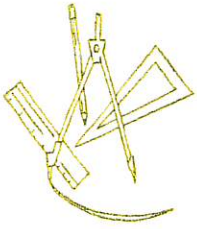

**RAYMONDVILLE DRAIN PROJECT
ENGINEERING APPENDIX A1**

ATTACHMENT E

GEOTECHNICAL REPORT – HIDALGO COUNTY



L&G Engineering Laboratory

Construction Material Testing
Geotechnical Engineering

**GEOTECHNICAL INVESTIGATION
FOR
RAYMONDVILLE DRAIN – BRIDGE FOUNDATIONS
HIDALGO COUNTY, TEXAS**

**Prepared For:
S&B Infrastructure**

**Prepared By:
L&G Engineering Laboratory, L.L.C.
[Texas Registered Engineering Firm F-6633]**

**L&G Project No. GL13026 – BRG
January 25, 2019**

**David A. Saenz, P.E., C.F.M.
Project Manager / Project Engineer**



INTRODUCTION.....	1
GENERAL PROJECT OVERVIEW	1
Project Description	1
Scope and Limitations of Investigation.....	1
EXISTING SOIL SURFACE & SUB-SURFACE CONDITIONS.....	2
Site Location / Description	2
GEOTECHNICAL SITE INVESTIGATION	3
Soil Borings and Field/Laboratory Tests.....	3
Water Strike Readings	4
GEOTECHNICAL BORING ANALYSIS & TESTING.....	5
Moisture Content	5
Plasticity Index	5
Particle Size Analysis (Determination of Fines Content)	6
Particle Size Analysis (Gradation Curves - D50 & D90).....	6
Sulfate Content of Soil (Concrete Structures).....	7
GEOTECHNICAL ENGINEERING ANALYSES.....	9
Proposed Project Foundation System Information	9
Deep Foundation Capacity (Capacity Curves).....	9
GENERAL CONSIDERATIONS DURING CONSTRUCTION	9
Deep Foundation Recommendations (Drilled Shafts)	9
Deep Foundation Recommendations (Piling).....	10
REFERENCES.....	11
APPENDIX A – FIGURES	A
APPENDIX B – BORING LOGS & GRADATIONS	B
APPENDIX C – DEEP FOUNDATION CAPACITY.....	C

INTRODUCTION

L&G Engineering Laboratory, L.L.C. (L&G) was contracted by **S&B Infrastructure (S&B)** to perform a subsurface geotechnical investigation and engineering analysis for the proposed Raymondville Drain Project in Hidalgo County, Texas. This report is specific to the proposed Bridge Foundations at the various roadway crossings throughout the project. This report will provide boring logs, foundation capacity curves, soil grain size gradation curves, soil sulfate concentrations and generalized recommendations.

GENERAL PROJECT OVERVIEW

Project Description

L&G is pleased to submit this document presenting our findings as the result of a subsurface geotechnical exploration performed at the request of **S&B**. It is our understanding that the general project involves the construction of a partial new location drainage ditch and partial widening/expansion of an existing drainage ditch improvement. The proposed location is as follows:

- Project begins at connection of proposed Raymondville Drain and Hidalgo County Drainage District No. 1 (HCDD No. 1) North Main Drain (approximately 0.8 miles west of I-69C) just south of FM 2812 and continues north to crossing at I-69C (approximately 1.6 miles south of FM 490). From I-69C the proposed Raymondville Drain continues easterly to crossing at Brushline Rd. then north to crossing at M Davila Sr Rd. From this point the project utilizes an existing Delta Lake Irrigation District drainage ditch alignment (which would require proposed widening) continuing north to County Rd 3000 W then easterly to just east of Hidalgo/Willacy County line (County Rd 5).

Bridge crossings will be constructed at several locations along the Raymondville Drain as a portion of this project. A general location map showing the proposed Raymondville Drain Project can be found on Figure 1 in Appendix A.

Scope and Limitations of Investigation

This report has been prepared in accordance with accepted Geotechnical Engineering practices for the subject project site and the anticipated construction. No specific warranty program or other standards, except acceptable industry standards, were followed during the course of this investigation. This report is intended for use by **S&B** and their representatives. This report may not contain sufficient information for other parties or agencies for uses in determining construction means and methods.

The strata shown on the boring logs (included in Appendix B of this report) represent the in-situ soil conditions at the boring locations during exploration. These stratifications represent approximate boundaries between subsurface materials; their actual transition may be gradual. It should be noted that the exploratory borings were performed within the limits of the proposed construction as requested and agreed upon by **S&B** and **L&G**.

The purposes for this study are to:

1. explore the general existing subsurface conditions at the site
2. evaluate the relevant engineering properties of the subsurface materials
3. calculate strength parameters for the existing soil strata for structural evaluation
4. generate foundation capacity curves for general bridge
5. develop grain size gradation curves for soils (for future use in Scour Analysis)
6. provide general construction recommendations regarding all aspects of the project

The scope of this geotechnical engineering study does not include environmental assessment of the air, soil, rock or water conditions on or adjacent to the site. No environmental opinions are presented in this report.

EXISTING SOIL SURFACE & SUB-SURFACE CONDITIONS

Site Location / Description

The proposed alignment for the Raymondville Drain Project within Hidalgo County, Texas is within and around the vicinity of the Edinburg, Faysville and Hargill, Texas (See Figure 1 in Appendix A). The proposed location is as follows:

- Project begins at connection of proposed Raymondville Drain and Hidalgo County Drainage District No. 1 (HCDD No. 1) North Main Drain (approximately 0.8 miles west of I-69C) just south of FM 2812 and continues north to crossing at I-69C (approximately 1.6 miles south of FM 490). From I-69C the proposed Raymondville Drain continues easterly to crossing at Brushline Rd. then north to crossing at M Davila Sr Rd. From this point the project utilizes an existing Delta Lake Irrigation District drainage ditch alignment (which would require proposed widening) continuing north to County Rd 3000 W then easterly to just east of Hidalgo/Willacy County line (County Rd 5).

The alignment crosses several tracts of existing agricultural lands, cultivated farmlands (small crops) and undeveloped acreages (no major clearing was required). In addition, it should be noted, a portion of the alignment is within an existing Delta Lake Irrigation District drainage ditch which required minimal clearing. The boring locations were drilled as close as possible to the locations specified by the Client as shown on Figure 2 in Appendix A. All final boring locations were surveyed by the Client to determine the exact coordinates for the borings (these are noted on the boring logs in Appendix B).

GEOTECHNICAL SITE INVESTIGATION

Soil Borings and Field/Laboratory Tests

Subsurface conditions at the site were evaluated through various depths of borings based on their required use in analysis. For this portion of the project and this report specific to the Bridge Foundations for the Raymondville Drain the overall breakdown of borings and corresponding depths is as follows:

- **Structure Borings** – Thirty-four (34) borings drilled at locations of proposed structures noted along the channel alignment (drilled to a depth of approximately seventy-five (75) feet below the existing top of natural ground).
 - Two (2) borings were drilled at locations of a prior alignment (drilled to a depth of approximately seventy-five (75) feet below the existing top of natural ground).

All exploratory borings were drilled at the approximate locations shown on Figure 2 in Appendix A. The soil borings were drilled and sampled in general accordance with American Society of Testing Materials Procedures (ASTM) D420, D1452, and D1586 using a truck mounted drilling rig (Simco 2800 HS (HT)). For ease of reference we have established a table of borings versus structure locations as follows:

Structure (Bridge Name)	Boring No.(s)
FM 2812	BRG-01, BRG-02
Cactus Ln	BRG-03, BRG-04
US 281 / I-69C	BRG-11, BRG-12
Brushline Rd (Old Alignment – Not Used)	BRG-13, BRG-14
Brushline Rd (Final Alignment)	BRG-13A1, BRG-14A1
Vista Bonita Rd	BRG-13A2, BRG-14A2
12 th Street	BRG-15, BRG-16
Bucy Rd	BRG-17, BRG-18
FM 490	BRG-19, BRG-20
M Davila Sr Rd	BRG-21, BRG-22
Ranch Road (Unknown) (0.50 Mi S of CR 2900 W)	BRG-23, BRG-24
CR 2900 W	BRG-25, BRG-26
Ranch Road (Unknown) (0.50 Mi N of Bucy Rd)	BRG-27, BRG-28
Ranch Road (Unknown) (0.56 Mi N of Bucy Rd)	BRG-29, BRG-30
Coolidge Rd	BRG-31, BRG-32
FM 493	BRG-33, BRG-44
CR 5	BRG-35, BRG-36

Table 1: Structure Locations/Names versus Borings Retrieved

**all depths are referenced from existing natural ground*

Texas Cone Penetration Testing (TCP) – Boring B-BRG-#

As part of the drilling procedure, Texas Cone Penetration (TCP) field tests were performed at various depth intervals for use in determination of soil strength parameters. TCP tests were executed in compliance with TxDOT test procedures (Tex-132-E, Texas Cone Penetration) and results were reported as blows per increment on the boring logs. A 170 pound hammer was used to drive the conical driving point through three (3) - six inch increments. The first six inch increment (or 12 blows, whichever was reached first), typically referred to as the seating drive, was not included in the blow count as per the test procedure. The number of blows required to drive the sampler through the subsequent two (2) - six inch increments were recorded as the TCP results (and were included on the boring logs in Appendix B). Where very dense or hard material was encountered (resulting in less than 6 inches of movement per 50 blows) the cone was driven for a minimum 100 blows, and the depth of penetration for the first and second 50 blows was recorded as the TCP results.

As part of the sampling procedure, auger samples were collected through general grab sampling during the drilling process (auger cuttings were collected at drilling intervals between TCP tests). Representative portions of the samples were identified, packaged, sealed in containers (to reduce moisture loss) and transported to our laboratory for subsequent testing. In the laboratory, each sample was evaluated and visually classified by a member of our Geotechnical Engineering staff. The properties of the strata were evaluated by a series of laboratory index tests (Tex-142-E, Laboratory Classification of Soils for Engineering Purposes and ASTM D 2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)). A summary of the laboratory data and their corresponding depths are presented on the boring logs in Appendix B.

Water Strike Readings

During the drilling operations, water strikes were encountered at all boring locations. It should be noted that fluctuations in groundwater levels are influenced by variations in rainfall and surface water run-off from season to season. The construction process itself may also cause variations in the groundwater level. If the water level is critical to the construction process, **L&G** recommends that the Contractor check the subsurface water conditions immediately prior to construction excavation through the installation of piezometer wells. Table 2 shows a summary of the initial water strike depth (24 hour water level readings not applicable to these borings since all borings required changing to mud rotary operations).

Boring No.	*Initial Water Strike
BRG-01	18.00ft
BRG-02	19.00ft
BRG-03	30.00ft
BRG-04	32.00ft
BRG-11	34.00ft
BRG-12	25.00ft
BRG-13	20.00ft
BRG-14	33.00ft

BRG-13A1	18.00ft
BRG-14A1	19.00ft
BRG-13A2	6.00ft
BRG-14A2	8.00ft
BRG-15	18.00ft
BRG-16	18.00ft
BRG-17	33.00ft
BRG-18	30.00ft
BRG-19	25.00ft
BRG-20	25.00ft
BRG-21	12.00ft
BRG-22	14.00ft
BRG-23	13.00ft
BRG-24	15.00ft
BRG-25	18.00ft
BRG-26	23.00ft
BRG-27	15.00ft
BRG-28	15.00ft
BRG-29	15.00ft
BRG-30	15.00ft
BRG-31	13.00ft
BRG-32	13.00ft
BRG-33	13.00ft
BRG-34	17.00ft
BRG-35	14.00ft
BRG-36	14.00ft

Table 2: Water Strike Depth Summary
**all depths are referenced from existing natural ground*

GEOTECHNICAL BORING ANALYSIS & TESTING

Moisture Content

The moisture content of a soil is defined as the ratio of the weight of the water in the sample to the dry weight of the soil sample. The moisture contents for the samples obtained as part of our geotechnical exploration were performed in compliance with ASTM procedure D2216 (and Tex-103-E). A comprehensive list of all moisture contents by corresponding depth can be found on the boring logs.

Plasticity Index

The Plasticity Index (PI) is defined as the difference between the liquid limit and the plastic limit of a soil. These limits are commonly referred to as the Atterberg Limits, which describe the consistency of soils with respect to their varying moisture contents. The plasticity indices for the samples obtained as part of our geotechnical exploration were performed in compliance with ASTM procedure D4318 (and Tex-104-E thru Tex-106-E). A comprehensive list of all plasticity indices by corresponding depth can be found on the boring logs.

Particle Size Analysis (Determination of Fines Content)

The standard grain size analysis is used to determine the relative proportions of different grain sizes as they are distributed along a range of different sized sieves. The minus 200 sieve analysis is used commonly as a tool for soil classification and identification using the Unified Soils Classification System. Results for this test are reported as a percentage of soil passing the No. 200 sieve, which has openings 0.075mm wide. The particle size analyses for the samples obtained as part of our geotechnical exploration were performed in compliance with ASTM procedure D1140 (and Tex-111-E). A comprehensive list of all fines contents by corresponding depth can be found on the boring logs.

Particle Size Analysis (Gradation Curves - D50 & D90)

Full standard gradation analysis is necessary to establish soil gradation curves. Standard gradation analysis involves two parts, the sieve analysis and the hydrometer analysis. The sieve analysis consists of stacking progressively finer sieves and passing a soil mass through. The sieve sizes correspond to different particle sizes within a soil. Hydrometer analyses are used primarily in fine grained soils but are also very useful in establishing the ‘tail-end’ of a gradation curve for soils having a mixture of coarse grained and fine grained soil constituents. Full standard gradation analysis is also useful in defining percentages of particle diameters. The diameter of soil particles corresponding to 50% (D50) and 90% (D90) finer in the soil samples were derived from sieve and hydrometer analyses (establishment of particle-size distribution curve) for use in Hydraulic Scour Analysis. The results are presenting in [Table 3](#) (full gradation curves can be found in [Appendix B](#)):

Boring #	*Sample Depth (ft.)	D50 (mm)	D90 (mm)
BRG-01	15	0.002	0.026
BRG-02	20	0.007	0.020
BRG-03	25	0.001	0.008
BRG-04	10	0.110	1.000
BRG-11	10	0.075	0.210
BRG-12	25	0.008	0.100
BRG-13	10	0.050	0.200
BRG-14	25	0.060	0.200
BRG-13A1	20	0.010	0.140
BRG-14A1	15	0.058	0.200
BRG-13A2	20	0.006	0.070
BRG-14A2	15	0.029	0.150
BRG-15	10	0.040	0.200
BRG-16	15	0.075	0.250
BRG-17	10	0.008	0.200
BRG-18	10	0.020	0.200
BRG-19	15	0.100	0.250
BRG-20	20	0.075	0.100
BRG-21	10	0.100	0.250

BRG-22	15	0.100	0.250
BRG-23	15	0.131	0.260
BRG-24	20	0.098	0.230
BRG-25	20	0.065	0.250
BRG-26	10	0.150	0.250
BRG-27	20	0.150	0.300
BRG-28	10	0.050	0.200
BRG-29	10	0.090	0.200
BRG-30	15	0.090	0.250
BRG-31	10	0.090	0.250
BRG-32	20	0.150	2.5
BRG-33	10	0.090	0.200
BRG-35	20	0.007	0.300
BRG-36	15	0.040	0.200

Table 3 – D50 & D90 Values for Scour Analysis

**all depths are referenced from existing natural ground*

In accordance with the TxDOT Geotechnical Manual (2006), **L&G** recommends D50 values be limited to 4×10^{-3} inches (0.10 millimeters) for this channel in cohesive material. In addition (and if required), it should be noted, the TxDOT Geotechnical Manual (2012) recommends Pier Scour utilize equations in HEC-18 with a reduction factor of 0.5 for soils with 11% or more clay.

Sulfate Content of Soil (Concrete Structures)

The presence of high concentrations of water-soluble sulfates (SO_4) in soils can be detrimental to concrete structures in direct contact. Concrete exposed to these sulfate rich soils (buried concrete structures, foundations, slabs-on-grade) are vulnerable to deterioration in the form of expansion, cracking and spalling. In order to detect levels of water-soluble sulfates in the soils, we performed testing on these soils in accordance with Tex-145-E (Determining Sulfate Content in Soils – Colorimetric Method). To ensure we got an accurate reading with regard to the water levels impacting the soils, we performed these tests at various depths below top of natural ground at the locations of the borings and at bulk sample locations. The general site specific results are presented in Table 4.

Boring #	*Sample Depth (ft.)	Water-Soluble Sulfate Level (Parts Per Million)
BRG-01	25	880
BRG-02	60	1,140
BRG-03	65	920
BRG-04	30	640
BRG-11	50	580
BRG-12	50	854
BRG-13	40	1,180
BRG-14	60	1,640
BRG-13A1	15	960
BRG-14A1	35	780
BRG-13A2	15	620

BRG-14A2	40	1380
BRG-15	30	120
BRG-17	55	1,780
BRG-18	30	2,160
BRG-19	55	1,120
BRG-20	10	< 100
BRG-21	30	920
BRG-22	35	1,440
BRG-23	20	700
BRG-24	40	540
BRG-25	40	1,980
BRG-26	30	1,100
BRG-27	55	1,300
BRG-29	30	1,680
BRG-30	50	1,160
BRG-31	20	1,160
BRG-32	30	1,580
BRG-33	20	580
BRG-36	30	1,260

Table 4 – Summary of Sulfate Contents
**all depths are referenced from existing natural ground*

GEOTECHNICAL ENGINEERING ANALYSES

Proposed Project Foundation System Information

L&G was tasked to provide a geotechnical analysis specific to the proposed Bridge Foundations at the various roadway crossings throughout the project. This analysis includes definition of foundation capacity curves and generalized recommendations. We understand that the proposed foundations for the bridge structures will be either concrete drilled shafts or concrete piling completed in accordance with the requirements of the TxDOT 2014 'Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges', Item 416 – Drilled Shaft Foundations, Item 409 – Prestressed Concrete Piling and associated Standards.

Deep Foundation Capacity (Capacity Curves)

Texas Cone Penetration (TCP) test results were used to calculate foundation capacity curves for various deep foundation options. Deep foundation options for use on this project could include square prestressed concrete piling or reinforced concrete drilled shafts. Design curves for two piling sizes most likely to be used (16 and 18 inch sides) and for drilled shaft size most likely to be used (36 inch diameter) have been provided in Appendix C. If alternate foundation types or sizes are required for the project, **L&G** can provide alternate curves as needed. Capacity curves were generated through the Texas Department of Transportation (TxDOT) WINCORE software program (version 3.1). The foundation capacities include the effects of point bearing and skin friction to account for total foundation capacity. The capacity curves were generated incorporating a disregard of the top 5 feet of each boring.

It is imperative for designers to note that the depth of foundation determined by way of the foundation capacity curves provided is a generalized model. Final foundation tip elevations should be determined with engineering judgment and modified based on each individual case. During final foundation design the foundation designer will need to take into account the final elevation of borings, final elevation of finished grade (groundline) at foundation elements and any additional disregarded depth that may be deemed necessary.

GENERAL CONSIDERATIONS DURING CONSTRUCTION

Deep Foundation Recommendations (Drilled Shafts)

Drilled Shafts

L&G recommends all Drilled Shaft construction be in accordance with the requirements of TxDOT 2014 'Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges', Item 416 – Drilled Shaft Foundations. Contractor should be aware that the use of casing and / or slurry to maintain stable excavations may be necessary. In terms of concrete, we recommend special attention be made to minimum/maximum slump of concrete required for drilled shafts (and requirements of slump retention). If differing site conditions (unanticipated or unusual strata) are encountered during construction, **L&G** shall be contacted to provide review and possible re-analysis if so required.

Deep Foundation Recommendations (Piling)

Piling

L&G recommends all Piling construction be in accordance with the requirements of TxDOT 2014 ‘Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges’, Item 409 – Prestressed Concrete Piling. In addition, we would further recommend that any piling be constructed as denoted in TxDOT Prestressed Concrete Piling (CP) Standard (and as such should be included with the final plan set for this project). Pile installation and driving should be in accordance with the requirements of TxDOT 2014 ‘Standard Specifications,’ Item 404 – Driving Piling. If any damage (cracking or spalling) is noted during pile installation, all operations shall cease immediately and cause of distress shall be determined (no subsequent pile driving shall occur until necessary modifications have been made to pile driving operation or installation method). If differing site conditions (unanticipated or unusual strata) are encountered during construction, **L&G** shall be contacted to provide review and possible re-analysis if so required.

REFERENCES

1. TxDOT, 2014, “Standard Specification for the Construction of Highways, Streets, and Bridges”, Austin, TX.
2. TxDOT, 2014, “TxDOT Pharr District Master General Notes” (Updated 4-25-18).
3. TxDOT, “100-E, Soils & Aggregates Test Procedures”, Austin, TX. (Current)
4. American Society of Testing Materials, Volume 04.08, Soil and Rock (I): D420- D5779 March 2003. (Current)
5. TxDOT, 2000, 2006, 2012 “Geotechnical Manual”, Austin, TX
6. TxDOT, 2015, “Prestressed Concrete Piling” and “Common Foundation Details” Standards, Austin, TX.

APPENDIX A – FIGURES

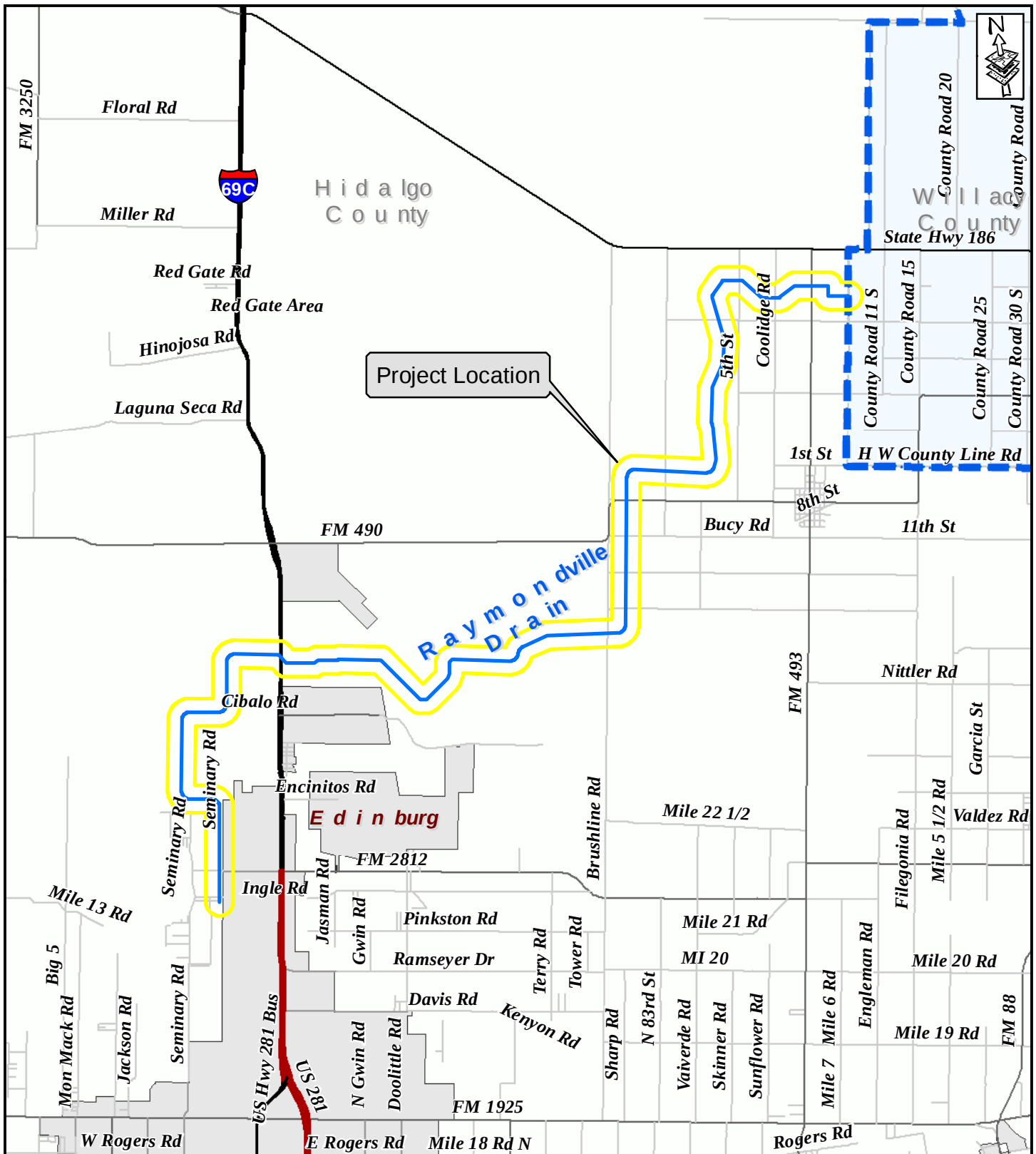


Figure 1

Raymondville Drain
Location Map

Legend

- Project Location
- City Limits
- County Limits
- Interstate Highway
- US Highway
- County Road
- Drainage Ditch

10,000
Feet
1 inch = 10,000 feet

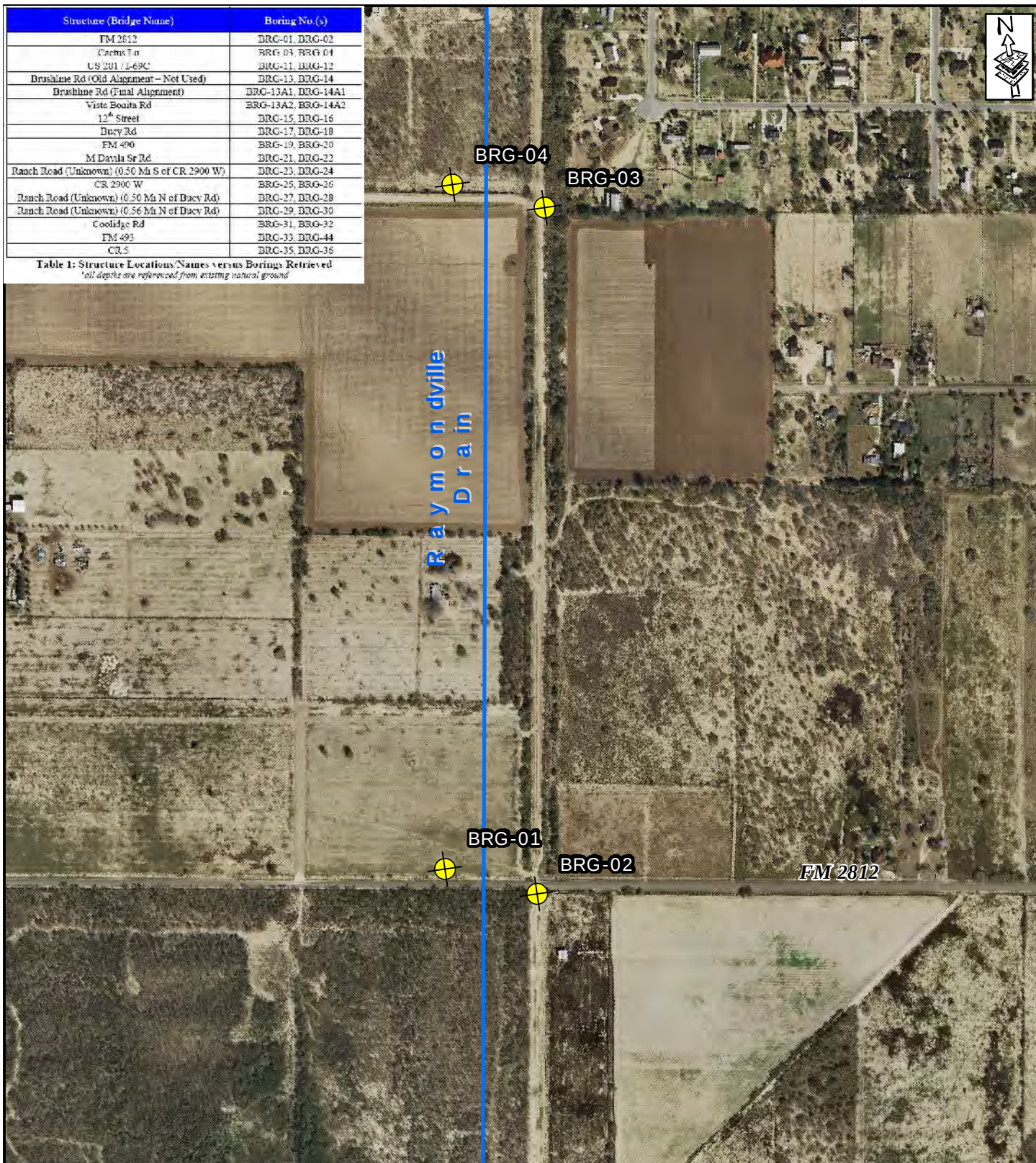


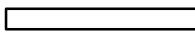
Figure 2a

Raymondville Drain

Boring Location Map

Legend

-  Bridge Boring
-  Drainage Ditch

500
 Feet
 1 inch = 500 feet

Structure (Bridge Name)	Boring No. (s)
FM 2612	BRG-01, BRG-02
Cactus Ln	BRG-03, BRG-04
US 281 / L-69C	BRG-11, BRG-12
Brushline Rd (Old Alignment - Not Used)	BRG-13, BRG-14
Brushline Rd (Final Alignment)	BRG-13A1, BRG-14A1
Vista Bonita Rd	BRG-13A2, BRG-14A2
12 th Street	BRG-15, BRG-16
Bucy Rd	BRG-17, BRG-18
FM 400	BRG-19, BRG-20
M Davila Sr Rd	BRG-21, BRG-22
Ranch Road (Unknown) (0.50 Mi S of CR 2900 W)	BRG-23, BRG-24
CR 2900 W	BRG-25, BRG-26
Ranch Road (Unknown) (0.50 Mi N of Bucy Rd)	BRG-27, BRG-28
Ranch Road (Unknown) (0.56 Mi N of Bucy Rd)	BRG-29, BRG-30
Coolidge Rd	BRG-31, BRG-32
FM 493	BRG-33, BRG-44
CR 5	BRG-35, BRG-36

Table 1: Structure Locations/Names versus Borings Retrieved
**all depths are referenced from existing natural ground*

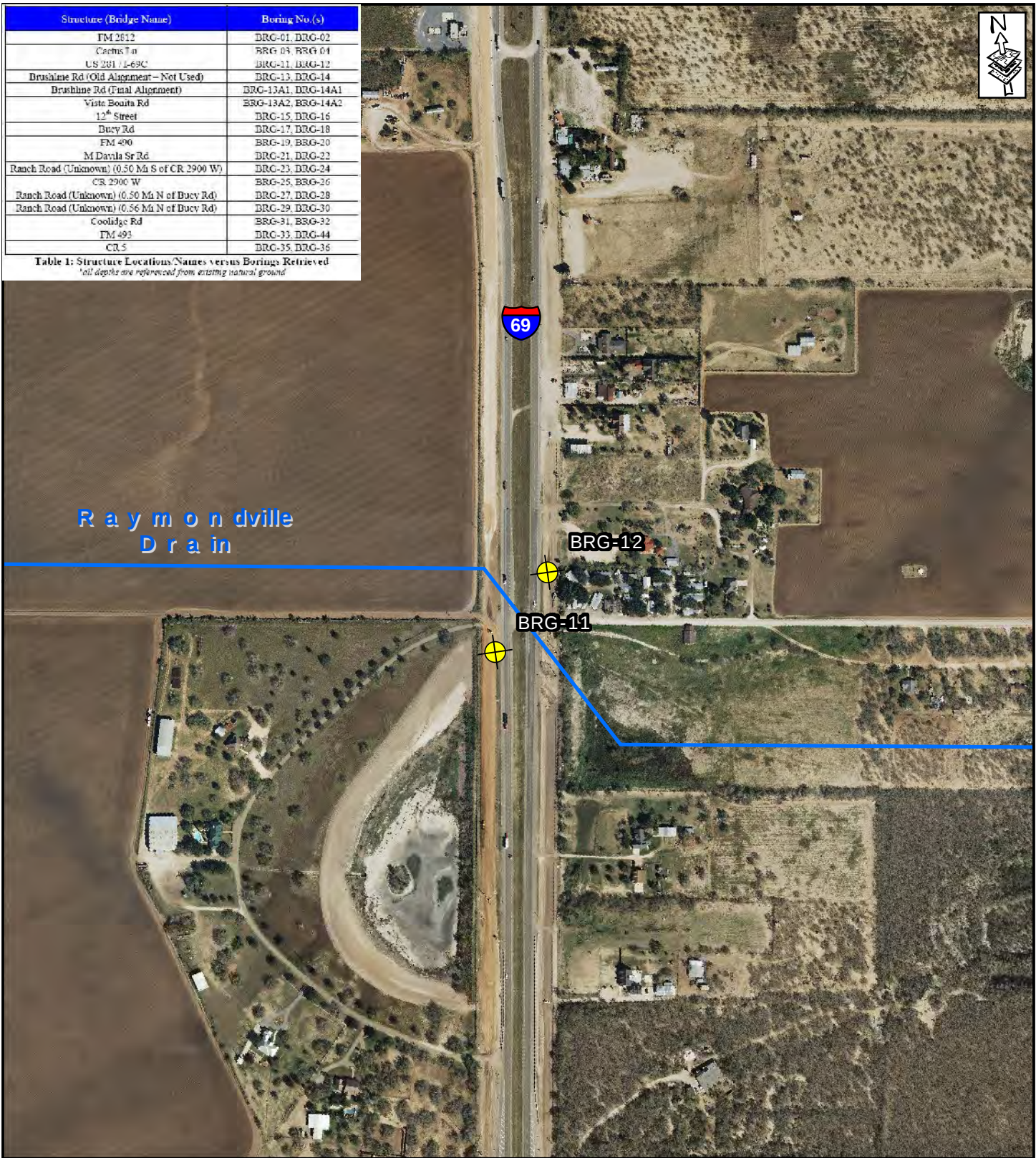


Figure 2b

Raymondville Drain

Boring Location Map

Legend

 Bridge Boring

 Drainage Ditch

500

Feet

1 inch = 500 feet

 **L&G Engineering Laboratory, LLC.**
Construction Material Testing
Geotechnical Engineering

Structure (Bridge Name)	Boring No. (s)
FM 2612	BRG-01, BRG-02
Cactus Ln	BRG-03, BRG-04
US 281 / L-69C	BRG-11, BRG-12
Brushline Rd (Old Alignment - Not Used)	BRG-13, BRG-14
Brushline Rd (Final Alignment)	BRG-13A1, BRG-14A1
Vista Bonita Rd	BRG-13A2, BRG-14A2
12 th Street	BRG-15, BRG-16
Bucy Rd	BRG-17, BRG-18
FM 400	BRG-19, BRG-20
M Davila Sr Rd	BRG-21, BRG-22
Ranch Road (Unknown) (0.50 Mi S of CR 2900 W)	BRG-23, BRG-24
CR 2900 W	BRG-25, BRG-26
Ranch Road (Unknown) (0.50 Mi N of Bucy Rd)	BRG-27, BRG-28
Ranch Road (Unknown) (0.56 Mi N of Bucy Rd)	BRG-29, BRG-30
Coolidge Rd	BRG-31, BRG-32
FM 493	BRG-33, BRG-34
CR 5	BRG-35, BRG-36

Table 1: Structure Locations/Names versus Borings Retrieved
**all depths are referenced from existing natural ground*

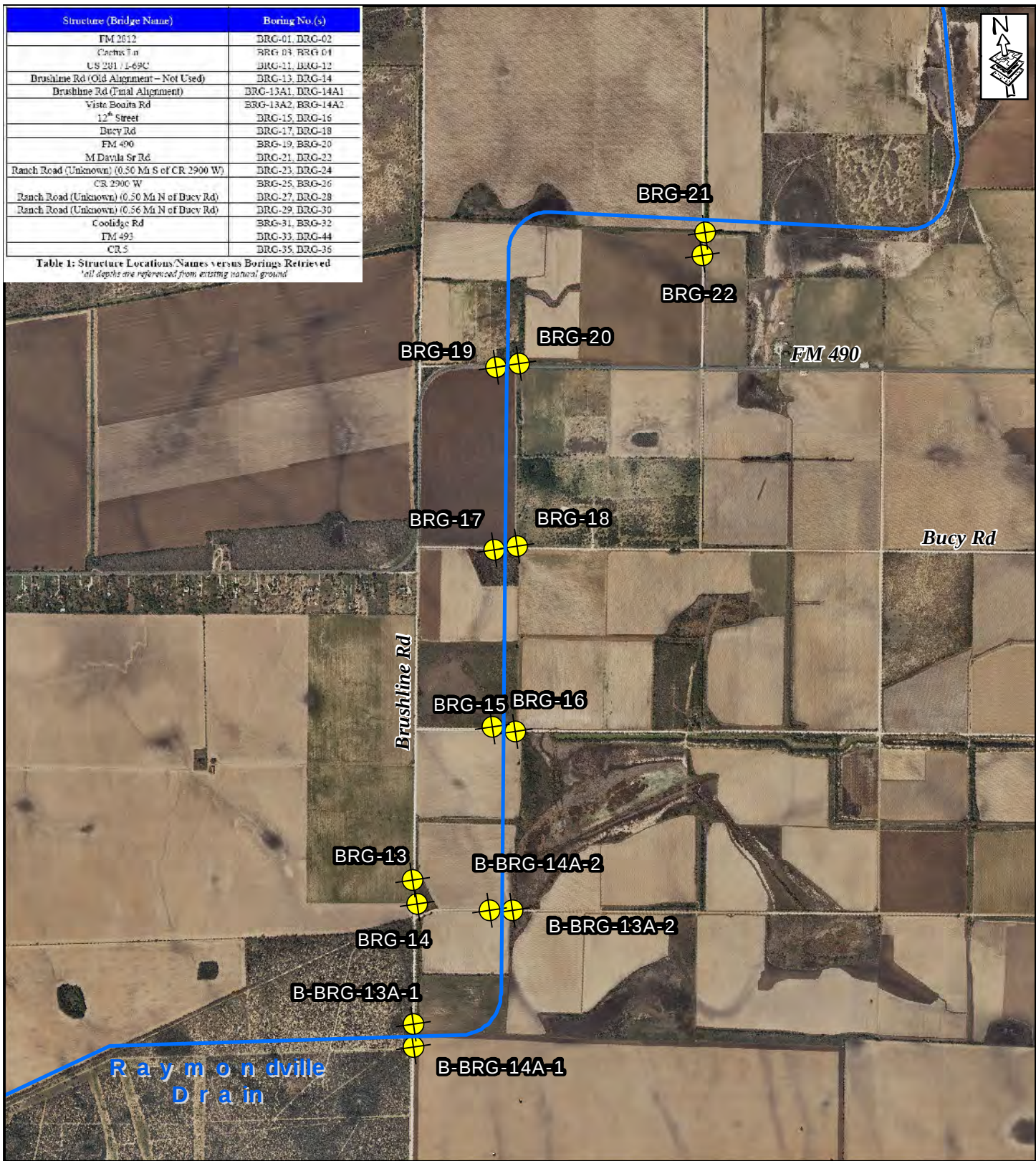


Figure 2c

Raymondville Drain

Boring Location Map

Legend

- Bridge Boring
- Drainage Ditch

2,000
 Feet
 1 inch = 2,000 feet



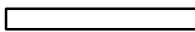
Figure 2d

Raymondville Drain

Boring Location Map

Legend

-  Bridge Boring
-  Drainage Ditch

2,000
 Feet
 1 inch = 2,000 feet

APPENDIX B – BORING LOGS & GRADATIONS



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-1
Structure Bridge
Station
Offset

District
Date 02/28/2014
Grnd. Elev. 80.00 ft
GW Elev. 62.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
73.		14 (6) 18 (6)	CLAY, Lean Clay, Brown, w/ Calcareous Nodules, Stiff, Dry (CL)			9.0	36	20		
68.		50 (6) 50 (4)	CLAY, Fat Clay, Tan, Hard, Dry (CH)			8.7				-200 = 86.1%
63.		7 (6) 16 (6)	CLAY, Fat Clay, Tan, Medium Stiff, Moist (CH)			15.9	86	60		-200 = 96.0%
		30 (6) 43 (6)	CLAY, Sandy Fat Clay, Tan to Light Brown, Very Stiff to Hard, Wet (CH)			17.3				-200 = 61.4%
		50 (3) 50 (1.5)				54.2	56	36		
		50 (2) 50 (1.5)				42.5				-200 = 51.4%
		50 (2) 50 (1)				51.0	57	33		
43.		50 (1.5) 50 (1)	GRAVEL, Poorly Graded Gravel w/ Clay and Sand, Fat, Light Brown, Very Dense, Wet			51.7				-200 = 22.5%
		50 (1) 50 (0.5)				59.0	82	51		
33.		50 (1) 50 (0.5)	SAND, Clayey Sand w/ Gravel, Fat, Light Brown, Very Dense, Wet (SC)			61.6				-200 = 37.1%
		50 (0.5) 50 (0.25)				66.1	81	46		
23.		50 (5) 50 (3)	CLAY, Lean Clay w/ Sand, Light Brown, w/ Reddish Tan Streaks, Hard, Wet (CL)			64.7				-200 = 72.6%
		50 (2) 50 (3)				41.8	71	48		
		50 (1) 50 (0.5)				37.4				-200 = 84.5%
5.		50 (1.5) 50 (1)				42.4	56	36		

Remarks: Sulfate Tests Performed at 25 ft. Results Provided on Separate Document. Boring Locate - N 26°23'13.80", W 98°9'21.10". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Richard Garcia

Logger: Kristopher R. Nerio

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-2
Structure Bridge
Station
Offset

District
Date 02/27/2014
Grnd. Elev. 81.00 ft
GW Elev. 62.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
74.		21 (6) 18 (6)	SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, Medium Dense, Dry (SC)			7.7				-200 = 46.0%
10		47 (6) 50 (6)	CLAY, Lean Clay, Tan, Stiff to Hard, Dry (CL)			10.7	48	31		
15		18 (6) 20 (6)				16.1				-200 = 98.3%
64.		50 (6) 50 (2.5)	CLAY, Sandy Lean Clay, Light Brown, Hard, Dry (CH)			14.6	57	39		-200 = 62.8%
59.		50 (2) 50 (1)	SAND, Clayey Sand w/ Gravel, Fat, Light Brown, Very Dense, Gravel Sized 1/8 in. (Sub-Angular), Wet (SC)			41.3				-200 = 47.0%
54.		50 (2.5) 50 (1.5)	SAND, Clayey Sand w/ Gravel, Lean, Light Brown, Very Dense, Gravel Sized 1/8 in. (Sub-Angular), Wet (SC)			43.0	49	29		
35		50 (2) 50 (0.5)				44.7				-200 = 17.7%
44.		50 (2) 50 (1)	SAND, Clayey Sand w/ Gravel, Fat, Light Brown, Very Dense, Gravel Sized 1/8 in. (Sub-Angular), Wet (SC)			44.3	66	41		
45		50 (0.5) 50 (0.5)				57.7				-200 = 48.5%
50		50 (1) 50 (0.5)				82.6	103	62		
29.		50 (0.5) 50 (1)	CLAY, Sandy Fat Clay, Hard, Wet (CH)			57.8				-200 = 58.0%
60		50 (2) 50 (1)				45.0	93	62		
19.		50 (3) 50 (2.5)	CLAY, Fat Clay w/ Sand, Hard, Wet (CH)			40.3				-200 = 81.9%
14.		50 (1) 50 (0.5)	CLAY, Sandy Fat Clay, Hard, Wet (CH)			38.2	56	37		
6.		50 (0.5) 50 (0.5)				31.1				-200 = 64.7%

Remarks: Sulfate Tests Performed at 60 ft. Results Provided on Seperate Document. Boring Locate - N 26°23'14.20", W 98°9'23.70". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Richard Garcia

Logger: Ray Santos

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-3
Structure Bridge
Station
Offset

District
Date 3/14/2014
Grnd. Elev. 85.00 ft
GW Elev. 55.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
78.		4 (6) 5 (6)	SAND, Silty Sand, Dark Brown, Loose, Dry			8.4				-200 = 21.4%
73.		39 (6) 48 (6)	CLAY, Lean Clay, Reddish Tan, Medium Stiff, Dry to Moist (CL)			12.4	38	24		
		12 (6) 13 (6)	CLAY, Fat Clay, Reddish Tan, Hard, Dry to Moist (CH)			20.3				-200 = 97.0%
		10 (6) 13 (6)				19.7	74	49		
		20 (6) 22 (6)				22.4				
		27 (6) 30 (6)				14.8	59	39		
53.		50 (1.75) 50 (0.75)	SAND, Clayey Sand, Lean, Light Brown, w/ Sandstone Fragments, (Sized 1/8 in Sub-Angular), Very Dense, Wet (SC)			31.6				-200 = 34.9%
		50 (1.5) 50 (0.5)				44.3	46	23		
43.		50 (1) 50 (0.5)	SAND, Clayey Sand, Fat, Light Brown, w/ Sandstone Fragments, (Sized 1/8 in Sub-Angular), Very Dense, Wet (SC)			34.8				-200 = 15.6%
		50 (0.75) 50 (0.25)				35.5	53	33		
		50 (0.5) 50 (0)				48.6				-200 = 27.9%
		50 (0.75) 50 (0.5)				49.5	57	32		
23.		50 (0.5) 50 (0)	CLAY, Sandy Fat Clay, Brown w/ Sandstone Fragments (Sized 1/8 in Sub-Angular), Hard, Wet (CH)			58.3				-200 = 53.3%
		50 (1) 50 (0.75)				55.7	57	33		
10.		50 (0.75) 50 (0)				60.6				-200 = 50.9%

Remarks: Sulfate Tests Performed at 65 ft. Results Provided on Sperate Document.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Kris Nerio

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-4
Structure Bridge
Station
Offset

District
Date 3/14/14
Grnd. Elev. 84.00 ft
GW Elev. 52.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
77.		5 (6) 8 (6)	SAND, Silty Sand, Dark Brown, Loose, Dry			7.5	0	0		
10		50 (5.75) 50 (5.5)	CLAY, Fat Clay, Reddish Tan, Medium Stiff to Stiff, Moist (CH)			11.0				
15		11 (6) 18 (6)				17.5	66	46		
20		11 (6) 13 (6)				20.3				-200 = 98.9%
25		15 (6) 27 (6)				21.7	87	66		
57.		29 (6) 42 (6)	CLAY, Sandy Lean Clay, Light Brown, Hard, Moist (CL)			23.6	38	21		-200 = 62.3%
52.		29 (6) 42 (6)	CLAY, Sandy Lean Clay, Light Brown, Hard, Moist (CL)			58.8				-200 = 64.5%
47.		13 (6) 22 (6)	SAND, Clayey Sand, Fat, Light Brown, w/ Traces of Gravel (Sized up to 1/4 in Sub-Angular), Medium Dense to Very Dense, Wet (SC)			34.5				-200 = 30.7%
45		50 (1.75) 50 (1)				33.7	57	34		
37.		50 (2) 50 (1.75)	GRAVEL, Poorly Graded Gravel, w/ Clay and Sand, Light Brown, w/ Traces of Gravel (Sized up to 1/4 in Sub-Angular), Very Dense, Wet			27.8				-200 = 11.0%
32.		50 (1.25) 50 (1)	GRAVEL, Clayey Gravel, Fat, Light Brown, Very Dense, Wet			39.8	61	33		
60		50 (0.75) 50 (0.5)				42.9				-200 = 29.5%
22.		50 (1.75) 50 (1.25)	CLAY, Fat Clay, Brown, w/ Gravel, Hard, Wet (CH)			48.3	63	36		
70		50 (2.25) 50 (1)				41.6				-200 = 69.4%
12.		50 (1.5) 50 (1.5)	CLAY, Sandy Lean Clay, Brown, w/ Gravel, Hard, Wet (CL)			35.1	49	30		
9.										

Remarks: Sulfate Tests Performed at 30 ft. Results Provided on Seperate Document. Boring Locate - N 26°23'38.30", W 98°9'19.60". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Kris Nerio

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-11
Structure Bridge
Station
Offset

District
Date 2/25/2014
Grnd. Elev. 79.00 ft
GW Elev. 45.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
72.		50 (5.5) 50 (5)	SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, Very Dense, Dry (SC)			11.3				-200 = 39.9%
67.		6 (6) 6 (6)	CLAY, Sandy Lean Clay, Light Tannish Brown, w/ Calcareous Nodules, Soft, Moist (SC)			12.7	33	17		-200 = 50.2%
		18 (6) 28 (6)	CLAY, Sandy Fat Clay, Light Tannish Brown, Gray Streaks, Very Stiff to Hard, Moist (CH)			20.2				-200 = 61.9%
57.		50 (4.5) 50 (3)				23.6	53	35		
		33 (6) 29 (6)	CLAY, Fat Clay w/ Sand, Light Tannish Brown, Hard, Wet (CH)			23.9				-200 = 81.1%
		50 (2) 50 (1)				27.6	63	41		
		50 (3) 50 (2)				49.0				-200 = 71.4%
		50 (3) 50 (2)				75.0	55	36		
		50 (3) 50 (2)				62.8				-200 = 71.6%
32.		50 (1.5) 50 (0.5)	CLAY, Sandy Fat Clay, Light Brown, w/ Calcareous Nodules, Tan Streaks, Hard, Wet (CH)			57.7	87	60		
		50 (3.5) 50 (3)				57.8				-200 = 69.5%
22.		50 (1) 50 (0.5)	CLAY, Fat Clay w/ Sand, Light Brown, w/ Calcareous Nodules, Gray Streaks, Olive Streaks, Tan Streaks, Hard, Wet (CH)			60.4	75	44		
		50 (1.5) 50 (0.5)				58.7				-200 = 75.3%
		50 (2) 50 (1)				56.5	87	60		
4.		50 (2.5) 50 (1)				46.5	78	48		-200 = 85.2%

Remarks: Sulfate Tests Performed at 50 ft. Results Provided on Seperate Document. Boring Locate - N 26°25'39.50", W 98°8'9.30". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Richard Garcia

Logger: Ray Santos

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-12
Structure Bridge
Station
Offset

District
Date 2/25/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		14 (6) 7 (6)	CLAY, Sandy Lean Clay, Dark Brown, Medium Stiff to Stiff, Dry (CL)			14.4	32	19		
10		5 (6) 6 (6)				12.0				-200 = 50.5%
15		8 (6) 11 (6)				19.4	49	33		
20		36 (6) 50 (5)	CLAY, Lean Clay w/ Sand, Tannish Brown, Stiff to Hard, Moist (CL)			17.7				-200 = 75.4%
25		16 (6) 18 (6)	CLAY, Fat Clay, Tan, w/ Olive Streaks, Hard, Wet (CH)			19.4	46	27		-200 = 87.6%
30		30 (6) 27 (6)				57.9				-200 = 95.8%
35		47 (6) 49 (6)				60.8	67	43		
40		50 (1.5) 50 (1.25)	CLAY, Sandy Fat Clay w/ Gravel, w/ Calcareous Nodules, Gravel Sized 1/8 in. (Sub-Angular), Hard, Wet (CH)			42.8				-200 = 59.2%
45		50 (2) 50 (1.5)				58.6	55	35		
50		50 (1.5) 50 (0.5)				54.4				-200 = 61.2%
55		50 (1) 50 (0.75)	SAND, Clayey Sand w/ Gravel, Fat, Gravel Sized 1/8 in. (Sub-Angular), w/ Calcareous Nodules, Hard, Wet (SC)			51.9	59	35		
60		50 (2.75) 50 (2)				54.6				-200 = 46.2%
65		50 (3.25) 50 (2)				44.2	66	40		
70		50 (1) 50 (0.5)				42.7				-200 = 44.6%
75		50 (1.25) 50 (0.5)				51.3				

Remarks: Sulfate Tests Performed at 50 ft. Results Provided on Seperate Document. Boring Locate - N 26°25'41.70", W 98°9'21.10". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Richard Garcia

Logger: Ray Santos

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-13
Structure Bridge
Station
Offset

District
Date 3/17/2014
Grnd. Elev. 68.00 ft
GW Elev. 48.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		4 (6) 3 (6)	CLAY, Sandy Lean Clay, Dark Brown, Soft to Medium Stiff, Dry (CL)			15.9				-200 = 51.3%
10		8 (6) 8 (6)				15.6	42	29		
56.		30 (6) 34 (6)	CLAY, Lean Clay w/ Sand, Light Brown, Hard, Moist to Wet (CL)			14.6				-200 = 78.5%
51.		13 (6) 14 (6)	CLAY, Silty Clay w/ Sand, Light Brown, Stiff, Wet			21.1	27	7		
25		13 (6) 13 (6)	CLAY, Lean CLay, Light Brown, Stiff, Wet (CL)			43.2				-200 = 79.7%
41.		13 (6) 16 (6)				51.0	44	26		
35		19 (6) 17 (6)				46.0				
40		17 (6) 17 (6)				55.7	48	29		
26.		18 (6) 21 (6)	CLAY, Fat Clay, Light Brown, Stiff to Hard, Wet (CH)			50.9				-200 = 97.5%
45		22 (6) 26 (6)				63.5	56	37		
50		31 (6) 35 (6)				55.9				
55		17 (6) 15 (6)				72.2	66	43		
60		11 (6) 13 (6)	CLAY, Fat Clay, Light Brown, Medium Stiff, Wet (CH)			83.9				-200 = 96.8%
65		13 (6) 11 (6)	CLAY, Sandy Lean Clay, Medium Stiff, Wet (CL)			57.7	43	28		
70		10 (6) 15 (6)				46.3				-200 = 63.1%

Remarks: Sulfate Tests Performed at 40 ft. Results Provided on Seperate Document.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Kris Nerio

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-14
Structure Bridge
Station
Offset

District
Date 3/17/2014
Grnd. Elev. 71.00 ft
GW Elev. 38.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		12 (6) 12 (6)	SAND, Clayey Sand, Lean, Brown, Loose to Medium Dense (SC)			8.5	0	0		
10		5 (6) 9 (6)				11.1				-200 = 44.5%
15		7 (6) 11 (6)				12.1	28	12		
20		15 (6) 20 (6)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, Stiff to Hard, Moist to Wet (CL)			16.7				-200 = 54.9%
25		22 (6) 25 (6)				20.7	23	15		
30		18 (6) 24 (6)				16.2				-200 = 52.4%
35		37 (6) 43 (6)				34.4	27	12		
40		39 (6) 44 (6)				59.3				-200 = 68.7%
45		29 (6) 37 (6)				61.2	45	30		
50		34 (6) 45 (6)	CLAY, Fat Clay, Tan, Hard, Wet (CH)			43.8				-200 = 91.1%
55		32 (6) 39 (6)				58.6	53	36		
60		36 (6) 43 (6)				48.3				-200 = 94.5%
65		16 (6) 20 (6)				59.3	63	42		
70		18 (6) 21 (6)				51.1				-200 = 94.8%
75		29 (6) 32 (6)				60.9				

Remarks: Sulfate Tests Performed at 60 ft. Results Provided on Seperate Document. Boring Locate - N 26°25'41.70", W 98°3'42.40". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Kris Nerio

Organization: L&G Engineering Laboratory



WinCore
Version 3.1

DRILLING LOG

1 of 1

County Hidalgo
Highway CSJ

Hole B-BRG-13A-1
Structure
Station
Offset

District
Date 12/12/2018
Grnd. Elev. 68.00 ft
GW Elev. 50.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Deviator Press. (psi)	Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		12 (6) 13 (6)	CLAY, Sandy Lean Clay, Dk. Brown to Brown, Med. Stiff to Very Stiff, Dry to Moist (CL)			12.5	34	22		
10		21 (6) 29 (6)				14.0				-200 = 55.4%
15		13 (6) 12 (6)				18.2	42	26		
20		11 (6) 15 (6)	CLAY, Lean Clay w/ Sand, Brown to Lt. Brown, Med. Stiff to Hard, Moist to Wet (CL)			21.3				-200 = 74.2%
25		30 (6) 33 (6)				41.6	41	24		
30		34 (6) 37 (6)	CLAY, Fat Clay, Lt. Brown, Hard, Wet (CH)			39.5				-200 = 86.8%
35		32 (6) 41 (6)				47.0	50	30		
40		38 (6) 31 (6)				47.3				-200 = 95.1%
45		34 (6) 46 (6)				46.0	58	33		
50		50 (5) 50 (4)				50.1				-200 = 92.8%
55		35 (6) 47 (6)				37.1	59	36		
60		42 (6) 50 (5)				38.9				-200 = 96.2%
65		29 (6) 31 (6)				41.3	64	42		
70		30 (6) 33 (6)				48.3				-200 = 97.6%
75		27 (6) 25 (6)				43.3	63	37		

Remarks: Sulfate Tests Performed at 15 ft. Results Provided on Seperate Document. Boring Locate - 26°25'20.41"N, 98° 3'45.37"W. Assumed Natural Ground Elevation (Google Earth).

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Margil Gonzalez

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway CSJ

Hole B-BRG-14A-1
Structure
Station
Offset

District
Date 12/13/2018
Grnd. Elev. 65.00 ft
GW Elev. 46.00 ft

Elev. (ft)	L O G	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Deviator Press. (psi)	Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
55.		29 (6) 31 (6)	SAND, Clayey Sand, Dk. Brown to Brown, w/ Caliche, Med. Dense, Dry (SC)			9.6				-200 = 40.4%
10		13 (6) 15 (6)				11.5	36	24		
15		20 (6) 21 (6)	CLAY, Sandy Lean Clay, Brown, Very Stiff, Dry to Wet (CL)			13.9				-200 = 54.4%
20		26 (6) 25 (6)				18.2	29	15		
25		28 (6) 31 (6)				38.5				-200 = 47.7%
30		24 (6) 29 (6)	SAND, Clayey Sand, Lt. Brown, Med. Dense to Dense, Wet (SC)			37.8	33	16		
35		27 (6) 36 (6)				37.7				-200 = 86.5%
40		29 (6) 34 (6)	CLAY, Lean Clay w/ Sand to Lean Clay, Lt. Brown to Tan, Very Stiff to Hard, Wet (CL)			38.4	47	28		
45		32 (6) 30 (6)				40.4				-200 = 77.1%
50		39 (6) 39 (6)				39.0	41	23		
55		50 (4) 50 (4)				46.4				
60		40 (6) 46 (6)				45.8	40	23		-200 = 80.6%
65		29 (6) 31 (6)	CLAY, Fat Clay, Brown, Hard, Wet (CH)			54.8				
70		30 (6) 31 (6)				44.5	53	34		
75		33 (6) 37 (6)				53.2				-200 = 87.3%

Remarks: Sulfate Tests Performed at 35 ft. Results Provided on Seperate Document. Boring Locate - 26°25'23.69"N, 98° 3'44.82"W. Assumed Natural Ground Elevation (Google Earth).

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Margil Gonzalez

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway CSJ

Hole B-BRG-13A-2
Structure
Station
Offset

District
Date 12/10/2018
Grnd. Elev. 59.00 ft
GW Elev. 53.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties			Additional Remarks
				Lateral Deviator Press. (psi)	Stress (psi)	MC	LL	PI Wet Den. (pcf)	
5		7 (6) 7 (6)	CLAY, Lean Clay w/ Sand, Dk. Brown to Brown, Med. Stiff to Hard, Moist to Wet (CL)			22.4	47	25	
10		12 (6) 17 (6)				30.3			-200 = 78.2%
15		41 (6) 40 (6)				37.7	43	26	
20		48 (6) 50 (5)	CLAY, Lean Clay, Brown, Hard, Wet (CL)			35.7			-200 = 90.2%
25		50 (5) 50 (5)				38.8	35	18	
30		32 (6) 33 (6)				43.0			-200 = 93.0%
35		29 (6) 31 (6)				34.8	46	26	
40		33 (6) 39 (6)				37.7			-200 = 93.9%
45		31 (6) 37 (6)				44.7	61	33	
50		28 (6) 34 (6)	CLAY, Fat Clay, Brown, Hard, Wet (CH)			48.0			-200 = 95.7%
55		26 (6) 37 (6)				43.0	60	35	
60		29 (6) 41 (6)				33.3			-200 = 96.3%
65		23 (6) 32 (6)				34.2	64	42	
70		26 (6) 29 (6)				40.8			-200 = 95.8%
75		34 (6) 38 (6)				41.7	61	35	

Remarks: Sulfate Tests Performed at 15 ft. Results Provided on Seperate Document. Boring Locate - 26°25'37.75"N, 98° 3'26.34"W. Assumed Natural Ground Elevation (Google Earth).

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Margil Gonzalez

Organization: L&G Engineering Laboratory



WinCore
Version 3.1

County Hidalgo
Highway CSJ

DRILLING LOG

1 of 1

Hole B-BRG-14A-2
Structure
Station
Offset

District
Date 12/11/2018
Grnd. Elev. 64.00 ft
GW Elev. 56.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Deviator Press. (psi)	Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
54.		4 (6) 4 (6)	SAND, Clayey Sand, Brown, Loose, Moist (SC)			20.7				-200 = 39.2%
10		8 (6) 7 (6)				22.7	27	15		
15		28 (6) 31 (6)	CLAY, Sandy Fat Clay, Brown to Tan, Med. Stiff to Hard, Wet (CH)			40.5				
20		35 (6) 34 (6)				53.5	59	36		
25		28 (6) 33 (6)				49.8				
39.		30 (6) 30 (6)	CLAY, Lean Clay, Tan, Very Stiff to Hard, Wet (CL)			43.6	48	29		-200 = 70.8%
30		27 (6) 34 (6)				48.3				
29.		25 (6) 31 (6)	CLAY, Fat Clay, Brown to Lt. Brown, Hard, Wet (CH)			59.8	70	55		-200 = 87.9%
40		28 (6) 35 (6)				62.2				
45		34 (6) 36 (6)				48.8	62	35		-200 = 88.3%
50		35 (6) 39 (6)				58.0				
55		41 (6) 49 (6)				36.7	59	32		-200 = 97.7%
60		47 (6) 50 (5)				37.1				
65		50 (5) 50 (4)				49.1	57	32		-200 = 97.6%
70		40 (6) 43 (6)				49.7				
-11.										-200 = 97.1%

Remarks: Sulfate Tests Performed at 40 ft. Results Provided on Seperate Document. Boring Locate - 26°25'38.28"N, 98° 3'30.03"W. Assumed Natural Ground Elevation (Google Earth).

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Margil Gonzalez

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-15
Structure Bridge
Station
Offset

District
Date 3/17/2014
Grnd. Elev. 62.00 ft
GW Elev. 44.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		4 (6) 5 (6)	SAND, Clayey Sand, Black to Dark Brown, Loose to Medium Dense, Moist (SC)			14.8				-200 = 34.7%
10		20 (6) 27 (6)				16.2	39	26		
15		19 (6) 19 (6)				17.2				
20		50 (6) 50 (5)	CLAY, Fat Clay w/ Sand, Brown, w/ Calcareous Nodules, Stiff to Hard, Moist (CH)			27.0	51	31		-200 = 74.2%
25		33 (6) 40 (6)				44.3				
30		19 (6) 27 (6)				38.7	54	33		
35		18 (6) 19 (6)	CLAY, Fat Clay, Tannish Light Brown, Reddish Tan Streaks, w/ Calcareous Nodules, Stiff to Hard, Wet (CH)			40.6				-200 = 97.5%
40		19 (6) 22 (6)				31.7	66	44		
45		20 (6) 27 (6)				31.5				
50		20 (6) 37 (6)				44.8	58	37		
55		21 (6) 26 (6)				34.8				
60		30 (6) 33 (6)				46.1	60	39		
65		27 (6) 30 (6)				43.4				
70		20 (6) 23 (6)				53.9	68	46		
75		18 (6) 18 (6)				37.6				
-13.										

