Summary of Load Test Results

172 Christopher Columbus Drive, Jersey City, NJ

Prepared for

American Piledriving Equipment

March 2014

CH2MHILL®

1100 112th Ave. NE, Suite 500
Bellevue, WA 98004

Disclaimer

The data summarized in this compilation came from the following sources:

- Subsurface Investigation Report, 172 Christopher Columbus Drive, Jersey City, New Jersey. May 16, 2012. Prepared for FM Home Improvement Inc., Denville, NJ by M&Z Engineering Associates, P.C., Monmouth Junction, NJ.
- Pile installation and static load test data collected by American Piledriving Equipment and M&Z Engineering Associates of Monmouth Junction, NJ between November 18 and December 1, 2014.

CH2M HILL is not responsible for the accuracy of the data and has not made geotechnical design recommendations for the design of this facility or the acceptance of these piles.

The information is presented here in a condensed format as a convenient reference for others considering the use of these products in similar conditions. Estimates of capacity using commonly accepted geotechnical engineering computation methods have been provided as a basis of comparison with the load test values. Estimates by others using the same data and the same or different analysis methods could result in different estimates of capacity. CH2M HILL is not responsible for reuse of the data or interpretations contained in this document.

References

Perko, H.A., 2009. Helical Piles: A Practical Guide to Design and Installation. John Wiley & Sons. New York, N.Y.

Sabatini, P.J., Tanyu, B., Armour, T., Groneck, P., and J.K. Keeley, 2005. Micropile Design and Construction. FHWA-NHI-05-039. National Highway Institute Federal Highway Administration.

Tappenden, K.M. and D.C. Sego, 2007. Predicting the Axial Capacity of Screw Piles Installed in Canadian Soils. In Proceedings: OttowaGeo2007

	Test Pile Geometry Summary									Ultimate Resistance				
										Interpreted from Static Load Test (kips)	Calculated from Interpreted Subsurface Data			Estimated from empirical end of driving torque (Perko, 2009)
	Pipe O.D (in)	Wall thickness (in)	helix diameter (in)	Effective Grout Bulb Diameter Based on Volume (in)	pile top depth below original grade (feet)	pile tip depth below original grade (feet)	pile embedment below excavated grade during test (feet)	Torque at end of driving (ft-lb)	Date of Static Load Test		Tappenden & Sego, 2007[1] (kips)	Tappenden & Sego, 2007[2] (kips)	Micropile Guidelines, FHWA Diameter = grout bulb diam (kips)	
Test 1	7	0.408	18	NA	12	50	38	64,000	11/18/2014	105	820	390	NA	170
Test 2	7	0.408	18	NA	12	40	28	NR	11/22/2014	180	340	195	NA	NR
Test 3	7	0.408	18	NA	12	44	32	110,000	11/25/2014	290	680	325	NA	290
Test 4	7	0.408	18	22	12	37	25	NA	12/1/2014	>>320	500	250	715	NA

