

Geotechnical Engineering Report

Sabino Canyon Road Extension

Pantano Wash Bridge

Tucson, Arizona

November 6, 2013

Terracon Project No. 63125005

Prepared for:

PSOMAS

Tucson, Arizona

Prepared by:

Terracon Consultants, Inc.

Tucson, Arizona



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Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

November 6, 2013



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**RE: Geotechnical Engineering Report
Sabino Canyon Road Extension
Pantano Wash Bridge
Tucson, Arizona
Terracon Project No. 63125005**

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. These services were performed in general accordance with our proposal number P63100454, dated December 1, 2010. The results of our engineering analyses, including the results of the subsurface engineering exploration and foundation design analyses recommendations for construction of foundations for the Pantano Wash Bridge are attached. Recommendations concerning the Mullin Landfill Bridge will be submitted under separate cover.

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.

Scott D. Neely, P.E.
Principal



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TABLE OF CONTENTS

1.0 INTRODUCTION..... 1
2.0 PROJECT INFORMATION 2
 2.1 Project Description 2
 2.2 Site Location and Description..... 4
3.0 SUBSURFACE CONDITIONS 4
 3.1 Site Geology 4
 3.2 Typical Subsurface Profile..... 5
 3.3 Field and Laboratory Test Data 7
 3.4 Groundwater..... 8
 3.5 Seismic Considerations 8
4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION..... 9
 4.1 Geotechnical Considerations 9
 4.2 Drilled Shaft Design Methodology and Analyses 10
 4.3 Drilled Shaft Axial Load Analyses 13
 4.4 Drilled Shaft Lateral Load Analyses 14
 4.5 Summary of Drilled Shaft Analyses 17
 4.6 Drilled Shaft Construction Considerations..... 18
 4.7 Lateral Earth Pressures..... 18
5.0 GENERAL COMMENTS..... 19

EXHIBIT NO.

Appendix A – Field Exploration

Site Plan and Boring Location Diagram A-1
 Field Exploration Description A-2
 Boring Logs A-3 to A-17
 General Notes A-18
 Unified Soil Classification System A-19

Appendix B – Laboratory Testing

Laboratory Test Description B-1
 Atterberg Limits Results B-2 and B-3
 Grain Size Distribution B-4 thru B-9
 Direct Shear Test Results B-10 thru B-15
 Summary of Laboratory Results..... B-16 and B-17

TABLE OF CONTENTS continued

	EXHIBIT NO.
Appendix C – Pantano Wash Bridge – East Abutment – Axial Load Analyses Results	
Design Shaft Load-Settlement Curve.....	C-1
Input Parameters.....	C-2
Ultimate End Bearing and Skin Friction Factors	C-3
Service Limit Output Based on Settlement	C-4
Shaft Resistance Tables	C-5 thru C-12
Shaft Resistance Graphs	C-13 thru C-20
Appendix D – Pantano Wash Bridge – Pier #1 – Axial Load Analyses Results	
Design Shaft Load-Settlement Curve.....	D-1
Input Parameters.....	D-2
Ultimate End Bearing and Skin Friction Factors	D-3
Service Limit Output Based on Settlement	D-4
Shaft Resistance Tables	D-5 thru D-12
Shaft Resistance Graphs	D-13 thru D-20
Appendix E – Pantano Wash Bridge – Pier #2 – Axial Load Analyses Results	
Design Shaft Load-Settlement Curve.....	E-1
Input Parameters.....	E-2
Ultimate End Bearing and Skin Friction Factors	E-3
Service Limit Output Based on Settlement	E-4
Shaft Resistance Tables	E-5 thru E-12
Shaft Resistance Graphs	E-13 thru E-20
Appendix F – Pantano Wash Bridge – Pier #3 – Axial Load Analyses Results	
Design Shaft Load-Settlement Curve.....	F-1
Input Parameters.....	F-2
Ultimate End Bearing and Skin Friction Factors	F-3
Service Limit Output Based on Settlement	F-4
Shaft Resistance Tables	F-5 thru F-12
Shaft Resistance Graphs	F-13 thru F-20
Appendix G – Pantano Wash Bridge – West Abutment – Axial Load Analyses Results	
Design Shaft Load-Settlement Curve.....	G-1
Input Parameters.....	G-2
Ultimate End Bearing and Skin Friction Factors	G-3
Service Limit Output Based on Settlement	G-4
Shaft Resistance Tables	G-5 thru G-12
Shaft Resistance Graphs	G-13 thru G-20

TABLE OF CONTENTS continued

	EXHIBIT NO.
Appendix H – Pantano Wash Bridge – East Abutment – Lateral Load Analyses Results	
Super Flood Event	
Lateral Deflection vs. Length of Drilled Shaft	H-1
Pile Head Deflection vs. Depth.....	H-2
Moment vs. Depth	H-3
Appendix I – Pantano Wash Bridge – Pier #1 – Lateral Load Analyses Results	
100 Year Event	
Lateral Deflection vs. Length of Drilled Shaft	I-1
Pile Head Deflection vs. Depth.....	I-2
Moment vs. Depth	I-3
Super Flood Event	
Lateral Deflection vs. Length of Drilled Shaft	I-4
Pile Head Deflection vs. Depth.....	I-5
Moment vs. Depth	I-6
Appendix J – Pantano Wash Bridge – Pier #2 – Lateral Load Analyses Results	
100 Year Event	
Lateral Deflection vs. Length of Drilled Shaft	J-1
Pile Head Deflection vs. Depth.....	J-2
Moment vs. Depth	J-3
Super Flood Event	
Lateral Deflection vs. Length of Drilled Shaft	J-4
Pile Head Deflection vs. Depth.....	J-5
Moment vs. Depth	J-6
Appendix K – Pantano Wash Bridge – Pier #3 – Lateral Load Analyses Results	
100 Year Event	
Lateral Deflection vs. Length of Drilled Shaft	K-1
Pile Head Deflection vs. Depth.....	K-2
Moment vs. Depth	K-3
Super Flood Event	
Lateral Deflection vs. Length of Drilled Shaft	K-4
Pile Head Deflection vs. Depth.....	K-5
Moment vs. Depth	K-6

TABLE OF CONTENTS continued

	EXHIBIT NO.
Appendix L – Pantano Wash Bridge – West Abutment – Lateral Load Analyses Results	
Super Flood Event	
Lateral Deflection vs. Length of Drilled Shaft	L-1
Pile Head Deflection vs. Depth.....	L-2
Moment vs. Depth	L-3

GEOTECHNICAL ENGINEERING REPORT SABINO CANYON ROAD EXTENSION PANTANO WASH BRIDGE CROSSING TUCSON, ARIZONA

**Terracon Project No. 63125005
November 6, 2013**

1.0 INTRODUCTION

This report presents the final results of our geotechnical engineering services performed for the bridge crossing the Pantano Wash in Tucson, Arizona. This is part of the Sabino Canyon Road Extension Project. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- seismic considerations
- foundation recommendations
- groundwater conditions
- lateral earth pressures

Our geotechnical engineering scope of work for this final portion of the project included the advancement of an additional four (4) test borings to depths of approximately 96 to 100 feet below existing site grades. Our work also includes the data from one boring performed for our previous Project No. 63105043, Boring No. B-5, which was drilled to an approximate depth of 101½ feet below existing site grade.

Logs of the borings along with a Site Plan and Boring Locations Diagram (Exhibit A-1), are included in Appendix A of this report. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included in Appendix B of this report. Descriptions of the field exploration and laboratory testing are included in their respective appendices.

2.0 PROJECT INFORMATION

2.1 Project Description

ITEM	DESCRIPTION
<p>Site layout</p>	<p>Refer to the Site Plan and Boring Location diagram (Exhibit A-1 in Appendix A) for the general location of the project and specific location of the borings.</p>
<p>Structures / Type of construction</p>	<p>Major elements of the Pantano Wash Bridge include:</p> <ul style="list-style-type: none"> ■ 4 Spans ■ The East Abutment will be a full height abutment on a single row of six 5-foot diameter drilled shaft foundations. Each shaft will be reinforced with 23 #11 vertical bars having 6½ inches of clearance from the outside of the shaft. The average top of drilled shaft elevation will be 2529 feet. ■ Pier #1: Pier Cap with six 4-foot diameter columns supported on six 5-foot diameter drilled shaft foundations. Each shaft will be reinforced with 19 #10 vertical bars having 6½ inches of clearance from the outside of the shaft. The average top of drilled shaft elevation will be 2506 feet. ■ Piers #2 and #3: Pier Cap with five 4-foot diameter columns supported on five 5-foot diameter drilled shaft foundations. Each shaft will be reinforced with 19 #10 vertical bars having 6½ inches of clearance from the outside of the shaft. The average top of drilled shaft elevation will be 2506 feet. ■ The West Abutment will be a full height abutment on a single row of five 5-foot diameter shaft foundations. Each shaft will be reinforced with 19 #10 vertical bars having 6½ inches of clearance from the outside of the shaft. The average top of drilled shaft elevation will be 2521.5 feet.
<p>Strength Limit -1 Structure Axial Loads (as provided by Structural Concepts)</p>	<p>Pantano Wash Bridge:</p> <ul style="list-style-type: none"> ■ East Abutment: 1,021 kips/shaft – Includes 388 kips of downdrag load at this abutment from the existing landfill ■ Pier #1: 844 kips/shaft ■ Pier #2: 1194 kips/shaft ■ Pier #3: 1092 kips/shaft ■ West Abutment: 602 kips/shaft – No downdrag load at this abutment

ITEM	DESCRIPTION
<p>Lateral Loads (as provided by Structural Concepts)</p>	<p>Pantano Wash Bridge – 100 Year Flood Event:</p> <ul style="list-style-type: none"> ■ East and West Abutment: Loads not provided. ■ Piers #1 & #2: Moment – 1330 ft.–kips Shear – 26 kips Axial – 600 kips ■ Pier #3: Moment – 1380 ft.–kips Shear – 30 kips Axial – 680 kips <p>Pantano Wash Bridge – Super Flood Event (Maximum Scour):</p> <ul style="list-style-type: none"> ■ East Abutment: Moment – 316 ft.–kips (Strength Limit) Shear – 17 kips Axial – 610 kips ■ Piers #1 & #2: Moment – 434 ft.–kips (Strength Limit) Shear – 9 kips Axial – 725 kips ■ Pier #3: Moment – 450 ft.–kips (Strength Limit) Shear – 15 kips Axial – 694 kips ■ West Abutment: Moment – 223 ft.–kips (Service Limit) Shear – 10 kips Axial – 260 kips
<p>Depth of Scour (As provided by Structural Concepts) (All depths are assumed to be temporary scour depths, not permanent removal of material)</p>	<p>Axial Load Conditions</p> <ul style="list-style-type: none"> ■ East Abutment: 22.8 feet (scour elev. is 2507 feet) ■ Pier #1: 21.3 feet (scour elev. is 2495 feet) ■ Pier #2: 21.3 feet (scour elev. is 2487 feet) ■ Pier #3: 36.2 feet (scour elev. is 2478 feet) ■ West Abutment: 37.6 feet (scour elev. is 2492 feet) <p>Lateral Load Conditions – 100 Year Flood Event</p> <ul style="list-style-type: none"> ■ East and West Abutment: Not Applicable ■ Pier #1 28 feet (scour elev. is 2490 feet) ■ Pier #2: 18 feet (scour elev. is 2490 feet) ■ Pier #3: 24 feet (scour elev. is 2490 feet) <p>Lateral Load Conditions – Super Flood Event (Maximum Scour)</p> <ul style="list-style-type: none"> ■ East Abutment: 45 feet (scour elev. is 2485 feet) ■ Pier #1 31 feet (scour elev. is 2487 feet) ■ Pier #2: 21 feet (scour elev. is 2487 feet) ■ Pier #3: 42 feet (scour elev. is 2472 feet) ■ West Abutment: 60 feet (scour elev. is 2470 feet)

2.2 Site Location and Description

ITEM	DESCRIPTION
Project Location	The southern end of the proposed alignment of Sabino Canyon Road as it crosses Pantano Wash in Tucson, Arizona.
Existing site features	Currently, Pantano Wash is lined with soil-cement bank protection along both its east and west embankments. Pier #1 will penetrate the east side soil-cement bank protection. The east abutment will be located approximately 50 feet behind the top of the bank protection, while the west abutment will be located immediately behind the top of the bank protection.
Existing topography	The topography across Pantano Wash varies significantly between the two embankments. The elevation of the east and west abutments are 2537 feet and 2530 feet MSL, respectively. The elevation of Piers 1, 2, and 3 vary from 2518 feet, 2508 feet, and 2514 feet MSL, respectively.
Mullin Landfill	The Mullin Landfill was formally created in 1967 and operated as a municipal solid waste disposal site. The landfill has been closed since 1987. A methane extraction system is currently in operation withdrawing gas from the landfill. During our drilling operations, not much waste material was brought to the surface on the flights of the auger. The native soils beneath the landfill did not get brought to the surface on the auger flights either. Our experience would indicate the landfill materials and the underlying native soils were pushed into the sidewalls of the landfill while drilling. Large obstacles to drilling were not encountered during our field exploration.

3.0 SUBSURFACE CONDITIONS

3.1 Site Geology

The project area is located in the Basin and Range physiographic province (¹Cooley, 1967) of the North American Cordillera (²Stern, et al, 1979) of the southwestern United States. The southern portion of the Basin and Range province is situated along the southwestern flank of the Colorado Plateau and is bounded by the Sierra Nevada Mountains to the west. Formed during middle and late Tertiary time (100 to 15 m.y. ago), the Basin and Range province is

¹Cooley, M.E., 1967, *Arizona Highway Geologic Map*, Arizona Geological Society.

²Stern, C.W., et al, 1979, *Geological Evolution of North America*, John Wiley & Sons, Santa Barbara, California.

dominated by fault controlled topography. The topography consists of mountain ranges and relatively flat alluviated valleys. These mountain ranges and valleys have evolved from generally complex movements and associated erosional and depositional processes. Structurally, the site lies within the Santa Cruz River Basin. Drainage flows to the Santa Cruz River during late Tertiary time, coupled with structural activity discussed above, are generally responsible for the present day topography within the basin.

Typically, the ranges in this area are of small areal extent, but protrude significantly above adjacent wide alluviated plains and valleys. The basin rims are formed by the mountain ranges which consist of sedimentary, igneous and metamorphic materials which have been subjected to recurrent faulting and tilting and in some places, volcanic and intrusive events. As a result of erosion, the valleys have experienced partial infilling with sedimentary material which has been deposited as alluvial fans. Occasionally, the valleys may become interlocking as a result of coalescing alluvial fans which are referred to as bajadas.

Surficial geologic conditions mapped at the site (³Wilson, et al, 1960) consist of alluvium of Quaternary age (10,000 to 1 m.y. ago). The alluvial materials have been described as deposits consisting of sand, silt and gravel. Locally, the alluvium can include clay deposits commonly referred to as playas. Playas are typically formed in shallow temporary lake beds on the valley floor.

3.2 Typical Subsurface Profile

Specific conditions encountered at each boring location are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for each of the borings can be found on the boring logs included in Appendix A of this report.

Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

³Wilson, E.D., Moore, R.T., and O'Haire, R.T., 1960, ***Geologic Map of Pima and Santa Cruz Counties, Arizona***, Arizona Bureau of Mines, University of Arizona.

East Abutment (Boring Location B-116)

Description	Approximate Depth to Bottom of Stratum (feet)	Material Encountered	Consistency/Density
Stratum 1	12	Landfill cap –Silty Sand	Medium Dense
Stratum 2 ¹	42	Municipal Solid Waste (MSW) Landfill Material. The MSW was typical of household wastes without much organics or odor. Identifiable components in the waste included plastic, paper, newspaper, metal cans, cardboard, cloth, wire, glass, etc.	--
Stratum 3	101	Silty sand with varying amounts of gravel and cobbles	Dense to Very Dense

Note¹: The description of the MSW was taken from the SCS Engineers report dated October 15, 2009, and titled "Kolb Road: Connection to Sabino Canyon At The Closed Vincent Mullins Landfill; Tucson, Arizona".

Pier #1 (Boring Location B-117)

Description	Approximate Depth to Bottom of Stratum (feet)	Material Encountered	Consistency/Density
Stratum 1	18	Poorly graded sand with silt and gravel	Medium Dense to Very Dense
Stratum 2	88*	Silty sand with varying amounts of gravel and cobbles	Dense to Very Dense

Note*: Auger refusal encountered on cobbles and boulders at a depth of 88 feet.

Pier #2 (Boring Location B-5 from Project No. 63105043)

Description	Approximate Depth to Bottom of Stratum (feet)	Material Encountered	Consistency/Density
Stratum 1	14	Silty sand with gravel	Medium Dense to Very Dense
Stratum 2	101½	Silty sand with varying amounts of gravel and cobbles	Medium Dense to Very Dense

Pier #3 (Boring Location B-118)

Description	Approximate Depth to Bottom of Stratum (feet)	Material Encountered	Consistency/Density
Stratum 1	8	Poorly graded gravel with silt	Medium Dense to Very Dense
Stratum 2	19	Silty Clayey Sand and Gravel	Dense to Very Dense
Stratum 3	97*	Silty sand with varying amounts of gravel and cobbles	Medium Dense to Very Dense

Note*: Auger refusal encountered on cobbles and boulders at a depth of 97 feet.

West Abutment (Boring Location B-119)

Description	Approximate Depth to Bottom of Stratum (feet)	Material Encountered	Consistency/Density
Stratum 1	2 inches	Asphalt Concrete	---
Stratum 2	2	Soil Cement	---
Stratum 3	17	Fill: Poorly graded sand with silt and gravel	Medium Dense
Stratum 4	24	Silty sand with gravel	Medium Dense
Stratum 5	97	Silty sand with varying amounts of gravel and poorly graded gravel with sand	Medium Dense to Very Dense

3.3 Field and Laboratory Test Data

The results of the laboratory testing are shown in graphical and tabular form in Appendix B. A brief summary of the laboratory test results is provided in this section.

Landfill materials encountered during drilling of Boring No. B-116 consisted of clothes, plastic and newspaper. The waste material was not brought to the surface on the flights of the auger. The native soils beneath the landfill did not get brought to the surface on the auger flights either. Our experience would indicate the landfill materials and the underlying native soils were pushed into the sidewalls of the landfill while drilling. Large obstacles to drilling were not encountered during our field exploration.

As previously outlined, the subsurface soils at the site consisted of granular soils which consist predominately of sands with variable gravel content. Results of gradation testing included in Appendix B indicates the gravel content of the granular soils typically ranges from 0% to 90% and the percent of fines (clay and silt size fraction) of the coarse grained soils ranged from 2% to 33%.

The site soils are typically non-plastic.

The dry unit weight and water content was measured on six samples. The unit weight varied from 99 pcf to 127 pcf with the moisture contents ranging from 5 to 10 percent. The average dry unit weight and moisture content of the soils were 116 pcf and 7.2 percent, respectively.

The peak angle of internal friction of the site soils varied from 31 to 39 degrees with cohesion varying from 0 to 640 psf. The angle of internal friction at maximum displacement varied from 27 to 37 degrees with the cohesion varying from 0 to 380 psf.

3.4 Groundwater

Groundwater was not observed in any test boring at the time of field exploration. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations. Groundwater conditions can change with varying seasonal and weather conditions, and other factors.

Based on information obtained from the Arizona Wells' database website (<http://www.sahra.arizona.edu/wells>), the depth to groundwater was measured in 2005 to be approximately 300 feet below the ground surface (approximate elevation of 2230 feet above mean sea level) at an United States Geological Survey (USGS) monitored well site located less than one-eighth mile east of the site.

3.5 Seismic Considerations

Terracon researched available literature and maps relating to seismic activity in the vicinity of the site in Pima County, Arizona (⁴Arizona Geological Survey, Spring 2000 - Volume 30, No. 1). Historical earthquake activity in the State of Arizona dates to about 1776, but records are sparse prior to the late 1800s. Based on this review, earthquake hazard levels are categorized as being low in the vicinity of the site and in this general region of south-central Arizona. This categorization is based upon historical earthquake activity, number of potentially active faults, and the estimated slip rates for those faults.

Based on information contained in the literature, we believe that the potential of seismic activity and the potential of significant damage to structures resulting from seismic activity in the vicinity of the site to be unlikely.

⁴ Arizona Geological Survey, *Earthquake Hazard in Arizona*, Volume 30, No. 1, Spring 2000

Based on the geotechnical exploration, the subsurface soil type can be classified as dense to very dense soils with average penetration resistance (blow counts) ranging between 15 and 50 blows per foot. The seismic site is classified as Site Class D as per Table 3.10.3.1-1 of the AASHTO LRFD Bridge Design Manual (⁵AASHTO, 2010).

The following table presents the seismic site classification and site coefficients based on the AASHTO LRFD Bridge Design Manual

Description	Value
Site Class	D
Site Latitude	32.241322°
Site Longitude	-110.841865°
PGA	0.07 ¹
S _s	0.28
S ₁	0.08
F _{pga}	1.6
F _a	1.6
F _v	2.4

Notes:

¹AASHTO's recommended PGA maps have a return period of 1000 years, which corresponds to a 7% probability of exceedance in 75 years.

The Design Response Spectrum for the bridge structures should be constructed based on the information presented in the table above and the procedure outlined in Section 3.10.4.1 of the AASHTO LRFD Bridge Design Manual.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

Geotechnical engineering recommendations for foundation design and construction and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of the test borings performed by Terracon, field and laboratory testing, engineering analyses, and our current understanding of the proposed project.

⁵ American Association of State Highway and Transportation Officials, **AASHTO LRFD Bridge Design Specifications**, 5th Edition, 2010

4.2 Drilled Shaft Design Methodology and Analyses

The engineering analyses for development of the tables and graphs related to drilled shafts in this report have been based on the AASHTO LRFD Bridge Design Manual (⁶AASHTO, 2010). The above reference was supplemented by the two Geotechnical Design Policies dated December 1, 2010, prepared by the ^{7,8}ADOT Geotechnical Design Section and titled, “Load Resistance Factor Design (LRFD); Development of Drilled Shaft Axial Resistance Charts for Use by Bridge Engineers”, and “Load Resistance Factor Design (LRFD); Design of Drilled Shafts in Gravel and Gravelly Soils Exhibiting Drained Behavior”.

The AASHTO design approach for drilled shaft foundation systems incorporates the beta (β) method for cohesionless (sand and gravel soils). The drained shear strength in the AASHTO design procedure for cohesionless soils is based on the results of the standard penetration testing and the resulting N_{60} values determined in each of the test borings.

Based on the ADOT Geotechnical Design Policy for drilled shafts in gravel or gravelly soils, drained soil behavior is applicable for the analyses and the cohesionless soils must be further differentiated into sand, gravelly or gravel classifications (based on the gravel percentage of the coarse grained fraction of the material) for determination of an appropriate beta (β) values to determine side resistance and to determine the appropriate load transfer curves for the computation of drilled shaft settlements. The field and laboratory testing indicates that the cohesionless soil layers at this site are classified as sands with varying gravel contents. However, based on the gravel percentages the ‘sand’ classification was used to estimate the ‘ β ’ values and load transfer curves.

The engineering analyses considered there to be no redundancy for any of the drilled shafts. The base and side resistance factors for compression used in our analyses were 0.40 and 0.44, respectively.

There are no downdrag loads for the west abutment since the finished grade at this abutment will not be changing. However, there will be a downdrag load on the east abutment drilled shafts due

⁶ American Association of State Highway and Transportation Officials, **AASHTO LRFD Bridge Design Specifications**, 5th Edition, 2010.

⁷Arizona Department of Transportation Geotechnical Design Section, **Load Resistance Factor Design (LRFD), Development of Drilled Shaft Axial Resistance Charts for use by Bridge Engineers**, Geotechnical Design Policy DS-1, December 1, 2010.

⁸Arizona Department of Transportation Geotechnical Design Section, **Load Resistance Factor Design (LRFD), Design of Drilled Shafts in Gravel and Gravelly Soils Exhibiting Drained Behavior**, Geotechnical Design Policy DS-2, December 1, 2010

to the long term compression of the landfill materials with time (⁹Leonard & Floom). According to (¹⁰Watts and Charles, 1990), the landfill will continue to compress at an estimated 2 percent of the fill thickness per log cycle of time. The landfill is expected to settle approximately 2% of 360 inches (30 feet x 12 inches/foot) between year 10 and 100, or about 7.2 inches within this period of time. The landfill is approximately 27 years old, and therefore, there is an estimated 5.8 inches of additional settlement anticipated between the present time (2012) and the year 2085.

The downdrag load due to the landfill cap material and the municipal solid waste (MSW) has been calculated based on a negative skin friction method following the governing equation below:

$$Q_s = \pi B \sum_{i=1}^n Y_i Z_i \Delta Z_i \beta \tan \phi_i K_{oi} \text{ (for cohesionless materials)}$$

In which:

- Q_s = ultimate shaft side resistance
- B = shaft diameter
- Y_i = effective unit weight (pcf) of ith layer
- Z_i = depth from ground surface to midpoint of ith layer
- ΔZ_i = thickness of ith layer
- ϕ_i = friction angle of ith layer with concrete
- K_{oi} = ratio of horizontal stress to vertical stress of ith layer

The parameters for the MSW material were obtained from (¹¹Pelkey, 1989). The following table summarizes the parameters used in our analyses.

Material Type	Unit Weight (pcf)	Friction Angle (°)	K_o
Landfill Soil Cover – Silty Sand	120	32	0.7
Municipal Solid Waste	70	30	0.37

Based on these parameters, using a five foot diameter shaft, with 12 feet of landfill cover over 30 feet of MSW, the downdrag load was calculated as approximately 310 kips. Applying a load factor of 1.25, the total downdrag load for each drilled shaft is 388 kips. This value was added to the structural loads that were provided for our analysis of the drilled shafts for the East Abutment.

⁹Leonard, M.L., and Floom, K.J. **Estimating Method and Use of Landfill Settlement.**

¹⁰Watts, K.S. and J.A. Charles. (December, 1990). **Settlement of Recently Placed Domestic Refuse Landfill.** Proceedings of the Institution of Civil Engineers, Part 1: Design and Construction, Vol. 88, pgs. 971-993.

¹¹Pelkey, S.G. (1989). **Geotechnical Properties of Municipal Solid Waste.** A thesis submitted in partial fulfillment of the requirement for the Degree of Masters of Science in Engineering, University of New Brunswick.

Consideration to reduce the downdrag load by use of casing or other load transfer reduction systems were eliminated due to the cost of any such system being considerably more expensive than an additional three feet of drilled shaft penetration. An additional three feet of drilled shaft penetration at the bottom of the shaft will compensate for the downdrag load applied by the landfill.

Based on the subsurface exploration, laboratory test results, and the foregoing discussion, the following design subsurface profiles were used in the drilled shaft axial load analyses for the Pantano Wash Bridge. The pertinent engineering properties are summarized in the following table.

Summary of Subsurface Profiles for Drilled Shaft Analyses							
Foundation Element	Top of Layer (ft/elev.)	Bottom of Layer (ft/elev.)	Soil Type ¹	Unit Weight (pcf)	Std. Penetration N ₆₀ (blows/ft)	Height of Shaft Above Existing Grade (ft.)	Notes
East Abutment	0/2530	12/2518	SM	120	0	-1 ⁴	Downdrag ²
	12/2518	42/2488	MSW	70	0		Downdrag ²
	42/2488	50/2480	SM	125	75		
	50/2480	75//2455	SM	125	62		
	75/2455	100/2430	SM	125	75		
Pier #1	0/2518	21/2497	SM	115	0	-12 ⁴	Scour Zone ³
	21/2497	45/2473	SM	125	72		
	45/2473	55/2463	SM	125	64		
	55/2463	96/2422	SM	125	75		
Pier #2	0/2508	21/2487	SM	120	0	-2 ⁴	Scour Zone ³
	21/2487	30/2478	SW	120	45		
	30/2478	40/2468	SW	125	62		
	40/2468	100/2408	SM	125	75		
Pier #3	0/2514	36/2478	SM	120	0	-8 ⁴	Scour Zone ³
	36/2478	55/2459	SM	125	54		
	55/2459	96/2418	SM	125	75		
West Abutment	0/2530	20/2510	SM	115	0	-8.5 ⁴	Scour Zone ³
	20/2510	38/2492	GM	125	0		Scour Zone ³
	38/2492	65/2465	SM	120	58		
	65/2465	96/2434	SM	125	74		

¹Soil type used in this table is based on the classifications used in drilled shaft analyses based on procedures of AASHTO 2010 or those based on the December 1, 2010 Geotechnical Design Policy of ADOT

²This layer is used to account for the overburden on the shaft due to the MSW. This layer creates the downdrag load as outlined above.

³This layer is used to account for the overburden on the shaft due to the native soil within the zone of scour.

⁴Negative number indicates the top of shaft is below existing grade

4.3 Drilled Shaft Axial Load Analyses

Results of LRFD calculations for axial capacity of the drilled shaft foundations for each foundation substructure element of the proposed bridge are presented in Appendices C through G. The results of the analysis are summarized in the following table:

RESULTS OF AXIAL COMPRESSION LOAD CAPACITY ANALYSES									
Foundation Element	¹ Factored Load per Shaft (kips)	Drilled Shaft Diameter (ft.)	² Drilled Shaft Tip Below Existing Ground Surface (ft.)	Existing Ground Surface Elevation (ft.)	Design Tip Elevation (ft.)	³ Top of Drilled Shaft Elevation (ft.)	Length of Drilled Shaft (ft.)	Axial Strength Limit Resistance (kips)	Estimated Settlement at Strength Limit (in.)
East Abutment	1,021	5	74	2,530	2,456	2,529	73	1,022	<0.25
Pier #1	844	5	42	2,518	2,476	2,506	42	876	<0.25
Pier #2	1,194	5	50	2,508	2,458	2,506	48	1,233	<0.25
Pier #3	1,092	5	66	2,514	2,448	2,506	58	1,134	<0.25
West Abutment	602	5	46	2,530	2,484	2,521.5	37.5	642	<0.5

¹ The factored load includes downdrag for the East Abutment.

² The drilled shaft tip depths below existing grade consider scour and downdrag depths, where applicable.

³ Top of drilled shaft elevations provided by Structural Concepts.

The following are limitations or conditions assumed or used in development of the resistances presented on the calculations and load resistance charts:

- The load resistances are not based on the use of redundant shaft configurations. The effects of redundancy should be addressed by the bridge engineer.
- The normalized load-displacement curves used to develop the Service Limit State charts are contained in the ^{8,9}ADOT Geotechnical Design Policies (DS-1 and DS-2) dated December 1, 2010 for sand, gravelly and gravel soils.
- A “rigid” shaft was assumed without elastic shortening for simplicity of calculations.
- Based on the AASHTO LRFD Bridge Design Manual, 2010, Section 10.8.3.6.3, the reduction factor (η) for center-to-center spacing of drilled shafts less than 4 shaft diameters is calculated as follows:
 - $\eta = 0.65$ for a center-to-center spacing of 2.5 shaft diameters.
 - $\eta = 1.0$ for a center-to-center spacing of 4.0 shaft diameters.

For center-to-center spacings between 2.5 and 4.0 shaft diameters, linearly interpolated values should be used.

The results of the analyses are presented in Appendices C through G arranged by substructure. The sheets in each of the Appendices are organized in the following order:

- Design Shaft-Load Settlement Curve for a specific shaft diameter at a specific depth
- Input parameters used to develop the graphs
- Nominal End Bearing Resistance and Skin Friction Factors
- Service Limit Output Based on Settlement
- Shaft Resistance Tables
 - Nominal Load Shaft Resistance
 - Strength Limit State Shaft Resistance
 - Service Limit Loads Based on Allowable Settlement. One table for each allowable settlement: 0.1”, 0.25”, 0.50”, 0.75”, 1.00”, and 2.00”.
- Shaft Resistance Graphs
 - Nominal Load Shaft Resistance
 - Strength Limit State Shaft Resistance - Compression
 - Service Limit Loads Based on Allowable Settlement. One graph for each allowable settlement: 0.1”, 0.25”, 0.50”, 0.75”, 1.00”, and 2.00”.

4.4 Drilled Shaft Lateral Load Analyses

Lateral load analyses have been performed for all three piers within the Pantano Wash for both the 100 year flood and Superflood events. Based on the requirements within the ADOT Bridge Practice Guidelines the lateral load analyses at the abutments is not required for the 100 year flood event, but is required for the Superflood event.

Based on Section 10.8.3.8 and 10.7.3.12 of AASHTO 2010, the nominal horizontal resistance of drilled shafts and shaft groups should be based on modeling P-y curves for the soils at the site. Recommended geotechnical parameters for lateral load analysis of drilled shaft foundations have been developed for use in the computer program L-PILE that utilizes P-y curve analyses and are presented by structure in the following tables.

Pantano Wash Bridge – 100 Year Event						
Foundation Element	Top of Layer Depth/Elev. (ft)	Bottom of Layer Depth/Elev. (ft)	Soil Type (P-y curve model)	Unit Weight (pcf)	Friction Angle	Subgrade Reaction k_s (pci)
Pier #1 – (Top of Drilled Shaft EL 2506 ft)	0/2518	12/2506	Scour Zone	NA ¹		
	12/2506	28/2490				
	28/2490	45/2473	Sand (Reese)	125	38	225
	45/2473	55/2463	Sand (Reese)	125	36	200
	55/2463	96/2422	Sand (Reese)	125	40	225

Pantano Wash Bridge – 100 Year Event						
Foundation Element	Top of Layer Depth/Elev. (ft)	Bottom of Layer Depth/Elev. (ft)	Soil Type (P-y curve model)	Unit Weight (pcf)	Friction Angle	Subgrade Reaction k_s (pci)
Pier #2 – (Top of Drilled Shaft EL 2506 ft)	0/2508	2/2506	Scour Zone	NA ¹		
	2/2506	18/2490				
	18/2490	30/2478	Sand (Reese)	120	34	140
	30/2478	40/2468	Sand (Reese)	125	36	200
	40/2468	100/2408	Sand (Reese)	125	40	225
Pier #3 – (Top of Drilled Shaft EL 2506 ft)	0/2514	8/2506	Scour Zone	NA ¹		
	8/2506	24/2490				
	24/2490	55/2459	Sand (Reese)	125	36	200
	55/2459	96/2418	Sand (Reese)	125	40	225

¹Represents elevations above the scour depths and above the top of the drilled shafts.

Pantano Wash Bridge – Super Flood Event						
Foundation Element	Top of Layer Depth/Elev. (ft)	Bottom of Layer Depth/Elev. (ft)	Soil Type (P-y curve model)	Unit Weight (pcf)	Friction Angle	Subgrade Reaction k_s (pci)
East Abutment – (Top of Drilled Shaft EL 2529 ft)	0/2530	1/2529	Scour Zone	NA ¹		
	1/2529	45/2485				
	45/2485	50/2480	Sand (Reese)	125	40	225
	50/2480	75/2455	Sand (Reese)	125	36	200
	75/2455	100/2430	Sand (Reese)	125	40	225
Pier #1 – (Top of Drilled Shaft EL 2506 ft)	0/2518	12/2506	Scour Zone	NA ¹		
	12/2506	31/2487				
	31/2487	45/2473	Sand (Reese)	125	38	225
	45/2473	55/2463	Sand (Reese)	125	36	200
	55/2463	96/2422	Sand (Reese)	125	40	225
Pier #2 – (Top of Drilled Shaft EL 2506 ft)	0/2508	2/2506	Scour Zone	NA ¹		
	2/2506	21/2487				
	21/2487	30/2478	Sand (Reese)	120	34	140
	30/2478	40/2468	Sand (Reese)	125	36	200
	40/2468	100/2408	Sand (Reese)	125	40	225
Pier #3 – (Top of Drilled Shaft EL 2506 ft)	0/2514	8/2506	Scour Zone	NA ¹		
	8/2506	42/2472				
	42/2472	55/2459	Sand (Reese)	125	36	200
	55/2459	96/2418	Sand (Reese)	125	40	225

Pantano Wash Bridge – Super Flood Event						
Foundation Element	Top of Layer Depth/Elev. (ft)	Bottom of Layer Depth/Elev. (ft)	Soil Type (P-y curve model)	Unit Weight (pcf)	Friction Angle	Subgrade Reaction k_s (pci)
West Abutment – (Top of Drilled Shaft EL 2521½ ft)	0/2530	8½/2521½	Scour Zone		NA ¹	
	8½/2521½	60/2470				
	60/2470	65/2465	Sand (Reese)	120	36	200
	65/2465	96/2434	Sand (Reese)	125	38	225

¹Represents elevations above the scour depths and above the top of the drilled shafts.

Based on Section 10.7.3.12 of AASHTO 2010 the P-y curves need to be modeled to account for group effects when used in the design, utilizing P-multipliers included in Table 10.7.2.4-1 as outlined below:

Shaft Center to Center Spacing (in the direction of loading)	P-Multipliers		
	Row 1	Row 2	Row 3 and Higher
3B	0.7	0.5	0.35
5B	1.0	0.85	0.7

Other provisions outlined in Section 10.7.2.4 of AASHTO 2010 should be applied in the lateral load analyses of drilled shaft foundations. In accordance with Table 10.5.5.2.3-1 a resistance factor of 1.0 may be applied to the geotechnical resistance values determined in accordance with the values outlined above.

Based on the memorandum from ¹²ADOT Geotechnical Design Section and titled, “Load Resistance Factor Design (LRFD); Analysis of Drilled Shafts Subjected to Lateral Loads”, a y-modification factor (y_m) should be used within potentially collapse-susceptible soil layers. Collapse-susceptible soils were not encountered within the limits of this project. Thus, no modification of the y value will be required or was used for the lateral capacity analyses.

Based on the above design parameters, we performed L-Pile analyses for each of the scour conditions. Results of the L-Pile analyses for the drilled shaft foundations for each foundation substructure element of the proposed bridge are presented in Appendices H through L. The following tables summarize the loading conditions and results of the L-PILE analyses.

¹²Arizona Department of Transportation Geotechnical Design Section, *Load Resistance Factor Design (LRFD), Analysis of Drilled Shafts Subjected to Lateral Loads based on Load and Resistance Factor (LRFD) Design Methodology*, Geotechnical Design Policy DS-3, December 1, 2010

Pantano Wash Bridge – 100 Year Event							
Foundation Element	Loading at Pile Head as Provided by Structural Concepts			Length of Drilled Shaft/Tip Elevation (ft.)	Deflection at Pile Head (in.)	Maximum Moment (ft. – kips)	Approximate Depth at Maximum Moment (ft.)
	Moment (ft. – kips)	Shear (kips)	Axial (kips)				
Pier #1	1330	26	600	42/2,464	1.6	1,876	19.5
Pier #2	1330	26	600	48/2,458	1.5	1,877	20.0
Pier #3	1380	30	680	58/2,448	1.7	2,024	20.0

Pantano Wash Bridge – Super Flood Event							
Foundation Element	Loading at Pile Head as Provided by Structural Concepts			Length of Drilled Shaft/Tip Elevation (ft.)	Deflection at Pile Head (in.)	Maximum Moment (ft. – kips)	Approximate Depth at Maximum Moment (ft.)
	Moment (ft. – kips)	Shear (kips)	Axial (kips)				
East Abut.	316 ¹	17 ¹	610 ¹	73/2,456	1.1	1,158	47.5
Pier #1	434 ¹	9 ¹	725 ¹	42/2,464	0.28	637	22.5
Pier #2	434 ¹	9 ¹	725 ¹	48/2,460	0.27	643	23.5
Pier #3	450 ¹	15 ¹	694 ¹	58/2,448	0.83	1,037	37.5
West Abut.	223 ²	10 ²	260 ²	86.5/2,435.5	0.96	781	55.0

Note 1: These loads are Strength Limit Loads as provided by Structural Concepts.

Note 2: These loads are Service Limit Loads as provided by Structural Concepts.

4.5 Summary of Drilled Shaft Analyses

For each drilled shaft, an axial load analysis was performed to determine the required tip elevation to support the design axial capacity, followed by a lateral load analysis using this tip elevation, the results of which are presented in previous sections of this report. At the West Abutment, the tip elevation for axial support is not sufficient for lateral loading conditions (including scour). Therefore, the lateral analysis for this location was performed using the final design tip elevation provided by Structural Concepts.

Foundation Element	Drilled Shaft Diameter (ft.)	Control Mode	Top of Drilled Shaft Elev. (ft.)	Design Tip Elevation for Axial Capacity	Design Tip Elevation for Lateral Capacity	Final Design Tip Elevation	Final Tip Elev. Meets Capacity Analyses
East Abut.	5	Axial	2,529	2,456	2,456	2,456	YES
Pier #1	5	Axial	2,506	2,476	2,476	2,446	YES
Pier #2	5	Axial	2,506	2,458	2,458	2,446	YES
Pier #3	5	Axial	2,506	2,448	2,448	2,440	YES
West Abut.	5	Lateral	2,521.5	2,484	2,435.5	2,435.5	YES

In the preceding table, the top of drilled shaft elevations were provided by the design team. The final design tip elevations for Pier #1, #2, and #3 were determined by Structural Concepts and provided to Terracon.

4.6 Drilled Shaft Construction Considerations

Temporary casing will likely be required during drilled shaft excavation to prevent caving in the granular soils or caving in the MSW materials. In caving granular soils another temporary stabilization technique would be to overdrill the caving zone, backfill with lean concrete and re-drill with the design shaft diameter the following day. Temporary casing should also be used whenever shafts are installed adjacent to existing structures or improvements to reduce potential ground loss and movement due to drilled shaft excavation. Shaft concrete should be placed immediately after completion of drilling and cleaning. Due to potential sloughing and raveling, foundation concrete quantities may exceed calculated geometric volumes.

If casing is used for drilled shaft construction, it should be withdrawn in a slow continuous manner maintaining a sufficient head of concrete above the bottom of the casing at all times to prevent infiltration of water or the creation of voids in shaft concrete. Shaft concrete should have a relatively high fluidity when placed in cased pier holes or through a tremie. Pier concrete with slump in the range of 6 to 8 inches is recommended. All drilled shaft construction techniques should be in accordance with Section 609 of the Arizona Department of Transportation (ADOT) Standard Specifications.

Free-fall concrete placement in drilled shafts will only be acceptable if provisions are taken to avoid striking the concrete on the sides of the hole or reinforcing steel. The use of a bottom-dump hopper, or an elephant's trunk discharging near the bottom of the hole where concrete segregation will be minimized, is recommended.

4.7 Lateral Earth Pressures

Lateral earth pressures on bridge abutment walls will be dependent on the materials used as backfill. We recommend materials used for abutment and retaining wall backfill meet the requirements of ADOT Structure Backfill. Structure backfill should be in accordance with Section 203 of the Arizona Department of Transportation (ADOT) Standard Specifications. The on-site sand and gravel soils are also acceptable for use as structure backfill.

Abutment and retaining walls on the project should be designed in accordance with the provisions of Section 11 of AASHTO 2010. For soils above any free water surface, recommended lateral earth pressures and load/resistance factors in accordance with Section 11.5.5 and Table 3.4.1.2 of AASHTO 2010 for unrestrained retaining structures are:

Backfill Type	Active¹ (psf/ft)	Passive (psf/ft)	At-Rest¹ Case (psf/ft)
On-site non-plastic sand soils	40	360	55
ADOT Structure Backfill	35	440	50
Load/Resistance Factor	1.50	.75	1.35

¹ Assumes a level backfill condition at the top of the wall, values should be increased for any sloping backfill configurations

The lateral earth pressures presented above do not include any hydrostatic loading or surcharge due to live loads acting on approach slabs. Appropriate additional loading and load factors should be applied in the design.

If ADOT Structure Backfill is specified in the design, the wall backfill should be placed in accordance with the details shown on ADOT Standard Drawing B-19.40. To reduce the potential of hydrostatic loading on retaining walls, drainage systems should be incorporated into the design where applicable. Drain systems consisting of continuous porous backfill or geocomposite as outlined in ADOT Standard Drawing B-19.10 are recommended. Drain systems should be discharged to weep holes appropriately placed along the face of each wall.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from a limited number of borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or

Geotechnical Engineering Report

Sabino Canyon Road Extension - Pantano Wash Bridge

Tucson, Arizona

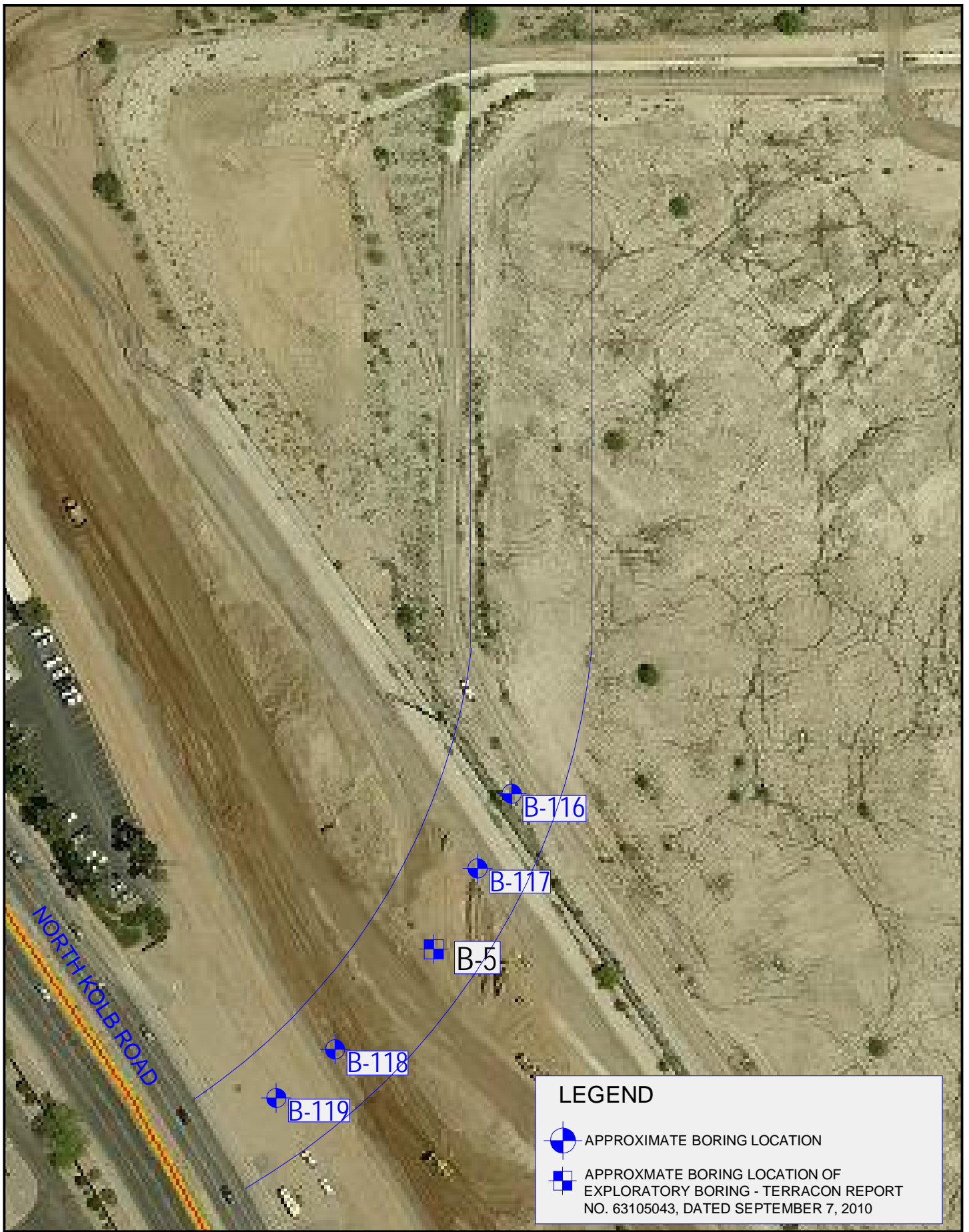
November 6, 2013 ■ Terracon Project No. 63125005





prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A
FIELD EXPLORATION



LEGEND

-  APPROXIMATE BORING LOCATION
-  APPROXIMATE BORING LOCATION OF EXPLORATORY BORING - TERRACON REPORT NO. 63105043, DATED SEPTEMBER 7, 2010

Project Mng:	BMB	Project No.	63125005
Drawn By:	RSK	Scale:	NA
Checked By:	BMB	File No.	63125005R.DWG
Approved By:	BMB	Date:	12/2012

Terracon
 Consulting Engineers and Scientists

355 SOUTH EUCLID, SUITE 107 TUCSON, ARIZONA 85719
 PH. (520) 770-1789 FAX. (520) 792-2539

SITE PLAN & BORING LOCATIONS DIAGRAM

PSOMAS

SABINO CANYON ROAD EXTENSION

PANTANO WASH BRIDGE

TUCSON ARIZONA

EXHIBIT

A-1

Field Exploration Description

Terracon completed one boring at each substructure on May 27, 2010, and March 2 through 12, 2012. The borings were drilled to depths of approximately 96 to 101½ feet below the ground surface at the approximate locations shown on the attached Site Plan and Boring Locations Diagram, Exhibit A-1.

The test borings were advanced with a truck-mounted CME-55 or CME-75 drill rig utilizing an 8-inch outer diameter hollow stem auger. The borings were located in the field by using the proposed site plan, an aerial photograph of the site, and measuring from existing property lines. The accuracy of boring locations should only be assumed to the level implied by the method used.

Continuous lithologic logs of each boring were recorded by the field geologist during the drilling operations. At selected intervals, samples of the subsurface materials were taken by driving split-spoon or ring-barrel samplers. Bulk samples of subsurface materials were also obtained.

Penetration resistance measurements were obtained by driving the split-spoon and ring-barrel samplers into the subsurface materials with a 140-pound automatic hammer falling 30 inches. The penetration resistance value is a useful index in estimating the consistency or relative density of materials encountered.

Groundwater conditions were evaluated in each boring at the time of site exploration.

Methane monitoring was performed while drilling landfill locations using a Landtech GA90 monitor. Methane levels remained below 0.2% methane/vol of air during exploration.

LOG OF BORING NO. B-116

CLIENT
PSOMAS

SITE
**Mullins Landfill Bridge
Tucson, Arizona**

PROJECT
Sabino-Kolb Extention

GRAPHIC LOG

DESCRIPTION

Approx. Surface Elev.: 2530 ft

DEPTH, ft.	USCS SYMBOL	SAMPLE			TESTS				
		INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pcf	LIQUID LIMIT	PLASTICITY INDEX	#200
2	SM	↑ ↓	BS						
6	SM	X	RS	30					
10	SM	X	SS	23					
20		X	SS	8					
26		X	SS	6					
30		X	SS	6					

FILL - LANDFILL CAP, SILTY SAND;
light brown, medium dense, slightly damp, non-plastic.

LANDFILL DEBRIS CONSISTING OF SOIL AND MUNICIPAL WASTE WITH VISIBLE PIECES OF NEWSPAPER, CLOTHES AND PLASTIC.

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None WD	▼
WL		▼
WL	Backfilled Upon Completion	



BORING STARTED		3-8-12	
BORING COMPLETED		3-8-12	
RIG	CME-75	FOREMAN	BCW
APPROVED	BMB	JOB #	63125005

BOREHOLE 2008 63125005.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-116

CLIENT
PSOMAS

SITE
**Mullins Landfill Bridge
Tucson, Arizona**

PROJECT
Sabino-Kolb Extention

GRAPHIC LOG

DESCRIPTION

DEPTH, ft.	USCS SYMBOL	SAMPLE			TESTS				
		INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pcf	LIQUID LIMIT	PLASTICITY INDEX	#200
36		X	SS	7					
40	SM	X	SS	16					
46	SM	X	SS	77/11"					
50	SM	X	RS	86/9"					
56	SM	X	RS	76					
60	SM	X	SS	46					
66	SM	X	SS	65					

LANDFILL DEBRIS CONSISTING OF SOIL AND MUNICIPAL WASTE WITH VISIBLE PIECES OF NEWSPAPER, CLOTHES AND PLASTIC.

SILTY SAND: light brown, dense to very dense, slightly damp, non-plastic, occasional cobbles.

42

2488

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft

WL	▽	None WD	▽
WL	▽		▽
WL	Backfilled Upon Completion		



BORING STARTED		3-8-12	
BORING COMPLETED		3-8-12	
RIG	CME-75	FOREMAN	BCW
APPROVED	BMB	JOB #	63125005

BOREHOLE 2008 63125005.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-116

CLIENT
PSOMAS

SITE
**Mullins Landfill Bridge
Tucson, Arizona**

PROJECT
Sabino-Kolb Extention

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	SAMPLE			TESTS					
			USCS SYMBOL	INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pcf	LIQUID LIMIT	PLASTICITY INDEX	#200
101	SILTY SAND: light brown, dense to very dense, slightly damp, non-plastic, occasional cobbles.	72	SM	X	SS	44					
		74									
		76	SM	X	RS	85/10"					
		78									
		80	SM	X	SS	77					
		82									
		84									
		86	SM	X	SS	82					
		88									
		90	SM	X	SS	92/11"					
	92										
	94										
	96	SM	X	SS	80/11"						
	98										
	100	SM			84	84					
	2429										
	<u>BOTTOM OF BORING.</u>										

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	▽ None	WD
WL	▽	▽
WL	Backfilled Upon Completion	



BORING STARTED	3-8-12
BORING COMPLETED	3-8-12
RIG CME-75	FOREMAN BCW
APPROVED BMB	JOB # 63125005

BOREHOLE 2008 63125005.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-117

CLIENT
PSOMAS

SITE
**Mullins Landfill Bridge
Tucson, Arizona**

PROJECT
Sabino-Kolb Extention

GRAPHIC LOG

DESCRIPTION

Approx. Surface Elev.: 2518 ft

DEPTH, ft.	USCS SYMBOL	SAMPLE			TESTS				
		INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pcf	LIQUID LIMIT	PLASTICITY INDEX	#200
2	GP-GM	↑ ↓	BS						
6	GP-GM	X	SS	50/6"					
10	GP-GM	X	SS	25					
16	GP-GM	X	SS	50/3"					
20	SM	X	SS	32					
26	SM	X	SS	48					
30	SM	X	SS	58					

POORLY GRADED GRAVEL WITH SILT AND SAND: light brown, medium dense to very dense, damp, non-plastic.

SILTY SAND: light brown, dense to very dense, slightly damp to damp, non-plastic.

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None WD	▼
WL		▼
WL	Backfilled Upon Completion	



BORING STARTED		3-12-12	
BORING COMPLETED		3-12-12	
RIG	CME-75	FOREMAN	BCW
APPROVED	BMB	JOB #	63125005

BOREHOLE 2008 63125005.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-117

CLIENT
PSOMAS

SITE
**Mullins Landfill Bridge
Tucson, Arizona**

PROJECT
Sabino-Kolb Extention

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	SAMPLE			TESTS					
			USCS SYMBOL	INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pcf	LIQUID LIMIT	PLASTICITY INDEX	#200
	<p>SILTY SAND: light brown, dense to very dense, slightly damp to damp, non-plastic.</p>	36	SM	X	SS	54					
38											
40		SM	X	SS	94/11"						
42											
44											
46		SM	X	SS	80/11"						
48											
50		SM	X	SS	49						
52											
54											
56	SM	X	SS	48							
58											
60	SM	X	SS	58							
62											
64											
66	SM	X	SS	86/11"							
68											
70											

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None WD	▼
WL		▼
WL	Backfilled Upon Completion	



BORING STARTED		3-12-12	
BORING COMPLETED		3-12-12	
RIG	CME-75	FOREMAN	BCW
APPROVED	BMB	JOB #	63125005

BOREHOLE 2008 63125005.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-117

CLIENT <p style="text-align: center;">PSOMAS</p>	
SITE <p style="text-align: center;">Mullins Landfill Bridge Tucson, Arizona</p>	PROJECT <p style="text-align: center;">Sabino-Kolb Extention</p>

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	SAMPLE			TESTS					
			USCS SYMBOL	INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pcf	LIQUID LIMIT	PLASTICITY INDEX	#200
88	<p>SILTY SAND: light brown, dense to very dense, slightly damp to damp, non-plastic.</p>	72	SM	X	SS	67					
		74									
		76	SM	X	SS	81					
		78									
		80	SM	X	SS	85/9"					
		82									
		84									
		86	SM	X	SS	70					
		88	SM	X	SS	50/5"					
	<p>Practical auger refusal at 88 feet on cobbles and boulders. <u>BOTTOM OF BORING.</u></p>	2430									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft

WL	▼	None WD	▼
WL	▼		▼
WL		Backfilled Upon Completion	



BORING STARTED	3-12-12
BORING COMPLETED	3-12-12
RIG CME-75	FOREMAN BCW
APPROVED BMB	JOB # 63125005

BOREHOLE 2008 63125005.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-5

CLIENT **PSOMAS**

SITE **S. of Tanque Verde Rd. & N. of Mullins Landfill
Tucson, Arizona**

PROJECT **Sabino Kolb Extension**

DESCRIPTION

Approx. Surface Elev.: 2508 ft

DEPTH, ft.	USCS SYMBOL	INTERVAL	SAMPLE		TESTS					
			TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pcf	LIQUID LIMIT	PLASTICITY INDEX	#200	
0	SM		BS							
2	SM		RS	54						
6	SM		SS	64/10"						14
10	SM		RS	39						
16	SW-SM		SS	26						8
22	SW-SM		SS	80/10"						
26	SW-SM		SS	33						
30	SW-SM		SS	35						

SILTY SAND WITH GRAVEL; brown, dense to very dense, slightly damp, low plasticity.

SAND WITH SILT AND GRAVEL; red brown, dense to very dense, slightly damp, low plasticity.

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None	WD
WL		
WL	Backfilled Upon Completion	



BORING STARTED	5-27-10
BORING COMPLETED	5-27-10
RIG CME-55	FOREMAN HPS
APPROVED OBL	JOB # 63105043

BOREHOLE 2008 63105043.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-5

CLIENT **PSOMAS**

SITE **S. of Tanque Verde Rd. & N. of Mullins Landfill
Tucson, Arizona**

PROJECT **Sabino Kolb Extension**

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	SAMPLE			TESTS						
			USCS SYMBOL	INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pct	LIQUID LIMIT	PLASTICITY INDEX	#200	
36	SILTY SAND: tan, medium dense to very dense, slightly damp, non-plastic.	2472	SW-SM	X	RS	100	8	127				
			SM	X	SS	43					22	
				SM	X	SS	50/2"					
				SM	X	SS	94					
				SM	X	RS	89/9"	10	123			
				SM	X	SS	89/11"					
				SM	X	SS	36			NP	NP	20

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None WD	▼
WL		▼
WL	Backfilled Upon Completion	



BORING STARTED	5-27-10
BORING COMPLETED	5-27-10
RIG CME-55	FOREMAN HPS
APPROVED OBL	JOB # 63105043

BOREHOLE 2008 63105043.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-5

CLIENT **PSOMAS**

SITE **S. of Tanque Verde Rd. & N. of Mullins Landfill
Tucson, Arizona**

PROJECT **Sabino Kolb Extension**

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	SAMPLE			TESTS					
			USCS SYMBOL	INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pct	LIQUID LIMIT	PLASTICITY INDEX	#200
	SILTY SAND: tan, medium dense to very dense, slightly damp, non-plastic.	72	SM	X	SS	73/11"					
		74									
		76	SM	X	RS	50/6"	8	99			
		78									
		80	SM	X	SS	79					
		82									
		84									
		86	SM	X	SS	68					
		88									
		90	SM	X	SS	89					
		92									
		94									
		96	SM	X	RS	50/4"					
		98									
		100	SM	X	SS	76					
	101.5										
	2406.5										
	<u>BOTTOM OF BORING.</u>										

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None WD	▼
WL	▼	▼
WL	Backfilled Upon Completion	



BORING STARTED		5-27-10	
BORING COMPLETED		5-27-10	
RIG	CME-55	FOREMAN	HPS
APPROVED	OBL	JOB #	63105043

BOREHOLE 2008 63105043.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-118

CLIENT
PSOMAS

SITE
**Mullins Landfill Bridge
Tucson, Arizona**

PROJECT
Sabino-Kolb Extention

GRAPHIC LOG

DESCRIPTION

Approx. Surface Elev.: 2514 ft

DEPTH, ft.	USCS SYMBOL	INTERVAL	SAMPLE			TESTS				
			TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pcf	LIQUID LIMIT	PLASTICITY INDEX	#200	
2	GP-GM		BS					NP	NP	6
6	GP-GM		SS	20						
10	SC-SM		SS	47						
16	SC-SM		SS	66/11"						
20	SM		SS	72						
26	SM		SS	34						
30	SM		RS	75	7	111				

POORLY GRADED GRAVEL WITH SILT AND SAND; light brown, medium dense, damp, non-plastic, occasional cobbles and boulders.

SILTY CLAYEY SAND WITH GRAVEL; light brown, dense to very dense, damp, low plasticity, occasional cobbles and boulders.

SILTY SAND; light brown, dense to very dense, damp, no to low plasticity.

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None WD	
WL		
WL	Backfilled Upon Completion	



BORING STARTED	3-5-12
BORING COMPLETED	3-5-12
RIG CME-75	FOREMAN OBL
APPROVED BMB	JOB # 63125005


BOREHOLE 2008 63125005.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-118

CLIENT
PSOMAS

SITE
**Mullins Landfill Bridge
Tucson, Arizona**

PROJECT
Sabino-Kolb Extention

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	SAMPLE			TESTS					
			USCS SYMBOL	INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pcf	LIQUID LIMIT	PLASTICITY INDEX	#200
	SILTY SAND: light brown, dense to very dense, damp, no to low plasticity.	36	SM	X	SS	41					
		38									
		40	SM	X	SS	89/11"					
		42									
		44									
		46	SM	X	SS	45			NP	NP	20
		48									
		50	SM	X	SS	38					
		52									
		54									
	56	SM	X	RS	61						
	58										
	60	SM	X	SS	59						
	62										
	64										
	66	SM	X	SS	57						
	68										
	70										

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None WD	▼
WL		▼
WL	Backfilled Upon Completion	



BORING STARTED		3-5-12	
BORING COMPLETED		3-5-12	
RIG	CME-75	FOREMAN	OBL
APPROVED	BMB	JOB #	63125005

BOREHOLE 2008 63125005.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-118

CLIENT <p style="text-align: center;">PSOMAS</p>	
SITE <p style="text-align: center;">Mullins Landfill Bridge Tucson, Arizona</p>	PROJECT <p style="text-align: center;">Sabino-Kolb Extention</p>

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	SAMPLE			TESTS					
			USCS SYMBOL	INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pcf	LIQUID LIMIT	PLASTICITY INDEX	#200
72	SILTY SAND: light brown, dense to very dense, damp, no to low plasticity.	72	SM	X	SS	86/11"					
74		74									
76		76	SM	X	SS	79/11"					
78		78									
80		80	SM	X	SS	50/3"					
82		82									
84		84									
86	86	SM	X	SS	89/11"						
88	88										
90	90	SM	X	SS	84						
92	92										
94	94										
96	96	SM	X	SS	50/6"						
97	97	2417									
	Practical auger refusal at 97 feet on cobbles and boulders. <u>BOTTOM OF BORING.</u>										

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None WD	▼
WL		▼
WL	Backfilled Upon Completion	



BORING STARTED		3-5-12	
BORING COMPLETED		3-5-12	
RIG	CME-75	FOREMAN	OBL
APPROVED	BMB	JOB #	63125005

BOREHOLE 2008 63125005.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-119

CLIENT
PSOMAS

SITE
**Mullins Landfill Bridge
Tucson, Arizona**

PROJECT
Sabino-Kolb Extention

GRAPHIC LOG

DESCRIPTION

DEPTH, ft.	USCS SYMBOL	SAMPLE			TESTS				
		INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pct	LIQUID LIMIT	PLASTICITY INDEX	#200
36	GP-GM	X	SS	83/8"			NP	NP	2
38									
40	SM	X	SS	69					
42									
44									
46	SM	X	SS	41			NP	NP	24
48									
50	SM	X	RS	50/3"					
52									
54									
56	SM	X	SS	42					
58									
60	SM	X	SS	39			NP	NP	19
62									
64									
66	SM	X	RS	76/11"					
68									
70									

38 **POORLY GRADED GRAVEL WITH SAND**; brown, very dense, damp, non-plastic. 2492

SILTY SAND; light brown, dense to very dense, damp, non-plastic, auger refusal at 97 feet.

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	None	WD
WL		
WL	Backfilled Upon Completion	



BORING STARTED	3-2-12
BORING COMPLETED	3-2-12
RIG CME-75	FOREMAN OBL
APPROVED BMB	JOB # 63125005

BOREHOLE 2008 63125005.GPJ TERR2000.GDT 9/3/13

LOG OF BORING NO. B-119

CLIENT <p style="text-align: center;">PSOMAS</p>	
SITE <p style="text-align: center;">Mullins Landfill Bridge Tucson, Arizona</p>	PROJECT <p style="text-align: center;">Sabino-Kolb Extention</p>

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	SAMPLE			TESTS					
			USCS SYMBOL	INTERVAL	TYPE	PENETRATION TEST RESULTS (BLOWS/FT.)	WATER CONTENT, %	DRY DENSITY pct	LIQUID LIMIT	PLASTICITY INDEX	#200
97	<p>SILTY SAND: light brown, dense to very dense, damp, non-plastic, auger refusal at 97 feet.</p>	72	SM	X	SS	90/9"					
		74									
		76	SM	X	SS	50/4"					
		78									
		80	SM	X	SS	90					
		82									
	84										
	86	SM	X	SS	52						
	88										
	90	SM	X	SS	85						
	92										
	94										
	96	SM	X	SS	64						
97	2433										
<u>BOTTOM OF BORING.</u>											

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft

WL	▼	None WD	▼
WL	▼		▼
WL		Backfilled Upon Completion	



BORING STARTED	3-2-12
BORING COMPLETED	3-2-12
RIG CME-75	FOREMAN OBL
APPROVED BMB	JOB # 63125005

BOREHOLE 2008 63125005.GPJ TERR2000.GDT 9/3/13

GENERAL NOTES

DRILLING & SAMPLING SYMBOLS:

SS:	Split Spoon - 1- ³ / ₈ " I.D., 2" O.D., unless otherwise noted	HS:	Hollow Stem Auger
MC:	Modified California Sampler – 2.5" O.D., unless otherwise noted	DC:	Dynamic Cone
RS:	Ring Sampler - 2.42" I.D., 3" O.D., unless otherwise noted	HA:	Hand Auger
BS:	Bulk Sample or Auger Sample	GS:	Grab Sample
Hammer Blows:	Number of Blows to advance the 9" O.D. steel casing one foot with the diesel hammer at "full" throttle.	WB:	Wash Boring or Mud Rotary

The number of blows required to advance a standard 2-inch O.D. split-spoon sampler (SS) the last 12 inches of the total 18-inch penetration with a 140-pound hammer falling 30 inches is considered the "Standard Penetration" or "N-value". For 3" O.D. ring samplers (RS) the penetration value is reported as the number of blows required to advance the sampler 12 inches using a 140-pound hammer falling 30 inches, reported as "blows per foot," and is not considered equivalent to the "Standard Penetration" or "N-value".

WATER LEVEL MEASUREMENT SYMBOLS:

WL:	Water Level	WS:	While Sampling
WCI:	Wet Cave in	WD:	While Drilling
DCI:	Dry Cave in	BCR:	Before Casing Removal
AB:	After Boring	ACR:	After Casing Removal

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. Groundwater levels at other times and other locations across the site could vary. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels may not be possible with only short-term observations.

DESCRIPTIVE SOIL CLASSIFICATION: Soil classification is based on the Unified 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 and/or described on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

CONSISTENCY OF FINE-GRAINED SOILS

<u>Unconfined Compressive Strength, Qu, psf</u>	<u>Standard Penetration or N-value (SS) Blows/Ft.</u>	<u>Consistency</u>
< 500	<2	Very Soft
500 – 1,000	2-3	Soft
1,001 – 2,000	4-6	Medium Stiff
2,001 – 4,000	7-12	Stiff
4,001 – 8,000	13-26	Very Stiff
8,000+	26+	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS

<u>Standard Penetration or N-value (SS) Blows/Ft.</u>	<u>Ring Sampler (RS) Blows/Ft.</u>	<u>Relative Density</u>
0 – 3	0-6	Very Loose
4 – 9	7-17	Loose
10 – 29	18-55	Medium Dense
30 – 49	56-95	Dense
50+	96+	Very Dense

RELATIVE PROPORTIONS OF SAND AND GRAVEL

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

GRAIN SIZE TERMINOLOGY

<u>Major Component of Sample</u>	<u>Particle Size</u>
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75 mm)
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

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 5
With	5 – 12
Modifiers	> 12

PLASTICITY DESCRIPTION

<u>Term</u>	<u>Plasticity Index</u>
Non-plastic	0-3
Low	4-15
Medium	16-25
High	25+

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	
	Sands 50% or more of coarse fraction passes No. 4 sieve	Gravels with Fines More than 12% fines ^C	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	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OL	Organic clay ^{K,L,M,N}	
					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	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OH	Organic clay ^{K,L,M,P}	
					Organic silt ^{K,L,M,O}	
Highly organic soils	Primarily organic matter, dark in color, and organic odor		PT	Peat		

^ABased on the material passing the 3-in. (75-mm) sieve

^BIf field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^CGravels 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.

^DSands 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

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

^FIf soil contains $\geq 15\%$ sand, add "with sand" to group name.

^GIf fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^HIf fines are organic, add "with organic fines" to group name.

^IIf soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^JIf Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^KIf soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^LIf soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

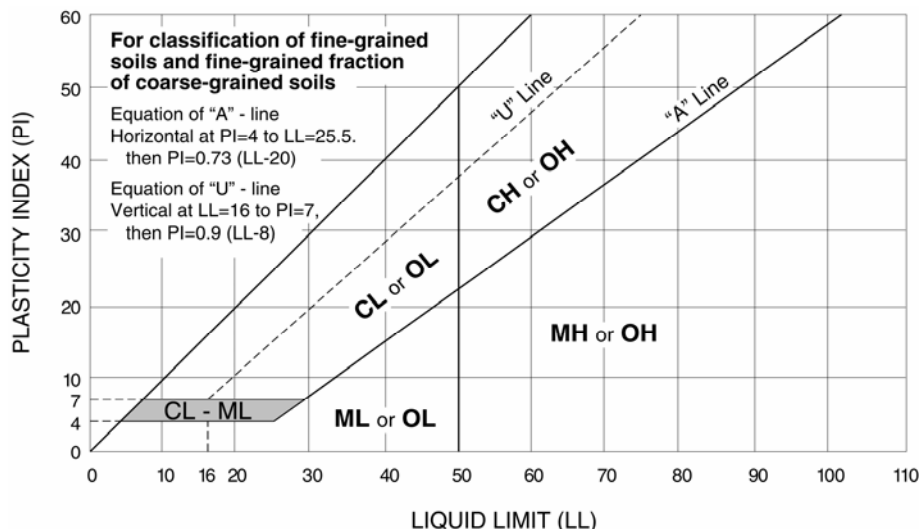
^MIf soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ 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.



APPENDIX B
LABORATORY TESTING

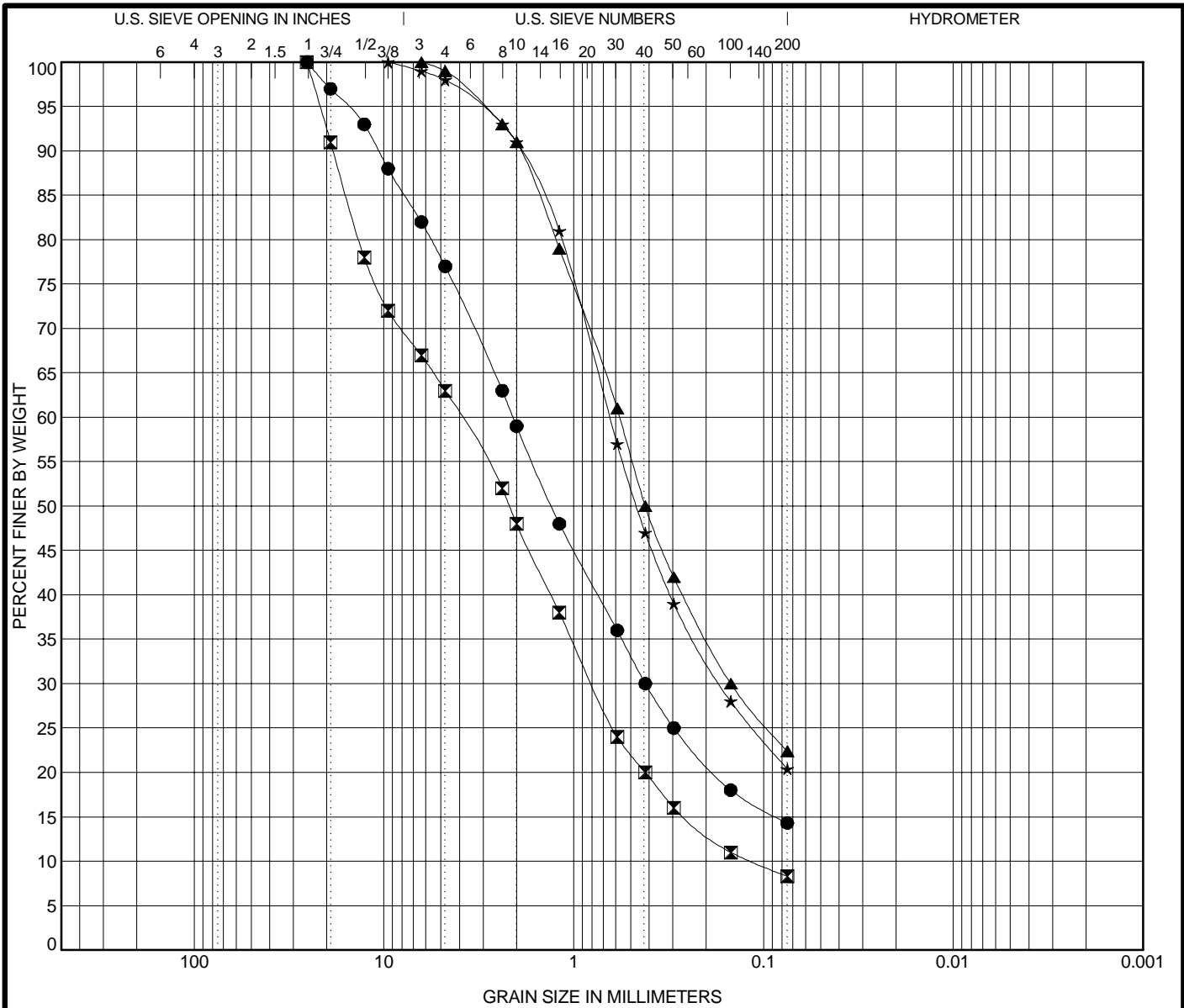
Laboratory Testing

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix A. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Selected soil samples obtained from the site were tested for the following engineering properties:

- Direct Shear
- Sieve Analysis
- Atterberg Limits
- In-situ Water Content
- In-situ Dry Density



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	USCS Soil Classification	LL	PL	PI	Cc	Cu
● B-5 5.0 ft	SILTY SAND (SM)					
☒ B-5 15.0 ft	SAND WITH SILT AND GRAVEL (SP-SM)				1.4	34.0
▲ B-5 40.0 ft	SILTY SAND (SM)					
★ B-5 65.0 ft	SILTY SAND(SM)	NP	NP	NP		

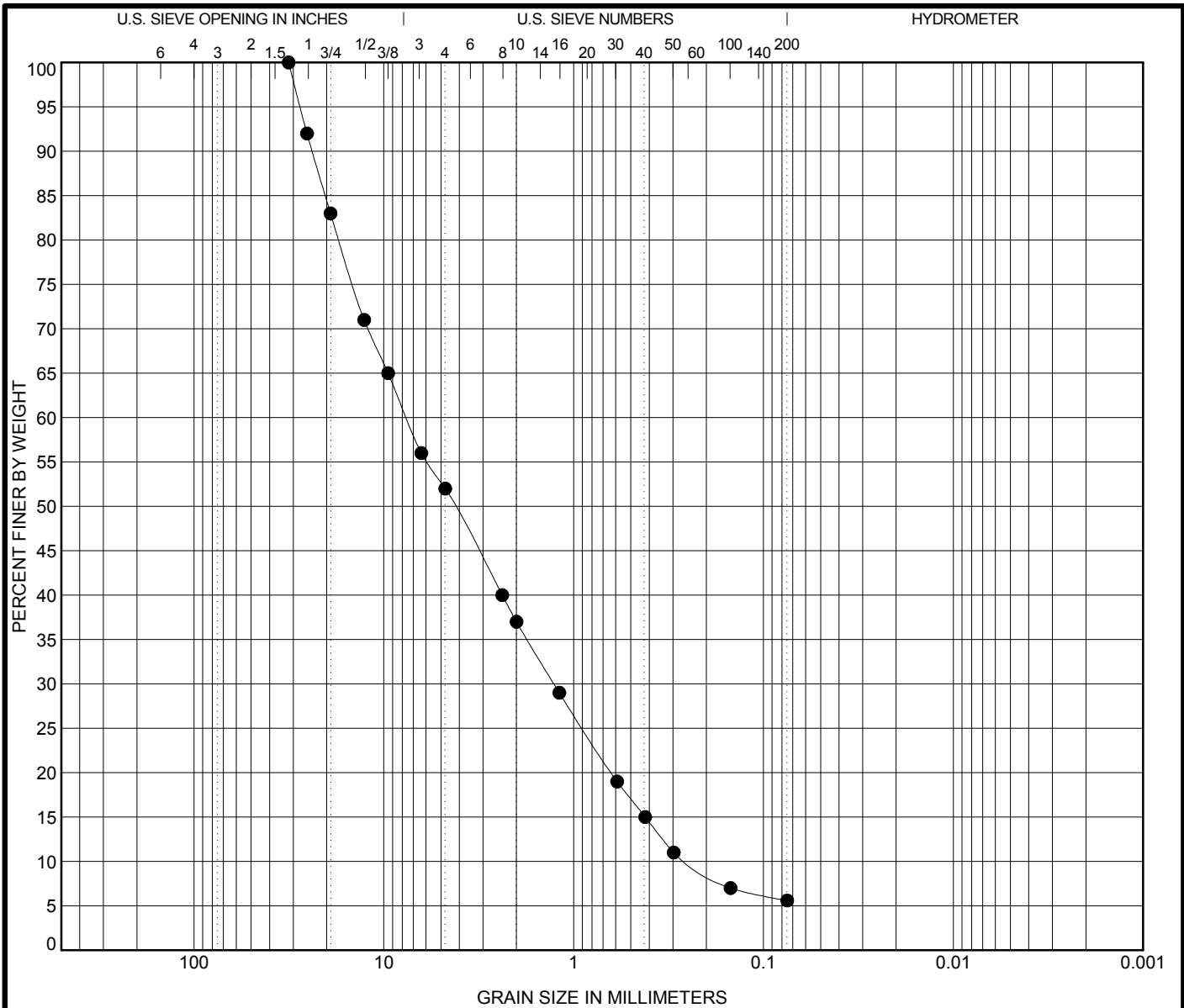
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-5 5.0 ft	25.4	2.089	0.42		23	63	14	
☒ B-5 15.0 ft	25.4	3.934	0.797	0.116	37	55	8	
▲ B-5 40.0 ft	6.35	0.572	0.149		1	77	22	
★ B-5 65.0 ft	9.5	0.644	0.169		2	78	20	



GRAIN SIZE DISTRIBUTION

Project: Sabino Kolb Extension
 Site: S. of Tanque Verde Rd. & N. of Mullins Landfill Tucson, Arizona
 Job #: 63105043
 Date: 12-20-12

TC: GRAIN SIZE MULTI 63105043.GPJ TERRACON.GDT 12/20/12



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	USCS Soil Classification					LL	PL	PI	Cc	Cu
● B-118 0.0 ft	POORLY GRADED GRAVEL with SILT and SAND(GP-GM)					NV	NP	NP	0.8	30.4

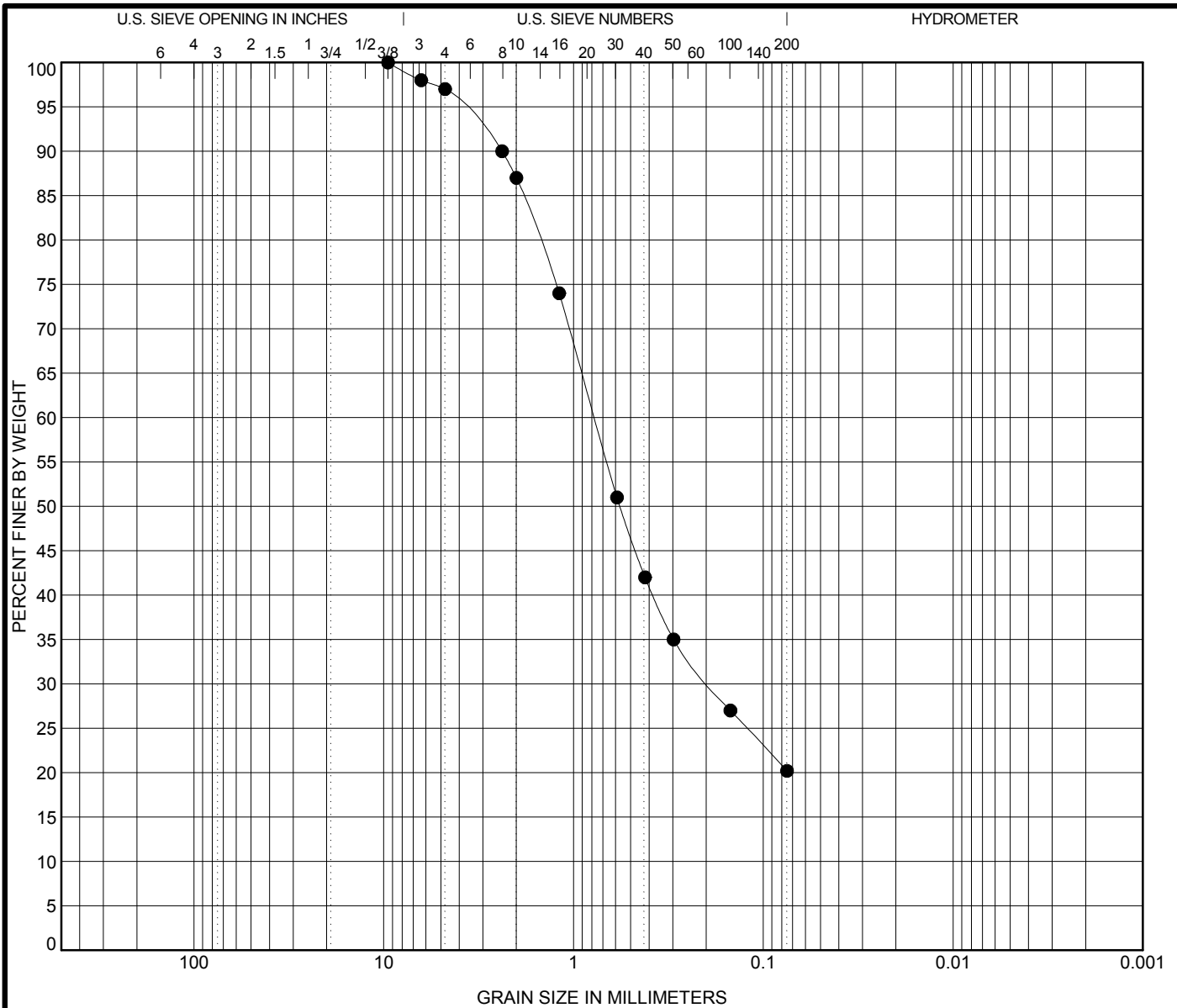
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-118 0.0 ft	31.75	7.595	1.27	0.25	48.0	46.4	5.6	

GRAIN SIZE DISTRIBUTION



Project: Sabino-Kolb Extention
 Site: Pantano Wash and Mullins Landfill Crossings Tucson, Arizona
 Job #: 63125005
 Date: 12-19-12

TC_GRAIN_SIZE_63125005.GPJ_TERRACON.GDT_12/19/12



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	USCS Soil Classification					LL	PL	PI	Cc	Cu
● B-118 45.0 ft	SILTY SAND(SM)					NV	NP	NP		

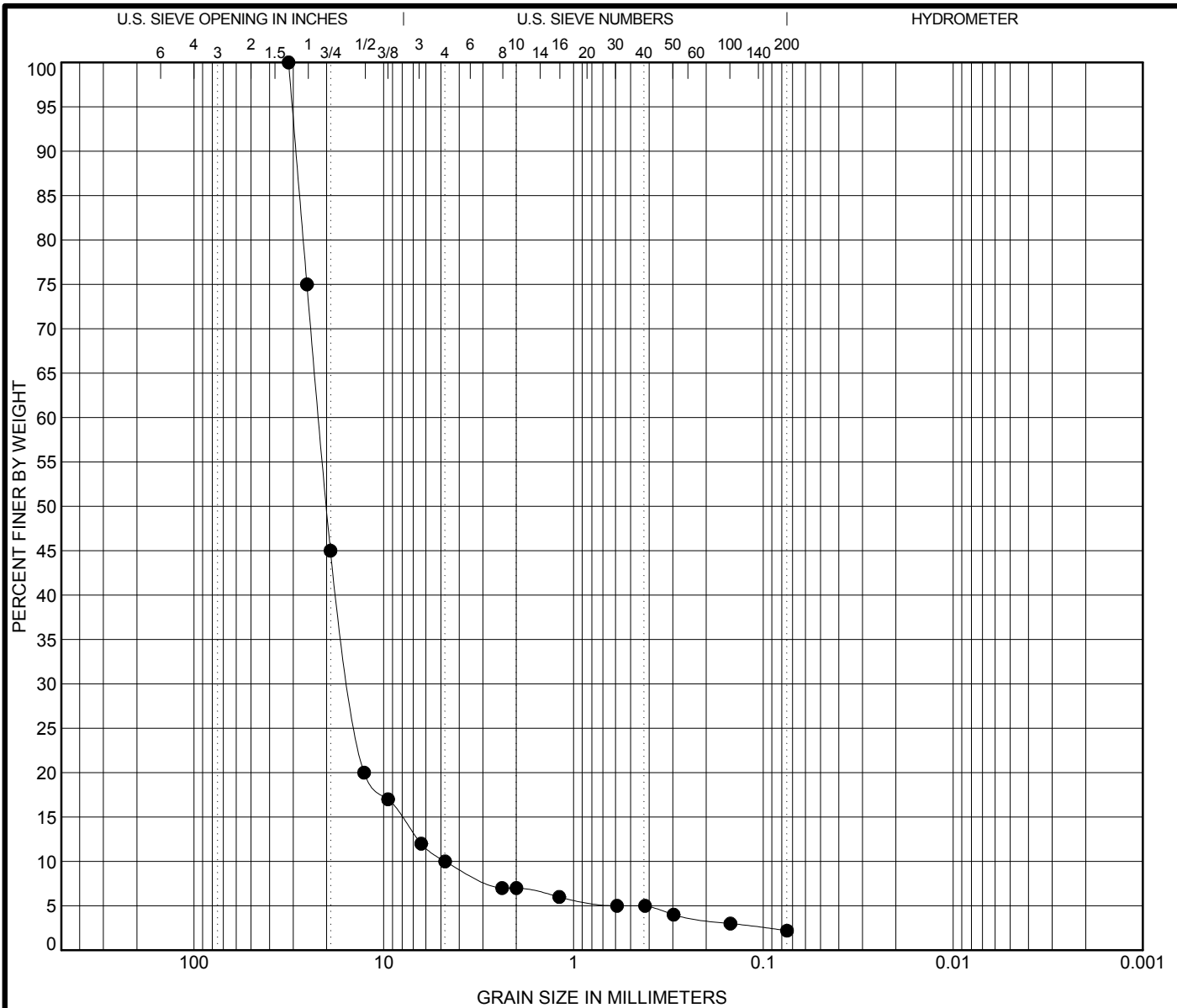
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-118 45.0 ft	9.5	0.776	0.193		3.0	76.8	20.2	