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Kris Nerio

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-16
Structure Bridge
Station
Offset

District
Date 3/19/2014
Grnd. Elev. 64.00 ft
GW Elev. 46.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
52.		4 (6) 4 (6)	SAND, Sandy Lean Clay, Dark Brown, Loose, Dry (SC)			13.1	26	12		
10		22 (6) 20 (6)				23.5				-200 = 47.4%
15		48 (6) 50 (6)	CLAY, Sandy Lean Clay, Light Brown, Traces of Calcareous Nodules, Medium Dense to Dense, Moist (CL)			23.2	24	7		-200 = 50.0%
20		30 (6) 35 (6)				33.3				-200 = 58.0%
42.		38 (6) 31 (6)	CLAY, Fat Clay, Tan, Reddish Streaks, Hard, Wet (CH)			50.6	78	56		
30		34 (6) 28 (6)				48.3				-200 = 94.5%
35		50 (2) 50 (1)				58.1	77	55		
40		42 (6) 42 (6)				50.3				-200 = 96.8%
45		32 (6) 40 (6)				45.0	77	55		
50		34 (6) 44 (6)				57.4				-200 = 98.9%
55		38 (6) 41 (6)				55.3	73	51		
60		42 (6) 43 (6)				54.6				-200 = 95.2%
65		45 (6) 50 (2)				75.8	76	57		
70		47 (6) 49 (6)				61.2				-200 = 96.5%
-11. 75		43 (6) 46 (6)				89.2	80	58		

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Kris Nerio

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-17
Structure Bridge
Station
Offset

District
Date 3/18/2014
Grnd. Elev. 62.00 ft
GW Elev. 29.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
55.		4 (6) 5 (6)	SAND, Clayey Sand, Fat, Dark Brown, Loose, Dry to Moist (SC)			17.7				-200 = 46.9%
10		25 (6) 28 (6)	CLAY, Fat Clay w/ Sand, grayish Brown, Medium Dense, Dry to Moist (CH)			17.6	52	36		
15		12 (6) 15 (6)				16.5				-200 = 70.9%
45.		18 (6) 33 (6)	CLAY, Fat Clay, Reddish Tan, Very Stiff to Hard, Moist to Wet (CH)			18.7	64	43		
20		35 (6) 42 (6)				22.6				-200 = 93.3%
25		27 (6) 32 (6)				47.0	42	25		
30		50 (3.75) 50 (1.75)				54.5				-200 = 86.3%
35		50 (4.25) 50 (1)				48.0	46	25		
40		50 (1.5) 50 (1)	CLAY, Fat Clay w/ Sand, Reddish Tan, Hard, Wet (CH)			52.3				-200 = 84.0%
20.		50 (6) 50 (6)				64.8	68	43		
45		38 (6) 42 (6)	CLAY, Fat Clay, Reddish Tan, Hard, Wet (CH)			57.7				-200 = 95.4%
10.		44 (6) 50 (3.5)				59.9	59	38		
55		50 (3.5) 50 (3)				62.1				-200 = 95.8%
60		50 (5) 50 (5)				69.2	59	38		
65		50 (4.5) 50 (4)				40.7				-200 = 95.1%
70										
-13.										

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Kris Nerio

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-18
Structure Bridge
Station
Offset

District
Date 3/18/2014
Grnd. Elev. 63.00 ft
GW Elev. 33.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		8 (6) 9 (6)	CLAY, Sandy Lean Clay, Dark Brown to Grayish Brown, Medium Stiff to Stiff, Dry to Moist (CL)			15.7				-200 = 54.5%
10		9 (6) 12 (6)				16.4	47	30		-200 = 62.2%
15		14 (6) 19 (6)				17.5				-200 = 66.9%
20		19 (6) 24 (6)	CLAY, Fat Clay w/ Sand, Brown, Stiff to Very Stiff, Moist (CH)			25.2	66	49		
25		23 (6) 25 (6)				31.1				-200 = 81.3%
30		14 (6) 20 (6)	CLAY, Lean Clay, Brown, Stiff to Hard, Wet (CL)			50.2	46	28		
35		35 (6) 39 (6)				47.7				-200 = 88.8%
40		41 (6) 42 (6)	CLAY, Fat Clay, Tan w/ Reddish Streaks, Hard, Wet (CH)			64.1	65	42		
45		38 (6) 41 (6)				49.9				-200 = 91.6%
50		40 (6) 42 (6)				61.7	66	47		
55		41 (6) 46 (6)				64.6				-200 = 94.8%
60		44 (6) 49 (6)				57.9	64	44		
65		41 (6) 48 (6)				54.4				-200 = 97.8%
70		38 (6) 46 (6)				57.7	63	41		
75		33 (6) 41 (6)				53.8				-200 = 96.9%

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Richard Garcia

Logger: Kris Nerio

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-19
Structure Bridge
Station
Offset

District
Date 03/27/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
72.		4 (6) 6 (6)	SAND, Clayey Sand, Lean, Dark Brown, Loose, Dry (SC)			10.8	26	11		-200 = 32.7%
10		11 (6) 11 (6)	SAND, Clayey Sand, Lean, Orange Tan, Loose to Medium Dense, Moist to Wet (SC)			8.9	29	17		
15		8 (6) 7 (6)				11.7				-200 = 47.1%
20		3 (6) 5 (6)				13.0	35	22		
25		6 (6) 13 (6)				15.6				-200 = 38.6%
30		24 (6) 31 (6)				37.7	25	10		
35		14 (6) 17 (6)				32.3				-200 = 23.0%
42.		23 (6) 21 (6)	SAND, Silty Clayey Sand, Light Brown, medium Dense, Wet			40.6	20	5		
45		41 (6) 48 (6)				32.4				-200 = 49.4%
32.		24 (6) 23 (6)	CLAY, Sandy Lean Clay, Light Brown, Very Stiff, Wet (CL)			42.2	49	28		
55		21 (6) 29 (6)				35.0				-200 = 67.0%
22.		30 (6) 24 (6)	CLAY, Fat Clay, Light Brown, Stiff to Very Stiff, Wet (CH)			38.5				
65		18 (6) 25 (6)				39.1	51	32		-200 = 87.9%
12.		21 (6) 23 (6)	CLAY, Fat Clay w/ Sand, Light Brown, Stiff to Very Stiff, Wet (CH)			37.2	56	35		
4.		19 (6) 21 (6)				44.1				-200 = 84.4%

Remarks: Sulfate Tests Performed at 55 ft. Results Provided on Seperate Document. Boring Locate - N 26°26'14.2055.50", W 98°3'15.60". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Kris Nerio

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway CSJ

Hole BRG-20
Structure
Station
Offset

District
Date 2/28/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
72.		6 (6) 5 (6)	SAND, Clayey Sand, Lean, Dark Brown, Loose, Moist (SC)			9.0				-200 = 32.6%
10		7 (6) 7 (6)	SAND, Clayey Sand, Lean, Tan, Loose, Moist (SC)			6.1	27	11		
15		6 (6) 7 (6)				8.9				-200 = 38.8%
62.		8 (6) 7 (6)	CLAY, Sandy Lean Clay, Tan, Medium Stiff, Moist (CL)			10.3	35	24		-200 = 50.2%
25		7 (6) 11 (6)				11.9				-200 = 34.4%
52.		17 (6) 20 (6)	SAND, Poorly Graded Sand w/ Clay, Lean, Medium Dense, Wet			27.5	23	10		
35		19 (6) 28 (6)				26.8				-200 = 10.1%
40		20 (6) 22 (6)				29.6	23	10		
37.		18 (6) 24 (6)	CLAY, Sandy Lean Clay, Brown, Hard, Wet (CL)			41.6				-200 = 62.8%
50		21 (6) 27 (6)				35.8	43	25		
27.		20 (6) 25 (6)	CLAY, Fat Clay w/ Sand, Brown, Very Stiff, Wet (CH)			48.9				-200 = 84.8%
60		23 (6) 29 (6)				51.0	53	33		
17.		27 (6) 33 (6)	CLAY, Fat Clay, Brown, Hard, Wet (CH)			53.8				-200 = 88.2%
70		35 (6) 37 (6)				42.9	62	37		
4.		39 (6) 48 (6)				44.0				-200 = 89.9%

Remarks: Sulfate Tests Performed at 5 ft. Results Provided on Seperate Document. Boring Locate - N 26°26'54.96", W 98°3'12.54". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-21
Structure
Station
Offset

District
Date 3/11/2014
Grnd. Elev. 61.00 ft
GW Elev. 49.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
54.		6 (6) 6 (6)	SAND, Clayey Sand, Dark Brown, TRaces of Calcareous Nodules, Loose, Moist (SC)			17.9				-200 = 39.1%
10		3 (6) 3 (6)	SAND, Clayey Sand, Light Brown, Very Loose, Moist (SC)			17.0	25	11		-200 = 43.0%
49.		30 (6) 33 (6)	SAND, Silty Clayey Sand, Light Brown, w/ Calcareous Nodules, Medium Dense to Dense, Wet			36.0				-200 = 38.6%
20		24 (6) 25 (6)				37.0	23	6		
39.		18 (6) 18 (6)	CLAY, Sandy Fat Clay, Light Brown, w/ Calcareous Nodules, Stiff, Wet (CH)			38.0				-200 = 51.1%
30		15 (6) 19 (6)				44.0	51	33		
29.		17 (6) 18 (6)	CLAY, Fat Clay w/ Sand, Light Brown, Tan Streaks, w/ Calcareous Nodules, Stiff, Wet (CH)			44.3				-200 = 70.4%
40		22 (6) 25 (6)				52.0	65	44		
45		17 (6) 20 (6)				62.6				-200 = 76.1%
50		19 (6) 23 (6)				50.7	66	42		
9.		21 (6) 22 (6)	CLAY, Fat Clay, Tan Streaks, w/ Calcareous Nodules, Stiff to Very Stiff, Wet (CH)			52.8				-200 = 97.1%
60		16 (6) 20 (6)				60.3	53	30		
65		21 (6) 29 (6)				42.7				-200 = 96.3%
70		24 (6) 21 (6)				71.2	60	35		
-14.		22 (6) 25 (6)				63.6				-200 = 97.3%

Remarks: Sulfate Tests Performed at 30 ft. Results Provided on Sperate Document.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-22
Structure
Station
Offset

District
Date 3/11/2014
Grnd. Elev. 62.00 ft
GW Elev. 48.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
55.		4 (6) 5 (6)	SAND, Clayey Sand, Dark Brown, w/ Calcareous Nodules, Loose, Moist (SC)			14.7	29	13		
10		4 (6) 5 (6)	SAND, Silty Clayey Sand, Brown, Loose to Medium Dense, Moist			14.9				-200 = 41.9%
15		11 (6) 16 (6)				28.6	21	7		-200 = 45.2%
45.		19 (6) 16 (6)	CLAY, Sandy Lean Clay, Light Brown, Stiff, Wet (CL)			38.3				-200 = 55.8%
25		11 (6) 16 (6)				44.0	37	17		
30		17 (6) 21 (6)				50.5				-200 = 58.4%
35		19 (6) 17 (6)				50.4	42	26		
25.		17 (6) 22 (6)	CLAY, Fat Clay, Light Brown, w/ Calcareous Nodules, Tan Streaks, Stiff, Wet (CH)			56.9				-200 = 90.9%
45		20 (6) 23 (6)				55.4	65	40		
15.		16 (6) 21 (6)	CLAY, Fat Clay w/ Sand, Light Brown, w/ Calcareous Nodules, Tan Streaks, Stiff, Wet (CH)			48.4				-200 = 82.1%
55		19 (6) 19 (6)				57.9	61	38		
5.		18 (6) 16 (6)	CLAY, Fat Clay, Light Brown, w/ Calcareous Nodules, Tan Streaks, Stiff to Very Stiff, Wet (CH)			54.8				-200 = 93.6%
65		24 (6) 20 (6)				53.0	60	35		
70		21 (6) 27 (6)				68.0				-200 = 94.0%
-13.		19 (6) 25 (6)				51.0	52	32		

Remarks: Sulfate Tests Performed at 35 ft. Results Provided on Seperate Document. Boring Locate - N 26°27'9.84", W 98°2'39.78". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-23
Structure
Station
Offset

District
Date 12/14/2018
Grnd. Elev. 55.00 ft
GW Elev. 42.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		12 (6) 13 (6)	SAND, Clayey Sand, Brown to Lt. Brown, w/ Caliche, Loose to Dense, Dry to Moist (SC)			11.5				-200 = 32.8%
10		14 (6) 16 (6)				18.3	31	16		
15		21 (6) 38 (6)				22.0				-200 = 26.4%
35.		40 (6) 33 (6)	CLAY, Lean Clay w/ Sand, Lt. Brown, Stiff to Hard, Wet (CL)			32.2	41	23		
20		32 (6) 34 (6)				37.4				-200 = 73.0%
25		18 (6) 23 (6)				47.1	44	23		
30		20 (6) 24 (6)	CLAY, Fat Clay, Tan, Very Stiff to Hard, Wet (CH)			45.3				-200 = 97.1%
20.		20 (6) 26 (6)				41.3	72	44		
40		27 (6) 25 (6)				42.6				-200 = 98.5%
45		27 (6) 31 (6)				37.3	68	44		
50		28 (6) 33 (6)				35.7				-200 = 99.0%
55		30 (6) 26 (6)				45.2	63	39		
60		33 (6) 35 (6)				46.7				-200 = 98.9%
65		33 (6) 37 (6)				49.0	67	38		
70		36 (6) 39 (6)				51.6				-200 = 99.0%
-20.										

Remarks: Sulfate Tests Performed at 20 ft. Results Provided on Seperate Document. Boring Locate - 26°28'27.25"N, 98° 1'38.70"W. Assumed Natural Ground Elevation (Google Earth).

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Margil Gonzalez

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-24
Structure
Station
Offset

District
Date 12/17/2018
Grnd. Elev. 54.00 ft
GW Elev. 39.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		13 (6) 15 (6)	SAND, Clayey Sand, Brown to Lt. Grayish Brown, w/ Caliche, Med. Dense to Very Dense, Dry to Wet (SC)			10.6	39	24		
10		11 (6) 13 (6)				16.2				-200 = 27.5%
15		13 (6) 17 (6)				20.5	28	25		
20		32 (6) 32 (6)				29.8				-200 = 41.4%
25		37 (6) 43 (6)				41.3	41	25		
30		50 (3) 50 (2.5)	CLAY, Sandy Lean Clay, Tan, Hard, Wet (CL)			39.1				-200 = 47.0%
35		50 (4.25) 50 (3)				44.2	45	30		
40		50 (5) 50 (4)				37.2				-200 = 66.1%
45		38 (6) 50 (5)				35.5	44	29		
50		31 (6) 44 (6)	CLAY, Fat Clay w/ Sand, Tan to Lt. Brown, Hard, Wet (CH)			37.6				-200 = 76.5%
55		37 (6) 41 (6)				40.5	53	33		
60		50 (5) 50 (4.5)	CLAY, Fat Clay, Tan, Hard, Wet (CH)			41.5				-200 = 88.8%
65		30 (6) 34 (6)				40.5	60	38		
70		29 (6) 38 (6)				45.8				-200 = 93.5%
75		33 (6) 42 (6)				48.3	64	39		

Remarks: Sulfate Tests Performed at 40 ft. Results Provided on Seperate Document. Boring Locate - 26°28'27.92"N, 98° 1'41.74"W. Assumed Natural Ground Elevation (Google Earth).

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Margil Gonzalez

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-25
Structure
Station
Offset

District
Date 3/20/2014
Grnd. Elev. 58.00 ft
GW Elev. 40.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		6 (6) 6 (6)	CLAY, Sandy Lean Clay, Brown, Soft to Medium Stiff, Moist (CL)			13.6				-200 = 50.5%
10		8 (6) 8 (6)				13.8	36	22		
15		3 (6) 4 (6)	SAND, Clayey Sand, Lean, Light Brown, w/ Calcareous Nodules, Tan Streaks, Loose, Moist, to Wet (SC)			16.7				-200 = 43.0%
20		7 (6) 12 (6)	CLAY, Sandy Lean Clay, Light Brown, w/ Calcareous Nodules, Tan Streaks, Stiff, Wet (CL)			26.5	24	10		-200 = 53.4%
25		12 (6) 15 (6)				36.7				-200 = 57.7%
30		17 (6) 18 (6)				40.4	31	14		
35		17 (6) 19 (6)	CLAY, Fat Clay, Light Brown, w/ Calcareous Nodules, Tan Streaks, Stiff to Hard, Wet (CH)			52.4				-200 = 91.8%
40		20 (6) 22 (6)				53.2	62	40		
45		28 (6) 39 (6)				47.8				-200 = 95.2%
50		50 (3) 50 (2.25)				52.2	62	40		
55		11 (6) 14 (6)	CLAY, Fat Clay, Light Brown, w/ Calcareous Nodules, Tan Streaks, Medium Stiff to Stiff, Wet (CH)			53.2				-200 = 95.4%
60		8 (6) 12 (6)				50.8	59	36		
65		14 (6) 18 (6)				56.2				-200 = 89.5%
70		20 (6) 23 (6)				53.5	62	37		
75		17 (6) 25 (6)				56.9				-200 = 89.2%

Remarks: Sulfate Tests Performed at 40 ft. Results Provided on Sperate Document.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-26
Structure
Station
Offset

District
Date 3/21/2014
Grnd. Elev. 59.00 ft
GW Elev. 43.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
52.		10 (6) 9 (6)	SAND, Clayey Sand, Lean, Dark Brown, Loose, Moist (SC)			11.9				-200 = 44.1%
		6 (6) 7 (6)	SAND, Clayey Sand, Lean, Reddish Brown, Loose, Moist (SC)			14.1	32	18		-200 = 31.1%
42.		9 (6) 11 (6)				18.6				-200 = 48.9%
		6 (6) 7 (6)	SAND, Clayey Sand, Lean, Light Olive Gray, w/ Calcareous Nodules, Loose to Medium Dense, Moist to Wet (SC)			19.8	38	25		
		17 (6) 19 (6)				31.2				-200 = 49.2%
		24 (6) 22 (6)				38.4	32	18		
27.		17 (6) 18 (6)	CLAY, Sandy Fat Clay, Light Brown, Reddish and Gray Streaks, Stiff to Very Stiff, Wet (CH)			43.1				-200 = 58.2%
		24 (6) 22 (6)				63.8	61	37		
17.		24 (6) 48 (6)	CLAY, Fat Clay, Light Brown, Reddish and Gray Streaks, Stiff to Hard, Wet (CH)			59.2				-200 = 89.4%
		50 (3) 50 (2.5)				41.1	67	43		
		17 (6) 20 (6)				54.5				-200 = 87.1%
		50 (6) 50 (4)				59.6	64	40		
		10 (6) 13 (6)				66.1				-200 = 87.1%
-8.		17 (6) 24 (6)	CLAY, Sandy Lean Clay, Light Brown, Reddish and Gray Streaks, Stiff to Hard, Wet (CL)			68.5	45	30		
-16.		42 (6) 39 (6)				43.1				-200 = 65.3%

Remarks: Sulfate Tests Performed at 30 ft. Results Provided on Sperate Document.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: David Bautista

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-27
Structure
Station
Offset

District
Date 3/22/2014
Grnd. Elev. 56.00 ft
GW Elev. 41.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
49.		5 (6) 5 (6)	SAND, Clayey Sand, Lean, Dark Brown, w/ Calcareous Nodules, Loose, Dry (SC)			17.0				-200 = 47.4%
10		6 (6) 8 (6)	SAND, Clayey Sand, Lean, Brown to Light Brown, w/ Calcareous Nodules, Loose to Medium Dense, Moist to Wet (SC)			17.0	40	24		
15		7 (6) 8 (6)				18.8				-200 = 47.2%
20		12 (6) 15 (6)				37.9	33	18		-200 = 41.6%
25		17 (6) 20 (6)				41.7				-200 = 33.6%
30		25 (6) 23 (6)				38.8	31	16		
24.		19 (6) 16 (6)	CLAY, Sandy Lean Clay, Light Brown, w/ Light Gray Streaks, w/ Calcareous Nodules, Stiff, Wet (CL)			49.6				-200 = 58.8%
40		10 (6) 16 (6)				36.8	35	22		
14.		18 (6) 24 (6)	SAND, Clayey Sand, Lean, Light Brown, w/ Light Streaks, w/ Calcareous Nodules, Medium Dense, Wet (SC)			35.2				-200 = 46.9%
50		22 (6) 19 (6)				37.5	29	16		
4.		20 (6) 25 (6)	CLAY, Sandy Lean Clay Light Brown, w/ Light Gray Streaks, w/ Calcareous Nodules, Stiff, Wet (CL)			40.3				-200 = 50.8%
60		24 (6) 27 (6)				39.2	27	14		
-6.		22 (6) 21 (6)	CLAY, Fat Clay, Light Brown, w/ Light Gray Streaks, Stiff to Hard, Wet (CH)			53.2				-200 = 86.0%
70		30 (6) 28 (6)				55.8	80	60		
-19.		27 (6) 33 (6)				52.2				-200 = 87.8%

Remarks: Sulfate Tests Performed at 55 ft. Results Provided on Seperate Document.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-28
Structure
Station
Offset

District
Date 3/28/2014
Grnd. Elev. 56.00 ft
GW Elev. 41.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		5 (6) 5 (6)	SAND, Clayey Sand, Lean, Dark Brown to Brown, Loose to Medium Dense, Moist to Wet (SC)			15.8				-200 = 47.2%
10		5 (6) 6 (6)				15.1	36	21		
15		8 (6) 8 (6)				20.9				-200 = 46.0%
20		4 (6) 6 (6)				41.5	28	16		
25		17 (6) 20 (6)				40.5				-200 = 48.7%
30		26 (6) 34 (6)	CLAY, Sandy Fat Clay, Light Brown, w/ Calcareous Nodules, White Streaks, Very Stiff to Stiff, Wet (CH)			39.6	34	20		
35		23 (6) 25 (6)				47.7				-200 = 51.8%
40		20 (6) 19 (6)				73.6	51	30		
45		18 (6) 22 (6)	CLAY, Sandy Lean Clay, Light Brown, w/ Calcareous Nodules, White Streaks, Stiff, Wet (CL)			60.8				-200 = 59.2%
50		24 (6) 21 (6)				46.5	41	25		
55		22 (6) 28 (6)	CLAY, Fat Clay w/ Sand, Light Brown, w/ Calcareous Nodules, Reddish Streaks, Very Stiff to Hard, Wet (CH)			68.8				-200 = 70.6%
60		27 (6) 25 (6)				49.2	60	36		
65		23 (6) 21 (6)				64.5				-200 = 84.8%
70		25 (6) 29 (6)				67.1	61	39		
75		27 (6) 32 (6)				73.8				-200 = 81.5%

Remarks: Sulfate Tests Performed at 65 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'19.50", W 98°1'31.98". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-29
Structure
Station
Offset

District
Date 3/12/2014
Grnd. Elev. 55.00 ft
GW Elev. 40.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		4 (6) 3 (6)	SAND, Clayey Sand, Dark Brown, w/ Calcareous Nodules, Loose to Medium Dense, Moist (SC)			16.5	41	25		
10		3 (6) 3 (6)				18.0				
15		9 (6) 8 (6)				22.8	30	16		
20		14 (6) 17 (6)				44.6				-200 = 46.6%
25		14 (6) 18 (6)	CLAY, Sandy Lean Clay, Light Brown, Stiff, Wet (CL)			50.0	49	31		
30		16 (6) 14 (6)				46.0				-200 = 58.0%
35		10 (6) 8 (6)	CLAY, Fat Clay, Tan, Medium Stiff, Wet (CH)			58.4	75	49		
40		7 (6) 7 (6)				62.8				-200 = 88.9%
45		14 (6) 17 (6)	SAND, Clayey Sand, Light Brown, Stiff, Wet (SC)			35.7	30	15		
50		17 (6) 19 (6)				39.7				-200 = 47.9%
55		21 (6) 34 (6)	CLAY, Fat Clay w/ Sand, Very Stiff to Hard, Wet (CH)			59.6	77	54		
60		31 (6) 43 (6)				65.7				-200 = 70.6%
65		27 (6) 30 (6)				57.8	64	42		
70		25 (6) 23 (6)	CLAY, Fat Clay, Stiff to Very Stiff, Wet (CH)			63.6				-200 = 91.0%
75		20 (6) 22 (6)				74.2	65	41		

Remarks: Sulfate Tests Performed at 30 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'21.66", W 98°1'17.64". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-30
Structure
Station
Offset

District
Date 3/12/2014
Grnd. Elev. 54.00 ft
GW Elev. 39.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
47.		6 (6) 6 (6)	SAND, Poorly Graded Sand w/ Clay, Lean, Dark Brown, w/ Calcareous Nodules, Loose, Dry			12.5	23	8		-200 = 34.2%
		3 (6) 5 (6)	SAND, Clayey Sand, Lean, Dark Brown, Loose, Dry (SC)			19.1	37	19		
		4 (6) 6 (6)				19.1				-200 = 46.8%
37.		10 (6) 14 (6)	SAND, Clayey Sand, Lean, Brown to Light Brown, Medium Dense to Dense, Wet (SC)			34.9	29	14		
		22 (6) 26 (6)				38.1				-200 = 44.4%
		30 (6) 35 (6)				47.7	38	22		
22.		24 (6) 28 (6)	CLAY, Sandy Fat Clay, Light Brown, Gray Streaks, Very Stiff, Wet (CH)			50.9				-200 = 52.8%
		22 (6) 25 (6)				44.7	50	31		
12.		21 (6) 26 (6)	CLAY, Sandy Lean Clay, Light Brown, Gray Streaks, Very Stiff, Wet (CL)			43.2				-200 = 54.0%
		24 (6) 26 (6)				46.1	43	27		
		26 (6) 29 (6)				46.4				-200 = 52.6%
-3.		28 (6) 31 (6)	CLAY, Fat Clay w/ Sand, Light Brown, Gray Streaks, Stiff to Very Stiff, Wet (CH)			51.7	66	45		
		24 (6) 29 (6)				26.0				-200 = 80.2%
-13.		26 (6) 32 (6)	CLAY, Fat Clay, Grayish Light Brown, Very Stiff, Wet (CH)			80.1				
-21.		25 (6) 28 (6)				27.8	64	37		-200 = 95.5%

Remarks: Sulfate Tests Performed at 50 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'18.60", W 98°1'17.80". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-31
Structure
Station
Offset

District
Date 3/8/2014
Grnd. Elev. 50.00 ft
GW Elev. 37.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		6 (6) 7 (6)	SAND, Clayey Sand, Fat, Clack, Loose to Medium Dense, Moist (SC)			18.4				-200 = 32.7%
10		20 (6) 22 (6)				21.4	53	40		-200 = 46.0%
15		28 (6) 30 (6)	SAND, Clayey Sand, Lean, Light Gray, w/ Calcareous Nodules, Gray Streaks, Medium Dense, Wet (SC)			27.7				-200 = 38.8%
20		23 (6) 25 (6)				33.9	30	16		
25		50 (3) 50 (2.5)	SAND, Clayey Sand, Lean, Light Gray, w/ Calcareous Nodules, w/ Gray Streaks, Very Dense, Wet (SC)			54.8				-200 = 46.9%
30		50 (4) 50 (3)				44.3	36	21		
35		34 (6) 37 (6)	CLAY, Sandy Fat Clay, Light Brown, w/ Gray Streaks, Hard, Wet (CH)			44.2				-200 = 54.4%
40		27 (6) 29 (6)				34.9	81	65		
45		33 (6) 38 (6)				29.8				-200 = 50.2%
50		41 (6) 45 (6)				37.5	50	33		
55		50 (4) 50 (3.25)	CLAY, Sandy Lean Clay, Light Brown, w/ Gray Streaks, Hard, Wet (CL)			41.5				-200 = 58.6%
60		50 (4.5) 50 (3.75)				53.1	45	28		
65		50 (4) 50 (3.75)	CLAY, Fat Clay, Light Brown, w/ Gray Streaks, Hard, Wet (CH)			43.1				-200 = 88.6%
70		50 (3.75) 50 (3.25)				45.0	65	42		
75		50 (5) 50 (5.5)				45.2				-200 = 89.1%

Remarks: Sulfate Tests Performed at 20 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'1.80", W 98°0'53.40". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



WinCore
Version 3.1

County Hidalgo
Highway
CSJ

DRILLING LOG

Hole BRG-32
Structure
Station
Offset

District
Date 3/8/14
Grnd. Elev. 52.00 ft
GW Elev. 39.00 ft

1 of 1

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		2 (6) 2 (6)	SAND, Clayey Sand, Lean, Brown to Light Brown, w/ Calcareous Nodules, Very Loose to Medium Dense, Moist (SC)			17.2				-200 = 39.1%
10		4 (6) 6 (6)				18.7	32	18		
15		2 (6) 2 (6)				23.4				-200 = 36.7%
20		21 (6) 33 (6)	CLAY, Sand Fat Clay, Light Brown, w/ Calcareous Nodules, Hard, Wet (CH)			34.9	49	34		-200 = 42.6%
25		30 (6) 47 (6)				32.3				-200 = 51.3%
30		33 (6) 42 (6)				48.5	69	48		
35		37 (6) 49 (6)	CLAY, Fat Clay w/ Sand, Light Brown, w/ Gray, Tan and Olive Streaks, Hard, Wet (CL)			46.4				-200 = 79.5%
40		50 (4.5) 50 (3)				57.0	59	44		
45		50 (3.75) 50 (2.5)				55.5				-200 = 61.1%
50		29 (6) 23 (6)	CLAY, Sandy Fat Clay, Light Brown, w/ Gray, Tan and Olive Streaks, Hard, Wet (CH)			56.4	67	49		
55		24 (6) 21 (6)				55.2				-200 = 70.9%
60		26 (6) 32 (6)				63.8	67	44		
65		30 (6) 27 (6)	CLAY, Fat Clay w/ Sand, Light Brown, w/ Gray, Tan and Olive Streaks, Hard, Wet (CH)			67.2				-200 = 81.1%
70		25 (6) 23 (6)				70.1	67	46		
75		31 (6) 38 (6)				57.6				-200 = 81.0%

Remarks: Sulfate Tests Performed at 30 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'5.22", W 98°0'50.88". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-33
Structure
Station
Offset

District
Date 3/1/2014
Grnd. Elev. 57.00 ft
GW Elev. 44.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		4 (6) 4 (6)	SAND, Clayey Sand, Lean, Brown, Very Loose to Loose, Moist (SC)			9.3				-200 = 39.4%
10		1 (6) 2 (6)				11.1	35	22		-200 = 46.2%
15		3 (6) 3 (6)				25.7				-200 = 38.2%
20		6 (6) 8 (6)				32.4	30	16		
25		50 (4.25) 50 (3)	CLAY, Lean Clay w/ Sand, Light Brown, w/ Calcareous Nodules, w/ Light Gray Streaks, Traces of Gravel 1/8 in. (Sub-Angular), Hard, Wet (CL)			30.5				-200 = 75.3%
30		50 (3.75) 50 (2.5)				34.6	32	14		
35		37 (6) 44 (6)	CLAY, Lean Clay, Light Brown, w/ Calcareous Nodules, Light Gray Streaks, Traces of Gravel 1/8 in. (Sub-Angular), Hard, Wet (CL)			44.3				-200 = 85.3%
40		22 (6) 26 (6)				40.1	43	24		
45		20 (6) 28 (6)	CLAY, Lean Clay w/ Sand, Light Brown, w/ Calcareous Nodules, Light Gray Streaks, Traces of Gravel 1/8 in. (Sub-Angular), Very Stiff to Hard, Wet (CL)			41.0				-200 = 53.5%
50		22 (6) 31 (6)				35.3	41	26		
55		25 (6) 33 (6)				27.4				-200 = 51.2%
60		24 (6) 28 (6)				27.8	28	16		
65		21 (6) 25 (6)	SAND, Clayey Sand, Lean, Light Brown, w/ Calcareous Nodules, Light Gray Streaks, Traces of Gravel 1/8 in. (Sub-Angular), Very Dense, Wet (SC)			30.4				-200 = 52.0%
70		50 (4.75) 50 (3)				39.6	50	34		
75		50 (3.5) 50 (2.25)				44.7				-200 = 39.1%

Remarks: Sulfate Tests Performed at 20 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'7.14", W 98°0'21.78". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-34
Structure
Station
Offset

District
Date 3/5/2014
Grnd. Elev. 57.00 ft
GW Elev. 40.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Deviator Press. (psi)	Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
5		5 (6) 5 (6)	SAND, Clayey Sand, Lean, Dark Brown to Brown, Loose to Medium Dense, Moist (SC)			14.3				-200 = 45.6%
10		5 (6) 5 (6)				14.9	38	23		
15		2 (6) 1 (6)				15.4				-200 = 47.9%
20		11 (6) 11 (6)				38.7	34	18		
35.		12 (6) 11 (6)	CLAY, Sandy Lean Clay, Light Brown, w/ Calcareous Nodules, Medium Stiff to Very Stiff, Wet (CL)			47.2				-200 = 64.2%
25		25 (6) 30 (6)				45.5	35	19		
30		20 (6) 22 (6)				55.8				-200 = 61.7%
35		22 (6) 36 (6)				53.2	33	20		
20.		22 (6) 24 (6)	SAND, Clayey Sand, Lean, Light Brown, w/ Calcareous Nodules, Medium Dense, Wet (SC)			37.9				-200 = 27.2%
40		13 (6) 13 (6)				41.0	27	13		
45		50 (2) 50 (1)				37.4				-200 = 56.0%
50		20 (6) 26 (6)				52.8	83	58		
55		22 (6) 30 (6)	CLAY, Fat Clay, Brown, w/ Gray Streaks, Wet (CH)			46.8				-200 = 40.6%
60		25 (6) 34 (6)				25.1	84	53		
65		20 (6) 27 (6)				26.1				-200 = 93.4%
-10.										
-18.										

Remarks: Sulfate Tests Performed at 30 ft. Results Provided on Seperate Document. Boring Locate - N 26°7'42.30", W 97°20'49.30". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-35
Structure
Station
Offset

District
Date 3/27/2014
Grnd. Elev. 56.00 ft
GW Elev. 40.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
49.		7 (6) 8 (6)	CLAY, Sandy Lean Clay, Dark Brown, Soft, Moist (CL)			15.4	39	24		
10		5 (6) 7 (6)	CLAY, Sandy Fat Clay, Brown, Soft to Stiff, Wet (CH)			17.4				-200 = 58.2%
15		14 (6) 14 (6)				18.0	55	38		
20		14 (6) 14 (6)				37.2				
25		14 (6) 15 (6)	CLAY, Fat Clay, Light Brown, w/ Calcareous Nodules, White Streaks, Medium Stiff to Very Stiff, Wet (CH)			48.3	60	39		
30		23 (6) 24 (6)				49.8				-200 = 85.8%
35		13 (6) 10 (6)				58.4	61	28		
40		10 (6) 9 (6)				58.0				-200 = 93.3%
45		11 (6) 13 (6)				66.2	68	44		
50		9 (6) 11 (6)	CLAY, Sandy Fat Clay, Light Brown, w/ Calcareous Nodules, White Streaks, Medium Stiff to Stiff, Wet (CH)			64.8				-200 = 57.1%
55		12 (6) 14 (6)				78.3	58	36		
60		16 (6) 18 (6)	CLAY, Sandy Lean Clay, Light Brown, w/ Calcareous Nodules, Red Streaks, Stiff, Wet (CL)			44.9				-200 = 63.0%
65		14 (6) 17 (6)				49.8	45	28		
70		23 (6) 24 (6)	CLAY, Fat Clay, Light Brown, w/ Calcareous Nodules, Red Streaks, Very Stiff, Wet (CH)			50.3				-200 = 89.6%
75		21 (6) 26 (6)				53.1	67	47		

Remarks: Sulfate Tests Performed at 45 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'55.62", W 97°59'53.64". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



DRILLING LOG

1 of 1

WinCore
Version 3.1

County Hidalgo
Highway
CSJ

Hole BRG-36
Structure
Station
Offset

District
Date 3/27/2014
Grnd. Elev. 54.00 ft
GW Elev. 40.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test		Properties				Additional Remarks
				Lateral Press. (psi)	Deviator Stress (psi)	MC	LL	PI	Wet Den. (pcf)	
47.		3 (6) 4 (6)	SAND, Clayey Sand, Lean, Brown, Very Loose to Loose, Wet (SC)			15.2				-200 = 44.7%
42.		6 (6) 7 (6)	SAND, Clayey Sand, Lean, Light Grayish Brown, w/ Calcareous Nodules, Loose, Wet (SC)			16.5	39	24		
37.		35 (6) 43 (6)	CLAY, Sandy Lean Clay, Light Grayish Brown, w/ Calcareous Nodules, Hard, Wet (CL)			19.4				-200 = 58.0%
		13 (6) 16 (6)	CLAY, Lean Clay, Tan, w/ Calcareous Nodules, Medium Stiff to Stiff, Wet (CL)			60.3	68	48		
		17 (6) 14 (6)				54.3				-200 = 92.0%
		15 (6) 20 (6)				67.2	66	45		
		9 (6) 9 (6)				62.1				-200 = 94.6%
		11 (6) 12 (6)				62.4	60	37		
		14 (6) 17 (6)				65.3				-200 = 96.4%
		16 (6) 19 (6)				60.1	61	38		
2.		19 (6) 22 (6)	CLAY, Lean Clay w/ Sand, Light Brown, w/ Calcareous Nodules, Stiff, Wet (CL)			52.6				-200 = 82.9%
		20 (6) 19 (6)				46.6	47	33		
-8.		20 (6) 19 (6)	CLAY, Lean Clay, Light Brown, Stiff to Hard, Wet (CL)			52.4				-200 = 97.6%
		35 (6) 33 (6)				64.6	61	38		
-21.		30 (6) 26 (6)				65.4				-200 = 95.4%

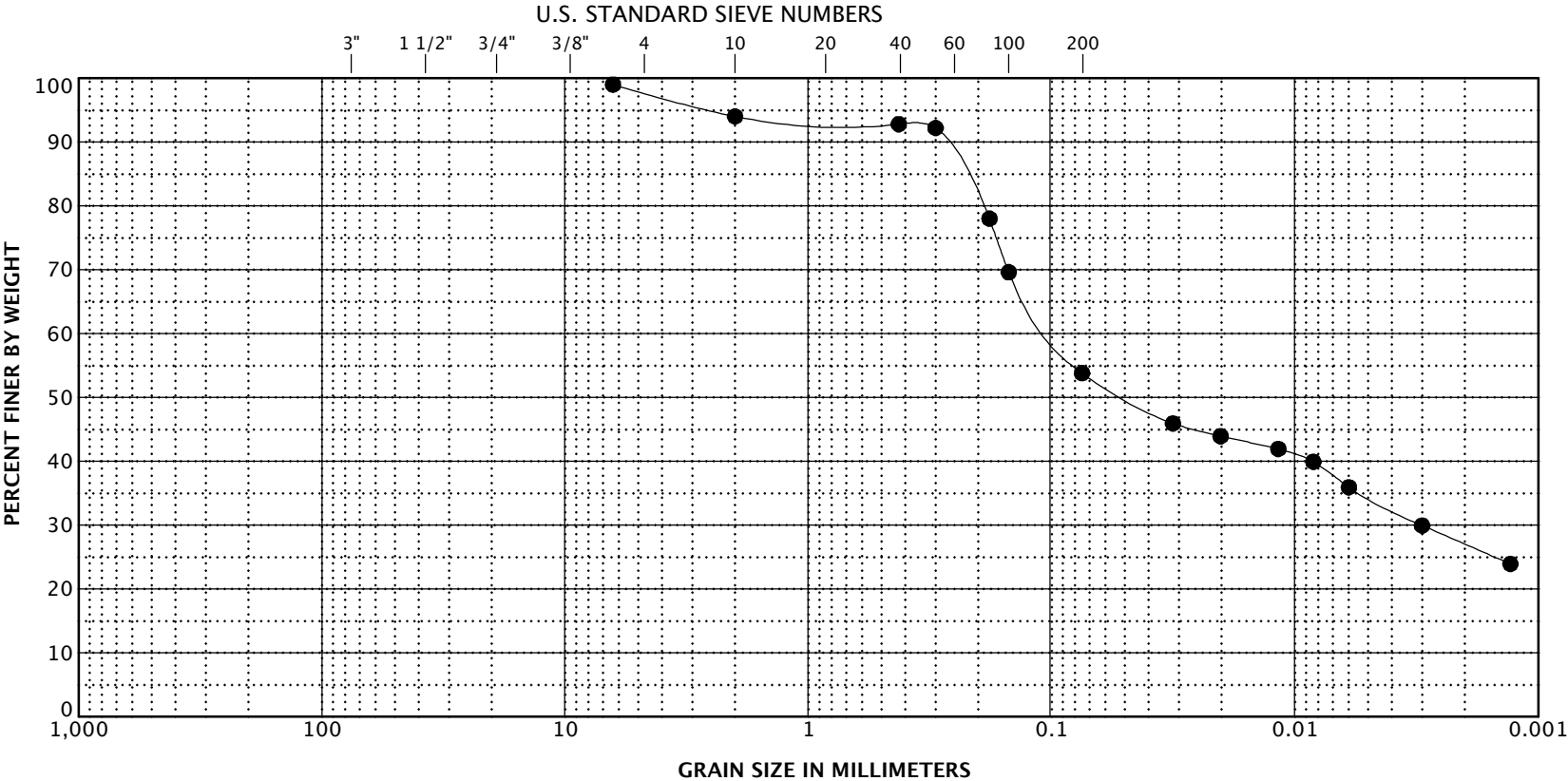
Remarks: Sulfate Tests Performed at 30 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'58.98", W 97°59'53.58". Assumed Natural Ground Elevation.

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: Oscar Garcia

Logger: Ramiro Cantu

Organization: L&G Engineering Laboratory



BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY

KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-CH-1-A	23.5		0.10	0.05	0.00			1	44	19	34

APPENDIX C – DEEP FOUNDATION CAPACITY

FOUNDATION CAPACITY CURVES

FM 2812

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

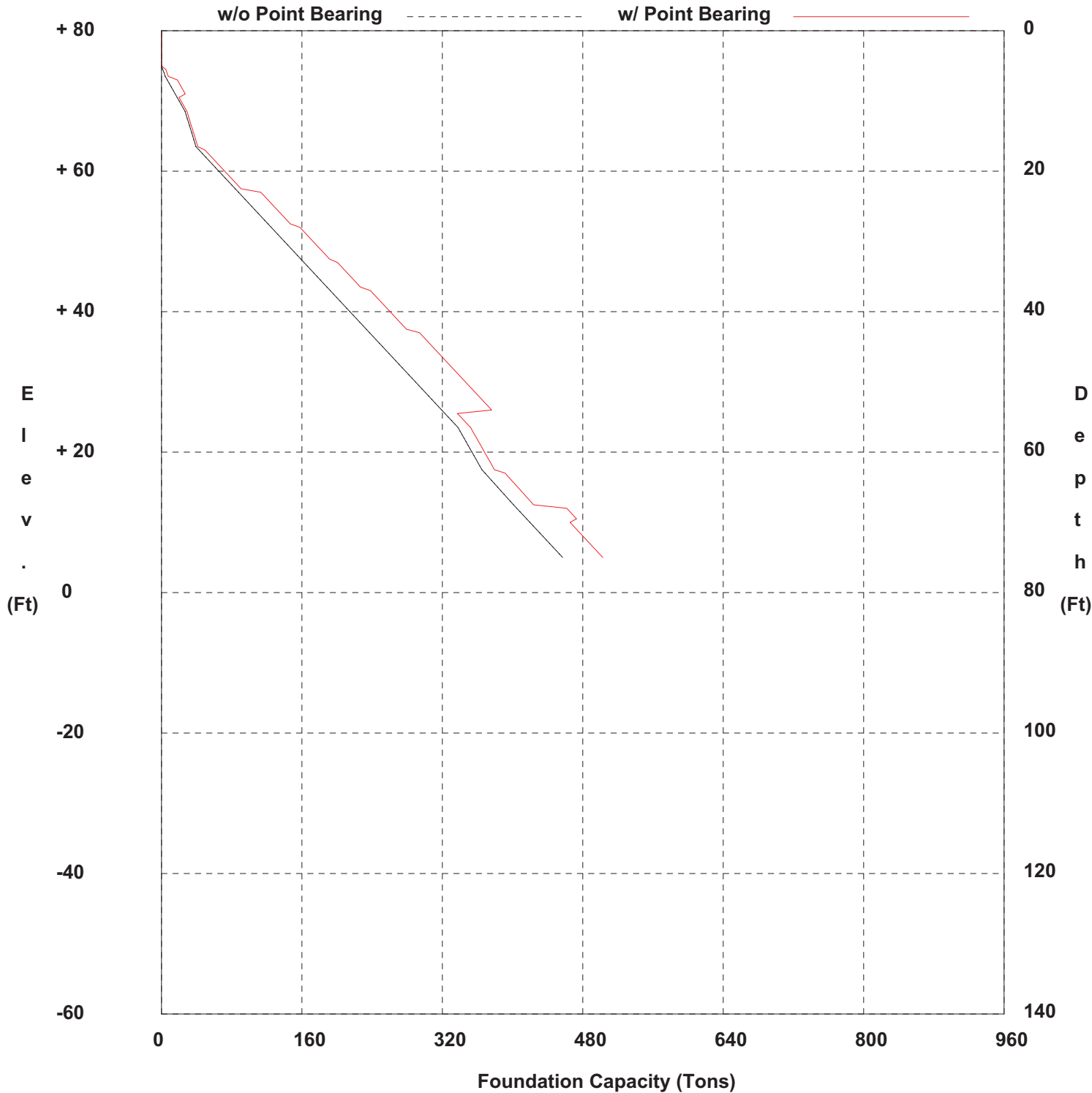
Hole BRG-1
Structure Bridge
Station
Offset

District
Date 02/28/2014
Grnd. Elev. 80.00 ft
GW Elev. 62.00 ft

16 inch Square Pile

+80 Top Hole Elevation
+75 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

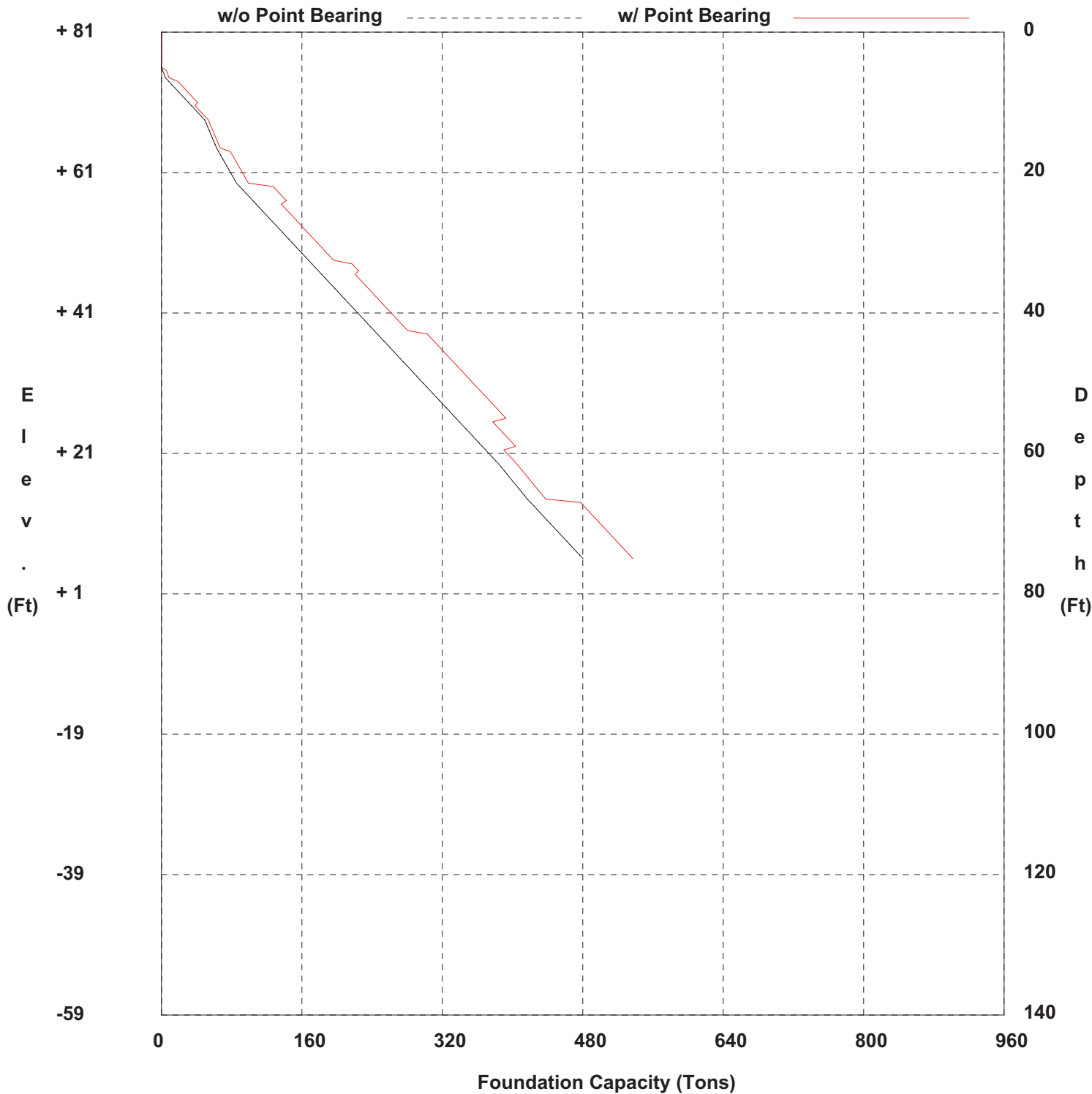
Hole BRG-2
Structure Bridge
Station
Offset

District
Date 02/27/2014
Grnd. Elev. 81.00 ft
GW Elev. 62.00 ft

16 inch Square Pile

+81 Top Hole Elevation
+76 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

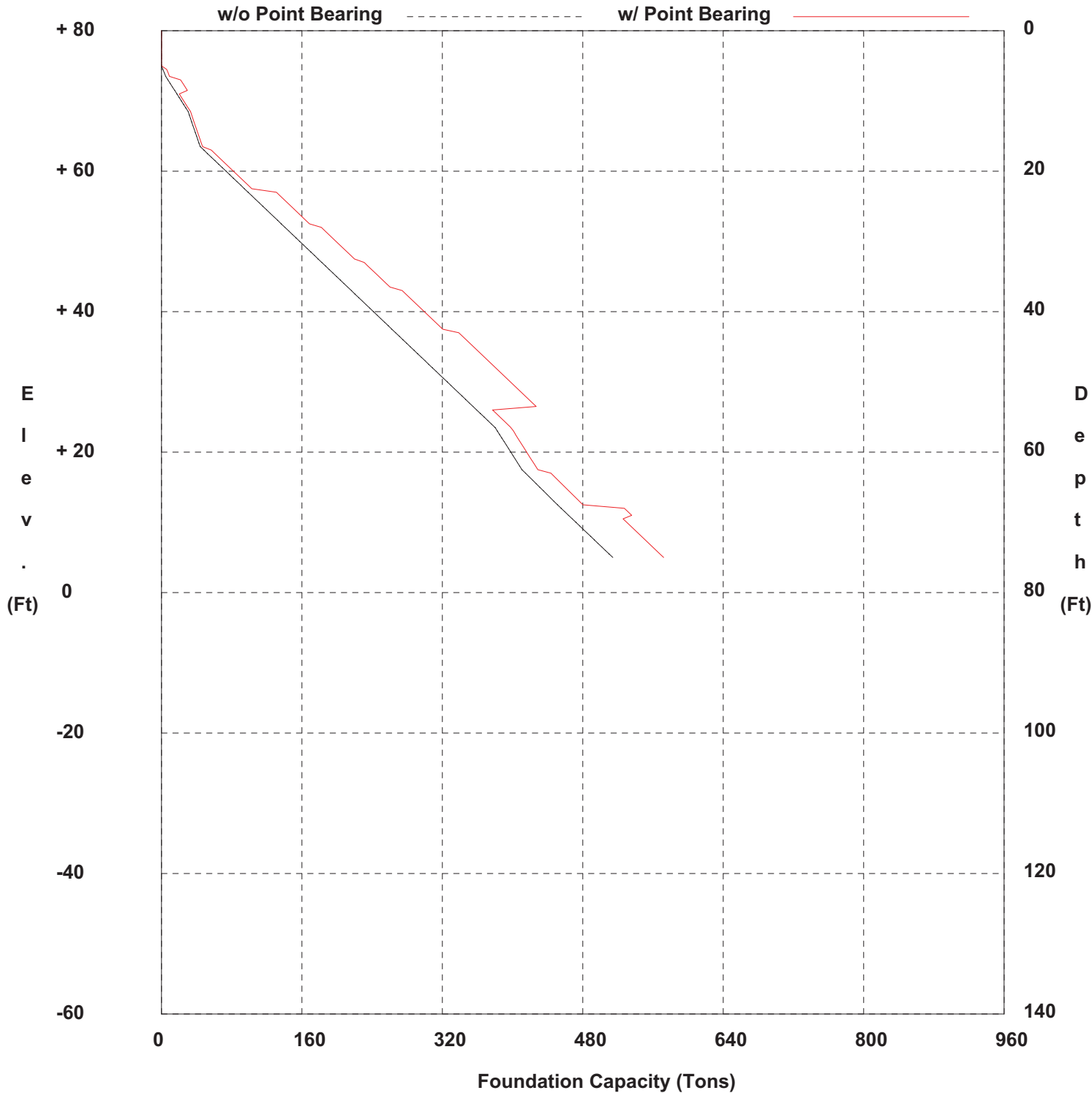
Hole BRG-1
Structure Bridge
Station
Offset

District
Date 02/28/2014
Grnd. Elev. 80.00 ft
GW Elev. 62.00 ft

18 inch Square Pile

+80 Top Hole Elevation
+75 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

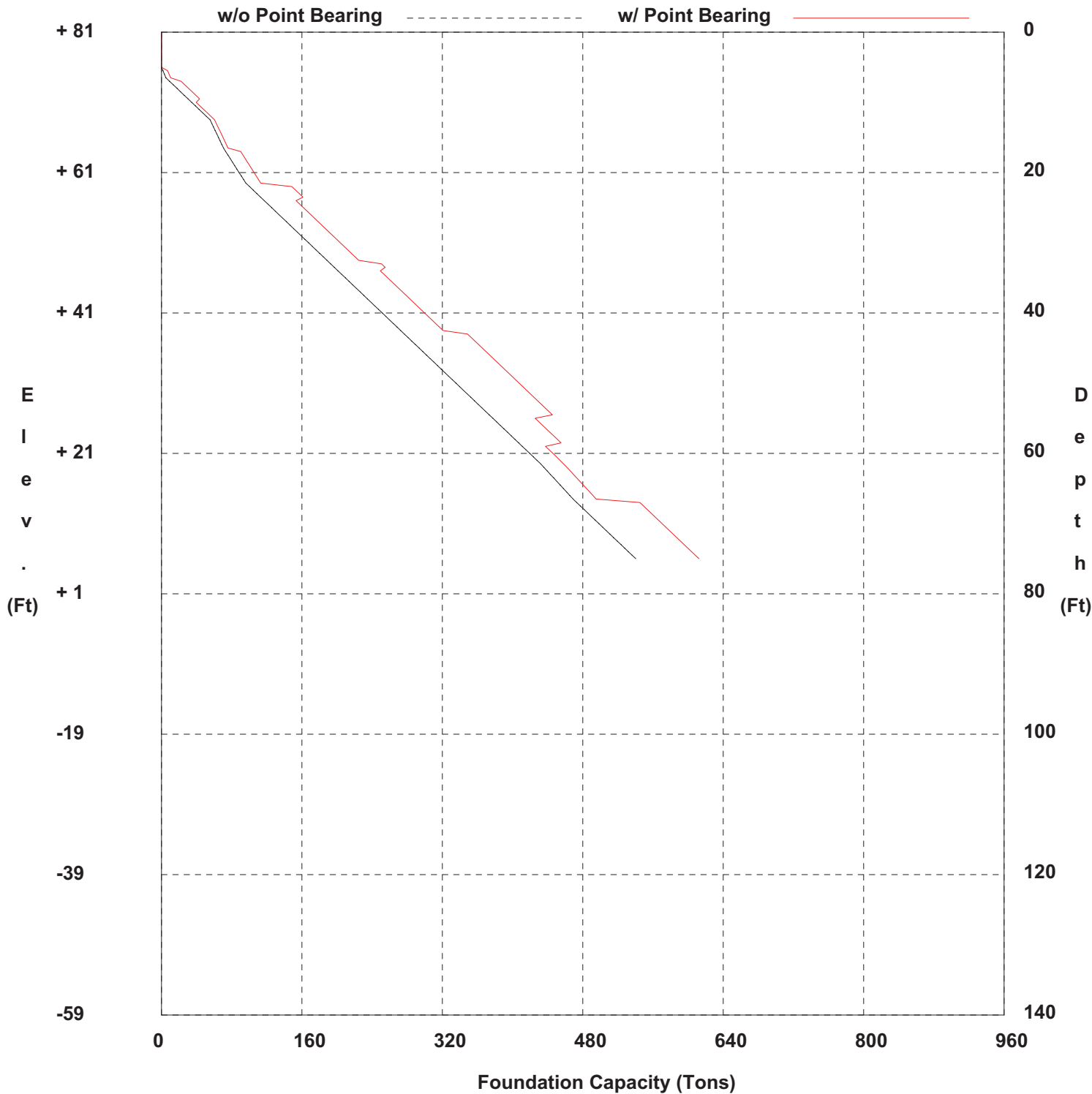
Hole BRG-2
Structure Bridge
Station
Offset

District
Date 02/27/2014
Grnd. Elev. 81.00 ft
GW Elev. 62.00 ft

18 inch Square Pile

+81 Top Hole Elevation
+76 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

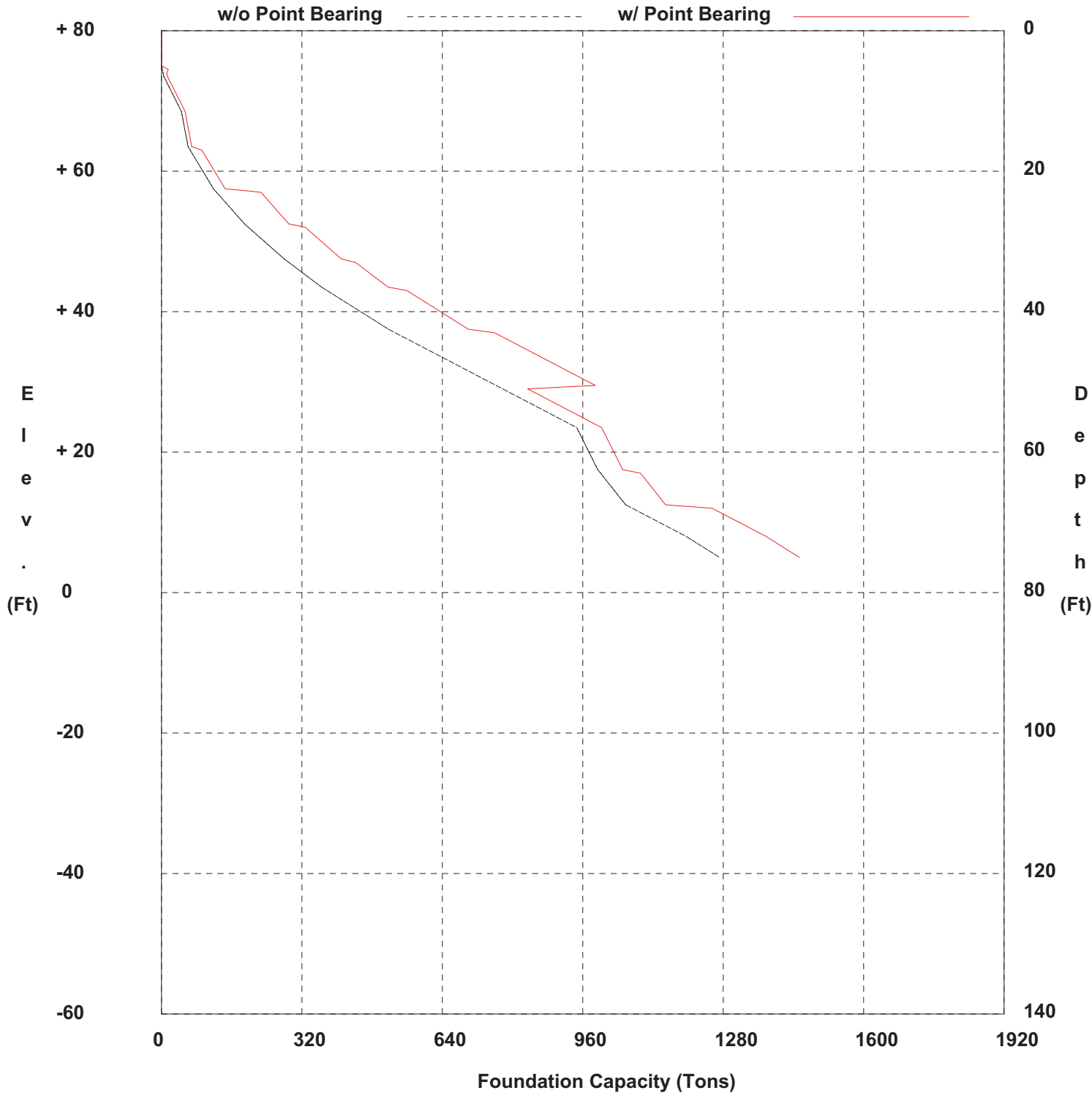
Hole BRG-1
Structure Bridge
Station
Offset

District
Date 02/28/2014
Grnd. Elev. 80.00 ft
GW Elev. 62.00 ft

36 inch Drilled Shaft

+80 Top Hole Elevation
+75 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

Hole
Structure
Station
Offset

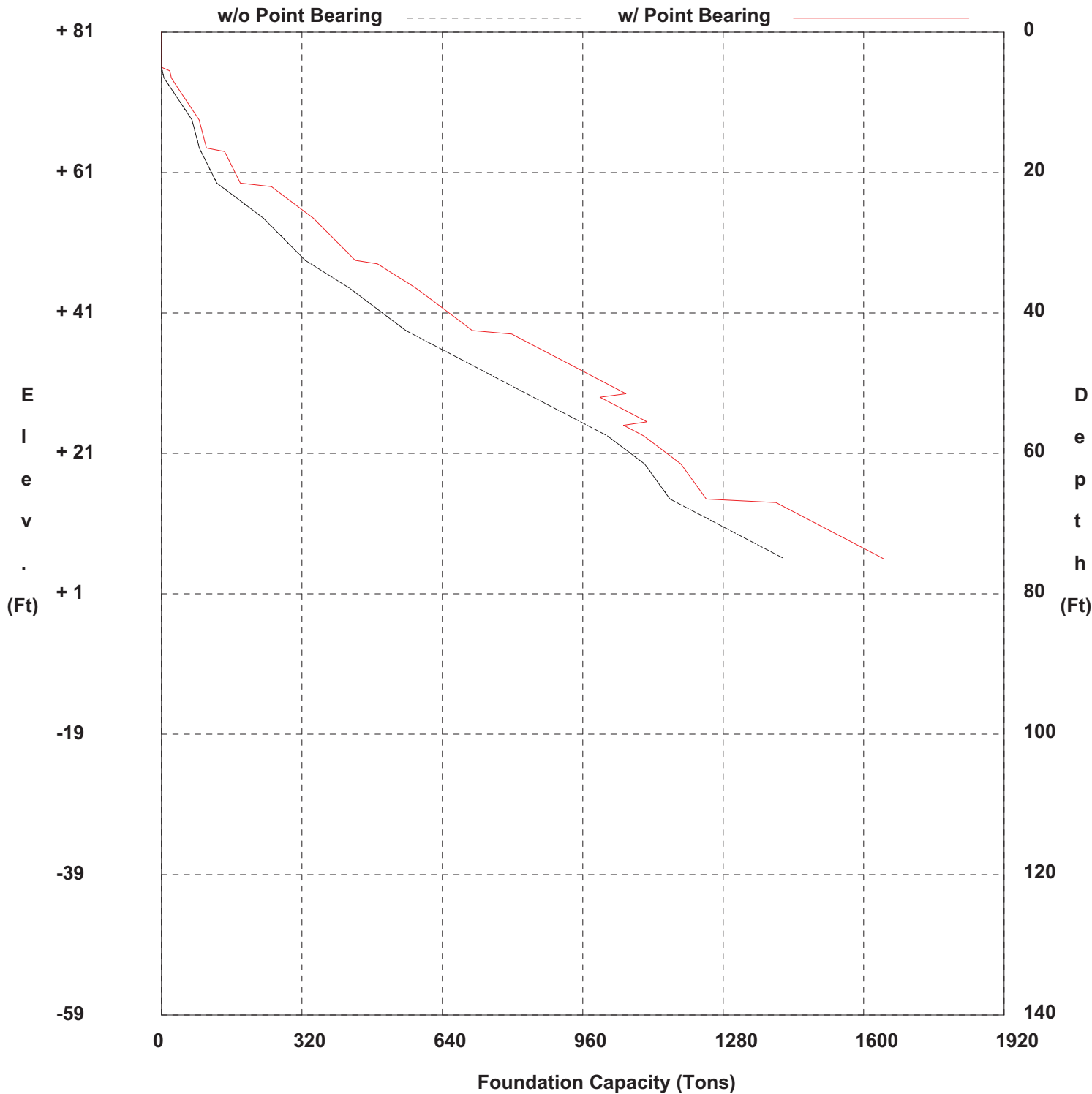
BRG-2
Bridge

District
Date 02/27/2014
Grnd. Elev. 81.00 ft
GW Elev. 62.00 ft

36 inch Drilled Shaft

+81 Top Hole Elevation
+76 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

Cactus Ln.

