CONSENT AGENDA
DRAINAGE DISTRICT
BOARD OF DIRECTORS
June 23, 2015
9:00 A.M.

NOTICE is hereby given in accordance with Chapter 551, Texas Government Code, that a SPECIAL MEETING of the Drainage District #1 Board of Directors will be held at the Edinburg Council Chambers 415 W. University Drive, Edinburg, Hidalgo County, Texas. Discussion and possible action relating to the following business will be transacted:

NOTICE TO THE PUBLIC
CONSENT AGENDA

The following items are of a routine or administrative nature. The Drainage District #1 Board has been furnished with background and support on each item, and/or it has been discussed at a previous meeting. All items will be acted upon by one vote without being discussed separately unless requested by a Board Member, in which event the item or items will immediately be withdrawn for individual consideration in its normal sequence after the items not requiring separate discussion have been acted upon. The remaining items will be adopted by one vote.

1. Approval of check register and payment of claims and bills - County Treasurer

2. **AI -50209** Discharge permit:
Bordertown Development LLC - Bordertown Acres Phase I

3. **AI -50094** Discharge Permits:
A. City of Edinburg - Edinburg Arena Subdivision 90.57 & 89.80

Utility Permit:
B. Sharyland Water Supply Corporation proposes to place 12"PVC steel casing on HCDD1 ROW north of 6 mile on Los Ebanos

4. **AI -50119** Approval to issue payment after review and audit procedures are complete:

L&G Consulting Engineers, Inc.
A) Inv. 11325163 in the amount of $137,895.67 from L&G Consulting Engineers, Inc. related to Work Authorization no. 1-Engineering Services for Pct.2 Pharr McAllen Drain & South Flood Water Channel Watershed Improvement Projects. PO#626860.

B) Inv. 11325167 in the amount of $13,662.09 from L&G Consulting Engineers, Inc. related to Work Authorization no. 4-Special Services for

Mission Inlet Re-certification Project. PO#624010.

C) Inv. 11325158 in the amount of $12,936.40 from L&G Consulting Engineers, Inc. related to Work Authorization no. 2-Engineering Services for outfalls for the US 83 Relief Route related to La Joya Watershed Improvement Project. PO#622697.

D) Inv#11325086 in the amount of $468.82 from L&G Consulting Engineers, Inc. related to Work Authorization No. 1-Engineering Services for FM 676 Outfall. PO#622895.

E) Inv#11325172 in the amount of $95,587.38 from L&G Consulting Engineers, Inc. related to Work Authorization No. 5-for Design, Geotechnical, Survey & Right of Way Acquisition Services for Phase 1 of La Joya Watershed Project. PO#625396.

5. **AI -50124** Request to issue payment after review and audit procedures are complete:

ENTECH Civil Engineers, Inc.

2013 Bonds:
A) Inv#W5ENT624245-3 in the amount of $2,895.60 related to Work Authorization No. 6-Engineering Services for Pct.4 South Main Drain Weir No. 5. PO#624245.

B) Inv#W3ENT624244-3 in the amount of $3,072.42 related to Work Authorization No. 5-Engineering Services for Pct.4 North Main Drain Weir No. 3. PO#624244.

General Fund:
C) Inv#0041-12-001-8 in the amount of $1,546.20 for Engineering Services for the Repair/Armoring of the South Main Drain Weir No. 5. PO#621259.

6. **AI -50125** Request approval to issue payment after review and audit procedures are completed:

Guzman & Muñoz Engineering & Surveying, Inc.

2013 Bonds:
A) Inv#5611 in the amount of $567.68 related to Work Authorization No. 1-Basic Services for Pct.4 Edinburg Stub Control Structures. PO#623074.

B) Inv#5616 in the amount of $3,849.81 related to Work Authorization No. 5-Basic Engineering Services for Pct. 4 West Main Drain Weir Structure. PO#623077.

7. **AI -50128** Request to issue payment after review and audit procedures are complete:

S&B Infrastructure, LTD.

A) Inv#U9444.103&812-05B in the amount of $87,396.00 related to Work Authorization no. 16-Engineering Services PS&E for Hidalgo County Raymondville Drain & Work Authorization No. 17-Engineering Services PS&E for Hidalgo and Willacy Counties Raymondville Drain Project. PO# 623918 & 626525.

B) Inv#U9444.103&812-06A in the amount of $170,517.00 related to Work Authorization no. 16-Engineering Services PS&E for Hidalgo County Raymondville Drain & Work Authorization No. 17-Engineering Services PS&E for Hidalgo and Willacy Counties RAymondville Drain Project. PO#623918 & 626525.

8. **AI -50132** Request approval to issue payment after review & audit procedures are complete:

R. Gutierrez Engineering Corporation.

General Fund:
A. Inv#3823 in the amount of $15,970.35 related to Work Authorization No. 2-Special Services for Aluminum Structural Plate Arch Repair.

B. Inv#3795 in the amount of $601.43 related to Work Authorization No. 3-Construction Material Testing for Seminole Valley Drain Improvements. PO#624631-R.

C. Inv#3494 in the amount of $28,908.20 related to North San Juan Lateral Project.

9. **AI -50179** A.) Change Order No. 2 for Construction Contract No. HCDD1-14-031-12-02 "Spanish Palms Subdivision" in the amount of $7,395.03. Reviewed and approved by Drainage District General Manager.

B.) Change Order No. 3 for Construction Contract No. HCDD1-13-022-04-29B "FM 495 Drain - Wisconsin Road Crossing" approval of rain days. Reviewed and approved by Drainage District General Manager.

10. **AI -50122** Request to issue payment after review and audit procedures are complete:

TEDSI Infrastructure Group.

A) Inv#20152303 in the amount of $18,868.80 from Tedsi Infrastructure

Group related to Work Authorization no. 8-General Management Services for the Lower Rio Grande Valley Regional Water Management Program. PO#623578.

B)Inv#20142204 in the amount of $95,442.44 from Tedsi Infrastructure Group related to Work Authorization no. 13-Preliminary Engineering Report for Lower Rio Grande Valley Regional Water Management Program. PO#623666,623958, 625152,626144.

C)Inv#20152356 in the amount of $6,002.05 from Tedsi Infrastructure Group related to Work Authorization no. 14-Preliminary Planning & Development of the Lower Rio Grande Regional Water Management Program. PO#623576.

D)Inv#20152354 in the amount of $3,660.00 from Tedsi Infrastructure Group related to Work Authorization no. 12-Legal Services for the Lower Rio Grande Valley Regional Water Management Program. PO#623665.

E) Inv#20142178 in the amount of $159,944.34 from Tedsi Infrastructure Group related to Work Authorization no. 13-Preliminary Engineering Report for Lower Rio Grande Valley Regional Water Management Program. PO#623666, 623958,625152,626144.

11. **AI -50193** 2013 Bond Series - L&G Engineering Invoices:

A.) Approval of Invoice # 11325165 in the amount of $7,834.04 for Engineering Services for WA # 1 of the La Joya Watershed for the month of May, related to Public involvement and Hydrology. P.O. 622086

B.) Approval of Invoice # 11325173 in the amount of $ 85,084.80 for Engineering Services for WA # 6A of the La Joya Watershed Improvements relating to Hydrologic Map and ROW aquisition services. P.O. 626941 in the amount of $268,175.43 approved on April 28-2015 and an increase of $ 54,324.22 which is on the regular agenda for June 23, 2015.

12. **AI -50239** 2013 Bonds:
Request approval to issue payment on the followings:

Tedsi Infrastructure Group

A) Inv#20141803 in the amount of $6,460.99 from Tedsi Infrastructure Group related to Work Authorization No. 4A-Engineering Services for Monte Cristo Drain Control Structure. Service Period 12-01-2013 through 01-31-2015. PO#623103.

B) Inv#20141804 in the amount of $6,430.99 from Tedsi Infrastructure

Group related to Work Authorization No. 4B Engineering Services for Weslaco North Lateral Control Structure. Service Period from 12-01-2013 through 01-31-2015. PO#623104.

AI -50209 **2.**

DRAINAGE - CONSENT

Meeting Date: 06/23/2015

Department: DRAINAGE DISTRICT

Information

CAPTION

Discharge permit:
Bordertown Development LLC - Bordertown Acres Phase I

BACKGROUND

Fiscal Impact

Attachments

No file(s) attached.

Form Review

Inbox	**Reviewed By**	**Date**
Budget & Management	Veronica Ortiz	06/19/2015 09:40 AM
Final Approval	Monica Badillo	06/19/2015 05:25 PM
Form Started By: ssanchez		Started On: 06/19/2015 08:30 AM
Final Approval Date: 06/19/2015		

AI -50094 **3.**

DRAINAGE - CONSENT

Meeting Date: 06/23/2015

Department: DRAINAGE DISTRICT

Information

CAPTION

Discharge Permits:
A. City of Edinburg - Edinburg Arena Subdivision 90.57 & 89.80

Utility Permit:
B. Sharyland Water Supply Corporation proposes to place 12"PVC steel casing on HCDD1 ROW north of 6 mile on Los Ebanos

BACKGROUND

Fiscal Impact

Attachments

No file(s) attached.

Form Review

Inbox	**Reviewed By**	**Date**
Budget & Management	Veronica Ortiz	06/15/2015 11:12 AM
Final Approval	Monica Badillo	06/19/2015 05:25 PM
Form Started By: ssanchez		Started On: 06/12/2015 04:16 PM
Final Approval Date: 06/19/2015		

AI -50119 **4.**

DRAINAGE - CONSENT

Meeting Date: 06/23/2015

Submitted For: Lora Briones

Submitted By: Claudette Guerrero, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

Approval to issue payment after review and audit procedures are complete:

L&G Consulting Engineers, Inc.

A) Inv. 11325163 in the amount of $137,895.67 from L&G Consulting Engineers, Inc. related to Work Authorization no. 1-Engineering Services for Pct.2 Pharr McAllen Drain & South Flood Water Channel Watershed Improvement Projects. PO#626860.

B) Inv. 11325167 in the amount of $13,662.09 from L&G Consulting Engineers, Inc. related to Work Authorization no. 4-Special Services for Mission Inlet Re-certification Project. PO#624010.

C) Inv. 11325158 in the amount of $12,936.40 from L&G Consulting Engineers, Inc. related to Work Authorization no. 2-Engineering Services for outfalls for the US 83 Relief Route related to La Joya Watershed Improvement Project. PO#622697.

D) Inv#11325086 in the amount of $468.82 from L&G Consulting Engineers, Inc. related to Work Authorization No. 1-Engineering Services for FM 676 Outfall. PO#622895.

E) Inv#11325172 in the amount of $95,587.38 from L&G Consulting Engineers, Inc. related to Work Authorization No. 5-for Design, Geotechnical, Survey & Right of Way Acquisition Services for Phase 1 of La Joya Watershed Project. PO#625396.

BACKGROUND

Fiscal Impact

Attachments

L&G Inv#11325163
L&G Inv# 11325167
L&G Inv# 11325158
L&G Inv#11325086
L&G Inv# 11325166

Form Review

Inbox	Reviewed By	Date
Budget & Management	Veronica Ortiz	06/18/2015 10:44 AM
Final Approval	Monica Badillo	06/19/2015 05:25 PM

Form Started By: Claudette Guerrero Started On: 06/16/2015 01:47 PM

Final Approval Date: 06/19/2015

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received:	6/1/2015
Engineer/Firm Name:	L&G Engineering
Project Name/Number:	Pharr Mcallen Drain & S. Flood Water Ch. WA No. 1
Invoice No.:	11325163
Purchase Order No.:	626860
Received By:	Rosa Arce
Forwarded to:	Joey Garza
Total # of Pages Submitted:	8
Attachments:	Invoice No. 11325165, 11325166, 11325167 & Penitas Basin

Additional Comments: CD Included

L&G Consulting Engineers, Inc.

June 1, 2015

Mr. Raul Sesin, P.E. – District Manager
Hidalgo County Drainage District #1
902 N. Doolittle
Edinburg, Texas 78542

RE: Work Authorization #1 on Pharr McAllen Drain & South Flood Water Channel Watershed Improvement Project
Job # 150301
P.O. # 626860

Dear Mr. Sesin,

Attached for your review and approval is our invoice for the services rendered during May 2015 on the subject referenced project.

The following is attached:

- L&G's Invoice #11325163
- CD w/ Electronic Files of Data for:
  - CSE – Monthly Progress Report and Invoice (LG201507) – May 25, 2015
  - Task 1, 2, 3, 4, 5, 5a, 6 & Direct Expenses

TASK		% COMPL
Pharr-McAllen Drain & South Flood Water Channel Watershed Improvement Project		
Task 1 ~ Coordination with TxDOT-County-City to Accommodate Local Drainage Needs & Corres. Participation (McAllen & Pharr)	L&G	50.0%
Update – L&G has continued coordination in gathering all existing data in the project area. L&G reviewed S&B Report & H&H Analysis for a portion of this system. L&G has also researched other master drainage plans/flood protection plans in the general area (1980 HCDD #1 Water Disposal Plan & 1997 TCB Flood Protection Plan).		
Task 2 ~ Gather/Verify Information Regarding Existing Hydraulic Structures (Size, type, flow line elevations, etc)	L&G	75.0%
Update – L&G has provided field and office surveys for investigation of the existing structures and entrance/exit conditions of hydraulic culverts (verification of results worked on this period). Google Earth file (.kmz) with description notes and information has been created and verified. Field verification of flowline elevations through generalized survey also completed this period.		
Task 3 ~ Field Reconnaissance for Identification and Logging of Existing Conditions Along Project Alignment	L&G	75.1%
Update – L&G has provided further survey of general cross sections and generation of preliminary DTM for verification of LiDAR information and usage on project H&H		

modeling. L&G has also field continued verification of current channel conditions for use in proposed model (establishment of n values and project constraints).		
Task 4 ~ Overall Drainage Area Map (Based on S&B & CSE Analysis/Model/Report)	L&G	25.0%
Update – L&G has generated an exhibit of the preliminary overall watershed map (based on S&B H&H report and CSE review/concurrence).		
Task 5 ~ Coordination & Support to Hydraulic Engineer for Pharr-McAllen Drain Watershed Study	L&G	77.9%
Update - L&G has coordinated with CSE in development of the Existing Condition HEC-HMS & HEC-RAS Models. Existing models are being QC/QA'd by L&G. Various channel upgrades and proposed alternatives have been vetted by L&G & CSE to determine the most advantageous options. Project Presentation was made on 5-19-15 at major project update meeting (see Task 6).		
Task 5a ~ (SUB): CSE ~ Pharr-McAllen Drain Watershed Study	CSE	77.5%
Update – See progress report from CSE dated May 25, 2015 (see attached)		
Task 6 ~ Meetings & Coordination with County, HCDD#1, HCID#2, City of McAllen, City of Pharr	L&G	50.2%
Update – L&G has held a major project update meeting with City of Pharr, Hidalgo County Pct. 2, and Hidalgo County Drainage District this period (held 5-19-15). In addition, many informal coordination meetings have been held with multiple parties to discuss project. Meeting minutes for major meeting has been completed.		
Direct Expenses	L&G	33.3%
Update – L&G has produced 5 (approx. 20ft Long by 3ft. Tall) Exhibits to date as part of the working process and have provided these prints to Hidalgo County Precinct No. 2 as well as the City of Pharr.		

Should you have any questions regarding this submittal or would like clarification on any aspect of the project, please do not hesitate to call me at (956) 585-1909.

Sincerely,



David Saenz, P.E., C.F.M.
Project Manager
L&G Engineering

L &G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956)565-9813 Fax (956)565-9018

INVOICE#: 11325163
INVOICE DATE: 5/31/2015

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

JUN 01 2015
5:00 AM / PM
BY: Rosa

BILL TO:
Hidalgo County Drainage District#1
902 N. Doolittle
Edinburg, TX 78542

JOB:150301
Pharr McAllen Drain & South Flood
Water Channel Watershed Imp. Project
WA#1 - PO#626860

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
Engineering services for the month of May 2015.						
FC 161 - HYDROLOGY						
16107-Task 1-Coordination with TxDOT-County-City to	17,443.20	1,781.71	6,939.90	8,721.61	50.0	8,721.59
16101-Task 2-Gaterh/Verify Information Regarding Exhistin	44,941.98	6,435.40	27,258.63	33,694.03	75.0	11,247.95
16102-Task 3-Field Reconnaissance for Identification and I	37,254.34	5,438.64	22,520.86	27,959.50	75.1	9,294.84
16103-Task 4-Overall Drainage Area Map (Based on S&B & CSI	24,420.74	0.00	6,111.42	6,111.42	25.0	18,309.32
16106-Task 5-Coordination & Support to Hydraulic Engineer	11,874.00	0.00	9,251.26	9,251.26	77.9	2,622.74
16140-Task 5a-(SUB): CSE~Pharr-McAllen Drain Water Study	74,487.92	0.00	57,747.48	57,747.48	77.5	16,740.44
16105-Task 6-Meetings & Coordination with County	16,353.00	1,635.30	6,566.12	8,201.42	50.2	8,151.58
	226,775.18	15,291.05	136,395.67	151,686.72		75,088.46
Direct Expenses	4,500.00	0.00	1,500.00	1,500.00	33.3	3,000.00
	4,500.00	0.00	1,500.00	1,500.00		3,000.00
TOTALS:	231,275.18	15,291.05	137,895.67	153,186.72	66.2	78,088.46

ORIGINAL CONTRACT SUM	$	231,275.18
CHANGE BY CHANGE ORDER	$	0.00
CONTRACT SUM TO DATE	$	231,275.18
TOTAL COMPLETED TO DATE	$	153,186.72
LESS PREVIOUS INVOICES	$	15,291.05
CURRENT PAYMENT DUE	$	137,895.67

PROJECT MANAGER'S SIGNATURE

L&G Consulting Engineers, Inc
2100 W. Expressway 83
Mercedes, Texas 78570
(956) 565-9813

Project Workhour Report
Pharr McAllen Drain & South Flood Water Channel Warshed Improvement Project WA#1
Reference:Inv#11325163
Date: 05/31/2015
P.O.#626860

	Hrs		Rate	Total
Senior Project Manager	55.00	X	218.04	$11,992.20
Senior Engineer	101.00	X	180.66	$18,246.66
Project Engineer	177.00	X	133.94	$23,707.38
Senior Engineer Tech	247.00	X	93.45	$23,082.15
Admin/Clerical	26.00	X	62.3	$1,619.80
Grand Total of Hours				$ 78,648.19
	(Difference due to rounding hours)			$ -

Invoice Summary

Man Hours					$ 78,648.19
Sub Contract					$ 57,747.48
(See Attached Sub Invoice for Man Hour Breakdown)					
Direct Expenses	Current Units		Rate		
20 ft. Long by 3 ft. Tall Exhibits (60sq.ft.)@5.00/sq.ft (15 total Prints)	5	X	300.00	$ 1,500.00	
					$ 1,500.00
	(Difference due to rounding)				$ -
Total Per Invoice Submitted					**$ 137,895.67**

Pharr-McAllen Drain Watershed Study
Monthly Progress Report No. #1 – May 2015

Period of Coverage:	May 2015
Date of Submittal:	May 25, 2015
Submitted To:	David Saenz, P.E.
Prepared By:	Civil Systems Engineering Inc.

The purpose of this study is to assist L&G and HCDD1 to evaluate the existing drainage systems conditions and alternative improvement plans to provide outfall and drainage relief to existing storm drainage systems upstream of Pharr Lateral Drain.

Specific Tasks

1. Coordinate meetings L&G, HCDD1, City of Pharr, and IBWC.
2. Gather information on the existing hydraulic structures, including size, type, and flow line (upstream & downstream) elevations of structures from previous projects.
3. Obtain and review previous study reports.
4. Field visits.
5. LiDAR data processing and recondition.
6. Drainage area delineations using GeoHMS.
7. Drainage and hydrologic parameters estimation.
8. Unit hydrograph generation for subbasins.
9. HEC-HMS model development and modeling analysis for multiple frequencies.
10. Integration of LiDAR data and channel cross section survey data.
11. HEC-RAS geometry data development using HEC-GeoRAS.
12. Update existing (S&B) RAS model.
13. 2D-mesh generation for 2D-unsteady overbank areas and laterals.
14. 1D/2D unsteady HEC-RAS model development.
15. Existing conditions HEC-RAS modeling analysis to identify system constraints, identify flood problem areas, and improvement opportunities.
16. Alternative analysis to optimize alternative improvements to relieve existing flooding problems and provide outfall needs – channel improvement, detention basin, and underground box.
17. Report preparation.
18. Presentation

Progress of Project

1. Coordinate meetings L&G, HCDD1, City of Pharr, and IBWC – coordination and meeting with L&G, HCDD1, and City of Pharr.

2. Gather information on the existing hydraulic structures, including size, type, and flow line (upstream & downstream) elevations of structures from previous projects – obtained information and data on existing channel and structures.

3. Obtain and review previous study reports – reviewed S&B report for Pharr-McAllen South drain

4. Field visits – visited project site.

5. LiDAR data processing and recondition – Performed LiDAR data recondition analysis.

6. Drainage area delineations using GeoHMS – performed drainage delineation for the watershed based on LiDAR data.

7. Drainage and hydrologic parameters estimation – reviewed exisitng model and estimated hydrologic and drainage parameters.

8. Unit hydrograph generation for subbasins – reviewed user defined hydrographs.

9. HEC-HMS model development and modeling analysis for multiple frequencies – performed HHM modeling run and generated hydrographs for 10- and 100-year hydrographs at specific locations.

10. Integration of LiDAR data and channel cross section survey data – performed data merge and integration processing.

11. HEC-RAS geometry data development using HEC-GeoRAS – generated RAS cross section data based on LiDAR and survey data using GeoRAS process.

12. Update existing (S&B) RAS model – updated S&B RAS model.

13. 2D-mesh generation for 2D-unsteady overbank areas and laterals – generated 2D mesh for the upstream reach of RAS model.

14. 1D/2D unsteady HEC-RAS model development – developed 1D/2D unsteady RAS model for the project.

15. Existing conditions HEC-RAS modeling analysis to identify system constraints, identify flood problem areas, and improvement opportunities – performed existing condition 1D/2D RAS modeling analysis to identify system constraints and opportunities.

16. Alternative analysis to optimize alternative improvements to relieve existing flooding

problems and provide outfall needs – channel improvement, detention basin, and underground box – performed alternative analysis to lower upstream water surface elevations along Pharr Lateral Drain.

17. Report preparation – prepared modeling results and tables for draft report.

18. Presentation – performed presentation for the preliminary modeling results.

Civil Systems Engineering, Inc.

1202 Lake Pointe Parkway
Sugar Land, Texas77478
(713) 782-3811

INVOICE

Engineering Services
Pharr_McAllen Drain Watershed Study

L&G Engineering
2100 W. Expressway 83
Mercedes, Texas 78570
Attention: Mr. David Saenz, P.E.

CSE Invoice Number: LG201507
CSE Project Number: LG201502
Invoice Period: 4/26/2015 Through 5/25/2015
Invoice Date: May 25, 2015

Contract Amount	Contract Amount Remaining
$74,487.92	$16,740.44

Employee Classfication	Rate	Previous		This Period		To Date	
		Hr	Total	Hr	Total	Hr	Total
Project Manager	$178.36			121.0	$21,581.56	121.0	$21,581.56
Project Engineer	$164.64			213.0	$35,068.32	213.0	$35,068.32
GIS Specialist	$137.20			8.0	$1,097.60	8.0	$1,097.60
Subtotal			**$0.00**		**$57,747.48**		**$57,747.48**

Deren Li, Ph.D., P.E., D.WRE
Project Manager

TOTAL FEE EARNED:	$57,747.48
LESS PREVIOUSLY INVOICED:	$0.00
TOTAL AMOUNT DUE THIS INVOICE:	**$57,747.48**

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: 6/1/2015

Engineer/Firm Name: L&G Engineering

Project Name/Number: Mission Inlet Rec. Proj. Progress Report WA NO. 4

Invoice No.: 11325167

Purchase Order No.: 624010

Received By: Rosa Arce

Forwarded to: Joey Garza

Total # of Pages Submitted: 5

Attachments: Invoice No. 11325165, 11325166, 11325163 & Penitas Basin

Additional Comments: CD Included

L&G Consulting Engineers, Inc.

June 1, 2015

Mr. Raul Sesin, P.E. – Executive Director
Hidalgo County Drainage District #1
902 N. Doolittle
Edinburg, Texas 78542

RE: Work Authorization #4 on Mission Inlet Recertification Project – Progress Report
Job #130204
P.O. #624010

Dear Mr. Sesin,

Attached for your review and approval is our invoice for the services rendered during the month of May 2015 on the subject referenced project.

The following is attached:

- L&G's Invoice # 11325167
  - CD w/ Inv Back-Up (Elec File Submit)
    - Task 13

TASK		% COMPL
FC13001 – Task 1 ~ Compilation & Review of Public Records (Appraisal District, Hidalgo County Records, HCDD #1 Easement & Quit Claim Deeds)	L&G	100%
Task Complete – See progress report dated February 4, 2014		
FC16104 – Task 2 ~ Georeferencing of Parcels & Survey Plat Information for Overall Existing Floodway/Levee Easement Map	L&G	100%
Task Complete – See progress report dated February 4, 2014		
FC11001 – Task 3 ~ Sketching of Parcels & Survey Plats for Floodway/Levee Easements Identified w/ No Survey Info (Using Easement Claim Parameters)	L&G	100%
Task Complete – See progress report dated February 4, 2014		
FC10201 – Task 4 ~ Researching & Cross Referencing Latest HC Appraisal District Info w/ Documented Floodway/Levee Easement Data	L&G	100%
Task Complete – See progress report dated February 4, 2014		
FC16101 – Task 5 ~ Calculation of Areas of Existing Levee & Floodway Easements for Potential Release of Lien	L&G	100%
Task Complete – See progress report dated February 4, 2014		
FC10205 – Task 6 ~ Segmenting, Organizing & Databasing (Electronic & Hard Copies) Existing HCDD #1 Data (Section I, II and III Project Binders)	L&G	100%
Task Complete – See progress report dated February 4, 2014		
FC10204 – Task 7 ~ Support to HCDD #1 on Project Development (i.e. Meetings w/ Land Owners, Coord. w/ County, Coord. w/ Cities, etc.)	L&G	100%
Task Complete – See progress report dated February 4, 2014		
FC16106 – Task 8 ~ Coord. & Supp. to CSE - HEC-HMS, RAS, & SWMM Model	L&G	100%

2100 W. Expressway 83 • Mercedes, TX 78570 • Office (956) 565-9813 • Fax (956) 565-9018
900 S. Stewart Rd., Ste. 9 • Mission, TX 78572 • Office (956) 585-1909 • Fax (956) 585-1927

Task Complete – L&G has actively managed and provided oversight of the work denoted in Task 9 for completion of this task.		
FC16170 – (SUB) Task 9 ~ Phase II – Proposed Condition H&H Modeling Analysis	CSE	100%
Task Complete – See progress report from CSE titled 'Period of Coverage October 2014' (see attached)		
FC10203 – Task 10 ~ Coord. w/ USIBWC/USACE for Cert. of Levee Sections	L&G	100%
Task Complete – See progress report dated February 2, 2015		
FC16107 – Task 11 ~ Coord. w/ FEMA for Accreditation of Levee	L&G	100%
Task Complete – See progress report dated February 2, 2015		
FC16109 – Task 12 ~ Development of Final Proposed Conditions Graphic Files (Location Specific Exhibits) In Concert w/ H&H Modeling (Incl. Structure Sizing)	L&G	90%
Update – L&G has developed various reference files for use in the generation of the overall schematic as denoted in Task 13. Working graphic files are attached (primarily in microstation (.dgn) format).		
FC11004 – Task 13 ~ Development of Final Proposed Conditions Schematic w/ Typical Sections (For Usage in PS&E Development)	L&G	90%
Update – L&G has continued updating/finalizing Proposed Conditions Schematic showing the locations of the proposed improvements with reference to the Phase II Proposed Improvement Alternative Report. Re-alignments have been incorporated in the plan due to constraints and impacts (utilities, existing water bodies, levees, etc.). Utilities and outfall tie-ins have been denoted. Zero-impact locations (where no proposed improvements will be needed) have been identified. Generalized typical sections have been modeled (proposed channel sections).		
FC16401 – Task 14 ~ Preliminary Engineering Report Summarizing Proposed Conditions Modeling, ROW Impacts & Guidelines for PS&E Development	L&G	100%
Task Complete – See progress report dated February 2, 2015		
FC16108 – Task 15 ~ Coordination and Support to Hydraulic Engineer for Conditional Letter of Map Revision	L&G	75.7%
Update – L&G has continued coordination with CSE in the development of the Conditional Letter Map revision		
FC11040 – (SUB) Task 16 ~ Phase III – Conditional Letter of Map Revision	CSE	71.8%
Update – See progress report from CSE dated April 25, 2015 (see attached)		
FC16301 – Task 17 – Development of Final Project Binder w/ All Data, Models, Reports and CLOMR Documents	L&G	0.0%
Task Not Started		
Direct Expenses	L&G	54.8%
No Update – See Progress Report Dated August 4, 2014		

Should you have any questions regarding this submittal or would like clarification on any aspect of the project, please do not hesitate to call me at (956) 585-1909.

Sincerely,



David Saenz, P.E., C.F.M.
Project Manager
L&G Engineering

L &G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956)565-9813 Fax (956)565-9018

INVOICE#: 11325167
INVOICE DATE: 5/31/2015

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

JUN 01 2015
5:00 AM PM
BY: Rosa Lw

BILL TO: 87
Hidalgo County Drainage District#1
902 N. Doolittle
Edinburg, TX 78542

JOB:130204
Mission Inlet Recertification Project
WA#4
P.O.#624010

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
Engineering services for the month of May 2015.						
FC 13001 - Task 1 - Compilation & Review of Public Records	12,004.46	12,004.46		12,004.46	100.0	-
FC 16104 - Task 2 - Georeferencing of Parcels & Survery Plat	13,655.78	13,655.78		13,655.78	100.0	-
FC 11001 - Task 3 - Sketching of Parcels & Survey Plats for F	13,655.78	13,655.78		13,655.78	100.0	-
FC 10201 - Task 4 - Researching & Cross Referencing Latest HC	9,878.66	9,878.66		9,878.66	100.0	-
FC 16101 - Task 5 - Calculation of Areas of Existing Levee &	10,429.26	10,429.26		10,429.26	100.0	-
FC 10205 - Task 6 - Segmenting, Organizing & Databasing	8,753.46	8,753.46		8,753.46	100.0	-
FC 10204 - Task 7 - Support to HCDD#1 on Project Development	58,837.20	58,837.20		58,837.20	100.0	-
FC 16106 - Task 8 - Coordination and Support to Hydraulic Eng	39,691.72	39,691.72		39,691.72	100.0	-
FC 16170 - Task 9 - SUB/Phase II - Proposed Conditions H&H Mo	394,813.00	394,813.00		394,813.00	100.0	-
FC 10203 - Task 10 - Coordination with USIBWC/USACE for Certi	19,270.72	19,270.72		19,270.72	100.0	-
FC 16107 - Task 11 - Coordination with FEMA for Accreditation	11,267.32	11,267.32		11,267.32	100.0	-
FC 16109 - Task 12 - Development of Proposed Conditions Graph	12,830.52	8,084.73	3,457.75	11,542.48	90.0	1,288.04
FC 11004 - Task 13 - Development of Final Proposed Conditions	33,989.56	20,399.39	10,204.34	30,603.73	90.0	3,385.83
FC 16401 - Task 14 - Preliminary Engineering Report Summarizi	18,782.74	18,782.74		18,782.74	100.0	-
FC 16108 - Task 15 - Coordination and Support to Hydraulic En	21,321.50	16,150.62		16,150.62	75.7	5,170.88
FC 11040 - Task 16 - Sub/Phase III - Conditional Letter of Ma	212,227.00	152,405.95		152,405.95	71.8	59,821.05
FC 16301 - Task 17 - Development of Final Binder w/All Data.	15,768.92			0.00	0.0	15,768.92
	907,177.60	808,080.79	13,662.09	821,742.88		85,434.72
Direct Expenses	16,250.00	8,898.82	0.00	8,898.82	54.8	7,351.18
	16,250.00	8,898.82	0.00	8,898.82		7,351.18
TOTALS:	923,427.60	816,979.61	13,662.09	830,641.70	90.0	92,785.90

ORIGINAL CONTRACT SUM	$	923,427.60
CHANGE BY CHANGE ORDER	$	0.00
CONTRACT SUM TO DATE	$	923,427.60
TOTAL COMPLETED TO DATE	$	830,641.70
LESS PREVIOUS INVOICES	$	816,979.61
CURRENT PAYMENT DUE	$	13,662.09

PROJECT MANAGER'S SIGNATURE

L&G Consulting Engineers, Inc
2100 W. Expressway 83
Mercedes, Texas 78570
(956) 565-9813

Project Workhour Report
Mission Inlet Recert. Project WA#4
Reference: Inv# 11325167
Date: 05/31/2015
P.O.#624010

	Hrs		Rate	Total
Senior Project Manager	9.00	X	212.59	$1,913.31
Senior Engineer	26.00	X	175.07	$4,551.82
Design Engineer	32.00	X	112.55	$3,601.60
Senior Engineer Tech	46.00	X	78.16	$3,595.36
ROW Administrator	0.00	X	106.29	$0.00
Admin/Clerical	0.00	X	56.27	$0.00

Grand Total of Hours $ 13,662.09

(Difference due to rounding hours) $ -

Invoice Summary

Man Hours						$ 13,662.09
Sub Contract						$ -
(See Attached Sub Invoice for Man Hour Breakdown)						
Direct Expenses	Current Units		Rate			
30 ft. Long by 3 ft. Tall Schematic Exhibit (90sq. Ft) @$5.00/sq. ft	0	X	1,350.00	$	-	
8.5 X 11 Copies (i.e. Section I, II, III Inventory Binders) - (4,000 units)	0	X	2,000.00	$	-	
Travel	0	X	2,500.00	$	-	
						$ -
			(Difference due to rounding)			$ -

Total Per Invoice Submitted **$ 13,662.09**

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: 6-1-2015

Engineer/Firm Name: L&G Eng.

Project Name/Number: La Joya Watershed Improvement Project WA No. 2

Invoice No.: 11325158

Purchase Order No.: 622697

Received By: Rosa Arce

Forwarded to: Joey Garza

Total # of Pages Submitted: 7

Attachments: CD: Task 10a

Additional Comments:

L&G Engineering
Transportation Consulting Engineers

2100 W. Expressway 83
Mercedes, TX 78570
Phone: (956) 565-9813
Fax: (956) 565-9018
Toll Free: (888) 565-9813

900 S. Stewart Rd., Ste. 10
Mission, TX 78572
Phone: (956) 585-1909
Fax: (956) 585-1927
Toll Free: (866) 585-1909

Firm No. F-4105

Letter of Transmittal

Mr. Raul E. Sesin, P.E. – Drainage District Manager
Attn: Ms. Lora Briones – Chief Financial Manager
Hidalgo County Drainage District #1
902 N. Doolittle Rd.
Edinburg, Texas 78542

DATE: June 1, 2015

REF.: Work Authorization #2 on La Joya Watershed Improvement Project
P.O. **#622697**
Invoice **(11325158)**

L&G PROJECT NO.: 130102

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☒ Hand Carry
☐ E-Mail	☐ Lonestar Overnight	☐ Pick up

COPIES	DESCRIPTION
1	CD:
	Task 10a: Final HEC-RAS Model
1	Invoice # 11325158

REMARKS:
Attached is our invoice and progress report for the month of May. A CD containing electronic information for Task 10a is also included.
If you have any questions or comments, please feel free to contact me or Mr. Damien B. Tijerina, P.E. at 956-585-1909.

Thank you,

Armando J. Sandoval, P.E.
Project Manager

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

Received By

JUN 01 2015
11:36 AM / PM
BY: Rosa Lee

If enclosures are not as stated, please notify us.

L&G Engineering
Transportation Consultants

June 1, 2015

Mr. Raul E. Sesin, P.E. – District Manager
Attn: Ms. Lora Briones – Chief Financial Officer
Hidalgo County Drainage District #1
902 N. Doolittle
Edinburg, Texas 78542

RE: Work Authorization #2 on La Joya Watershed Improvement Project
US 83 Relief Route – Drainage Outfalls
Job #130102
P.O. #622697

Dear Mr. Sesin,

Attached for your review and approval is the progress report and invoice for the month of May 2015 on the subject referenced project.

FC 110 – ROUTE AND DESIGN STUDIES		**% Complete**
Task 1 – 11001 - Schematic for Outfall (Roll 1 of 2 & Roll 2 of 2)	L&G	100%
Task Completed – See Progress Report Dated (7-1-13)		
Task 7 – 11002 - Design Surveys Coordination & Review (Provided by TxDOT)	L&G	100%
Task Completed - See progress report dated (4-1-2015)		
Task 10 – 11003 - PS&E Development for Needed Outfalls & Structural Crossings	L&G	100%
Task Completed - See progress report dated (5-1-2015)		
Task 10a – 11050 - Sub PS&E Development for Needed Outfalls & Structural Crossings	CSE	100%
Benchmark information from Hinojosa Engineering was finally resolved and vertical changes to the HEC-RAS model were implemented to finalize the HEC-RAS Model. Civil Systems Engineering, Inc. (CSE) submitted a final HEC-RAS model of the design of the US 83 Relief Route outfall channel and it has been submitted to TxDOT. **Task is now complete.**		

2100 W. Expressway 83 • Mercedes, TX 78570 • Office (956) 565-9813 • Fax (956) 565-9018
900 S. Stewart Rd., Ste. 9 • Mission, TX 78572 • Office (956) 585-1909 • Fax (956) 585-1927

Task 9 – 11040 - Geotechnical Engineering, Testing, & Report	L&G Lab	100%
Task Completed – See progress Report Date (9-3-13).		
FC 120 – PUBLIC INVOLVEMENT		
Task 5 – 12001 - Support to HCDD#1 & TxDOT on Project Development	L&G	100%
Task Completed – See Progress Report Dated (7-1-13)		
Task 6 – 12002 - Public Involvement for Vetting of Location of Outfall with Affected Land Owners	L&G	100%
Task Completed – See Progress Report Dated (7-1-13)		
FC 130 – RIGHT-OF-WAY DATA		
Task 2 – 13001 - Office Surveys for Schematic (Preliminary Ownership Identification and Property Rights)	L&G	100%
Task Completed – See Progress Report Dated (7-1-13)		
Task 8 – 13002 - ROW Map Coordination & Review (Provided by TxDOT)	L&G	100%
TxDOT submitted a ROW map to L&G Engineering. L&G told TxDOT that the ROW map needs to clearly identify the easement widths and locations. TxDOT is updating their ROW map. **Task Completed - See progress report dated (4-1-2015)**		
FC 161 – HYDROLOGY		
Task 3 – 16101 - Hydrologic Map	L&G	100%
Task Completed – See Progress Report Dated (7-1-13)		
Task 4 – 16102 - Hydraulic Analysis for Proposed Outfall and Structure Sizing	L&G	100%
Task Completed – See Progress Report Dated (7-1-13)		
Task 4a – 16120 - Sub-Drainage Analysis and Report for DA#4	CSE	48.6%
No Update – Civil Systems Engineering, Inc. (CSE) submitted a draft report to L&G Engineering. The report summarizes findings of the drainage study for DA4 drainage area for the La Joya Relief Route Project. A HEC-HMS model was developed based on watershed and hydrologic parameters. The draft report and the HEC-HMS model were submitted to HCDD#1 on a CD in February 2014.		

FC 163 – BID ASSISTANCE		
Task 11 – 16301 – Develop Plan Sheet Package to be inserted into TxDOT's set of Plans with Gen Notes and Specs to be bid in Austin	L&G	100%
Task Completed – See Progress Report Dated (05-01-2015)		
Direct Expenses	L&G	100%
L&G previously provided prints for the Hydrologic Map and Schematics that were utilized at TxDOT's US 83 RR Public Meeting. One original signed & sealed set of plans was printed out, five copies of the set of plans were made and distributed. Cross sections of the outfall were printed out and copies of the cross sections were made and distributed. The General Notes and Engineer's Estimate were created and printed out, copies of both were made and distributed. Two CDs were created, containing PDFs of the signed and sealed plan set, and were submitted. **Task is now complete**.		

Should you have any questions regarding this submittal or would like clarification on any aspect of the project, please do not hesitate to call me at (956) 585-1909.

Sincerely,

Armando J. Sandoval, P.E.
Project Manager L&G Engineering

L &G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956)565-9813 Fax (956)565-9018

INVOICE#: 11325158
INVOICE DATE: 5/31/2015

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

JUN 01 2015
11:36 AM / PM
BY: Rosa Ane

BILL TO:
Hidalgo County Drainage District#1
902 N. Doolittle
Edinburg, TX 78542

JOB:130102
La Joya Relief Route Analysis
WA#2
P.O.#622697

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
Engineering services for the month of May 2015.						
FC 110 - ROUTE AND DESIGN STUDIES						
TASK 1 - 11001 - Schem. for Outfall (Roll 1 Of 2 & Roll 2 of 2)St	62,619.67	62,619.67		62,619.67	100.0	-
TASK 7 - 11002 - Design Surveys Coord. & Review (Provided by TxDC	4,516.46	4,516.46		4,516.46	100.0	-
TASK 10 -11003 - PS&E Devel. For needed Outfalls & Struct. Crossi	292,071.63	292,071.63		292,071.63	100.0	-
TASK 10a-11050 - SUB-PS&E Devel. Needed Outfalls & Struct. Crossi	28,870.00	18,933.60	9,936.40	28,870.00	100.0	-
TASK 9 - 11040 - SUB - Geotech. Eng., Testing & Report	64,938.06	64,938.06		64,938.06	100.0	-
	453,015.82	443,079.42	9,936.40	453,015.82		-
FC 120 - PUBLIC INVOLVEMENT						
TASK 5 - 12001 - Supp. to HCDD & TxDOT on Proj. Devel.	14,374.52	14,374.52		14,374.52	100.0	-
TASK 6 - 12002 - Pub. Inv. On Vetting of location of Outfall	7,830.66	7,830.66		7,830.66	100.0	-
	22,205.18	22,205.18	0.00	22,205.18		-
FC 130 - RIGHT-OF-WAY DATA						
TASK 2 - 13001 - Off. Surv. For Schematic (Pre. Ownership I.D. &	10,210.31	10,210.31		10,210.31	100.0	-
TASK 8 - 13002 - ROW Map Coord. & Review(Provided by TxDOT)	10,629.20	10,629.20		10,629.20	100.0	-
	20,839.51	20,839.51	0.00	20,839.51		-
FC 161 - HYDROLOGY						
TASK 3 - 16101 - Hydrologic Map	22,885.56	22,885.56		22,885.56	100.0	-
TASK 4 - 16102 - Hydo. Analysis for prop. Outfall and Struct. Siz	12,286.64	12,286.64		12,286.64	100.0	-
TASK 4a -16120 - SUB-Drain. Analysis and Report for DA#4	23,440.00	11,387.60		11,387.60	48.6	12,052.40
	58,612.20	46,559.80	0.00	46,559.80		12,052.40
FC 163 - BID ASSISTANCE						
TASK 11 - 16301 - Devel. Plan Sheet to be insert. Into	22,976.56	22,976.56		22,976.56	100.0	-
TxDOT set of plans with Gen. notes & Specs to be bid	22,976.56	22,976.56	0.00	22,976.56		-
DIRECT EXPENSES	8,000.00	5,000.00	3,000.00	8,000.00	100.0	-
	8,000.00	5,000.00	3,000.00	8,000.00		-
TOTALS:	585,649.27	560,660.47	12,936.40	573,596.87	97.9	12,052.40

ORIGINAL CONTRACT SUM	$	585,649.27
CHANGE BY CHANGE ORDER	$	0.00
CONTRACT SUM TO DATE	$	585,649.27
TOTAL COMPLETED TO DATE	$	573,596.87
LESS PREVIOUS INVOICES	$	560,660.47
CURRENT PAYMENT DUE	$	12,936.40

PROJECT MANAGER'S SIGNATURE

L&G Consulting Engineers, Inc
2100 W. Expressway 83
Mercedes, Texas 78570
(956) 565-9813

Project Workhour Report
La Joya Watershed Improvements WA#2
Reference:Inv#11325158
Date: 05/31/15
P.O.#622697

	Hrs		Rate	Total
Senior Project Manager	0.00	X	206.39	$0.00
Senior Engineer	0.00	X	169.97	$0.00
Design Engineer	0.00	X	109.27	$0.00
Senior Engineer Tech	0.00	X	75.88	$0.00
ROW Administrator	0.00	X	103.20	$0.00
Admin/Clerical	0.00	X	54.63	$0.00

Grand Total of Hours		$ -
	(Difference due to rounding hours)	$ -

Invoice Summary

Man Hours		$ -
Sub Contract (See Attached Sub Invoice for Man Hour Breakdown)		$ 9,936.40

Direct Expenses	Current Units		Rate			
20 ft. Long by 3 ft. Tall Hydrologic Map &Schematic (60 Sq Ft) @ $5.00/sq. ft.	0	X	300.00	$ -		
10 Sets of Plans and Geo Repor t - As per contract requirements	6	X	500.00	$ 3,000.00		
11 x 17 Copies (i.e. various Exhibits) - (500 units)	0	X	1.50	$ -		
					$	3,000.00
			(Difference due to rounding)		$	-

Total Per Invoice Submitted		**$ 12,936.40**

Civil Systems Engineering, Inc.