GRAIN SIZE DISTRIBUTION



Project: Sabino-Kolb Extention
 Site: Pantano Wash and Mullins Landfill Crossings Tucson, Arizona
 Job #: 63125005
 Date: 12-19-12

TC_GRAIN_SIZE_63125005.GPJ_TERRACON.GDT_12/19/12



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	USCS Soil Classification	LL	PL	PI	Cc	Cu
● B-119 35.0 ft	WELL-GRADED GRAVEL(GW)	NV	NP	NP	2.1	4.6

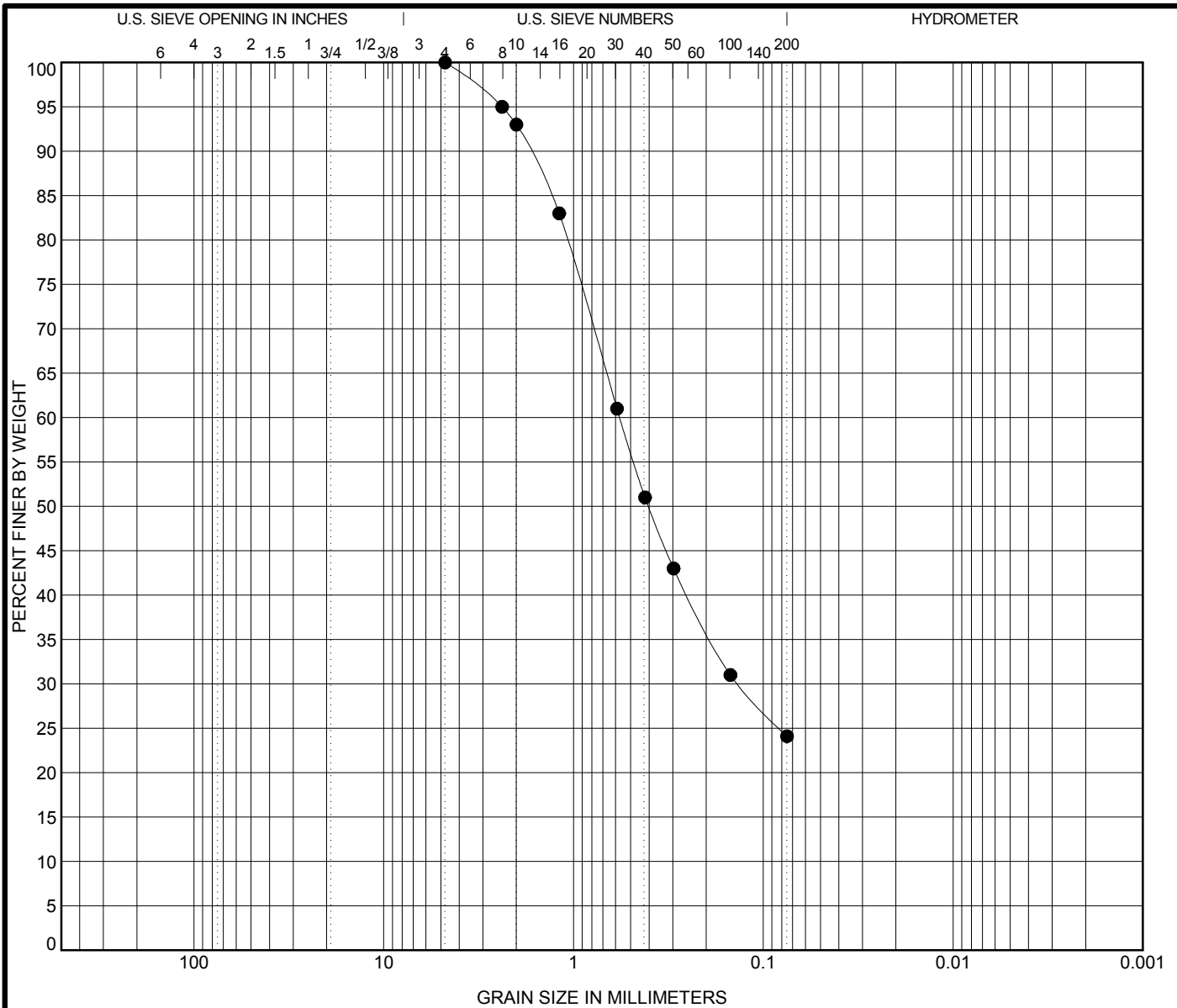
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-119 35.0 ft	31.75	22.026	14.952	4.75	90.0	7.8	2.2	



GRAIN SIZE DISTRIBUTION

Project: Sabino-Kolb Extention
 Site: Pantano Wash and Mullins Landfill Crossings Tucson, Arizona
 Job #: 63125005
 Date: 12-19-12

TC_GRAIN_SIZE_63125005.GPJ_TERRACON.GDT_12/19/12



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	USCS Soil Classification					LL	PL	PI	Cc	Cu
● B-119 45.0 ft	SILTY SAND(SM)					NV	NP	NP		

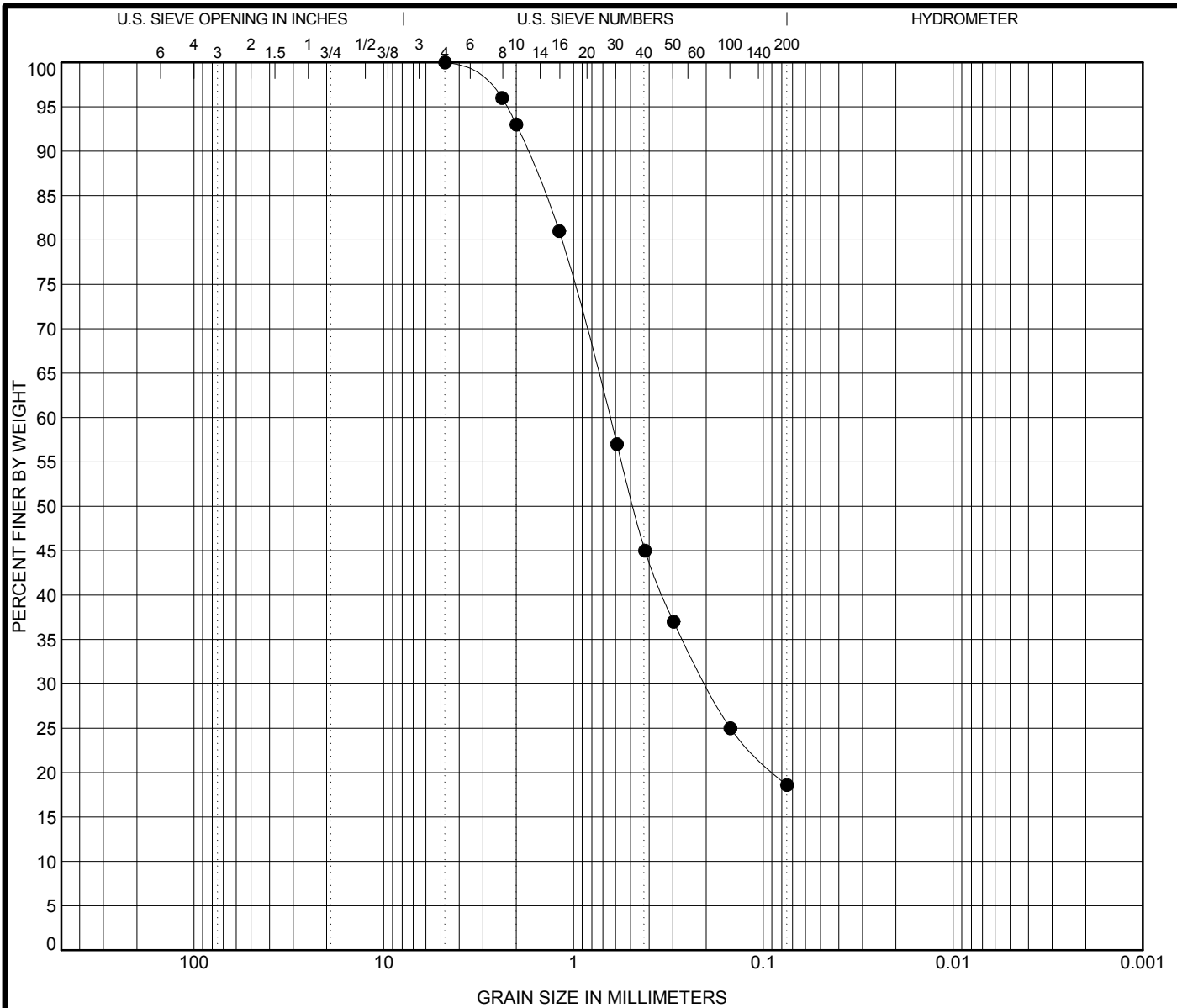
Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-119 45.0 ft	4.75	0.57	0.135		0.0	75.9	24.1	



GRAIN SIZE DISTRIBUTION

Project: Sabino-Kolb Extention
 Site: Pantano Wash and Mullins Landfill Crossings Tucson, Arizona
 Job #: 63125005
 Date: 12-19-12

TC_GRAIN_SIZE_63125005.GPJ_TERRACON.GDT_12/19/12



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	USCS Soil Classification					LL	PL	PI	Cc	Cu
● B-119 60.0 ft	SILTY SAND(SM)					NV	NP	NP		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-119 60.0 ft	4.75	0.644	0.199		0.0	81.4	18.6	

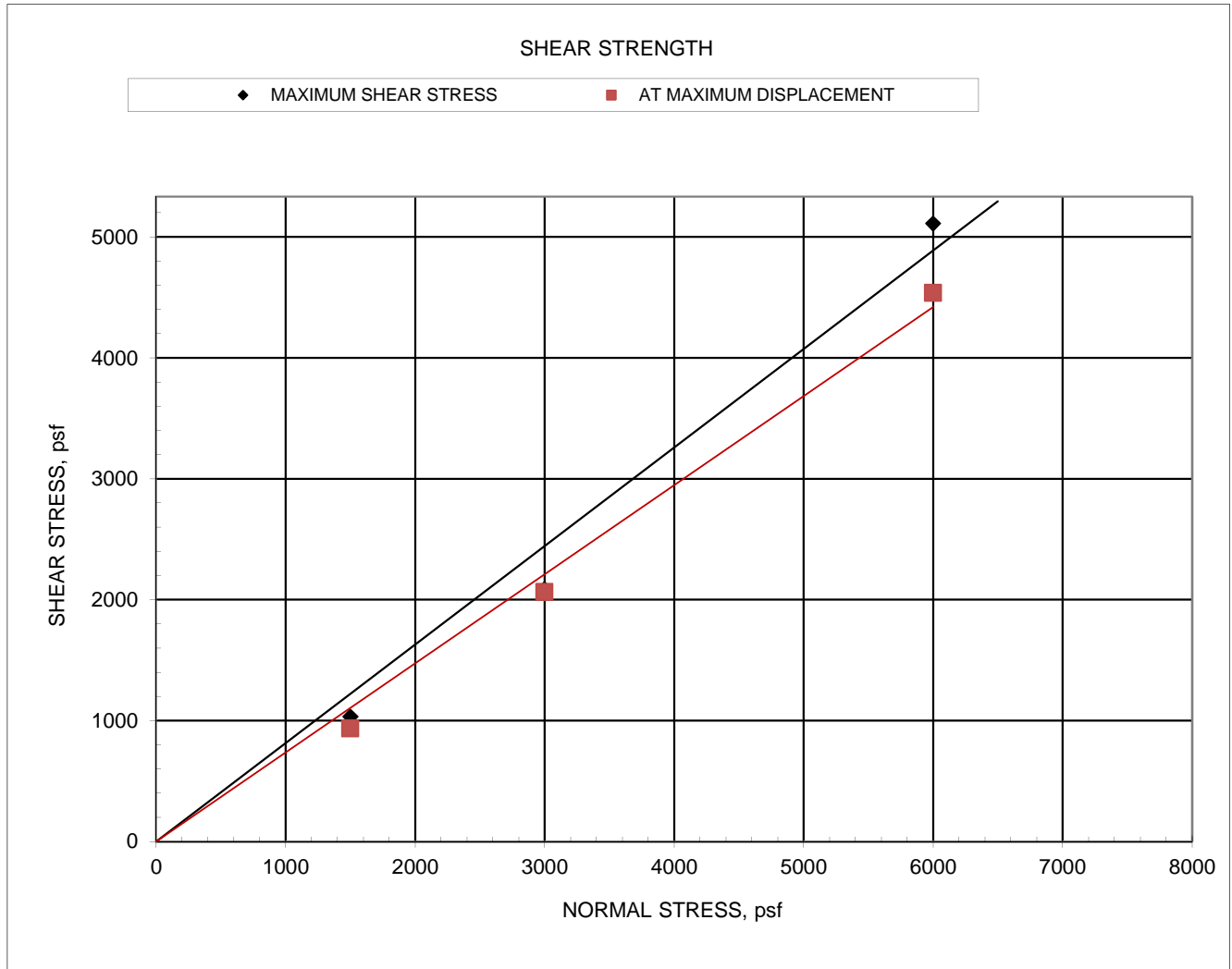
GRAIN SIZE DISTRIBUTION



Project: Sabino-Kolb Extention
 Site: Pantano Wash and Mullins Landfill Crossings Tucson, Arizona
 Job #: 63125005
 Date: 12-19-12

TC_GRAIN_SIZE_63125005.GPJ_TERRACON.GDT_12/19/12

**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



		FRICTION ANGLE	COHESION	NORMAL	NORMAL	NORMAL
		39.2 deg	0 psf	STRESS, psf	STRESS, psf	STRESS, psf
AT MAXIMUM SHEAR STRESS						
AT MAXIMUM DISPLACEMENT		37.1 deg	0 psf	1500	3000	6000
INITIAL AREA, in ²	4.584	INITIAL MOISTURE, %		1.9	1.9	1.9
INITIAL LENGTH, in	1.000	INITIAL DRY DENSITY, pcf		107.4	109.8	112.1
SPECIFIC GRAVITY	2.68	INITIAL SATURATION, %		9	10	10
SG ASSUMED	X	INITIAL VOID RATIO		0.56	0.52	0.49
SG TESTED		FINAL MOISTURE, %		14.7	13.8	12.5
LIQUID LIMIT	NP	FINAL SATURATION, %		75	78	76
PLASTIC LIMIT	NV	FINAL VOID RATIO		0.53	0.47	0.44
PLASTICITY INDEX	NP	MAXIMUM SHEAR STRESS, psf		1032	2088	5112
		DISPLACEMENT AT MAXIMUM SHEAR, in		0.141	0.351	0.226
		SHEAR STRESS AT MAX DISPLACEMENT, psf		936	2064	4536
		MAXIMUM DISPLACEMENT, in		0.401	0.401	0.401
SAMPLE TYPE	UNDISTURBED	RATE OF LOADING, in/min		0.0100	0.0100	0.0100
DESCRIPTION	SILTY SAND(SM)					

PROJECT NAME: Sabino Canyon Road

BORING NO. B-5

LOCATION: Pantano Wash Bridge

SAMPLE NO. @

JOB NO.: 63125005

DEPTH, feet 40 TO 41

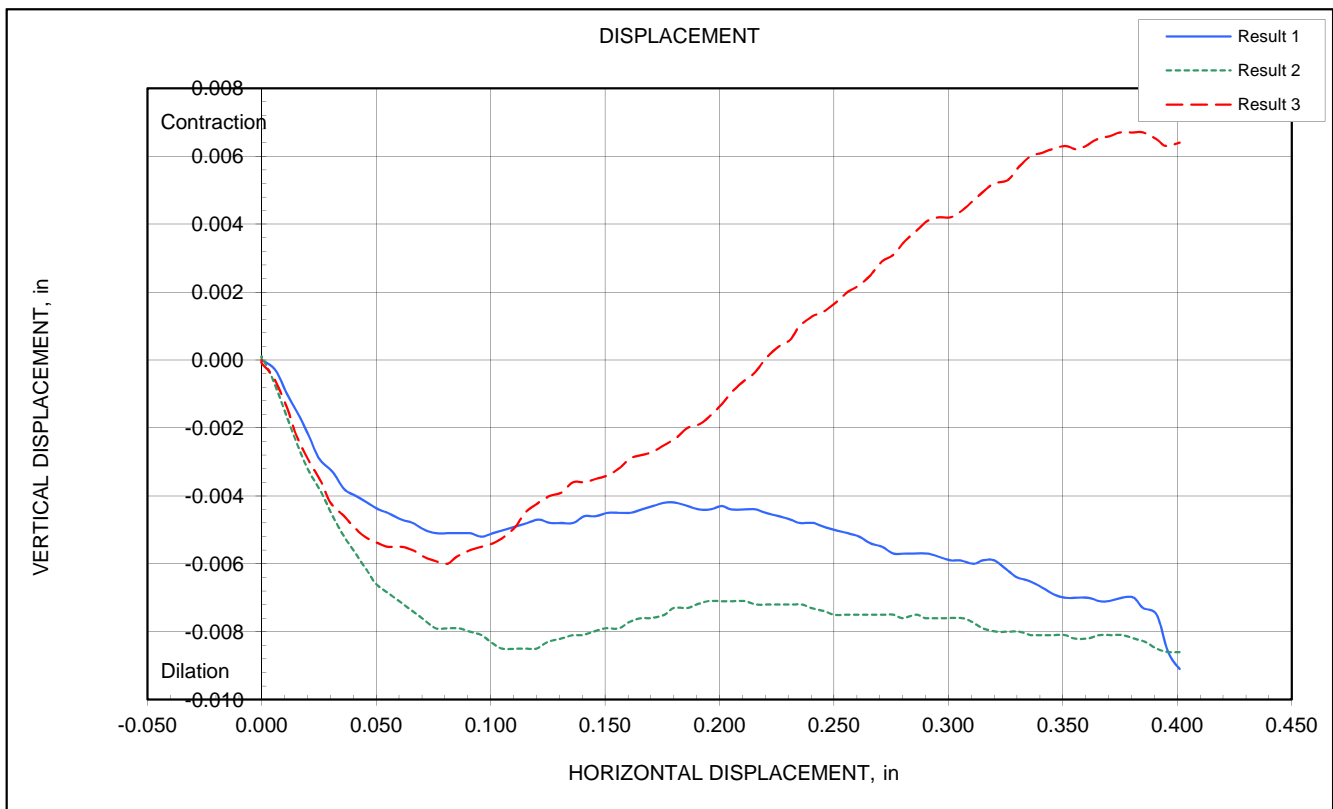
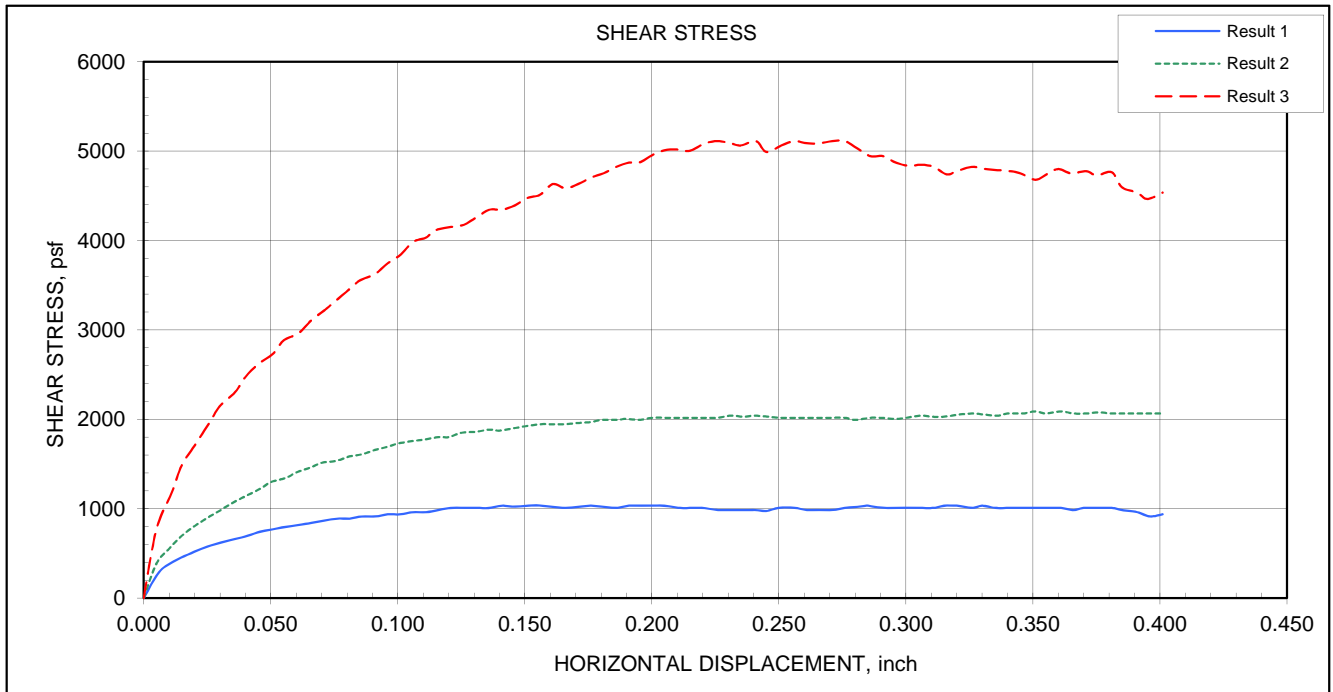
DATE: 3/22/2012

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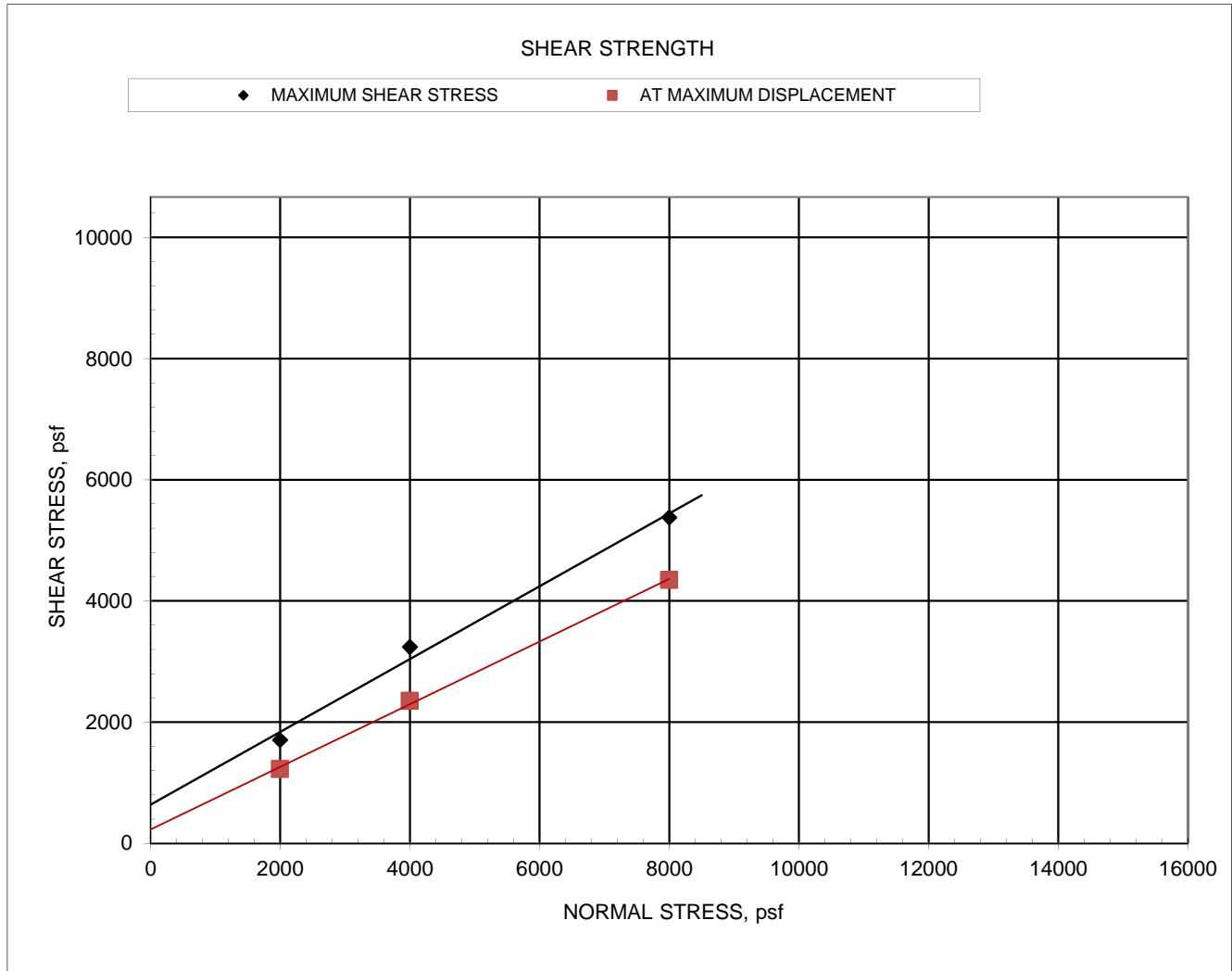


Sabino Canyon Road
 Pantano Wash Bridge
 63125005
 3/22/2012

BORING NO. B-5
 SAMPLE NO. @
 DEPTH, feet 40 TO 41



**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



	FRICTION ANGLE	COHESION	NORMAL STRESS, psf	NORMAL STRESS, psf	NORMAL STRESS, psf
AT MAXIMUM SHEAR STRESS	31.0 deg	636 psf			
AT MAXIMUM DISPLACEMENT	27.3 deg	228 psf	2000	4000	8000
INITIAL AREA, in ²	4.584	INITIAL MOISTURE, %	8.0	8.0	8.0
INITIAL LENGTH, in	1.000	INITIAL DRY DENSITY, pcf	111.5	111.2	108.7
SPECIFIC GRAVITY	2.68	INITIAL SATURATION, %	43	43	40
SG ASSUMED	X	INITIAL VOID RATIO	0.50	0.50	0.54
SG TESTED		FINAL MOISTURE, %	19.4	18.5	19.3
LIQUID LIMIT		FINAL SATURATION, %	108	104	103
PLASTIC LIMIT		FINAL VOID RATIO	0.48	0.48	0.50
PLASTICITY INDEX		MAXIMUM SHEAR STRESS, psf	1704	3240	5376
		DISPLACEMENT AT MAXIMUM SHEAR, in	0.101	0.126	0.156
		SHEAR STRESS AT MAX DISPLACEMENT, psf	1224	2352	4344
		MAXIMUM DISPLACEMENT, in	0.400	0.401	0.401
SAMPLE TYPE	UNDISTURBED	RATE OF LOADING, in/min	0.0100	0.0100	0.0100
DESCRIPTION	SILTY SAND(SM)				

PROJECT NAME: Sabino Canyon Road

BORING NO. B-18

LOCATION: Pantano Wash Bridge

SAMPLE NO. @

JOB NO.: 63125005

DEPTH, feet 55 TO 56

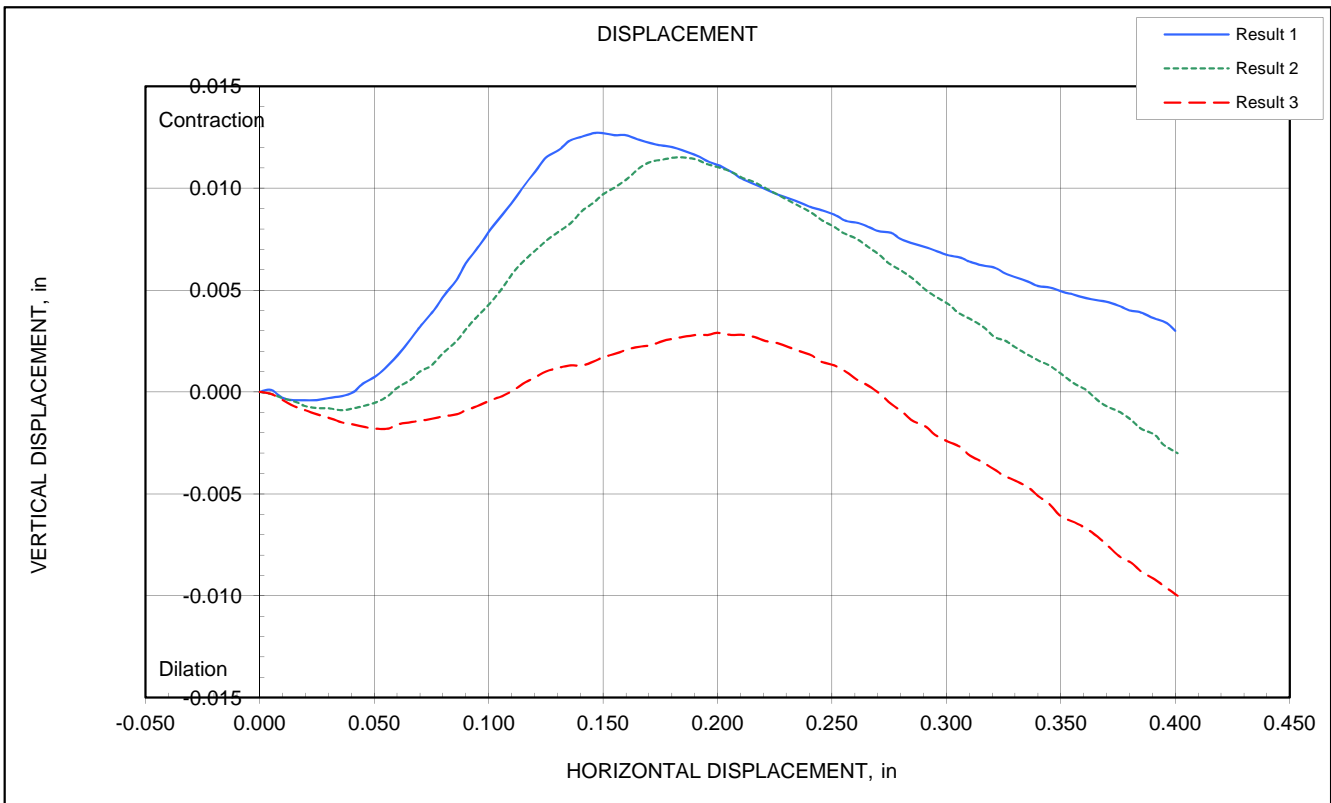
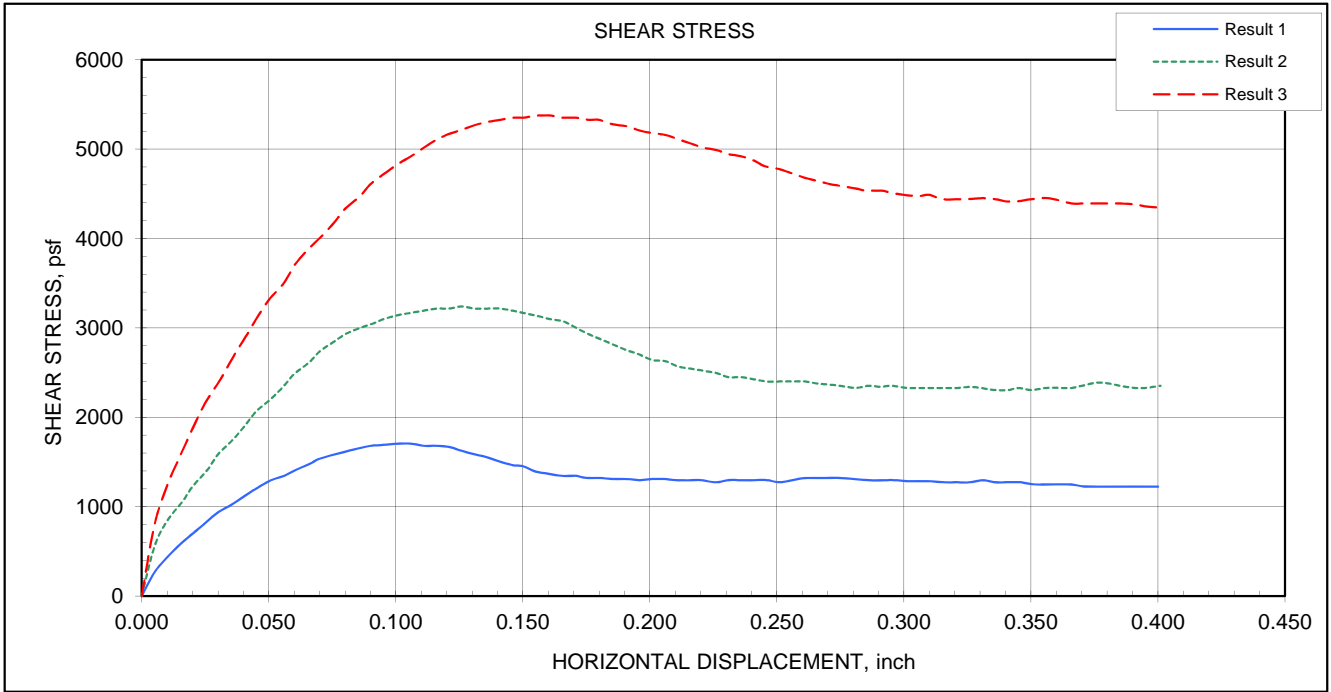
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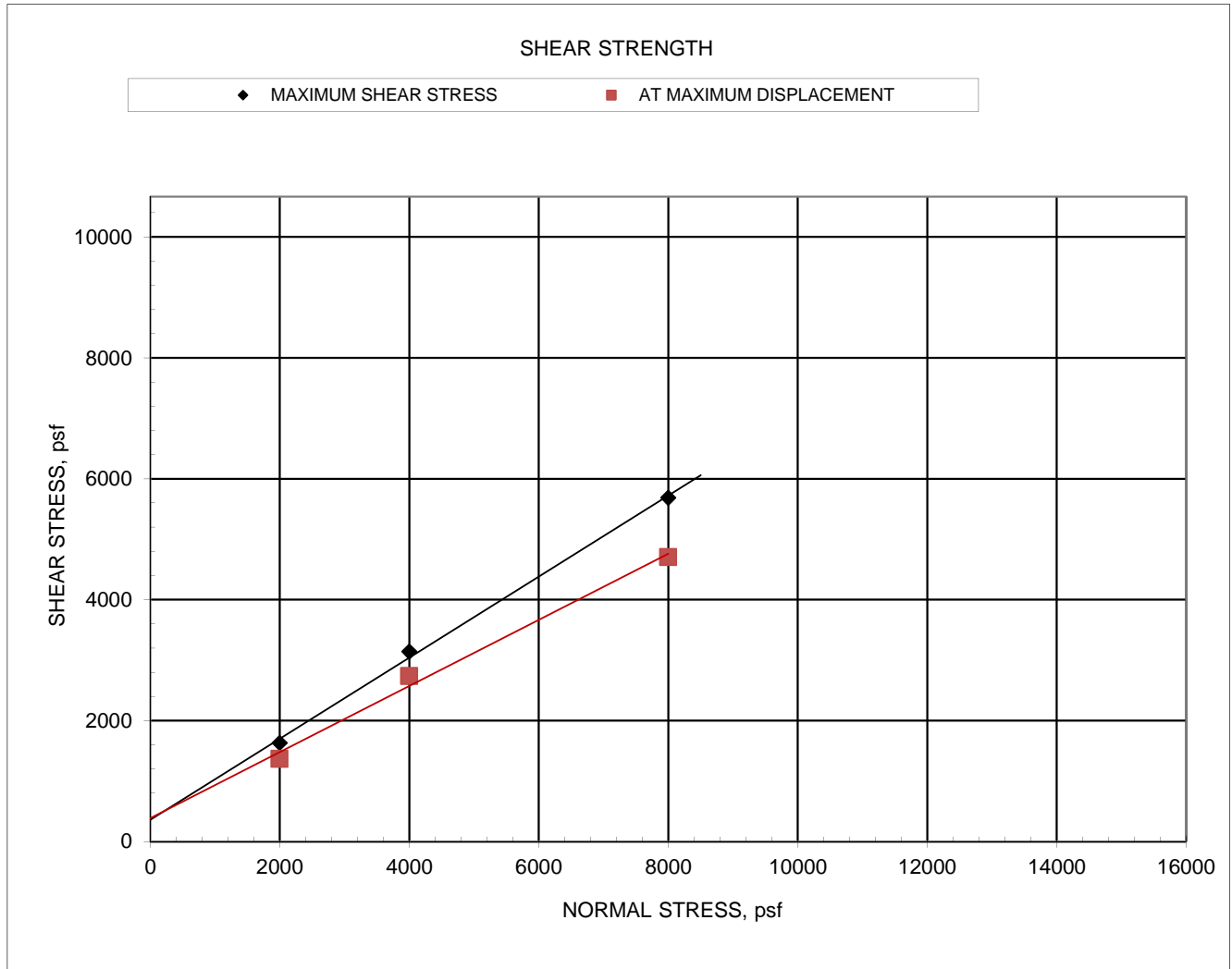


Sabino Canyon Road
Pantano Wash Bridge
63125005
3/22/2012

BORING NO. B-18
SAMPLE NO. @
DEPTH, feet 55 TO 56



**DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
ASTM D3080**



		FRICTION ANGLE	COHESION	NORMAL	NORMAL	NORMAL
		33.8 deg	360 psf	STRESS, psf	STRESS, psf	STRESS, psf
AT MAXIMUM SHEAR STRESS						
AT MAXIMUM DISPLACEMENT		28.7 deg	384 psf	2000	4000	8000
INITIAL AREA, in ²	4.584	INITIAL MOISTURE, %		7.2	7.2	7.2
INITIAL LENGTH, in	1.000	INITIAL DRY DENSITY, pcf		108.8	106.3	108.1
SPECIFIC GRAVITY	2.68	INITIAL SATURATION, %		36	34	35
SG ASSUMED	X	INITIAL VOID RATIO		0.54	0.57	0.55
SG TESTED		FINAL MOISTURE, %		18.5	18.7	19.5
LIQUID LIMIT		FINAL SATURATION, %		97	92	102
PLASTIC LIMIT		FINAL VOID RATIO		0.51	0.54	0.51
PLASTICITY INDEX		MAXIMUM SHEAR STRESS, psf		1632	3144	5688
		DISPLACEMENT AT MAXIMUM SHEAR, in		0.116	0.141	0.156
		SHEAR STRESS AT MAX DISPLACEMENT, psf		1368	2736	4704
		MAXIMUM DISPLACEMENT, in		0.401	0.401	0.401
SAMPLE TYPE	UNDISTURBED	RATE OF LOADING, in/min		0.0100	0.0100	0.0100
DESCRIPTION	SILTY SAND(SM)					

PROJECT NAME: Sabino Canyon Road

BORING NO. B-19

LOCATION: Pantano Wash Bridge

SAMPLE NO. @

JOB NO.: 63125005

DEPTH, feet 65 TO 66

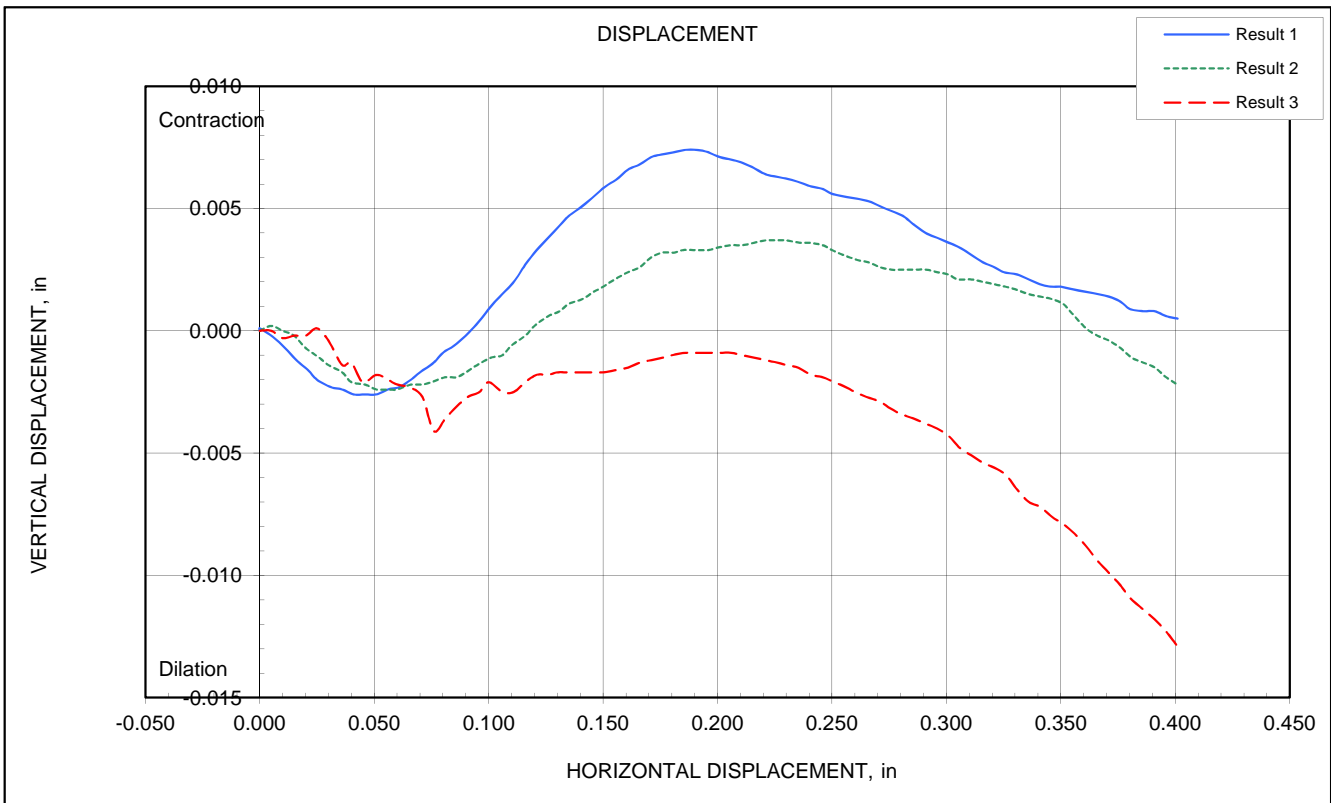
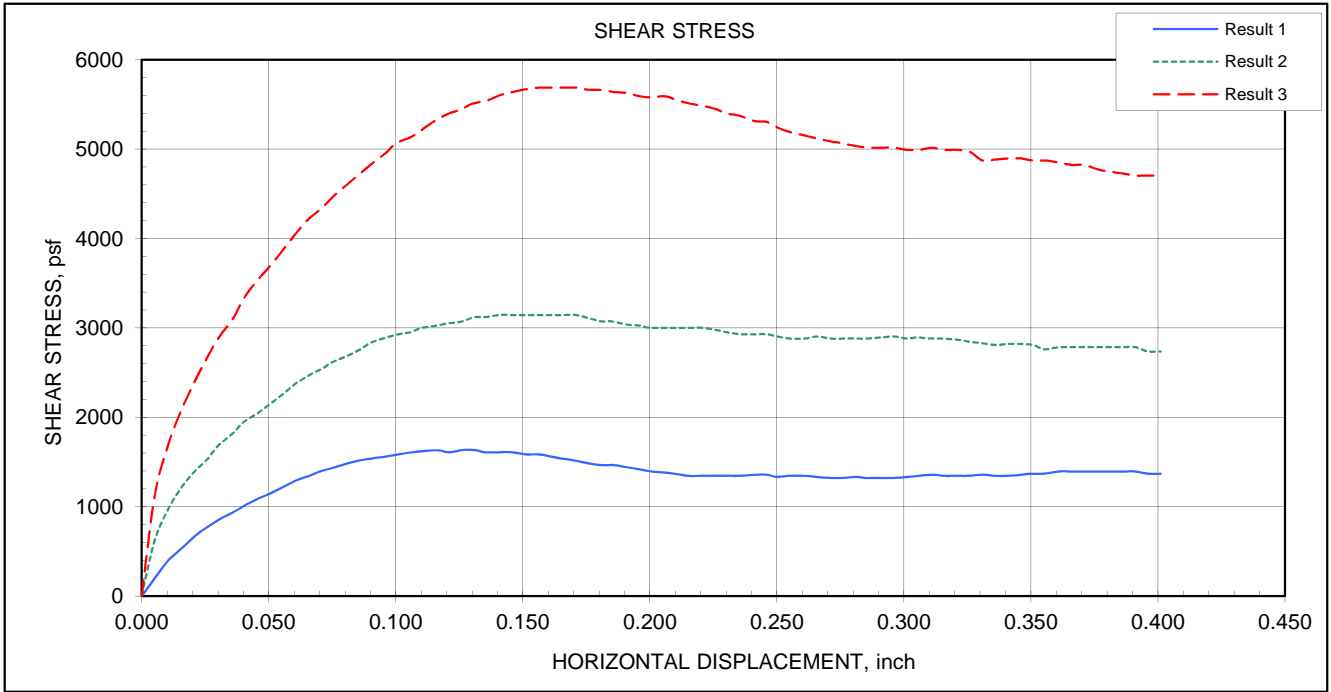
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Sabino Canyon Road
 Pantano Wash Bridge
 63125005
 3/22/2012

BORING NO. B-19
 SAMPLE NO. @
 DEPTH, feet 65 TO 66



SOIL PROPERTIES 63105043.GPJ TERR2000.GDT 12/19/12

Borehole No.	Depth (ft.)	USCS Soil Class.	In-Situ Properties		Classification			Expansion Testing					Corrosivity			Remarks	
			Dry Density (pcf)	Water Content (%)	Passing #200 Sieve (%)	Atterberg Limits			Dry Density (pcf)	Water Content (%)	Surcharge (psf)	Expansion (%)	Expansion Index EI ₅₀	pH	Resistivity (ohm-cm)		Sulfates (ppm)
						LL	PL	PI									
B-5	5	SM			14												
B-5	15	SW-SM			8												
B-5	35	SW-SM	127	8													1, 2
B-5	40	SM			22												
B-5	55	SM	123	10													1, 2
B-5	65	SM			20	NP	NP	NP									
B-5	75	SM	99	8													1, 2

REMARKS

1. Dry Density and/or moisture determined from one or more rings of a multi-ring sample.
2. Visual Classification.
3. Submerged to approximate saturation.
4. Expansion Index in accordance with ASTM D4829-95.
5. Air-Dried Sample

SUMMARY OF LABORATORY RESULTS



Project: Sabino Kolb Extension
 Site: S. of Tanque Verde Rd. & N. of Mullins Landfill Tucson, Arizona
 Job #: 63105043
 Date: 12-19-12

SOIL PROPERTIES 2_63125005.GPJ TERR2000.GDT 12/19/12

Borehole No.	Depth (ft.)	USCS Soil Class.	In-Situ Properties		Classification			Expansion Testing					Corrosivity				Remarks	
			Dry Density (pcf)	Water Content (%)	Passing #200 Sieve (%)	Atterberg Limits			Dry Density (pcf)	Water Content (%)	Surcharge (psf)	Expansion (%)	Expansion Index EI ₅₀	pH	Resistivity (ohm-cm)	Sulfates (ppm)		Chlorides (ppm)
						LL	PL	PI										
B-117	0	GP-GM													ND	ND	2	
B-118	0	GP-GM			6	NP	NP	NP										
B-118	30	SM	111	7													1, 2	
B-118	45	SM			20	NP	NP	NP										
B-119	2	SP-SM													120	ND	2	
B-119	5	SP-SM	122	5													1, 2	
B-119	15	SP-SM	114	5													1, 2	
B-119	35	GP-GM			2	NP	NP	NP										
B-119	45	SM			24	NP	NP	NP										
B-119	60	SM			19	NP	NP	NP										

REMARKS

1. Dry Density and/or moisture determined from one or more rings of a multi-ring sample.
2. Visual Classification.
3. Submerged to approximate saturation.
4. Expansion Index in accordance with ASTM D4829-95.
5. Air-Dried Sample

SUMMARY OF LABORATORY RESULTS

Project: Sabino-Kolb Extention
 Site: Pantano Wash and Mullins Landfill Crossings Tucson, Arizona
 Job #: 63125005
 Date: 12-19-12



APPENDIX C
Pantano Wash Bridge
East Abutment
Axial Load Analyses Results

Drilled Shaft Resistance Analysis



Design Shaft-Displacement/Resistance Curve

PROJECT

Project Name: Kolb Road Bridge over Pantano Wash
 Project Location: Tucson, Arizona
 Project Number: 63125005

Structure Data

Structure Designation: 0
 Foundation Element: East Abut.

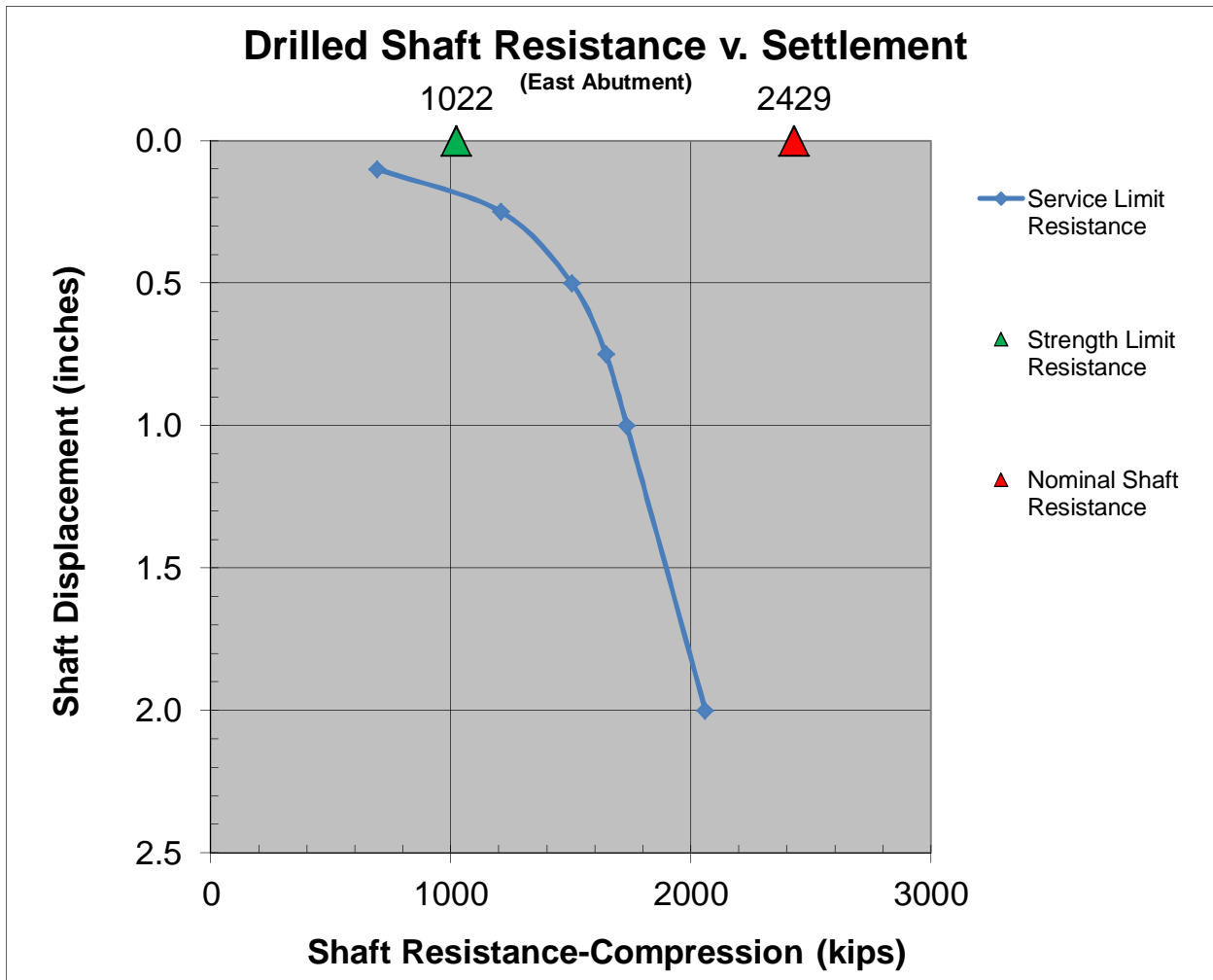
Foundation Design Criteria

Design Shaft Diameter: 5.0 ft.
 Design Shaft Depth: 74 ft.

Service Limit Displacements & Resistances

	δ (in)	Kips
1	0.10	693.5
2	0.25	1209.0
3	0.50	1503.4
4	0.75	1646.6
5	1.00	1733.3
6	2.00	2060.1

Strength Limit Resistance	Nominal Resistance
Kips	Kips
1022	2429



Drilled Shaft LRFD Analysis



Drilled Shaft Foundation Analysis is based on procedures outlined in AASHTO (2010) & FHWA NHI-09

- ◆ Analysis applies to cohesive and cohesionless soils ($\phi=0$ and $c=0$)
- ◆ Drilled shaft service state loads based on the Load Transfer curves outlined in AASHTO 2010
- ◆ The analyses follow the ADOT Geotechnical Design Policies DS-1 and DS-2 dated December 1, 2010

PROJECT

Project Name:	Kolb Road Bridge over Pantano Wash
Project Location:	Tucson, Arizona
Project Number:	63125005

Structure Data

Structure Designation	East Abut.
Foundation Element	

Foundation Data

Shaft Diameters

Maximum Diameter	7.5 ft.
Minimum Diameter	4.0 ft.
Increment for Diameter	0.5 ft.
Maximum Shaft Tip Depth	80 ft.

Service Limit Displacements

	δ (in)
1	0.10
2	0.25
3	0.50
4	0.75
5	1.00
6	2.00

Foundation Design Criteria

Design for Redundancy	No
Design Shaft Diameter	5.0 ft.
Design Shaft Depth	74 ft.

Show Service Limit Output for Case: 2

Subsurface Data

Initial Information

Number of Soil Layers	5
Depth to Groundwater	300 ft.
Ground Surface Elevation	2530.0 ft.

Soil Layer Properties

Layer Number	1	2	3	4	5
Depth from Ground Surface	12	42	50	75	100
Unit Weight of Layer (γ) pcf	120	70	125	125	125
Penetration Resistance " N_{60} " Blows/ft	0	0	75	62	75
Cohesion " c " of Layer (ksf)					
Thickness of layer (ft)	12.0	30.0	8.0	25.0	25.0
Soil Type	Sand	Sand	Sand	Sand	Sand

Strength Resistance Factors

Analyses Conducted Without Redundant Design

Side Resistance-Compression	0.44	0.44	0.44	0.44	0.44
Side Resistance-Uplift	0.36	0.36	0.36	0.36	0.36
Base Resistance-Compression	0.40	0.40	0.40	0.40	0.40

Drilled Shaft Resistance Analyses



Nominal End Bearing Resistance and Skin Friction Factors

Elevation feet	Depth of Shaft feet	Penetration Resistance N	Cohesion c (ksf)	Soil Unit Weight γ' (pcf)	Effective Stress σ'_z (psf)	β	α	Unit Skin Friction Load (ksf)	Side Resistance Factor Compression	Side Resistance Factor Uplift	Base Resistance Factor	Ultimate End Bearing Pressure (ksf)						
												Shaft Diameter (ft)						
												4	4.5	5	5.5	6	6.5	7
2528.00	2.0	0.0		120.0	120.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2526.00	4.0	0.0		120.0	360.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2524.00	6.0	0.0		120.0	600.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2522.00	8.0	0.0		120.0	840.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2520.00	10.0	0.0		120.0	1080.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2518.00	12.0	0.0		120.0	1320.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2516.00	14.0	0.0		70.0	1510.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2514.00	16.0	0.0		70.0	1650.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2512.00	18.0	0.0		70.0	1790.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2510.00	20.0	0.0		70.0	1930.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2508.00	22.0	0.0		70.0	2070.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2506.00	24.0	0.0		70.0	2210.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2504.00	26.0	0.0		70.0	2350.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2502.00	28.0	0.0		70.0	2490.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2500.00	30.0	0.0		70.0	2630.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2498.00	32.0	0.0		70.0	2770.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2496.00	34.0	0.0		70.0	2910.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2494.00	36.0	0.0		70.0	3050.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2492.00	38.0	0.0		70.0	3190.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2490.00	40.0	0.0		70.0	3330.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2488.00	42.0	0.0		70.0	3470.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2486.00	44.0	75.0		125.0	3665.0	0.60		2.22	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2484.00	46.0	75.0		125.0	3915.0	0.58		2.29	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2482.00	48.0	75.0		125.0	4165.0	0.56		2.35	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2480.00	50.0	75.0		125.0	4415.0	0.55		2.41	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2478.00	52.0	62.0		125.0	4665.0	0.53		2.46	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2476.00	54.0	62.0		125.0	4915.0	0.51		2.50	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2474.00	56.0	62.0		125.0	5165.0	0.49		2.53	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2472.00	58.0	62.0		125.0	5415.0	0.47		2.56	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2470.00	60.0	62.0		125.0	5665.0	0.45		2.57	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2468.00	62.0	62.0		125.0	5915.0	0.44		2.58	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2466.00	64.0	62.0		125.0	6165.0	0.42		2.59	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2464.00	66.0	62.0		125.0	6415.0	0.40		2.59	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2462.00	68.0	62.0		125.0	6665.0	0.39		2.58	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2460.00	70.0	62.0		125.0	6915.0	0.37		2.56	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2458.00	72.0	62.0		125.0	7165.0	0.35		2.54	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2456.00	74.0	62.0		125.0	7415.0	0.34		2.51	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2454.00	76.0	75.0		125.0	7665.0	0.32		2.48	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2452.00	78.0	75.0		125.0	7915.0	0.31		2.44	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2450.00	80.0	75.0		125.0	8165.0	0.29		2.39	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0

Drilled Shaft Resistance Analyses

Service Limit Output Based on Settlement Analyses for Settlement = 0.25 Inches

Elevation feet	Depth of Shaft feet	Layer Soil Type	Concrete Unit Weight γ' (pcf)	Effective Concrete Stress σ'_z (psf)	Service Limit Factor for End Bearing							
					Based on the Total Settlement as a % of Shaft Diameter							
					Shaft Diameter (ft)							
					4	4.5	5	5.5	6	6.5	7	7.5
2528.00	2.0	Sand	150.0	300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2526.00	4.0	Sand	150.0	600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2524.00	6.0	Sand	150.0	900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2522.00	8.0	Sand	150.0	1200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2520.00	10.0	Sand	150.0	1500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2518.00	12.0	Sand	150.0	1800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2516.00	14.0	Sand	150.0	2100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2514.00	16.0	Sand	150.0	2400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2512.00	18.0	Sand	150.0	2700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2510.00	20.0	Sand	150.0	3000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2508.00	22.0	Sand	150.0	3300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2506.00	24.0	Sand	150.0	3600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2504.00	26.0	Sand	150.0	3900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2502.00	28.0	Sand	150.0	4200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2500.00	30.0	Sand	150.0	4500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2498.00	32.0	Sand	150.0	4800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2496.00	34.0	Sand	150.0	5100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2494.00	36.0	Sand	150.0	5400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2492.00	38.0	Sand	150.0	5700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2490.00	40.0	Sand	150.0	6000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2488.00	42.0	Sand	150.0	6300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2486.00	44.0	Sand	150.0	6600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2484.00	46.0	Sand	150.0	6900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2482.00	48.0	Sand	150.0	7200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2480.00	50.0	Sand	150.0	7500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2478.00	52.0	Sand	150.0	7800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2476.00	54.0	Sand	150.0	8100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2474.00	56.0	Sand	150.0	8400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2472.00	58.0	Sand	150.0	8700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2470.00	60.0	Sand	150.0	9000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2468.00	62.0	Sand	150.0	9300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2466.00	64.0	Sand	150.0	9600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2464.00	66.0	Sand	150.0	9900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2462.00	68.0	Sand	150.0	10200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2460.00	70.0	Sand	150.0	10500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2458.00	72.0	Sand	150.0	10800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2456.00	74.0	Sand	150.0	11100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2454.00	76.0	Sand	150.0	11400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2452.00	78.0	Sand	150.0	11700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2450.00	80.0	Sand	150.0	12000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083

Drilled Shaft Resistance Analyses



Nominal Load Shaft Resistances

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		End	Skin	Total	End	Skin	Total	End	Skin	Total	End	Skin	Total	End	Skin	Total	End	Skin	Total	End	Skin	Total	End	Skin	Total
		Bearing kips	Capacity kips	Capacity kips	Bearing kips	Capacity kips	Capacity kips	Bearing kips	Capacity kips	Capacity kips	Bearing kips	Capacity kips	Capacity kips	Bearing kips	Capacity kips	Capacity kips	Bearing kips	Capacity kips	Capacity kips	Bearing kips	Capacity kips	Capacity kips	Bearing kips	Capacity kips	Capacity kips
2528.00	2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2526.00	4.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2524.00	6.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2522.00	8.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2520.00	10.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2518.00	12.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2516.00	14.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2514.00	16.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2512.00	18.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2510.00	20.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2508.00	22.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2506.00	24.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2504.00	26.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2502.00	28.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2500.00	30.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2498.00	32.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2496.00	34.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2494.00	36.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2492.00	38.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2490.00	40.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2488.00	42.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2486.00	44.0	754.01	55.68	809.69	954.29	62.64	1016.94	1178.14	69.61	1247.74	1425.55	76.57	1502.11	1696.52	83.53	1780.04	1991.05	90.49	2081.54	2309.15	97.45	2406.60	2650.81	104.41	2755.22
2484.00	46.0	754.01	113.19	867.19	954.29	127.34	1081.63	1178.14	141.48	1319.62	1425.55	155.63	1581.18	1696.52	169.78	1866.30	1991.05	183.93	2174.98	2309.15	198.08	2507.23	2650.81	212.23	2863.03
2482.00	48.0	754.01	172.30	926.31	954.29	193.84	1148.13	1178.14	215.37	1393.51	1425.55	236.91	1662.46	1696.52	258.45	1954.97	1991.05	279.99	2271.04	2309.15	301.52	2610.67	2650.81	323.06	2973.87
2480.00	50.0	754.01	232.82	986.83	954.29	261.92	1216.21	1178.14	291.03	1469.16	1425.55	320.13	1745.67	1696.52	349.23	2045.75	1991.05	378.33	2369.39	2309.15	407.44	2716.59	2650.81	436.54	3087.35
2478.00	52.0	754.01	294.55	1048.56	954.29	331.37	1285.66	1178.14	368.19	1546.33	1425.55	405.01	1830.56	1696.52	441.83	2138.35	1991.05	478.65	2469.70	2309.15	515.47	2824.62	2650.81	552.28	3203.09
2476.00	54.0	754.01	357.30	1111.31	954.29	401.96	1356.25	1178.14	446.63	1624.76	1425.55	491.29	1916.83	1696.52	535.95	2232.47	1991.05	580.61	2571.67	2309.15	625.28	2934.43	2650.81	669.94	3320.75
2474.00	56.0	754.01	420.88	1174.89	954.29	473.49	1427.78	1178.14	526.10	1704.23	1425.55	578.71	2004.25	1696.52	631.32	2327.83	1991.05	683.93	2674.98	2309.15	736.54	3045.69	2650.81	789.15	3439.96
2472.00	58.0	754.01	485.10	1239.11	954.29	545.74	1500.03	1178.14	606.37	1784.51	1425.55	667.01	2092.56	1696.52	727.65	2424.17	1991.05	788.29	2779.34	2309.15	848.92	3158.07	2650.81	909.56	3560.37
2470.00	60.0	754.01	549.78	1303.79	954.29	618.50	1572.80	1178.14	687.23	1865.36	1425.55	755.95	2181.50	1696.52	824.67	2521.19	1991.05	893.40	2884.45	2309.15	962.12	3271.27	2650.81	1030.84	3681.65
2468.00	62.0	754.01	614.75	1368.76	954.29	691.59	1645.89	1178.14	768.44	1946.57	1425.55	845.28	2270.83	1696.52	922.12	2618.64	1991.05	998.97	2990.02	2309.15	1075.81	3384.96	2650.81	1152.66	3803.47
2466.00	64.0	754.01	679.83	1433.84	954.29	764.81	1719.10	1178.14	849.79	2027.92	1425.55	934.76	2360.31	1696.52	1019.74	2716.26	1991.05	1104.72	3095.77	2309.15	1189.70	3498.85	2650.81	1274.68	3925.49
2464.00	66.0	754.01	744.85	1498.85	954.29	837.95	1792.24	1178.14	931.06	2109.19	1425.55	1024.16	2449.71	1696.52	1117.27	2813.79	1991.05	1210.37	3201.43	2309.15	1303.48	3612.63	2650.81	1396.59	4047.40
2462.00	68.0	754.01	809.63	1563.64	954.29	910.84	1865.13	1178.14	1012.04	2190.18	1425.55	1113.25	2538.79	1696.52	1214.45	2910.97	1991.05	1315.66	3306.71	2309.15	1416.86	3726.01	2650.81	1518.06	4168.87
2460.00	70.0	754.01	874.03	1628.04	954.29	983.28	1937.57	1178.14	1092.54	2270.67	1425.55	1201.79	2627.34	1696.52	1311.04	3007.56	1991.05	1420.30	3411.35	2309.15	1529.55	3838.70	2650.81	1638.80	4289.61
2458.00	72.0	754.01	937.87	1691.87	954.29	1055.10	2009.39	1178.14	1172.33	2350.47	1425.55	1289.56	2715.11	1696.52	1406.80	3103.32	1991.05	1524.03	3515.08	2309.15	1641.26	3950.41	2650.81	1758.50	4409.31
2456.00	74.0	754.01	1000.98	1754.99	954.29	1126.11	2080.40	1178.14	1251.23	2429.37	1425.55	1376.35	2801.90	1696.52	1501.48	3198.00	1991.05	1626.60	3617.65	2309.15	1751.72	4060.87	2650.81	1876.85	4527.66
2454.00	76.0	754.01	1063.23	1817.24	954.29	1196.13	2150.42	1178.14	1329.04	2507.17	1425.55	1461.94	2887.49	1696.52	1594.84	3291.36	1991.05	1727.75	3718.80	2309.15	1860.65	4169.80	2650.81	1993.55	4644.36
2452.00	78.0	754.01	1124.44	1878.45	954.29	1265.00	2219.29	1178.14	1405.55	2583.69	1425.55	1546.11	2971.66	1696.52	1686.66	3383.18	1991.05	1827.22	3818.27	2309.15	1967.78	4276.92	2650.81	2108.33	4759.14
2450.00	80.0	754.01	1184.47	1938.48	954.29	1332.53	2286.82	1178.14	1480.59	2658.73	1425.55	1628.65	3054.20	1696.52	1776.71	3473.23	1991.05	1924.77	3915.82	2309.15	2072.83	4381.98	2650.81	2220.89	4871.70

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement		Analyses for Settlement = 0.10 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2528.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2526.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2524.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2522.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2520.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2518.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2516.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2514.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2512.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2510.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2508.00	22.0	0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00
2506.00	24.0	0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00
2504.00	26.0	0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00
2502.00	28.0	0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00
2500.00	30.0	0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00
2498.00	32.0	0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00
2496.00	34.0	0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00
2494.00	36.0	0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00
2492.00	38.0	0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00
2490.00	40.0	0.00	75.40	0.00	0.00	95.43	0.00	0.00	117.81	0.00	0.00	142.55	0.00	0.00	169.65	0.00	0.00	199.11	0.00	0.00	230.91	0.00	0.00	265.08	0.00
2488.00	42.0	0.00	79.17	0.00	0.00	100.20	0.00	0.00	123.70	0.00	0.00	149.68	0.00	0.00	178.13	0.00	0.00	209.06	0.00	0.00	242.46	0.00	0.00	278.33	0.00
2486.00	44.0	79.68	82.94	79.68	86.74	104.97	86.74	93.58	129.60	93.58	100.25	156.81	100.25	106.78	186.62	106.78	113.22	219.02	113.22	119.56	254.01	119.56	125.84	291.59	125.84
2484.00	46.0	113.73	86.71	113.73	122.12	109.74	122.12	130.07	135.49	130.07	137.67	163.94	137.67	145.00	195.10	145.00	152.12	228.97	152.12	159.07	265.55	159.07	165.87	304.84	165.87
2482.00	48.0	148.75	90.48	148.75	158.50	114.51	158.50	167.58	141.38	167.58	176.14	171.07	176.14	184.29	203.58	184.29	192.12	238.93	192.12	199.68	277.10	199.68	207.03	318.10	207.03
2480.00	50.0	184.59	94.25	184.59	195.75	119.29	195.75	205.99	147.27	205.99	215.53	178.19	215.53	224.52	212.06	224.52	233.07	248.88	233.07	241.26	288.64	241.26	249.17	331.35	249.17
2478.00	52.0	221.16	98.02	221.16	233.74	124.06	233.74	245.16	153.16	245.16	255.70	185.32	255.70	265.55	220.55	265.55	274.84	258.84	274.84	283.68	300.19	283.68	292.15	344.61	292.15
2476.00	54.0	258.32	101.79	258.32	272.35	128.83	272.35	284.98	159.05	284.98	296.54	192.45	296.54	307.25	229.03	307.25	317.29	268.79	317.29	317.29	311.74	326.79	335.84	357.86	335.84
2474.00	56.0	295.98	105.56	295.98	311.48	133.60	311.48	325.33	164.94	325.33	337.92	199.58	337.92	349.51	237.51	349.51	360.31	278.75	360.31	370.47	323.28	370.47	380.10	371.11	380.10
2472.00	58.0	334.02	109.33	334.02	351.00	138.37	351.00	366.08	170.83	366.08	379.71	206.70	379.71	392.19	246.00	392.19	403.76	288.70	403.76	414.59	334.83	414.59	424.81	384.37	424.81
2470.00	60.0	372.33	113.10	372.33	390.80	143.14	390.80	407.13	176.72	407.13	421.81	213.83	421.81	435.19	254.48	435.19	447.53	298.66	447.53	459.03	346.37	459.03	469.85	397.62	469.85
2468.00	62.0	410.81	116.87	410.81	430.78	147.92	430.78	448.36	182.61	448.36	464.09	220.96	464.09	478.37	262.96	478.37	491.49	308.61	491.49	503.67	357.92	503.67	515.08	410.88	515.08
2466.00	64.0	449.36	120.64	449.36	470.83	152.69	470.83	489.66	188.50	489.66	506.44	228.09	506.44	521.62	271.44	521.62	535.52	318.57	535.52	548.38	369.46	548.38	560.39	424.13	560.39
2464.00	66.0	487.87	124.41	487.87	510.85	157.46	510.85	530.92	194.39	530.92	548.76	235.22	548.76	564.84	279.93	564.84	579.51	328.52	579.51	593.05	381.01	593.05	605.66	437.38	605.66
2462.00	68.0	526.24	128.18	526.24	550.72	162.23	550.72	572.03	200.28	572.03	590.92	242.34	590.92	607.90	288.41	607.90	623.35	338.48	623.35	637.57	392.56	637.57	650.77	450.64	650.77
2460.00	70.0	564.38	131.95	564.38	590.34	167.00	590.34	612.90	206.17	612.90	632.83	249.47	632.83	650.70	296.89	650.70	666.92	348.43	666.92	681.81	404.10	681.81	695.60	463.89	695.60
2458.00	72.0	602.19	135.72	602.19	629.63	171.77	629.63	653.41	212.06	653.41	674.37	256.60	674.37	693.13	305.37	693.13	710.11	358.39	710.11	725.67	415.65	725.67	740.05	477.15	740.05
2456.00	74.0	639.58	139.49	639.58	668.47	176.54	668.47	693.46	217.96	693.46	715.45	263.73	715.45	735.08	313.86	735.08	752.82	368.34	752.82	769.04	427.19	769.04	784.00	490.40	784.00
2454.00	76.0	676.44	143.26	676.44	706.78	181.32	706.78	732.97	223.85	732.97	755.96	270.85	755.96	776.45	322.34	776.45	794.94	378.30	794.94	811.80	438.74	811.80	827.34	503.65	827.34
2452.00	78.0	712.70	147.03	712.70	744.45	186.09	744.45	771.81	229.74	771.81	795.80	277.98	795.80	817.13	330.82	817.13	836.35	388.26	836.35	853.86	450.28	853.86	869.95	516.91	869.95
2450.00	80.0	748.26	150.80	748.26	781.39	190.86	781.39	809.91	235.63	809.91	834.87	285.11	834.87	857.03	339.30	857.03	876.97	398.21	876.97	895.10	461.83	895.10	911.75	530.16	911.75

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement		Analyses for Settlement = 0.25 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2528.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2526.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2524.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2522.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2520.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2518.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2516.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2514.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2512.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2510.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2508.00	22.0	0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00
2506.00	24.0	0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00
2504.00	26.0	0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00
2502.00	28.0	0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00
2500.00	30.0	0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00
2498.00	32.0	0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00
2496.00	34.0	0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00
2494.00	36.0	0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00
2492.00	38.0	0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00
2490.00	40.0	0.00	75.40	0.00	0.00	95.43	0.00	0.00	117.81	0.00	0.00	142.55	0.00	0.00	169.65	0.00	0.00	199.11	0.00	0.00	230.91	0.00	0.00	265.08	0.00
2488.00	42.0	0.00	79.17	0.00	0.00	100.20	0.00	0.00	123.70	0.00	0.00	149.68	0.00	0.00	178.13	0.00	0.00	209.06	0.00	0.00	242.46	0.00	0.00	278.33	0.00
2486.00	44.0	168.34	82.94	168.34	187.48	104.97	187.48	206.08	129.60	206.08	224.21	156.81	224.21	241.93	186.62	241.93	259.30	219.02	259.30	276.36	254.01	276.36	293.17	291.59	293.17
2484.00	46.0	220.53	86.71	220.53	244.34	109.74	244.34	267.09	135.49	267.09	288.91	163.94	288.91	309.93	195.10	309.93	330.25	228.97	330.25	349.97	265.55	349.97	369.17	304.84	369.17
2482.00	48.0	274.19	90.48	274.19	302.80	114.51	302.80	329.81	141.38	329.81	355.43	171.07	355.43	379.83	203.58	379.83	403.19	238.93	403.19	425.64	277.10	425.64	447.30	318.10	447.30
2480.00	50.0	329.12	94.25	329.12	362.64	119.29	362.64	394.02	147.27	394.02	423.53	178.19	423.53	451.40	212.06	451.40	477.86	248.88	477.86	503.11	288.64	503.11	527.30	331.35	527.30
2478.00	52.0	385.16	98.02	385.16	423.69	124.06	423.69	459.52	153.16	459.52	492.99	185.32	492.99	524.40	220.55	524.40	554.03	258.84	554.03	582.13	300.19	582.13	608.89	344.61	608.89
2476.00	54.0	442.11	101.79	442.11	485.73	128.83	485.73	526.10	159.05	526.10	563.60	192.45	563.60	598.60	229.03	598.60	631.46	268.79	631.46	662.45	311.74	662.45	691.83	357.86	691.83
2474.00	56.0	499.82	105.56	499.82	548.60	133.60	548.60	593.55	164.94	593.55	635.13	199.58	635.13	673.79	237.51	673.79	709.91	278.75	709.91	743.84	323.28	743.84	775.87	371.11	775.87
2472.00	58.0	558.12	109.33	558.12	612.11	138.37	612.11	661.69	170.83	661.69	707.40	206.70	707.40	749.73	246.00	749.73	789.15	288.70	789.15	826.04	334.83	826.04	860.75	384.37	860.75
2470.00	60.0	616.83	113.10	616.83	676.07	143.14	676.07	730.32	176.72	730.32	780.18	213.83	780.18	826.22	254.48	826.22	868.96	298.66	868.96	908.84	346.37	908.84	946.25	397.62	946.25
2468.00	62.0	675.80	116.87	675.80	740.31	147.92	740.31	799.25	182.61	799.25	853.28	220.96	853.28	903.05	262.96	903.05	949.12	308.61	949.12	992.01	357.92	992.01	1032.12	410.88	1032.12
2466.00	64.0	734.87	120.64	734.87	804.67	152.69	804.67	868.30	188.50	868.30	926.51	228.09	926.51	980.01	271.44	980.01	1029.42	318.57	1029.42	1075.31	369.46	1075.31	1118.14	424.13	1118.14
2464.00	66.0	793.89	124.41	793.89	868.96	157.46	868.96	937.28	194.39	937.28	999.67	235.22	999.67	1056.89	279.93	1056.89	1109.65	328.52	1109.65	1158.54	381.01	1158.54	1204.08	437.38	1204.08
2462.00	68.0	852.70	128.18	852.70	933.03	162.23	933.03	1006.02	200.28	1006.02	1072.57	242.34	1072.57	1133.51	288.41	1133.51	1189.59	338.48	1189.59	1241.47	392.56	1241.47	1289.72	450.64	1289.72
2460.00	70.0	911.15	131.95	911.15	996.70	167.00	996.70	1074.35	206.17	1074.35	1145.03	249.47	1145.03	1209.65	296.89	1209.65	1269.04	348.43	1269.04	1323.90	404.10	1323.90	1374.83	463.89	1374.83
2458.00	72.0	969.09	135.72	969.09	1059.83	171.77	1059.83	1142.08	212.06	1142.08	1216.86	256.60	1216.86	1285.14	305.37	1285.14	1347.81	358.39	1347.81	1405.62	415.65	1405.62	1459.21	477.15	1459.21
2456.00	74.0	1026.39	139.49	1026.39	1122.24	176.54	1122.24	1209.05	217.96	1209.05	1287.88	263.73	1287.88	1359.79	313.86	1359.79	1425.69	368.34	1425.69	1486.41	427.19	1486.41	1542.64	490.40	1542.64
2454.00	76.0	1082.89	143.26	1082.89	1183.79	181.32	1183.79	1275.09	223.85	1275.09	1357.92	270.85	1357.92	1433.39	322.34	1433.39	1502.50	378.30	1502.50	1566.09	438.74	1566.09	1624.91	503.65	1624.91
2452.00	78.0	1138.45	147.03	1138.45	1244.33	186.09	1244.33	1340.04	229.74	1340.04	1426.80	277.98	1426.80	1505.78	330.82	1505.78	1578.03	388.26	1578.03	1644.45	450.28	1644.45	1705.82	516.91	1705.82
2450.00	80.0	1192.94	150.80	1192.94	1303.69	190.86	1303.69	1403.73	235.63	1403.73	1494.35	285.11	1494.35	1576.77	339.30	1576.77	1652.10	398.21	1652.10	1721.29	461.83	1721.29	1785.17	530.16	1785.17

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement

Analyses for Settlement = 0.50 Inch(es)

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2528.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2526.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2524.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2522.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2520.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2518.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2516.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2514.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2512.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2510.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2508.00	22.0	0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00
2506.00	24.0	0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00
2504.00	26.0	0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00
2502.00	28.0	0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00
2500.00	30.0	0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00
2498.00	32.0	0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00
2496.00	34.0	0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00
2494.00	36.0	0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00
2492.00	38.0	0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00
2490.00	40.0	0.00	75.40	0.00	0.00	95.43	0.00	0.00	117.81	0.00	0.00	142.55	0.00	0.00	169.65	0.00	0.00	199.11	0.00	0.00	230.91	0.00	0.00	265.08	0.00
2488.00	42.0	0.00	79.17	0.00	0.00	100.20	0.00	0.00	123.70	0.00	0.00	149.68	0.00	0.00	178.13	0.00	0.00	209.06	0.00	0.00	242.46	0.00	0.00	278.33	0.00
2486.00	44.0	287.59	82.94	287.59	324.53	104.97	324.53	361.07	129.60	361.07	397.23	156.81	397.23	433.00	186.62	433.00	468.37	219.02	468.37	503.37	254.01	503.37	537.99	291.59	537.99
2484.00	46.0	343.51	86.71	343.51	387.31	109.74	387.31	430.56	135.49	430.56	473.22	163.94	473.22	515.25	195.10	515.25	556.60	228.97	556.60	597.28	265.55	597.28	637.29	304.84	637.29
2482.00	48.0	400.99	90.48	400.99	451.85	114.51	451.85	502.00	141.38	502.00	551.34	171.07	551.34	599.80	203.58	599.80	647.30	238.93	647.30	693.83	277.10	693.83	739.37	318.10	739.37
2480.00	50.0	459.84	94.25	459.84	517.93	119.29	517.93	575.13	147.27	575.13	631.32	178.19	631.32	686.37	212.06	686.37	740.17	248.88	740.17	792.67	288.64	792.67	843.88	331.35	843.88
2478.00	52.0	519.87	98.02	519.87	585.33	124.06	585.33	649.73	153.16	649.73	712.90	185.32	712.90	774.67	220.55	774.67	834.88	258.84	834.88	893.49	300.19	893.49	950.49	344.61	950.49
2476.00	54.0	580.88	101.79	580.88	653.84	128.83	653.84	725.56	159.05	725.56	795.83	192.45	795.83	864.42	229.03	864.42	931.16	268.79	931.16	995.98	311.74	995.98	1058.85	357.86	1058.85
2474.00	56.0	642.71	105.56	642.71	723.26	133.60	723.26	802.39	164.94	802.39	879.85	199.58	879.85	955.36	237.51	955.36	1028.72	278.75	1028.72	1099.81	323.28	1099.81	1168.64	371.11	1168.64
2472.00	58.0	705.16	109.33	705.16	793.38	138.37	793.38	880.00	170.83	880.00	964.72	206.70	964.72	1047.22	246.00	1047.22	1127.25	288.70	1127.25	1204.70	334.83	1204.70	1279.54	384.37	1279.54
2470.00	60.0	768.05	113.10	768.05	864.00	143.14	864.00	958.16	176.72	958.16	1050.20	213.83	1050.20	1139.74	254.48	1139.74	1226.50	298.66	1226.50	1310.34	346.37	1310.34	1391.24	397.62	1391.24
2468.00	62.0	831.23	116.87	831.23	934.93	147.92	934.93	1036.67	182.61	1036.67	1136.06	220.96	1136.06	1232.67	262.96	1232.67	1326.19	308.61	1326.19	1416.45	357.92	1416.45	1503.43	410.88	1503.43
2466.00	64.0	894.51	120.64	894.51	1005.99	152.69	1005.99	1115.32	188.50	1115.32	1222.07	228.09	1222.07	1325.76	271.44	1325.76	1426.04	318.57	1426.04	1522.74	369.46	1522.74	1615.82	424.13	1615.82
2464.00	66.0	957.73	124.41	957.73	1076.97	157.46	1076.97	1193.89	194.39	1193.89	1307.99	235.22	1307.99	1418.76	279.93	1418.76	1525.80	328.52	1525.80	1628.93	381.01	1628.93	1728.10	437.38	1728.10
2462.00	68.0	1020.74	128.18	1020.74	1147.71	162.23	1147.71	1272.18	200.28	1272.18	1393.61	242.34	1393.61	1511.43	288.41	1511.43	1625.21	338.48	1625.21	1734.75	392.56	1734.75	1839.98	450.64	1839.98
2460.00	70.0	1083.35	131.95	1083.35	1218.02	167.00	1218.02	1350.00	206.17	1350.00	1478.71	249.47	1478.71	1603.54	296.89	1603.54	1724.02	348.43	1724.02	1839.92	404.10	1839.92	1951.18	463.89	1951.18
2458.00	72.0	1145.43	135.72	1145.43	1287.72	171.77	1287.72	1427.14	212.06	1427.14	1563.08	256.60	1563.08	1694.85	305.37	1694.85	1821.96	358.39	1821.96	1944.18	415.65	1944.18	2061.42	477.15	2061.42
2456.00	74.0	1206.81	139.49	1206.81	1356.63	176.54	1356.63	1503.41	217.96	1503.41	1646.49	263.73	1646.49	1785.13	313.86	1785.13	1918.81	368.34	1918.81	2047.27	427.19	2047.27	2170.42	490.40	2170.42
2454.00	76.0	1267.33	143.26	1267.33	1424.59	181.32	1424.59	1578.63	223.85	1578.63	1728.75	270.85	1728.75	1874.16	322.34	1874.16	2014.32	378.30	2014.32	2148.93	438.74	2148.93	2277.91	503.65	2277.91
2452.00	78.0	1326.86	147.03	1326.86	1491.43	186.09	1491.43	1652.61	229.74	1652.61	1809.65	277.98	1809.65	1961.72	330.82	1961.72	2108.24	388.26	2108.24	2248.90	450.28	2248.90	2383.62	516.91	2383.62
2450.00	80.0	1385.23	150.80	1385.23	1556.97	190.86	1556.97	1725.15	235.63	1725.15	1888.98	285.11	1888.98	2047.59	339.30	2047.59	2200.35	398.21	2200.35	2346.95	461.83	2346.95	2487.29	530.16	2487.29

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement

Analyses for Settlement = 0.75 Inch(es)

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2528.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2526.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2524.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2522.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2520.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2518.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2516.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2514.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2512.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2510.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2508.00	22.0	0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00
2506.00	24.0	0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00
2504.00	26.0	0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00
2502.00	28.0	0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00
2500.00	30.0	0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00
2498.00	32.0	0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00
2496.00	34.0	0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00
2494.00	36.0	0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00
2492.00	38.0	0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00
2490.00	40.0	0.00	75.40	0.00	0.00	95.43	0.00	0.00	117.81	0.00	0.00	142.55	0.00	0.00	169.65	0.00	0.00	199.11	0.00	0.00	230.91	0.00	0.00	265.08	0.00
2488.00	42.0	0.00	79.17	0.00	0.00	100.20	0.00	0.00	123.70	0.00	0.00	149.68	0.00	0.00	178.13	0.00	0.00	209.06	0.00	0.00	242.46	0.00	0.00	278.33	0.00
2486.00	44.0	392.14	82.94	392.14	446.89	104.97	446.89	500.74	129.60	500.74	553.88	156.81	553.88	606.47	186.62	606.47	658.65	219.02	658.65	710.46	254.01	710.46	761.95	291.59	761.95
2484.00	46.0	446.58	86.71	446.58	509.14	109.74	509.14	570.45	135.49	570.45	630.75	163.94	630.75	690.34	195.10	690.34	749.41	228.97	749.41	808.02	265.55	808.02	866.18	304.84	866.18
2482.00	48.0	502.54	90.48	502.54	573.13	114.51	573.13	642.10	141.38	642.10	709.77	171.07	709.77	776.57	203.58	776.57	842.72	238.93	842.72	908.31	277.10	908.31	973.33	318.10	973.33
2480.00	50.0	559.83	94.25	559.83	638.65	119.29	638.65	715.46	147.27	715.46	790.67	178.19	790.67	864.84	212.06	864.84	938.25	248.88	938.25	1010.98	288.64	1010.98	1083.03	331.35	1083.03
2478.00	52.0	618.26	98.02	618.26	705.48	124.06	705.48	790.28	153.16	790.28	873.20	185.32	873.20	954.88	220.55	954.88	1035.69	258.84	1035.69	1115.71	300.19	1115.71	1194.93	344.61	1194.93
2476.00	54.0	677.67	101.79	677.67	773.41	128.83	773.41	866.34	159.05	866.34	957.08	192.45	957.08	1046.41	229.03	1046.41	1134.74	268.79	1134.74	1222.17	311.74	1222.17	1308.67	357.86	1308.67
2474.00	56.0	737.85	105.56	737.85	842.24	133.60	842.24	943.41	164.94	943.41	1042.07	199.58	1042.07	1139.14	237.51	1139.14	1235.09	278.75	1235.09	1330.03	323.28	1330.03	1423.92	371.11	1423.92
2472.00	58.0	798.64	109.33	798.64	911.76	138.37	911.76	1021.25	170.83	1021.25	1127.92	206.70	1127.92	1232.82	246.00	1232.82	1336.46	288.70	1336.46	1438.99	334.83	1438.99	1540.33	384.37	1540.33
2470.00	60.0	859.88	113.10	859.88	981.78	143.14	981.78	1099.66	176.72	1099.66	1214.39	213.83	1214.39	1327.16	254.48	1327.16	1438.56	298.66	1438.56	1548.73	346.37	1548.73	1657.58	397.62	1657.58
2468.00	62.0	921.38	116.87	921.38	1052.12	147.92	1052.12	1178.41	182.61	1178.41	1301.24	220.96	1301.24	1421.93	262.96	1421.93	1541.11	308.61	1541.11	1658.95	357.92	1658.95	1775.34	410.88	1775.34
2466.00	64.0	982.98	120.64	982.98	1122.57	152.69	1122.57	1257.29	188.50	1257.29	1388.24	228.09	1388.24	1516.85	271.44	1516.85	1643.83	318.57	1643.83	1769.36	369.46	1769.36	1893.31	424.13	1893.31
2464.00	66.0	1044.53	124.41	1044.53	1192.95	157.46	1192.95	1336.10	194.39	1336.10	1475.16	235.22	1475.16	1611.69	279.93	1611.69	1746.46	328.52	1746.46	1879.66	381.01	1879.66	2011.16	437.38	2011.16
2462.00	68.0	1105.86	128.18	1105.86	1263.09	162.23	1263.09	1414.63	200.28	1414.63	1561.77	242.34	1561.77	1706.19	288.41	1706.19	1848.73	338.48	1848.73	1989.58	392.56	1989.58	2128.60	450.64	2128.60
2460.00	70.0	1166.82	131.95	1166.82	1332.80	167.00	1332.80	1492.69	206.17	1492.69	1647.85	249.47	1647.85	1800.11	296.89	1800.11	1950.37	348.43	1950.37	2098.83	404.10	2098.83	2245.33	463.89	2245.33
2458.00	72.0	1227.25	135.72	1227.25	1401.91	171.77	1401.91	1570.07	212.06	1570.07	1733.19	256.60	1733.19	1893.22	305.37	1893.22	2051.13	358.39	2051.13	2207.13	415.65	2207.13	2314.04	477.15	2314.04
2456.00	74.0	1287.01	139.49	1287.01	1470.24	176.54	1470.24	1646.58	217.96	1646.58	1817.57	263.73	1817.57	1985.29	313.86	1985.29	2150.77	368.34	2150.77	2314.22	427.19	2314.22	2475.46	490.40	2475.46
2454.00	76.0	1345.93	143.26	1345.93	1537.63	181.32	1537.63	1722.03	223.85	1722.03	1900.78	270.85	1900.78	2076.08	322.34	2076.08	2249.02	378.30	2249.02	2419.82	438.74	2419.82	2588.29	503.65	2588.29
2452.00	78.0	1403.88	147.03	1403.88	1603.89	186.09	1603.89	1796.23	229.74	1796.23	1982.61	277.98	1982.61	2165.37	330.82	2165.37	2345.64	388.26	2345.64	2523.67	450.28	2523.67	2699.25	516.91	2699.25
2450.00	80.0	1460.70	150.80	1460.70	1668.88	190.86	1668.88	1868.99	235.63	1868.99	2062.86	285.11	2062.86	2252.93	339.30	2252.93	2440.40	398.21	2440.40	2625.51	461.83	2625.51	2808.06	530.16	2808.06