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

Hole
Structure
Station
Offset

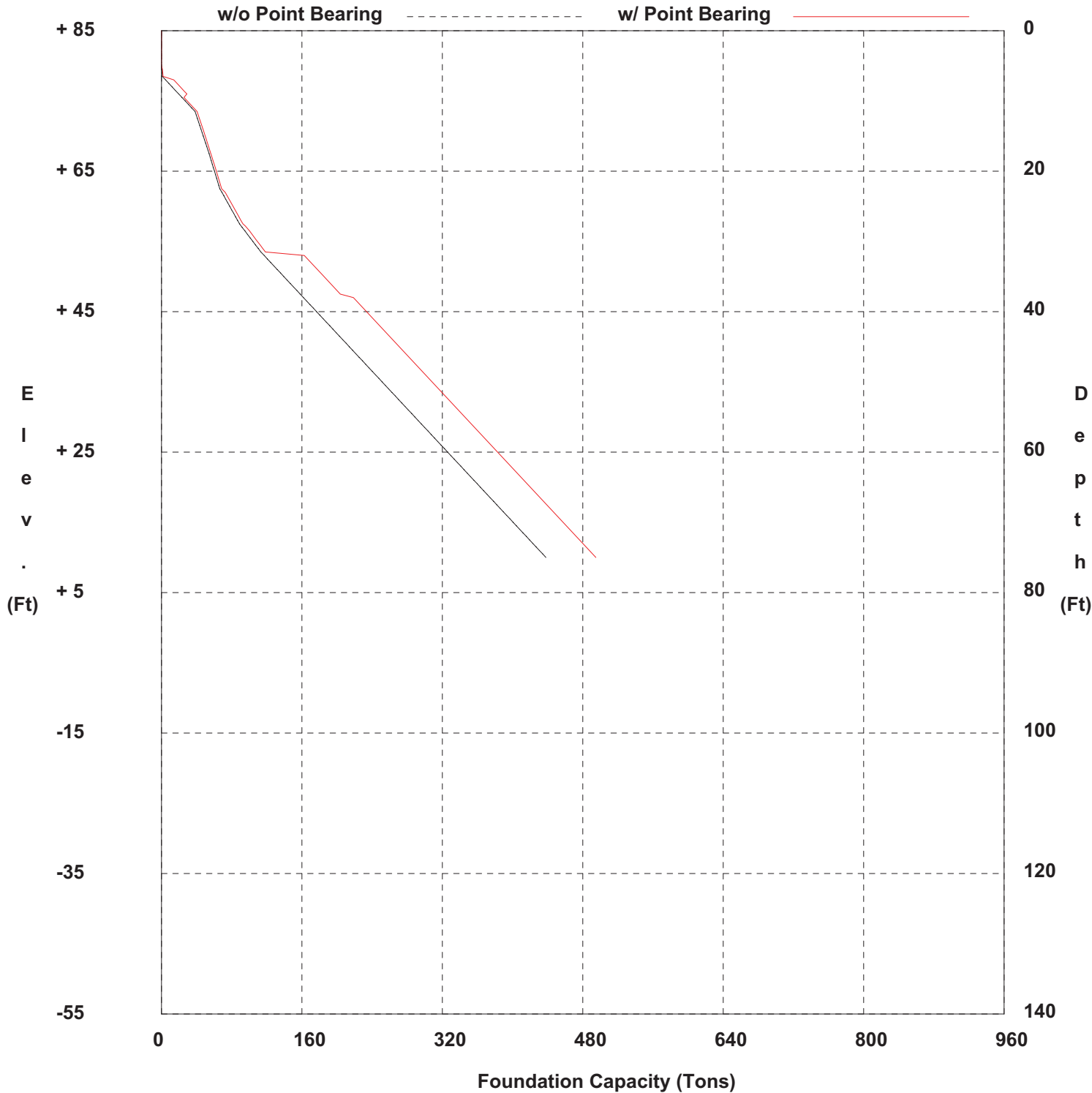
BRG-3
Bridge

District
Date 3/14/2014
Grnd. Elev. 85.00 ft
GW Elev. 55.00 ft

16 inch Square Pile

+85 Top Hole Elevation
+80 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

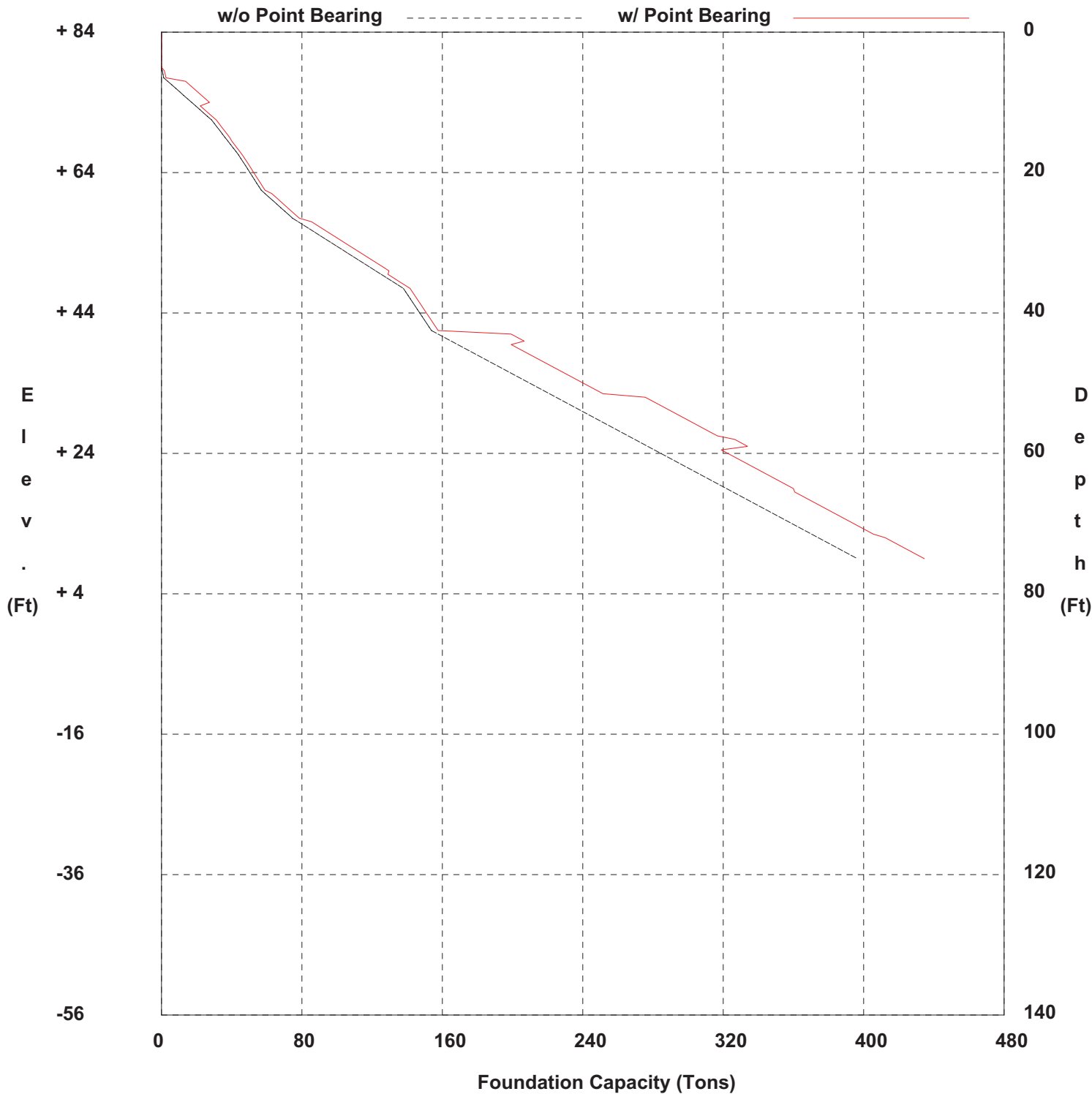
Hole BRG-4
Structure Bridge
Station
Offset

District
Date 3/14/14
Grnd. Elev. 84.00 ft
GW Elev. 52.00 ft

16 inch Square Pile

+84 Top Hole Elevation
+79 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

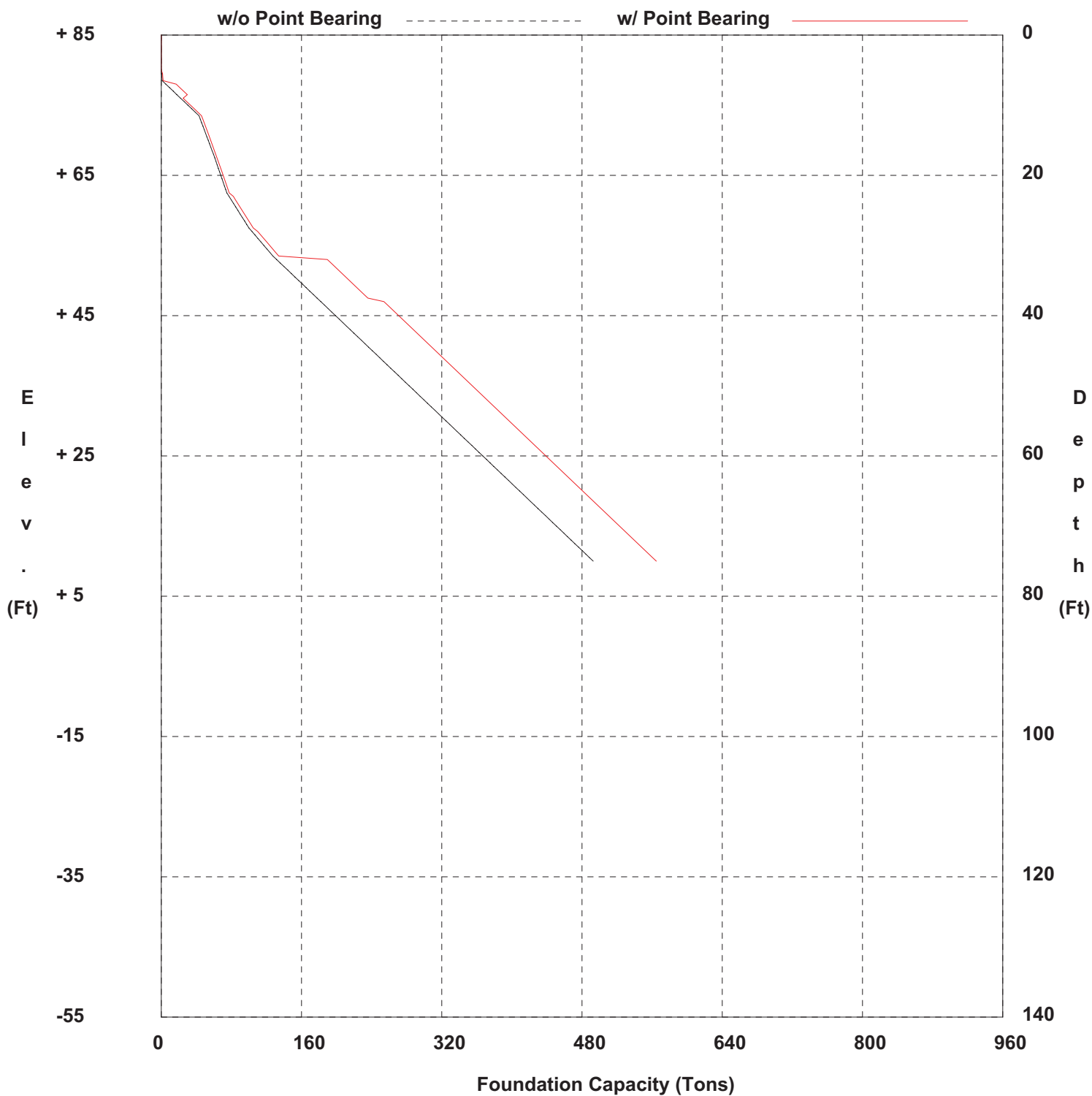
Hole BRG-3
Structure Bridge
Station
Offset

District
Date 3/14/2014
Grnd. Elev. 85.00 ft
GW Elev. 55.00 ft

18 inch Square Pile

+85 Top Hole Elevation
+80 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

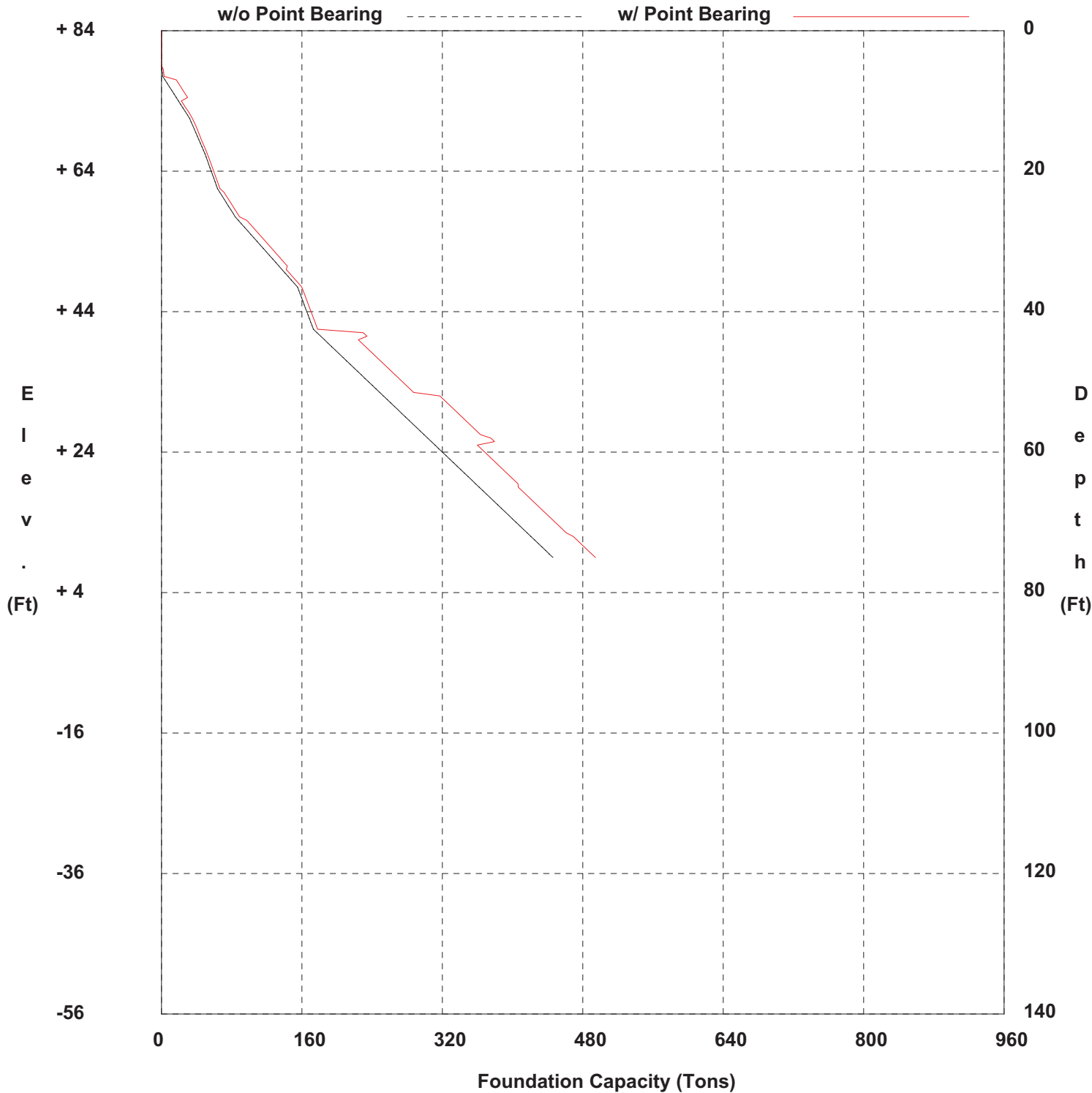
Hole BRG-4
Structure Bridge
Station
Offset

District
Date 3/14/14
Grnd. Elev. 84.00 ft
GW Elev. 52.00 ft

18 inch Square Pile

+84 Top Hole Elevation
+79 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

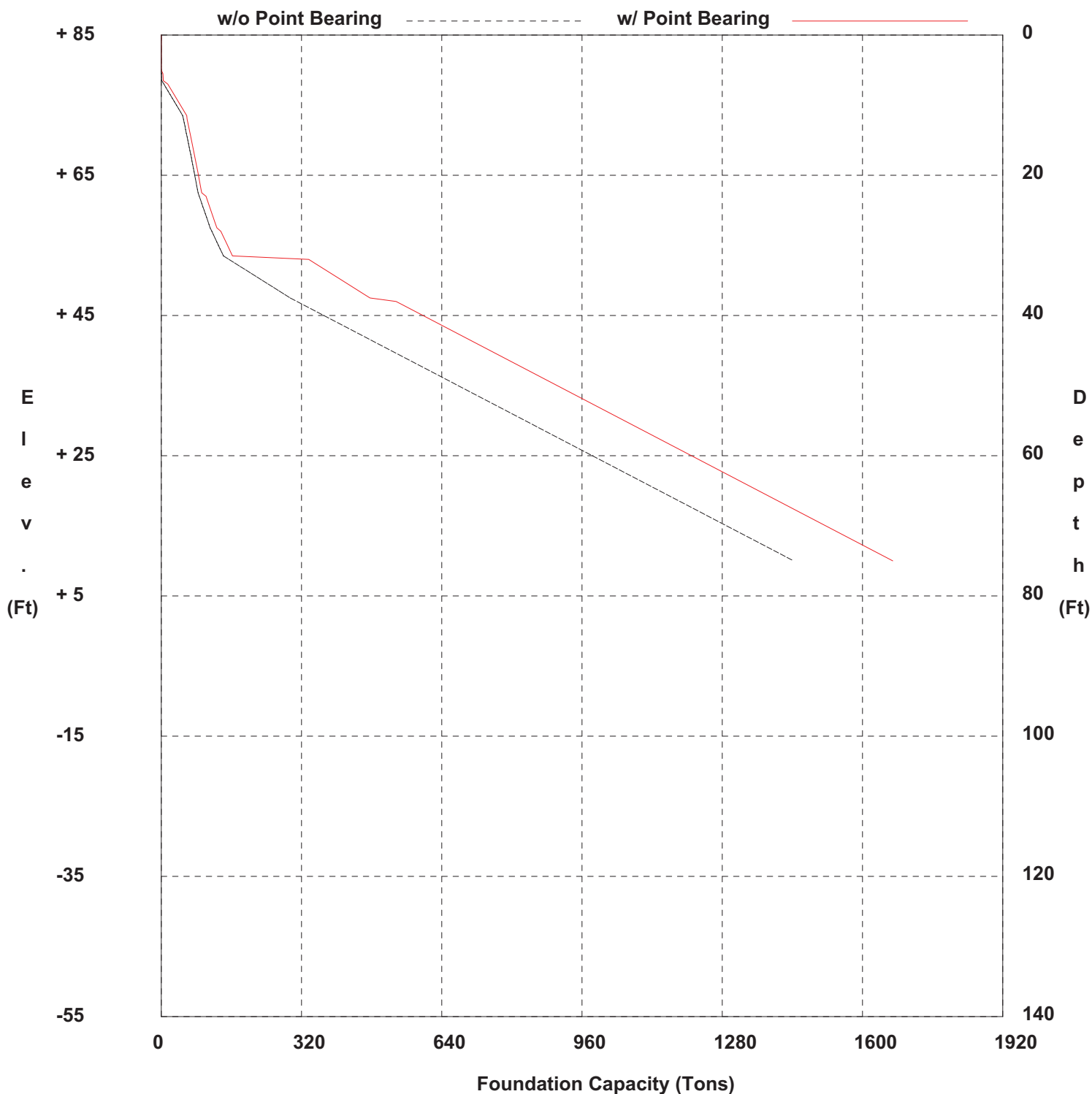
Hole BRG-3
Structure Bridge
Station
Offset

District
Date 3/14/2014
Grnd. Elev. 85.00 ft
GW Elev. 55.00 ft

36 inch Drilled Shaft

+85 Top Hole Elevation
+80 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

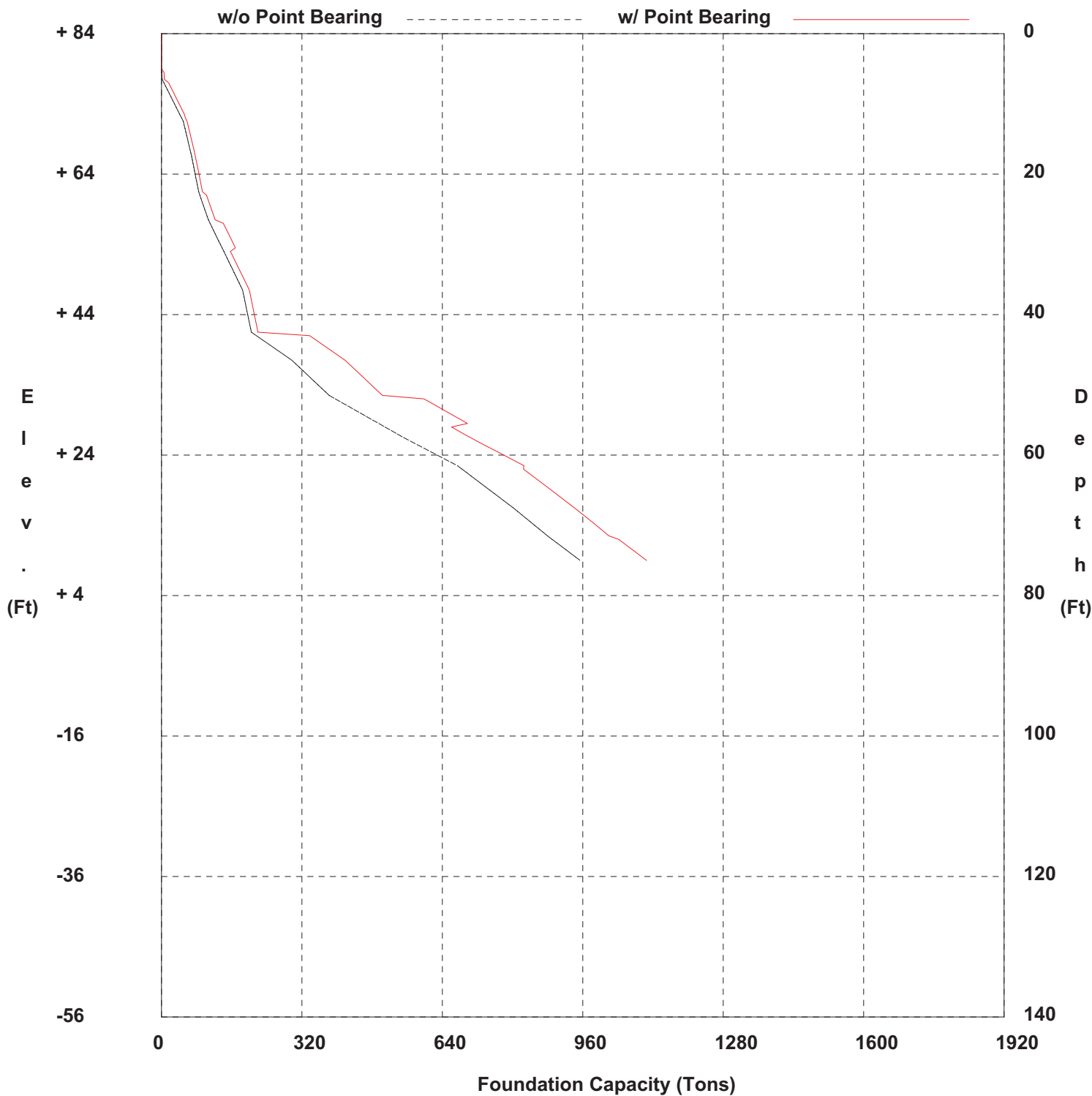
Hole BRG-4
Structure Bridge
Station
Offset

District
Date 3/14/14
Grnd. Elev. 84.00 ft
GW Elev. 52.00 ft

36 inch Drilled Shaft

+84 Top Hole Elevation
+79 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

US 281 / I-69C

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

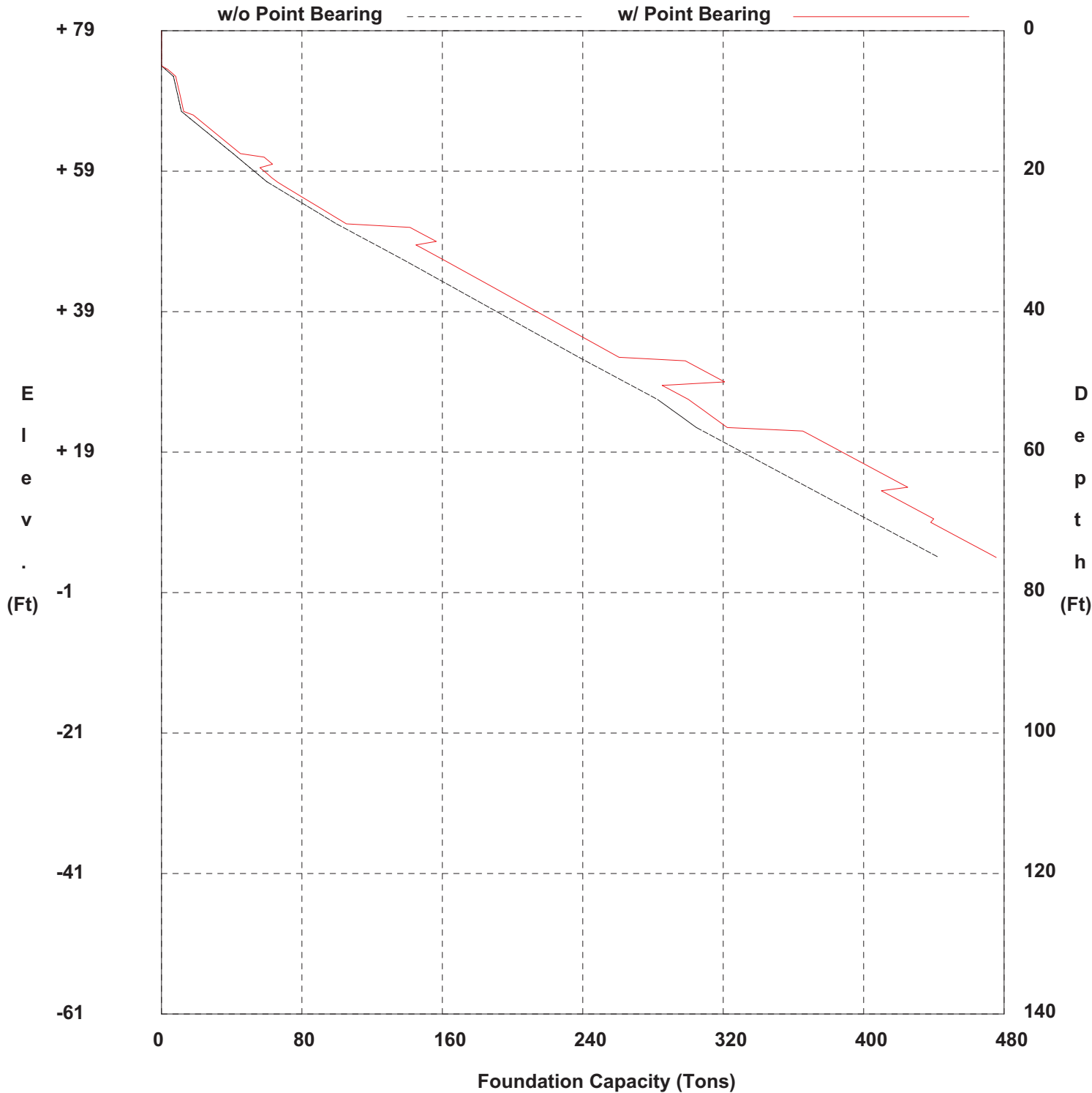
Hole BRG-11
Structure Bridge
Station
Offset

District
Date 2/25/2014
Grnd. Elev. 79.00 ft
GW Elev. 45.00 ft

16 inch Square Pile

+79 Top Hole Elevation
+74 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

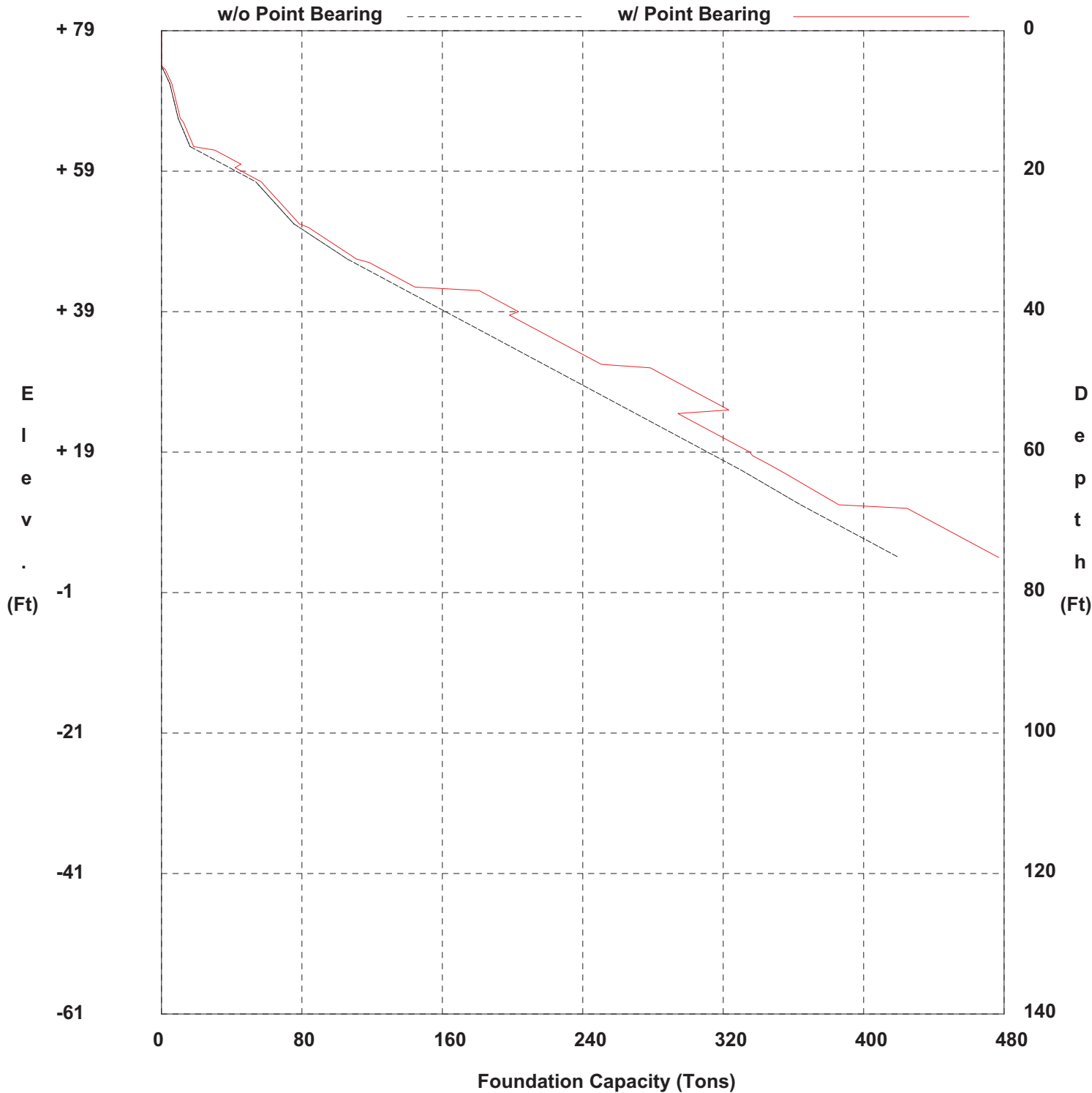
Hole BRG-12
Structure Bridge
Station
Offset

District
Date 2/25/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

16 inch Square Pile

+79 Top Hole Elevation
+74 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

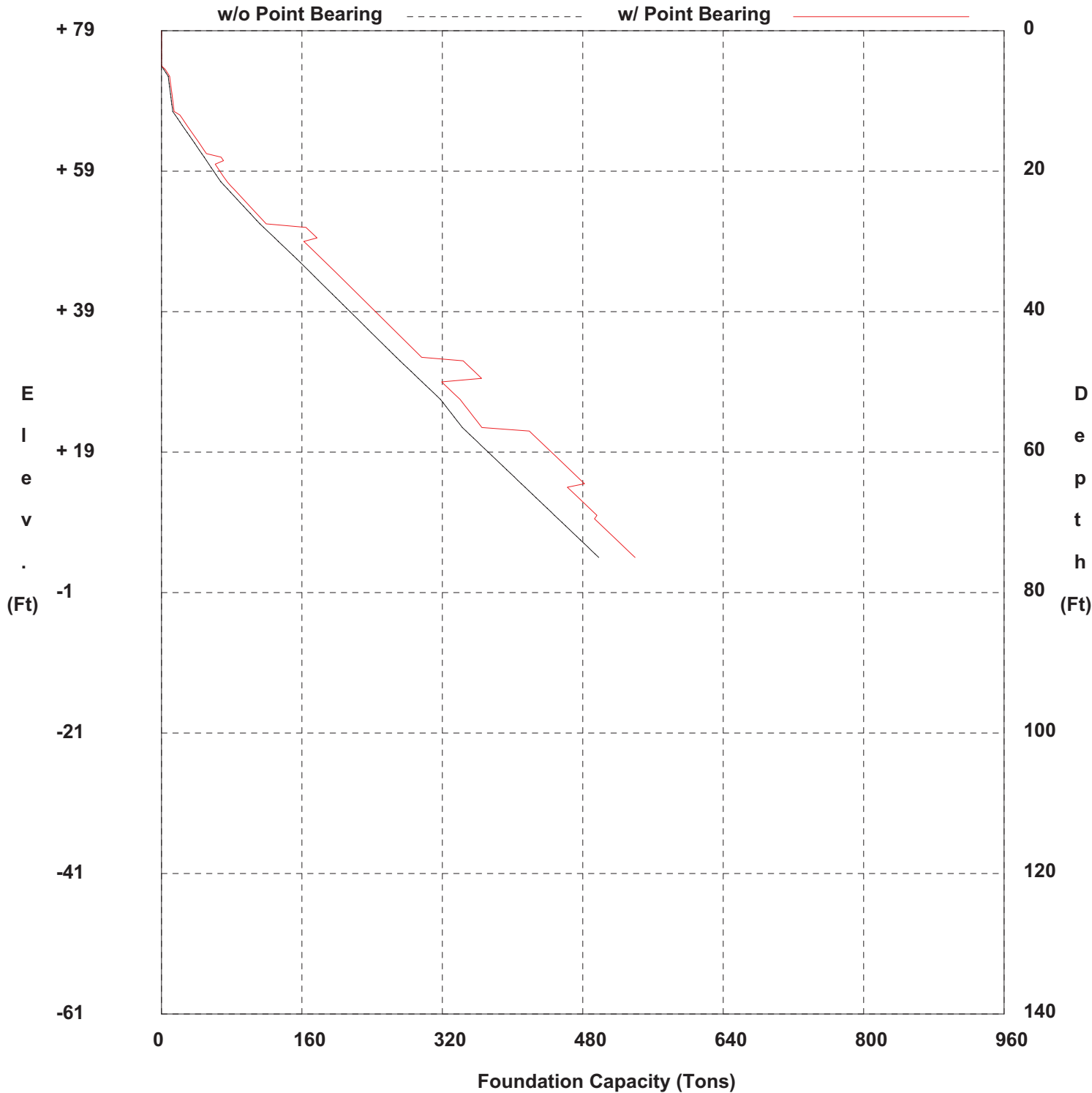
Hole BRG-11
Structure Bridge
Station
Offset

District
Date 2/25/2014
Grnd. Elev. 79.00 ft
GW Elev. 45.00 ft

18 inch Square Pile

+79 Top Hole Elevation
+74 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

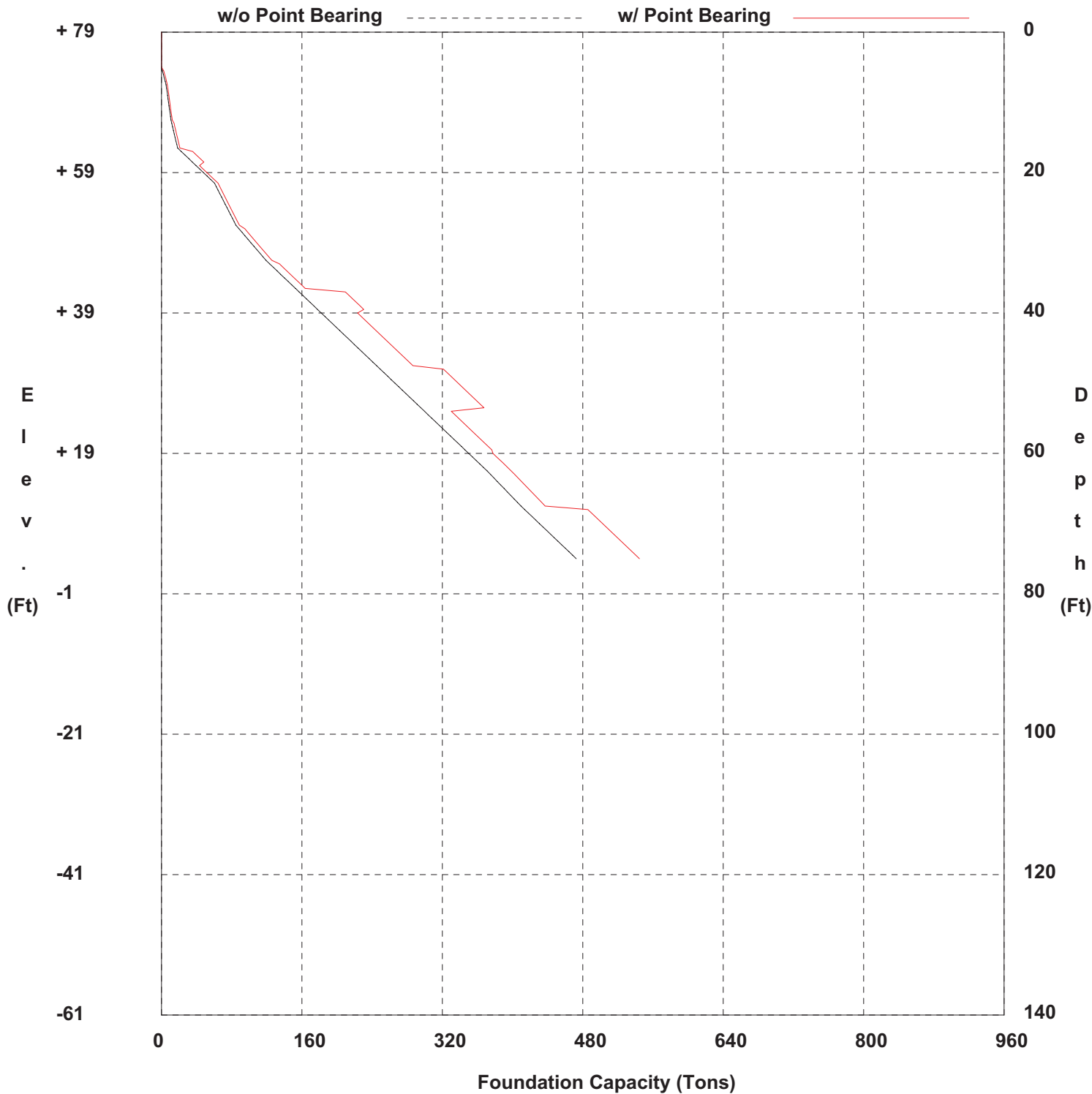
Hole BRG-12
Structure Bridge
Station
Offset

District
Date 2/25/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

18 inch Square Pile

+79 Top Hole Elevation
+74 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

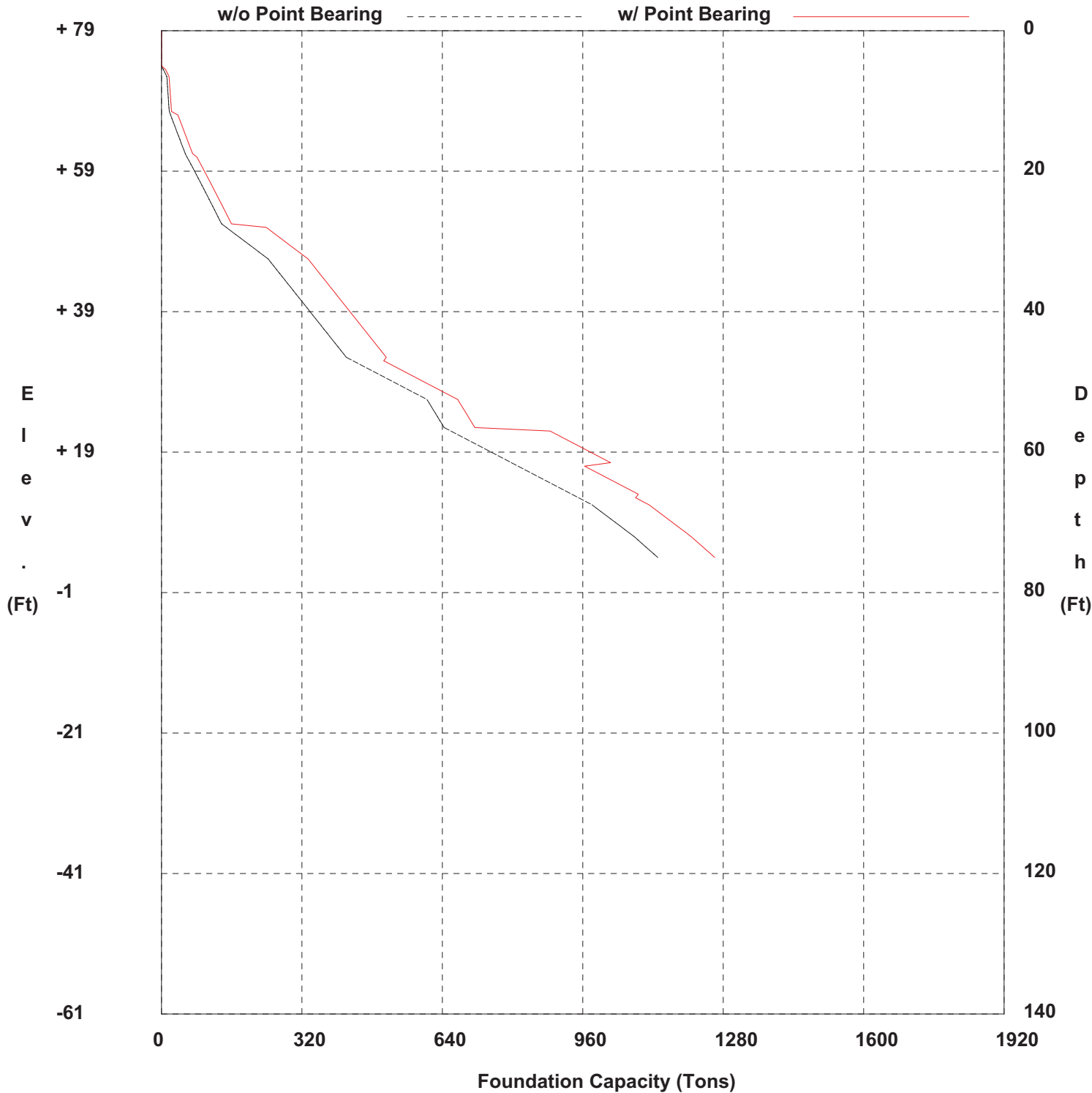
Hole BRG-11
Structure Bridge
Station
Offset

District
Date 2/25/2014
Grnd. Elev. 79.00 ft
GW Elev. 45.00 ft

36 inch Drilled Shaft

+79 Top Hole Elevation
+74 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

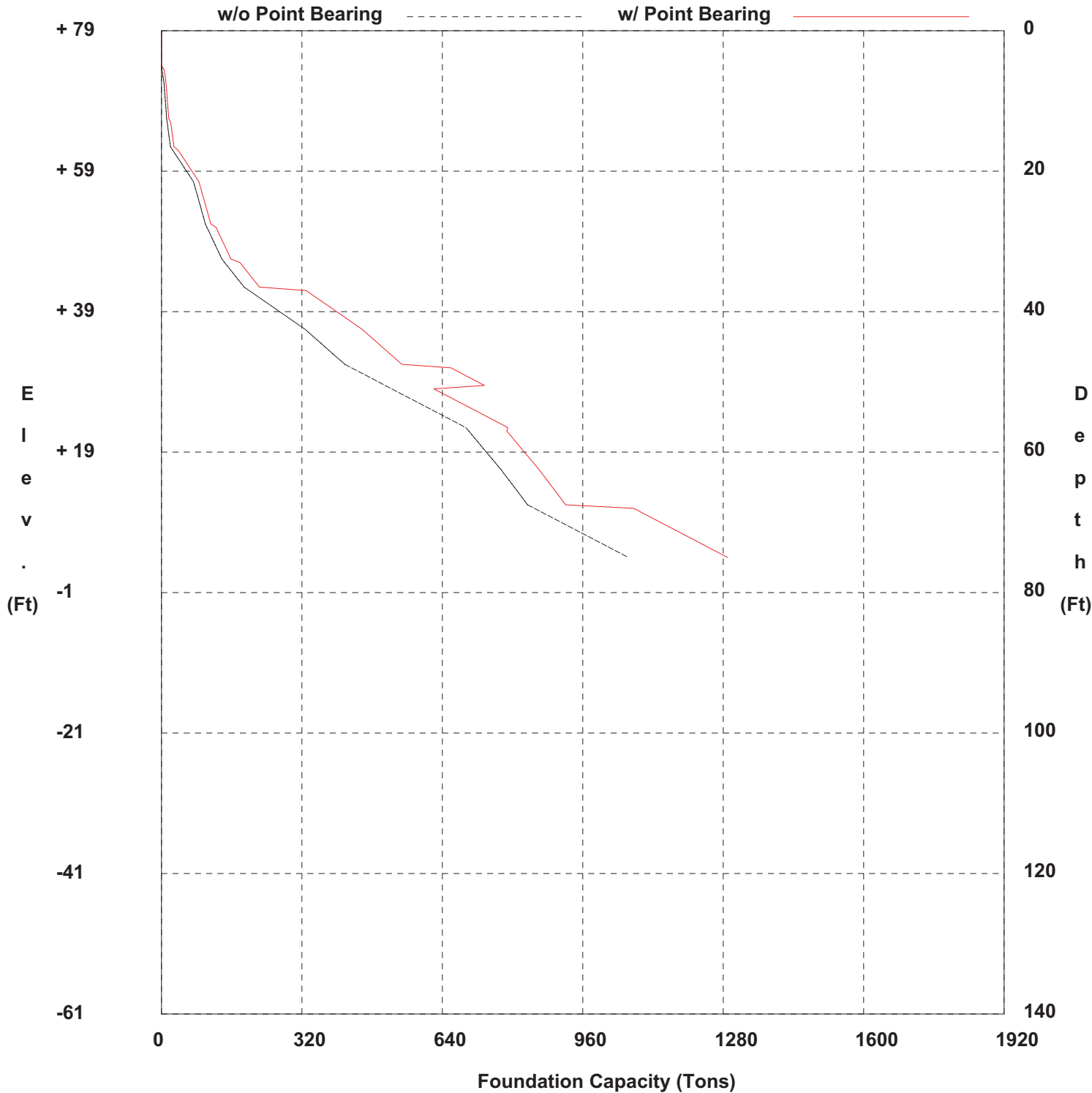
Hole BRG-12
Structure Bridge
Station
Offset

District
Date 2/25/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

36 inch Drilled Shaft

+79 Top Hole Elevation
+74 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

Brushline Rd. (Old Alignment – Not Used)

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

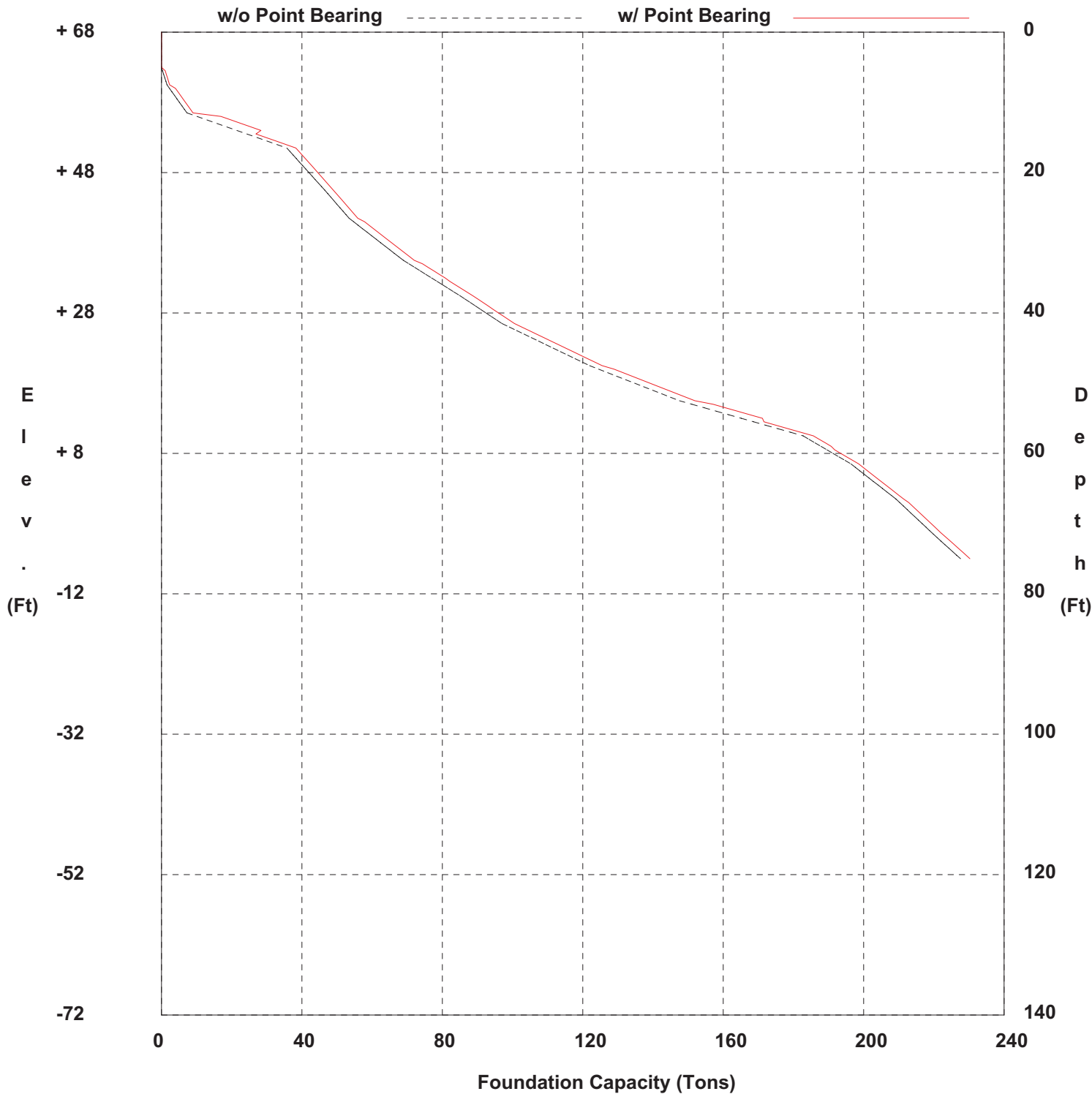
Hole BRG-13
Structure Bridge
Station
Offset

District
Date 3/17/2014
Grnd. Elev. 68.00 ft
GW Elev. 48.00 ft

16 inch Square Pile

+68 Top Hole Elevation
+63 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

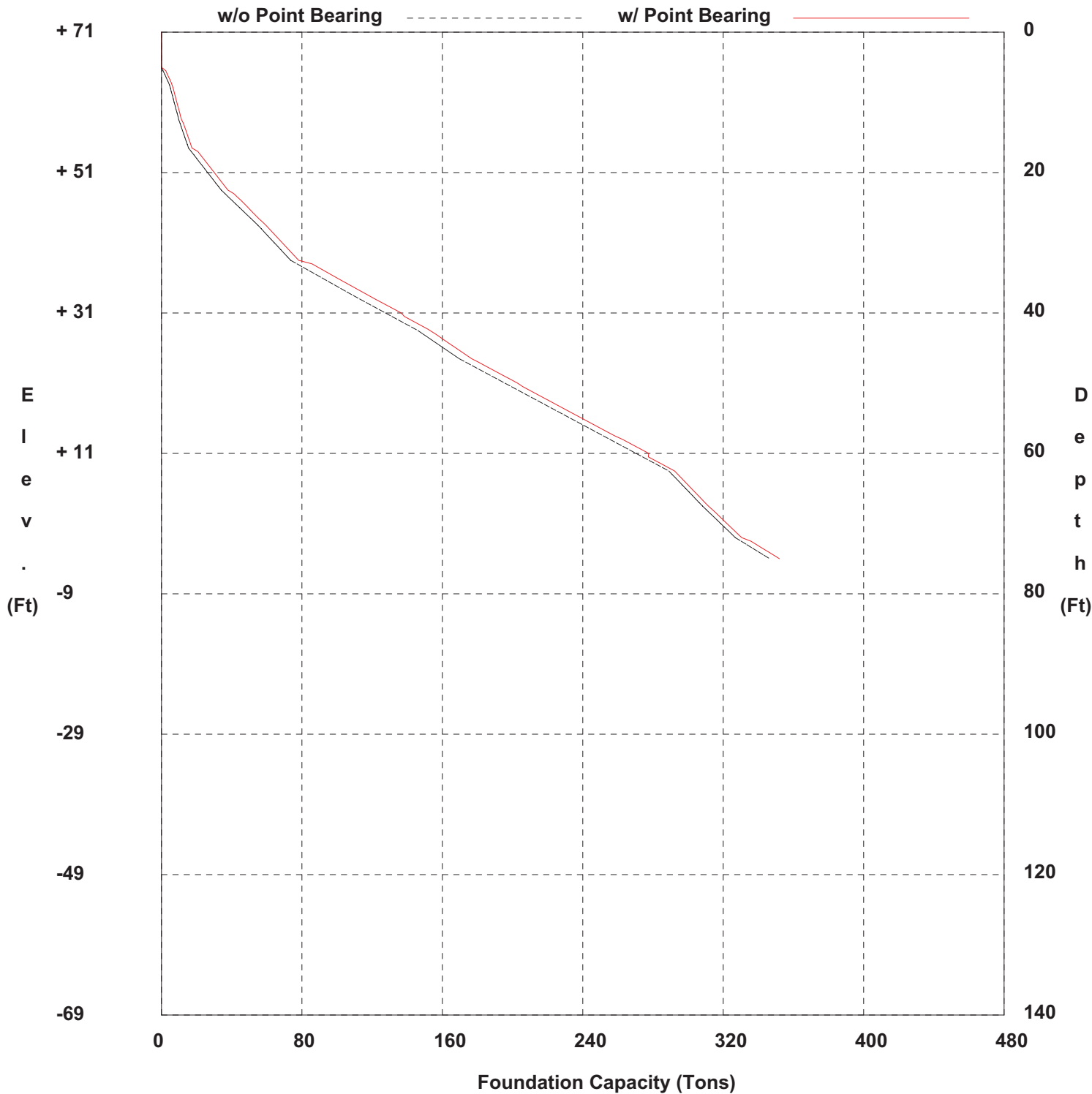
Hole BRG-14
Structure Bridge
Station
Offset

District
Date 3/17/2014
Grnd. Elev. 71.00 ft
GW Elev. 38.00 ft

16 inch Square Pile

+71 Top Hole Elevation
+66 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

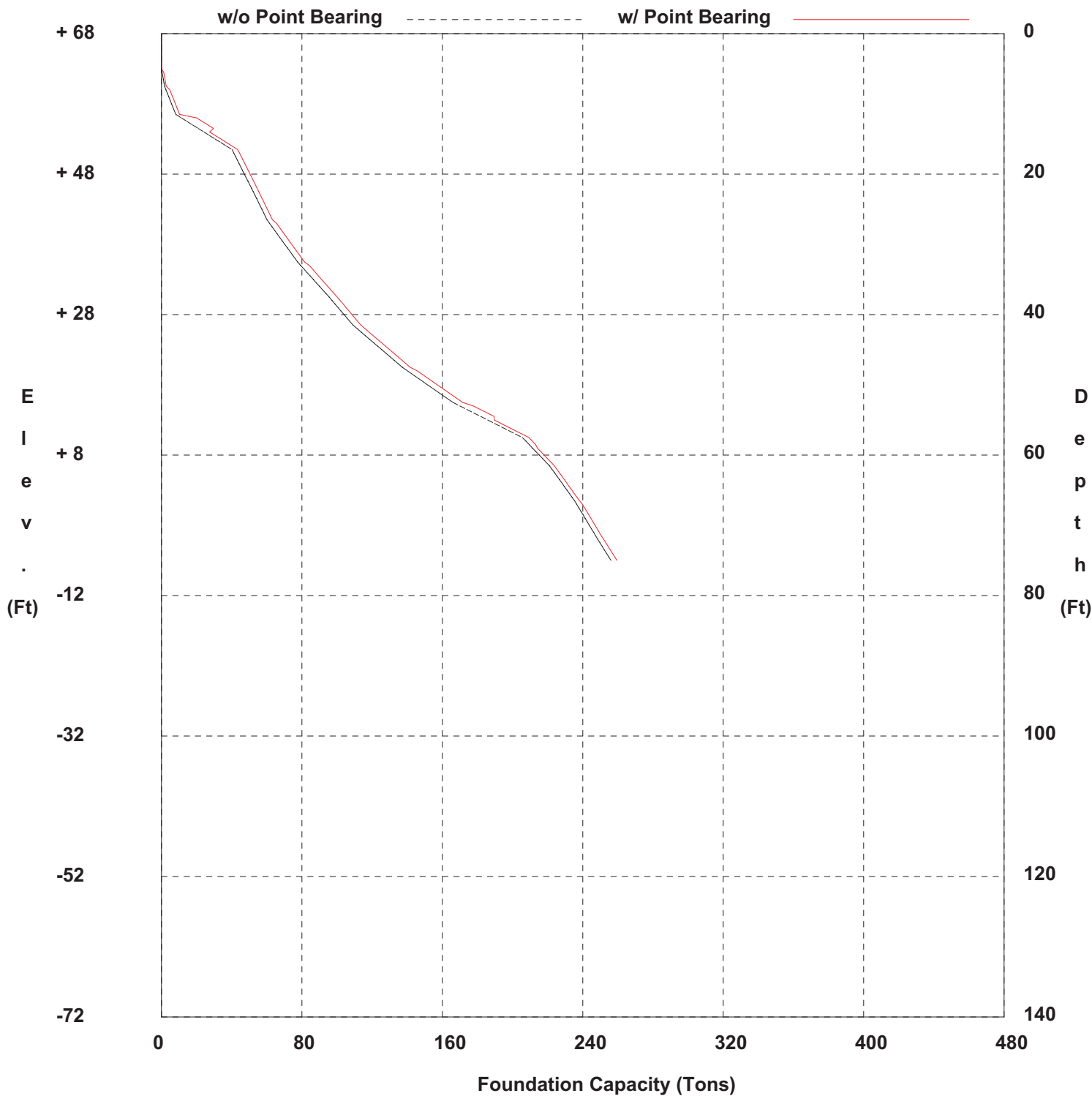
Hole BRG-13
Structure Bridge
Station
Offset

