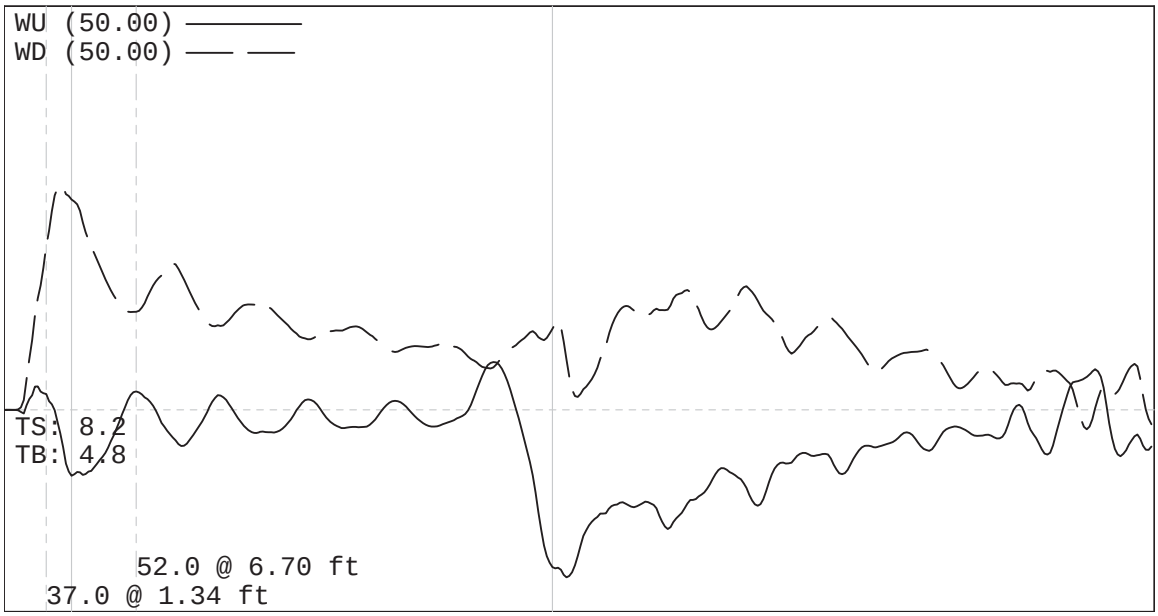
3.1 Energy Transfer Ratio (ETR) and Hammer Efficiency Correction (CE)

Based on our testing and subsequent analysis, CME-55 (Serial Number 359485) has an **ETR** of **81.9% ± 2.47%.** Based on this ETR, the hammer efficiency correction (**C_E**) is **1.37**.

Exhibit A-1 Representative Blow

CME55 727 B1 23.5 TO 25_2





Project Information

PROJECT: CME55 727
PILE NAME: B1 23.5 TO 25_2
DESCR: cme 55 auto
OPERATOR: KJZ
FILE: B1 23.5 TO 25_2.w01
7/2/2015 4:10:26 PM
Blow Number 2

Pile Properties

LE	28.63	ft
AR	1.18	in^2
EM	30000	ksi
SP	0.492	k/ft3
WS	16807.9	f/s
EA/C	2.1	ksec/ft
2L/C	3.42	ms
JC	[]	