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement			Analyses for Settlement = 1.00 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.			
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	
2528.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00	
2526.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00	
2524.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00	
2522.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00	
2520.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00	
2518.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00	
2516.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00	
2514.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00	
2512.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00	
2510.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00	
2508.00	22.0	0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00	
2506.00	24.0	0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00	
2504.00	26.0	0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00	
2502.00	28.0	0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00	
2500.00	30.0	0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00	
2498.00	32.0	0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00	
2496.00	34.0	0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00	
2494.00	36.0	0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00	
2492.00	38.0	0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00	
2490.00	40.0	0.00	75.40	0.00	0.00	95.43	0.00	0.00	117.81	0.00	0.00	142.55	0.00	0.00	169.65	0.00	0.00	199.11	0.00	0.00	230.91	0.00	0.00	265.08	0.00	
2488.00	42.0	0.00	79.17	0.00	0.00	100.20	0.00	0.00	123.70	0.00	0.00	149.68	0.00	0.00	178.13	0.00	0.00	209.06	0.00	0.00	242.46	0.00	0.00	278.33	0.00	
2486.00	44.0	482.18	82.94	482.18	553.33	104.97	553.33	626.28	129.60	626.28	697.34	156.81	697.34	767.68	186.62	767.68	837.20	219.02	837.20	906.02	254.01	906.02	974.28	291.59	974.28	
2484.00	46.0	533.93	86.71	533.93	611.55	109.74	611.55	693.62	135.49	693.62	772.56	163.94	772.56	850.68	195.10	850.68	927.70	228.97	927.70	1003.77	265.55	1003.77	1079.12	304.84	1079.12	
2482.00	48.0	587.13	90.48	587.13	671.40	114.51	671.40	762.85	141.38	762.85	849.89	171.07	849.89	936.01	203.58	936.01	1020.72	238.93	1020.72	1104.26	277.10	1104.26	1186.90	318.10	1186.90	
2480.00	50.0	641.60	94.25	641.60	732.68	119.29	732.68	833.72	147.27	833.72	929.06	178.19	929.06	1023.36	212.06	1023.36	1115.97	248.88	1115.97	1207.14	288.64	1207.14	1297.25	331.35	1297.25	
2478.00	52.0	697.16	98.02	697.16	795.18	124.06	795.18	906.01	153.16	906.01	1009.81	185.32	1009.81	1112.47	220.55	1112.47	1213.12	258.84	1213.12	1312.08	300.19	1312.08	1409.81	344.61	1409.81	
2476.00	54.0	753.63	101.79	753.63	858.72	128.83	858.72	979.49	159.05	979.49	1091.89	192.45	1091.89	1203.04	229.03	1203.04	1311.87	268.79	1311.87	1418.75	311.74	1418.75	1524.22	357.86	1524.22	
2474.00	56.0	810.85	105.56	810.85	923.09	133.60	923.09	1053.95	164.94	1053.95	1175.06	199.58	1175.06	1294.81	237.51	1294.81	1411.92	278.75	1411.92	1526.82	323.28	1526.82	1640.14	371.11	1640.14	
2472.00	58.0	868.65	109.33	868.65	988.11	138.37	988.11	1129.15	170.83	1129.15	1259.07	206.70	1259.07	1387.51	246.00	1387.51	1512.98	288.70	1512.98	1635.99	334.83	1635.99	1757.23	384.37	1757.23	
2470.00	60.0	926.87	113.10	926.87	1053.60	143.14	1053.60	1204.90	176.72	1204.90	1343.68	213.83	1343.68	1480.87	254.48	1480.87	1614.78	298.66	1614.78	1745.95	346.37	1745.95	1875.17	397.62	1875.17	
2468.00	62.0	985.34	116.87	985.34	1119.38	147.92	1119.38	1280.98	182.61	1280.98	1428.66	220.96	1428.66	1574.65	262.96	1574.65	1717.02	308.61	1717.02	1856.39	357.92	1856.39	1993.63	410.88	1993.63	
2466.00	64.0	1043.91	120.64	1043.91	1185.28	152.69	1185.28	1357.19	188.50	1357.19	1513.80	228.09	1513.80	1668.58	271.44	1668.58	1819.44	318.57	1819.44	1967.02	369.46	1967.02	2112.28	424.13	2112.28	
2464.00	66.0	1102.42	124.41	1102.42	1251.11	157.46	1251.11	1433.33	194.39	1433.33	1598.85	235.22	1598.85	1762.43	279.93	1762.43	1921.76	328.52	1921.76	2077.54	381.01	2077.54	2230.83	437.38	2230.83	
2462.00	68.0	1160.73	128.18	1160.73	1316.70	162.23	1316.70	1509.20	200.28	1509.20	1683.60	242.34	1683.60	1855.95	288.41	1855.95	2023.72	338.48	2023.72	2187.68	392.56	2187.68	2348.96	450.64	2348.96	
2460.00	70.0	1218.69	131.95	1218.69	1381.90	167.00	1381.90	1584.61	206.17	1584.61	1767.83	249.47	1767.83	1948.90	296.89	1948.90	2125.06	348.43	2125.06	2297.14	404.10	2297.14	2466.37	463.89	2466.37	
2458.00	72.0	1276.14	135.72	1276.14	1446.54	171.77	1446.54	1659.37	212.06	1659.37	1851.34	256.60	1851.34	2041.04	305.37	2041.04	2225.52	358.39	2225.52	2405.66	415.65	2405.66	2582.76	477.15	2582.76	
2456.00	74.0	1332.95	139.49	1332.95	1510.45	176.54	1510.45	1733.29	217.96	1733.29	1933.91	263.73	1933.91	2132.15	313.86	2132.15	2324.85	368.34	2324.85	2512.96	427.19	2512.96	2697.85	490.40	2697.85	
2454.00	76.0	1388.97	143.26	1388.97	1573.47	181.32	1573.47	1806.18	223.85	1806.18	2015.33	270.85	2015.33	2221.99	322.34	2221.99	2422.81	378.30	2422.81	2618.77	438.74	2618.77	2811.34	503.65	2811.34	
2452.00	78.0	1444.06	147.03	1444.06	1635.45	186.09	1635.45	1877.86	229.74	1877.86	2095.40	277.98	2095.40	2310.35	330.82	2310.35	2519.14	388.26	2519.14	2722.83	450.28	2722.83	2922.95	516.91	2922.95	
2450.00	80.0	1498.09	150.80	1498.09	1696.23	190.86	1696.23	1948.16	235.63	1948.16	2173.93	285.11	2173.93	2397.00	339.30	2397.00	2613.61	398.21	2613.61	2824.87	461.83	2824.87	3032.41	530.16	3032.41	

Drilled Shaft Resistance Analyses

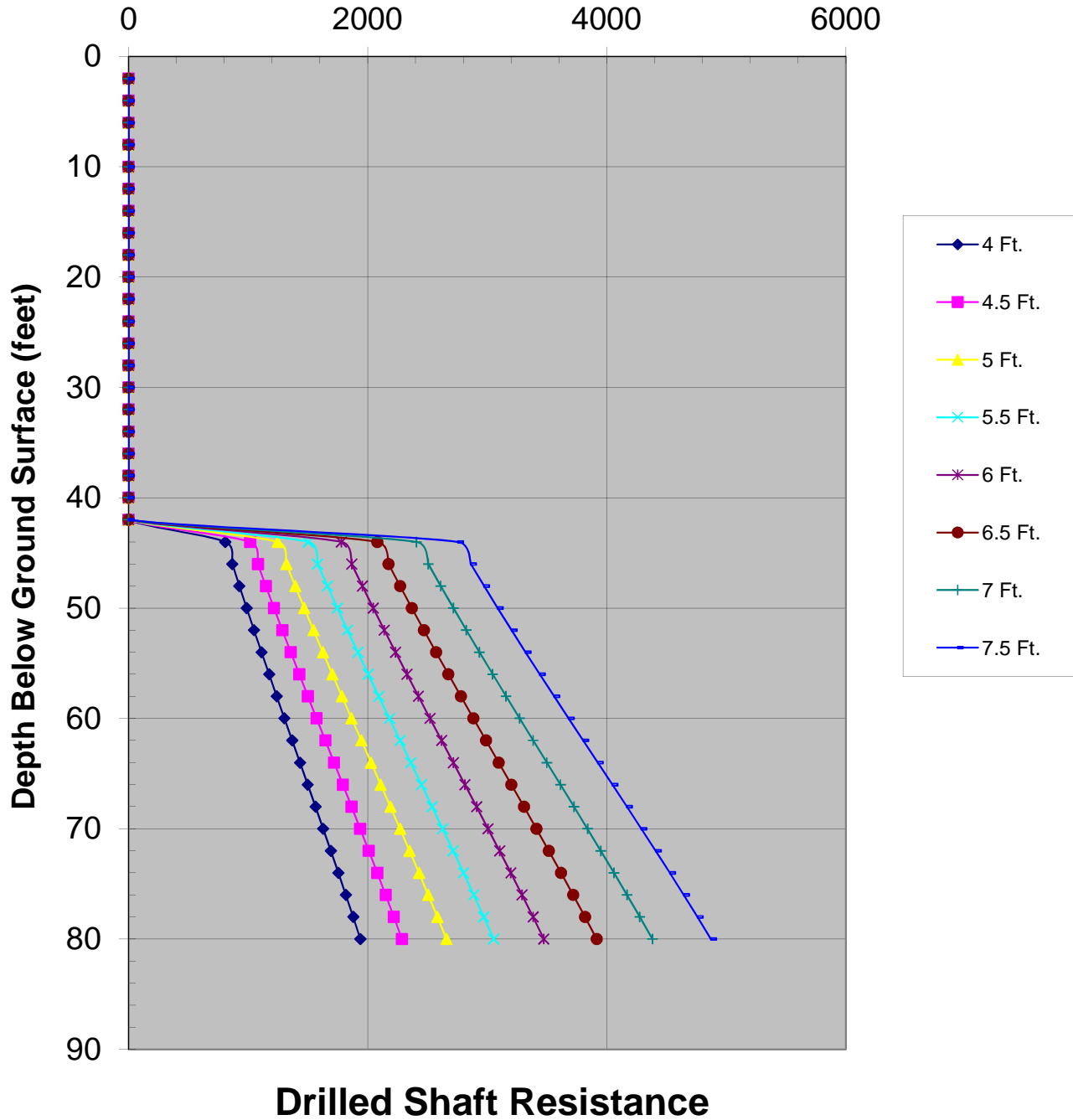


Service Limit Resistance Based On Allowable Settlement

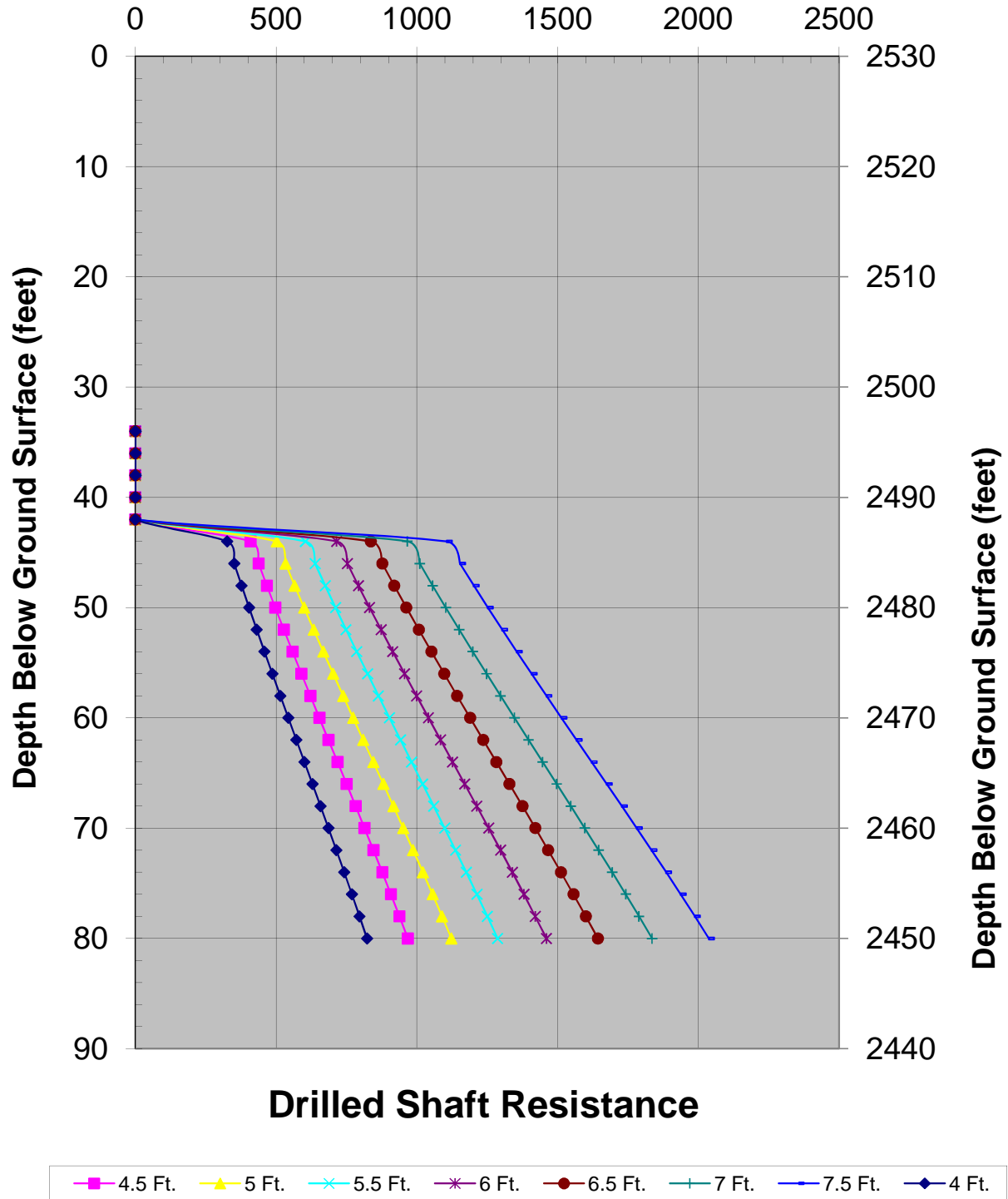
Analyses for Settlement = 2.00 Inch(es)

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.			
		R	Shaft	R	R	Shaft	Net	R	Shaft	Net	R	Shaft	Net	R	Shaft	Net	R	Shaft	Net	R	Shaft	Net	R	Shaft	Net	
		Service kips	Weight kips	Service kips	Service kips	Weight kips	Capacity kips	Service kips	Weight kips	Capacity kips	Service kips	Weight kips	Capacity kips	Service kips	Weight kips	Capacity kips	Service kips	Weight kips	Capacity kips	Service kips	Weight kips	Capacity kips	Service kips	Weight kips	Capacity kips	Service kips
2528.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00	
2526.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00	
2524.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00	
2522.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00	
2520.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00	
2518.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00	
2516.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00	
2514.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00	
2512.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00	
2510.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00	
2508.00	22.0	0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00	
2506.00	24.0	0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00	
2504.00	26.0	0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00	
2502.00	28.0	0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00	
2500.00	30.0	0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00	
2498.00	32.0	0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00	
2496.00	34.0	0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00	
2494.00	36.0	0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00	
2492.00	38.0	0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00	
2490.00	40.0	0.00	75.40	0.00	0.00	95.43	0.00	0.00	117.81	0.00	0.00	142.55	0.00	0.00	169.65	0.00	0.00	199.11	0.00	0.00	230.91	0.00	0.00	265.08	0.00	
2488.00	42.0	0.00	79.17	0.00	0.00	100.20	0.00	0.00	123.70	0.00	0.00	149.68	0.00	0.00	178.13	0.00	0.00	209.06	0.00	0.00	242.46	0.00	0.00	278.33	0.00	
2486.00	44.0	720.96	82.94	720.96	858.01	104.97	858.01	996.60	129.60	996.60	1135.94	156.81	1135.94	1275.42	186.62	1275.42	1414.62	219.02	1414.62	1553.28	254.01	1553.28	1691.26	291.59	1691.26	
2484.00	46.0	772.71	86.71	772.71	916.23	109.74	916.23	1061.29	135.49	1061.29	1207.10	163.94	1207.10	1353.05	195.10	1353.05	1498.72	228.97	1498.72	1643.85	265.55	1643.85	1788.30	304.84	1788.30	
2482.00	48.0	825.91	90.48	825.91	976.08	114.51	976.08	1127.79	141.38	1127.79	1280.25	171.07	1280.25	1432.85	203.58	1432.85	1585.17	238.93	1585.17	1736.95	277.10	1736.95	1888.05	318.10	1888.05	
2480.00	50.0	880.38	94.25	880.38	1037.36	119.29	1037.36	1195.88	147.27	1195.88	1355.15	178.19	1355.15	1514.55	212.06	1514.55	1673.68	248.88	1673.68	1832.27	288.64	1832.27	1990.18	331.35	1990.18	
2478.00	52.0	935.94	98.02	935.94	1099.86	124.06	1099.86	1265.33	153.16	1265.33	1431.54	185.32	1431.54	1597.89	220.55	1597.89	1763.96	258.84	1763.96	1929.50	300.19	1929.50	2094.35	344.61	2094.35	
2476.00	54.0	992.41	101.79	992.41	1163.39	128.83	1163.39	1335.92	159.05	1335.92	1509.19	192.45	1509.19	1682.60	229.03	1682.60	1855.73	268.79	1855.73	2028.33	311.74	2028.33	2200.24	357.86	2200.24	
2474.00	56.0	1049.63	105.56	1049.63	1227.76	133.60	1227.76	1407.44	164.94	1407.44	1587.87	199.58	1587.87	1768.43	237.51	1768.43	1948.71	278.75	1948.71	2128.46	323.28	2128.46	2307.53	371.11	2307.53	
2472.00	58.0	1107.43	109.33	1107.43	1292.79	138.37	1292.79	1479.69	170.83	1479.69	1667.34	206.70	1667.34	1855.13	246.00	1855.13	2042.64	288.70	2042.64	2229.61	334.83	2229.61	2415.90	384.37	2415.90	
2470.00	60.0	1165.65	113.10	1165.65	1358.28	143.14	1358.28	1552.46	176.72	1552.46	1747.39	213.83	1747.39	1942.45	254.48	1942.45	2137.24	298.66	2137.24	2331.49	346.37	2331.49	2525.05	397.62	2525.05	
2468.00	62.0	1224.12	116.87	1224.12	1424.06	147.92	1424.06	1625.55	182.61	1625.55	1827.78	220.96	1827.78	2030.16	262.96	2030.16	2232.25	308.61	2232.25	2433.81	357.92	2433.81	2634.69	410.88	2634.69	
2466.00	64.0	1282.69	120.64	1282.69	1489.95	152.69	1489.95	1698.76	188.50	1698.76	1908.32	228.09	1908.32	2118.01	271.44	2118.01	2327.43	318.57	2327.43	2536.31	369.46	2536.31	2744.51	424.13	2744.51	
2464.00	66.0	1341.20	124.41	1341.20	1555.78	157.46	1555.78	1771.91	194.39	1771.91	1988.78	235.22	1988.78	2205.79	279.93	2205.79	2422.52	328.52	2422.52	2638.71	381.01	2638.71	2854.22	437.38	2854.22	
2462.00	68.0	1399.51	128.18	1399.51	1621.38	162.23	1621.38	1844.79	200.28	1844.79	2068.95	242.34	2068.95	2293.25	288.41	2293.25	2517.27	338.48	2517.27	2740.75	392.56	2740.75	2963.55	450.64	2963.55	
2460.00	70.0	1457.47	131.95	1457.47	1686.58	167.00	1686.58	1917.24	206.17	1917.24	2148.64	249.47	2148.64	2380.18	296.89	2380.18	2611.45	348.43	2611.45	2842.17	404.10	2842.17	3072.22	463.89	3072.22	
2458.00	72.0	1514.92	135.72	1514.92	1751.21	171.77	1751.21	1989.05	212.06	1989.05	2227.64	256.60	2227.64	2466.36	305.37	2466.36	2704.81	358.39	2704.81	2942.72	415.65	2942.72	3179.94	477.15	3179.94	
2456.00	74.0	1571.73	139.49	1571.73	1815.12	176.54	1815.12	2060.06	217.96	2060.06	2305.75	263.73	2305.75	2551.57	313.86	2551.57	2797.12	368.34	2797.12	3042.13	427.19	3042.13	3286.46	490.40	3286.46	
2454.00	76.0	1627.75	143.26	1627.75	1878.14	181.32	1878.14	2130.09	223.85	2130.09	2382.78	270.85	2382.78	2635.60	322.34	2635.60	2888.15	378.30	2888.15	3140.17	438.74	3140.17	3391.49	503.65	3391.49	
2452.00	78.0	1682.84	147.03	1682.84	1940.12	186.09	1940.12	2198.95	229.74	2198.95	2458.53	277.98	2458.53	2718.24	330.82	2718.24	2977.68	388.26	2977.68	3236.58	450.28	3236.58	3494.79	516.91	3494.79	
2450.00	80.0	1736.87	150.80	1736.87	2000.90	190.86	2000.90	2266.49	235.63	2266.49	2532.82	285.11	2532.82	2799.28	339.30	2799.28	3065.47	398.21	3065.47	3331.13	461.83	3331.13	3596.09	530.16	3596.09	

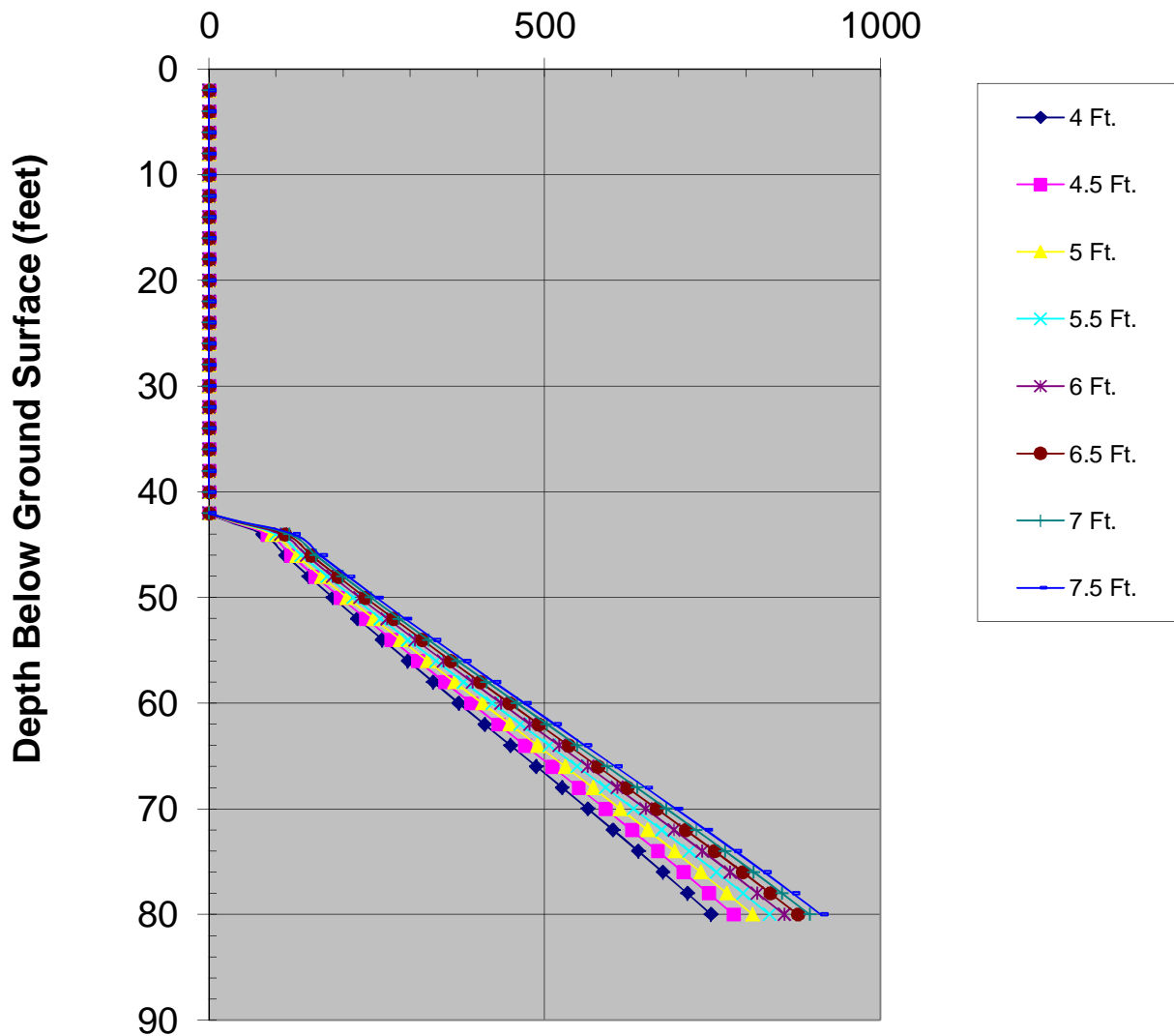
Nominal Shaft Resistance-Compression (kips) (East Abutment)



**Strength Limit State Shaft Resistance-Compression (kips)
(East Abutment)**



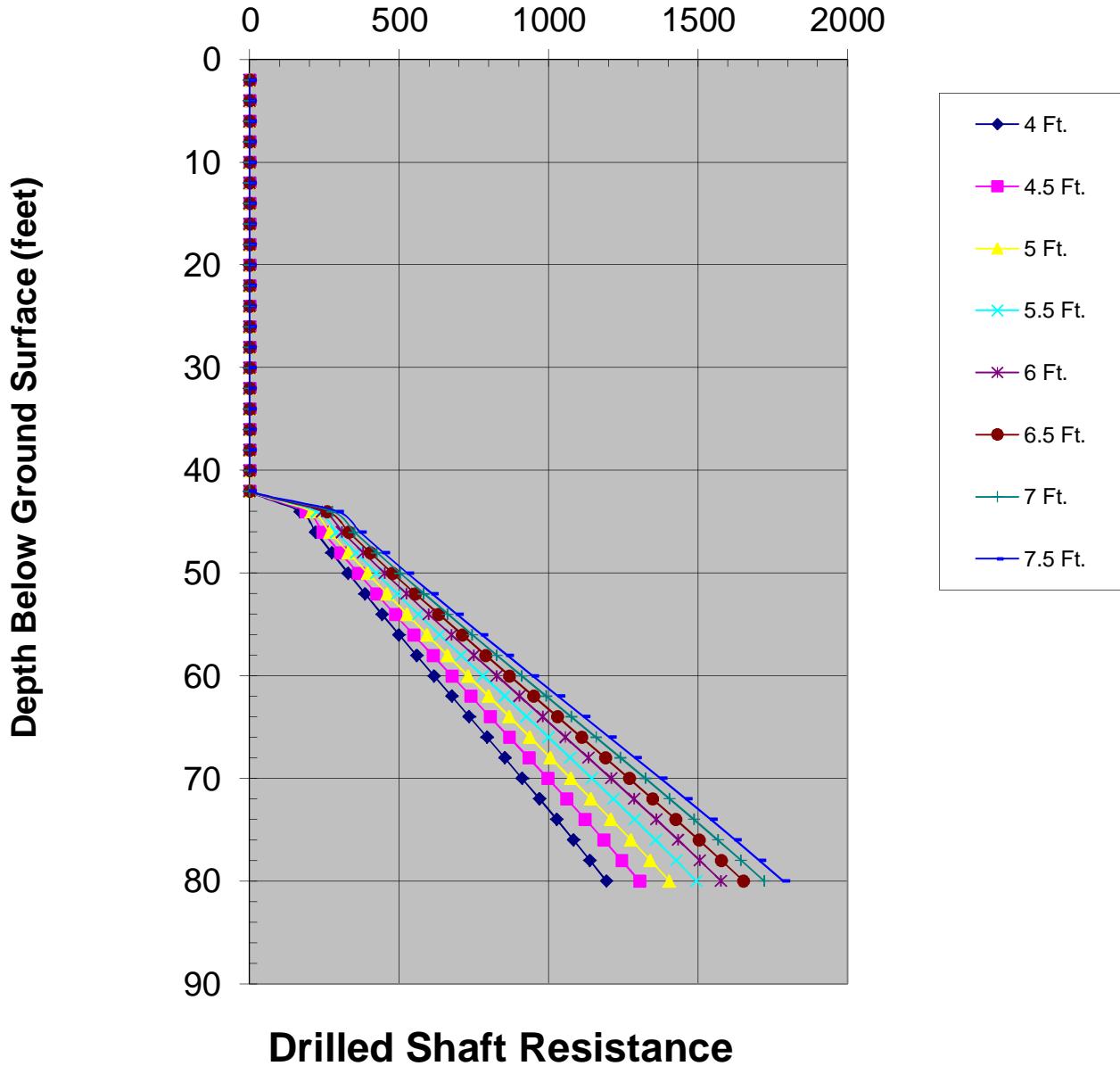
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

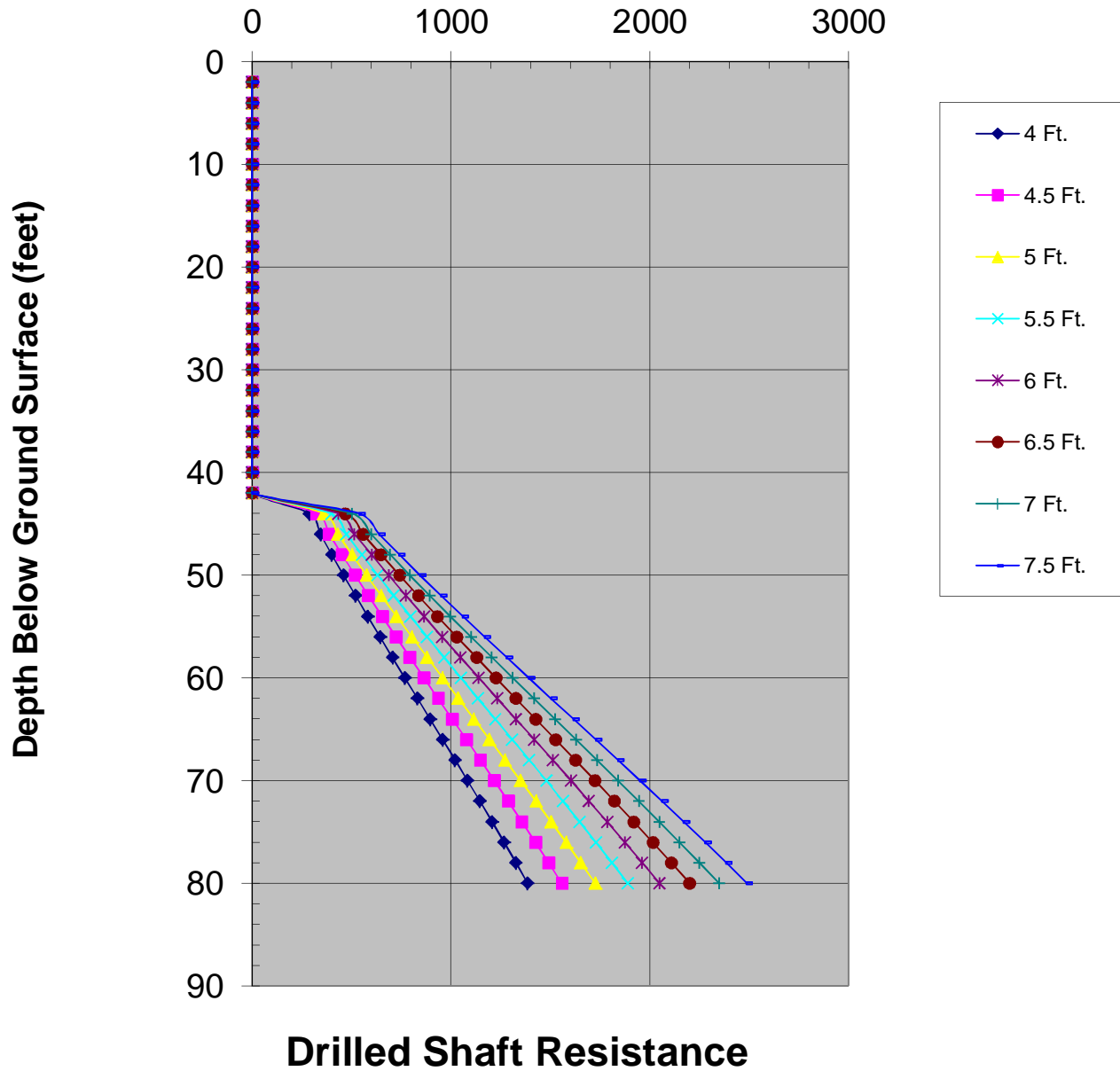
Analysis for
Settlement = 0.10 Inches

Service Limit Shaft Resistance-Compression (kips)

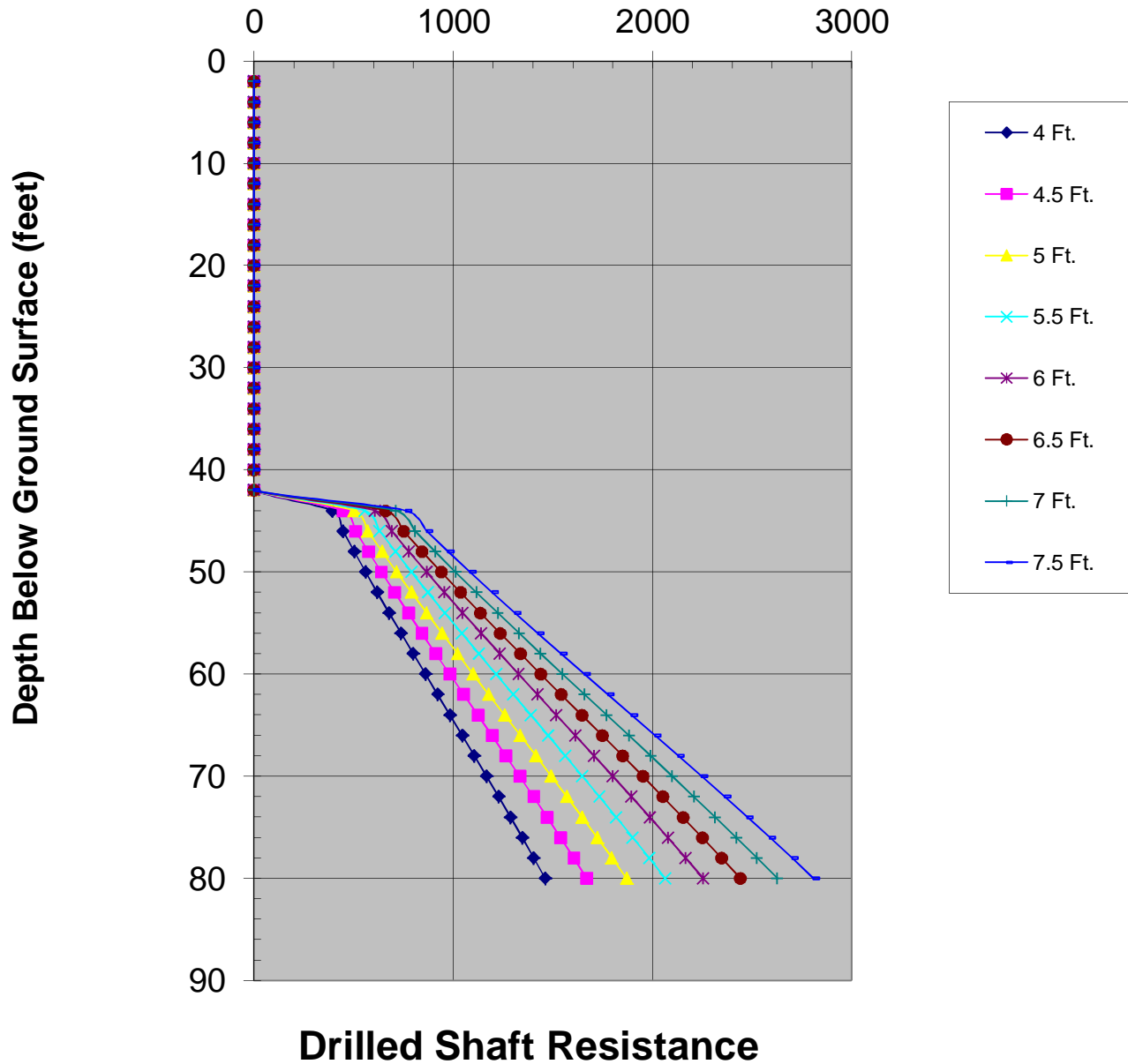


Analysis for Settlement = 0.25 Inches

Service Limit Shaft Resistance-Compression (kips)



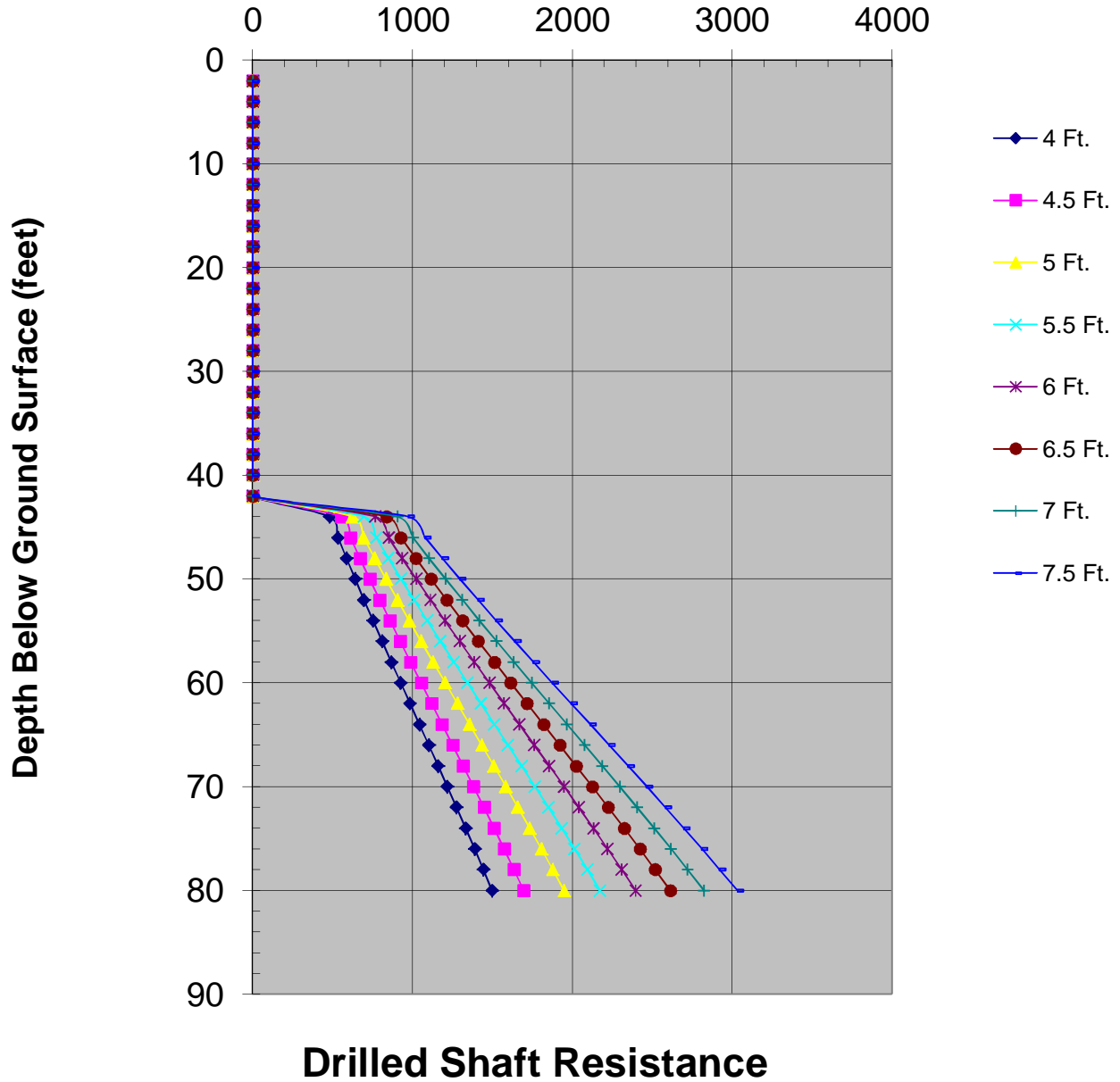
Service Limit Shaft Resistance-Compression (kips)



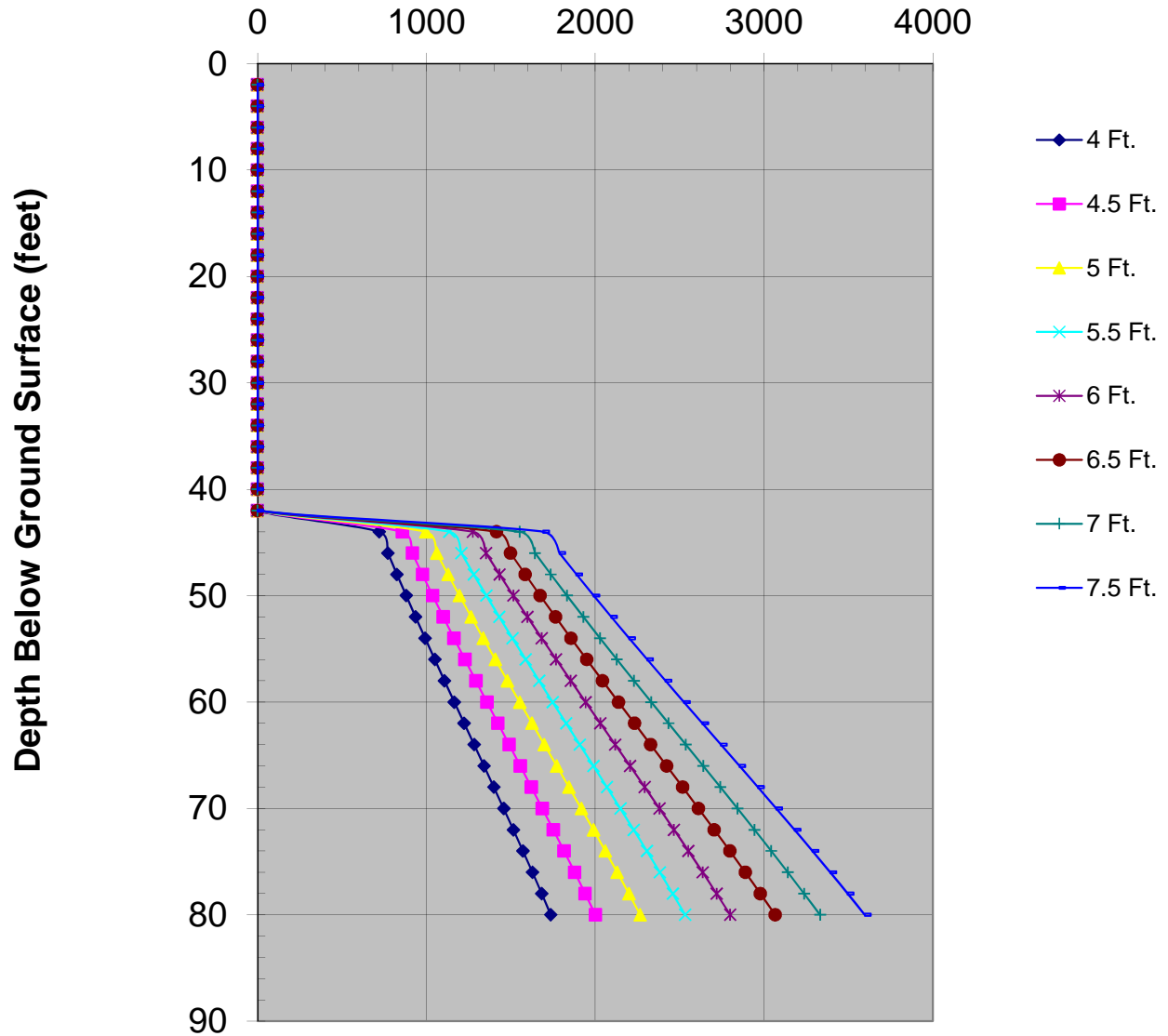
Drilled Shaft Resistance

Analysis for
Settlement = 0.75 Inches

Service Limit Shaft Resistance-Compression (kips)



Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for
Settlement = 2.00 Inches

APPENDIX D
Pantano Wash Bridge
Pier #1
Axial Load Analyses Results

Drilled Shaft Resistance Analysis



Design Shaft-Displacement/Resistance Curve

PROJECT

Project Name: Pantano Wash and Mullins Crossing
 Project Location: Tucson, Arizona
 Project Number: 63125005

Structure Data

Structure Designation: 0
 Foundation Element: Pier #1

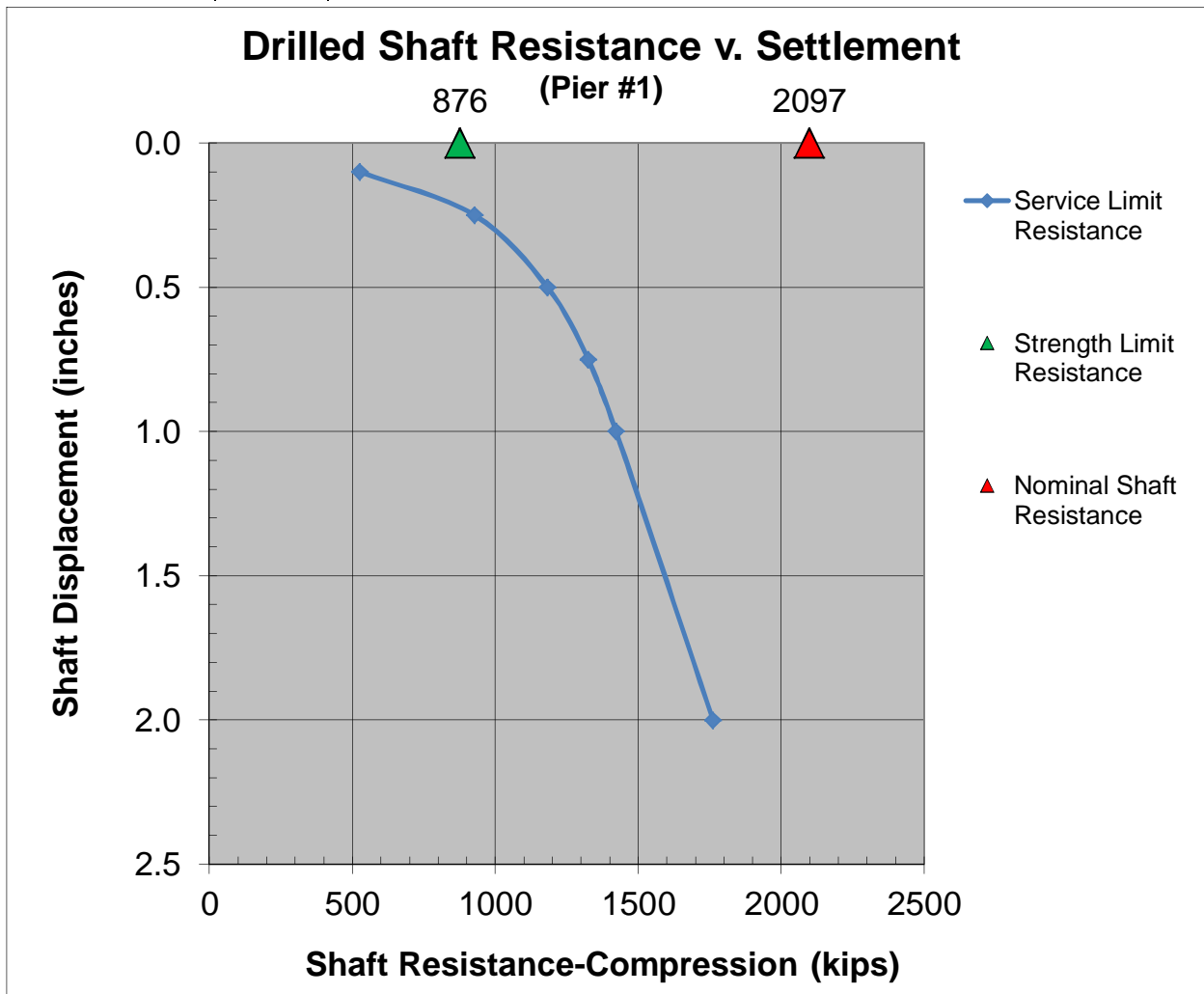
Foundation Design Criteria

Design Shaft Diameter: 5.0 ft.
 Design Shaft Depth: 42 ft.

Service Limit Displacements & Resistances

	δ (in)	Kips
1	0.10	524.9
2	0.25	927.2
3	0.50	1182.4
4	0.75	1324.6
5	1.00	1422.2
6	2.00	1761.2

Strength Limit Resistance Kips	Nominal Resistance Kips
876	2097



Drilled Shaft LRFD Analysis



Drilled Shaft Foundation Analysis is based on procedures outlined in AASHTO (2010) & FHWA NHI-09

- ◆ Analysis applies to cohesive and cohesionless soils ($\phi=0$ and $c=0$)
- ◆ Drilled shaft service state loads based on the Load Transfer curves outlined in AASHTO 2010
- ◆ The analyses follow the ADOT Geotechnical Design Policies DS-1 and DS-2 dated December 1, 2010

PROJECT

Project Name:	Pantano Wash and Mullins Crossing
Project Location:	Tucson, Arizona
Project Number:	63125005

Structure Data

Structure Designation	
Foundation Element	Pier #1

Foundation Data

Shaft Diameters

Maximum Diameter	7.5 ft.
Minimum Diameter	4.0 ft.
Increment for Diameter	0.5 ft.
Maximum Shaft Tip Depth	80 ft.

Service Limit Displacements

	δ (in)
1	0.10
2	0.25
3	0.50
4	0.75
5	1.00
6	2.00

Foundation Design Criteria

Design for Redundancy	No
Design Shaft Diameter	5.0 ft.
Design Shaft Depth	42 ft.

Show Service Limit Output for Case: 2

Subsurface Data

Initial Information

Number of Soil Layers	4
Depth to Groundwater	300 ft.
Ground Surface Elevation	2518.0 ft.

Soil Layer Properties

Layer Number	1	2	3	4
Depth from Ground Surface	21	45	55	96
Unit Weight of Layer (γ) pcf	115	125	125	125
Penetration Resistance " N_{60} " Blows/ft	0	72	64	75
Cohesion " c " of Layer (ksf)				
Thickness of layer (ft)	21.0	24.0	10.0	41.0
Soil Type	Sand	Sand	Sand	Sand

Strength Resistance Factors

Analyses Conducted Without Redundant Design

Side Resistance-Compression	0.44	0.44	0.44	0.44
Side Resistance-Uplift	0.36	0.36	0.36	0.36
Base Resistance-Compression	0.40	0.40	0.40	0.40

Drilled Shaft Resistance Analyses



Nominal End Bearing Resistance and Skin Friction Factors

Elevation feet	Depth of Shaft feet	Penetration Resistance N	Cohesion c (ksf)	Soil Unit Weight γ' (pcf)	Effective Stress σ'_z (psf)	β	α	Unit Skin Friction Load (ksf)	Side Resistance Factor Compression	Side Resistance Factor Uplift	Base Resistance Factor	Ultimate End Bearing Pressure (ksf)						
												Shaft Diameter (ft)						
												4	4.5	5	5.5	6	6.5	7
2516.00	2.0	0.0		115.0	115.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2514.00	4.0	0.0		115.0	345.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2512.00	6.0	0.0		115.0	575.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2510.00	8.0	0.0		115.0	805.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2508.00	10.0	0.0		115.0	1035.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2506.00	12.0	0.0		115.0	1265.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2504.00	14.0	0.0		115.0	1495.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2502.00	16.0	0.0		115.0	1725.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2500.00	18.0	0.0		115.0	1955.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2498.00	20.0	0.0		115.0	2185.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2496.00	22.0	72.0		125.0	2425.0	0.87		2.10	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2494.00	24.0	72.0		125.0	2675.0	0.84		2.24	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2492.00	26.0	72.0		125.0	2925.0	0.81		2.37	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2490.00	28.0	72.0		125.0	3175.0	0.79		2.49	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2488.00	30.0	72.0		125.0	3425.0	0.76		2.60	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2486.00	32.0	72.0		125.0	3675.0	0.74		2.71	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2484.00	34.0	72.0		125.0	3925.0	0.71		2.80	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2482.00	36.0	72.0		125.0	4175.0	0.69		2.88	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2480.00	38.0	72.0		125.0	4425.0	0.67		2.96	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2478.00	40.0	72.0		125.0	4675.0	0.65		3.02	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2476.00	42.0	72.0		125.0	4925.0	0.63		3.08	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2474.00	44.0	72.0		125.0	5175.0	0.60		3.13	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2472.00	46.0	64.0		125.0	5425.0	0.58		3.17	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2470.00	48.0	64.0		125.0	5675.0	0.56		3.20	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2468.00	50.0	64.0		125.0	5925.0	0.55		3.23	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2466.00	52.0	64.0		125.0	6175.0	0.53		3.25	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2464.00	54.0	64.0		125.0	6425.0	0.51		3.26	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2462.00	56.0	75.0		125.0	6675.0	0.49		3.27	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2460.00	58.0	75.0		125.0	6925.0	0.47		3.27	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2458.00	60.0	75.0		125.0	7175.0	0.45		3.26	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2456.00	62.0	75.0		125.0	7425.0	0.44		3.24	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2454.00	64.0	75.0		125.0	7675.0	0.42		3.22	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2452.00	66.0	75.0		125.0	7925.0	0.40		3.20	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2450.00	68.0	75.0		125.0	8175.0	0.39		3.16	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2448.00	70.0	75.0		125.0	8425.0	0.37		3.12	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2446.00	72.0	75.0		125.0	8675.0	0.35		3.08	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2444.00	74.0	75.0		125.0	8925.0	0.34		3.02	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2442.00	76.0	75.0		125.0	9175.0	0.32		2.96	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2440.00	78.0	75.0		125.0	9425.0	0.31		2.90	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2438.00	80.0	75.0		125.0	9675.0	0.29		2.83	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0

Drilled Shaft Resistance Analyses

Service Limit Output Based on Settlement Analyses for Settlement = 0.25 Inches

Elevation feet	Depth of Shaft feet	Layer Soil Type	Concrete Unit Weight γ' (pcf)	Effective Concrete Stress σ'_z (psf)	Service Limit Factor for End Bearing							
					Based on the Total Settlement as a % of Shaft Diameter							
					Shaft Diameter (ft)							
					4	4.5	5	5.5	6	6.5	7	7.5
2516.00	2.0	Sand	150.0	300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2514.00	4.0	Sand	150.0	600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2512.00	6.0	Sand	150.0	900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2510.00	8.0	Sand	150.0	1200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2508.00	10.0	Sand	150.0	1500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2506.00	12.0	Sand	150.0	1800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2504.00	14.0	Sand	150.0	2100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2502.00	16.0	Sand	150.0	2400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2500.00	18.0	Sand	150.0	2700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2498.00	20.0	Sand	150.0	3000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2496.00	22.0	Sand	150.0	3300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2494.00	24.0	Sand	150.0	3600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2492.00	26.0	Sand	150.0	3900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2490.00	28.0	Sand	150.0	4200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2488.00	30.0	Sand	150.0	4500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2486.00	32.0	Sand	150.0	4800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2484.00	34.0	Sand	150.0	5100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2482.00	36.0	Sand	150.0	5400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2480.00	38.0	Sand	150.0	5700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2478.00	40.0	Sand	150.0	6000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2476.00	42.0	Sand	150.0	6300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2474.00	44.0	Sand	150.0	6600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2472.00	46.0	Sand	150.0	6900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2470.00	48.0	Sand	150.0	7200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2468.00	50.0	Sand	150.0	7500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2466.00	52.0	Sand	150.0	7800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2464.00	54.0	Sand	150.0	8100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2462.00	56.0	Sand	150.0	8400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2460.00	58.0	Sand	150.0	8700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2458.00	60.0	Sand	150.0	9000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2456.00	62.0	Sand	150.0	9300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2454.00	64.0	Sand	150.0	9600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2452.00	66.0	Sand	150.0	9900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2450.00	68.0	Sand	150.0	10200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2448.00	70.0	Sand	150.0	10500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2446.00	72.0	Sand	150.0	10800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2444.00	74.0	Sand	150.0	11100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2442.00	76.0	Sand	150.0	11400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2440.00	78.0	Sand	150.0	11700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2438.00	80.0	Sand	150.0	12000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083

Drilled Shaft Resistance Analyses



Nominal Load Shaft Resistances

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips
2516.00	2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2514.00	4.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2512.00	6.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2510.00	8.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2508.00	10.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2506.00	12.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2504.00	14.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2502.00	16.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2500.00	18.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2498.00	20.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2496.00	22.0	754.01	52.83	806.84	954.29	59.43	1013.73	1178.14	66.04	1244.18	1425.55	72.64	1498.19	1696.52	79.25	1775.76	1991.05	85.85	2076.90	2309.15	92.45	2401.60	2650.81	99.06	2749.87
2494.00	24.0	754.01	109.21	863.22	954.29	122.87	1077.16	1178.14	136.52	1314.65	1425.55	150.17	1575.72	1696.52	163.82	1860.34	1991.05	177.47	2168.52	2309.15	191.12	2500.27	2650.81	204.78	2855.59
2492.00	26.0	754.01	168.88	922.89	954.29	189.99	1144.28	1178.14	211.10	1389.24	1425.55	232.21	1657.76	1696.52	253.32	1949.84	1991.05	274.43	2265.48	2309.15	295.54	2604.69	2650.81	316.65	2967.46
2490.00	28.0	754.01	231.58	985.58	954.29	260.52	1214.81	1178.14	289.47	1467.61	1425.55	318.42	1743.96	1696.52	347.36	2043.88	1991.05	376.31	2367.36	2309.15	405.26	2714.41	2650.81	434.20	3085.01
2488.00	30.0	754.01	297.05	1051.06	954.29	334.18	1288.47	1178.14	371.31	1549.45	1425.55	408.44	1833.99	1696.52	445.57	2142.09	1991.05	482.70	2473.76	2309.15	519.83	2828.98	2650.81	556.96	3207.77
2486.00	32.0	754.01	365.06	1119.07	954.29	410.69	1364.98	1178.14	456.32	1634.46	1425.55	501.96	1927.50	1696.52	547.59	2244.11	1991.05	593.22	2584.27	2309.15	638.85	2948.00	2650.81	684.49	3335.30
2484.00	34.0	754.01	435.38	1189.39	954.29	489.80	1444.09	1178.14	544.22	1722.36	1425.55	598.65	2024.19	1696.52	653.07	2349.59	1991.05	707.49	2698.54	2309.15	761.91	3071.06	2650.81	816.33	3467.14
2482.00	36.0	754.01	507.78	1261.79	954.29	571.25	1525.55	1178.14	634.73	1812.87	1425.55	698.20	2123.75	1696.52	761.67	2458.19	1991.05	825.15	2816.20	2309.15	888.62	3197.77	2650.81	952.09	3602.90
2480.00	38.0	754.01	582.05	1336.06	954.29	654.81	1609.10	1178.14	727.57	1905.70	1425.55	800.32	2225.87	1696.52	873.08	2569.60	1991.05	945.84	2936.89	2309.15	1018.59	3327.74	2650.81	1091.35	3742.16
2478.00	40.0	754.01	657.98	1411.99	954.29	740.23	1694.52	1178.14	822.47	2000.61	1425.55	904.72	2330.27	1696.52	986.97	2683.49	1991.05	1069.22	3060.27	2309.15	1151.46	3460.61	2650.81	1233.71	3884.52
2476.00	42.0	754.01	735.36	1489.36	954.29	827.28	1781.57	1178.14	919.20	2097.33	1425.55	1011.11	2436.66	1696.52	1103.03	2799.55	1991.05	1194.95	3186.01	2309.15	1286.87	3596.02	2650.81	1378.79	4029.60
2474.00	44.0	754.01	813.98	1567.99	954.29	915.73	1870.02	1178.14	1017.48	2195.62	1425.55	1119.23	2544.77	1696.52	1220.97	2917.49	1991.05	1322.72	3313.77	2309.15	1424.47	3733.62	2650.81	1526.22	4177.03
2472.00	46.0	754.01	893.66	1647.67	954.29	1005.37	1959.66	1178.14	1117.08	2295.22	1425.55	1228.79	2654.33	1696.52	1340.50	3037.01	1991.05	1452.20	3443.26	2309.15	1563.91	3873.06	2650.81	1675.62	4326.43
2470.00	48.0	754.01	974.21	1728.22	954.29	1095.98	2050.27	1178.14	1217.76	2395.90	1425.55	1339.54	2765.08	1696.52	1461.31	3157.83	1991.05	1583.09	3574.14	2309.15	1704.86	4014.01	2650.81	1826.64	4477.45
2468.00	50.0	754.01	1055.43	1809.44	954.29	1187.36	2141.65	1178.14	1319.28	2497.42	1425.55	1451.21	2876.76	1696.52	1583.14	3279.66	1991.05	1715.07	3706.12	2309.15	1847.00	4156.15	2650.81	1978.93	4629.74
2466.00	52.0	754.01	1137.14	1891.15	954.29	1279.28	2233.57	1178.14	1421.43	2599.56	1425.55	1563.57	2989.11	1696.52	1705.71	3402.23	1991.05	1847.85	3838.91	2309.15	1990.00	4299.14	2650.81	2132.14	4782.95
2464.00	54.0	754.01	1219.17	1973.17	954.29	1371.56	2325.85	1178.14	1523.96	2702.10	1425.55	1676.35	3101.90	1696.52	1828.75	3525.27	1991.05	1981.15	3972.20	2309.15	2133.54	4442.69	2650.81	2285.94	4936.75
2462.00	56.0	754.01	1301.33	2055.34	954.29	1464.00	2418.29	1178.14	1626.66	2804.80	1425.55	1789.33	3214.88	1696.52	1952.00	3648.51	1991.05	2114.66	4105.72	2309.15	2277.33	4586.48	2650.81	2440.00	5090.81
2460.00	58.0	754.01	1383.46	2137.47	954.29	1556.39	2510.68	1178.14	1729.33	2907.46	1425.55	1902.26	3327.80	1696.52	2075.19	3771.71	1991.05	2248.12	4239.18	2309.15	2421.06	4730.20	2650.81	2593.99	5244.80
2458.00	60.0	754.01	1465.38	2219.39	954.29	1648.56	2602.85	1178.14	1831.73	3009.87	1425.55	2014.90	3440.45	1696.52	2198.08	3894.60	1991.05	2381.25	4372.30	2309.15	2564.42	4873.57	2650.81	2747.60	5398.41
2456.00	62.0	754.01	1546.94	2300.95	954.29	1740.31	2694.60	1178.14	1933.67	3111.81	1425.55	2127.04	3552.59	1696.52	2320.41	4016.93	1991.05	2513.77	4504.83	2309.15	2707.14	5016.29	2650.81	2900.51	5551.32
2454.00	64.0	754.01	1627.96	2381.96	954.29	1831.45	2785.74	1178.14	2034.95	3213.08	1425.55	2238.44	3663.99	1696.52	2441.93	4138.45	1991.05	2645.43	4636.48	2309.15	2848.92	5158.07	2650.81	3052.42	5703.23
2452.00	66.0	754.01	1708.28	2462.29	954.29	1921.81	2876.10	1178.14	2135.35	3313.49	1425.55	2348.88	3774.43	1696.52	2562.42	4258.94	1991.05	2775.95	4767.00	2309.15	2989.49	5298.64	2650.81	3203.02	5853.83
2450.00	68.0	754.01	1787.74	2541.75	954.29	2011.21	2965.50	1178.14	2234.68	3412.82	1425.55	2458.15	3883.70	1696.52	2681.62	4378.14	1991.05	2905.09	4896.14	2309.15	3128.55	5437.70	2650.81	3352.02	6002.83
2448.00	70.0	754.01	1866.20	2620.21	954.29	2099.48	3053.77	1178.14	2332.75	3510.89	1425.55	2566.03	3991.57	1696.52	2799.30	4495.82	1991.05	3032.58	5023.63	2309.15	3265.85	5575.00	2650.81	3499.13	6149.93
2446.00	72.0	754.01	1943.49	2697.50	954.29	2186.43	3140.72	1178.14	2429.36	3607.50	1425.55	2672.30	4097.85	1696.52	2915.24	4611.75	1991.05	3158.17	5149.22	2309.15	3401.11	5710.26	2650.81	3644.04	6294.85
2444.00	74.0	754.01	2019.46	2773.47	954.29	2271.90	3226.19	1178.14	2524.33	3702.47	1425.55	2776.76	4202.31	1696.52	3029.20	4725.71	1991.05	3281.63	5272.68	2309.15	3534.06	5843.21	2650.81	3786.49	6437.30
2442.00	76.0	754.01	2093.97	2847.98	954.29	2355.72	3310.01	1178.14	2617.46	3795.60	1425.55	2879.21	4304.76	1696.52	3140.96	4837.47	1991.05	3402.70	5393.75	2309.15	3664.45	5973.60	2650.81	3926.19	6577.00
2440.00	78.0	754.01	2166.86	2920.87	954.29	2437.72	3392.01	1178.14	2708.58	3886.72	1425.55	2979.44	4404.98	1696.52	3250.29	4946.81	1991.05	3521.15	5512.20	2309.15	3792.01	6101.16	2650.81	4062.87	6713.68
2438.00	80.0	754.01	2237.99	2992.00	954.29	2517.74	3472.04	1178.14	2797.49	3975.63	1425.55	3077.24	4502.79	1696.52	3356.99	5053.51	1991.05	3636.74	5627.79	2309.15	3916.49	6225.64	2650.81	4196.24	6847.05

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement				Analyses for Settlement = 0.10 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.				
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips		
2516.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00		
2514.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00		
2512.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00		
2510.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00		
2508.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00		
2506.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00		
2504.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00		
2502.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00		
2500.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00		
2498.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00		
2496.00	22.0	77.99	41.47	77.99	84.98	52.49	84.98	91.77	64.80	91.77	98.39	78.41	98.39	104.89	93.31	104.89	111.29	109.51	111.29	117.60	117.60	117.60	123.85	145.79	123.85		
2494.00	24.0	111.38	45.24	111.38	119.68	57.26	119.68	127.55	70.69	127.55	135.08	85.53	135.08	142.36	101.79	142.36	149.44	119.46	149.44	156.34	138.55	156.34	163.11	159.05	163.11		
2492.00	26.0	146.72	49.01	146.72	156.40	62.03	156.40	165.41	76.58	165.41	173.92	92.66	173.92	182.02	110.27	182.02	189.81	129.42	189.81	197.33	150.09	197.33	204.65	172.30	204.65		
2490.00	28.0	183.86	52.78	183.86	194.98	66.80	194.98	205.20	82.47	205.20	214.72	99.79	214.72	223.69	118.76	223.69	232.23	139.37	232.23	240.41	161.64	240.41	248.30	185.56	248.30		
2488.00	30.0	222.64	56.55	222.64	235.27	71.57	235.27	246.75	88.36	246.75	257.33	106.92	257.33	267.21	127.24	267.21	276.53	149.33	276.53	285.39	173.19	285.39	293.88	198.81	293.88		
2486.00	32.0	262.92	60.32	262.92	277.13	76.34	277.13	289.91	94.25	289.91	301.59	114.04	301.59	312.41	135.72	312.41	322.54	159.28	322.54	332.12	184.73	332.12	341.24	212.06	341.24		
2484.00	34.0	304.57	64.09	304.57	320.40	81.11	320.40	334.53	100.14	334.53	347.35	121.17	347.35	359.15	144.20	359.15	370.12	169.24	370.12	380.43	196.28	380.43	390.20	225.32	390.20		
2482.00	36.0	347.45	67.86	347.45	364.96	85.89	364.96	380.48	106.03	380.48	394.47	128.30	394.47	407.27	152.69	407.27	419.11	179.19	419.11	430.18	207.82	430.18	440.61	238.57	440.61		
2480.00	38.0	391.44	71.63	391.44	410.66	90.66	410.66	427.61	111.92	427.61	442.81	135.43	442.81	456.64	161.17	456.64	469.37	189.15	469.37	481.21	219.37	481.21	492.32	251.83	492.32		
2478.00	40.0	436.41	75.40	436.41	457.39	95.43	457.39	475.79	117.81	475.79	492.22	142.55	492.22	507.10	169.65	507.10	520.74	199.11	520.74	533.37	230.91	533.37	545.18	265.08	545.18		
2476.00	42.0	482.25	79.17	482.25	505.01	100.20	505.01	524.90	123.70	524.90	542.58	149.68	542.58	558.53	178.13	558.53	573.09	209.06	573.09	586.53	242.46	586.53	599.05	278.33	599.05		
2474.00	44.0	528.82	82.94	528.82	553.39	104.97	553.39	574.79	129.60	574.79	593.75	156.81	593.75	610.79	186.62	610.79	626.29	219.02	626.29	640.56	254.01	640.56	653.80	291.59	653.80		
2472.00	46.0	576.01	86.71	576.01	602.43	109.74	602.43	625.36	135.49	625.36	645.61	163.94	645.61	663.75	195.10	663.75	680.21	228.97	680.21	695.30	265.55	695.30	709.28	304.84	709.28		
2470.00	48.0	623.72	90.48	623.72	651.99	114.51	651.99	676.47	141.38	676.47	698.02	171.07	698.02	717.28	203.58	717.28	734.70	238.93	734.70	750.64	277.10	750.64	765.35	318.10	765.35		
2468.00	50.0	671.82	94.25	671.82	701.98	119.29	701.98	728.01	147.27	728.01	750.88	178.19	750.88	771.26	212.06	771.26	789.66	248.88	789.66	806.44	288.64	806.44	821.90	331.35	821.90		
2466.00	52.0	720.22	98.02	720.22	752.26	124.06	752.26	779.87	153.16	779.87	804.06	185.32	804.06	825.57	220.55	825.57	844.95	258.84	844.95	862.58	300.19	862.58	878.80	344.61	878.80		
2464.00	54.0	768.81	101.79	768.81	802.74	128.83	802.74	831.92	159.05	831.92	857.44	192.45	857.44	880.09	229.03	880.09	900.45	268.79	900.45	918.94	311.74	918.94	935.91	357.86	935.91		
2462.00	56.0	817.47	105.56	817.47	853.31	133.60	853.31	884.06	164.94	884.06	910.92	199.58	910.92	934.70	237.51	934.70	956.04	278.75	956.04	975.39	323.28	975.39	993.11	371.11	993.11		
2460.00	58.0	866.12	109.33	866.12	903.85	138.37	903.85	936.18	170.83	936.18	964.37	206.70	964.37	989.29	246.00	989.29	1011.61	288.70	1011.61	1031.82	334.83	1031.82	1050.29	384.37	1050.29		
2458.00	60.0	914.64	113.10	914.64	954.26	143.14	954.26	988.17	176.72	988.17	1017.68	213.83	1017.68	1043.74	254.48	1043.74	1067.04	298.66	1067.04	1088.11	346.37	1088.11	1107.33	397.62	1107.33		
2456.00	62.0	962.94	116.87	962.94	1004.45	147.92	1004.45	1039.93	182.61	1039.93	1070.76	220.96	1070.76	1097.95	262.96	1097.95	1122.22	308.61	1122.22	1144.14	357.92	1144.14	1164.12	410.88	1164.12		
2454.00	64.0	1010.93	120.64	1010.93	1054.31	152.69	1054.31	1091.34	188.50	1091.34	1123.49	228.09	1123.49	1151.79	271.44	1151.79	1177.04	318.57	1177.04	1199.80	369.46	1199.80	1220.52	424.13	1220.52		
2452.00	66.0	1058.51	124.41	1058.51	1103.74	157.46	1103.74	1142.31	194.39	1142.31	1175.76	235.22	1175.76	1205.18	279.93	1205.18	1231.39	328.52	1231.39	1254.99	381.01	1254.99	1276.45	437.38	1276.45		
2450.00	68.0	1105.57	128.18	1105.57	1152.64	162.23	1152.64	1192.74	200.28	1192.74	1227.48	242.34	1227.48	1258.00	288.41	1258.00	1285.15	338.48	1285.15	1309.59	392.56	1309.59	1331.78	450.64	1331.78		
2448.00	70.0	1152.04	131.95	1152.04	1200.93	167.00	1200.93	1242.53	206.17	1242.53	1278.54	249.47	1278.54	1310.14	296.89	1310.14	1338.24	348.43	1338.24	1363.49	404.10	1363.49	1386.40	463.89	1386.40		
2446.00	72.0	1197.82	135.72	1197.82	1248.49	171.77	1248.49	1291.58	212.06	1291.58	1328.84	256.60	1328.84	1361.51	305.37	1361.51	1390.53	358.39	1390.53	1416.59	415.65	1416.59	1440.21	477.15	1440.21		
2444.00	74.0	1242.82	139.49	1242.82	1295.24	176.54	1295.24	1339.79	217.96	1339.79	1378.28	263.73	1378.28	1412.01	313.86	1412.01	1441.94	368.34	1441.94	1468.79	427.19	1468.79	1493.11	490.40	1493.11		
2442.00	76.0	1286.95	143.26	1286.95	1341.09	181.32	1341.09	1387.07	223.85	1387.07	1426.77	270.85	1426.77	1461.53	322.34	1461.53	1492.35	378.30	1492.35	1519.98	438.74	1519.98	1544.98	503.65	1544.98		
2440.00	78.0	1330.13	147.03	1330.13	1385.95	186.09	1385.95	1433.33	229.74	1433.33	1474.21	277.98	1474.21	1509.98	330.82	1509.98	1541.67	388.26	1541.67	1570.06	450.28	1570.06	1595.73	516.91	1595.73		
2438.00	80.0	1372.26	150.80	1372.26	1429.73	190.86	1429.73	1478.47	235.63	1478.47	1520.50	285.11	1520.50	1557.26	339.30	1557.26	1589.80	398.21	1589.80	1618.93	461.83	1618.93	1645.26	530.16	1645.26		

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement			Analyses for Settlement = 0.25 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.			
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	
2516.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00	
2514.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00	
2512.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00	
2510.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00	
2508.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00	
2506.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00	
2504.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00	
2502.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00	
2500.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00	
2498.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00	
2496.00	22.0	165.74	-41.47	165.74	184.66	52.49	184.66	203.05	64.80	203.05	-221.00	78.41	221.00	238.56	93.31	238.56	255.78	109.51	-255.78	272.71	127.00	272.71	289.39	145.79	289.39	
2494.00	24.0	216.92	45.24	216.92	240.41	57.26	240.41	262.88	70.69	262.88	284.44	85.53	284.44	305.23	101.79	305.23	325.35	119.46	325.35	344.88	138.55	344.88	363.92	159.05	363.92	
2492.00	26.0	271.08	49.01	271.08	299.42	62.03	299.42	326.19	76.58	326.19	351.58	92.66	351.58	375.79	110.27	375.79	398.97	129.42	398.97	421.26	150.09	421.26	442.79	172.30	442.79	
2490.00	28.0	327.99	52.78	327.99	361.41	66.80	361.41	392.70	82.47	392.70	422.13	99.79	422.13	449.93	118.76	449.93	476.33	139.37	476.33	501.52	161.64	501.52	525.65	185.56	525.65	
2488.00	30.0	387.42	56.55	387.42	426.15	71.57	426.15	462.17	88.36	462.17	495.80	106.92	495.80	527.35	127.24	527.35	557.11	149.33	557.11	585.32	173.19	585.32	612.19	198.81	612.19	
2486.00	32.0	449.16	60.32	449.16	493.41	76.34	493.41	534.33	94.25	534.33	572.33	114.04	572.33	607.78	135.72	607.78	641.03	159.28	641.03	672.38	184.73	672.38	702.09	212.06	702.09	
2484.00	34.0	512.99	64.09	512.99	562.94	81.11	562.94	608.94	100.14	608.94	651.45	121.17	651.45	690.93	144.20	690.93	727.80	169.24	727.80	762.40	196.28	762.40	795.04	225.32	795.04	
2482.00	36.0	578.71	67.86	578.71	634.54	85.89	634.54	685.76	106.03	685.76	732.92	128.30	732.92	776.55	152.69	776.55	817.14	179.19	817.14	855.08	207.82	855.08	890.74	238.57	890.74	
2480.00	38.0	646.12	71.63	646.12	707.98	90.66	707.98	764.56	111.92	764.56	816.49	135.43	816.49	864.38	161.17	864.38	908.78	189.15	908.78	950.15	219.37	950.15	988.91	251.83	988.91	
2478.00	40.0	715.04	75.40	715.04	783.06	95.43	783.06	845.12	117.81	845.12	901.92	142.55	901.92	954.17	169.65	954.17	1002.46	199.11	1002.46	1047.34	230.91	1047.34	1089.26	265.08	1089.26	
2476.00	42.0	785.28	79.17	785.28	859.58	100.20	859.58	927.21	123.70	927.21	988.99	149.68	988.99	1045.67	178.13	1045.67	1097.94	209.06	1097.94	1146.39	242.46	1146.39	1191.54	278.33	1191.54	
2474.00	44.0	856.65	82.94	856.65	937.33	104.97	937.33	1010.64	129.60	1010.64	1077.46	156.81	1077.46	1138.65	186.62	1138.65	1194.95	219.02	1194.95	1247.04	254.01	1247.04	1295.46	291.59	1295.46	
2472.00	46.0	928.97	86.71	928.97	1016.12	109.74	1016.12	1095.18	135.49	1095.18	1167.12	163.94	1167.12	1232.87	195.10	1232.87	1293.27	228.97	1293.27	1349.03	265.55	1349.03	1400.78	304.84	1400.78	
2470.00	48.0	1002.08	90.48	1002.08	1095.76	114.51	1095.76	1180.64	141.38	1180.64	1257.75	171.07	1257.75	1328.12	203.58	1328.12	1392.65	238.93	1392.65	1452.14	277.10	1452.14	1507.25	318.10	1507.25	
2468.00	50.0	1075.81	94.25	1075.81	1176.08	119.29	1176.08	1266.81	147.27	1266.81	1349.14	178.19	1349.14	1424.17	212.06	1424.17	1492.87	248.88	1492.87	1556.10	288.64	1556.10	1614.60	331.35	1614.60	
2466.00	52.0	1149.98	98.02	1149.98	1256.88	124.06	1256.88	1353.51	153.16	1353.51	1441.09	185.32	1441.09	1520.79	220.55	1520.79	1593.69	258.84	1593.69	1660.70	300.19	1660.70	1722.61	344.61	1722.61	
2464.00	54.0	1224.43	101.79	1224.43	1337.99	128.83	1337.99	1440.54	159.05	1440.54	1533.38	192.45	1533.38	1617.79	229.03	1617.79	1694.91	268.79	1694.91	1765.70	311.74	1765.70	1831.03	357.86	1831.03	
2462.00	56.0	1299.01	105.56	1299.01	1419.24	133.60	1419.24	1527.71	164.94	1527.71	1625.84	198.58	1625.84	1714.96	237.51	1714.96	1796.29	278.75	1796.29	1870.88	323.28	1870.88	1939.63	371.11	1939.63	
2460.00	58.0	1373.56	109.33	1373.56	1500.46	138.37	1500.46	1614.85	170.83	1614.85	1718.25	206.70	1718.25	1812.08	246.00	1812.08	1897.62	288.70	1897.62	1976.01	334.83	1976.01	2048.18	384.37	2048.18	
2458.00	60.0	1447.93	113.10	1447.93	1581.47	143.14	1581.47	1701.78	176.72	1701.78	1810.43	213.83	1810.43	1908.96	254.48	1908.96	1998.71	298.66	1998.71	2080.88	346.37	2080.88	2156.47	397.62	2156.47	
2456.00	62.0	1521.95	116.87	1521.95	1662.11	147.92	1662.11	1788.30	182.61	1788.30	1902.20	220.96	1902.20	2005.40	262.96	2005.40	2099.34	308.61	2099.34	2185.27	357.92	2185.27	2264.27	410.88	2264.27	
2454.00	64.0	1595.49	120.64	1595.49	1742.23	152.69	1742.23	1874.26	188.50	1874.26	1993.36	228.09	1993.36	2101.20	271.44	2101.20	2199.31	318.57	2199.31	2288.98	369.46	2288.98	2371.35	424.13	2371.35	
2452.00	66.0	1668.40	124.41	1668.40	1821.65	157.46	1821.65	1959.49	194.39	1959.49	2083.74	235.22	2083.74	2196.19	279.93	2196.19	2298.41	328.52	2298.41	2391.80	381.01	2391.80	2477.52	437.38	2477.52	
2450.00	68.0	1740.53	128.18	1740.53	1900.23	162.23	1900.23	2043.80	200.28	2043.80	2173.16	242.34	2173.16	2290.16	288.41	2290.16	2396.47	338.48	2396.47	2493.52	392.56	2493.52	2582.56	450.64	2582.56	
2448.00	70.0	1811.75	131.95	1811.75	1977.81	167.00	1977.81	2127.04	206.17	2127.04	2261.44	249.47	2261.44	2382.94	296.89	2382.94	2493.27	348.43	2493.27	2593.95	404.10	2593.95	2686.26	463.89	2686.26	
2446.00	72.0	1881.90	135.72	1881.90	2054.24	171.77	2054.24	2209.05	212.06	2209.05	2348.41	256.60	2348.41	2474.34	305.37	2474.34	2588.64	358.39	2588.64	2692.89	415.65	2692.89	2788.42	477.15	2788.42	
2444.00	74.0	1950.87	139.49	1950.87	2129.37	176.54	2129.37	2289.65	217.96	2289.65	2433.89	263.73	2433.89	2564.18	313.86	2564.18	2682.38	368.34	2682.38	2790.14	427.19	2790.14	2888.84	490.40	2888.84	
2442.00	76.0	2018.49	143.26	2018.49	2203.05	181.32	2203.05	2368.71	223.85	2368.71	2517.73	270.85	2517.73	2652.28	322.34	2652.28	2774.31	378.30	2774.31	2885.51	438.74	2885.51	2987.32	503.65	2987.32	
2440.00	78.0	2084.66	147.03	2084.66	2275.13	186.09	2275.13	2446.04	229.74	2446.04	2599.75	277.98	2599.75	2738.48	330.82	2738.48	2864.26	388.26	2864.26	2978.82	450.28	2978.82	3083.67	516.91	3083.67	
2438.00	80.0	2149.23	150.80	2149.23	2345.46	190.86	2345.46	2521.52	235.63	2521.52	2679.79	285.11	2679.79	2822.60	339.30	2822.60	2952.02	398.21	2952.02	3069.87	461.83	3069.87	3177.69	530.16	3177.69	

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement

Analyses for Settlement = 0.50 Inch(es)