District
Date 3/17/2014
Grnd. Elev. 68.00 ft
GW Elev. 48.00 ft

18 inch Square Pile

+68 Top Hole Elevation
+63 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

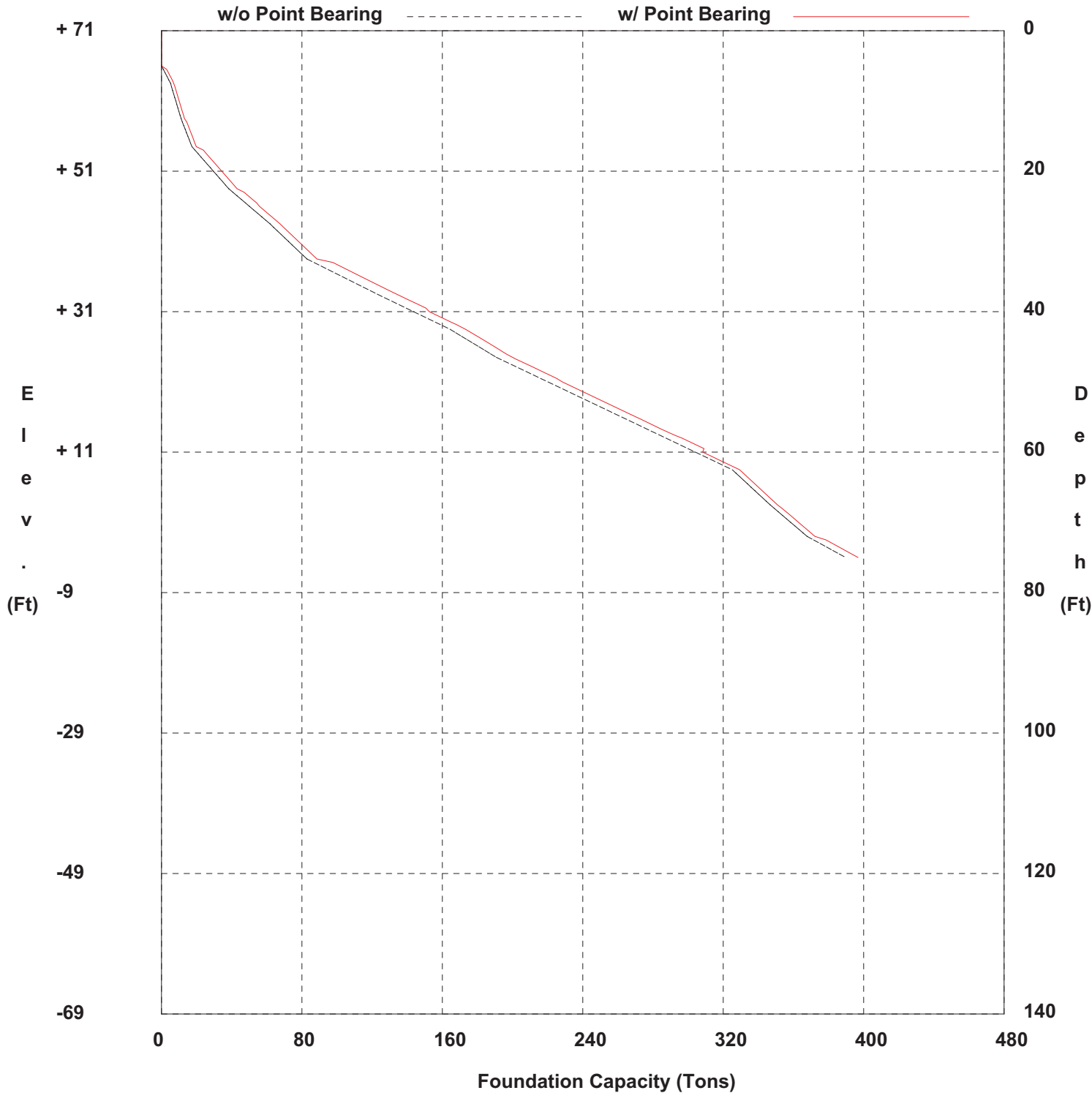
Hole BRG-14
Structure Bridge
Station
Offset

District
Date 3/17/2014
Grnd. Elev. 71.00 ft
GW Elev. 38.00 ft

18 inch Square Pile

+71 Top Hole Elevation
+66 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

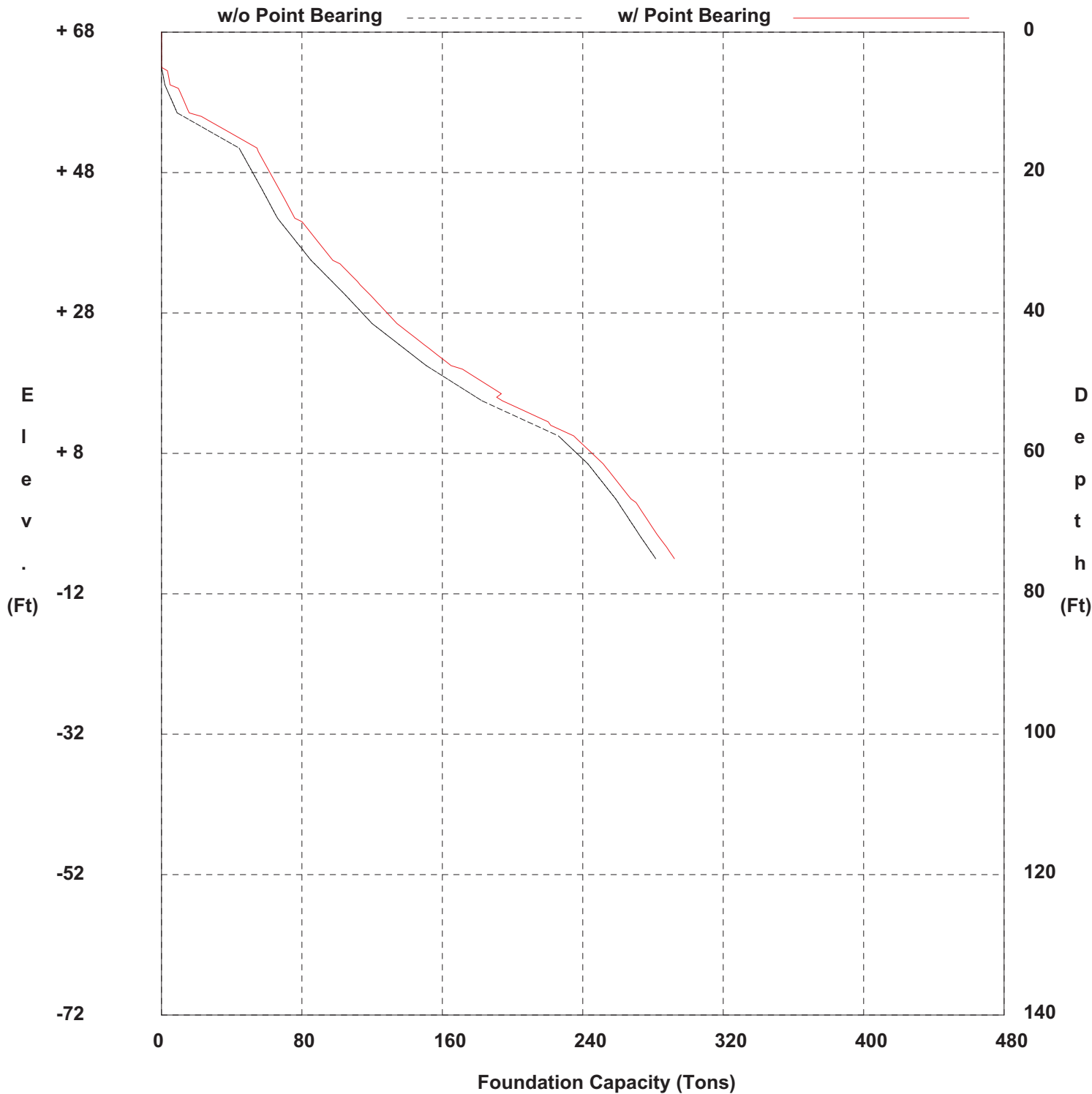
Hole BRG-13
Structure Bridge
Station
Offset

District
Date 3/17/2014
Grnd. Elev. 68.00 ft
GW Elev. 48.00 ft

36 inch Drilled Shaft

+68 Top Hole Elevation
+63 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

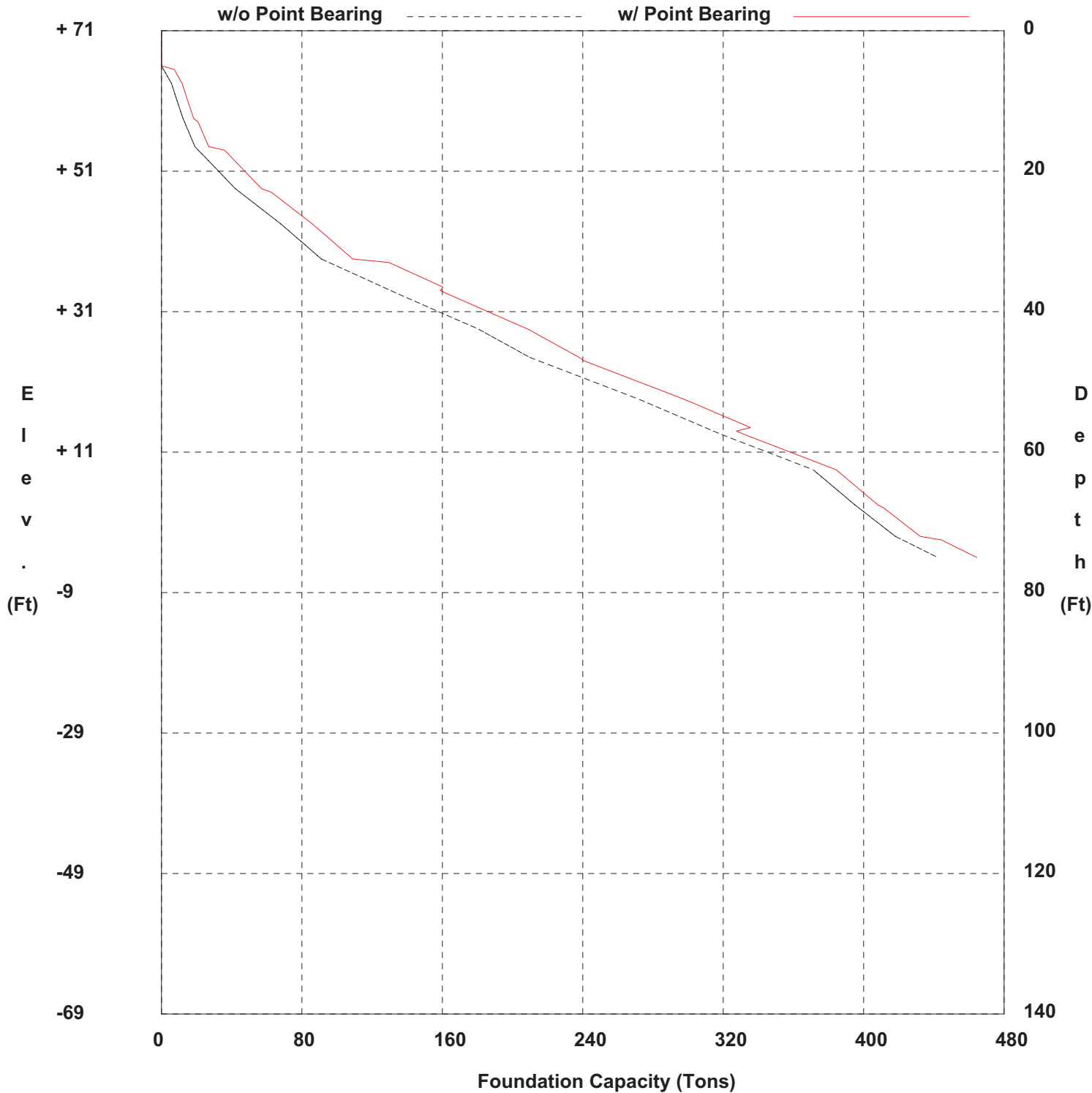
Hole BRG-14
Structure Bridge
Station
Offset

District
Date 3/17/2014
Grnd. Elev. 71.00 ft
GW Elev. 38.00 ft

36 inch Drilled Shaft

+71 Top Hole Elevation
+66 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

Brushline Rd. (Final Alignment)

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

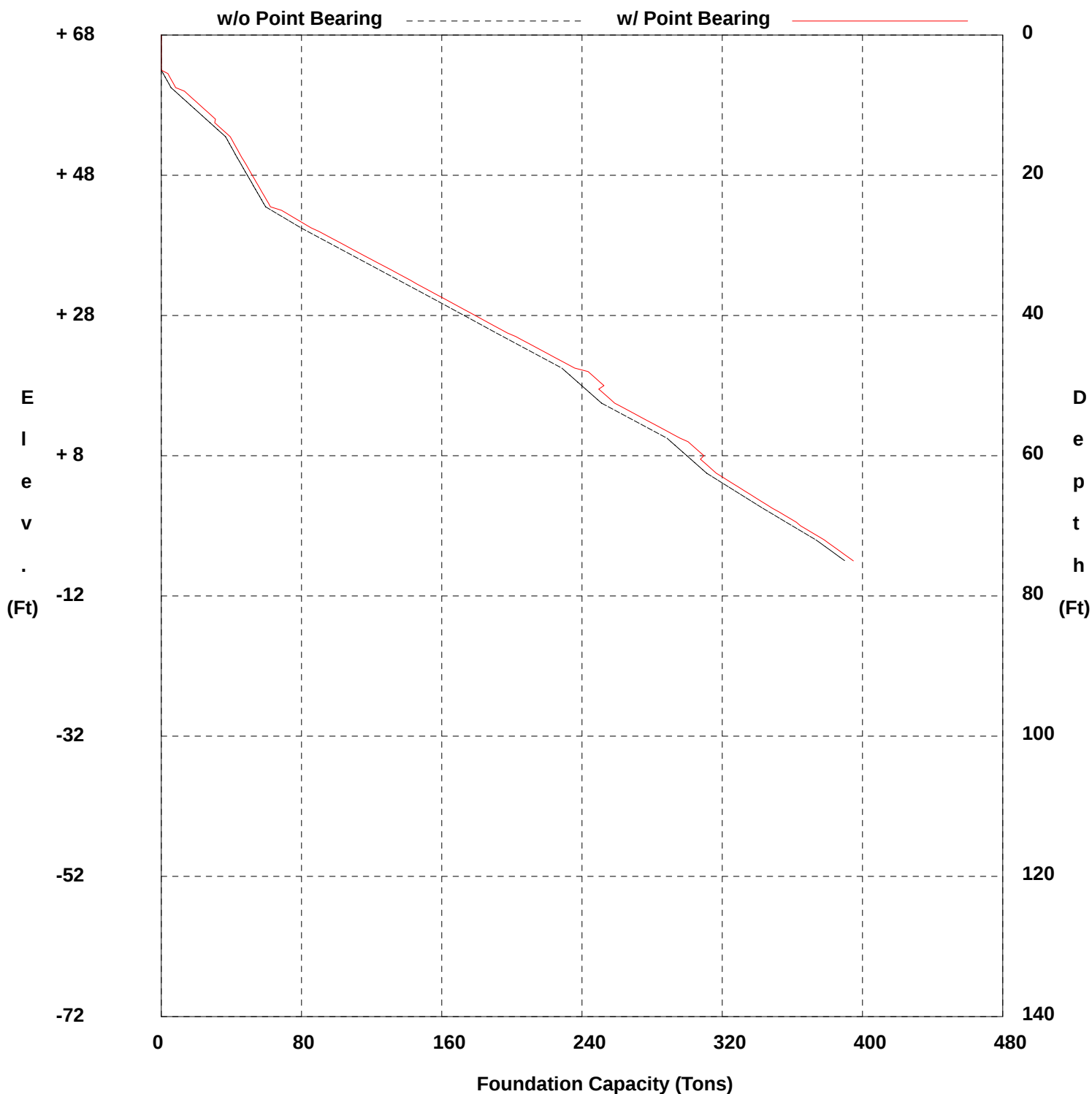
Hole B-BRG-13A-1
Structure
Station
Offset

District
Date 12/12/2018
Grnd. Elev. 68.00 ft
GW Elev. 50.00 ft

16 inch Square Pile

+68 Top Hole Elevation
+63 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

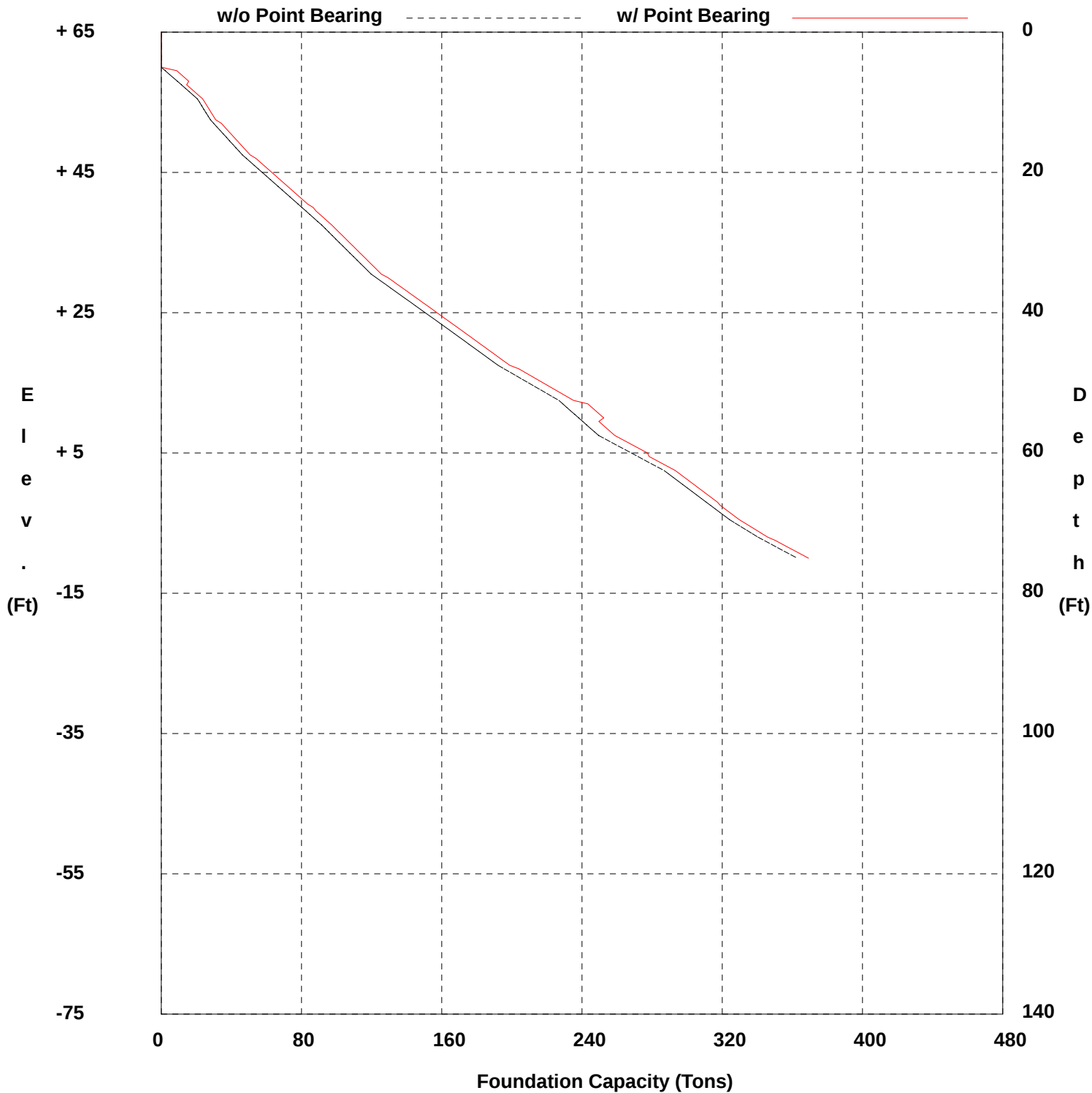
Hole B-BRG-14A-1
Structure
Station
Offset

District
Date 12/13/2018
Grnd. Elev. 65.00 ft
GW Elev. 46.00 ft

16 inch Square Pile

+65 Top Hole Elevation
+60 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

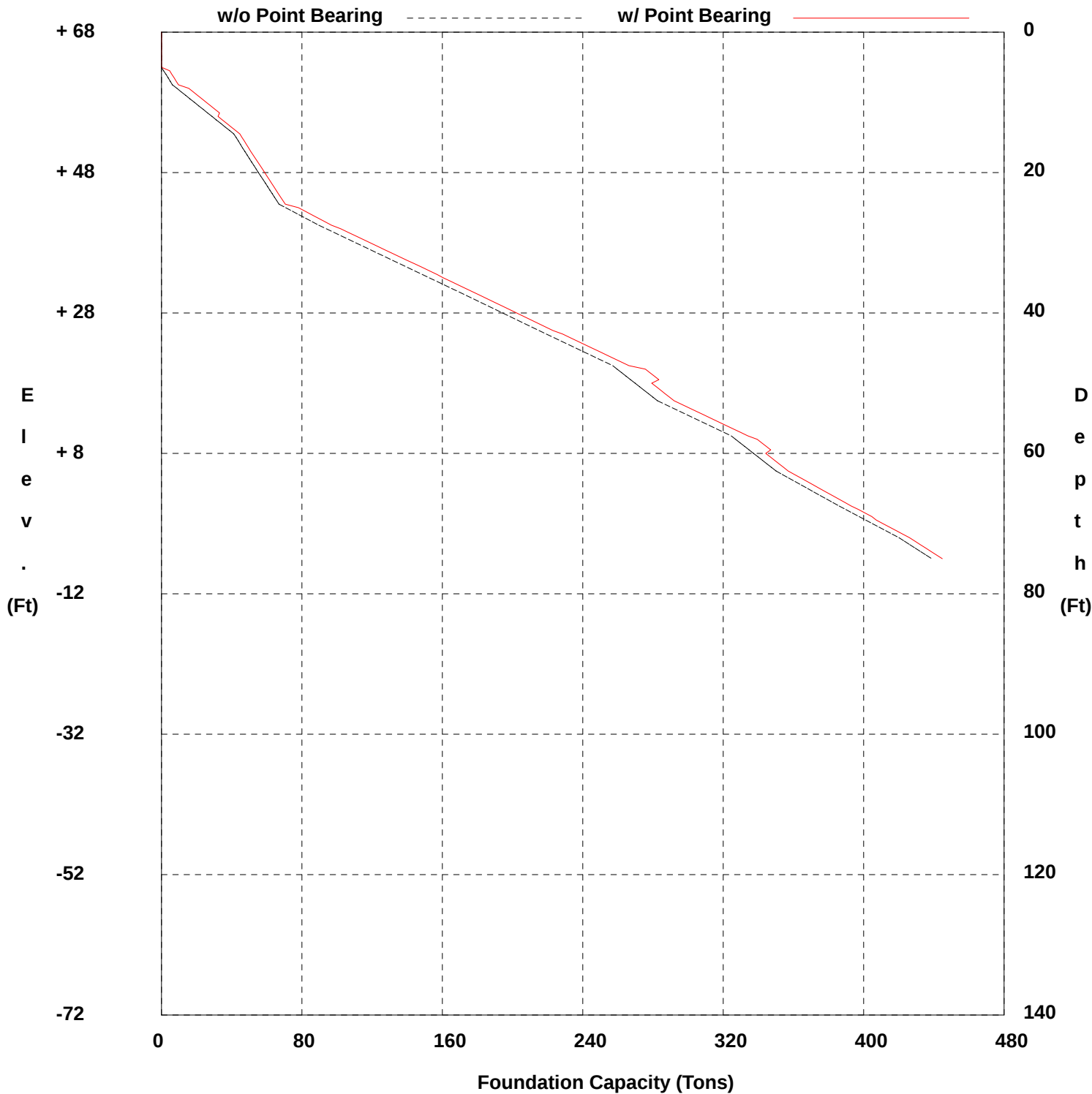
Hole B-BRG-13A-1
Structure
Station
Offset

District
Date 12/12/2018
Grnd. Elev. 68.00 ft
GW Elev. 50.00 ft

18 inch Square Pile

+68 Top Hole Elevation
+63 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

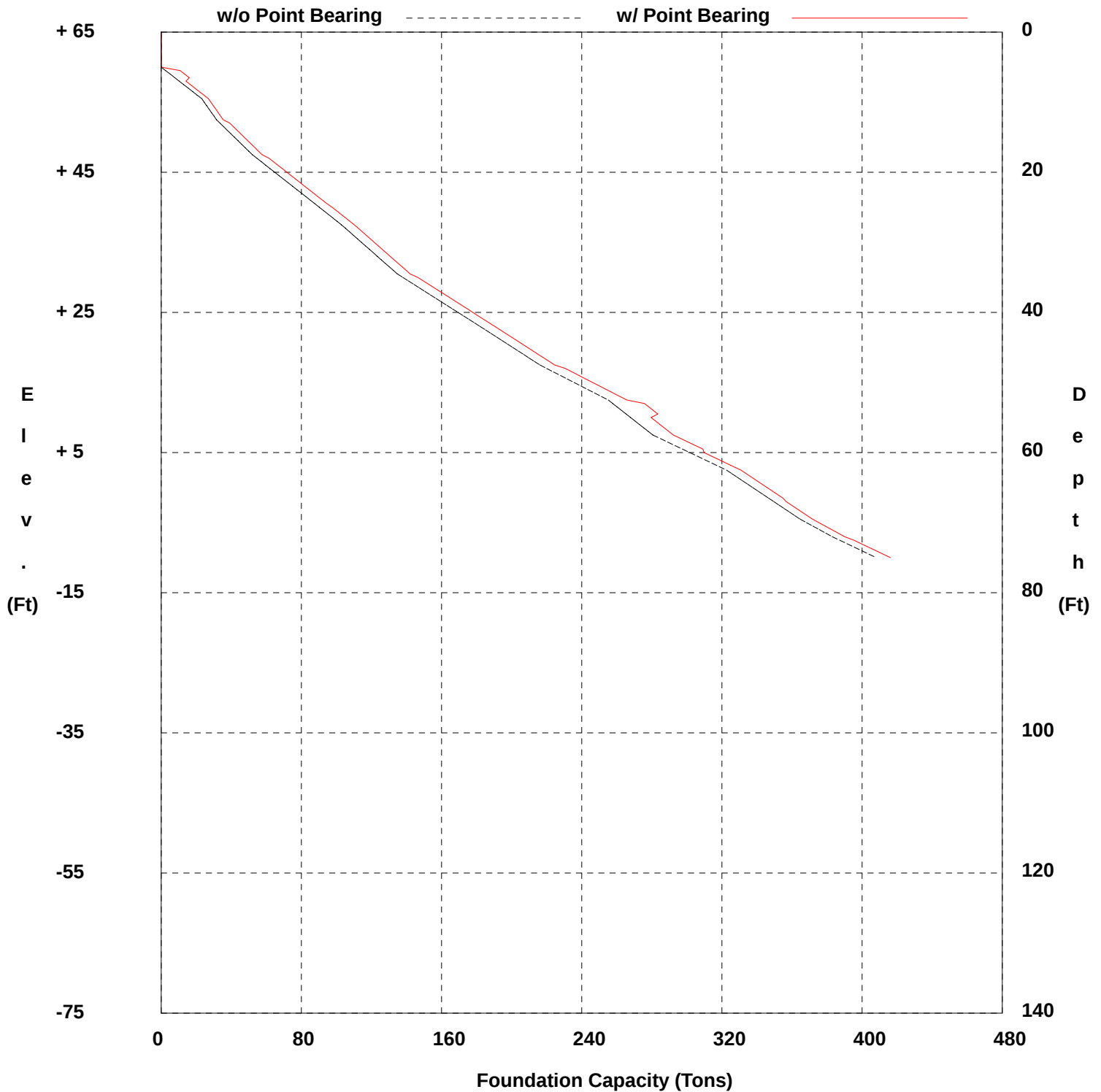
Hole B-BRG-14A-1
Structure
Station
Offset

District
Date 12/13/2018
Grnd. Elev. 65.00 ft
GW Elev. 46.00 ft

18 inch Square Pile

+65 Top Hole Elevation
+60 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

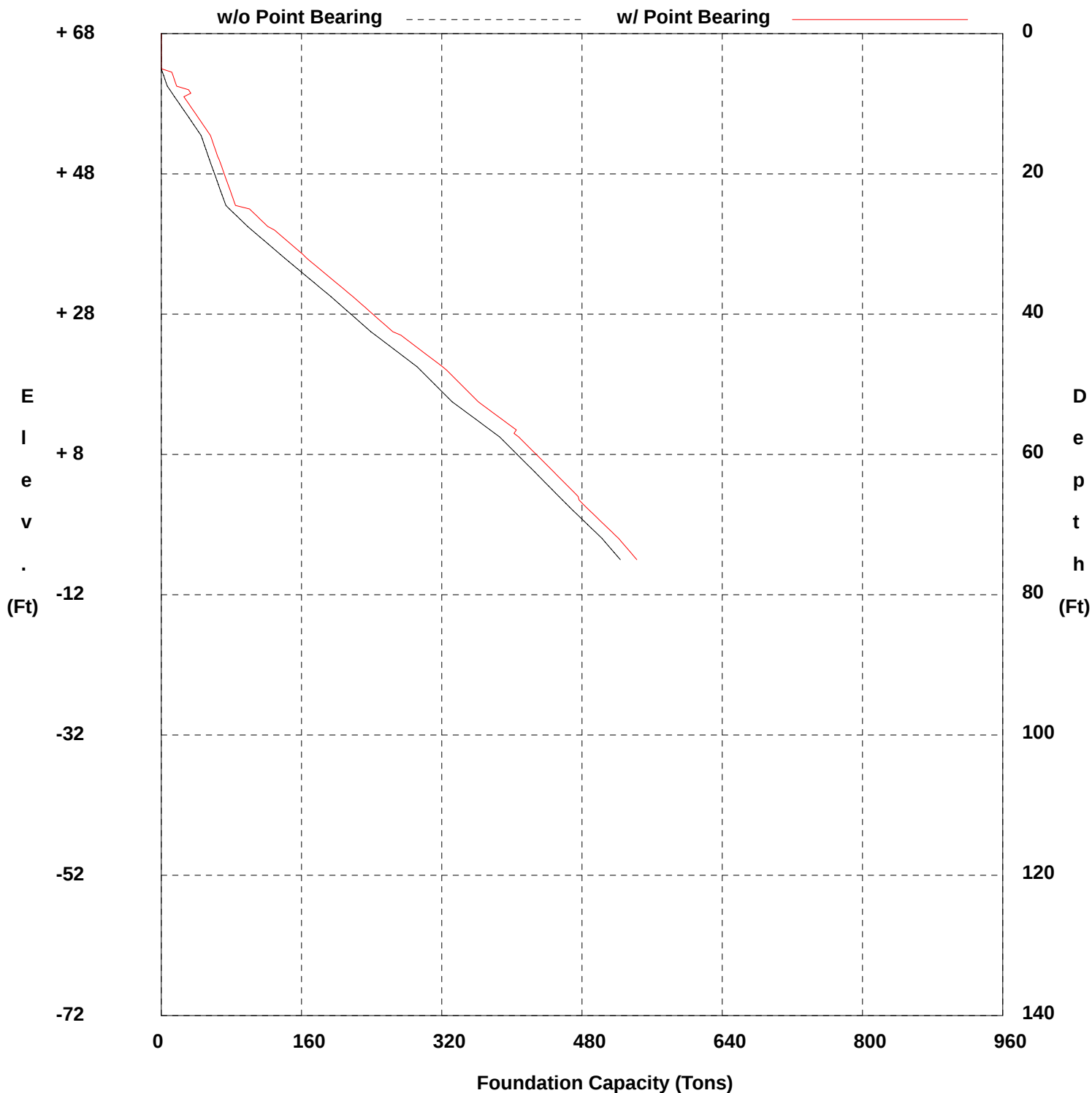
Hole B-BRG-13A-1
Structure
Station
Offset

District
Date 12/12/2018
Grnd. Elev. 68.00 ft
GW Elev. 50.00 ft

36 inch Drilled Shaft

+68 Top Hole Elevation
+63 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

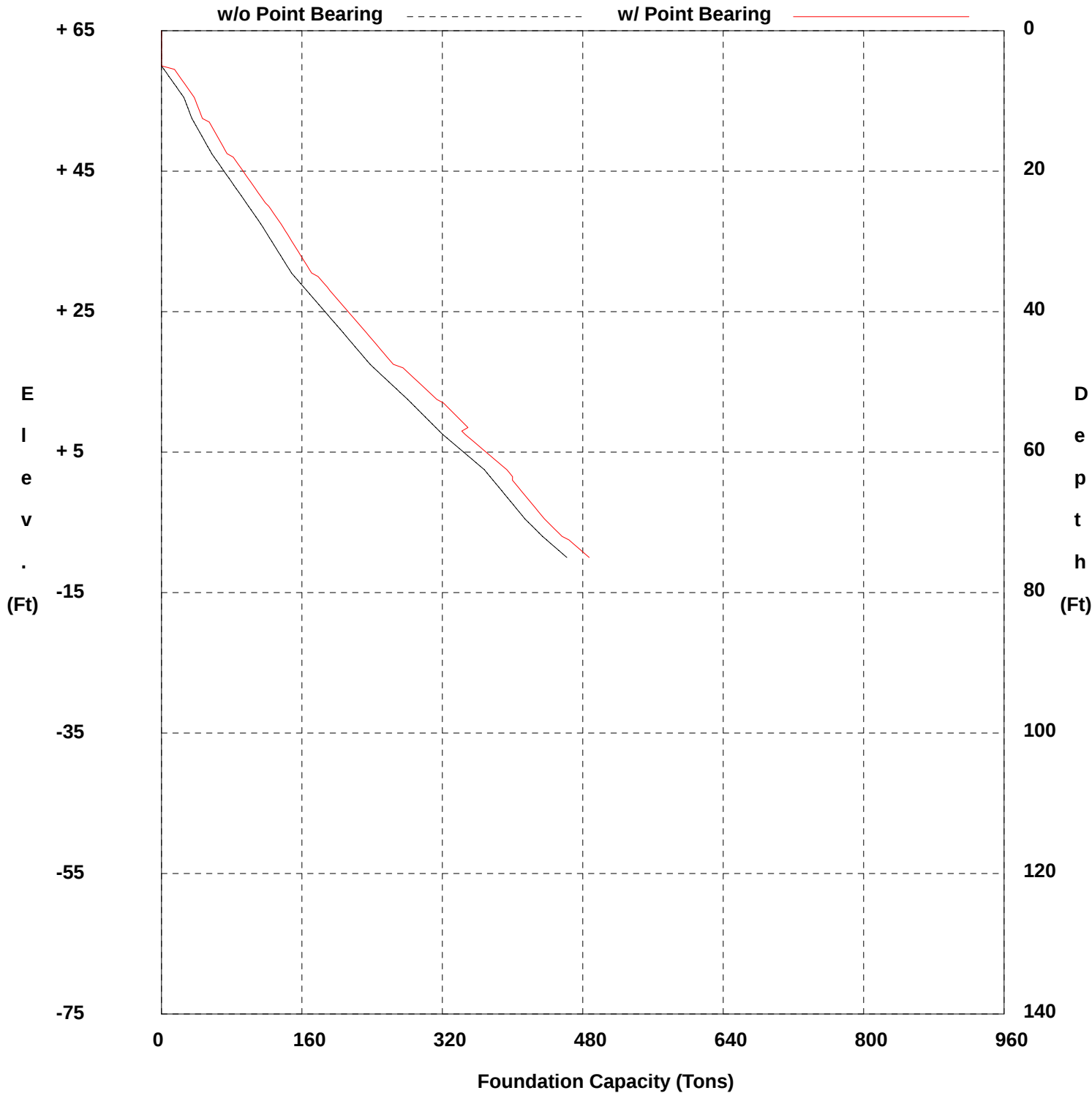
Hole B-BRG-14A-1
Structure
Station
Offset

District
Date 12/13/2018
Grnd. Elev. 65.00 ft
GW Elev. 46.00 ft

36 inch Drilled Shaft

+65 Top Hole Elevation
+60 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

Vista Bonita Rd.

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

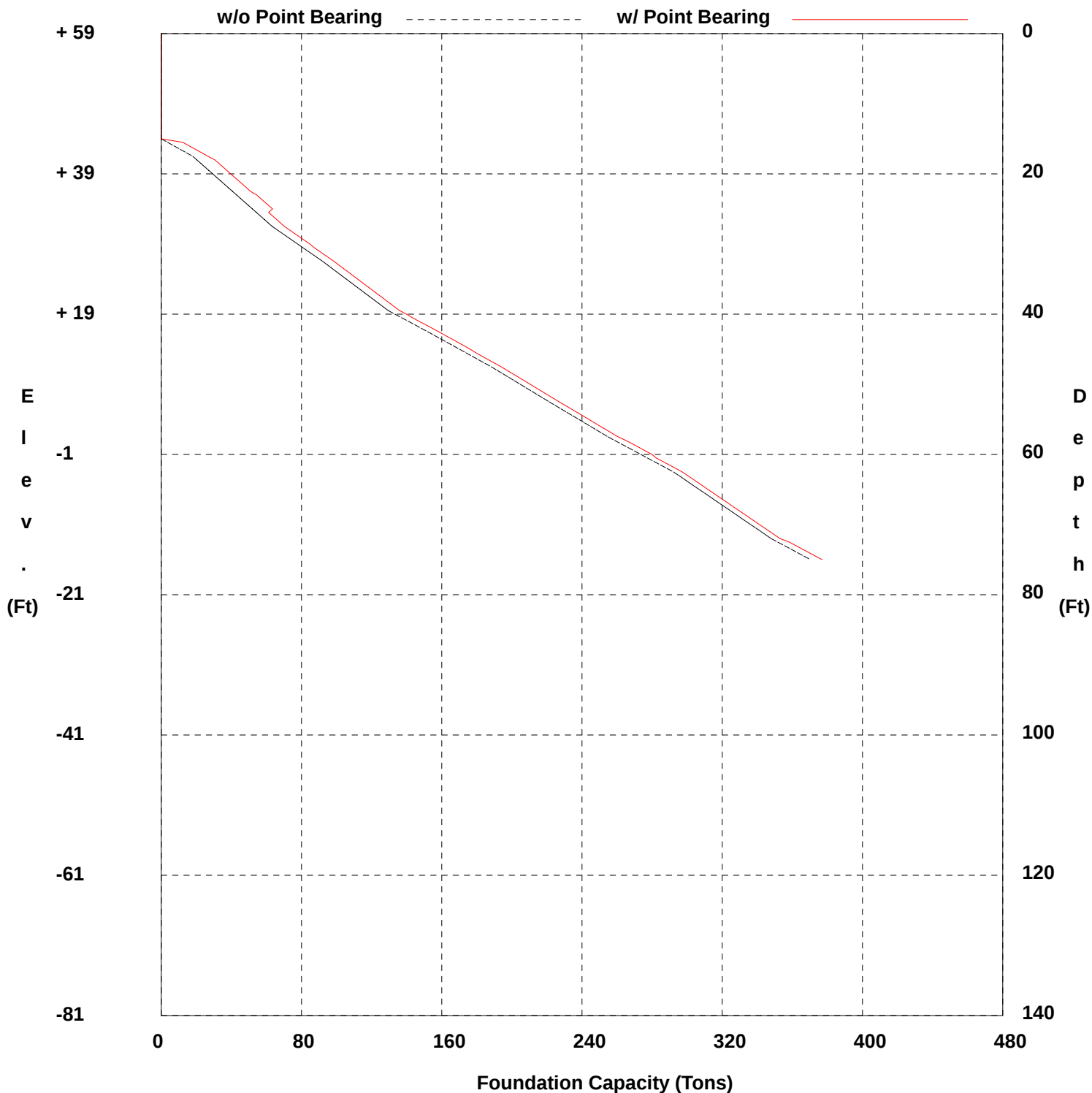
Hole B-BRG-13A-2
Structure
Station
Offset

District
Date 12/10/2018
Grnd. Elev. 59.00 ft
GW Elev. 53.00 ft

16 inch Square Pile

+59 Top Hole Elevation
+44 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

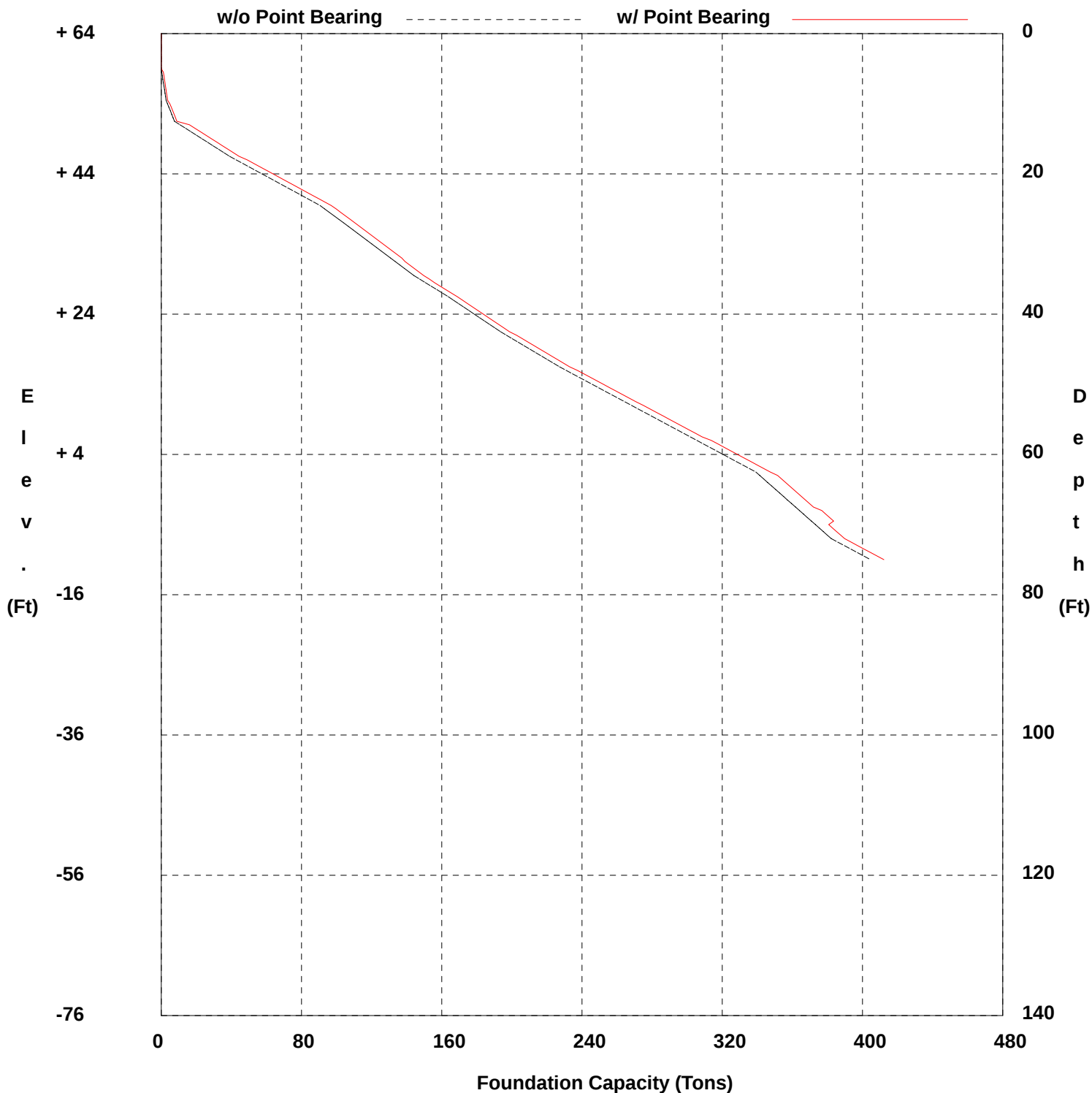
Hole B-BRG-14A-2
Structure
Station
Offset

District
Date 12/11/2018
Grnd. Elev. 64.00 ft
GW Elev. 56.00 ft

16 inch Square Pile

+64 Top Hole Elevation
+59 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

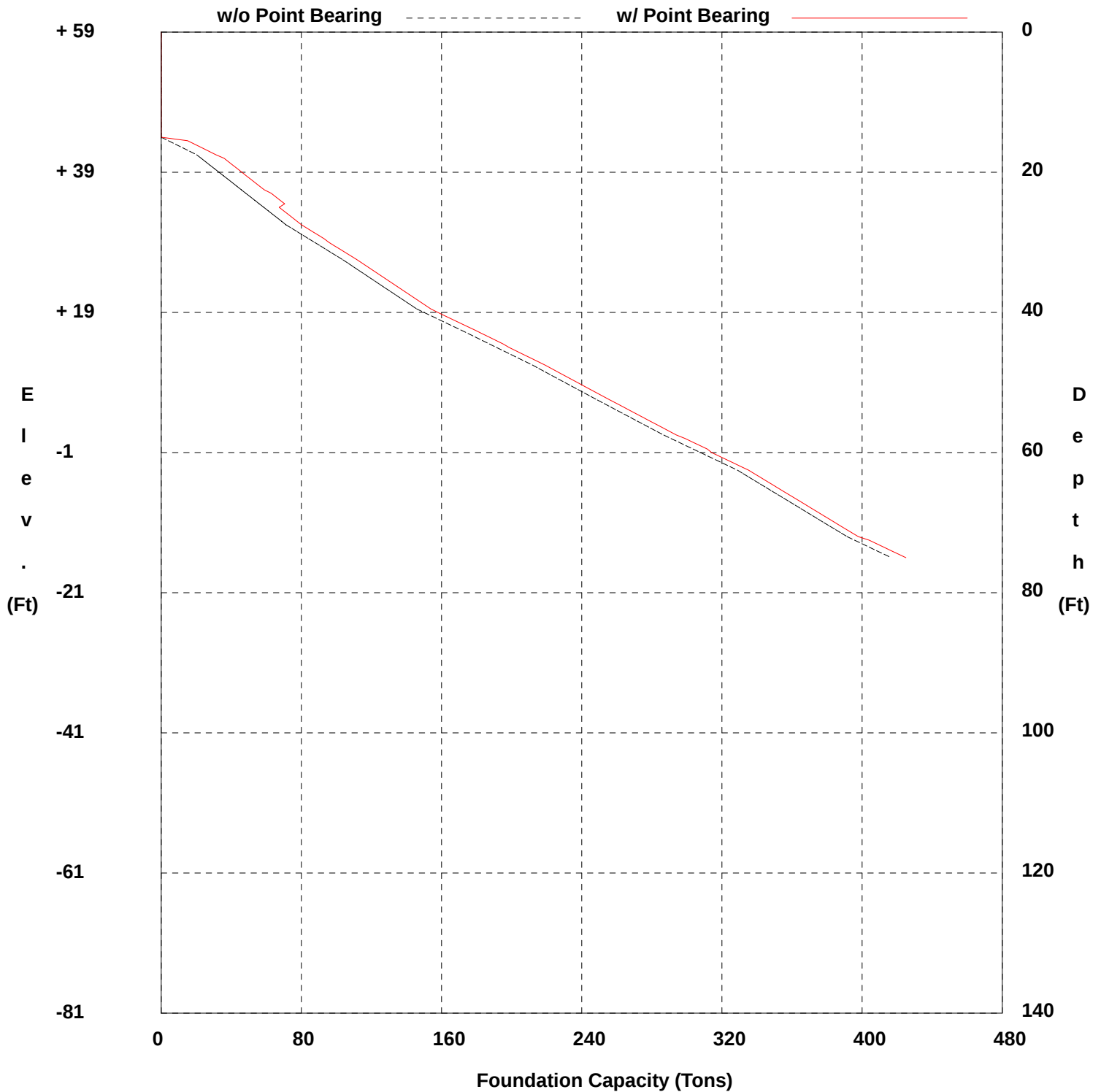
Hole B-BRG-13A-2
Structure
Station
Offset

District
Date 12/10/2018
Grnd. Elev. 59.00 ft
GW Elev. 53.00 ft

18 inch Square Pile

+59 Top Hole Elevation
+44 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

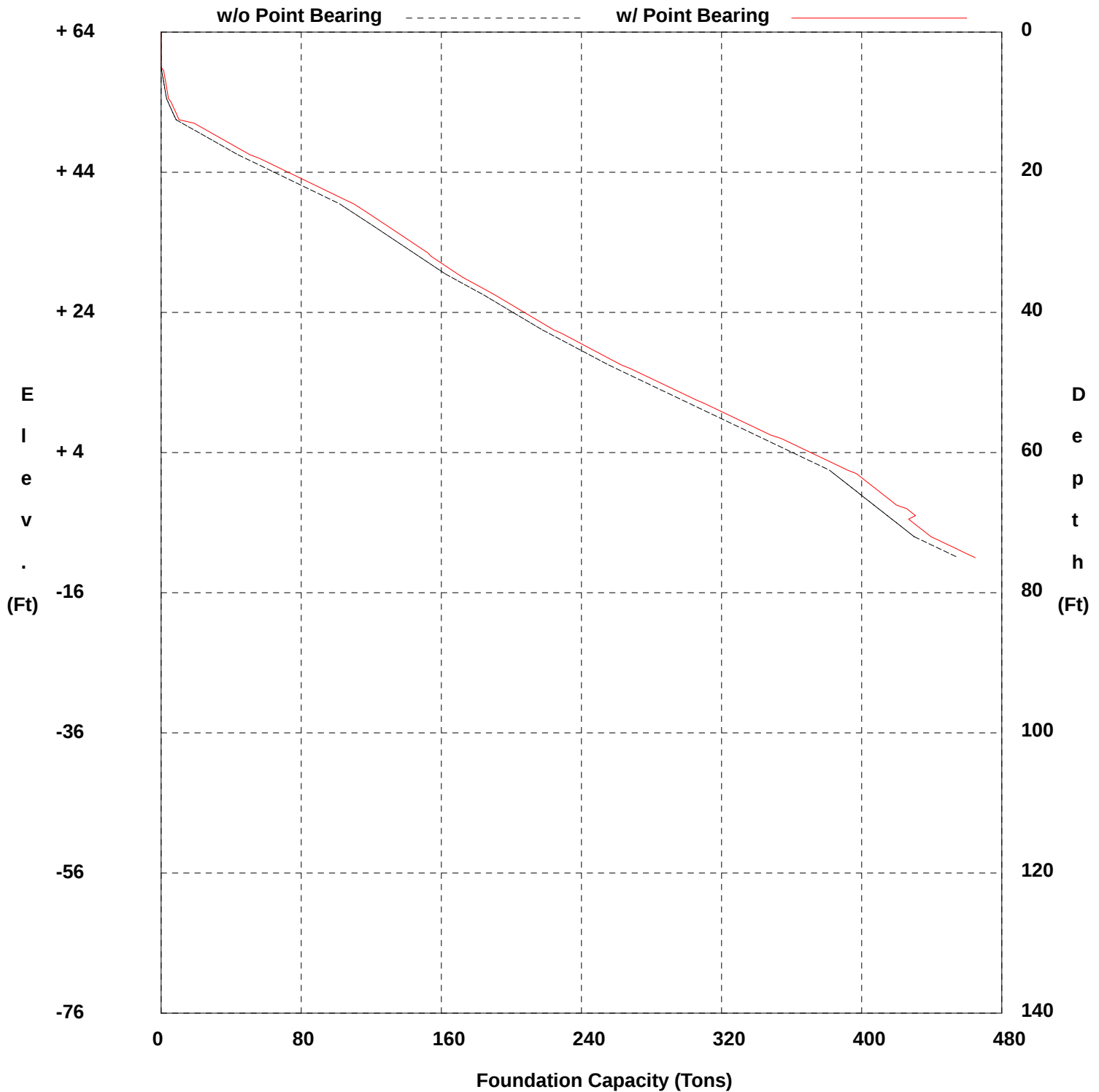
Hole B-BRG-14A-2
Structure
Station
Offset

District
Date 12/11/2018
Grnd. Elev. 64.00 ft
GW Elev. 56.00 ft

18 inch Square Pile

+64 Top Hole Elevation
+59 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

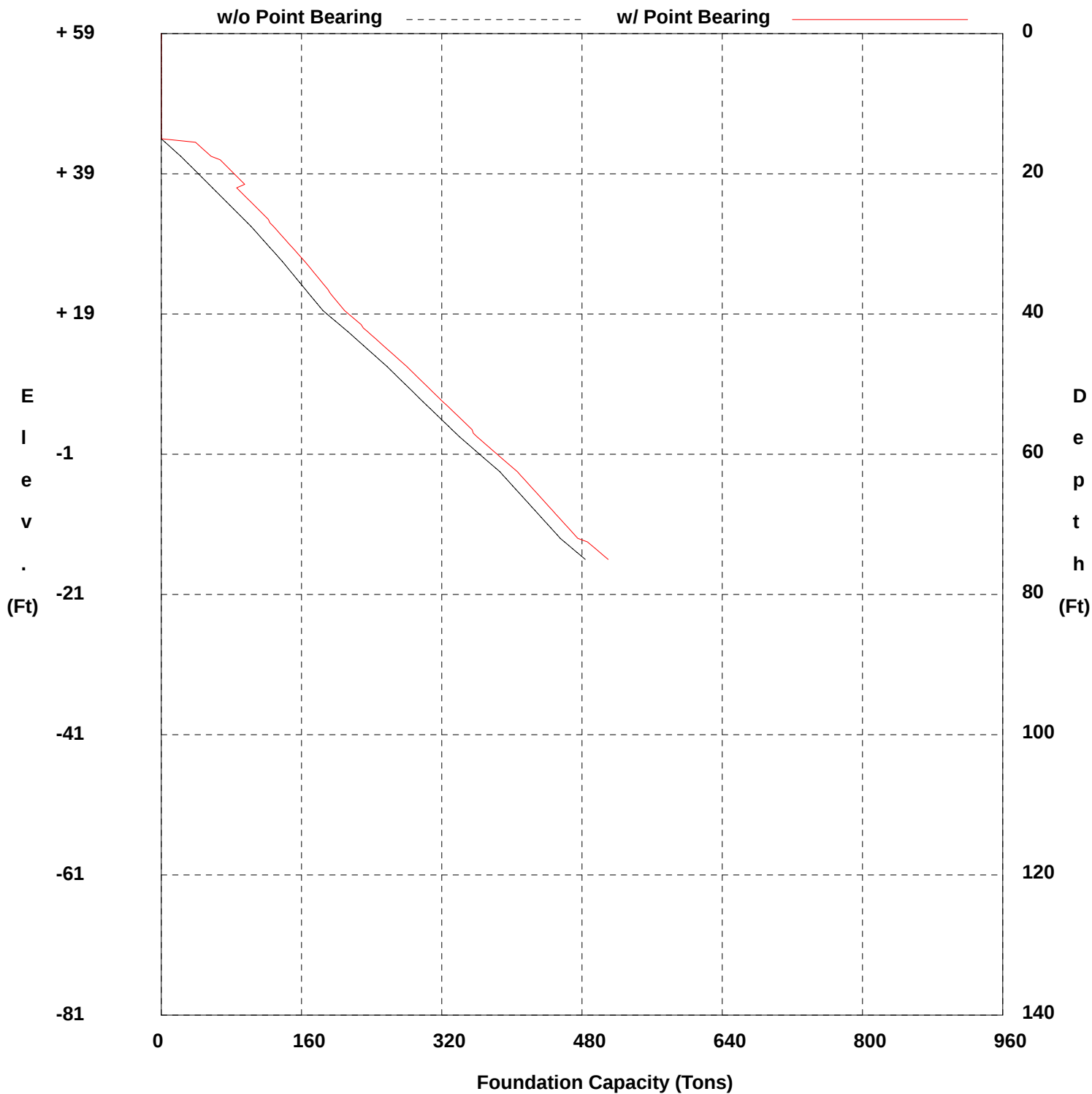
Hole B-BRG-13A-2
Structure
Station
Offset

District
Date 12/10/2018
Grnd. Elev. 59.00 ft
GW Elev. 53.00 ft

36 inch Drilled Shaft

+59 Top Hole Elevation
+44 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

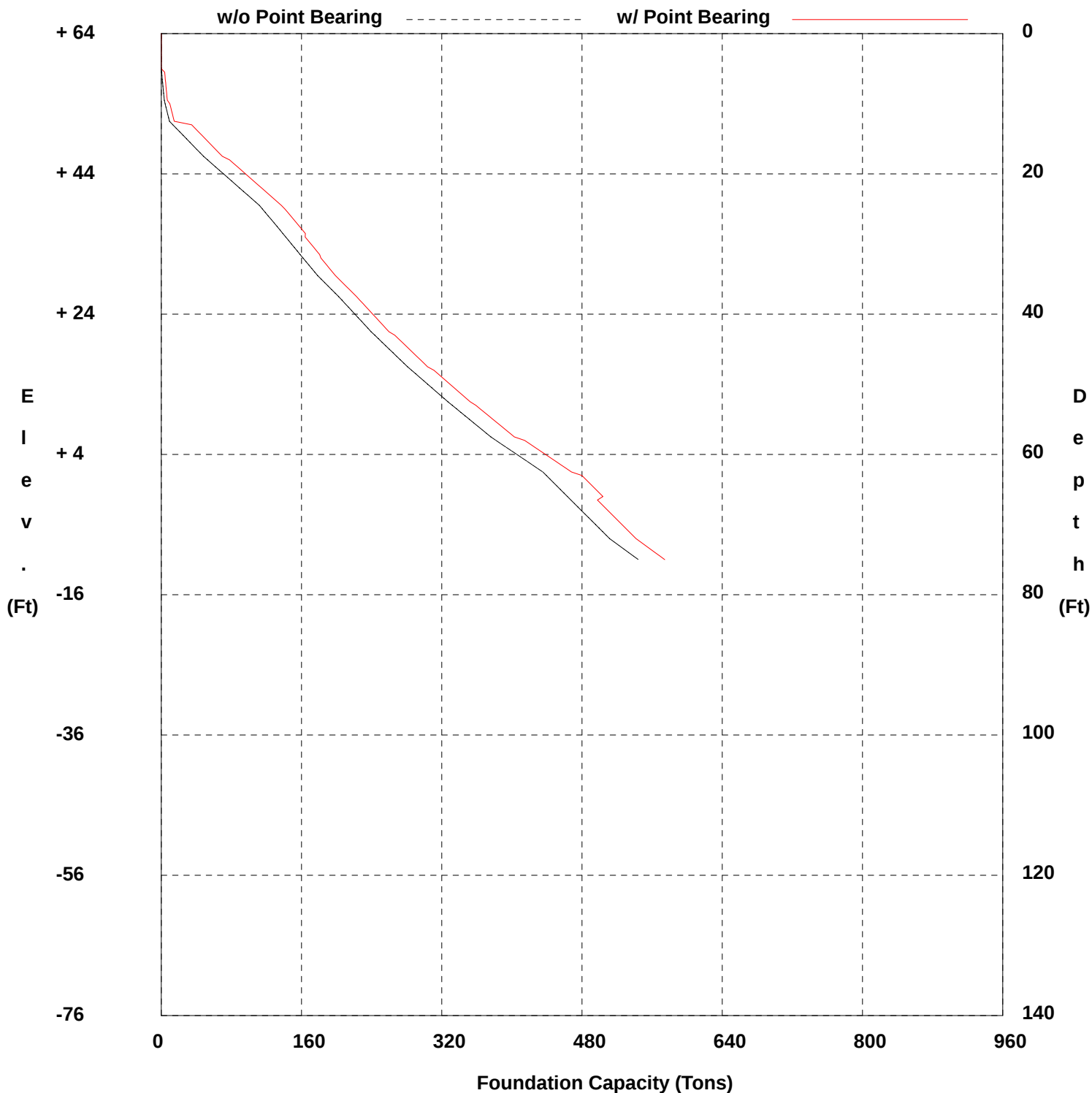
Hole B-BRG-14A-2
Structure
Station
Offset

District
Date 12/11/2018
Grnd. Elev. 64.00 ft
GW Elev. 56.00 ft

36 inch Drilled Shaft

+64 Top Hole Elevation
+59 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

12th Street

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

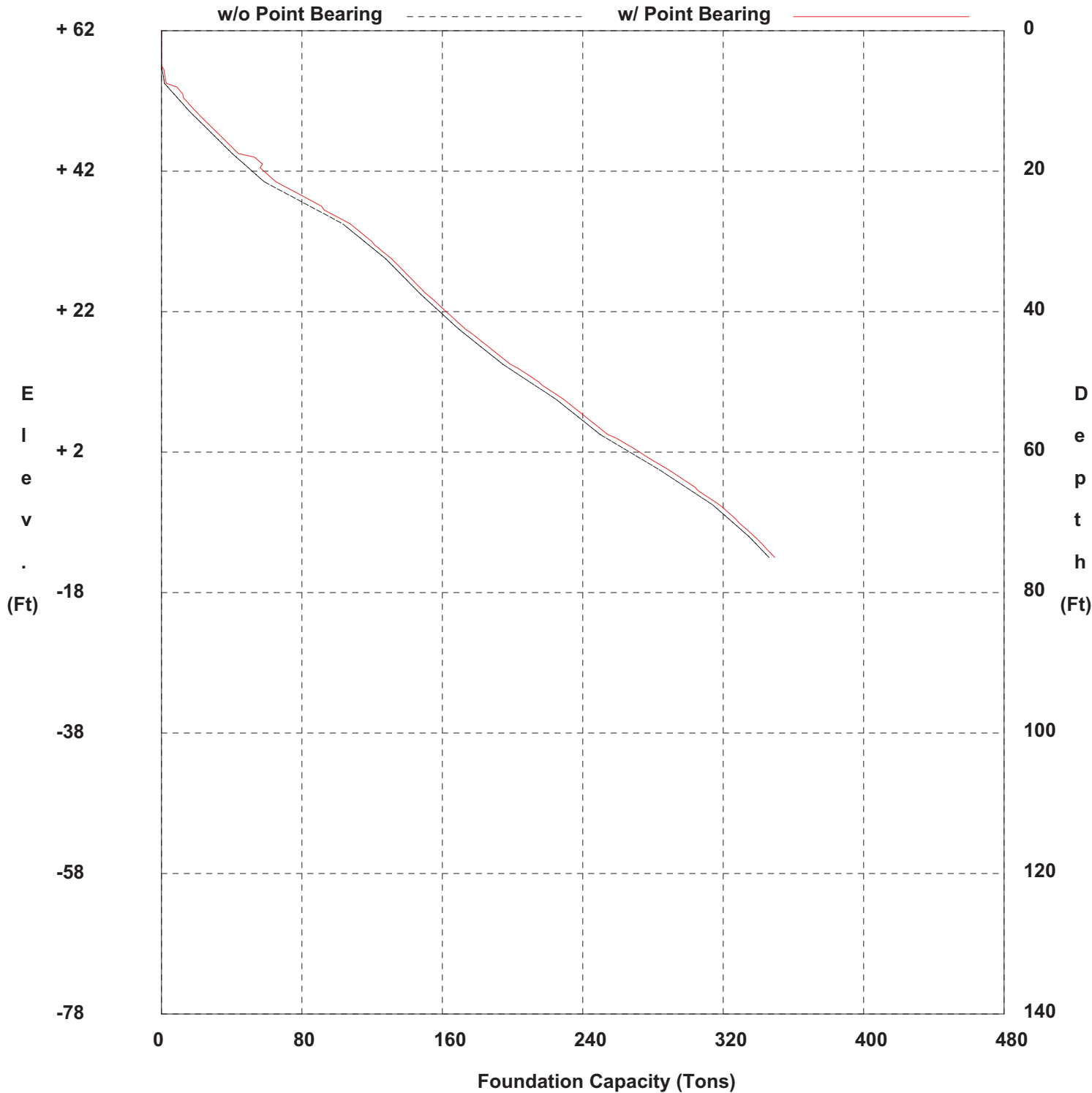
Hole BRG-15
Structure Bridge
Station
Offset