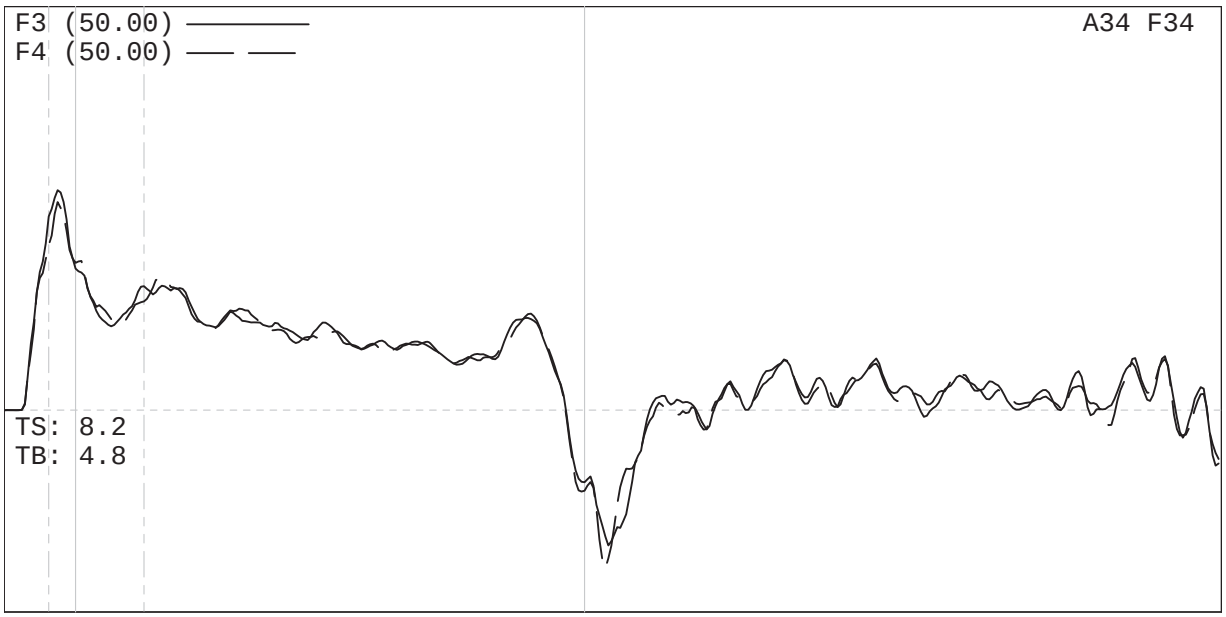
Quantity Results

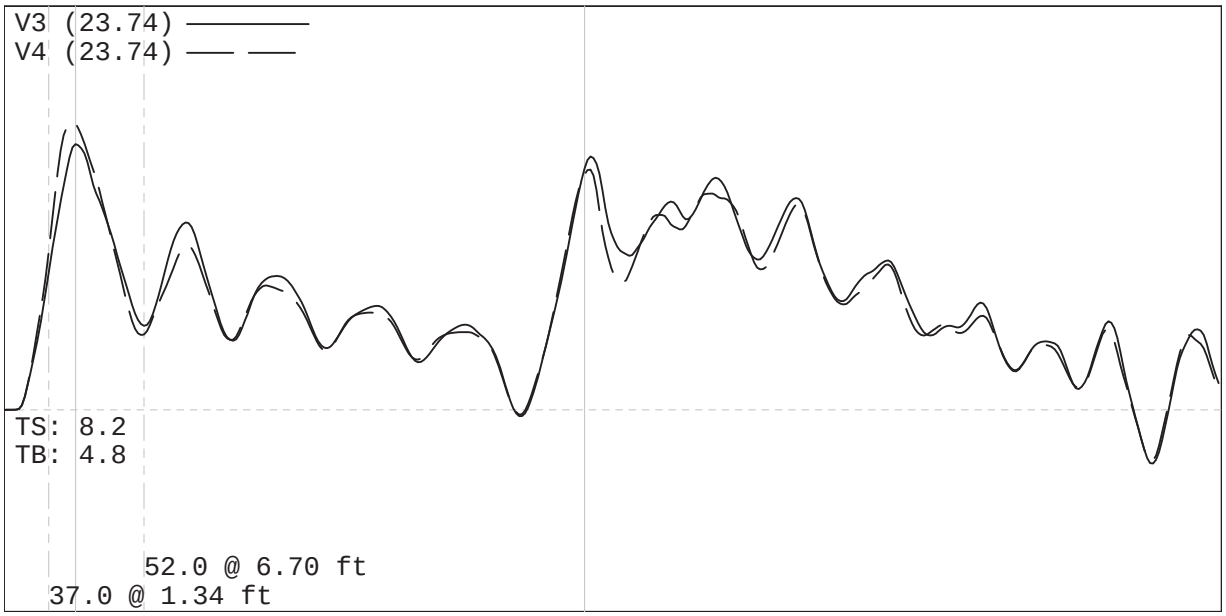
EMX	0.28	k-ft
EF2	0.23	k-ft
FMX	26.49	kips
BPM	2.00	bpm
VMX	16.24	f/s
AMX	2108.49	g's
DMX	0.85	in
DFN	0.85	in
TSX	14.95	ksi