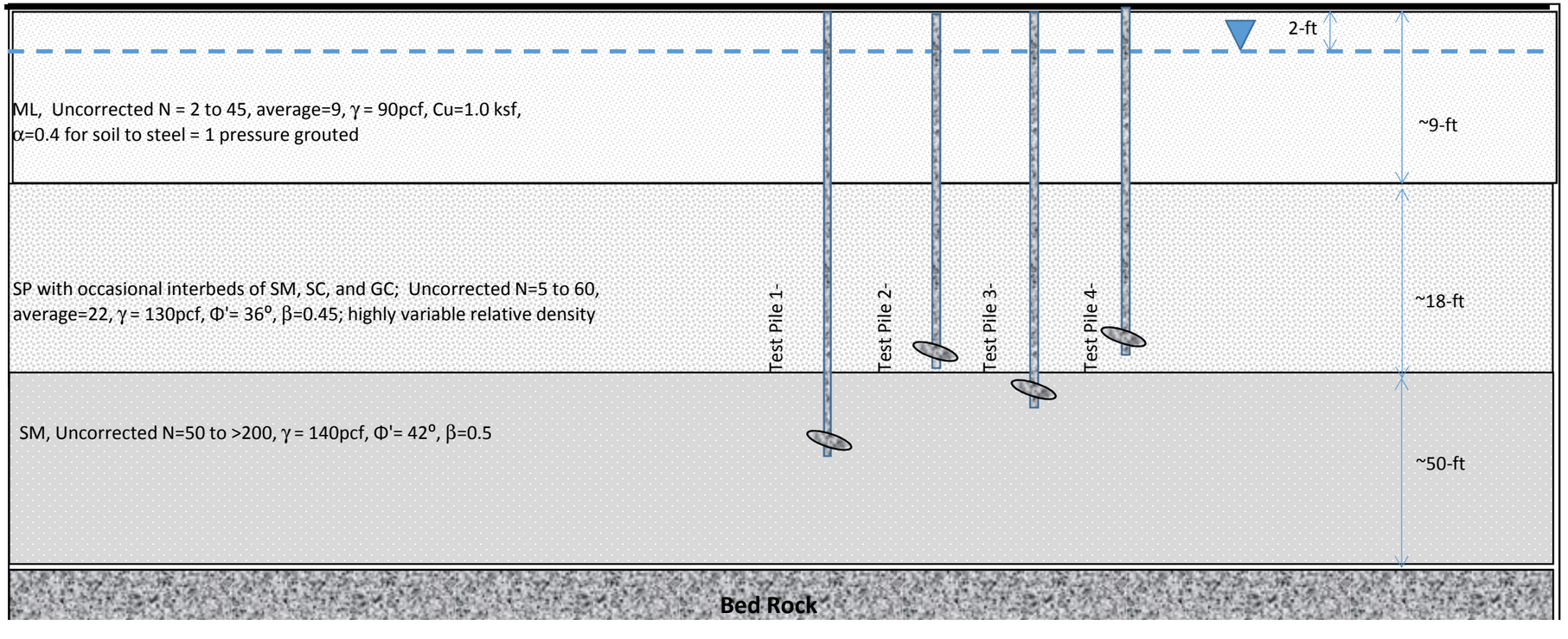
[1] mid range for Nq values, skin friction as for driven steel piles

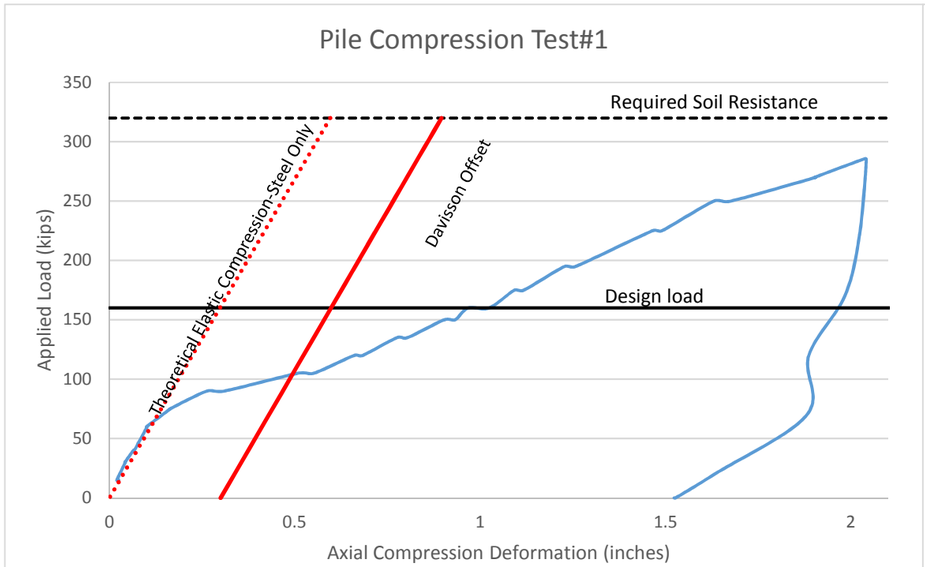
[2] low range for Nq values, ignore skin friction