District
Date 3/17/2014
Grnd. Elev. 62.00 ft
GW Elev. 44.00 ft

16 inch Square Pile

+62 Top Hole Elevation
+57 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

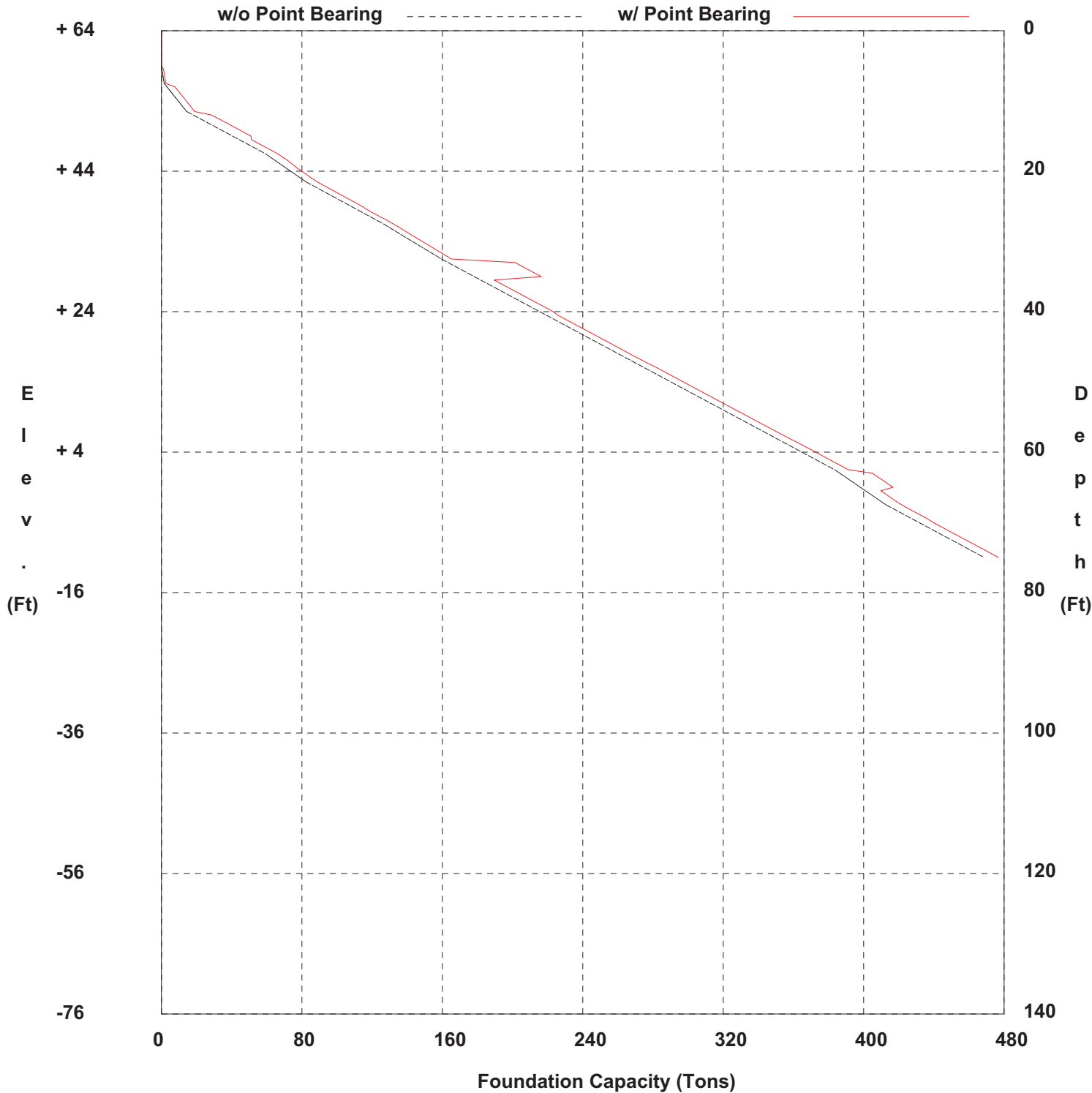
Hole BRG-16
Structure Bridge
Station
Offset

District
Date 3/19/2014
Grnd. Elev. 64.00 ft
GW Elev. 46.00 ft

16 inch Square Pile

+64 Top Hole Elevation
+59 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

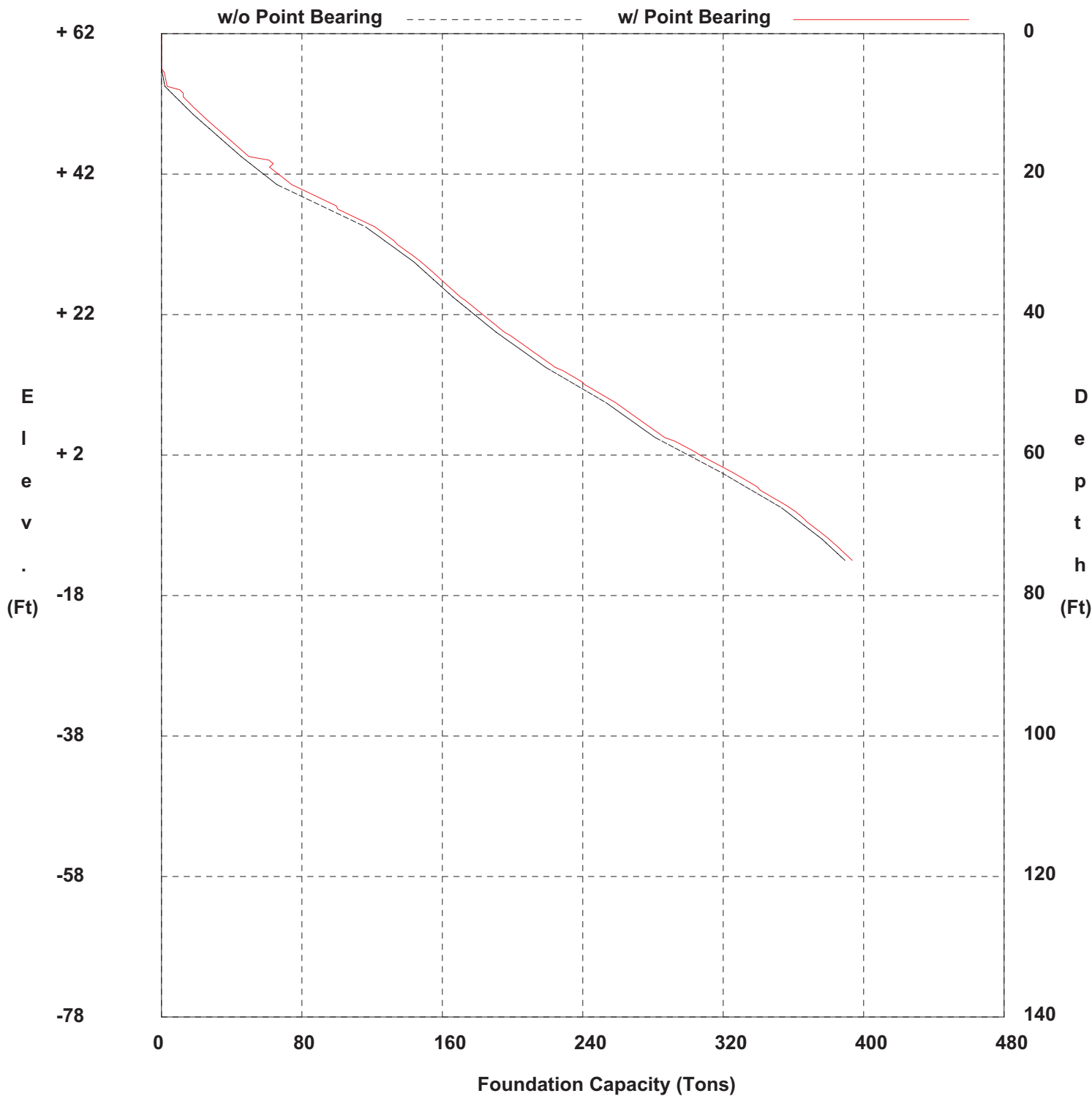
Hole BRG-15
Structure Bridge
Station
Offset

District
Date 3/17/2014
Grnd. Elev. 62.00 ft
GW Elev. 44.00 ft

18 inch Square Pile

+62 Top Hole Elevation
+57 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

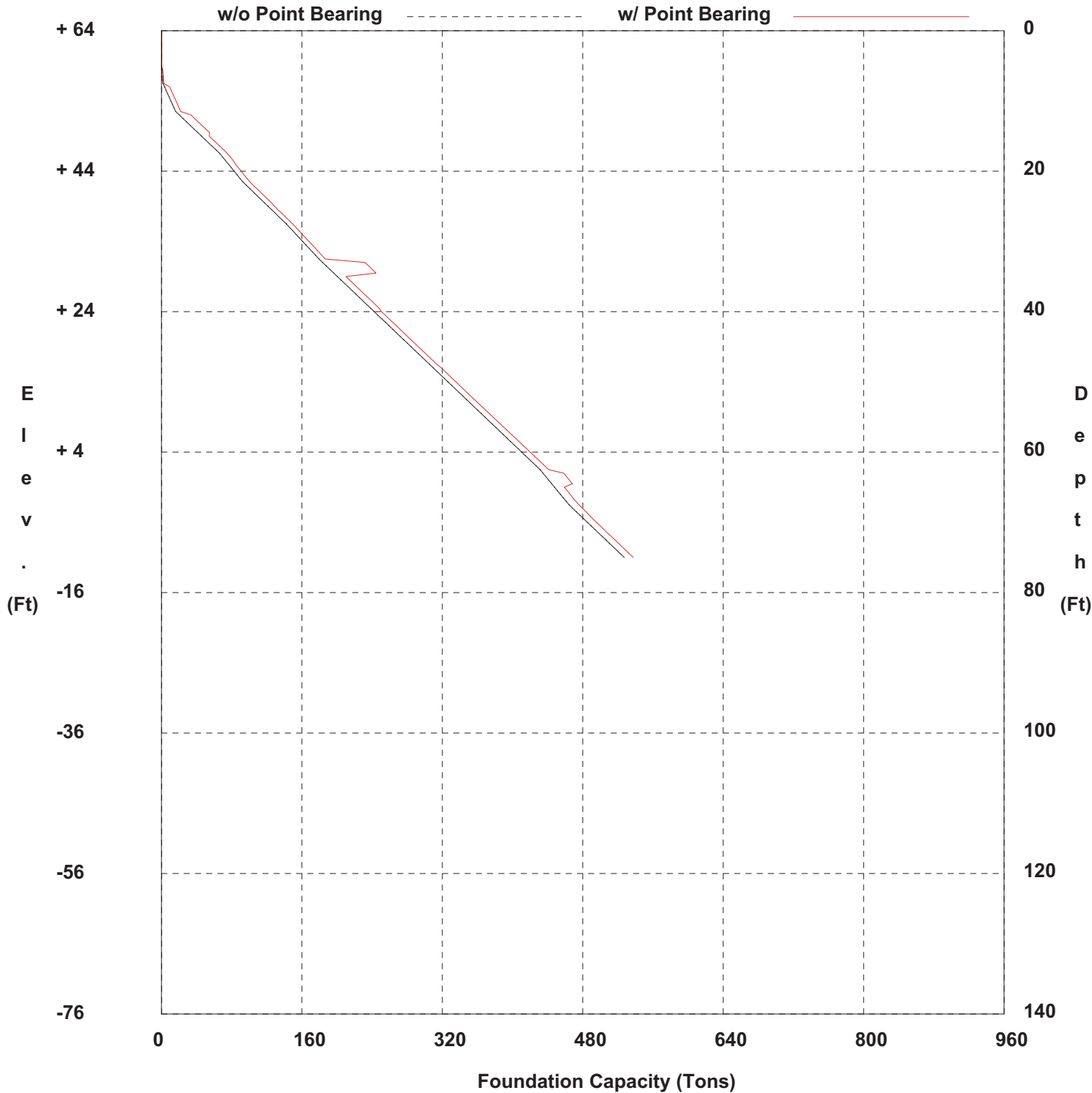
Hole BRG-16
Structure Bridge
Station
Offset

District
Date 3/19/2014
Grnd. Elev. 64.00 ft
GW Elev. 46.00 ft

18 inch Square Pile

+64 Top Hole Elevation
+59 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

Hole
Structure
Station
Offset

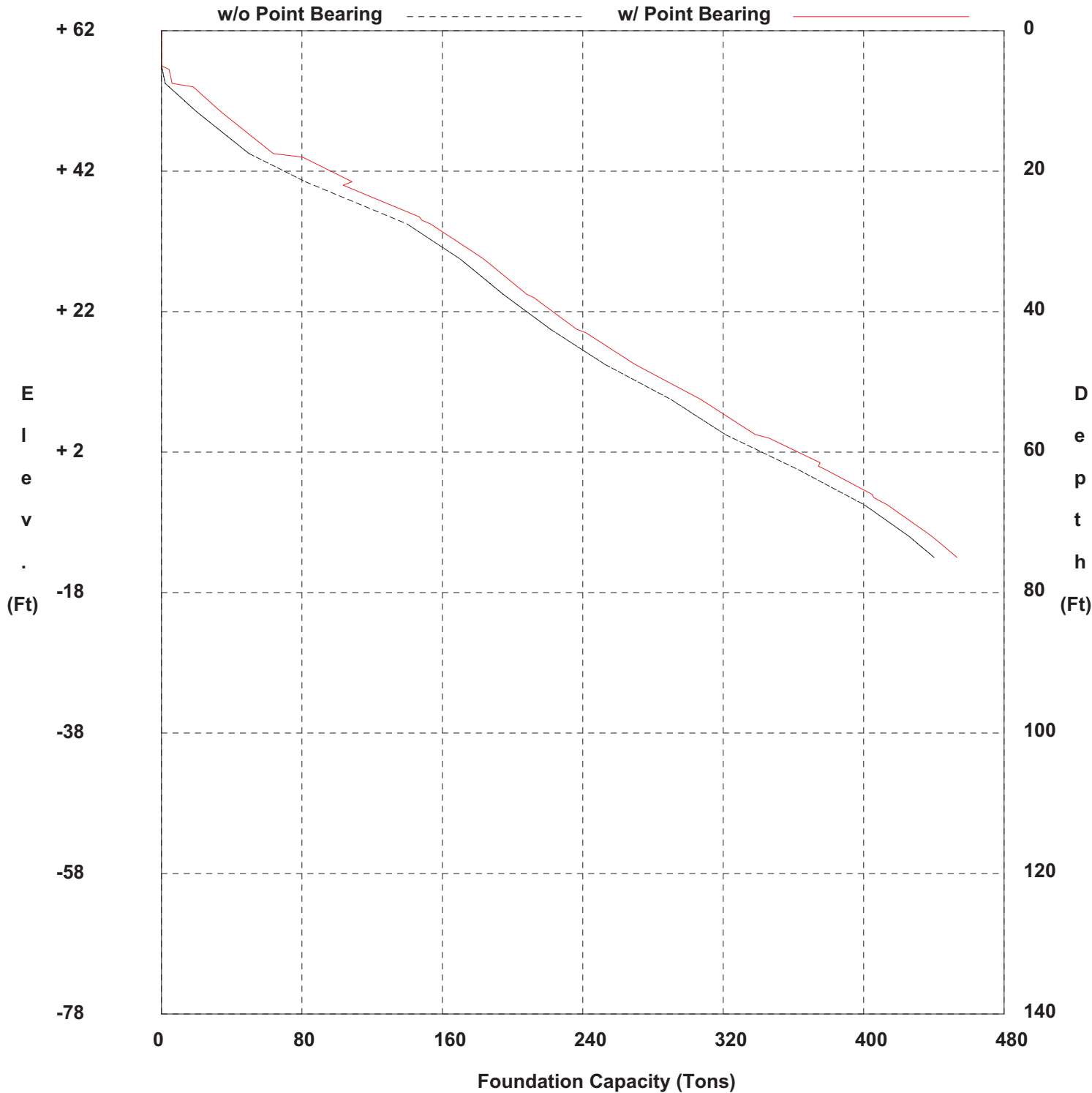
BRG-15
Bridge

District
Date 3/17/2014
Grnd. Elev. 62.00 ft
GW Elev. 44.00 ft

36 inch Drilled Shaft

+62 Top Hole Elevation
+57 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

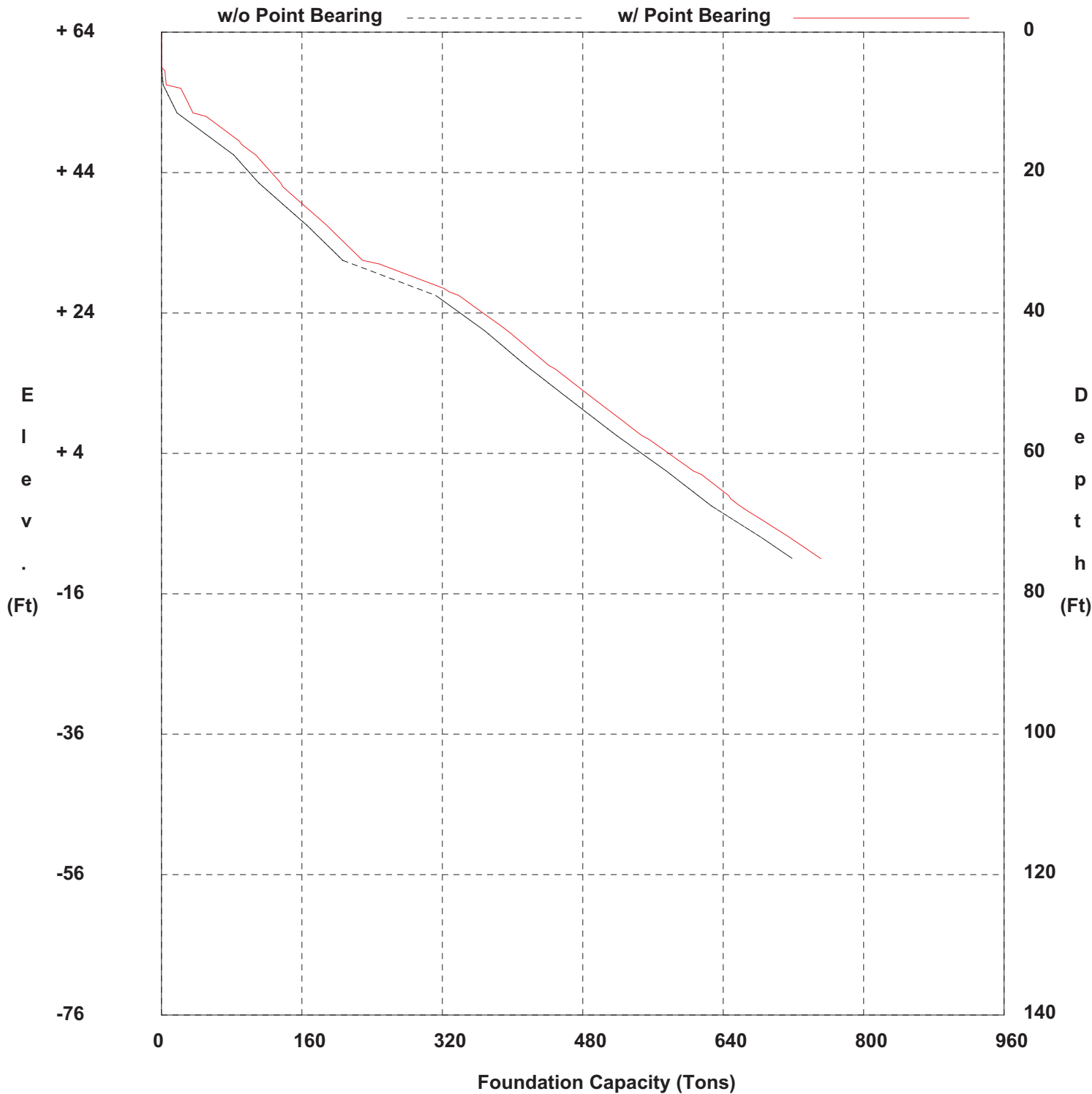
Hole BRG-16
Structure Bridge
Station
Offset

District
Date 3/19/2014
Grnd. Elev. 64.00 ft
GW Elev. 46.00 ft

36 inch Drilled Shaft

+64 Top Hole Elevation
+59 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

Bucy Rd.

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

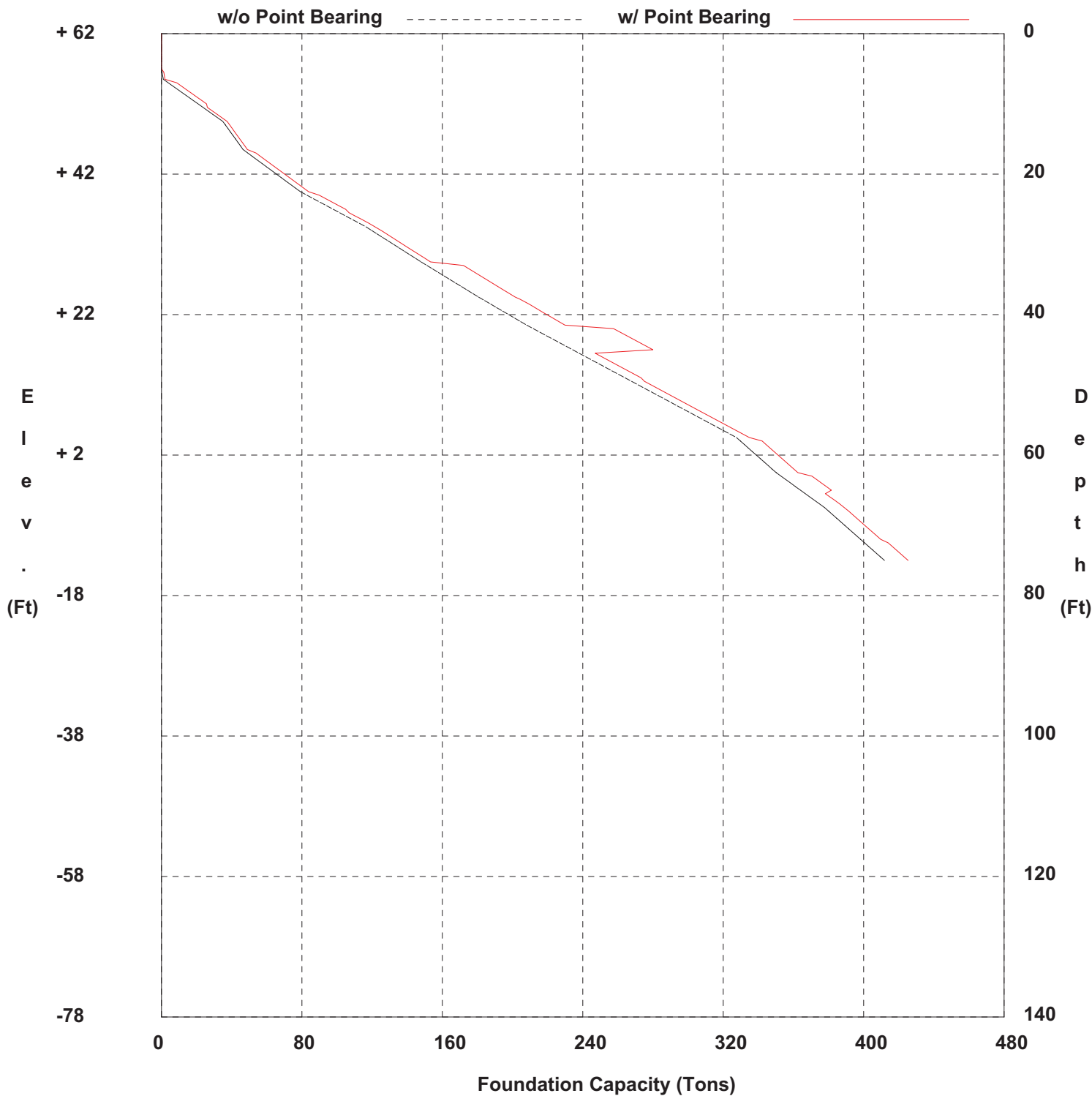
Hole BRG-17
Structure Bridge
Station
Offset

District
Date 3/18/2014
Grnd. Elev. 62.00 ft
GW Elev. 29.00 ft

16 inch Square Pile

+62 Top Hole Elevation
+57 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

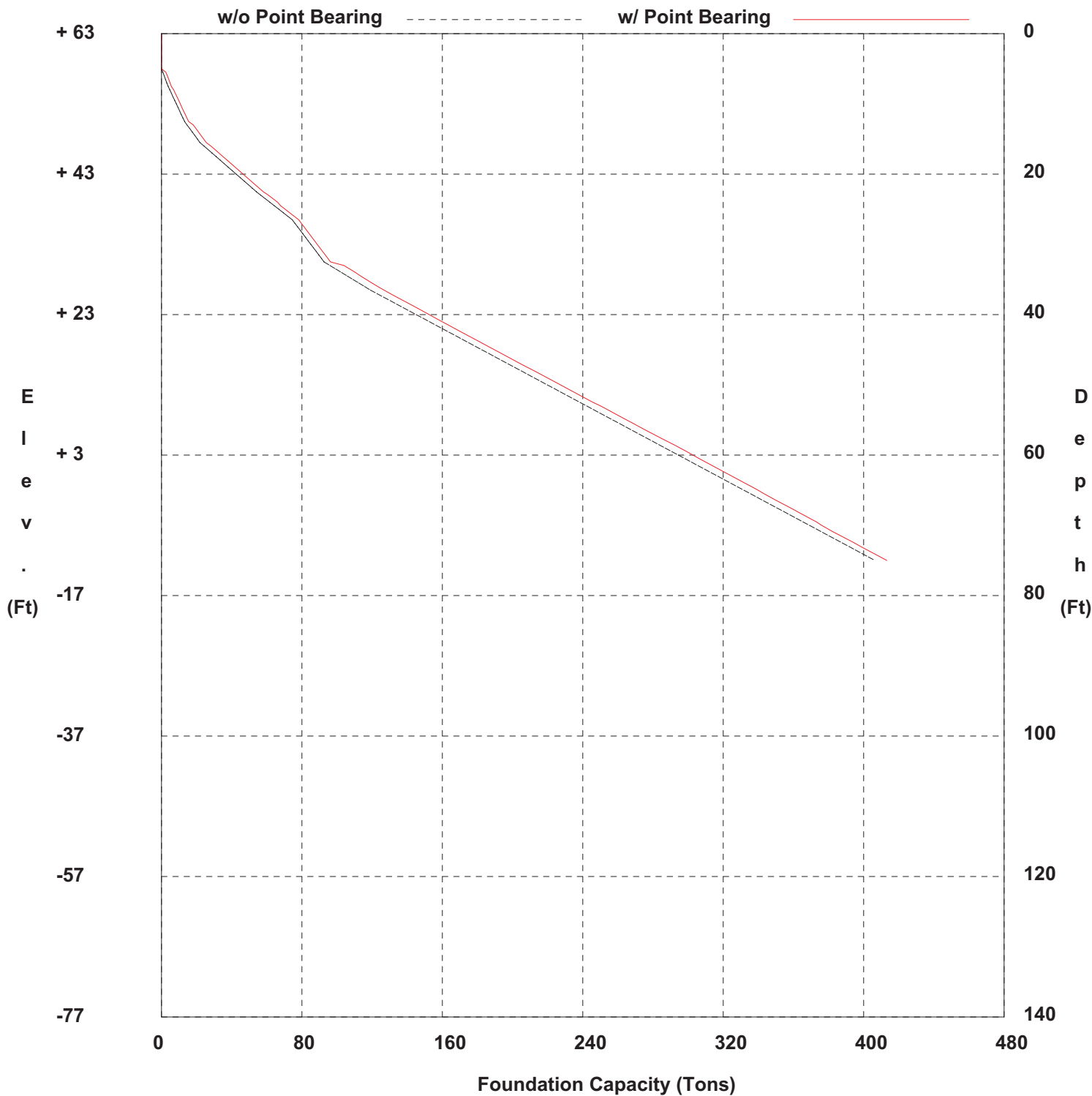
Hole BRG-18
Structure Bridge
Station
Offset

District
Date 3/18/2014
Grnd. Elev. 63.00 ft
GW Elev. 33.00 ft

16 inch Square Pile

+63 Top Hole Elevation
+58 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

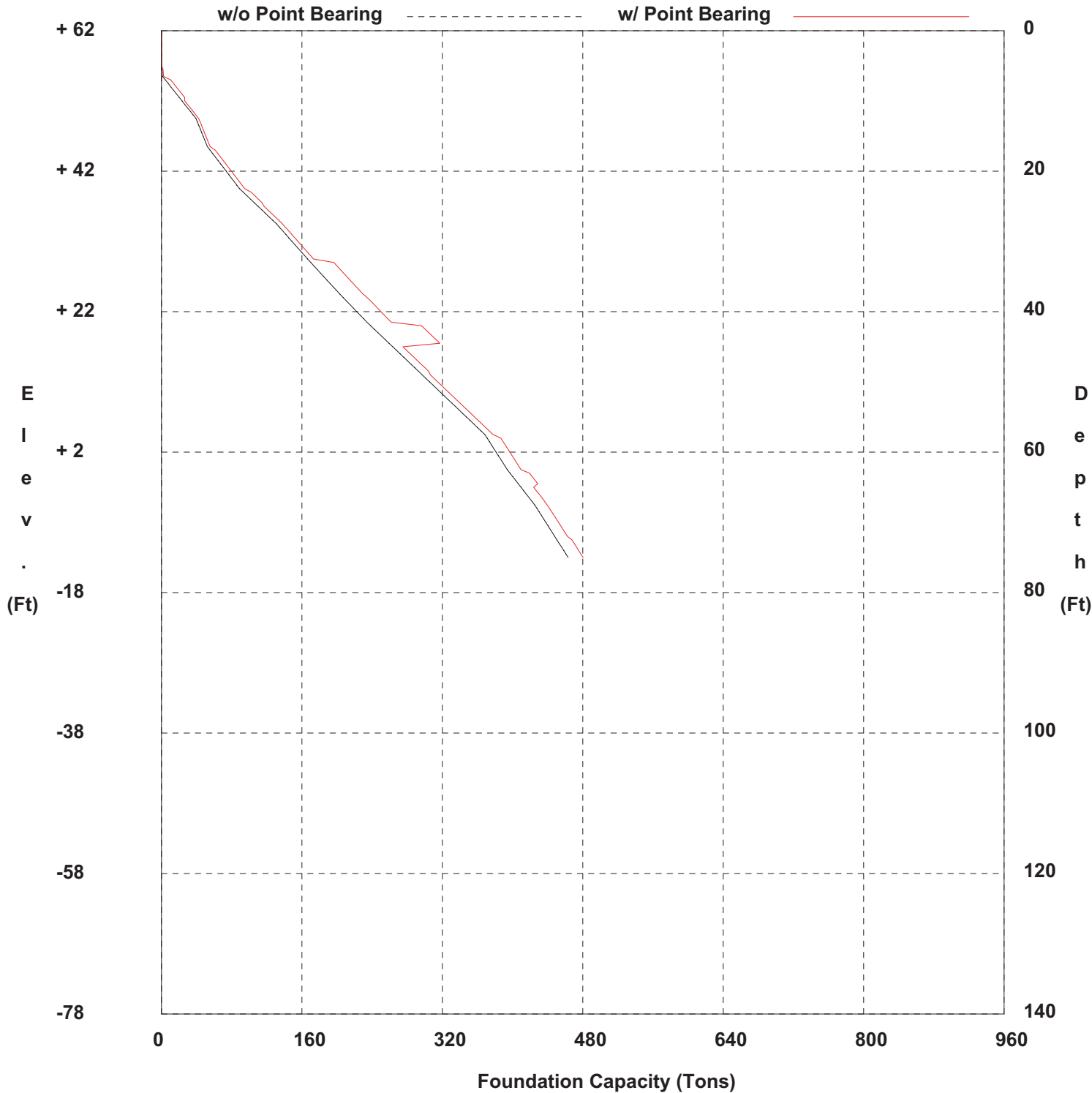
Hole BRG-17
Structure Bridge
Station
Offset

District
Date 3/18/2014
Grnd. Elev. 62.00 ft
GW Elev. 29.00 ft

18 inch Square Pile

+62 Top Hole Elevation
+57 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

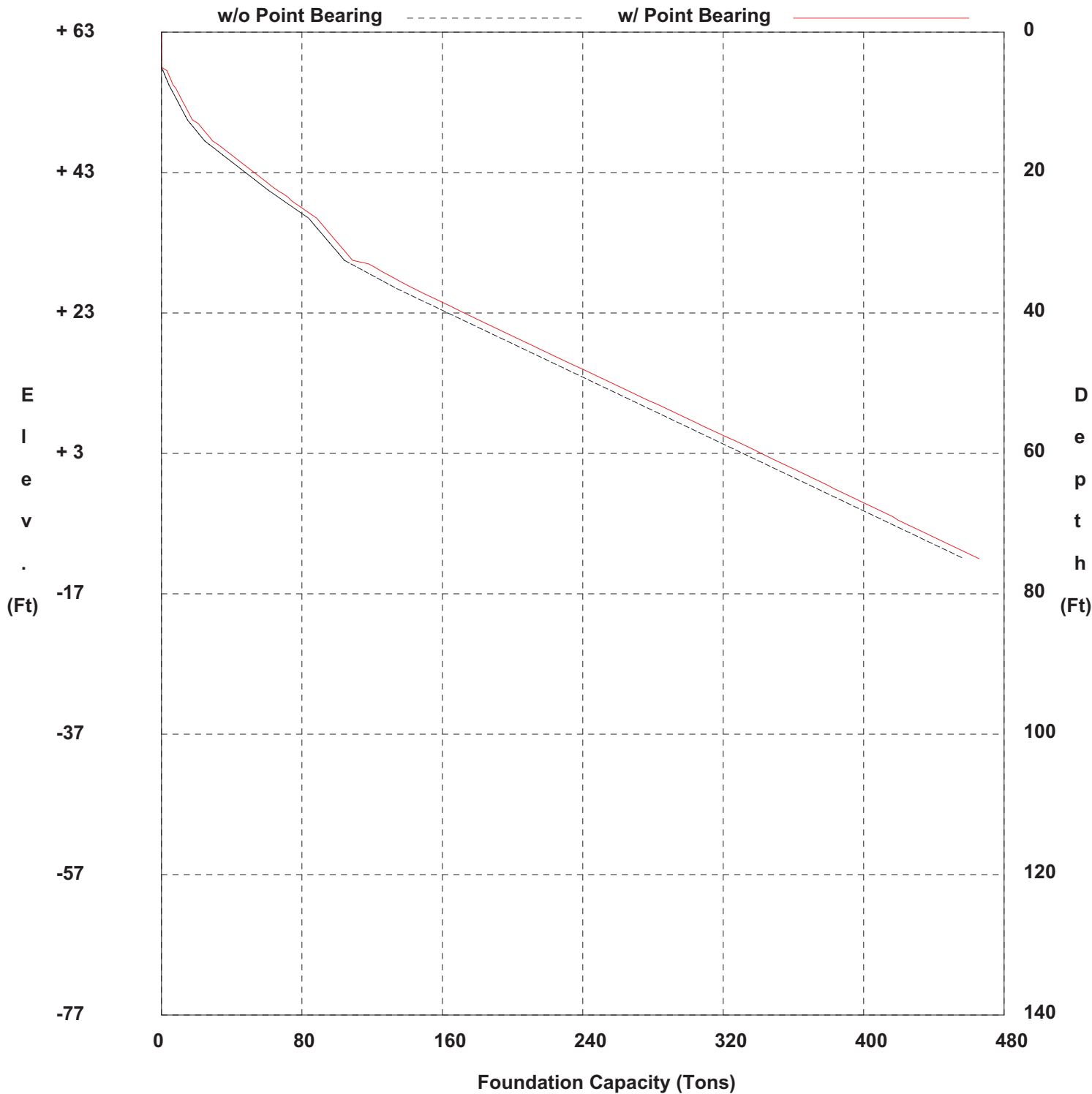
Hole BRG-18
Structure Bridge
Station
Offset

District
Date 3/18/2014
Grnd. Elev. 63.00 ft
GW Elev. 33.00 ft

18 inch Square Pile

+63 Top Hole Elevation
+58 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

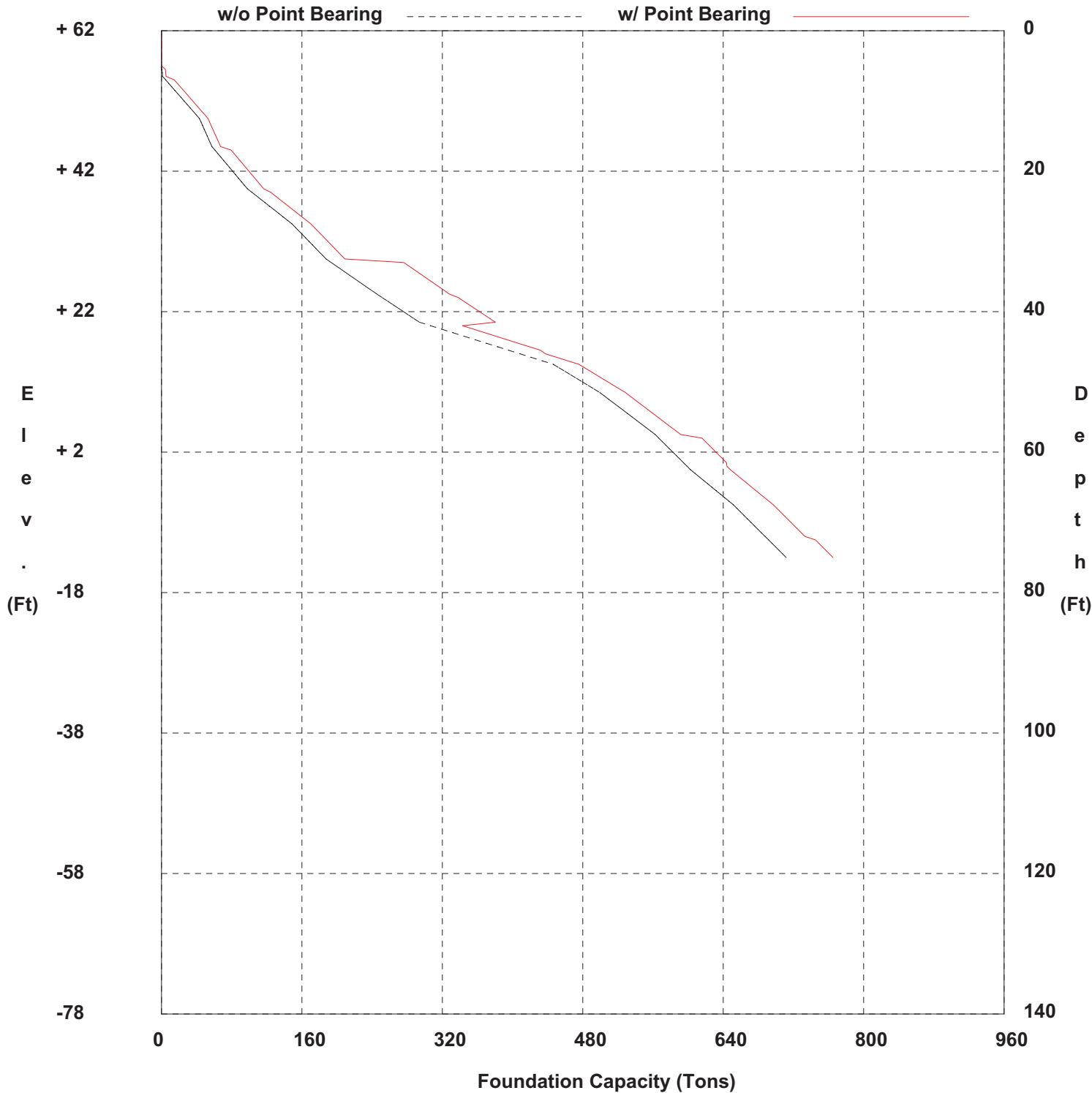
Hole BRG-17
Structure Bridge
Station
Offset

District
Date 3/18/2014
Grnd. Elev. 62.00 ft
GW Elev. 29.00 ft

36 inch Drilled Shaft

+62 Top Hole Elevation
+57 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

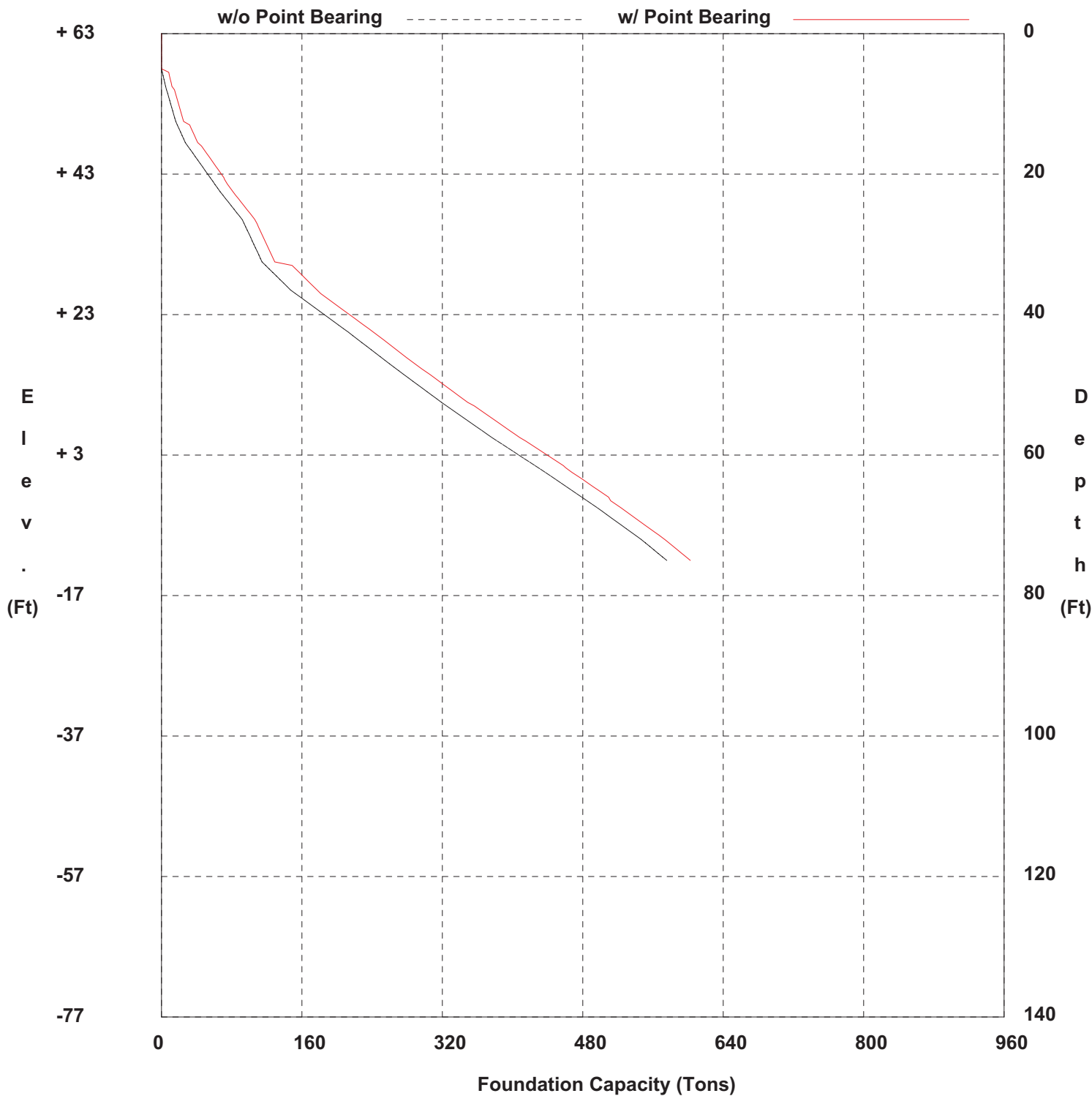
Hole BRG-18
Structure Bridge
Station
Offset

District
Date 3/18/2014
Grnd. Elev. 63.00 ft
GW Elev. 33.00 ft

36 inch Drilled Shaft

+63 Top Hole Elevation
+58 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

FM 490

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

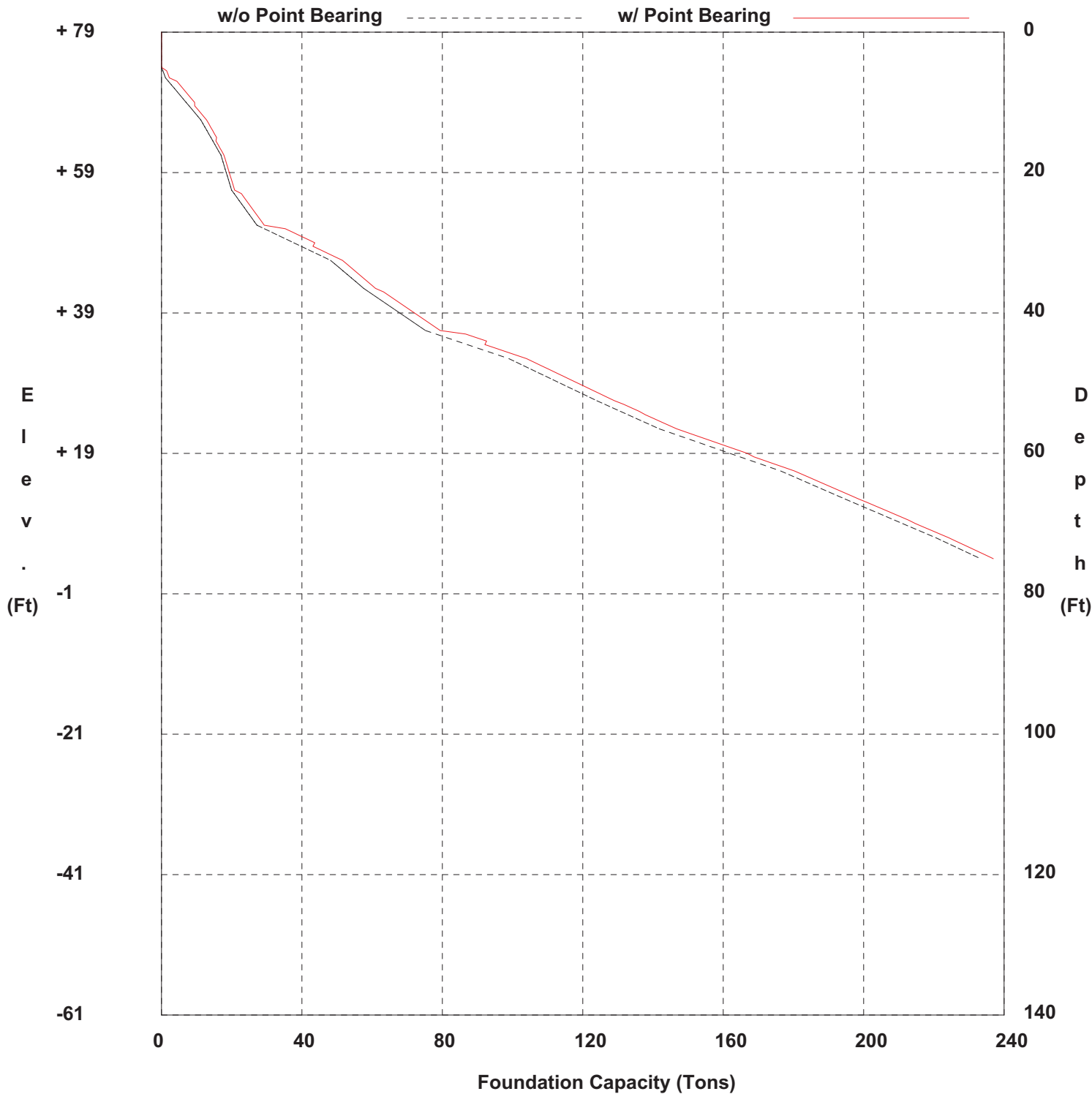
Hole BRG-19
Structure Bridge
Station
Offset

District
Date 03/27/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

16 inch Square Pile

+79 Top Hole Elevation
+74 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

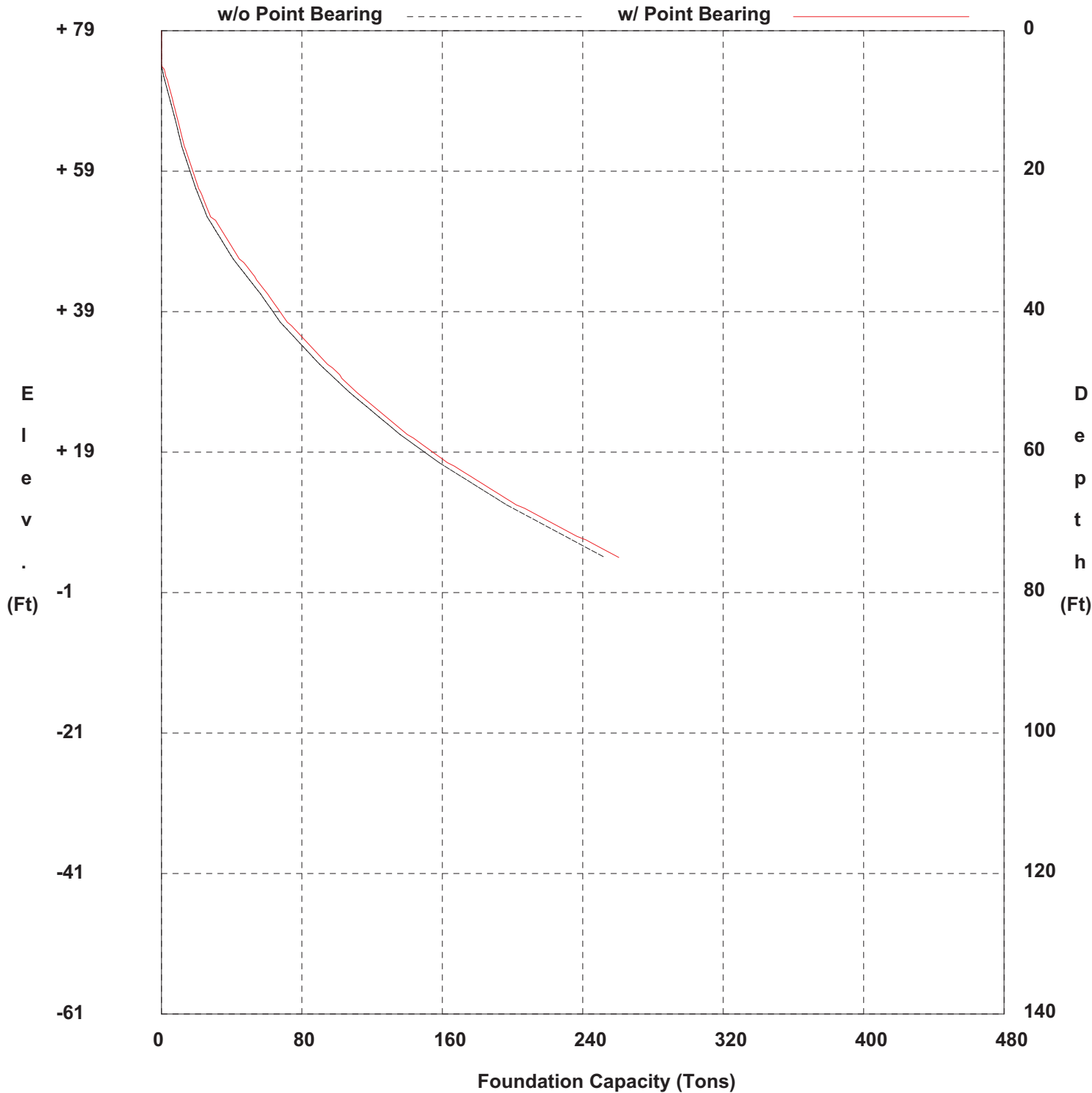
Hole BRG-20
Structure
Station
Offset

District
Date 2/28/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

16 inch Square Pile

+79 Top Hole Elevation
+74 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

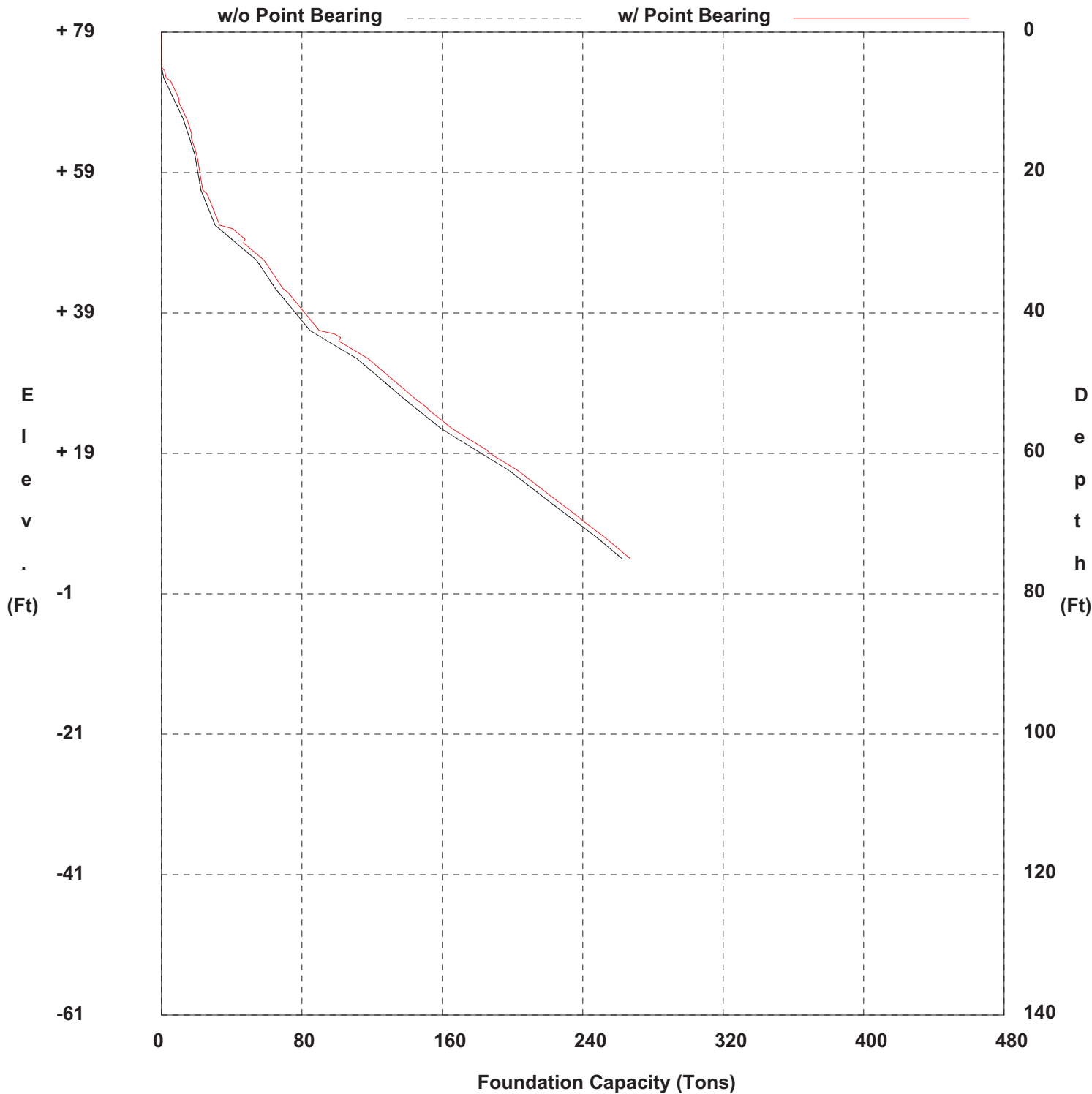
Hole BRG-19
Structure Bridge
Station
Offset

District
Date 03/27/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

18 inch Square Pile

+79 Top Hole Elevation
+74 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

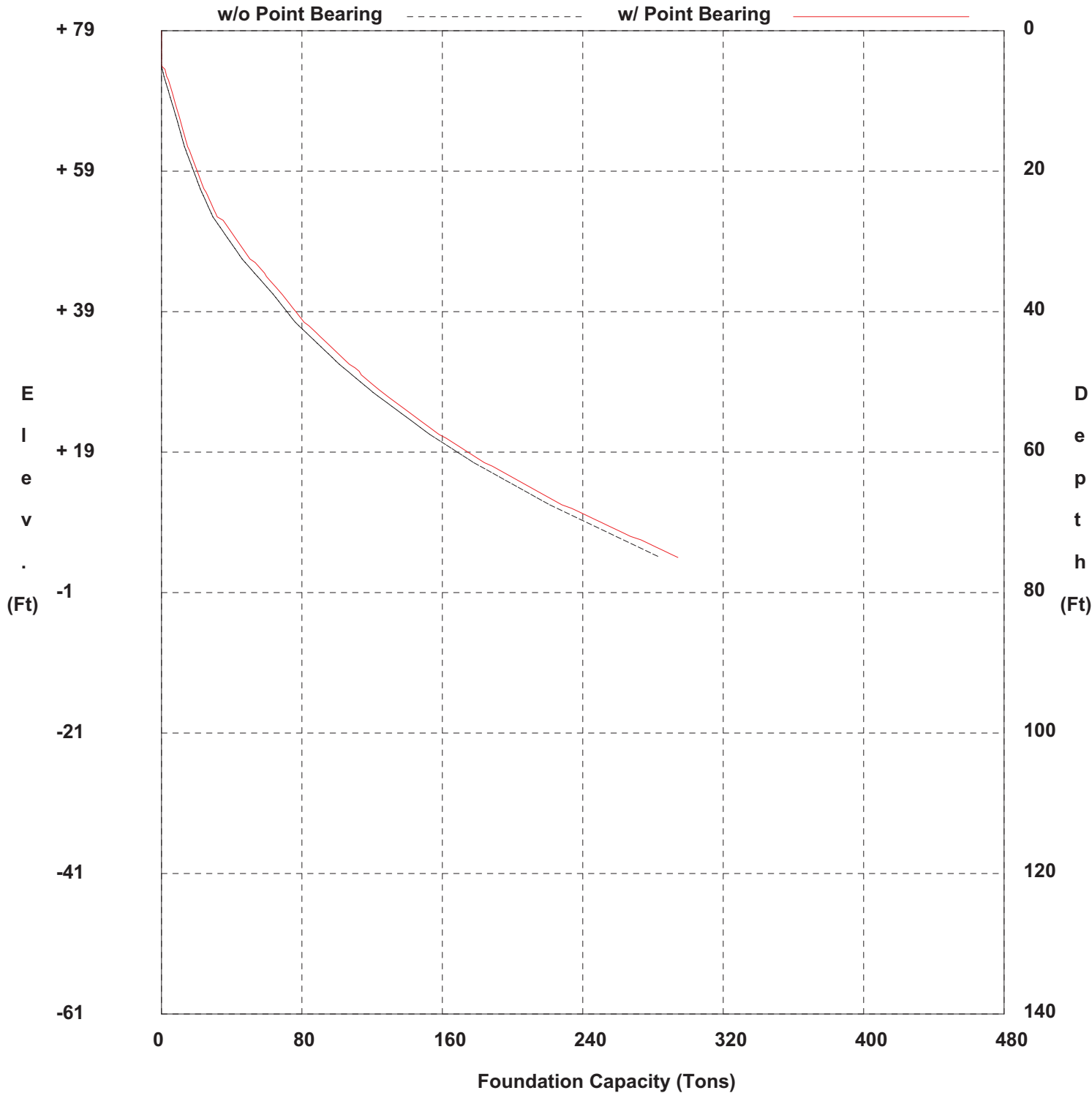
Hole BRG-20
Structure
Station
Offset

District
Date 2/28/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

18 inch Square Pile

+79 Top Hole Elevation
+74 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

Hole
Structure
Station
Offset

BRG-19
Bridge

District
Date 03/27/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

36 inch Drilled Shaft

+79 Top Hole Elevation

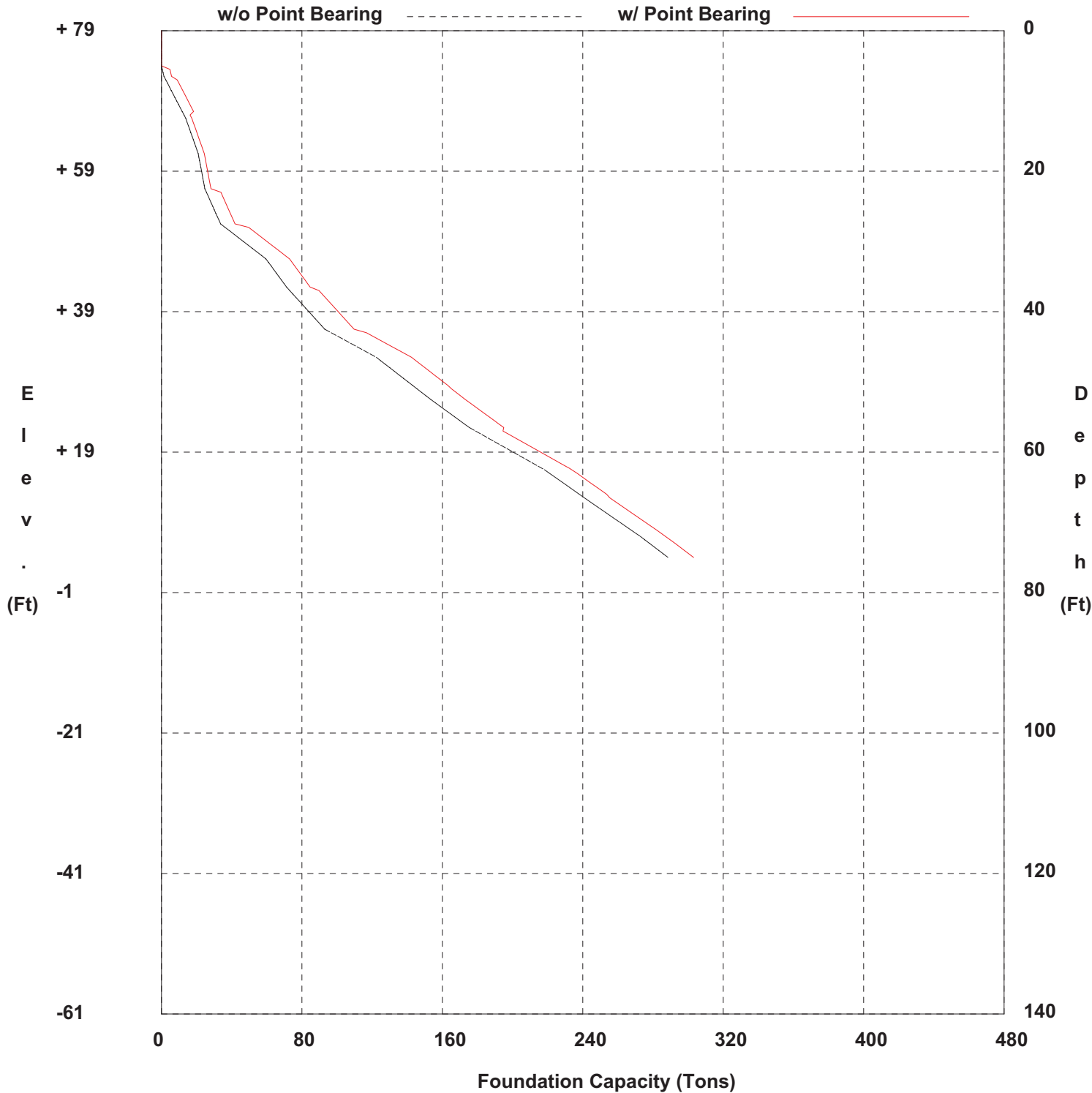
+74 Disregard Elevation

Disregard above hard strata disabled

Pb: 2 Diameters Below Tip Checked

TCP Capacity Values Used

0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

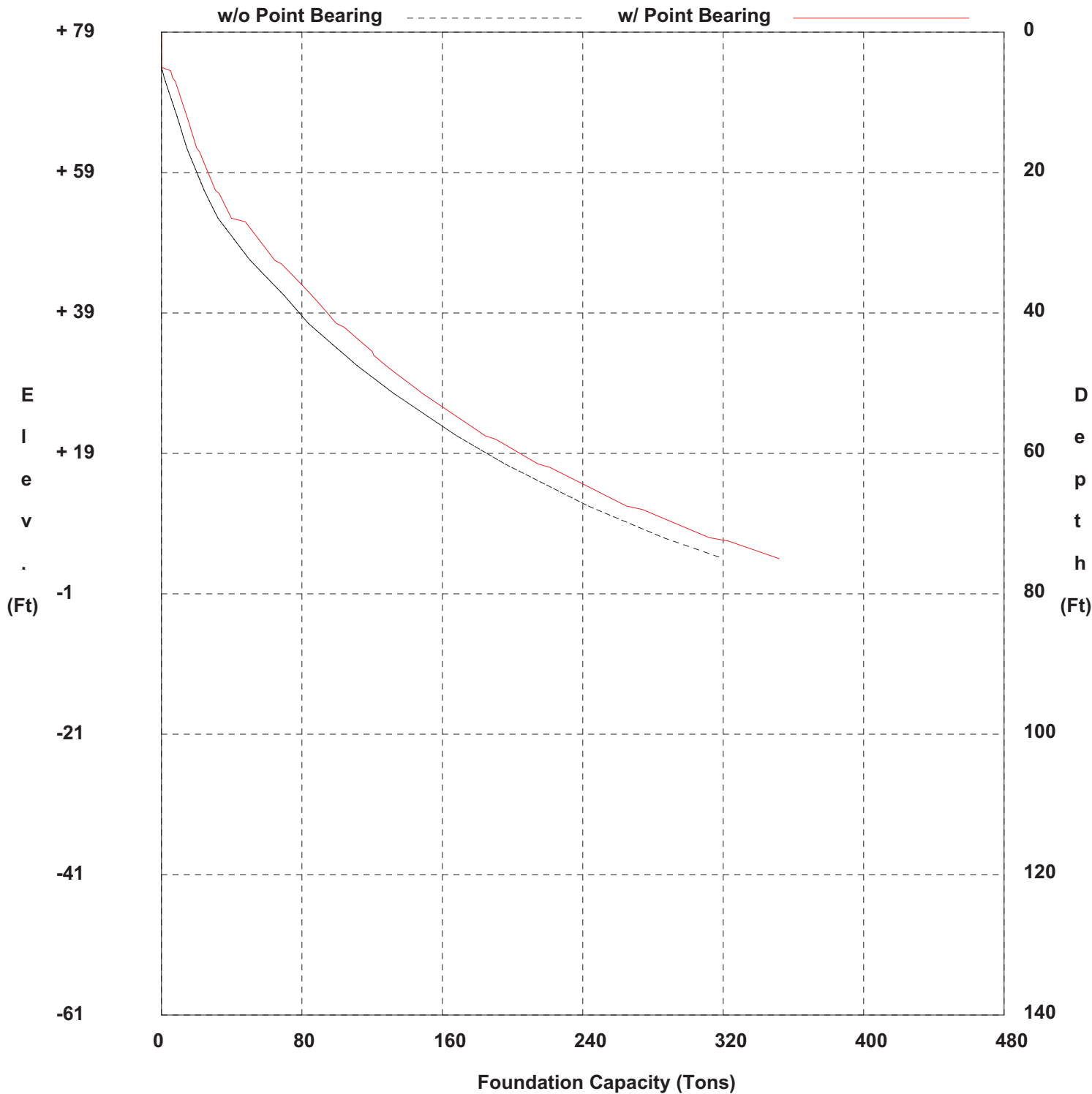
Hole BRG-20
Structure
Station
Offset

District
Date 2/28/2014
Grnd. Elev. 79.00 ft
GW Elev. 54.00 ft

36 inch Drilled Shaft

+79 Top Hole Elevation
+74 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

M Davila Sr. Rd.