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2516.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2514.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2512.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2510.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2508.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2506.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2504.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2502.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2500.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2498.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2496.00	22.0	284.82	41.47	284.82	321.42	52.49	321.42	357.62	64.80	357.62	393.46	78.41	393.46	428.91	93.31	428.91	463.99	109.51	463.99	498.71	127.00	498.71	533.06	145.79	533.06
2494.00	24.0	339.64	45.24	339.64	382.98	57.26	382.98	425.76	70.69	425.76	467.97	85.53	467.97	509.56	101.79	509.56	550.51	119.46	550.51	590.79	138.55	590.79	630.43	159.05	630.43
2492.00	26.0	397.67	49.01	397.67	448.12	62.03	448.12	497.87	76.58	497.87	546.83	92.66	546.83	594.91	110.27	594.91	642.06	129.42	642.06	688.24	150.09	688.24	733.47	172.30	733.47
2490.00	28.0	458.63	52.78	458.63	516.57	66.80	516.57	573.63	82.47	573.63	629.68	99.79	629.68	684.59	118.76	684.59	738.26	139.37	738.26	790.64	161.64	790.64	841.73	185.56	841.73
2488.00	30.0	522.29	56.55	522.29	588.06	71.57	588.06	652.75	88.36	652.75	716.20	106.92	716.20	778.24	127.24	778.24	838.71	149.33	838.71	897.57	173.19	897.57	954.80	198.81	954.80
2486.00	32.0	588.43	60.32	588.43	662.31	76.34	662.31	734.93	94.25	734.93	806.08	114.04	806.08	875.52	135.72	875.52	943.07	159.28	943.07	1008.65	184.73	1008.65	1072.24	212.06	1072.24
2484.00	34.0	656.81	64.09	656.81	739.09	81.11	739.09	819.91	100.14	819.91	899.01	121.17	899.01	976.10	144.20	976.10	1050.96	169.24	1050.96	1123.50	196.28	1123.50	1193.68	225.32	1193.68
2482.00	36.0	727.21	67.86	727.21	818.14	85.89	818.14	907.41	106.03	907.41	994.70	128.30	994.70	1079.67	152.69	1079.67	1162.06	179.19	1162.06	1241.75	207.82	1241.75	1318.71	238.57	1318.71
2480.00	38.0	799.43	71.63	799.43	899.23	90.66	899.23	997.16	111.92	997.16	1092.85	135.43	1092.85	1185.90	161.17	1185.90	1276.02	189.15	1276.02	1363.05	219.37	1363.05	1446.97	251.83	1446.97
2478.00	40.0	873.27	75.40	873.27	982.13	95.43	982.13	1088.91	117.81	1088.91	1193.19	142.55	1193.19	1294.50	169.65	1294.50	1392.52	199.11	1392.52	1487.06	230.91	1487.06	1578.09	265.08	1578.09
2476.00	42.0	948.51	79.17	948.51	1066.61	100.20	1066.61	1182.42	123.70	1182.42	1295.45	149.68	1295.45	1405.18	178.13	1405.18	1511.24	209.06	1511.24	1613.43	242.46	1613.43	1711.71	278.33	1711.71
2474.00	44.0	1024.96	82.94	1024.96	1152.46	104.97	1152.46	1277.43	129.60	1277.43	1399.36	156.81	1399.36	1517.65	186.62	1517.65	1631.88	219.02	1631.88	1741.85	254.01	1741.85	1847.49	291.59	1847.49
2472.00	46.0	1102.45	86.71	1102.45	1239.46	109.74	1239.46	1373.72	135.49	1373.72	1504.66	163.94	1504.66	1631.62	195.10	1631.62	1754.14	228.97	1754.14	1871.98	265.55	1871.98	1985.09	304.84	1985.09
2470.00	48.0	1180.77	90.48	1180.77	1327.40	114.51	1327.40	1471.06	141.38	1471.06	1611.10	171.07	1611.10	1746.83	203.58	1746.83	1877.73	238.93	1877.73	2003.53	277.10	2003.53	2124.18	318.10	2124.18
2468.00	50.0	1259.75	94.25	1259.75	1416.07	119.29	1416.07	1569.21	147.27	1569.21	1718.44	178.19	1718.44	1863.00	212.06	1863.00	2002.35	248.88	2002.35	2136.18	288.64	2136.18	2264.44	331.35	2264.44
2466.00	52.0	1339.20	98.02	1339.20	1505.29	124.06	1505.29	1667.95	153.16	1667.95	1826.43	185.32	1826.43	1979.88	220.55	1979.88	2127.73	258.84	2127.73	2269.64	300.19	2269.64	2405.55	344.61	2405.55
2464.00	54.0	1418.97	101.79	1418.97	1594.85	128.83	1594.85	1767.08	159.05	1767.08	1934.83	192.45	1934.83	2097.21	229.03	2097.21	2253.58	268.79	2253.58	2403.61	311.74	2403.61	2547.20	357.86	2547.20
2462.00	56.0	1498.86	105.56	1498.86	1684.56	133.60	1684.56	1866.37	164.94	1866.37	2043.41	199.58	2043.41	2214.74	237.51	2214.74	2379.65	278.75	2379.65	2537.80	323.28	2537.80	2689.09	371.11	2689.09
2460.00	58.0	1578.73	109.33	1578.73	1774.23	138.37	1774.23	1965.61	170.83	1965.61	2151.95	206.70	2151.95	2332.21	246.00	2332.21	2505.67	288.70	2505.67	2671.94	334.83	2671.94	2830.92	384.37	2830.92
2458.00	60.0	1658.39	113.10	1658.39	1863.68	143.14	1863.68	2064.62	176.72	2064.62	2260.22	213.83	2260.22	2449.40	254.48	2449.40	2631.37	298.66	2631.37	2805.74	346.37	2805.74	2972.39	397.62	2972.39
2456.00	62.0	1737.69	116.87	1737.69	1952.72	147.92	1952.72	2163.17	182.61	2163.17	2368.00	220.96	2368.00	2566.05	262.96	2566.05	2756.51	308.61	2756.51	2938.94	357.92	2938.94	3113.23	410.88	3113.23
2454.00	64.0	1816.47	120.64	1816.47	2041.17	152.69	2041.17	2261.07	188.50	2261.07	2475.07	228.09	2475.07	2681.93	271.44	2681.93	2880.82	318.57	2880.82	3071.26	369.46	3071.26	3253.14	424.13	3253.14
2452.00	66.0	1894.58	124.41	1894.58	2128.87	157.46	2128.87	2358.14	194.39	2358.14	2581.21	235.22	2581.21	2796.82	279.93	2796.82	3004.06	328.52	3004.06	3202.44	381.01	3202.44	3391.84	437.38	3391.84
2450.00	68.0	1971.85	128.18	1971.85	2215.64	162.23	2215.64	2454.17	200.28	2454.17	2686.23	242.34	2686.23	2910.49	288.41	2910.49	3125.99	338.48	3125.99	3332.23	392.56	3332.23	3529.07	450.64	3529.07
2448.00	70.0	2048.14	131.95	2048.14	2301.30	167.00	2301.30	2548.98	206.17	2548.98	2789.92	249.47	2789.92	3022.71	296.89	3022.71	3246.37	348.43	3246.37	3460.37	404.10	3460.37	3664.56	463.89	3664.56
2446.00	72.0	2123.30	135.72	2123.30	2385.68	171.77	2385.68	2642.38	212.06	2642.38	2892.06	256.60	2892.06	3133.27	305.37	3133.27	3364.96	358.39	3364.96	3586.60	415.65	3586.60	3798.03	477.15	3798.03
2444.00	74.0	2197.18	139.49	2197.18	2468.63	176.54	2468.63	2734.19	217.96	2734.19	2992.46	263.73	2992.46	3241.94	313.86	3241.94	3481.53	368.34	3481.53	3710.68	427.19	3710.68	3929.23	490.40	3929.23
2442.00	76.0	2269.63	143.26	2269.63	2549.98	181.32	2549.98	2824.23	223.85	2824.23	3090.93	270.85	3090.93	3348.51	322.34	3348.51	3595.85	378.30	3595.85	3832.37	438.74	3832.37	4057.89	503.65	4057.89
2440.00	78.0	2340.51	147.03	2340.51	2629.57	186.09	2629.57	2912.31	229.74	2912.31	3187.26	277.98	3187.26	3452.77	330.82	3452.77	3707.70	388.26	3707.70	3951.42	450.28	3951.42	4183.77	516.91	4183.77
2438.00	80.0	2409.68	150.80	2409.68	2707.23	190.86	2707.23	2998.27	235.63	2998.27	3281.26	285.11	3281.26	3554.52	339.30	3554.52	3816.84	398.21	3816.84	4067.60	461.83	4067.60	4306.61	530.16	4306.61

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement			Analyses for Settlement = 0.75 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.			
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	
2516.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00	
2514.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00	
2512.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00	
2510.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00	
2508.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00	
2506.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00	
2504.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00	
2502.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00	
2500.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00	
2498.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00	
2496.00	22.0	389.44	41.47	389.44	443.80	52.49	443.80	497.28	64.80	497.28	550.06	78.41	550.06	602.31	93.31	602.31	654.14	109.51	654.14	705.62	127.00	705.62	756.77	145.79	756.77	
2494.00	24.0	442.82	45.24	442.82	504.84	57.26	504.84	565.63	70.69	565.63	625.43	85.53	625.43	684.55	101.79	684.55	743.14	119.46	743.14	801.28	138.55	801.28	858.98	159.05	858.98	
2492.00	26.0	499.30	49.01	499.30	569.43	62.03	569.43	637.95	76.58	637.95	705.20	92.66	705.20	771.58	110.27	771.58	837.32	129.42	837.32	902.51	150.09	902.51	967.13	172.30	967.13	
2490.00	28.0	558.65	52.78	558.65	637.30	66.80	637.30	713.95	82.47	713.95	789.01	99.79	789.01	863.03	118.76	863.03	936.28	139.37	936.28	1008.87	161.64	1008.87	1080.78	185.56	1080.78	
2488.00	30.0	620.63	56.55	620.63	708.18	71.57	708.18	793.31	88.36	793.31	876.53	106.92	876.53	958.53	127.24	958.53	1039.63	149.33	1039.63	1119.95	173.19	1119.95	1199.46	198.81	1199.46	
2486.00	32.0	685.01	60.32	685.01	781.81	76.34	781.81	875.75	94.25	875.75	967.45	114.04	967.45	1057.73	135.72	1057.73	1146.98	159.28	1146.98	1235.33	184.73	1235.33	1322.74	212.06	1322.74	
2484.00	34.0	751.58	64.09	751.58	857.94	81.11	857.94	960.99	100.14	960.99	1061.46	121.17	1061.46	1160.30	144.20	1160.30	1257.98	169.24	1257.98	1354.63	196.28	1354.63	1450.20	225.32	1450.20	
2482.00	36.0	820.12	67.86	820.12	936.32	85.89	936.32	1048.75	106.03	1048.75	1158.25	128.30	1158.25	1265.90	152.69	1265.90	1372.27	179.19	1372.27	1477.47	207.82	1477.47	1581.45	238.57	1581.45	
2480.00	38.0	890.43	71.63	890.43	1016.72	90.66	1016.72	1138.77	111.92	1138.77	1257.53	135.43	1257.53	1374.23	161.17	1374.23	1489.50	189.15	1489.50	1603.47	219.37	1603.47	1716.08	251.83	1716.08	
2478.00	40.0	962.30	75.40	962.30	1098.92	95.43	1098.92	1230.81	117.81	1230.81	1359.03	142.55	1359.03	1484.98	169.65	1484.98	1609.35	199.11	1609.35	1732.29	230.91	1732.29	1853.70	265.08	1853.70	
2476.00	42.0	1035.55	79.17	1035.55	1182.68	100.20	1182.68	1324.60	123.70	1324.60	1462.47	149.68	1462.47	1597.84	178.13	1597.84	1731.48	209.06	1731.48	1863.56	242.46	1863.56	1993.96	278.33	1993.96	
2474.00	44.0	1109.98	82.94	1109.98	1267.80	104.97	1267.80	1419.90	129.60	1419.90	1567.58	156.81	1567.58	1712.53	186.62	1712.53	1855.59	219.02	1855.59	1996.96	254.01	1996.96	2136.49	291.59	2136.49	
2472.00	46.0	1185.41	86.71	1185.41	1354.06	109.74	1354.06	1516.49	135.49	1516.49	1674.10	163.94	1674.10	1828.75	195.10	1828.75	1981.36	228.97	1981.36	2132.14	265.55	2132.14	2280.92	304.84	2280.92	
2470.00	48.0	1261.66	90.48	1261.66	1441.25	114.51	1441.25	1614.12	141.38	1614.12	1781.77	171.07	1781.77	1946.23	203.58	1946.23	2108.50	238.93	2108.50	2268.79	277.10	2268.79	2426.92	318.10	2426.92	
2468.00	50.0	1338.54	94.25	1338.54	1529.18	119.29	1529.18	1712.57	147.27	1712.57	1890.35	178.19	1890.35	2064.70	212.06	2064.70	2236.70	248.88	2236.70	2406.58	288.64	2406.58	2574.14	331.35	2574.14	
2466.00	52.0	1415.90	98.02	1415.90	1617.64	124.06	1617.64	1811.62	153.16	1811.62	1999.58	185.32	1999.58	2183.89	220.55	2183.89	2365.68	258.84	2365.68	2545.21	300.19	2545.21	2722.26	344.61	2722.26	
2464.00	54.0	1493.55	101.79	1493.55	1706.44	128.83	1706.44	1911.04	159.05	1911.04	2109.24	192.45	2109.24	2303.53	229.03	2303.53	2495.16	268.79	2495.16	2684.37	311.74	2684.37	2870.95	357.86	2870.95	
2462.00	56.0	1571.33	105.56	1571.33	1795.39	133.60	1795.39	2010.64	164.94	2010.64	2219.08	199.58	2219.08	2423.38	237.51	2423.38	2624.85	278.75	2624.85	2823.77	323.28	2823.77	3019.89	371.11	3019.89	
2460.00	58.0	1649.07	109.33	1649.07	1884.30	138.37	1884.30	2110.19	170.83	2110.19	2328.87	206.70	2328.87	2543.17	246.00	2543.17	2754.49	288.70	2754.49	2963.11	334.83	2963.11	3168.76	384.37	3168.76	
2458.00	60.0	1726.63	113.10	1726.63	1972.99	143.14	1972.99	2209.49	176.72	2209.49	2438.38	213.83	2438.38	2662.67	254.48	2662.67	2883.80	298.66	2883.80	3102.10	346.37	3102.10	3317.26	397.62	3317.26	
2456.00	62.0	1803.83	116.87	1803.83	2061.27	147.92	2061.27	2308.35	182.61	2308.35	2547.41	220.96	2547.41	2781.62	262.96	2781.62	3012.53	308.61	3012.53	3240.45	357.92	3240.45	3465.09	410.88	3465.09	
2454.00	64.0	1880.52	120.64	1880.52	2148.98	152.69	2148.98	2406.55	188.50	2406.55	2655.71	228.09	2655.71	2899.79	271.44	2899.79	3140.42	318.57	3140.42	3377.91	369.46	3377.91	3611.95	424.13	3611.95	
2452.00	66.0	1956.56	124.41	1956.56	2235.93	157.46	2235.93	2503.91	194.39	2503.91	2763.09	235.22	2763.09	3016.95	279.93	3016.95	3267.20	328.52	3267.20	3514.18	381.01	3514.18	3757.54	437.38	3757.54	
2450.00	68.0	2031.79	128.18	2031.79	2321.96	162.23	2321.96	2600.24	200.28	2600.24	2869.32	242.34	2869.32	3132.86	288.41	3132.86	3392.64	338.48	3392.64	3649.00	392.56	3649.00	3901.59	450.64	3901.59	
2448.00	70.0	2106.06	131.95	2106.06	2406.89	167.00	2406.89	2695.34	206.17	2695.34	2974.20	249.47	2974.20	3247.30	296.89	3247.30	3516.47	348.43	3516.47	3782.10	404.10	3782.10	4043.80	463.89	4043.80	
2446.00	72.0	2179.22	135.72	2179.22	2490.57	171.77	2490.57	2789.02	212.06	2789.02	3077.52	256.60	3077.52	3360.03	305.37	3360.03	3638.47	358.39	3638.47	3913.23	415.65	3913.23	4183.90	477.15	4183.90	
2444.00	74.0	2251.14	139.49	2251.14	2572.81	176.54	2572.81	2881.11	217.96	2881.11	3179.09	263.73	3179.09	3470.85	313.86	3470.85	3758.39	368.34	3758.39	4042.12	427.19	4042.12	4321.62	490.40	4321.62	
2442.00	76.0	2321.67	143.26	2321.67	2653.47	181.32	2653.47	2971.42	223.85	2971.42	3278.69	270.85	3278.69	3579.52	322.34	3579.52	3876.00	378.30	3876.00	4168.52	438.74	4168.52	4456.67	503.65	4456.67	
2440.00	78.0	2390.68	147.03	2390.68	2732.38	186.09	2732.38	3059.78	229.74	3059.78	3376.13	277.98	3376.13	3685.85	330.82	3685.85	3991.06	388.26	3991.06	4292.19	450.28	4292.19	4588.80	516.91	4588.80	
2438.00	80.0	2458.01	150.80	2458.01	2809.39	190.86	2809.39	3146.00	235.63	3146.00	3471.22	285.11	3471.22	3789.60	339.30	3789.60	4103.34	398.21	4103.34	4412.87	461.83	4412.87	4717.74	530.16	4717.74	

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement

Analyses for Settlement = 1.00 Inch(es)

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2516.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2514.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2512.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2510.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2508.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2506.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2504.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2502.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2500.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2498.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2496.00	22.0	479.61	41.47	479.61	550.44	52.49	550.44	622.94	64.80	622.94	693.61	78.41	693.61	763.56	93.31	763.56	832.71	109.51	832.71	901.17	127.00	901.17	969.08	145.79	969.08
2494.00	24.0	530.36	45.24	530.36	607.53	57.26	607.53	688.97	70.69	688.97	767.36	85.53	767.36	844.95	101.79	844.95	921.44	119.46	921.44	997.02	138.55	997.02	1071.88	159.05	1071.88
2492.00	26.0	584.06	49.01	584.06	667.94	62.03	667.94	758.84	76.58	758.84	845.42	92.66	845.42	931.07	110.27	931.07	1015.34	129.42	1015.34	1098.45	150.09	1098.45	1180.67	172.30	1180.67
2490.00	28.0	640.48	52.78	640.48	731.42	66.80	731.42	832.26	82.47	832.26	927.43	99.79	927.43	1021.57	118.76	1021.57	1114.01	139.37	1114.01	1205.02	161.64	1205.02	1294.98	185.56	1294.98
2488.00	30.0	699.41	56.55	699.41	797.71	71.57	797.71	908.93	88.36	908.93	1013.07	106.92	1013.07	1116.07	127.24	1116.07	1217.04	149.33	1217.04	1316.32	173.19	1316.32	1414.36	198.81	1414.36
2486.00	32.0	760.62	60.32	760.62	866.57	76.34	866.57	988.58	94.25	988.58	1102.04	114.04	1102.04	1214.24	135.72	1214.24	1324.08	159.28	1324.08	1431.94	184.73	1431.94	1538.36	212.06	1538.36
2484.00	34.0	823.90	64.09	823.90	937.77	81.11	937.77	1070.93	100.14	1070.93	1194.03	121.17	1194.03	1315.74	144.20	1315.74	1434.74	169.24	1434.74	1551.47	196.28	1551.47	1666.58	225.32	1666.58
2482.00	36.0	889.07	67.86	889.07	1011.08	85.89	1011.08	1155.72	106.03	1155.72	1288.74	128.30	1288.74	1420.25	152.69	1420.25	1548.68	179.19	1548.68	1674.55	207.82	1674.55	1798.59	238.57	1798.59
2480.00	38.0	955.91	71.63	955.91	1086.28	90.66	1086.28	1242.69	111.92	1242.69	1385.89	135.43	1385.89	1527.45	161.17	1527.45	1665.56	189.15	1665.56	1800.81	219.37	1800.81	1934.01	251.83	1934.01
2478.00	40.0	1024.24	75.40	1024.24	1163.15	95.43	1163.15	1331.61	117.81	1331.61	1485.21	142.55	1485.21	1637.05	169.65	1637.05	1785.05	199.11	1785.05	1929.88	230.91	1929.88	2072.45	265.08	2072.45
2476.00	42.0	1093.88	79.17	1093.88	1241.50	100.20	1241.50	1422.22	123.70	1422.22	1586.43	149.68	1586.43	1748.73	178.13	1748.73	1906.82	209.06	1906.82	2061.41	242.46	2061.41	2213.53	278.33	2213.53
2474.00	44.0	1164.65	82.94	1164.65	1321.11	104.97	1321.11	1514.29	129.60	1514.29	1689.29	156.81	1689.29	1862.23	186.62	1862.23	2030.56	219.02	2030.56	2195.07	254.01	2195.07	2356.89	291.59	2356.89
2472.00	46.0	1236.36	86.71	1236.36	1401.78	109.74	1401.78	1607.61	135.49	1607.61	1793.52	163.94	1793.52	1977.24	195.10	1977.24	2155.96	228.97	2155.96	2330.52	265.55	2330.52	2502.17	304.84	2502.17
2470.00	48.0	1308.85	90.48	1308.85	1483.33	114.51	1483.33	1701.93	141.38	1701.93	1898.88	171.07	1898.88	2093.50	203.58	2093.50	2282.71	238.93	2282.71	2467.44	277.10	2467.44	2649.03	318.10	2649.03
2468.00	50.0	1381.95	94.25	1381.95	1565.57	119.29	1565.57	1797.04	147.27	1797.04	2005.12	178.19	2005.12	2210.73	212.06	2210.73	2410.53	248.88	2410.53	2605.51	288.64	2605.51	2797.12	331.35	2797.12
2466.00	52.0	1455.49	98.02	1455.49	1648.30	124.06	1648.30	1892.73	153.16	1892.73	2112.01	185.32	2112.01	2328.68	220.55	2328.68	2539.12	258.84	2539.12	2744.41	300.19	2744.41	2946.10	344.61	2946.10
2464.00	54.0	1529.31	101.79	1529.31	1731.36	128.83	1731.36	1988.79	159.05	1988.79	2219.31	192.45	2219.31	2447.08	229.03	2447.08	2668.21	268.79	2668.21	2883.85	311.74	2883.85	3095.66	357.86	3095.66
2462.00	56.0	1603.26	105.56	1603.26	1814.55	133.60	1814.55	2085.01	164.94	2085.01	2326.80	199.58	2326.80	2565.67	237.51	2565.67	2797.51	278.75	2797.51	3023.52	323.28	3023.52	3245.47	371.11	3245.47
2460.00	58.0	1677.18	109.33	1677.18	1897.70	138.37	1897.70	2181.19	170.83	2181.19	2434.23	206.70	2434.23	2684.22	246.00	2684.22	2926.76	288.70	2926.76	3163.13	334.83	3163.13	3395.22	384.37	3395.22
2458.00	60.0	1750.91	113.10	1750.91	1980.65	143.14	1980.65	2277.13	176.72	2277.13	2541.40	213.83	2541.40	2802.47	254.48	2802.47	3055.69	298.66	3055.69	3302.40	346.37	3302.40	3544.59	397.62	3544.59
2456.00	62.0	1824.31	116.87	1824.31	2063.22	147.92	2063.22	2372.63	182.61	2372.63	2648.08	220.96	2648.08	2920.19	262.96	2920.19	3184.03	308.61	3184.03	3441.03	357.92	3441.03	3693.29	410.88	3693.29
2454.00	64.0	1897.22	120.64	1897.22	2145.26	152.69	2145.26	2467.51	188.50	2467.51	2754.06	228.09	2754.06	3037.13	271.44	3037.13	3311.53	318.57	3311.53	3578.76	369.46	3578.76	3841.01	424.13	3841.01
2452.00	66.0	1969.51	124.41	1969.51	2226.58	157.46	2226.58	2561.57	194.39	2561.57	2859.13	235.22	2859.13	3153.07	279.93	3153.07	3437.94	328.52	3437.94	3715.30	381.01	3715.30	3987.46	437.38	3987.46
2450.00	68.0	2041.03	128.18	2041.03	2307.04	162.23	2307.04	2654.63	200.28	2654.63	2963.08	242.34	2963.08	3267.77	288.41	3267.77	3563.00	338.48	3563.00	3850.39	392.56	3850.39	4132.35	450.64	4132.35
2448.00	70.0	2111.64	131.95	2111.64	2386.48	167.00	2386.48	2746.50	206.17	2746.50	3065.71	249.47	3065.71	3381.02	296.89	3381.02	3686.47	348.43	3686.47	3983.75	404.10	3983.75	4275.40	463.89	4275.40
2446.00	72.0	2181.20	135.72	2181.20	2464.73	171.77	2464.73	2837.02	212.06	2837.02	3166.82	256.60	3166.82	3492.58	305.37	3492.58	3808.10	358.39	3808.10	4115.14	415.65	4115.14	4416.33	477.15	4416.33
2444.00	74.0	2249.58	139.49	2249.58	2541.66	176.54	2541.66	2925.99	217.96	2925.99	3266.20	263.73	3266.20	3602.24	313.86	3602.24	3927.66	368.34	3927.66	4244.29	427.19	4244.29	4554.85	490.40	4554.85
2442.00	76.0	2316.64	143.26	2316.64	2617.09	181.32	2617.09	3013.24	223.85	3013.24	3363.66	270.85	3363.66	3709.79	322.34	3709.79	4044.91	378.30	4044.91	4370.94	438.74	4370.94	4690.70	503.65	4690.70
2440.00	78.0	2382.24	147.03	2382.24	2690.90	186.09	2690.90	3098.60	229.74	3098.60	3459.01	277.98	3459.01	3815.00	330.82	3815.00	4159.63	388.26	4159.63	4494.85	450.28	4494.85	4823.60	516.91	4823.60
2438.00	80.0	2446.26	150.80	2446.26	2762.92	190.86	2762.92	3181.90	235.63	3181.90	3552.06	285.11	3552.06	3917.68	339.30	3917.68	4271.57	398.21	4271.57	4615.77	461.83	4615.77	4953.30	530.16	4953.30

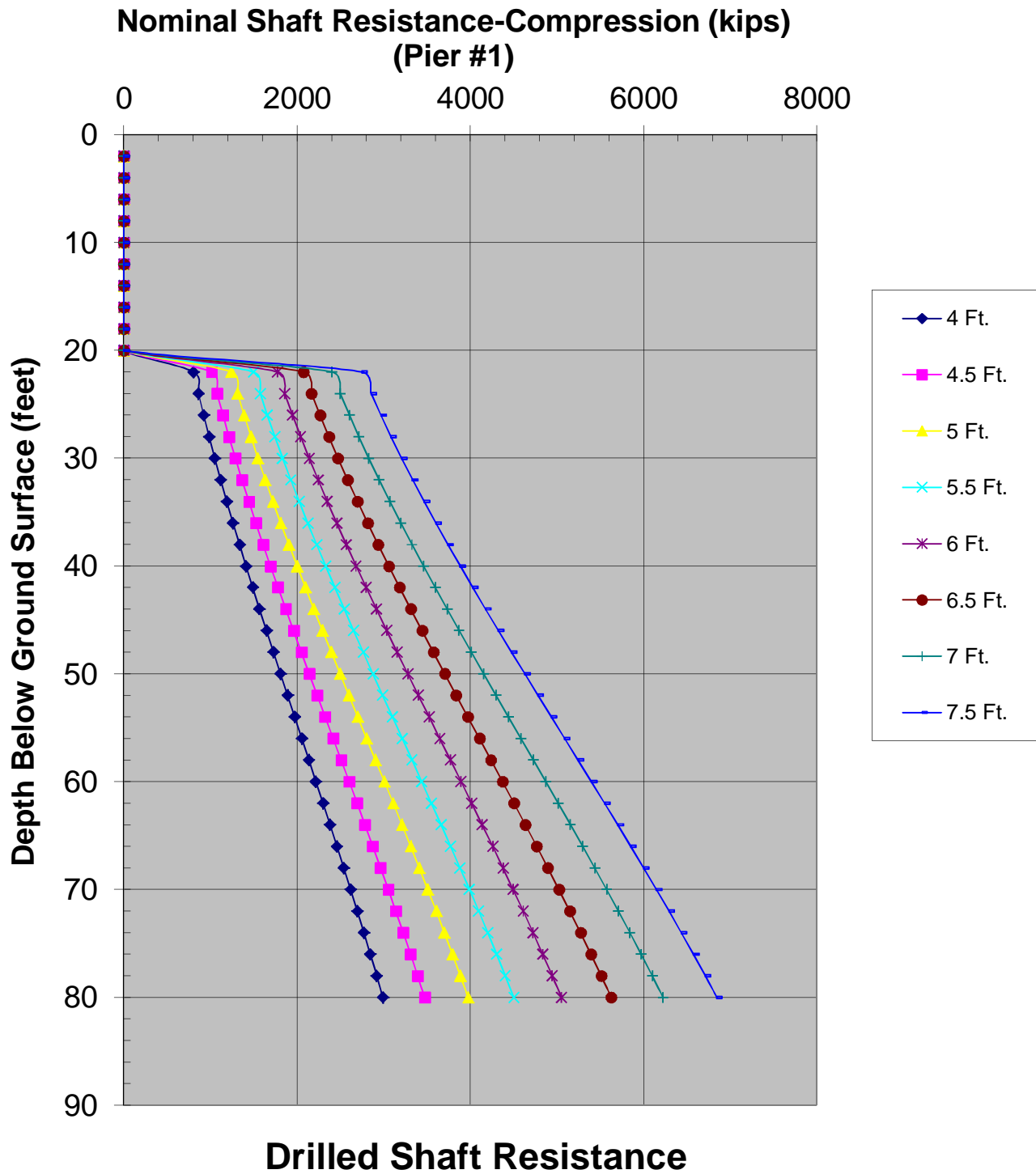
Drilled Shaft Resistance Analyses



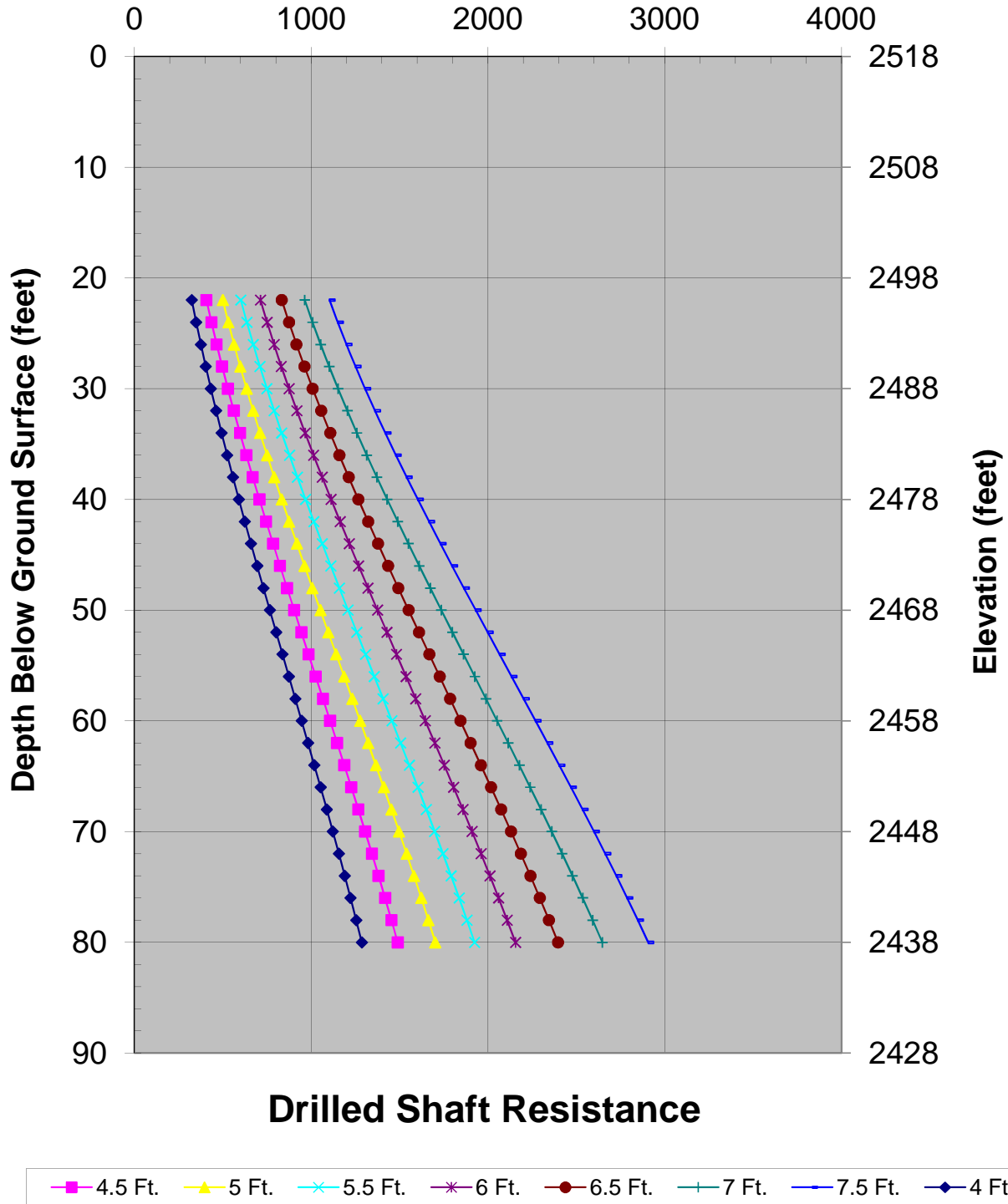
Service Limit Resistance Based On Allowable Settlement

Analyses for Settlement = 2.00 Inch(es)

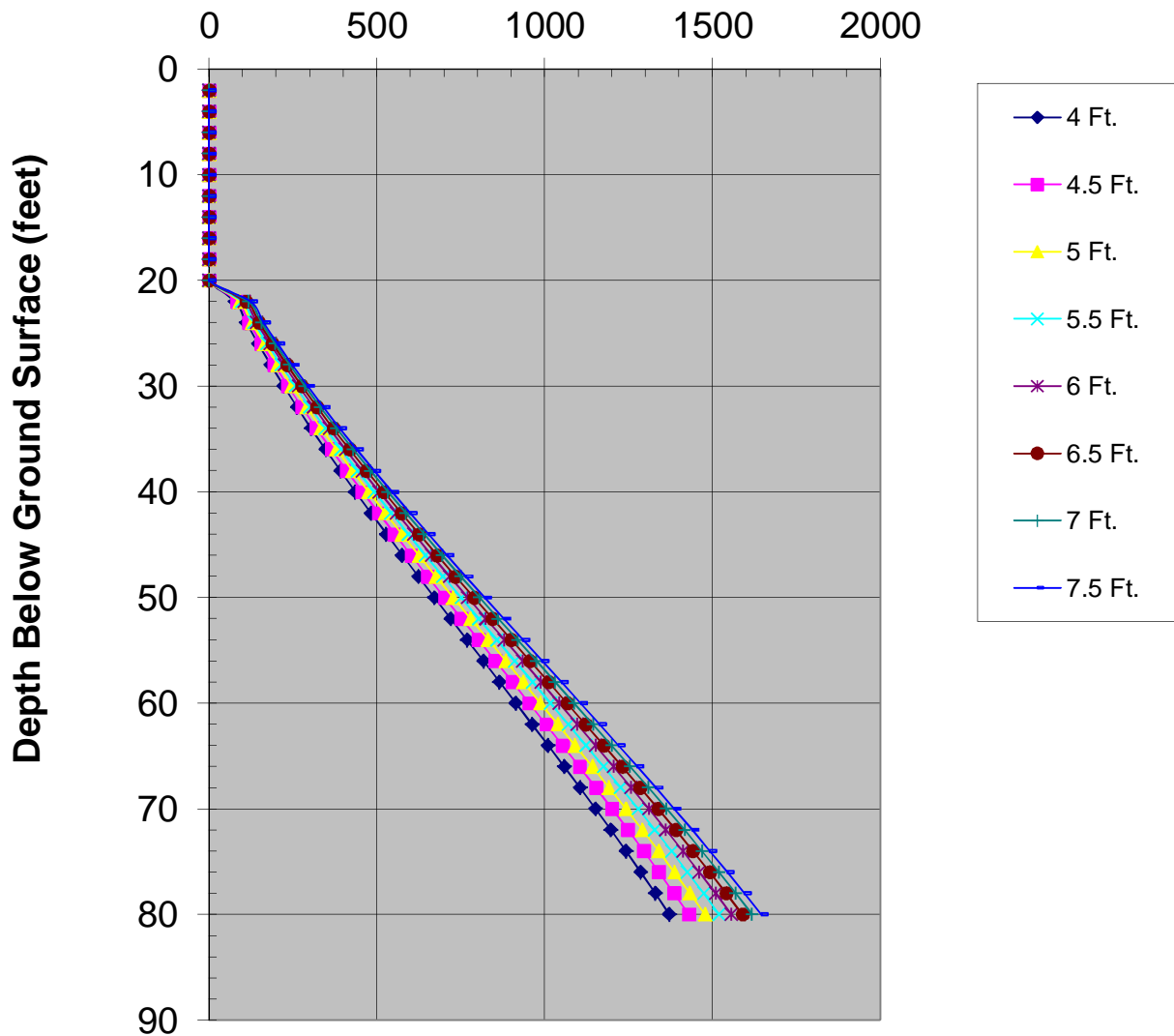
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2516.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2514.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2512.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2510.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2508.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2506.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2504.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2502.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2500.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2498.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2496.00	22.0	718.39	41.47	718.39	855.12	52.49	855.12	993.39	64.80	993.39	1132.41	78.41	1132.41	1271.57	93.31	1271.57	1410.44	109.51	1410.44	1548.79	127.00	1548.79	1686.45	145.79	1686.45
2494.00	24.0	769.14	45.24	769.14	912.20	57.26	912.20	1056.82	70.69	1056.82	1202.18	85.53	1202.18	1347.68	101.79	1347.68	1492.91	119.46	1492.91	1637.59	138.55	1637.59	1781.59	159.05	1781.59
2492.00	26.0	822.84	49.01	822.84	972.62	62.03	972.62	1123.95	76.58	1123.95	1276.02	92.66	1276.02	1428.23	110.27	1428.23	1580.17	129.42	1580.17	1731.57	150.09	1731.57	1882.28	172.30	1882.28
2490.00	28.0	879.26	52.78	879.26	1036.10	66.80	1036.10	1194.48	82.47	1194.48	1353.61	99.79	1353.61	1512.87	118.76	1512.87	1671.86	139.37	1671.86	1830.31	161.64	1830.31	1988.08	185.56	1988.08
2488.00	30.0	938.19	56.55	938.19	1102.39	71.57	1102.39	1268.13	88.36	1268.13	1434.63	106.92	1434.63	1601.26	127.24	1601.26	1767.61	149.33	1767.61	1933.43	173.19	1933.43	2098.56	198.81	2098.56
2486.00	32.0	999.40	60.32	999.40	1171.25	76.34	1171.25	1344.65	94.25	1344.65	1518.79	114.04	1518.79	1693.07	135.72	1693.07	1867.08	159.28	1867.08	2040.55	184.73	2040.55	2213.33	212.06	2213.33
2484.00	34.0	1062.68	64.09	1062.68	1242.45	81.11	1242.45	1423.76	100.14	1423.76	1605.81	121.17	1605.81	1788.01	144.20	1788.01	1969.92	169.24	1969.92	2151.30	196.28	2151.30	2332.00	225.32	2332.00
2482.00	36.0	1127.85	67.86	1127.85	1315.75	85.89	1315.75	1505.21	106.03	1505.21	1695.41	128.30	1695.41	1885.75	152.69	1885.75	2075.81	179.19	2075.81	2265.34	207.82	2265.34	2454.18	238.57	2454.18
2480.00	38.0	1194.69	71.63	1194.69	1390.95	90.66	1390.95	1588.76	111.92	1588.76	1787.32	135.43	1787.32	1986.02	161.17	1986.02	2184.43	189.15	2184.43	2382.31	219.37	2382.31	2579.51	251.83	2579.51
2478.00	40.0	1263.02	75.40	1263.02	1467.83	95.43	1467.83	1674.18	117.81	1674.18	1881.28	142.55	1881.28	2088.52	169.65	2088.52	2295.47	199.11	2295.47	2501.90	230.91	2501.90	2707.64	265.08	2707.64
2476.00	42.0	1332.66	79.17	1332.66	1546.17	100.20	1546.17	1761.23	123.70	1761.23	1977.03	149.68	1977.03	2192.98	178.13	2192.98	2408.64	209.06	2408.64	2623.77	242.46	2623.77	2838.21	278.33	2838.21
2474.00	44.0	1403.43	82.94	1403.43	1625.78	104.97	1625.78	1849.68	129.60	1849.68	2074.34	156.81	2074.34	2299.12	186.62	2299.12	2523.63	219.02	2523.63	2747.60	254.01	2747.60	2970.89	291.59	2970.89
2472.00	46.0	1475.14	86.71	1475.14	1706.46	109.74	1706.46	1939.33	135.49	1939.33	2172.94	163.94	2172.94	2406.69	195.10	2406.69	2640.16	228.97	2640.16	2873.10	265.55	2873.10	3105.35	304.84	3105.35
2470.00	48.0	1547.63	90.48	1547.63	1788.01	114.51	1788.01	2029.94	141.38	2029.94	2272.61	171.07	2272.61	2515.42	203.58	2515.42	2757.96	238.93	2757.96	2999.96	277.10	2999.96	3241.27	318.10	3241.27
2468.00	50.0	1620.73	94.25	1620.73	1870.25	119.29	1870.25	2121.31	147.27	2121.31	2373.12	178.19	2373.12	2625.07	212.06	2625.07	2876.74	248.88	2876.74	3127.88	288.64	3127.88	3378.33	331.35	3378.33
2466.00	52.0	1694.27	98.02	1694.27	1952.98	124.06	1952.98	2213.24	153.16	2213.24	2474.24	185.32	2474.24	2735.38	220.55	2735.38	2996.25	258.84	2996.25	3256.58	300.19	3256.58	3516.22	344.61	3516.22
2464.00	54.0	1768.09	101.79	1768.09	2036.03	128.83	2036.03	2305.52	159.05	2305.52	2575.75	192.45	2575.75	2846.12	229.03	2846.12	3116.21	268.79	3116.21	3385.77	311.74	3385.77	3654.64	357.86	3654.64
2462.00	56.0	1842.04	105.56	1842.04	2119.22	133.60	2119.22	2397.95	164.94	2397.95	2677.43	199.58	2677.43	2957.04	237.51	2957.04	3236.38	278.75	3236.38	3515.18	323.28	3515.18	3793.29	371.11	3793.29
2460.00	58.0	1915.96	109.33	1915.96	2202.38	138.37	2202.38	2490.35	170.83	2490.35	2779.06	206.70	2779.06	3067.92	246.00	3067.92	3356.49	288.70	3356.49	3644.53	334.83	3644.53	3931.88	384.37	3931.88
2458.00	60.0	1989.69	113.10	1989.69	2285.33	143.14	2285.33	2582.51	176.72	2582.51	2880.45	213.83	2880.45	3178.51	254.48	3178.51	3476.31	298.66	3476.31	3773.56	346.37	3773.56	4070.13	397.62	4070.13
2456.00	62.0	2063.09	116.87	2063.09	2367.90	147.92	2367.90	2674.26	182.61	2674.26	2981.37	220.96	2981.37	3288.61	262.96	3288.61	3595.58	308.61	3595.58	3902.01	357.92	3902.01	4207.75	410.88	4207.75
2454.00	64.0	2136.00	120.64	2136.00	2449.93	152.69	2449.93	2765.41	188.50	2765.41	3081.63	228.09	3081.63	3397.99	271.44	3397.99	3714.07	318.57	3714.07	4029.61	369.46	4029.61	4344.47	424.13	4344.47
2452.00	66.0	2208.29	124.41	2208.29	2531.26	157.46	2531.26	2855.77	194.39	2855.77	3181.03	235.22	3181.03	3506.42	279.93	3506.42	3831.54	328.52	3831.54	4156.12	381.01	4156.12	4480.01	437.38	4480.01
2450.00	68.0	2279.81	128.18	2279.81	2611.72	162.23	2611.72	2945.17	200.28	2945.17	3279.37	242.34	3279.37	3613.70	288.41	3613.70	3947.76	338.48	3947.76	4281.28	392.56	4281.28	4614.11	450.64	4614.11
2448.00	70.0	2350.42	131.95	2350.42	2691.15	167.00	2691.15	3033.43	206.17	3033.43	3376.45	249.47	3376.45	3719.62	296.89	3719.62	4062.50	348.43	4062.50	4404.85	404.10	4404.85	4746.51	463.89	4746.51
2446.00	72.0	2419.98	135.72	2419.98	2769.41	171.77	2769.41	3120.38	212.06	3120.38	3472.10	256.60	3472.10	3823.96	305.37	3823.96	4175.53	358.39	4175.53	4526.58	415.65	4526.58	4876.94	477.15	4876.94
2444.00	74.0	2488.36	139.49	2488.36	2846.33	176.54	2846.33	3205.85	217.96	3205.85	3566.12	263.73	3566.12	3926.52	313.86	3926.52	4286.65	368.34	4286.65	4646.24	427.19	4646.24	5005.14	490.40	5005.14
2442.00	76.0	2555.42	143.26	2555.42	2921.77	181.32	2921.77	3289.67	223.85	3289.67	3658.32	270.85	3658.32	4027.10	322.34	4027.10	4395.61	378.30	4395.61	4763.58	438.74	4763.58	5130.87	503.65	5130.87
2440.00	78.0	2621.02	147.03	2621.02	2995.57	186.09	2995.57	3371.67	229.74	3371.67	3748.52	277.98	3748.52	4125.51	330.82	4125.51	4502.22	388.26	4502.22	4878.39	450.28	4878.39	5253.88	516.91	5253.88
2438.00	80.0	2685.04	150.80	2685.04	3067.59	190.86	3067.59	3451.70	235.63	3451.70	3836.55	285.11	3836.55	4221.54	339.30	4221.54	4606.25	398.21	4606.25	4990.42	461.83	4990.42	5373.91	530.16	5373.91



Strength Limit State Shaft Resistance-Compression (kips) (Pier #1)



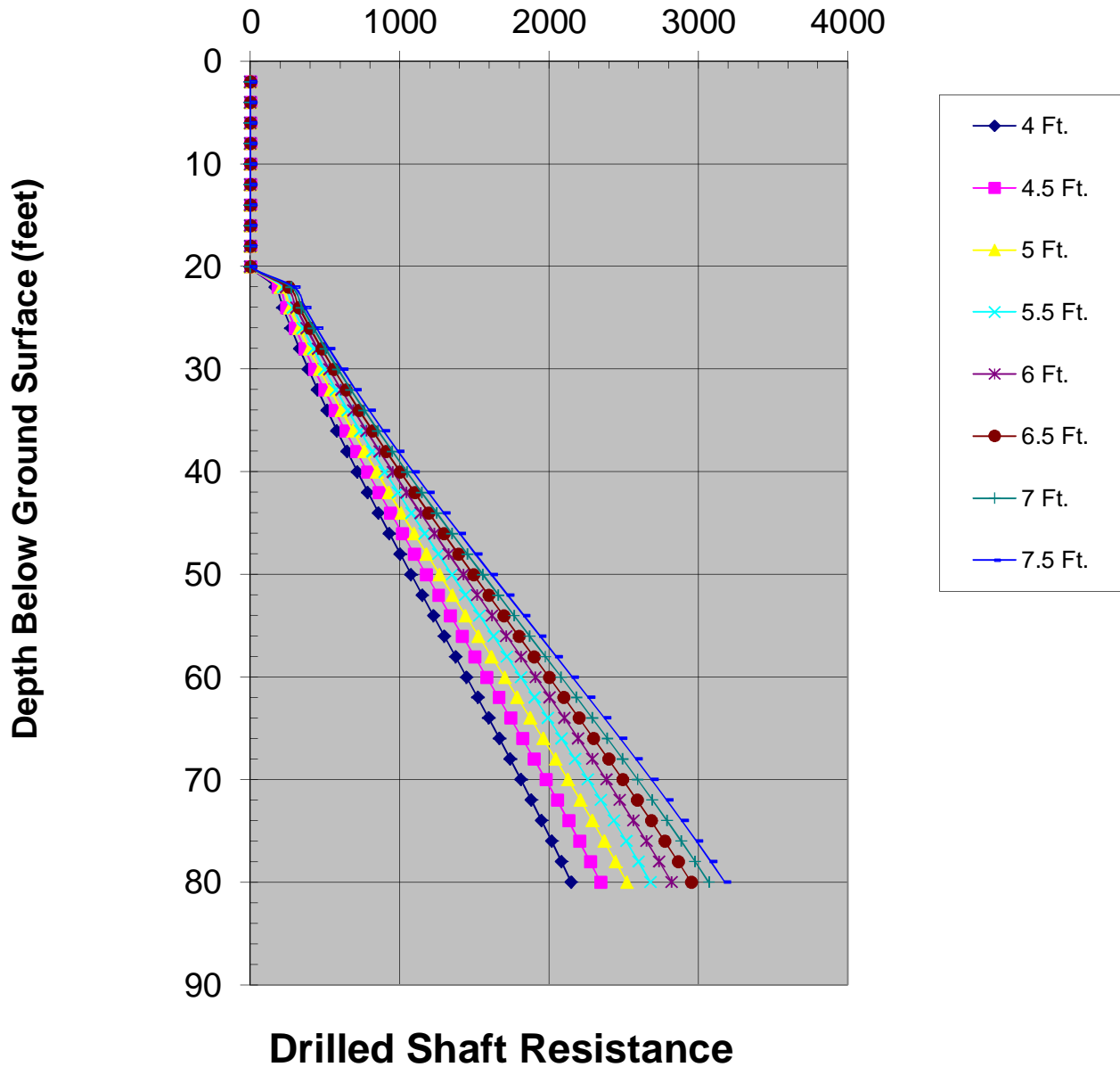
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

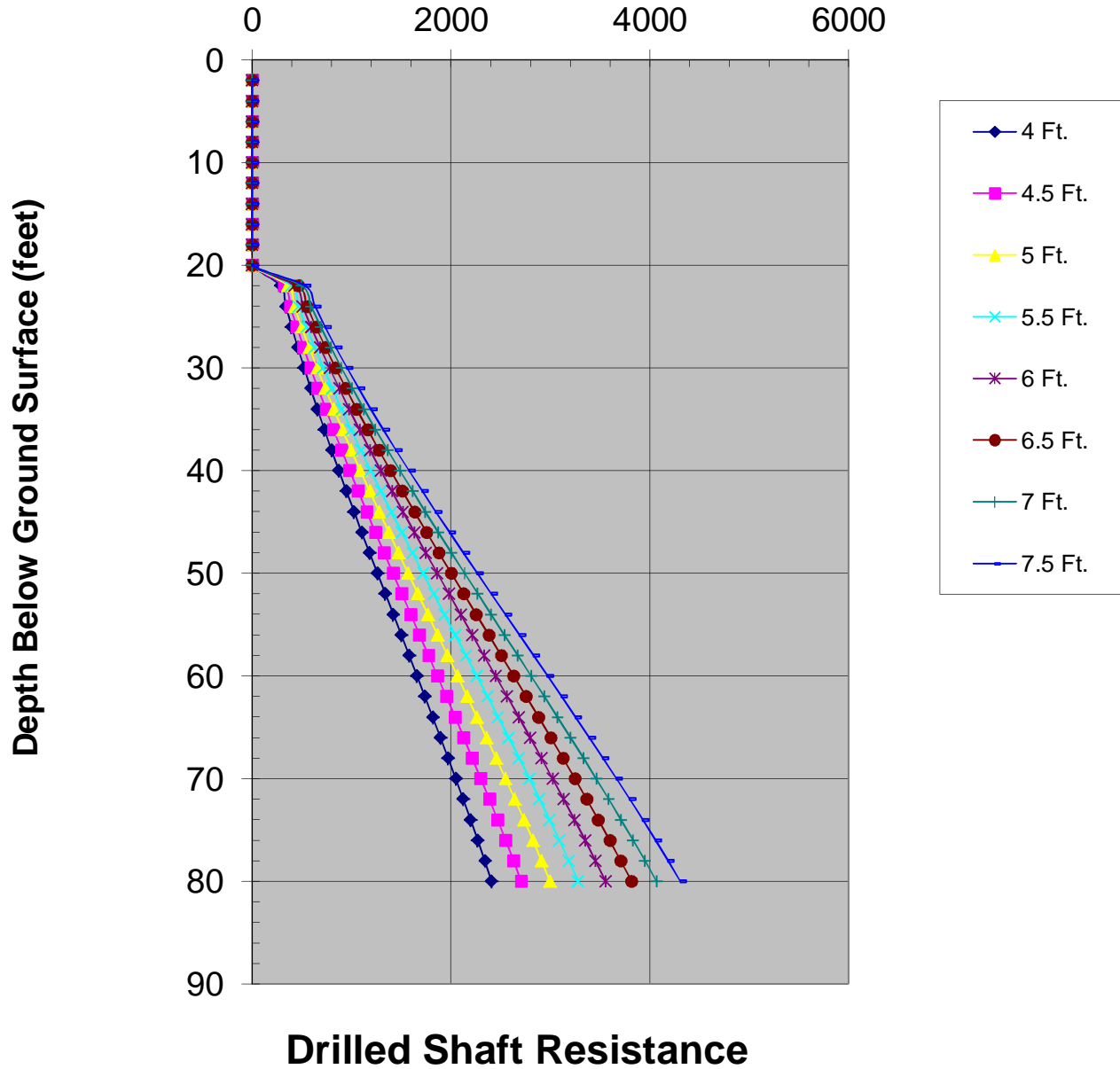
Analysis for Settlement = 0.10 Inches

Service Limit Shaft Resistance-Compression (kips)



Analysis for
Settlement = 0.25 Inches

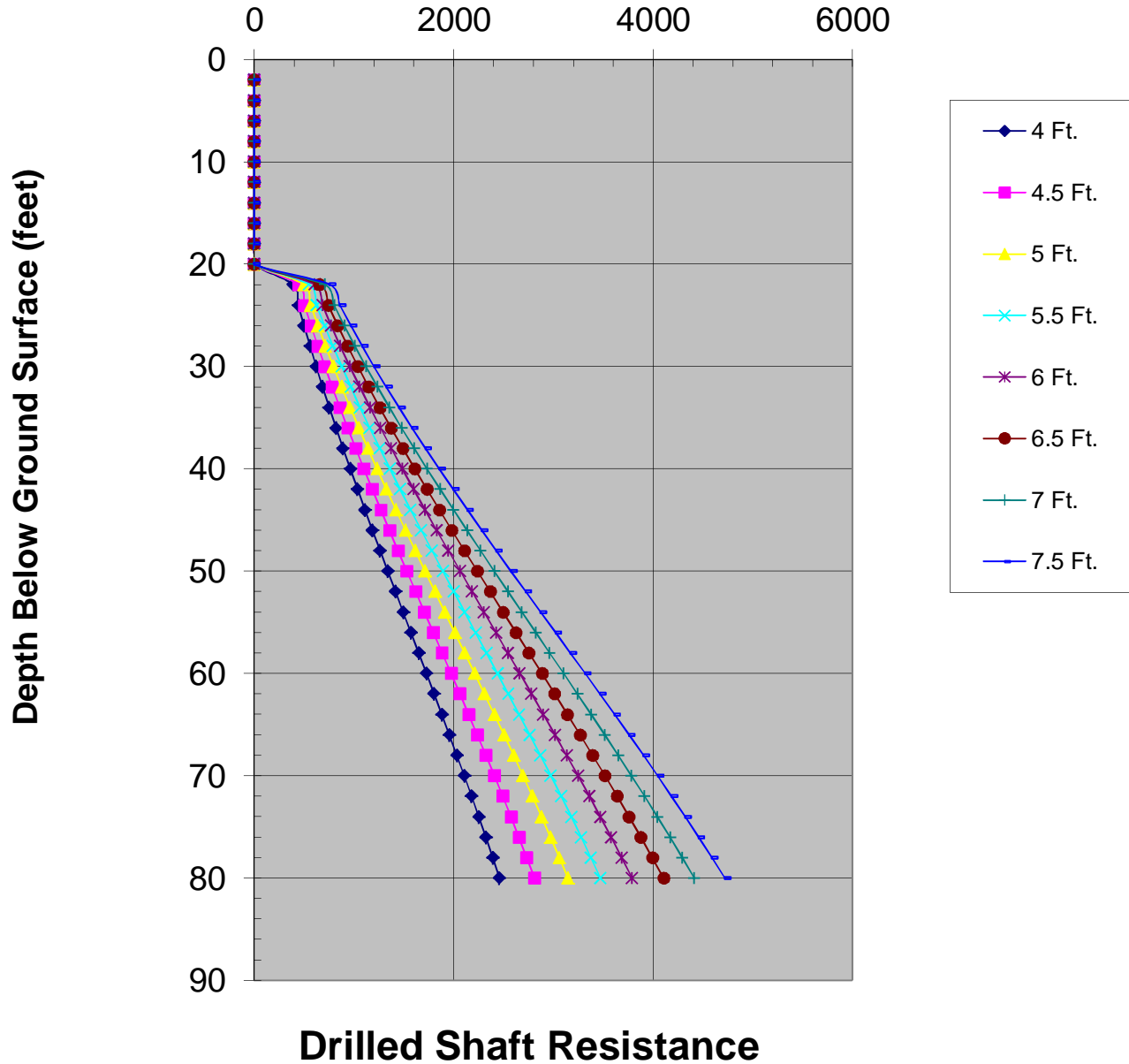
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for
Settlement = 0.50 Inches

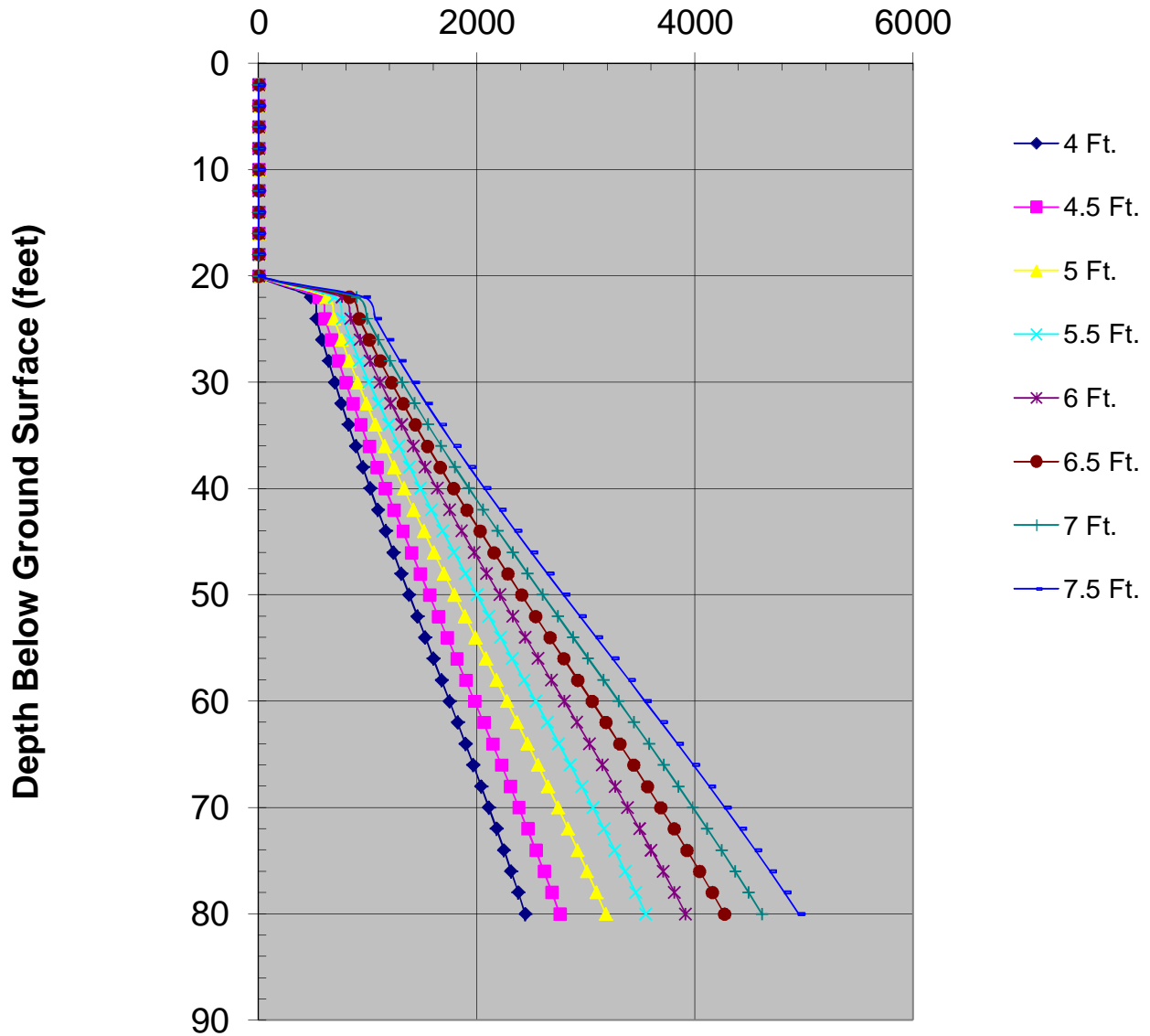
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for
Settlement = 0.75 Inches

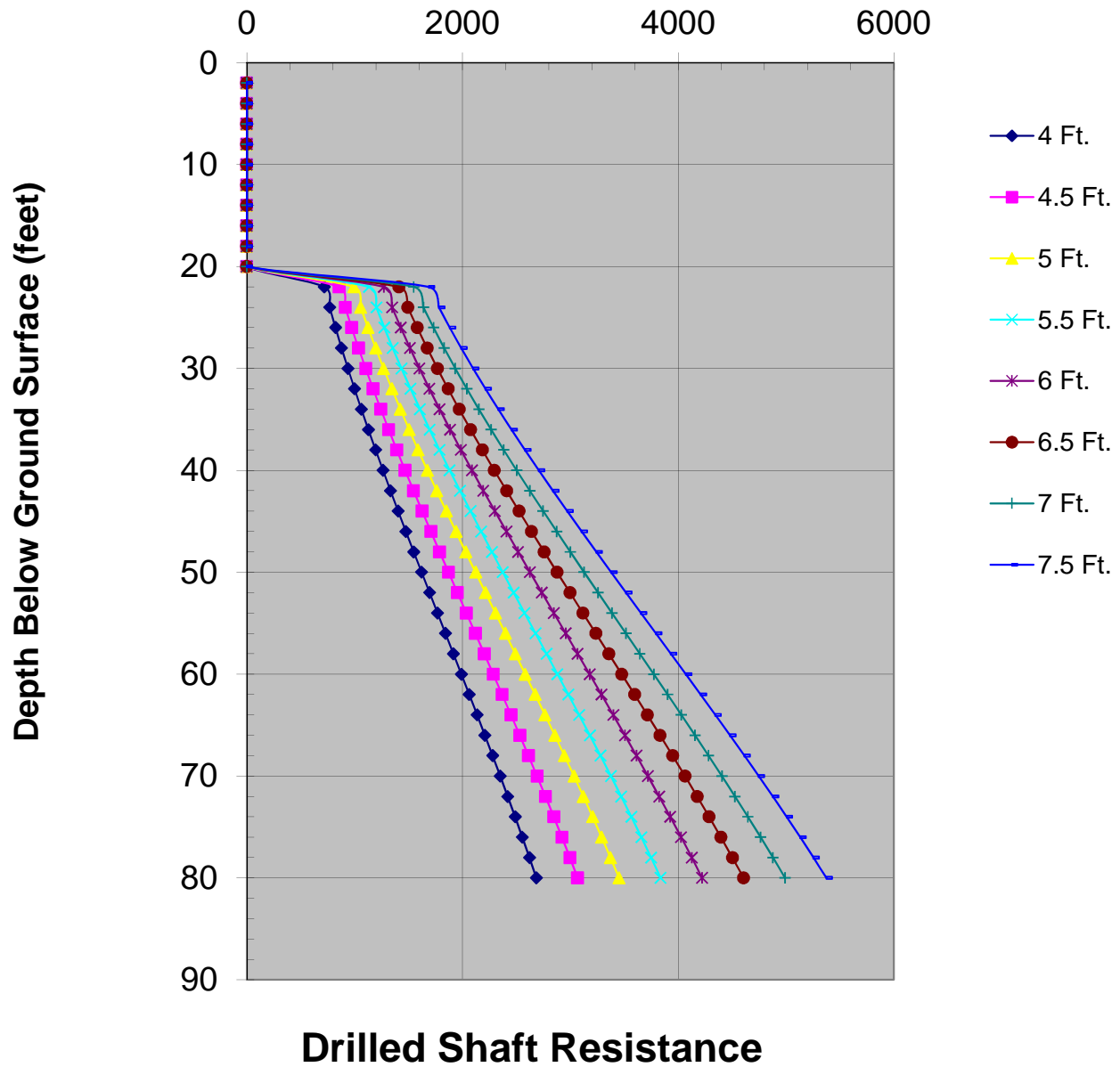
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for
Settlement = 1.00 Inches

Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for
Settlement = 2.00 Inches

APPENDIX E
Pantano Wash Bridge
Pier #2
Axial Load Analyses Results

Drilled Shaft Resistance Analysis



Design Shaft-Displacement/Resistance Curve

PROJECT

Project Name: Kolb Road Bridge over Pantano Wash
 Project Location: Tucson, Arizona
 Project Number: 63125005

Structure Data

Structure Designation: 0
 Foundation Element: Pier #2

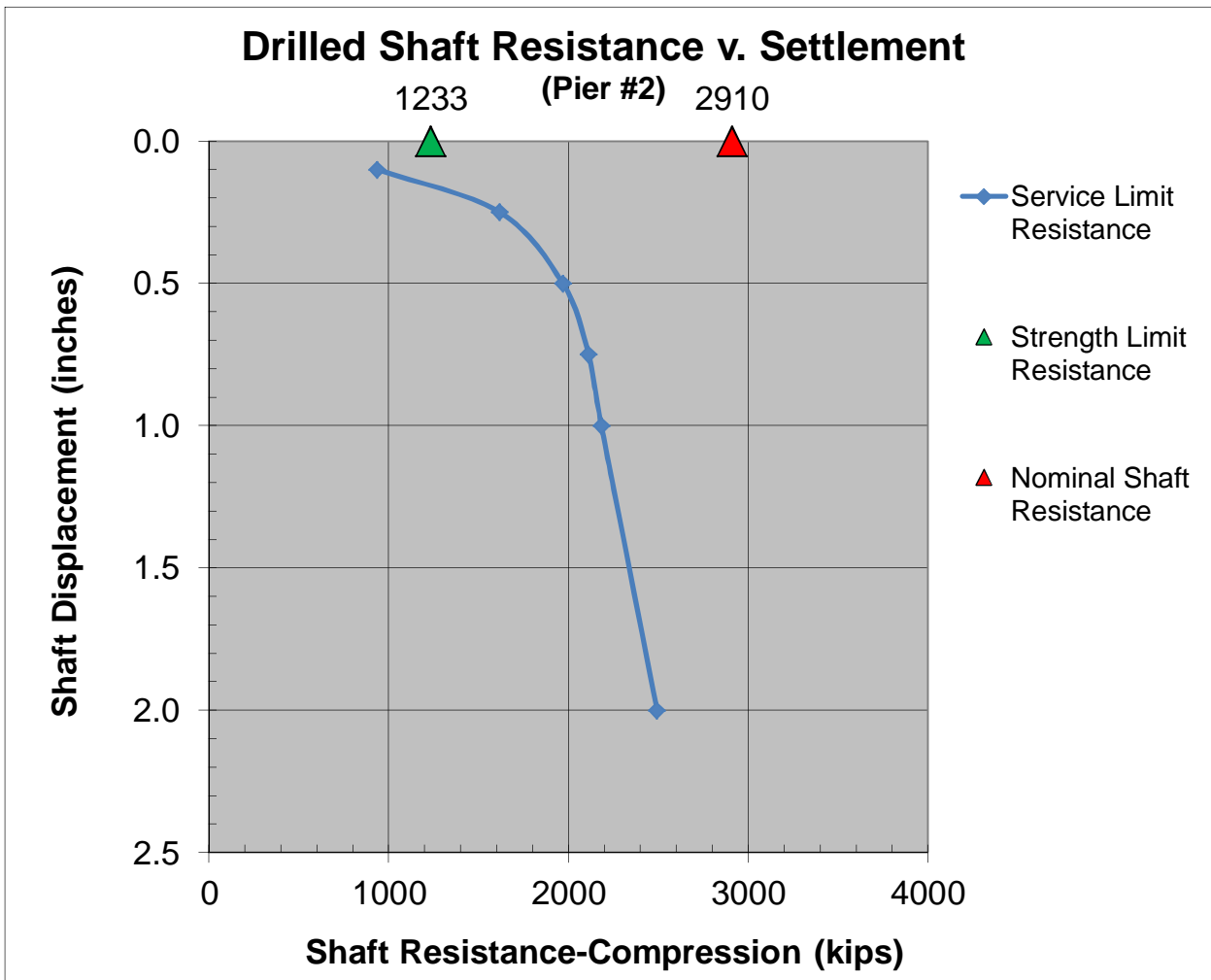
Foundation Design Criteria

Design Shaft Diameter: 5.0 ft.
 Design Shaft Depth: 50 ft.

Service Limit Displacements & Resistances

	δ (in)	Kips
1	0.10	937.3
2	0.25	1616.8
3	0.50	1967.8
4	0.75	2112.4
5	1.00	2183.3
6	2.00	2492.4

Strength Limit Resistance	Nominal Resistance
Kips	Kips
1233	2910



Drilled Shaft LRFD Analysis



Drilled Shaft Foundation Analysis is based on procedures outlined in AASHTO (2010) & FHWA NHI-09

- ◆ Analysis applies to cohesive and cohesionless soils ($\phi=0$ and $c=0$)
- ◆ Drilled shaft service state loads based on the Load Transfer curves outlined in AASHTO 2010
- ◆ The analyses follow the ADOT Geotechnical Design Policies DS-1 and DS-2 dated December 1, 2010

PROJECT

Project Name:	Kolb Road Bridge over Pantano Wash
Project Location:	Tucson, Arizona
Project Number:	63125005

Structure Data

Structure Designation	
Foundation Element	Pier #2

Foundation Data

Shaft Diameters

Maximum Diameter	7.5 ft.
Minimum Diameter	4.0 ft.
Increment for Diameter	0.5 ft.
Maximum Shaft Tip Depth	80 ft.

Service Limit Displacements

	δ (in)
1	0.10
2	0.25
3	0.50
4	0.75
5	1.00
6	2.00

Foundation Design Criteria

Design for Redundancy	No
Design Shaft Diameter	5.0 ft.
Design Shaft Depth	50 ft.

Show Service Limit Output for Case: 2

Subsurface Data

Initial Information

Number of Soil Layers	4
Depth to Groundwater	300 ft.
Ground Surface Elevation	2508.0 ft.

Soil Layer Properties

Layer Number	1	2	3	4
Depth from Ground Surface	21	30	40	100
Unit Weight of Layer (γ) pcf	120	120	125	125
Penetration Resistance " N_{60} " Blows/ft	0	45	62	75
Cohesion " c " of Layer (ksf)				
Thickness of layer (ft)	21.0	9.0	10.0	60.0
Soil Type	Sand	Gravelly	Gravelly	Sand

Strength Resistance Factors

Analyses Conducted Without Redundant Design

	0.44	0.44	0.44	0.44
Side Resistance-Compression	0.44	0.44	0.44	0.44
Side Resistance-Uplift	0.36	0.36	0.36	0.36
Base Resistance-Compression	0.40	0.40	0.40	0.40

Drilled Shaft Resistance Analyses



Nominal End Bearing Resistance and Skin Friction Factors

Elevation feet	Depth of Shaft feet	Penetration Resistance N	Cohesion c (ksf)	Soil Unit Weight γ' (pcf)	Effective Stress σ'_z (psf)	β	α	Unit Skin Friction Load (ksf)	Side Resistance Factor Compression	Side Resistance Factor Uplift	Base Resistance Factor	Ultimate End Bearing Pressure (ksf)						
												Shaft Diameter (ft)						
												4	4.5	5	5.5	6	6.5	7
2506.00	2.0	0.0		120.0	120.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2504.00	4.0	0.0		120.0	360.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2502.00	6.0	0.0		120.0	600.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2500.00	8.0	0.0		120.0	840.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2498.00	10.0	0.0		120.0	1080.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2496.00	12.0	0.0		120.0	1320.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2494.00	14.0	0.0		120.0	1560.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2492.00	16.0	0.0		120.0	1800.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2490.00	18.0	0.0		120.0	2040.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2488.00	20.0	0.0		120.0	2280.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2486.00	22.0	45.0		120.0	2520.0	1.39		3.50	0.44	0.36	0.40	54.0	54.0	54.0	54.0	54.0	54.0	54.0
2484.00	24.0	45.0		120.0	2760.0	1.35		3.72	0.44	0.36	0.40	54.0	54.0	54.0	54.0	54.0	54.0	54.0
2482.00	26.0	45.0		120.0	3000.0	1.31		3.93	0.44	0.36	0.40	54.0	54.0	54.0	54.0	54.0	54.0	54.0
2480.00	28.0	45.0		120.0	3240.0	1.27		4.00	0.44	0.36	0.40	54.0	54.0	54.0	54.0	54.0	54.0	54.0
2478.00	30.0	45.0		120.0	3480.0	1.23		4.00	0.44	0.36	0.40	54.0	54.0	54.0	54.0	54.0	54.0	54.0
2476.00	32.0	62.0		125.0	3725.0	1.19		4.00	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2474.00	34.0	62.0		125.0	3975.0	1.16		4.00	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2472.00	36.0	62.0		125.0	4225.0	1.12		4.00	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2470.00	38.0	62.0		125.0	4475.0	1.08		4.00	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2468.00	40.0	62.0		125.0	4725.0	1.05		4.00	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2466.00	42.0	75.0		125.0	4975.0	0.63		3.11	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2464.00	44.0	75.0		125.0	5225.0	0.60		3.16	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2462.00	46.0	75.0		125.0	5475.0	0.58		3.20	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2460.00	48.0	75.0		125.0	5725.0	0.56		3.23	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2458.00	50.0	75.0		125.0	5975.0	0.55		3.26	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2456.00	52.0	75.0		125.0	6225.0	0.53		3.28	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2454.00	54.0	75.0		125.0	6475.0	0.51		3.29	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2452.00	56.0	75.0		125.0	6725.0	0.49		3.29	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2450.00	58.0	75.0		125.0	6975.0	0.47		3.29	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2448.00	60.0	75.0		125.0	7225.0	0.45		3.28	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2446.00	62.0	75.0		125.0	7475.0	0.44		3.27	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2444.00	64.0	75.0		125.0	7725.0	0.42		3.24	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2442.00	66.0	75.0		125.0	7975.0	0.40		3.22	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2440.00	68.0	75.0		125.0	8225.0	0.39		3.18	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2438.00	70.0	75.0		125.0	8475.0	0.37		3.14	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2436.00	72.0	75.0		125.0	8725.0	0.35		3.09	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2434.00	74.0	75.0		125.0	8975.0	0.34		3.04	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2432.00	76.0	75.0		125.0	9225.0	0.32		2.98	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2430.00	78.0	75.0		125.0	9475.0	0.31		2.92	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2428.00	80.0	75.0		125.0	9725.0	0.29		2.84	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0

Drilled Shaft Resistance Analyses

Service Limit Output Based on Settlement Analyses for Settlement = 0.25 Inches

Elevation feet	Depth of Shaft feet	Layer Soil Type	Concrete Unit Weight γ' (pcf)	Effective Concrete Stress σ'_z (psf)	Service Limit Factor for End Bearing							
					Based on the Total Settlement as a % of Shaft Diameter							
					Shaft Diameter (ft)							
					4	4.5	5	5.5	6	6.5	7	7.5
2506.00	2.0	Sand	150.0	300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2504.00	4.0	Sand	150.0	600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2502.00	6.0	Sand	150.0	900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2500.00	8.0	Sand	150.0	1200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2498.00	10.0	Sand	150.0	1500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2496.00	12.0	Sand	150.0	1800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2494.00	14.0	Sand	150.0	2100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2492.00	16.0	Sand	150.0	2400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2490.00	18.0	Sand	150.0	2700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2488.00	20.0	Sand	150.0	3000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2486.00	22.0	Gravelly	150.0	3300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2484.00	24.0	Gravelly	150.0	3600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2482.00	26.0	Gravelly	150.0	3900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2480.00	28.0	Gravelly	150.0	4200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2478.00	30.0	Gravelly	150.0	4500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2476.00	32.0	Gravelly	150.0	4800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2474.00	34.0	Gravelly	150.0	5100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2472.00	36.0	Gravelly	150.0	5400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2470.00	38.0	Gravelly	150.0	5700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2468.00	40.0	Gravelly	150.0	6000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2466.00	42.0	Sand	150.0	6300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2464.00	44.0	Sand	150.0	6600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2462.00	46.0	Sand	150.0	6900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2460.00	48.0	Sand	150.0	7200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2458.00	50.0	Sand	150.0	7500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2456.00	52.0	Sand	150.0	7800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2454.00	54.0	Sand	150.0	8100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2452.00	56.0	Sand	150.0	8400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2450.00	58.0	Sand	150.0	8700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2448.00	60.0	Sand	150.0	9000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2446.00	62.0	Sand	150.0	9300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2444.00	64.0	Sand	150.0	9600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2442.00	66.0	Sand	150.0	9900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2440.00	68.0	Sand	150.0	10200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2438.00	70.0	Sand	150.0	10500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2436.00	72.0	Sand	150.0	10800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2434.00	74.0	Sand	150.0	11100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2432.00	76.0	Sand	150.0	11400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2430.00	78.0	Sand	150.0	11700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2428.00	80.0	Sand	150.0	12000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083

Drilled Shaft Resistance Analyses



Nominal Load Shaft Resistances

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips
		2506.00	2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2504.00	4.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2502.00	6.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2500.00	8.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2498.00	10.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2496.00	12.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2494.00	14.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2492.00	16.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2490.00	18.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2488.00	20.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2486.00	22.0	678.61	88.07	766.68	858.86	99.08	957.94	1060.32	110.09	1170.41	1282.99	121.10	1404.09	1526.87	132.11	1658.97	1791.95	143.11	1935.06	2078.23	154.12	2232.36	2385.73	165.13	2550.86
2484.00	24.0	678.61	181.68	860.28	858.86	204.39	1063.25	1060.32	227.10	1287.42	1282.99	249.81	1532.80	1526.87	272.52	1799.38	1791.95	295.22	2087.17	2078.23	317.93	2396.17	2385.73	340.64	2726.37
2482.00	26.0	678.61	280.39	959.00	858.86	315.44	1174.30	1060.32	350.49	1410.81	1282.99	385.53	1668.53	1526.87	420.58	1947.45	1791.95	455.63	2247.58	2078.23	490.68	2568.91	2385.73	525.73	2911.46
2480.00	28.0	678.61	380.92	1059.53	858.86	428.54	1287.40	1060.32	476.15	1536.48	1282.99	523.77	1806.76	1526.87	571.38	2098.25	1791.95	619.00	2410.95	2078.23	666.61	2744.85	2385.73	714.23	3099.96
2478.00	30.0	678.61	481.46	1160.06	858.86	541.64	1400.50	1060.32	601.82	1662.14	1282.99	662.00	1944.99	1526.87	722.19	2249.05	1791.95	782.37	2574.31	2078.23	842.55	2920.78	2385.73	902.73	3288.46
2476.00	32.0	754.01	581.99	1336.00	954.29	654.74	1609.03	1178.14	727.49	1905.63	1425.55	800.24	2225.78	1696.52	872.99	2569.50	1991.05	945.74	2936.79	2309.15	1018.48	3327.63	2650.81	1091.23	3742.04
2474.00	34.0	754.01	682.53	1436.53	954.29	767.84	1722.13	1178.14	853.16	2031.29	1425.55	938.47	2364.02	1696.52	1023.79	2720.31	1991.05	1109.10	3100.16	2309.15	1194.42	3503.57	2650.81	1279.74	3930.54
2472.00	36.0	754.01	783.06	1537.07	954.29	880.94	1835.23	1178.14	978.83	2156.96	1425.55	1076.71	2502.25	1696.52	1174.59	2871.11	1991.05	1272.47	3263.52	2309.15	1370.36	3679.50	2650.81	1468.24	4119.05
2470.00	38.0	754.01	883.59	1637.60	954.29	994.04	1948.34	1178.14	1104.49	2282.63	1425.55	1214.94	2640.49	1696.52	1325.39	3021.91	1991.05	1435.84	3426.89	2309.15	1546.29	3855.44	2650.81	1656.74	4307.55
2468.00	40.0	754.01	984.13	1738.14	954.29	1107.14	2061.44	1178.14	1230.16	2408.30	1425.55	1353.18	2778.72	1696.52	1476.19	3172.71	1991.05	1599.21	3590.26	2309.15	1722.23	4031.37	2650.81	1845.24	4496.05
2466.00	42.0	754.01	1082.29	1816.30	954.29	1195.08	2149.37	1178.14	1327.86	2506.00	1425.55	1460.65	2886.20	1696.52	1593.44	3289.95	1991.05	1726.22	3717.28	2309.15	1859.01	4168.16	2650.81	1991.80	4642.61
2464.00	44.0	754.01	1141.68	1895.69	954.29	1284.39	2238.68	1178.14	1427.10	2605.23	1425.55	1569.81	2995.35	1696.52	1712.52	3409.03	1991.05	1855.23	3846.28	2309.15	1997.94	4307.08	2650.81	2140.65	4791.45
2462.00	46.0	754.01	1222.09	1976.10	954.29	1374.85	2329.15	1178.14	1527.62	2705.75	1425.55	1680.38	3105.92	1696.52	1833.14	3529.66	1991.05	1985.90	3976.95	2309.15	2138.66	4447.81	2650.81	2291.42	4942.23
2460.00	48.0	754.01	1303.35	2057.35	954.29	1466.26	2420.56	1178.14	1629.18	2807.32	1425.55	1792.10	3217.65	1696.52	1955.02	3651.54	1991.05	2117.94	4108.99	2309.15	2280.86	4590.01	2650.81	2443.77	5094.58
2458.00	50.0	754.01	1385.25	2139.26	954.29	1558.41	2512.70	1178.14	1731.56	2909.70	1425.55	1904.72	3330.27	1696.52	2077.88	3774.40	1991.05	2251.03	4242.09	2309.15	2424.19	4733.34	2650.81	2597.35	5248.16
2456.00	52.0	754.01	1467.63	2221.63	954.29	1651.08	2605.37	1178.14	1834.53	3012.67	1425.55	2017.99	3443.53	1696.52	2201.44	3897.96	1991.05	2384.89	4375.94	2309.15	2568.35	4877.50	2650.81	2751.80	5402.61
2454.00	54.0	754.01	1550.29	2304.30	954.29	1744.08	2698.37	1178.14	1937.86	3116.00	1425.55	2131.65	3557.20	1696.52	2325.44	4021.95	1991.05	2519.22	4510.28	2309.15	2713.01	5022.16	2650.81	2906.80	5557.61
2452.00	56.0	754.01	1633.07	2387.08	954.29	1837.20	2791.50	1178.14	2041.34	3219.48	1425.55	2245.47	3671.02	1696.52	2449.61	4146.12	1991.05	2653.74	4644.79	2309.15	2857.87	5167.02	2650.81	3062.01	5712.82
2450.00	58.0	754.01	1715.79	2469.80	954.29	1930.27	2884.56	1178.14	2144.74	3322.88	1425.55	2359.22	3784.76	1696.52	2573.69	4270.21	1991.05	2788.16	4779.22	2309.15	3002.64	5311.79	2650.81	3217.11	5867.92
2448.00	60.0	754.01	1798.29	2552.30	954.29	2023.07	2977.37	1178.14	2247.86	3426.00	1425.55	2472.65	3898.19	1696.52	2697.43	4393.95	1991.05	2922.22	4913.27	2309.15	3147.00	5456.15	2650.81	3371.79	6022.60
2446.00	62.0	754.01	1880.39	2634.40	954.29	2115.44	3069.73	1178.14	2350.49	3528.63	1425.55	2585.54	4011.08	1696.52	2820.59	4517.10	1991.05	3055.63	5046.69	2309.15	3290.68	5599.83	2650.81	3525.73	6176.54
2444.00	64.0	754.01	1961.94	2715.94	954.29	2207.18	3161.47	1178.14	2452.42	3630.56	1425.55	2697.66	4123.21	1696.52	2942.91	4639.42	1991.05	3188.15	5179.20	2309.15	3433.39	5742.54	2650.81	3678.63	6329.44
2442.00	66.0	754.01	2042.77	2796.77	954.29	2298.11	3252.40	1178.14	2553.46	3731.59	1425.55	2808.80	4234.35	1696.52	3064.15	4760.67	1991.05	3319.49	5310.55	2309.15	3574.84	5883.99	2650.81	3830.18	6480.99
2440.00	68.0	754.01	2122.72	2876.73	954.29	2388.06	3342.35	1178.14	2653.40	3831.54	1425.55	2918.74	4344.28	1696.52	3184.08	4880.60	1991.05	3449.42	5440.47	2309.15	3714.76	6023.91	2650.81	3980.10	6630.91
2438.00	70.0	754.01	2201.64	2955.65	954.29	2476.84	3431.14	1178.14	2752.05	3930.19	1425.55	3027.25	4452.80	1696.52	3302.46	4998.98	1991.05	3577.66	5568.72	2309.15	3852.87	6162.02	2650.81	4128.07	6778.88
2436.00	72.0	754.01	2279.37	3033.38	954.29	2564.30	3518.59	1178.14	2849.22	4027.36	1425.55	3134.14	4559.69	1696.52	3419.06	5115.58	1991.05	3703.98	5695.04	2309.15	3988.81	6298.06	2650.81	4273.83	6924.64
2434.00	74.0	754.01	2355.77	3109.78	954.29	2650.25	3604.54	1178.14	2944.72	4122.85	1425.55	3239.19	4664.74	1696.52	3533.66	5230.18	1991.05	3828.13	5819.18	2309.15	4122.60	6431.75	2650.81	4417.08	7067.89
2432.00	76.0	754.01	2430.69	3184.69	954.29	2734.52	3688.81	1178.14	3038.36	4216.50	1425.55	3342.19	4767.74	1696.52	3646.03	5342.55	1991.05	3949.87	5940.92	2309.15	4253.70	6562.85	2650.81	4557.54	7208.35
2430.00	78.0	754.01	2503.97	3257.97	954.29	2816.96	3771.25	1178.14	3129.96	4308.09	1425.55	3442.95	4868.50	1696.52	3755.95	5452.47	1991.05	4068.94	6060.00	2309.15	4381.94	6691.09	2650.81	4694.93	7345.74
2428.00	80.0	754.01	2575.46	3329.47	954.29	2897.40	3851.69	1178.14	3219.33	4397.47	1425.55	3541.26	4966.81	1696.52											

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement

Analyses for Settlement = 0.10 Inch(es)