Sensors

F3: [AWJ 1] 211.53 (1)
F4: [AWJ 2] 211.77 (1)
A3: [K4170] 390 mv/5000g's (1)
A4: [K2578] 374 mv/5000g's (1)
CLIP: OK

CME55 727 B1 23.5 TO 25_2





Project Information

PROJECT: CME55 727
PILE NAME: B1 23.5 TO 25_2
DESCR: cme 55 auto
OPERATOR: KJZ
FILE: B1 23.5 TO 25_2.w01
7/2/2015 4:10:26 PM
Blow Number 2

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EA/C	2.1	ksec/ft
2L/C	3.42	ms
JC	[]	

Quantity Results

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DMX	0.85	in
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TSX	14.95	ksi

Sensors

F3: [AWJ 1] 211.53 (1)
F4: [AWJ 2] 211.77 (1)
A3: [K4170] 390 mv/5000g's (1)
A4: [K2578] 374 mv/5000g's (1)
CLIP: OK

Exhibit A-2 PDA Equipment Calibrations

Certificate of Calibration

Pile Dynamics, Inc. certifies that the

Pile Driving Analyzer®, Model PAX

Serial Number: 3766L

was calibrated on 28 March 2014
using a PDA Calibration Box whose output was calibrated with test equipment traceable to NIST.
This certificate is valid for 2 years from above date.

Tested by:

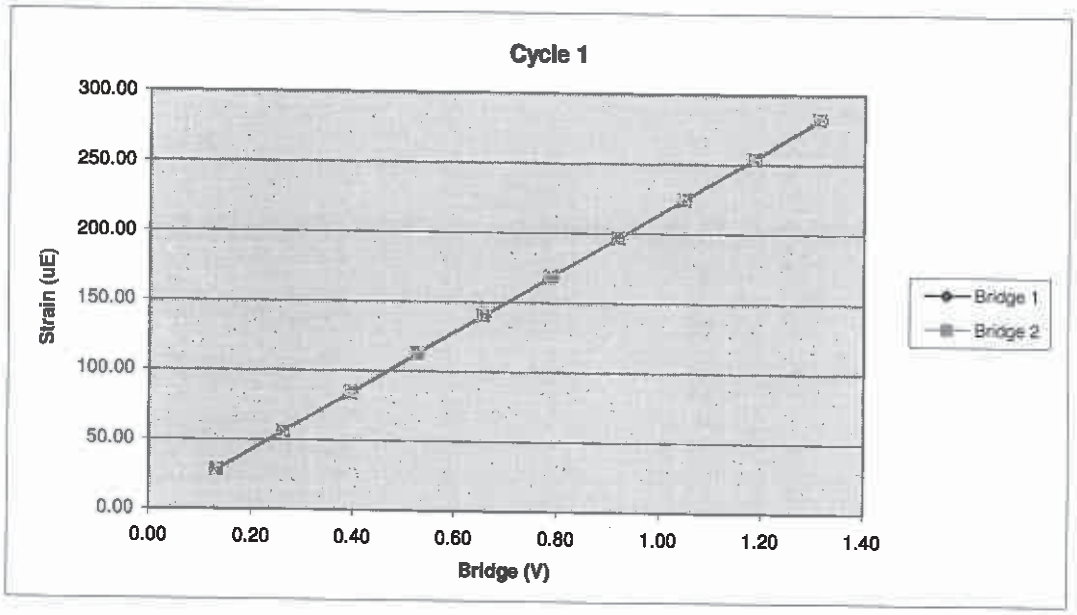
Pile Dynamics, Inc.
30725 Aurora Road
Cleveland, Ohio 44139 USA