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

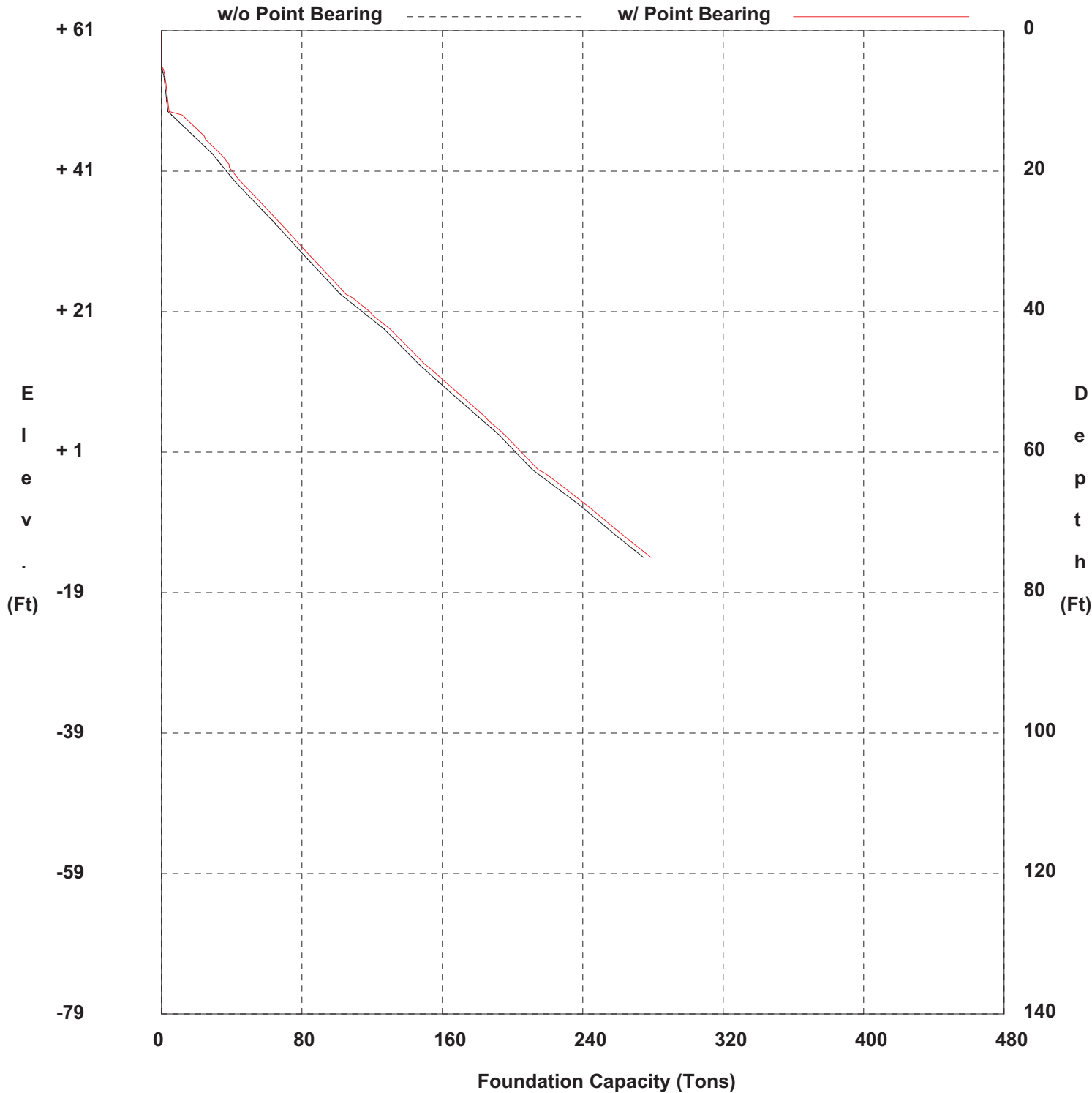
Hole BRG-21
Structure
Station
Offset

District
Date 3/11/2014
Grnd. Elev. 61.00 ft
GW Elev. 49.00 ft

16 inch Square Pile

+61 Top Hole Elevation
+56 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

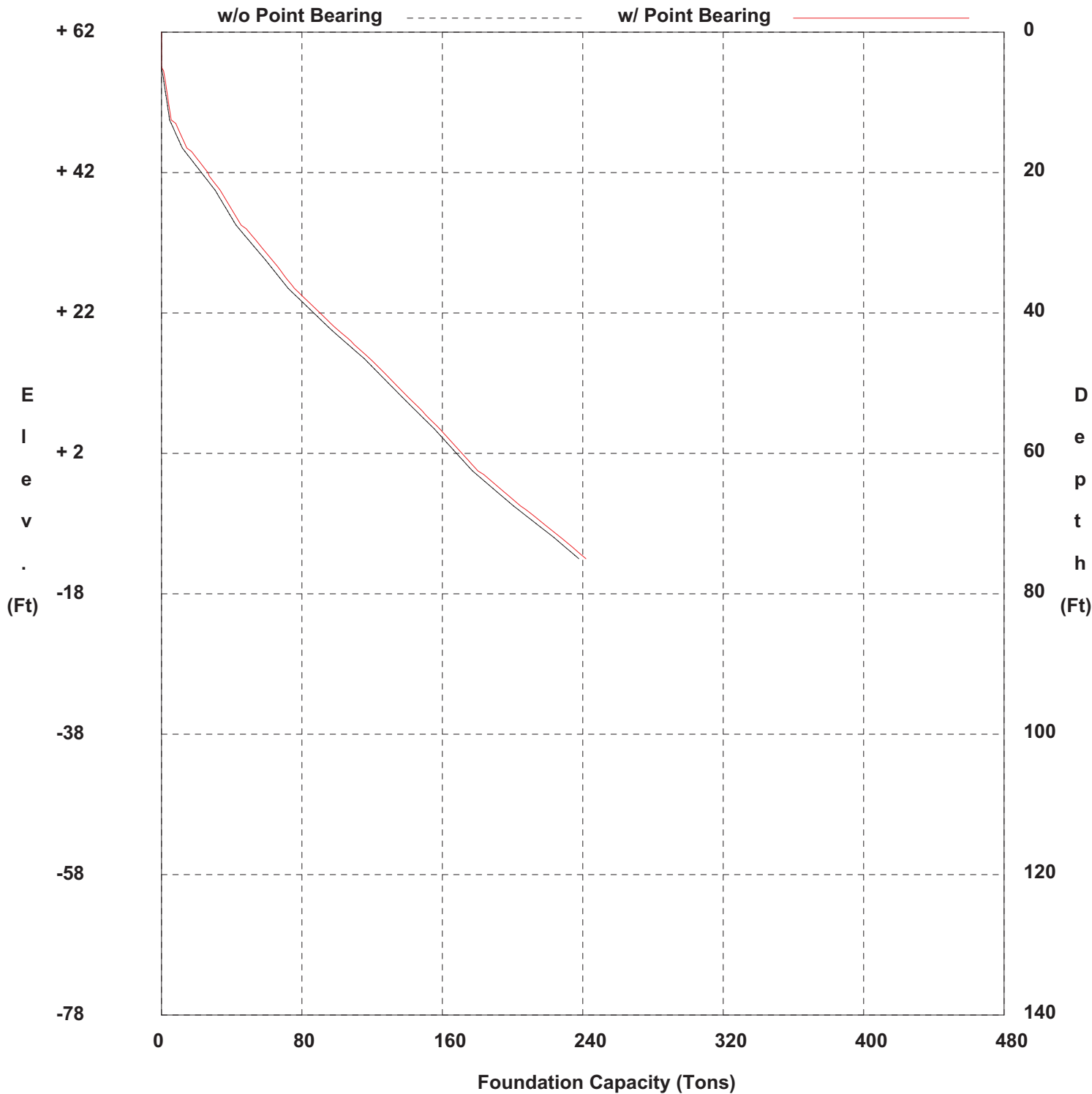
Hole BRG-22
Structure
Station
Offset

District
Date 3/11/2014
Grnd. Elev. 62.00 ft
GW Elev. 48.00 ft

16 inch Square Pile

+62 Top Hole Elevation
+57 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

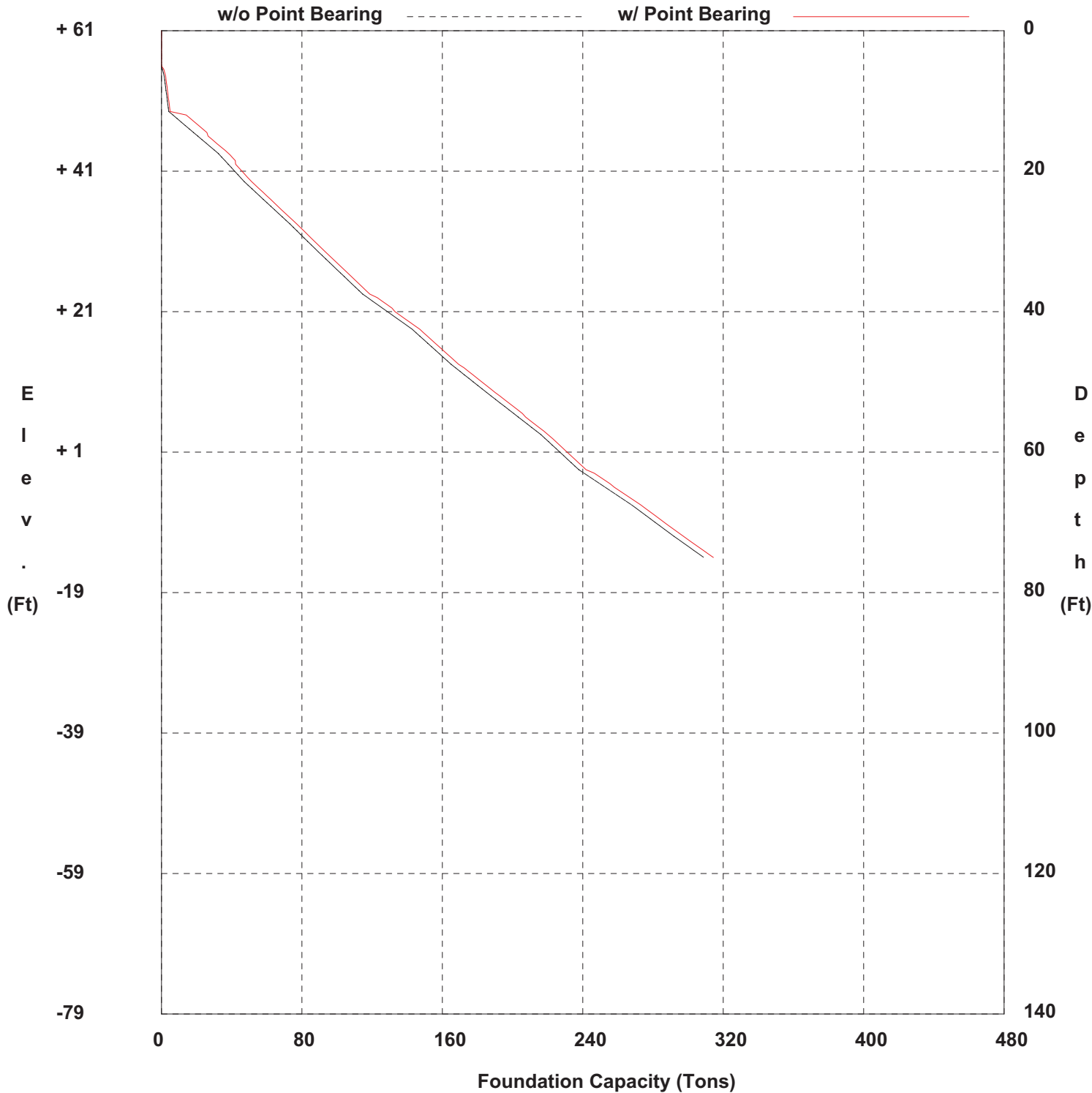
Hole BRG-21
Structure
Station
Offset

District
Date 3/11/2014
Grnd. Elev. 61.00 ft
GW Elev. 49.00 ft

18 inch Square Pile

+61 Top Hole Elevation
+56 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

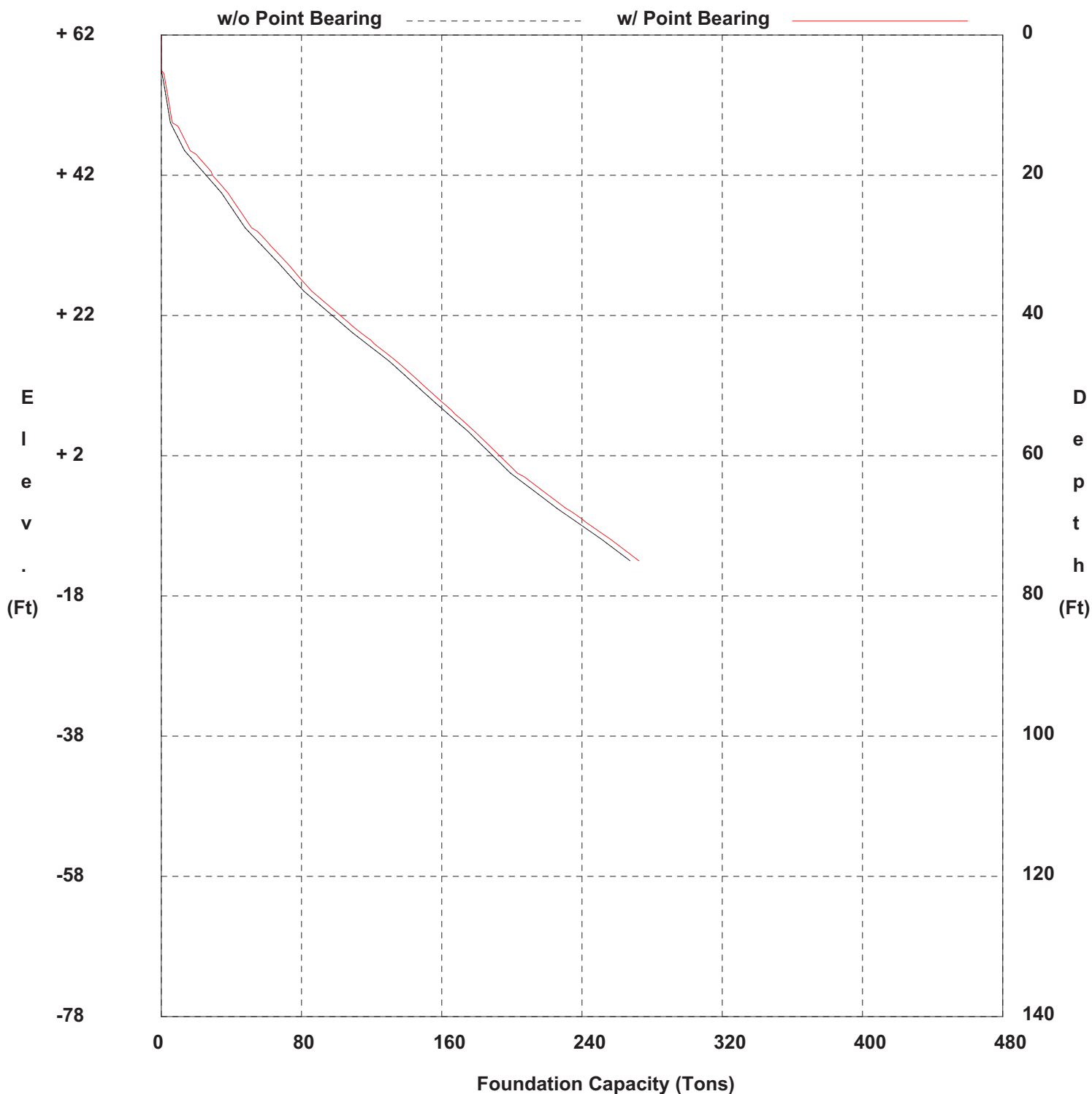
Hole BRG-22
Structure
Station
Offset

District
Date 3/11/2014
Grnd. Elev. 62.00 ft
GW Elev. 48.00 ft

18 inch Square Pile

+62 Top Hole Elevation
+57 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

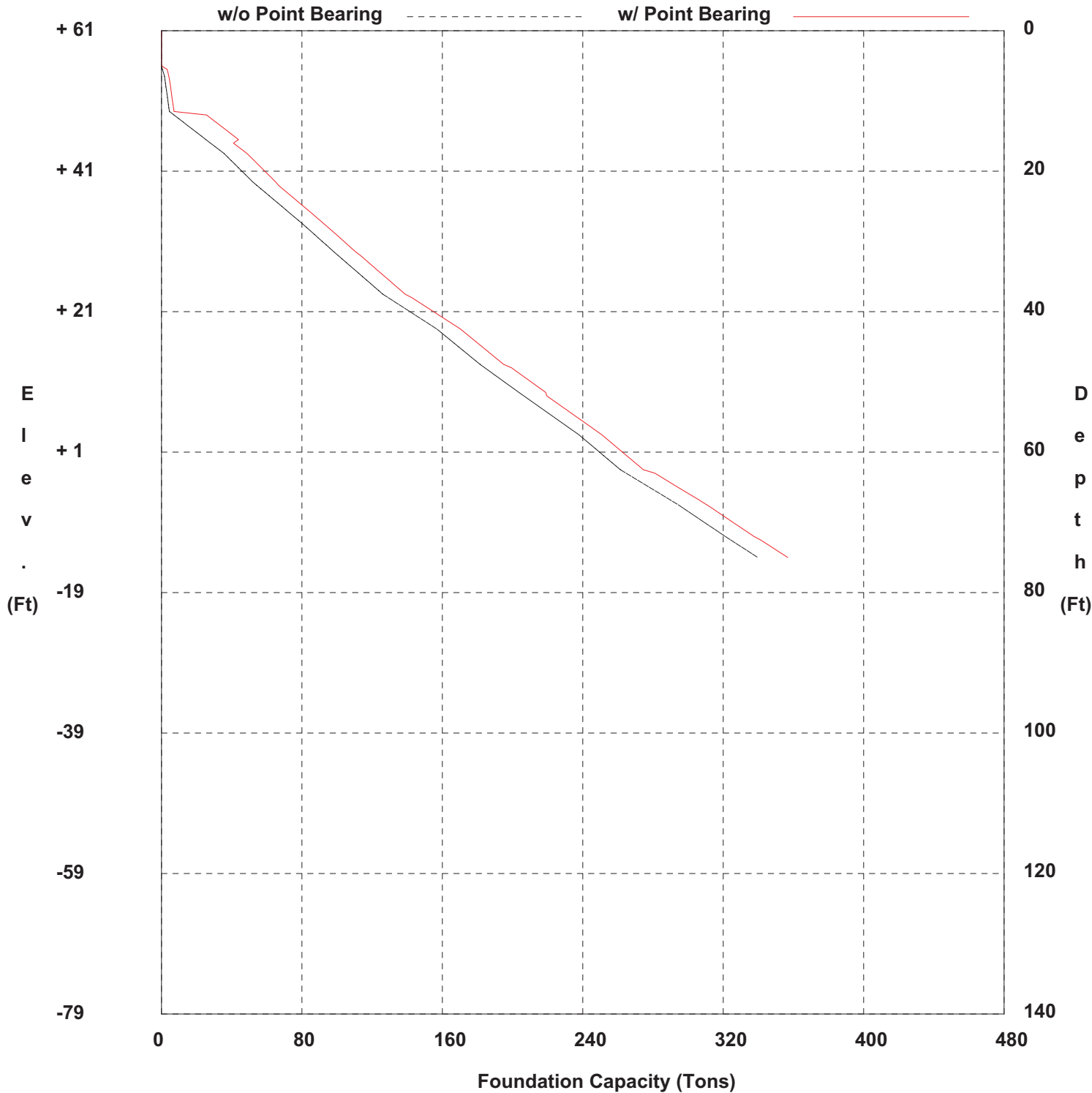
Hole BRG-21
Structure
Station
Offset

District
Date 3/11/2014
Grnd. Elev. 61.00 ft
GW Elev. 49.00 ft

36 inch Drilled Shaft

+61 Top Hole Elevation
+56 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

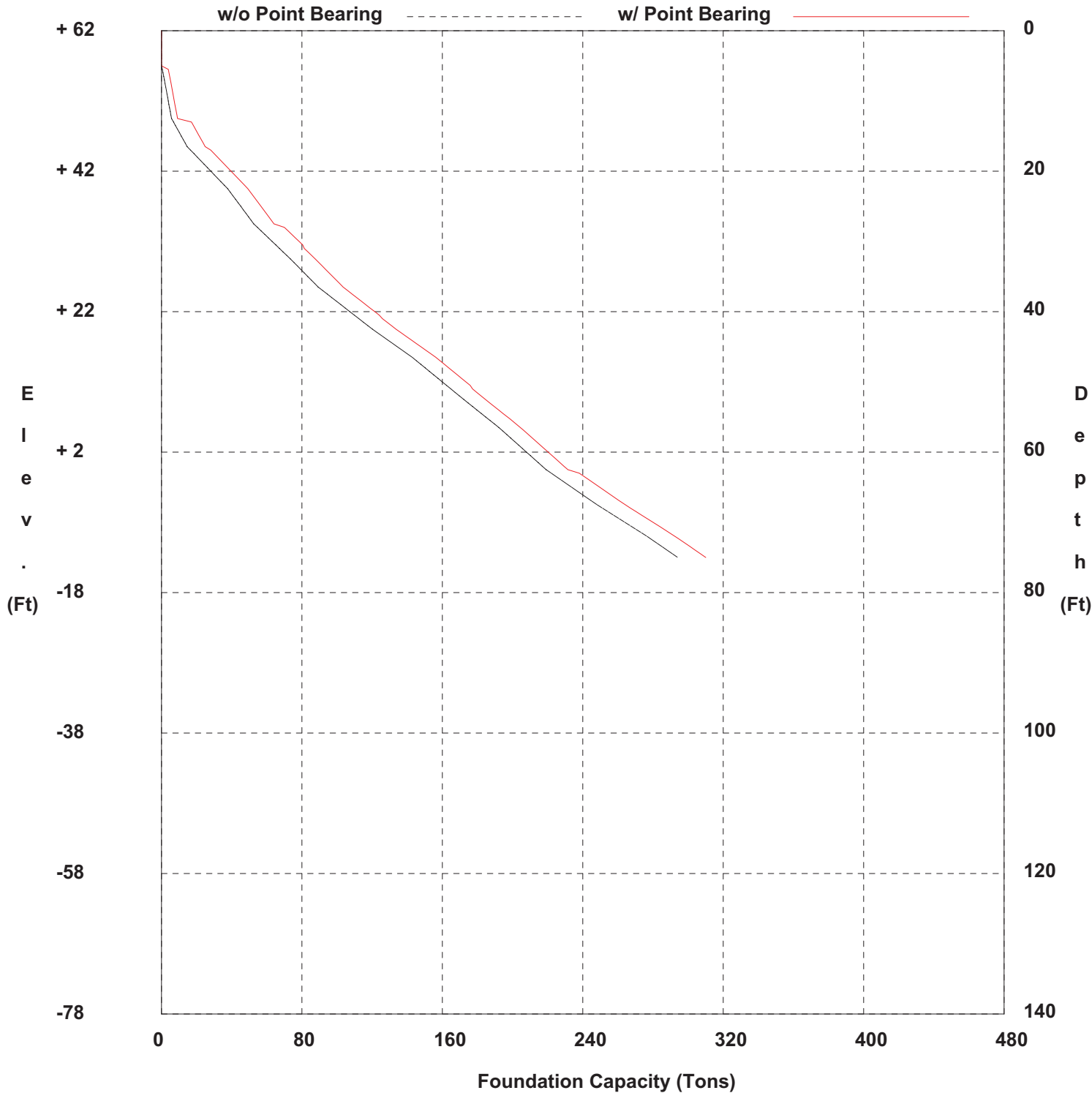
Hole BRG-22
Structure
Station
Offset

District
Date 3/11/2014
Grnd. Elev. 62.00 ft
GW Elev. 48.00 ft

36 inch Drilled Shaft

+62 Top Hole Elevation
+57 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

Ranch Road (Unknown)
(0.5 Miles S of CR 2900 W)