2299 Lone Star Drive, Ste 239
Sugar Land, Texas77479
(713) 782-3811

INVOICE

Engineering Services
US 83 Relief Route Drainage Impact Study (La Joya Watershed - WA No.6)

L&G Engineering
2100 W. Expressway 83
Mercedes, Texas 78570
Attention: Mr. Damien B Tigerina, P.E.

CSE Invoice Number: LG201503
CSE Project Number: LG2013013
Invoice Period: 1/26/2015 Through 2/25/2015
Invoice Date: February 25, 2015

Contract Amount	Contract Amount Remaining
$28,870.00	$0.00

Employee Classfication	Rate	Previous		This Period		To Date	
		Hr	Total	Hr	Total	Hr	Total
Project Manager	$178.36	20.0	$3,567.20	18.0	$3,210.48	38.0	$6,777.68
Project Engineer	$164.64	80.0	$13,171.20	40.0	$6,588.72	120.0	$19,759.92
GIS Specialist	$137.20	16.0	$2,195.20	1.0	$137.20	17.0	$2,332.40
Subtotal			**$18,933.60**		**$9,936.40**		**$28,870.00**

Deren Li, Ph.D., P.E., D.WRE
Project Manager

TOTAL FEE EARNED:	$28,870.00
LESS PREVIOUSLY INVOICED:	$18,933.60
TOTAL AMOUNT DUE THIS INVOICE:	**$9,936.40**

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: 4-1-15

Engineer/Firm Name: L&G Eng.

Project Name/Number: WA#1 PM1676. Outfall Analysis & Eva. Proj

Invoice No.: 1132-5084

Purchase Order No.: 622895

Received By: Rosa Arce

Forwarded to: Joey Garza

Additional Comments: Attachments: (1) CD "Outfall Schematics 2A & 2B"

L&G Engineering
Transportation Consulting Engineers

2100 W. Expressway 83
Mercedes, TX 78570
Phone: (956) 565-9813
Fax: (956) 565-9018
Toll Free: (888) 565-9813

900 S. Stewart Rd., Ste. 10
Mission, TX 78572
Phone: (956) 585-1909
Fax: (956) 585-1927
Toll Free: (866) 585-1909

Firm No. F-4105

Letter of Transmittal

Mr. Raul Sesin, P.E., C.F.M. – Drainage District Manager
Hidalgo County Drainage District
902 N. Doolittle Rd.
Edinburg, Texas 78541

DATE: April 1, 2015

REF.: Work Authorization #1 on FM 676 Outfall Analysis and Evaluation Project
P.O. #622895
Invoice #11325086

L&G PROJECT NO.: 130401

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☒ Hand Carry
☐ E-Mail	☐ Lonestar Overnight	☐ Pick up

COPIES	DESCRIPTION
1	Progress Report and Invoice Package
	• L & G's Invoice #11325086
	• FM 676 – CD with Recommended Outfall#2B

REMARKS:
If you have any questions or comments, please feel free to contact me, Mr. Ricardo Gallaga, P.E. at 956 585-1909.

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
APR 01 2015
8:58 AM PM
BY: Rose Arce

Thank you,

Signed: _____

If enclosures are not as stated, please notify us.

L&G Engineering
Transportation Consultants

April 1, 2015

Mr. Raul Sesin, P.E., C.F.M. – Executive Director
Attn: Ms. Lora Briones – Chief Financial Officer
Hidalgo County Drainage District #1
902 N. Doolittle
Edinburg, Texas 78542

RE: Work Authorization #1 on Rural Drainage Development Pct #3 - FM676
P.O. #622895
Invoice #11325086

Dear Mr. Garza,

Attached for your review and approval is our invoice for the services rendered during the month of March 2015 on the subject referenced project.

The following is attached:

- L & G's Invoice #11325086
- CD with Recommended Outfall #6

TASK		% COMPL
Task 1(FC 10201) ~ Coordinate w/ TxDOT - County - Alton to Accommodate Local Drainage Needs & Corresponding Participation	L&G	100.0%
L&G met internally and will meet with the City of Alton (City Manager and Assistant City Manager) to present draft final report and obtain comments. L&G will meet with HCDD#1 to present draft final report and obtained comments. L&G has completed field visits used in an effort to identify and log existing drainage features and view area of concerns especially after recent rain events experienced. L&G presented final draft to TxDOT, Hidalgo County and City of Alton.		
Task 2 (FC 16108) ~ Gather Information Regarding Existing Drainage Features, Facilities, & Watersheds	L&G	100.0%

2100 W. Expressway 83 • Mercedes, TX 78570 • Office (956) 565-9813 • Fax (956) 565-9018
900 S. Stewart Rd., Ste. 9 • Mission, TX 78572 • Office (956) 585-1909 • Fax (956) 585-1927

L&G performed field visits to the project area to review and note existing drainage features that are not shown in the GIS database, and to identify drainage facility not identified in studies or reports obtained. L&G met City of Alton to further determine areas of drainage concern, which have been including in the report. L&G has created a map of the general area depicting contours, flow patterns, low areas and other potential obstacles affecting drainage.		
Task 3 (FC 16107) ~ Hydrologic Mapping & Outfall Capacity Analysis	L&G	100.0%
L&G has compiled a pre-final the general hydrologic map showing drainages areas that contribute water to the FM676 project and surrounding area. Several potential outfall locations have also been established by L&G primarily based off of minimal impacts to residences. The map is being supplemented with drainage areas (Sub-Basins) that are contributing to the flooding experienced within the project area. Recommendations obtained from several studies done for this area in the late 1990's coincide with L&G's preliminary outfalls and continue to be studied further. Additionally, preliminary hydrologic analysis has been conducted within the study area to help determine feasibility of proposed outfalls. L&G has performed preliminary runoff calculations for each drainage area in efforts to provide a conceptual sizing of facility(s) that will be needed. This map was presented to HCDD#1 for comments. L&G presented and explained the various options.		
Task 4 (FC 16109) ~ Meet w/ County - HCDD#1 - TxDOT - Alton and Examine Existing Hydrologic Studies	L&G	100.0%
L&G has obtained available drainages studies done in the late 1990's for this general area. L&G has utilized and referenced the "Master Drainage Plan, City of Alton, Texas" (1998) and HCDD#1 Report: "Flood Protection Plan for Hidalgo County, Texas" (1997) These studies have been referenced in the report.		
Task 5 (FC 13009) ~ Identification of All Affected Property Owners on Proposed Facilities	L&G	100.0%
L&G has included exhibits as part of the feasibility report that provides ownership information obtained from Hidalgo County Appraisal District to identify any and all existing property ownership within the project limits. Additionally, L&G approximate acreage affected to the affected property owners for each of the proposed outfall locations. Included in the affected property owner identifications are estimated values in dollars of them proposed impacts to each parcel.		
Task 6 (FC 12007) – Coordination with Landowners due to Proposed Outfalls Facilities Impacting their Properties (Limited Public Involvement)	L&G	71.9%
Updated – L&G has determined recommended outfall #6 which impacts two different owners including HCDD#1 and SIVAD Enterprises Inc as per Hidalgo Appraisal District data base. L&G discussed internally and will be meeting with local entities to complete this task. (See attached Schematic for Outfall)		

Task 7 (FC 16401) - Coordination w/TxDOT & FHWA on Logistics for Utilizing Federal Earmark Monies.	L&G	100.0%
L&G identification of $500,738 of federal funds available for drainage improvements for FM 676 (from SH 107 to Taylor Rd) has being referenced in the report but is awaiting further information from TxDOT on possible uses of this money. L&G continues to coordinate with TxDOT to determine why the on-system project is requiring 20% participation from the local entity (County). L&G so far has sent 4 emails (July 29th, Aug 23rd, Sept 11th, and Oct 22nd) requesting additional information to be included as part of feasibility submittal. L&G continues to coordinate with TxDOT but has not received any correspondence. L&G was unable to obtain an answer on possible usage of the +500K of federal funds.		
Task 8 (FC 10202) ~ Feasibility Report and Recommendations	L&G	95.1%
Updated - L&G is completing the final stages of compiling the information for the feasibility report to include Introduction, Assessment of Existing Storm Drain System, Proposed Outfall locations, Hydrologic Mapping Outfalls, Impacts of Drainage Outfalls, Funding Analysis and Conclusion and Recommendations. L&G will be preparing final submittal for discussions and comments from HCDD #1.		
L&G Direct Expenses	L&G	72.4%
L&G has produced 4 20ft X 3ft (Approx) Hydrologic Maps to date as a function of the contract total as well as approx 100 ~ 8.5X11 and 50 ~ 11X17 sheets (Approx).		

Should you have any questions regarding this submittal or would like clarification on any aspect of the project, please do not hesitate to call me at (956) 585 - 1909.

Sincerely,

Ricardo Gallaga, P.E.
Project Manager
L&G Engineering

L &G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956)565-9813 Fax (956)565-9018

INVOICE#: 11325086
INVOICE DATE: 3/31/2015

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

APR 01 2015
8:58 AM PM
BY: Rosa Arce

BILL TO:
Hidalgo County Drainage District#1
902 N. Doolittle
Edinburg, TX 78542

JOB:130401
FM 676 Outfall Analysis and Eval.
WA#1
P.O.#622895

Engineering services for the month of March 2015.

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
FC 102 - FEASABILITY STUDIES						
Task 1 - 10201 - Coord. w/TxDOT - County - Alton Local Drainage	13,405.68	13,405.68		13,405.68	100.0	-
Task 8 - 10202 - Feasibility Report and Recommendations	5,809.62	5,527.69		5,527.69	95.1	281.93
	19,215.30	18,933.37	-	18,933.37		281.93
FC 120 - PUBLIC INVOLVEMENT						
Task 6 - 12007 - Coord. W/Landowners due to Prop. Outfall Fac.	6,411.40	4,143.35	468.82	4,612.17	71.9	1,799.23
	6,411.40	4,143.35	468.82	4,612.17		1,799.23
FC 130 - RIGHT-OF-WAY DATA						
Task 5 - 13009 - ID. Of all affected Prop. Owners on Proposed Fac	9,110.28	9,110.28		9,110.28	100.0	-
	9,110.28	9,110.28	-	9,110.28		-
FC 161 - HYDROLOGY						
Task 3 - 16107 - Hydro. Map & Outfall Cap. Analysis	25,975.00	25,975.00		25,975.00	100.0	-
Task 2 - 16108 - Gather Info on existing Drainage features	4,080.08	4,080.08		4,080.08	100.0	-
Task 4 - 16109 - Meet w/County - HCDD#1 - TxDOT - Alton Ext Hydro	3,091.68	3,091.68		3,091.68	100.0	-
	33,146.76	33,146.76	-	33,146.76		-
FC 164 - COORDINATION						
Task 7 - 16401 - Coordination w/TxDOT & FHWA on Log. For Utilizin	5,271.03	5,271.03		5,271.03	100.0	-
	5,271.03	5,271.03	-	5,271.03		-
Direct Expenses	1,900.00	1,375.00		1,375.00	72.4	525.00
	1,900.00	1,375.00	-	1,375.00		525.00
TOTALS:	75,054.77	71,979.79	468.82	72,448.61	96.5	2,606.16

ORIGINAL CONTRACT SUM	$	75,054.77
CHANGE BY CHANGE ORDER	$	0.00
CONTRACT SUM TO DATE	$	75,054.77
TOTAL COMPLETED TO DATE	$	72,448.61
LESS PREVIOUS INVOICES	$	71,979.79
CURRENT PAYMENT DUE	$	468.82

PROJECT MANAGER'S SIGNATURE

L&G Consulting Engineers, Inc
2100 W. Expressway 83
Mercedes, Texas 78570
(956) 565-9813

Project Workhour Report
FM 676 Outfall Analysis and Evaluation WA#1
Reference:Inv#11325086
Date: 3/31/2015
P.O.#622895

	Hrs		Rate	Total
Senior Project Manager	0.00	X	215.40	$0.00
Senior Engineer	2.00	X	167.89	$335.78
Design Engineer	0.00	X	114.04	$0.00
Senior Engineer Tech	0.00	X	79.19	$0.00
CADD Operator/GIS Analyst	2.00	X	66.52	$133.04
Admin/Clerical	0.00	X	57.02	$0.00

Grand Total of Hours $ 468.82

(Difference due to rounding hours) $ -

Invoice Summary

Man Hours					$	468.82
Sub Contract					$	-
(See Attached Sub Invoice for Man Hour Breakdown)						
Direct Expenses	Current Units		Rate			
20 ft. Long by 3 ft. Tall Hydro Map (60sq. Ft) @$5.00/sq. ft	0	X	300.00	$ -		
8.5 X 11 Copies (i.e. Corr. w/Landowners) - (250 units)	0	X	1.00	$ -		
11 x 17 Copies (i.e. various Exhibits) - (100 units)	0	X	1.50	$ -		
					$	-
			(Difference due to rounding)		$	-

Total Per Invoice Submitted **$ 468.82**

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received:	6/1/2015
Engineer/Firm Name:	L&G Engineering
Project Name/Number:	La Joya Watershed Imp. WA No. 4
Invoice No.:	11325166
Purchase Order No.:	625396
Received By:	Rosa Arce
Forwarded to:	Joey Garza
Total # of Pages Submitted:	15
Attachments:	Invoice No. 11325165, 11325167, 11325163 & Penitas Basin

Additional Comments: CD Included

L&G Engineering
Transportation Consulting Engineers

2100 W. Expressway 83
Mercedes, TX 78570
Phone: (956) 565-9813
Fax: (956) 565-9018
Toll Free: (888) 565-9813

900 S. Stewart Rd., Ste. 10
Mission, TX 78572
Phone: (956) 585-1909
Fax: (956) 585-1927
Toll Free: (866) 585-1909

Firm No. F-4105

Letter of Transmittal

Mr. Raul Sesin, P.E. – District Manager
Hidalgo County Drainage District #1
902 N. Doolittle Rd.
Edinburg, Texas 78542

DATE: June 1, 2015

Project: Progress Report & Invoice Package for Various Work Authorizations
La Joya Watershed Improvement Project
Mission Inlet Recertification Project
Pharr McAllen Drain & South Flood Water Channel Watershed Improvement Project

L&G PROJECT NO.:

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☒ Hand Carry
☐ E-Mail	☐ Lonestar Overnight	☐ Pick up

COPIES	DESCRIPTION
1	Progress Report and Invoice Package (including CD w/Electronic Files) for the following Project:
	• Work Authorization #4 on La Joya Watershed Improvement Project
	○ P.O. #625396, Invoice #11325166 -W TRNSM. (15)
	• Work Authorization #1 on La Joya Watershed Improvement Project
	○ P.O. #625396, Invoice #11325165 ( )
	▪ 3 Copies of Penitas Basin Final Report
	• Work Authorization #4 on Mission Inlet Recertification Project
	○ P.O. #624010, Invoice #11325167 (5)
	• Work Authorization #1 on Pharr McAllen Drain & South Flood Water Channel
	○ P.O. #624010, Invoice #11325163 (8)

REMARKS:

If you have any questions or comments, please feel free to contact me, Mr. David Saenz, P.E. at (956) 585-1909.

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JUN 01 2015
5:00 AM PM
BY: Rosa Ane

Thank you,

Signed: _____

If enclosures are not as stated, please notify us.

L&G Consulting Engineers, Inc.

June 1, 2015

Mr. Raul Sesin, P.E. – District Manager
Hidalgo County Drainage District #1
902 N. Doolittle
Edinburg, Texas 78542

RE: Work Authorization #4 on La Joya Watershed Improvement Project
Job # 130104
P.O. # 625396

Dear Mr. Sesin,

Attached for your review and approval is our invoice for the services rendered during the month of May 2015 on the subject referenced project.

The following is attached:

- L&G's Invoice #11325166
- CD w/ Electronic Files of Data for:
  - R.O.W. Surveying Services – Monthly Progress Reports and Invoices (#R15-032, #R15-031, #R15-033) – May 31, 2015
  - Task A (Task 1a, 2a, 3a & 4a)
  - Task B (Task 1b, 2b, 3b & 4b)
  - Task C (Task 1c, 2c & 5c)

TASK		% COMPL
Task A **Construction Plans for Liberty Pit Detention Facility**		
Task 1a ~ Coordination & Management of ROW and Design Survey, & Geotechnical	L&G	100%
Update – Task Complete – L&G has held weekly meetings with R.O.W. SS and has coordinated the ROW and Design Survey aspect of this project through to completion.		
Task 2a ~ (SUB): Field and Design Survey (Utility Locates) - #3 (FC150)	ROW SS	100%
Update – Task Complete – See progress report (#R15-032) from R.O.W. S.S dated May 31, 2015 (see attached)		
Task 3a ~ (SUB): ROW Map, Parcel Sketches & Field Notes - #3 (FC130)	ROW SS	100%
Update – Task Complete – See progress report (#R15-032) from R.O.W. S.S dated May 31, 2015 (see attached)		
Task 4a ~ Acquisition of ROW for Proposed Facility; Negotiation with Land Owner(s)	L&G ROW	54.2%
Update – All project files and necessary documentation have been created and		

2100 W. Expressway 83 • Mercedes, TX 78570 • Office (956) 565-9813 • Fax (956) 565-9018
900 S. Stewart Rd., Ste. 9 • Mission, TX 78572 • Office (956) 585-1909 • Fax (956) 585-1927

organized at the L&G office for project implementation and initiation. All title commitments were received from Sierra Title Co. Offer packages have been mailed out via priority mail certified return receipt per Title 2 & 3 of the Uniform Act.		
Task 5a ~ (SUB): Geotechnical Exploration & Analyses for Proposed Facility - #2	L&G LAB	100.0%
Task Complete – See progress report from L&G Lab dated April 30, 2015		
Task 6a ~ Conceptual Site Plan Identifying 60% of Recovered ROW & Design Surveys (Prior to PS&E Release)	L&G	100.0%
Task Complete – See progress report dated January 2, 2015		
Task 7a ~ Plans, Specifications & Estimates (PS&E) for Proposed Facility & 400ft. Zone for Commercial Development	L&G	80.0%
No Update – See progress report dated March 2, 2015		
Task B **Construction Plan for South Basin Pit Detention Facility**		
Task 1b ~ Coordination & Management of ROW and Design Survey, & Geotechnical	L&G	100%
Update – Task Complete – L&G has held weekly meetings with R.O.W. SS and has coordinated the ROW and Design Survey aspect of this project through to completion.		
Task 2b ~ (SUB): Field and Design Survey (Utility Locates) - #3 (FC150)	ROW SS	100%
Update – Task Complete – See progress report (#R15-031) from R.O.W. S.S dated May 31, 2015 (see attached)		
Task 3b ~ (SUB): ROW Map, Parcel Sketches & Field Notes - #3 (FC130)	ROW SS	100%
Update – Task Complete – See progress report (#R15-031) from R.O.W. S.S dated May 31, 2015 (see attached)		
Task 4b ~ Acquisition of ROW for Proposed Facility; Negotiation with Land Owner(s)	L&G ROW	34.5%
Update – All project files and necessary documentation have been created and organized at the L&G office for project implementation and initiation. All title commitments were received from Sierra Title Co. Offer packages have been mailed out via priority mail certified return receipt per Title 2 & 3 of the Uniform Act.		
Task 5b ~ (SUB): Geotechnical Exploration & Analyses for Proposed Facility - #2	L&G LAB	100.0%
Task Complete – See progress report from L&G Lab dated April 30, 2015		
Task 6b ~ Conceptual Site Plan Identifying 60% of Recovered ROW & Design Surveys (Prior to PS&E Release)	L&G	100.0%
Task Complete – See progress report dated January 2, 2015		
Task 7b ~ Plans, Specifications & Estimates (PS&E) for Proposed Facility	L&G	80.0%
No Update – See progress report dated March 2, 2015		

Task C **Phase I Outfall Development of La Joya Watershed Drainage Master Plan**		
Task 1c ~ Coordination & Management of ROW Base Map, Design Survey & Geotechnical	L&G	44.8%
Update – L&G has held weekly meetings with R.O.W. Surveying Services, LLC and continued to coordinate the ROW and Design Survey aspect of this project.		
Task 2c ~ Design Surveys (Utility Locates) - #3 (FC150)	ROW SS	75.0%
Update – See progress report (#R15-033) from R.O.W. S.S dated May 31, 2015 (see attached)		
Task 3c ~ (SUB): Geotechnical Exploration & Analyses for Proposed Facility	L&G LAB	0.0%
Task Not Started		
Task 4c ~ Preliminary Detailed Schematic for Proposed Phase I Outfall	L&G	100.0%
Task Complete – See progress report dated February 2, 2015		
Task 5c ~ Plans, Specifications & Estimates (PS&E) for Proposed Facility	L&G	60.0%
Update – L&G has continued project development of PS&E including Title Sheet, Overall Project Layout, Plan & Profile (P&P) Sheets, Culvert Crossings, preliminary cross sections and incorporation of pertinent Design Standards.		

Should you have any questions regarding this submittal or would like clarification on any aspect of the project, please do not hesitate to call me at (956) 585-1909.

Sincerely,



David Saenz, P.E., C.F.M.
Project Manager
L&G Engineering

L &G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956)565-9813 Fax (956)565-9018

INVOICE#: 11325166
INVOICE DATE: 5/31/2015

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

JUN 01 2015
5:00 AM/PM
BY: Rosalva

BILL TO:
Hidalgo County Drainage District#1
902 N. Doolittle
Edinburg, TX 78542

JOB:130104
La Joya Watershed Imp
WA#4
PO #625396

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
Engineering services for the month of May 2015.						
Task A - Construction Plans for Liberty Pit Detention Facility						
13001-Task 1a - Coord. & Management of ROW & Design Survey	10,704.28	10,010.24	694.04	10,704.28	100.0	-
15010-Task 2a - SUB: Field & Design Survey (Utlity Locates	27,168.00	24,451.00	2,717.00	27,168.00	100.0	-
13010-Task 3a - SUB: ROW Map Parcel Sketches & Field Notes	22,400.00	20,160.00	2,240.00	22,400.00	100.0	-
60001-Task 4a - Acquisition of ROW for Proposed Facility	28,100.00	5,400.00	9,825.00	15,225.00	54.2	12,875.00
33010-Task 5a - SUB: Geotech. Exploration & Analysis	27,538.64	27,538.64		27,538.64	100.0	-
11006-Task 6a - Conceptual Site Plan Identify 60% of Recov	11,498.80	11,498.80		11,498.80	100.0	-
16001-Task 7a - Plans, Specification & Estimates (PS&E)	50,384.04	40,317.32		40,317.32	80.0	10,066.72
Task B - Construction Plans for South Basin Pit Detention Facility						
13002-Task 1b - Coord. & Management of ROW & Design Survey	7,928.16	7,446.71	481.45	7,928.16	100.0	-
15020-Task 2b - SUB: Field & Design Survey (Utlity Locates	24,935.00	22,442.00	2,493.00	24,935.00	100.0	-
13020-Task 3b - SUB: ROW Map Parcel Sketches & Field Notes	7,488.00	6,739.00	749.00	7,488.00	100.0	-
60003-Task 4b - Acquisition of ROW for Proposed Facility	14,800.00	0.00	5,100.00	5,100.00	34.5	9,700.00
33320-Task 5b - SUB: Geotech. Exploration & Analysis	21,162.28	21,162.28		21,162.28	100.0	-
11007-Task 6b - Conceptual Site Plan Identify 60% of Recov	8,966.44	8,966.44		8,966.44	100.0	-
16002-Task 7b - Plans, Specification & Estimates (PS&E)	33,589.36	26,874.03		26,874.03	80.0	6,715.33
Task C - Phase I Outfall Development of La Joya Watershed Drainage Master Plan						
13003-Task 1c - Coord. & Management of ROW Base Map. Desig	13,030.24	4,951.97	887.86	5,839.83	44.8	7,190.41
15030-Task 2c - SUB: Desgin Survey (Utlitiy Locates	67,062.00	40,237.00	10,059.50	50,296.50	75.0	16,765.50
33030-Task 3c - SUB: Geotechnical Exploration & Analysis	29,301.96	0.00		0.00	0.0	29,301.96
11008-Task 4c - Preliminary Detailed Schematic for Propose	37,866.28	37,866.28		37,866.28	100.0	-
16003-Task 5c - Plans, Specfications & Estimates (PS&E)	200,524.00	100,283.73	20,089.98	120,373.71	60.0	80,150.29
	644,447.48	416,345.44	55,336.83	471,682.27	73.2	172,765.21
TOTALS:	644,447.48	416,345.44	55,336.83	471,682.27	73.2	172,765.21

ORIGINAL CONTRACT SUM	$	644,447.48
CHANGE BY CHANGE ORDER	$	0.00
CONTRACT SUM TO DATE	$	644,447.48
TOTAL COMPLETED TO DATE	$	471,682.27
LESS PREVIOUS INVOICES	$	416,345.44
CURRENT PAYMENT DUE	$	55,336.83

PROJECT MANAGER'S SIGNATURE

L&G Consulting Engineers, Inc
2100 W. Expressway 83
Mercedes, Texas 78570
(956) 565-9813

Project Workhour Report
La Joya Watershed Improvements WA#4
Reference: Inv# 11325166
Date: 5/31/2015
P.O. #625396

	Hrs		Rate	Total
Senior Project Manager	17.00	X	212.59	$3,614.03
Senior Engineer	22.00	X	175.07	$3,851.54
Design Engineer	64.00	X	112.55	$7,203.20
Senior Engineer Tech	90.00	X	78.16	$7,034.40
Admin/Clerical	8.00	X	56.27	$450.16

Grand Total of Hours	$	22,153.33
(Difference due to rounding hours)	$	-

Invoice Summary

Man Hours	$	22,153.33
Sub Contract	$	33,183.50
(See Attached Sub Invoice for Man Hour Breakdown)		

Direct Expenses	Current Units		Rate			
10 Sets of Plans and Geo Report - As per contract requirements	0	X	500.00	$	-	
					$	-
(Difference due to rounding)					$	-
Total Per Invoice Submitted					**$**	**55,336.83**

R. O. W. SURVEYING SERVICES, L.L.C.

May 31, 2015

Jacinto Garza, President/CEO
L & G Engineering
Attn: Reza Badiozzamani, P.E.
2100 W. Expressway 83
Mercedes, Texas 78570

RE: Liberty Road Caliche Pit-Work Authorization #8
Invoice #R15-032 Limits: Liberty Road Caliche Pit

Dear Mr. Badiozzamani:

Attached for your approval is our invoice for services rendered for the month of May, 2015:

ROW's Invoice Exhibit C – Work Schedule Progress Report

FC 130 – ROW Map	Contract Amount	Invoice to Date	Paid to Date	Current Amount Due	Contract Balance	Percent Complete
Phase I – ROW Map, Parcel Description, Metes & Bounds Description, :& Title Reports	$22,400	$22,400	$20,160	$2,240	$-0-	100%
FC 150-Field Surveying						
Phase I - Primary & Secondary Control Phase II – DTM Topography and Cross-Sections Phase III – Final Report and Deliverables Project Management & Oversight	$27,168	$27,168	$24,451	$2,717	$-0-	100%
Total	$49,568	$49,568	$44,611		$-0-	100%
			Total Due	$4,957		

Make Checks Payable to: **R.O.W. Surveying Services, LLC.**

Thank you for your business. Should you have any questions or require additional information, please do not hesitate to give me a call at (956) 451-2670.

Sincerely,

DAS

Julio Cerda, P.E.
President/CEO

Exhibit "C"
Work Schedule Liberty Rd. Caliche Pit
La Joya Watershed Outfall - Work Authorization #4

TASK AND DESCRIPTION	FIRM	2014					2015				
		AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
Phase I: ROW Mapping											
A. ROW Map	**ROWSS**										
B. Parcel Plats	**ROWSS**										
Phase I: Field Surveying (Control Hz & Vt)											
A. Primary and Secondary Control	**ROWSS**										
B. Setting Benchmarks	**ROWSS**										
Phase II: DTM Topography and Cross Sections											
A. Topography & X-Sections	**ROWSS**										
B. Utilities, Irrigation Crossings, Outfalls, Driveways, etc.	**ROWSS**										
Phase III: Final Report and Deliverables											
A. Final Report and Deliverables	**ROWSS**										

Liberty Road Caliche Pit Progress Report as of 05/31/15:

Project Management:

- Have met with prime consultant (L&G Engineering) to update project progress, scope, and final deliverable.
- Meet with TxDOT, L&G, and Hidalgo County in reference to ongoing projects in the Peñitas area.
- Requested from Urban County survey control, right of way map and project benchmarks that would be beneficial to survey. None provided.
- Coordinate office staff on daily assignments and project progress.
- Final submittal-all Project Management complete.

General Task:

- Field verify existing structures and collected field data.
- Complete boundary survey and exhibit.
- Base map completed.
- Parcel sketches with Metes and Bounds completed, signed and sealed copies attached.
- Final submittal-General Task complete.

R. O. W. SURVEYING SERVICES, L.L.C.

May 31, 2015

Jacinto Garza, President/CEO
L & G Engineering
Attn: Reza Badiozzamani, P.E.
2100 W. Expressway 83
Mercedes, Texas 78570

RE: Tress Detention-Work Authorization #8
Invoice #R15-031 Limits: Tress Detention

Dear Mr. Badiozzamani:

Attached for your approval is our invoice for services rendered for the month of May, 2015:

ROW's Invoice Exhibit C – Work Schedule Progress Report

FC 130 – ROW Map	Contract Amount	Invoice to Date	Paid to Date	Current Amount Due	Contract Balance	Percent Complete
Phase I – ROW Map, Parcel Description, Metes & Bounds Description, :& Title Reports	$7,488	$7,488	$6,739	$749	$-0-	100%
FC 150-Field Surveying						
Phase I - Primary & Secondary Control Phase II – DTM Topography and Cross-Sections Phase III – Final Report and Deliverables Project Management & Oversight	$24,935	$24,935	$22,442	$2,493	$-0-	100%
Total	$32,423	$32,423	$29,181		$-0-	100%
			Total Due	$3,242		

Make Checks Payable to: **R.O.W. Surveying Services, LLC.**

Thank you for your business. Should you have any questions or require additional information, please do not hesitate to give me a call at (956) 451-2670.

Sincerely,

Julio Cerda, P.E.
President/CEO

DAS

Exhibit "C"
Work Schedule TRESS Detention
La Joya Watershed Outfall - Work Authorization #4

TASK AND DESCRIPTION	FIRM	2014					2015				
		AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
Phase I: ROW Mapping											
A. ROW Map	**ROWSS**										
B. Parcel Plats	**ROWSS**										
Phase I: Field Surveying (Control Hz & Vt)											
A. Primary and Secondary Control	**ROWSS**										
B. Setting Benchmarks	**ROWSS**										
Phase II: DTM Topography and Cross Sections											
A. Topography & X-Sections	**ROWSS**										
B. Utilities, Irrigation Crossings, Outfalls, Driveways, etc.	**ROWSS**										
Phase III: Final Report and Deliverables											
A. Final Report and Deliverables	**ROWSS**										

Tress Property Progress Report as of 05/31/15:

Project Management:

- Have met with prime consultant (L&G Engineering) to update project progress, scope, and final deliverable.
- Met with TxDOT and other consultants with ongoing projects in the Peñitas area
- Coordinate office staff on daily assignments and project progress.
- Final submittal--all Project Management Complete.

General Task:

- Complete topographic survey.
- Complete processing field data.
- Complete DGN, Geopak, and deliverable.
- Field verify all existing structures and collected data.
- Final submittal—General Task Complete.

R. O. W. SURVEYING SERVICES, L.L.C.

May 31, 2015

Jacinto Garza, President/CEO
L & G Engineering
Attn: Reza Badiozzamani, P.E.
2100 W. Expressway 83
Mercedes, Texas 78570

RE: La Joya Watershed-Work Authorization #8
Invoice #R15-033
Limits: From: 3 ½ Mile North Tom Gil To: Liberty Road Caliche Pit

Dear Mr. Badiozzamani:

Attached for your approval is our invoice for services rendered for the month of May, 2015:

ROW's Invoice Exhibit C – Work Schedule Progress Report

FC 150-Field Surveying	Contract Amount	Invoice to Date	Paid to Date	Current Amount Due	Contract Balance	Percent Complete
Phase I - Primary & Secondary Control Phase II – DTM Topography and Cross-Sections Phase III – Final Report and Deliverables Project Management & Oversight	**$67,062**	**$50,297**	**$28,062**	**$10,060**	**$16,765**	**75%**
Total	**$67,062**	**$50,297**	**$28,062**		**$16,765**	**75%**
		Total Due		**$10,060**		

Make Checks Payable to: **R.O.W. Surveying Services, LLC.**

Thank you for your business. Should you have any questions or require additional information, please do not hesitate to give me a call at (956) 451-2670.

Sincerely,

Julio Cerda, P.E.
President/CEO

Exhibit "C"
Work Schedule
La Joya Watershed Outfall - Work Authorization #4

TASK AND DESCRIPTION	FIRM	2015									
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	NOV
Phase I: ROW Mapping											
A. ROW Map	**ROWSS**										
B. Parcel Plats	**ROWSS**										
Phase I: Field Surveying (Control Hz & Vt)											
A. Primary and Secondary Control	**ROWSS**										
B. Setting Benchmarks	**ROWSS**										
Phase II: DTM Topography and Cross Sections											
A. Topography & X-Sections	**ROWSS**										
B. Utilities, Irrigation Crossings, Outfalls, Driveways, etc.	**ROWSS**										
Phase III: Final Report and Deliverables											
A. Final Report and Deliverables	**ROWSS**										

La Joya Outfall Progress Report as of 05/31/15:

Project Management:

- Continued communication between landowners regarding right of entry. Research two land owners whom did not respond to request to enter.
- Met with TxDOT, Hidalgo County, L&G regarding ongoing projects in the Peñitas area
- Coordinate office staff on daily assignments and project progress
- Coordinate with gas companies within project limits to locate and identify depths of existing lines.

General Task:

- Complete field topography survey from beginning to end of project, 100 foot cross sections identifying all visible utilities. Gas lines still need to be verified. Begin CADD work for final deliverable.
- Begin Horizontal and Vertical Control sheets
- Continue to process field data for final deliverable.
- Update digital files for invoice.

AI -50124 **5.**

DRAINAGE - CONSENT

Meeting Date: 06/23/2015

Submitted By: Claudette Guerrero, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

Request to issue payment after review and audit procedures are complete:

ENTECH Civil Engineers, Inc.

2013 Bonds:

A) Inv#W5ENT624245-3 in the amount of $2,895.60 related to Work Authorization No. 6-Engineering Services for Pct.4 South Main Drain Weir No. 5. PO#624245.

B) Inv#W3ENT624244-3 in the amount of $3,072.42 related to Work Authorization No. 5-Engineering Services for Pct.4 North Main Drain Weir No. 3. PO#624244.

General Fund:

C) Inv#0041-12-001-8 in the amount of $1,546.20 for Engineering Services for the Repair/Armoring of the South Main Drain Weir No. 5. PO#621259.

BACKGROUND

Fiscal Impact

Attachments

Entech Inv#0041-12-001-8
Entech Inv#W3ENT624244-3
Entech Inv#W5ENT624245-3

Form Review

Inbox	**Reviewed By**	**Date**
Budget & Management	Veronica Ortiz	06/18/2015 11:59 AM
Final Approval	Monica Badillo	06/19/2015 05:25 PM

Form Started By: Claudette Guerrero Started On: 06/16/2015 02:14 PM

Final Approval Date: 06/19/2015

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: **5/19/2015**

Engineer/Firm Name: **Entech Civil Eng.**

Project Name/Number: **Weir No. 5**

Invoice No.: **0041-12-001-8**

Purchase Order No.: **621259-R**

Received By: **Rosa Arce**

Forwarded to: **Joey Garza**

Total # of Pages Submitted: **3**

Attachments:

Additional Comments:

ENTECH CIVIL ENGINEERS, INC.
CONSULTING ENGINEERS • PROJECT MANAGERS

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

MAY 19 2015
11:00 AM / PM
BY: Rosa Lee

INVOICE

Mr. Raul E. Sesin
Hidalgo County Drainage District No. 1
902 N. Doolittle Rd.
Edinburg, Texas 78542

INVOICE NUMBER: **0041-12-001-8**
DATE: 5/12/2015
PURCHASE ORDER NO. 621259-R

Re: Hidalgo County Drainage District No. 1 - Weir #5
Contract No: 12-016-03-27
Entech Project No. 0041-12-001

Description	Amount
Invoice for	
3/1/2015 To 4/30/2015	$1,546.20
Total	**$1,546.20**

Thank you,

Nick Alanis
Vice President

16360 Park Ten Place, Suite 230 • Houston, Texas 77084 • Tel: (281) 945-0069 • Fax: (281) 945-0081
Email: info@entechhou.com

HIDALGO COUNTY DRAINAGE DISTRICT NO 1
WEIR NO 5
HCDD1-14-032-12-17

Progress Report (Construction Support)

February 28, 2015 through April 30, 2015

1. Prepared final contract for HCDD1 and contractor signature
2. Submitted final contract to contractor for inclusion of required bonds, insurance and signatures
3. Responded to several RFI's
4. Submitted revised cover pages and title pages for new HCDD1 logo
5. Attended Pre-Construction meeting
6. Coordinated with contractor and contractor's personnel
7. Issued Notice to Proceed to Contractor effective May 1, 2015

ENTECH CIVIL ENGINEERS, INC.

Hidalgo County Drainage District No. 1 - Weir #5
Contract No. 12-016-03-27

Date of Invoice: 5/12/2015
Contract No. 12-016-03-27
Invoice No.: 0041-12-001-8
Entech Job No.: 0041-12-001
Period of Services: 42064 to 42124

LABOR COSTS

unctic Task Code	Description	Task Value ($)	% Completed To Date	% Previously Completed	% Completed This Period	Amount Completed To Date ($)	Amount Previously Completed	Amount Completed This Period
Phase II Final Design								
	Entech Civil Engineers, Inc.							
	Final Design	56,622.00						
	Coordination	2,250.00						
		$ 58,872.00	100.00%	100.00%		$58,872.00	$58,872.00	$0.00
	DOS Land Surveying LLC							
	Phase II Surveying	$15,000.00	90.00%	90.00%		$13,500.00	$13,500.00	$0.00
Phase III Construction Services								
	Entech Civil Engineers, Inc.							
	Construction Services	$30,924.00	10.00%	5.00%	5.00%	$3,092.40	$1,546.20	$1,546.20
TOTAL LABOR COSTS		**$104,796.00**	**72.01%**	**70.54%**	**1.48%**	**$75,464.40**	**$73,918.20**	**$1,546.20**

Invoice this Period	**$1,546.20**
Contract Amount	**$104,796.00**
Remaining Amount	**$29,331.60**

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: **5/19/2015**

Engineer/Firm Name: **Entech Civil Eng.**

Project Name/Number: **Rehab NMD Weir No. 3 & SMD Weir No. 5**

Invoice No.: **W3ENT624244-3**

Purchase Order No.: **624244**

Received By: **Rosa Arce**

Forwarded to: **Joey Garza**

Total # of Pages Submitted: **3**

Attachments:

Additional Comments:

ENTECH CIVIL ENGINEERS, INC.
CONSULTING ENGINEERS • PROJECT MANAGERS

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

MAY 19 2015
11:00 AM / PM.
BY: Rosa Lw

INVOICE

Mr. Raul E. Sesin
Hidalgo County Drainage District No. 1
902 N. Doolittle Rd.
Edinburg, Texas 78542

INVOICE NUMBER: **W3ENT624244-3**
DATE: 5/11/2015

Re: Hidalgo County Drainage District No. 1
Rehabilitation of North Main Drain Weir 3 & SMD Weir 5 PCT 4
Work Authorization No. 5 - Weir 3
Purchase Order No: 624244
Entech Project No. 0041-13-001

Description	Amount
Invoice for	
March 1, 2015 to April 30, 2015	$3,072.42
Total	**$3,072.42**

Thank you,

Nick Alanis
Vice President

16360 Park Ten Place, Suite 230 • Houston, Texas 77084 • Tel: (281) 945-0069 • Fax: (281) 945-0081
Email: info@entechhou.com

ENTECH CIVIL ENGINEERS, INC.
Hidalgo County Drainage District No. 1
Rehabilitation of North Main Drain Weir 3 & SMD Weir 5 PCT 4
Work Authorization No. 5 - Weir 3
Purchase Order No: 624244

Date of Invoice: 5/11/2015
Invoice No.: W3ENT624244-3
Entech Job No.: 0041-13-001
Period of Services: ######## to April 30, 2015

LABOR COSTS

unctic Task Code	Description	Task Value ($)	% Completed To Date	% Previously Completed	% Completed This Period	Amount Completed To Date ($)	Amount Previously Completed	Amount Completed This Period
Final Desing (Basic Services) Geotechnical								
	Entech Civil Engineers, Inc.							
	Final Design (Basic Services)	30,724.22						
		$ 30,724.22	100.00%	90.00%	10.00%	$30,724.22	$27,651.80	$3,072.42
TOTAL LABOR COSTS		$ 30,724.22	100.00%	90.00%	10.00%	$30,724.22	$27,651.80	$3,072.42

Invoice this Period	**$3,072.42**
Contract Amount	**$30,724.22**
Remaining Amount	**$0.00**

HIDALGO COUNTY DRAINAGE DISTRICT NO 1
SLOPE REPAIR OF NORTH MAIN DRAIN WEIR NO 3 AND SOUTH MAIN DRAIN WEIR NO 5
HCDD1-15-002-02-25

Progress Report

February 28 to April 30, 2015

1. Responded to several queries regarding plans
2. Reviewed bid for correctness and statutory requirements
3. Provided tabulation of bids
4. Provided detailed analysis of bids
5. Determined ne bid invalid and analyzed remaining bid
6. Submitted recommendation for award of contract
7. Notified by HCDD1 non-award of bid and end of project

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: **5/19/2015**

Engineer/Firm Name: **Entech Civil Eng.**

Project Name/Number: **Rehab NMD Weir No. 3 & SMD Weir No. 5 WA No. 6**

Invoice No.: **W5ENT624245-3**

Purchase Order No.: **624245**

Received By: **Rosa Arce**

Forwarded to: **Joey Garza**

Total # of Pages Submitted: **3**

Attachments:

Additional Comments:

ENTECH CIVIL ENGINEERS, INC.
CONSULTING ENGINEERS • PROJECT MANAGERS

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
MAY 19 2015
11:00 AM / PM
BY:

INVOICE

Mr. Raul E. Sesin
Hidalgo County Drainage District No. 1
902 N. Doolittle Rd.
Edinburg, Texas 78542

INVOICE NUMBER: **W5ENT624245-3**
DATE: 5/11/2015

Re: Hidalgo County Drainage District No. 1
Rehabilitation of North Main Drain Weir 3 & SMD Weir 5 PCT 4
Work Authorization No. 6 - Weir 5
Purchase Order No: 624245
Entech Project No. 0041-13-001

Description	Amount
Invoice for	
March 1, 2015, to April 30, 2015	$2,895.60
Total	**$2,895.60**

Thank you,

Nick Alanis
Vice President

16360 Park Ten Place, Suite 230 • Houston, Texas 77084 • Tel: (281) 945-0069 • Fax: (281) 945-0081
Email: info@entechhou.com

ENTECH CIVIL ENGINEERS, INC.
Hidalgo County Drainage District No. 1
Rehabilitation of North Main Drain Weir 3 & SMD Weir 5 PCT 4
Work Authorization No. 6 - Weir 5
Purchase Order No: 624245

Date of Invoice: 5/11/2015
Invoice No.: W5ENT624245-3
Entech Job No.: 0041-13-001
Period of Services: March 1, to April 30, 2015

LABOR COSTS

unctic Task Code	Description	Task Value ($)	% Completed To Date	% Previously Completed	% Completed This Period	Amount Completed To Date ($)	Amount Previously Completed	Amount Completed This Period
Final Desing (Basic Services) Geotechnical								
	Entech Civil Engineers, Inc.							
	Final Design (Basic Services)	28,955.98						
		$ 28,955.98	100.00%	90.00%	10.00%	$28,955.98	$26,060.38	$2,895.60
TOTAL LABOR COSTS		$ 28,955.98	100.00%	90.00%	10.00%	$28,955.98	$26,060.38	$2,895.60

Invoice this Period	**$2,895.60**
Contract Amount	**$28,955.98**
Remaining Amount	**$0.00**

HIDALGO COUNTY DRAINAGE DISTRICT NO 1
SLOPE REPAIR OF NORTH MAIN DRAIN WEIR NO 3 AND SOUTH MAIN DRAIN WEIR NO 5
HCDD1-15-002-02-25

Progress Report

February 28 to April 30, 2015

1. Responded to several queries regarding plans
2. Reviewed bid for correctness and statutory requirements
3. Provided tabulation of bids
4. Provided detailed analysis of bids
5. Determined ne bid invalid and analyzed remaining bid
6. Submitted recommendation for award of contract
7. Notified by HCDD1 non-award of bid and end of project

AI -50125 **6.**

DRAINAGE - CONSENT

Meeting Date: 06/23/2015

Submitted For: Lora Briones

Submitted By: Claudette Guerrero, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

Request approval to issue payment after review and audit procedures are completed:

Guzman & Muñoz Engineering & Surveying, Inc.