March 2015

267AWJ		Cycle 1		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	989.85	28.25	0.13	0.13
3	1984.04	55.90	0.26	0.26
4	2984.15	84.22	0.40	0.39
5	3983.07	112.75	0.53	0.53
6	4967.80	140.04	0.66	0.65
7	5960.01	168.66	0.79	0.79
8	6950.26	196.46	0.92	0.92
9	7933.41	224.50	1.05	1.05
10	8967.62	253.80	1.18	1.18
11	9960.63	282.25	1.31	1.31

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**7580.05**	**Force Calibration (lb/V)**	**7594.00**
Offset	-6.55	Offset	-12.19
Correlation	0.999997	Correlation	0.999996
Strain Calibration (µE/V)	**214.70**	**Strain Calibration (µE/V)**	**215.09**
Offset	-0.38	Offset	-0.54
Correlation	0.999994	Correlation	0.999993

Force Strain Calibration	
EA (Kips)	**35305.52**
Offset	6.95
Correlation	0.999996

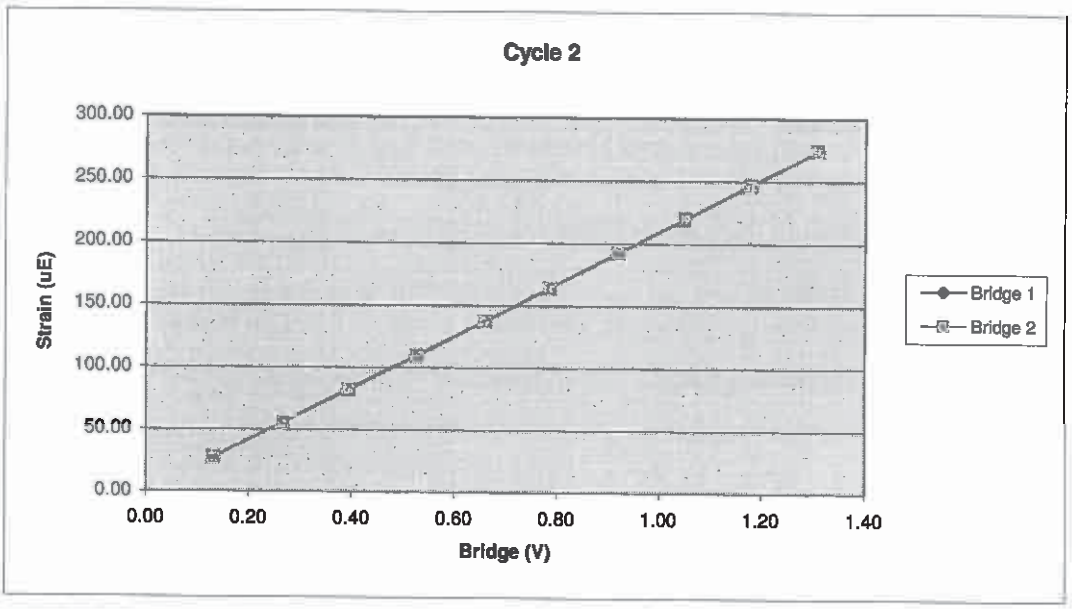


March 2015

267AWJ		Cycle 2		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	985.91	27.42	0.13	0.13
3	2013.22	55.80	0.27	0.27
4	2976.66	82.22	0.39	0.39
5	3986.03	109.72	0.53	0.53
6	4991.06	137.06	0.66	0.66
7	5966.52	164.10	0.79	0.79
8	6974.31	192.21	0.92	0.92
9	7944.65	219.38	1.05	1.05
10	8931.15	246.44	1.18	1.18
11	9931.65	273.99	1.31	1.31