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	Net Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2506.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2504.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2502.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2500.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2498.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2496.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2494.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2492.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2490.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2488.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2486.00	22.0	66.11	41.47	66.11	71.83	52.49	71.83	77.45	64.80	77.45	83.01	78.41	83.01	88.51	93.31	88.51	93.96	109.51	93.96	99.38	127.00	99.38	104.77	145.79	104.77
2484.00	24.0	91.71	45.24	91.71	97.98	57.26	97.98	104.06	70.69	104.06	110.00	85.53	110.00	115.83	101.79	115.83	121.57	119.46	121.57	127.24	138.55	127.24	132.85	159.05	132.85
2482.00	26.0	118.70	49.01	118.70	125.55	62.03	125.55	132.12	76.58	132.12	138.47	92.66	138.47	144.65	110.27	144.65	150.68	129.42	150.68	156.61	150.09	156.61	162.45	172.30	162.45
2480.00	28.0	146.19	52.78	146.19	153.64	66.80	153.64	160.70	82.47	160.70	167.46	99.79	167.46	173.99	118.76	173.99	180.34	139.37	180.34	186.53	161.64	186.53	192.60	185.56	192.60
2478.00	30.0	173.68	56.55	173.68	181.73	71.57	181.73	189.28	88.36	189.28	196.46	106.92	196.46	203.34	127.24	203.34	209.99	149.33	209.99	216.45	173.19	216.45	222.75	198.81	222.75
2476.00	32.0	205.84	60.32	205.84	215.06	76.34	215.06	223.68	94.25	223.68	231.85	114.04	231.85	239.66	135.72	239.66	247.19	159.28	247.19	254.50	184.73	254.50	261.61	212.06	261.61
2474.00	34.0	233.34	64.09	233.34	243.15	81.11	243.15	252.26	100.14	252.26	260.84	121.17	260.84	269.01	144.20	269.01	276.85	169.24	276.85	284.41	196.28	284.41	291.76	225.32	291.76
2472.00	36.0	260.83	67.86	260.83	271.23	85.89	271.23	280.84	106.03	280.84	289.84	128.30	289.84	298.36	152.69	298.36	306.50	179.19	306.50	314.33	207.82	314.33	321.91	238.57	321.91
2470.00	38.0	288.32	71.63	288.32	299.32	90.66	299.32	309.42	111.92	309.42	318.83	135.43	318.83	327.70	161.17	327.70	336.15	189.15	336.15	344.25	219.37	344.25	352.07	251.83	352.07
2468.00	40.0	315.81	75.40	315.81	327.41	95.43	327.41	338.00	117.81	338.00	347.83	142.55	347.83	357.05	169.65	357.05	365.80	199.11	365.80	374.17	230.91	374.17	382.22	265.08	382.22
2466.00	42.0	343.30	79.17	343.30	355.91	100.20	355.91	366.37	123.70	366.37	375.35	149.68	375.35	383.77	178.13	383.77	392.06	209.06	392.06	399.51	242.46	399.51	407.33	281.28	407.33
2464.00	44.0	370.79	82.94	370.79	383.41	104.97	383.41	394.77	129.60	394.77	403.01	156.81	403.01	411.19	186.62	411.19	419.42	219.02	419.42	427.60	254.01	427.60	435.52	291.59	435.52
2462.00	46.0	398.28	86.71	398.28	415.92	109.74	415.92	427.06	135.49	427.06	435.35	163.94	435.35	443.58	195.10	443.58	451.67	229.97	451.67	460.51	265.55	460.51	469.20	304.84	469.20
2460.00	48.0	425.77	90.48	425.77	443.43	114.51	443.43	454.47	141.38	454.47	462.34	171.07	462.34	470.16	203.58	470.16	478.30	238.93	478.30	486.78	277.10	486.78	495.42	318.10	495.42
2458.00	50.0	453.26	94.25	453.26	470.94	119.29	470.94	481.87	147.27	481.87	490.65	178.19	490.65	499.48	212.06	499.48	508.26	248.88	508.26	517.33	288.64	517.33	526.55	331.35	526.55
2456.00	52.0	480.75	98.02	480.75	498.43	124.06	498.43	509.25	153.16	509.25	518.01	185.32	518.01	526.72	220.55	526.72	535.52	268.79	535.52	544.58	300.19	544.58	553.60	344.61	553.60
2454.00	54.0	508.24	101.79	508.24	525.94	128.83	525.94	536.63	159.05	536.63	545.39	192.45	545.39	554.19	229.03	554.19	563.03	288.79	563.03	572.03	311.74	572.03	581.52	358.86	581.52
2452.00	56.0	535.73	105.56	535.73	553.43	133.60	553.43	564.12	164.94	564.12	572.81	195.58	572.81	581.52	237.51	581.52	590.31	300.19	590.31	599.15	311.74	599.15	608.14	378.93	608.14
2450.00	58.0	563.22	109.33	563.22	580.92	138.37	580.92	591.61	170.83	591.61	600.37	198.58	600.37	609.16	246.00	609.16	617.99	311.74	617.99	626.87	323.28	626.87	635.90	407.11	635.90
2448.00	60.0	590.71	113.10	590.71	608.41	143.14	608.41	619.10	176.72	619.10	627.77	201.83	627.77	636.46	254.48	636.46	645.20	311.74	645.20	653.97	323.28	653.97	662.79	407.11	662.79
2446.00	62.0	618.20	116.87	618.20	636.10	147.92	636.10	646.75	181.61	646.75	655.42	209.96	655.42	664.11	262.96	664.11	672.81	311.74	672.81	681.70	323.28	681.70	690.74	407.11	690.74
2444.00	64.0	645.69	120.64	645.69	663.60	152.69	663.60	673.43	188.50	673.43	682.10	220.96	682.10	690.77	271.44	690.77	699.52	311.74	699.52	708.31	323.28	708.31	717.35	407.11	717.35
2442.00	66.0	673.18	124.41	673.18	691.11	157.46	691.11	700.85	194.39	700.85	709.52	233.44	709.52	718.15	279.93	718.15	726.84	311.74	726.84	735.89	323.28	735.89	745.09	407.11	745.09
2440.00	68.0	700.67	128.18	700.67	718.62	162.23	718.62	728.26	200.28	728.26	736.89	244.34	736.89	745.52	288.41	745.52	754.25	311.74	754.25	763.33	323.28	763.33	772.57	407.11	772.57
2438.00	70.0	728.16	131.95	728.16	746.07	167.00	746.07	755.60	206.17	755.60	764.13	249.47	764.13	772.64	296.89	772.64	781.31	311.74	781.31	790.87	323.28	790.87	800.58	407.11	800.58
2436.00	72.0	755.65	135.72	755.65	773.58	171.77	773.58	783.11	212.06	783.11	791.67	256.60	791.67	800.19	305.37	800.19	808.81	311.74	808.81	818.50	323.28	818.50	828.34	407.11	828.34
2434.00	74.0	783.14	139.49	783.14	801.07	176.54	801.07	810.60	217.96	810.60	819.16	263.73	819.16	827.75	313.86	827.75	836.33	311.74	836.33	845.93	323.28	845.93	855.65	407.11	855.65
2432.00	76.0	810.63	143.26	810.63	828.56	181.32	828.56	838.09	223.85	838.09	846.61	270.85	846.61	855.17	322.34	855.17	863.74	311.74	863.74	873.41	323.28	873.41	883.19	407.11	883.19
2430.00	78.0	838.12	147.03	838.12	856.00	186.09	856.00	865.53	229.74	865.53	874.07	277.98	874.07	882.55	330.82	882.55	891.03	311.74	891.03	900.74	323.28	900.74	910.59	407.11	910.59
2428.00	80.0	865.61	150.80	865.61	883.43	190.86	883.43	892.87	235.63	892.87	901.30	285.11	901.30	909.72	339.30	909.72	918.14	311.74	918.14	927.75	323.28	927.75	937.49	407.11	937.49

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement

Analyses for Settlement = 0.25 Inch(es)

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2506.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2504.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2502.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2500.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2498.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2496.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2494.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2492.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2490.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2488.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2486.00	22.0	152.64	41.47	152.64	167.85	52.49	167.85	182.74	64.80	182.74	197.39	78.41	197.39	211.82	93.31	211.82	226.08	109.51	226.08	240.20	127.00	240.20	254.19	145.79	254.19
2484.00	24.0	202.20	45.24	202.20	219.58	57.26	219.58	236.36	70.69	236.36	252.64	85.53	252.64	268.52	101.79	268.52	284.06	119.46	284.06	299.31	138.55	299.31	314.33	159.05	314.33
2482.00	26.0	254.46	49.01	254.46	274.14	62.03	274.14	292.90	76.58	292.90	310.91	92.66	310.91	328.31	110.27	328.31	345.20	129.42	345.20	361.66	150.09	361.66	377.75	172.30	377.75
2480.00	28.0	307.69	52.78	307.69	329.70	66.80	329.70	350.48	82.47	350.48	370.25	99.79	370.25	389.20	118.76	389.20	407.46	139.37	407.46	425.15	161.64	425.15	442.34	185.56	442.34
2478.00	30.0	360.91	56.55	360.91	385.26	71.57	385.26	408.06	88.36	408.06	429.60	106.92	429.60	450.10	127.24	450.10	469.73	149.33	469.73	488.64	173.19	488.64	506.94	198.81	506.94
2476.00	32.0	425.92	60.32	425.92	454.07	76.34	454.07	480.34	94.25	480.34	505.10	114.04	505.10	528.60	135.72	528.60	551.06	159.28	551.06	572.64	184.73	572.64	593.48	212.06	593.48
2474.00	34.0	479.15	64.09	479.15	509.63	81.11	509.63	537.92	100.14	537.92	564.44	121.17	564.44	589.49	144.20	589.49	613.33	169.24	613.33	636.14	196.28	636.14	658.08	225.32	658.08
2472.00	36.0	532.37	67.86	532.37	565.19	85.89	565.19	595.51	106.03	595.51	623.78	128.30	623.78	650.39	152.69	650.39	675.60	179.19	675.60	699.63	207.82	699.63	722.67	238.57	722.67
2470.00	38.0	585.60	71.63	585.60	620.75	90.66	620.75	653.09	111.92	653.09	683.13	135.43	683.13	711.28	161.17	711.28	737.86	189.15	737.86	763.12	219.37	763.12	787.26	251.83	787.26
2468.00	40.0	638.83	75.40	638.83	676.32	95.43	676.32	710.67	117.81	710.67	742.47	142.55	742.47	772.18	169.65	772.18	800.13	199.11	800.13	826.62	230.91	826.62	851.85	265.08	851.85
2466.00	42.0	1082.04	79.17	1082.04	1182.87	100.20	1182.87	1274.09	123.70	1274.09	1356.86	149.68	1356.86	1432.28	178.13	1432.28	1501.34	209.06	1501.34	1564.89	242.46	1564.89	1623.67	278.33	1623.67
2464.00	44.0	1154.10	82.94	1154.10	1261.37	104.97	1261.37	1358.32	129.60	1358.32	1446.19	156.81	1446.19	1526.16	186.62	1526.16	1599.29	219.02	1599.29	1666.51	254.01	1666.51	1728.60	291.59	1728.60
2462.00	46.0	1227.09	86.71	1227.09	1340.89	109.74	1340.89	1443.64	135.49	1443.64	1536.68	163.94	1536.68	1621.25	195.10	1621.25	1698.52	228.97	1698.52	1769.45	265.55	1769.45	1834.89	304.84	1834.89
2460.00	48.0	1300.84	90.48	1300.84	1421.23	114.51	1421.23	1529.85	141.38	1529.85	1628.10	171.07	1628.10	1717.34	203.58	1717.34	1798.77	238.93	1798.77	1873.46	277.10	1873.46	1942.29	318.10	1942.29
2458.00	50.0	1375.19	94.25	1375.19	1502.23	119.29	1502.23	1616.75	147.27	1616.75	1720.27	178.19	1720.27	1814.20	212.06	1814.20	1899.84	248.88	1899.84	1978.30	288.64	1978.30	2050.55	331.35	2050.55
2456.00	52.0	1449.96	98.02	1449.96	1583.68	124.06	1583.68	1704.15	153.16	1704.15	1812.95	185.32	1812.95	1911.61	220.55	1911.61	2001.48	258.84	2001.48	2083.75	300.19	2083.75	2159.43	344.61	2159.43
2454.00	54.0	1525.00	101.79	1525.00	1665.43	128.83	1665.43	1791.86	159.05	1791.86	1905.97	192.45	1905.97	2009.36	229.03	2009.36	2103.48	268.79	2103.48	2189.56	311.74	2189.56	2268.70	357.86	2268.70
2452.00	56.0	1600.13	105.56	1600.13	1747.28	133.60	1747.28	1879.69	164.94	1879.69	1999.12	199.58	1999.12	2107.25	237.51	2107.25	2205.62	278.75	2205.62	2295.53	323.28	2295.53	2378.11	371.11	2378.11
2450.00	58.0	1675.22	109.33	1675.22	1829.08	138.37	1829.08	1967.46	170.83	1967.46	2092.20	206.70	2092.20	2205.07	246.00	2205.07	2307.69	288.70	2307.69	2401.42	334.83	2401.42	2487.45	384.37	2487.45
2448.00	60.0	1750.10	113.10	1750.10	1910.66	143.14	1910.66	2054.99	176.72	2054.99	2185.02	213.83	2185.02	2302.63	254.48	2302.63	2409.48	298.66	2409.48	2507.02	346.37	2507.02	2596.49	397.62	2596.49
2446.00	62.0	1824.63	116.87	1824.63	1991.85	147.92	1991.85	2142.10	182.61	2142.10	2277.41	220.96	2277.41	2399.72	262.96	2399.72	2510.78	308.61	2510.78	2612.11	357.92	2612.11	2705.01	410.88	2705.01
2444.00	64.0	1898.65	120.64	1898.65	2072.48	152.69	2072.48	2228.62	188.50	2228.62	2369.16	228.09	2369.16	2496.15	271.44	2496.15	2611.40	318.57	2611.40	2716.50	369.46	2716.50	2812.80	424.13	2812.80
2442.00	66.0	1972.02	124.41	1972.02	2152.41	157.46	2152.41	2314.38	194.39	2314.38	2460.11	235.22	2460.11	2591.73	279.93	2591.73	2711.13	328.52	2711.13	2819.97	381.01	2819.97	2919.64	437.38	2919.64
2440.00	68.0	2044.59	128.18	2044.59	2231.47	162.23	2231.47	2399.21	200.28	2399.21	2550.08	242.34	2550.08	2686.28	288.41	2686.28	2809.79	338.48	2809.79	2922.31	392.56	2922.31	3025.32	450.64	3025.32
2438.00	70.0	2116.23	131.95	2116.23	2309.51	167.00	2309.51	2482.94	206.17	2482.94	2638.88	249.47	2638.88	2779.61	296.89	2779.61	2907.17	348.43	2907.17	3023.34	404.10	3023.34	3129.63	463.89	3129.63
2436.00	72.0	2186.79	135.72	2186.79	2386.38	171.77	2386.38	2565.42	212.06	2565.42	2726.35	256.60	2726.35	2871.53	305.37	2871.53	3003.08	358.39	3003.08	3122.84	415.65	3122.84	3232.38	477.15	3232.38
2434.00	74.0	2256.13	139.49	2256.13	2461.93	176.54	2461.93	2646.48	217.96	2646.48	2812.32	263.73	2812.32	2961.88	313.86	2961.88	3097.35	368.34	3097.35	3220.64	427.19	3220.64	3333.36	490.40	3333.36
2432.00	76.0	2324.13	143.26	2324.13	2536.01	181.32	2536.01	2725.96	223.85	2725.96	2896.61	270.85	2896.61	3050.46	322.34	3050.46	3189.78	378.30	3189.78	3316.53	438.74	3316.53	3432.38	503.65	3432.38
2430.00	78.0	2390.65	147.03	2390.65	2608.47	186.09	2608.47	2803.71	229.74	2803.71	2979.06	277.98	2979.06	3137.12	330.82	3137.12	3280.20	388.26	3280.20	3410.33	450.28	3410.33	3529.24	516.91	3529.24
2428.00	80.0	2455.55	150.80	2455.55	2679.17	190.86	2679.17	2879.57	235.63	2879.57	3059.52	285.11	3059.52	3221.67	339.30	3221.67	3368.43	398.21	3368.43	3501.86	461.83	3501.86	3623.75	530.16	3623.75

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement

Analyses for Settlement = 0.50 Inch(es)

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2506.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2504.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2502.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2500.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2498.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2496.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2494.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2492.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2490.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2488.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2486.00	22.0	277.55	41.47	277.55	309.32	52.49	309.32	340.37	64.80	340.37	370.83	78.41	370.83	400.82	93.31	400.82	430.41	109.51	430.41	459.65	127.00	459.65	488.60	145.79	488.60
2484.00	24.0	349.23	45.24	349.23	385.81	57.26	385.81	421.11	70.69	421.11	455.39	85.53	455.39	488.83	101.79	488.83	521.56	119.46	521.56	553.69	138.55	553.69	585.28	159.05	585.28
2482.00	26.0	424.83	49.01	424.83	466.46	62.03	466.46	506.25	76.58	506.25	544.56	92.66	544.56	581.64	110.27	581.64	617.69	129.42	617.69	652.85	150.09	652.85	687.24	172.30	687.24
2480.00	28.0	501.82	52.78	501.82	548.61	66.80	548.61	592.97	82.47	592.97	635.38	99.79	635.38	676.17	118.76	676.17	715.59	139.37	715.59	753.84	161.64	753.84	791.07	185.56	791.07
2478.00	30.0	578.81	56.55	578.81	630.75	71.57	630.75	679.69	88.36	679.69	726.19	106.92	726.19	770.69	127.24	770.69	813.50	149.33	813.50	854.84	173.19	854.84	894.90	198.81	894.90
2476.00	32.0	679.15	60.32	679.15	739.27	76.34	739.27	795.78	94.25	795.78	849.37	114.04	849.37	900.55	135.72	900.55	949.69	159.28	949.69	997.07	184.73	997.07	1042.92	212.06	1042.92
2474.00	34.0	756.14	64.09	756.14	821.42	81.11	821.42	882.50	100.14	882.50	940.19	121.17	940.19	995.08	144.20	995.08	1047.60	169.24	1047.60	1098.07	196.28	1098.07	1146.76	225.32	1146.76
2472.00	36.0	833.13	67.86	833.13	903.56	85.89	903.56	969.21	106.03	969.21	1031.01	128.30	1031.01	1089.61	152.69	1089.61	1145.50	179.19	1145.50	1199.06	207.82	1199.06	1250.59	238.57	1250.59
2470.00	38.0	910.12	71.63	910.12	985.71	90.66	985.71	1055.93	111.92	1055.93	1121.82	135.43	1121.82	1184.13	161.17	1184.13	1243.40	189.15	1243.40	1300.06	219.37	1300.06	1354.43	251.83	1354.43
2468.00	40.0	987.12	75.40	987.12	1067.86	95.43	1067.86	1142.64	117.81	1142.64	1212.64	142.55	1212.64	1278.66	169.65	1278.66	1341.31	199.11	1341.31	1401.05	230.91	1401.05	1458.26	265.08	1458.26
2466.00	42.0	1266.42	79.17	1266.42	1423.57	100.20	1423.57	1577.50	123.70	1577.50	1727.51	149.68	1727.51	1872.82	178.13	1872.82	2012.88	209.06	2012.88	2147.39	242.46	2147.39	2276.29	278.33	2276.29
2464.00	44.0	1343.62	82.94	1343.62	1510.24	104.97	1510.24	1673.43	129.60	1673.43	1832.42	156.81	1832.42	1986.37	186.62	1986.37	2134.69	219.02	2134.69	2277.05	254.01	2277.05	2413.38	291.59	2413.38
2462.00	46.0	1421.81	86.71	1421.81	1598.04	109.74	1598.04	1770.61	135.49	1770.61	1938.70	163.94	1938.70	2101.40	195.10	2101.40	2258.07	228.97	2258.07	2408.39	265.55	2408.39	2552.25	304.84	2552.25
2460.00	48.0	1500.82	90.48	1500.82	1686.76	114.51	1686.76	1868.80	141.38	1868.80	2046.08	171.07	2046.08	2217.62	203.58	2217.62	2382.75	238.93	2382.75	2541.09	277.10	2541.09	2692.57	318.10	2692.57
2458.00	50.0	1580.47	94.25	1580.47	1776.18	119.29	1776.18	1967.78	147.27	1967.78	2154.32	178.19	2154.32	2334.78	212.06	2334.78	2508.42	248.88	2508.42	2674.86	288.64	2674.86	2834.01	331.35	2834.01
2456.00	52.0	1660.57	98.02	1660.57	1866.12	124.06	1866.12	2067.32	153.16	2067.32	2263.18	185.32	2263.18	2452.60	220.55	2452.60	2634.81	258.84	2634.81	2809.40	300.19	2809.40	2976.26	344.61	2976.26
2454.00	54.0	1740.95	101.79	1740.95	1956.38	128.83	1956.38	2167.22	159.05	2167.22	2372.43	192.45	2372.43	2570.84	229.03	2570.84	2761.65	268.79	2761.65	2944.41	311.74	2944.41	3119.02	357.86	3119.02
2452.00	56.0	1821.45	105.56	1821.45	2046.76	133.60	2046.76	2267.25	164.94	2267.25	2481.82	199.58	2481.82	2689.25	237.51	2689.25	2888.67	278.75	2888.67	3079.61	323.28	3079.61	3261.97	371.11	3261.97
2450.00	58.0	1901.89	109.33	1901.89	2137.08	138.37	2137.08	2367.22	170.83	2367.22	2591.15	206.70	2591.15	2807.57	246.00	2807.57	3015.59	288.70	3015.59	3214.72	334.83	3214.72	3404.82	384.37	3404.82
2448.00	60.0	1982.11	113.10	1982.11	2227.15	143.14	2227.15	2466.91	176.72	2466.91	2700.17	213.83	2700.17	2925.57	254.48	2925.57	3142.17	298.66	3142.17	3349.45	346.37	3349.45	3547.28	397.62	3547.28
2446.00	62.0	2061.94	116.87	2061.94	2316.79	147.92	2316.79	2566.13	182.61	2566.13	2808.67	220.96	2808.67	3043.01	262.96	3043.01	3268.15	308.61	3268.15	3483.54	357.92	3483.54	3689.06	410.88	3689.06
2444.00	64.0	2141.24	120.64	2141.24	2405.82	152.69	2405.82	2664.67	188.50	2664.67	2916.44	228.09	2916.44	3159.65	271.44	3159.65	3393.27	318.57	3393.27	3616.73	369.46	3616.73	3829.88	424.13	3829.88
2442.00	66.0	2219.84	124.41	2219.84	2494.07	157.46	2494.07	2762.35	194.39	2762.35	3023.26	235.22	3023.26	3275.27	279.93	3275.27	3517.29	328.52	3517.29	3748.74	381.01	3748.74	3969.47	437.38	3969.47
2440.00	68.0	2297.58	128.18	2297.58	2581.37	162.23	2581.37	2858.97	200.28	2858.97	3128.92	242.34	3128.92	3389.63	288.41	3389.63	3639.96	338.48	3639.96	3879.32	392.56	3879.32	4107.54	450.64	4107.54
2438.00	70.0	2374.33	131.95	2374.33	2667.54	167.00	2667.54	2954.34	206.17	2954.34	3233.22	249.47	3233.22	3502.52	296.89	3502.52	3761.06	348.43	3761.06	4008.22	404.10	4008.22	4243.83	463.89	4243.83
2436.00	72.0	2449.92	135.72	2449.92	2752.41	171.77	2752.41	3048.28	212.06	3048.28	3335.95	256.60	3335.95	3613.71	305.37	3613.71	3880.33	358.39	3880.33	4135.18	415.65	4135.18	4378.07	477.15	4378.07
2434.00	74.0	2524.21	139.49	2524.21	2835.82	176.54	2835.82	3140.60	217.96	3140.60	3436.91	263.73	3436.91	3722.99	313.86	3722.99	3997.56	368.34	3997.56	4259.96	427.19	4259.96	4510.00	490.40	4510.00
2432.00	76.0	2597.05	143.26	2597.05	2917.61	181.32	2917.61	3231.13	223.85	3231.13	3535.91	270.85	3535.91	3830.14	322.34	3830.14	4112.50	378.30	4112.50	4382.31	438.74	4382.31	4639.37	503.65	4639.37
2430.00	78.0	2668.31	147.03	2668.31	2997.62	186.09	2997.62	3319.68	229.74	3319.68	3632.75	277.98	3632.75	3934.95	330.82	3934.95	4224.94	388.26	4224.94	4501.99	450.28	4501.99	4765.91	516.91	4765.91
2428.00	80.0	2737.83	150.80	2737.83	3075.69	190.86	3075.69	3406.08	235.63	3406.08	3727.24	285.11	3727.24	4037.23	339.30	4037.23	4334.64	398.21	4334.64	4618.76	461.83	4618.76	4889.38	530.16	4889.38

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement

Analyses for Settlement = 0.75 Inch(es)

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2506.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2504.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2502.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2500.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2498.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2496.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2494.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2492.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2490.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2488.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2486.00	22.0	383.09	41.47	383.09	432.36	52.49	432.36	480.50	64.80	480.50	527.62	78.41	527.62	573.89	93.31	573.89	619.45	109.51	619.45	664.41	127.00	664.41	708.86	145.79	708.86
2484.00	24.0	465.57	45.24	465.57	522.09	57.26	522.09	576.76	70.69	576.76	629.79	85.53	629.79	681.42	101.79	681.42	731.88	119.46	731.88	781.35	138.55	781.35	829.97	159.05	829.97
2482.00	26.0	552.55	49.01	552.55	616.70	62.03	616.70	678.28	76.58	678.28	737.53	92.66	737.53	794.82	110.27	794.82	850.44	129.42	850.44	904.66	150.09	904.66	957.68	172.30	957.68
2480.00	28.0	641.14	52.78	641.14	713.07	66.80	713.07	781.67	82.47	781.67	847.27	99.79	847.27	910.31	118.76	910.31	971.19	139.37	971.19	1030.25	161.64	1030.25	1087.76	185.56	1087.76
2478.00	30.0	729.72	56.55	729.72	809.43	71.57	809.43	885.06	88.36	885.06	957.00	106.92	957.00	1025.79	127.24	1025.79	1091.94	149.33	1091.94	1155.85	173.19	1155.85	1217.83	198.81	1217.83
2476.00	32.0	852.25	60.32	852.25	944.45	76.34	944.45	1031.77	94.25	1031.77	1114.68	114.04	1114.68	1193.81	135.72	1193.81	1269.76	159.28	1269.76	1343.04	184.73	1343.04	1414.01	212.06	1414.01
2474.00	34.0	940.84	64.09	940.84	1040.82	81.11	1040.82	1135.17	100.14	1135.17	1224.41	121.17	1224.41	1309.29	144.20	1309.29	1390.51	169.24	1390.51	1468.63	196.28	1468.63	1544.08	225.32	1544.08
2472.00	36.0	1029.42	67.86	1029.42	1137.18	85.89	1137.18	1238.56	106.03	1238.56	1334.14	128.30	1334.14	1424.78	152.69	1424.78	1511.26	179.19	1511.26	1594.22	207.82	1594.22	1674.15	238.57	1674.15
2470.00	38.0	1118.01	71.63	1118.01	1233.54	90.66	1233.54	1341.95	111.92	1341.95	1443.87	135.43	1443.87	1540.27	161.17	1540.27	1632.01	189.15	1632.01	1719.81	219.37	1719.81	1804.23	251.83	1804.23
2468.00	40.0	1206.59	75.40	1206.59	1329.90	95.43	1329.90	1445.34	117.81	1445.34	1553.61	142.55	1553.61	1655.76	169.65	1655.76	1752.76	199.11	1752.76	1845.40	230.91	1845.40	1934.30	265.08	1934.30
2466.00	42.0	1345.04	79.17	1345.04	1536.61	100.20	1536.61	1720.89	123.70	1720.89	1899.52	149.68	1899.52	2074.71	178.13	2074.71	2247.54	209.06	2247.54	2418.22	242.46	2418.22	2586.59	278.33	2586.59
2464.00	44.0	1420.19	82.94	1420.19	1622.55	104.97	1622.55	1817.12	129.60	1817.12	2005.65	156.81	2005.65	2190.51	186.62	2190.51	2372.84	219.02	2372.84	2552.91	254.01	2552.91	2730.49	291.59	2730.49
2462.00	46.0	1496.32	86.71	1496.32	1709.61	109.74	1709.61	1914.59	135.49	1914.59	2113.15	163.94	2113.15	2307.80	195.10	2307.80	2499.78	228.97	2499.78	2689.34	265.55	2689.34	2876.25	304.84	2876.25
2460.00	48.0	1573.23	90.48	1573.23	1797.57	114.51	1797.57	2013.08	141.38	2013.08	2221.77	171.07	2221.77	2426.32	203.58	2426.32	2628.03	238.93	2628.03	2827.19	277.10	2827.19	3023.54	318.10	3023.54
2458.00	50.0	1650.77	94.25	1650.77	1886.24	119.29	1886.24	2112.36	147.27	2112.36	2331.26	178.19	2331.26	2545.78	212.06	2545.78	2757.32	248.88	2757.32	2966.14	288.64	2966.14	3172.00	331.35	3172.00
2456.00	52.0	1728.75	98.02	1728.75	1975.41	124.06	1975.41	2212.21	153.16	2212.21	2441.38	185.32	2441.38	2665.94	220.55	2665.94	2887.34	258.84	2887.34	3105.90	300.19	3105.90	3321.32	344.61	3321.32
2454.00	54.0	1807.00	101.79	1807.00	2064.90	128.83	2064.90	2312.41	159.05	2312.41	2551.89	192.45	2551.89	2786.51	229.03	2786.51	3017.82	268.79	3017.82	3246.14	311.74	3246.14	3471.17	357.86	3471.17
2452.00	56.0	1885.37	105.56	1885.37	2154.52	133.60	2154.52	2412.75	164.94	2412.75	2662.55	199.58	2662.55	2907.25	237.51	2907.25	3148.49	278.75	3148.49	3386.58	323.28	3386.58	3621.22	371.11	3621.22
2450.00	58.0	1963.67	109.33	1963.67	2244.07	138.37	2244.07	2513.02	170.83	2513.02	2773.13	206.70	2773.13	3027.91	246.00	3027.91	3279.06	288.70	3279.06	3526.93	334.83	3526.93	3771.17	384.37	3771.17
2448.00	60.0	2041.77	113.10	2041.77	2333.38	143.14	2333.38	2613.02	176.72	2613.02	2883.42	213.83	2883.42	3148.24	254.48	3148.24	3409.28	298.66	3409.28	3666.88	346.37	3666.88	3920.70	397.62	3920.70
2446.00	62.0	2119.49	116.87	2119.49	2422.26	147.92	2422.26	2712.54	182.61	2712.54	2993.17	220.96	2993.17	3268.00	262.96	3268.00	3538.87	308.61	3538.87	3806.17	357.92	3806.17	4069.53	410.88	4069.53
2444.00	64.0	2196.69	120.64	2196.69	2510.54	152.69	2510.54	2811.38	188.50	2811.38	3102.18	228.09	3102.18	3386.94	271.44	3386.94	3667.59	318.57	3667.59	3944.52	369.46	3944.52	4217.34	424.13	4217.34
2442.00	66.0	2273.20	124.41	2273.20	2598.04	157.46	2598.04	2909.36	194.39	2909.36	3210.24	235.22	3210.24	3504.84	279.93	3504.84	3795.17	328.52	3795.17	4081.65	381.01	4081.65	4363.86	437.38	4363.86
2440.00	68.0	2348.89	128.18	2348.89	2684.59	162.23	2684.59	3006.27	200.28	3006.27	3317.12	242.34	3317.12	3621.46	288.41	3621.46	3921.38	338.48	3921.38	4217.30	392.56	4217.30	4508.78	450.64	4508.78
2438.00	70.0	2423.60	131.95	2423.60	2770.03	167.00	2770.03	3101.93	206.17	3101.93	3422.62	249.47	3422.62	3736.57	296.89	3736.57	4045.95	348.43	4045.95	4351.19	404.10	4351.19	4651.84	463.89	4651.84
2436.00	72.0	2497.19	135.72	2497.19	2854.18	171.77	2854.18	3196.16	212.06	3196.16	3526.54	256.60	3526.54	3849.96	305.37	3849.96	4168.65	358.39	4168.65	4483.07	415.65	4483.07	4792.75	477.15	4792.75
2434.00	74.0	2569.51	139.49	2569.51	2936.89	176.54	2936.89	3288.76	217.96	3288.76	3628.67	263.73	3628.67	3961.39	313.86	3961.39	4289.25	368.34	4289.25	4612.69	427.19	4612.69	4931.24	490.40	4931.24
2432.00	76.0	2640.42	143.26	2640.42	3017.99	181.32	3017.99	3379.57	223.85	3379.57	3728.81	270.85	3728.81	4070.66	322.34	4070.66	4407.49	378.30	4407.49	4739.78	438.74	4739.78	5067.03	503.65	5067.03
2430.00	78.0	2709.79	147.03	2709.79	3097.32	186.09	3097.32	3468.39	229.74	3468.39	3826.78	277.98	3826.78	4177.55	330.82	4177.55	4523.16	388.26	4523.16	4864.10	450.28	4864.10	5199.86	516.91	5199.86
2428.00	80.0	2777.48	150.80	2777.48	3174.72	190.86	3174.72	3555.06	235.63	3555.06	3922.36	285.11	3922.36	4281.84	339.30	4281.84	4636.02	398.21	4636.02	4985.41	461.83	4985.41	5329.46	530.16	5329.46

Drilled Shaft Resistance Analyses

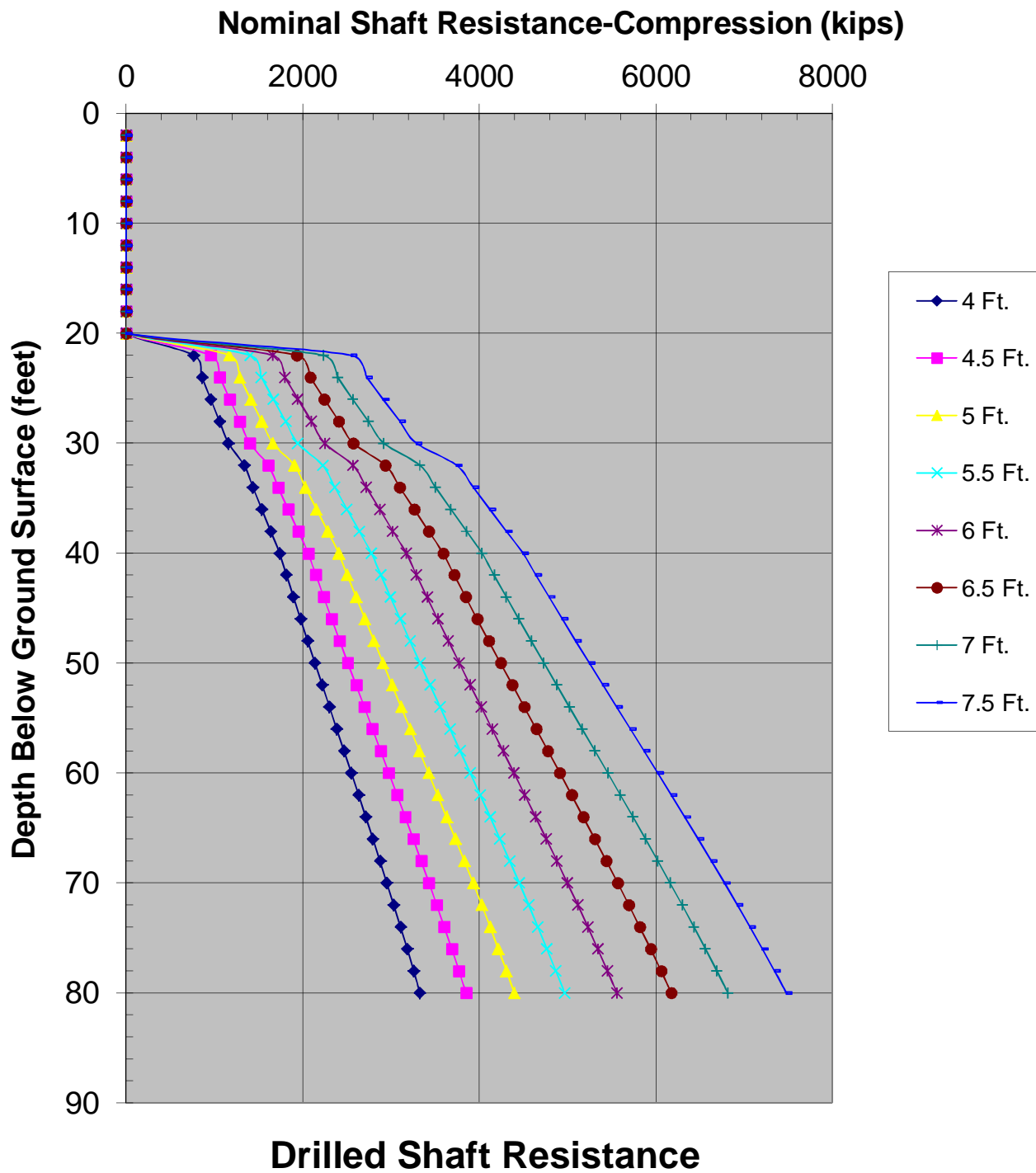


Service Limit Resistance Based On Allowable Settlement		Analyses for Settlement = 1.00 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2506.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2504.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2502.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2500.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2498.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2496.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2494.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2492.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2490.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2488.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2486.00	22.0	472.51	41.47	472.51	538.37	52.49	538.37	603.59	64.80	603.59	667.87	78.41	667.87	731.13	93.31	731.13	793.40	109.51	793.40	854.79	127.00	854.79	915.39	145.79	915.39
2484.00	24.0	561.42	45.24	561.42	635.21	57.26	635.21	708.41	70.69	708.41	780.35	85.53	780.35	850.76	101.79	850.76	919.66	119.46	919.66	987.18	138.55	987.18	1053.46	159.05	1053.46
2482.00	26.0	655.18	49.01	655.18	737.34	62.03	737.34	818.95	76.58	818.95	898.96	92.66	898.96	976.91	110.27	976.91	1052.81	129.42	1052.81	1126.79	150.09	1126.79	1199.07	172.30	1199.07
2480.00	28.0	750.67	52.78	750.67	841.35	66.80	841.35	931.53	82.47	931.53	1019.76	99.79	1019.76	1105.40	118.76	1105.40	1188.41	139.37	1188.41	1268.98	161.64	1268.98	1347.37	185.56	1347.37
2478.00	30.0	846.16	56.55	846.16	945.36	71.57	945.36	1044.11	88.36	1044.11	1140.55	106.92	1140.55	1233.88	127.24	1233.88	1324.01	149.33	1324.01	1411.17	173.19	1411.17	1495.66	198.81	1495.66
2476.00	32.0	944.85	60.32	944.85	1099.06	76.34	1099.06	1212.80	94.25	1212.80	1323.80	114.04	1323.80	1431.10	135.72	1431.10	1534.57	159.28	1534.57	1634.49	184.73	1634.49	1731.24	212.06	1731.24
2474.00	34.0	1080.34	64.09	1080.34	1203.07	81.11	1203.07	1325.38	100.14	1325.38	1444.60	121.17	1444.60	1559.58	144.20	1559.58	1670.17	169.24	1670.17	1776.68	196.28	1776.68	1879.53	225.32	1879.53
2472.00	36.0	1175.83	67.86	1175.83	1307.08	85.89	1307.08	1437.97	106.03	1437.97	1565.40	128.30	1565.40	1688.06	152.69	1688.06	1805.78	179.19	1805.78	1918.87	207.82	1918.87	2027.83	238.57	2027.83
2470.00	38.0	1271.32	71.63	1271.32	1411.09	90.66	1411.09	1550.55	111.92	1550.55	1686.20	135.43	1686.20	1816.55	161.17	1816.55	1941.38	189.15	1941.38	2061.06	219.37	2061.06	2176.13	251.83	2176.13
2468.00	40.0	1366.82	75.40	1366.82	1515.10	95.43	1515.10	1663.13	117.81	1663.13	1807.00	142.55	1807.00	1945.03	169.65	1945.03	2076.98	199.11	2076.98	2203.24	230.91	2203.24	2324.42	265.08	2324.42
2466.00	42.0	1388.12	79.17	1388.12	1572.52	100.20	1572.52	1805.08	123.70	1805.08	2014.10	149.68	2014.10	2220.64	178.13	2220.64	2421.33	209.06	2421.33	2617.17	242.46	2617.17	2809.63	278.33	2809.63
2464.00	44.0	1459.57	82.94	1459.57	1652.90	104.97	1652.90	1898.04	129.60	1898.04	2117.95	156.81	2117.95	2335.23	186.62	2335.23	2546.26	219.02	2546.26	2752.12	254.01	2752.12	2954.38	291.59	2954.38
2462.00	46.0	1531.95	86.71	1531.95	1734.32	109.74	1734.32	1992.22	135.49	1992.22	2223.14	163.94	2223.14	2451.30	195.10	2451.30	2672.81	228.97	2672.81	2888.82	265.55	2888.82	3101.00	304.84	3101.00
2460.00	48.0	1605.07	90.48	1605.07	1816.59	114.51	1816.59	2087.37	141.38	2087.37	2329.43	171.07	2329.43	2568.58	203.58	2568.58	2800.69	238.93	2800.69	3026.95	277.10	3026.95	3249.15	318.10	3249.15
2458.00	50.0	1678.79	94.25	1678.79	1899.52	119.29	1899.52	2183.28	147.27	2183.28	2436.57	178.19	2436.57	2686.81	212.06	2686.81	2929.58	248.88	2929.58	3166.18	288.64	3166.18	3398.49	331.35	3398.49
2456.00	52.0	1752.93	98.02	1752.93	1982.92	124.06	1982.92	2279.75	153.16	2279.75	2544.33	185.32	2544.33	2805.71	220.55	2805.71	3059.22	258.84	3059.22	3306.21	300.19	3306.21	3548.68	344.61	3548.68
2454.00	54.0	1827.32	101.79	1827.32	2066.62	128.83	2066.62	2376.56	159.05	2376.56	2652.47	192.45	2652.47	2925.03	229.03	2925.03	3189.31	268.79	3189.31	3446.73	311.74	3446.73	3699.40	357.86	3699.40
2452.00	56.0	1901.83	105.56	1901.83	2150.43	133.60	2150.43	2473.50	164.94	2473.50	2760.75	199.58	2760.75	3044.51	237.51	3044.51	3319.58	278.75	3319.58	3587.45	323.28	3587.45	3850.34	371.11	3850.34
2450.00	58.0	1976.28	109.33	1976.28	2234.19	138.37	2234.19	2570.37	170.83	2570.37	2868.96	206.70	2868.96	3163.92	246.00	3163.92	3449.77	288.70	3449.77	3728.07	334.83	3728.07	4001.16	384.37	4001.16
2448.00	60.0	2050.52	113.10	2050.52	2317.72	143.14	2317.72	2666.98	176.72	2666.98	2976.88	213.83	2976.88	3282.99	254.48	3282.99	3579.59	298.66	3579.59	3868.31	346.37	3868.31	4151.58	397.62	4151.58
2446.00	62.0	2124.41	116.87	2124.41	2400.85	147.92	2400.85	2763.12	182.61	2763.12	3084.28	220.96	3084.28	3401.50	262.96	3401.50	3708.80	308.61	3708.80	4007.88	357.92	4007.88	4301.28	410.88	4301.28
2444.00	64.0	2197.81	120.64	2197.81	2483.41	152.69	2483.41	2858.62	188.50	2858.62	3190.95	228.09	3190.95	3519.21	271.44	3519.21	3837.13	318.57	3837.13	4146.50	369.46	4146.50	4449.96	424.13	4449.96
2442.00	66.0	2270.55	124.41	2270.55	2565.25	157.46	2565.25	2953.27	194.39	2953.27	3296.68	235.22	3296.68	3635.88	279.93	3635.88	3964.33	328.52	3964.33	4283.90	381.01	4283.90	4597.33	437.38	4597.33
2440.00	68.0	2342.51	128.18	2342.51	2646.20	162.23	2646.20	3046.90	200.28	3046.90	3401.27	242.34	3401.27	3751.28	288.41	3751.28	4090.16	338.48	4090.16	4419.81	392.56	4419.81	4743.11	450.64	4743.11
2438.00	70.0	2413.54	131.95	2413.54	2726.11	167.00	2726.11	3139.32	206.17	3139.32	3504.51	249.47	3504.51	3865.20	296.89	3865.20	4214.36	348.43	4214.36	4553.97	404.10	4553.97	4887.01	463.89	4887.01
2436.00	72.0	2483.50	135.72	2483.50	2804.82	171.77	2804.82	3230.36	212.06	3230.36	3606.19	256.60	3606.19	3977.40	305.37	3977.40	4336.69	358.39	4336.69	4686.12	415.65	4686.12	5028.75	477.15	5028.75
2434.00	74.0	2552.26	139.49	2552.26	2882.17	176.54	2882.17	3319.82	217.96	3319.82	3706.13	263.73	3706.13	4087.68	313.86	4087.68	4456.92	368.34	4456.92	4815.99	427.19	4815.99	5168.04	490.40	5168.04
2432.00	76.0	2619.68	143.26	2619.68	2958.02	181.32	2958.02	3407.55	223.85	3407.55	3804.13	270.85	3804.13	4195.81	322.34	4195.81	4574.81	378.30	4574.81	4943.33	438.74	4943.33	5304.63	503.65	5304.63
2430.00	78.0	2685.63	147.03	2685.63	3032.21	186.09	3032.21	3493.37	229.74	3493.37	3899.99	277.98	3899.99	4301.58	330.82	4301.58	4690.14	388.26	4690.14	5067.90	450.28	5067.90	5438.24	516.91	5438.24
2428.00	80.0	2749.98	150.80	2749.98	3104.61	190.86	3104.61	3577.10	235.63	3577.10	3993.52	285.11	3993.52	4404.79	339.30	4404.79	4802.66	398.21	4802.66	5189.44	461.83	5189.44	5568.61	530.16	5568.61

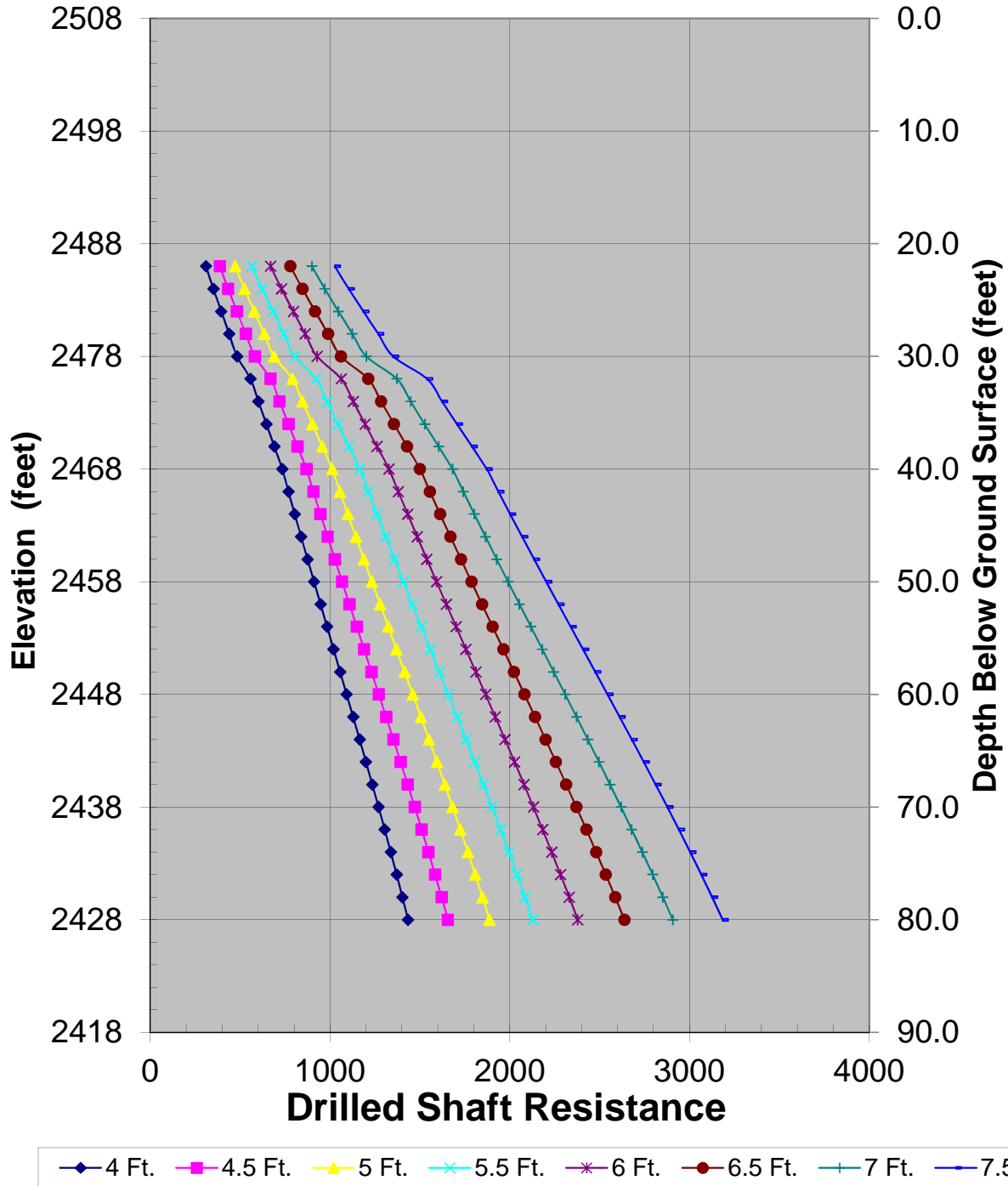
Drilled Shaft Resistance Analyses



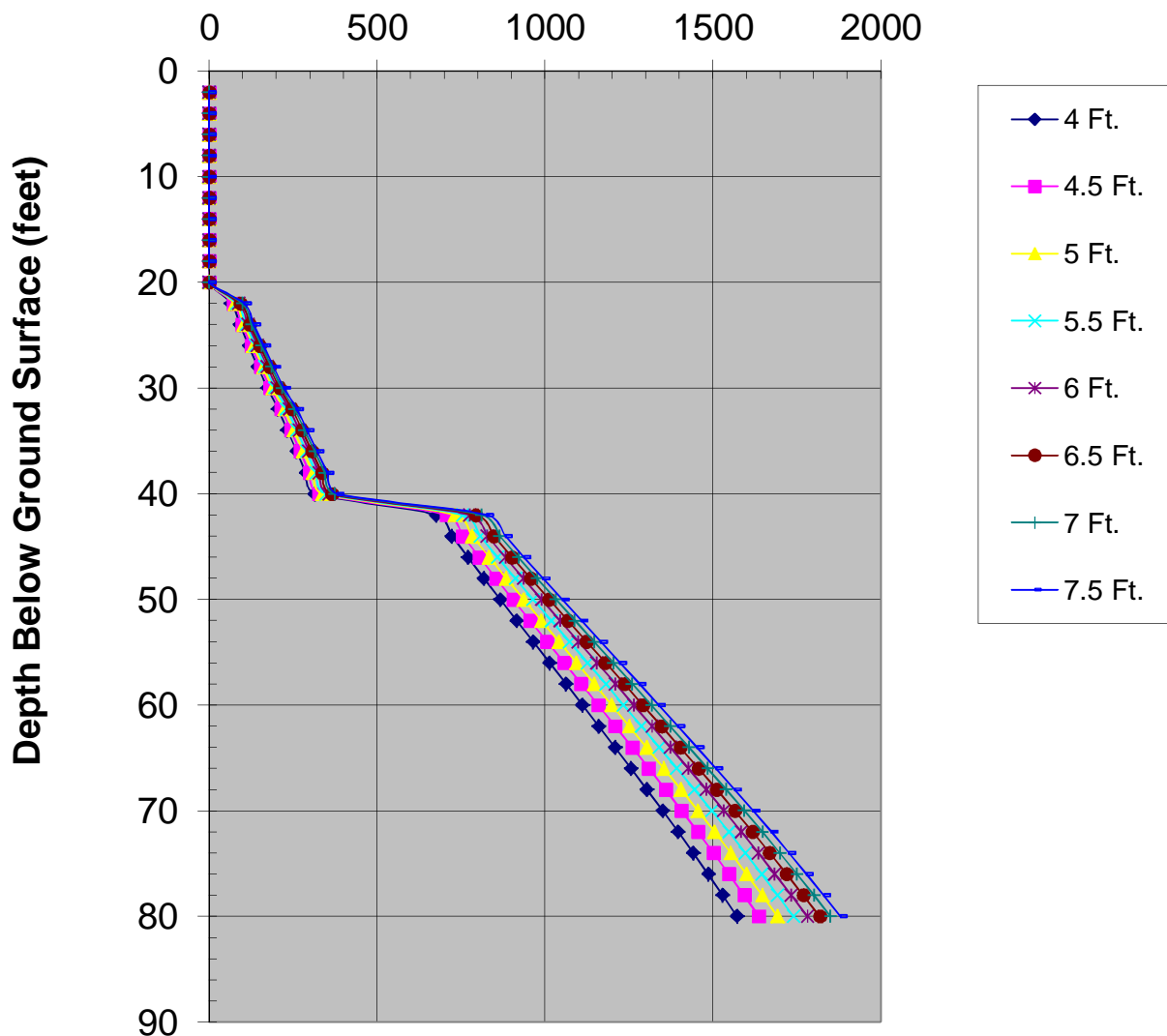
Service Limit Resistance Based On Allowable Settlement										Analyses for Settlement = 2.00 Inch(es)																	
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.				
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips		
2506.00	2.0	0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00		
2504.00	4.0	0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00		
2502.00	6.0	0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00		
2500.00	8.0	0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00		
2498.00	10.0	0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00		
2496.00	12.0	0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00		
2494.00	14.0	0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00		
2492.00	16.0	0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00		
2490.00	18.0	0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00		
2488.00	20.0	0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.33	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00		
2486.00	22.0	691.83	41.47	691.83	820.54	52.49	820.54	950.65	64.80	950.65	1081.43	78.41	1081.43	1212.33	93.31	1212.33	1342.98	109.51	1342.98	1471.81	127.00	1471.81	1597.65	145.79	1597.65		
2484.00	24.0	785.44	45.24	785.44	925.85	57.26	925.85	1067.65	70.69	1067.65	1210.13	85.53	1210.13	1352.74	101.79	1352.74	1495.09	119.46	1495.09	1634.19	138.55	1634.19	1767.80	159.05	1767.80		
2482.00	26.0	884.15	49.01	884.15	1036.90	62.03	1036.90	1191.04	76.58	1191.04	1345.86	92.66	1345.86	1500.80	110.27	1500.80	1655.49	129.42	1655.49	1805.44	150.09	1805.44	1947.23	172.30	1947.23		
2480.00	28.0	984.68	52.78	984.68	1150.00	66.80	1150.00	1316.71	82.47	1316.71	1484.10	99.79	1484.10	1651.60	118.76	1651.60	1818.86	139.37	1818.86	1979.84	161.64	1979.84	2129.97	185.56	2129.97		
2478.00	30.0	1085.22	56.55	1085.22	1263.10	71.57	1263.10	1442.38	88.36	1442.38	1622.33	106.92	1622.33	1802.41	127.24	1802.41	1982.23	149.33	1982.23	2154.25	173.19	2154.25	2312.71	198.81	2312.71		
2476.00	32.0	1252.83	60.32	1252.83	1456.37	76.34	1456.37	1661.44	94.25	1661.44	1867.27	114.04	1867.27	2073.23	135.72	2073.23	2278.92	159.28	2278.92	2475.22	184.73	2475.22	2655.18	212.06	2655.18		
2474.00	34.0	1353.37	64.09	1353.37	1569.47	81.11	1569.47	1787.11	100.14	1787.11	2005.50	121.17	2005.50	2224.03	144.20	2224.03	2442.28	169.24	2442.28	2649.62	196.28	2649.62	2837.92	225.32	2837.92		
2472.00	36.0	1453.90	67.86	1453.90	1682.57	85.89	1682.57	1912.78	106.03	1912.78	2143.74	128.30	2143.74	2374.83	152.69	2374.83	2605.65	179.19	2605.65	2824.03	207.82	2824.03	3020.66	238.57	3020.66		
2470.00	38.0	1554.44	71.63	1554.44	1795.67	90.66	1795.67	2038.45	111.92	2038.45	2281.97	135.43	2281.97	2525.64	161.17	2525.64	2769.02	189.15	2769.02	2998.44	219.37	2998.44	3203.40	251.83	3203.40		
2468.00	40.0	1654.97	75.40	1654.97	1908.77	95.43	1908.77	2164.12	117.81	2164.12	2420.21	142.55	2420.21	2676.44	169.65	2676.44	2932.39	199.11	2932.39	3172.84	230.91	3172.84	3386.14	265.08	3386.14		
2466.00	42.0	1626.91	79.17	1626.91	1877.19	100.20	1877.19	2129.03	123.70	2129.03	2381.62	149.68	2381.62	2634.34	178.13	2634.34	2886.78	209.06	2886.78	3138.69	242.46	3138.69	3389.91	278.33	3389.91		
2464.00	44.0	1698.35	82.94	1698.35	1957.57	104.97	1957.57	2218.34	129.60	2218.34	2479.86	156.81	2479.86	2741.51	186.62	2741.51	3002.88	219.02	3002.88	3263.72	254.01	3263.72	3523.88	291.59	3523.88		
2462.00	46.0	1770.73	86.71	1770.73	2038.99	109.74	2038.99	2308.81	135.49	2308.81	2579.37	163.94	2579.37	2850.07	195.10	2850.07	3120.49	228.97	3120.49	3390.38	265.55	3390.38	3659.58	304.84	3659.58		
2460.00	48.0	1843.85	90.48	1843.85	2121.26	114.51	2121.26	2400.22	141.38	2400.22	2679.92	171.07	2679.92	2959.76	203.58	2959.76	3239.32	238.93	3239.32	3518.35	277.10	3518.35	3796.69	318.10	3796.69		
2458.00	50.0	1917.57	94.25	1917.57	2204.19	119.29	2204.19	2492.36	147.27	2492.36	2781.28	178.19	2781.28	3070.33	212.06	3070.33	3359.11	248.88	3359.11	3647.35	288.64	3647.35	3934.91	331.35	3934.91		
2456.00	52.0	1991.71	98.02	1991.71	2287.60	124.06	2287.60	2585.03	153.16	2585.03	2883.22	185.32	2883.22	3181.54	220.55	3181.54	3479.58	258.84	3479.58	3777.09	300.19	3777.09	4073.91	344.61	4073.91		
2454.00	54.0	2066.11	101.79	2066.11	2371.29	128.83	2371.29	2678.03	159.05	2678.03	2985.52	192.45	2985.52	3293.14	229.03	3293.14	3600.48	268.79	3600.48	3907.29	311.74	3907.29	4213.41	357.86	4213.41		
2452.00	56.0	2140.61	105.56	2140.61	2455.11	133.60	2455.11	2771.16	164.94	2771.16	3087.96	199.58	3087.96	3404.89	237.51	3404.89	3721.55	278.75	3721.55	4037.67	323.28	4037.67	4353.10	371.11	4353.10		
2450.00	58.0	2215.06	109.33	2215.06	2538.87	138.37	2538.87	2864.22	170.83	2864.22	3190.33	206.70	3190.33	3516.56	246.00	3516.56	3842.53	288.70	3842.53	4167.95	334.83	4167.95	4492.70	384.37	4492.70		
2448.00	60.0	2289.30	113.10	2289.30	2622.39	143.14	2622.39	2957.03	176.72	2957.03	3292.41	213.83	3292.41	3627.93	254.48	3627.93	3963.18	298.66	3963.18	4297.88	346.37	4297.88	4631.91	397.62	4631.91		
2446.00	62.0	2363.19	116.87	2363.19	2705.52	147.92	2705.52	3049.39	182.61	3049.39	3394.02	220.96	3394.02	3738.77	262.96	3738.77	4083.25	308.61	4083.25	4427.20	357.92	4427.20	4770.45	410.88	4770.45		
2444.00	64.0	2436.59	120.64	2436.59	2788.09	152.69	2788.09	3141.13	188.50	3141.13	3494.93	228.09	3494.93	3848.86	271.44	3848.86	4202.51	318.57	4202.51	4555.63	369.46	4555.63	4908.06	424.13	4908.06		
2442.00	66.0	2509.33	124.41	2509.33	2869.93	157.46	2869.93	3232.07	194.39	3232.07	3594.95	235.22	3594.95	3957.98	279.93	3957.98	4320.72	328.52	4320.72	4682.94	381.01	4682.94	5044.46	437.38	5044.46		
2440.00	68.0	2581.29	128.18	2581.29	2950.88	162.23	2950.88	3322.01	200.28	3322.01	3693.90	242.34	3693.90	4065.91	288.41	4065.91	4437.66	338.48	4437.66	4808.86	392.56	4808.86	5179.38	450.64	5179.38		
2438.00	70.0	2652.32	131.95	2652.32	3030.78	167.00	3030.78	3410.80	206.17	3410.80	3791.56	249.47	3791.56	4172.46	296.89	4172.46	4553.08	348.43	4553.08	4933.16	404.10	4933.16	5312.56	463.89	5312.56		
2436.00	72.0	2722.28	135.72	2722.28	3109.49	171.77	3109.49	3498.25	212.06	3498.25	3887.76	256.60	3887.76	4277.40	305.37	4277.40	4666.77	358.39	4666.77	5055.60	415.65	5055.60	5443.74	477.15	5443.74		
2434.00	74.0	2791.04	139.49	2791.04	3186.85	176.54	3186.85	3584.20	217.96	3584.20	3982.30	263.73	3982.30	4380.54	313.86	4380.54	4778.50	368.34	4778.50	5175.92	427.19	5175.92	5572.66	490.40	5572.66		
2432.00	76.0	2858.46	143.26	2858.46	3262.70	181.32	3262.70	3668.48	223.85	3668.48	4075.01	270.85	4075.01	4481.67	322.34	4481.67	4888.06	378.30	4888.06	5293.91	438.74	5293.91	5699.08	503.65	5699.08		
2430.00	78.0	2924.41	147.03	2924.41	3336.89	186.09	3336.89	3750.92	229.74	3750.92	4165.69	277.98	4165.69	4580.60	330.82	4580.60	4995.23	388.26	4995.23	5409.32	450.28	5409.32	5822.74	516.91	5822.74		
2428.00	80.0	2988.76	150.80	2988.76	3409.28	190.86	3409.28	3831.35	235.63	3831.35	4254.17	285.11	4254.17	4677.12	339.30	4677.12	5099.80	398.21	5099.80	5521.94	461.83	5521.94	5943.39	530.16	5943.39		



Strength Limit State Shaft Resistance-Compression (kips) (Pier #2)



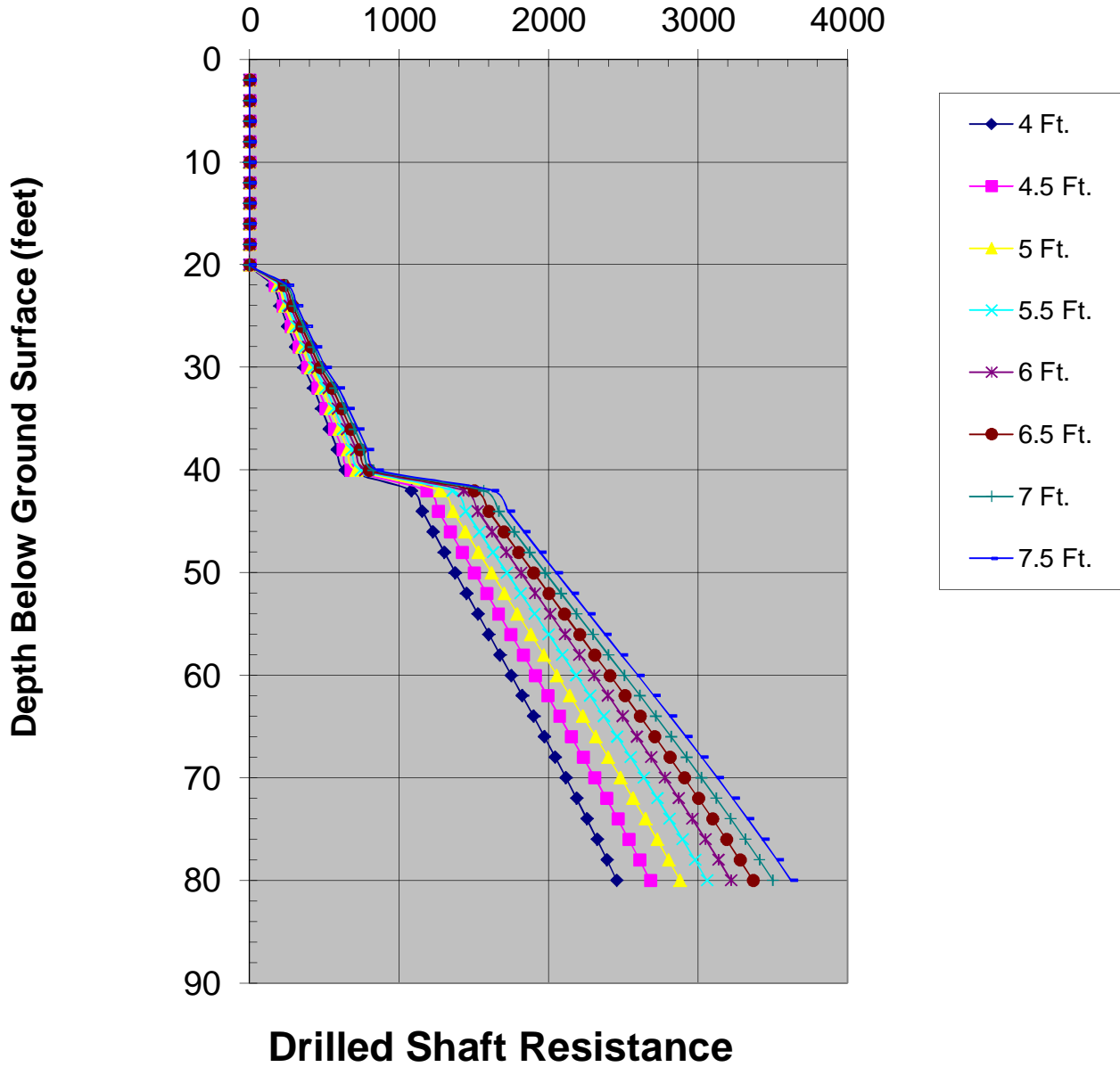
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

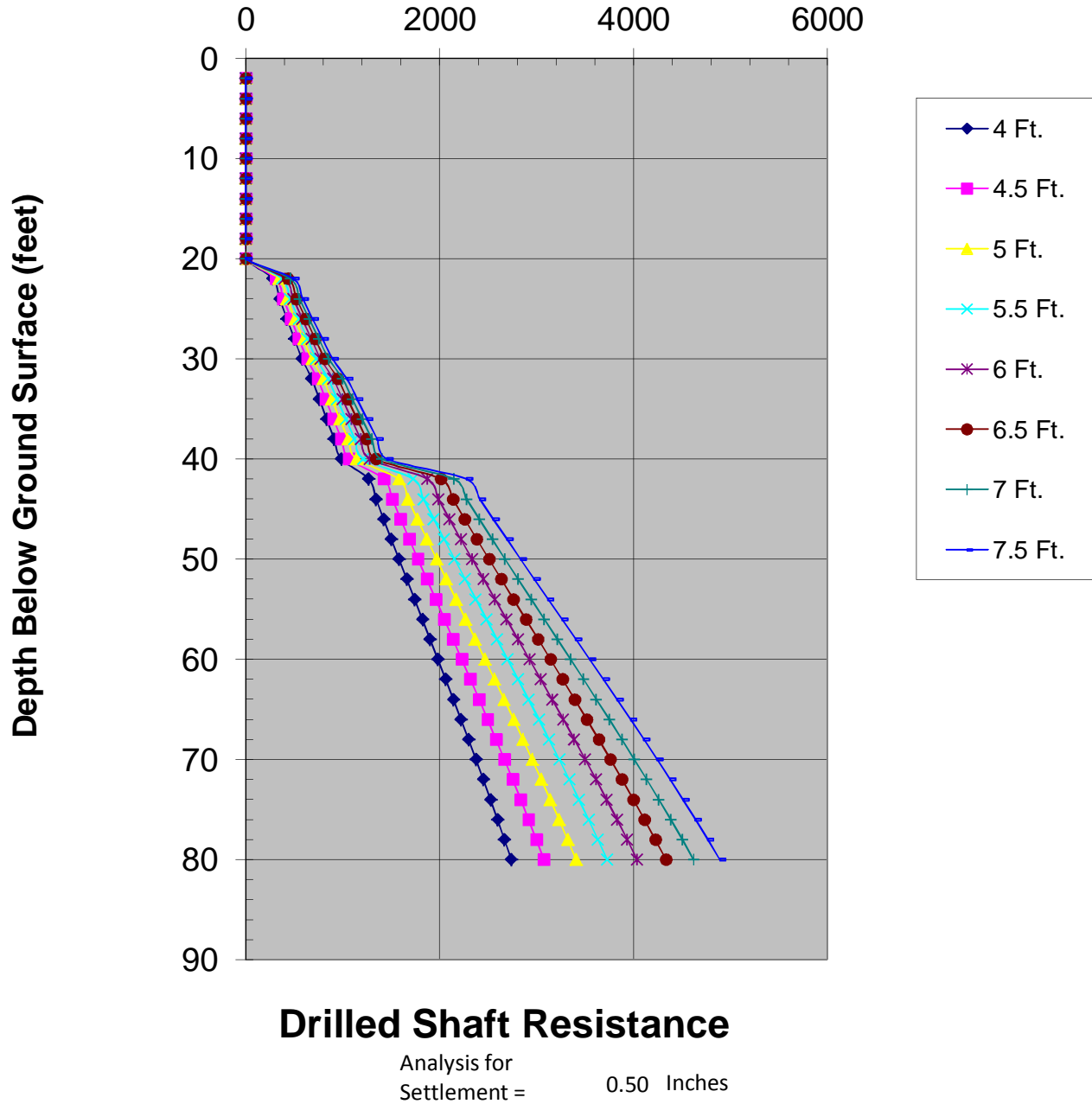
Analysis for
Settlement = 0.10 Inches

Service Limit Shaft Resistance-Compression (kips)



Analysis for Settlement = 0.25 Inches

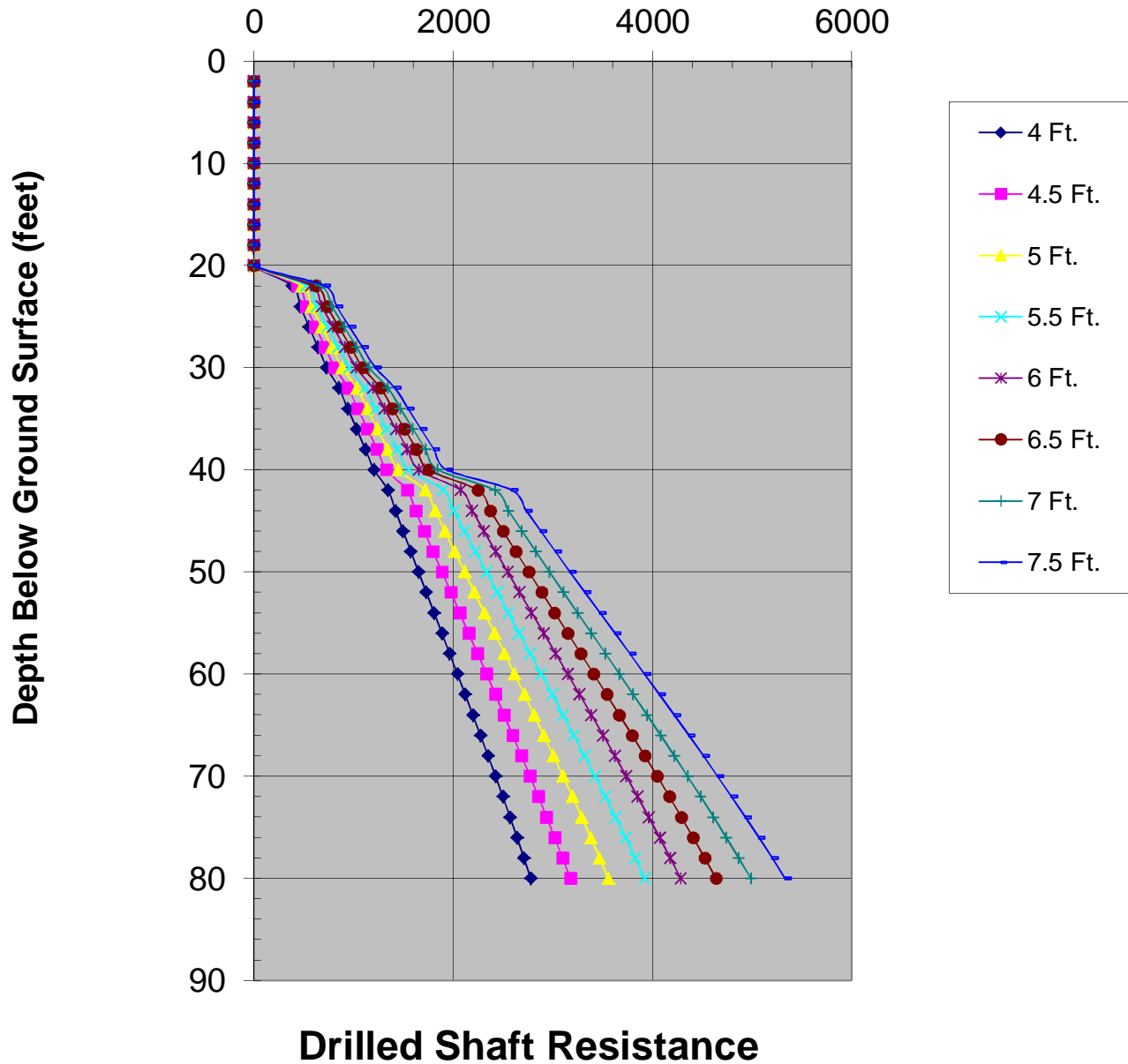
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for
Settlement = 0.50 Inches

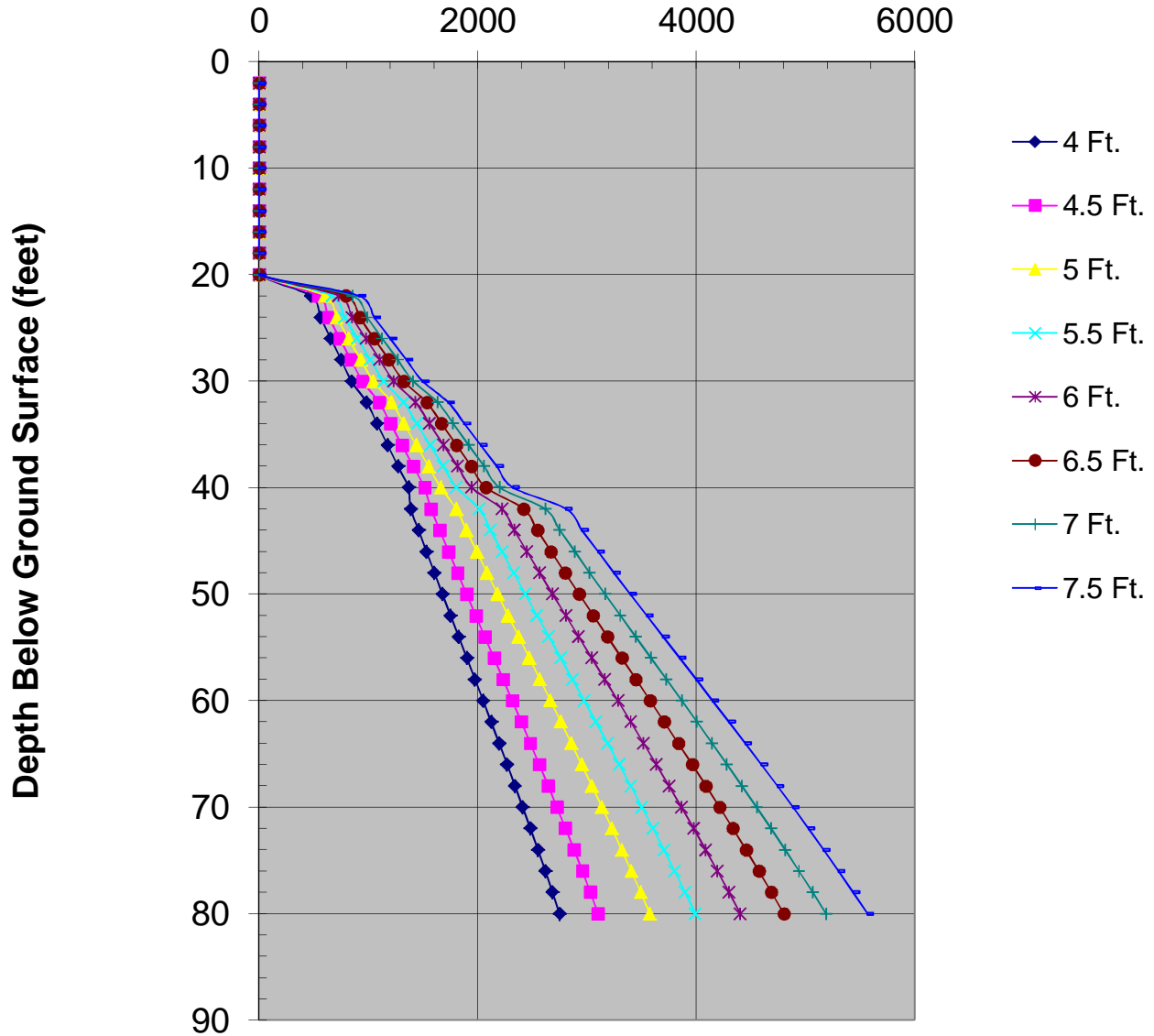
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for
Settlement = 0.75 Inches

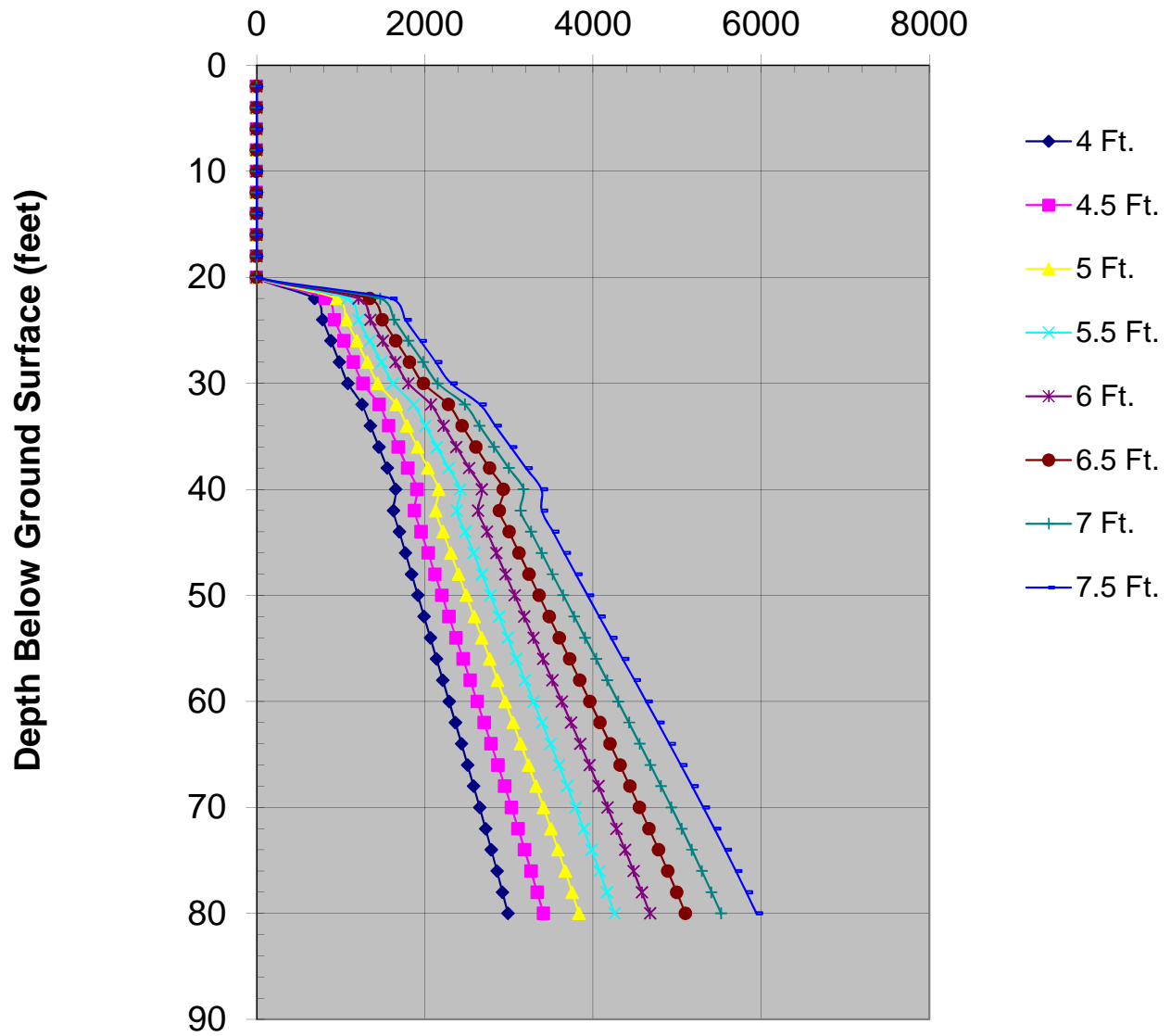
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for
Settlement = 1.00 Inches

Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for Settlement = 2.00 Inches

APPENDIX F
Pantano Wash Bridge
Pier #3
Axial Load Analyses Results

Drilled Shaft Resistance Analysis



Design Shaft-Displacement/Resistance Curve

PROJECT

Project Name: Kolb Road Bridge over Pantano Wash
 Project Location: Tucson, Arizona
 Project Number: 63125005

Structure Data

Structure Designation: 0
 Foundation Element: Pier #3

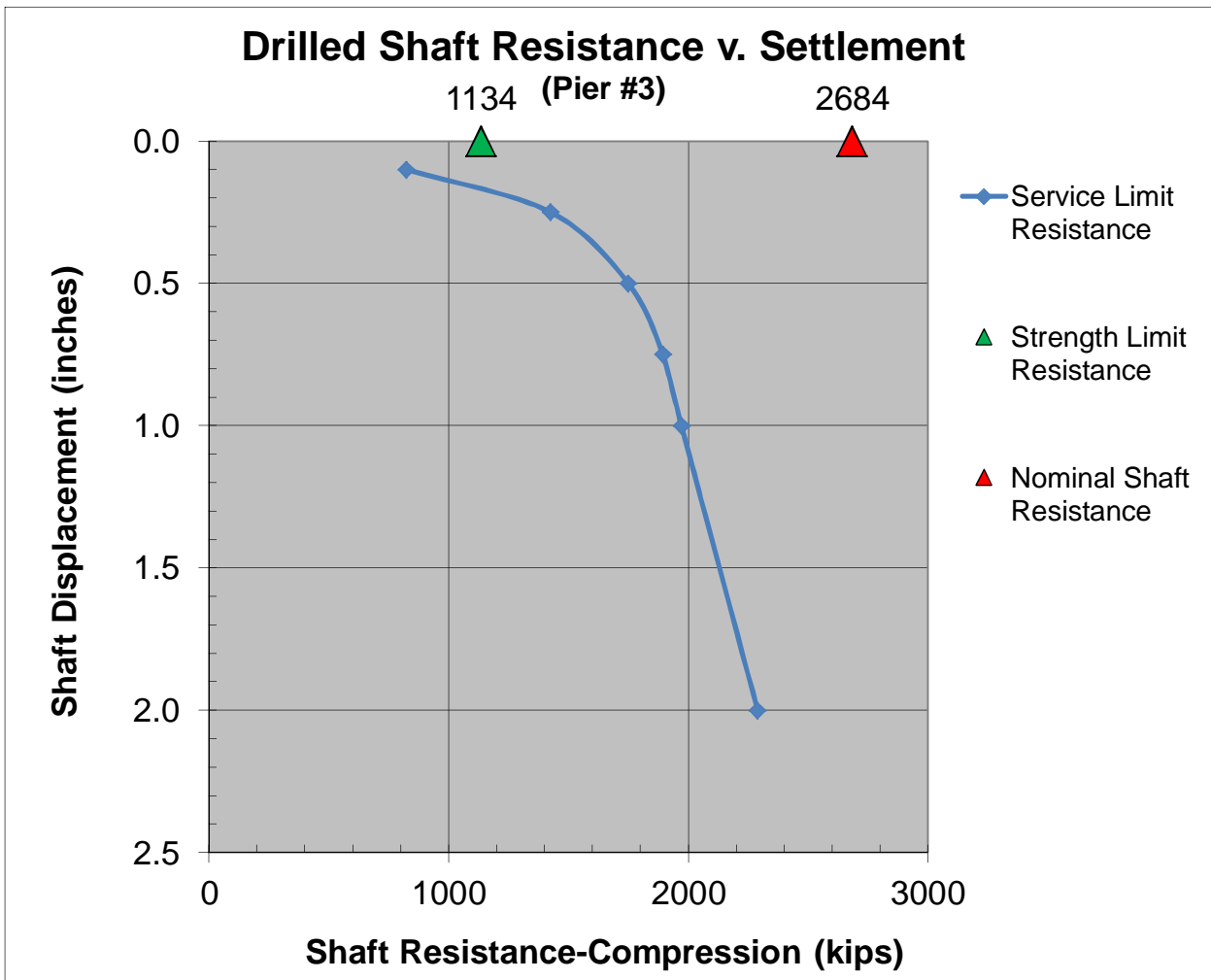
Foundation Design Criteria

Design Shaft Diameter: 5.0 ft.
 Design Shaft Depth: 66 ft.

Service Limit Displacements & Resistances

	δ (in)	Kips
1	0.10	822.6
2	0.25	1425.0
3	0.50	1749.3
4	0.75	1893.3
5	1.00	1971.6
6	2.00	2289.0

Strength Limit Resistance	Nominal Resistance
Kips	Kips
1134	2684



Drilled Shaft LRFD Analysis



Drilled Shaft Foundation Analysis is based on procedures outlined in AASHTO (2010) & FHWA NHI-09

- ◆ Analysis applies to cohesive and cohesionless soils ($\phi=0$ and $c=0$)
- ◆ Drilled shaft service state loads based on the Load Transfer curves outlined in AASHTO 2010
- ◆ The analyses follow the ADOT Geotechnical Design Policies DS-1 and DS-2 dated December 1, 2010

PROJECT

Project Name:	Kolb Road Bridge over Pantano Wash
Project Location:	Tucson, Arizona
Project Number:	63125005

Structure Data

Structure Designation	
Foundation Element	Pier #3

Foundation Data

Shaft Diameters

Maximum Diameter	7.5 ft.
Minimum Diameter	4.0 ft.
Increment for Diameter	0.5 ft.
Maximum Shaft Tip Depth	80 ft.

Service Limit Displacements

	δ (in)
1	0.10
2	0.25
3	0.50
4	0.75
5	1.00
6	2.00

Foundation Design Criteria

Design for Redundancy	No
Design Shaft Diameter	5.0 ft.
Design Shaft Depth	66 ft.

Show Service Limit Output for Case: 2

Subsurface Data

Initial Information

Number of Soil Layers	4
Depth to Groundwater	300 ft.
Ground Surface Elevation	2514.0 ft.