2013 Bonds:

A) Inv#5611 in the amount of $567.68 related to Work Authorization No. 1-Basic Services for Pct.4 Edinburg Stub Control Structures. PO#623074.

B) Inv#5616 in the amount of $3,849.81 related to Work Authorization No. 5-Basic Engineering Services for Pct. 4 West Main Drain Weir Structure. PO#623077.

BACKGROUND

Fiscal Impact

Attachments

Guzman Inv#5611
Guzman Inv#5616

Form Review

Inbox	**Reviewed By**	**Date**
Budget & Management	Veronica Ortiz	06/18/2015 10:49 AM
Final Approval	Monica Badillo	06/19/2015 05:25 PM

Form Started By: Claudette Guerrero Started On: 06/16/2015 02:48 PM

Final Approval Date: 06/19/2015

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: **5/21/2015**

Engineer/Firm Name: **Guzman & Munoz**

Project Name/Number: **EDBG Stub to SMD**

Invoice No.: **5611**

Purchase Order No.: **623074**

Received By: **Rosa Arce**

Forwarded to: **Joey Garza**

Total # of Pages Submitted: **4**

Attachments:

Additional Comments: **This Item came in with several other invoice's total number of pages together was: 14 pg**

GUZMAN & MUNOZ ENGINEERING AND SURVEYING, INC.
2020 E. EXPRESSWAY 83
MERCEDES, TEXAS 78570
(956)565-4637 PHONE * (956)-565-4636 FAX

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

MAY 2 1 2015
3:29 AM / PM
BY: Rosalva

TO: HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
Attn: Raul Sesin P.E., CFM
902 North Doolittle Road
Edinburg, Texas 78542

DATE: 5/18/2015
INVOICE NO.: 5611

PROJECT: EDINBURG STUB TO SOUTH MAIN DRAIN (NEAR CANTON RD AND CESAR CHAVEZ RD)
Purchase Order #: 623074
GMES PROJECT NO.: P790-01

GMES TASK	DESCRIPTION OF WORK TASK	TOTAL COST PER TASK	PERCENT COMPLETE	AMOUNT EARNED TO DATE	PREVIOUSLY PAID	AMOUNT DUE THIS INVOICE
	BASIC SERVICES					
	PRELIMINARY ENGINEERING INCLUDING STUDY AND REPORT	$ 2,245.24	100%	$ 2,245.24	$ 2,245.24	$ -
1	Data Collection					
2	Planning Meeting with the Client					
3	Preparation of the Draft Preliminary Engineering Report (2 Alternatives)					
4	Preparation of Preliminary Probably Construction Cost Estimate					
5	Address Preliminary Engineering Report Comments from Client and Selection of Alternative					
6	Finalize the Preliminary Engineering Report and Submit it to the Client					
7	Preparation of Meeting Minutes and Logs					
	DESIGN PHASE	$ 3,243.82	100%	$ 3,243.82	$ 3,243.82	$ -
1	Prepare Preliminary Layout for Client Review					
2	Address Client Comments of Preliminary Layout					
3	Preparation of 30% Structural Plans and Specifications					
4	Preparation of 60% Structural Plans and Specifications					
5	Preparation of 100% Structural Plans and Specifications					
6	Preparation of Final Probably Construction Cost Estimate					
	BID PHASE	$ 1,107.99	100%	$ 1,107.99	$ 1,107.99	$ -
1	Preparation of the Bid Documents					
2	Administrative Assistance during the Bid Process					

GUZMAN & MUNOZ ENGINEERING AND SURVEYING, INC.
2020 E. EXPRESSWAY 83
MERCEDES, TEXAS 78570
(956)565-4637 PHONE * (956)-565-4636 FAX

DATE: 5/18/2015
INVOICE NO.: 5611

TO: HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
Attn: Raul Sesin P.E., CFM
902 North Doolittle Road
Edinburg, Texas 78542

PROJECT: EDINBURG STUB TO SOUTH MAIN DRAIN (NEAR CANTON RD AND CESAR CHAVEZ RD)
Purchase Order #: 623074
GMES PROJECT NO.: P790-01

GMES TASK	DESCRIPTION OF WORK TASK	TOTAL COST PER TASK	PERCENT COMPLETE	AMOUNT EARNED TO DATE	PREVIOUSLY PAID	AMOUNT DUE THIS INVOICE
	CONSTRUCTION PHASE	$ 7,863.82	100%	$ 7,863.82	$ 7,863.82	$ -
1	Project Management and Coordination					
2	Provide Daily / Weekly Reports					
3	Review and Process Contractor Pay Requests					
4	Provide Shop Drawing Review					
5	Provide Responses to RFI's					
6	Review and Process Change Orders					
7	Preparation of Meeting Minutes and Logs					
	PROJECT CLOSEOUT	$ 2,234.43	100%	$ 2,234.43	$ 1,737.50	$ 496.93
1	Perform Initial Walkthrough and Develop Punch List					
2	Perform FINAL Walkthrough and FINALIZE Punch List					
3	Preparation and submittal of As-Builts					
4	PROJECT CLOSEOUT (Final Meeting: Submittal of all Project Documents / Final Acceptance)					
	TOTAL COST FOR BASIC SERVICES	$ 16,695.30	100%	$ 16,695.30	$ 16,198.37	$ 496.93
	REIMBURSABLE DIRECT COST	$ 150.00	100.00%	$ 150.00	$ 79.25	$ 70.75
	GRAND TOTAL BASIC AND SPECIAL SERVICES LABOR COST	$ 16,845.30	100.00%	$ 16,845.30	$ 16,277.62	$ 567.68

WORK AUTHORIZATION NO. 1
ATTACHMENT "D"
ESTIMATED COST PROPOSAL
EDINBURG STUB TO SOUTH MAIN DRAIN (NEAR CANTON RD AND CESAR CHAVEZ RD)

GUZMAN & MUNOZ ENGINEERING AND SURVEYING, INC.
CLIENT: HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
PROJECT: EDINBURG STUB TO SOUTH MAIN DRAIN (NEAR CANTON RD AND CESAR CHAVEZ RD)
GMES PROJECT NO.: P790-01

Invoice# 5611
Date: 05/18/2015

GMES TASK	DESCRIPTION OF WORK TASK	PRINCIPAL	SR PROJECT MANAGER	SENIOR ENGINEER	EIT	SR DESIGNER	CADD TECH	SECRETARY	RPLS	SURVEY DESIGNER	2 PERSON SURVEY CREW	GPS	CONSTRUCTION MANAGER	SENIOR INSPECTOR (PSR)	TOTAL MANHOURS	TOTAL COST PER TASK
	BASIC SERVICES															
	Percent of Time Based on Fee	-13.2%	0.0%	15.5%	0.0%	8.1%	6.2%	0.0%	0.0%	0.0%	0.0%	0.0%	74.4%	8.7%		
	PRELIMINARY ENGINEERING INCLUDING STUDY AND REPORT															$ -
1	Data Collection			0.0		0.0									0.0	$ -
2	Planning Meeting with the Client		0.0	0.0											0.0	$ -
3	Preparation of the Draft Preliminary Engineering Report (2 Alternatives)	0.0	0.0	0.0	0.0	0.0	0.0	0.0							0.0	$ -
4	Preparation of Preliminary Probably Construction Cost Estimate		0.0	0.0		0.0									0.0	$ -
5	Address Preliminary Engineering Report Comments from Client and Selection of Alternative		0.0	0.0											0.0	$ -
6	Finalize the Preliminary Engineering Report and Submit it to the Client		0.0	0.0		0.0									0.0	$ -
7	Preparation of Meeting Minutes and Logs			0.0											0.0	$ -
	DESIGN PHASE															$ -
1	Prepare Preliminary Layout for Client Review	0.0	0.0	0.0		0.0	0.0	0.0							0.0	$ -
2	Address Client Comments of Preliminary Layout		0.0	0.0		0.0	0.0								0.0	$ -
3	Preparation of 30% Structural Plans and Specifications		0.0	0.0	0.0	0.0	0.0								0.0	$ -
4	Preparation of 60% Structural Plans and Specifications	0.0	0.0	0.0	0.0	0.0	0.0								0.0	$ -
5	Preparation of 100% Structural Plans and Specifications	0.0	0.0	0.0		0.0	0.0								0.0	$ -
6	Preparation of Final Probably Construction Cost Estimate		0.0	0.0		0.0		0.0							0.0	$ -
	BID PHASE															$ -
1	Preparation of the Bid Documents	0.0	0.0	0.0		0.0		0.0							0.0	$ -
2	Administrative Assistance during the Bid Process		0.0	0.0		0.0		0.0							0.0	$ -
	CONSTRUCTION PHASE															$ -
1	Project Management and Coordination	0.00	0.00	0.00		0.00	0.00	0.00					0.00	0.00	0.00	$ -
2	Provide Daily / Weekly Reports												0.00	0.00	0.00	$ -
3	Review and Process Contractor Pay Requests		0.00	0.00		0.00							0.00	0.00	0.00	$ -
4	Provide Shop Drawing Review			0.00		0.00							0.00		0.00	$ -
5	Provide Responses to RFI's			0.00		0.00							0.00		0.00	$ -
6	Review and Process Change Orders		0.00	0.00		0.00							0.00	0.00	0.00	$ -
7	Preparation of Meeting Minutes and Logs		0.00	0.00									0.00	0.00	0.00	$ -
	PROJECT CLOSEOUT															$ 496.93
1	Perform Initial Walkthrough and Develop Punch List			0.0									0.0	0.0	0.0	$ -
2	Perform FINAL Walkthrough and FINALIZE Punch List			0.0									0.5	0.0	0.5	$ 92.46
3	Preparation and submittal of As-Builts			0.5		0.5	0.5	0.0					0.5	0.5	2.5	$ 283.57
4	PROJECT CLOSEOUT (Final Meeting: Submittal of all Project Documents / Final Acceptance)	-0.25	0.0			0.0	0.0	0.0					1.0		0.8	$ 120.90
	TOTAL HOURS - BASIC SERVICES	-0.3	0.0	0.5	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	2.0	0.5	3.8	
	TOTAL COST FOR BASIC SERVICES	$ (65.49)	$ -	$ 77.05	$ -	$ 40.07	$ 30.82	$ -	$ -	$ -	$ -	$ -	$ 369.84	$ 43.15		$ 496.93
	Percent of Time Based on Fee	-13.2%	0.0%	15.6%	0.0%	8.1%	6.2%	0.0%	0.0%	0.0%	0.0%	0.0%		8.7%		
	GRAND TOTAL HOURS	0	0	1	0	1	1	0	0	0	0	0	2	1	4	$ 495.43
	HOURLY RATE	$ 261.97	$ 184.92	$ 154.10	$ 86.30	$ 80.13	$ 61.64	$ 55.48	$ 98.62	$ 61.64	$ 150.00	$ 30.00	$ 184.92	$ 86.30		
	GRAND TOTAL BASIC AND SPECIAL SERVICES LABOR COST	-$65	$0	$77	$0	$40	$31	$0	$0	$0	$0	$0	$370	$43	$495.43	
	GRAND TOTAL BASIC AND SPECIAL SERVICES LABOR COST															$ 496.93

REIMBURSABLE DIRECT COST	
Mileage = 200 Miles @ 0.55/ Mile =	$ -
Overnight carrier cost = 2 @ 20/ Ea.	$ -
Copies = At cost	$ 70.75
Subtotal (RDC)	$ 70.75
GRAND TOTAL	$ 567.68

ASSUMPTIONS
PRELIMINARY ENGINEERING INCLUDING STUDY AND REPORT - ALL FLOW DATA FOR DESIGN SHALL BE PROVIDED BY THE OWNER.

Expressway
PRINTING, COPYING & MORE L.L.C.
2020
Full Service Center
2020 E. Expressway 83 Suite 4, Mercedes, TX
Phone: 956.825.9829 Fax: 956.825.9930

Invoice

Date	Invoice #
5/20/2015	2983

Bill To	Ship To
Guzman & Munoz Engineering and Surveying 2020 E. Expressway-Ste 5 Mercedes, Texas 78570	

P.O. Number	Terms	Rep	Ship	Via	F.O.B.	Project
790-01	Due on receipt	DM	5/20/2015		790-01	

Quantity	Item Code	Description	Price Each	Amount
8	Reprographics	24 X 36	2.20	17.60
8	Scans	24x36 Reprographics to PDFS	0.40	3.20
1	Specialty	Plans and Spec.s , binding	49.85	49.85

Thank you for your business.

Total $70.65

LETTER OF TRANSMITTAL

GUZMAN & MUÑOZ
ENGINEERING AND SURVEYING, INC.

2020 E. EXPRESSWAY 83, MERCEDES, TEXAS 78570
PHONE NO. 565-4637 FAX NO. 565-4636

Dated: May 21, 2015	Project No. P-790-01/02/06
RE:	
Hidalgo County Drainage District #1	
Edinburg Stub to South Main Drain	
Near Canton RD & Cesar Chavez RD	
WA#2 Surveying Services for Edinburg Stub Drain I South	
WA#6 Surveying Services for West Main Drain Weir	
INV. No's. 5611/5612/5613	
Via: A-Fast IND No. 56116	
Tracking #	

TO: *Hidalgo Co. Drainage District No. 1*
Attn: Raul Sesin
902 N. Doolittle
Edinburg, TX 78542

WE ARE SENDING:

Submittals	Application	Sketch	Letter	
Attached	Prints	Drawings	Final Plat	Pay Application
Change Order	**X Invoice**	Disc	Submittals	Release of Lien

COPIES	DATE	NO.	DESCRIPTION
1	*5/21/2015*	*P790-01*	*One (1) Copy of invoice no. 5611 for the above referenced project.*
1	*5/21/2015*	*P790-02*	*One (1) Copy of invoice no. 5612 for the above referenced project.*
1	*5/21/2015*	*P790-06*	*One (1) Copy on invoice no. 5613 for the above referenced project.*
~~1~~	~~5/21/2015~~	~~P790-05~~	~~remaining balance from previous invoice No. 5566~~
1	5-21-15		(1) INV# 56116

THESE ARE TRANSMITTED AS CHECKED BELOW:

	For approval	____	Approved as submitted	____	Resubmit	____	Copies for approval
	Final approval	____	Approved as noted	____	Submit	____	Copies for distribution
____	As requested	____	Returned for corrections	____	Return	____	Correction prints
X	**For review and payment**		Other ____				
____	For bids due ____						

REMARKS: *Please review, approve and process for payment. Should you have any questions or concerns, please contact our office at (956)565-4637. Thank you.*

Received by : ____

SIGNED: ____
GMES Representative

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
MAY 21 2015
3:29 AM / PM
BY: Rosalw

If enclosures are not as noted, kindly notify us at once.

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: **5/21/2015**

Engineer/Firm Name: **Guzman & Munoz**

Project Name/Number: **WMD**

Invoice No.: **5616**

Purchase Order No.: **623077**

Received By: **Rosa Arce**

Forwarded to: **Joey Garza**

Total # of Pages Submitted: **3**

Attachments:

Additional Comments: **This Item came in with several other invoice's total number of pages together was: 14 pg**

GUZMAN & MUNOZ ENGINEERING AND SURVEYING, INC.
2020 E. EXPRESSWAY 83
MERCEDES, TEXAS 78570
(956)565-4637 PHONE * (956)-565-4636 FAX

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

MAY 2 1 2015
3:29 AM / PM
BY: Rosalie

DATE: 5/21/2015
INVOICE NO.: 5616

TO: HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
Attn: Godfrey Garza, Jr.
902 North Doolittle Road
Edinburg, Texas 78542

CLIENT: HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
PO No.:623077
PROJECT: WEST MAIN DRAIN CONTROL WEIR STRUCTURE
GMES PROJECT NO.: P790-05

GMES TASK	DESCRIPTION OF WORK TASK	TOTAL COST PER TASK	PERCENT COMPLETE	AMOUNT EARNED TO DATE	PREVIOUSLY PAID	AMOUNT DUE THIS INVOICE
	BASIC SERVICES					
	PRELIMINARY ENGINEERING	$ 3,753.89	100%	$ 3,753.89	$ 3,753.89	$ -
1	Data Collection					
2	Planning Meeting with the Client					
3	Preparation of the Draft Preliminary Engineering Report (2 Alternatives)					
4	Preparation of Preliminary Probably Construction Cost Estimate					
5	Address Preliminary Engineering Report Comments from Client and Selection of Alternative					
6	Finalize the Preliminary Engineering Report and Submit it to the Client					
7	Preparation of Meeting Minutes and Logs					
	DESIGN PHASE	$ 5,791.08	100%	$ 5,791.08	$ 5,791.08	$ -
1	Prepare Preliminary Layout for Client Review					
2	Address Client Comments of Preliminary Layout					
3	Preparation of 30% Structural Plans and Specifications					
4	Preparation of 60% Structural Plans and Specifications					
5	Preparation of 100% Structural Plans and Specifications					
6	Preparation of Final Probably Construction Cost Estimate					
	BID PHASE	$ 2,086.53	100%	$ 2,086.53	$ 2,086.53	$ -
1	Preparation of the Bid Documents					
2	Administrative Assistance during the Bid Process					
	CONSTRUCTION PHASE	$ 13,302.02	100%	$ 13,302.02	$ 13,302.02	$ -
1	Project Management and Coordination					
2	Provide Daily / Weekly Reports					
3	Review and Process Contractor Pay Requests					
4	Provide Shop Drawing Review					
5	Provide Responses to RFI's					
6	Review and Process Change Orders					
7	Preparation of Meeting Minutes and Logs					

GUZMAN & MUNOZ ENGINEERING AND SURVEYING, INC.
2020 E. EXPRESSWAY 83
MERCEDES, TEXAS 78570
(956)565-4637 PHONE * (956)-565-4636 FAX

DATE: 5/21/2015
INVOICE NO.: 5616

TO: HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
Attn: Godfrey Garza, Jr.
902 North Doolittle Road
Edinburg, Texas 78542

CLIENT: HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
PO No.:623077
PROJECT: WEST MAIN DRAIN CONTROL WEIR STRUCTURE
GMES PROJECT NO.: P790-05

	PROJECT CLOSEOUT	$ 3,725.11	100%	$ 3,725.11	$ -	$ 3,725.11
1	Perform Initial Walkthrough and Develop Punch List					
2	Perform FINAL Walkthrough and FINALIZE Punch List					
3	Preparation and submittal of As-Builts					
4	PROJECT CLOSEOUT (Final Meeting: Submittal of all Project Documents / Final Acceptance)					
	TOTAL COST FOR BASIC SERVICES	$ 28,658.63	100%	$ 28,658.63	$ 24,933.52	$ 3,725.11
	REIMBURSABLE DIRECT COSTS					
	Mileage = 200 Miles @ 0.55/ Mile =	$ 110.00	100%	$ 110.00	$ 25.30	$ 84.70
	Overnight carrier cost = 2 @ 20/ Ea.	$ 40.00	100%	$ 40.00	$ -	$ 40.00
	Copies = At cost					
	GRAND TOTAL BASIC AND REIMBURSABLE DIRECT COSTS	$ 28,808.63	100%	$ 28,808.63	$ 24,958.82	$ 3,849.81

WORK AUTHORIZATION NO. 5
ATTACHMENT "D"
ESTIMATED COST PROPOSAL
WEST MAIN DRAIN CONTROL WEIR STRUCTURE
NEAR MCCOLL ROAD BETWEEN CHAPIN ROAD AND SCHUNIOR ROAD

GUZMAN & MUNOZ ENGINEERING AND SURVEYING, INC.
CLIENT: HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
PROJECT: WEST MAIN DRAIN CONTROL WEIR STRUCTURE
GMES PROJECT NO.: P790-02

DATE: 5/21/2015
INVOICE No: 5616

GMES TASK	DESCRIPTION OF WORK TASK	PRINCIPAL	SR PROJECT MANAGER	SENIOR ENGINEER	EIT	SR DESIGNER	CADD TECH	SECRETARY	RPLS	SURVEY DESIGNER	2 PERSON SURVEY CREW	GPS	CONSTRUCTION MANAGER	SENIOR INSPECTOR (PSR)	TOTAL MANHOURS	TOTAL COST PER TASK
	BASIC SERVICES															
	Percent of Time Based on Fee	7.0%	5.0%	12.4%	0.0%	4.3%	8.3%	1.5%	0.0%	0.0%	0.0%	0.0%	54.6%	7.0%		
	PRELIMINARY ENGINEERING															$ -
1	Data Collection		0.0	0.0		0.0									0.0	$ -
2	Planning Meeting with the Client		0.0	0.0				0.0							0.0	$ -
3	Preparation of the Draft Preliminary Engineering Report (2 Alternatives)	0.0	0.0	0.0	0.0		0.0	0.0							0.0	$ -
4	Preparation of Preliminary Probably Construction Cost Estimate		0.0	0.0			0.0								0.0	$ -
5	Address Preliminary Engineering Report Comments from Client and Selection of Alternative		0.0	0.0											0.0	$ -
6	Finalize the Preliminary Engineering Report and Submit it to the Client		0.0	0.0			0.0								0.0	$ -
7	Preparation of Meeting Minutes and Logs			0.0											0.0	$ -
	DESIGN PHASE															$ -
1	Prepare Preliminary Layout for Client Review	0.0	0.0	0.0		0.0	0.0	0.0							0.0	$ -
2	Address Client Comments of Preliminary Layout		0.0	0.0		0.0	0.0								0.0	$ -
3	Preparation of 30% Structural Plans and Specifications		0.0	0.0	0.0	0.0	0.0								0.0	$ -
4	Preparation of 60% Structural Plans and Specifications	0.0	0.0	0.0	0.0	0.0	0.0								0.0	$ -
5	Preparation of 100% Structural Plans and Specifications	0.0	0.0	0.0		0.0	0.0								0.0	$ -
6	Preparation of Final Probably Construction Cost Estimate		0.0	0.0		0.0		0.0							0.0	$ -
	BID PHASE															$ -
1	Preparation of the Bid Documents	0.0	0.0	0.0		0.0		0.0							0.0	$ -
2	Administrative Assistance during the Bid Process		0.0	0.0		0.0		0.0							0.0	$ -
	CONSTRUCTION PHASE															$ -
1	Project Management and Coordination	0.0	0.0	0.0		0.0	0.0	0.0					0.0	0.0	0.0	$ -
2	Provide Daily / Weekly Reports												0.0	0.0	0.0	$ -
3	Review and Process Contractor Pay Requests		0.0	0.0		0.0							0.0	0.0	0.0	$ -
4	Provide Shop Drawing Review			0.0		0.0							0.0		0.0	$ -
5	Provide Responses to RFI's			0.0		0.0							0.0		0.0	$ -
6	Review and Process Change Orders		0.0	0.0		0.0							0.0	0.0	0.0	$ -
7	Preparation of Meeting Minutes and Logs		0.0	0.0									0.0	0.0	0.0	$ -
	PROJECT CLOSEOUT															$ 3,725.11
1	Perform Initial Walkthrough and Develop Punch List			1.0									1.0	1.0	3.0	$ 425.32
2	Perform FINAL Walkthrough and FINALIZE Punch List			1.0									1.0	1.0	3.0	$ 425.32
3	Preparation and submittal of As-Builts			1.0		1.0	4.0						1.0	1.0	8.0	$ 752.01
4	PROJECT CLOSEOUT (Final Meeting: Submittal of all Project Documents / Final Acceptance)	1.0	1.0			1.0	1.0	1.0					8.0		13.0	$ 2,122.46
	TOTAL HOURS - BASIC SERVICES	1.0	1.0	3.0	0.0	2.0	5.0	1.0	0.0	0.0	0.0	0.0	11.0	3.0	27.0	
	TOTAL COST FOR BASIC SERVICES	$ 261.97	$ 184.92	$ 462.30	$ -	$ 160.26	$ 308.20	$ 55.48	$ -	$ -	$ -	$ -	$ 2,034.12	$ 258.90		$ 3,725.11
	Percent of Time Based on Fee	7.0%	5.0%	12.4%	0.0%	4.3%	8.3%	1.5%	0.0%	0.0%	0.0%	0.0%		6.9%		
	GRAND TOTAL HOURS	1	1	3	0	2	5	1	0	0	0	0	11	3	27	$ 3,726.15
	HOURLY RATE	$ 261.97	$ 184.92	$ 154.10	$ 86.30	$ 80.13	$ 61.64	$ 55.48	$ 98.62	$ 61.64	$ 150.00	$ 30.00	$ 184.92	$ 86.30		
	GRAND TOTAL BASIC AND SPECIAL SERVICES LABOR COST	$262	$185	$462	$0	$160	$308	$55	$0	$0	$0	$0	$2,034	$259	$3,726.15	
	GRAND TOTAL BASIC AND SPECIAL SERVICES LABOR COST															$ 3,725.11

REIMBURSABLE DIRECT COST	
Mileage = 154 Miles @ 0.55/ Mile = $110.00	$ 84.70
Overnight carrier cost = 2 @ 20/ Ea. = $40.00	$ 40.00
Copies = At cost	
Subtotal (RDC)	$ 124.70
GRAND TOTAL	$ 3,849.81

REIMBURSABLE DIRECT COST $ 124.70

GRAND TOTAL $ 3,849.81

ASSUMPTIONS

PRELIMINARY ENGINEERING INCLUDING STUDY AND REPORT - ALL FLOW DATA FOR DESIGN SHALL BE PROVIDED BY THE OWNER.

LETTER OF TRANSMITTAL

GM GUZMAN & MUÑOZ
ENGINEERING AND SURVEYING, INC.

2020 E. EXPRESSWAY 83, MERCEDES, TEXAS 78570
PHONE NO. 565-4637 FAX NO. 565-4636

Dated: May 21, 2015	Project No. P-790-01/02/06
RE:	
Hidalgo County Drainage District #1	
Edinburg Stub to South Main Drain	
Near Canton RD & Cesar Chavez RD	
WA#2 Surveying Services for Edinburg Stub Drain I South	
WA#6 Surveying Services for West Main Drain Weir	
INV. No's. 5611/5612/5613	
Via: A-Fast IMD No. 5616	
Tracking #	

TO: *Hidalgo Co. Drainage District No. 1*
Attn: Raul Sesin
902 N. Doolittle
Edinburg, TX 78542

WE ARE SENDING:

Submittals	Application	Sketch	Letter	
Attached	Prints	Drawings	Final Plat	Pay Application
Change Order	**X Invoice**	Disc	Submittals	Release of Lien

COPIES	DATE	NO.	DESCRIPTION
1	*5/21/2015*	*P790-01*	*One (1) Copy of invoice no. 5611 for the above referenced project.*
1	*5/21/2015*	*P790-02*	*One (1) Copy of invoice no. 5612 for the above referenced project.*
1	*5/21/2015*	*P790-06*	*One (1) Copy on invoice no. 5613 for the above referenced project.*
~~1~~	~~5/21/2015~~	~~P790-05~~	~~remaining balance from previous invoice No. 5566~~
1	5-21-15		(1) Inv# 5616

THESE ARE TRANSMITTED AS CHECKED BELOW:

	For approval	____	Approved as submitted	____	Resubmit	____	Copies for approval
	Final approval	____	Approved as noted	____	Submit	____	Copies for distribution
____	As requested	____	Returned for corrections	____	Return	____	Correction prints
X	**For review and payment**		Other ____				
____	For bids due ____						

REMARKS: *Please review, approve and process for payment. Should you have any questions or concerns, please contact our office at (956)565-4637. Thank you.*

Received by : ____

SIGNED: ____
GMES Representative

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

MAY 21 2015
3:29 AM / PM
BY: Rosalw

If enclosures are not as noted, kindly notify us at once.

AI -50128 **7.**

DRAINAGE - CONSENT

Meeting Date: 06/23/2015

Submitted For: Lora Briones

Submitted By: Claudette Guerrero, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

Request to issue payment after review and audit procedures are complete:

S&B Infrastructure, LTD.

A) Inv#U9444.103&812-05B in the amount of $87,396.00 related to Work Authorization no. 16-Engineering Services PS&E for Hidalgo County Raymondville Drain & Work Authorization No. 17-Engineering Services PS&E for Hidalgo and Willacy Counties Raymondville Drain Project. PO# 623918 & 626525.

B) Inv#U9444.103&812-06A in the amount of $170,517.00 related to Work Authorization no. 16-Engineering Services PS&E for Hidalgo County Raymondville Drain & Work Authorization No. 17-Engineering Services PS&E for Hidalgo and Willacy Counties RAymondville Drain Project. PO#623918 & 626525.

BACKGROUND

Fiscal Impact

Attachments

S&B Inv#U9444.103&812-05B
S&B Inv#U9444.103&812-06A

Form Review

Inbox	**Reviewed By**	**Date**
Budget & Management	Veronica Ortiz	06/18/2015 10:49 AM
Final Approval	Monica Badillo	06/19/2015 05:25 PM

Form Started By: Claudette Guerrero Started On: 06/16/2015 03:19 PM

Final Approval Date: 06/19/2015

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: ~~6/8/2015~~ 6/5/2015

Engineer/Firm Name: S&B Infastructure

Project Name/Number: Raymondville Drain Project WA No. 16 & 17

Invoice No.: U9444.103 & 812-05B

Purchase Order No.:

Received By: Rosa Arce

Forwarded to: Joey Garza

Total # of Pages Submitted: 5

Attachments: USB Electronic Invoice

Additional Comments: $87,396.00

Raymondville Drain Project, Project for Flood Control
Lower Rio Grande Basin, (Hidalgo & Willacy Counties), Texas
Water Resources Development Act (WRDA) 1986, Title IV, Section 401, As Amended by WRDA 2007

S&B INFRASTRUCTURE, LTD.
Engineering ✪ Management ✪ Technology

INVOICE TRANSMITTAL

S&BI Invoice U9444.103&812-05B

5 June 2015

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JUN 05 2015
4:44 AM/PM
BY: Rosa

To: **Lora Briones, HCDD1 Financial Officer**
Claudette Guerrero, HCDD1 Accountant
Josè "Noe" Saldivar, PE, HCDD1 Engineer

From: Sharlotte L. Teague, PE, S&BI Senior Project Manager

Dear Lora, Claudette, and Noe,

Transmitted herewith is above-referenced S&BI invoice. Under this invoice, we are respectfully requesting payment as follows:

Work Performed Under: S&BI Work Authorization Nos. 16 & 17

Performance Period: thru March 31, 2015

Work Tasks Performed:

For this invoice, we are primarily requesting compensation for **the following** work (see *"Expanded Progress Report"* attached to invoice; tasks performed are outlined as follows:

1. **GCM - activities for the period of January 1, 2015 thru March 31, 2015 included the following:**
   - **a.** Conducted internal meetings with S&BI project team on project status / requirements.
   - **b.** Coordination regarding S&BI project controls; review of project costs to-date.
   - **c.** File administration and update of file management.
   - **d.** Briefing for new Commissioner Eddie Cantu, Precinct No. 2 (1-14-2015)
   - **e.** Briefing for Raul Sesin, PE as new HCDD1 General Manager (2-25-2015)

2. **Engineering / Design – primary activities included:**
   - **a.** Performed Structure Research:
     - (1) Prepared list / inventory
     - (2) Prepared report "Summary of Structures"
     - (3) Structure Engineer Site Visit
   - **b.** Prepared Preliminary Bridge Layouts for Diversion Channel
   - **c.** H&H Design Data for Bridge Layouts – prepared for all bridges in dgn.
   - **d.** TxDOT Bridge Standards – downloaded and reviewed for potential modifications
   - **e.** H&H Model Adjustments - Tweaked and adjusted channel alignments in HEC RAS models for Phase 1, Segments 2 thru 6
   - **f.** Cross-Sections - Analyzed / adjusted / tweaked cross-sections for (1) determination of actual top-of-ditch opening width, (2) variations in bench elevations, and (3) relationship of top-of-width opening and required right-of-way.

3. **Prelim Compensable Utilities – primary activities included:**
   - **a.** Updated Utility Exhibits
   - **b.** Updated Utility List
   - **c.** Meeting with AEP
   - **d.** Meeting with Santa Cruz Irrigation District

Electronic back-up for 1., 2., and 3. above has been provided in the attached USB.

Respectfully Submitted By: _____

Sharlotte Lynne Teague, PE

Attachments: **S&BI Invoice U9444.103&812-05B with Expanded Line-Item Progress Report**
USB (Electronic Copies of Technical Back-up as listed above)

S&B Infrastructure, Ltd.

INVOICE

June 2, 2015

Hidalgo County Drainage District No. 1
Attention: Lora Briones, Financial Officer
902 N. Doolittle
Edinburg, Texas 78542

Project Description:
Raymondville Drain
Work Authorization No. 16 ***"Hidalgo County - Planning, Design, Preliminary Engineering, PS&E"***
Work Authorization No. 17 ***"Hidalgo and Willacy Counties - Planning, Design, Preliminary Engineering"***

S&B Invoice No.: **U9444.103&812-05B**
Invoice Period: **January 1, 2015 thru March 31, 2015**

	QTY	UNIT	UNIT PRICE	PERCENT COMPLETE	INVOICED TO DATE	PREVIOUSLY INVOICED	AMOUNT THIS INVOICE
Hidalgo County -Planning, Design and PS&E	1	LS	$3,007,286	41%	$ 1,221,502.00	$ 1,208,221.00	$ 13,281.00
Hidalgo & Willacy Counties -Planning, Design, Preliminary Engineering, and PS&E	1	LS	$5,599,008	5%	$ 252,395.00	$ 178,280.00	$ 74,115.00
						PAYMENT IS REQUESTED IN THE AMOUNT OF:	**$ 87,396.00**

I hereby certify that this invoice is true and correct, and that all services indicated have been provided.

S & B INFRASTRUCTURE, LTD.

Sharlotte L. Teague, PE
Senior Project Manager

IN ACCORDANCE WITH OUR CONTRACT,
PLEASE REMIT **BY FED EX**: **$ 87,396.00**

FED EX ACCOUNT NO. 2887-7404-8
S&B INFRASTRUCTURE, LTD.
ATTN: MIKE MANTHOS PHONE: 713.845.5401
3535 Sage Road
Houston, Texas 77056

Attachments:
PROGRESS REPORT NO. 5B

Raymondville Drain, Project for Flood Control
Hidalgo County Drainage District No. 1 / S&B Infrastructure, Ltd.
Work Authorization No. 16 / Work Authorization No. 17

Expanded Description	Estimated Line Item Budget	% Complete	Expanded Progress Report U9444.103&812-05b *Thru March 31, 2015* Invoice To-Date Amount	Previously Invoiced	Amount Due This Invoice
Work Authorization No. 16:					
1 **GCM**	$265,616	85%	$ 225,774	$ 212,493	$ 13,281
2 **Engineering / Design (HC)**	$834,861	47%	$ 391,893	$ 391,893	$ -
3 **Geotechnical (HC)**	$423,909	48%	$ 204,674	$ 204,674	$ -
4 **Design Survey (HC)**	$241,451	85%	$ 205,234	$ 205,234	$ -
5 **ROW Survey (HC)**	$309,349	37%	$ 115,509	$ 115,509	$ -
6 **ROW Acquis Administration (HC)**	$782,100	0%	$ 3,420	$ 3,420	$ -
7 **Prelim ROW / Utilities (HC)**	$150,000	50%	$ 75,000	$ 75,000	$ -
SUB-TOTAL (WA 16):	$3,007,286	41%	$ 1,221,503	$ 1,208,222	$ 13,281
Work Authorization No. 17:					
1 **GCM**	$703,663	1%	$ 7,037	$ -	$ 7,037
2 **Engineering / Design (HC)**	$653,667	7%	$ 44,378	$ -	$ 44,378
3 **Prelim Compensable Utilities (HC)**	$227,008	10%	$ 22,701	$ -	$ 22,701
4 **H&H Design (WC)**	$930,776	0%	$ -	$ -	$ -
5 **Engineering - Final Schematic (WC)**	$893,524	0%	$ -	$ -	$ -
6 **Prelim ROW / Design Survey (WC)**	$354,932	0%	$ -	$ -	$ -
7 **Prelim ROW Acquis Admin (WC)**	$270,500	0%	$ -	$ -	$ -
8 **Geotechnical (WC)**	$1,564,938	11%	$ 178,280	$ 178,280	$ (0)
SUB-TOTAL (WA 17):	$5,599,008	5%	$ 252,395	$ 178,280	$ 74,115

SIBI Invoice

Electronic Backup

Inv. U9444-103 & 812-05B



Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: 6/3/2015

Engineer/Firm Name: S&B Infrastructure Group

Project Name/Number: Raymondville Drain WA No. 16 & 17

Invoice No.: U94443103 & 812-06A

Purchase Order No.:

Received By: Rosa Arce

Forwarded to: Joey Garza

Total # of Pages Submitted: 195 pg.

Attachments: USB, Backups and Drawings

↓ NOT scanned.

Additional Comments: $170,517.00

Raymondville Drain Project, Project for Flood Control
Lower Rio Grande Basin, (Hidalgo & Willacy Counties), Texas
Water Resources Development Act (WRDA) 1986, Title IV, Section 401,
As Amended by WRDA 2007

S&B INFRASTRUCTURE, LTD.
Engineering ✪ Management ✪ Technology

INVOICE TRANSMITTAL

S&BI Invoice U9444.103&812-06a

2 June 2015

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JUN 03 2015
9:34 AM PM
BY: RosaAne

To: **Lora Briones, HCDD1 Financial Officer**
Claudette Guerrero, HCDD1 Accountant
Josè "Noe" Saldivar, PE, HCDD1 Engineer

From: Sharlotte L. Teague, PE, S&BI Senior Project Manager

Dear Lora, Claudette, and Noe,

Transmitted herewith is above-referenced S&BI invoice. Under this invoice, we are respectfully requesting payment as follows:

Work Performed Under: S&BI Work Authorization No. 17

Performance Period: thru April 30, 2015

Work Tasks Performed:

For this invoice, we are primarily requesting compensation for **geotechnical** work (see *"Expanded Progress Report"* attached to invoice; tasks performed are outlined as follows:

For the period of April 1 thru April 30, 2015, S&BI coordinated with L&G, and:

a. L&G has completed the field investigation / drilling and began laboratory testing of 22 additional Bridge/Structural borings (B-BRG-48 through B-BRG-49, B-BRG-56 through B-BRG-59, B-BRG-65, B-BRG-68, B-BRG-74, B-BRG-77, and B-BRG-79 through B-BRG-88). (48 Bridge / Structural Borings to-date,)

b. Boring Logs were created for all borings completed to-date (TxDOT Wincore format).

c. Began development of Gradation Curves (D50~D90 for Scour), Evaluation of Sulfate Content for Structure Locations (structure specific), and Deep Foundation Analysis for Bridge Abutments (16 locations investigated).

d. Updates were made to the overall geotechnical exhibit / schematic.

Electronic back-up for b., c., and d. above has been provided in the attached USB, and is in the form of pdfs; hard-copies area also attached.

Also, a hard-copy of L&G's invoice has been provided for your files in support of the request for this payment.

Respectfully Submitted By: _____
Sharlotte Lynne Teague, PE

Attachments: **S&BI Invoice U9444.103&812-06a with Expanded Line-Item Progress Report**
Sub-Provider Invoice (L&G 11325136 thru 4-29-2015) $155,015.52
USB (Electronic Copies of Technical Back-up as listed above and Sub-provider Invoice)
Hard-Copy:

- **Updated Overall Geotechnical Exhibit / Schematic (4-30-2015)**
- **Preliminary Drilling Logs (thru 4-30-2015)**
- **Bearing Foundation Capacity Curves (thru 4-30-2015)**
- **Gradation Curves (thru 4-30-2015)**
- **Sulfate By Boring Location (thru 4-30-2015)**

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

JUN 03 2015
9:34 AM / PM
BY: Rosa Arce

S&B Infrastructure, Ltd.

INVOICE

June 2, 2015

Hidalgo County Drainage District No. 1
Attention: Lora Briones, Financial Officer
902 N. Doolittle
Edinburg, Texas 78542

Project Description:
Raymondville Drain
Work Authorization No. 16 ***"Hidalgo County - Planning, Design, Preliminary Engineering, PS&E"***
Work Authorization No. 17 ***"Hidalgo and Willacy Counties - Planning, Design, Preliminary Engineering"***

S&B Invoice No.: **U9444.103&812-06A**
Invoice Period: **April 1, 2015 through April 30, 2015**

	QTY	UNIT	UNIT PRICE	PERCENT COMPLETE	INVOICED TO DATE	PREVIOUSLY INVOICED	AMOUNT THIS INVOICE
Hidalgo County -Planning, Design and PS&E	1	LS	$3,007,286	41%	$ 1,221,502.00	$ 1,221,502.00	
Hidalgo & Willacy Counties -Planning, Design, Preliminary Engineering, and PS&E	1	LS	$5,599,008	8%	$ 422,912.00	$ 252,395.00	$ 170,517.00
						PAYMENT IS REQUESTED IN THE AMOUNT OF:	**$ 170,517.00**

I hereby certify that this invoice is true and correct, and that all services indicated have been provided.

S & B INFRASTRUCTURE, LTD.