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**7594.28**	**Force Calibration (lb/V)**	**7600.39**
Offset	**-7.07**	Offset	**-19.16**
Correlation	**0.999997**	Correlation	**0.999998**
Strain Calibration (µE/V)	**209.38**	**Strain Calibration (µE/V)**	**209.55**
Offset	**-0.18**	Offset	**-0.51**
Correlation	**0.999994**	Correlation	**0.999993**

Force Strain Calibration	
EA (Kips)	**36269.26**
Offset	**-0.51**
Correlation	**0.999993**

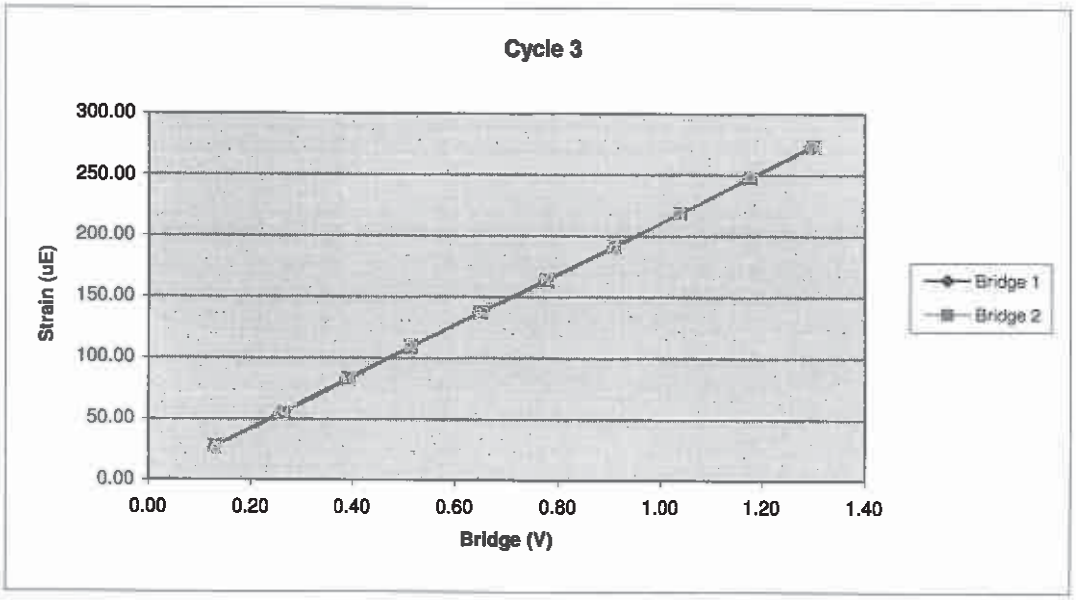


March 2015

267AWJ		Cycle 3		
Sample	**Force (lb)**	**Strain (µE)**	**Bridge 1 (V)**	**Bridge 2 (V)**
1	0.00	0.00	0.00	0.00
2	978.02	27.23	0.13	0.13
3	1983.45	54.94	0.26	0.26
4	2969.76	82.48	0.39	0.39
5	3927.08	108.47	0.51	0.51
6	4947.10	136.99	0.65	0.65
7	5912.50	163.76	0.77	0.78
8	6922.07	191.13	0.91	0.91
9	7898.71	218.67	1.04	1.04
10	8946.33	247.50	1.17	1.18
11	9882.76	273.33	1.30	1.30

Bridge 1		**Bridge 2**	
Force Calibration (lb/V)	**7616.04**	**Force Calibration (lb/V)**	**7621.58**
Offset	**10.36**	Offset	**-12.46**
Correlation	**0.999996**	Correlation	**0.999993**
Strain Calibration (µE/V)	**210.51**	**Strain Calibration (µE/V)**	**210.66**
Offset	**0.46**	Offset	**-0.17**
Correlation	**0.999997**	Correlation	**0.999993**