Soil Layer Properties

Layer Number	1	2	3	4
Depth from Ground Surface	5	36	55	96
Unit Weight of Layer (γ) pcf	120	120	125	125
Penetration Resistance " N_{60} " Blows/ft	0	0	54	75
Cohesion " c " of Layer (ksf)				
Thickness of layer (ft)	5.0	31.0	19.0	41.0
Soil Type	Sand	Sand	Sand	Sand

Strength Resistance Factors

Analyses Conducted Without Redundant Design

Side Resistance-Compression	0.44	0.44	0.44	0.44
Side Resistance-Uplift	0.36	0.36	0.36	0.36
Base Resistance-Compression	0.40	0.40	0.40	0.40

Drilled Shaft Resistance Analyses



Nominal End Bearing Resistance and Skin Friction Factors

Elevation feet	Depth of Shaft feet	Penetration Resistance N	Cohesion c (ksf)	Soil Unit Weight γ' (pcf)	Effective Stress σ'_z (psf)	β	α	Unit Skin Friction Load (ksf)	Side Resistance Factor Compression	Side Resistance Factor Uplift	Base Resistance Factor	Ultimate End Bearing Pressure (ksf)						
												Shaft Diameter (ft)						
												4	4.5	5	5.5	6	6.5	7
2512.00	2.0	0.0		120.0	120.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2510.00	4.0	0.0		120.0	360.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2508.00	6.0	0.0		120.0	600.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2506.00	8.0	0.0		120.0	840.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2504.00	10.0	0.0		120.0	1080.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2502.00	12.0	0.0		120.0	1320.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2500.00	14.0	0.0		120.0	1560.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2498.00	16.0	0.0		120.0	1800.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2496.00	18.0	0.0		120.0	2040.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2494.00	20.0	0.0		120.0	2280.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2492.00	22.0	0.0		120.0	2520.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2490.00	24.0	0.0		120.0	2760.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2488.00	26.0	0.0		120.0	3000.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2486.00	28.0	0.0		120.0	3240.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2484.00	30.0	0.0		120.0	3480.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2482.00	32.0	0.0		120.0	3720.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2480.00	34.0	0.0		120.0	3960.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2478.00	36.0	0.0		120.0	4200.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2476.00	38.0	54.0		125.0	4445.0	0.67		2.97	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2474.00	40.0	54.0		125.0	4695.0	0.65		3.03	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2472.00	42.0	54.0		125.0	4945.0	0.63		3.09	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2470.00	44.0	54.0		125.0	5195.0	0.60		3.14	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2468.00	46.0	54.0		125.0	5445.0	0.58		3.18	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2466.00	48.0	54.0		125.0	5695.0	0.56		3.22	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2464.00	50.0	54.0		125.0	5945.0	0.55		3.24	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2462.00	52.0	54.0		125.0	6195.0	0.53		3.26	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2460.00	54.0	54.0		125.0	6445.0	0.51		3.27	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2458.00	56.0	75.0		125.0	6695.0	0.49		3.28	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2456.00	58.0	75.0		125.0	6945.0	0.47		3.28	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2454.00	60.0	75.0		125.0	7195.0	0.45		3.27	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2452.00	62.0	75.0		125.0	7445.0	0.44		3.25	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2450.00	64.0	75.0		125.0	7695.0	0.42		3.23	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2448.00	66.0	75.0		125.0	7945.0	0.40		3.20	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2446.00	68.0	75.0		125.0	8195.0	0.39		3.17	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2444.00	70.0	75.0		125.0	8445.0	0.37		3.13	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2442.00	72.0	75.0		125.0	8695.0	0.35		3.08	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2440.00	74.0	75.0		125.0	8945.0	0.34		3.03	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2438.00	76.0	75.0		125.0	9195.0	0.32		2.97	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2436.00	78.0	75.0		125.0	9445.0	0.31		2.91	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2434.00	80.0	75.0		125.0	9695.0	0.29		2.84	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0

Drilled Shaft Resistance Analyses

Service Limit Output Based on Settlement Analyses for Settlement = 0.25 Inches

Elevation feet	Depth of Shaft feet	Layer Soil Type	Concrete Unit Weight γ' (pcf)	Effective Concrete Stress σ'_z (psf)	Service Limit Factor for End Bearing							
					Based on the Total Settlement as a % of Shaft Diameter							
					Shaft Diameter (ft)							
					4	4.5	5	5.5	6	6.5	7	7.5
2512.00	2.0	Sand	150.0	300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2510.00	4.0	Sand	150.0	600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2508.00	6.0	Sand	150.0	900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2506.00	8.0	Sand	150.0	1200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2504.00	10.0	Sand	150.0	1500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2502.00	12.0	Sand	150.0	1800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2500.00	14.0	Sand	150.0	2100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2498.00	16.0	Sand	150.0	2400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2496.00	18.0	Sand	150.0	2700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2494.00	20.0	Sand	150.0	3000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2492.00	22.0	Sand	150.0	3300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2490.00	24.0	Sand	150.0	3600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2488.00	26.0	Sand	150.0	3900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2486.00	28.0	Sand	150.0	4200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2484.00	30.0	Sand	150.0	4500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2482.00	32.0	Sand	150.0	4800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2480.00	34.0	Sand	150.0	5100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2478.00	36.0	Sand	150.0	5400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2476.00	38.0	Sand	150.0	5700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2474.00	40.0	Sand	150.0	6000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2472.00	42.0	Sand	150.0	6300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2470.00	44.0	Sand	150.0	6600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2468.00	46.0	Sand	150.0	6900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2466.00	48.0	Sand	150.0	7200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2464.00	50.0	Sand	150.0	7500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2462.00	52.0	Sand	150.0	7800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2460.00	54.0	Sand	150.0	8100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2458.00	56.0	Sand	150.0	8400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2456.00	58.0	Sand	150.0	8700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2454.00	60.0	Sand	150.0	9000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2452.00	62.0	Sand	150.0	9300.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2450.00	64.0	Sand	150.0	9600.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2448.00	66.0	Sand	150.0	9900.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2446.00	68.0	Sand	150.0	10200.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2444.00	70.0	Sand	150.0	10500.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2442.00	72.0	Sand	150.0	10800.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2440.00	74.0	Sand	150.0	11100.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2438.00	76.0	Sand	150.0	11400.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2436.00	78.0	Sand	150.0	11700.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083
2434.00	80.0	Sand	150.0	12000.0	0.156	0.139	0.125	0.113	0.104	0.096	0.089	0.083

Drilled Shaft Resistance Analyses



Nominal Load Shaft Resistances

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips
		2512.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2510.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2508.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2506.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2504.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2502.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2500.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2498.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2496.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2494.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2492.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2490.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2488.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2486.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2484.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2482.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2480.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2478.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2476.00	38.0	754.01	74.61	828.61	954.29	83.93	1038.22	1178.14	93.26	1271.40	1425.55	102.58	1528.13	1696.52	111.91	1808.43	1991.05	121.24	2112.29	2309.15	130.56	2439.71	2650.81	139.89	2790.70
2474.00	40.0	754.01	150.86	904.87	954.29	169.71	1124.01	1178.14	188.57	1366.71	1425.55	207.43	1632.98	1696.52	226.29	1922.80	1991.05	245.14	2236.20	2309.15	264.00	2573.15	2650.81	282.86	2933.67
2472.00	42.0	754.01	228.55	982.56	954.29	257.12	1211.41	1178.14	285.69	1463.82	1425.55	314.25	1739.80	1696.52	342.82	2039.34	1991.05	371.39	2362.44	2309.15	399.96	2709.11	2650.81	428.53	3079.34
2470.00	44.0	754.01	307.48	1061.49	954.29	345.91	1300.21	1178.14	384.35	1562.49	1425.55	422.78	1848.33	1696.52	461.22	2157.74	1991.05	499.65	2490.71	2309.15	538.09	2847.24	2650.81	576.52	3227.33
2468.00	46.0	754.01	387.45	1141.46	954.29	435.89	1390.18	1178.14	484.32	1662.45	1425.55	532.75	1958.30	1696.52	581.18	2277.70	1991.05	629.61	2620.66	2309.15	678.04	2987.19	2650.81	726.48	3377.28
2466.00	48.0	754.01	468.28	1222.29	954.29	526.82	1481.11	1178.14	585.35	1763.49	1425.55	643.89	2069.43	1696.52	702.42	2398.94	1991.05	760.96	2752.01	2309.15	819.49	3128.64	2650.81	878.03	3528.84
2464.00	50.0	754.01	549.78	1303.78	954.29	618.50	1572.79	1178.14	687.22	1865.36	1425.55	755.94	2181.49	1696.52	824.66	2521.18	1991.05	893.39	2884.44	2309.15	962.11	3271.26	2650.81	1030.83	3681.64
2462.00	52.0	754.01	631.75	1385.76	954.29	710.72	1665.01	1178.14	789.69	1967.83	1425.55	868.66	2294.21	1696.52	947.63	2644.15	1991.05	1026.60	3017.65	2309.15	1105.57	3414.72	2650.81	1184.54	3835.35
2460.00	54.0	754.01	714.04	1468.04	954.29	803.29	1757.58	1178.14	892.54	2070.68	1425.55	981.80	2407.34	1696.52	1071.05	2767.57	1991.05	1160.31	3151.36	2309.15	1249.56	3558.71	2650.81	1338.82	3989.63
2458.00	56.0	754.01	796.45	1550.45	954.29	896.00	1850.29	1178.14	995.56	2173.69	1425.55	1095.11	2520.66	1696.52	1194.67	2891.19	1991.05	1294.22	3285.28	2309.15	1393.78	3702.93	2650.81	1493.34	4144.14
2456.00	58.0	754.01	878.81	1632.82	954.29	988.66	1942.95	1178.14	1098.51	2276.65	1425.55	1208.37	2633.91	1696.52	1318.22	3014.74	1991.05	1428.07	3419.12	2309.15	1537.92	3847.07	2650.81	1647.77	4298.58
2454.00	60.0	754.01	960.96	1714.97	954.29	1081.09	2035.38	1178.14	1201.21	2379.34	1425.55	1321.33	2746.87	1696.52	1441.45	3137.97	1991.05	1561.57	3552.62	2309.15	1681.69	3990.84	2650.81	1801.81	4452.62
2452.00	62.0	754.01	1042.74	1796.75	954.29	1173.08	2127.37	1178.14	1303.42	2481.56	1425.55	1433.76	2859.31	1696.52	1564.11	3260.62	1991.05	1694.45	3685.50	2309.15	1824.79	4133.94	2650.81	1955.13	4605.94
2450.00	64.0	754.01	1123.97	1877.97	954.29	1264.46	2218.75	1178.14	1404.96	2583.10	1425.55	1545.45	2971.00	1696.52	1685.95	3382.47	1991.05	1826.45	3817.50	2309.15	1966.94	4276.09	2650.81	2107.44	4758.25
2448.00	66.0	754.01	1204.49	1958.50	954.29	1355.05	2309.34	1178.14	1505.61	2683.75	1425.55	1656.18	3081.72	1696.52	1806.74	3503.26	1991.05	1957.30	3948.35	2309.15	2107.86	4417.01	2650.81	2258.42	4909.23
2446.00	68.0	754.01	1284.15	2038.16	954.29	1444.67	2398.96	1178.14	1605.19	2783.33	1425.55	1765.71	3191.26	1696.52	1926.23	3622.75	1991.05	2086.75	4077.80	2309.15	2247.27	4556.42	2650.81	2407.79	5058.60
2444.00	70.0	754.01	1362.79	2116.80	954.29	1533.14	2487.44	1178.14	1703.49	2881.63	1425.55	1873.84	3299.39	1696.52	2044.19	3740.71	1991.05	2214.54	4205.59	2309.15	2384.89	4694.04	2650.81	2555.24	5206.05
2442.00	72.0	754.01	1440.26	2194.27	954.29	1620.30	2574.59	1178.14	1800.33	2978.47	1425.55	1980.36	3405.91	1696.52	2160.39	3856.91	1991.05	2340.43	4331.48	2309.15	2520.46	4829.61	2650.81	2700.49	5351.30
2440.00	74.0	754.01	1516.41	2270.41	954.29	1705.96	2660.25	1178.14	1895.51	3073.65	1425.55	2085.06	3510.60	1696.52	2274.61	3971.13	1991.05	2464.16	4455.21	2309.15	2653.71	4962.86	2650.81	2843.26	5494.07
2438.00	76.0	754.01	1591.08	2345.08	954.29	1789.96	2744.25	1178.14	1988.84	3166.98	1425.55	2187.73	3613.27	1696.52	2386.61	4083.13	1991.05	2585.50	4576.55	2309.15	2784.38	5093.53	2650.81	2983.27	5634.08
2436.00	78.0	754.01	1664.12	2418.13	954.29	1872.14	2826.43	1178.14	2080.15	3258.29	1425.55	2288.17	3713.71	1696.52	2496.18	4192.70	1991.05	2704.20	4695.25	2309.15	2912.21	5221.36	2650.81	3120.23	5771.04
2434.00	80.0	754.01	1735.40	2489.41	954.29	1952.33	2906.62	1178.14	2169.25	3347.39	1425.55	2386.18	3811.72	1696.52	2603.10	4299.62	1991.05	2820.03	4811.08	2309.15	3036.95	5346.10	2650.81	3253.88	5904.69

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement

Analyses for Settlement = 0.10 Inch(es)

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2512.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2510.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2508.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2506.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2504.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2502.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2500.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2498.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2496.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2494.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2492.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00
2490.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00
2488.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00
2486.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00
2484.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00
2482.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00
2480.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	228.32	0.00
2478.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	235.57	0.00
2476.00	38.0	90.88	71.63	90.88	98.38	90.66	98.38	105.58	111.92	105.58	112.56	135.43	112.56	119.36	161.17	119.36	126.02	189.15	126.02	132.56	219.37	132.56	139.01	251.83	139.01
2474.00	40.0	136.05	75.40	136.05	145.31	95.43	145.31	153.97	117.81	153.97	162.19	142.55	162.19	170.04	169.65	170.04	177.61	199.11	177.61	184.95	230.91	184.95	192.10	265.08	192.10
2472.00	42.0	182.06	79.17	182.06	193.12	100.20	193.12	203.28	123.70	203.28	212.75	149.68	212.75	221.68	178.13	221.68	230.18	209.06	230.18	238.33	242.46	238.33	246.19	278.33	246.19
2470.00	44.0	228.81	82.94	228.81	241.69	104.97	241.69	253.37	129.60	253.37	264.12	156.81	264.12	274.14	186.62	274.14	283.58	219.02	283.58	292.56	254.01	292.56	301.15	291.59	301.15
2468.00	46.0	276.18	86.71	276.18	290.91	109.74	290.91	304.12	135.49	304.12	316.16	163.94	316.16	327.30	195.10	327.30	337.70	228.97	337.70	347.51	265.55	347.51	356.83	304.84	356.83
2466.00	48.0	324.06	90.48	324.06	340.65	114.51	340.65	355.41	141.38	355.41	368.77	171.07	368.77	381.02	203.58	381.02	392.39	238.93	392.39	403.04	277.10	403.04	413.11	318.10	413.11
2464.00	50.0	372.33	94.25	372.33	390.80	119.29	390.80	407.13	147.27	407.13	421.80	178.19	421.80	435.18	212.06	435.18	447.53	248.88	447.53	459.03	288.64	459.03	469.85	331.35	469.85
2462.00	52.0	420.88	98.02	420.88	441.25	124.06	441.25	459.15	153.16	459.15	475.15	185.32	475.15	489.67	220.55	489.67	502.99	258.84	502.99	515.35	300.19	515.35	526.92	344.61	526.92
2460.00	54.0	469.62	101.79	469.62	491.88	128.83	491.88	511.37	159.05	511.37	528.70	192.45	528.70	544.36	229.03	544.36	558.67	268.79	558.67	571.89	311.74	571.89	584.21	357.86	584.21
2458.00	56.0	518.43	105.56	518.43	542.60	133.60	542.60	563.66	164.94	563.66	582.34	199.58	582.34	599.13	237.51	599.13	614.43	278.75	614.43	628.51	323.28	628.51	641.59	371.11	641.59
2456.00	58.0	567.21	109.33	567.21	593.29	138.37	593.29	615.93	170.83	615.93	635.94	206.70	635.94	653.88	246.00	653.88	670.16	288.70	670.16	685.10	334.83	685.10	698.94	384.37	698.94
2454.00	60.0	615.87	113.10	615.87	643.84	143.14	643.84	668.07	176.72	668.07	689.41	213.83	689.41	708.48	254.48	708.48	725.74	298.66	725.74	741.54	346.37	741.54	756.13	397.62	756.13
2452.00	62.0	664.31	116.87	664.31	694.17	147.92	694.17	719.96	182.61	719.96	742.62	220.96	742.62	762.83	262.96	762.83	781.07	308.61	781.07	797.72	357.92	797.72	813.07	410.88	813.07
2450.00	64.0	712.42	120.64	712.42	744.16	152.69	744.16	771.51	188.50	771.51	795.49	228.09	795.49	816.82	271.44	816.82	836.03	318.57	836.03	853.53	369.46	853.53	869.62	424.13	869.62
2448.00	66.0	760.11	124.41	760.11	793.71	157.46	793.71	822.61	194.39	822.61	847.89	235.22	847.89	870.34	279.93	870.34	890.52	328.52	890.52	908.86	381.01	908.86	925.69	437.38	925.69
2446.00	68.0	807.30	128.18	807.30	842.73	162.23	842.73	873.16	200.28	873.16	899.74	242.34	899.74	923.29	288.41	923.29	944.42	338.48	944.42	963.59	392.56	963.59	981.15	450.64	981.15
2444.00	70.0	853.88	131.95	853.88	891.13	167.00	891.13	923.07	206.17	923.07	950.92	249.47	950.92	975.55	296.89	975.55	997.63	348.43	997.63	1017.62	404.10	1017.62	1035.91	463.89	1035.91
2442.00	72.0	899.76	135.72	899.76	938.80	171.77	938.80	972.23	212.06	972.23	1001.33	256.60	1001.33	1027.04	305.37	1027.04	1050.04	358.39	1050.04	1070.85	415.65	1070.85	1089.84	477.15	1089.84
2440.00	74.0	944.86	139.49	944.86	985.66	176.54	985.66	1020.55	217.96	1020.55	1050.89	263.73	1050.89	1077.65	313.86	1077.65	1101.56	368.34	1101.56	1123.16	427.19	1123.16	1142.86	490.40	1142.86
2438.00	76.0	989.09	143.26	989.09	1031.61	181.32	1031.61	1067.94	223.85	1067.94	1099.48	270.85	1099.48	1127.28	322.34	1127.28	1152.09	378.30	1152.09	1174.46	438.74	1174.46	1194.85	503.65	1194.85
2436.00	78.0	1032.35	147.03	1032.35	1076.57	186.09	1076.57	1114.29	229.74	1114.29	1147.02	277.98	1147.02	1175.83	330.82	1175.83	1201.51	388.26	1201.51	1224.65	450.28	1224.65	1245.70	516.91	1245.70
2434.00	80.0	1074.57	150.80	1074.57	1120.43	190.86	1120.43	1159.53	235.63	1159.53	1193.41	285.11	1193.41	1223.21	339.30	1223.21	1249.74	398.21	1249.74	1273.62	461.83	1273.62	1295.33	530.16	1295.33

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement				Analyses for Settlement = 0.25 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.				
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips		
2512.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00		
2510.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00		
2508.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00		
2506.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00		
2504.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00		
2502.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00		
2500.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00		
2498.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00		
2496.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00		
2494.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00		
2492.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00		
2490.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00		
2488.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00		
2486.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00		
2484.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00		
2482.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00		
2480.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00		
2478.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00		
2476.00	38.0	185.51	71.63	185.51	206.19	90.66	206.19	226.16	111.92	226.16	245.50	135.43	245.50	264.31	161.17	264.31	282.65	189.15	282.65	300.58	219.37	300.58	318.18	251.83	318.18		
2474.00	40.0	254.72	75.40	254.72	281.59	95.43	281.59	307.06	117.81	307.06	331.30	142.55	331.30	354.48	169.65	354.48	376.73	199.11	376.73	398.19	230.91	398.19	418.96	265.08	418.96		
2472.00	42.0	325.24	79.17	325.24	358.42	100.20	358.42	389.49	123.70	389.49	418.72	149.68	418.72	446.35	178.13	446.35	472.59	209.06	472.59	497.64	242.46	497.64	521.65	278.33	521.65		
2470.00	44.0	396.89	82.94	396.89	436.47	104.97	436.47	473.24	129.60	473.24	507.54	156.81	507.54	539.69	186.62	539.69	569.98	219.02	569.98	598.68	254.01	598.68	625.98	291.59	625.98		
2468.00	46.0	469.48	86.71	469.48	515.55	109.74	515.55	558.09	135.49	558.09	597.52	163.94	597.52	634.26	195.10	634.26	668.66	228.97	668.66	701.05	265.55	701.05	731.69	304.84	731.69		
2466.00	48.0	542.85	90.48	542.85	595.48	114.51	595.48	643.85	141.38	643.85	688.47	171.07	688.47	729.84	203.58	729.84	768.40	238.93	768.40	804.52	277.10	804.52	838.53	318.10	838.53		
2464.00	50.0	616.82	94.25	616.82	676.06	119.29	676.06	730.31	147.27	730.31	780.17	178.19	780.17	826.21	212.06	826.21	868.95	248.88	868.95	908.83	288.64	908.83	946.24	331.35	946.24		
2462.00	52.0	691.24	98.02	691.24	757.13	124.06	757.13	817.29	153.16	817.29	872.41	185.32	872.41	923.15	220.55	923.15	970.10	258.84	970.10	1013.77	300.19	1013.77	1054.60	344.61	1054.60		
2460.00	54.0	765.92	101.79	765.92	838.49	128.83	838.49	904.59	159.05	904.59	965.00	192.45	965.00	1020.46	229.03	1020.46	1071.63	268.79	1071.63	1119.10	311.74	1119.10	1163.36	357.86	1163.36		
2458.00	56.0	840.73	105.56	840.73	919.98	133.60	919.98	992.03	164.94	992.03	1057.73	199.58	1057.73	1117.91	237.51	1117.91	1173.31	278.75	1173.31	1224.59	323.28	1224.59	1272.28	371.11	1272.28		
2456.00	58.0	915.49	109.33	915.49	1001.43	138.37	1001.43	1079.42	170.83	1079.42	1150.41	206.70	1150.41	1215.31	246.00	1215.31	1274.95	288.70	1274.95	1330.02	334.83	1330.02	1381.15	384.37	1381.15		
2454.00	60.0	990.06	113.10	990.06	1082.67	143.14	1082.67	1166.59	176.72	1166.59	1242.85	213.83	1242.85	1312.46	254.48	1312.46	1376.31	298.66	1376.31	1435.18	346.37	1435.18	1489.74	397.62	1489.74		
2452.00	62.0	1064.29	116.87	1064.29	1163.53	147.92	1163.53	1253.35	182.61	1253.35	1334.86	220.96	1334.86	1409.16	262.96	1409.16	1477.21	308.61	1477.21	1539.86	357.92	1539.86	1597.83	410.88	1597.83		
2450.00	64.0	1138.02	120.64	1138.02	1243.86	152.69	1243.86	1339.53	188.50	1339.53	1426.26	228.09	1426.26	1505.22	271.44	1505.22	1577.44	318.57	1577.44	1643.84	369.46	1643.84	1705.19	424.13	1705.19		
2448.00	66.0	1211.11	124.41	1211.11	1323.48	157.46	1323.48	1424.97	194.39	1424.97	1516.87	235.22	1516.87	1600.44	279.93	1600.44	1676.80	328.52	1676.80	1746.92	381.01	1746.92	1811.63	437.38	1811.63		
2446.00	68.0	1283.42	128.18	1283.42	1402.26	162.23	1402.26	1509.49	200.28	1509.49	1606.51	242.34	1606.51	1694.64	288.41	1694.64	1775.09	338.48	1775.09	1848.89	392.56	1848.89	1916.92	450.64	1916.92		
2444.00	70.0	1354.80	131.95	1354.80	1480.02	167.00	1480.02	1592.93	206.17	1592.93	1695.00	249.47	1695.00	1787.64	296.89	1787.64	1872.13	348.43	1872.13	1949.56	404.10	1949.56	2020.87	463.89	2020.87		
2442.00	72.0	1425.12	135.72	1425.12	1556.63	171.77	1556.63	1675.12	212.06	1675.12	1782.16	256.60	1782.16	1879.25	305.37	1879.25	1967.71	358.39	1967.71	2048.72	415.65	2048.72	2123.27	477.15	2123.27		
2440.00	74.0	1494.24	139.49	1494.24	1631.92	176.54	1631.92	1755.91	217.96	1755.91	1867.84	263.73	1867.84	1969.29	313.86	1969.29	2061.67	368.34	2061.67	2146.19	427.19	2146.19	2223.91	490.40	2223.91		
2438.00	76.0	1562.02	143.26	1562.02	1705.76	181.32	1705.76	1835.13	223.85	1835.13	1951.86	270.85	1951.86	2057.59	322.34	2057.59	2153.80	378.30	2153.80	2241.77	438.74	2241.77	2322.61	503.65	2322.61		
2436.00	78.0	1628.32	147.03	1628.32	1777.99	186.09	1777.99	1912.64	229.74	1912.64	2034.06	277.98	2034.06	2143.97	330.82	2143.97	2243.93	388.26	2243.93	2335.28	450.28	2335.28	2419.16	516.91	2419.16		
2434.00	80.0	1693.02	150.80	1693.02	1848.47	190.86	1848.47	1988.26	235.63	1988.26	2114.26	285.11	2114.26	2228.26	339.30	2228.26	2331.88	398.21	2331.88	2426.52	461.83	2426.52	2513.37	530.16	2513.37		

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement		Analyses for Settlement = 0.50 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2512.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2510.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2508.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2506.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2504.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2502.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2500.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2498.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2496.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2494.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2492.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00
2490.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00
2488.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00
2486.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00
2484.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00
2482.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00
2480.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00
2478.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00
2476.00	38.0	305.99	71.63	305.99	345.19	90.66	345.19	383.94	111.92	383.94	422.24	135.43	422.24	460.06	161.17	460.06	497.41	189.15	497.41	534.27	219.37	534.27	570.66	251.83	570.66
2474.00	40.0	380.14	75.40	380.14	428.44	95.43	428.44	476.08	117.81	476.08	523.01	142.55	523.01	569.13	169.65	569.13	614.40	199.11	614.40	658.81	230.91	658.81	702.34	265.08	702.34
2472.00	42.0	455.69	79.17	455.69	513.27	100.20	513.27	569.97	123.70	569.97	625.68	149.68	625.68	680.26	178.13	680.26	733.61	209.06	733.61	785.69	242.46	785.69	836.51	278.33	836.51
2470.00	44.0	532.44	82.94	532.44	599.45	104.97	599.45	665.35	129.60	665.35	729.99	156.81	729.99	793.16	186.62	793.16	854.72	219.02	854.72	914.61	254.01	914.61	972.81	291.59	972.81
2468.00	46.0	610.21	86.71	610.21	686.76	109.74	686.76	762.00	135.49	762.00	835.68	163.94	835.68	907.55	195.10	907.55	977.43	228.97	977.43	1045.22	265.55	1045.22	1110.92	304.84	1110.92
2466.00	48.0	688.80	90.48	688.80	775.01	114.51	775.01	859.67	141.38	859.67	942.50	171.07	942.50	1023.17	203.58	1023.17	1101.45	238.93	1101.45	1177.24	277.10	1177.24	1250.50	318.10	1250.50
2464.00	50.0	768.05	94.25	768.05	863.99	119.29	863.99	958.15	147.27	958.15	1050.20	178.19	1050.20	1139.73	212.06	1139.73	1226.49	248.88	1226.49	1310.33	288.64	1310.33	1391.23	331.35	1391.23
2462.00	52.0	847.76	98.02	847.76	953.50	124.06	953.50	1057.22	153.16	1057.22	1158.53	185.32	1158.53	1256.99	220.55	1256.99	1352.28	258.84	1352.28	1444.22	300.19	1444.22	1532.80	344.61	1532.80
2460.00	54.0	927.77	101.79	927.77	1043.33	128.83	1043.33	1156.65	159.05	1156.65	1267.27	192.45	1267.27	1374.68	229.03	1374.68	1478.53	268.79	1478.53	1578.61	311.74	1578.61	1674.89	357.86	1674.89
2458.00	56.0	1007.91	105.56	1007.91	1133.31	133.60	1133.31	1256.24	164.94	1256.24	1376.18	199.58	1376.18	1492.56	237.51	1492.56	1604.97	278.75	1604.97	1713.20	323.28	1713.20	1817.20	371.11	1817.20
2456.00	58.0	1088.00	109.33	1088.00	1223.24	138.37	1223.24	1355.78	170.83	1355.78	1485.03	206.70	1485.03	1610.38	246.00	1610.38	1731.35	288.70	1731.35	1847.73	334.83	1847.73	1959.44	384.37	1959.44
2454.00	60.0	1167.89	113.10	1167.89	1312.94	143.14	1312.94	1455.05	176.72	1455.05	1593.60	213.83	1593.60	1727.89	254.48	1727.89	1857.41	298.66	1857.41	1981.90	346.37	1981.90	2101.31	397.62	2101.31
2452.00	62.0	1247.41	116.87	1247.41	1402.22	147.92	1402.22	1553.87	182.61	1553.87	1701.67	220.96	1701.67	1844.85	262.96	1844.85	1982.88	308.61	1982.88	2115.46	357.92	2115.46	2242.52	410.88	2242.52
2450.00	64.0	1326.39	120.64	1326.39	1490.91	152.69	1490.91	1652.03	188.50	1652.03	1809.02	228.09	1809.02	1961.04	271.44	1961.04	2107.51	318.57	2107.51	2248.12	369.46	2248.12	2382.80	424.13	2382.80
2448.00	66.0	1404.70	124.41	1404.70	1578.83	157.46	1578.83	1749.34	194.39	1749.34	1915.44	235.22	1915.44	2076.22	279.93	2076.22	2231.07	328.52	2231.07	2379.64	381.01	2379.64	2521.86	437.38	2521.86
2446.00	68.0	1482.16	128.18	1482.16	1665.80	162.23	1665.80	1845.61	200.28	1845.61	2020.71	242.34	2020.71	2190.17	288.41	2190.17	2353.30	338.48	2353.30	2509.75	392.56	2509.75	2659.42	450.64	2659.42
2444.00	70.0	1558.63	131.95	1558.63	1751.66	167.00	1751.66	1940.64	206.17	1940.64	2124.64	249.47	2124.64	2302.65	296.89	2302.65	2473.96	348.43	2473.96	2638.19	404.10	2638.19	2795.23	463.89	2795.23
2442.00	72.0	1633.96	135.72	1633.96	1836.25	171.77	1836.25	2034.26	212.06	2034.26	2227.02	256.60	2227.02	2413.46	305.37	2413.46	2592.83	358.39	2592.83	2764.71	415.65	2764.71	2929.01	477.15	2929.01
2440.00	74.0	1708.00	139.49	1708.00	1919.38	176.54	1919.38	2126.27	217.96	2126.27	2327.65	263.73	2327.65	2522.38	313.86	2522.38	2709.66	368.34	2709.66	2889.07	427.19	2889.07	3060.50	490.40	3060.50
2438.00	76.0	1780.61	143.26	1780.61	2000.91	181.32	2000.91	2216.51	223.85	2216.51	2426.32	270.85	2426.32	2629.18	322.34	2629.18	2824.23	378.30	2824.23	3011.02	438.74	3011.02	3189.45	503.65	3189.45
2436.00	78.0	1851.64	147.03	1851.64	2080.66	186.09	2080.66	2304.78	229.74	2304.78	2522.86	277.98	2522.86	2733.66	330.82	2733.66	2936.31	388.26	2936.31	3130.33	450.28	3130.33	3315.59	516.91	3315.59
2434.00	80.0	1920.95	150.80	1920.95	2158.49	190.86	2158.49	2390.91	235.63	2390.91	2617.06	285.11	2617.06	2835.62	339.30	2835.62	3045.68	398.21	3045.68	3246.74	461.83	3246.74	3438.68	530.16	3438.68

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement				Analyses for Settlement = 0.75 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.				
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips		
2512.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00		
2510.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00		
2508.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00		
2506.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00		
2504.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00		
2502.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00		
2500.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00		
2498.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00		
2496.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00		
2494.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00		
2492.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00		
2490.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00		
2488.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00		
2486.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00		
2484.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00		
2482.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00		
2480.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00		
2478.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00		
2476.00	38.0	410.05	71.63	410.05	467.38	90.66	467.38	523.68	111.92	523.68	579.17	135.43	579.17	634.07	161.17	634.07	688.51	189.15	688.51	742.56	219.37	742.56	796.24	251.83	796.24		
2474.00	40.0	482.24	75.40	482.24	549.92	95.43	549.92	616.11	117.81	616.11	681.10	142.55	681.10	745.29	169.65	745.29	808.87	199.11	808.87	871.93	230.91	871.93	934.46	265.08	934.46		
2472.00	42.0	555.78	79.17	555.78	634.03	100.20	634.03	710.28	123.70	710.28	784.96	149.68	784.96	858.61	178.13	858.61	931.51	209.06	931.51	1003.74	242.46	1003.74	1075.29	278.33	1075.29		
2470.00	44.0	630.50	82.94	630.50	719.48	104.97	719.48	805.95	129.60	805.95	890.48	156.81	890.48	973.74	186.62	973.74	1056.09	219.02	1056.09	1137.65	254.01	1137.65	1218.37	291.59	1218.37		
2468.00	46.0	706.21	86.71	706.21	806.05	109.74	806.05	902.89	135.49	902.89	997.39	163.94	997.39	1090.39	195.10	1090.39	1182.33	228.97	1182.33	1273.33	265.55	1273.33	1363.33	304.84	1363.33		
2466.00	48.0	782.72	90.48	782.72	893.55	114.51	893.55	1000.87	141.38	1000.87	1105.44	171.07	1105.44	1208.29	203.58	1208.29	1309.92	238.93	1309.92	1410.46	277.10	1410.46	1509.85	318.10	1509.85		
2464.00	50.0	859.87	94.25	859.87	981.78	119.29	981.78	1099.65	147.27	1099.65	1214.38	178.19	1214.38	1327.15	212.06	1327.15	1438.55	248.88	1438.55	1548.71	288.64	1548.71	1657.57	331.35	1657.57		
2462.00	52.0	937.47	98.02	937.47	1070.52	124.06	1070.52	1199.02	153.16	1199.02	1323.97	185.32	1323.97	1446.73	220.55	1446.73	1567.95	258.84	1567.95	1687.79	300.19	1687.79	1806.17	344.61	1806.17		
2460.00	54.0	1015.37	101.79	1015.37	1159.60	128.83	1159.60	1298.75	159.05	1298.75	1433.97	192.45	1433.97	1566.74	229.03	1566.74	1697.83	268.79	1697.83	1827.39	311.74	1827.39	1955.31	357.86	1955.31		
2458.00	56.0	1093.38	105.56	1093.38	1248.81	133.60	1248.81	1398.65	164.94	1398.65	1544.14	199.58	1544.14	1686.95	237.51	1686.95	1827.91	278.75	1827.91	1967.20	323.28	1967.20	2104.70	371.11	2104.70		
2456.00	58.0	1171.35	109.33	1171.35	1337.98	138.37	1337.98	1498.49	170.83	1498.49	1654.25	206.70	1654.25	1807.09	246.00	1807.09	1957.92	288.70	1957.92	2106.94	334.83	2106.94	2254.00	384.37	2254.00		
2454.00	60.0	1249.12	113.10	1249.12	1426.92	143.14	1426.92	1598.07	176.72	1598.07	1764.07	213.83	1764.07	1926.92	254.48	1926.92	2087.60	298.66	2087.60	2246.32	346.37	2246.32	2402.92	397.62	2402.92		
2452.00	62.0	1326.53	116.87	1326.53	1515.44	147.92	1515.44	1697.19	182.61	1697.19	1873.38	220.96	1873.38	2046.19	262.96	2046.19	2216.67	308.61	2216.67	2385.05	357.92	2385.05	2551.14	410.88	2551.14		
2450.00	64.0	1403.43	120.64	1403.43	1603.38	152.69	1603.38	1795.65	188.50	1795.65	1981.97	228.09	1981.97	2164.67	271.44	2164.67	2344.89	318.57	2344.89	2522.86	369.46	2522.86	2698.38	424.13	2698.38		
2448.00	66.0	1479.65	124.41	1479.65	1690.55	157.46	1690.55	1893.25	194.39	1893.25	2089.62	235.22	2089.62	2282.13	279.93	2282.13	2471.99	328.52	2471.99	2659.48	381.01	2659.48	2844.35	437.38	2844.35		
2446.00	68.0	1555.06	128.18	1555.06	1776.79	162.23	1776.79	1989.81	200.28	1989.81	2196.11	242.34	2196.11	2398.32	288.41	2398.32	2597.74	338.48	2597.74	2794.63	392.56	2794.63	2988.75	450.64	2988.75		
2444.00	70.0	1629.51	131.95	1629.51	1861.92	167.00	1861.92	2085.14	206.17	2085.14	2301.24	249.47	2301.24	2513.03	296.89	2513.03	2721.87	348.43	2721.87	2928.04	404.10	2928.04	3131.30	463.89	3131.30		
2442.00	72.0	1702.85	135.72	1702.85	1945.79	171.77	1945.79	2179.04	212.06	2179.04	2404.80	256.60	2404.80	2626.02	305.37	2626.02	2844.15	358.39	2844.15	3059.47	415.65	3059.47	3271.72	477.15	3271.72		
2440.00	74.0	1774.93	139.49	1774.93	2028.22	176.54	2028.22	2271.34	217.96	2271.34	2506.59	263.73	2506.59	2737.09	313.86	2737.09	2964.34	368.34	2964.34	3188.66	427.19	3188.66	3409.74	490.40	3409.74		
2438.00	76.0	1845.61	143.26	1845.61	2109.05	181.32	2109.05	2361.85	223.85	2361.85	2606.41	270.85	2606.41	2846.00	322.34	2846.00	3082.20	378.30	3082.20	3315.34	438.74	3315.34	3545.09	503.65	3545.09		
2436.00	78.0	1914.76	147.03	1914.76	2188.13	186.09	2188.13	2450.39	229.74	2450.39	2704.06	277.98	2704.06	2952.55	330.82	2952.55	3197.50	388.26	3197.50	3439.26	450.28	3439.26	3677.50	516.91	3677.50		
2434.00	80.0	1982.24	150.80	1982.24	2265.30	190.86	2265.30	2536.79	235.63	2536.79	2799.35	285.11	2799.35	3056.51	339.30	3056.51	3310.01	398.21	3310.01	3560.19	461.83	3560.19	3806.71	530.16	3806.71		

Drilled Shaft Resistance Analyses

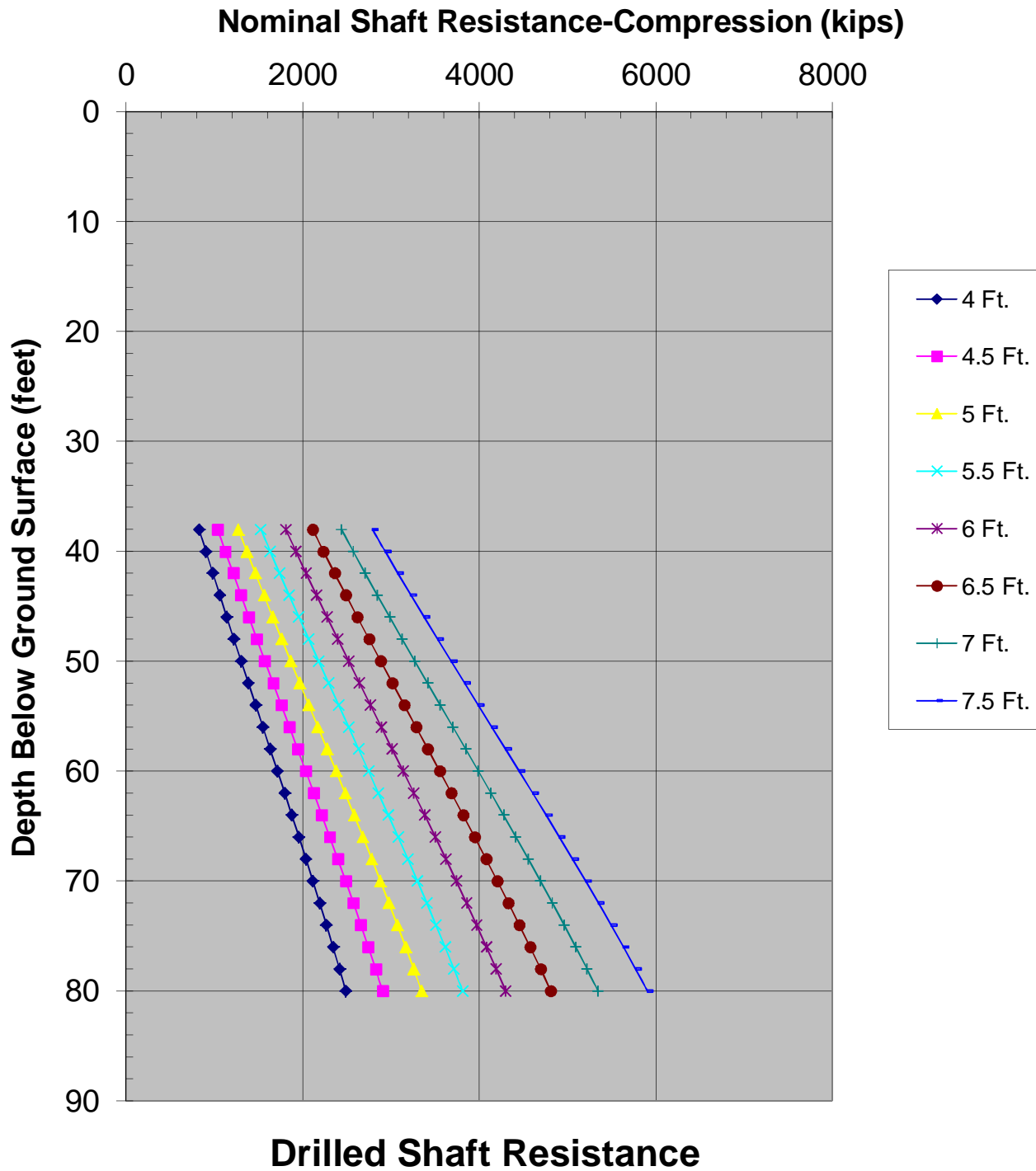


Service Limit Resistance Based On Allowable Settlement				Analyses for Settlement = 1.00 Inch(es)																							
Elevation	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.				
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips		
2512.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00		
2510.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00		
2508.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00		
2506.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00		
2504.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00		
2502.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00		
2500.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00		
2498.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00		
2496.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00		
2494.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00		
2492.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00		
2490.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00		
2488.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00		
2486.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00		
2484.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00		
2482.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00		
2480.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00		
2478.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00		
2476.00	38.0	499.21	71.63	499.21	572.49	90.66	572.49	648.44	111.92	648.44	722.09	135.43	722.09	794.99	161.17	794.99	866.98	189.15	866.98	938.19	219.37	938.19	1008.78	251.83	1008.78		
2474.00	40.0	567.83	75.40	567.83	649.69	95.43	649.69	737.74	117.81	737.74	821.84	142.55	821.84	905.06	169.65	905.06	986.98	199.11	986.98	1067.81	230.91	1067.81	1147.81	265.08	1147.81		
2472.00	42.0	637.76	79.17	637.76	728.36	100.20	728.36	828.72	123.70	828.72	923.47	149.68	923.47	1017.20	178.13	1017.20	1109.24	209.06	1109.24	1199.88	242.46	1199.88	1289.46	278.33	1289.46		
2470.00	44.0	708.79	82.94	708.79	808.27	104.97	808.27	921.15	129.60	921.15	1026.72	156.81	1026.72	1131.13	186.62	1131.13	1233.46	219.02	1233.46	1334.05	254.01	1334.05	1433.38	291.59	1433.38		
2468.00	46.0	780.77	86.71	780.77	889.25	109.74	889.25	1014.80	135.49	1014.80	1131.33	163.94	1131.33	1246.56	195.10	1246.56	1359.32	228.97	1359.32	1470.00	265.55	1470.00	1579.20	304.84	1579.20		
2466.00	48.0	853.52	90.48	853.52	971.08	114.51	971.08	1109.46	141.38	1109.46	1237.07	171.07	1237.07	1363.23	203.58	1363.23	1486.52	238.93	1486.52	1607.41	277.10	1607.41	1726.57	318.10	1726.57		
2464.00	50.0	926.86	94.25	926.86	1053.60	119.29	1053.60	1204.89	147.27	1204.89	1343.67	178.19	1343.67	1480.86	212.06	1480.86	1614.77	248.88	1614.77	1745.94	288.64	1745.94	1875.16	331.35	1875.16		
2462.00	52.0	1000.64	98.02	1000.64	1136.60	124.06	1136.60	1300.89	153.16	1300.89	1450.91	185.32	1450.91	1599.19	220.55	1599.19	1743.78	258.84	1743.78	1885.29	300.19	1885.29	2024.63	344.61	2024.63		
2460.00	54.0	1074.69	101.79	1074.69	1219.91	128.83	1219.91	1397.25	159.05	1397.25	1558.54	192.45	1558.54	1717.96	229.03	1717.96	1873.27	268.79	1873.27	2025.17	311.74	2025.17	2174.65	357.86	2174.65		
2458.00	56.0	1148.86	105.56	1148.86	1303.35	133.60	1303.35	1493.76	164.94	1493.76	1666.34	199.58	1666.34	1836.91	237.51	1836.91	2002.96	278.75	2002.96	2165.26	323.28	2165.26	2324.91	371.11	2324.91		
2456.00	58.0	1222.99	109.33	1222.99	1386.75	138.37	1386.75	1590.21	170.83	1590.21	1774.09	206.70	1774.09	1955.80	246.00	1955.80	2132.58	288.70	2132.58	2305.27	334.83	2305.27	2475.09	384.37	2475.09		
2454.00	60.0	1296.93	113.10	1296.93	1469.93	143.14	1469.93	1686.42	176.72	1686.42	1881.56	213.83	1881.56	2074.38	254.48	2074.38	2261.87	298.66	2261.87	2444.93	346.37	2444.93	2624.88	397.62	2624.88		
2452.00	62.0	1370.53	116.87	1370.53	1552.72	147.92	1552.72	1782.18	182.61	1782.18	1988.52	220.96	1988.52	2192.42	262.96	2192.42	2390.56	308.61	2390.56	2583.93	357.92	2583.93	2773.98	410.88	2773.98		
2450.00	64.0	1443.63	120.64	1443.63	1634.97	152.69	1634.97	1877.30	188.50	1877.30	2094.78	228.09	2094.78	2309.66	271.44	2309.66	2518.39	318.57	2518.39	2722.02	369.46	2722.02	2922.08	424.13	2922.08		
2448.00	66.0	1516.11	124.41	1516.11	1716.50	157.46	1716.50	1971.60	194.39	1971.60	2200.12	235.22	2200.12	2425.89	279.93	2425.89	2645.12	328.52	2645.12	2858.90	381.01	2858.90	3068.91	437.38	3068.91		
2446.00	68.0	1587.80	128.18	1587.80	1797.15	162.23	1797.15	2064.89	200.28	2064.89	2304.32	242.34	2304.32	2540.88	288.41	2540.88	2770.48	338.48	2770.48	2994.32	392.56	2994.32	3214.15	450.64	3214.15		
2444.00	70.0	1658.58	131.95	1658.58	1876.78	167.00	1876.78	2156.99	206.17	2156.99	2407.20	249.47	2407.20	2654.39	296.89	2654.39	2894.24	348.43	2894.24	3128.00	404.10	3128.00	3357.54	463.89	3357.54		
2442.00	72.0	1728.30	135.72	1728.30	1955.22	171.77	1955.22	2247.71	212.06	2247.71	2508.54	256.60	2508.54	2766.21	305.37	2766.21	3016.16	358.39	3016.16	3259.69	415.65	3259.69	3498.79	477.15	3498.79		
2440.00	74.0	1796.83	139.49	1796.83	2032.31	176.54	2032.31	2336.87	217.96	2336.87	2608.14	263.73	2608.14	2876.12	313.86	2876.12	3135.98	368.34	3135.98	3389.13	427.19	3389.13	3637.62	490.40	3637.62		
2438.00	76.0	1864.03	143.26	1864.03	2107.91	181.32	2107.91	2424.32	223.85	2424.32	2705.82	270.85	2705.82	2983.90	322.34	2983.90	3253.49	378.30	3253.49	3516.06	438.74	3516.06	3773.77	503.65	3773.77		
2436.00	78.0	1929.77	147.03	1929.77	2181.87	186.09	2181.87	2509.86	229.74	2509.86	2801.37	277.98	2801.37	3089.33	330.82	3089.33	3368.45	388.26	3368.45	3640.24	450.28	3640.24	3906.95	516.91	3906.95		
2434.00	80.0	1993.92	150.80	1993.92	2254.04	190.86	2254.04	2593.33	235.63	2593.33	2894.61	285.11	2894.61	3192.22	339.30	3192.22	3480.62	398.21	3480.62	3761.41	461.83	3761.41	4036.92	530.16	4036.92		

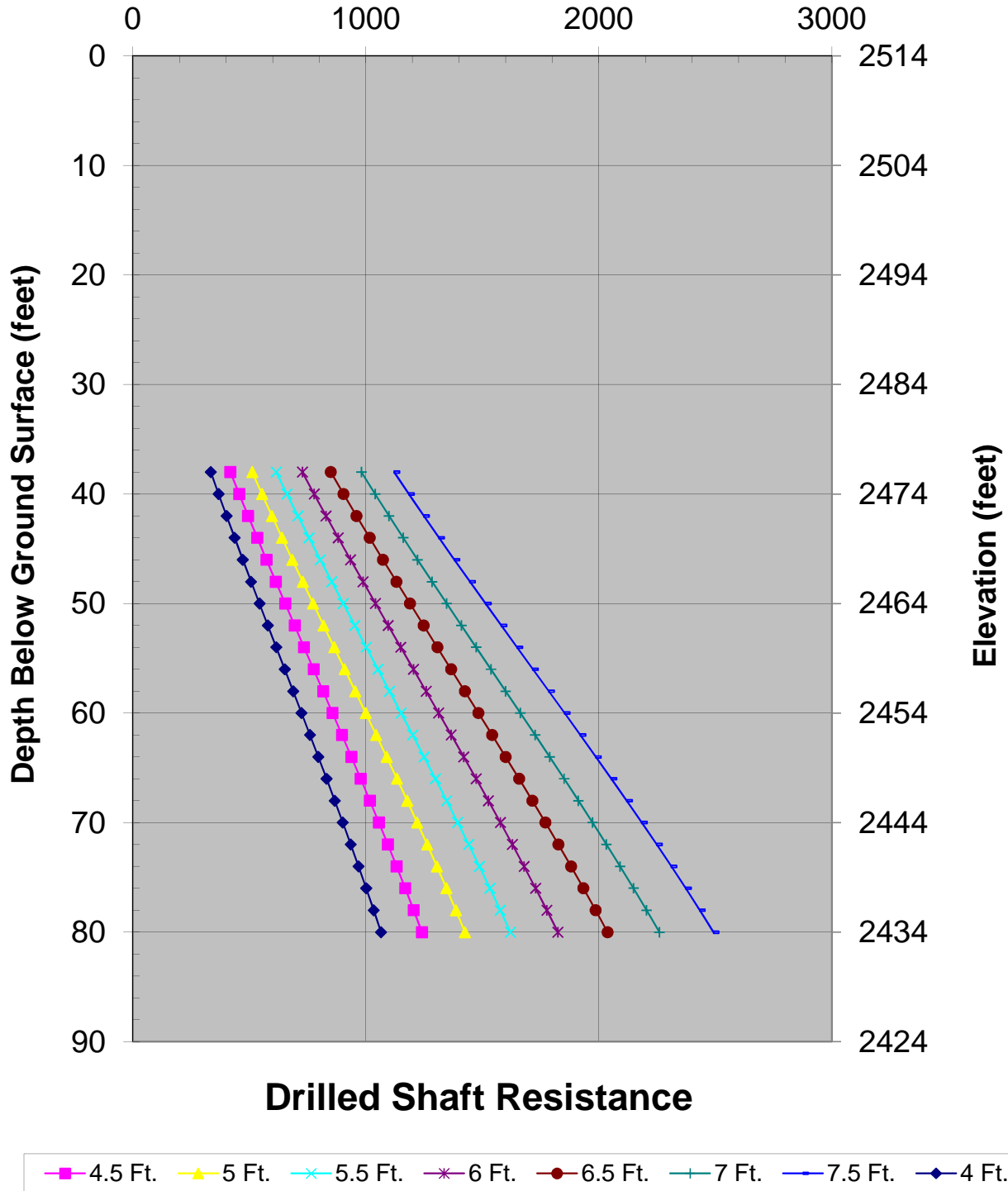
Drilled Shaft Resistance Analyses



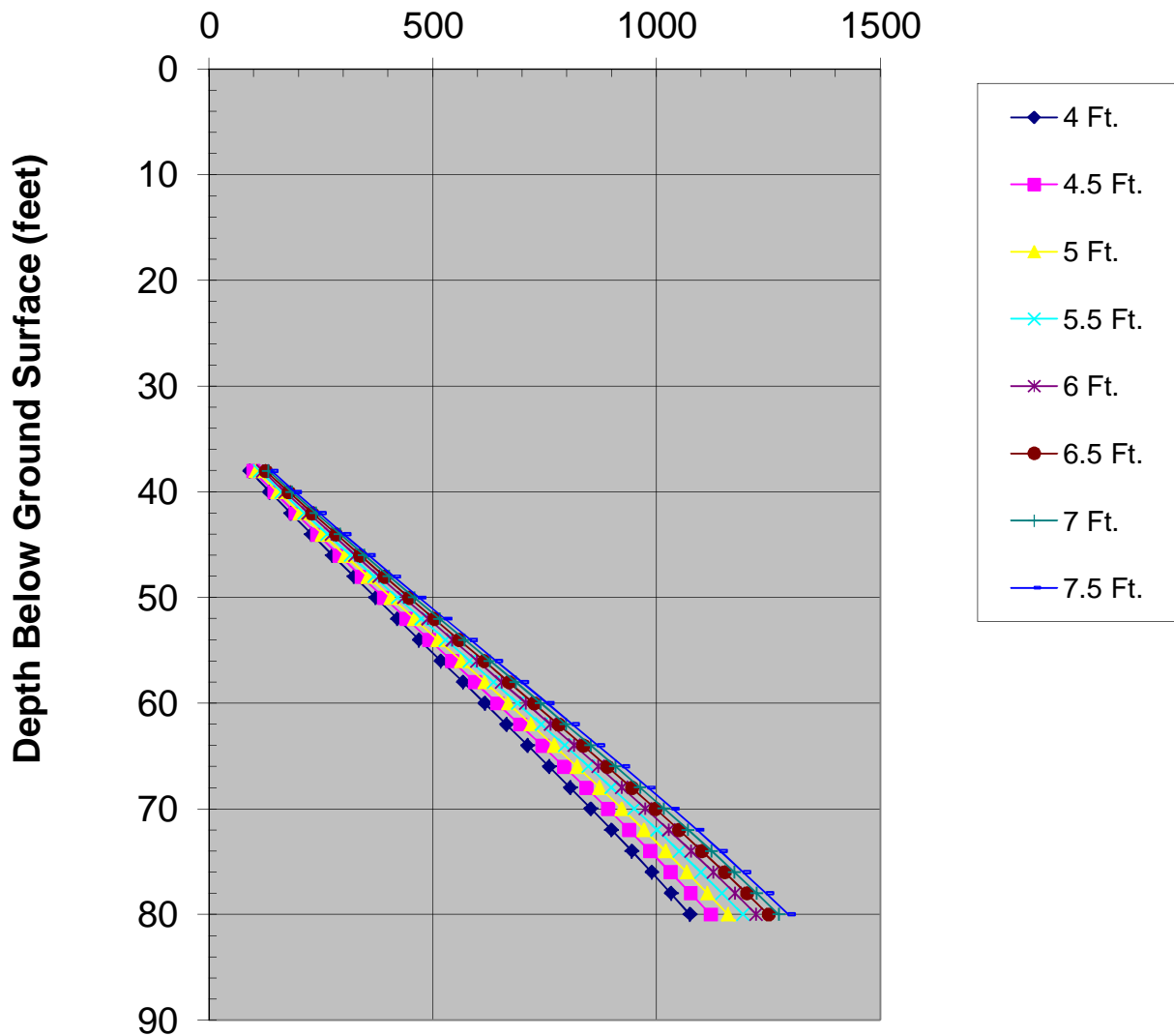
Service Limit Resistance Based On Allowable Settlement				Analyses for Settlement = 2.00 Inch(es)																							
Elevation	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.				
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips		
2512.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00		
2510.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00		
2508.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00		
2506.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00		
2504.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00		
2502.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00		
2500.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00		
2498.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00		
2496.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00		
2494.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00		
2492.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00		
2490.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00		
2488.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00		
2486.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00		
2484.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00		
2482.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00		
2480.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00		
2478.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00		
2476.00	38.0	737.99	71.63	737.99	877.16	90.66	877.16	1017.89	111.92	1017.89	1159.36	135.43	1159.36	1300.96	161.17	1300.96	1442.29	189.15	1442.29	1583.08	219.37	1583.08	1723.19	251.83	1723.19		
2474.00	40.0	806.62	75.40	806.62	954.37	95.43	954.37	1103.67	117.81	1103.67	1253.72	142.55	1253.72	1403.90	169.65	1403.90	1553.81	199.11	1553.81	1703.18	230.91	1703.18	1851.87	265.08	1851.87		
2472.00	42.0	876.54	79.17	876.54	1033.03	100.20	1033.03	1191.07	123.70	1191.07	1349.86	149.68	1349.86	1508.79	178.13	1508.79	1667.43	209.06	1667.43	1825.54	242.46	1825.54	1982.97	278.33	1982.97		
2470.00	44.0	947.57	82.94	947.57	1112.95	104.97	1112.95	1279.87	129.60	1279.87	1447.54	156.81	1447.54	1615.34	186.62	1615.34	1782.87	219.02	1782.87	1949.86	254.01	1949.86	2116.17	291.59	2116.17		
2468.00	46.0	1019.55	86.71	1019.55	1193.92	109.74	1193.92	1369.84	135.49	1369.84	1546.51	163.94	1546.51	1723.31	195.10	1723.31	1899.83	228.97	1899.83	2075.82	265.55	2075.82	2251.12	304.84	2251.12		
2466.00	48.0	1092.30	90.48	1092.30	1275.76	114.51	1275.76	1460.77	141.38	1460.77	1646.53	171.07	1646.53	1832.42	203.58	1832.42	2018.04	238.93	2018.04	2203.12	277.10	2203.12	2387.52	318.10	2387.52		
2464.00	50.0	1165.64	94.25	1165.64	1358.27	119.29	1358.27	1552.45	147.27	1552.45	1747.38	178.19	1747.38	1942.44	212.06	1942.44	2137.23	248.88	2137.23	2331.48	288.64	2331.48	2525.04	331.35	2525.04		
2462.00	52.0	1239.42	98.02	1239.42	1441.28	124.06	1441.28	1644.68	153.16	1644.68	1848.83	185.32	1848.83	2053.11	220.55	2053.11	2257.12	258.84	2257.12	2460.59	300.19	2460.59	2663.38	344.61	2663.38		
2460.00	54.0	1313.47	101.79	1313.47	1524.59	128.83	1524.59	1737.24	159.05	1737.24	1950.65	192.45	1950.65	2164.19	229.03	2164.19	2377.46	268.79	2377.46	2590.18	311.74	2590.18	2802.23	357.86	2802.23		
2458.00	56.0	1387.64	105.56	1387.64	1608.03	133.60	1608.03	1829.96	164.94	1829.96	2052.63	199.58	2052.63	2275.45	237.51	2275.45	2497.98	278.75	2497.98	2719.98	323.28	2719.98	2941.30	371.11	2941.30		
2456.00	58.0	1461.77	109.33	1461.77	1691.42	138.37	1691.42	1922.62	170.83	1922.62	2154.56	206.70	2154.56	2386.64	246.00	2386.64	2618.44	288.70	2618.44	2849.71	334.83	2849.71	3080.29	384.37	3080.29		
2454.00	60.0	1535.71	113.10	1535.71	1774.60	143.14	1774.60	2015.04	176.72	2015.04	2256.23	213.83	2256.23	2497.55	254.48	2497.55	2738.59	298.66	2738.59	2979.10	346.37	2979.10	3218.92	397.62	3218.92		
2452.00	62.0	1609.31	116.87	1609.31	1857.40	147.92	1857.40	2107.03	182.61	2107.03	2357.42	220.96	2357.42	2607.94	262.96	2607.94	2858.18	308.61	2858.18	3107.89	357.92	3107.89	3356.92	410.88	3356.92		
2450.00	64.0	1682.41	120.64	1682.41	1939.64	152.69	1939.64	2198.42	188.50	2198.42	2457.94	228.09	2457.94	2717.60	271.44	2717.60	2976.98	318.57	2976.98	3235.83	369.46	3235.83	3493.99	424.13	3493.99		
2448.00	66.0	1754.89	124.41	1754.89	2021.17	157.46	2021.17	2289.01	194.39	2289.01	2557.59	235.22	2557.59	2826.31	279.93	2826.31	3094.75	328.52	3094.75	3362.65	381.01	3362.65	3629.87	437.38	3629.87		
2446.00	68.0	1826.58	128.18	1826.58	2101.83	162.23	2101.83	2378.63	200.28	2378.63	2656.17	242.34	2656.17	2933.85	288.41	2933.85	3211.25	338.48	3211.25	3488.12	392.56	3488.12	3764.30	450.64	3764.30		
2444.00	70.0	1897.36	131.95	1897.36	2181.45	167.00	2181.45	2467.10	206.17	2467.10	2753.49	249.47	2753.49	3040.02	296.89	3040.02	3326.27	348.43	3326.27	3611.98	404.10	3611.98	3897.01	463.89	3897.01		
2442.00	72.0	1967.08	135.72	1967.08	2259.89	171.77	2259.89	2554.25	212.06	2554.25	2849.36	256.60	2849.36	3144.60	305.37	3144.60	3439.56	358.39	3439.56	3733.99	415.65	3733.99	4027.74	477.15	4027.74		
2440.00	74.0	2035.61	139.49	2035.61	2336.99	176.54	2336.99	2639.91	217.96	2639.91	2943.58	263.73	2943.58	3247.39	313.86	3247.39	3550.92	368.34	3550.92	3853.92	427.19	3853.92	4156.23	490.40	4156.23		
2438.00	76.0	2102.81	143.26	2102.81	2412.59	181.32	2412.59	2723.91	223.85	2723.91	3035.99	270.85	3035.99	3348.20	322.34	3348.20	3660.13	378.30	3660.13	3971.52	438.74	3971.52	4282.23	503.65	4282.23		
2436.00	78.0	2168.55	147.03	2168.55	2486.55	186.09	2486.55	2806.09	229.74	2806.09	3126.38	277.98	3126.38	3446.81	330.82	3446.81	3766.96	388.26	3766.96	4086.57	450.28	4086.57	4405.50	516.91	4405.50		
2434.00	80.0	2232.70	150.80	2232.70	2558.72	190.86	2558.72	2886.28	235.63	2886.28	3214.59	285.11	3214.59	3543.04	339.30	3543.04	3871.20	398.21	3871.20	4198.84	461.83	4198.84	4525.78	530.16	4525.78		



Strength Limit State Shaft Resistance-Compression (kips) (Pier #3)



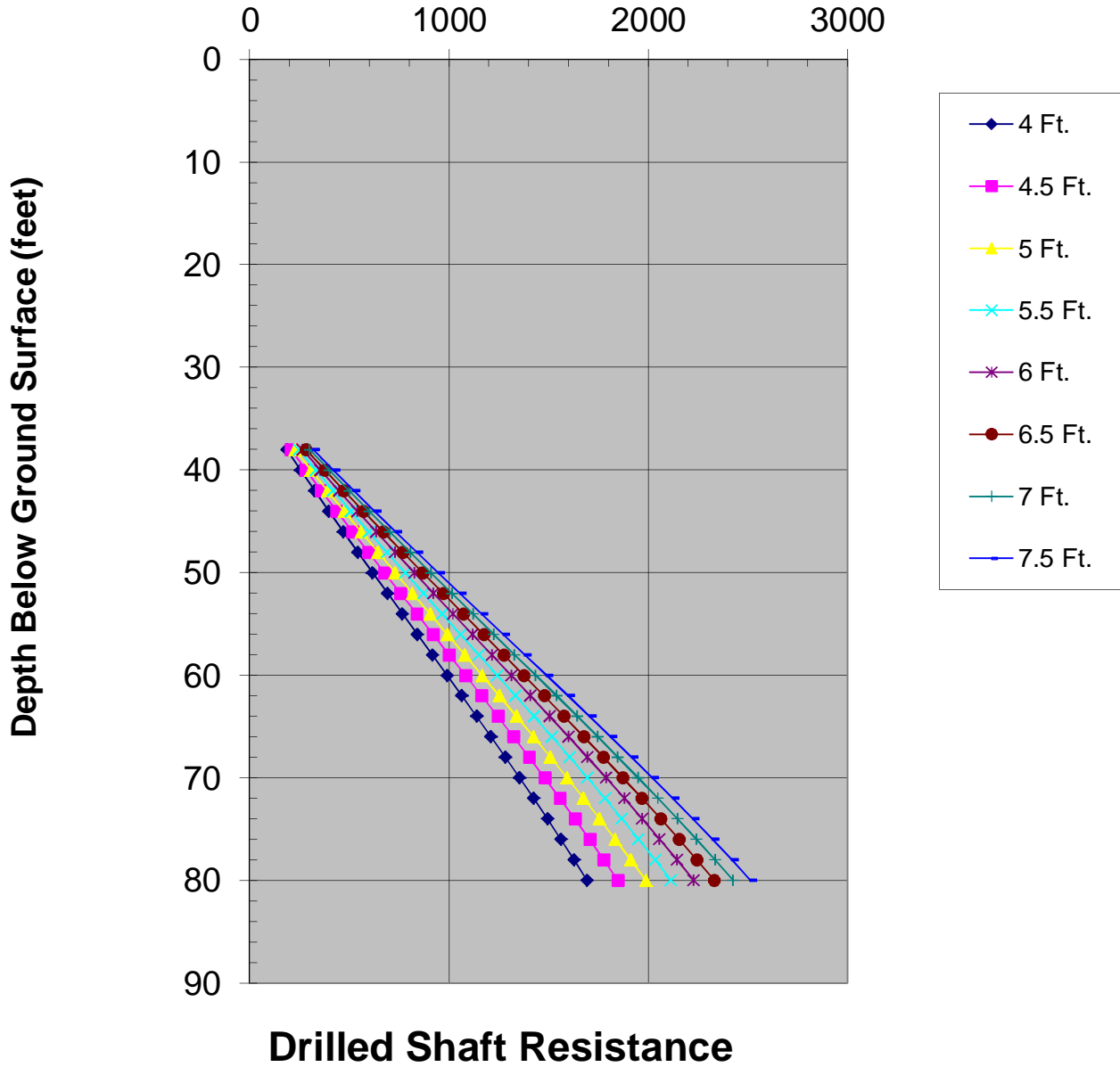
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

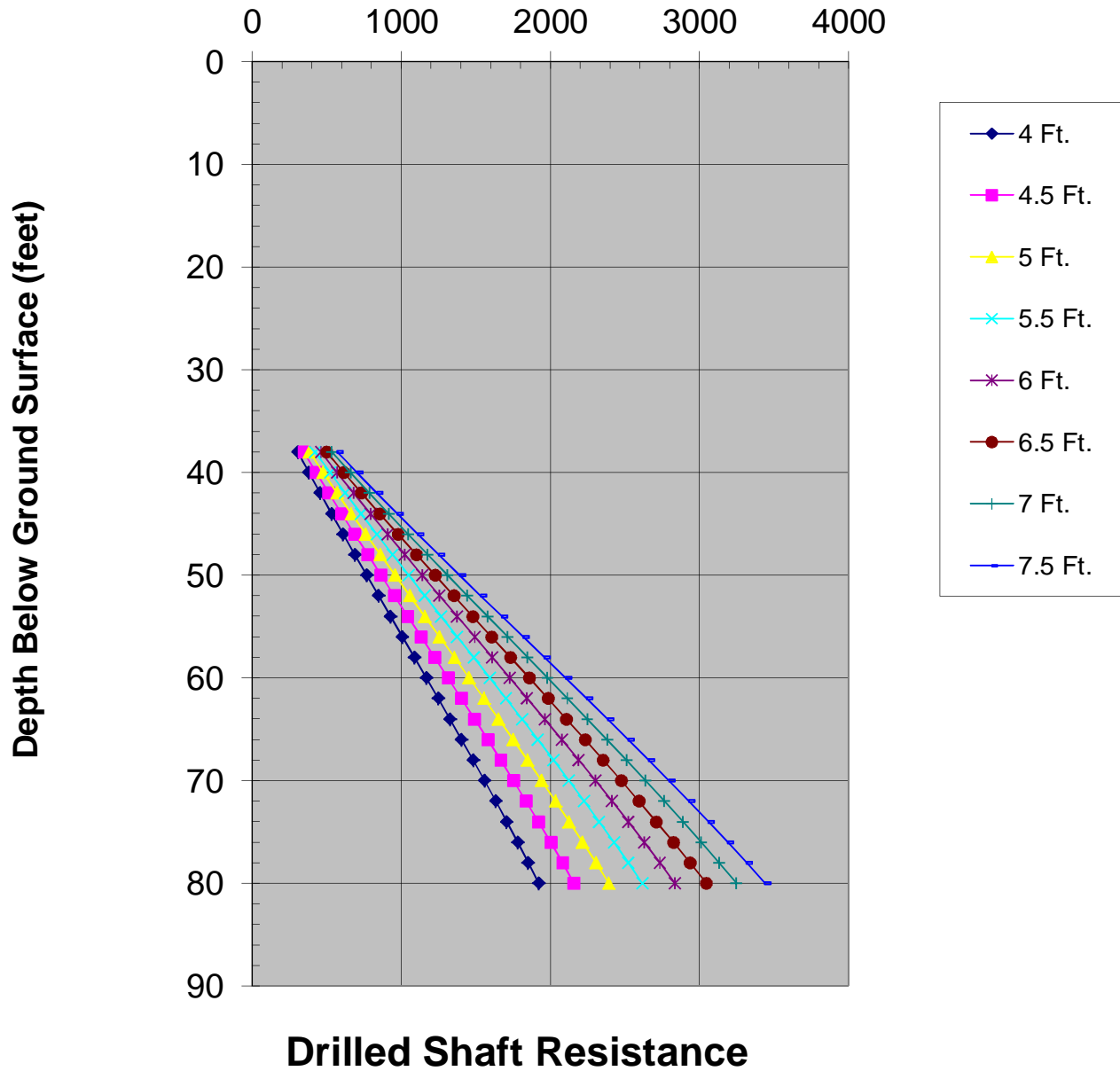
Analysis for
Settlement = 0.10 Inches

Service Limit Shaft Resistance-Compression (kips)

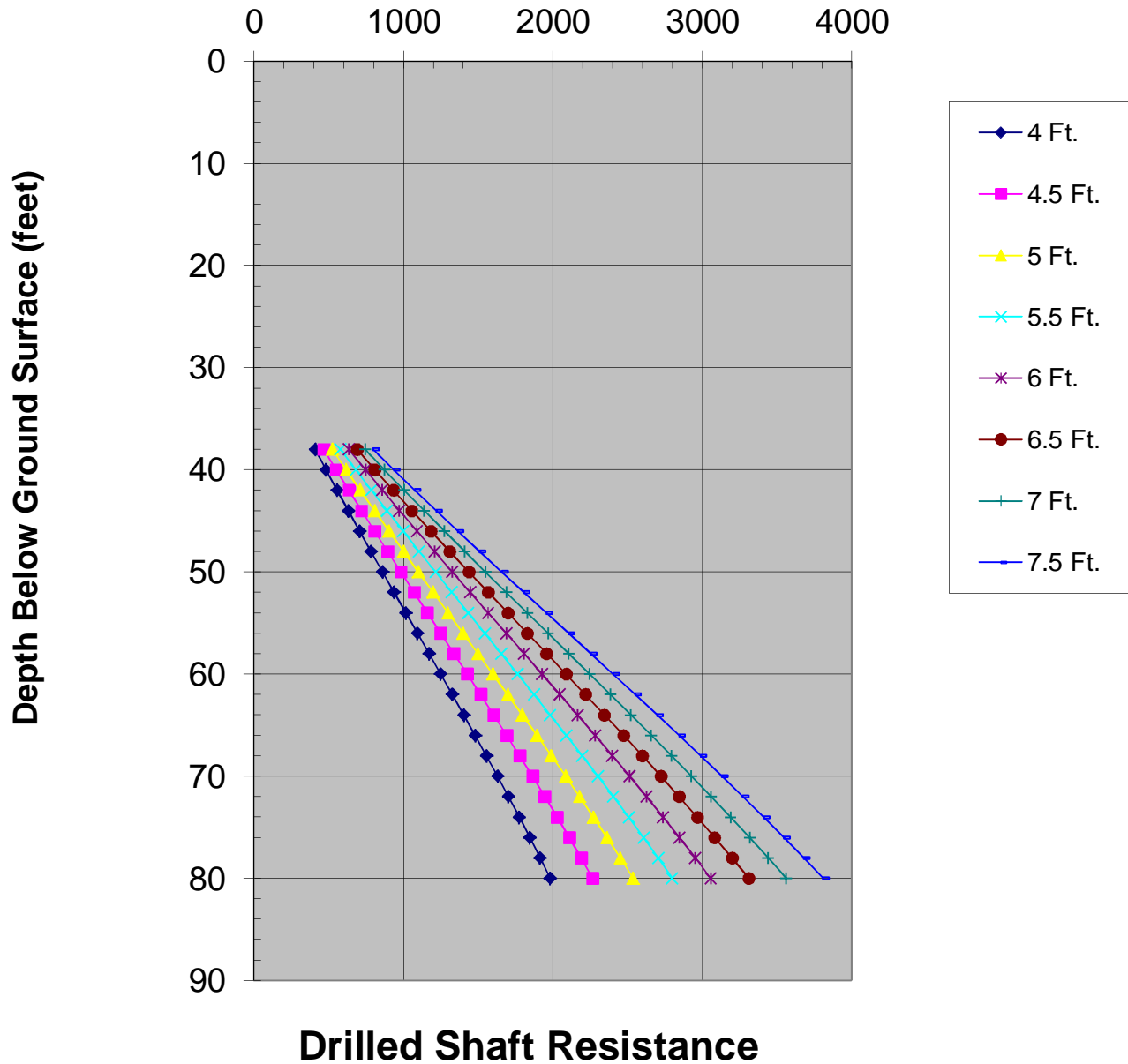


Analysis for
Settlement = 0.25 Inches

Service Limit Shaft Resistance-Compression (kips)

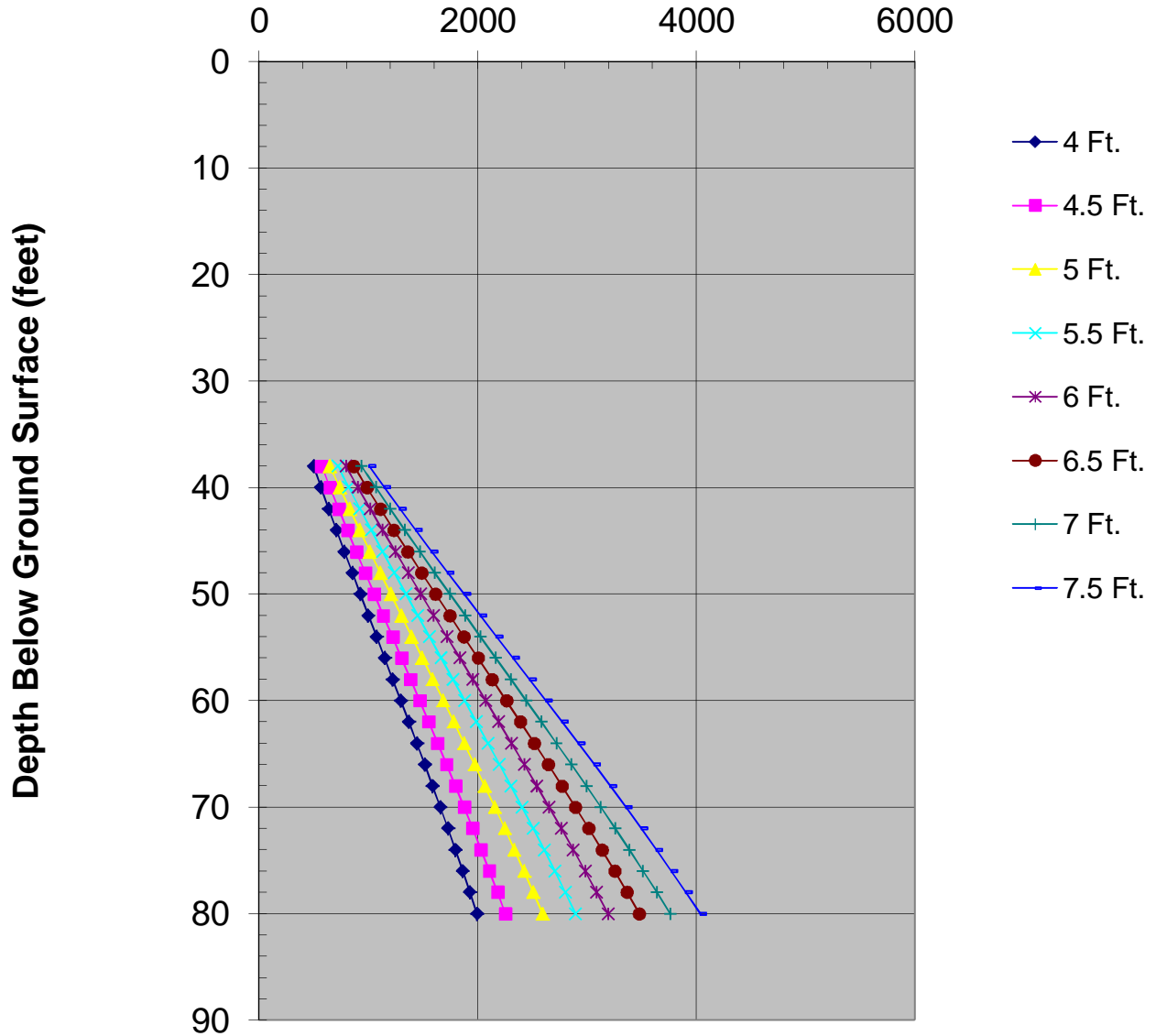


Service Limit Shaft Resistance-Compression (kips)



Analysis for
Settlement = 0.75 Inches

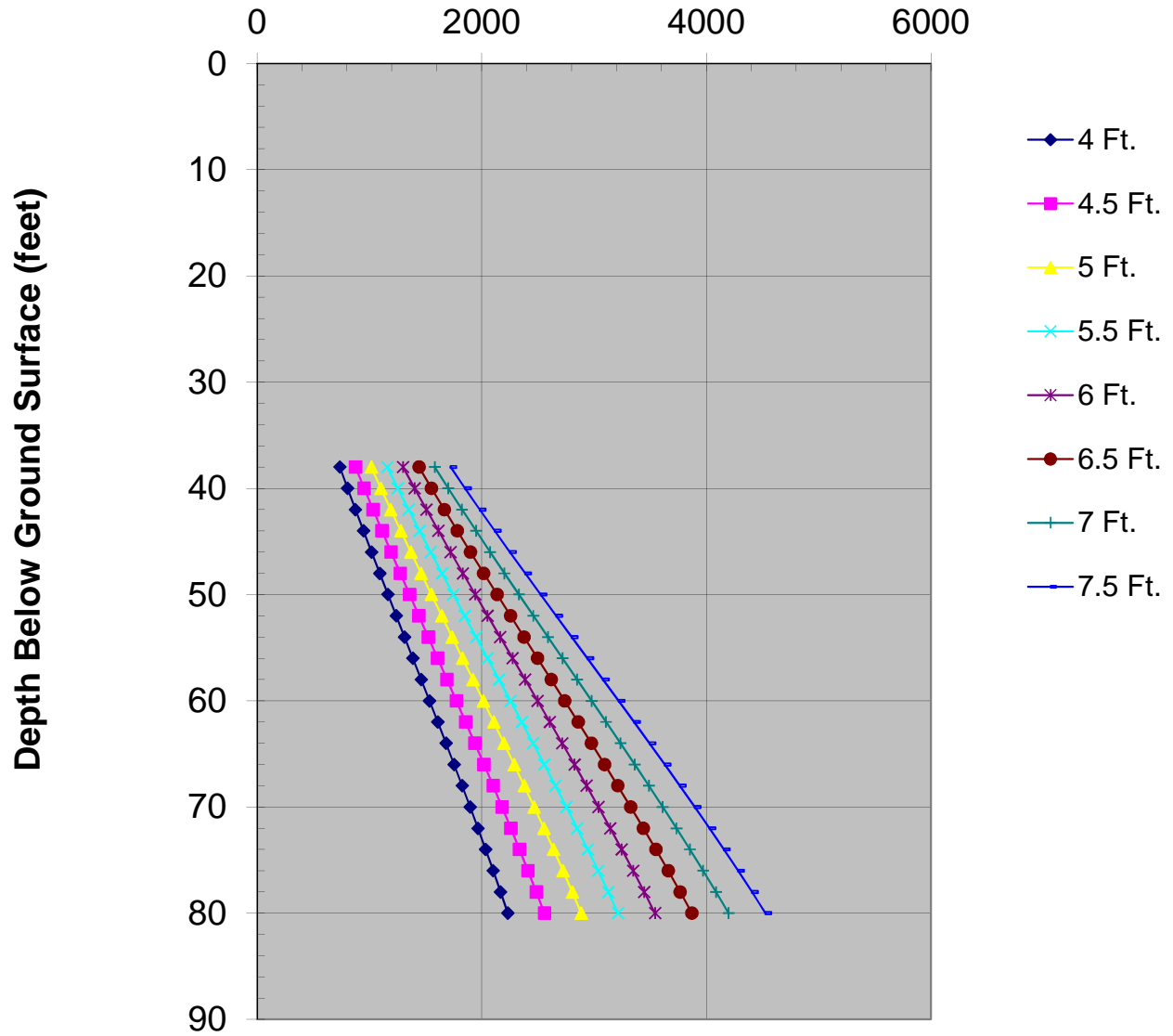
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for Settlement = 1.00 Inches

Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for
Settlement = 2.00 Inches

APPENDIX G
Pantano Wash Bridge
West Abutment
Axial Load Analyses Results

Drilled Shaft Resistance Analysis



Design Shaft-Displacement/Resistance Curve

PROJECT

Project Name: Kolb Road Bridge over Pantano Wash
 Project Location: Tucson, Arizona
 Project Number: 63125005

Structure Data

Structure Designation: 0
 Foundation Element: West Abut.

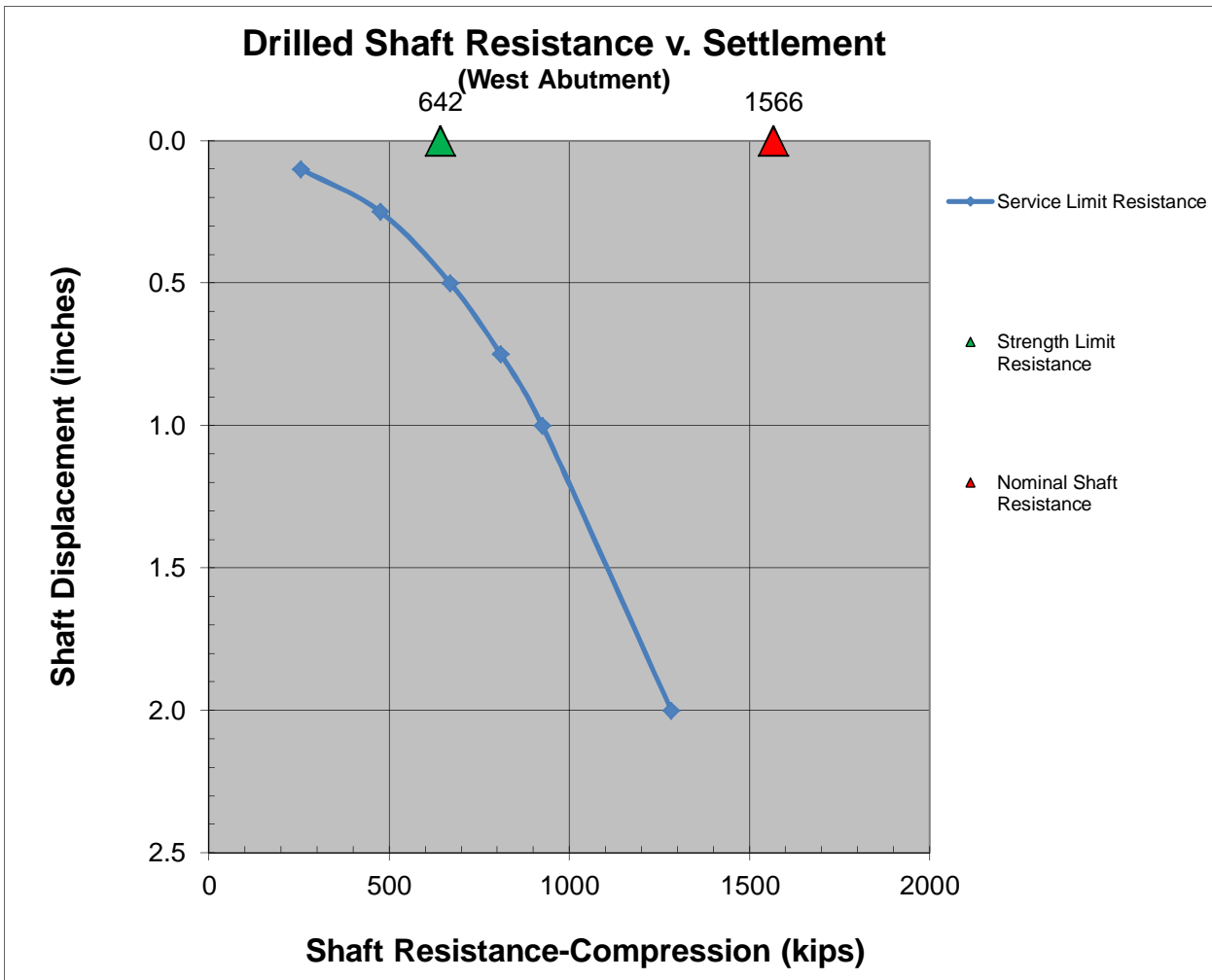
Foundation Design Criteria

Design Shaft Diameter: 5.0 ft.
 Design Shaft Depth: 46 ft.

Service Limit Displacements & Resistances

	δ (in)	Kips
1	0.10	255.2
2	0.25	476.3
3	0.50	668.9
4	0.75	809.5
5	1.00	924.6
6	2.00	1283.2

Strength Limit Resistance	Nominal Resistance
Kips	Kips
642	1566



Drilled Shaft LRFD Analysis



Drilled Shaft Foundation Analysis is based on procedures outlined in AASHTO (2010) & FHWA NHI-09

- ◆ Analysis applies to cohesive and cohesionless soils ($\phi=0$ and $c=0$)
- ◆ Drilled shaft service state loads based on the Load Transfer curves outlined in AASHTO 2010
- ◆ The analyses follow the ADOT Geotechnical Design Policies DS-1 and DS-2 dated December 1, 2010

PROJECT

Project Name:	Kolb Road Bridge over Pantano Wash
Project Location:	Tucson, Arizona
Project Number:	63125005

Structure Data

Structure Designation	
Foundation Element	West Abut

Foundation Data

Shaft Diameters

Maximum Diameter	7.5 ft.
Minimum Diameter	4.0 ft.
Increment for Diameter	0.5 ft.
Maximum Shaft Tip Depth	80 ft.

Service Limit Displacements

	δ (in)
1	0.10
2	0.25
3	0.50
4	0.75
5	1.00
6	2.00

Foundation Design Criteria

Design for Redundancy	No
Design Shaft Diameter	5.0 ft.
Design Shaft Depth	46 ft.

Show Service Limit Output for Case: 5

Subsurface Data

Initial Information

Number of Soil Layers	4
Depth to Groundwater	300 ft.
Ground Surface Elevation	2530.0 ft.