Sharlotte L. Teague, PE
Senior Project Manager

IN ACCORDANCE WITH OUR CONTRACT,
PLEASE REMIT **BY FED EX**: **$ 170,517.00**

FED EX ACCOUNT NO. 2887-7404-8
S&B INFRASTRUCTURE, LTD.
ATTN: MIKE MANTHOS PHONE: 713.845.5401
3535 Sage Road
Houston, Texas 77056

Attachments:
PROGRESS REPORT NO. 6A

Raymondville Drain, Project for Flood Control
Hidalgo County Drainage District No. 1 / S&B Infrastructure, Ltd.
Work Authorization No. 16 / Work Authorization No. 17

Expanded Description	Estimated Line Item Budget	% Complete	Expanded Progress Report U9444.103&812-06a *Thru April 30, 2015* Invoice To-Date Amount	Previously Invoiced	Amount Due This Invoice
Work Authorization No. 16:					
1 **GCM**	$265,616	85%	$ 225,774	$ 225,774	$ -
2 **Engineering / Design (HC)**	$834,861	47%	$ 391,893	$ 391,893	$ -
3 **Geotechnical (HC)**	$423,909	48%	$ 204,674	$ 204,674	$ -
4 **Design Survey (HC)**	$241,451	85%	$ 205,234	$ 205,234	$ -
5 **ROW Survey (HC)**	$309,349	37%	$ 115,509	$ 115,509	$ -
6 **ROW Acquis Administration (HC)**	$782,100	0%	$ 3,420	$ 3,420	$ -
7 **Prelim ROW / Utilities (HC)**	$150,000	50%	$ 75,000	$ 75,000	$ -
SUB-TOTAL (WA 16):	$3,007,286	41%	$ 1,221,503	$ 1,221,503	$ -
Work Authorization No. 17:					
1 **GCM**	$703,663	1%	$ 7,037	$ 7,037	$ -
2 **Engineering / Design (HC)**	$653,667	7%	$ 44,378	$ 44,378	$ -
3 **Prelim Compensable Utilities (HC)**	$227,008	10%	$ 22,701	$ 22,701	$ -
4 **H&H Design (WC)**	$930,776	0%	$ -	$ -	$ -
5 **Engineering - Final Schematic (WC)**	$893,524	0%	$ -	$ -	$ -
6 **Prelim ROW / Design Survey (WC)**	$354,932	0%	$ -	$ -	$ -
7 **Prelim ROW Acquis Admin (WC)**	$270,500	0%	$ -	$ -	$ -
8 **Geotechnical (WC)**	$1,564,938	22%	$ 348,797	$ 178,280	$ 170,517
SUB-TOTAL (WA 17):	$5,599,008	8%	$ 422,912	$ 252,395	$ 170,517

L & G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956) 565-9813 Fax (956) 565-9018

INVOICE #: 11325136
INVOICE DATE: 04/29/15

BILL TO: 09
S&B Infrastructure Ltd
Attn: Infrastructure A/P
P.O. Box 266245
Houston, TX 77207-6245

JOB: 140202
Raymondville Drain Outfall WA2
Willacy County PO#U9444-Z0023
S&B Project No. U9444.813

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
Engineering services for the month of April 2015.						
33001-Geotech Testin	799,881.31	121,899.94	102,749.58	224,649.52	28.1	575,231.79
33002-Geotech Analys	610,954.80	40,172.50	52,265.94	92,438.44	15.1	518,516.36
33003-Geotech ODE	4,390.00				0.0	4,390.00
TOTALS:	1,415,226.11	162,072.44	155,015.52	317,087.96	22.4	1,098,138.15

ORIGINAL CONTRACT SUM	$	1,415,226.11
CHANGE BY CHANGE ORDER	$	0.00
CONTRACT SUM TO DATE	$	1,415,226.11
TOTAL COMPLETED TO DATE	$	317,087.96
LESS PREVIOUS INVOICES	$	162,072.44
CURRENT PAYMENT DUE	$	155,015.52

PROJECT MANAGER'S SIGNATURE

SkDI

Invoice Electronic Back-up

VQ4414.103 & 812-06a



DRILLING LOGS

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-37
Structure Bridge Borings
Station
Offset

District
Date 3/3/2015
Grnd. Elev. 49.00 ft
GW Elev. 31.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
43.		5 (6) 6 (6)	SAND, Clayey Sand, Lean, Dark Brown, Loose, Moist (SC)			15.6				-200 = 34.8%
38.		8 (6) 7 (6)	CLAY, Sandy Lean Clay, Brown, Medium Stiff, w/ Calcareous Nodules, Moist (CL)			21.6	47	32		
		35 (6) 35 (6)	CLAY, Sandy Lean Clay, Brown, Stiff to Hard, w/ Calcareous Nodules, Moist (CL)			24.8				-200 = 68.8%
		17 (6) 17 (6)				36.6	37	22		
		19 (6) 30 (6)				32.4				-200 = 54.3%
		24 (6) 48 (6)				23.7	29	13		
18.		42 (6) 47 (6)	CLAY, Lean Clay w/ Sand, Brown, w/ Calcareous Nodules, Hard, Wet (CL)			37.4				-200 = 71.4%
		50 (3) 50 (1.5)				34.0	34	18		
8.		50 (4) 50 (2.5)	SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, Very Dense, Wet (SC)			36.8				-200 = 36.1%
		50 (2) 50 (1)				34.0	32	19		
-2.		50 (4) 50 (5)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, Hard, Wet (CL)			39.3				-200 = 59.3%
		40 (6) 37 (6)				36.7	43	28		
		47 (6) 43 (6)				30.5				-200 = 58.5%
-17.		50 (6) 50 (4)	CLAY, Fat Clay w/ Sand, Brown, w/ Calcareous Nodules, Hard, Wet (CH)			42.4	58	37		
-26.		50 (4) 50 (4)				44.2				-200 = 70.5%

PRELIMINARY

Remarks: Sulfate Tests Performed at 65 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'0.40", W 97°59'23.70". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratory

DRILLING LOG

	County Willacy	Hole	B-BRG-37	District	
WinCore	Highway	Structure	Bridge Borings	Date	3/3/2015
Version 3.1	CSJ	Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	31.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	LL	PI	Wet Den. (pcf)	Additional Remarks
43.		5 (6) 6 (6)	SAND, Clayey Sand, Lean, Dark Brown, Loose, Moist (SC)			15.6				-200 = 34.8%
38.		8 (6) 7 (6)	CLAY, Sandy Lean Clay, Brown, Medium Stiff, w/ Calcareous Nodules, Moist (CL)			21.6	47	32		
		35 (6) 35 (6)	CLAY, Sandy Lean Clay, Brown, Stiff to Hard, w/ Calcareous Nodules, Moist (CL)			24.8				-200 = 68.8%
		17 (6) 17 (6)				36.6	37	22		
		19 (6) 30 (6)				32.4				-200 = 54.3%
		24 (6) 48 (6)				23.7	29	13		
18.		42 (6) 47 (6)	CLAY, Lean Clay w/ Sand, Brown, w/ Calcareous Nodules, Hard, Wet (CL)			37.4				-200 = 71.4%
		50 (3) 50 (1.5)				34.0	34	18		
8.		50 (4) 50 (2.5)	SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, Very Dense, Wet (SC)			36.8				-200 = 36.1%
		50 (2) 50 (1)				34.0	32	19		
-2.		50 (4) 50 (5)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, Hard, Wet (CL)			39.3				-200 = 59.3%
		40 (6) 37 (6)				36.7	43	28		
		47 (6) 43 (6)				30.5				-200 = 58.5%
-17.		50 (6) 50 (4)	CLAY, Fat Clay w/ Sand, Brown, w/ Calcareous Nodules, Hard, Wet (CH)			42.4	58	37		
-26.		50 (4) 50 (4)				44.2				-200 = 70.5%

PRELIMINARY

Remarks: Sulfate Tests Performed at 65 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'0.40", W 97°59'23.70". 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: Okie Contreras Logger: Joe Gomez Organization: L&G Engineering Laboratory

L:\Wincore\Projects\Year 2015 Projects\Raymondville_Drain_Willacy.CLG

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-38
Structure Bridge Borings
Station
Offset

District
Date 3/3/205
Grnd. Elev. 50.00 ft
GW Elev. 32.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
5		6 (6) 5 (6)	CLAY, Sandy Lean Clay, Dark Brown, Soft to Stiff, Dry (CL)			10.5	24	10		
10		19 (6) 17 (6)				17.9				-200 = 52.2%
39.										
15		12 (6) 16 (6)	CLAY, Fat Clay w/ Sand, Brown, Stiff, Moist (CH)			15.6	51	35		
20		20 (6) 21 (6)				37.4				-200 = 72.4%
29.										
25		27 (6) 45 (6)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, Hard, Wet (CL)			37.4	[illegible]	23		
30		40 (6) 50 (5)				[illegible].5				-200 = 54.8%
19.										
35		26 (6) 31 (6)	SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, Hard, Wet (SC)			34.7	31	13		
40		30 (6) 33 (6)				32.2				-200 = 30.5%
45		50 (2) 50 (2)				44.7	33	12		
50		50 (3) 50 (1.5)				37.4				-200 = 39.5%
-1.										
55		41 (6) 47 (6)	CLAY, Fat Clay, Brown, w/ Calcareous Nodules, Hard, Wet (CH)			47.0	83	58		
60		35 (6) 35 (6)				47.6				-200 = 86.2%
-11.										
65		41 (6) 37 (6)	CLAY, Fat Clay w/ Sand, w/ Calcareous Nodules, Hard, Wet (CH)			39.2	62	43		
70		38 (6) 38 (6)				41.4				-200 = 82.1%
-25. 75		40 (6) 41 (6)				44.6	56	38		

PRELIMINARY

Remarks: Sulfate Tests Performed at 40 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'2.50", W 97°59'23.20". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-39
Structure Bridge Borings
Station
Offset

District
Date 3/3/2015
Grnd. Elev. 46.00 ft
GW Elev. 33.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
5		4 (6) 5 (6)	SAND, Silty Sand, Dark Brown, Loose, Moist (SM)			12.3	0	0		
10		8 (6) 10 (6)				16.9				-200 = 47.5%
35.										
15		13 (6) 17 (6)	CLAY, Sandy Fat Clay, Grayish Brown, Stiff to Very Stiff, Moist (CH)			18.4	51	37		
20		22 (6) 28 (6)				42.9				-200 = 68.7%
25.										
25		41 (6) 42 (6)	SAND, Silty Sand, Brown, Medium Dense to Very Dense, Wet (SM)			30.7		0		
30		50 (3) 50 (2.5)				24.9				-200 = 15.0%
35		16 (6) 15 (6)				26.1	0	0		
40		16 (6) 15 (6)				29.1				-200 = 22.1%
5.										
45		36 (6) 41 (6)	SAND, Clayey Sand, Lean, Brown, Dense to Very Dense, Wet (SC)			31.8	24	8		
50		50 (2.5) 50 (2.25)				37.3				-200 = 46.5%
-5.										
55		50 (1.75) 50 (2)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, Hard, Wet (CL)			36.4	33	18		
60		39 (6) 45 (6)				48.0				-200 = 53.0%
-15.										
65		34 (6) 36 (6)	CLAY, Fat Clay w/ Sand, Brown, w/ Calcareous Nodules, Hard, Wet (CH)			19.9	51	34		
70		36 (6) 33 (6)				51.5				-200 = 80.6%
-29. 75		41 (6) 40 (6)				52.4	54	38		

PRELIMINARY

Remarks: Sulfate Tests Performed at 45 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'6.90", W 97°58'51.90". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-40
Structure Bridge Borings
Station
Offset

District
Date 3/3/2015
Grnd. Elev. 46.00 ft
GW Elev. 38.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
40. 5		1 (6) 1 (6)	SAND, Clayey Sand, Dark Brown, Very Loose, Moist (SC)			19.7				-200 = 32.25
10		5 (6) 11 (6)	CLAY, Sandy Lean Clay, Dark Grayish Brown, Medium Stiff to Stiff, Moist (CL)			27.2	26	15		
15		12 (6) 16 (6)				36.2				-200 = 51.2%
25. 20		8 (6) 14 (6)				50.3	46	31		
25		50 (4.5) 50 (5)	CLAY, Lean Clay w/ Sand, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CL)			64.7				-200 = 74.6%
30		50 (4.25) 50 (4)				43.7	42	24		
10. 35		50 (4.5) 50 (4.75)				51.4				-200 = 72.9%
40		32 (6) 38 (6)	SAND, Clayey Sand, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Medium Dense, Wet (SC)			49.6	24	18		
45		25 (6) 32 (6)				39.9				-200 = 45.4%
50		50 (5) 50 (4.75)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CL)			41.8	29	12		
-10. 55		50 (5.75) 50 (4.5)				49.9				-200 = 51.7%
60		50 (4.75) 50 (5)	CLAY, Fat Clay w/ Sand, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CH)			48.0	58	39		
65		50 (5) 50 (4.75)				59.8				-200 = 76.9%
70		50 (3.5) 50 (4.25)				60.9	62	43		
-29. 75		50 (4.25) 50 (4.5)				56.3				-200 = 75.4%

PRELIMINARY

Remarks: Sulfate Tests Performed at 20 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'10.00", W 97°58'51.90". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-41
Structure Bridge Borings
Station
Offset

District
Date 3/9/2015
Grnd. Elev. 50.00 ft
GW Elev. 37.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
44.			SAND, Clayey Sand, Lean, Dark Brown, Loose, Dry (SC)							
5		5 (6) 6 (6)				10.3	25	12		
			SAND, Clayey Sand, Fat, Brown, Loose, Dry (SC)							
10		7 (6) 8 (6)				18.1				-200 = 44.2%
15		8 (6) 8 (6)				19.3	52	18		
34.			CLAY, Sandy Fat Clay, Brown, w/ Calcareous Nodules, Medium Stiff, Wet (CH)							
20		9 (6) 8 (6)				39.2				-200 = 66.0%
29.			CLAY, Sandy Fat Clay, Brown, w/ Calcareous Nodules, Very Stiff to Hard, Wet (CH)							
25		23 (6) 23 (6)				55.0	[illegible]	38		
30		35 (6) 40 (6)				[illegible].1				-200 = 68.1%
19.			CLAY, Lean Clay w/ Sand, Brown, w/ Calcareous Nodules, Hard, Wet (CL)							
35		27 (6) 44 (6)				38.3	41	32		
40		24 (6) 50 (5)				63.1				-200 = 74.6%
45		25 (6) 39 (6)				52.1	43	26		
4.			CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, Hard, Wet (CL)							
50		24 (6) 43 (6)				40.9				-200 = 50.6%
55		26 (6) 31 (6)				42.5	40	24		
60		25 (6) 34 (6)				43.9				-200 = 52.1%
-11.			CLAY, Fat Clay w/ Sand, Brown, w/ Calcareous Nodules, Very Stiff to Hard, Wet (CH)							
65		27 (6) 29 (6)				51.6	62	43		
70		29 (6) 39 (6)				54.3				-200 = 76.8%
-25. 75		32 (6) 34 (6)				51.9	68	48		

PRELIMINARY

Remarks: Sulfate Tests Performed at 65 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'56.10", W 97°58'48.10". 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: Oscar

Logger: Ben

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-42
Structure Bridge Borings
Station
Offset

District
Date 3/9/2015
Grnd. Elev. 45.00 ft
GW Elev. 34.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			SAND, Clayey Sand, Lean, Dark Brown, Very Loose, Dry (SC)							
5		1 (6) 2 (6)				21.0				-200 = 45.5%
39.			CLAY, Sandy Lean Clay, Grayish Brown, w/ Calcareous Nodules, Medium Stiff to Very Stiff, Wet (CL)							
10		8 (6) 9 (6)				24.8	46	28		
15		20 (6) 24 (6)				2.7				-200 = 52.9%
29.			SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, Dense to Very Dense, Wet (SC)							
20		30 (6) 32 (6)				35.7	30	16		
25		50 (5) 50 (5)				40.1				-200 = 45.7%
30		50 (5.75) 50 (4)				30.5	25	14		
35		50 (4.5) 50 (4)				36.5				-200 = 33.1%
9.			SAND, Poorly Graded Sand w/ Silt, Brown, Very Dense, Wet (SP-SM)							
40		50 (5) 50 (3)				34.7				
45		50 (5) 50 (5.75)				30.5	0	0		-200 = 11.2%
-1.			SAND, Clayey Sand, Lean, Brown, Dense, Wet (SC)							
50		39 (6) 45 (6)				39.1				
55		42 (6) 46 (6)				42.7				-200 = 35.9%
60		50 (6) 50 (6)				39.6	41	25		
65		48 (6) 48 (6)				43.8				-200 = 42.3%
70		30 (6) 42 (6)				36.2				
-26.			CLAY, Fat Clay w/ Sand, Brown, Hard, Wet (CH)							
-30. 75		37 (6) 42 (6)				42.3	52	36		-200 = 73.1%

PRELIMINARY

Remarks: Sulfate Tests Performed at 40 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'53.90", W 97°58'47.70". 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: Oscar

Logger: Ben

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-43
Structure Bridge Borings
Station
Offset

District
Date 3/2/2015
Grnd. Elev. 57.00 ft
GW Elev. 36.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
5		12 (6) 12 (6)	SAND, Clayey Sand, Lean, Dark Brown, Loose to Medium Dense, Moist (SC)			13.3	26	10		
10		8 (6) 9 (6)				12.5				-200 = 41.6%
15		20 (6) 15 (6)				16.5	41	28		
41.										
20		24 (6) 23 (6)	SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Loose to Medium Dense, Wet (SC)			19.1				-200 = 39.4%
25		12 (6) 5 (6)				37.2	[illegible]	22		
31.										
30		50 (4) 50 (2)	SAND, Silty, Clayey Sand, Brown, Dense to Very Dense, Wet (SC-SM)			[illegible].5				-200 = 41.5%
35		50 (5.5) 50 (3)				37.8	24	7		
40		50 (2.25) 50 (1.5)				45.4				-200 = 42.1%
45		50 (6) 50 (1)				33.9	24	7		
50		32 (6) 35 (6)				42.6				-200 = 45.5%
6.										
55		30 (6) 28 (6)	SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Medium Dense to Dense, Wet (SC)			45.7	39	23		
60		18 (6) 20 (6)				35.5				-200 = 35.3%
65		32 (6) 38 (6)				38.3	31	17		
-9.										
70		50 (4.5) 50 (3)	CLAY, Sandy Fat Clay, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CH)			45.9				-200 = 57.9%
-18. 75		50 (3) 50 (1.5)				60.5	69	49		

PRELIMINARY

Remarks: Sulfate Tests Performed at 25 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'46.8", W 97°57'58.3". 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: Okie Contreras

Logger: Richard Garcia

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-44
Structure Bridge Borings
Station
Offset

District
Date 3/2/2015
Grnd. Elev. 53.00 ft
GW Elev. 40.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
5		7 (6) 8 (6)	SAND, Clayey Sand, Lean, Dark Brown to Brown, Traces of Roots, Very Loose to Loose, Dry (SC)			7.0				-200 = 39.9%
10		7 (6) 5 (6)				10.8	36	22		
15		2 (6) 3 (6)				17.1				-200 = 39.5%
37.										
20		19 (6) 13 (6)	SAND, Clayey Sand, Lean Brown, Medium Dense to Dense, Wet (SC)			55.3	30	14		
25		30 (6) 32 (6)				30.4				-200 = 33.1%
27.										
30		50 (5) 50 (4.5)	SAND, Silty Sand, Brown, Medium Dense to Very Dense, Wet (SM)			23.2	0	0		
35		50 (4.75) 50 (4)				22.2				-200 = 18.9%
40		50 (4.5) 50 (4)				26.1	0	0		
45		50 (4.75) 50 (4.25)				28.9				-200 = 14.6%
50		23 (6) 26 (6)				27.3	0	0		
55		26 (6) 33 (6)				26.0				-200 = 15.7%
-3.										
60		32 (6) 33 (6)	SAND, Clayey Sand, Lean, Brown, Dense, Wet (SC)			25.9	26	19		
65		30 (6) 32 (6)				34.6				-200 = 33.5%
-13.										
70		28 (6) 30 (6)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Stiff to Hard, Wet (CL)			40.8	31	18		
-22. 75		33 (6) 36 (6)				48.4				-200 = 61.7%

PRELIMINARY

Remarks: Sulfate Tests Performed at 65 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'48.00", W 97°57'57.1". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

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DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-45
Structure Bridge Borings
Station
Offset

District
Date 3/4/2015
Grnd. Elev. 49.00 ft
GW Elev. 35.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
43.		6 (6) 6 (6)	SAND, Clayey Sand, Lean, Dark Brown, Traces of Roots, Loose, Dry (SC)			17.2	30	18		-200 = 39.9%
38.		5 (6) 7 (6)	SAND, Clayey Sand, Fat, Dark Brown, Loose, Dry (SC)			16.6	52	34		
		19 (6) 26 (6)	SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, Medium Dense, Wet (SC)			17.8				-200 = 39.5%
28.		23 (6) 25 (6)				44.0	39	19		
		30 (6) 37 (6)	SAND, Silty, Clayey Sand, Brown, Dense, Wet (SC-SM)			35.6	41	5		-200 = 33.1%
18.		43 (6) 50 (6)				26.4				
		50 (4.75) 50 (4)	SAND, Silty Sand, Brown, Dense to Very Dense, Wet (SM)			23.3				-200 = 18.9%
		50 (3.75) 50 (3.25)				19.7	0	0		
		50 (2.5) 50 (2)				32.8				-200 = 14.6%
		50 (2) 50 (1.75)				30.4				
		50 (4.25) 50 (5)				27.7	0	0		-200 = 15.7%
		36 (6) 35 (6)				29.1				
		35 (6) 39 (6)				33.0				-200 = 33.5%
		41 (6) 44 (6)				29.6				
-22.			CLAY, Sandy Fat Clay, Brown, Hard, Wet (CH)							
-26.		38 (6) 42 (6)				49.5	64	46		-200 = 61.7%

PRELIMINARY

Remarks: Sulfate Tests Performed at 60 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'42.7", W 97°57'29.1". 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: Benito Gutierres

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-46
Structure Bridge Borings
Station
Offset

District
Date 3/5/2015
Grnd. Elev. 49.00 ft
GW Elev. 13.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
5		5 (6) 4 (6)	SAND, Clayey Sand, Lean, Dark Brown, Very Loose to Loose, Dry (SC)			9.4	30	16		
10		2 (6) 2 (6)				10.7				-200 = 42.8%
38.										
15		42 (6) 50 (5.75)	CLAY, Lean Clay w/ Sand, Brown, w/ Calcareous Nodules, Stiff to Hard, Wet (CL)			19.0	37	22		
20		16 (6) 19 (6)				33.0				-200 = 70.1%
25		39 (6) 43 (6)				31.8	39	17		
23.										
30		50 (6) 50 (5.5)	SAND, Silty, Clayey Sand, Brown, w/ Calcareous Nodules, Very Dense, Wet (SC-SM)			19.8	20	5		-200 = 38.9%
18.										
35		50 (5.5) 50 (4.25)	SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, Very Dense, Wet (SC)			32.9	20	8		
40		50 (4.25) 50 (4)				26.6				-200 = 23.5%
8.										
45		26 (6) 31 (6)	SAND, Silty Sand, Lean, Brown, w/ Calcareous Nodules, Dense, Wet (SM)			27.7				
50		19 (6) 22 (6)				24.2	0	0		-200 = 20.9%
55		18 (6) 24 (6)				25.2				
60		23 (6) 31 (6)				26.7				-200 = 17.2%
-12.										
65		32 (6) 27 (6)	SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, Medium Dense to Dense, Wet (SC)			28.1	30	12		
70		33 (6) 31 (6)				25.5				-200 = 19.2%
-22.										
-26. 75		30 (6) 32 (6)	SAND, Clayey Sand, Fat, Brown, w/ Calcareous Nodules, Dense, Wet (SC)			43.1	50	34		

PRELIMINARY

Remarks: Sulfate Tests Performed at 35 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'44.3", W 97°57'28.4". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-47
Structure Bridge Borings
Station
Offset

District
Date 3/5/2015
Grnd. Elev. 49.00 ft
GW Elev. 36.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
5		6 (6) 4 (6)	SAND, Clayey Sand, Lean, Dark Brown, Very Loose to Loose, Dry (SC)			12.4				-200 = 41.4%
10		4 (6) 3 (6)				18.4	34	22		
38.			CLAY, SAndy Lean Clay, Brown, Stiff to Hard, Wet (CL)							
15		50 (4) 50 (2)				28.7				-200 = 55.7%
20		15 (6) 14 (6)				33.8	27	15		
25		17 (6) 22 (6)				31.6				-200 = 68.9%
30		50 (6) 50 (4)				33.8	32	16		
35		50 (2.5) 50 (3)				40.7				-200 = 50.6%
13.			SAND, Silty Sand, Brown, w/ Calcareous Nodules, Dense to Very Dense, Wet (SM)							
40		50 (3) 50 (2)				32.1	0	0		
45		50 (4.5) 48 (6)				39.5				-200 = 37.7%
3.			SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Medium Dense to Very Dense, Wet (SC)							
50		17 (6) 19 (6)				46.5	28	12		
55		50 (5.5) 50 (5)				44.4				-200 = 35.4%
60		50 (4) 50 (4)				46.5	42	27		
-12.			CLAY, Fat Clay w/ Sand, Brown, w/ Calcareous Nodules, Hard, Wet (CH)							
65		46 (6) 49 (6)				48.0				-200 = 71.5%
-17.			CLAY, Sandy Fat Clay, Brown, w/ Calcareous Nodules, Hard, Wet (CH)							
70		47 (6) 42 (6)				48.6	62	44		
-26. 75		49 (6) 47 (6)				59.4				-200 = 68.6%

PRELIMINARY

Remarks: Sulfate Tests Performed at 20 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'43.0", W 97°57'27.4". 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: Okie Garcia

Logger: Joe Ramirez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-48
Structure Bridge Borings
Station
Offset

District
Date 3/30/2015
Grnd. Elev. 45.00 ft
GW Elev. 34.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Sandy Lean Clay, Dark Brown, Soft, Moist (CL)							
		3 (6) 4 (6)				18.0	48	30		
39. 5										
			CLAY, Sand Lean Clay, Brown w/ Calcareous Nodules, Medium Stiff to Stiff, Wet (CL)							
		7 (6) 12 (6)				21.9				-200 = 52.9%
10										
		22 (6) 21 (6)				33.2	36	23		
15										
		12 (6) 12 (6)				38.7				-200 = 64.6%
20										
24.			CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, Very Stiff to Hard, Wet (CL)							
		22 (6) 20 (6)				39.8	38	24		
25										
		35 (6) 29 (6)				28.5				-200 = 60.9%
30										
		41 (6) 43 (6)				38.7	25	10		
35										
9.			SAND, Silty Sand, Brown, w/ Gray Streaks, Dense to Very Dense, Wet (SM)							
		45 (6) 45 (6)				29.4				-200 = 25.6%
40										
		50 (5) 50 (5.5)				24.9	0	0		
45										
		50 (6) 50 (5)				29.6				-200 = 13.9%
50										
		40 (6) 38 (6)				30.8	0	0		
55										
		37 (6) 35 (6)				32.2				-200 = 19.4%
60										
-16.			SAND, Clayey Sand, Lean, Brown, w/ Gray Streaks, Very Dense, Wet (SC)							
		50 (4.5) 50 (5)				37.4	24	8		
65										
		50 (3) 50 (2.5)				33.9				-200 = 39.8%
70										
		50 (1) 50 (2)				39.0	42	29		
-30. 75										

PRELIMINARY

Remarks: Sulfate Tests Performed at 25 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'42.10", W 97°57'0.00". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy | Hole B-BRG-49 | District
Highway | Structure Bridge Borings | Date 3/30/2015
CSJ | Station | Grnd. Elev. 45.00 ft
Offset | GW Elev. 34.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
		6 (6) 7 (6)	SAND, Clayey Sand, Lean, Dark Brown, Loose, Moist (SC)			20.0				-200 = 48.5%
5										
		7 (6) 7 (6)				20.9	46	31		
10										
34.			CLAY, Sandy Lean Clay, Brown, w/ Reddish Brown Streaks Medium Stiff, Wet (CL)							
		7 (6) 7 (6)				36.6				-200 = 55.7%
15										
29.			CLAY, Lean Clay w/ Sand, Brown, w/ Reddish Brown Streaks, Stiff to Hard, Wet (CL)							
		22 (6) 16 (6)				40.4	38	24		
20										
		37 (6) 43 (6)				47.4				-200 = 82.2%
25										
		45 (6) 50 (6)				49.3	48	29		
30										
		50 (4) 50 (4)				45.4				-200 = 75.4%
35										
		50 (3) 50 (1.5)				42.8	42	27		
40										
4.			SAND, Clayey Sand, Lean, Brown, Very Dense, Wet (SC)							
		50 (2) 50 (1)				40.0				-200 = 49.4%
45										
		50 (1.5) 50 (1)				43.3	27	9		
50										
		50 (4) 50 (2)				34.1				-200 = 33.5%
55										
-11.			CLAY, Fat Clay w/ Sand, Brown, Hard, Wet (CH)							
		50 (3) 50 (3.5)				42.8	70	52		
60										
		50 (3) 50 (1)				51.4				-200 = 70.6%
65										
		50 (1) 50 (1)				48.7	71	52		
70										
-26.			CLAY, Sandy Fat Clay, Brown, Hard, Wet (CH)							
		50 (2.5) 50 (2)				48.1				-200 = 65.7%
-30. 75										

PRELIMINARY

Remarks: Sulfate Tests Performed at 50 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'45.30", W 97°56'58.70". 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: Okie Contreras | Logger: Joe Gomez | Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-50
Structure Bridge Borings
Station
Offset

District
Date 3/15/2015
Grnd. Elev. 42.00 ft
GW Elev. 30.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Sandy Lean Clay, Dark Brown, Soft, Dry (CL)							
	5	6 (6) 5 (6)				20.7	45	28		
36.			CLAY, Sandy Lean Clay, Gray, Medium Stiff, Moist (CL)							
	10	12 (6) 12 (6)				24.1	39	22		-200 = 65.5%
31.			CLAY, Sandy Lean Clay, Light Brown, w/ Traces of Gravel (Sized up to 1/4 in. Sub-Angular), Stiff to Very Stiff, Wet (CL)							
	15	18 (6) 19 (6)				27.8	29	22		
	20	20 (6) 25 (6)				29.4				-200 = 69.0%
	25	17 (6) 18 (6)				45.3	[illegible]6	27		
16.			CLAY, Fat Clay, Brown, w/ Reddish Brown Streaks, Stiff to Very Stiff, Wet (CH)							
	30	15 (6) 20 (6)				[illegible]6.6				-200 = 93.2%
	35	16 (6) 19 (6)				46.9	73	50		
	40	21 (6) 24 (6)				42.5				-200 = 94.9%
	45	18 (6) 21 (6)				6.73	68	45		
	50	20 (6) 23 (6)				43.7				-200 = 93.2%
	55	21 (6) 24 (6)				48.9	73	48		
	60	19 (6) 24 (6)				45.7				-200 = 95.8%
	65	22 (6) 23 (6)				49.7	76	51		
	70	25 (6) 27 (6)				54.8				-200 = 97.7%
-33.	75	23 (6) 23 (6)				53.3	75	53		

PRELIMINARY

Remarks: Sulfate Tests Performed at 60 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'39.40", W 97°56'30.30". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-51
Structure Bridge Borings
Station
Offset

District
Date 3/15/2015
Grnd. Elev. 48.00 ft
GW Elev. 30.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
42. 5		6 (6) 6 (6)	CLAY, Sandy Lean Clay, Dark Brown, Soft, Dry (CL)			18.4	40	24		-200 = 57.9%
37. 10		17 (6) 20 (6)	CLAY, Fat Clay w/ Sand, Gray, Stiff, Moist (CH)			26.7	52	33		-200 = 68.3%
15		16 (6) 18 (6)	CLAY, Lean Clay w/ Sand, Brown, w/ Traces of Gravel (Sized up to 1/4 in. Sub-Angular, Stiff, Wet (CL)			31.2				-200 = 65.7%
27. 20		15 (6) 17 (6)				32.0	27	11		
22. 25		21 (6) 26 (6)	SAND, Clayey Sand, Fat, Brown, Medium Dense, Wet (SC)			25.4				-200 = 37.5%
30		20 (6) 21 (6)	CLAY, Sandy Fat Clay, Brown, Stiff, Wet (CH)			[illegible]7				-200 = 61.9%
12. 35		16 (6) 19 (6)				44.1	74	47		
40		15 (6) 19 (6)	CLAY, Fat Clay, Brown, w/ Reddish Brown and Gray Streaks, Stiff, Wet (CH)			41.9				-200 = 96.0%
45		14 (6) 16 (6)				47.6	71	44		
-3. 50		16 (6) 19 (6)				47.2				
55		18 (6) 21 (6)	CLAY, Fat Clay w/ Sand, Brown, w/ Reddish Brown, and Gray Streaks, Stiff to Very Stiff, Wet (CH)			45.5				-200 = 83.0%
-13. 60		20 (6) 26 (6)				46.6	55	35		
65		19 (6) 24 (6)	CLAY, Fat Clay, Brown, w/ Reddish Brown and Gray Streaks, Stiff to Very Stiff, Wet (CH)			48.8				-200 = 86.1%
70		18 (6) 25 (6)				49.8	56	34		
-27. 75		18 (6) 27 (6)				49.1				-200 = 89.1%

PRELIMINARY

Remarks: Sulfate Tests Performed at 10 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'38.60", W 97°56'31.30". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

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DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-52
Structure Bridge Borings
Station
Offset

District
Date 3/13/2015
Grnd. Elev. 45.00 ft
GW Elev. 32.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
39.		10 (6) 10 (6)	SAND, Clayey Sand, Lean, Dark Brown, Medium Dense, Dry (SC)			12.5				-200 = 49.9%
	5									
		7 (6) 10 (6)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, Soft to Medium Stiff, Wet (CL)			15.2	40	27		
	10									
		5 (6) 6 (6)				17.1				-200 = 53.6%
29.	15									
		19 (6) 16 (6)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Stiff to Hard, Wet (CL)			31.7	35	21		
	20									
		23 (6) 25 (6)				41.0				-200 = 67.6%
	25									
		30 (6) 29 (6)				35.7	34	16		
14.	30									
		38 (6) 46 (6)	CLAY, Fat Clay, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CH)			53.8				-200 = 92.4%
	35									
		50 (2.75) 50 (3)				47.6	58	35		
	40									
		50 (3) 50 (3.5)				43.2				-200 = 91.7%
	45									
		50 (4.25) 50 (4)				48.8	56	35		
	50									
		50 (4) 50 (3.5)				43.8				-200 = 95.3%
-11.	55									
		19 (6) 21 (6)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Medium Stiff to Very Stiff, Wet (CL)			44.9	46	28		
	60									
		10 (6) 13 (6)				35.1				-200 = 59.1%
-21.	65									
		13 (6) 18 (6)	CLAY, Lean Clay w/ Sand, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Stiff, Wet (CL)			35.6	29	16		
	70									
-30.	75	15 (6) 24 (6)				38.7				-200 = 81.6%

PRELIMINARY

Remarks: Sulfate Tests Performed at 40 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'21.40", W 97°55'35.60". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-53
Structure Bridge Borings
Station
Offset

District
Date 3/13/2015
Grnd. Elev. 44.00 ft
GW Elev. 31.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Sandy Lean Clay, Dark Brown, Soft to Medium Stiff, Dry (CL)							
5		5 (6) 6 (6)				16.3	34	18		
10		9 (6) 9 (6)				15.5				-200 = 58.1%
33.			CLAY, Sandy Lean Clay, Brown, Medium Stiff to Stiff, Wet (CL)							
15		8 (6) 8 (6)				19.4	44	29		
20		11 (6) 12 (6)				9.50				-200 = 60.0%
25		13 (6) 14 (6)				34.5	[illegible]	18		
18.			CLAY, Fat Clay w/ Sand, Brown, Stiff, Wet (CH)							
30		16 (6) 20 (6)				[illegible].1				-200 = 73.1%
35		15 (6) 20 (6)				54.0	65	44		
8.			CLAY, Fat Clay, Brown, Stiff to Very Stiff, Wet (CH)							
40		18 (6) 21 (6)				53.5				-200 = 88.5%
45		18 (6) 21 (6)				54.3	69	46		
50		20 (6) 22 (6)				55.6				-200 = 91.5%
55		21 (6) 24 (6)				54.8	63	43		
60		20 (6) 25 (6)				57.0				-200 = 90.7%
-17.			CLAY, Lean Clay, Brown, Hard, Wet (CL)							
65		25 (6) 29 (6)				34.1	39	20		
-22.			CLAY, Fat Clay, Brown, Hard, Wet (CH)							
70		23 (6) 29 (6)				45.6				-200 = 91.8%
-31. 75		25 (6) 30 (6)				44.8	53	33		

PRELIMINARY

Remarks: Sulfate Tests Performed at 65 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'20.20", W 97°55'35.30". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-54
Structure Bridge Borings
Station
Offset

District
Date 3/10/2015
Grnd. Elev. 45.00 ft
GW Elev. 31.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
39. 5		11 (6) 10 (6)	CLAY, Sandy Lean Clay, Dark Brown, w/ Calcareous Nodules, Medium Stiff, Dry (CL)			14.4	40	27		
10		9 (6) 10 (6)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, Soft to Medium Stiff, Wet (CL)			14.5				-200 = 54.1%
29. 15		6 (6) 6 (6)				14.9	43	30		
24. 20		14 (6) 14 (6)	SAND, Clayey Sand, Lean, Grayish Brown, w/ Calcareous Nodules, Medium Dense, Wet (SC)			22.3				-200 = 35.8%
19. 25		18 (6) 25 (6)	SAND, Silty Sand, Brown, w/ Calcareous Nodules, Medium Dense, Wet (SM)			23.9		0		
30		22 (6) 30 (6)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Very Stiff, Wet (CL)			4[illegible].7				-200 = 61.0%
9. 35		20 (6) 36 (6)				45.0	38	23		
40		22 (6) 46 (6)	CLAY, Fat Clay w/ Sand, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CH)			49.2				-200 = 83.7%
-1. 45		27 (6) 38 (6)				46.9	57	37		
50		38 (6) 45 (6)	CLAY, Fat Clay Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CH)			47.6				-200 = 91.8%
-11. 55		23 (6) 27 (6)				53.0	65	45		
60		18 (6) 21 (6)	CLAY, Lean Clay w/ Sand, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Stiff, Wet (CL)			52.1				-200 = 76.2%
-21. 65		12 (6) 16 (6)				38.3	34	18		
70		14 (6) 18 (6)	CLAY, Sandy Lean Clay, Brown, w/ Calcaroeus Nodules, w/ Reddish Brown ang Gray Streaks, Stiff, Wet (CL)			36.5				-200 = 63.4%
-30. 75		11 (6) 17 (6)				39.4	41	26		

PRELIMINARY

Remarks: Sulfate Tests Performed at 25 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'15.90", W 97°55'6.10". 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: Oscar Garcia

Logger: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-55
Structure Bridge Borings
Station
Offset

District
Date 3/10/2015
Grnd. Elev. 43.00 ft
GW Elev. 26.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
37. 5		6 (6) 6 (6)	SAND, Clayey Sand, Dark Brown, Traces of Roots, w/ Calcareous Nodules, Loose, Moist (SC)			15.7				-200 = 47.0%
10		9 (6) 10 (6)	CLAY, Sandy Lean Clay, Light Brown, w/ Calcareous Nodules, Medium Stiff, Wet (CL)			16.0	48	32		
15		8 (6) 7 (6)				16.7				-200 = 52.8%
22. 20		7 (6) 7 (6)				26.6	32	17		
25		10 (6) 12 (6)	SAND, Poorly Graded Sand with Clay, Brown, w/ Calcareous Nodules, Medium Dense, Wet (SP-SC)			27.2				-200 = 7.7%
12. 30		16 (6) 15 (6)				31.0	21	8		
35		23 (6) 25 (6)	CLAY, Lean Clay w/ Sand, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Very Stiff, Wet (CL)			37.6				-200 = 71.4%
2. 40		23 (6) 26 (6)				40.6	40	22		
45		26 (6) 31 (6)	CLAY, Fat Clay, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CH)			46.2				-200 = 93.4%
-8. 50		25 (6) 33 (6)				44.4	63	42		
55		31 (6) 36 (6)	CLAY, Lean Clay w/ Sand, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CL)			55.5				-200 = 84.1%
-18. 60		23 (6) 27 (6)				44.5	33	15		
65		18 (6) 24 (6)	CLAY, Sandy Lean Clay, Light Gray Brown, w/ Calcareous Nodules, w/ Reddish Brown Streaks, Stiff to Very Stiff, Wet (CL)			34.3				-200 = 51.0%
70		16 (6) 20 (6)				36.6	35	21		
-32. 75		17 (6) 21 (6)				47.8				-200 = 67.9%

PRELIMINARY

Remarks: Sulfate Tests Performed at 40 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'15.00", W 97°55'7.00". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

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DRILLING LOG

WinCore Version 3.1

County Willacy | Hole B-BRG-56 | District
Highway | Structure Bridge Borings | Date 3/31/2015
CSJ | Station | Grnd. Elev. 39.00 ft
Offset | GW Elev. 26.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
		5 (6) 7 (6)	CLAY, Sandy Lean Clay, Dark Brown, Soft, Dry (CL)			16.5	36	21		
33. 5		9 (6) 7 (6)	CLAY, Sandy Lean Clay, Grayish Brown, Medium Stiff to Stiff, Moist (CL)			18.0				-200 = 51.5%
10		14 (6) 20 (6)				22.7	30	15		
23. 15		29 (6) 25 (6)	SAND, Silty Sand, Brown, Medium Dense, Wet (SM)			25.5				-200 = 13.9%
20		22 (6) 20 (6)				31.0		0		
13. 25		20 (6) 18 (6)	SAND, Clayey Sand, Lean, Light Brown, Medium Dense, Wet (SC)			[illegible]3	49	31		
30		20 (6) 18 (6)				36.4				-200 = 31.2%
3. 35		18 (6) 18 (6)	SAND, Clayey Sand, Fat, Light Brown, Medium Dense, Wet (SC)			41.1	59	39		
40		22 (6) 19 (6)				39.1				-200 = 46.7%
-7. 45		22 (6) 22 (6)	SAND, Clayey Sand, Lean, Light Brown, Medium Dense to Dense, Wet (SC)			33.1	35	22		
50		42 (6) 45 (6)				38.3				-200 = 39.3%
-17. 55		50 (3) 50 (3)	CLAY, Fat Clay w/ Sand, Light Brown, Hard, Wet (CH)			36.6	55	40		
60		50 (4.5) 50 (5)				41.5				-200 = 70.7%
-27. 65		47 (6) 50 (5)	CLAY, Lean Clay, Light Brown, Hard, Wet (CL)			42.8	44	29		
70		50 (5) 50 (4.5)				37.9				-200 = 88.1%
-36. 75										

PRELIMINARY

Remarks: Sulfate Tests Performed at 45 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'19.10", W 97°54'37.80". 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: Okie Contreras | Logger: Joe Gomez | Organization: L&G Engineering Laboratories

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-57
Structure Bridge Borings
Station
Offset

District
Date 3/31/2015
Grnd. Elev. 40.00 ft
GW Elev. 26.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
34.		7 (6) 7 (6)	SAND, Clayey Sand, Lean, Dark Brown, Loose, Dry (SC)			14.8				-200 = 39.1%
5										
		12 (6) 12 (6)	CLAY, Sandy Lean Clay, Brown, Medium Stiff to Very Stiff, Moist to Wet (CL)			15.0	44	29		
10										
		13 (6) 15 (6)				16.2				-200 = 57.8%
15										
		25 (6) 28 (6)				34.5	28	16		
20										
		20 (6) 23 (6)				39.7				-200 = 55.6%
25										
		22 (6) 18 (6)				27.8	31	15		
30										
9.		38 (6) 47 (6)	CLAY, Sandy Fat Clay, Brown, Hard, Wet (CH)			49.0				-200 = 55.0%
35										
		45 (6) 35 (6)				63.2	69	47		
40										
-1.		13 (6) 36 (6)	SAND, Clayey Sand, Lean, Light Brown, Medium Dense to Very Dense, Wet (SC)			40.4				-200 = 41.1%
45										
		35 (6) 27 (6)				40.2	36	21		
50										
		50 (5.5) 50 (5)				37.0				-200 = 41.0%
55										
-16.		50 (5) 50 (3)	CLAY, Lean Clay w/ Sand, Light Brown, Hard, Wet (CL)			47.9	48	34		
60										
		50 (5) 50 (4.5)				45.5				-200 = 81.6%
65										
-26.		50 (3) 50 (2)	CLAY, Fat Clay, Light Brown, Hard, Wet (CH)			39.0	52	36		
70										
-35.		50 (2.5) 50 (2)				40.5				-200 = 89.5%
75										

PRELIMINARY

Remarks: Sulfate Tests Performed at 25 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'18.00", W 97°54'35.70". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratories

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-58
Structure Bridge Borings
Station
Offset

District
Date 4/2/2015
Grnd. Elev. 40.00 ft
GW Elev. 25.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
34. 5		5 (6) 7 (6)	CLAY, Sandy Lean Clay, Dark Brown, Soft, Dry (CL)			21.8	49	33		
10		8 (6) 10 (6)	CLAY, Sandy Lean Clay, Grayish Brown, Medium Stiff, Moist (CL)			18.7				-200 = 59.5%
24. 15		8 (6) 11 (6)				21.9	41	25		
20		16 (6) 15 (6)	SAND, Clayey Sand, Lean, Brown, Medium Dense, Wet (SC)			34.4				-200 = 30.3%
14. 25		22 (6) 19 (6)				39.0	25	19		
30		22 (6) 24 (6)	CLAY, Fat Clay w/ Sand, Brown, w/ Reddish Brown and Gray Streaks, Stiff to Very Stiff, Wet (CH)			47.4				-200 = 76.9%
4. 35		18 (6) 12 (6)				53.7	53	33		
40		11 (6) 11 (6)	CLAY, Lean Clay, Brown, w/ Reddish Brown and Gray Streaks, Medium Stiff to Stiff, Wet (CL)			50.6				-200 = 95.2%
-6. 45		16 (6) 20 (6)				34.5	30	15		
50		30 (6) 25 (6)	SAND, Clayey Sand, Lean, Light Brown, w/ Reddish Brown and Gray Streaks, Medium Dense to Dense, Wet (SC)			33.4				-200 = 37.2%
-16. 55		32 (6) 47 (6)				33.7	39	23		
60		48 (6) 44 (6)	CLAY, Sandy Fat Clay, Light Brown, w/ Reddish Brown and Gray Streaks, Hard, Wet (CH)			32.2				-200 = 51.3%
-26. 65		50 (3) 50 (5)				38.0	59	39		
70		50 (4.5) 50 (3)	CLAY, Lean Clay w/ Sand, Light Brown, w/ Reddish Brown and Gray Streaks, Herd, Wet (CL)			37.2				-200 = 74.7%
-35. 75		50 (3) 50 (4.5)				33.7	46	27		

PRELIMINARY

Remarks: Sulfate Tests Performed at 35 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'40.80", W 97°54'1.40". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratories

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-59
Structure Bridge Borings
Station
Offset

District
Date 4/1/2015
Grnd. Elev. 39.00 ft
GW Elev. 26.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
39.00			SAND, Clayey Sand, Lean, Dark Brown, Loose, Dry (SC)							
5		6 (6) 6 (6)				17.9				-200 = 48.5%
33.			CLAY, Sandy Lean Clay, Light Brown, Medium Stiff, Moist (CL)							
10		8 (6) 8 (6)				16.1	47	33		
15		7 (6) 10 (6)				30.0				-200 = 53.7%
23.			CLAY, Lean Clay w/ Sand, Light Brown, Very Stiff, Wet (CL)							
20		27 (6) 27 (6)				42.7	35	22		
25		23 (6) 27 (6)				54.1				-200 = 84.9%
30		25 (6) 30 (6)				40.4	42	25		
8.			CLAY, Fat Clay, Light Brown, w/ Reddish Brown and Gray Streaks, Stiff to Very Stiff, Wet (CL)							
35		24 (6) 20 (6)				37.3				-200 = 95.8%
40		22 (6) 16 (6)				41.2	64	42		
-2.			CLAY, Sandy Lean Clay, Light Brown, w/ Reddish Brown and Gray Streaks, Very Stiff, Wet (CL)							
45		20 (6) 22 (6)				40.6				-200 = 52.4%
50		22 (6) 22 (6)				32.6	29	16		
-12.			SAND, Clayey Sand, Lean, Light Brown, w/ Reddish Brown and Gray Streaks, Very Dense, Wet (SC)							
55		50 (5) 50 (3.5)				33.4				-200 = 37.5%
60		50 (3) 50 (3)				31.8	35	19		
-22.			CLAY, Lean Clay w/ Sand, Light Brown, w/ Reddish Brown and Gray Streaks, Hard, Wet (CL)							
65		50 (4.5) 50 (5.5)				36.6				-200 = 83.5%
-27.			CLAY, Lean Clay, Light Brown, w/ Reddish Brown and Gray Streaks, Hard, Wet (CL)							
70		50 (6) 50 (5)				8.7	44	24		
-36. 75		50 (5) 50 (4)				75.8				-200 = 87.3%

PRELIMINARY

Remarks: Sulfate Tests Performed at 60 ft. Results Provided on Seperate Document. Boring Locate - N 26°28'42.50", W 97°53'59.10". 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: Okie Contreras Logger: Joe Gomez Organization: 4/1/2015

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-60
Structure Bridge Borings
Station
Offset

District
Date 3/11/2015
Grnd. Elev. 37.00 ft
GW Elev. 20.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
5		8 (6) 10 (6)	CLAY, Sandy Lean Clay, Dark Brown, w/ Calcareous Nodules, Medium Stiff to Stiff, Moist (CL)			17.0	42	24		
10		14 (6) 13 (6)				17.1				-200 = 67.7%
26.										
15		11 (6) 12 (6)	SAND, Clayey Sand, Fat, Brown, w/ Calcareous Nodules, Medium Dense, Wet (SC)			26.9	50	33		
20		16 (6) 17 (6)				29.3				-200 = 29.9%
16.										
25		19 (6) 21 (6)	CLAY, Lean Clay w/ Sand, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Stiff to Hard, Wet (CL)			46.7	[illegible]	23		
30		25 (6) 24 (6)				43.7				-200 = 75.1%
35		28 (6) 31 (6)				48.0	46	26		
1.										
40		27 (6) 35 (6)	CLAY, Fat Clay, Brown, w/ Calcareous Nodules, w/ Reddish Brown, and Gray Streaks, Hard, Wet (CH)			41.1				-200 = 89.0%
45		30 (6) 42 (6)				72.5	58	35		
-9.										
50		33 (6) 36 (6)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CL)			45.3				-200 = 62.6%
55		36 (6) 47 (6)				38.5	28	14		
-19.										
60		34 (6) 39 (6)	SAND, Clayey Sand, Lean, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (SC)			37.1				-200 = 36.4%
65		37 (6) 46 (6)				32.8	32	17		
70		40 (6) 45 (6)				31.7				-200 = 45.1%
75		39 (6) 47 (6)				32.1	33	18		
-38.										