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

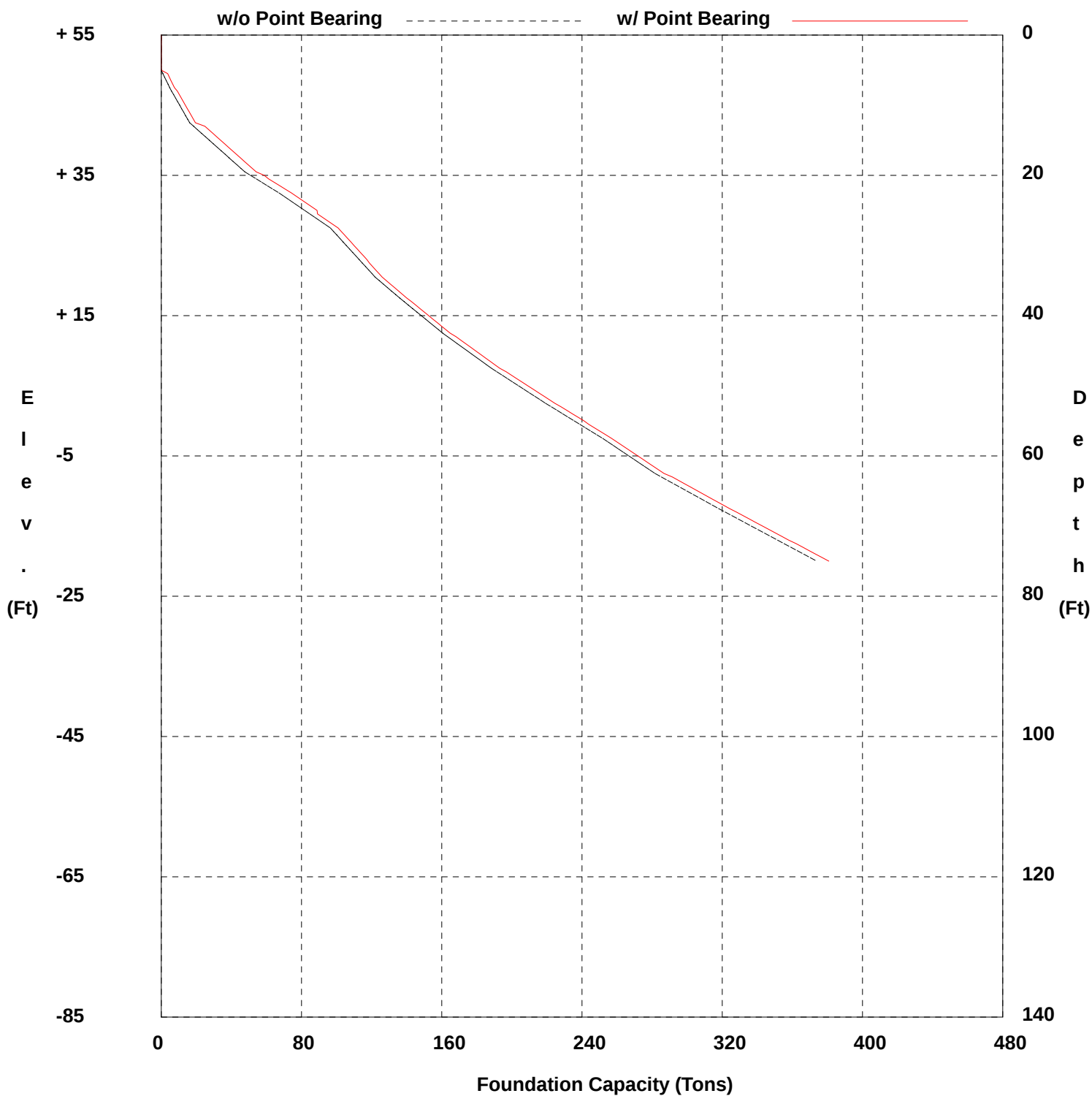
Hole BRG-23
Structure
Station
Offset

District
Date 12/14/2018
Grnd. Elev. 55.00 ft
GW Elev. 42.00 ft

16 inch Square Pile

+55 Top Hole Elevation
+50 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

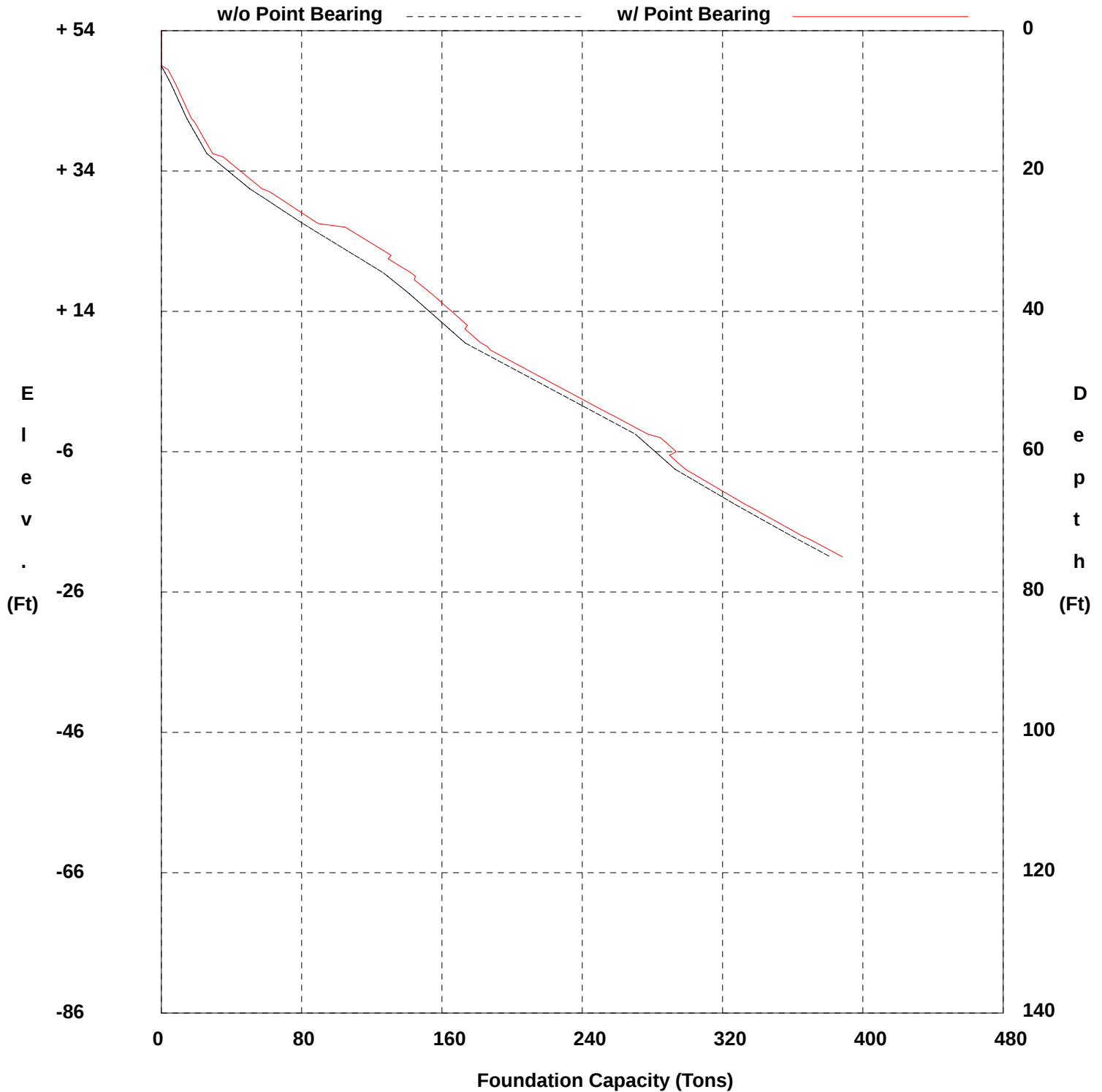
Hole BRG-24
Structure
Station
Offset

District
Date 12/17/2018
Grnd. Elev. 54.00 ft
GW Elev. 39.00 ft

16 inch Square Pile

+54 Top Hole Elevation
+49 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

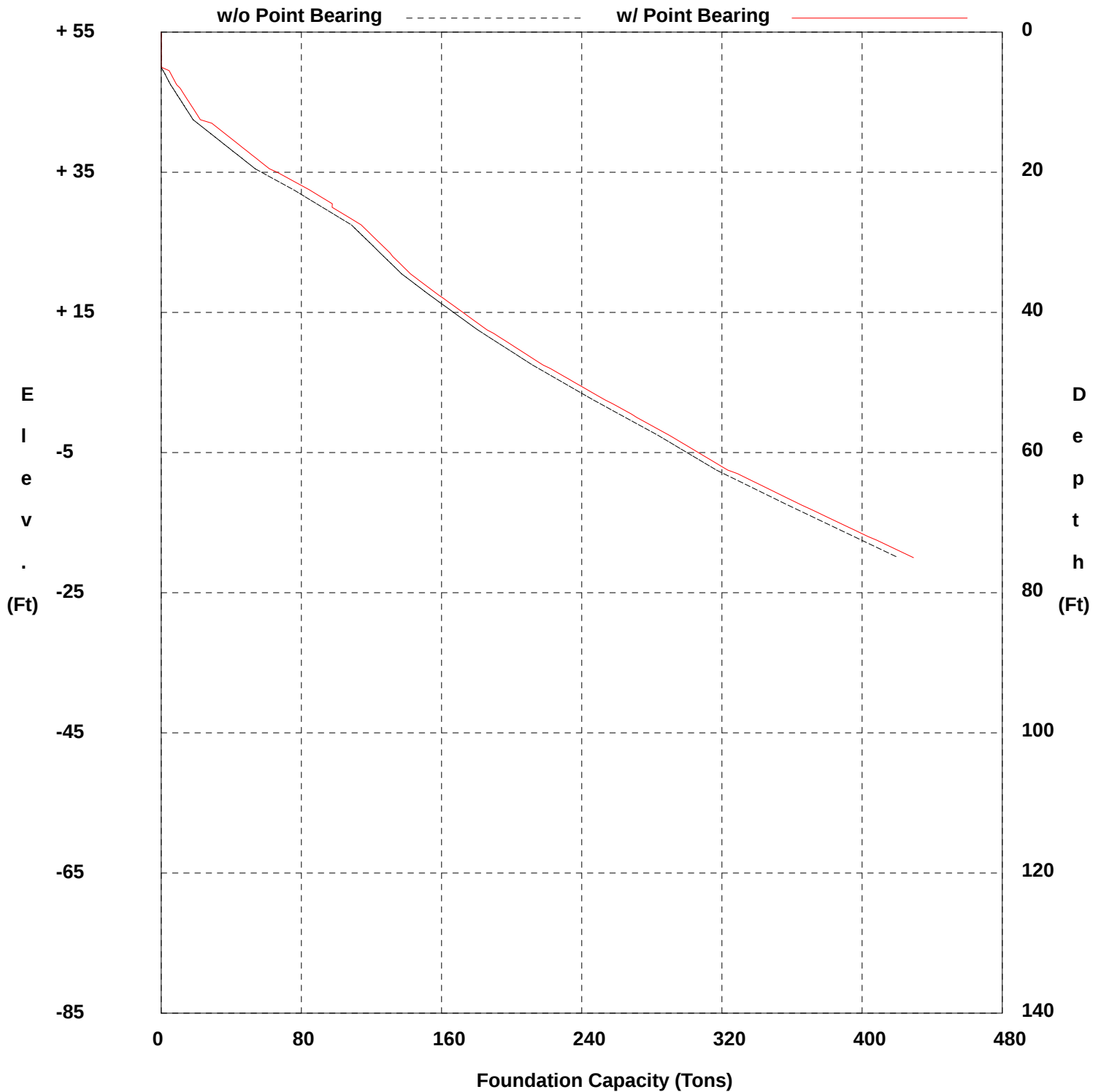
Hole BRG-23
Structure
Station
Offset

District
Date 12/14/2018
Grnd. Elev. 55.00 ft
GW Elev. 42.00 ft

18 inch Square Pile

+55 Top Hole Elevation
+50 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

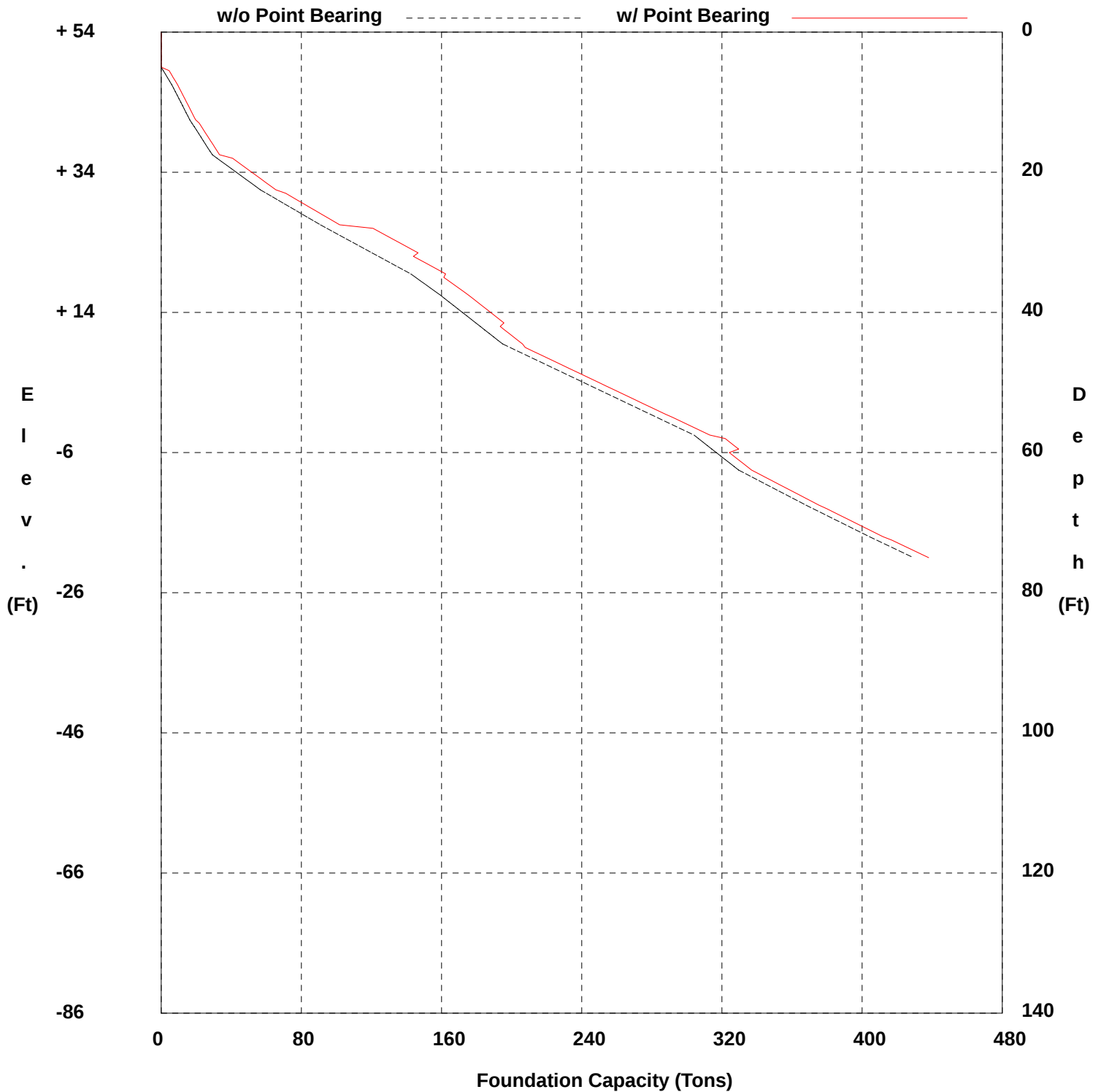
Hole BRG-24
Structure
Station
Offset

District
Date 12/17/2018
Grnd. Elev. 54.00 ft
GW Elev. 39.00 ft

18 inch Square Pile

+54 Top Hole Elevation
+49 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

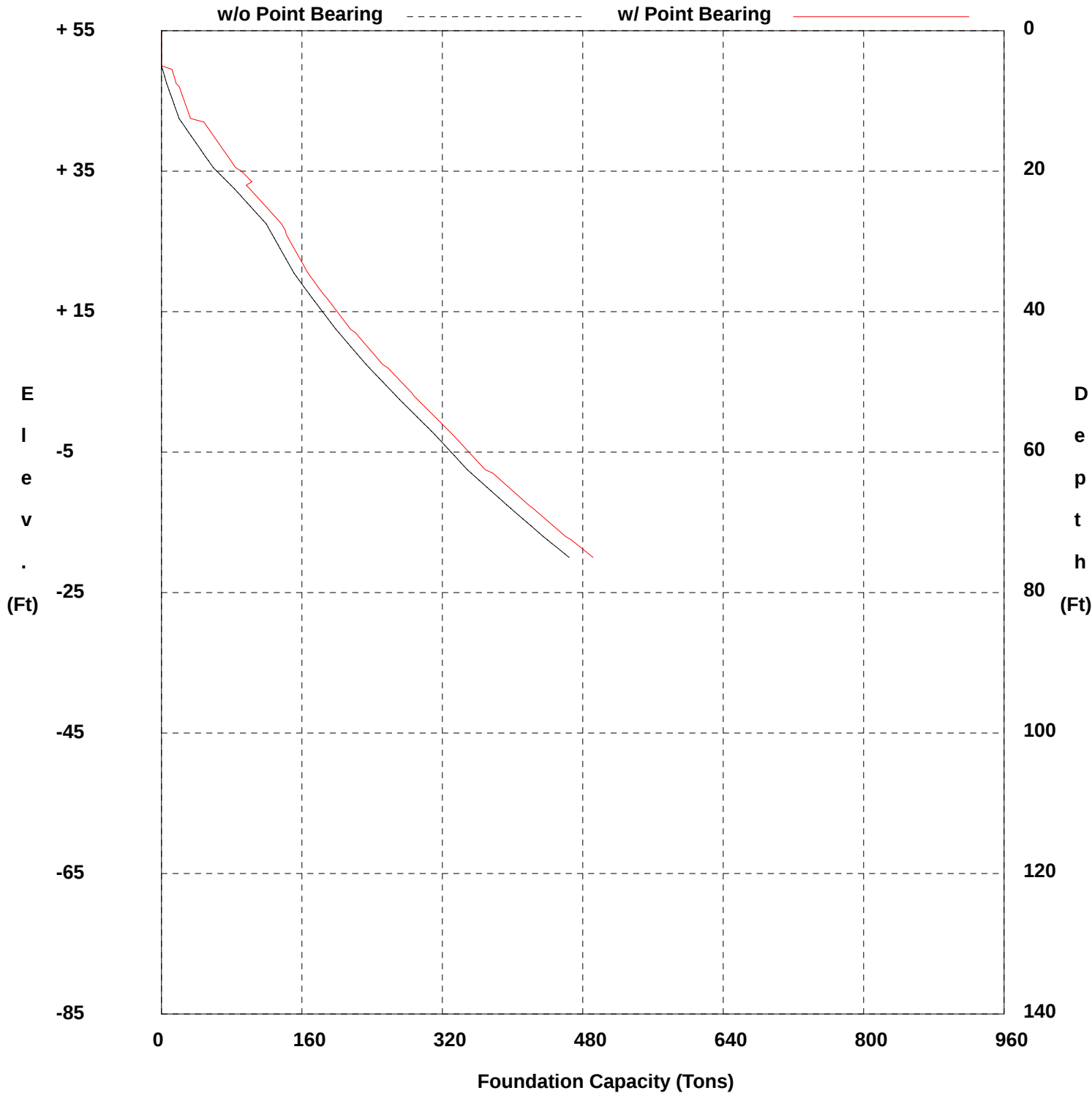
Hole BRG-23
Structure
Station
Offset

District
Date 12/14/2018
Grnd. Elev. 55.00 ft
GW Elev. 42.00 ft

36 inch Drilled Shaft

+55 Top Hole Elevation
+50 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

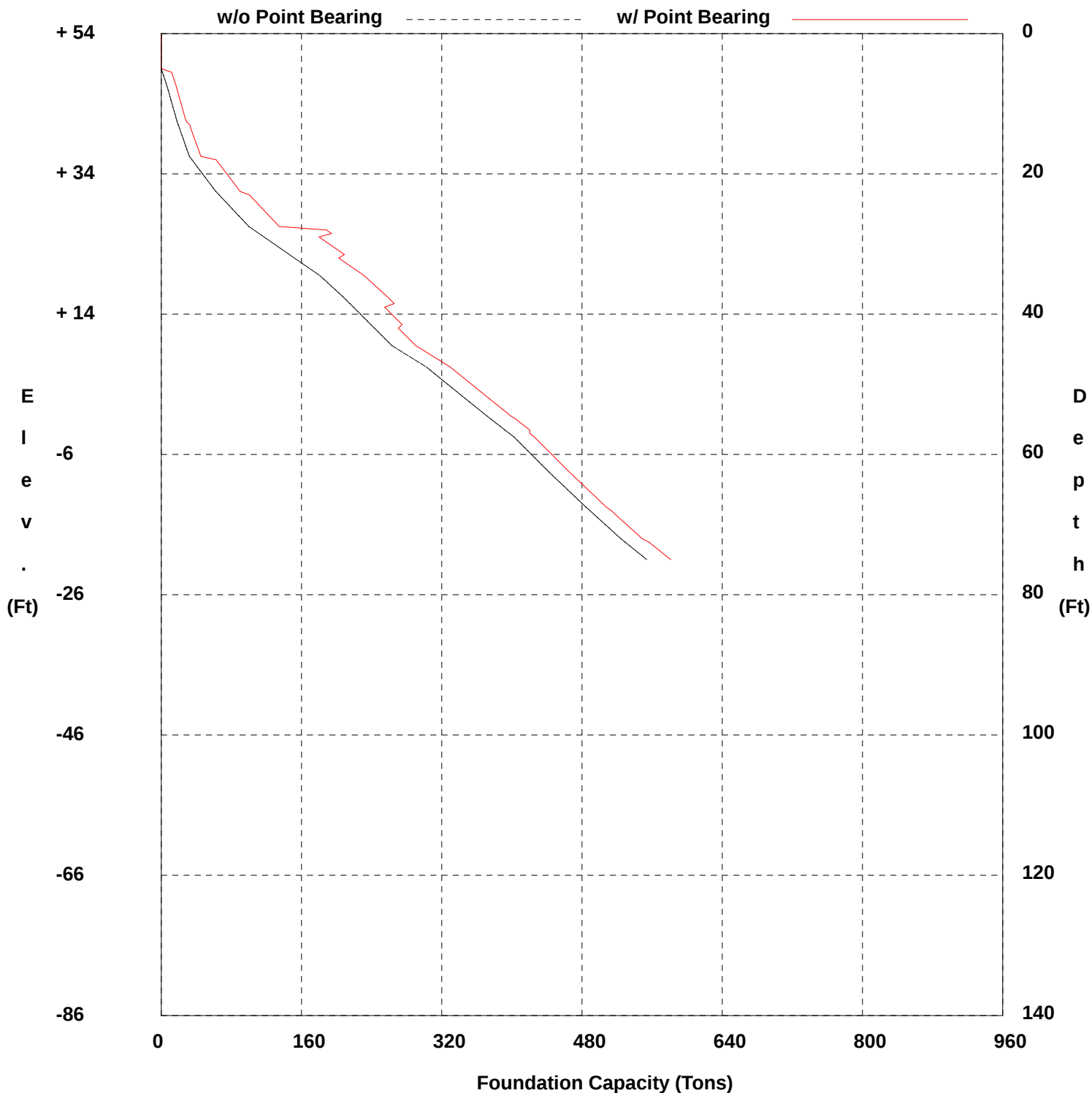
Hole BRG-24
Structure
Station
Offset

District
Date 12/17/2018
Grnd. Elev. 54.00 ft
GW Elev. 39.00 ft

36 inch Drilled Shaft

+54 Top Hole Elevation
+49 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

CR 2900 W

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

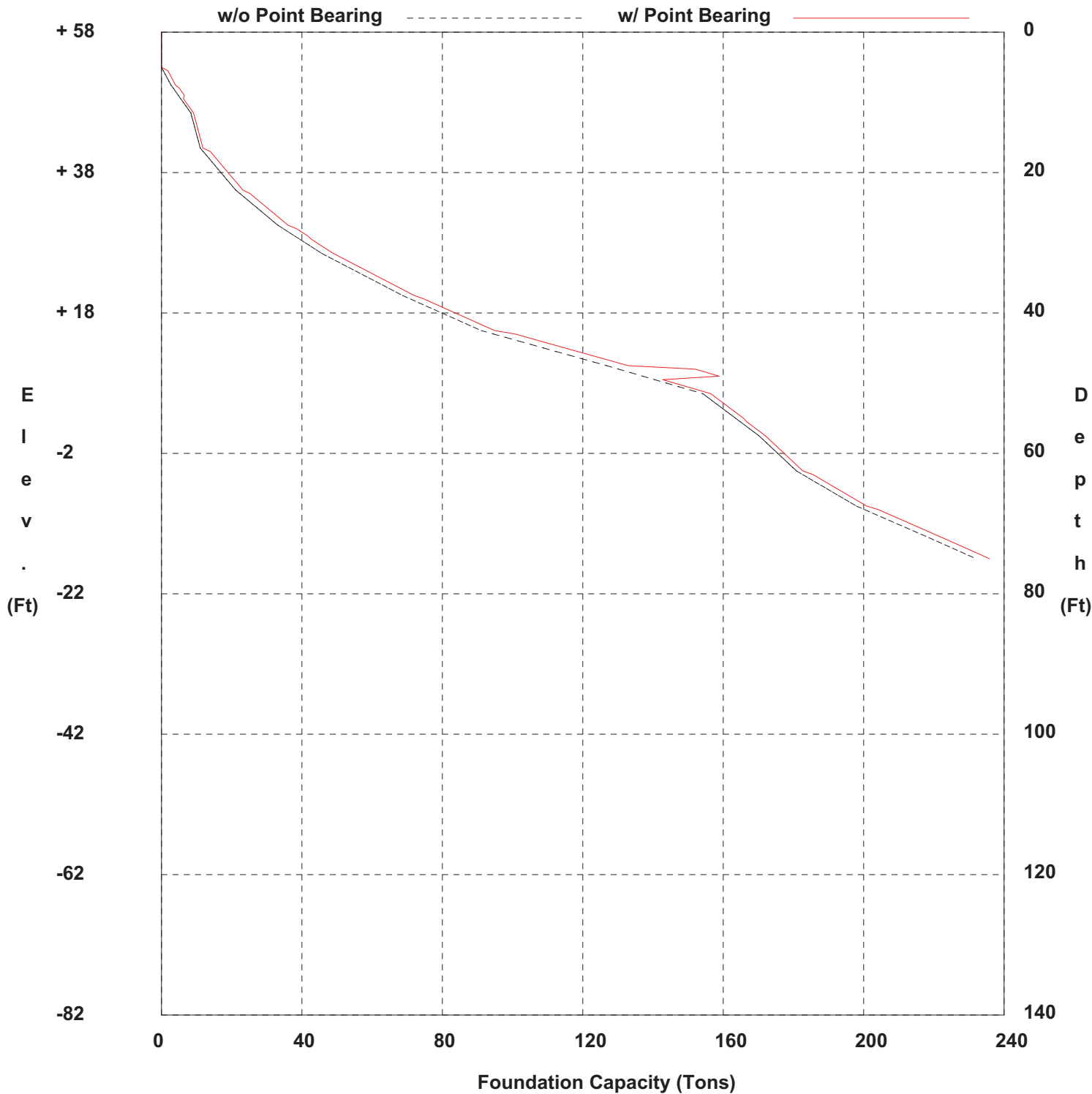
Hole BRG-25
Structure
Station
Offset

District
Date 3/20/2014
Grnd. Elev. 58.00 ft
GW Elev. 40.00 ft

16 inch Square Pile

+58 Top Hole Elevation
+53 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

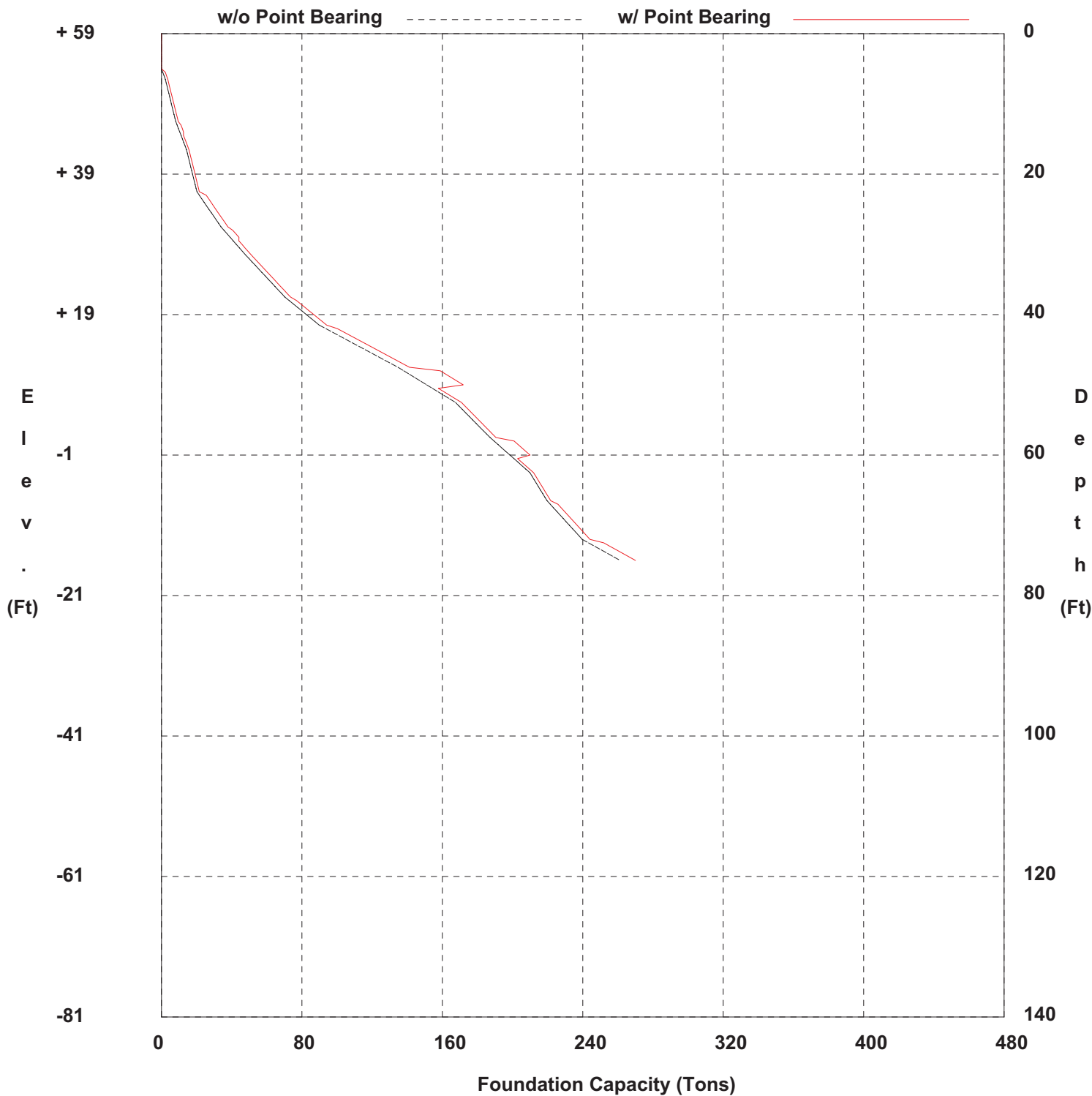
Hole BRG-26
Structure
Station
Offset

District
Date 3/21/2014
Grnd. Elev. 59.00 ft
GW Elev. 43.00 ft

16 inch Square Pile

+59 Top Hole Elevation
+54 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

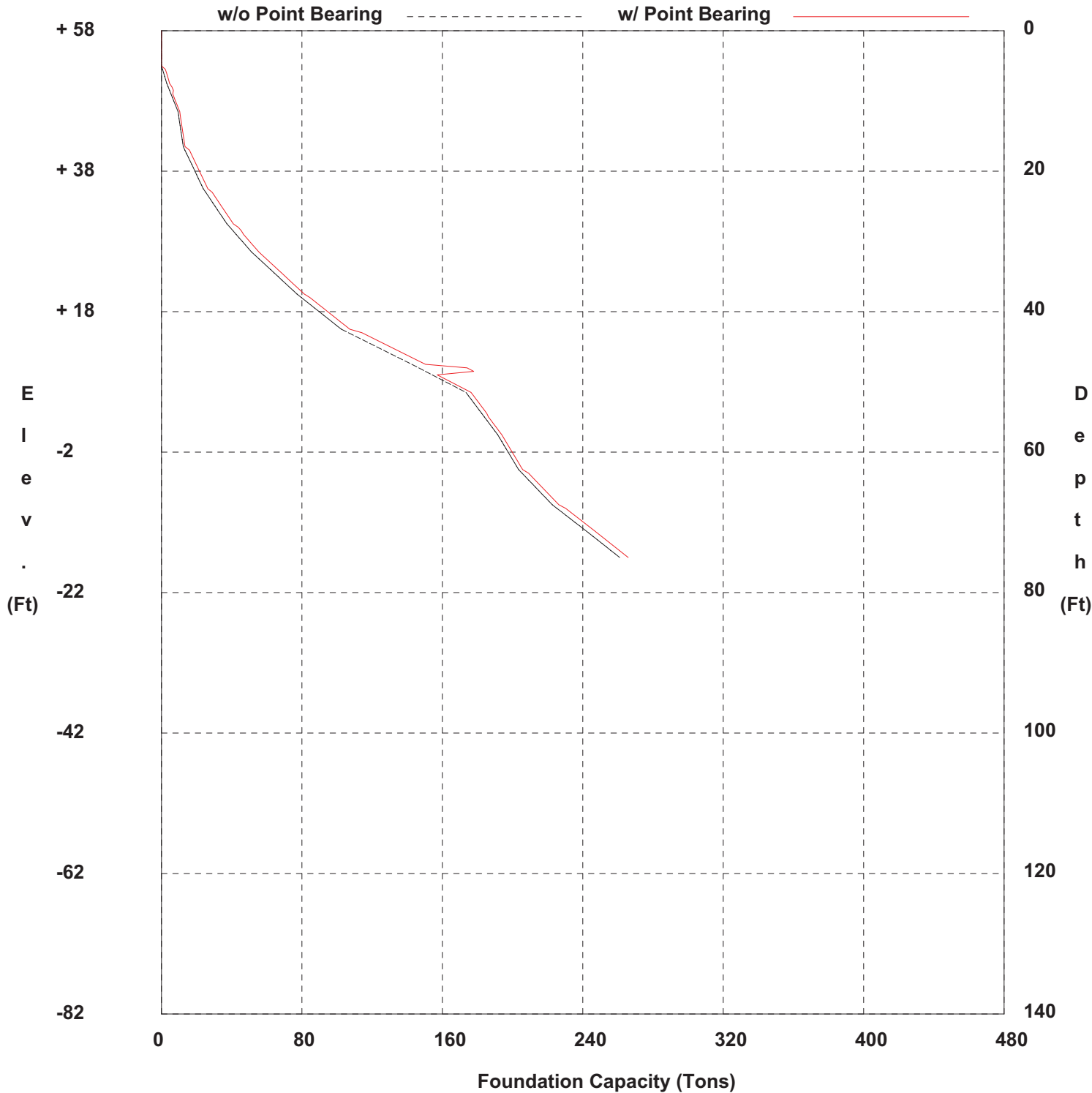
Hole BRG-25
Structure
Station
Offset

District
Date 3/20/2014
Grnd. Elev. 58.00 ft
GW Elev. 40.00 ft

18 inch Square Pile

+58 Top Hole Elevation
+53 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

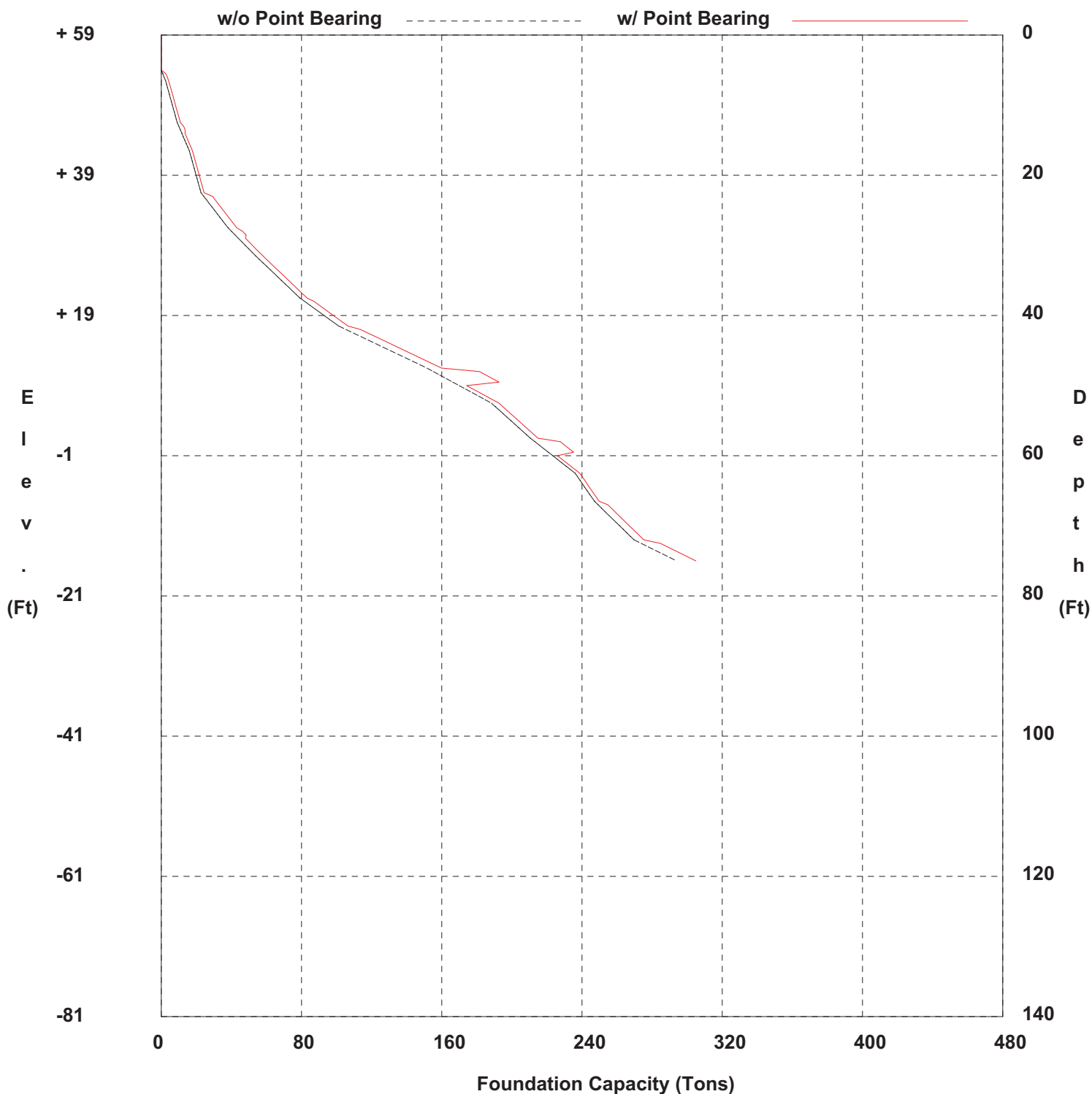
Hole BRG-26
Structure
Station
Offset

District
Date 3/21/2014
Grnd. Elev. 59.00 ft
GW Elev. 43.00 ft

18 inch Square Pile

+59 Top Hole Elevation
+54 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

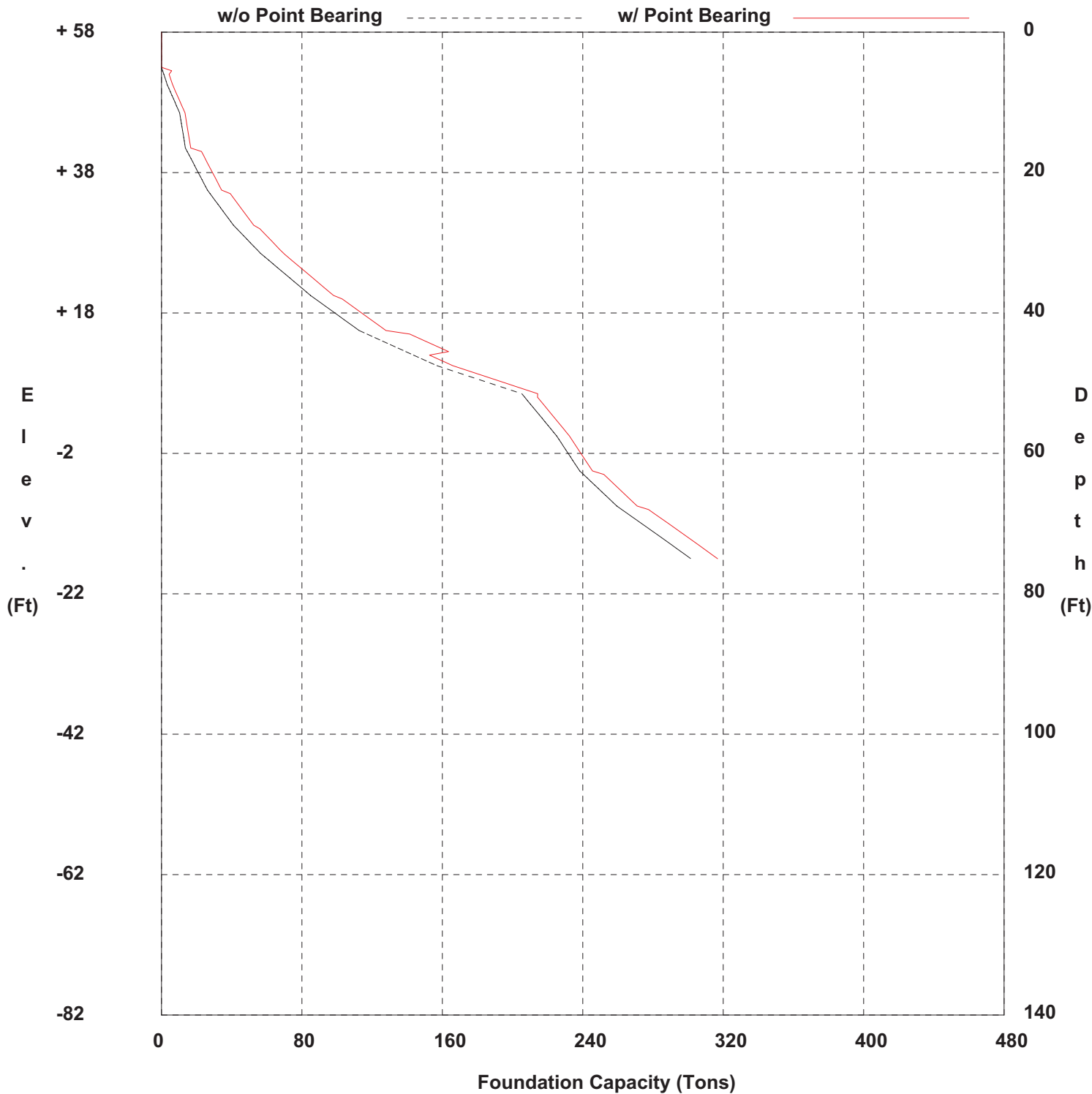
Hole BRG-25
Structure
Station
Offset

District
Date 3/20/2014
Grnd. Elev. 58.00 ft
GW Elev. 40.00 ft

36 inch Drilled Shaft

+58 Top Hole Elevation
+53 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

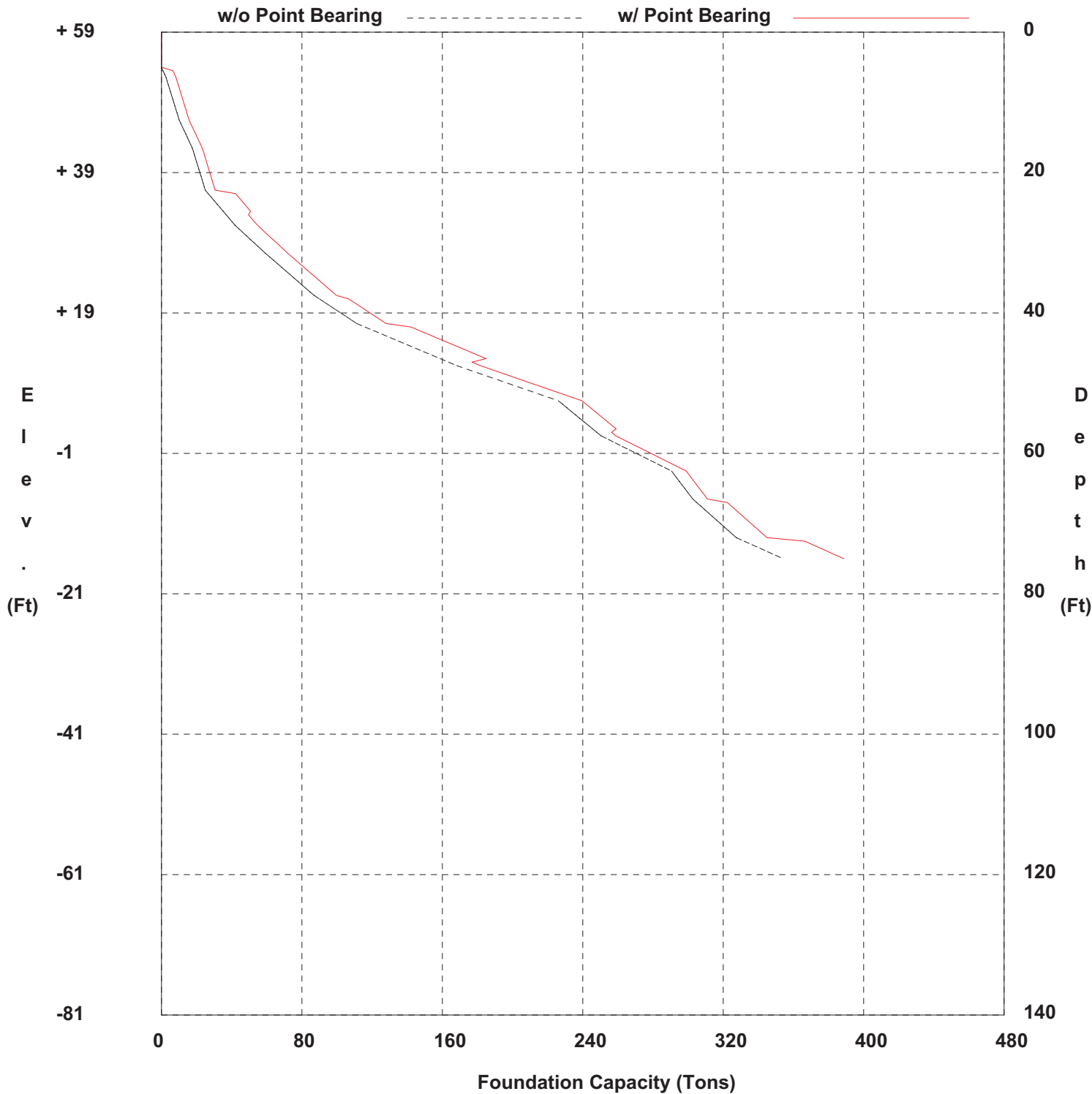
Hole BRG-26
Structure
Station
Offset

District
Date 3/21/2014
Grnd. Elev. 59.00 ft
GW Elev. 43.00 ft

36 inch Drilled Shaft

+59 Top Hole Elevation
+54 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

Ranch Road (Unknown)
(0.5 Miles N of Bucy Rd.)

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

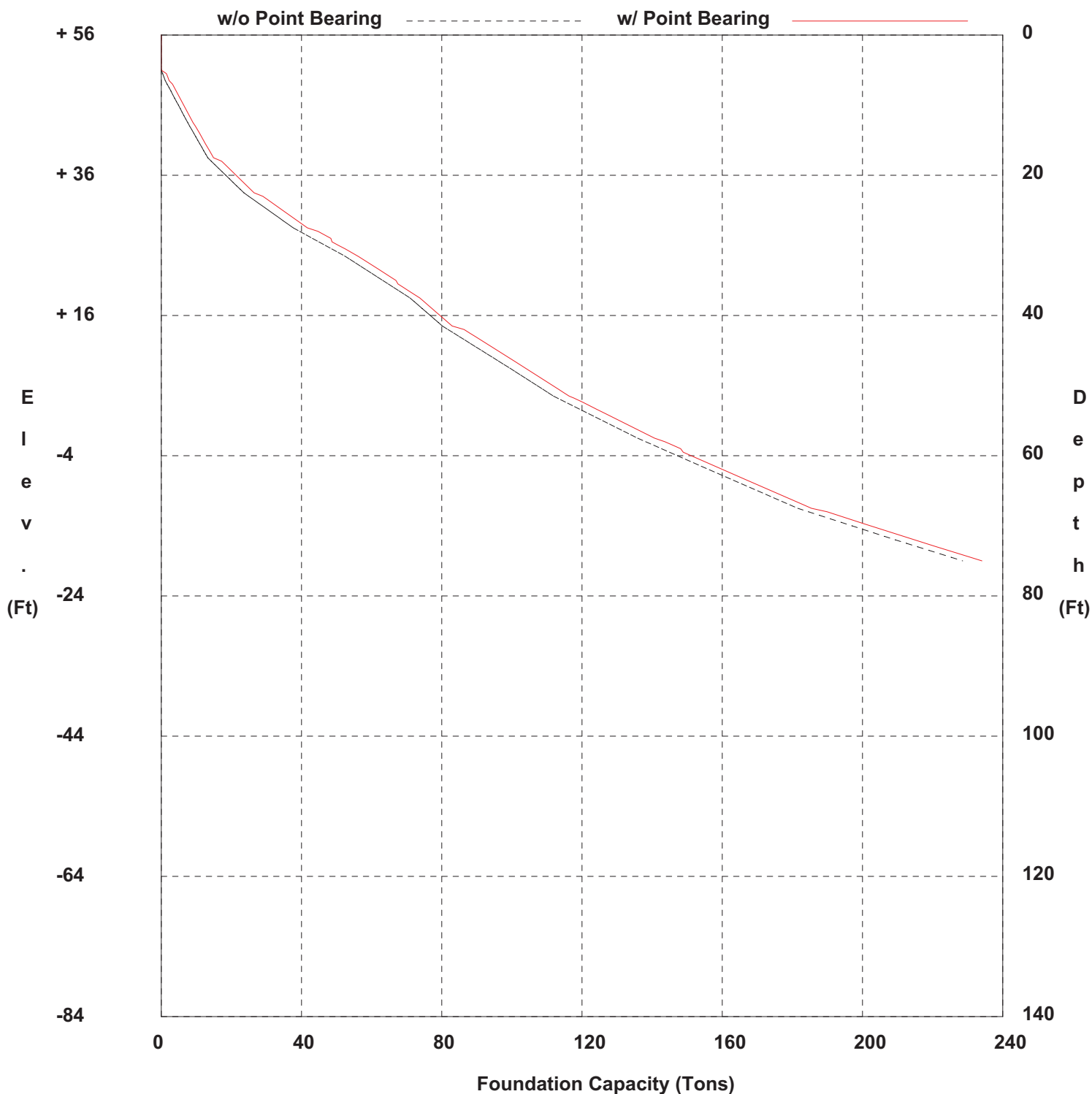
Hole BRG-27
Structure
Station
Offset

District
Date 3/22/2014
Grnd. Elev. 56.00 ft
GW Elev. 41.00 ft

16 inch Square Pile

+56 Top Hole Elevation
+51 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

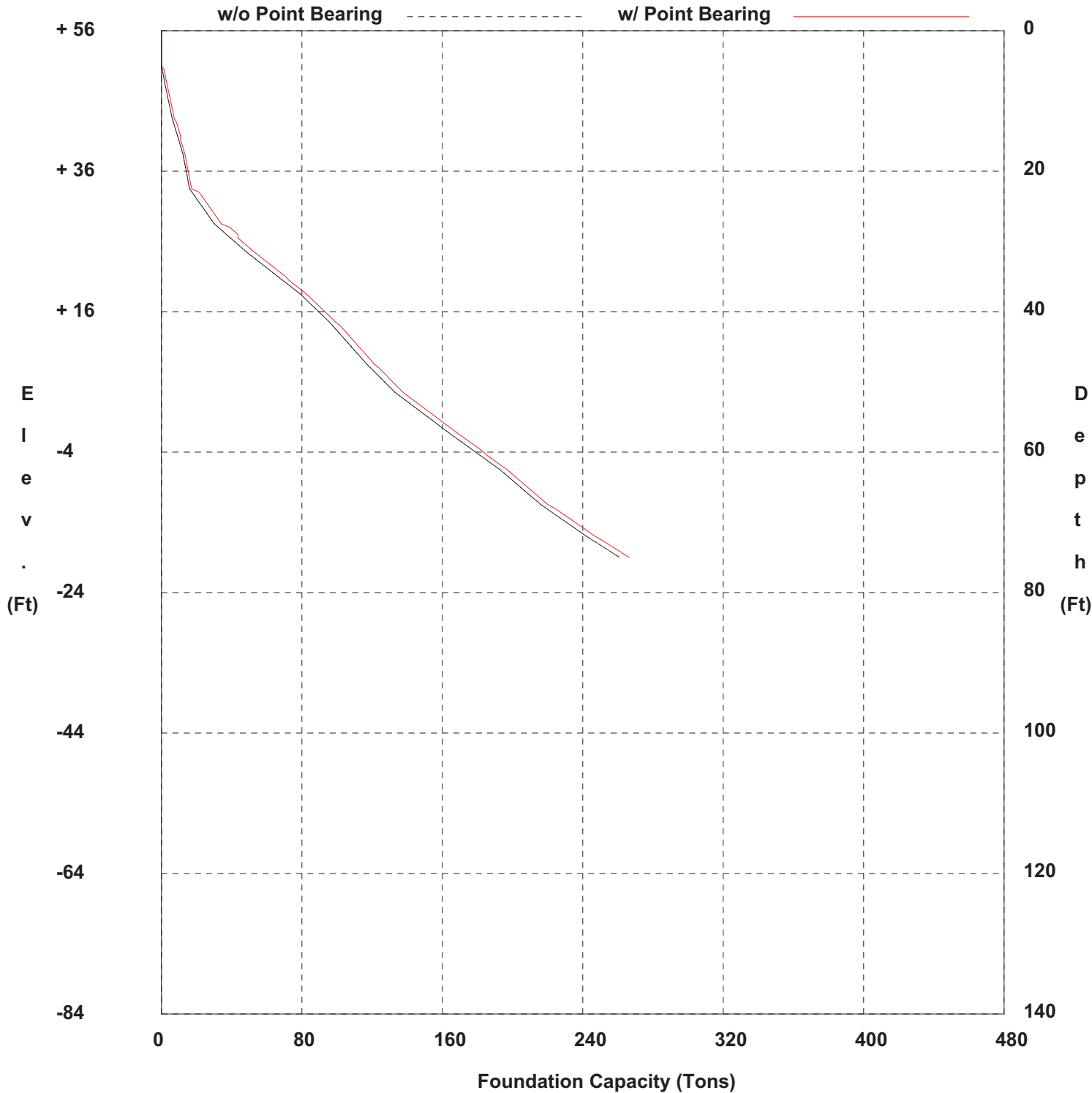
Hole BRG-28
Structure
Station
Offset

District
Date 3/28/2014
Grnd. Elev. 56.00 ft
GW Elev. 41.00 ft

16 inch Square Pile

+56 Top Hole Elevation
+51 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

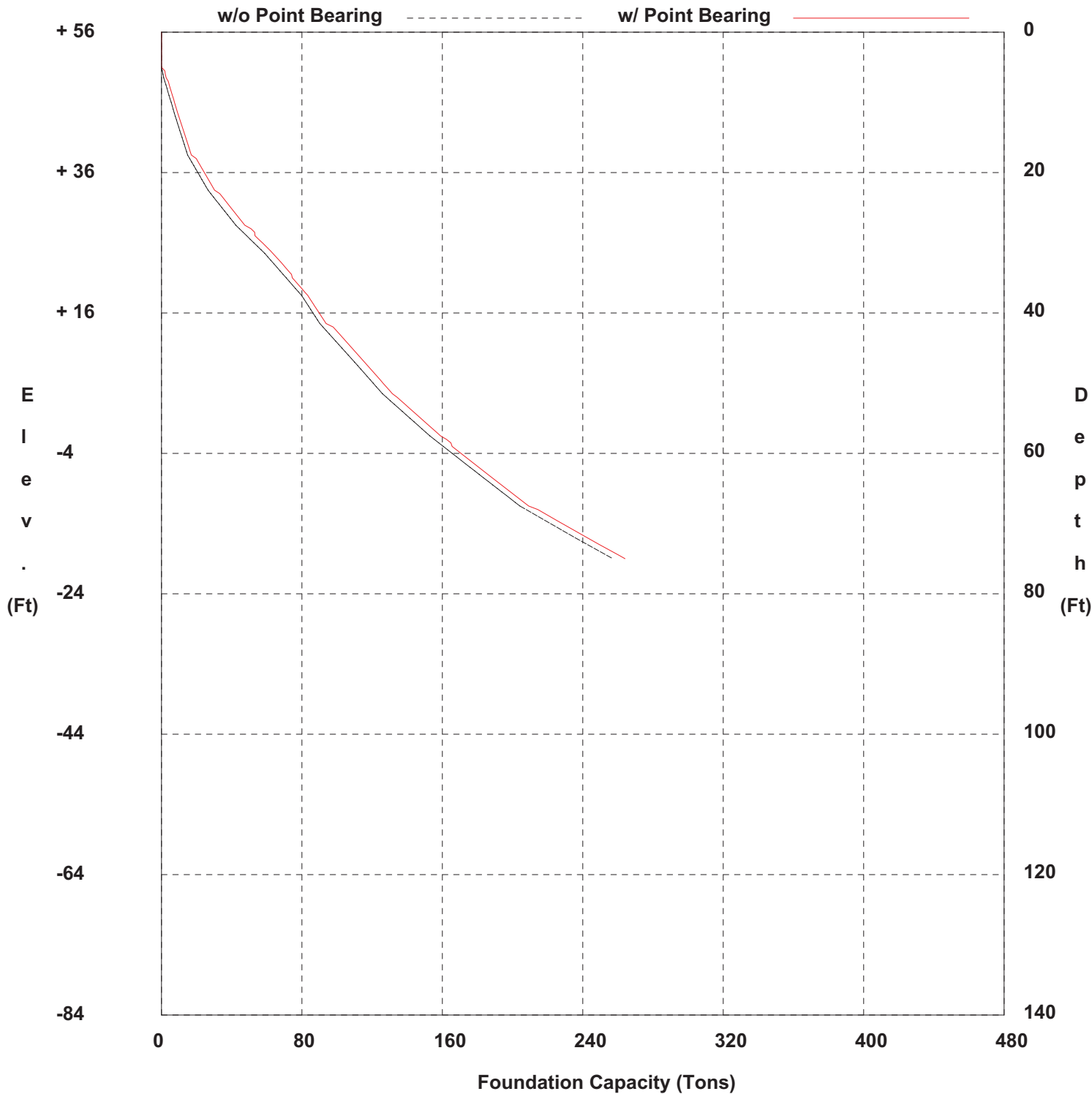
Hole BRG-27
Structure
Station
Offset

District
Date 3/22/2014
Grnd. Elev. 56.00 ft
GW Elev. 41.00 ft

18 inch Square Pile

+56 Top Hole Elevation
+51 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

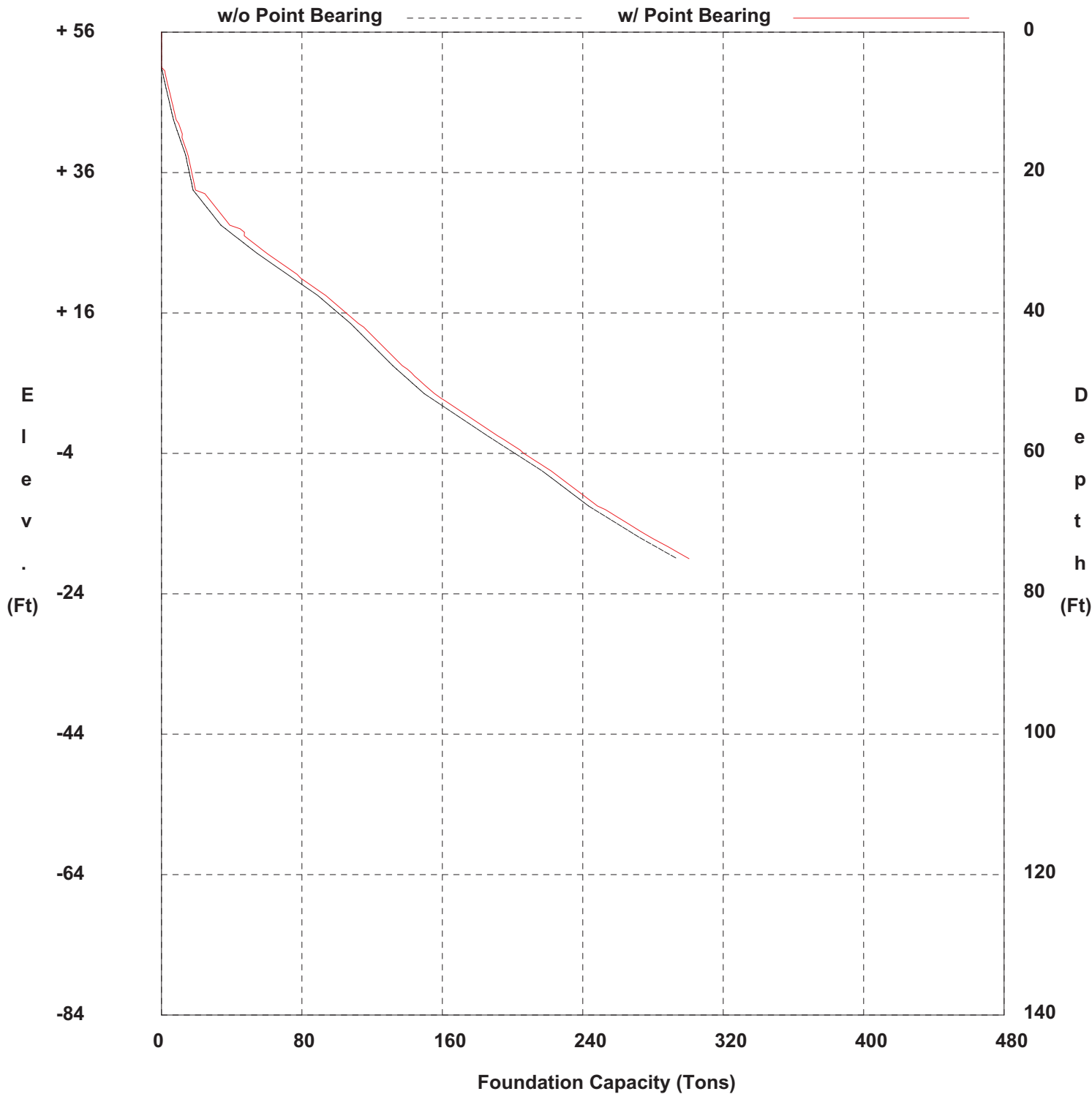
Hole BRG-28
Structure
Station
Offset

District
Date 3/28/2014
Grnd. Elev. 56.00 ft
GW Elev. 41.00 ft

18 inch Square Pile

+56 Top Hole Elevation
+51 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

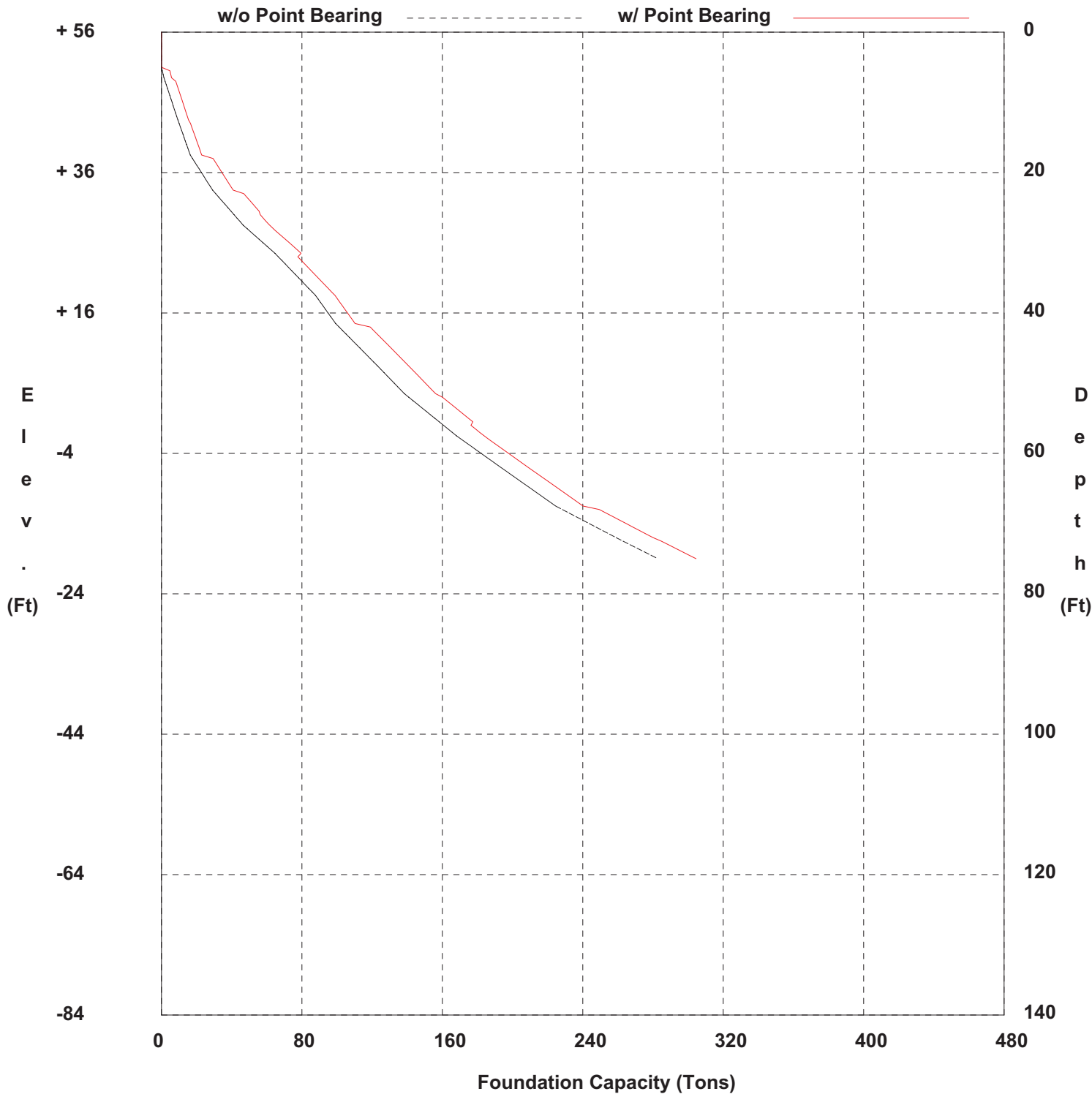
Hole BRG-27
Structure
Station
Offset

District
Date 3/22/2014
Grnd. Elev. 56.00 ft
GW Elev. 41.00 ft

36 inch Drilled Shaft

+56 Top Hole Elevation
+51 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

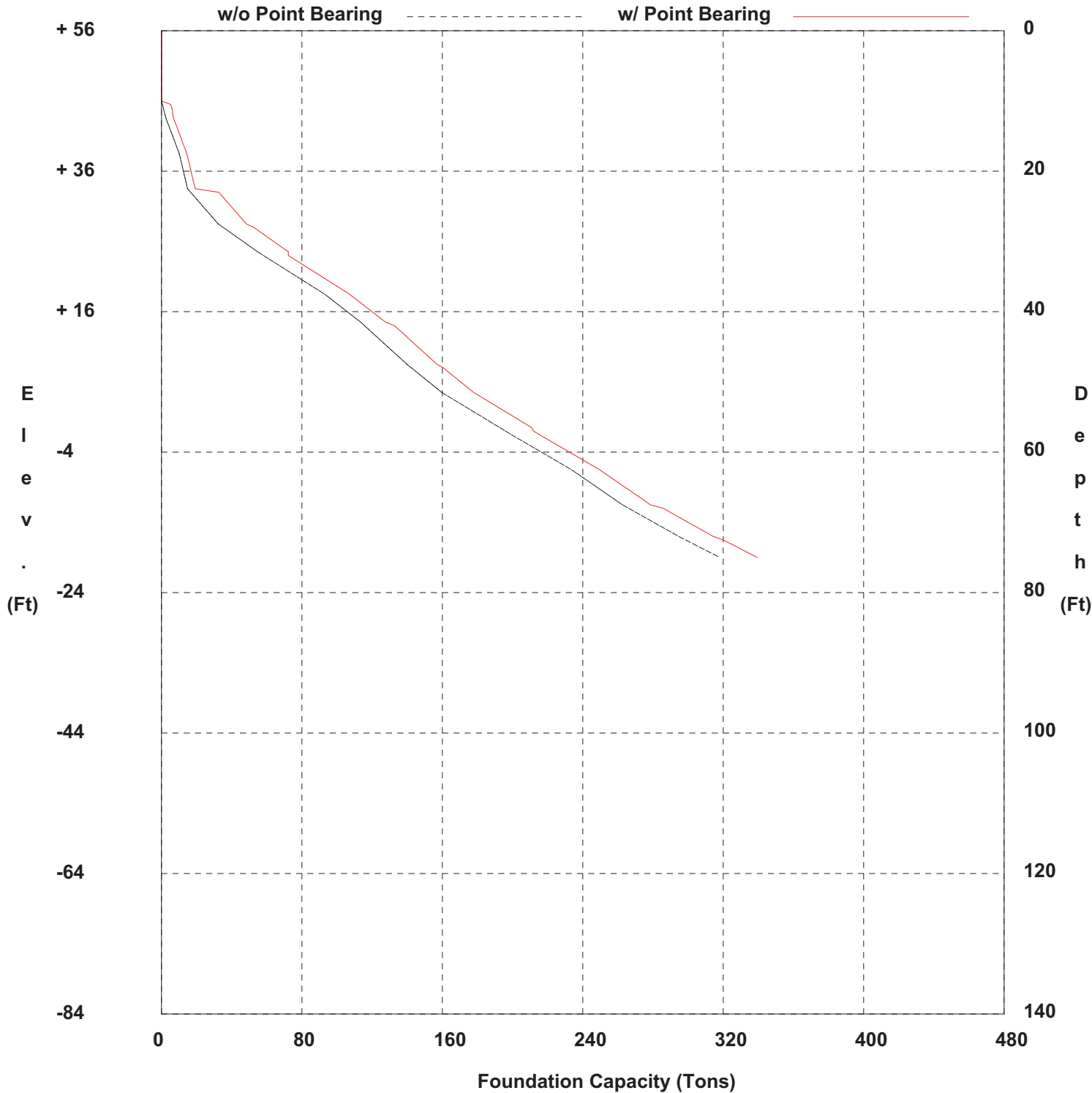
Hole BRG-28
Structure
Station
Offset

District
Date 3/28/2014
Grnd. Elev. 56.00 ft
GW Elev. 41.00 ft

36 inch Drilled Shaft

+56 Top Hole Elevation
+51 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

Ranch Road (Unknown)
(0.56 Miles N of Bucy Rd. – Bucy Rd. Extension)

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

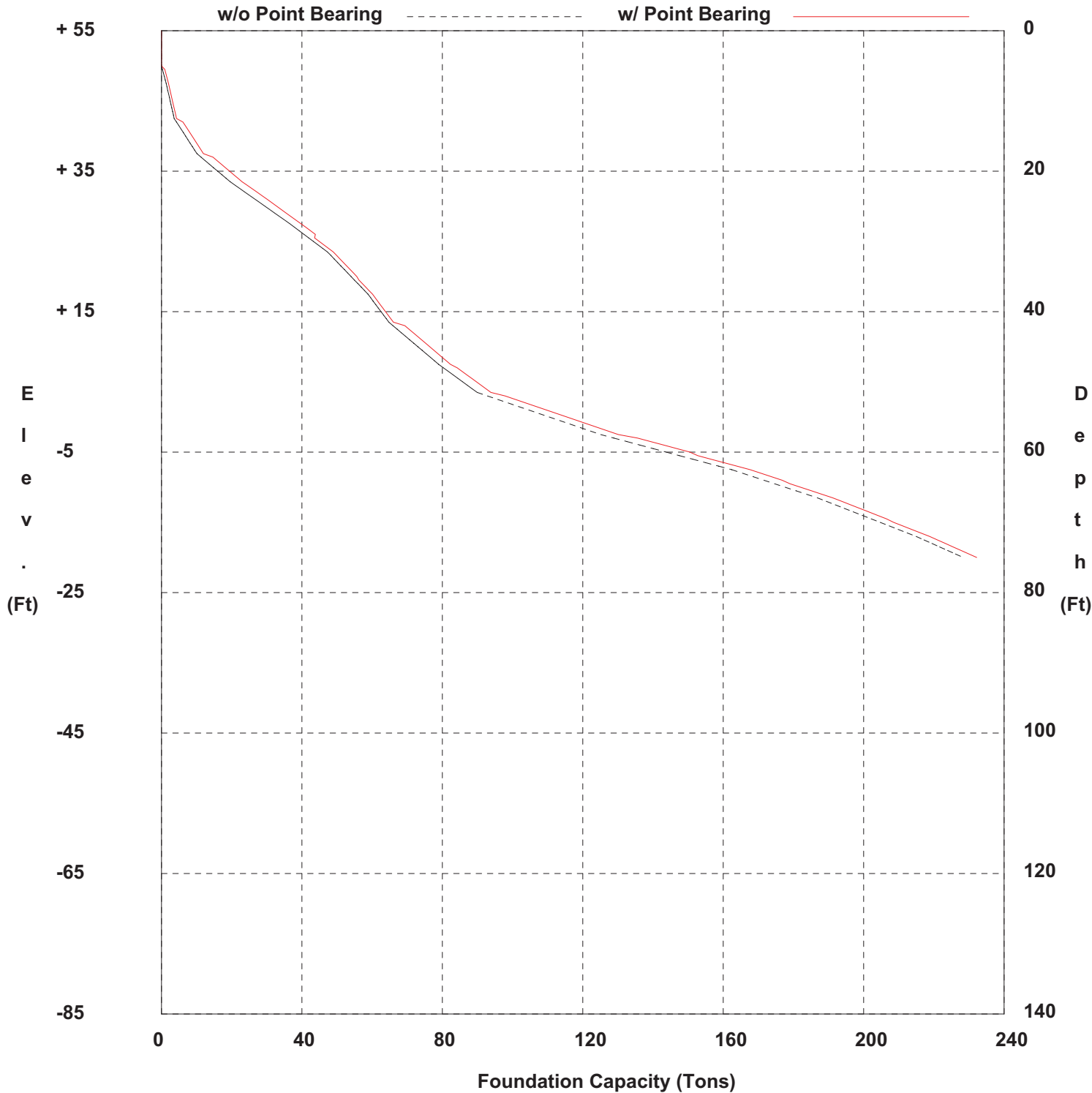
Hole BRG-29
Structure
Station
Offset

District
Date 3/12/2014
Grnd. Elev. 55.00 ft
GW Elev. 40.00 ft

16 inch Square Pile

+55 Top Hole Elevation
+50 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

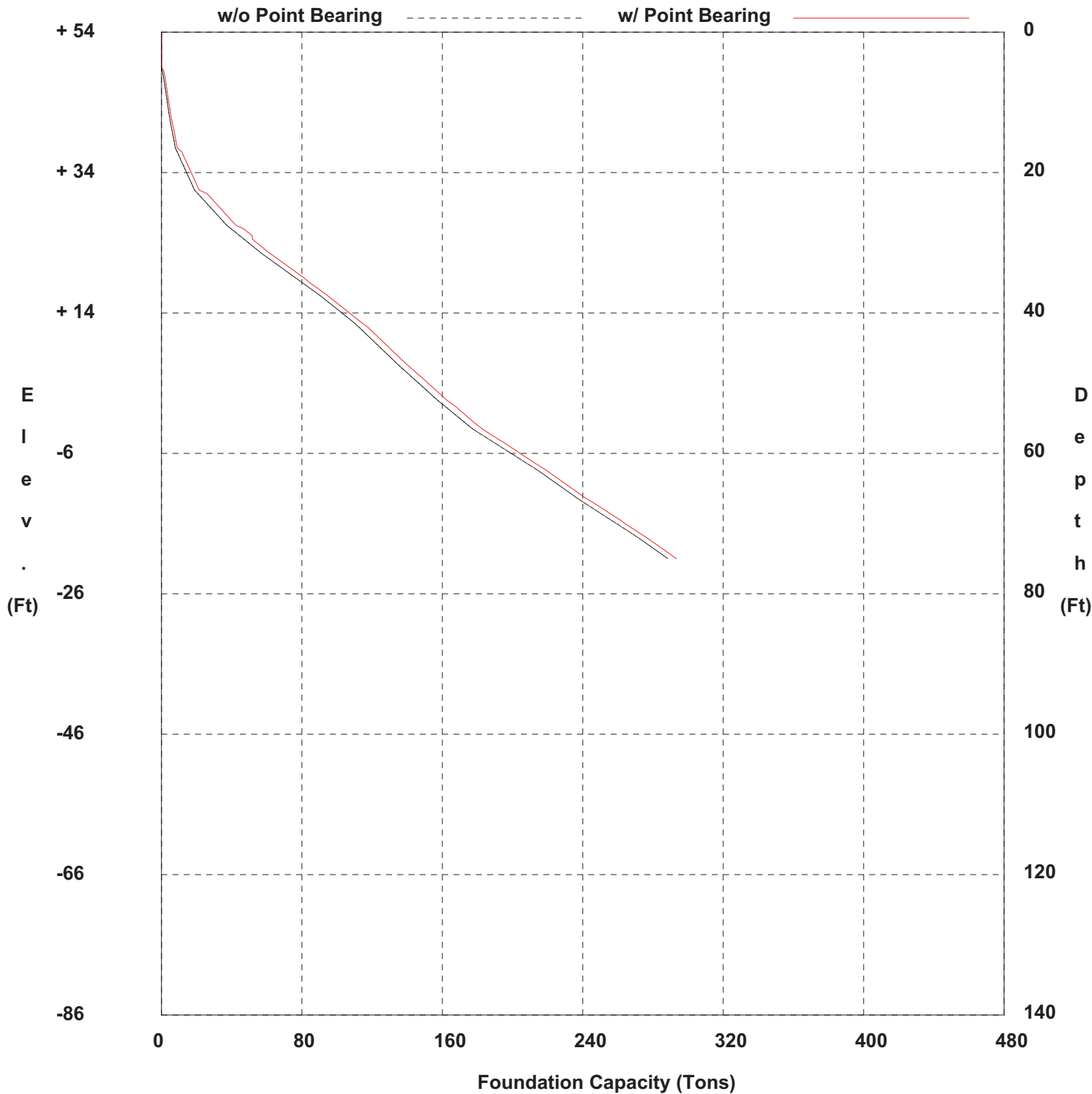
Hole BRG-30
Structure
Station
Offset

District
Date 3/12/2014
Grnd. Elev. 54.00 ft
GW Elev. 39.00 ft

16 inch Square Pile

+54 Top Hole Elevation
+49 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

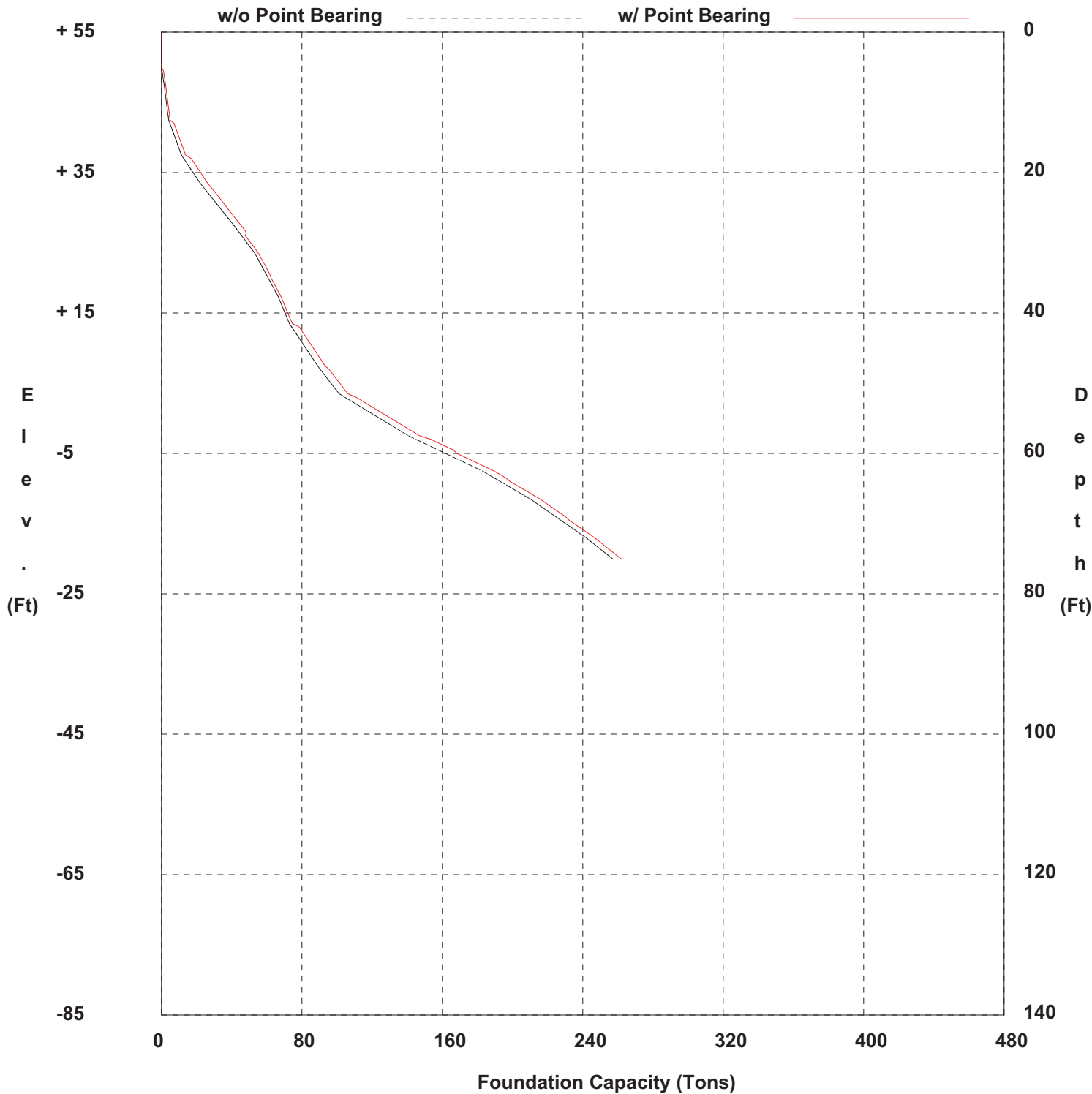
Hole BRG-29
Structure
Station
Offset

District
Date 3/12/2014
Grnd. Elev. 55.00 ft
GW Elev. 40.00 ft

18 inch Square Pile

+55 Top Hole Elevation
+50 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

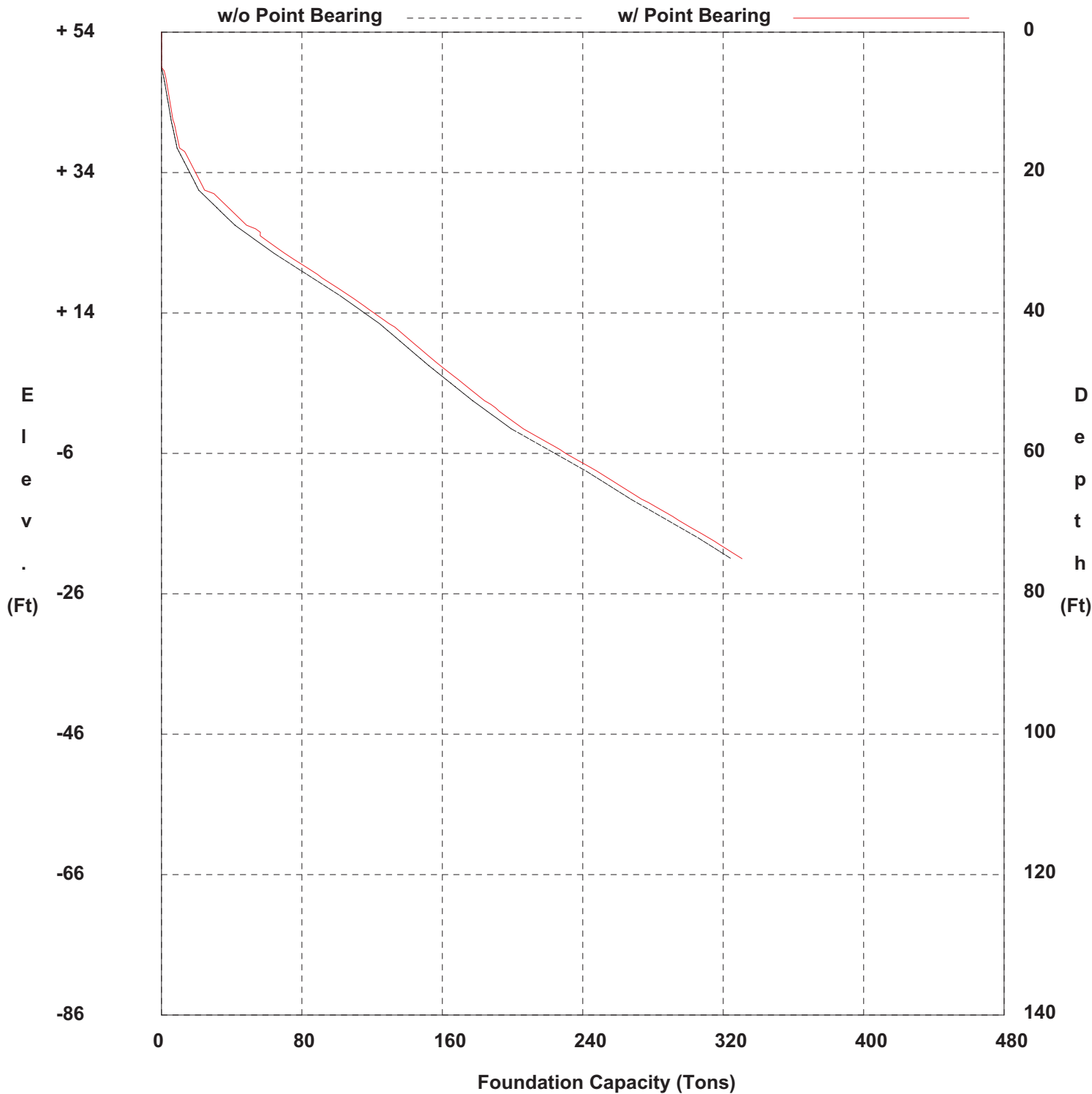
Hole BRG-30
Structure
Station
Offset

District
Date 3/12/2014
Grnd. Elev. 54.00 ft
GW Elev. 39.00 ft

18 inch Square Pile

+54 Top Hole Elevation
+49 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

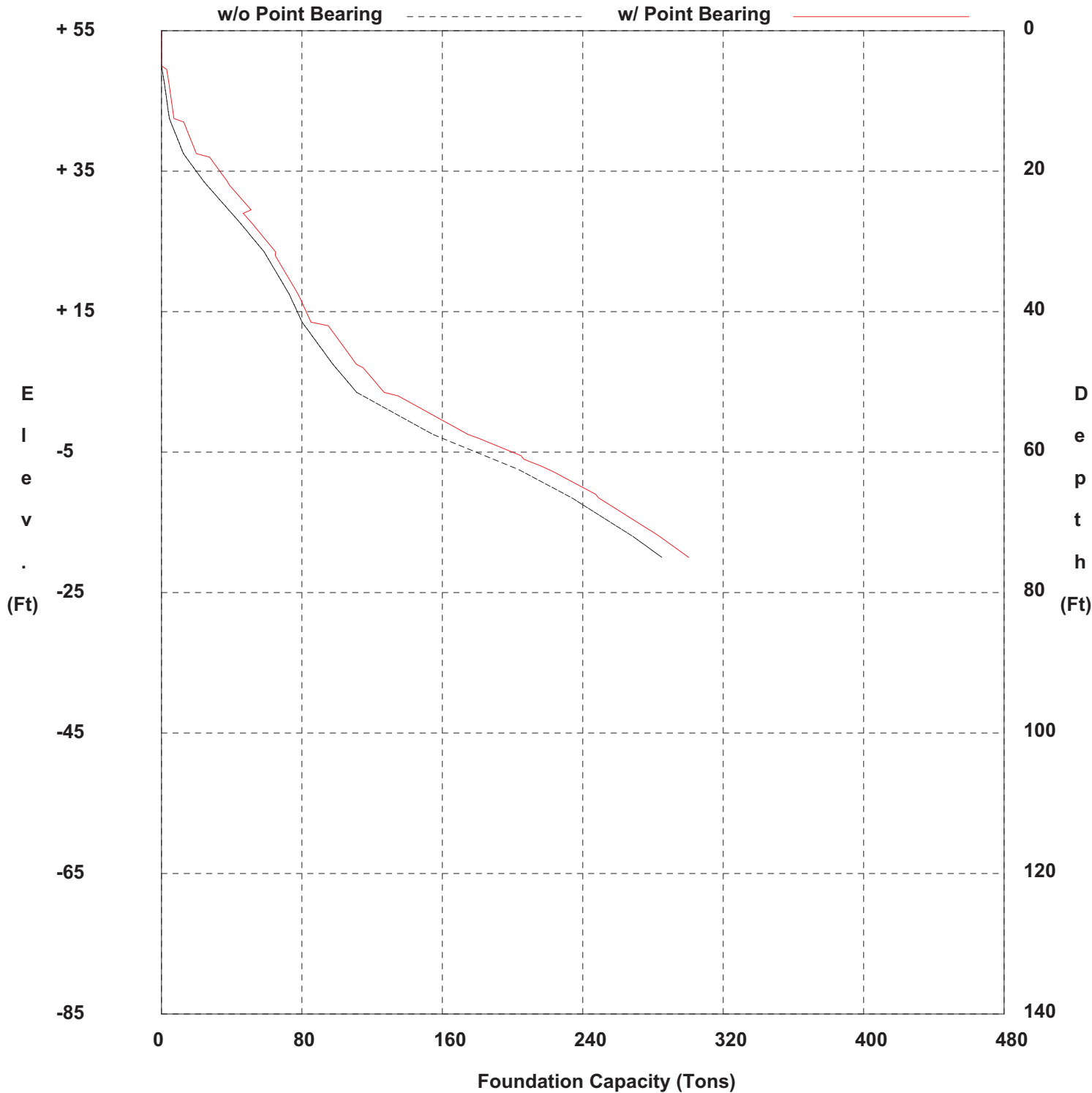
Hole BRG-29
Structure
Station
Offset

District
Date 3/12/2014
Grnd. Elev. 55.00 ft
GW Elev. 40.00 ft

36 inch Drilled Shaft

+55 Top Hole Elevation
+50 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

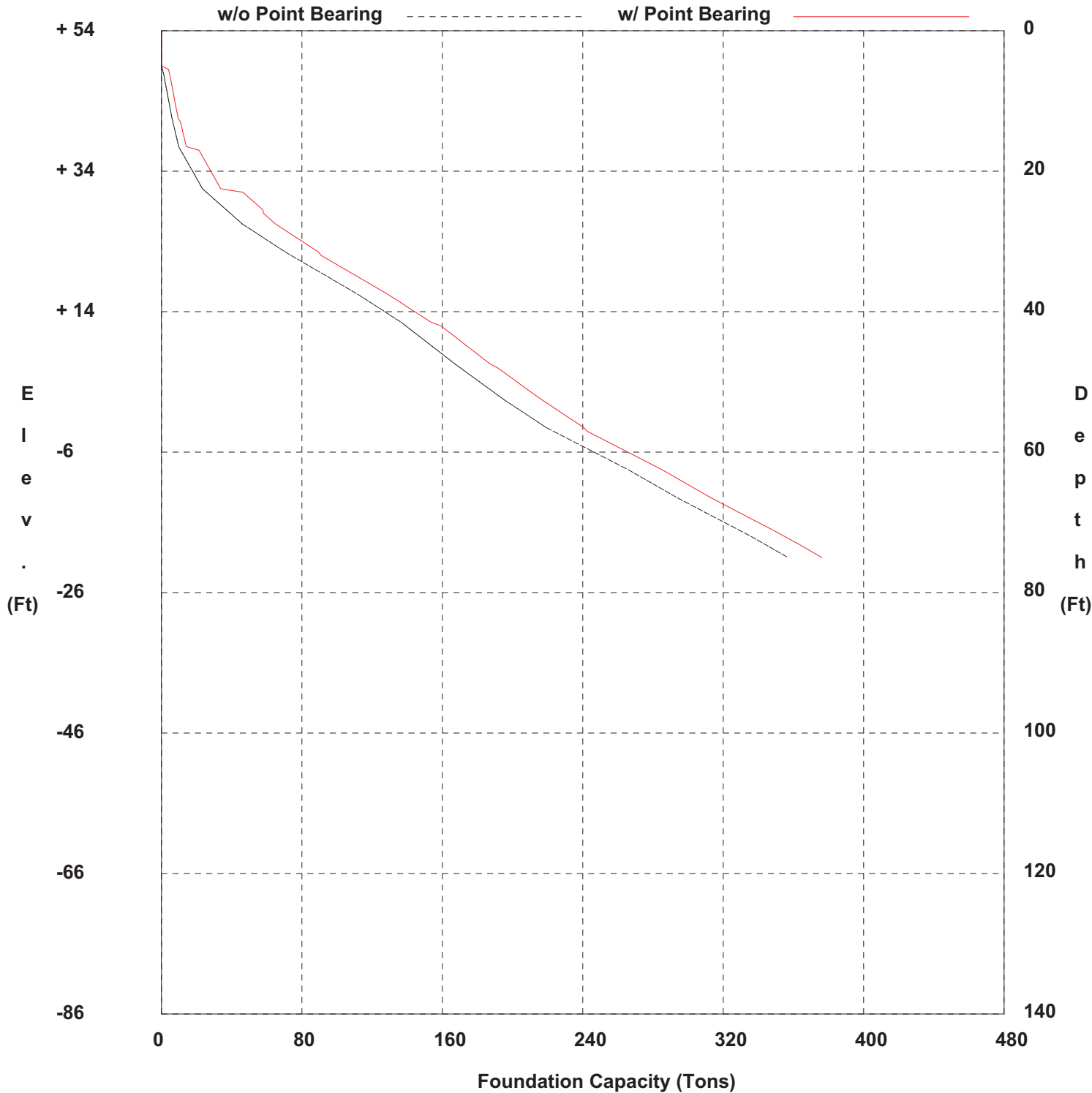
Hole BRG-30
Structure
Station
Offset

District
Date 3/12/2014
Grnd. Elev. 54.00 ft
GW Elev. 39.00 ft

36 inch Drilled Shaft

+54 Top Hole Elevation
+49 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

Coolidge Rd.