Soil Layer Properties

Layer Number	1	2	3	4
Depth from Ground Surface	20	38	65	96
Unit Weight of Layer (γ) pcf	115	125	120	125
Penetration Resistance " N_{60} " Blows/ft	0	0	58	74
Cohesion " c " of Layer (ksf)				
Thickness of layer (ft)	20.0	18.0	27.0	31.0
Soil Type	Sand	Gravel	Sand	Sand

Strength Resistance Factors

Analyses Conducted Without Redundant Design

	0.44	0.44	0.44	0.44
Side Resistance-Compression	0.44	0.44	0.44	0.44
Side Resistance-Uplift	0.36	0.36	0.36	0.36
Base Resistance-Compression	0.40	0.40	0.40	0.40

Drilled Shaft Resistance Analyses



Nominal End Bearing Resistance and Skin Friction Factors

Elevation feet	Depth of Shaft feet	Penetration Resistance N	Cohesion c (ksf)	Soil Unit Weight γ' (pcf)	Effective Stress σ'_z (psf)	β	α	Unit Skin Friction Load (ksf)	Side Resistance Factor Compression	Side Resistance Factor Uplift	Base Resistance Factor	Ultimate End Bearing Pressure (ksf)						
												Shaft Diameter (ft)						
												4	4.5	5	5.5	6	6.5	7
2528.00	2.0	0.0		115.0	115.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2526.00	4.0	0.0		115.0	345.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2524.00	6.0	0.0		115.0	575.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2522.00	8.0	0.0		115.0	805.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2520.00	10.0	0.0		115.0	1035.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2518.00	12.0	0.0		115.0	1265.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2516.00	14.0	0.0		115.0	1495.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2514.00	16.0	0.0		115.0	1725.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2512.00	18.0	0.0		115.0	1955.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2510.00	20.0	0.0		115.0	2185.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2508.00	22.0	0.0		125.0	2425.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2506.00	24.0	0.0		125.0	2675.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2504.00	26.0	0.0		125.0	2925.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2502.00	28.0	0.0		125.0	3175.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2500.00	30.0	0.0		125.0	3425.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2498.00	32.0	0.0		125.0	3675.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2496.00	34.0	0.0		125.0	3925.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2494.00	36.0	0.0		125.0	4175.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2492.00	38.0	0.0		125.0	4425.0	0.00		0.00	0.44	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2490.00	40.0	58.0		120.0	4670.0	0.65		3.02	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2488.00	42.0	58.0		120.0	4910.0	0.63		3.07	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2486.00	44.0	58.0		120.0	5150.0	0.60		3.11	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2484.00	46.0	58.0		120.0	5390.0	0.58		3.15	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2482.00	48.0	58.0		120.0	5630.0	0.56		3.18	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2480.00	50.0	58.0		120.0	5870.0	0.55		3.20	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2478.00	52.0	58.0		120.0	6110.0	0.53		3.22	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2476.00	54.0	58.0		120.0	6350.0	0.51		3.23	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2474.00	56.0	58.0		120.0	6590.0	0.49		3.23	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2472.00	58.0	58.0		120.0	6830.0	0.47		3.22	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2470.00	60.0	58.0		120.0	7070.0	0.45		3.21	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2468.00	62.0	58.0		120.0	7310.0	0.44		3.19	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2466.00	64.0	58.0		120.0	7550.0	0.42		3.17	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2464.00	66.0	74.0		125.0	7795.0	0.40		3.14	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2462.00	68.0	74.0		125.0	8045.0	0.39		3.11	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2460.00	70.0	74.0		125.0	8295.0	0.37		3.07	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2458.00	72.0	74.0		125.0	8545.0	0.35		3.03	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2456.00	74.0	74.0		125.0	8795.0	0.34		2.98	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2454.00	76.0	74.0		125.0	9045.0	0.32		2.92	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2452.00	78.0	74.0		125.0	9295.0	0.31		2.86	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2450.00	80.0	74.0		125.0	9545.0	0.29		2.79	0.44	0.36	0.40	60.0	60.0	60.0	60.0	60.0	60.0	60.0

Drilled Shaft Resistance Analyses

Service Limit Output Based on Settlement Analyses for Settlement = 1 Inches

Elevation feet	Depth of Shaft feet	Layer Soil Type	Concrete Unit Weight γ' (pcf)	Effective Concrete Stress σ'_z (psf)	Service Limit Factor for End Bearing							
					Based on the Total Settlement as a % of Shaft Diameter							
					Shaft Diameter (ft)							
					4	4.5	5	5.5	6	6.5	7	7.5
2528.00	2.0	Sand	150.0	300.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2526.00	4.0	Sand	150.0	600.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2524.00	6.0	Sand	150.0	900.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2522.00	8.0	Sand	150.0	1200.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2520.00	10.0	Sand	150.0	1500.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2518.00	12.0	Sand	150.0	1800.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2516.00	14.0	Sand	150.0	2100.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2514.00	16.0	Sand	150.0	2400.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2512.00	18.0	Sand	150.0	2700.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2510.00	20.0	Sand	150.0	3000.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2508.00	22.0	Gravel	150.0	3300.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2506.00	24.0	Gravel	150.0	3600.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2504.00	26.0	Gravel	150.0	3900.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2502.00	28.0	Gravel	150.0	4200.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2500.00	30.0	Gravel	150.0	4500.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2498.00	32.0	Gravel	150.0	4800.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2496.00	34.0	Gravel	150.0	5100.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2494.00	36.0	Gravel	150.0	5400.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2492.00	38.0	Gravel	150.0	5700.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2490.00	40.0	Sand	150.0	6000.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2488.00	42.0	Sand	150.0	6300.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2486.00	44.0	Sand	150.0	6600.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2484.00	46.0	Sand	150.0	6900.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2482.00	48.0	Sand	150.0	7200.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2480.00	50.0	Sand	150.0	7500.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2478.00	52.0	Sand	150.0	7800.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2476.00	54.0	Sand	150.0	8100.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2474.00	56.0	Sand	150.0	8400.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2472.00	58.0	Sand	150.0	8700.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2470.00	60.0	Sand	150.0	9000.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2468.00	62.0	Sand	150.0	9300.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2466.00	64.0	Sand	150.0	9600.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2464.00	66.0	Sand	150.0	9900.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2462.00	68.0	Sand	150.0	10200.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2460.00	70.0	Sand	150.0	10500.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2458.00	72.0	Sand	150.0	10800.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2456.00	74.0	Sand	150.0	11100.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2454.00	76.0	Sand	150.0	11400.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2452.00	78.0	Sand	150.0	11700.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329
2450.00	80.0	Sand	150.0	12000.0	0.573	0.521	0.476	0.438	0.405	0.376	0.351	0.329

Drilled Shaft Resistance Analyses



Nominal Load Shaft Resistances

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips	End Bearing kips	Skin Capacity kips	Total Capacity kips
2528.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2526.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2524.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2522.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2520.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2518.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2516.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2514.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2512.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2510.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2508.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2506.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2504.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2502.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2500.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2498.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2496.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2494.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2492.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2490.00	40.0	754.01	75.85	829.85	954.29	85.33	1039.62	1178.14	94.81	1272.94	1425.55	104.29	1529.83	1696.52	113.77	1810.29	1991.05	123.25	2114.30	2309.15	132.73	2441.88	2650.81	142.21	2793.02
2488.00	42.0	754.01	152.99	906.99	954.29	172.11	1126.40	1178.14	191.23	1369.37	1425.55	210.36	1635.90	1696.52	229.48	1926.00	1991.05	248.60	2239.66	2309.15	267.73	2576.88	2650.81	286.85	2937.66
2486.00	44.0	754.01	231.23	985.24	954.29	260.14	1214.43	1178.14	289.04	1467.18	1425.55	317.95	1743.49	1696.52	346.85	2043.37	1991.05	375.75	2366.81	2309.15	404.66	2713.81	2650.81	433.56	3084.37
2484.00	46.0	754.01	310.40	1064.41	954.29	349.20	1303.49	1178.14	388.00	1566.14	1425.55	426.80	1852.35	1696.52	465.60	2162.12	1991.05	504.40	2495.45	2309.15	543.20	2852.35	2650.81	582.00	3232.81
2482.00	48.0	754.01	390.31	1144.31	954.29	439.09	1393.38	1178.14	487.88	1666.02	1425.55	536.67	1962.22	1696.52	585.46	2281.98	1991.05	634.25	2625.30	2309.15	683.03	2992.18	2650.81	731.82	3382.63
2480.00	50.0	754.01	470.77	1224.78	954.29	529.62	1483.91	1178.14	588.46	1766.60	1425.55	647.31	2072.86	1696.52	706.16	2402.67	1991.05	765.00	2756.06	2309.15	823.85	3133.00	2650.81	882.70	3533.51
2478.00	52.0	754.01	551.62	1305.63	954.29	620.58	1574.87	1178.14	689.53	1867.67	1425.55	758.48	2184.03	1696.52	827.44	2523.95	1991.05	896.39	2887.44	2309.15	965.34	3274.49	2650.81	1034.29	3685.10
2476.00	54.0	754.01	632.69	1386.70	954.29	711.78	1666.07	1178.14	790.87	1969.00	1425.55	869.95	2295.50	1696.52	949.04	2645.56	1991.05	1028.13	3019.18	2309.15	1107.21	3416.36	2650.81	1186.30	3837.11
2474.00	56.0	754.01	713.81	1467.82	954.29	803.04	1757.33	1178.14	892.26	2070.40	1425.55	981.49	2407.04	1696.52	1070.72	2767.23	1991.05	1159.94	3151.00	2309.15	1249.17	3558.32	2650.81	1338.40	3989.20
2472.00	58.0	754.01	794.81	1548.82	954.29	894.17	1848.46	1178.14	993.52	2171.65	1425.55	1092.87	2518.41	1696.52	1192.22	2888.74	1991.05	1291.57	3282.62	2309.15	1390.92	3700.07	2650.81	1490.28	4141.08
2470.00	60.0	754.01	875.54	1629.55	954.29	984.98	1939.27	1178.14	1094.42	2272.56	1425.55	1203.87	2629.41	1696.52	1313.31	3009.83	1991.05	1422.75	3413.80	2309.15	1532.19	3841.34	2650.81	1641.64	4292.45
2468.00	62.0	754.01	955.83	1709.84	954.29	1075.31	2029.60	1178.14	1194.79	2372.92	1425.55	1314.27	2739.81	1696.52	1433.74	3130.26	1991.05	1553.22	3544.27	2309.15	1672.70	3981.85	2650.81	1792.18	4442.99
2466.00	64.0	754.01	1035.53	1789.54	954.29	1164.97	2119.26	1178.14	1294.41	2472.55	1425.55	1423.85	2849.40	1696.52	1553.29	3249.81	1991.05	1682.73	3673.79	2309.15	1812.17	4121.32	2650.81	1941.61	4592.42
2464.00	66.0	754.01	1114.53	1868.54	954.29	1253.85	2208.14	1178.14	1393.17	2571.30	1425.55	1532.48	2958.03	1696.52	1671.80	3368.32	1991.05	1811.11	3802.17	2309.15	1950.43	4259.58	2650.81	2089.75	4740.56
2462.00	68.0	754.01	1192.74	1946.74	954.29	1341.83	2296.12	1178.14	1490.92	2669.06	1425.55	1640.01	3065.56	1696.52	1789.10	3485.62	1991.05	1938.19	3929.25	2309.15	2087.29	4396.44	2650.81	2236.38	4887.19
2460.00	70.0	754.01	1269.98	2023.99	954.29	1428.73	2383.02	1178.14	1587.48	2765.61	1425.55	1746.22	3171.77	1696.52	1904.97	3601.49	1991.05	2063.72	4054.77	2309.15	2222.47	4531.61	2650.81	2381.21	5032.02
2458.00	72.0	754.01	1346.11	2100.12	954.29	1514.38	2468.67	1178.14	1682.64	2860.78	1425.55	1850.90	3276.45	1696.52	2019.17	3715.69	1991.05	2187.43	4178.48	2309.15	2355.70	4664.85	2650.81	2523.96	5174.77
2456.00	74.0	754.01	1420.98	2174.99	954.29	1598.60	2552.89	1178.14	1776.22	2954.36	1425.55	1953.85	3379.39	1696.52	2131.47	3827.99	1991.05	2309.09	4300.14	2309.15	2486.71	4795.86	2650.81	2664.33	5315.14
2454.00	76.0	754.01	1494.43	2248.44	954.29	1681.23	2635.52	1178.14	1868.04	3046.17	1425.55	2054.84	3480.39	1696.52	2241.64	3938.16	1991.05	2428.45	4419.50	2309.15	2615.25	4924.40	2650.81	2802.06	5452.86
2452.00	78.0	754.01	1566.32	2320.32	954.29	1762.11	2716.40	1178.14	1957.90	3136.03	1425.55	2153.68	3579.23	1696.52	2349.47	4045.99	1991.05	2545.26	4536.32	2309.15	2741.05	5050.20	2650.81	2936.84	5587.65
2450.00	80.0	754.01	1636.49	2390.50	954.29	1841.05	2795.35	1178.14	2045.62	3223.75	1425.55	2250.18	3675.72	1696.52	2454.74	4151.26	1991.05	2659.30	4650.35	2309.15	2863.86	5173.01	2650.81	3068.42	5719.23

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement				Analyses for Settlement = 0.10 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.				
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips		
2528.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00		
2526.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00		
2524.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00		
2522.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00		
2520.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00		
2518.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00		
2516.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00		
2514.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00		
2512.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00		
2510.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00		
2508.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00		
2506.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00		
2504.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00		
2502.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00		
2500.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00		
2498.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00		
2496.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00		
2494.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00		
2492.00		0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00		
2490.00	40.0	91.62	75.40	91.62	99.14	95.43	99.14	106.37	117.81	106.37	113.37	142.55	113.37	120.18	169.65	120.18	126.86	199.11	126.86	133.41	230.91	133.41	139.87	265.08	139.87		
2488.00	42.0	137.31	79.17	137.31	146.62	100.20	146.62	155.32	123.70	155.32	163.57	149.68	163.57	171.46	178.13	171.46	179.05	209.06	179.05	186.41	242.46	186.41	193.58	278.33	193.58		
2486.00	44.0	183.65	82.94	183.65	194.77	104.97	194.77	204.98	129.60	204.98	214.49	156.81	214.49	223.46	186.62	223.46	232.00	219.02	232.00	240.17	254.01	240.17	248.06	291.59	248.06		
2484.00	46.0	230.54	86.71	230.54	243.49	109.74	243.49	255.22	135.49	255.22	266.02	163.94	266.02	276.08	195.10	276.08	285.56	228.97	285.56	294.57	265.55	294.57	303.18	304.84	303.18		
2482.00	48.0	277.87	90.48	277.87	292.66	114.51	292.66	305.93	141.38	305.93	318.02	171.07	318.02	329.19	203.58	329.19	339.63	238.93	339.63	349.47	277.10	349.47	358.81	318.10	358.81		
2480.00	50.0	325.53	94.25	325.53	342.18	119.29	342.18	356.99	147.27	356.99	370.39	178.19	370.39	382.67	212.06	382.67	394.07	248.88	394.07	404.75	288.64	404.75	414.84	331.35	414.84		
2478.00	52.0	373.42	98.02	373.42	391.94	124.06	391.94	408.30	153.16	408.30	423.01	185.32	423.01	436.41	220.55	436.41	448.78	258.84	448.78	460.30	300.19	460.30	471.13	344.61	471.13		
2476.00	54.0	421.44	101.79	421.44	441.83	128.83	441.83	459.75	159.05	459.75	475.77	192.45	475.77	490.29	229.03	490.29	503.63	268.79	503.63	516.00	311.74	516.00	527.58	357.86	527.58		
2474.00	56.0	469.48	105.56	469.48	491.75	133.60	491.75	511.22	164.94	511.22	528.56	199.58	528.56	544.21	237.51	544.21	558.51	278.75	558.51	571.73	323.28	571.73	584.05	371.11	584.05		
2472.00	58.0	517.46	109.33	517.46	541.60	138.37	541.60	562.63	170.83	562.63	581.27	206.70	581.27	598.05	246.00	598.05	613.32	288.70	613.32	627.39	334.83	627.39	640.45	384.37	640.45		
2470.00	60.0	565.28	113.10	565.28	591.27	143.14	591.27	613.86	176.72	613.86	633.81	213.83	633.81	651.70	254.48	651.70	667.94	298.66	667.94	682.85	346.37	682.85	696.66	397.62	696.66		
2468.00	62.0	612.83	116.87	612.83	640.68	147.92	640.68	664.81	182.61	664.81	686.06	220.96	686.06	705.07	262.96	705.07	722.27	308.61	722.27	738.01	357.92	738.01	752.56	410.88	752.56		
2466.00	64.0	660.04	120.64	660.04	689.73	152.69	689.73	715.39	188.50	715.39	737.93	228.09	737.93	758.04	271.44	758.04	776.19	318.57	776.19	792.77	369.46	792.77	808.05	424.13	808.05		
2464.00	66.0	706.83	124.41	706.83	738.35	157.46	738.35	765.52	194.39	765.52	789.35	235.22	789.35	810.55	279.93	810.55	829.65	328.52	829.65	847.05	381.01	847.05	863.05	437.38	863.05		
2462.00	68.0	753.15	128.18	753.15	786.48	162.23	786.48	815.15	200.28	815.15	840.24	242.34	840.24	862.52	288.41	862.52	882.56	338.48	882.56	900.78	392.56	900.78	917.50	450.64	917.50		
2460.00	70.0	798.90	131.95	798.90	834.01	167.00	834.01	864.17	206.17	864.17	890.51	249.47	890.51	913.87	296.89	913.87	934.83	348.43	934.83	953.85	404.10	953.85	971.28	463.89	971.28		
2458.00	72.0	844.00	135.72	844.00	880.86	171.77	880.86	912.48	212.06	912.48	940.06	256.60	940.06	964.47	305.37	964.47	986.34	358.39	986.34	1006.16	415.65	1006.16	1024.29	477.15	1024.29		
2456.00	74.0	888.34	139.49	888.34	926.94	176.54	926.94	959.99	217.96	959.99	988.78	263.73	988.78	1014.23	313.86	1014.23	1037.00	368.34	1037.00	1057.60	427.19	1057.60	1076.42	490.40	1076.42		
2454.00	76.0	931.84	143.26	931.84	972.14	181.32	972.14	1006.61	223.85	1006.61	1036.59	270.85	1036.59	1063.05	322.34	1063.05	1086.69	378.30	1086.69	1108.06	438.74	1108.06	1127.56	503.65	1127.56		
2452.00	78.0	974.42	147.03	974.42	1016.38	186.09	1016.38	1052.22	229.74	1052.22	1083.37	277.98	1083.37	1110.83	330.82	1110.83	1135.33	388.26	1135.33	1157.45	450.28	1157.45	1177.61	516.91	1177.61		
2450.00	80.0	1015.99	150.80	1015.99	1059.56	190.86	1059.56	1096.76	235.63	1096.76	1129.04	285.11	1129.04	1157.47	339.30	1157.47	1182.82	398.21	1182.82	1205.67	461.83	1205.67	1226.47	530.16	1226.47		

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement				Analyses for Settlement = 0.25 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.				
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips		
2528.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00		
2526.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00		
2524.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00		
2522.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00		
2520.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00		
2518.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00		
2516.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00		
2514.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00		
2512.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00		
2510.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00		
2508.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00		
2506.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00		
2504.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00		
2502.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00		
2500.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00		
2498.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00		
2496.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00		
2494.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00		
2492.00		0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00		
2490.00	40.0	186.64	75.40	186.64	207.42	95.43	207.42	227.47	117.81	227.47	246.90	142.55	246.90	265.77	169.65	265.77	284.17	199.11	284.17	302.17	230.91	302.17	319.81	265.08	319.81		
2488.00	42.0	256.66	79.17	256.66	283.70	100.20	283.70	309.32	123.70	309.32	333.70	149.68	333.70	356.99	178.13	356.99	379.36	209.06	379.36	400.92	242.46	400.92	421.78	278.33	421.78		
2486.00	44.0	327.68	82.94	327.68	361.07	104.97	361.07	392.34	129.60	392.34	421.74	156.81	421.74	449.52	186.62	449.52	475.91	219.02	475.91	501.08	254.01	501.08	525.20	291.59	525.20		
2484.00	46.0	399.54	86.71	399.54	439.36	109.74	439.36	476.34	135.49	476.34	510.82	163.94	510.82	543.14	195.10	543.14	573.59	228.97	573.59	602.42	265.55	602.42	629.84	304.84	629.84		
2482.00	48.0	472.07	90.48	472.07	518.37	114.51	518.37	561.12	141.38	561.12	600.73	171.07	600.73	637.63	203.58	637.63	672.18	238.93	672.18	704.70	277.10	704.70	735.46	318.10	735.46		
2480.00	50.0	545.11	94.25	545.11	597.94	119.29	597.94	646.49	147.27	646.49	691.27	178.19	691.27	732.79	212.06	732.79	771.47	248.88	771.47	807.70	288.64	807.70	841.82	331.35	841.82		
2478.00	52.0	618.50	98.02	618.50	677.89	124.06	677.89	732.28	153.16	732.28	782.25	185.32	782.25	828.40	220.55	828.40	871.23	258.84	871.23	911.20	300.19	911.20	948.69	344.61	948.69		
2476.00	54.0	692.09	101.79	692.09	758.06	128.83	758.06	818.29	159.05	818.29	873.47	192.45	873.47	924.27	229.03	924.27	971.26	268.79	971.26	1014.97	311.74	1014.97	1055.84	357.86	1055.84		
2474.00	56.0	765.72	105.56	765.72	838.27	133.60	838.27	904.36	164.94	904.36	964.75	199.58	964.75	1020.19	237.51	1020.19	1071.35	278.75	1071.35	1118.81	323.28	1118.81	1163.06	371.11	1163.06		
2472.00	58.0	839.25	109.33	839.25	918.37	138.37	918.37	990.30	170.83	990.30	1055.89	206.70	1055.89	1115.98	246.00	1115.98	1171.30	288.70	1171.30	1222.50	334.83	1222.50	1270.13	384.37	1270.13		
2470.00	60.0	912.52	113.10	912.52	998.20	143.14	998.20	1075.95	176.72	1075.95	1146.73	213.83	1146.73	1211.44	254.48	1211.44	1270.91	298.66	1270.91	1325.83	346.37	1325.83	1376.83	397.62	1376.83		
2468.00	62.0	985.40	116.87	985.40	1077.59	147.92	1077.59	1161.14	182.61	1161.14	1237.07	220.96	1237.07	1306.39	262.96	1306.39	1369.98	308.61	1369.98	1428.61	357.92	1428.61	1482.95	410.88	1482.95		
2466.00	64.0	1057.74	120.64	1057.74	1156.40	152.69	1156.40	1245.70	188.50	1245.70	1326.75	228.09	1326.75	1400.63	271.44	1400.63	1468.32	318.57	1468.32	1530.63	369.46	1530.63	1588.30	424.13	1588.30		
2464.00	66.0	1129.46	124.41	1129.46	1234.53	157.46	1234.53	1329.52	194.39	1329.52	1415.65	235.22	1415.65	1494.06	279.93	1494.06	1565.80	328.52	1565.80	1631.76	381.01	1631.76	1692.72	437.38	1692.72		
2462.00	68.0	1200.44	128.18	1200.44	1311.86	162.23	1311.86	1412.49	200.28	1412.49	1503.64	242.34	1503.64	1586.54	288.41	1586.54	1662.29	338.48	1662.29	1731.87	392.56	1731.87	1796.09	450.64	1796.09		
2460.00	70.0	1270.56	131.95	1270.56	1388.24	167.00	1388.24	1494.45	206.17	1494.45	1590.56	249.47	1590.56	1677.88	296.89	1677.88	1757.60	348.43	1757.60	1830.75	404.10	1830.75	1898.19	463.89	1898.19		
2458.00	72.0	1339.66	135.72	1339.66	1463.52	171.77	1463.52	1575.23	212.06	1575.23	1676.22	256.60	1676.22	1767.91	305.37	1767.91	1851.54	358.39	1851.54	1928.20	415.65	1928.20	1998.82	477.15	1998.82		
2456.00	74.0	1407.62	139.49	1407.62	1537.56	176.54	1537.56	1654.66	217.96	1654.66	1760.47	263.73	1760.47	1856.44	313.86	1856.44	1943.92	368.34	1943.92	2024.04	427.19	2024.04	2097.78	490.40	2097.78		
2454.00	76.0	1474.29	143.26	1474.29	1610.19	181.32	1610.19	1732.59	223.85	1732.59	1843.11	270.85	1843.11	1943.30	322.34	1943.30	2034.55	378.30	2034.55	2118.06	438.74	2118.06	2194.86	503.65	2194.86		
2452.00	78.0	1539.54	147.03	1539.54	1681.27	186.09	1681.27	1808.86	229.74	1808.86	1924.00	277.98	1924.00	2028.31	330.82	2028.31	2123.25	388.26	2123.25	2210.08	450.28	2210.08	2289.88	516.91	2289.88		
2450.00	80.0	1603.24	150.80	1603.24	1750.67	190.86	1750.67	1883.32	235.63	1883.32	2002.97	285.11	2002.97	2111.30	339.30	2111.30	2209.84	398.21	2209.84	2299.91	461.83	2299.91	2382.64	530.16	2382.64		

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement				Analyses for Settlement = 0.50 Inch(es)																							
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.				
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips		
2528.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00		
2526.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00		
2524.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00		
2522.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00		
2520.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00		
2518.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00		
2516.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00		
2514.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00		
2512.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00		
2510.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00		
2508.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00		
2506.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00		
2504.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00		
2502.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00		
2500.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00		
2498.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00		
2496.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00		
2494.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00		
2492.00		0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00		
2490.00	40.0	307.20	75.40	307.20	346.54	95.43	346.54	385.44	117.81	385.44	423.87	142.55	423.87	461.83	169.65	461.83	499.31	199.11	499.31	536.29	230.91	536.29	572.80	265.08	572.80		
2488.00	42.0	382.21	79.17	382.21	430.77	100.20	430.77	478.66	123.70	478.66	525.82	149.68	525.82	572.18	178.13	572.18	617.67	209.06	617.67	662.28	242.46	662.28	706.02	278.33	706.02		
2486.00	44.0	458.30	82.94	458.30	516.20	104.97	516.20	573.21	129.60	573.21	629.23	156.81	629.23	684.10	186.62	684.10	737.73	219.02	737.73	790.08	254.01	790.08	841.14	291.59	841.14		
2484.00	46.0	535.28	86.71	535.28	602.64	109.74	602.64	668.88	135.49	668.88	733.85	163.94	733.85	797.34	195.10	797.34	859.20	228.97	859.20	919.38	265.55	919.38	977.85	304.84	977.85		
2482.00	48.0	612.98	90.48	612.98	689.88	114.51	689.88	765.44	141.38	765.44	839.45	171.07	839.45	911.63	203.58	911.63	981.81	238.93	981.81	1049.88	277.10	1049.88	1115.84	318.10	1115.84		
2480.00	50.0	691.22	94.25	691.22	777.73	119.29	777.73	862.68	147.27	862.68	945.79	178.19	945.79	1026.73	212.06	1026.73	1105.27	248.88	1105.27	1181.30	288.64	1181.30	1254.80	331.35	1254.80		
2478.00	52.0	769.85	98.02	769.85	866.01	124.06	866.01	960.39	153.16	960.39	1052.64	185.32	1052.64	1142.38	220.55	1142.38	1229.33	258.84	1229.33	1313.35	300.19	1313.35	1394.42	344.61	1394.42		
2476.00	54.0	848.68	101.79	848.68	954.52	128.83	954.52	1058.36	159.05	1058.36	1159.78	192.45	1159.78	1258.34	229.03	1258.34	1353.72	268.79	1353.72	1445.76	311.74	1445.76	1534.42	357.86	1534.42		
2474.00	56.0	927.56	105.56	927.56	1043.09	133.60	1043.09	1156.38	164.94	1156.38	1266.98	199.58	1266.98	1374.36	237.51	1374.36	1478.18	278.75	1478.18	1578.24	323.28	1578.24	1674.50	371.11	1674.50		
2472.00	58.0	1006.32	109.33	1006.32	1131.53	138.37	1131.53	1254.27	170.83	1254.27	1374.03	206.70	1374.03	1490.23	246.00	1490.23	1602.47	288.70	1602.47	1710.54	334.83	1710.54	1814.39	384.37	1814.39		
2470.00	60.0	1084.82	113.10	1084.82	1219.67	143.14	1219.67	1351.82	176.72	1351.82	1480.71	213.83	1480.71	1605.70	254.48	1605.70	1726.33	298.66	1726.33	1842.38	346.37	1842.38	1953.79	397.62	1953.79		
2468.00	62.0	1162.90	116.87	1162.90	1307.33	147.92	1307.33	1448.85	182.61	1448.85	1586.82	220.96	1586.82	1720.54	262.96	1720.54	1849.53	308.61	1849.53	1973.52	357.92	1973.52	2092.44	410.88	2092.44		
2466.00	64.0	1240.39	120.64	1240.39	1394.35	152.69	1394.35	1545.16	188.50	1545.16	1692.14	228.09	1692.14	1834.54	271.44	1834.54	1971.81	318.57	1971.81	2103.68	369.46	2103.68	2230.07	424.13	2230.07		
2464.00	66.0	1317.22	124.41	1317.22	1480.61	157.46	1480.61	1640.63	194.39	1640.63	1796.55	235.22	1796.55	1947.55	279.93	1947.55	2093.04	328.52	2093.04	2232.72	381.01	2232.72	2366.51	437.38	2366.51		
2462.00	68.0	1393.26	128.18	1393.26	1565.99	162.23	1565.99	1735.13	200.28	1735.13	1899.90	242.34	1899.90	2059.41	288.41	2059.41	2213.03	338.48	2213.03	2360.44	392.56	2360.44	2501.55	450.64	2501.55		
2460.00	70.0	1468.38	131.95	1468.38	1650.33	167.00	1650.33	1828.48	206.17	1828.48	2001.98	249.47	2001.98	2169.89	296.89	2169.89	2331.55	348.43	2331.55	2486.60	404.10	2486.60	2634.95	463.89	2634.95		
2458.00	72.0	1542.41	135.72	1542.41	1733.45	171.77	1733.45	1920.48	212.06	1920.48	2102.59	256.60	2102.59	2278.79	305.37	2278.79	2448.37	358.39	2448.37	2610.94	415.65	2610.94	2766.42	477.15	2766.42		
2456.00	74.0	1615.21	139.49	1615.21	1815.19	176.54	1815.19	2010.95	217.96	2010.95	2201.53	263.73	2201.53	2385.88	313.86	2385.88	2563.24	368.34	2563.24	2733.22	427.19	2733.22	2895.71	490.40	2895.71		
2454.00	76.0	1686.63	143.26	1686.63	1895.39	181.32	1895.39	2099.71	223.85	2099.71	2298.60	270.85	2298.60	2490.94	322.34	2490.94	2675.94	378.30	2675.94	2853.18	438.74	2853.18	3022.55	503.65	3022.55		
2452.00	78.0	1756.54	147.03	1756.54	1973.87	186.09	1973.87	2186.59	229.74	2186.59	2393.60	277.98	2393.60	2593.77	330.82	2593.77	2786.24	388.26	2786.24	2970.59	450.28	2970.59	3146.69	516.91	3146.69		
2450.00	80.0	1824.77	150.80	1824.77	2050.50	190.86	2050.50	2271.39	235.63	2271.39	2486.35	285.11	2486.35	2694.14	339.30	2694.14	2893.92	398.21	2893.92	3085.20	461.83	3085.20	3267.88	530.16	3267.88		

Drilled Shaft Resistance Analyses



Service Limit Resistance Based On Allowable Settlement

Analyses for Settlement = 0.75 Inch(es)

Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2528.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2526.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2524.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2522.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2520.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2518.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2516.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2514.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2512.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2510.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2508.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00
2506.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00
2504.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00
2502.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00
2500.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00
2498.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00
2496.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00
2494.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00
2492.00		0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00
2490.00	40.0	411.23	75.40	411.23	468.72	95.43	468.72	525.18	117.81	525.18	580.83	142.55	580.83	635.88	169.65	635.88	690.47	199.11	690.47	744.67	230.91	744.67	798.49	265.08	798.49
2488.00	42.0	484.25	79.17	484.25	552.23	100.20	552.23	618.69	123.70	618.69	683.95	149.68	683.95	748.40	178.13	748.40	812.23	209.06	812.23	875.54	242.46	875.54	938.32	278.33	938.32
2486.00	44.0	558.32	82.94	558.32	636.93	104.97	636.93	713.53	129.60	713.53	788.55	156.81	788.55	862.53	186.62	862.53	935.74	219.02	935.74	1008.29	254.01	1008.29	1080.16	291.59	1080.16
2484.00	46.0	633.27	86.71	633.27	722.64	109.74	722.64	809.49	135.49	809.49	894.38	163.94	894.38	978.00	195.10	978.00	1060.71	228.97	1060.71	1142.60	265.55	1142.60	1223.66	304.84	1223.66
2482.00	48.0	708.91	90.48	708.91	809.14	114.51	809.14	906.35	141.38	906.35	1001.20	171.07	1001.20	1094.55	203.58	1094.55	1186.83	238.93	1186.83	1278.16	277.10	1278.16	1368.50	318.10	1368.50
2480.00	50.0	785.08	94.25	785.08	896.25	119.29	896.25	1003.89	147.27	1003.89	1108.77	178.19	1108.77	1211.92	212.06	1211.92	1313.84	248.88	1313.84	1414.68	288.64	1414.68	1514.36	331.35	1514.36
2478.00	52.0	861.62	98.02	861.62	983.78	124.06	983.78	1101.89	153.16	1101.89	1216.86	185.32	1216.86	1329.85	220.55	1329.85	1441.47	258.84	1441.47	1551.85	300.19	1551.85	1660.92	344.61	1660.92
2476.00	54.0	938.36	101.79	938.36	1071.54	128.83	1071.54	1200.16	159.05	1200.16	1325.23	192.45	1325.23	1448.10	229.03	1448.10	1569.43	268.79	1569.43	1689.39	311.74	1689.39	1807.87	357.86	1807.87
2474.00	56.0	1015.15	105.56	1015.15	1159.36	133.60	1159.36	1298.48	164.94	1298.48	1433.67	199.58	1433.67	1566.42	237.51	1566.42	1697.47	278.75	1697.47	1827.01	323.28	1827.01	1954.91	371.11	1954.91
2472.00	58.0	1091.83	109.33	1091.83	1247.05	138.37	1247.05	1396.67	170.83	1396.67	1541.95	206.70	1541.95	1684.57	246.00	1684.57	1825.33	288.70	1825.33	1964.43	334.83	1964.43	2101.74	384.37	2101.74
2470.00	60.0	1168.25	113.10	1168.25	1334.44	143.14	1334.44	1494.52	176.72	1494.52	1649.87	213.83	1649.87	1802.32	254.48	1802.32	1952.75	298.66	1952.75	2101.39	346.37	2101.39	2248.07	397.62	2248.07
2468.00	62.0	1244.26	116.87	1244.26	1421.36	147.92	1421.36	1591.84	182.61	1591.84	1757.20	220.96	1757.20	1919.43	262.96	1919.43	2079.49	308.61	2079.49	2237.61	357.92	2237.61	2393.61	410.88	2393.61
2466.00	64.0	1319.71	120.64	1319.71	1507.64	152.69	1507.64	1688.45	188.50	1688.45	1863.75	228.09	1863.75	2035.68	271.44	2035.68	2205.29	318.57	2205.29	2372.82	369.46	2372.82	2538.07	424.13	2538.07
2464.00	66.0	1394.49	124.41	1394.49	1593.16	157.46	1593.16	1784.21	194.39	1784.21	1969.36	235.22	1969.36	2150.91	279.93	2150.91	2330.00	328.52	2330.00	2506.85	381.01	2506.85	2681.28	437.38	2681.28
2462.00	68.0	1468.52	128.18	1468.52	1677.82	162.23	1677.82	1879.00	200.28	1879.00	2073.90	242.34	2073.90	2264.98	288.41	2264.98	2453.44	338.48	2453.44	2639.53	392.56	2639.53	2823.04	450.64	2823.04
2460.00	70.0	1541.65	131.95	1541.65	1761.45	167.00	1761.45	1972.64	206.17	1972.64	2177.16	249.47	2177.16	2377.65	296.89	2377.65	2575.36	348.43	2575.36	2770.58	404.10	2770.58	2963.06	463.89	2963.06
2458.00	72.0	1613.72	135.72	1613.72	1843.86	171.77	1843.86	2064.92	212.06	2064.92	2278.94	256.60	2278.94	2488.70	305.37	2488.70	2695.54	358.39	2695.54	2899.74	415.65	2899.74	3101.06	477.15	3101.06
2456.00	74.0	1684.59	139.49	1684.59	1924.91	176.54	1924.91	2155.67	217.96	2155.67	2379.02	263.73	2379.02	2597.90	313.86	2597.90	2813.71	368.34	2813.71	3026.76	427.19	3026.76	3236.77	490.40	3236.77
2454.00	76.0	1754.12	143.26	1754.12	2004.43	181.32	2004.43	2244.70	223.85	2244.70	2477.21	270.85	2477.21	2705.03	322.34	2705.03	2929.65	378.30	2929.65	3151.37	438.74	3151.37	3369.91	503.65	3369.91
2452.00	78.0	1822.17	147.03	1822.17	2082.25	186.09	2082.25	2331.84	229.74	2331.84	2573.31	277.98	2573.31	2809.89	330.82	2809.89	3043.12	388.26	3043.12	3273.33	450.28	3273.33	3500.21	516.91	3500.21
2450.00	80.0	1888.61	150.80	1888.61	2158.22	190.86	2158.22	2416.90	235.63	2416.90	2667.12	285.11	2667.12	2912.25	339.30	2912.25	3153.89	398.21	3153.89	3392.39	461.83	3392.39	3627.42	530.16	3627.42

Drilled Shaft Resistance Analyses



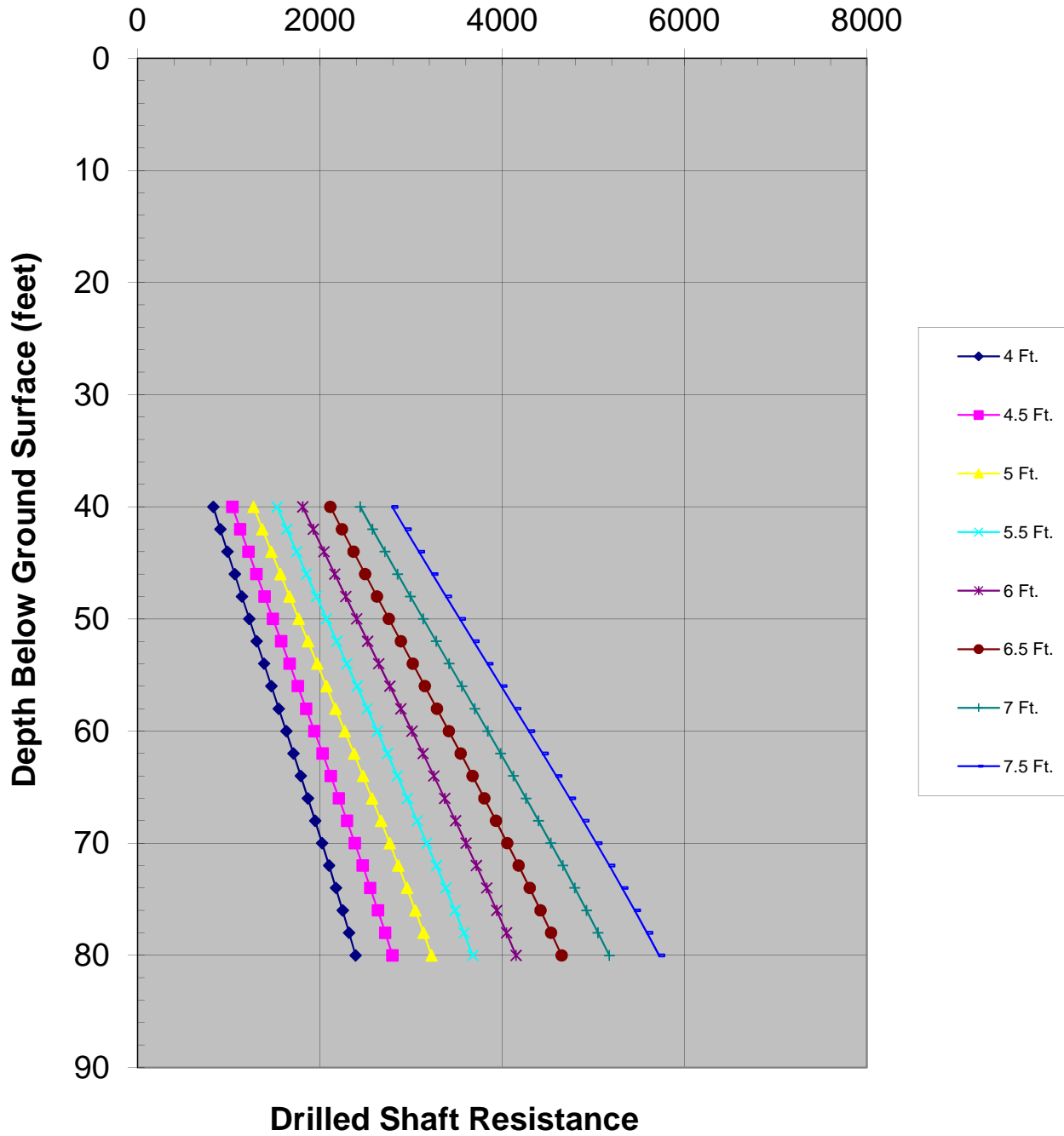
Service Limit Resistance Based On Allowable Settlement												Analyses for Settlement = 1.00 Inch(es)													
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2528.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2526.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2524.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2522.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2520.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2518.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2516.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2514.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2512.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2510.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2508.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00
2506.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00
2504.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00
2502.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00
2500.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00
2498.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00
2496.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00
2494.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00
2492.00		0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00
2490.00	40.0	500.32	75.40	500.32	573.74	95.43	573.74	649.89	117.81	649.89	723.71	142.55	723.71	796.78	169.65	796.78	868.93	199.11	868.93	940.30	230.91	940.30	1011.04	265.08	1011.04
2488.00	42.0	569.75	79.17	569.75	651.85	100.20	651.85	740.23	123.70	740.23	824.62	149.68	824.62	908.13	178.13	908.13	990.33	209.06	990.33	1071.43	242.46	1071.43	1151.69	278.33	1151.69
2486.00	44.0	640.17	82.94	640.17	731.07	104.97	731.07	831.86	129.60	831.86	926.98	156.81	926.98	1021.07	186.62	1021.07	1113.47	219.02	1113.47	1204.44	254.01	1204.44	1294.36	291.59	1294.36
2484.00	46.0	711.42	86.71	711.42	811.23	109.74	811.23	924.57	135.49	924.57	1030.54	163.94	1030.54	1135.34	195.10	1135.34	1238.06	228.97	1238.06	1339.02	265.55	1339.02	1438.70	304.84	1438.70
2482.00	48.0	783.34	90.48	783.34	892.13	114.51	892.13	1018.14	141.38	1018.14	1135.06	171.07	1135.06	1250.68	203.58	1250.68	1363.81	238.93	1363.81	1474.85	277.10	1474.85	1584.40	318.10	1584.40
2480.00	50.0	855.76	94.25	855.76	973.61	119.29	973.61	1112.37	147.27	1112.37	1240.32	178.19	1240.32	1366.83	212.06	1366.83	1490.44	248.88	1490.44	1611.64	288.64	1611.64	1731.11	331.35	1731.11
2478.00	52.0	928.52	98.02	928.52	1055.47	124.06	1055.47	1207.06	153.16	1207.06	1346.09	185.32	1346.09	1483.53	220.55	1483.53	1617.68	258.84	1617.68	1749.08	300.19	1749.08	1878.53	344.61	1878.53
2476.00	54.0	1001.49	101.79	1001.49	1137.55	128.83	1137.55	1301.99	159.05	1301.99	1452.14	192.45	1452.14	1600.55	229.03	1600.55	1745.26	268.79	1745.26	1886.89	311.74	1886.89	2026.34	357.86	2026.34
2474.00	56.0	1074.49	105.56	1074.49	1219.68	133.60	1219.68	1396.99	164.94	1396.99	1558.25	199.58	1558.25	1717.64	237.51	1717.64	1872.92	278.75	1872.92	2024.79	323.28	2024.79	2174.24	371.11	2174.24
2472.00	58.0	1147.39	109.33	1147.39	1301.70	138.37	1301.70	1491.85	170.83	1491.85	1664.21	206.70	1664.21	1834.56	246.00	1834.56	2000.39	288.70	2000.39	2162.48	334.83	2162.48	2321.94	384.37	2321.94
2470.00	60.0	1220.05	113.10	1220.05	1383.43	143.14	1383.43	1586.38	176.72	1586.38	1769.81	213.83	1769.81	1951.08	254.48	1951.08	2127.43	298.66	2127.43	2299.71	346.37	2299.71	2469.12	397.62	2469.12
2468.00	62.0	1292.31	116.87	1292.31	1464.73	147.92	1464.73	1680.41	182.61	1680.41	1874.84	220.96	1874.84	2066.97	262.96	2066.97	2253.79	308.61	2253.79	2436.20	357.92	2436.20	2615.52	410.88	2615.52
2466.00	64.0	1364.04	120.64	1364.04	1545.42	152.69	1545.42	1773.74	188.50	1773.74	1979.09	228.09	1979.09	2182.01	271.44	2182.01	2379.21	318.57	2379.21	2571.68	369.46	2571.68	2760.83	424.13	2760.83
2464.00	66.0	1435.14	124.41	1435.14	1625.41	157.46	1625.41	1866.26	194.39	1866.26	2082.44	235.22	2082.44	2296.04	279.93	2296.04	2503.54	328.52	2503.54	2705.98	381.01	2705.98	2904.88	437.38	2904.88
2462.00	68.0	1505.52	128.18	1505.52	1704.59	162.23	1704.59	1957.84	200.28	1957.84	2184.74	242.34	2184.74	2408.92	288.41	2408.92	2626.61	338.48	2626.61	2838.92	392.56	2838.92	3047.47	450.64	3047.47
2460.00	70.0	1575.04	131.95	1575.04	1782.80	167.00	1782.80	2048.30	206.17	2048.30	2285.78	249.47	2285.78	2520.42	296.89	2520.42	2748.18	348.43	2748.18	2970.23	404.10	2970.23	3188.31	463.89	3188.31
2458.00	72.0	1643.56	135.72	1643.56	1859.89	171.77	1859.89	2137.45	212.06	2137.45	2385.37	256.60	2385.37	2630.31	305.37	2630.31	2867.99	358.39	2867.99	3099.65	415.65	3099.65	3327.12	477.15	3327.12
2456.00	74.0	1710.94	139.49	1710.94	1935.69	176.54	1935.69	2225.12	217.96	2225.12	2483.31	263.73	2483.31	2738.38	313.86	2738.38	2985.81	368.34	2985.81	3226.91	427.19	3226.91	3463.63	490.40	3463.63
2454.00	76.0	1777.05	143.26	1777.05	2010.06	181.32	2010.06	2311.14	223.85	2311.14	2579.39	270.85	2579.39	2844.40	322.34	2844.40	3101.40	378.30	3101.40	3351.77	438.74	3351.77	3597.55	503.65	3597.55
2452.00	78.0	1841.75	147.03	1841.75	2082.84	186.09	2082.84	2395.32	229.74	2395.32	2673.43	277.98	2673.43	2948.16	330.82	2948.16	3214.53	388.26	3214.53	3473.97	450.28	3473.97	3728.62	516.91	3728.62
2450.00	80.0	1904.91	150.80	1904.91	2153.90	190.86	2153.90	2477.50	235.63	2477.50	2765.23	285.11	2765.23	3049.45	339.30	3049.45	3324.97	398.21	3324.97	3593.27	461.83	3593.27	3856.58	530.16	3856.58

Drilled Shaft Resistance Analyses

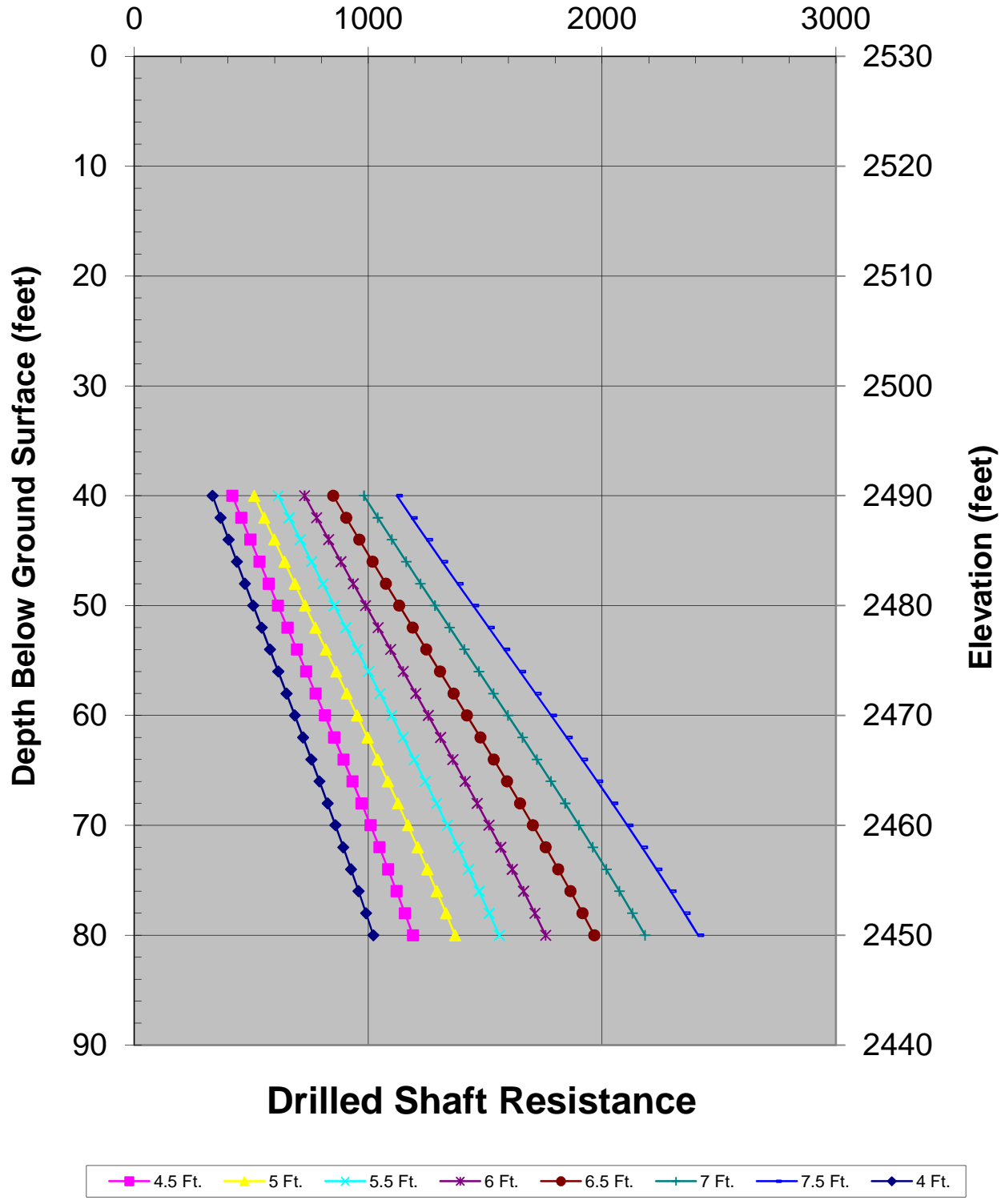


Service Limit Resistance Based On Allowable Settlement												Analyses for Settlement = 2.00 Inch(es)													
Elevation feet	Depth of Shaft feet	Diameter= 4 Ft.			Diameter= 4.5 Ft.			Diameter= 5 Ft.			Diameter= 5.5 Ft.			Diameter= 6 Ft.			Diameter= 6.5 Ft.			Diameter= 7 Ft.			Diameter= 7.5 Ft.		
		R Service kips	Shaft Weight kips	R Service kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips	R Service kips	Shaft Weight kips	Net Capacity kips
2528.00		0.00	3.77	0.00	0.00	4.77	0.00	0.00	5.89	0.00	0.00	7.13	0.00	0.00	8.48	0.00	0.00	9.96	0.00	0.00	11.55	0.00	0.00	13.25	0.00
2526.00		0.00	7.54	0.00	0.00	9.54	0.00	0.00	11.78	0.00	0.00	14.26	0.00	0.00	16.97	0.00	0.00	19.91	0.00	0.00	23.09	0.00	0.00	26.51	0.00
2524.00		0.00	11.31	0.00	0.00	14.31	0.00	0.00	17.67	0.00	0.00	21.38	0.00	0.00	25.45	0.00	0.00	29.87	0.00	0.00	34.64	0.00	0.00	39.76	0.00
2522.00		0.00	15.08	0.00	0.00	19.09	0.00	0.00	23.56	0.00	0.00	28.51	0.00	0.00	33.93	0.00	0.00	39.82	0.00	0.00	46.18	0.00	0.00	53.02	0.00
2520.00		0.00	18.85	0.00	0.00	23.86	0.00	0.00	29.45	0.00	0.00	35.64	0.00	0.00	42.41	0.00	0.00	49.78	0.00	0.00	57.73	0.00	0.00	66.27	0.00
2518.00		0.00	22.62	0.00	0.00	28.63	0.00	0.00	35.34	0.00	0.00	42.77	0.00	0.00	50.90	0.00	0.00	59.73	0.00	0.00	69.27	0.00	0.00	79.52	0.00
2516.00		0.00	26.39	0.00	0.00	33.40	0.00	0.00	41.23	0.00	0.00	49.89	0.00	0.00	59.38	0.00	0.00	69.69	0.00	0.00	80.82	0.00	0.00	92.78	0.00
2514.00		0.00	30.16	0.00	0.00	38.17	0.00	0.00	47.13	0.00	0.00	57.02	0.00	0.00	67.86	0.00	0.00	79.64	0.00	0.00	92.37	0.00	0.00	106.03	0.00
2512.00		0.00	33.93	0.00	0.00	42.94	0.00	0.00	53.02	0.00	0.00	64.15	0.00	0.00	76.34	0.00	0.00	89.60	0.00	0.00	103.91	0.00	0.00	119.29	0.00
2510.00		0.00	37.70	0.00	0.00	47.71	0.00	0.00	58.91	0.00	0.00	71.28	0.00	0.00	84.83	0.00	0.00	99.55	0.00	0.00	115.46	0.00	0.00	132.54	0.00
2508.00		0.00	41.47	0.00	0.00	52.49	0.00	0.00	64.80	0.00	0.00	78.41	0.00	0.00	93.31	0.00	0.00	109.51	0.00	0.00	127.00	0.00	0.00	145.79	0.00
2506.00		0.00	45.24	0.00	0.00	57.26	0.00	0.00	70.69	0.00	0.00	85.53	0.00	0.00	101.79	0.00	0.00	119.46	0.00	0.00	138.55	0.00	0.00	159.05	0.00
2504.00		0.00	49.01	0.00	0.00	62.03	0.00	0.00	76.58	0.00	0.00	92.66	0.00	0.00	110.27	0.00	0.00	129.42	0.00	0.00	150.09	0.00	0.00	172.30	0.00
2502.00		0.00	52.78	0.00	0.00	66.80	0.00	0.00	82.47	0.00	0.00	99.79	0.00	0.00	118.76	0.00	0.00	139.37	0.00	0.00	161.64	0.00	0.00	185.56	0.00
2500.00		0.00	56.55	0.00	0.00	71.57	0.00	0.00	88.36	0.00	0.00	106.92	0.00	0.00	127.24	0.00	0.00	149.33	0.00	0.00	173.19	0.00	0.00	198.81	0.00
2498.00		0.00	60.32	0.00	0.00	76.34	0.00	0.00	94.25	0.00	0.00	114.04	0.00	0.00	135.72	0.00	0.00	159.28	0.00	0.00	184.73	0.00	0.00	212.06	0.00
2496.00		0.00	64.09	0.00	0.00	81.11	0.00	0.00	100.14	0.00	0.00	121.17	0.00	0.00	144.20	0.00	0.00	169.24	0.00	0.00	196.28	0.00	0.00	225.32	0.00
2494.00		0.00	67.86	0.00	0.00	85.89	0.00	0.00	106.03	0.00	0.00	128.30	0.00	0.00	152.69	0.00	0.00	179.19	0.00	0.00	207.82	0.00	0.00	238.57	0.00
2492.00		0.00	71.63	0.00	0.00	90.66	0.00	0.00	111.92	0.00	0.00	135.43	0.00	0.00	161.17	0.00	0.00	189.15	0.00	0.00	219.37	0.00	0.00	251.83	0.00
2490.00	40.0	739.10	75.40	739.10	878.42	95.43	878.42	1019.28	117.81	1019.28	1160.89	142.55	1160.89	1302.64	169.65	1302.64	1444.10	199.11	1444.10	1585.04	230.91	1585.04	1725.28	265.08	1725.28
2488.00	42.0	808.53	79.17	808.53	956.52	100.20	956.52	1106.06	123.70	1106.06	1256.35	149.68	1256.35	1406.78	178.13	1406.78	1556.92	209.06	1556.92	1706.53	242.46	1706.53	1855.46	278.33	1855.46
2486.00	44.0	878.95	82.94	878.95	1035.75	104.97	1035.75	1194.09	129.60	1194.09	1353.18	156.81	1353.18	1512.41	186.62	1512.41	1671.36	219.02	1671.36	1829.77	254.01	1829.77	1987.50	291.59	1987.50
2484.00	46.0	950.20	86.71	950.20	1115.91	109.74	1115.91	1283.15	135.49	1283.15	1451.15	163.94	1451.15	1619.28	195.10	1619.28	1787.14	228.97	1787.14	1954.46	265.55	1954.46	2121.10	304.84	2121.10
2482.00	48.0	1022.12	90.48	1022.12	1196.81	114.51	1196.81	1373.05	141.38	1373.05	1550.03	171.07	1550.03	1727.16	203.58	1727.16	1904.00	238.93	1904.00	2080.31	277.10	2080.31	2255.94	318.10	2255.94
2480.00	50.0	1094.54	94.25	1094.54	1278.28	119.29	1278.28	1463.57	147.27	1463.57	1649.61	178.19	1649.61	1835.79	212.06	1835.79	2021.68	248.88	2021.68	2207.04	288.64	2207.04	2391.72	331.35	2391.72
2478.00	52.0	1167.30	98.02	1167.30	1360.14	124.06	1360.14	1554.53	153.16	1554.53	1749.67	185.32	1749.67	1944.94	220.55	1944.94	2139.93	258.84	2139.93	2334.39	300.19	2334.39	2528.16	344.61	2528.16
2476.00	54.0	1240.27	101.79	1240.27	1442.23	128.83	1442.23	1645.73	159.05	1645.73	1849.99	192.45	1849.99	2054.38	229.03	2054.38	2258.49	268.79	2258.49	2462.07	311.74	2462.07	2664.96	357.86	2664.96
2474.00	56.0	1313.27	105.56	1313.27	1524.36	133.60	1524.36	1736.99	164.94	1736.99	1950.37	199.58	1950.37	2163.89	237.51	2163.89	2377.13	278.75	2377.13	2589.83	323.28	2589.83	2801.85	371.11	2801.85
2472.00	58.0	1386.18	109.33	1386.18	1606.37	138.37	1606.37	1828.12	170.83	1828.12	2050.61	206.70	2050.61	2273.24	246.00	2273.24	2495.59	288.70	2495.59	2717.41	334.83	2717.41	2938.54	384.37	2938.54
2470.00	60.0	1458.83	113.10	1458.83	1688.11	143.14	1688.11	1918.94	176.72	1918.94	2150.51	213.83	2150.51	2382.22	254.48	2382.22	2613.66	298.66	2613.66	2844.55	346.37	2844.55	3074.77	397.62	3074.77
2468.00	62.0	1531.09	116.87	1531.09	1769.40	147.92	1769.40	2009.26	182.61	2009.26	2249.87	220.96	2249.87	2490.61	262.96	2490.61	2731.08	308.61	2731.08	2971.01	357.92	2971.01	3210.26	410.88	3210.26
2466.00	64.0	1602.82	120.64	1602.82	1850.10	152.69	1850.10	2098.92	188.50	2098.92	2348.50	228.09	2348.50	2598.21	271.44	2598.21	2847.64	318.57	2847.64	3096.54	369.46	3096.54	3344.75	424.13	3344.75
2464.00	66.0	1673.92	124.41	1673.92	1930.09	157.46	1930.09	2187.80	194.39	2187.80	2446.27	235.22	2446.27	2704.86	279.93	2704.86	2963.18	328.52	2963.18	3220.97	381.01	3220.97	3478.07	437.38	3478.07
2462.00	68.0	1744.30	128.18	1744.30	2009.27	162.23	2009.27	2275.78	200.28	2275.78	2543.04	242.34	2543.04	2810.44	288.41	2810.44	3077.56	338.48	3077.56	3344.14	392.56	3344.14	3610.04	450.64	3610.04
2460.00	70.0	1813.83	131.95	1813.83	2087.48	167.00	2087.48	2362.68	206.17	2362.68	2638.63	249.47	2638.63	2914.72	296.89	2914.72	3190.53	348.43	3190.53	3465.80	404.10	3465.80	3740.39	463.89	3740.39
2458.00	72.0	1882.34	135.72	1882.34	2164.56	171.77	2164.56	2448.33	212.06	2448.33	2732.85	256.60	2732.85	3017.50	305.37	3017.50	3301.87	358.39	3301.87	3585.71	415.65	3585.71	3868.86	477.15	3868.86
2456.00	74.0	1949.72	139.49	1949.72	2240.37	176.54	2240.37	2532.56	217.96	2532.56	2825.49	263.73	2825.49	3118.57	313.86	3118.57	3411.36	368.34	3411.36	3703.62	427.19	3703.62	3995.20	490.40	3995.20
2454.00	76.0	2015.83	143.26	2015.83	2314.74	181.32	2314.74	2615.19	223.85	2615.19	2916.39	270.85	2916.39	3217.72	322.34	3217.72	3518.78	378.30	3518.78	3819.31	438.74	3819.31	4119.15	503.65	4119.15
2452.00	78.0	2080.53	147.03	2080.53	2387.52	186.09	2387.52	2696.06	229.74	2696.06	3005.35	277.98	3005.35	3314.77	330.82	3314.77	3623.92	388.26	3623.92	3932.53	450.28	3932.53	4240.45	516.91	4240.45
2450.00	80.0	2143.69	150.80	2143.69	2458.57	190.86	2458.57	2775.01	235.63	2775.01	3092.19	285.11	3092.19	3409.51	339.30	3409.51	3726.55	398.21	3726.55	4043.06	461.83	4043.06	4358.88	530.16	4358.88

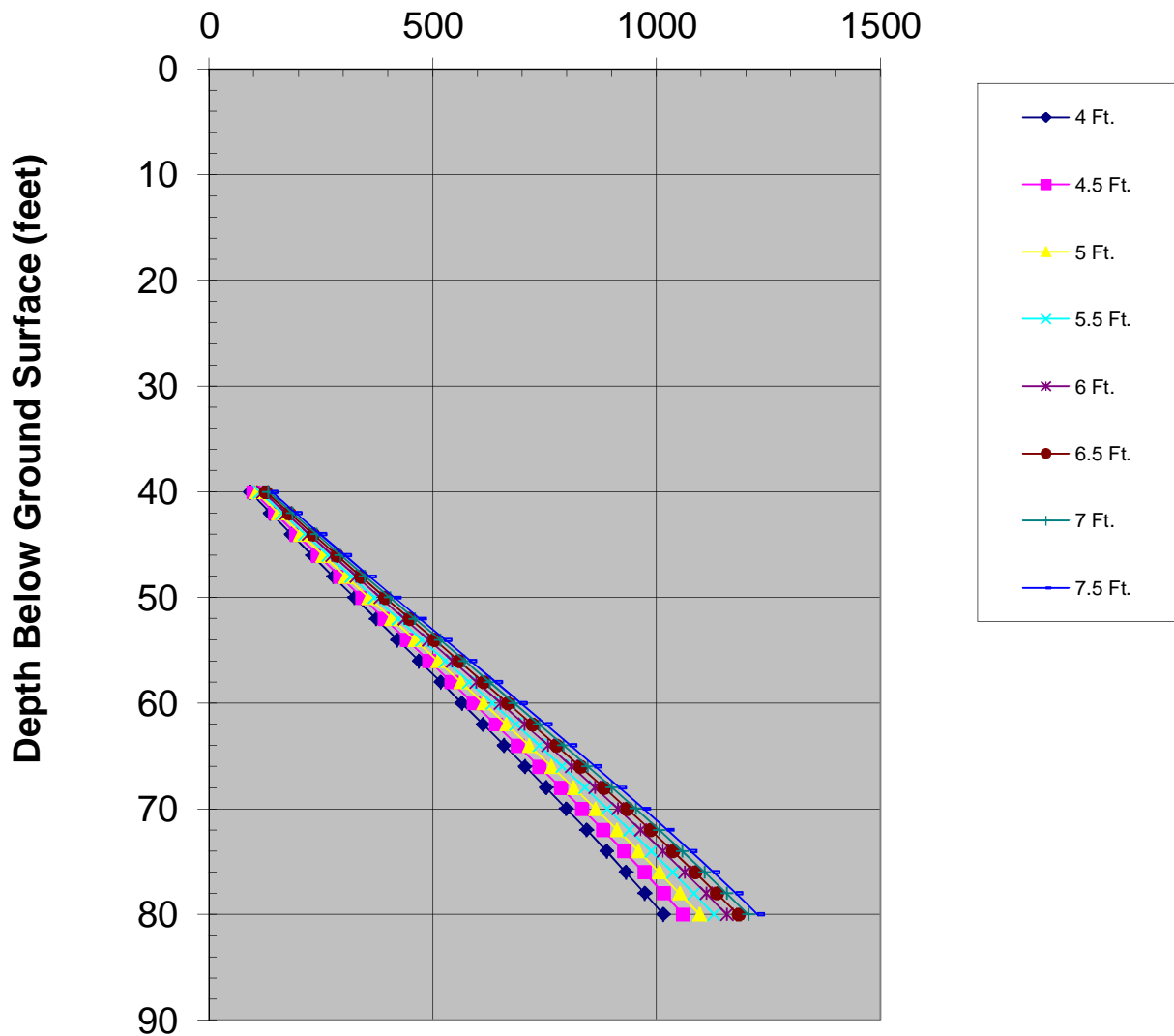
Nominal Shaft Resistance-Compression (kips) (West Abutment)



Strength Limit State Shaft Resistance-Compression (kips) (West Abutment)



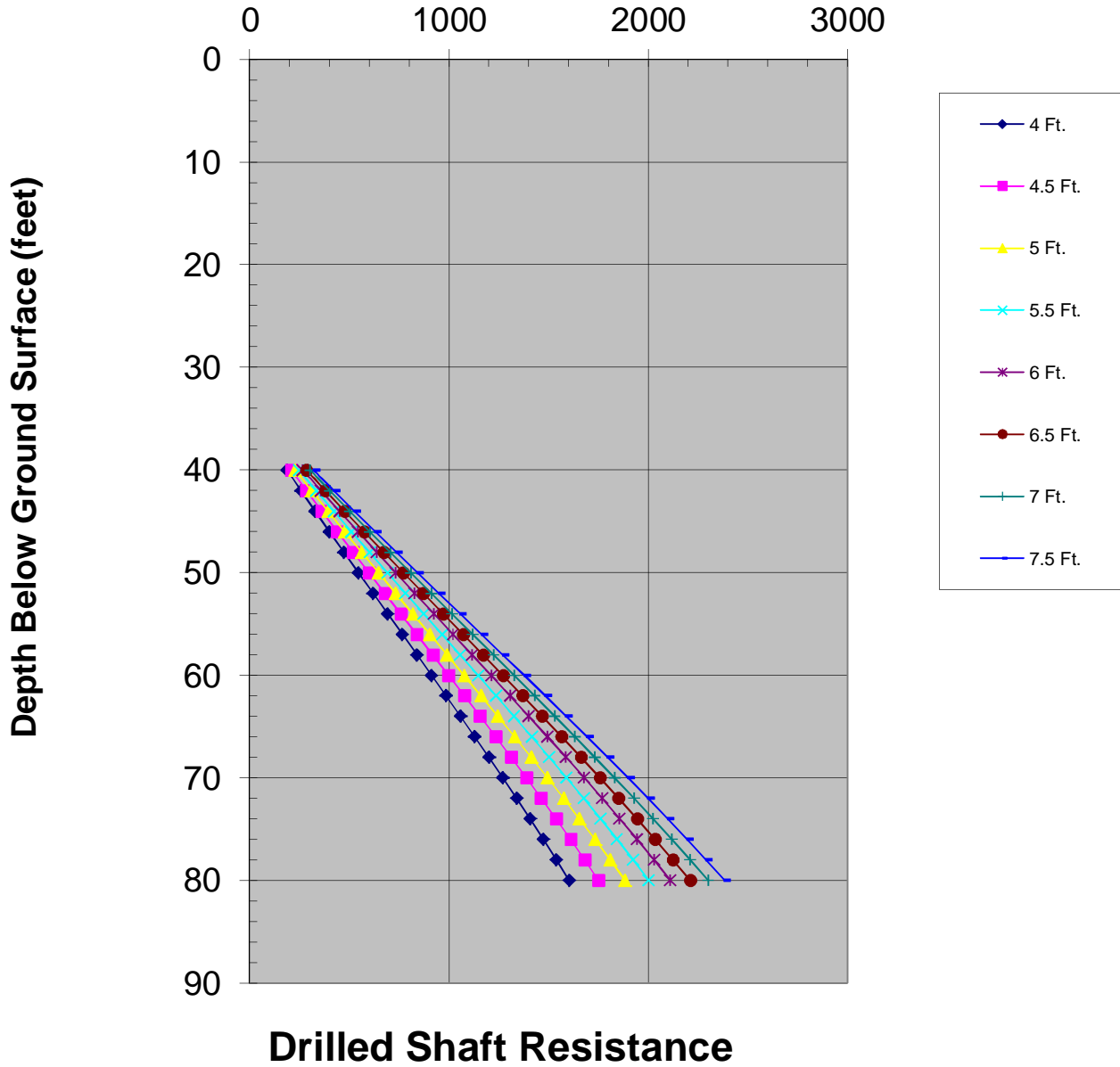
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

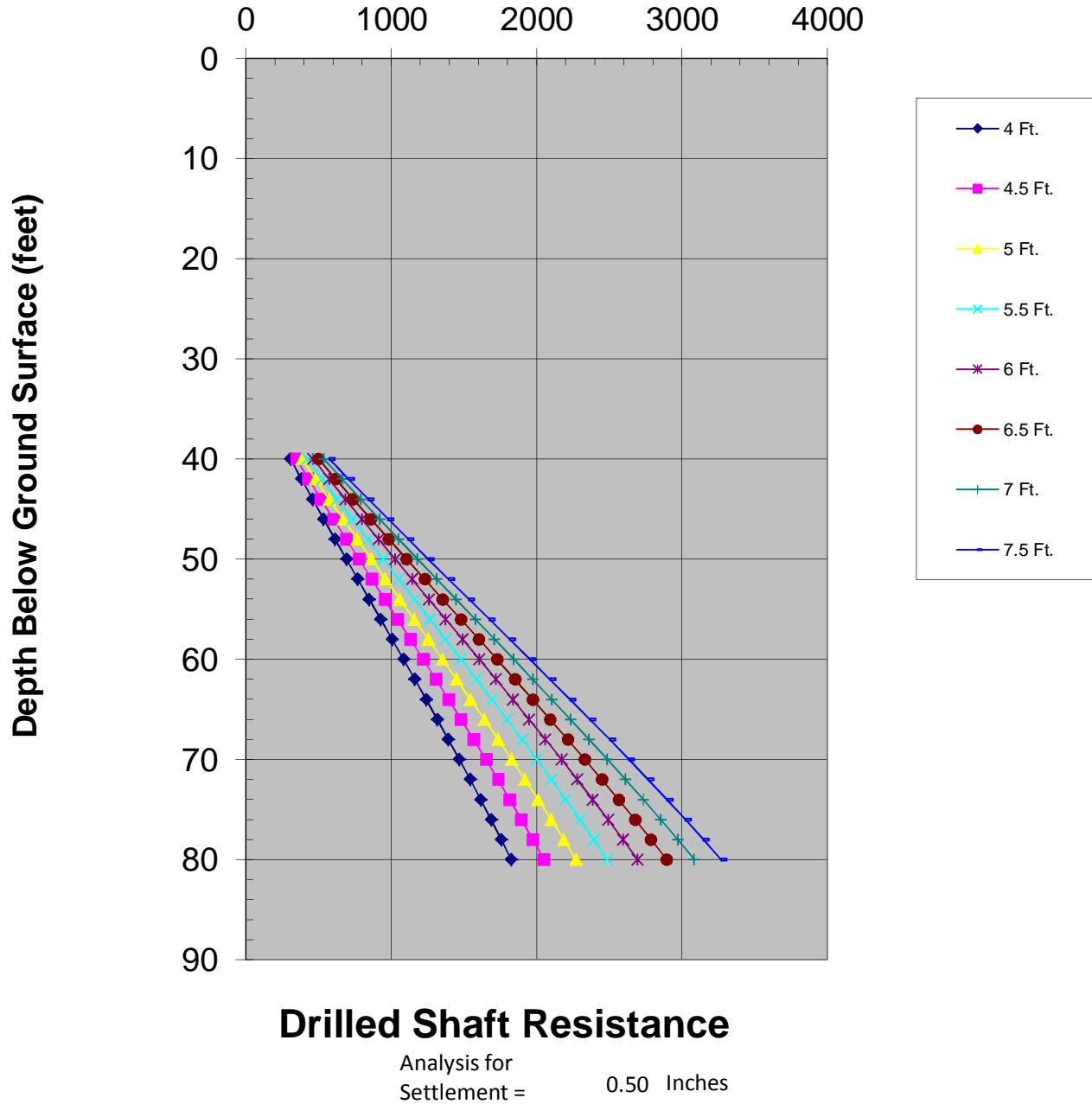
Analysis for
Settlement = 0.10 Inches

Service Limit Shaft Resistance-Compression (kips)

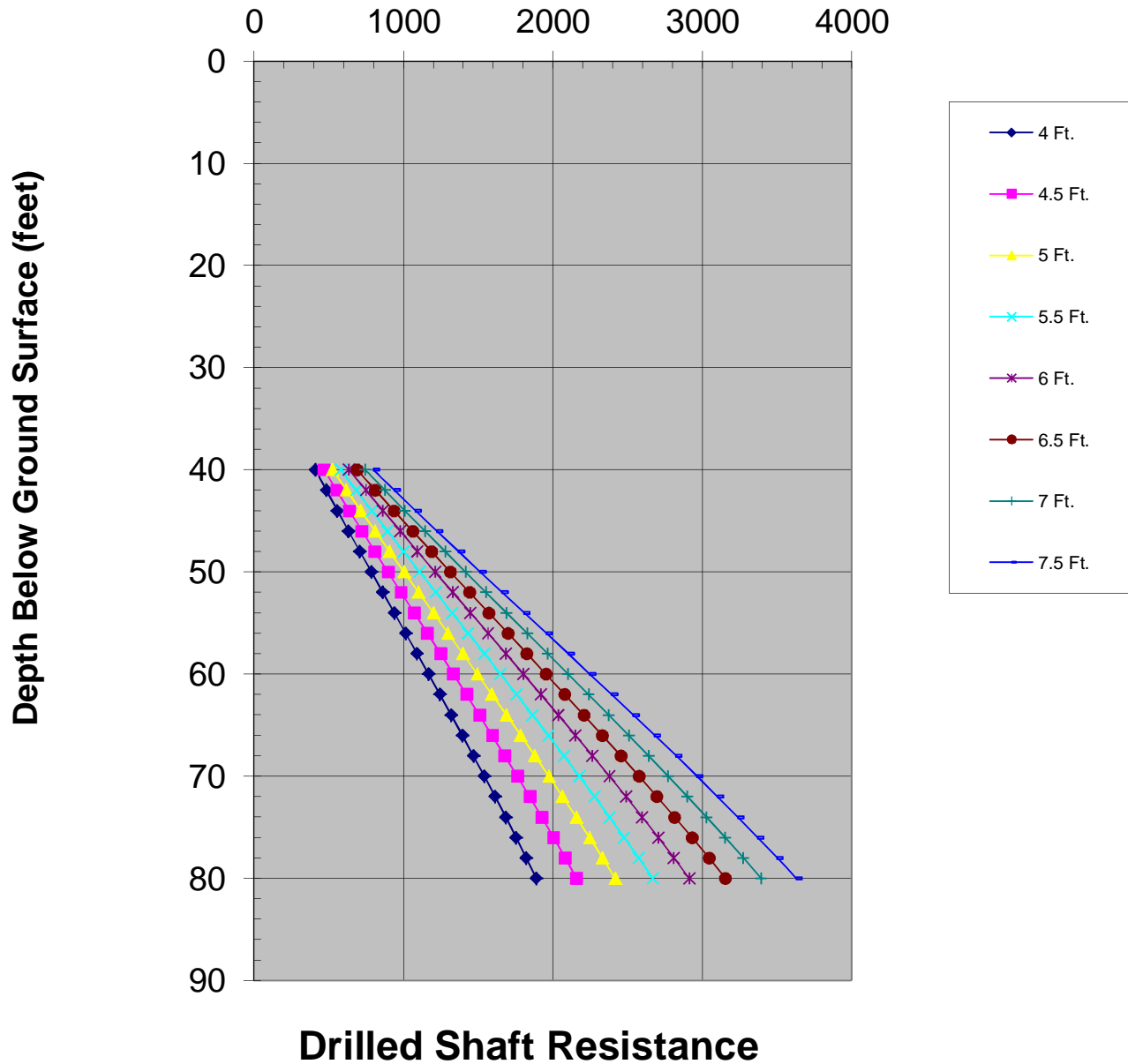


Analysis for
Settlement = 0.25 Inches

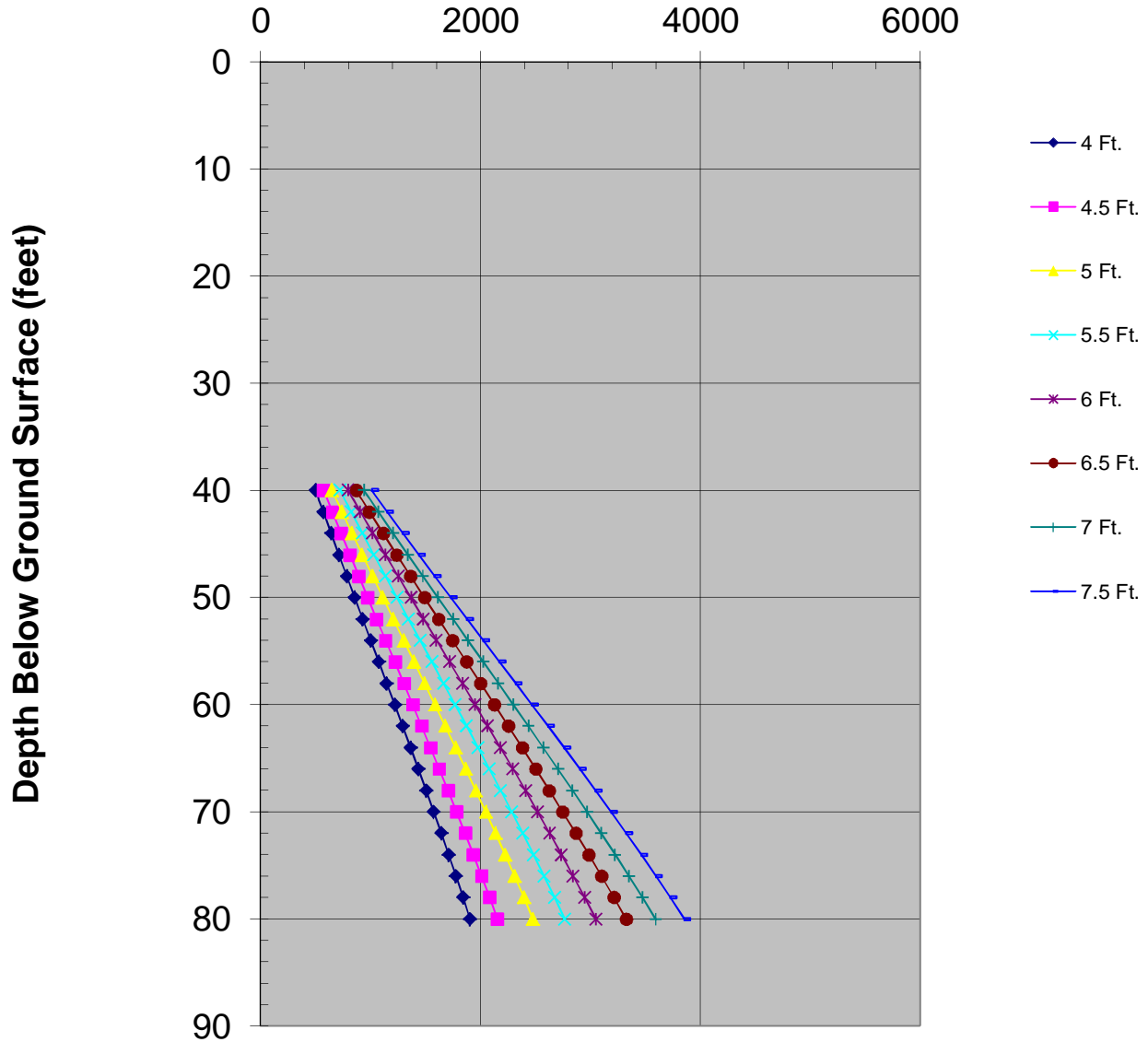
Service Limit Shaft Resistance-Compression (kips)



Service Limit Shaft Resistance-Compression (kips)



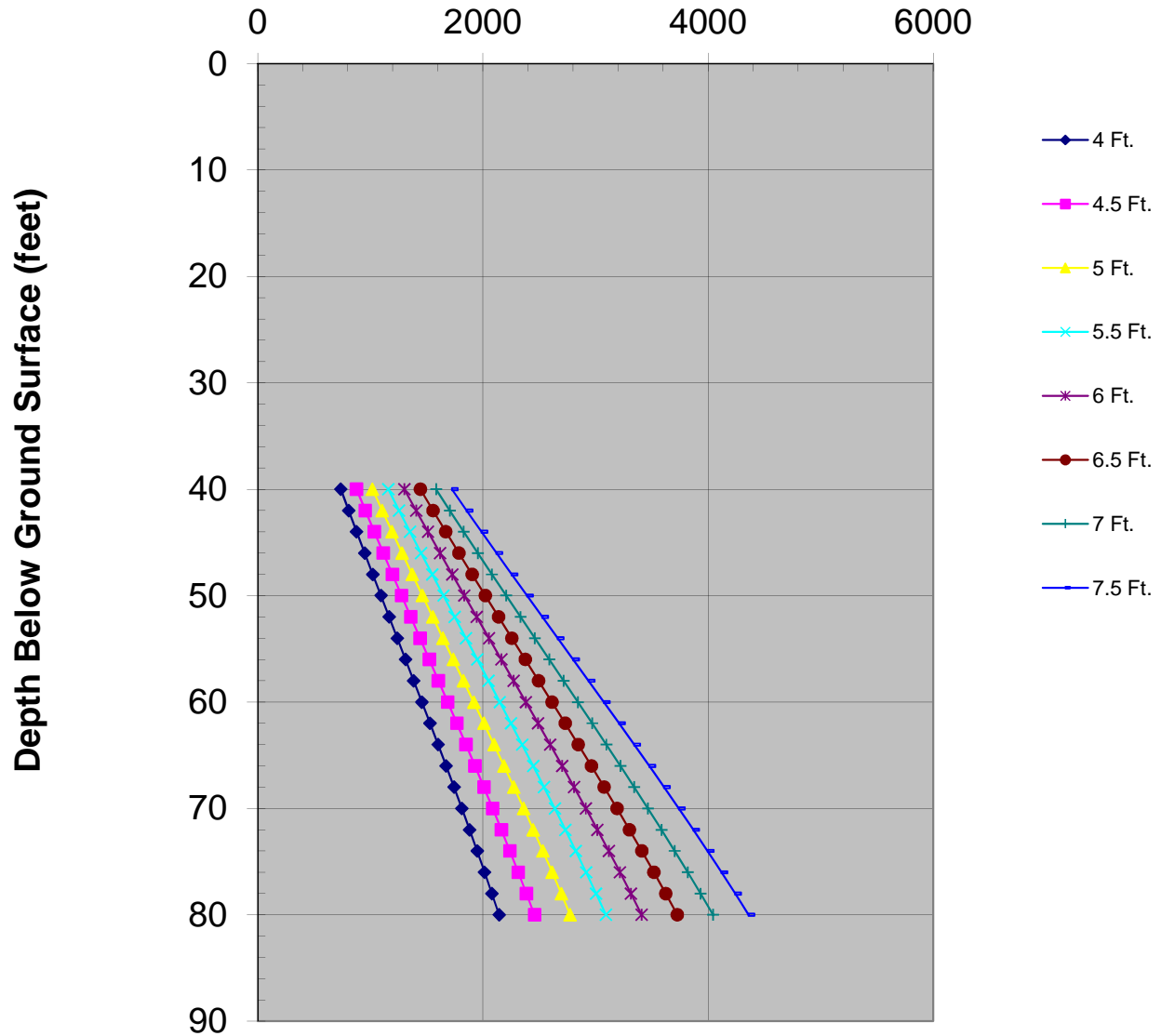
Service Limit Shaft Resistance-Compression (kips)



Drilled Shaft Resistance

Analysis for
Settlement = 1.00 Inches

Service Limit Shaft Resistance-Compression (kips)



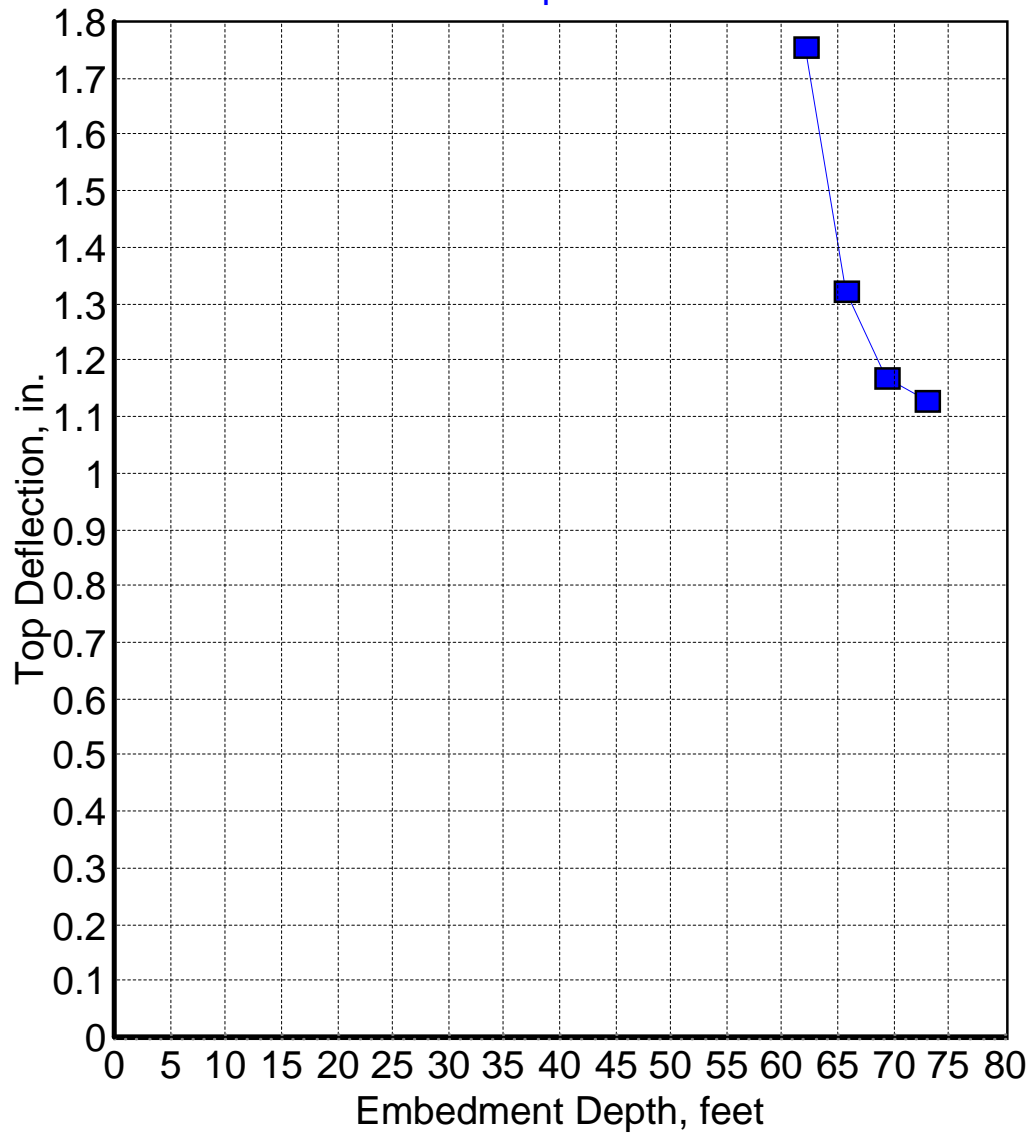
Drilled Shaft Resistance

Analysis for
Settlement = 2.00 Inches

APPENDIX H
Pantano Wash Bridge
East Abutment
Lateral Load Analyses Results

Top Deflection vs. Pile Length

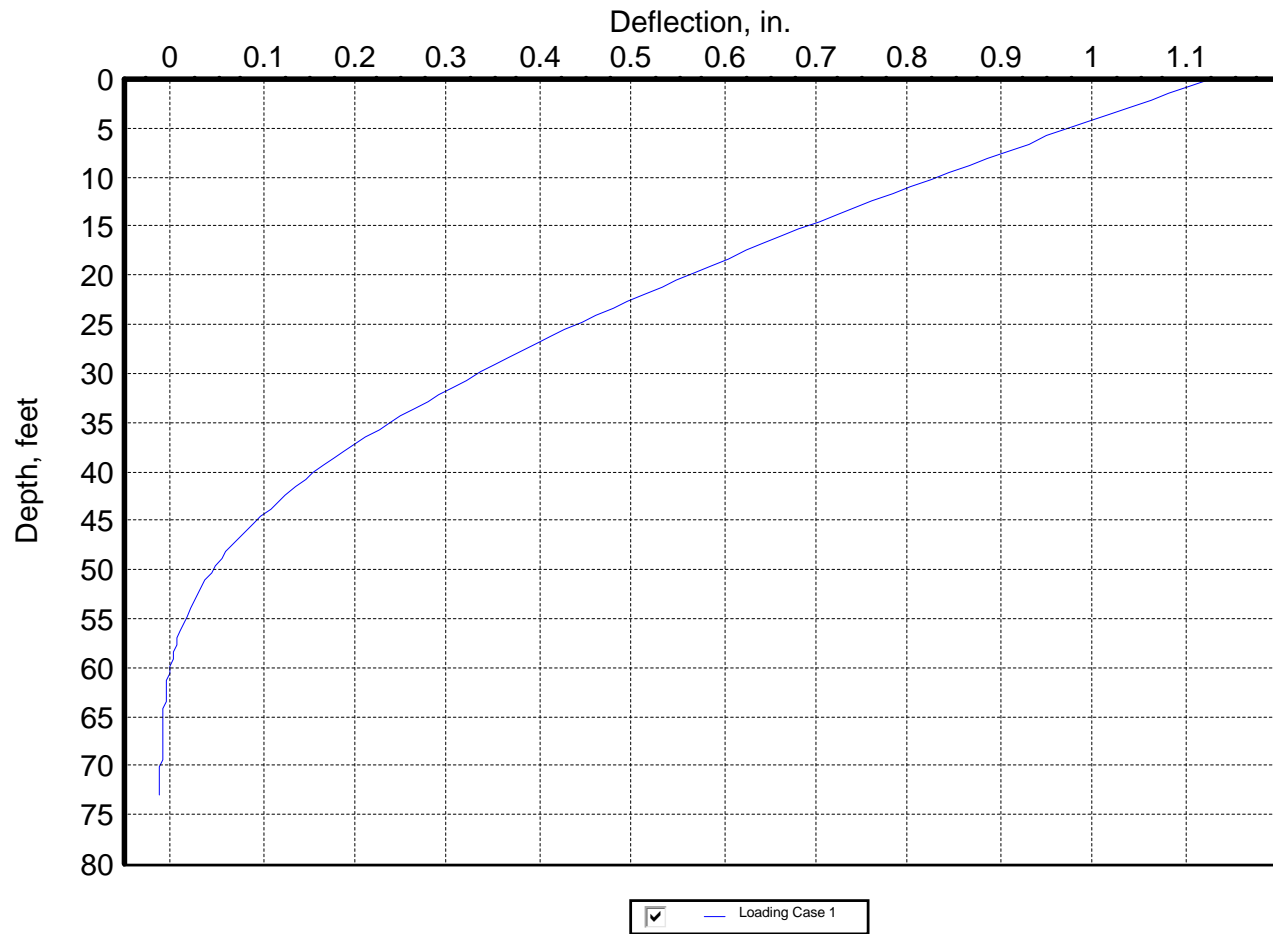
East Abutment - Super Flood Event



Loading Case 1

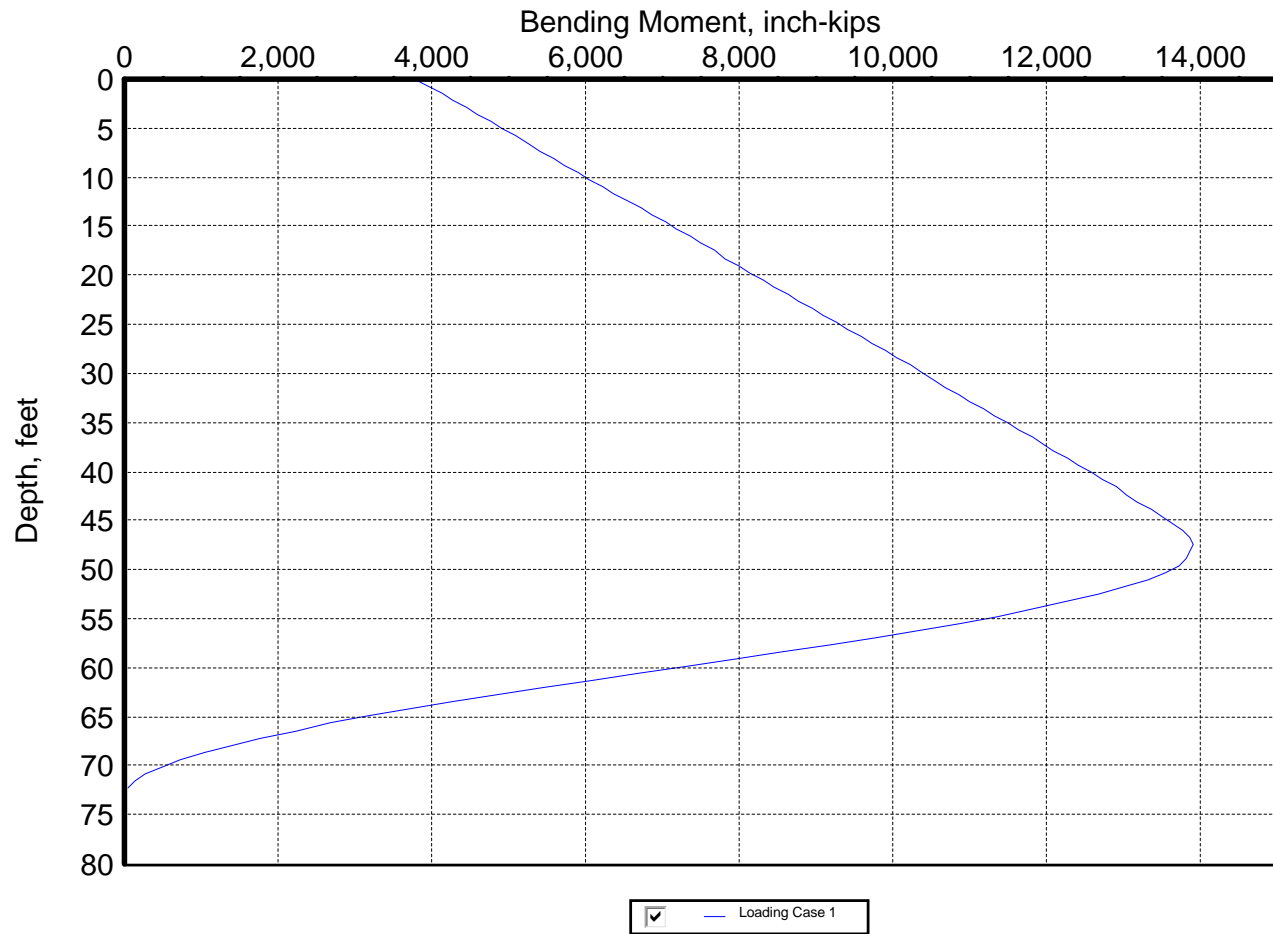
LPile 2012.6.37, © 2013 by Ensoft, Inc.