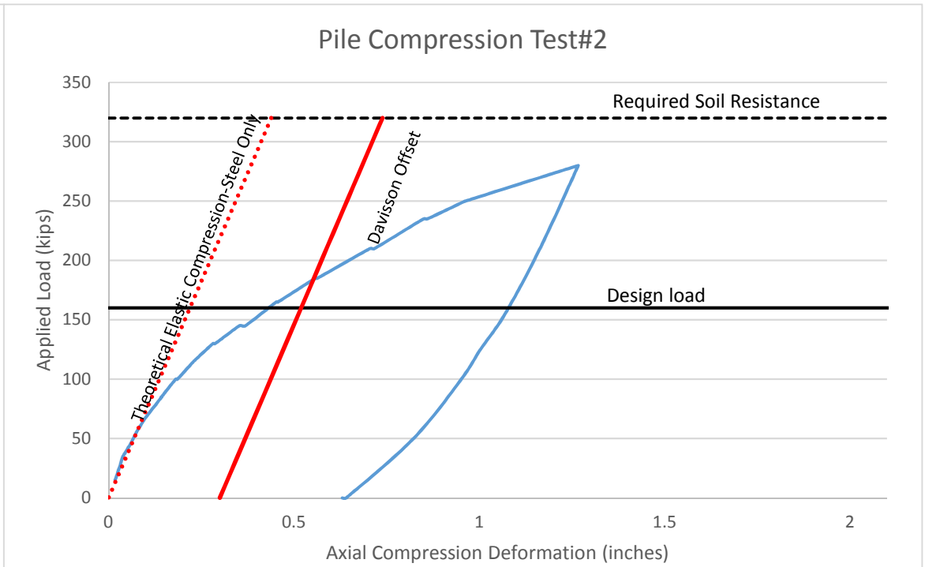
NR=not recorded

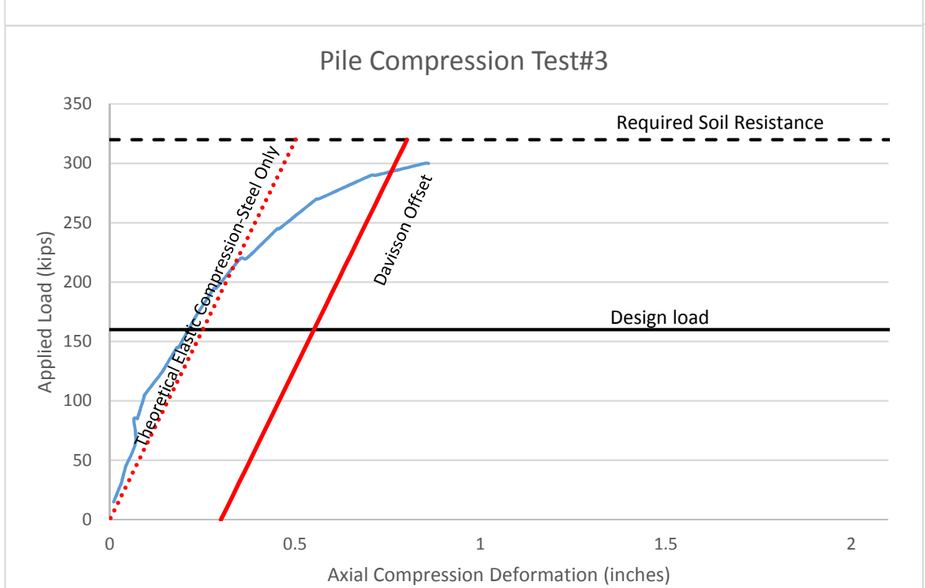
NA=not applicable

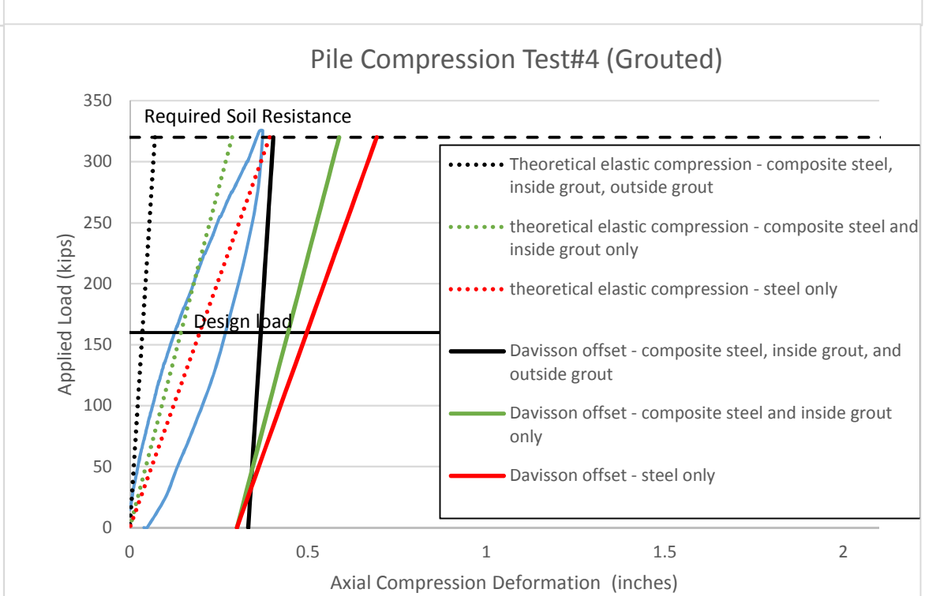
APE HD150 driver

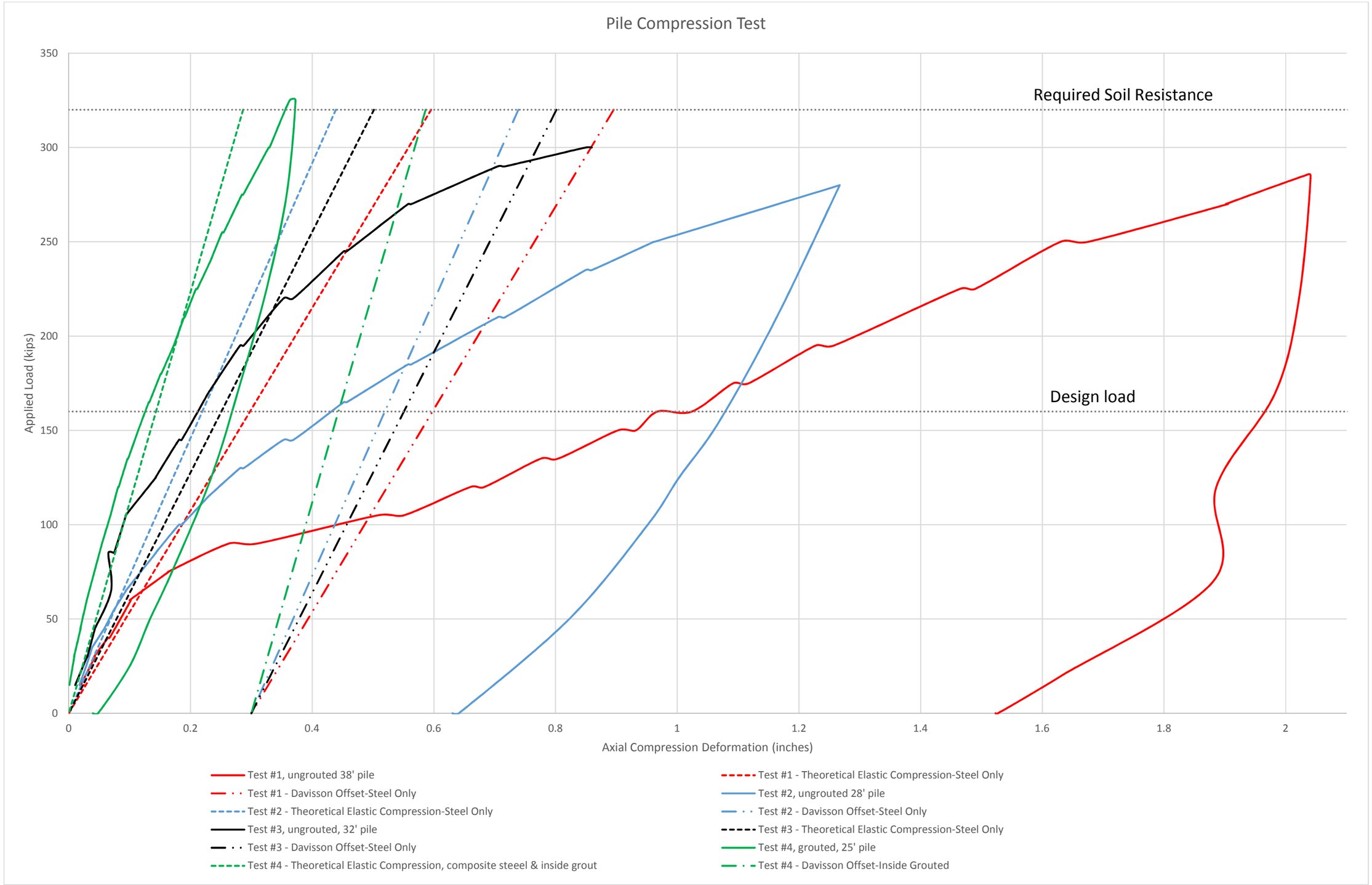


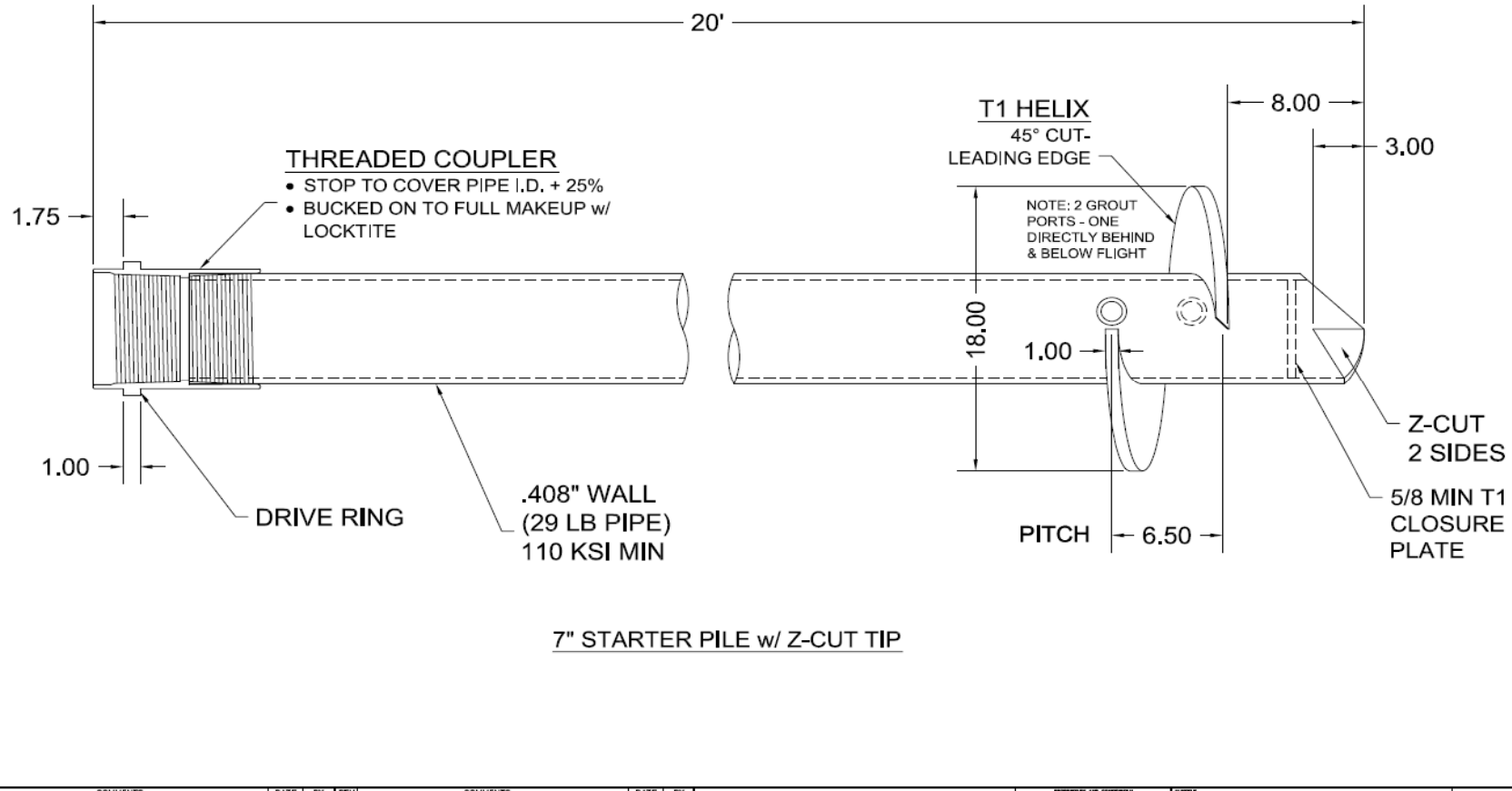

Pile Compression Test#1
Required Soil Resistance
Theoretical Elastic Compression-Steel Only
Davisson Offset
Design load
Applied Load (kips)
Axial Compression Deformation (inches)
0
50
100
150
200
250
300
350
0
0.5
1
1.5
2


Pile Compression Test#2
Required Soil Resistance
Theoretical Elastic Compression-Steel Only
Davisson Offset
Design load
Applied Load (kips)
Axial Compression Deformation (inches)