PRELIMINARY

Remarks: Sulfate Tests Performed at 45 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'41.30", W 97°52'49.60". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-61
Structure Bridge Borings
Station
Offset

District
Date 3/11/2015
Grnd. Elev. 39.00 ft
GW Elev. 26.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Sandy Fat Clay, Brown, Stiff, Moist (CH)							
	5	6 (6) 6 (6)				17.4				-200 = 61.9%
33.										
			CLAY, Sandy Fat Clay, Brown, Stiff, Moist (CH)							
	10	13 (6) 15 (6)				17.8	55	39		
	15	13 (6) 15 (6)				15.6				-200 = 63.8%
23.			SAND, Clayey Sand, Lean, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Medium Dense, Wet (SC)							
	20	19 (6) 21 (6)				35.1	43	25		
	25	19 (6) 23 (6)				35.1				-200 = 45.2%
	30	21 (6) 29 (6)				35.0	36	20		
8.			CLAY, Fat Clay w/ Sand, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CH)							
	35	24 (6) 31 (6)				36.5				-200 = 84.8%
	40	23 (6) 27 (6)				45.6	52	28		
-2.			CLAY, Fat Clay, Brown, w/ Calcareous Nodules, w/ Reddish Brown and Gray Streaks, Hard, Wet (CH)							
	45	28 (6) 31 (6)				48.7				-200 = 92.6%
	50	23 (6) 27 (6)				51.8	61	36		
	55	26 (6) 34 (6)				53.0				-200 = 93.4%
	60	28 (6) 33 (6)				54.5	60	39		
	65	24 (6) 30 (6)				48.3				-200 = 90.5%
	70	25 (6) 39 (6)				46.9	57	29		
-36.	75	28 (6) 41 (6)				47.0				-200 = 85.9%

PRELIMINARY

Remarks: Sulfate Tests Performed at 20 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'40.10", W 97°52'47.60". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

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DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-65
Structure Bridge Borings
Station
Offset

District
Date 4/16/2015
Grnd. Elev. 37.00 ft
GW Elev. 20.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Lean Clay w/ Sand, Dark Brown, Hard, Dry (CL)							
5		28 (6) 37 (6)				10.4	38	25		
31.			CLAY, Fat Clay w/ Sand, Dark Brown to Brown, Medium Stiff to Stiff, Dry (CH)							
10		29 (6) 22 (6)				9.3				-200 = 70.2%
15		10 (6) 9 (6)				19.6	76	54		
21.			SAND, Clayey Sand, Lean, Brown, Medium Dense to Dense, Wet (SC)							
20		14 (6) 15 (6)				23.6				-200 = 28.5%
25		21 (6) 30 (6)				35.4	23	8		
30		31 (6) 30 (6)				4.0				-200 = 33.2%
6.			SAND, Poorly Graded Sand w/ Silt, Brown, Very Dense, Wet (SP-SM)							
35		50 (5) 50 (5)				31.1	0	0		
40		50 (4) 50 (3.5)				28.3				-200 = 11.9%
45		50 (4) 50 (4)				28.3	0	0		
50		50 (3.5) 50 (3)				24.2				-200 = 10.1%
55		50 (5.5) 47 (6)				33.5	0	0		
-19.			SAND, Silty Sand, brown, Dense to Very Dense, Wet (SM)							
60		39 (6) 50 (6)				33.9				-200 = 20.6%
65		50 (4) 50 (2)				27.1	0	0		
-29.			SAND, Clayey Sand, Lean, Light Brown, Very Dense, Wet (SC)							
70		50 (2) 50 (1.5)				37.4				-200 = 29.2%
-38. 75		50 (1) 50 (1)				38.5	40	27		

PRELIMINARY

Remarks: Sulfate Tests Performed at 65 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'5.9", W 97°51'38.90". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratories

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-66
Structure Bridge Borings
Station
Offset

District
Date 3/16/2015
Grnd. Elev. 34.00 ft
GW Elev. 11.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Fat Clay w/ Sand, Dark Brown, Very Stiff, Wet (CH)							
5		22 (6) 22 (6)				13.5				-200 = 72.8%
28.			CLAY, Fat Clay w/ Sand, Brown, Medium Stiff, Wet (CH)							
10		10 (6) 9 (6)				15.7	58	37		
15		8 (6) 10 (6)				22.2				-200 = 84.5%
20		10 (6) 13 (6)				23.0	82	60		
13.			CLAY, Fat Clay, Brown, Stiff, Wet (CH)							
25		15 (6) 18 (6)				22.0				-200 = 87.0%
8.			SAND, Clayey Sand, Lean, Brown, Dense to Very Dense, Wet (SC)							
30		31 (6) 35 (6)				28.2	38	23		
35		46 (6) 50 (3.5)				29.2				-200 = 31.9%
40		50 (2.25) 50 (2)				27.6	26	8		
-7.			SAND, Silty Sand, Brown, Very Dense, Wet (SM)							
45		50 (2) 50 (2.25)				29.6				-200 = 22.3%
50		50 (3) 50 (2.75)				29.9	0	0		
55		50 (4) 50 (4.25)				26.1				-200 = 18.4%
60		50 (3.25) 50 (3)				55.9	0	0		
65		50 (3.25) 50 (3.5)				26.5				-200 = 16.2%
70		50 (3.5) 50 (3)				28.7	0	0		
-41. 75		50 (3.5) 50 (3.5)				13.5				-200 = 14.5%

PRELIMINARY

Remarks: Sulfate Tests Performed at 45 ft. Results Provided on Seperate Document. Boring Locate - N 26°29'41.30", W 97°52'49.60". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-67
Structure Bridge Borings
Station
Offset

District
Date 3/16/2015
Grnd. Elev. 34.00 ft
GW Elev. 16.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
		19 (6) 16 (6)	CLAY, Fat Clay w/ Sand, Dark Brown, w/ Calcareous Nodules, Stiff, Dry (CH)			11.9	50	32		
28. 5										
		8 (6) 8 (6)	CLAY, Fat Clay w/ Sand, Brown, Medium Stiff, Wet (CH)			18.7				-200 = 77.2%
10										
		9 (6) 12 (6)				20.2	69	57		
18. 15										
		10 (6) 12 (6)	CLAY, Lean Clay, Brown, Medium Stiff to Stiff, Wet (CL)			24.2				-200 = 89.7%
20										
		16 (6) 18 (6)				42.2	[illegible]	32		
8. 25										
		16 (6) 19 (6)	CLAY, Sandy Lean Clay, Brown, w/ Calcareous Nodules, Stiff, Wet (CL)			[illegible].2				-200 = 56.0%
30										
		15 (6) 17 (6)				33.4	37	24		
35										
		18 (6) 22 (6)				36.6				-200 = 59.6%
40										
		17 (6) 23 (6)				37.6	35	20		
-12. 45										
		23 (6) 25 (6)	SAND, Clayey Sand, Brown, w/ Calcareous Nodules, Medium Dense to Very Dense, Wet (SC)			32.5				-200 = 23.1%
50										
		50 (5) 50 (5.5)				33.4	34	20		
55										
		50 (5.25) 50 (5.5)				35.4				-200 = 33.8%
-27. 60										
		41 (6) 50 (5.5)	CLAY, Sandy Lean Clay, w/ Calcareous Nodules, Hard, Wet (CL)			34.0	43	29		
65										
		42 (6) 50 (6)				33.7				-200 = 50.3%
70										
		41 (6) 48 (6)				35.2	41	27		
-41. 75										

PRELIMINARY

Remarks: Sulfate Tests Performed at 45 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'7.80", W 97°50'46.60". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

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DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-68
Structure Bridge Borings
Station
Offset

District
Date 4/9/2015
Grnd. Elev. 36.00 ft
GW Elev. 18.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
30. 5		6 (6) 6 (6)	CLAY, Sandy Fat Clay, Dark Brown, Soft, Moist (CH)			18.8				-200 = 68.6%
25. 10		9 (6) 10 (6)	CLAY, Fat Clay w/ Sand, Grayish Brown, Medium Stiff, Moist (CH)			18.8	51	36		
20. 15		11 (6) 11 (6)	CLAY, Fat Clay w/ Sand, Brown, Medium Stiff, Moist (CH)			19.4				-200 = 81.0%
		3 (6) 6 (6)	SAND, Poorly Graded Sand w/ Silt, Brown, Soft to Stiff, Wet (SP-SM)			29.4	0	0		
20		22 (6) 21 (6)				24.2				-200 = 7.6%
5. 30		14 (6) 17 (6)				26.4	0	0		
35		30 (6) 34 (6)	SAND, Poorly Graded Sand w/ Silt, Brown, Hard,Wet (SP-SM)			28.4				-200 = 11.0%
-5. 40		38 (6) 31 (6)				30.2	0	0		
45		20 (6) 15 (6)	SAND, Clayey Sand, Fat Brown, w/ Reddish Brown and Gray Streaks, Medium Dense, Wet (SC)			37.7				-200 = 42.1%
-15. 50		14 (6) 14 (6)				44.9	58	40		
55		20 (6) 20 (6)	CLAY, Sandy Lean Clay, Brown, w/ Reddish Brown and Gray Streaks, Stiff, Wet (CL)			46.4				-200 = 53.1%
-25. 60		17 (6) 25 (6)				36.2	31	19		
65		25 (6) 32 (6)	SAND, Clayey Sand, Lean, Brown, w/ Reddish Brown and Gray Streaks, Medium Dense, Wet (SC)			42.8				-200 = 45.8%
-30. 70		50 (4) 50 (4)	CLAY, Sandy Lean Clay, Brown, w/ Reddish Brown and Gray Streaks, Hard, Wet (CL)			38.6	32	18		
-39. 75		50 (2.5) 50 (1)				44.2				-200 = 66.7%

PRELIMINARY

Remarks: Sulfate Tests Performed at 70 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'8.30", W 97°49'51.10". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratories

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DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-70
Structure Bridge Borings
Station
Offset

District
Date 3/17/2015
Grnd. Elev. 32.00 ft
GW Elev. 23.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
26.			CLAY, Sandy Lean Clay, Dark Brown, Medium Stiff, Wet (CL)							
5		10 (6) 11 (6)				14.0	32	21		
21.			CLAY, Sandy Lean Clay, Grayish Brown, Medium Stiff, Wet (CL)							
10		8 (6) 11 (6)				22.2				-200 = 66.0%
			CLAY, Fat Clay w/ Sand, Brown, w/ Reddish Brown and Gray Streaks, Medium Stiff to Very Stiff, Wet (CH)							
15		10 (6) 12 (6)				41.2	59	42		
20		11 (6) 12 (6)				40.2				-200 = 82.5%
25		13 (6) 15 (6)				49.9	[illegible]	50		
30		25 (6) 25 (6)				[illegible].3				-200 = 77.5%
35		21 (6) 26 (6)				35.4	52	28		
-4.			CLAY, Fat Clay, Brown, w/ Reddish Brown and Gray Streaks, Very Stiff to Hard, Wet (CH)							
40		24 (6) 29 (6)				50.4				-200 = 93.6%
45		50 (4) 50 (3.25)				43.5	69	47		
50		50 (2) 50 (1.5)				45.0				-200 = 95.0%
55		50 (2.25) 50 (2)				50.3	63	43		
60		50 (2) 50 (2)				44.4				-200 = 98.3%
65		50 (2.25) 50 (2)				45.3	73	47		
70		50 (2.5) 50 (2.5)				46.2				-200 = 97.8%
-43. 75		50 (2) 50 (2.5)				49.7	75	50		

PRELIMINARY

Remarks: Sulfate Tests Performed at 30 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'37.50", W 97°49'47.90". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

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DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-71
Structure Bridge Borings
Station
Offset

District
Date 3/17/2015
Grnd. Elev. 29.00 ft
GW Elev. 21.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
5		6 (6) 6 (6)	CLAY, Sandy Lean Clay, Dark Brown, Traces of Roots, Soft to Medium Stiff, Dry (CL)			16.4				-200 = 56.8%
10		7 (6) 8 (6)				16.8	46	32		
18.			CLAY, Fat Clay, Brown, w/ Reddish Brown and Gray Streaks, Medium Stiff, Dry (CH)							
15		8 (6) 9 (6)				44.5				-200 = 89.0%
20		9 (6) 9 (6)				39.3	54	33		
25		9 (6) 12 (6)				41.6				-200 = 91.2%
30		8 (6) 12 (6)				45.0	74	53		
35		10 (6) 11 (6)				51.0				-200 = 93.6%
40		9 (6) 10 (6)				48.2	50	34		
-12.			CLAY, Lean Clay w/ Sand, Brown, w/ Reddish Brown and Gray Streaks, Medium Stiff to Stiff, Wet (CL)							
45		10 (6) 12 (6)				46.4				-200 = 74.6%
50		12 (6) 16 (6)				48.3	49	34		
-22.			CLAY, Fat Clay, Brown, w/ Reddish Brown and Gray Streaks, Stiff to Very Stiff, Wet (CH)							
55		17 (6) 17 (6)				44.9				-200 = 85.7%
60		21 (6) 26 (6)				51.0	62	41		
65		23 (6) 26 (6)				72.2				-200 = 96.9%
70		24 (6) 27 (6)				66.1	69	47		
-46. 75		26 (6) 29 (6)				58.2				-200 = 96.2%

PRELIMINARY

Remarks: Sulfate Tests Performed at 70 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'39.60", W 97°49'48.90". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-72
Structure Bridge Borings
Station
Offset

District
Date 3/18/2015
Grnd. Elev. 32.00 ft
GW Elev. 14.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Sandy Lean Clay, Dark Brown, Soft, Moist (CL)							
5		5 (6) 6 (6)				20.3				-200 = 61.3%
26.			CLAY, Lean Clay, Light Olive Brown to Brown, Stiff, Moist (CL)							
10		18 (6) 19 (6)				15.2	44	29		
15		17 (6) 22 (6)				15.6				-200 = 85.1%
20		17 (6) 16 (6)				15.0	43	27		
25		16 (6) 18 (6)				51.4				-200 = 91.7%
6.			CLAY, Fat Clay w/ Sand, Brown, Stiff, Wet (CH)							
30		15 (6) 16 (6)				38.4	57	40		
35		13 (6) 14 (6)				55.0				-200 = 80.7%
40		17 (6) 16 (6)				49.7	65	45		
-9.			CLAY, Fat Clay, Tannish Brown, Stiff, Wet (CH)							
45		19 (6) 21 (6)				58.3				-200 = 93.4%
50		18 (6) 19 (6)				61.9	80	55		
55		16 (6) 16 (6)				62.1				-200 = 95.7%
60		18 (6) 20 (6)				68.9	95	70		
-29.			CLAY, Sandy Fat Clay, Tannish Brown, Stiff, Wet (CH)							
65		17 (6) 18 (6)				56.2				-200 = 59.9%
-34.			CLAY, Fat Clay Tannish Brown, Stiff, Wet (CH)							
70		17 (6) 20 (6)				56.5	66	47		
-43. 75		18 (6) 22 (6)								-200 = 90.6%

PRELIMINARY

Remarks: Sulfate Tests Performed at 15 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'37.70", W 97°48'52.00". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

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DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-73
Structure Bridge Borings
Station
Offset

District
Date 3/18/2015
Grnd. Elev. 30.00 ft
GW Elev. 12.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
24. 5		5 (6) 7 (6)	CLAY, Sandy Lean Clay, Dark Brown, w/ Calcareous Nodules, Soft, Moist (CL)			23.3	40	25		
19. 10		14 (6) 14 (6)	CLAY, Sandy Lean Clay, Grayish Brown, Stiff, Moist (CL)			16.8				-200 = 69.2%
15		16 (6) 16 (6)	CLAY, Fat Clay, Brown, Stiff, Wet (CH)			14.2	53	37		
20		21 (6) 19 (6)				15.9				-200 = 88.1%
25		20 (6) 22 (6)				57.3	80	42		
30		19 (6) 21 (6)				32.1				-200 = 94.6%
-6. 35		16 (6) 18 (6)				46.2	50	32		
40		19 (6) 18 (6)	CLAY, Fat Clay w/ Sand, Light Brown, Stiff to Very Stiff, Wet (CH)			45.3				-200 = 77.3%
-16. 45		23 (6) 25 (6)				50.8	55	35		
50		20 (6) 21 (6)	CLAY, Fat Clay, Brown, Stiff, Wet (CH)			53.7				-200 = 88.8%
55		16 (6) 18 (6)				59.4	69	45		
60		14 (6) 14 (6)				62.7				-200 = 96.4%
65		16 (6) 18 (6)				73.5	76	67		
70		17 (6) 19 (6)				79.8				-200 = 92.9%
-45. 75		16 (6) 18 (6)				61.5	71	48		

PRELIMINARY

Remarks: Sulfate Tests Performed at 40 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'39.40", W 97°48'52.10". 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: Oscar Garcia

Logger: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-74
Structure Bridge Borings
Station
Offset

District
Date 4/17/2015
Grnd. Elev. 34.00 ft
GW Elev. 17.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Sandy Lean Clay, Dark Brown, Traces of Roots, Soft, Moist (CL)							
		5 (6) 6 (6)				14.1	33	19		
28. 5			CLAY, Sandy Lean Clay, Brown, Stiff to Hard, Wet (CL)							
10		38 (6) 40 (6)				17.5				-200 = 58.8%
15		18 (6) 15 (6)				14.2	36	22		
20		18 (6) 16 (6)				41.1				-200 = 65.2%
25		50 (4.5) 50 (4)				35.5		0		
8.			SAND, Silty Sand, Brown, Dense to Very Dense, Wet (SM)							
30		50 (5.5) 44 (6)				22.8				-200 = 19.3%
35		38 (6) 33 (6)				30.3	0	0		
40		39 (6) 37 (6)				33.9				-200 = 18.7%
45		33 (6) 35 (6)				31.6	0	0		
50		35 (6) 37 (6)				35.5				-200 = 27.5%
-17.			SAND, Clayey Sand, Fat, Brown, w/ Reddish Brown and Gray Streaks, Wet (SC)							
55		17 (6) 20 (6)				38.1	51	33		
60		15 (6) 18 (6)				44.5				-200 = 49.0%
65		18 (6) 20 (6)				50.7	50	34		
-32.			SAND, Clayey Sand, Lean, Light Brown, w/ Reddish Brown and Gray Streaks, Wet (SC)							
70		17 (6) 18 (6)				39.7				-200 = 40.6%
-41. 75		20 (6) 26 (6)				33.7	37	23		

PRELIMINARY

Remarks: Sulfate Tests Performed at 15 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'18.90", W 97°47'58.60". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-75
Structure Bridge Borings
Station
Offset

District
Date 4/17/2015
Grnd. Elev. 34.00 ft
GW Elev. 18.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			SAND, Clayey Sand, Lean, Brown, Loose, Moist (SC)							
5		4 (6) 4 (6)				27.3				-200 = 47.5%
28.			CLAY, Sandy Lean Clay, Brown, Medium Stiff to Very Stiff, Moist (CL)							
10		21 (6) 28 (6)				26.8	34	22		
15		6 (6) 7 (6)				17.8				-200 = 61.3%
20		7 (6) 10 (6)				30.2	26	9		
13.			SAND, Silty Sand, Brown, w/ Reddish Brown and Gray Streaks, Medium Dense to Dense, Wet (SM)							
25		42 (6) 50 (5)				32.2				-200 = 40.5%
30		45 (6) 50 (3.5)				26.2	0	0		
35		40 (6) 43 (6)				27.9				-200 = 30.1%
40		16 (6) 20 (6)				26.6	0	0		
-7.			SAND, Silt w/ Sand, Brown w/ Reddish Brown and Gray Streaks, Stiff, Wet (ML)							
45		18 (6) 22 (6)				45.7				-200 = 51.5%
50		20 (6) 16 (6)				34.3	0	0		
-17.			CLAY, Sandy Lean Clay, Brown, w/ Reddish Brown and Gray Streaks, Stiff to Very Stiff, Wet (CL)							
55		25 (6) 19 (6)				46.2				-200 = 65.8%
60		19 (6) 19 (6)				39.1	34	20		
-27.			SAND, Clayey Sand, Lean, Light Brown, Medium Dense, Wet (SC)							
65		20 (6) 20 (6)				38.5				-200 = 49.0%
70		15 (6) 18 (6)				35.8	31	15		
-41. 75		28 (6) 24 (6)				37.5				-200 = 32.8%

PRELIMINARY

Remarks: Sulfate Tests Performed at 70 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'21.00", W 97°47'58.70". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1	County Willacy	Hole B-BRG-76	District		
	Highway	Structure Bridge Borings	Date	4/16/2015	
	CSJ	Station	Grnd. Elev.	34.00 ft	
		Offset	GW Elev.	16.00 ft	

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
5		9 (6) 10 (6)	CLAY, Sandy Lean Clay, Dark Brown, Medium Stiff to Stiff, Dry to Moist (CL)			16.0	45	31		-200 = 52.5%
10		9 (6) 10 (6)				14.7	48	35		
15		11 (6) 15 (6)				10.7	44	33		-200 = 58.2%
18.			CLAY, Sandy Fat Clay, Grayish Brown, Medium Stiff, Moist (CH)							
20		6 (6) 17 (6)				13.2	50	38		
13.			SAND, Clayey Sand, Lean, Brown, Medium Dense to Dense, Wet (SC)							
25		21 (6) 23 (6)				26.8	27	12		-200 = 22.4%
30		37 (6) 46 (6)				24.2				
3.			SAND, Poorly Graded Sand w/ Silt, Brown, Dense to Very Dense, Wet (SP-SM)							
35		46 (6) 50 (4.5)				26.5				-200 = 8.8%
40		50 (5.5) 50 (5)				21.4				
45		50 (5) 50 (4.5)				23.1				-200 = 8.2%
50		50 (5) 50 (5.5)				34.9	0	0		
55		50 (4.5) 50 (4)				23.0				-200 = 5.3%
60		50 (3.5) 50 (4)				25.6				
65		50 (4) 50 (4)				22.5				-200 = 5.9%
70		50 (4.5) 50 (4.5)				24.9	0	0		
-41. 75		50 (4) 50 (4.5)				25.4				-200 = 5.8%

PRELIMINARY

Remarks: Sulfate Tests Performed at 30 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'19.90", W 97°47'30.30". 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: Ben Gutierrez Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-77
Structure Bridge Borings
Station
Offset

District
Date 4/16/2015
Grnd. Elev. 33.00 ft
GW Elev. 16.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Sandy Lean Clay, Dark Brown, Stiff, Dry (CL)							
27. 5		13 (6) 17 (6)				20.3	38	24		
			CLAY, Sandy Fat Clay, Grayish Brown, Medium Stiff, Dry (CH)							
22. 10		12 (6) 11 (6)				12.2	51	36		-200 = 58.4%
			CLAY, Sandy Lean Clay, Grayish Brown, Stiff, Dry (CL)							
17. 15		12 (6) 14 (6)				15.6	46	30		
			SAND, Silty Clayey Sand, Lean, Brown, Loose, Moist (SC-SM)							
12. 20		9 (6) 9 (6)				19.4	22	6		-200 = 40.8%
			SAND, Poorly Graded Sand w/ Silt, Brown, Very Dense, Wet (SP-SM)							
25		46 (6) 50 (4.5)				27.4		0		
30		50 (4.5) 50 (4)				24.9				-200 = 8.1%
35		50 (4) 50 (4)				25.2				
40		50 (3.5) 50 (4)				24.4				-200 = 5.1%
-8.			SAND, Poorly Graded Sand, Brown, Very Dense, Wet (SP)							
45		50 (3.5) 50 (3.5)				26.9	0	0		
50		50 (4) 50 (3.5)				26.9				-200 = 4.7%
55		50 (4.5) 50 (4)				27.2				
-23.			SAND, Poorly Graded Sand w/ Silt, Brown, Very Dense, Wet (SP-SM)							
60		50 (4.5) 50 (4.5)				26.8				-200 = 5.3%
65		50 (4.5) 50 (4)				26.2	0	0		
70		50 (4) 50 (4.5)				26.0				-200 = 5.6%
-42. 75		50 (3.5) 50 (3.5)				27.5				

PRELIMINARY

Remarks: Sulfate Tests Performed at 75 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'21.00", W 97°47'28.90". 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: Ben Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-78
Structure Bridge Borings
Station
Offset

District
Date 3/19/2015
Grnd. Elev. 34.00 ft
GW Elev. 16.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
5		10 (6) 10 (6)	CLAY, Sandy Fat Clay, Dark Brown, Medium Stiff, Dry (CH)			17.3				-200 = 55.5%
10		8 (6) 6 (6)				16.6	52	36		
23.										
15		12 (6) 10 (6)	CLAY, Sandy Fat Clay, Brown, Soft to Medium Stiff, Moist (CH)			15.2				-200 = 61.9%
20		5 (6) 5 (6)				16.7	64	38		
13.										
25		8 (6) 10 (6)	SAND, Silty Sand, Brown, Loose to Medium Dense, Wet (SM)			29.0				-200 = 19.1%
30		11 (6) 10 (6)				22.3	0	0		
3.										
35		12 (6) 13 (6)	SAND, Poorly Graded Sand w/ Silt, Brown, Medium Dense, Wet (SP-SM)			21.3				-200 = 7.7%
40		14 (6) 16 (6)				20.9				
-7.										
45		13 (6) 16 (6)	SAND, Poorly Graded Sand, Brown, Medium Dense, Wet (SP)			21.9				-200 = 4.7%
50		13 (6) 16 (6)				23.3	0	0		
55		26 (6) 31 (6)				22.8				-200 = 4.6%
60		27 (6) 30 (6)				24.2				
-27.										
65		50 (4.5) 50 (5)	SAND, Silty Sand, Brown, Very Dense, Wet (SM)			22.6				-200 = 16.1%
-32.										
70		50 (3) 50 (3.25)	SAND, Poorly Graded Sand w/ Silt, Brown, Very Dense, Wet (SP-SM)			23.1	0	0		
-41. 75		50 (3.25) 50 (2.5)				25.3				-200 = 9.0%

PRELIMINARY

Remarks: Sulfate Tests Performed at 20 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'8.30", W 97°47'13.60". 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: Benito Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-79
Structure Bridge Borings
Station
Offset

District
Date 4/10/2015
Grnd. Elev. 35.00 ft
GW Elev. 17.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
5		7 (6) 8 (6)	SAND, Clayey Sand, Lean, Dark Brown, Loose, Dry (SC)			12.5	27	14		-200 = 43.4%
29.										
10		7 (6) 7 (6)	CLAY, Sandy Fat Clay, Brown, Medium Stiff, Moist (CH)			17.7	52	37		
24.										
15		14 (6) 17 (6)	CLAY, Sandy Lean Clay, Brown, Soft to Stiff, Moist (CL)			15.2	43	29		-200 = 66.8%
20		5 (6) 6 (6)				23.1	42	28		
14.										
25		50 (5.5) 50 (5.5)	SAND, Silty Sand, Brown, Very Dense, Wet (SM)			29.9				-200 = 21.1%
30		50 (4.5) 50 (4)				16.7	0	0		
35		50 (4.5) 50 (4.25)				25.7				-200 = 17.5%
40		50 (4.5) 50 (4)				20.7				
45		50 (4) 50 (4.25)				21.7				-200 = 12.2%
50		50 (4.5) 50 (4.5)				23.2	0	0		
-16.										
55		50 (4.5) 50 (4.25)	SAND, Poorly Graded Sand, Brown, Very Dense, Wet (SP)			25.3				-200 = 4.6%
60		50 (4) 50 (4.5)				20.9	0	0		
-26.										
65		50 (3.75) 50 (4)	SAND, Poorly Graded Sand w/ Silt, Brown, Very Dense, Wet (SP-SM)			23.4				-200 = 6.9%
70		50 (4) 50 (4)				16.8	0	0		
-40. 75		50 (4.25) 50 (4)				25.4				-200 = 8.2%

PRELIMINARY

Remarks: Sulfate Tests Performed at 50 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'9.40", W 97°47'13.40". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratories

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-80
Structure Bridge Borings
Station
Offset

District
Date 4/2/2015
Grnd. Elev. 36.00 ft
GW Elev. 23.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
30. 5		2 (6) 2 (6)	CLAY, Sandy Fat Clay, Dark Brown, Very Soft, Dry (CH)			19.7				-200 = 62.9%
10		7 (6) 9 (6)	CLAY, Sandy Fat Clay, Grayish Brown, Medium Stiff, Moist (CH)			20.0	50	32		
20. 15		9 (6) 11 (6)				19.1				-200 = 59.2%
20		12 (6) 14 (6)	CLAY, Sandy Lean Clay, Light Brown, Stiff to Very Stiff, Wet (CL)			17.4	32	16		
25		16 (6) 17 (6)				35.8				-200 = 66.4%
30		19 (6) 26 (6)				24.3	27	12		
5. 35		50 (4) 50 (4)	SAND, Clayey Sand, Lean, Brown, Very Dense, Wet (SC)			37.4				-200 = 29.9%
40		50 (3.5) 50 (2)	SAND, Poorly Graded Sand with Silt, Brown, Very Dense, Wet (SP-SM)			25.9	0	0		
45		50 (3) 50 (2)				21.7				-200 = 11.8%
-10. 50		22 (6) 18 (6)	SAND, Clayey Sand, Lean, Brown, w/ Reddish Brown and Gray Streaks, Medium Dense to Dense, Wet (SC)			42.5	28	16		
55		15 (6) 18 (6)				41.9				-200 = 41.1%
60		16 (6) 22 (6)				40.4	28	16		
65		18 (6) 20 (6)				42.3				-200 = 44.5%
70		32 (6) 36 (6)				33.1	25	14		
-39. 75		29 (6) 34 (6)				21.2				-200 = 44.5%

PRELIMINARY

Remarks: Sulfate Tests Performed at 70 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'8.50", W 97°46'41.00". 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: Okie Contrras

Logger: Joe Gomez

Organization: L&G Engineering Laboratories

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-81
Structure Bridge Borings
Station
Offset

District
Date 4/15/2015
Grnd. Elev. 33.00 ft
GW Elev. 25.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
		5 (6) 7 (6)	CLAY, Sandy Fat Clay, Dark Brown, Traces of Roots, Soft to Medium Stiff, Stiff (CH)			19.4				-200 = 67.0%
5										
		8 (6) 11 (6)				21.1	71	54		
22. 10										
		15 (6) 18 (6)	SAND, Clayey Sand, Lean, Brown, w/ Reddish Brown and Gray Streaks, Medium Dense, Wet (SC)			35.9				-200 = 40.8%
15										
		13 (6) 12 (6)				33.8	46	33		
12. 20										
		30 (6) 41 (6)	CLAY, Sandy Fat Clay, Brown, w/ Reddish Brown and Gray Streaks, Hard, Wet (CH)			36.3				-200 = 64.9%
25										
		38 (6) 45 (6)				32.2	68	50		
2. 30										
		48 (6) 50 (4.5)	SAND, Clayey Sand, Lean, Brown, Dense to Very Dense, Wet (SC)			28.0				-200 = 28.8%
35										
		50 (4.5) 50 (5)				34.0	40	29		
-8. 40										
		50 (5) 50 (5.5)	SAND, Poorly Graded Sand w/ Silty, Brown, Dense to Very Dense, Wet (SP-SM)			22.3				-200 = 6.7%
45										
		45 (6) 40 (6)				23.3	0	0		
50										
		43 (6) 46 (6)				23.2				-200 = 5.9%
55										
		48 (6) 50 (4.5)				22.7	0	0		
-28. 60										
		50 (5) 50 (4)	SAND, Poorly Graded Sand, Brown, Very Dense, Wet (SP)			23.3				-200 = 4.9%
65										
		50 (4.5) 50 (4.5)				23.3	0	0		
-38. 70										
		50 (4) 50 (5)	SAND, Poorly Graded Sand w/ Silt, Brown, Very Dense, Wet (SP-SM)			23.1				-200 = 5.6%
-42. 75										

PRELIMINARY

Remarks: Sulfate Tests Performed at 20 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'12.00", W 97°46'39.20". 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: Ben Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-82
Structure Bridge Borings
Station
Offset

District
Date 4/22/2015
Grnd. Elev. 33.00 ft
GW Elev. 15.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Fat Clay w/ Sand, Brown, Soft to Medium Stiff, Moist (CH)							
5		5 (6) 7 (6)				18.7				-200 = 74.6%
10		6 (6) 7 (6)				21.5	62	42		
22.			CLAY, Sandy Lean Clay, Gray, Medium Stiff to Stiff, Wet (CL)							
15		10 (6) 13 (6)				18.4				-200 = 54.2%
20		13 (6) 23 (6)				27.6	34	20		
12.			SAND, Clayey Sand, Lean, Grayish Brown, Medium Dense, Wet (SC)							
25		14 (6) 11 (6)				33.5				-200 = 22.3%
30		13 (6) 12 (6)				32.9	27	9		
2.			SAND, Clayey Sand, Lean, Brown, Dense to Very Dense, Wet (SC)							
35		40 (6) 50 (5)				47.0				-200 = 39.1%
40		50 (5.5) 50 (5)				40.5	30	12		
45		50 (5.5) 47 (6)				37.8				-200 = 28.8%
-13.			SAND, Clayey Sand, Lean, Brown, w/ Reddish Brown and Gray Streaks, Dense to Very Dense, Wet (SC)							
50		27 (6) 46 (6)				35.5	40	27		
55		30 (6) 32 (6)				46.6				-200 = 33.7%
60		25 (6) 30 (6)				30.5	34	26		
65		50 (4) 50 (3)				36.5				-200 = 41.3%
70		50 (3) 50 (4)				38.0	27	13		
-42. 75		50 (3) 50 (4.5)				35.9				-200 = 37.5%

PRELIMINARY

Remarks: Sulfate Tests Performed at 50 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'8.10", W 97°46'39.00". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-83
Structure Bridge Borings
Station
Offset

District
Date 4/21/2015
Grnd. Elev. 33.00 ft
GW Elev. 17.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
		4 (6) 5 (6)	CLAY, Sandy Lean Clay, Dark Brown, Soft, Wet (CL)			25.4				-200 = 62.6%
5		5 (6) 5 (6)				20.6	34	16		
10		12 (6) 22 (6)	SAND, Silty Clayey Sand, Brown, Stiff, Wet (SC-SM)			17.2				-200 = 33.5%
22. 15		23 (6) 18 (6)				31.9	21	7		
20		20 (6) 20 (6)				33.6				-200 = 21.7%
7. 25		20 (6) 22 (6)	CLAY, Lean Clay w/ Sand, Brown, Very Stiff to Hard, Wet (CL)			31.0	38	17		
30		26 (6) 32 (6)				44.3				-200 = 82.1%
35		36 (6) 28 (6)				41.5	35	17		
-8. 40		37 (6) 31 (6)	CLAY, Sandy Lean Clay, Brown, w/ Reddish Brown and Gray Streaks, Hard, Wet (CL)			37.3				-200 = 72.4%
45		32 (6) 25 (6)				35.9	26	11		
-18. 50		26 (6) 20 (6)	SAND, Clayey Sand, Lean, Brown, w/ Reddish Brown and Gray Streaks, Medium Dense to Very Dense, Wet (SC)			34.3				-200 = 47.0%
55		18 (6) 20 (6)				28.9	29	14		
60		50 (5) 50 (4)				33.8				-200 = 34.7%
-33. 65		50 (4) 50 (2)	SAND, Silty Clayey Sand, Brown, w/ Reddish Brown and Gray Streaks, Very Dense, Wet (SC-SM)			37.0	23	7		
70		50 (4) 50 (3)				34.4				-200 = 25.1%
-42. 75										

PRELIMINARY

Remarks: Sulfate Tests Performed at 70 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'12.90", W 97°46'31.00". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-84
Structure Bridge Borings
Station
Offset

District
Date 4/20/2015
Grnd. Elev. 36.00 ft
GW Elev. 23.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
		4 (6) 6 (6)	CLAY, Lean Clay w/ Sand, Dark Brown, w/ Calcareou Nodules, Soft to Medium Stiff, Dry (CL)			22.8				-200 = 73.3%
5										
		11 (6) 10 (6)				17.9	47	32		
10										
25.			SAND, Clayey Sand, Brown, Medium Dense, Wet (SC)							
		8 (6) 14 (6)				16.8				-200 = 34.2%
15										
		14 (6) 17 (6)				34.4	32	20		
20										
		16 (6) 17 (6)				43.2				
25										
10.			CLAY, Fat Clay w/ Sand, Brown, Stiff, Wet (CH)							
		18 (6) 16 (6)				45.7	64	44		
30										
		18 (6) 19 (6)				41.9				-200 = 74.7%
35										
		50 (3.5) 47 (6)	CLAY, Sandy Lean Clay, Brown, Hard, Wet (CL)			41.8	38	23		
40										
		50 (3) 50 (2.5)				36.5				-200 = 62.0%
45										
		50 (5) 41 (6)				29.4	26	10		
50										
-15.			SAND, Silty Sand, Brown, Dense to Very Dense, Wet (SM)							
		38 (6) 49 (6)				23.7				-200 = 23.1%
55										
		50 (5) 50 (5)				22.9	0	0		
60										
		50 (4) 50 (5)				25.7				-200 = 19.3%
65										
		50 (4.5) 50 (5.5)				21.3	0	0		
70										
		50 (6) 50 (5)				21.9				-200 = 16.2%
-39. 75										

PRELIMINARY

Remarks: Sulfate Tests Performed at 35 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'7.80", W 97°46'27.40". 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: Ben Gutierrez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-85
Structure Bridge Borings
Station
Offset

District
Date 4/21/2015
Grnd. Elev. 39.00 ft
GW Elev. 11.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Sandy Lean Clay, Dark Brown, Very Soft to Soft, Moist (CL)							
33. 5		18 (6) 12 (6)				19.7				-200 = 53.7%
			CLAY, Sandy Lean Clay, Brown, Vey Soft to Soft, Moist (CL)							
10		1 (6) 2 (6)				18.0	37	23		
15		3 (6) 5 (6)				20.5				-200 = 53.0%
18. 20		5 (6) 5 (6)				21.4	39	24		
			CLAY, Sandy Fat Clay, Brown, Stiff to Hard, Wet (CH)							
25		26 (6) 30 (6)				20.8				-200 = 56.1%
8. 30		17 (6) 19 (6)				46.0	51	33		
			CLAY, Fat Clay, Brown, Very Stiff to Hard, Wet (CH)							
35		20 (6) 24 (6)				50.2				-200 = 92.4%
40		18 (6) 30 (6)				47.7	50	30		
-7. 45		50 (4) 50 (2)				49.2				-200 = 86.7%
			CLAY, Sandy Lean Clay, Brown, w/ Reddish Brown and Gray Streaks, Stiff to Hard, Wet (CL)							
50		50 (2) 50 (2)				42.7	44	27		
55		30 (6) 30 (6)				37.2				-200 = 54.0%
60		18 (6) 16 (6)				33.6	28	14		
-22.			SAND, Clayey Sand, Brown, w/ Reddish Brown and Gray Streaks, Medium Dense, Wet (SC)							
65		17 (6) 18 (6)				38.0				-200 = 35.6%
70		25 (6) 25 (6)				31.1	29	15		
-36. 75		31 (6) 27 (6)				38.4				-200 = 33.6%

PRELIMINARY

Remarks: Sulfate Tests Performed at 40 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'7.80", W 97°46'27.40". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-86
Structure Bridge Borings
Station
Offset

District
Date 4/20/2015
Grnd. Elev. 36.00 ft
GW Elev. 19.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
36.00			CLAY, Fat Clay, Dark Brown, Soft to Medium Stiff, Dry (CH)							
5		5 (6) 4 (6)				19.3	60	43		
10		7 (6) 7 (6)				21.2				-200 = 85.7%
25.00			CLAY, Lean Clay, Brown, Stiff, Wet (CL)							
15		11 (6) 15 (6)				18.2	44	29		
20		17 (6) 14 (6)				31.8				
15.00			CLAY, Fat Clay w/ Sand, Brown, Stiff, Wet (CH)							
25		19 (6) 21 (6)				42.0	44	38		
10.00			CLAY, Lean Clay w/ Sand, Brown, Stiff, Wet (CL)							
30		19 (6) 19 (6)				42.1				-200 = 77.0%
35		26 (6) 15 (6)				53.4	40	25		
			SAND, Silty Clayey Sand, Brown, Medium Dense to Dense, Wet (SC-SM)							
40		24 (6) 18 (6)				29.6				-200 = 25.7%
45		36 (6) 41 (6)				28.6	20	6		
-10.00			CLAY, Fat Clay w/ Sand, Lean, Brown, Stiff to Hard (CH)							
50		44 (6) 42 (6)				49.4				-200 = 75.8%
55		18 (6) 20 (6)				48.8	51	33		
-20.00			SAND, Clayey Sand, Lean, Grayish Brown, Medium Dense, Wet (SC)							
60		14 (6) 16 (6)				35.3				-200 = 44.4%
65		15 (6) 17 (6)				35.5	32	19		
70		14 (6) 18 (6)				35.7				-200 = 37.7%
-39.00 75		16 (6) 17 (6)				23.6	21	11		

PRELIMINARY

Remarks: Sulfate Tests Performed at 40 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'6.40", W 97°46'25.30". 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: Ben Gutierrez

Organization: L&G Engineering Laboratory

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DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-87
Structure Bridge Borings
Station
Offset