Lateral Deflection vs. Depth
East Abutment - Super Flood Event



LPile 2012.6.37, © 2013 by Ensoft, Inc.

Bending Moment vs. Depth East Abutment - Super Flood Event

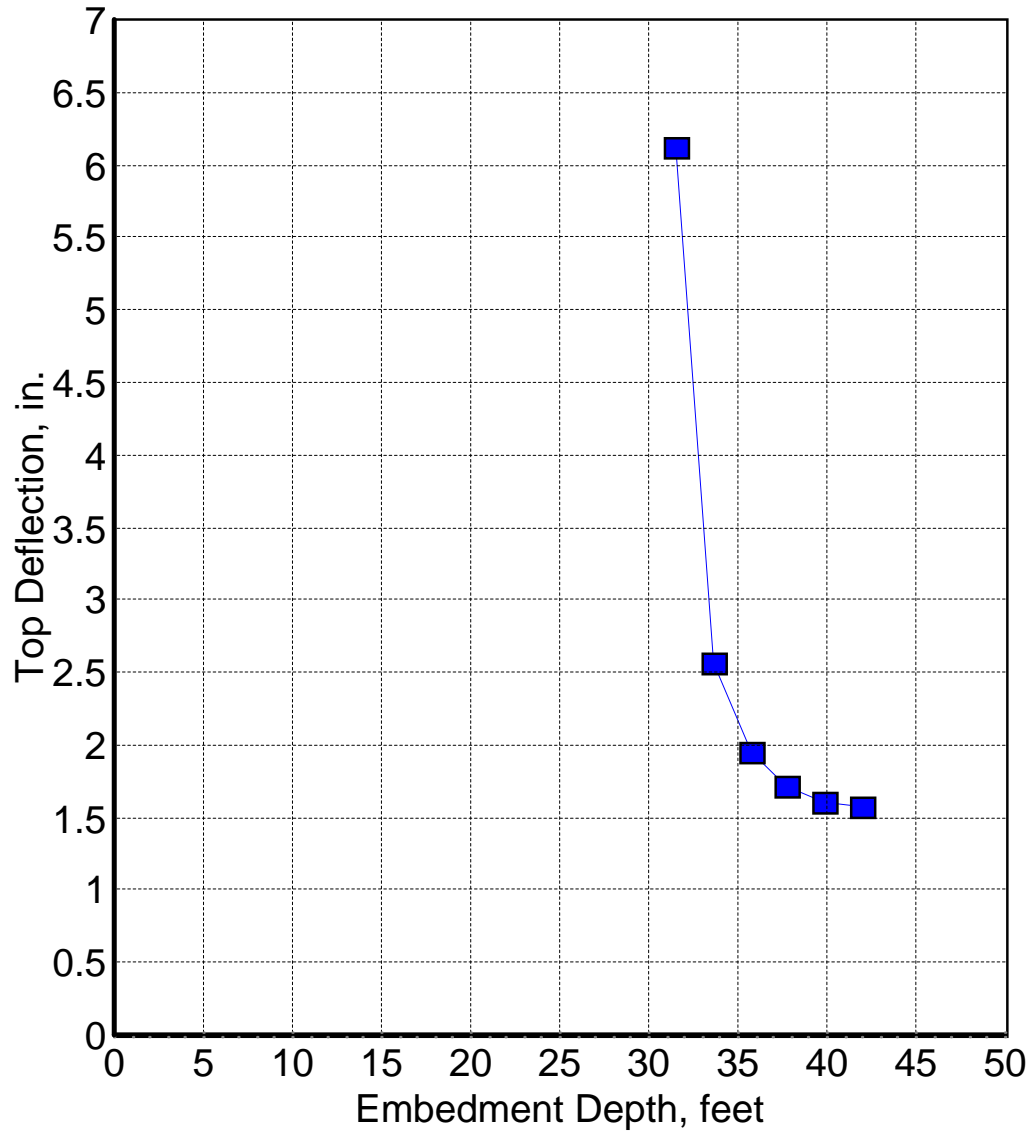


LPile 2012.6.37, © 2013 by Ensoft, Inc.

APPENDIX I
Pantano Wash Bridge
Pier #1
Lateral Load Analyses Results

Top Deflection vs. Pile Length

Pier #1 - 100 Year Event

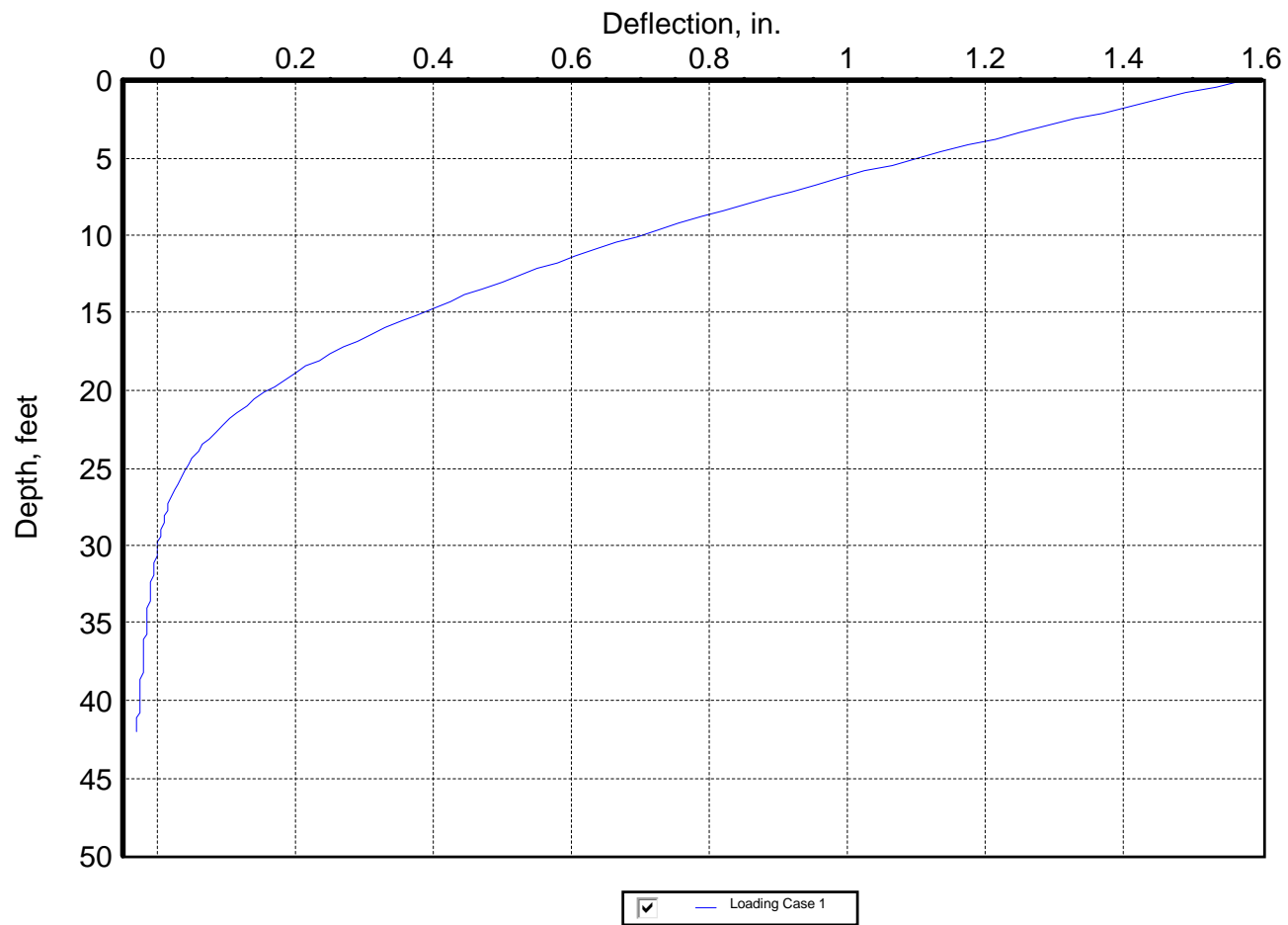


Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

Lateral Deflection vs. Depth

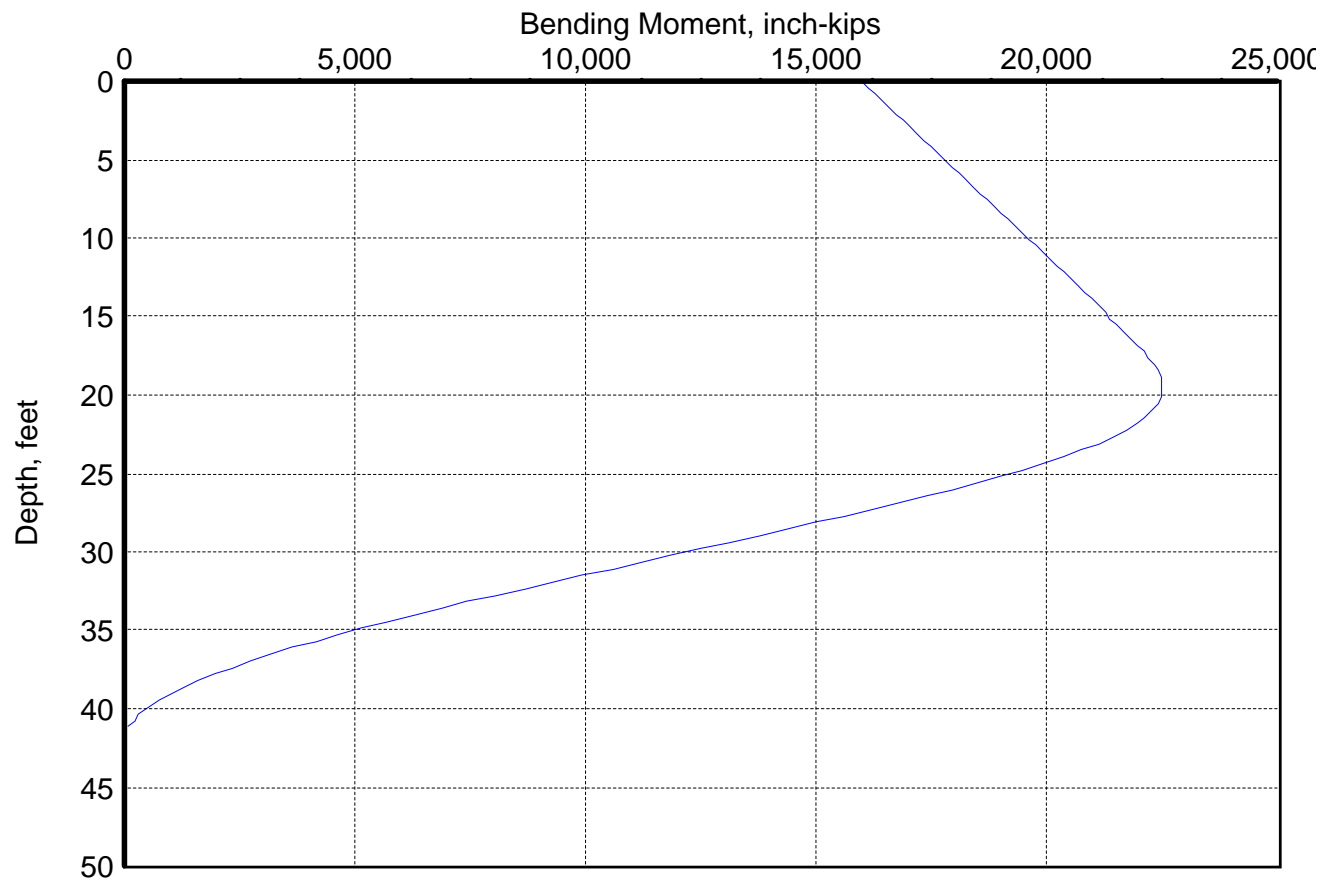
Pier #1 - 100 Year Event



LPile 2012.6.37, © 2013 by Ensoft, Inc.

Bending Moment vs. Depth

Pier #1 - 100 Year Event

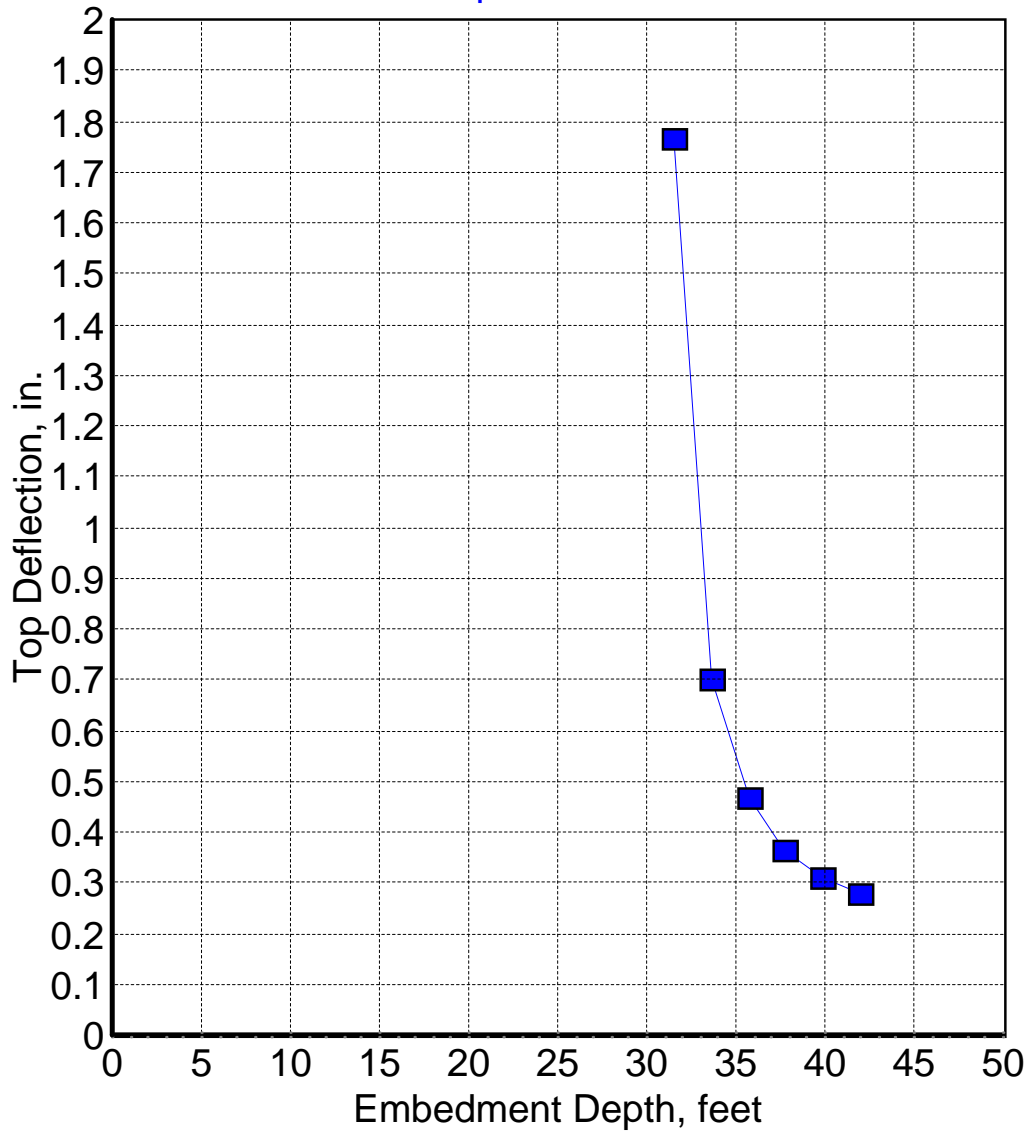


Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

Top Deflection vs. Pile Length

Pier #1 - Super Flood Event

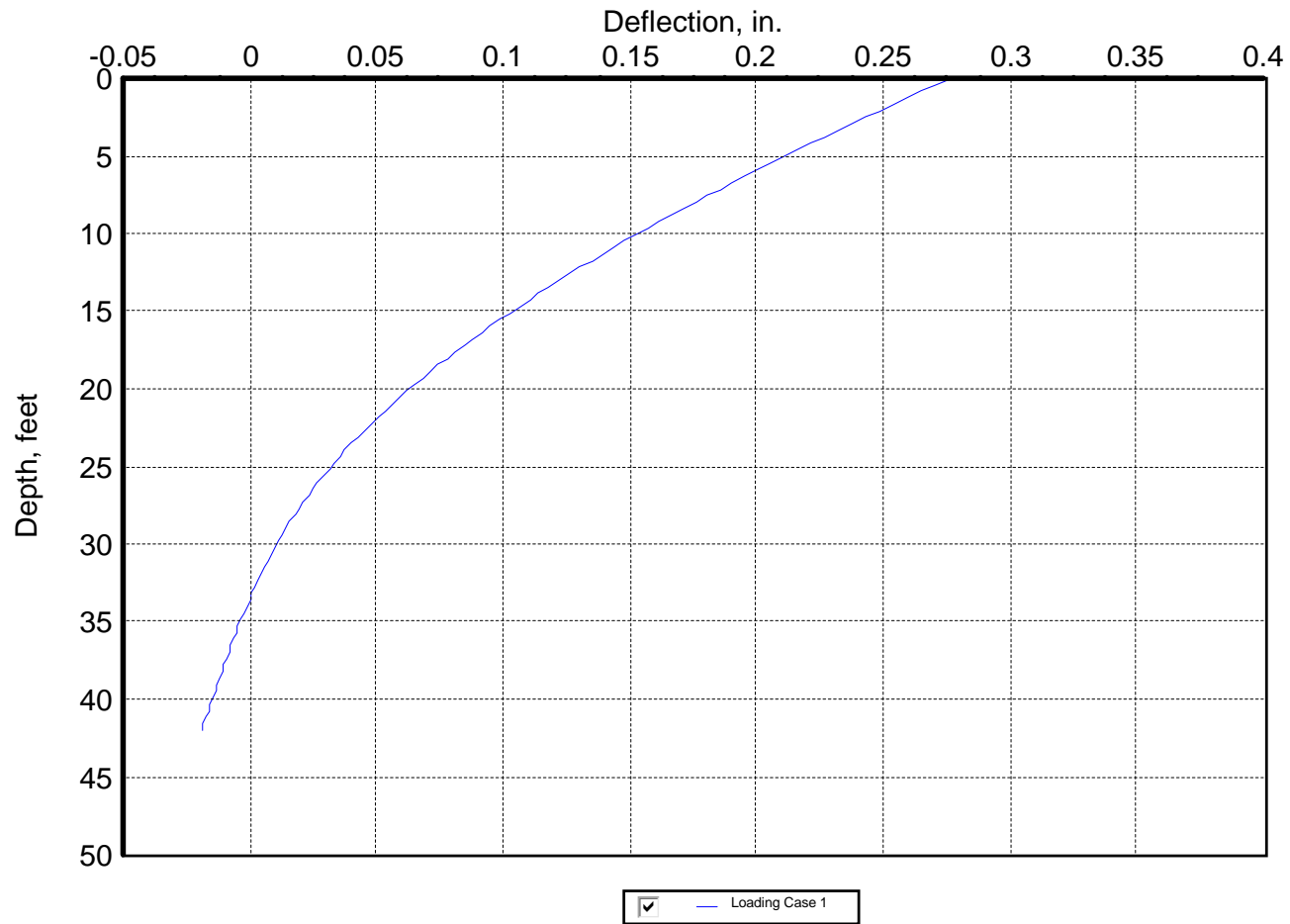


Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

Lateral Deflection vs. Depth

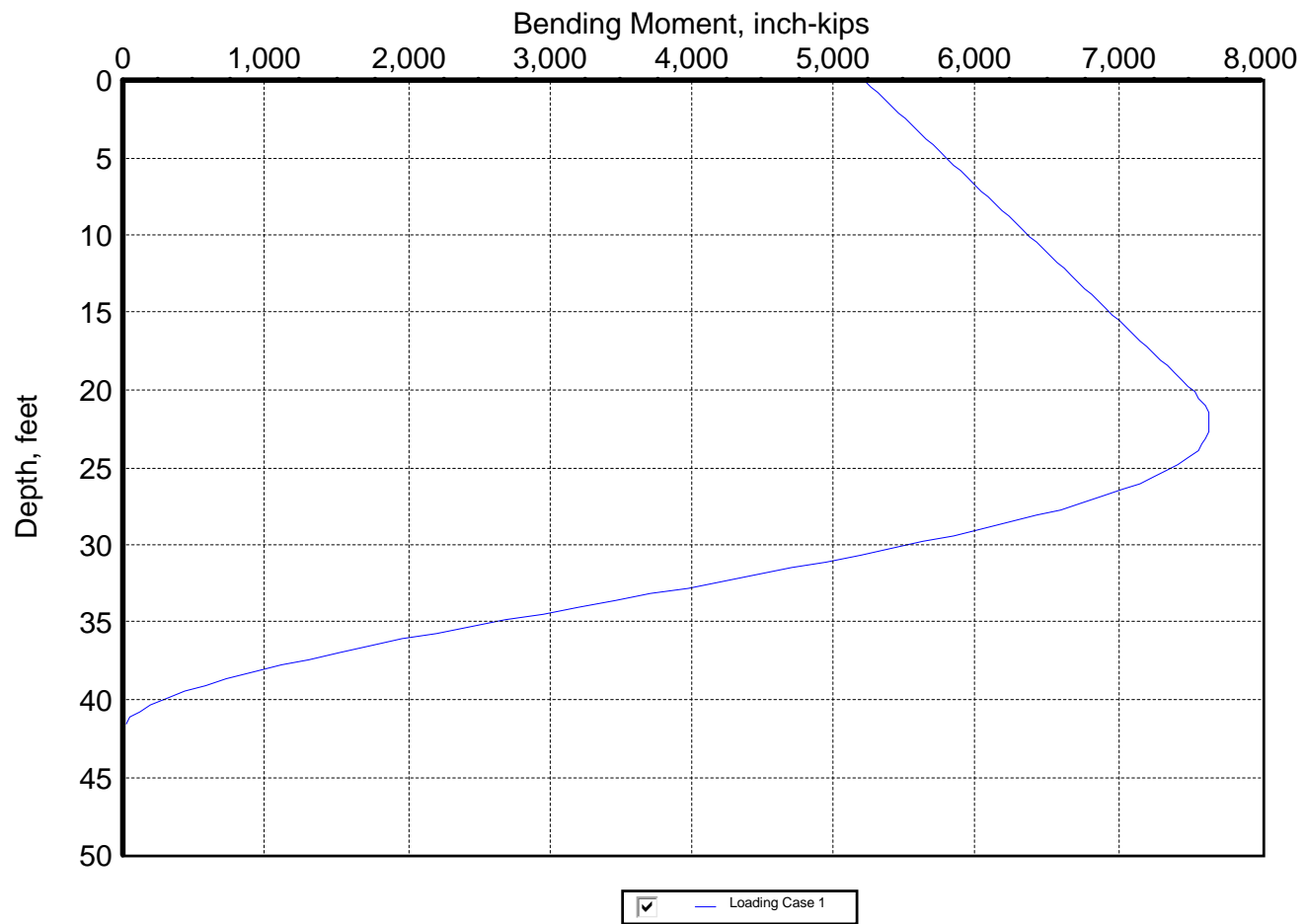
Pier #1 - Super Flood Event



LPile 2012.6.37, © 2013 by Ensoft, Inc.

Bending Moment vs. Depth

Pier #1 - Super Flood Event

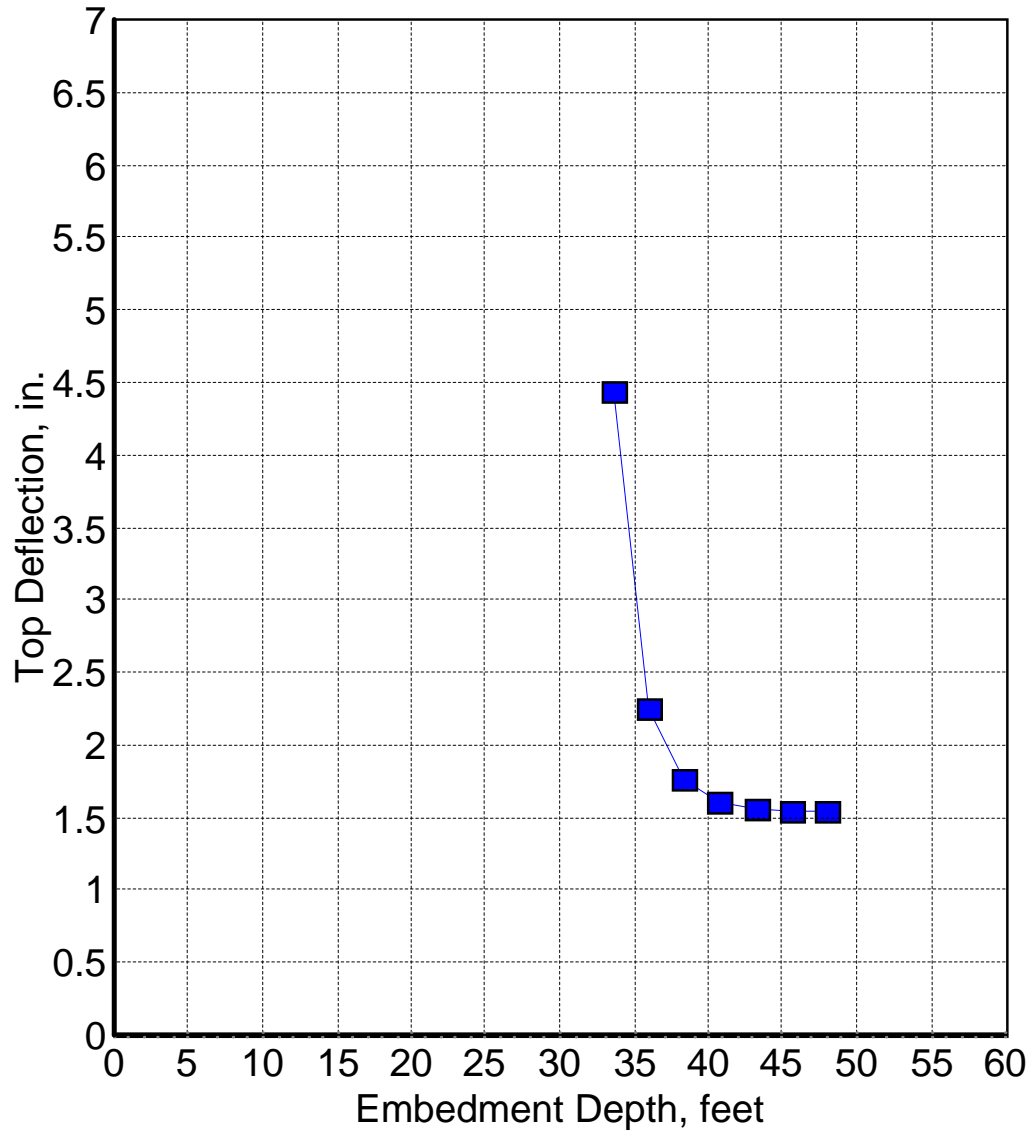


LPile 2012.6.37, © 2013 by Ensoft, Inc.

APPENDIX J
Pantano Wash Bridge
Pier #2
Lateral Load Analyses Results

Top Deflection vs. Pile Length

Pier #2 - 100 Year Event

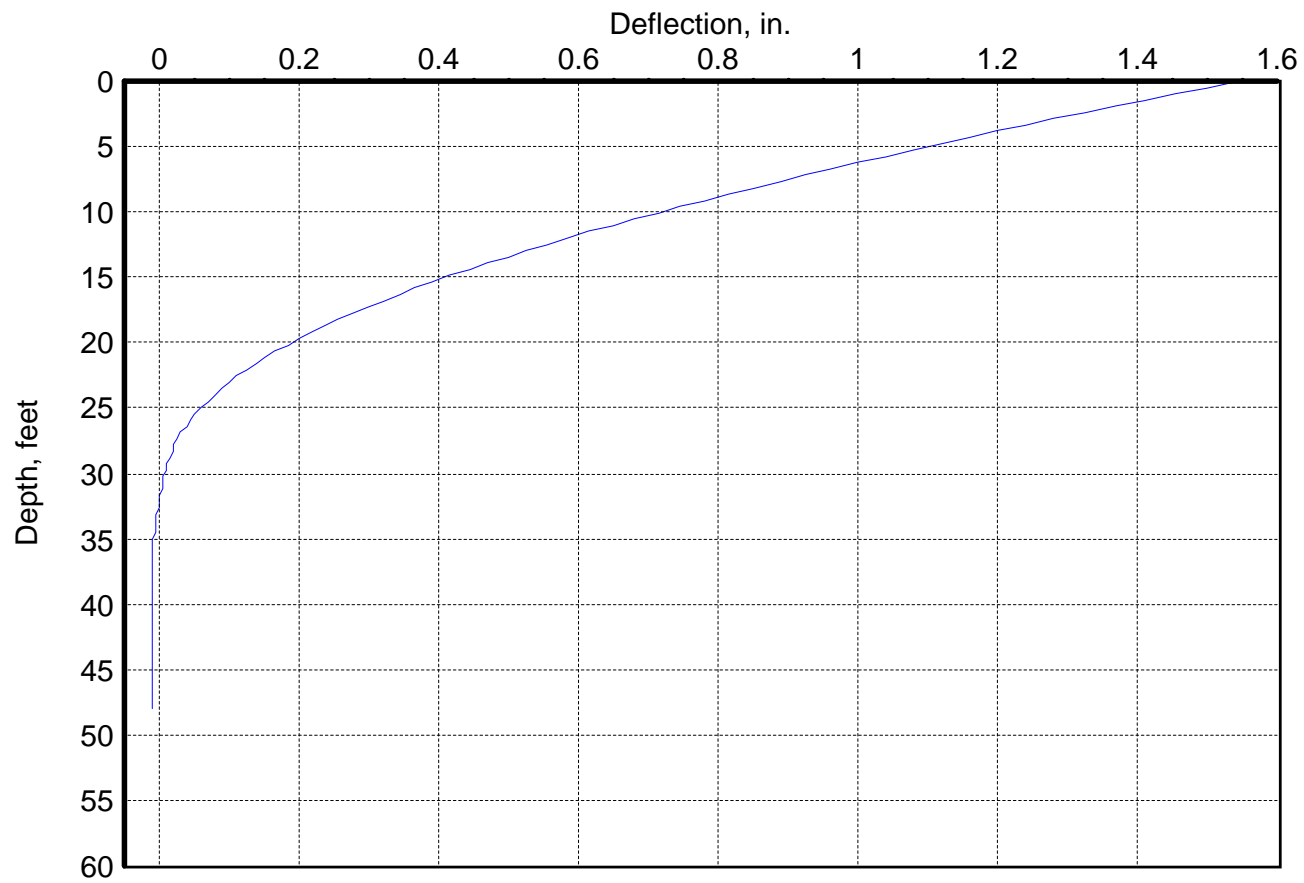


Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

Lateral Deflection vs. Depth

Pier #2 - 100 Year Event

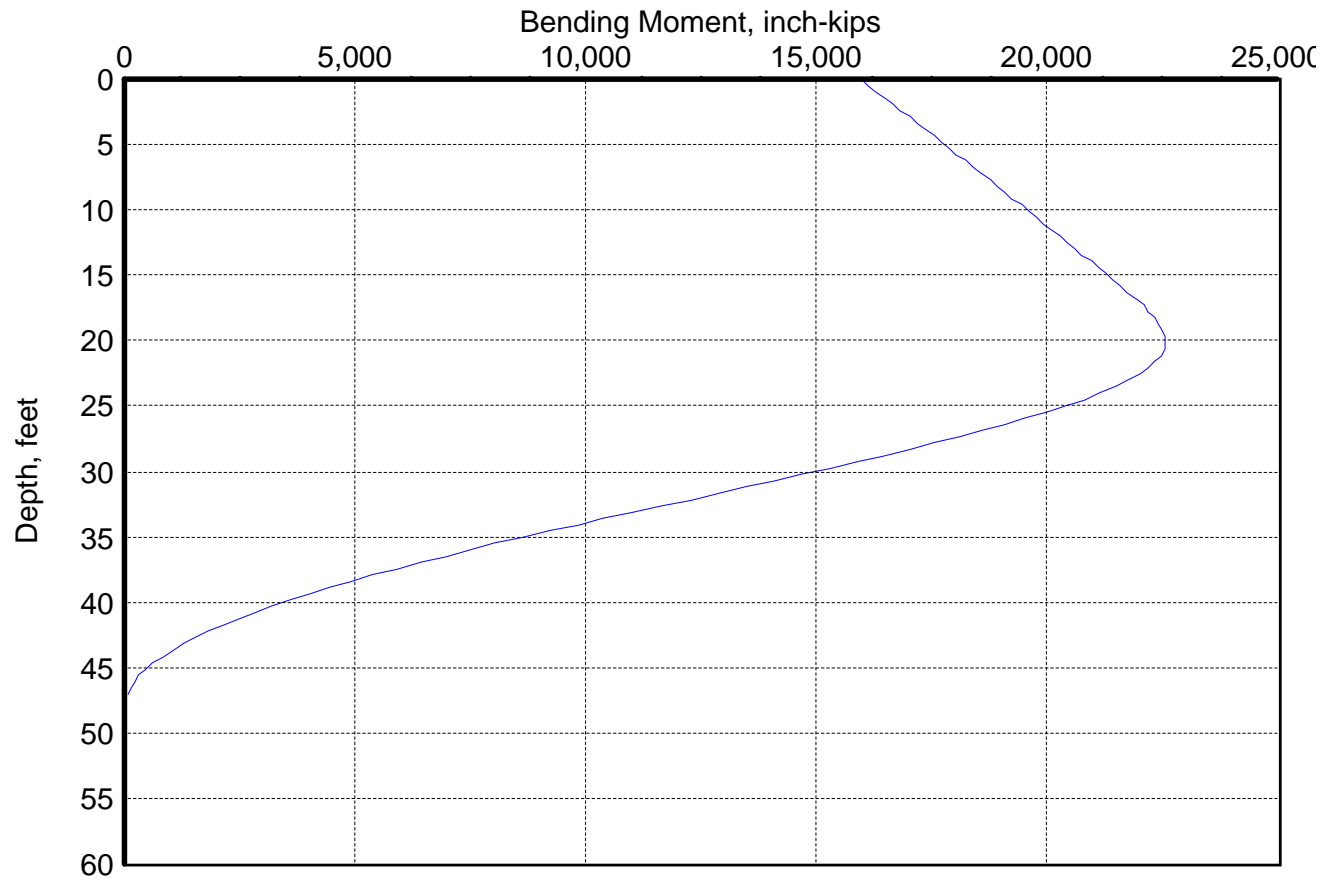


Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

Bending Moment vs. Depth

Pier #2 - 100 Year Event

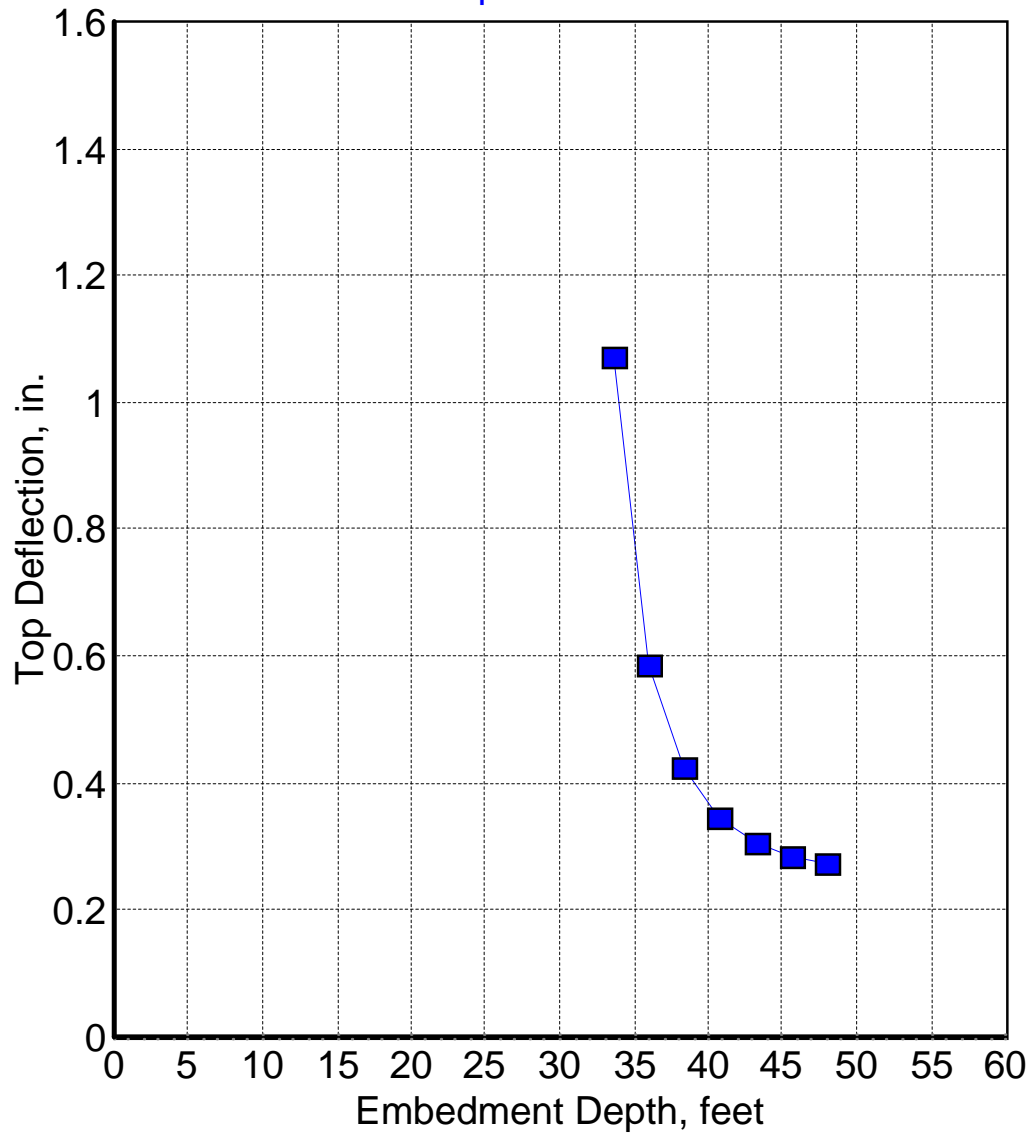


Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

Top Deflection vs. Pile Length

Pier #2 - Super Flood Event

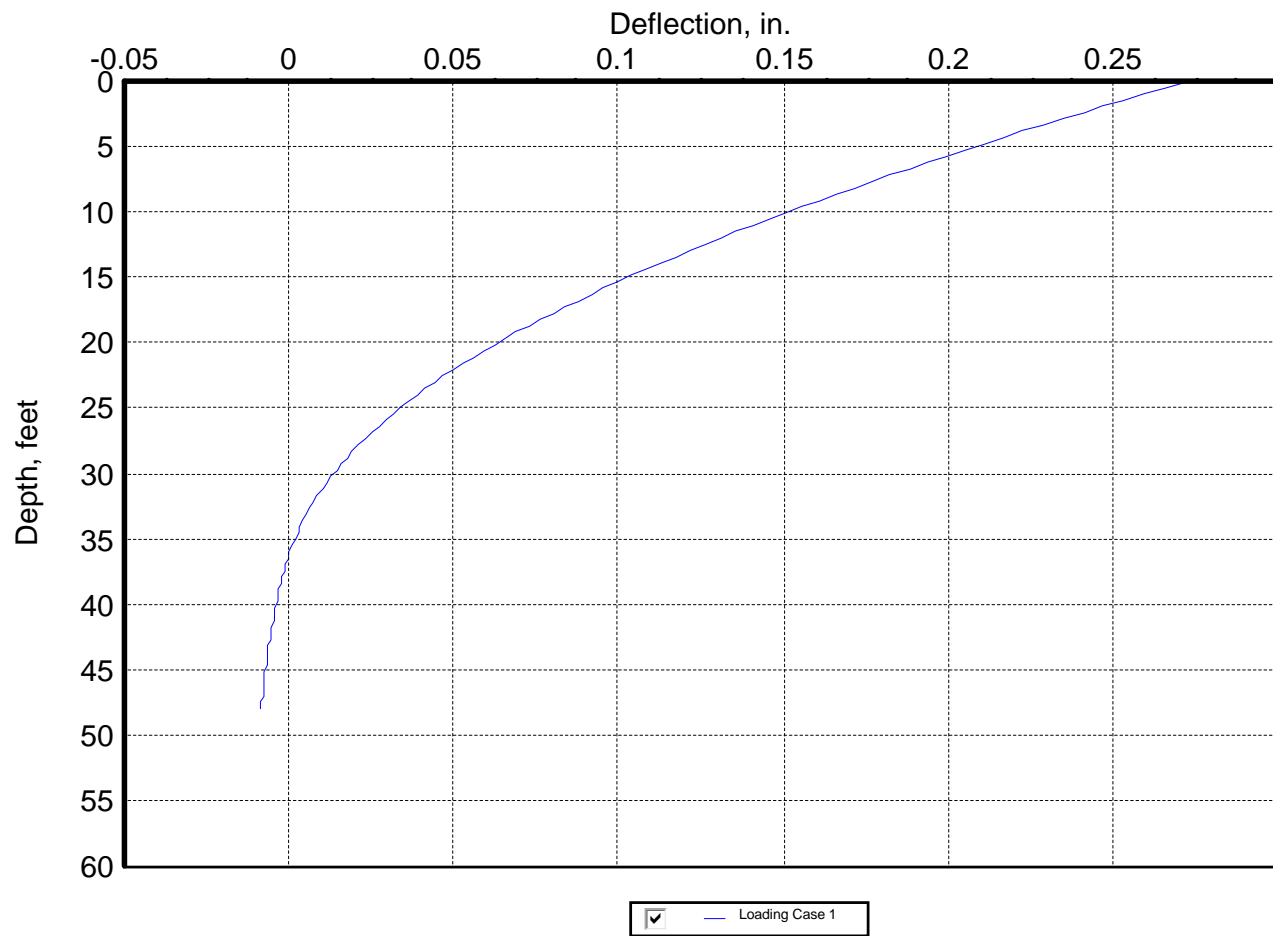


Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

Lateral Deflection vs. Depth

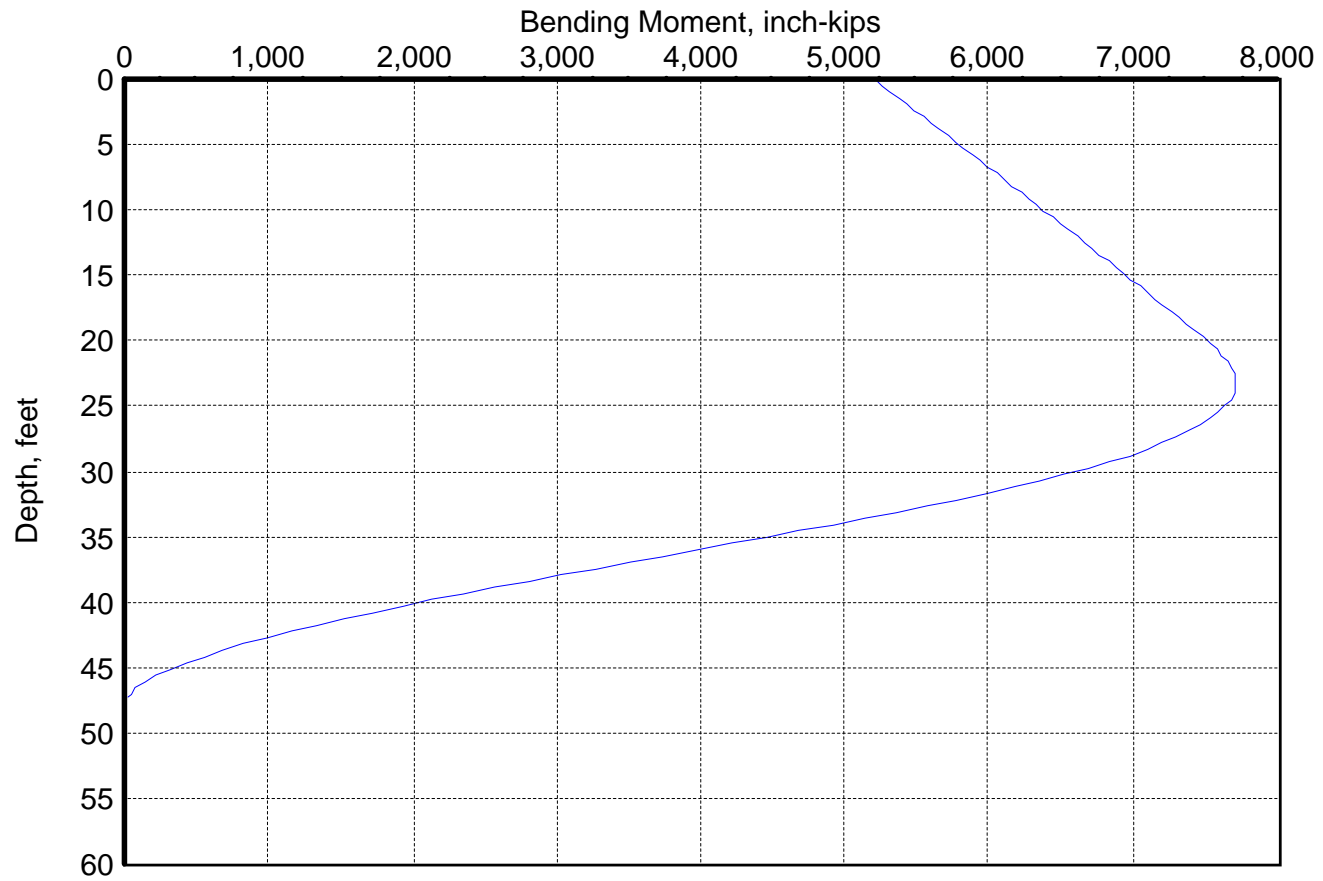
Pier #2 - Super Flood Event



LPile 2012.6.37, © 2013 by Ensoft, Inc.

Bending Moment vs. Depth

Pier #2 - Super Flood Event



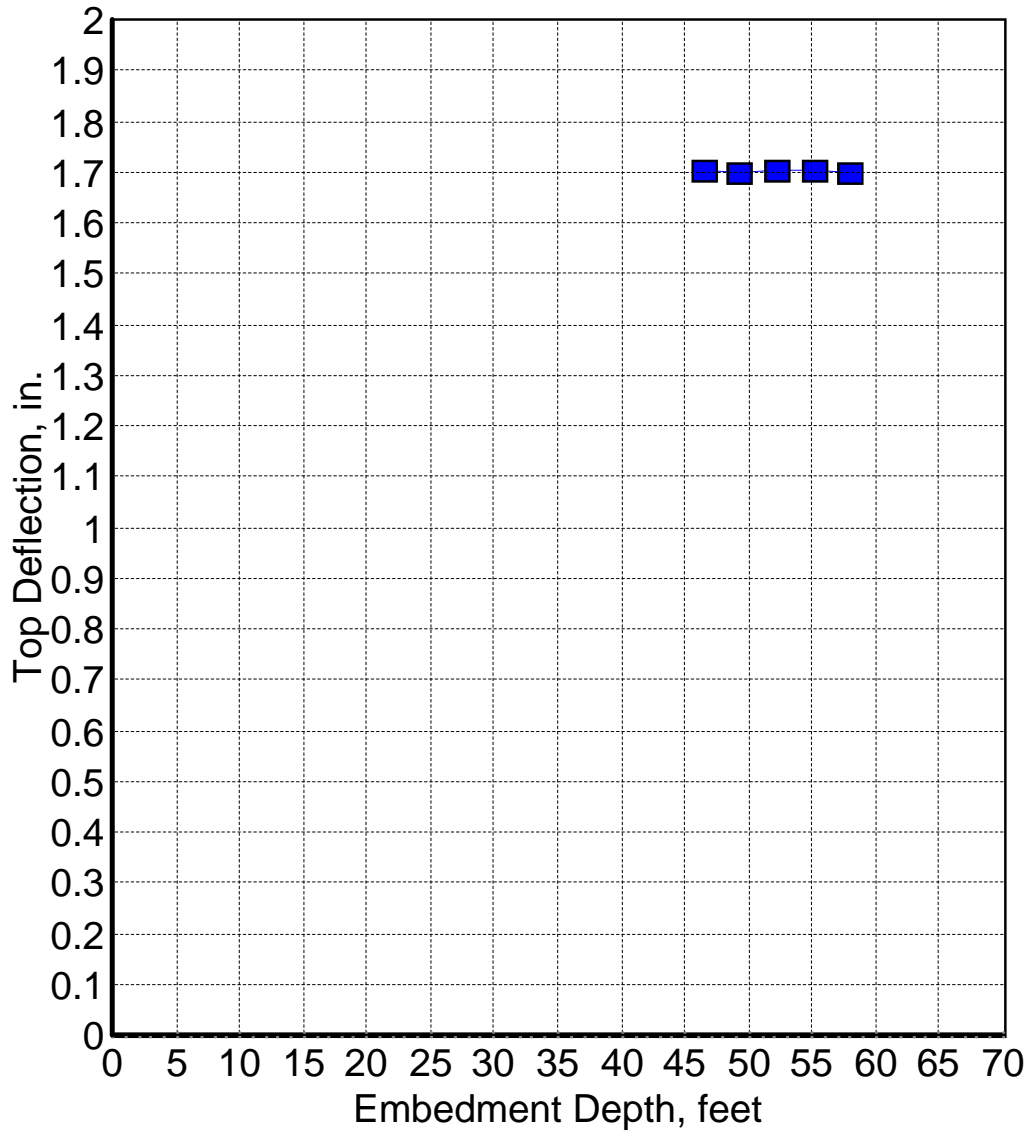
Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

APPENDIX K
Pantano Wash Bridge
Pier #3
Lateral Load Analyses Results

Top Deflection vs. Pile Length

Pier #3 - 100 Year Event

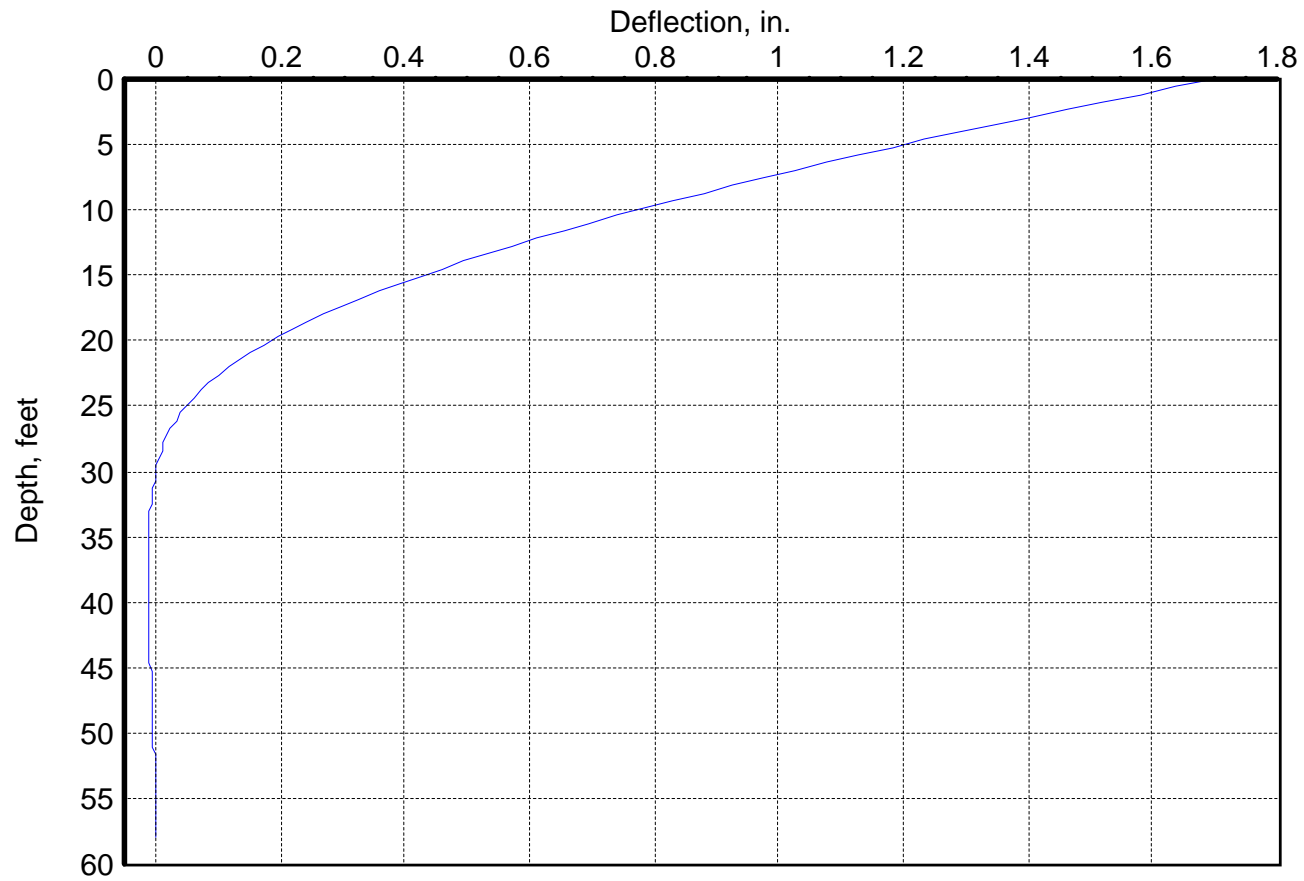


Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

Lateral Deflection vs. Depth

Pier #3 - 100 Year Event

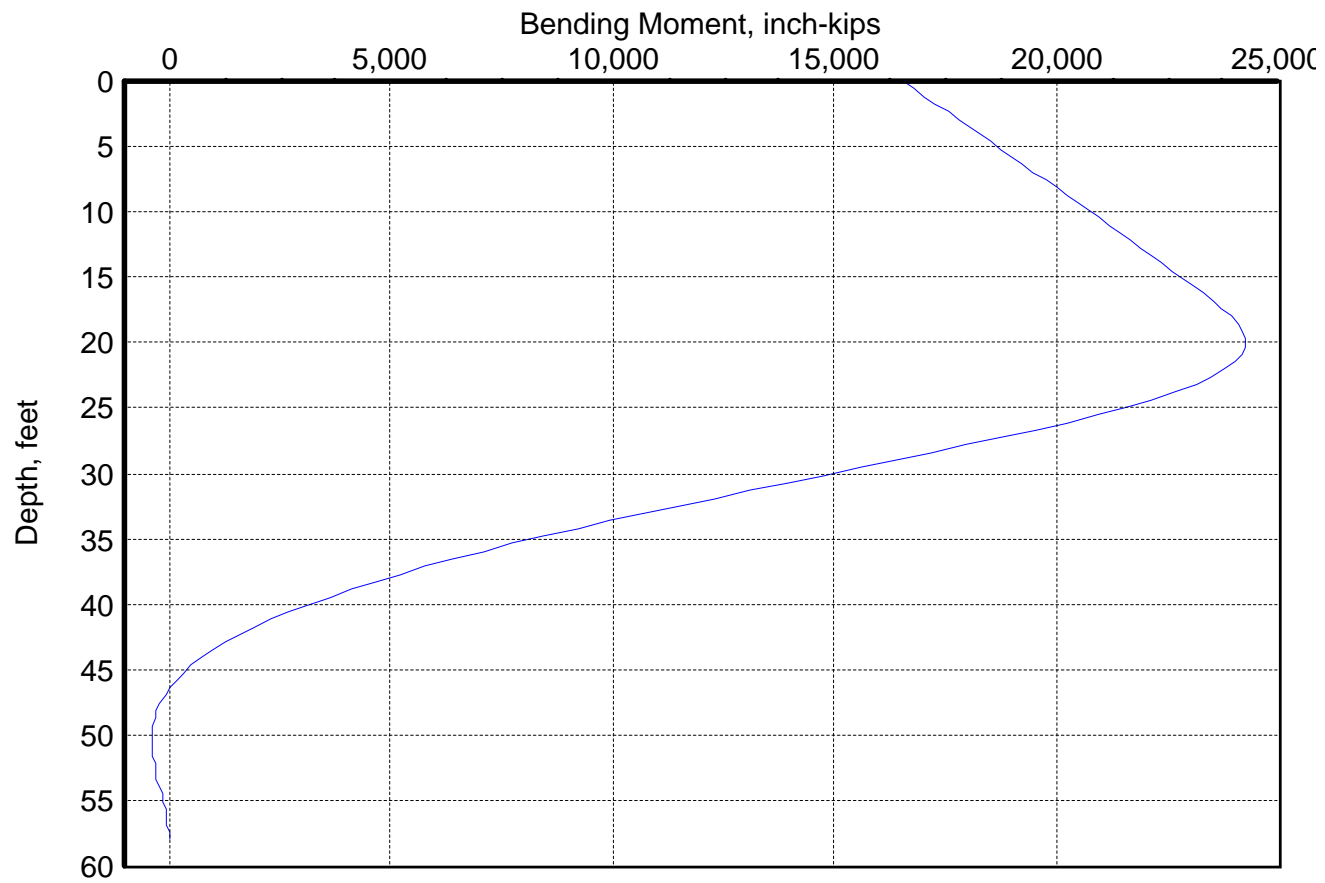


Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

Bending Moment vs. Depth

Pier #3 - 100 Year Event

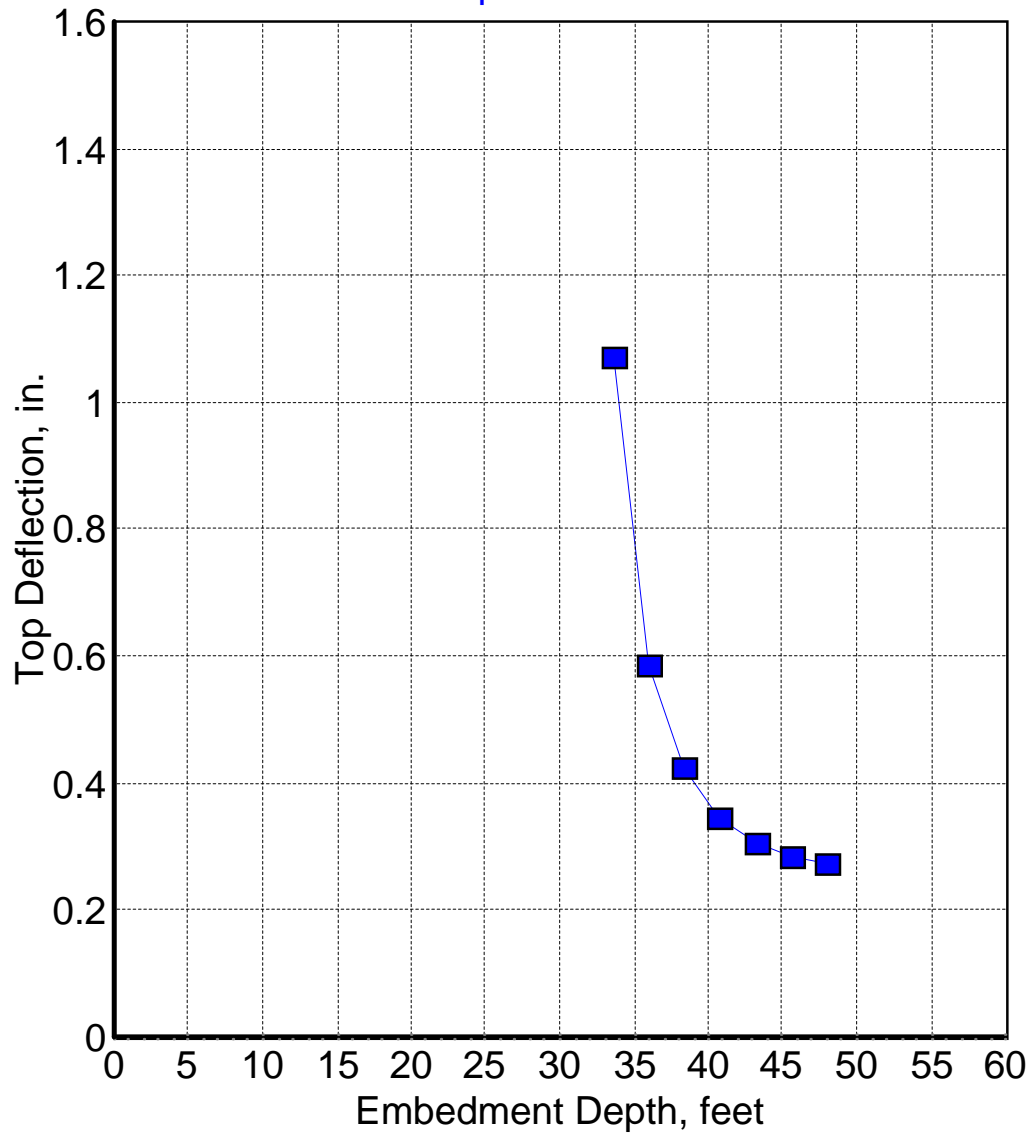


Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

Top Deflection vs. Pile Length

Pier #2 - Super Flood Event

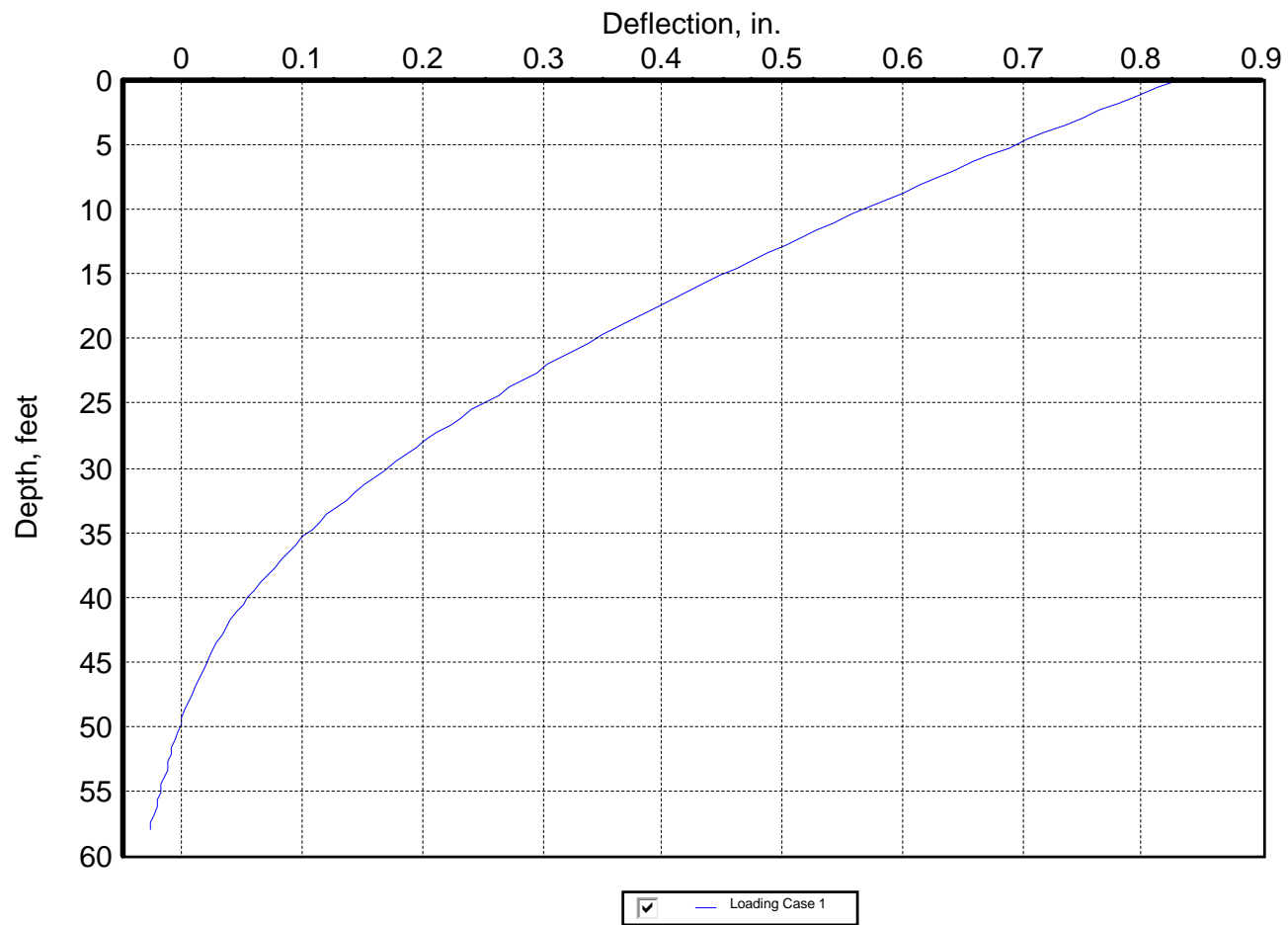


Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

Lateral Deflection vs. Depth

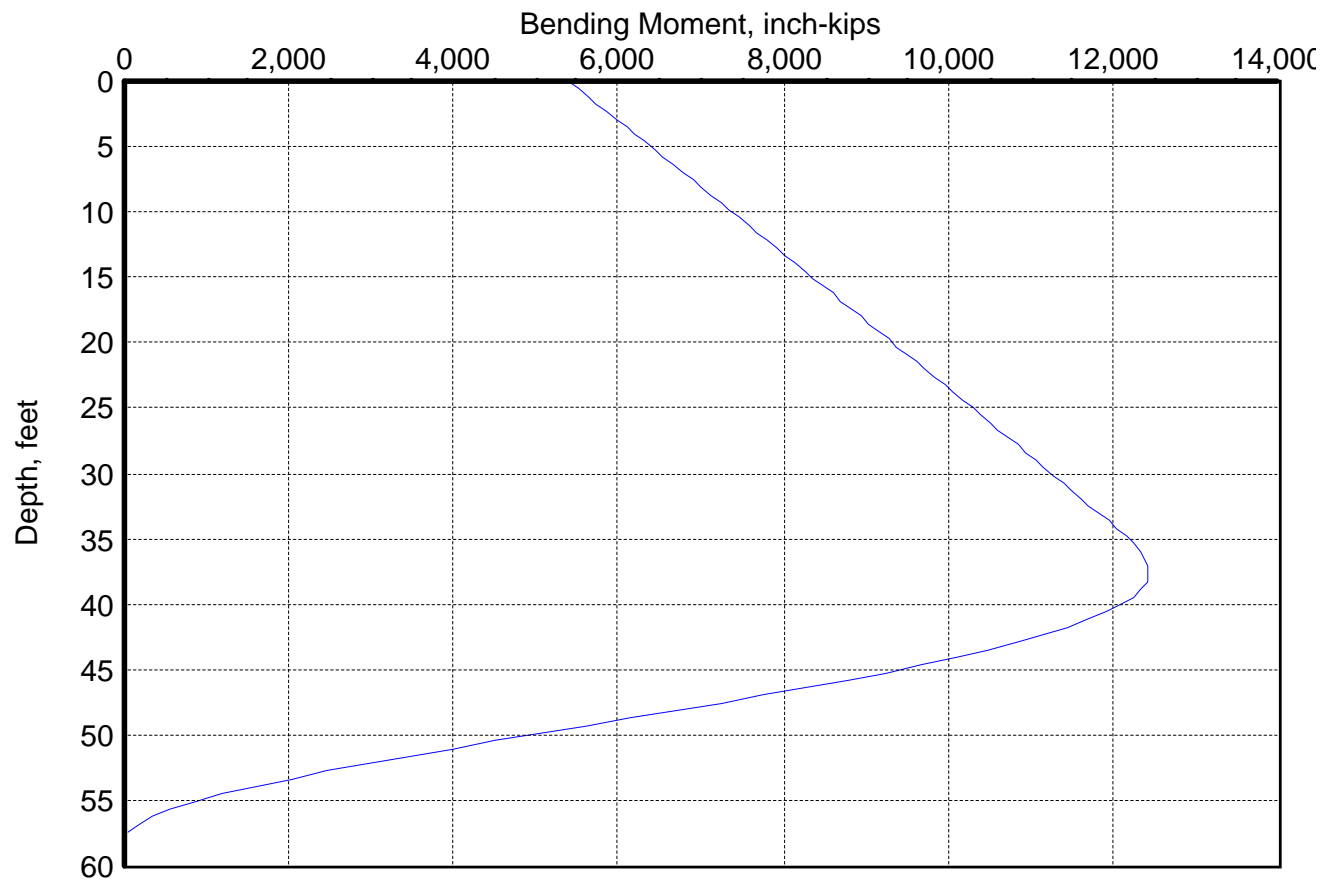
Pier #3 - Super Flood Event



LPile 2012.6.37, © 2013 by Ensoft, Inc.

Bending Moment vs. Depth

Pier #3 - Super Flood Event



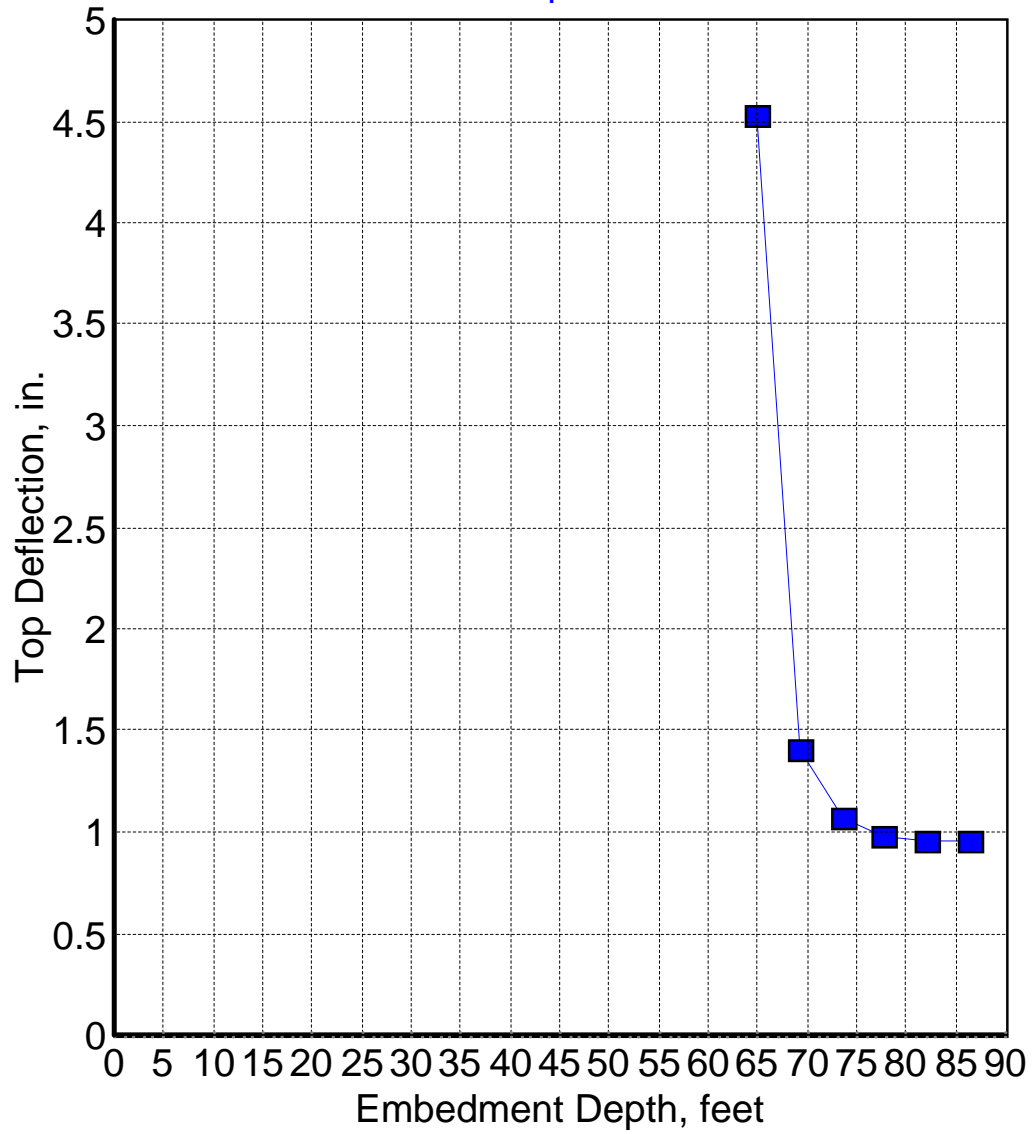
Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

APPENDIX L
Pantano Wash Bridge
West Abutment
Lateral Load Analyses Results

Top Deflection vs. Pile Length

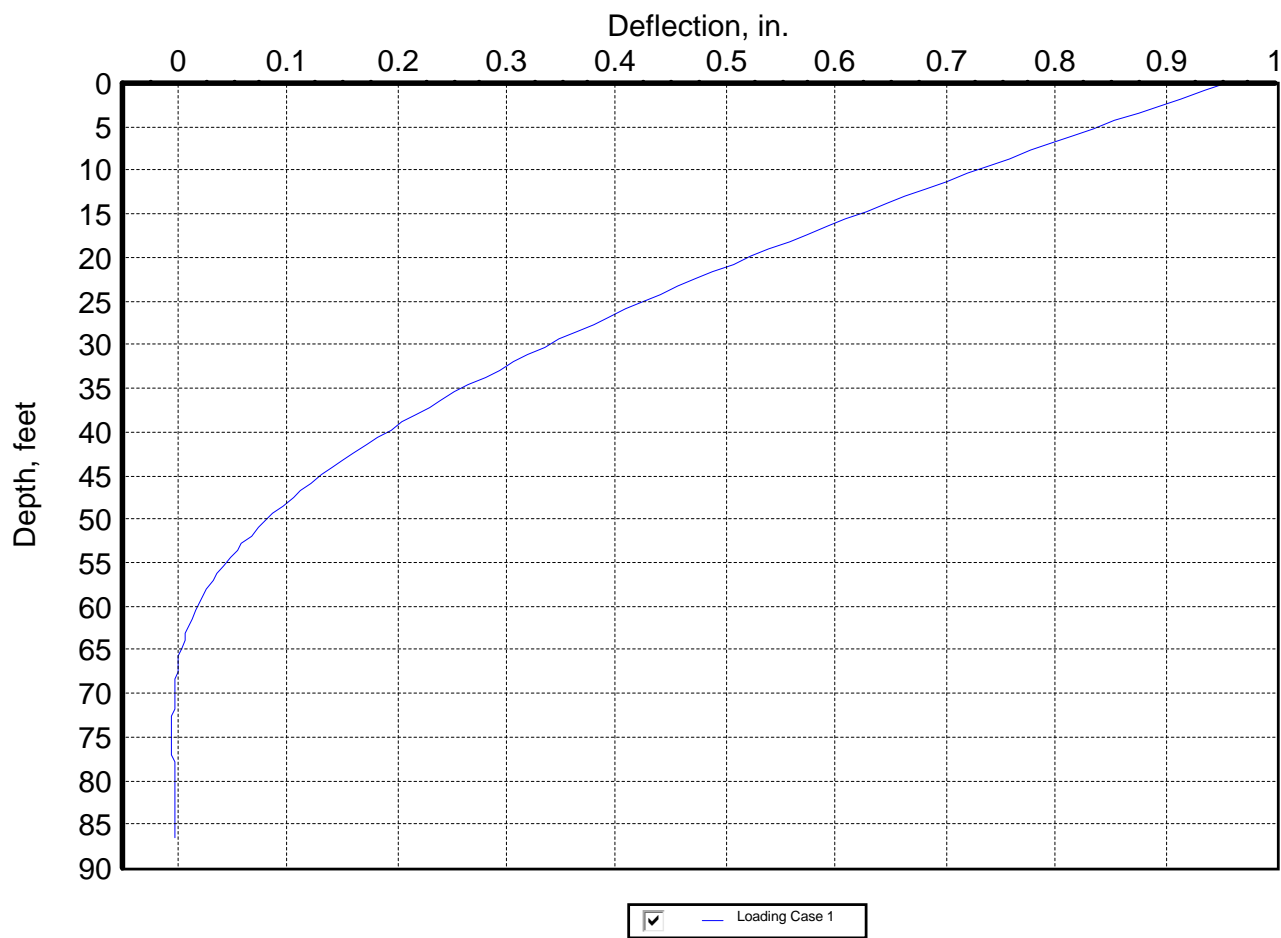
West Abutment - Super Flood Event



Loading Case 1

LPile 2012.6.37, © 2013 by Ensoft, Inc.

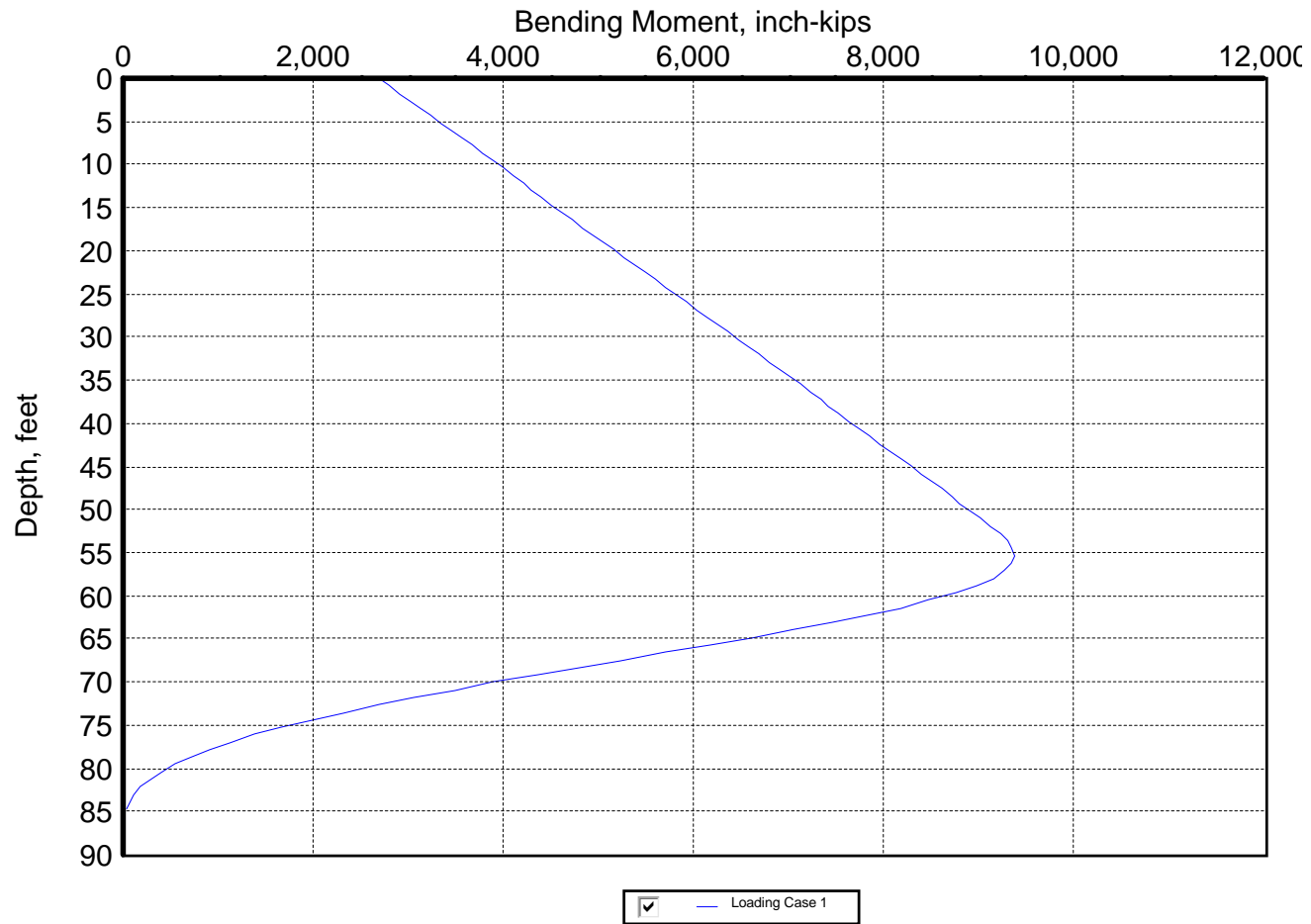
Lateral Deflection vs. Depth West Abutment - Super Flood Event



LPile 2012.6.37, © 2013 by Ensoft, Inc.

Bending Moment vs. Depth

West Abutment - Super Flood Event



LPile 2012.6.37, © 2013 by Ensoft, Inc.