0
50
100
150
200
250
300
350
0
0.5
1
1.5
2


Pile Compression Test#3
Required Soil Resistance
Theoretical Elastic Compression-Steel Only
Davisson Offset
Design load
Applied Load (kips)
Axial Compression Deformation (inches)
0
50
100
150
200
250
300
350
0
0.5
1
1.5
2


Pile Compression Test#4 (Grouted)
Required Soil Resistance
Design load
Theoretical elastic compression - composite steel, inside grout, outside grout
theoretical elastic compression - composite steel and inside grout only
theoretical elastic compression - steel only
Davisson offset - composite steel, inside grout, and outside grout
Davisson offset - composite steel and inside grout only
Davisson offset - steel only
Applied Load (kips)
Axial Compression Deformation (inches)
0
50
100
150
200
250
300
350
0
0.5
1
1.5
2


Pile Compression Test
Applied Load (kips)
350
300
250
200
150
100
50
0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Axial Compression Deformation (inches)
Required Soil Resistance
Design load
Test #1, ungrouted 38' pile
Test #1 - Theoretical Elastic Compression-Steel Only
Test #1 - Davisson Offset-Steel Only
Test #2, ungrouted 28' pile
Test #2 - Theoretical Elastic Compression-Steel Only
Test #2 - Davisson Offset-Steel Only
Test #3, ungrouted, 32' pile
Test #3 - Theoretical Elastic Compression-Steel Only
Test #3 - Davisson Offset-Steel Only
Test #4, grouted, 25' pile
Test #4 - Theoretical Elastic Compression, composite steeel & inside grout
Test #4 - Davisson Offset-Inside Grouted



7" STARTER PILE w/ Z-CUT TIP

REV	COMMENTS	DATE	BY	REV	COMMENTS	DATE	BY
				A			

AMERICAN PILEDRIVING EQUIPMENT, INC.
7032 SOUTH 196TH STREET
KENT, WASHINGTON 98032

PROPRIETARY AND CONFIDENTIAL
SCALE: DO NOT SCALE

DRAWN	JWK	DATE	10/20/14
CHECKED	.	DATE	XX/XX/XX
APPROVED	.	DATE	XX/XX/XX

SUBTITLE: 7"x20' STEEL STARTER PILE
SINGLE H18x1 & Z-CUT TIP

TITLE: MULTI-FAMILY BUILDING
170 CC DRIVE, JERSEY CITY

SHEET — OF —
DRAWING NO: 1001612
REV: —
PLOT INFO:
BORDER SCALE: 1=6