District
Date 4/20/2015
Grnd. Elev. 34.00 ft
GW Elev. 8.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
28.		5 (6) 6 (6)	CLAY, Sandy Lean CLay, Dark Brown, Soft, w/ Calcareous Nodules, Dry (CL)			18.7	48	32		
5										
		5 (6) 6 (6)	CLAY, Sandy Fat Clay, Brown, Soft to Medium Stiff, Wet (CH)			17.3				-200 = 50.5%
10										
18.		10 (6) 15 (6)				17.5	54	36		
15			CLAY, Sandy Lean Clay, Brown, w/ Black Mottles, Stiff to Very Stiff, Wet (CL)							
		20 (6) 19 (6)				17.5				
20										
		20 (6) 20 (6)				18.0	[illegible]	11		
25										
		21 (6) 30 (6)				[illegible].9				-200 = 67.7%
3.			CLAY, Lean Clay, Brown, Hard, Wet (CL)							
30										
		40 (6) 48 (6)				54.7	45	26		
35										
		50 (3) 50 (1)				54.9				-200 = 86.5%
40										
-12.		42 (6) 40 (6)				36.0	25	10		
45			SAND, Silty Clayey Sand, Brown, Medium Dense to Dense, Wet (SC-SM)							
		40 (6) 30 (6)				30.5				-200 = 21.3%
50										
		20 (6) 22 (6)				29.6	22	5		
55										
-22.		24 (6) 30 (6)	SAND, Silty Sand, Brown, Medium Dense to DEnse, Wet (SM)			39.7				-200 = 28.6%
60										
		42 (6) 50 (6)				34.9	0	0		
65										
-32.		50 (5) 50 (4)	SAND, Clayey Sand, Brown, Very Dense, Wet (SC)			37.6				-200 = 22.5%
70										
-41.		50 (3) 50 (3)				38.2	23	8		
75										

PRELIMINARY

Remarks: Sulfate Tests Performed at 35 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'11.00", W 97°46'25.80". 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: Okie Contreras

Logger: Joe Gomez

Organization: L&G Engineering Laboratory

DRILLING LOG

WinCore Version 3.1

County Willacy
Highway
CSJ

Hole B-BRG-88
Structure Bridge Borings
Station
Offset

District
Date 4/21/2015
Grnd. Elev. 34.00 ft
GW Elev. 18.00 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			CLAY, Fat Clay, Brown, Soft to Stiff, Moist (CH)							
5		5 (6) 6 (6)				24.3	64	46		
10		7 (6) 8 (6)				22.4				-200 = 88.8%
15		14 (6) 18 (6)				20.6	60	45		
18.			CLAY, Fat Clay w/ Sand, Light Brown, Very Stiff to Hard, Wet (CH)							
20		20 (6) 23 (6)				36.2				-200 = 73.7%
25		26 (6) 31 (6)				39.3	54	39		
8.			CLAY, Sandy Fat Clay, Brown, w/ Reddish Brown and Gray Streaks, Hard, Wet (CH)							
30		33 (6) 42 (6)				31.3				-200 = 68.6%
3.			SAND, Poorly Graded Sand w/ Silt, Dense to Very Dense, Wet (SP-SM)							
35		39 (6) 50 (5)				24.5	0	0		
40		50 (4.5) 50 (4.5)				26.2				-200 = 11.2%
45		50 (4) 50 (4.5)				26.1	0	0		
50		50 (2) 50 (2)				23.4				-200 = 8.1%
55		50 (2) 50 (2)				21.0	0	0		
60		50 (3.5) 50 (3.5)				23.5				-200 = 9.4%
65		50 (3) 50 (4)				21.3	0	0		
-32.			SAND, Silty Sand, Brown, Very Dense, Wet (SM)							
70		50 (6) 50 (6)				24.9				-200 = 14.4%
-41. 75		50 (2) 50 (2)				23.8	0	0		

PRELIMINARY

Remarks: Sulfate Tests Performed at 45 ft. Results Provided on Seperate Document. Boring Locate - N 26°31'8.10", W 97°46'9.10". 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: Oscar Garcia

Logger: Ben Gutierrez

Organization: L&G Engineering Laboratory

BEARING FOUNDATION

CAPACITY CURVES

CR 10

FOUNDATION CAPACITY

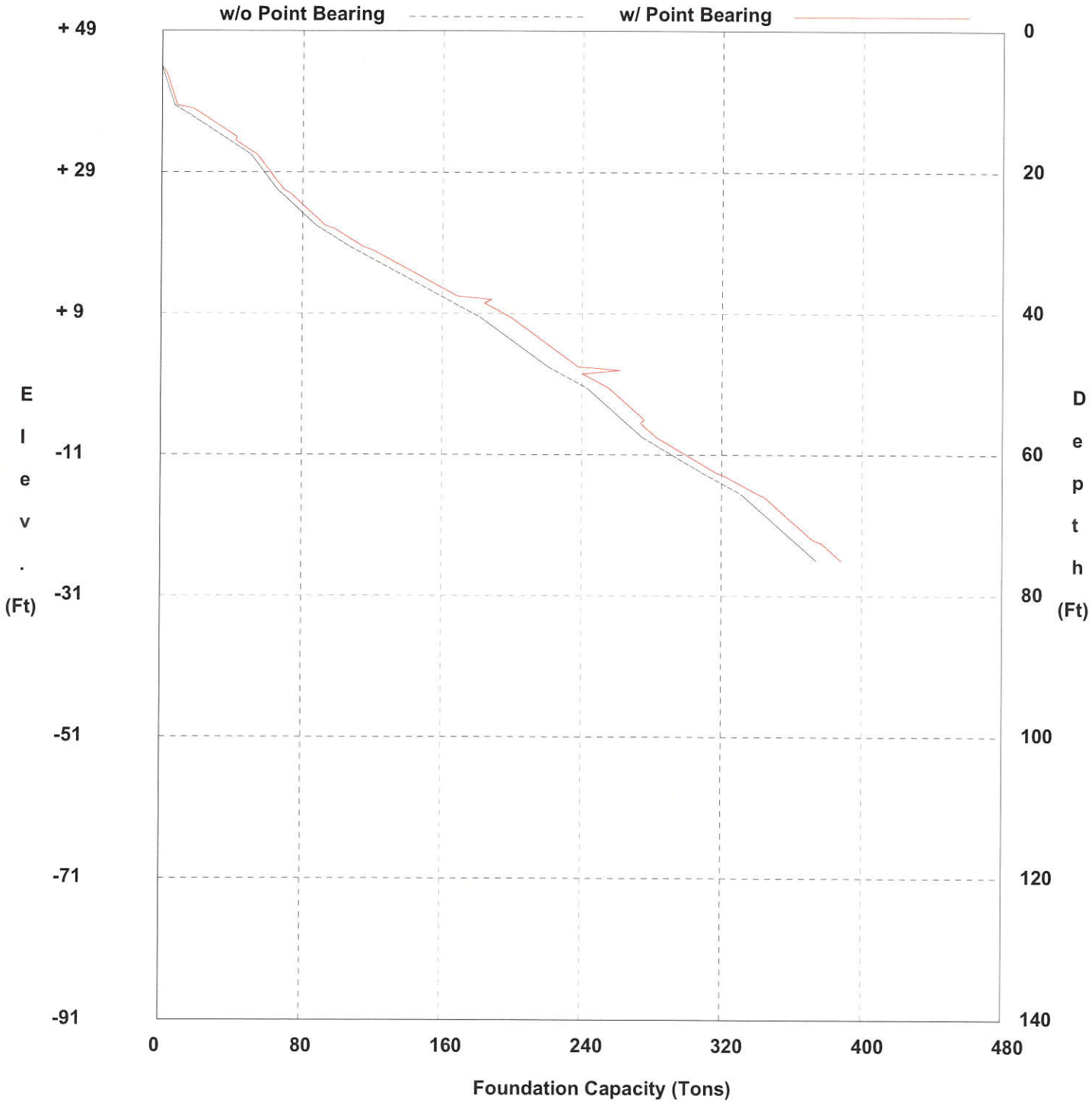
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-37	District	
Highway		Structure	Bridge Borings	Date	3/3/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	31.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 43.5

+49 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



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FOUNDATION CAPACITY

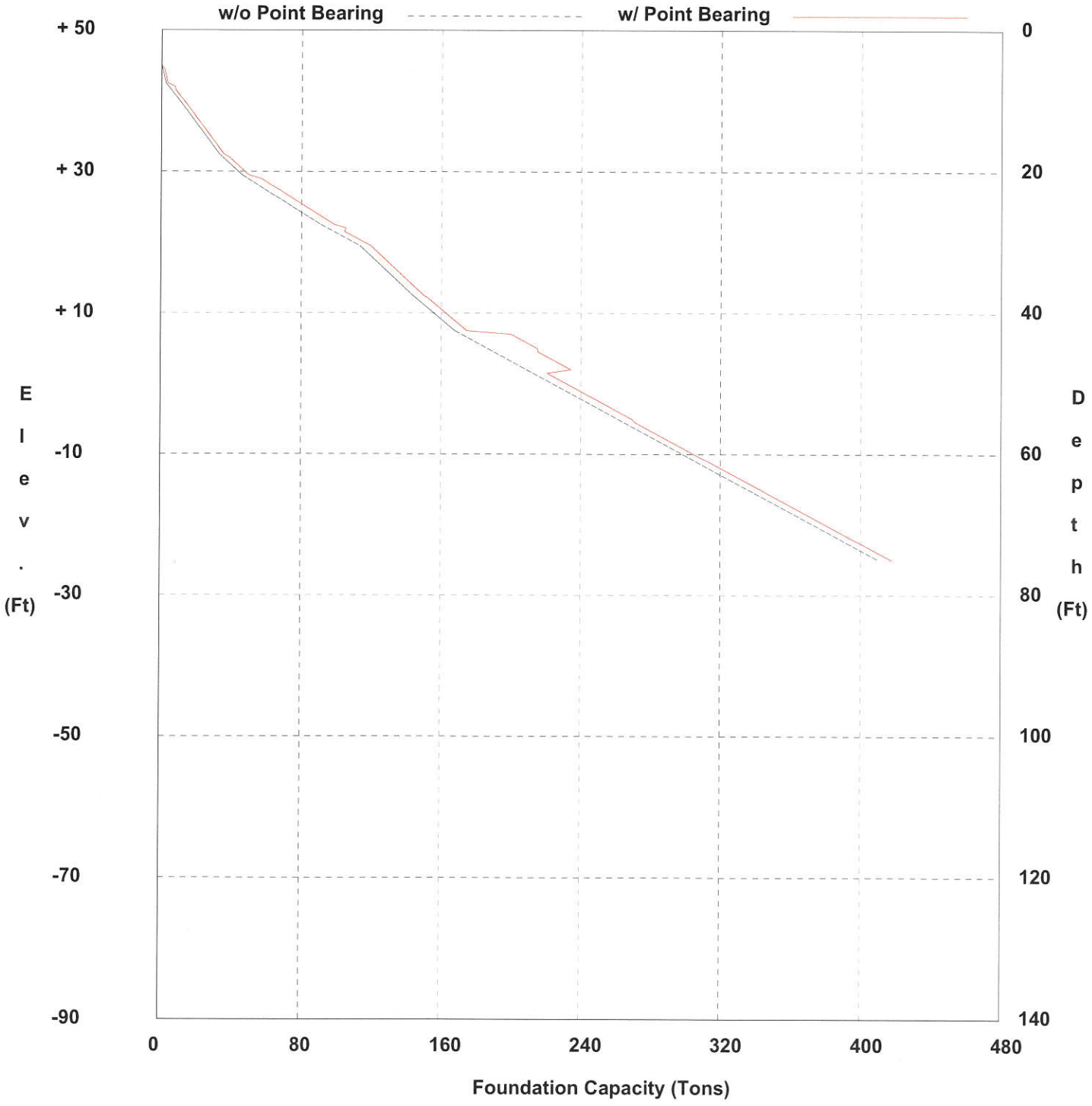
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-38	District	
Highway		Structure	Bridge Borings	Date	3/3/205
Control		Station		Grnd. Elev.	50.00 ft
		Offset		GW Elev.	32.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 44.5

+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



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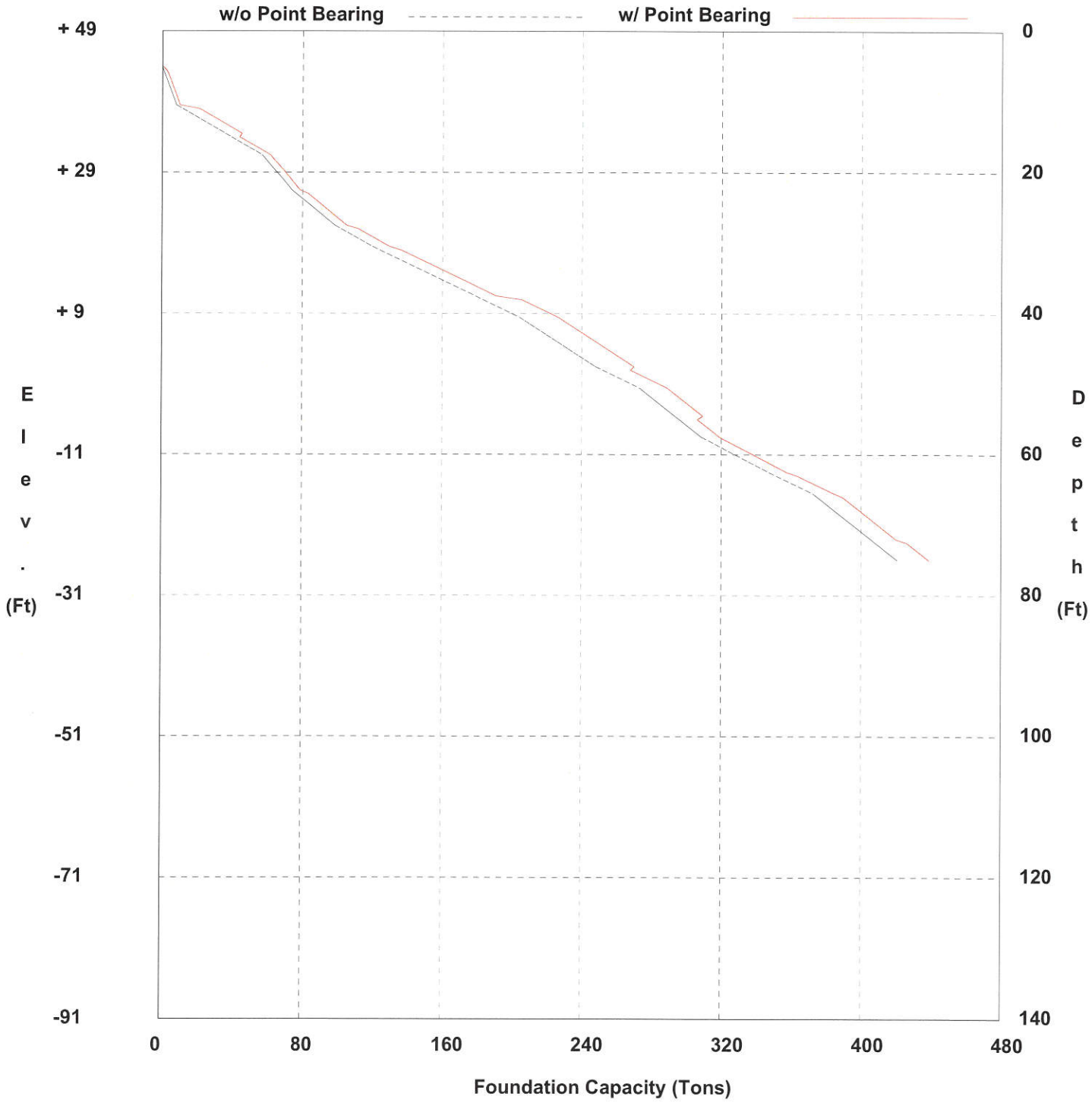
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Version 3.1

County	Willacy	Hole	B-BRG-37	District	
Highway		Structure	Bridge Borings	Date	3/3/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	31.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 43.5

+49 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



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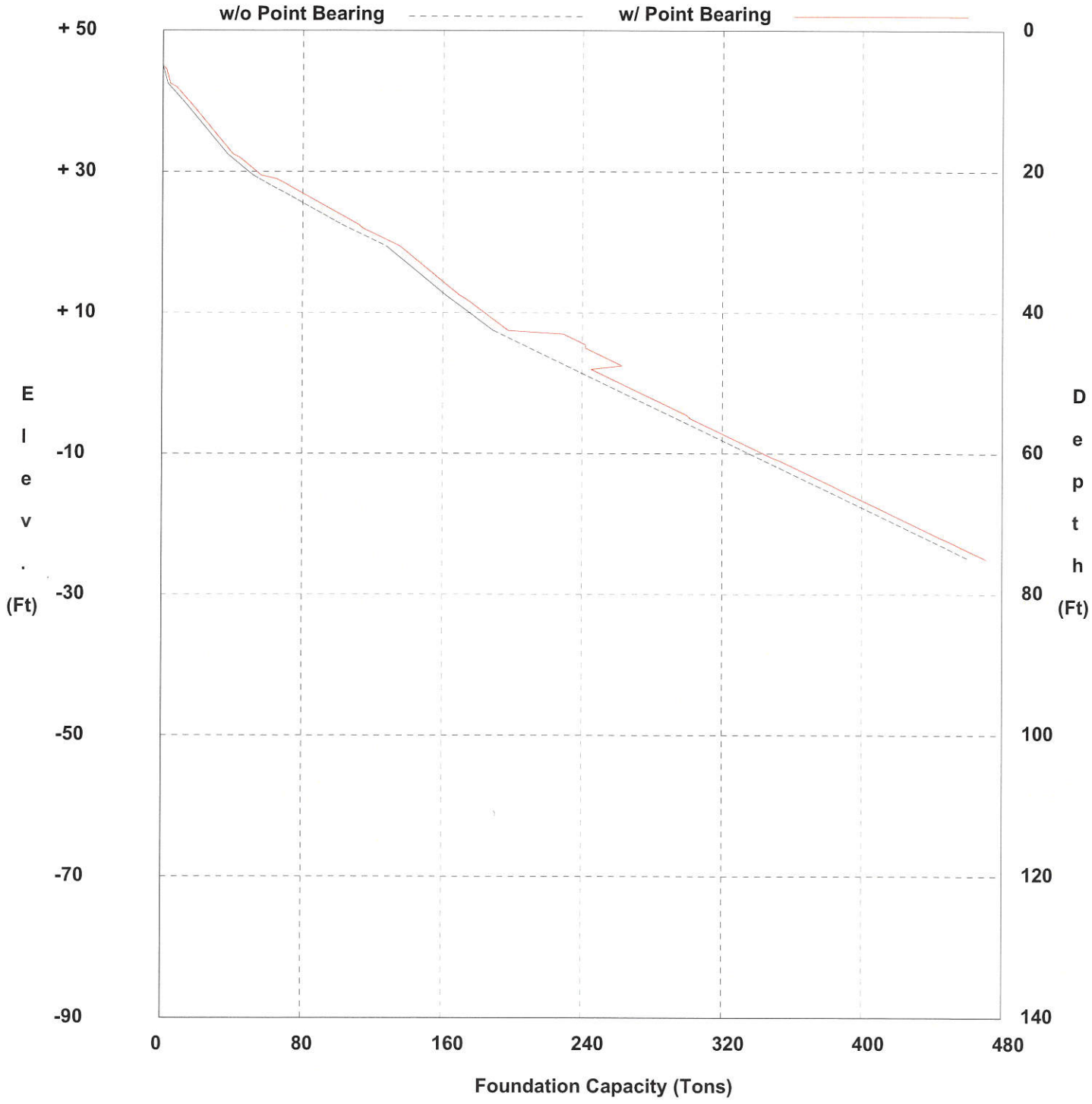
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Version 3.1

County	Willacy	Hole	B-BRG-38	District	
Highway		Structure	Bridge Borings	Date	3/3/205
Control		Station		Grnd. Elev.	50.00 ft
		Offset		GW Elev.	32.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 44.5

+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



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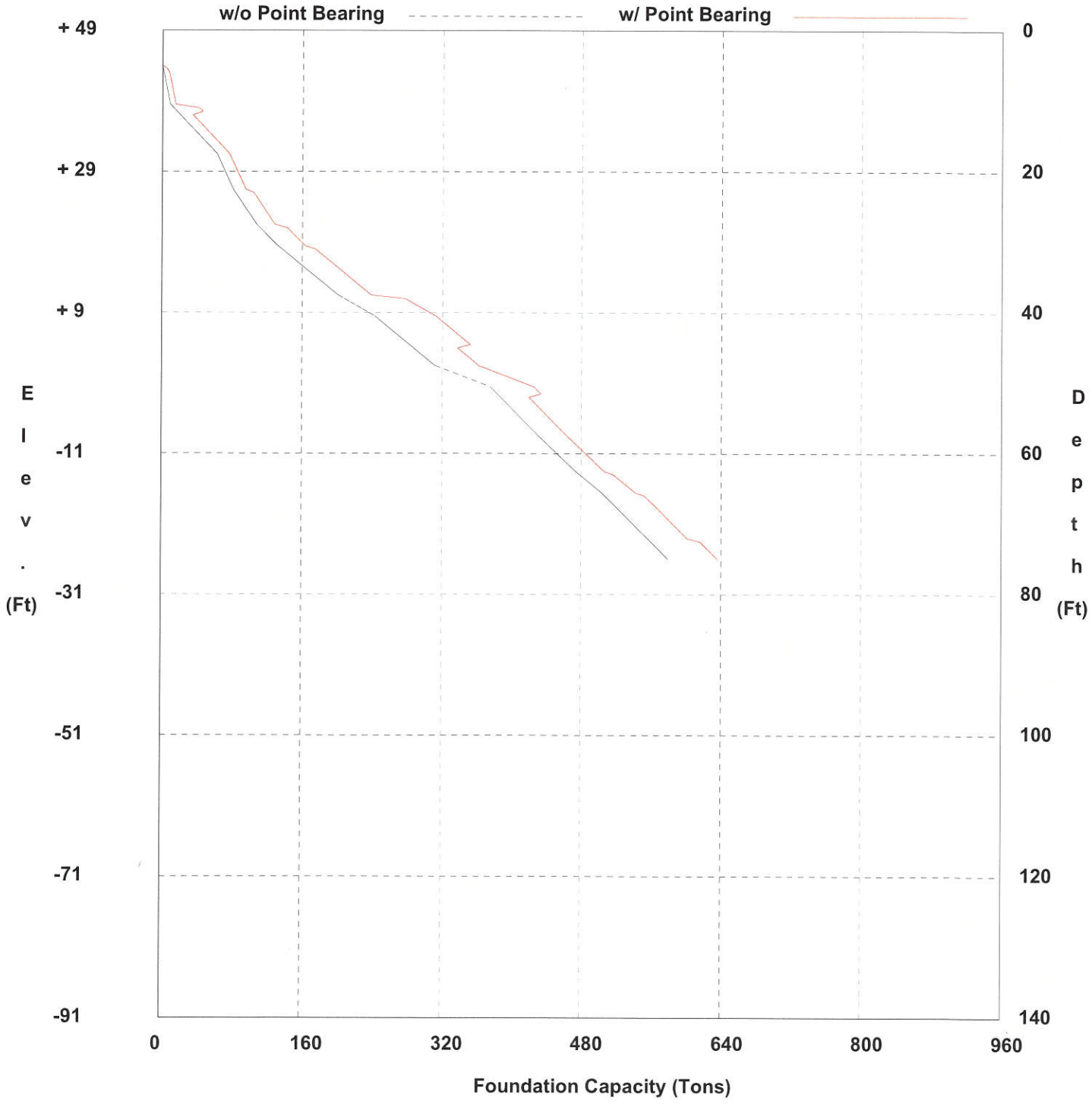
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County	Willacy	Hole	B-BRG-37	District	
Highway		Structure	Bridge Borings	Date	3/3/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	31.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 40

+49 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



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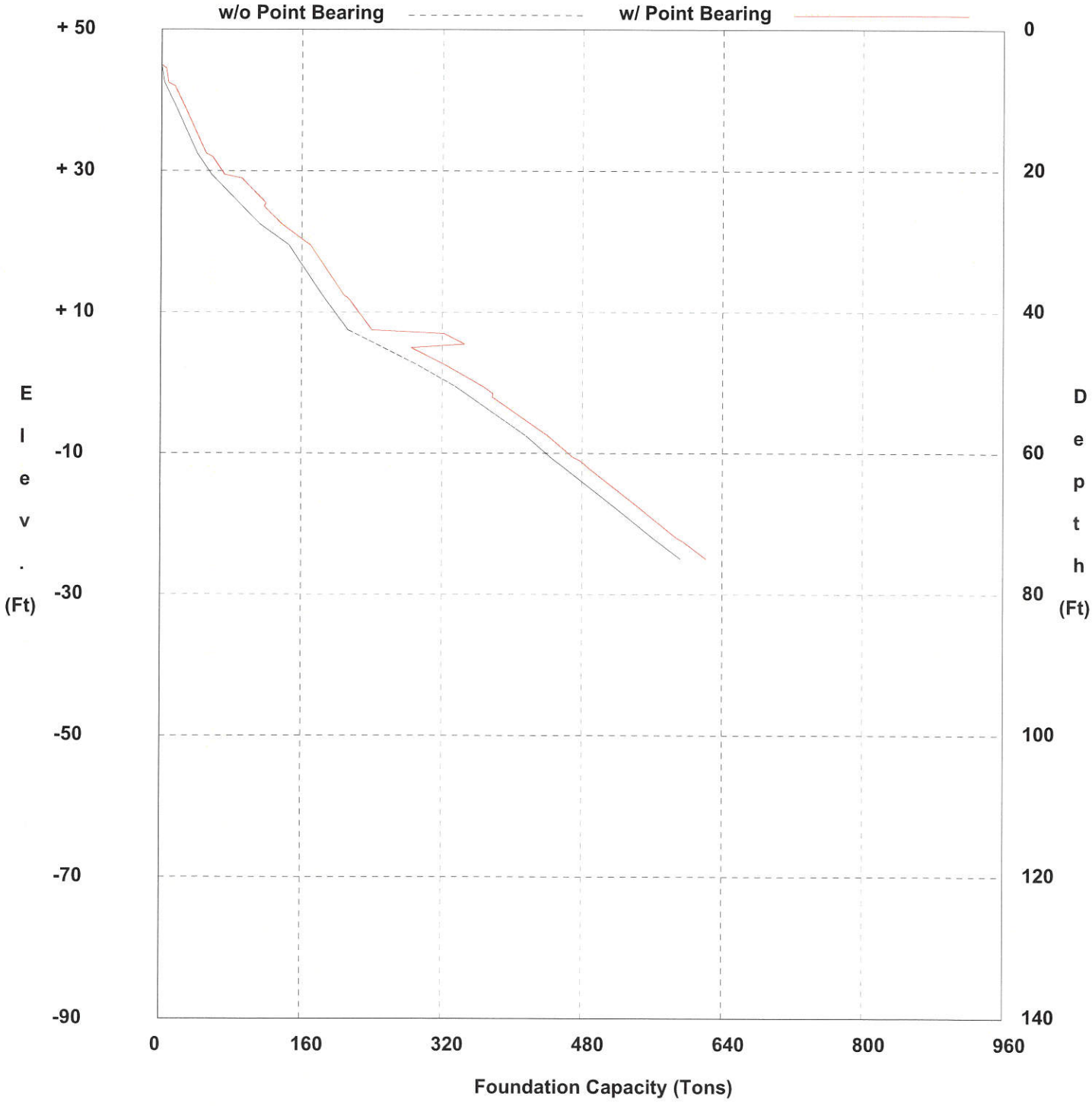
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-38	District	
Highway		Structure	Bridge Borings	Date	3/3/205
Control		Station		Grnd. Elev.	50.00 ft
		Offset		GW Elev.	32.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 41

+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



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CR 15

FOUNDATION CAPACITY

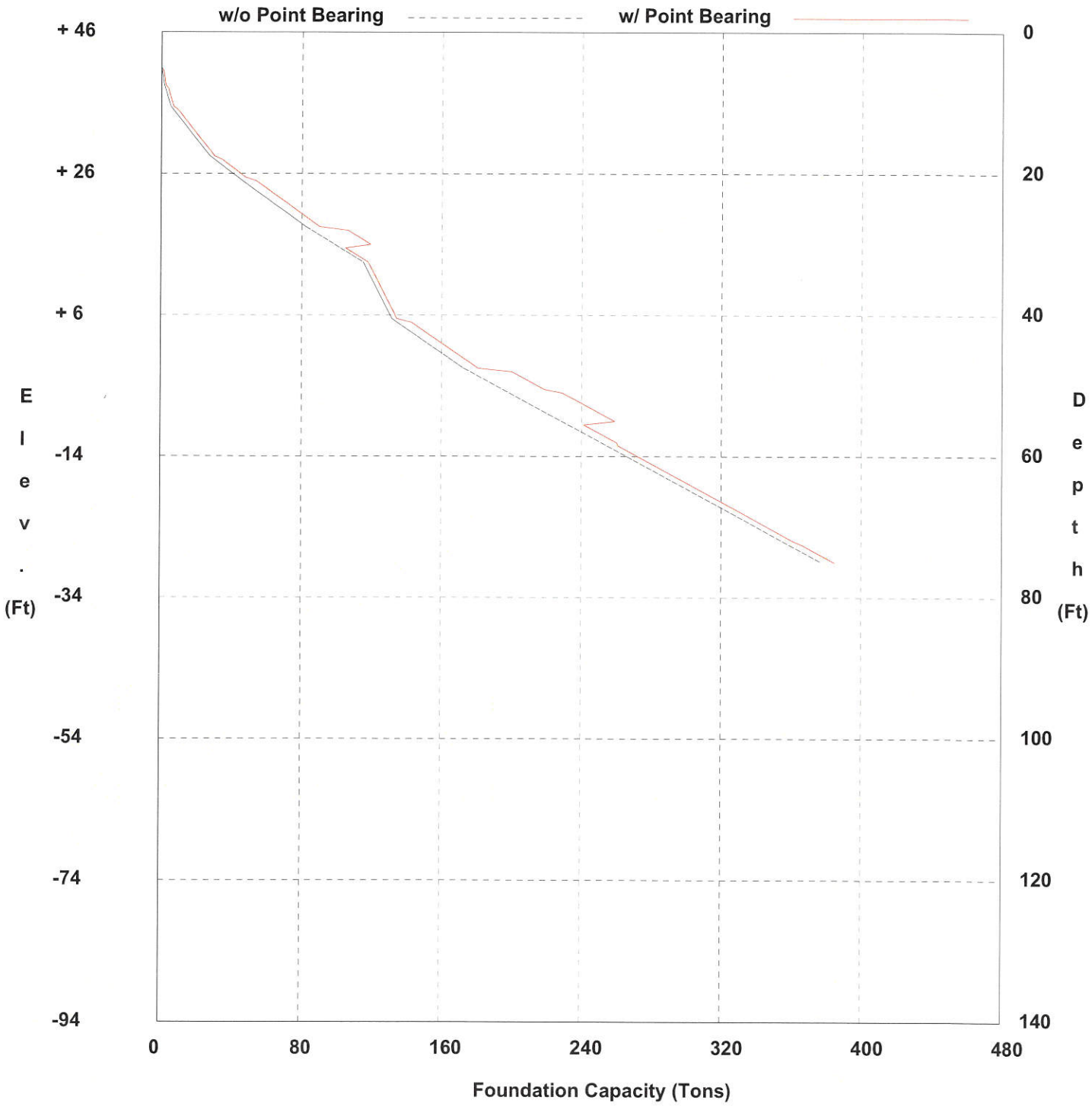
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-39	District	
Highway		Structure	Bridge Borings	Date	3/3/2015
Control		Station		Grnd. Elev.	46.00 ft
		Offset		GW Elev.	33.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 40.5

+46 Top Hole Elevation
+41 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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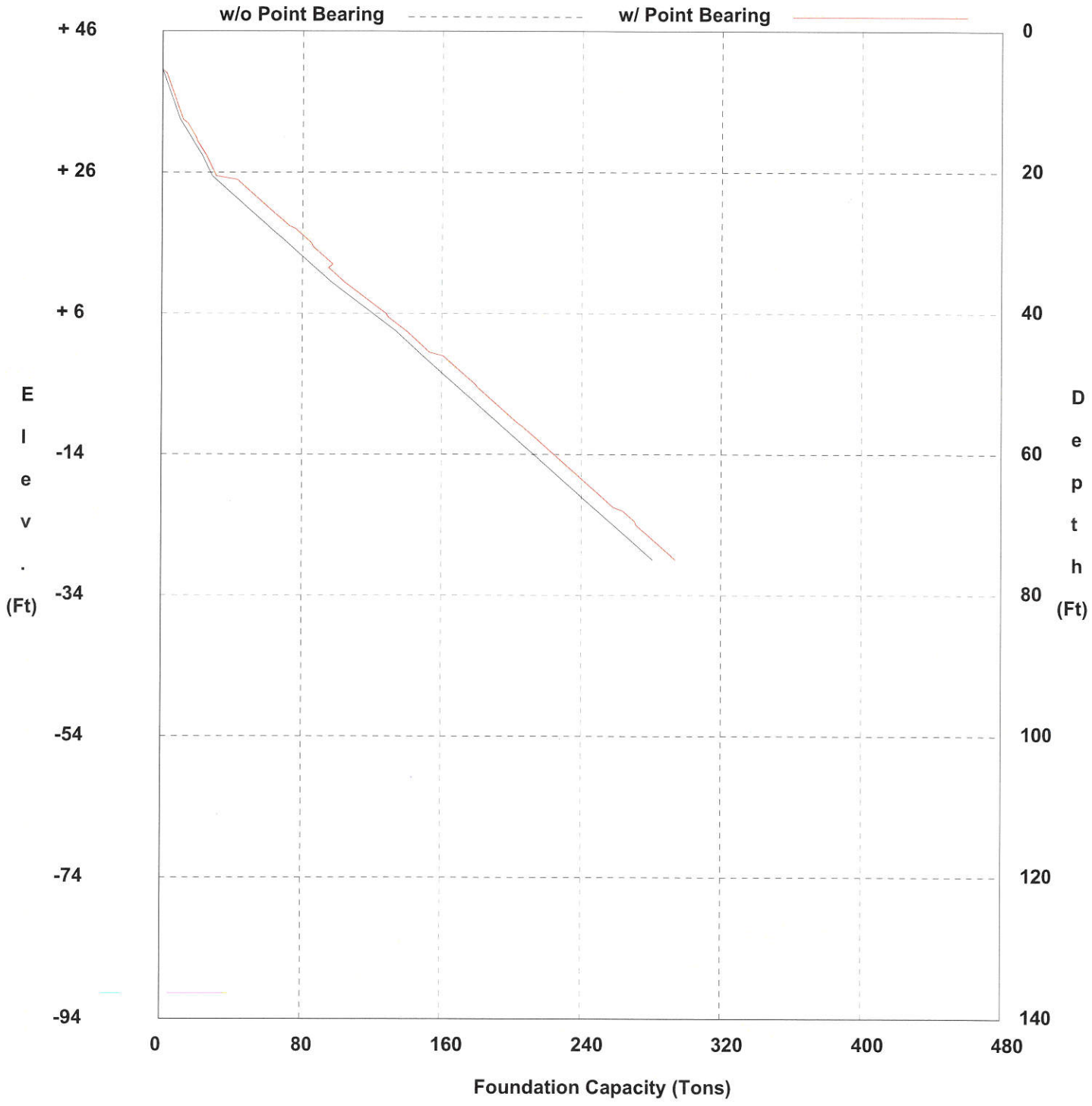
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-40	District	
Highway		Structure	Bridge Borings	Date	3/3/2015
Control		Station		Grnd. Elev.	46.00 ft
		Offset		GW Elev.	38.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 40.5

+46 Top Hole Elevation
+41 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

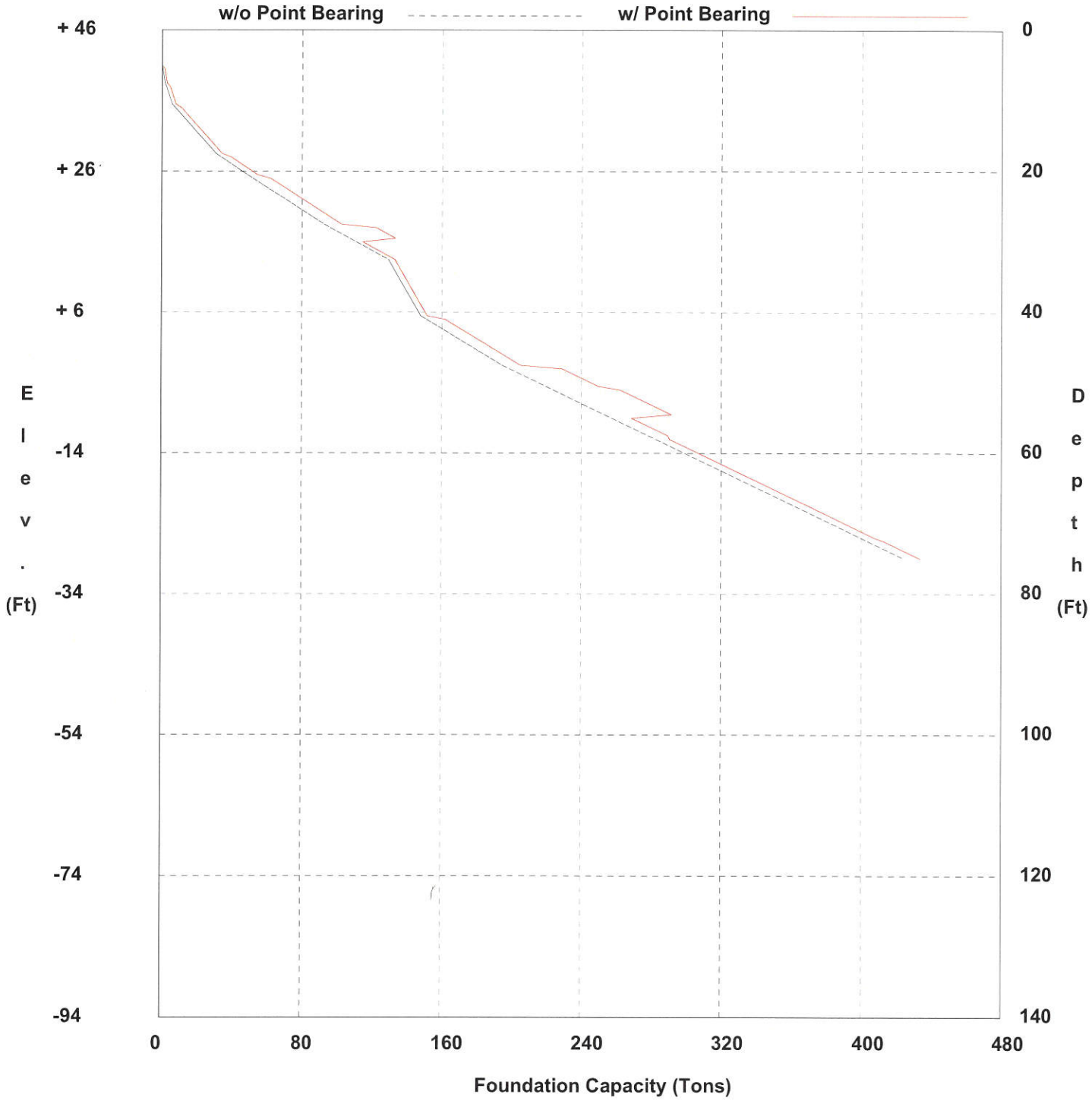
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Version 3.1

County	Willacy	Hole	B-BRG-39	District	
Highway		Structure	Bridge Borings	Date	3/3/2015
Control		Station		Grnd. Elev.	46.00 ft
		Offset		GW Elev.	33.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 40.5

+46 Top Hole Elevation
+41 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

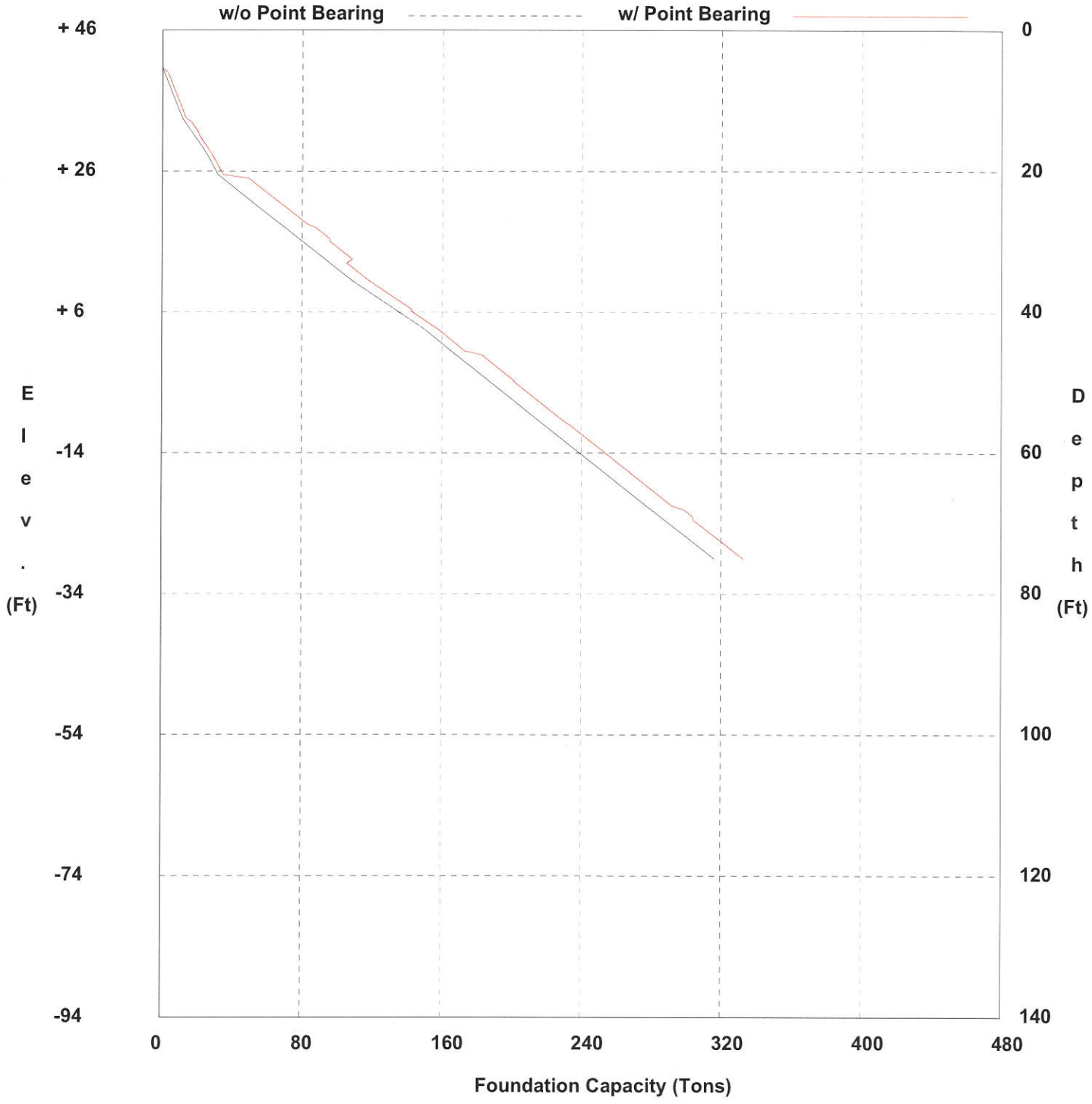
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-40	District	
Highway		Structure	Bridge Borings	Date	3/3/2015
Control		Station		Grnd. Elev.	46.00 ft
		Offset		GW Elev.	38.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 40.5