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

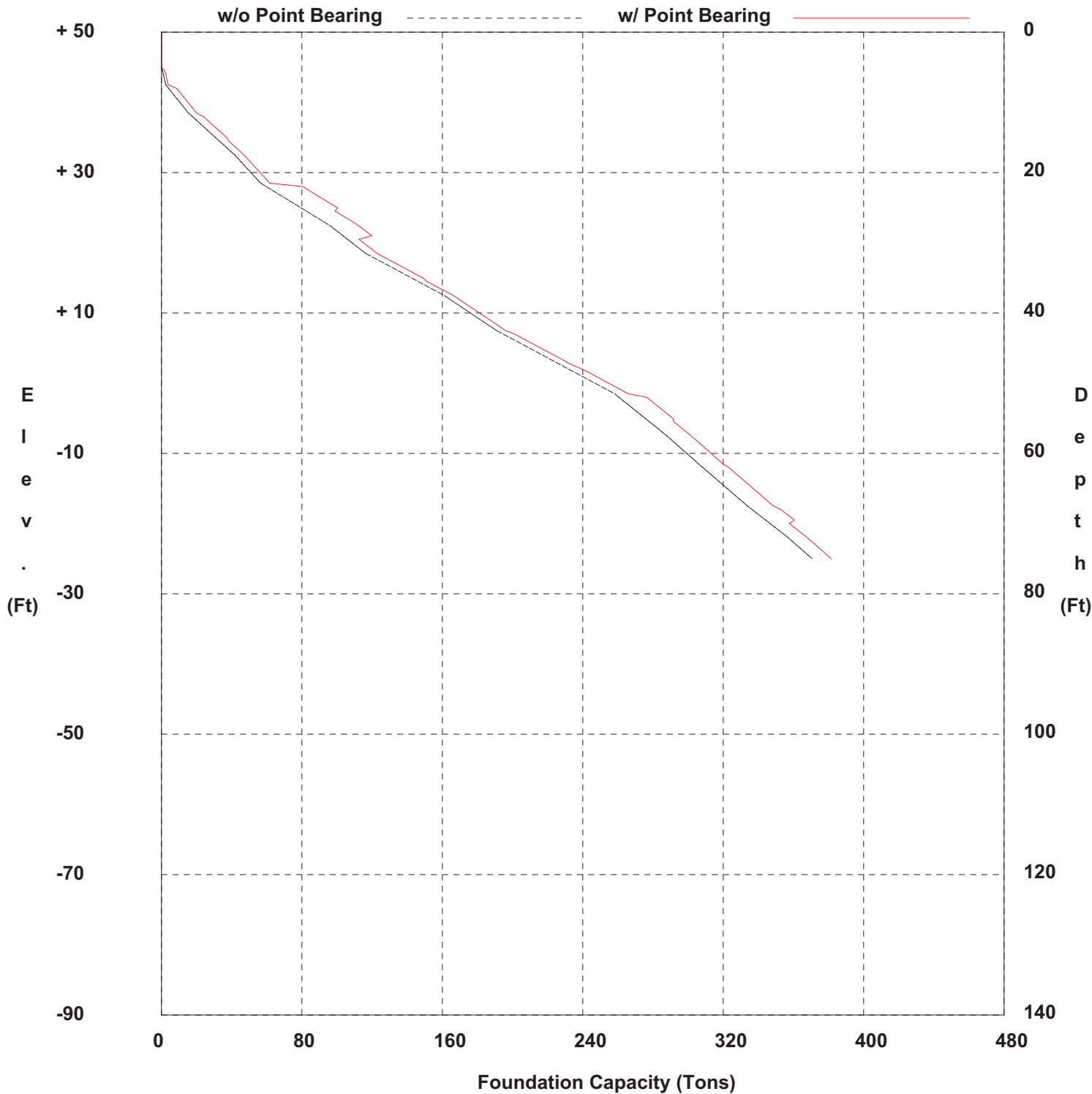
Hole BRG-31
Structure
Station
Offset

District
Date 3/8/2014
Grnd. Elev. 50.00 ft
GW Elev. 37.00 ft

16 inch Square Pile

+50 Top Hole Elevation
+45 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

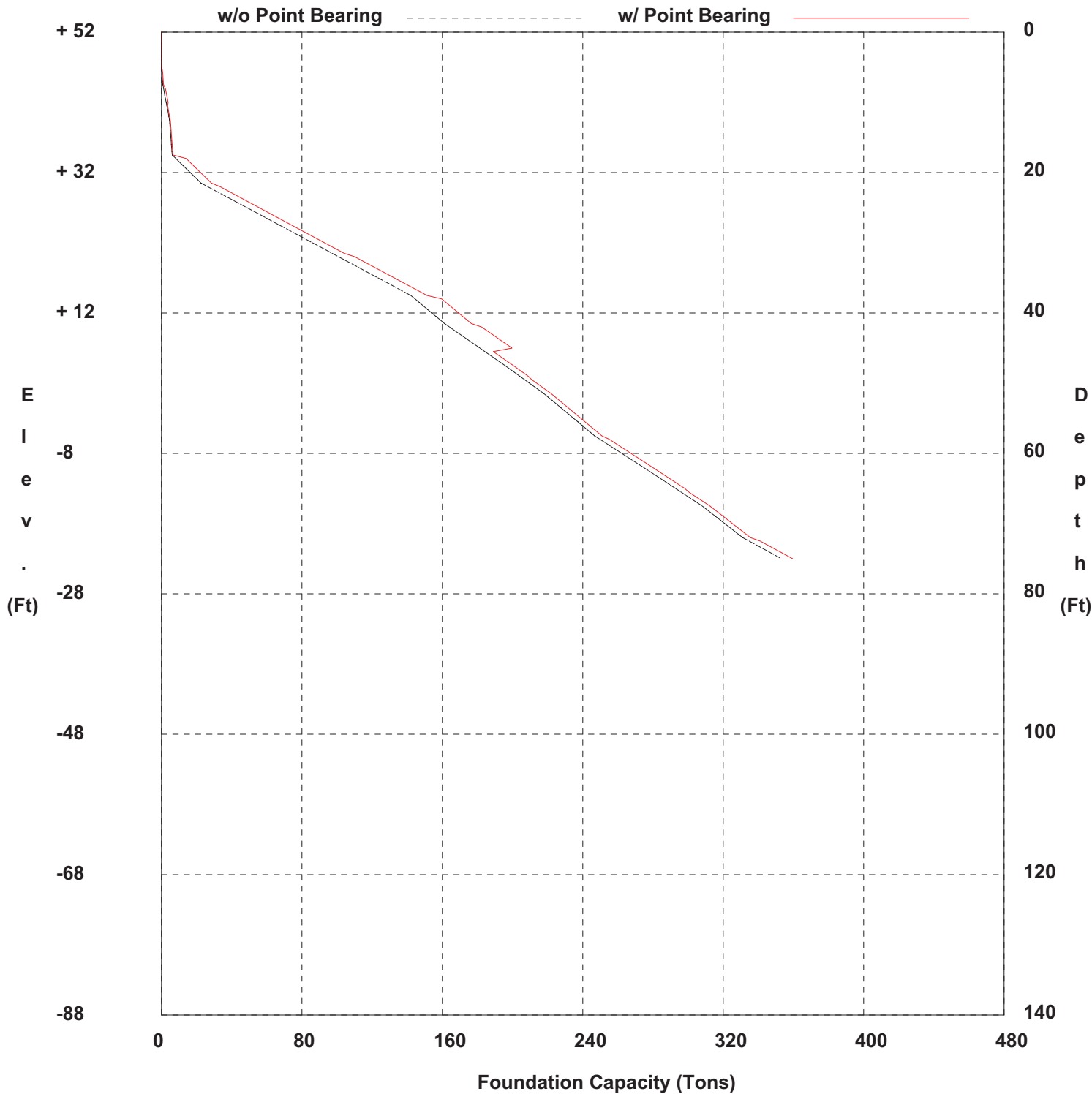
Hole BRG-32
Structure
Station
Offset

District
Date 3/8/14
Grnd. Elev. 52.00 ft
GW Elev. 39.00 ft

16 inch Square Pile

+52 Top Hole Elevation
+47 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

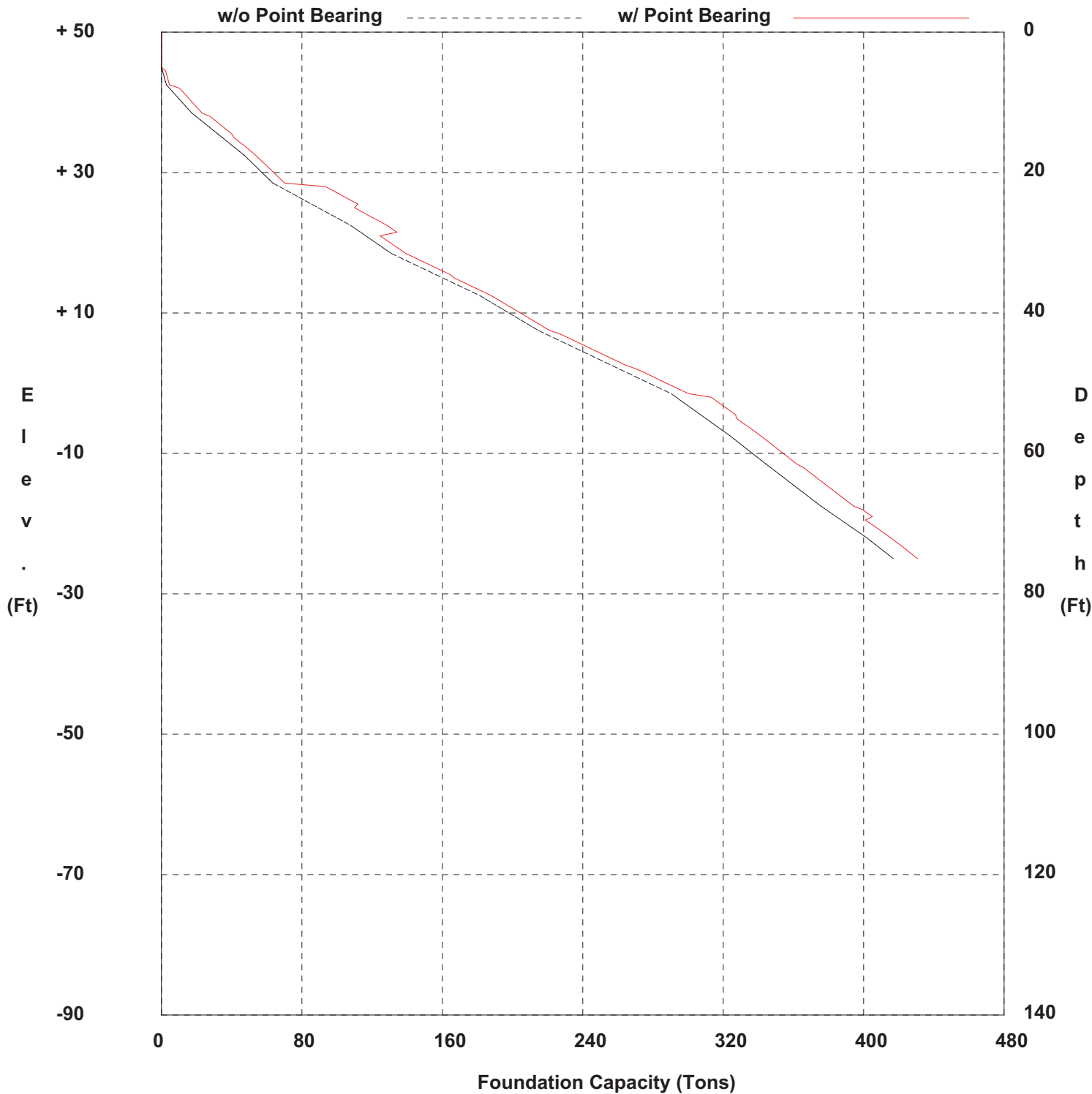
Hole BRG-31
Structure
Station
Offset

District
Date 3/8/2014
Grnd. Elev. 50.00 ft
GW Elev. 37.00 ft

18 inch Square Pile

+50 Top Hole Elevation
+45 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

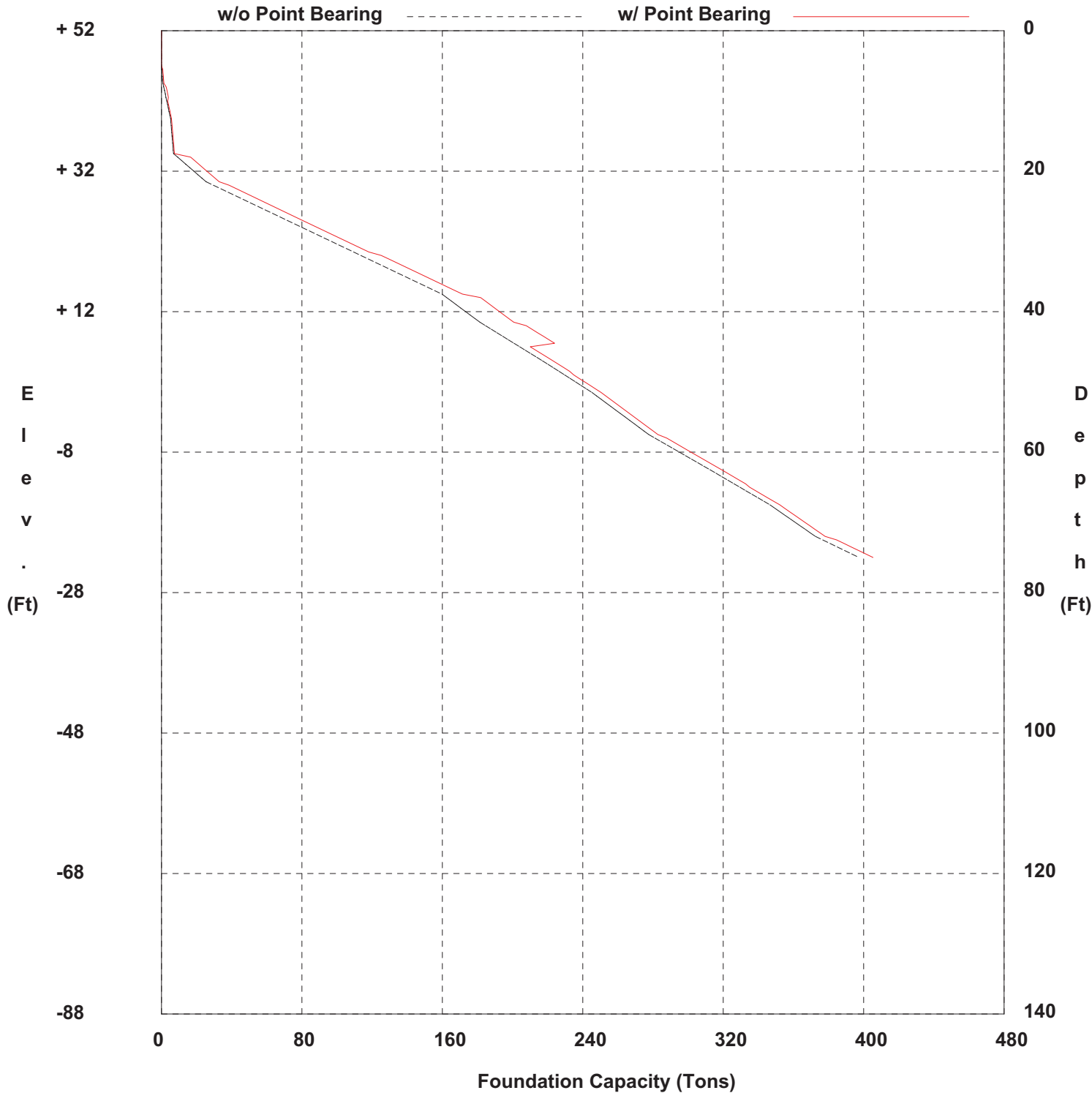
Hole BRG-32
Structure
Station
Offset

District
Date 3/8/14
Grnd. Elev. 52.00 ft
GW Elev. 39.00 ft

18 inch Square Pile

+52 Top Hole Elevation
+47 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

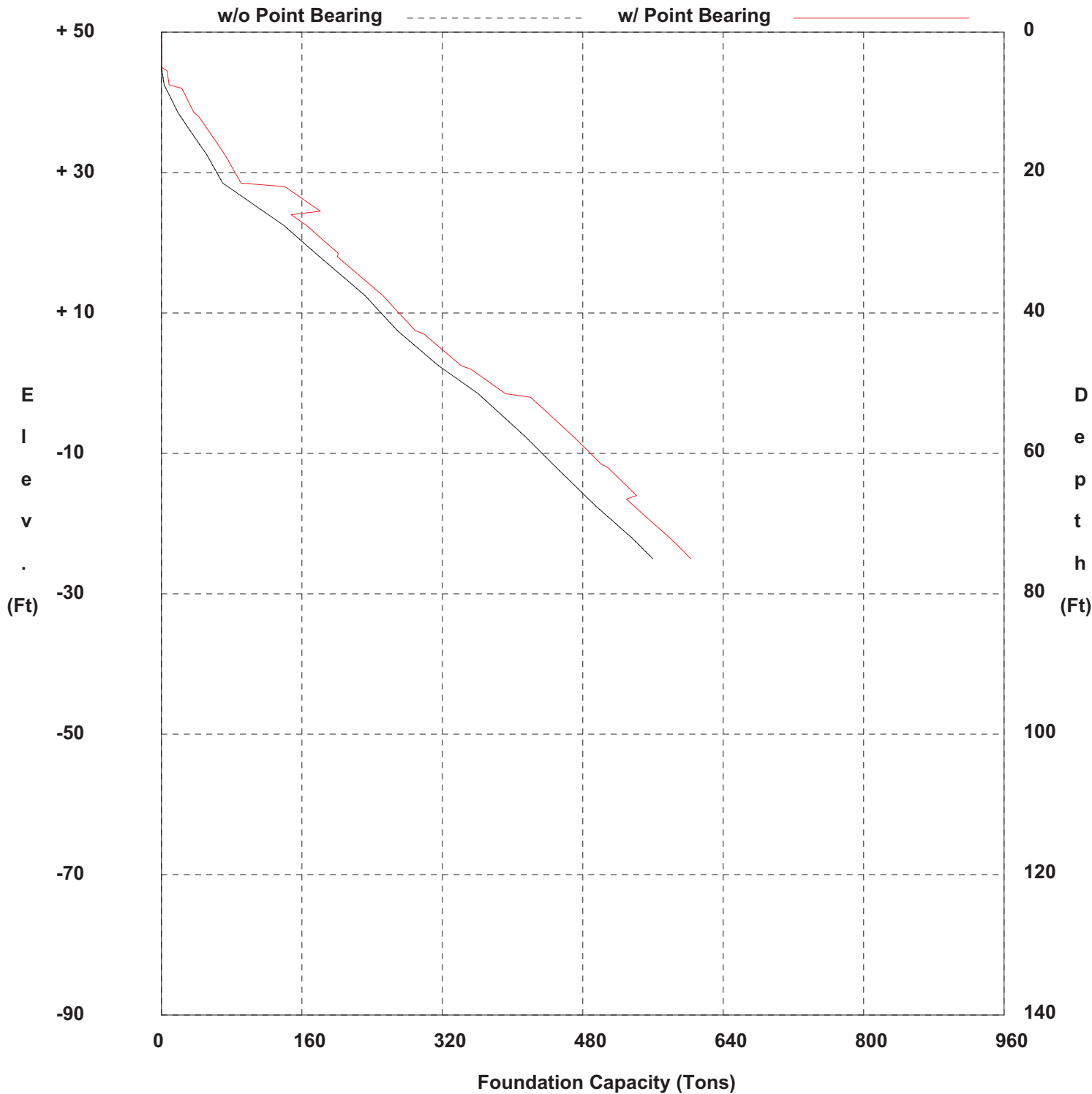
Hole BRG-31
Structure
Station
Offset

District
Date 3/8/2014
Grnd. Elev. 50.00 ft
GW Elev. 37.00 ft

36 inch Drilled Shaft

+50 Top Hole Elevation
+45 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

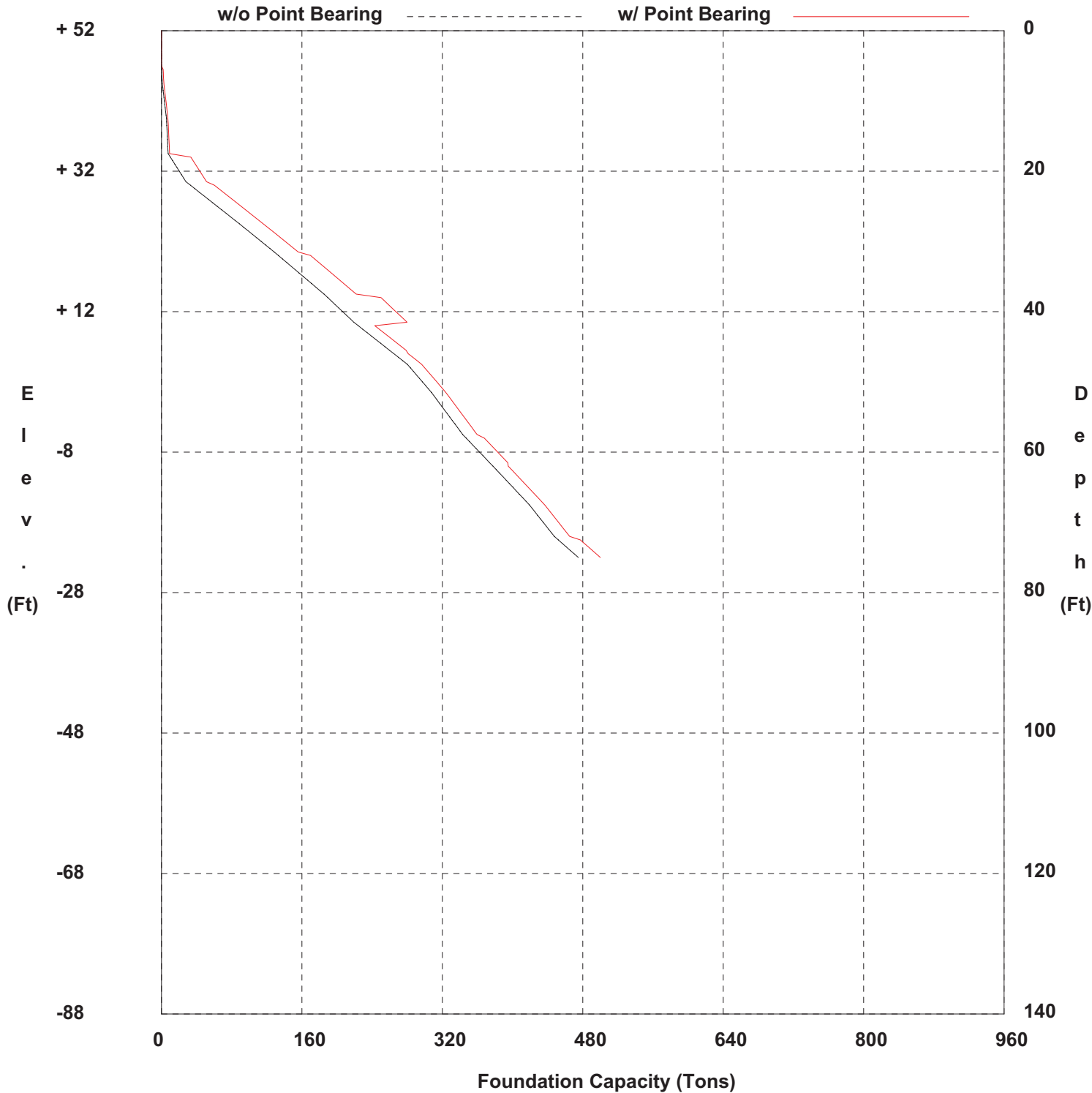
Hole BRG-32
Structure
Station
Offset

District
Date 3/8/14
Grnd. Elev. 52.00 ft
GW Elev. 39.00 ft

36 inch Drilled Shaft

+52 Top Hole Elevation
+47 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

FM 493

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

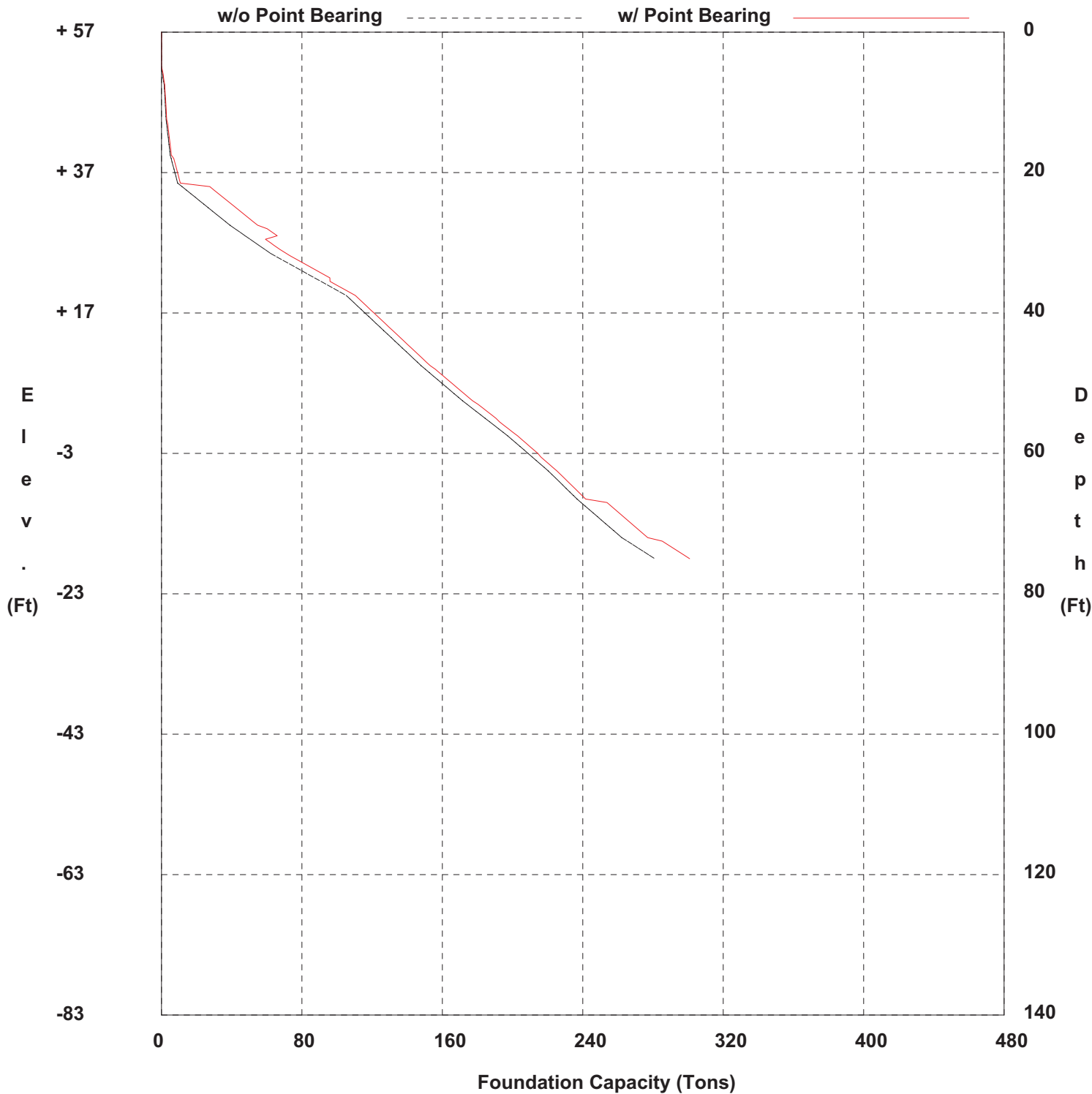
Hole BRG-33
Structure
Station
Offset

District
Date 3/1/2014
Grnd. Elev. 57.00 ft
GW Elev. 44.00 ft

16 inch Square Pile

+57 Top Hole Elevation
+52 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

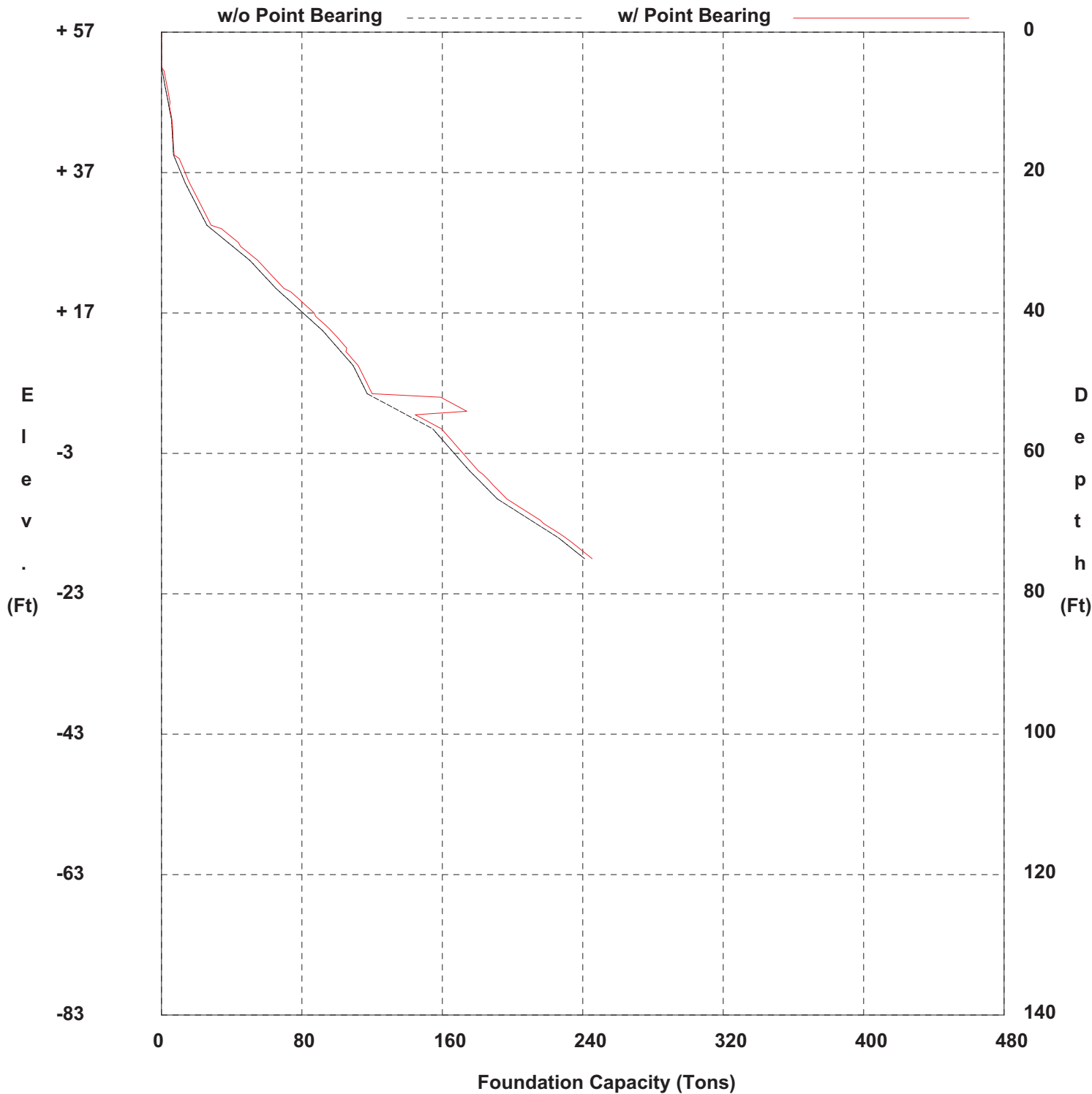
Hole BRG-34
Structure
Station
Offset

District
Date 3/5/2014
Grnd. Elev. 57.00 ft
GW Elev. 40.00 ft

16 inch Square Pile

+57 Top Hole Elevation
+52 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

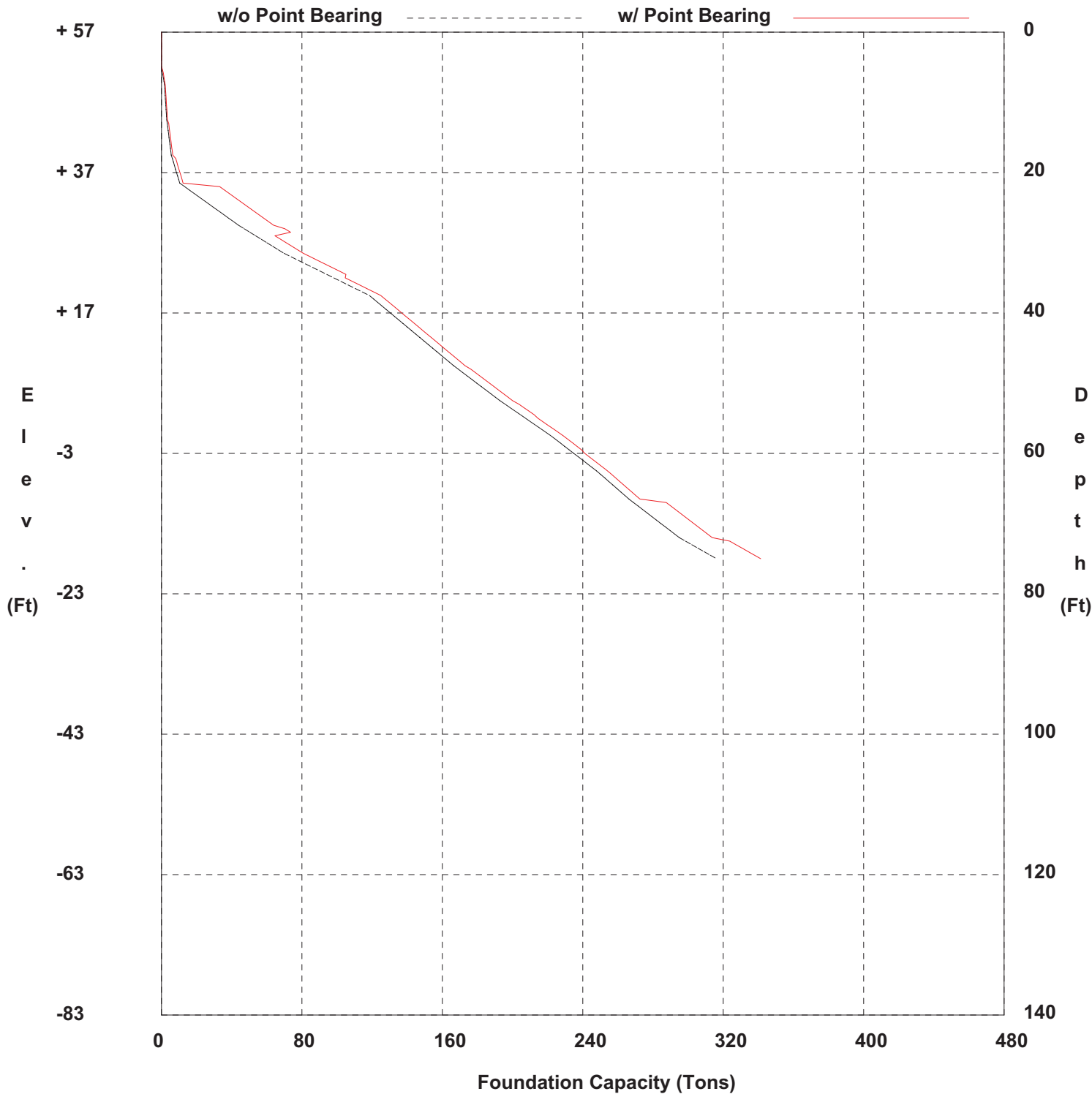
Hole BRG-33
Structure
Station
Offset

District
Date 3/1/2014
Grnd. Elev. 57.00 ft
GW Elev. 44.00 ft

18 inch Square Pile

+57 Top Hole Elevation
+52 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

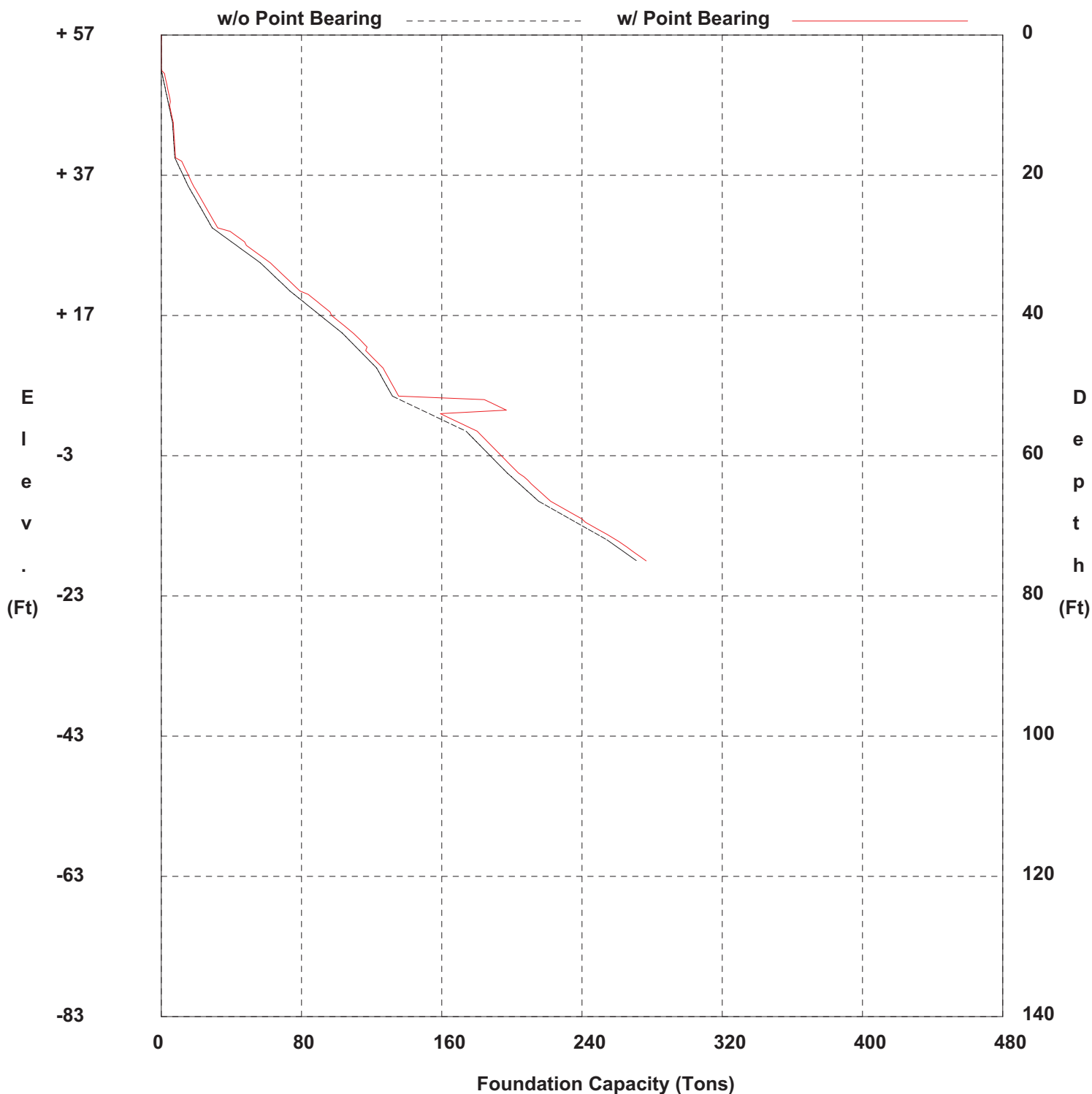
Hole BRG-34
Structure
Station
Offset

District
Date 3/5/2014
Grnd. Elev. 57.00 ft
GW Elev. 40.00 ft

18 inch Square Pile

+57 Top Hole Elevation
+52 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

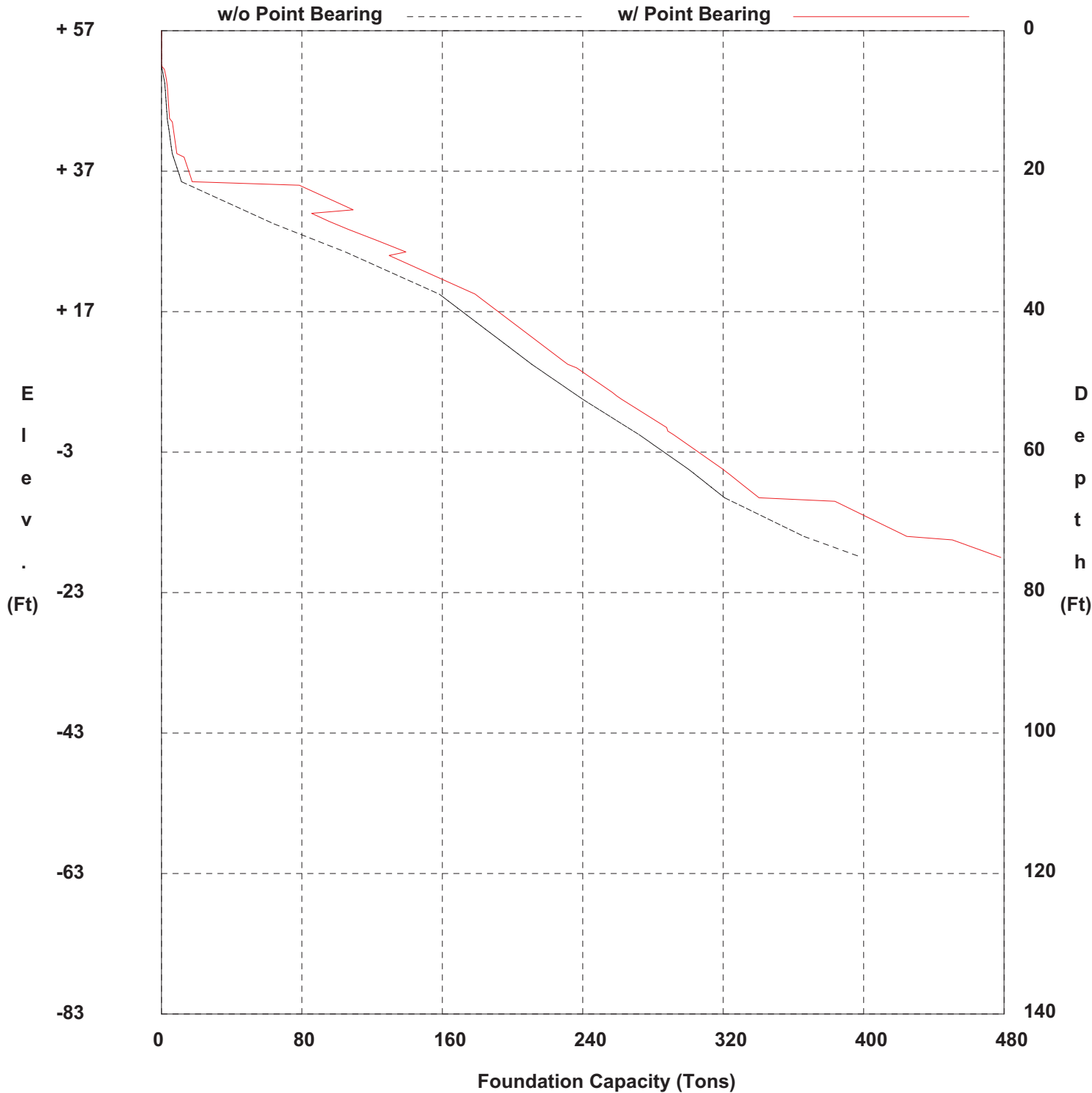
Hole BRG-33
Structure
Station
Offset

District
Date 3/1/2014
Grnd. Elev. 57.00 ft
GW Elev. 44.00 ft

36 inch Drilled Shaft

+57 Top Hole Elevation
+52 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

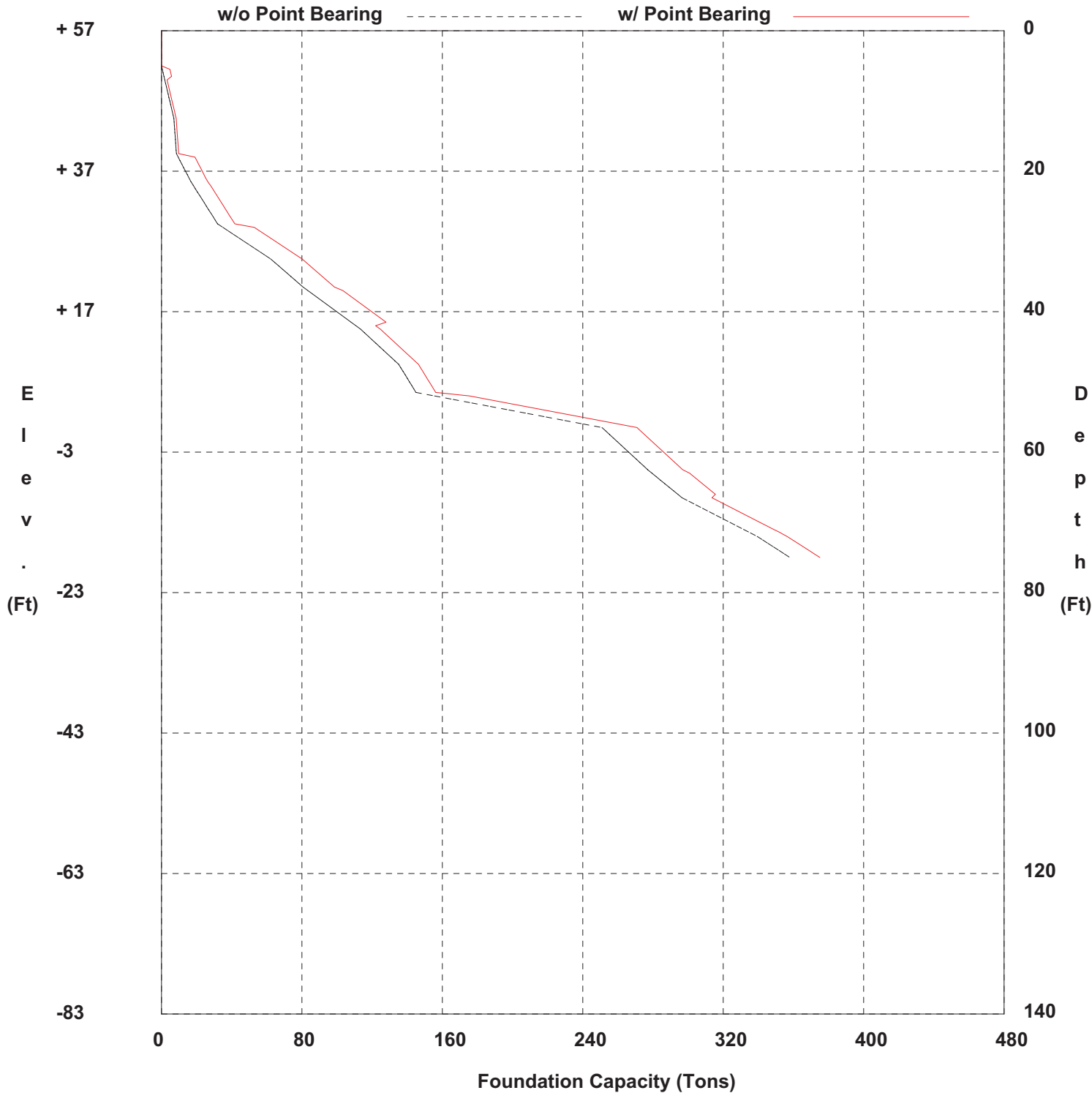
Hole BRG-34
Structure
Station
Offset

District
Date 3/5/2014
Grnd. Elev. 57.00 ft
GW Elev. 40.00 ft

36 inch Drilled Shaft

+57 Top Hole Elevation
+52 Disregard Elevation

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



FOUNDATION CAPACITY CURVES

County Rd. 5

FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

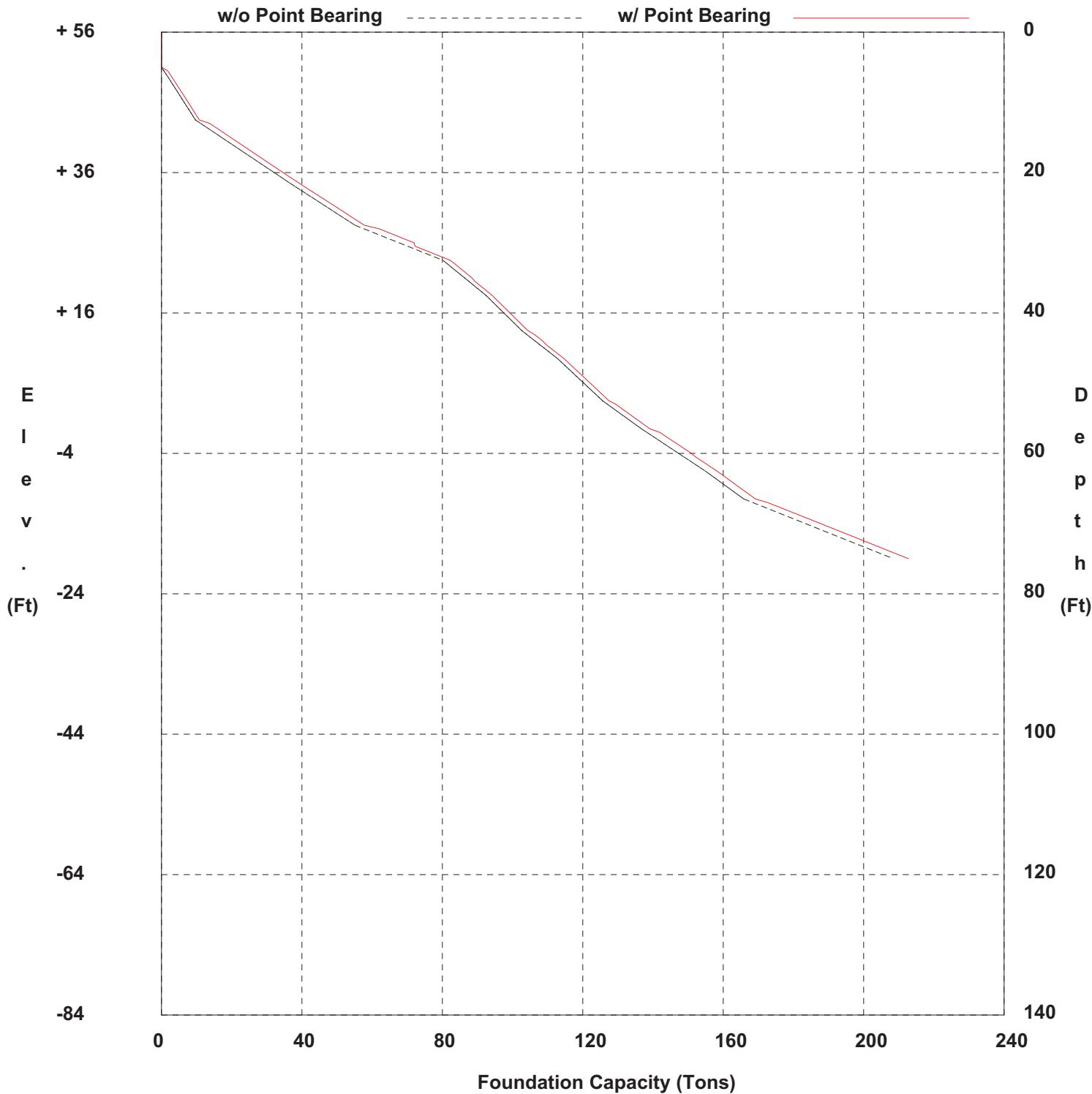
Hole BRG-35
Structure
Station
Offset

District
Date 3/27/2014
Grnd. Elev. 56.00 ft
GW Elev. 40.00 ft

16 inch Square Pile

+56 Top Hole Elevation
+51 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

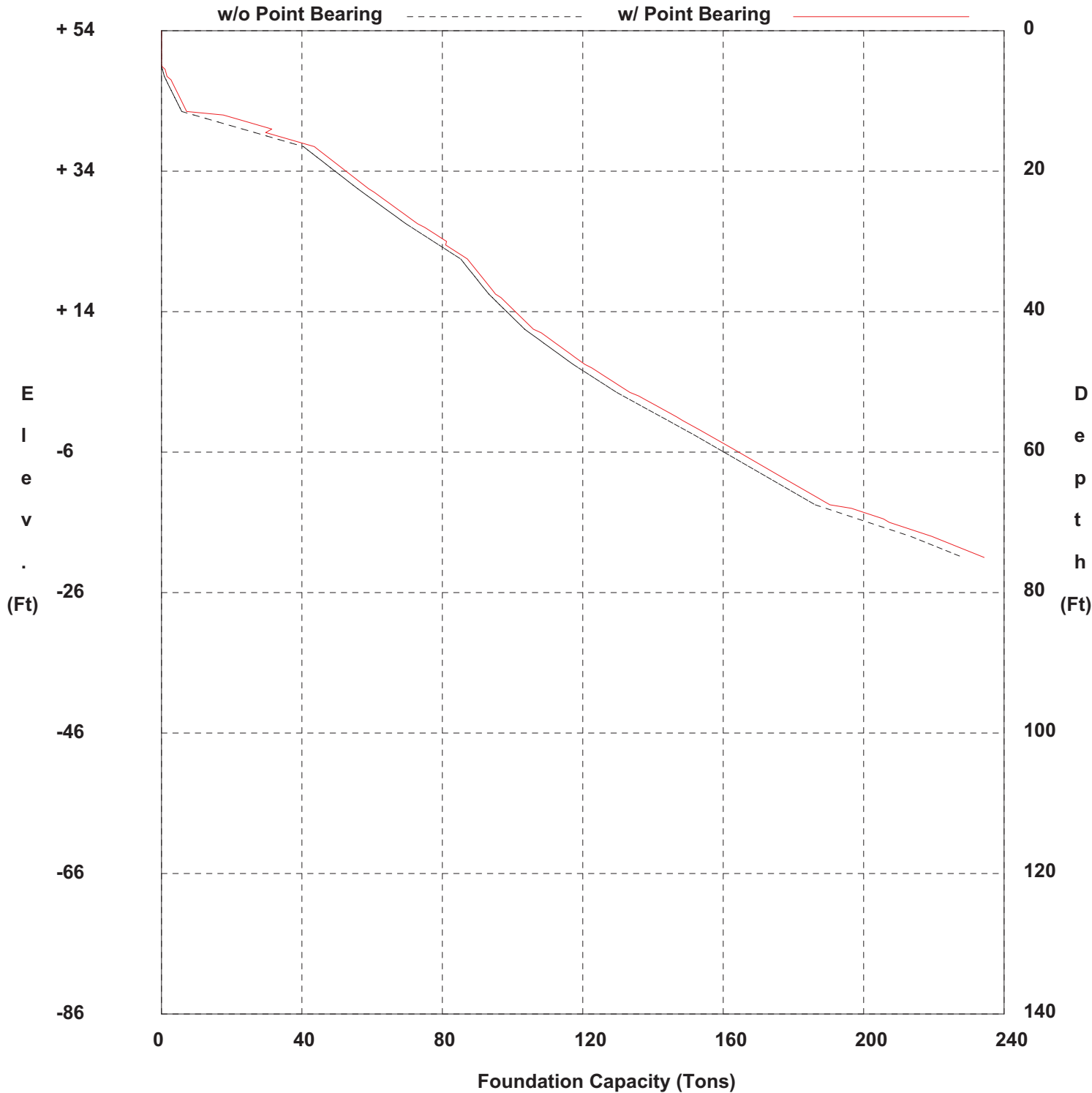
Hole BRG-36
Structure
Station
Offset

District
Date 3/27/2014
Grnd. Elev. 54.00 ft
GW Elev. 40.00 ft

16 inch Square Pile

+54 Top Hole Elevation
+49 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

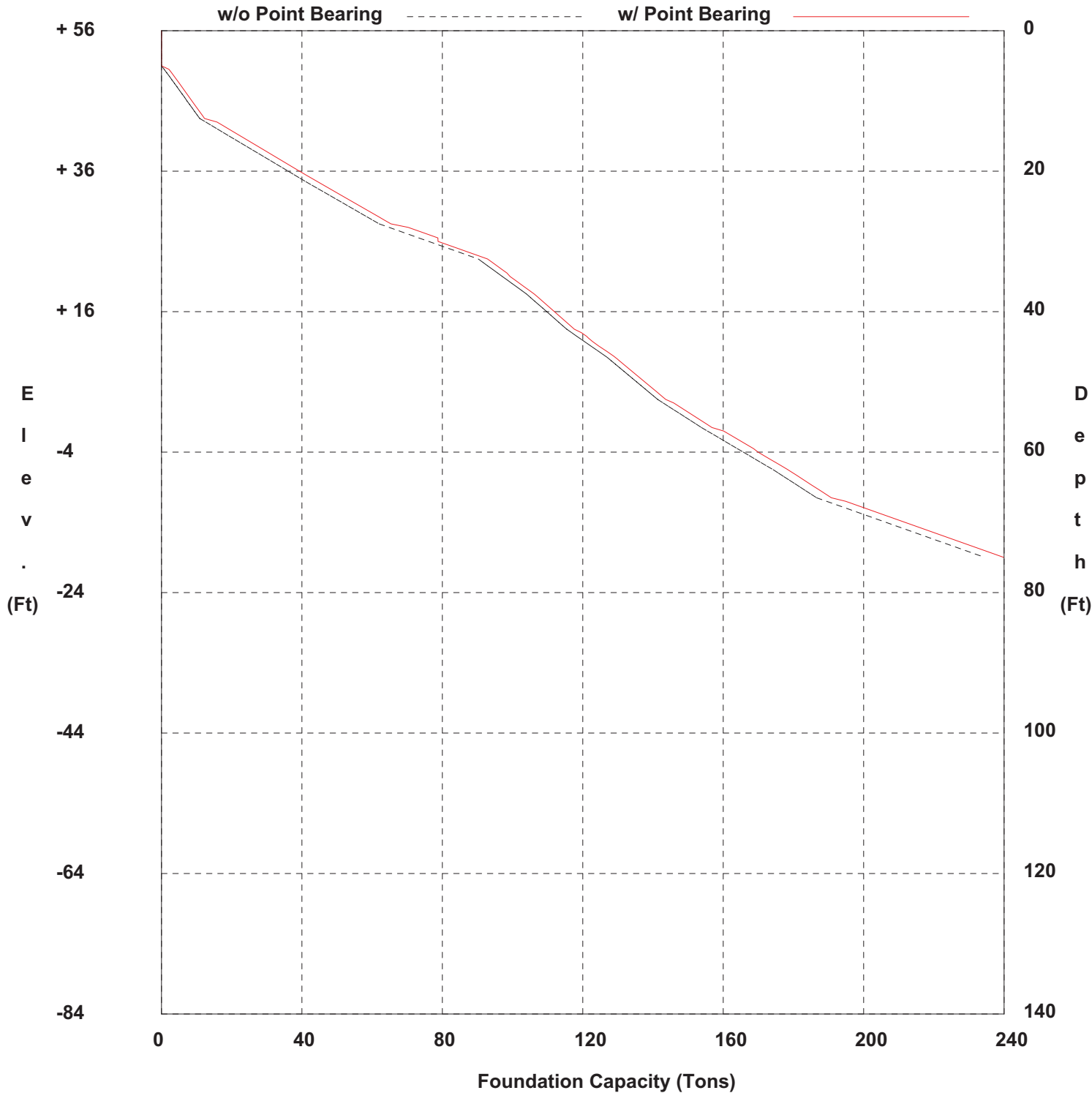
Hole BRG-35
Structure
Station
Offset

District
Date 3/27/2014
Grnd. Elev. 56.00 ft
GW Elev. 40.00 ft

18 inch Square Pile

+56 Top Hole Elevation
+51 Disregard Elevation
Skin Friction Limit = 1.4 tsf

Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used



FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

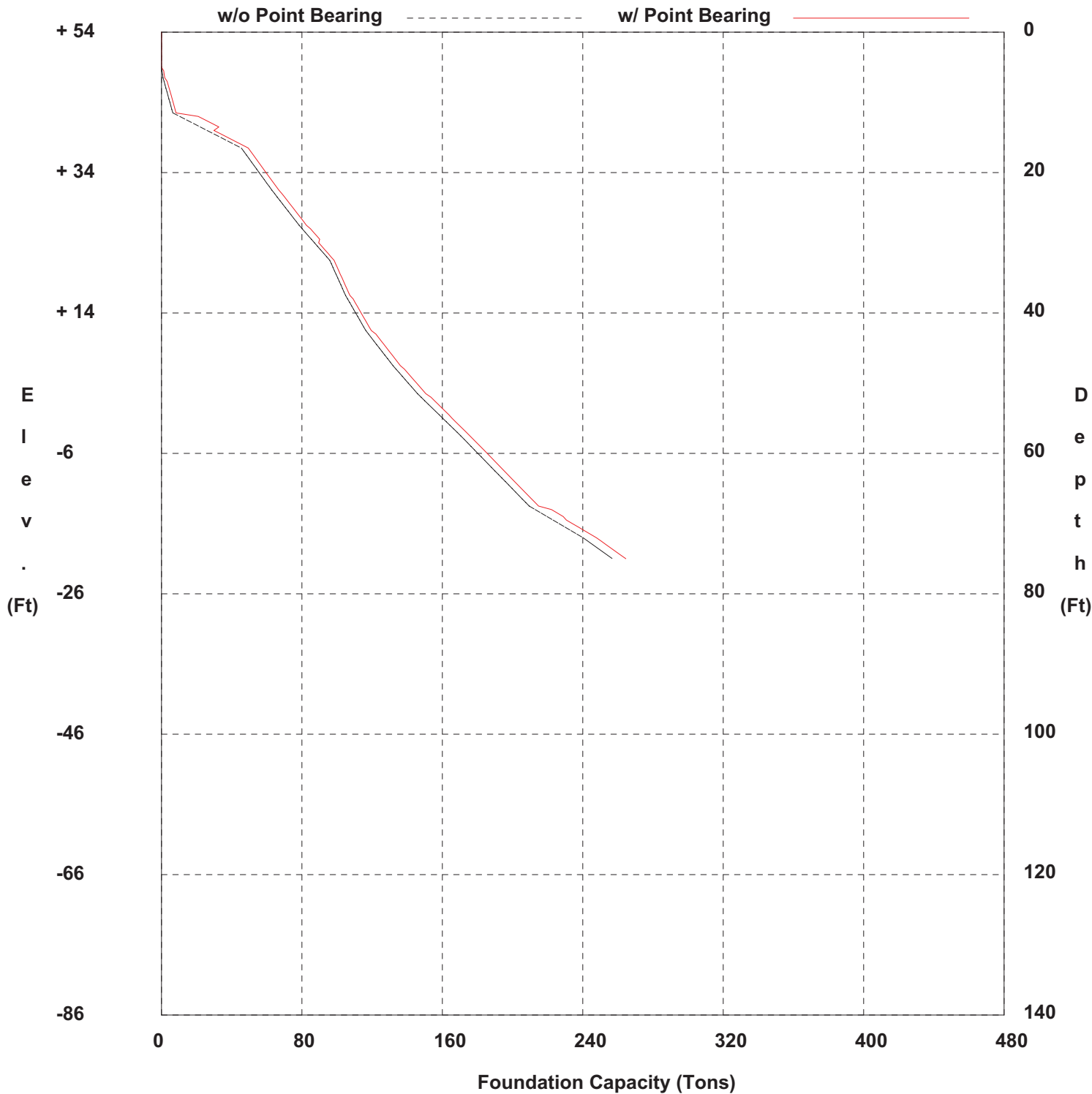
Hole BRG-36
Structure
Station
Offset

District
Date 3/27/2014
Grnd. Elev. 54.00 ft
GW Elev. 40.00 ft

18 inch Square Pile

+54 Top Hole Elevation
+49 Disregard Elevation
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FOUNDATION CAPACITY

WinCore
Version 3.1

County Hidalgo
Highway
Control

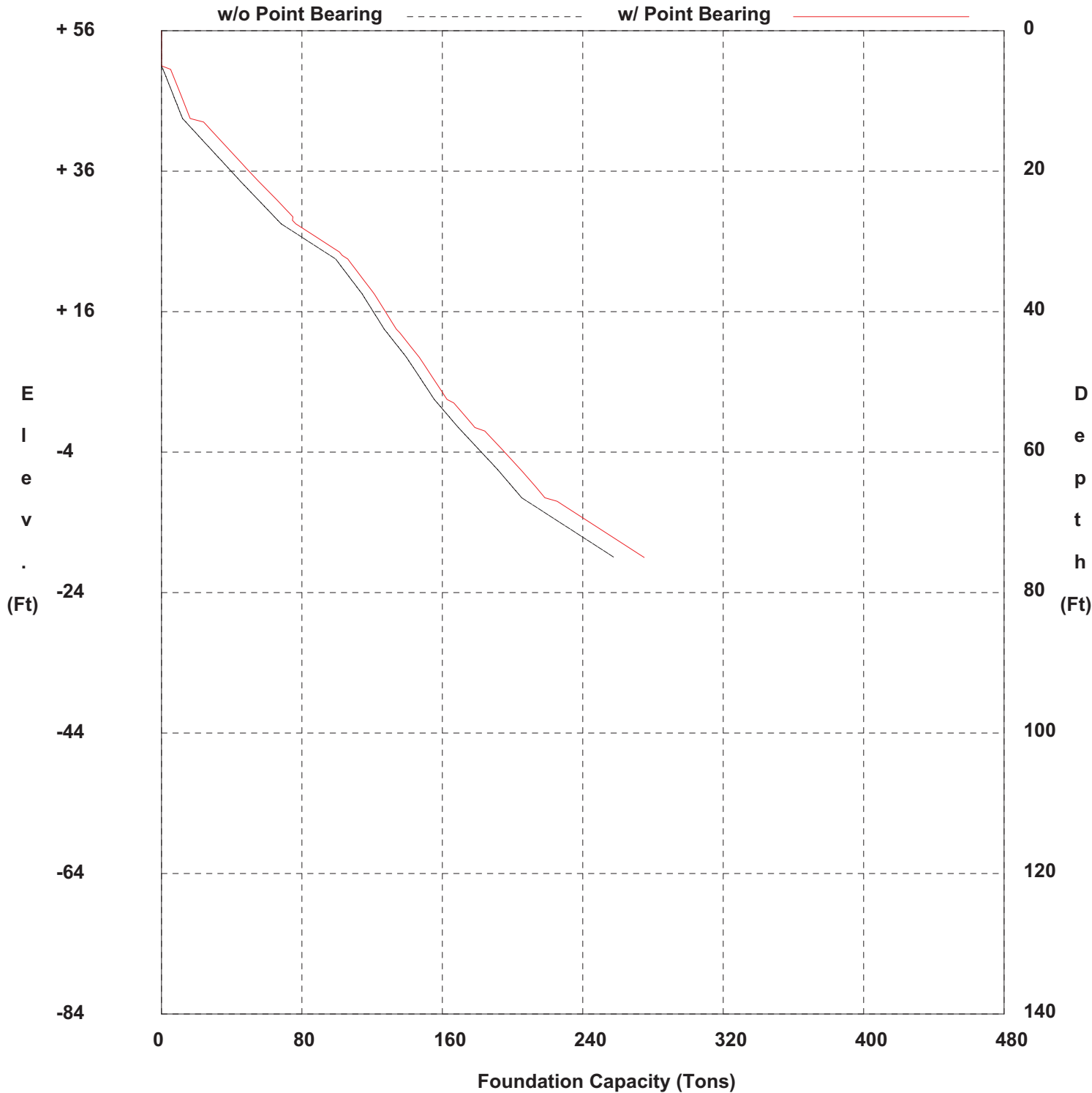
Hole BRG-35
Structure
Station
Offset

District
Date 3/27/2014
Grnd. Elev. 56.00 ft
GW Elev. 40.00 ft

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+51 Disregard Elevation

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0.7 Soil Reduction Factor Used



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