Force Strain Calibration	
EA (Kips)	**36178.74**
Offset	**-6.36**
Correlation	**0.999997**



Bridge Excitation (V) 5
Shunt Resitor (ohm) 60.4k

Calibration Factors	267AWJ		
Bridge 1 (µE/V)	211.53	Bridge 2 (µE/V)	211.77
EA Factor (Kips)	35917.84	Area (in^2)	1.20

Calibrated by: _____
Calibrated Date: 3/30/2015

Pile Dynamics Inc
30725 Aurora Rd
Solon, OH 44139

Traceable to N.I.S.T.

QBTA: ON [ALT-F1/BB=60] Pile Dynamics, Inc. TG F2 DPF

Pile Dynamics
04-Nov-13 07:48

FS — 10 | BN 390 | SL 168/ 3440/ 99 | PJ: | PN: HOPBAR | A 4 F 2 | -- VS 3.3

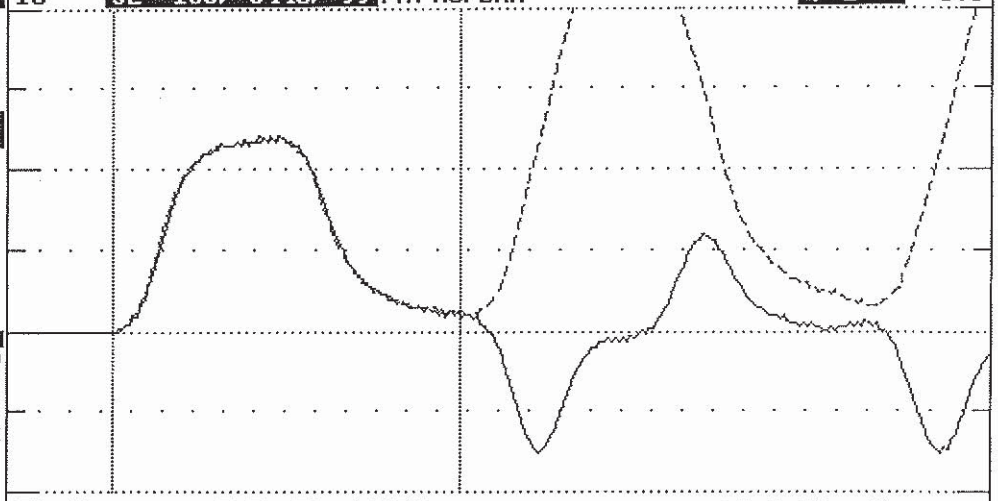
LE 39.6 ft
AR 1.7 in2
EM 30000 Ksi
SP 0.492 K/ft3
WS* 16810 ft/s
WC 17418 ft/s
CAUTION

JC 0.40
FM 1.00
VM 1.00

EA/C 30.3 Ks/ft
UN KIPS*0.1
FR 20000 MB 30

DL -40
VT -1
PK 1 TM-PEAK

F1/2 500/ 213
F3/4 213/ 213
A1/2 999/ 999
A3/4 999/ 390



TS 12 E B PD: k4170 LP 0.00 ft
TB 8.0 T1 9.3 2L/C 4.6 VA 1000 VE 1022 LI 1.0

ACCEPT SQ-OFF FL-OFF PR-OFF

VMX= 3.9 FMX= 60 AMX= 120
EMX= 0.2 MEX= 117 FVP= 1.01

contact Pile Dynamics USA
with your questions
tel USA - 216 - 831- 6131
fax USA - 216 - 831- 0916