+46 Top Hole Elevation
+41 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

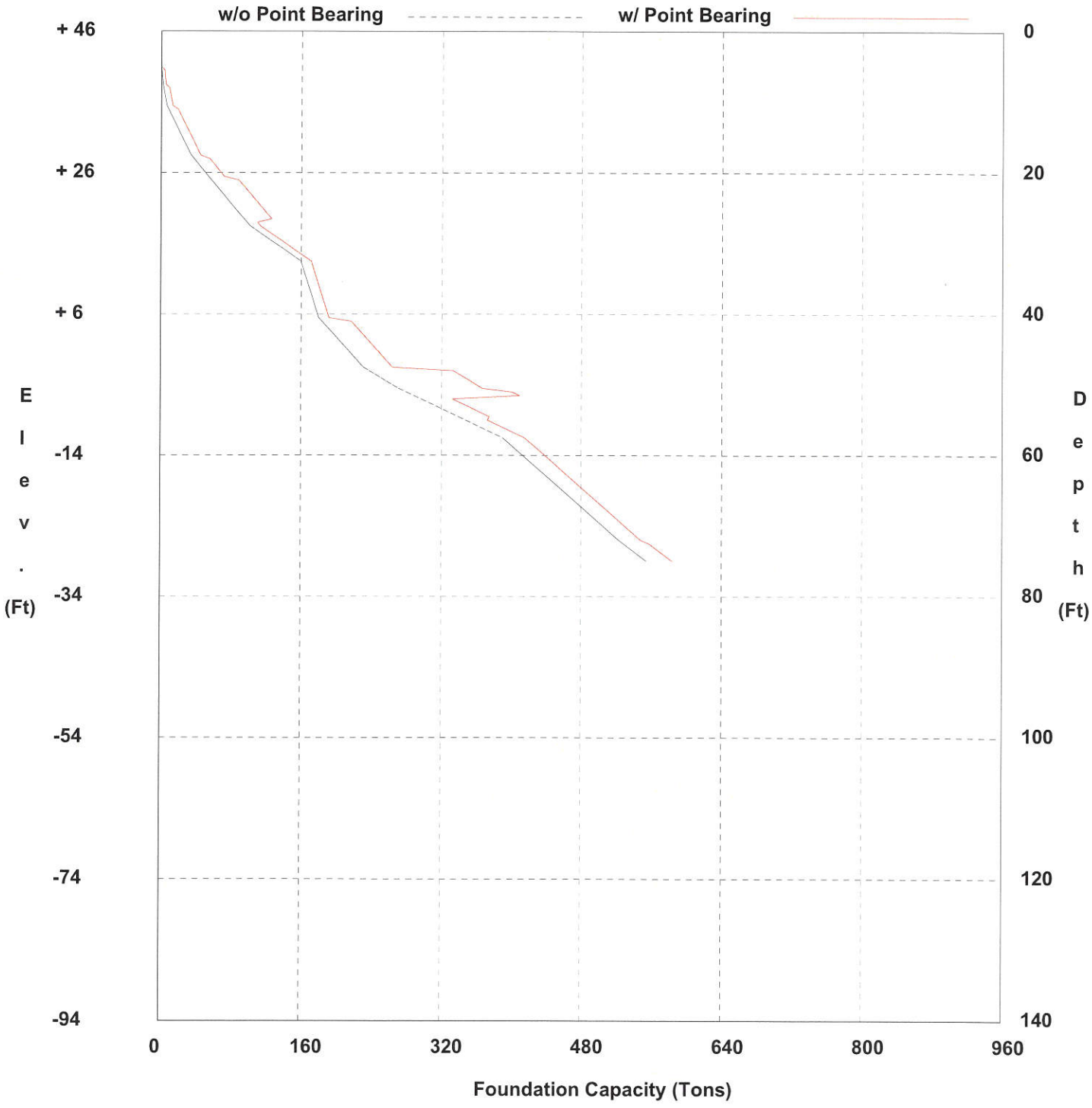
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-39	District	
Highway		Structure	Bridge Borings	Date	3/3/2015
Control		Station		Grnd. Elev.	46.00 ft
		Offset		GW Elev.	33.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 37

+46 Top Hole Elevation
+41 Disregard Elevation

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



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FOUNDATION CAPACITY

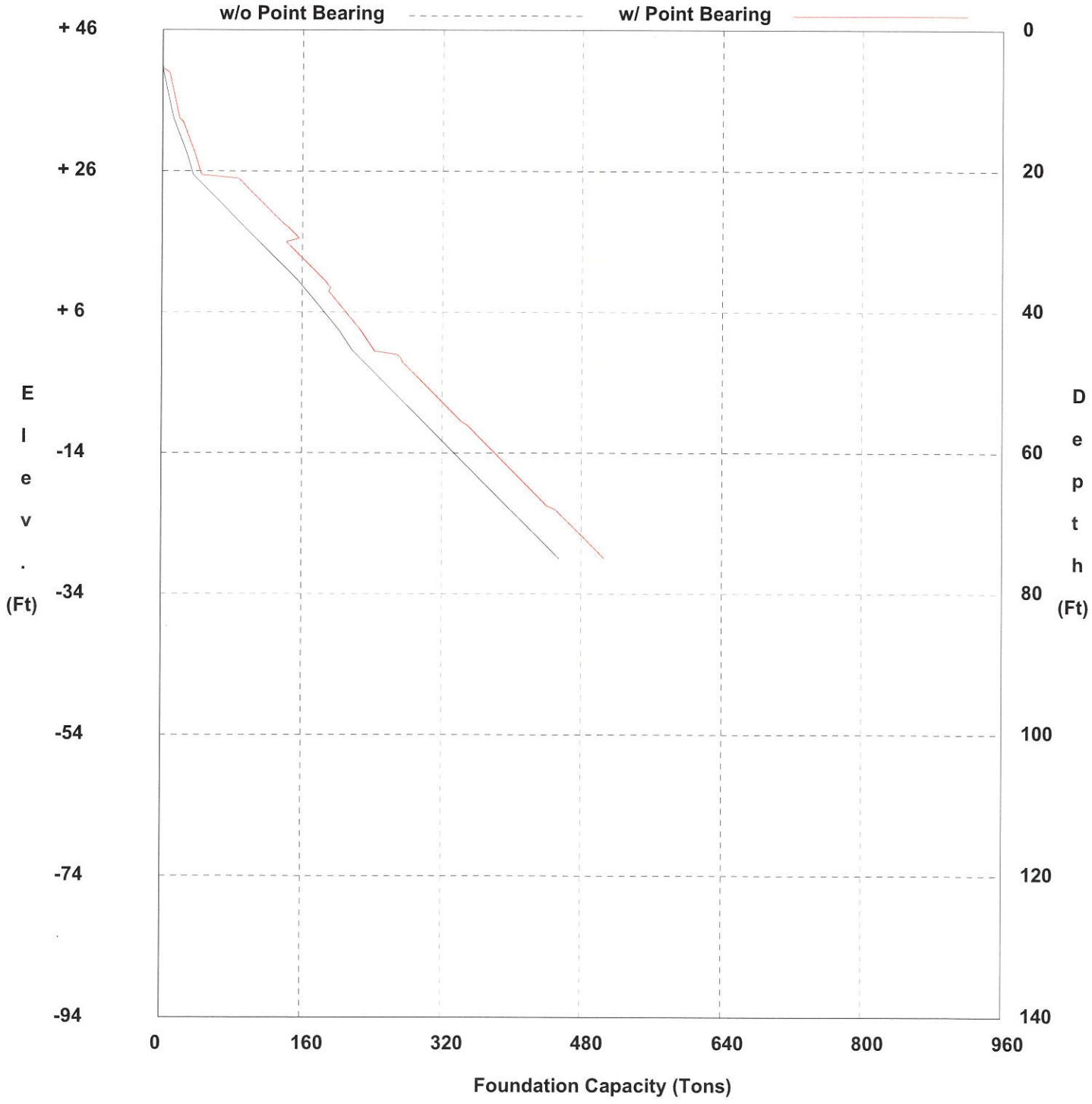
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-40	District	
Highway		Structure	Bridge Borings	Date	3/3/2015
Control		Station		Grnd. Elev.	46.00 ft
		Offset		GW Elev.	38.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 37

+46 Top Hole Elevation
+41 Disregard Elevation

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



L:\Wincore\Projects\Year 2015 Projects\Raymondville_Drain_Willacy.CLG

CR 3000 W (1-WEST)

FOUNDATION CAPACITY

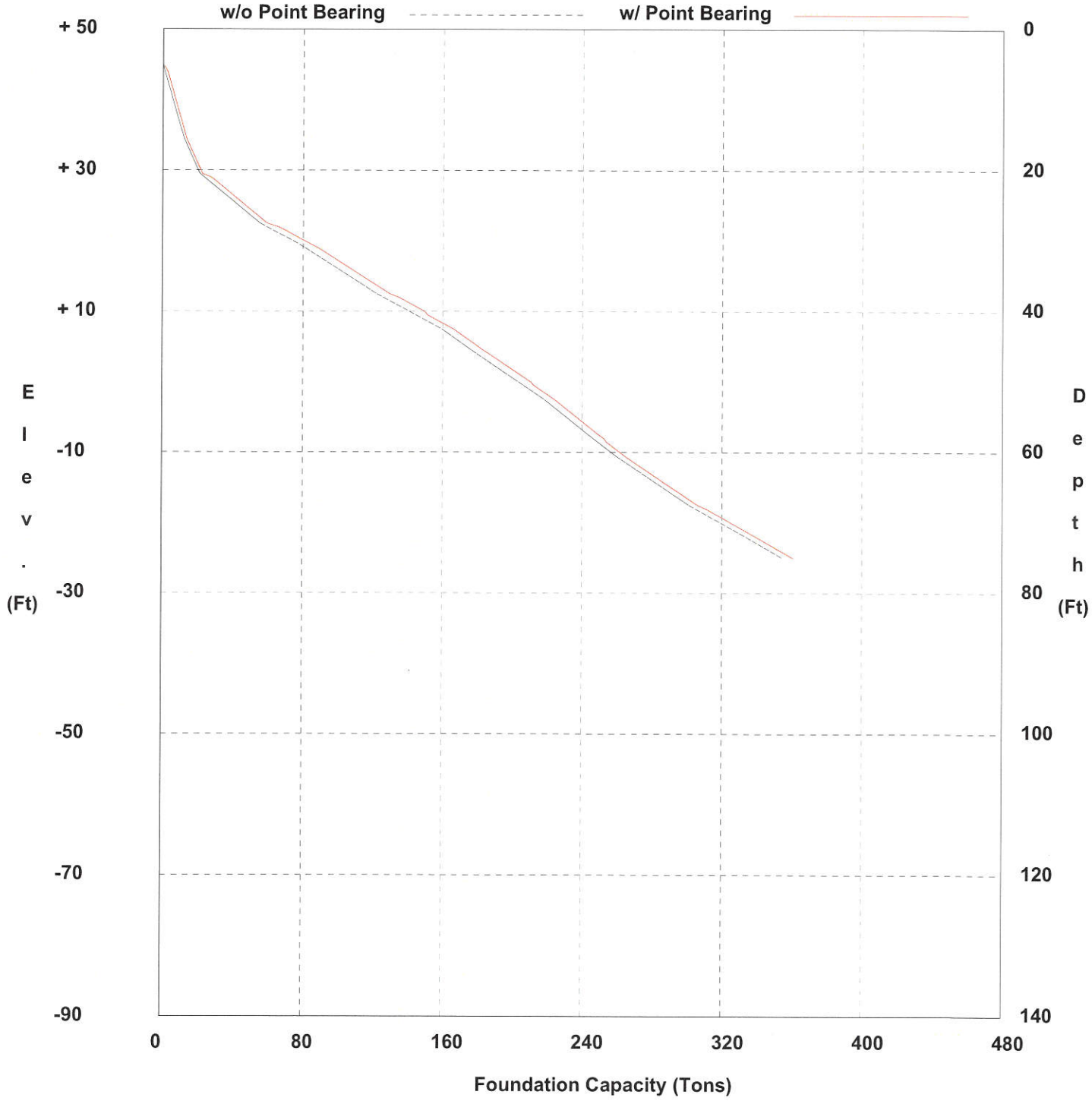
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-41	District	
Highway		Structure	Bridge Borings	Date	3/9/2015
Control		Station		Grnd. Elev.	50.00 ft
		Offset		GW Elev.	37.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 44.5

+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

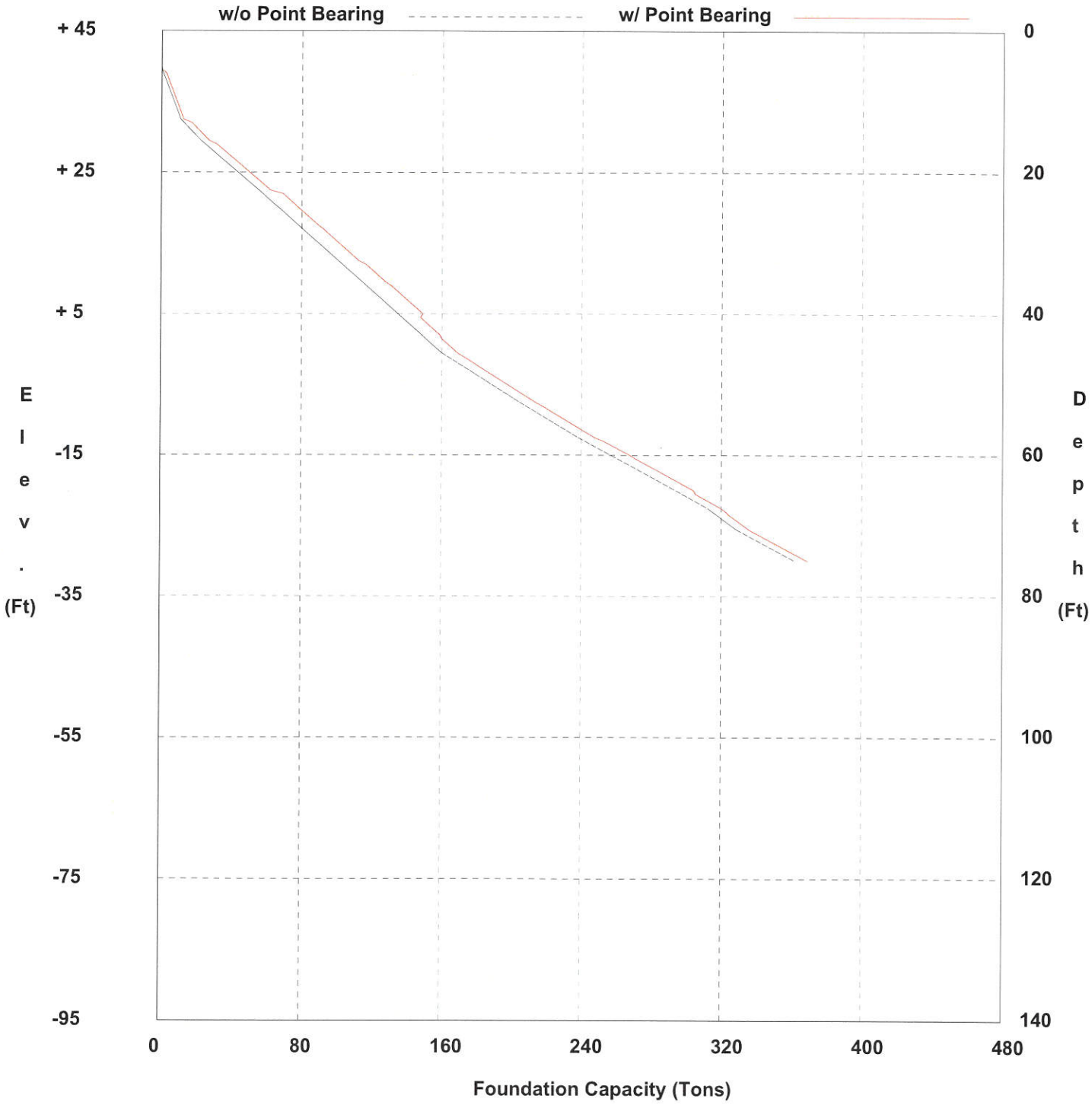
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-42	District	
Highway		Structure	Bridge Borings	Date	3/9/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	34.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 39.5

+45 Top Hole Elevation
+40 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

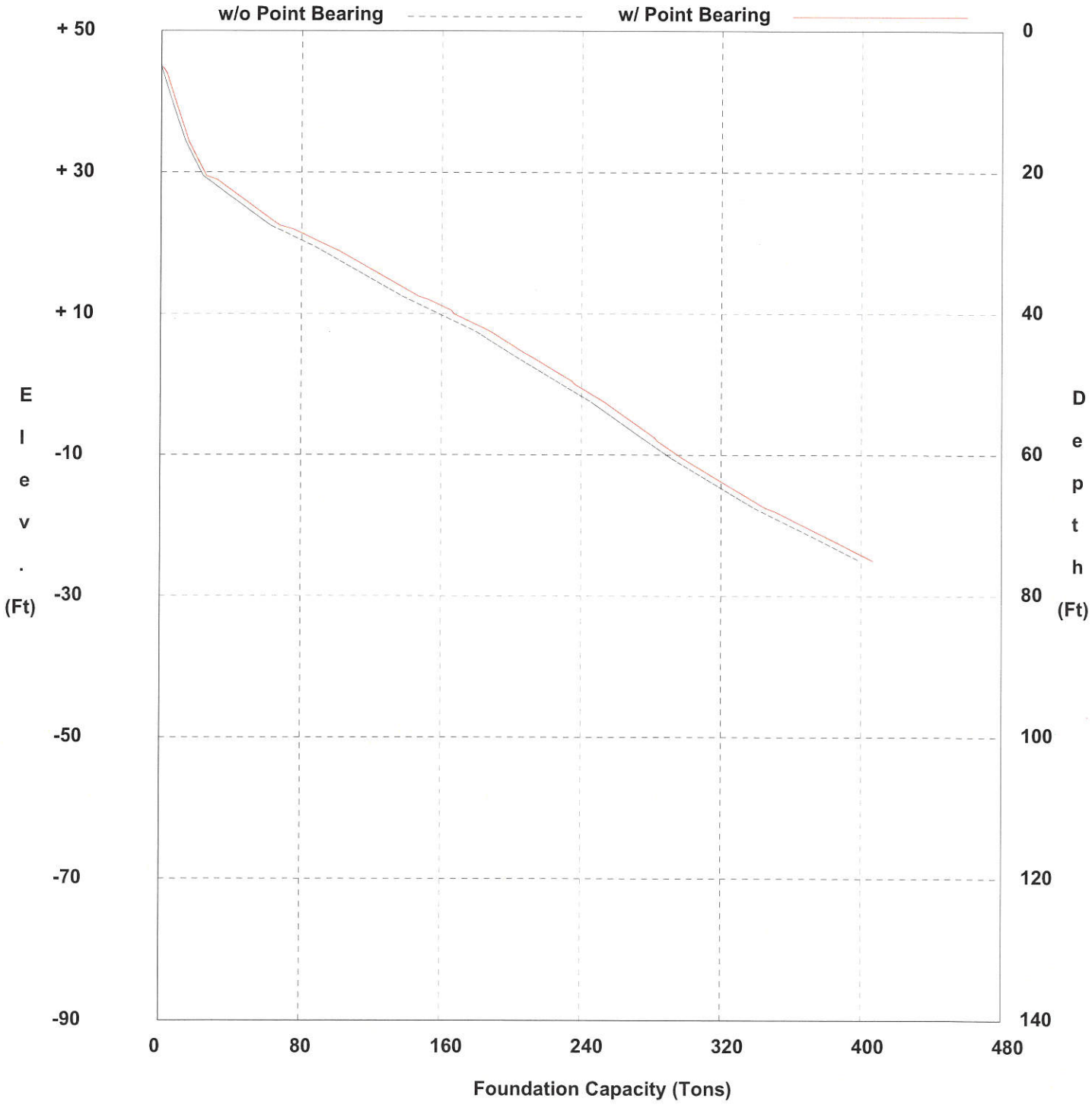
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-41	District	
Highway		Structure	Bridge Borings	Date	3/9/2015
Control		Station		Grnd. Elev.	50.00 ft
		Offset		GW Elev.	37.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 44.5

+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



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FOUNDATION CAPACITY

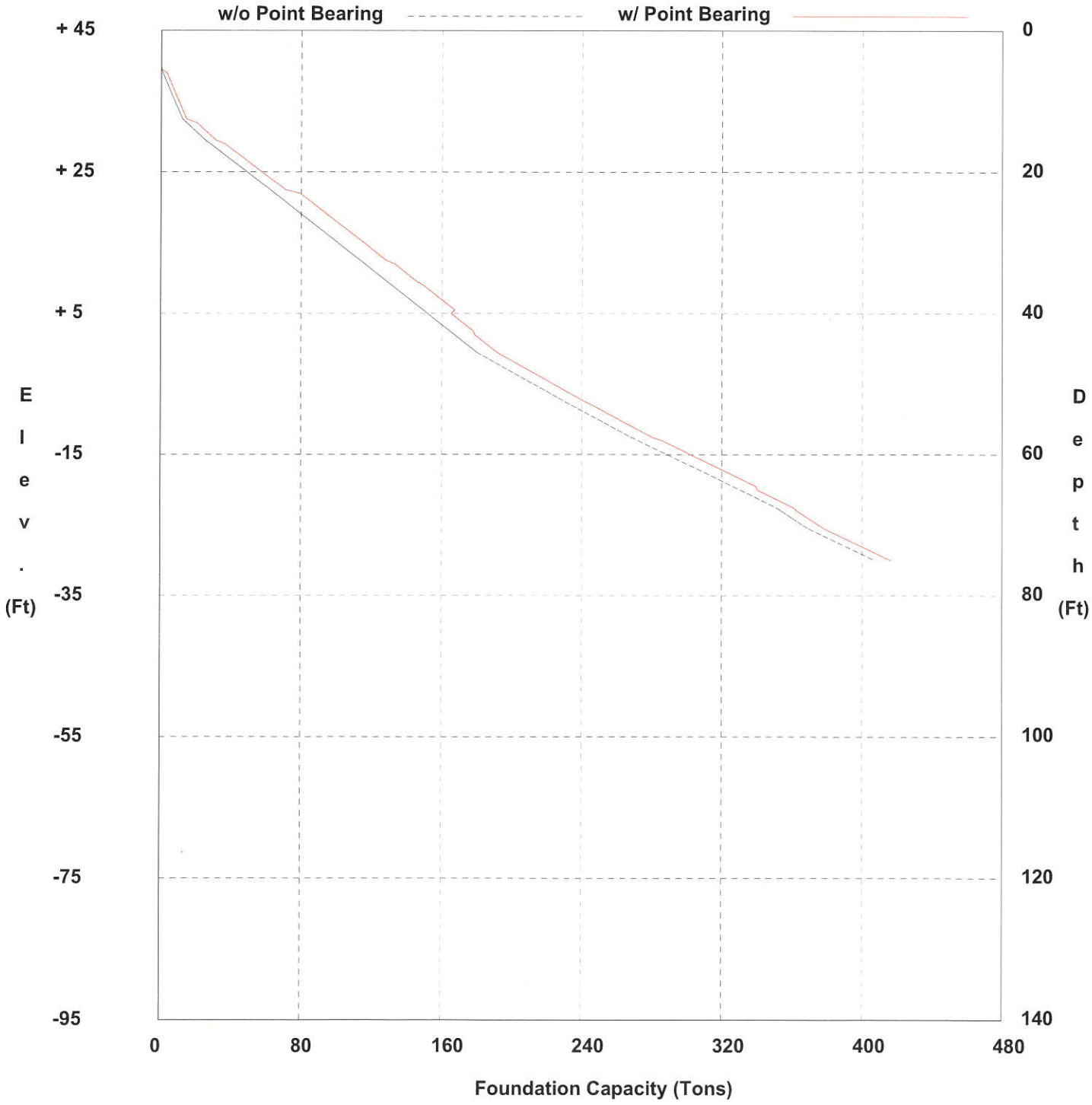
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-42	District	
Highway		Structure	Bridge Borings	Date	3/9/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	34.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 39.5

+45 Top Hole Elevation
+40 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

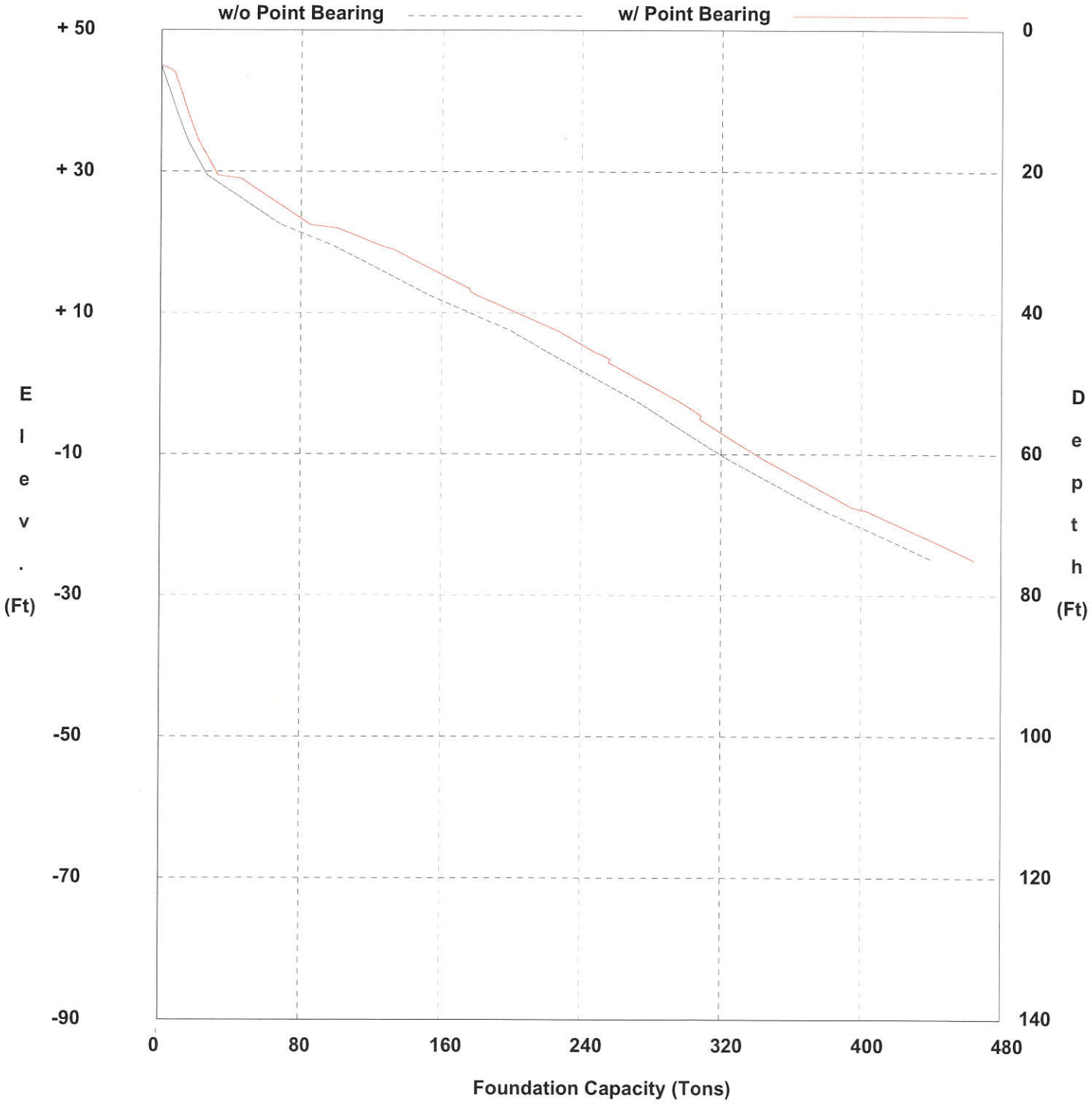
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-41	District	
Highway		Structure	Bridge Borings	Date	3/9/2015
Control		Station		Grnd. Elev.	50.00 ft
		Offset		GW Elev.	37.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 41

+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



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FOUNDATION CAPACITY

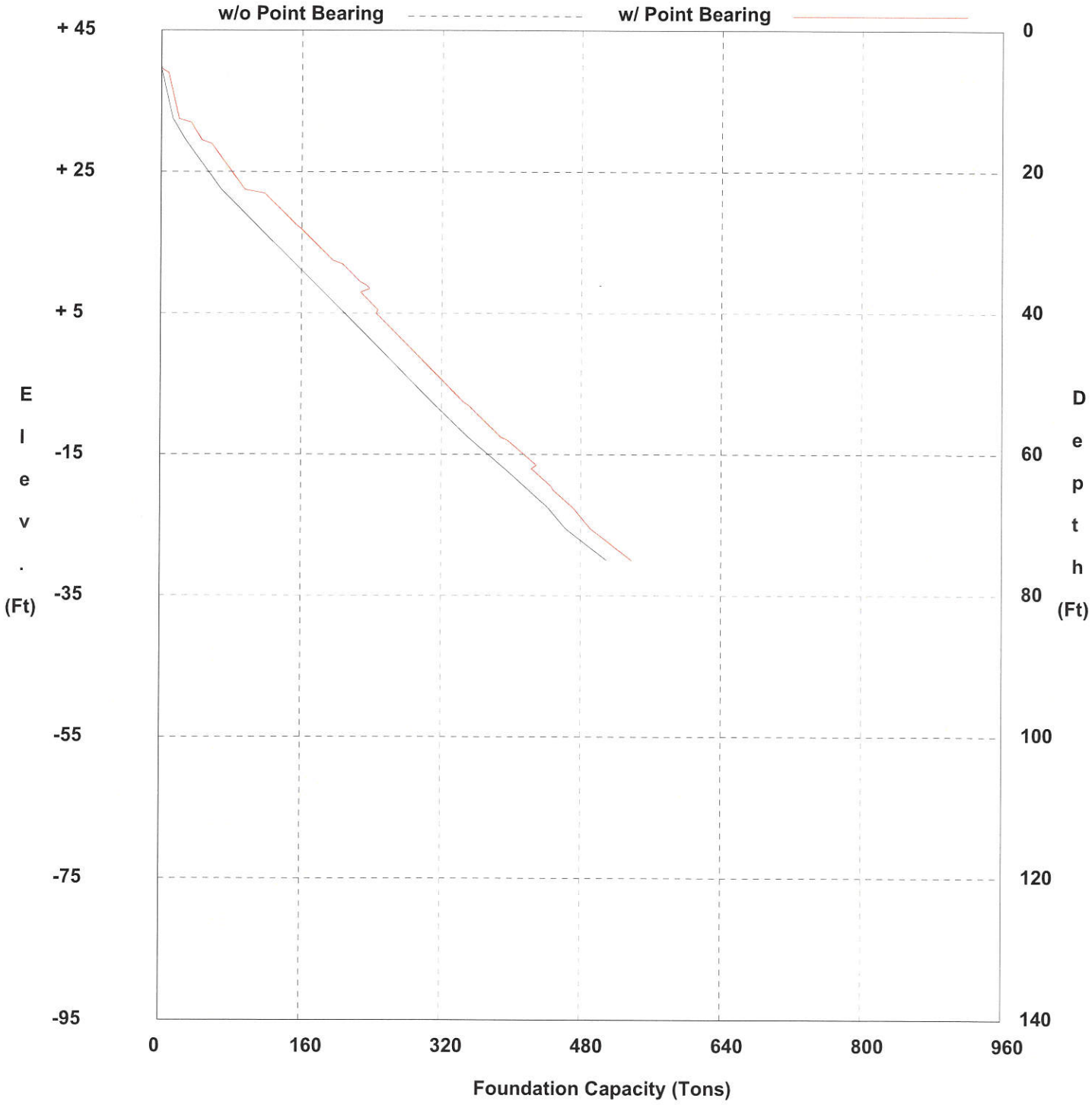
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-42	District	
Highway		Structure	Bridge Borings	Date	3/9/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	34.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 36

+45 Top Hole Elevation
+40 Disregard Elevation

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



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CR 25

FOUNDATION CAPACITY

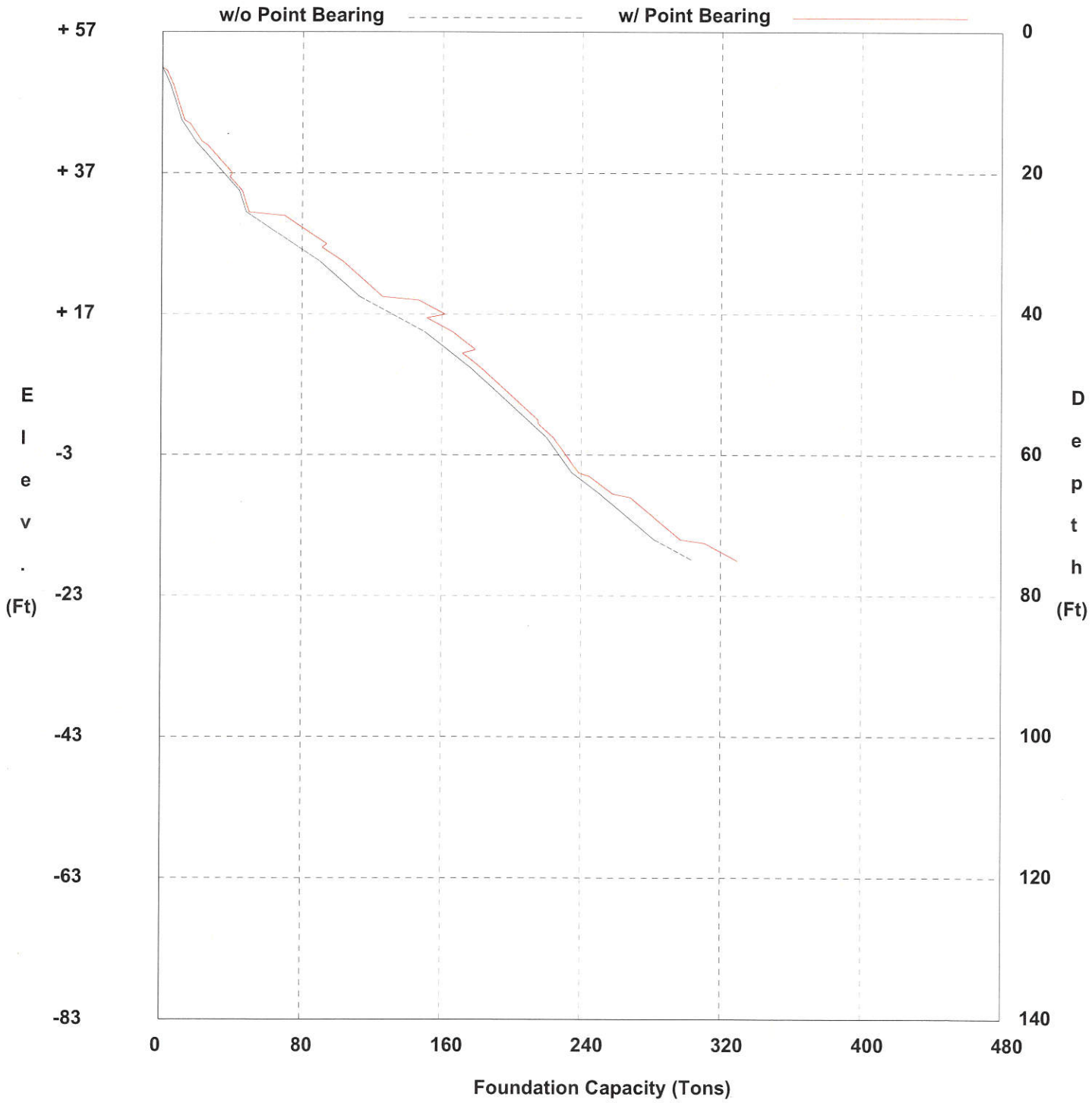
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-43	District	
Highway		Structure	Bridge Borings	Date	3/2/2015
Control		Station		Grnd. Elev.	57.00 ft
		Offset		GW Elev.	36.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 51.5

+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

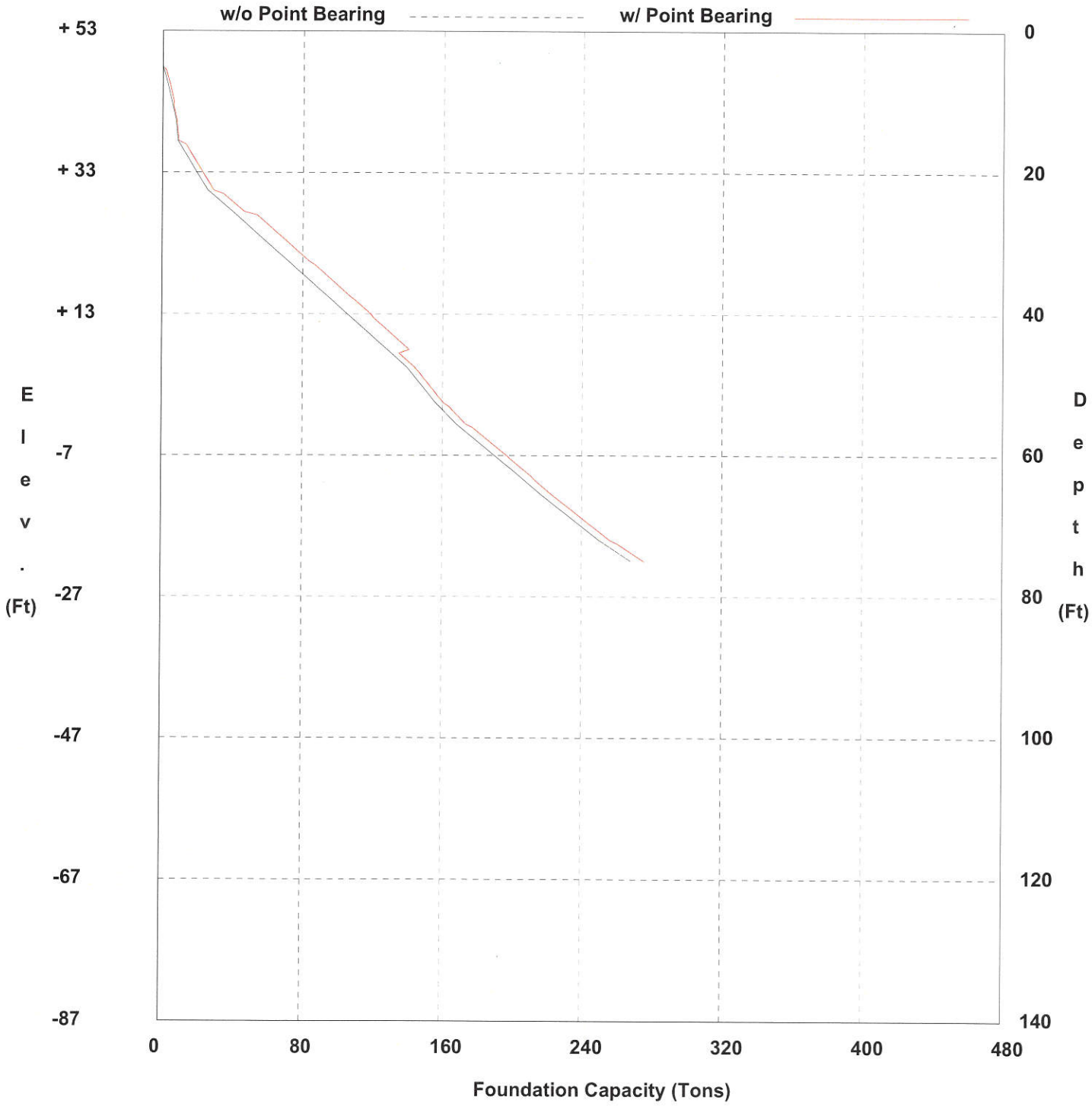
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-44	District	
Highway		Structure	Bridge Borings	Date	3/2/2015
Control		Station		Grnd. Elev.	53.00 ft
		Offset		GW Elev.	40.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 47.5

+53 Top Hole Elevation
+48 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

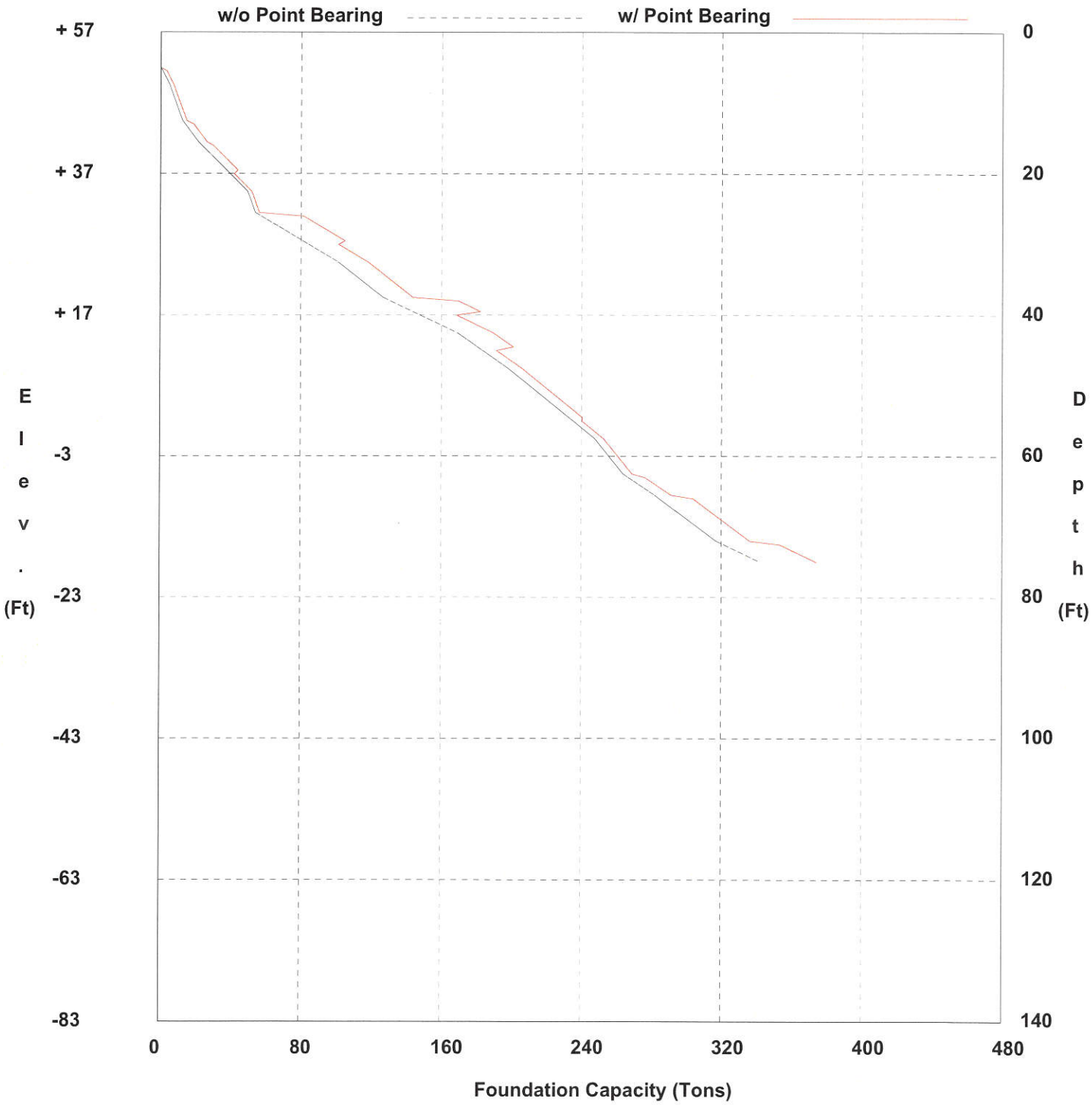
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-43	District	
Highway		Structure	Bridge Borings	Date	3/2/2015
Control		Station		Grnd. Elev.	57.00 ft
		Offset		GW Elev.	36.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 51.5

+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



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FOUNDATION CAPACITY

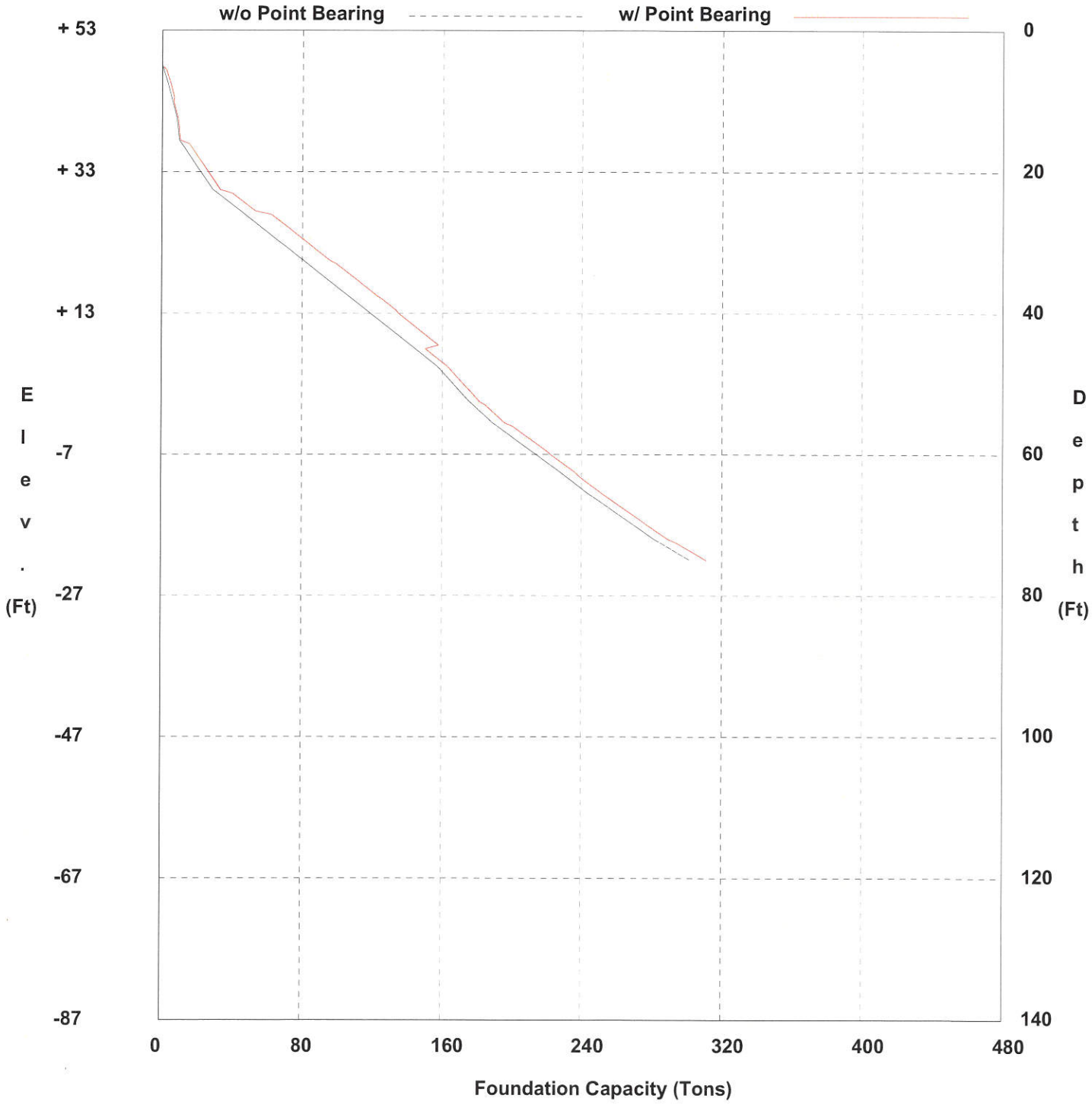
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-44	District	
Highway		Structure	Bridge Borings	Date	3/2/2015
Control		Station		Grnd. Elev.	53.00 ft
		Offset		GW Elev.	40.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 47.5