ACCELEROMETER CALIBRATION N.I.S.T. Traceable

SERIAL NUMBER: K4170 PR

CALIBRATION FACTOR: .078 mv/G

PAK (*5000): 390 DATE: 4-NOV-13

PDA OPERATOR: Dale

<-AT:PIEZORESISTIVE OP: dale [ver:4.05] AT:PIEZOELECTRIC->

Smart Sensor

Smart Chip Programmed By DB **on** 4-NOV-13 **CRC Value** AEA2

QBTA: ON [ALT-F1/BB=60] Pile Dynamics, Inc. TG F2

Pile Dynamics
09-Nov-14 06:30

FS — 10 | BN 1979 SL 628/ 3440/ 99 | PJ: PN: HOPBAR | A 4 F 2

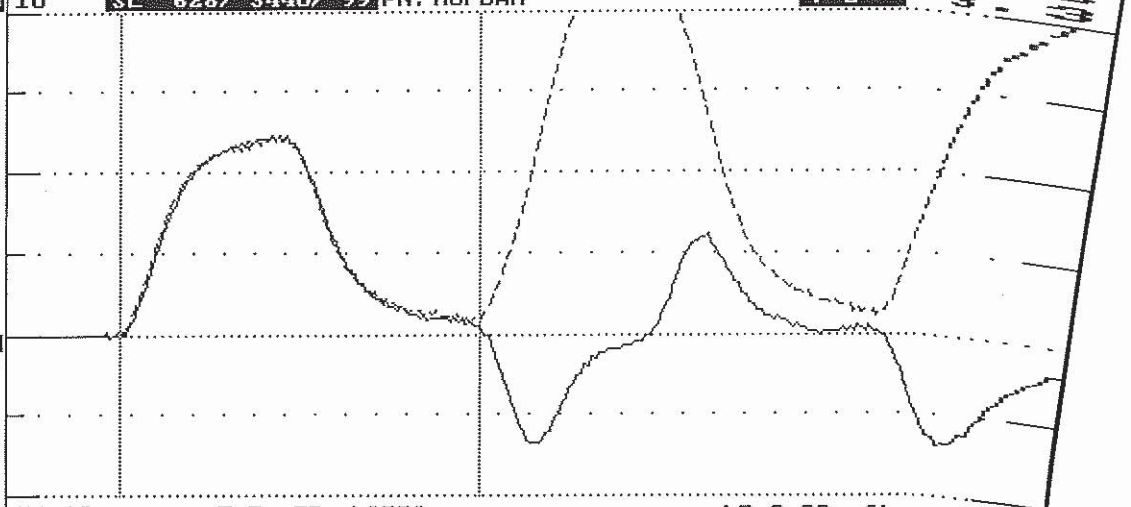
LE 39.6 ft
AR 1.7 in2
EM 30000 Ksi
SP 0.492 K/ft3
WS 16810 ft/s
WC 16862 ft/s

JC 0.40
FM 1.00
VM 1.00

EA/C 30.3 Ks/ft
UN KIPS*0.1
FR 20000 MB 30

DL -40
VT -1
PK 1 TM-PEAK

F1/2 500/ 213
F3/4 213/ 213
A1/2 999/ 999
A3/4 999/ 374



TS 12 E B PD: k2578 LP 0.00 ft
TB 8.0 T1 9.4 2L/C 4.7 VA 1000 VE 1022 LI 1.0

VMX= 3.9 FMX= 61 AMX= 120
EMX= 0.2 MEX= 119 FVP= 1.02

ACCEPT SQ-OFF FL-OFF PR-OFF

contact Pile Dynamics USA
with your questions
tel USA - 216 - 831- 6131
fax USA - 216 - 831- 0916

ACCELEROMETER CALIBRATION N.I.S.T. Traceable

SERIAL NUMBER: K2578

CALIBRATION FACTOR: .0748 MV/G

~~PAK (*5000)~~: 374 DATE: 11 NOV 14

PDA OPERATOR: A. M. Wing

K-AT:PIEZORESISTIVE OP: laine [ver:4.05] AT:PIEZOELECTRIC

Smart Sensor

Smart Chip Programmed By A.M.W. **on** 11 NOV 14 **CRC Value** 8DDB