+53 Top Hole Elevation
+48 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

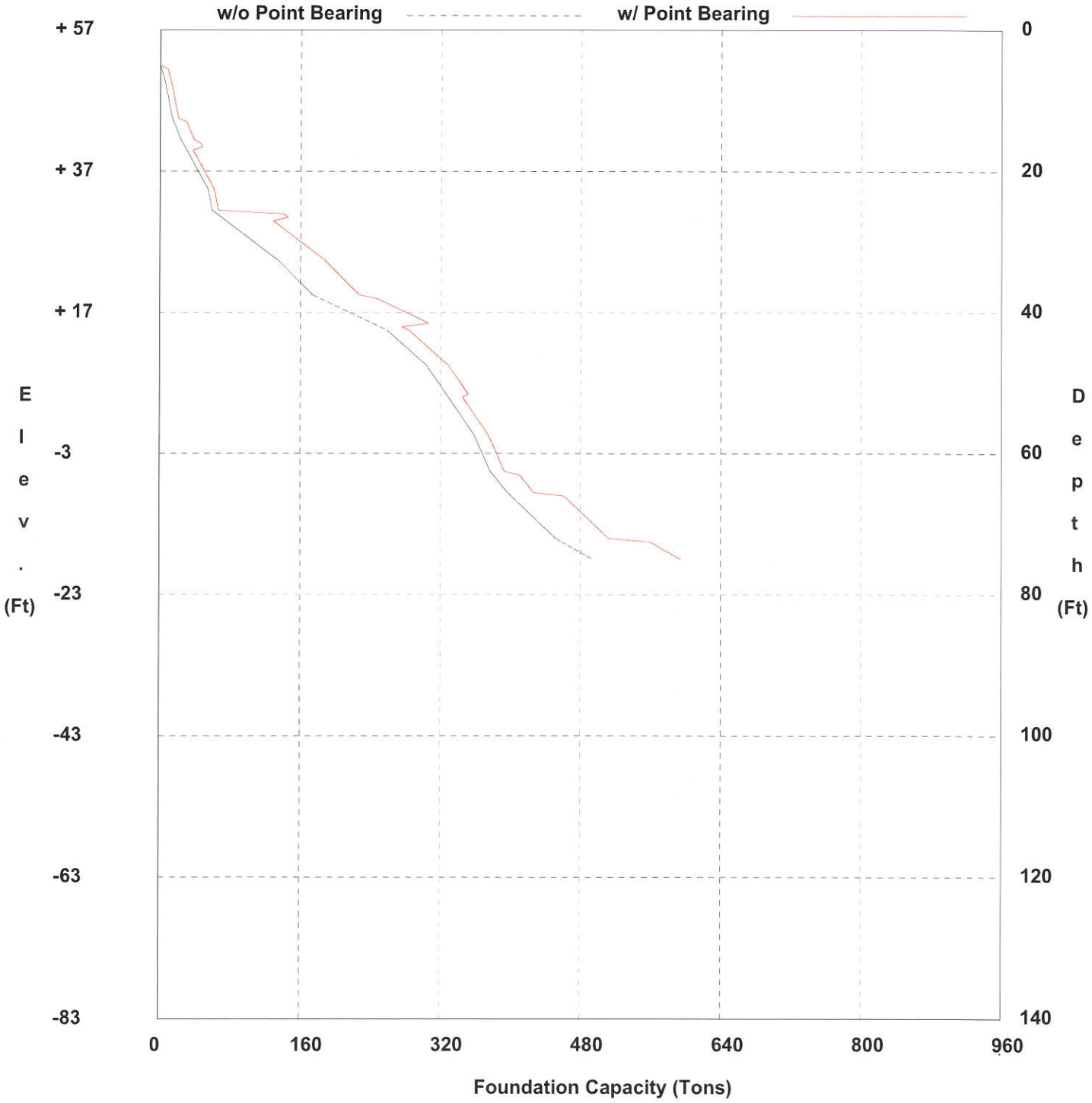
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Version 3.1

County	Willacy	Hole	B-BRG-43	District	
Highway		Structure	Bridge Borings	Date	3/2/2015
Control		Station		Grnd. Elev.	57.00 ft
		Offset		GW Elev.	36.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 48

+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



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FOUNDATION CAPACITY

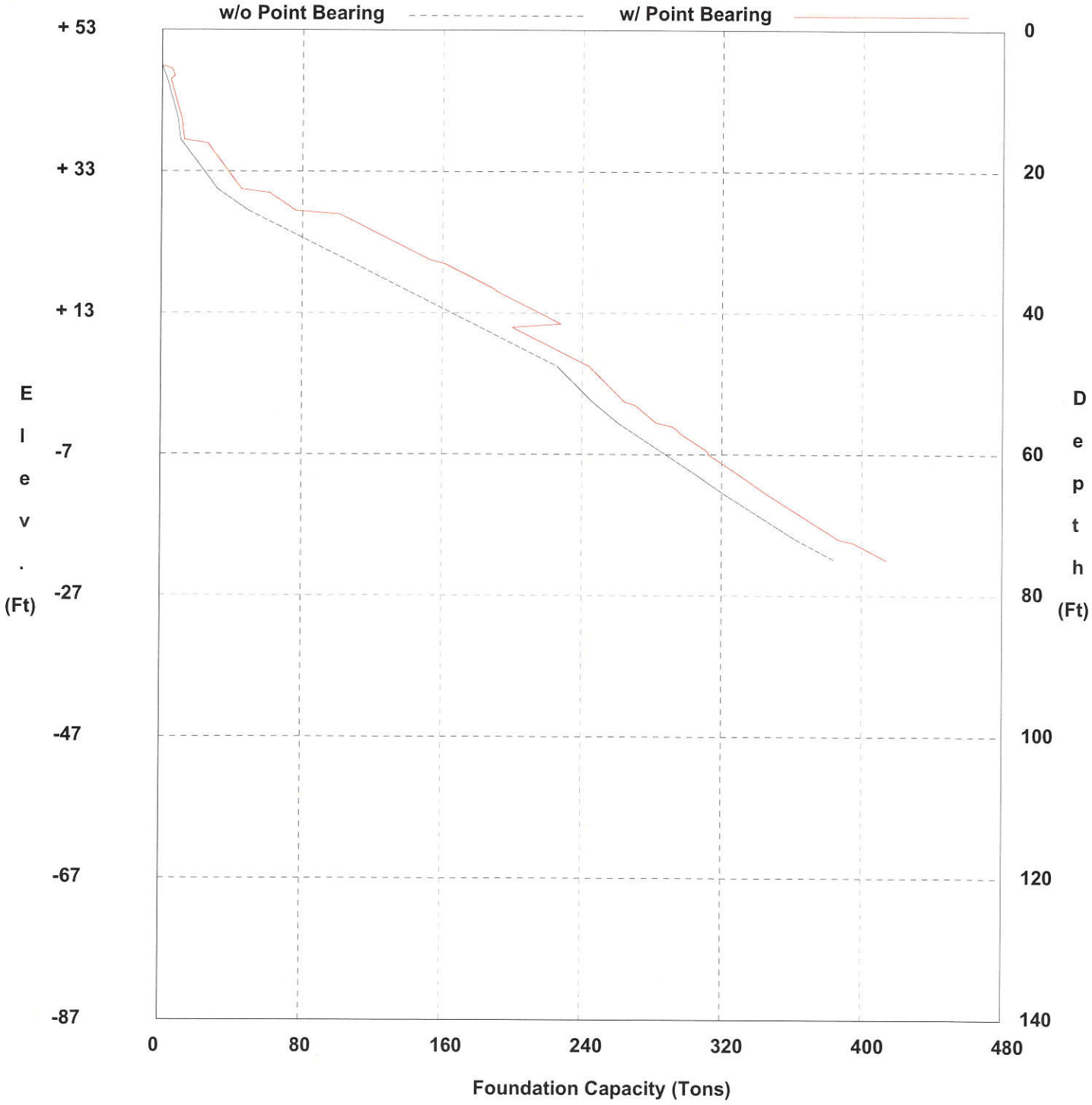
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-44	District	
Highway		Structure	Bridge Borings	Date	3/2/2015
Control		Station		Grnd. Elev.	53.00 ft
		Offset		GW Elev.	40.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 44

+53 Top Hole Elevation
+48 Disregard Elevation

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



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CR 30

FOUNDATION CAPACITY

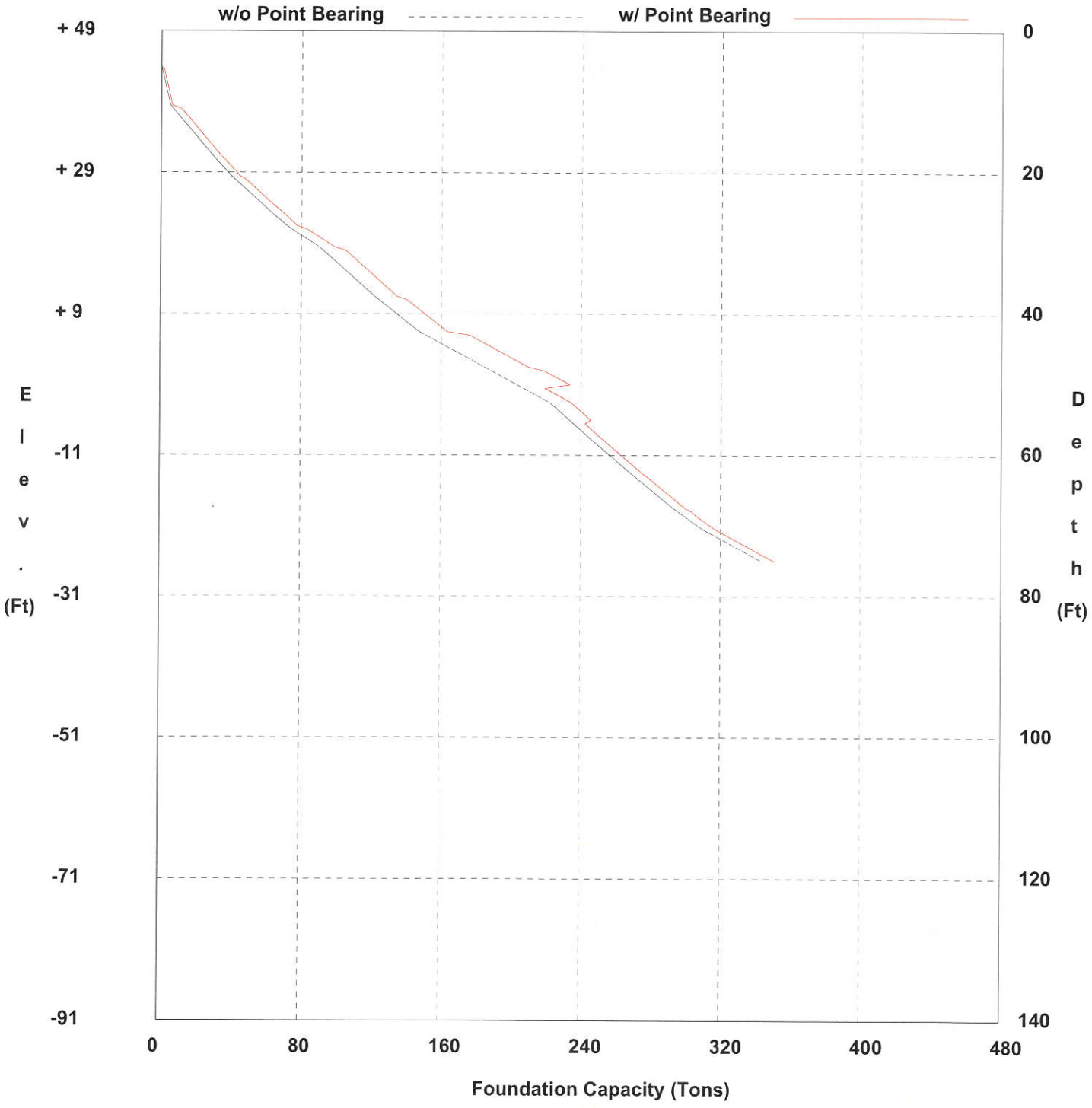
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-45	District	
Highway		Structure	Bridge Borings	Date	3/4/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	35.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 43.5

+49 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



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FOUNDATION CAPACITY

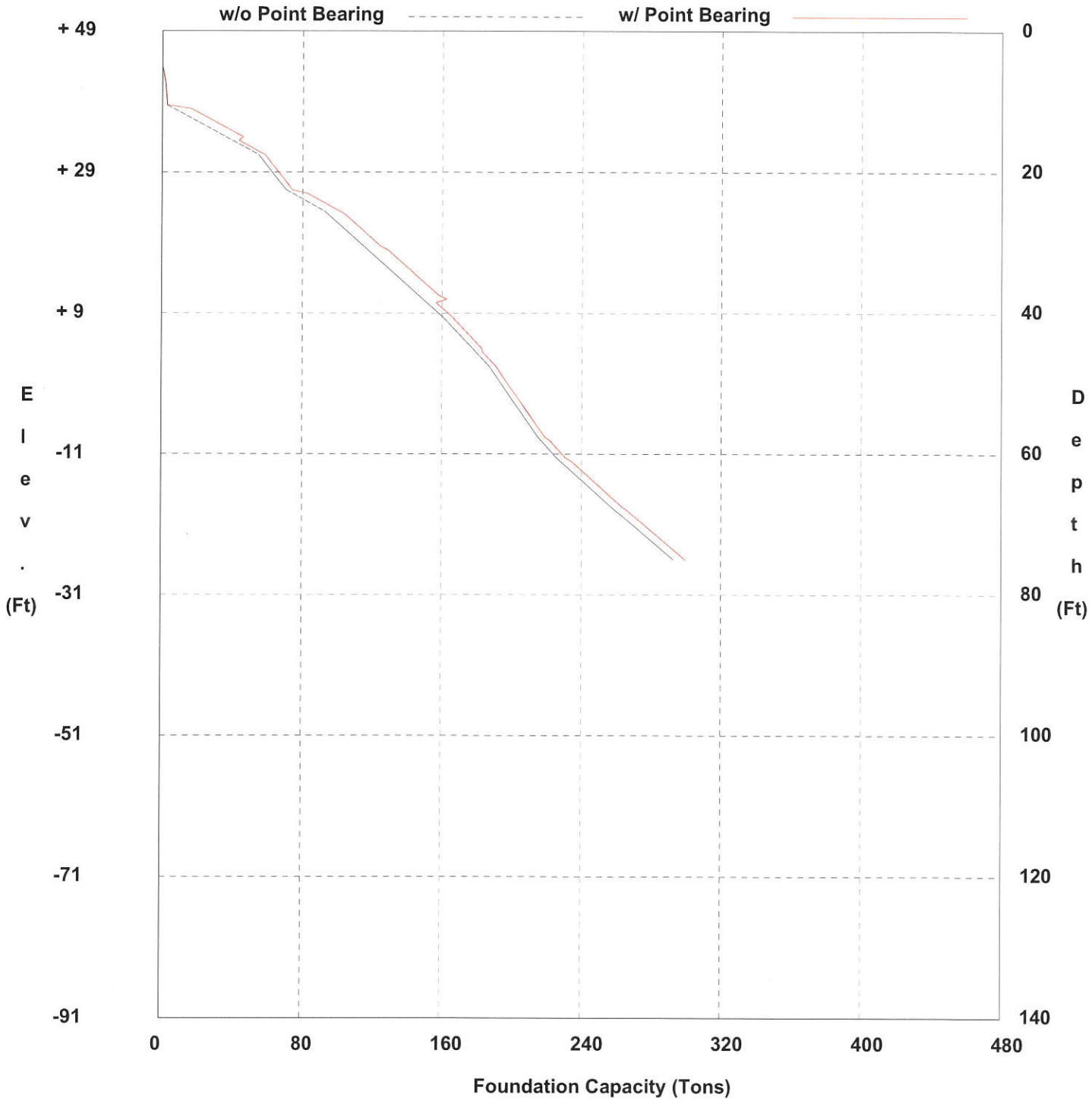
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-46	District	
Highway		Structure	Bridge Borings	Date	3/5/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	13.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 43.5

+49 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

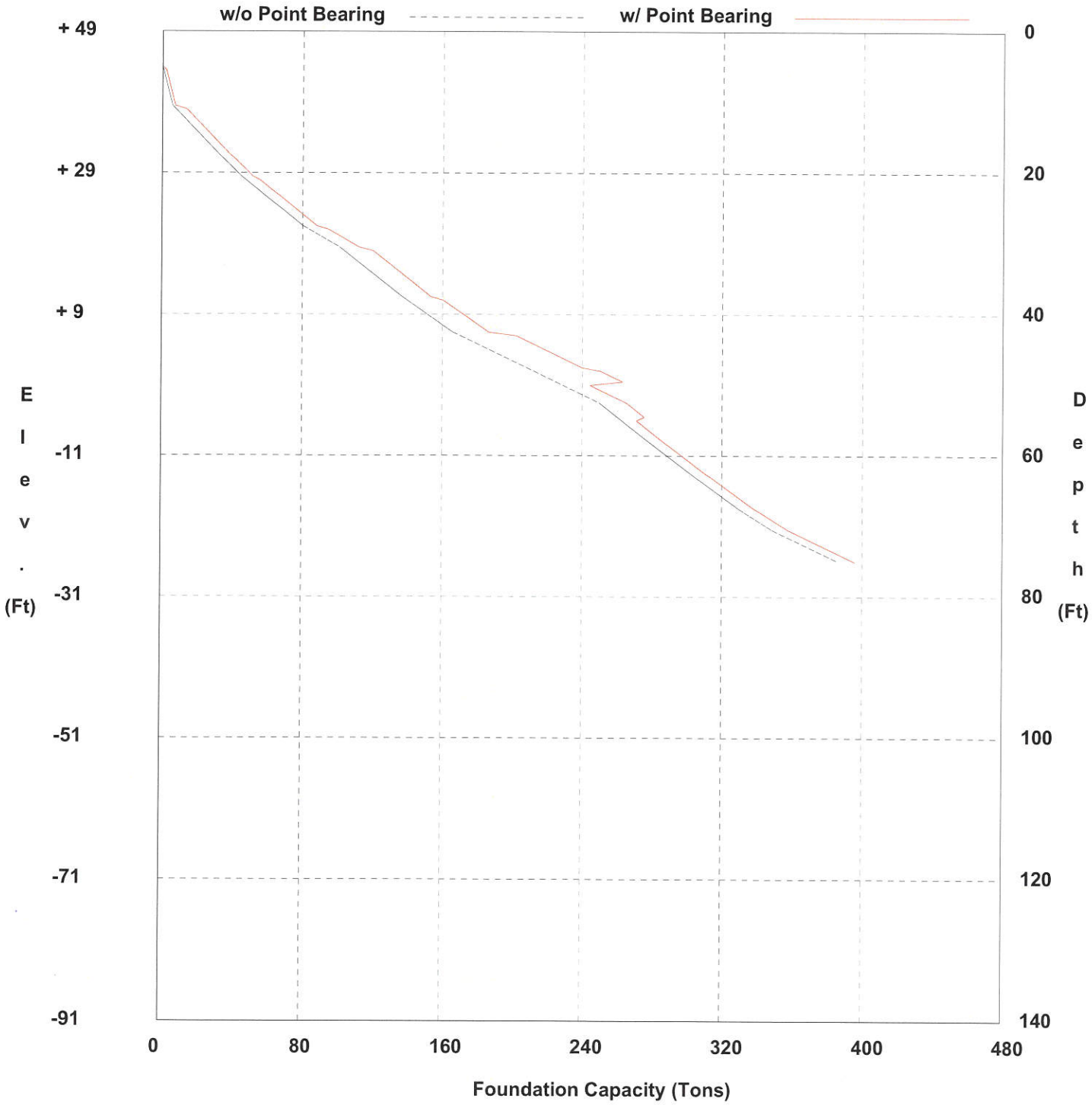
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-45	District	
Highway		Structure	Bridge Borings	Date	3/4/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	35.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 43.5

+49 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

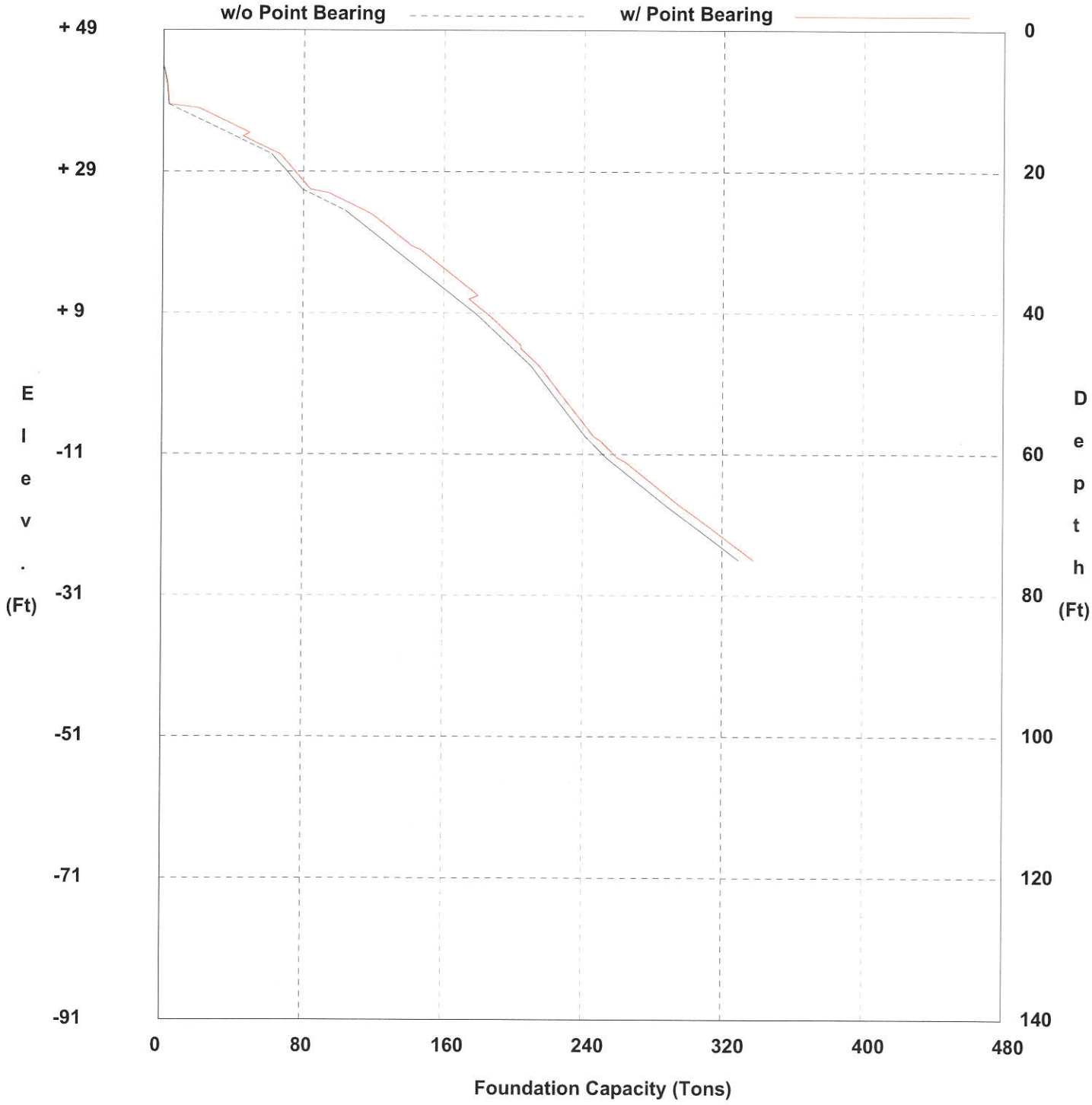
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Version 3.1

County	Willacy	Hole	B-BRG-46	District	
Highway		Structure	Bridge Borings	Date	3/5/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	13.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 43.5

+49 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



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FOUNDATION CAPACITY

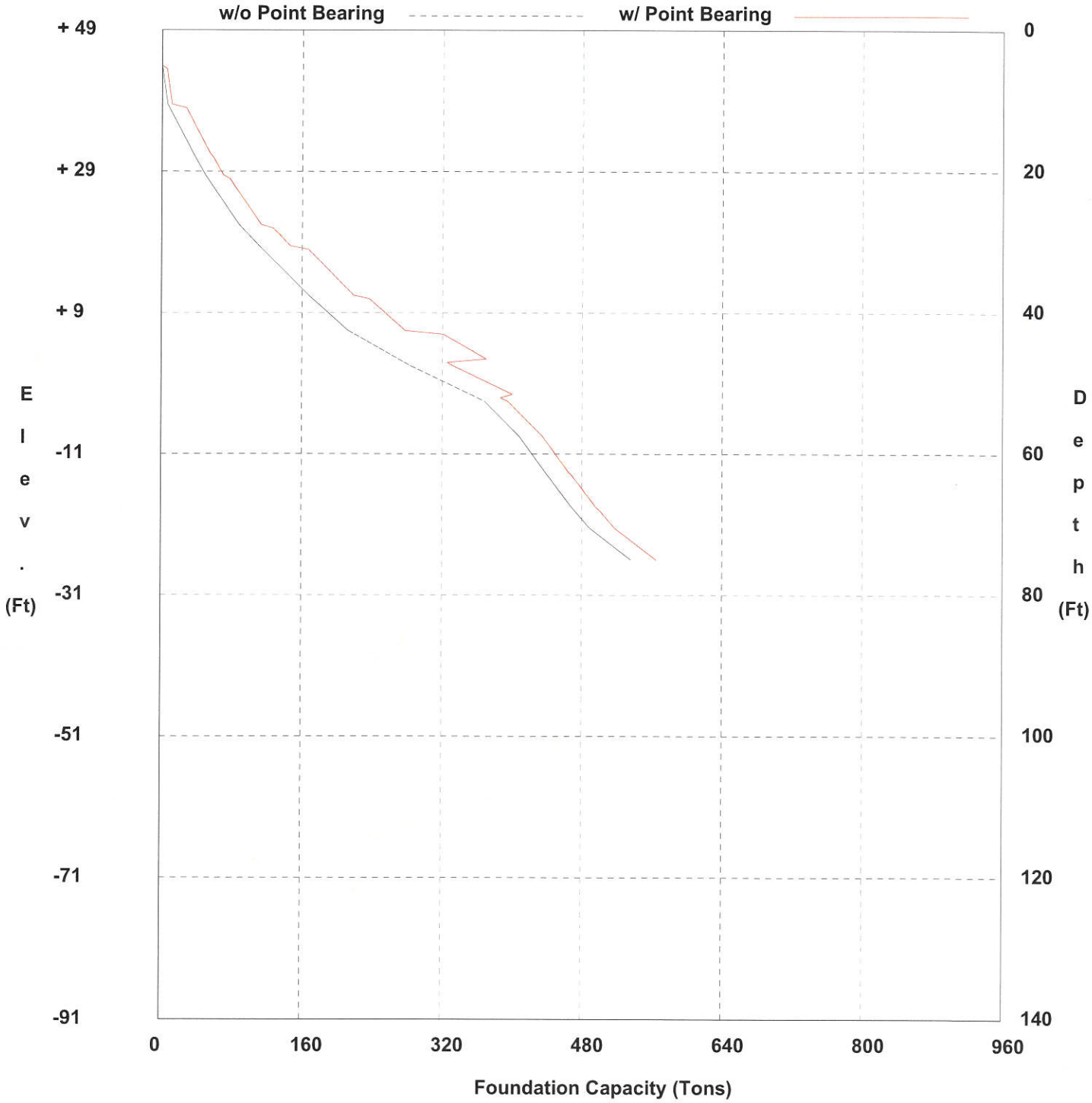
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-45	District	
Highway		Structure	Bridge Borings	Date	3/4/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	35.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 40

+49 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



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FOUNDATION CAPACITY

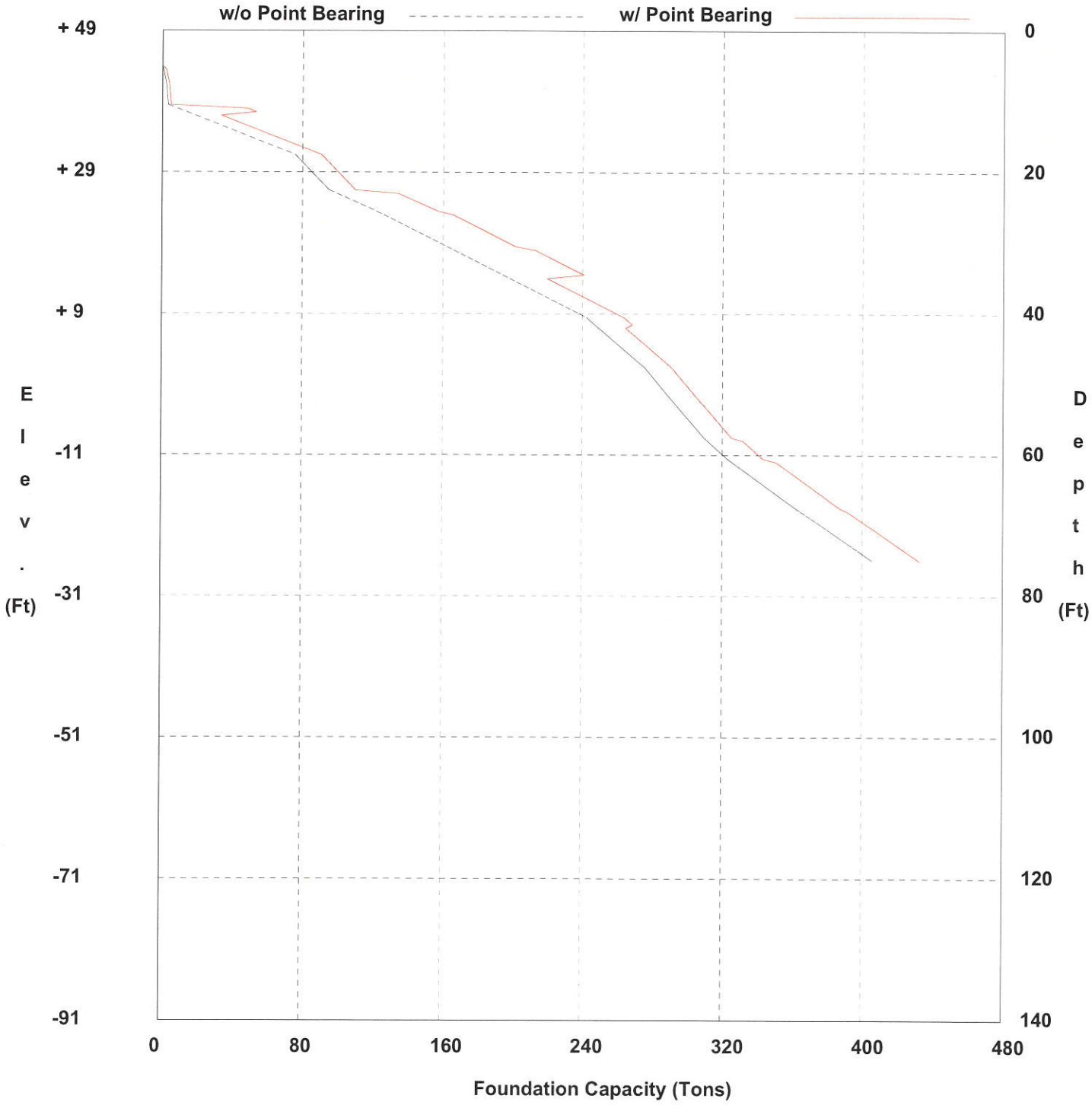
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Version 3.1

County	Willacy	Hole	B-BRG-46	District	
Highway		Structure	Bridge Borings	Date	3/5/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	13.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 40

+49 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



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CR 3000 W (2-EAST)

FOUNDATION CAPACITY

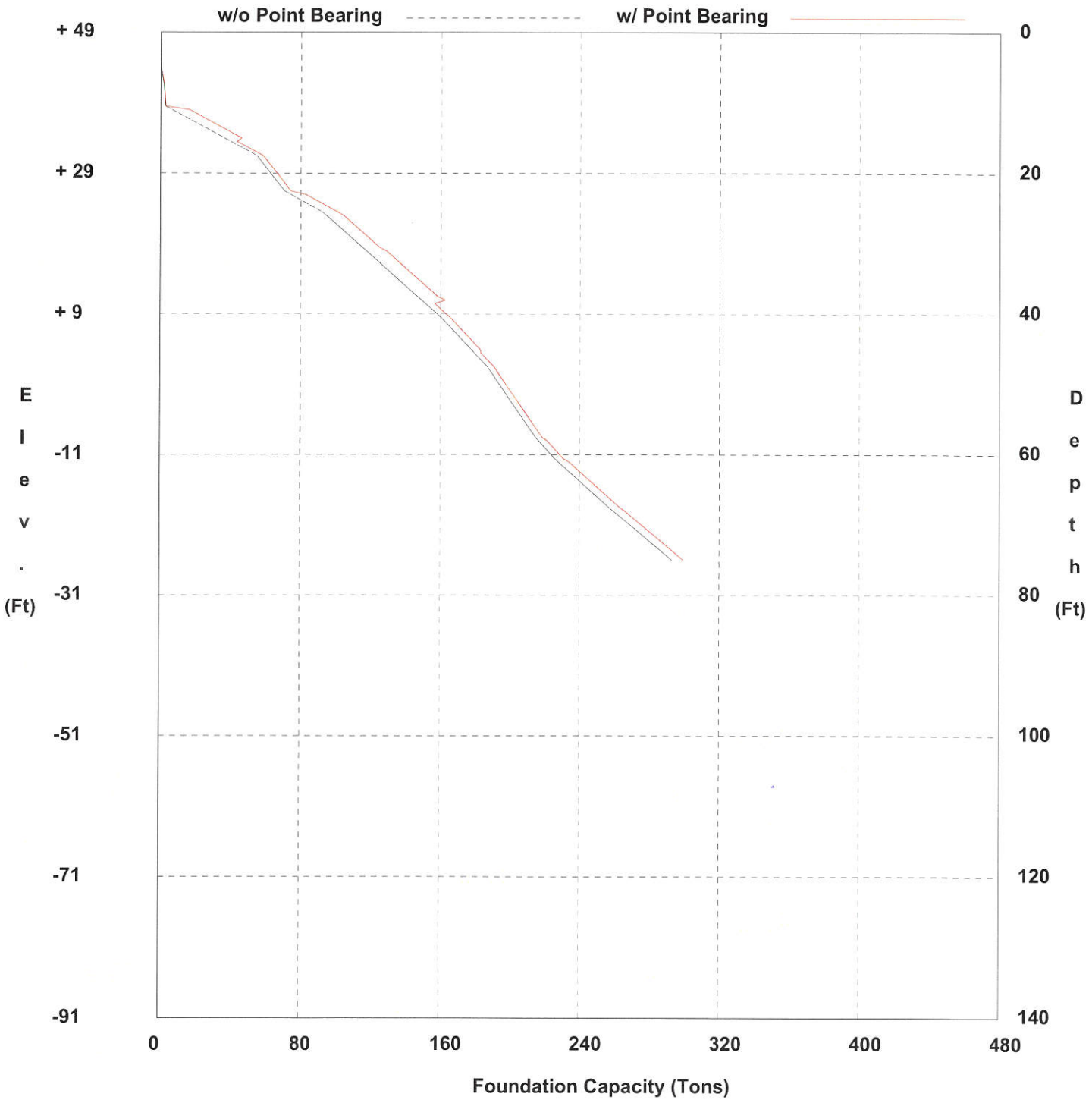
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-46	District	
Highway		Structure	Bridge Borings	Date	3/5/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	13.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 43.5

+49 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

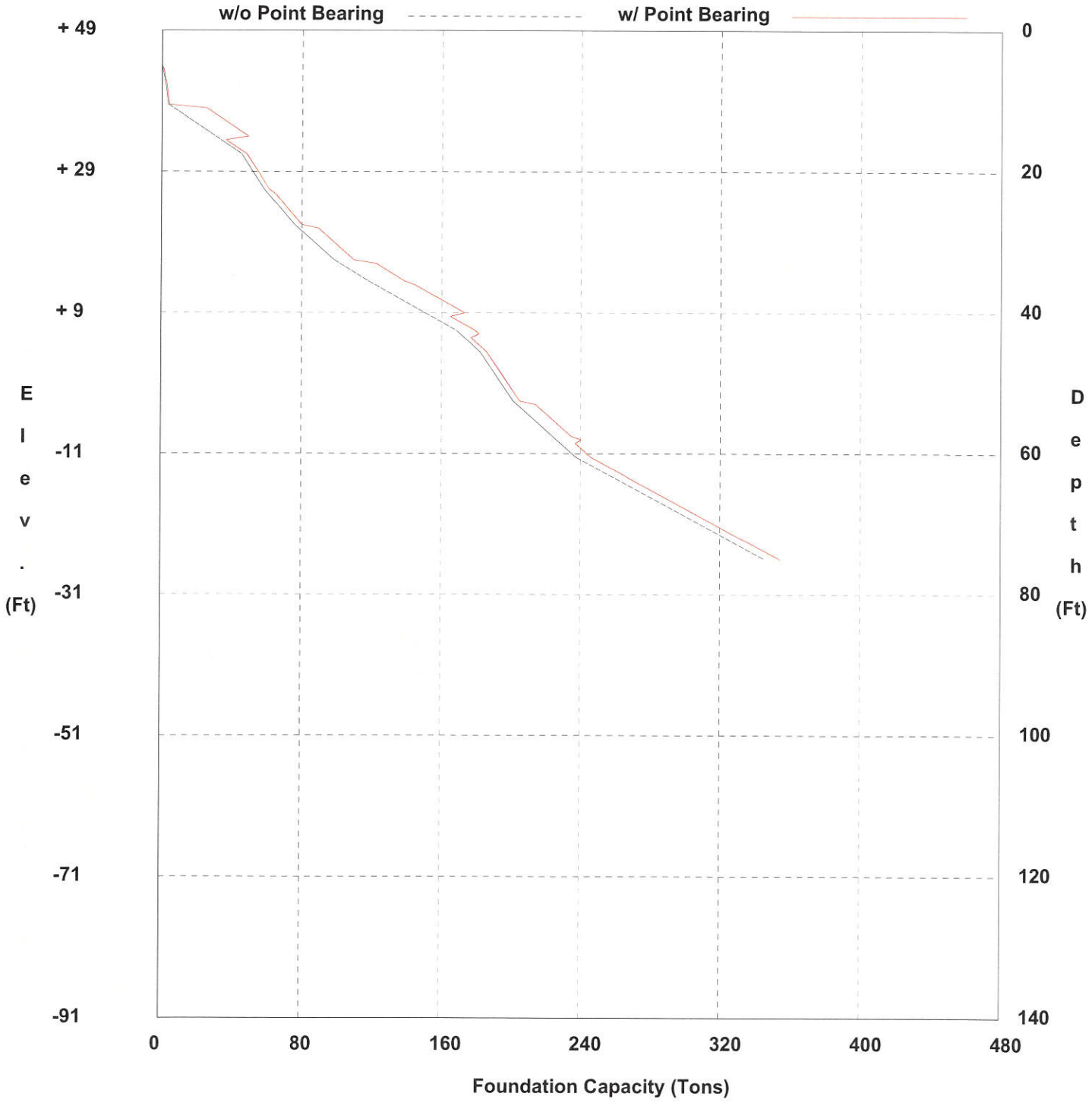
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-47	District	
Highway		Structure	Bridge Borings	Date	3/5/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	36.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 43.5

+49 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



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FOUNDATION CAPACITY

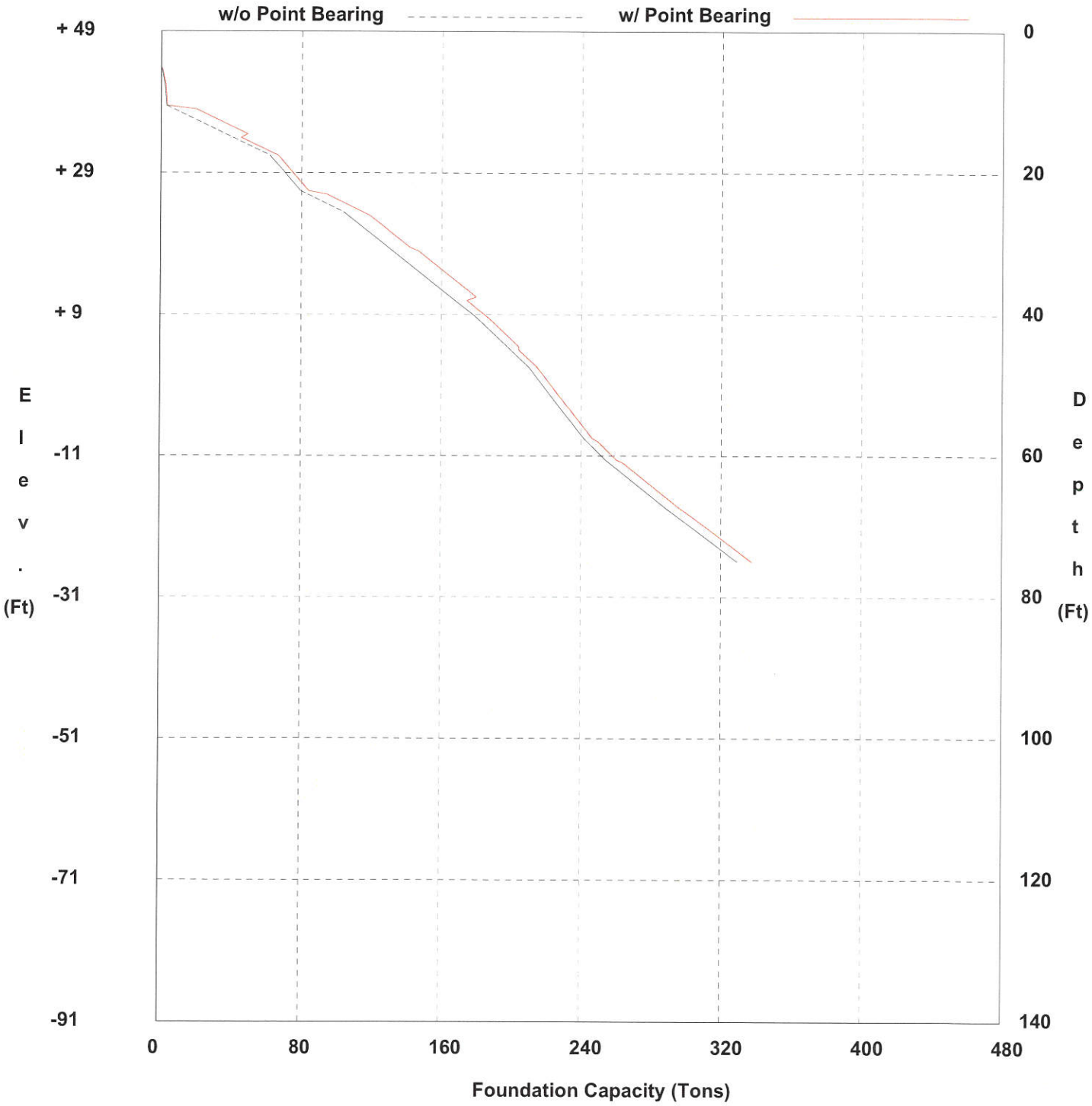
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-46	District	
Highway		Structure	Bridge Borings	Date	3/5/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	13.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 43.5

+49 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



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FOUNDATION CAPACITY

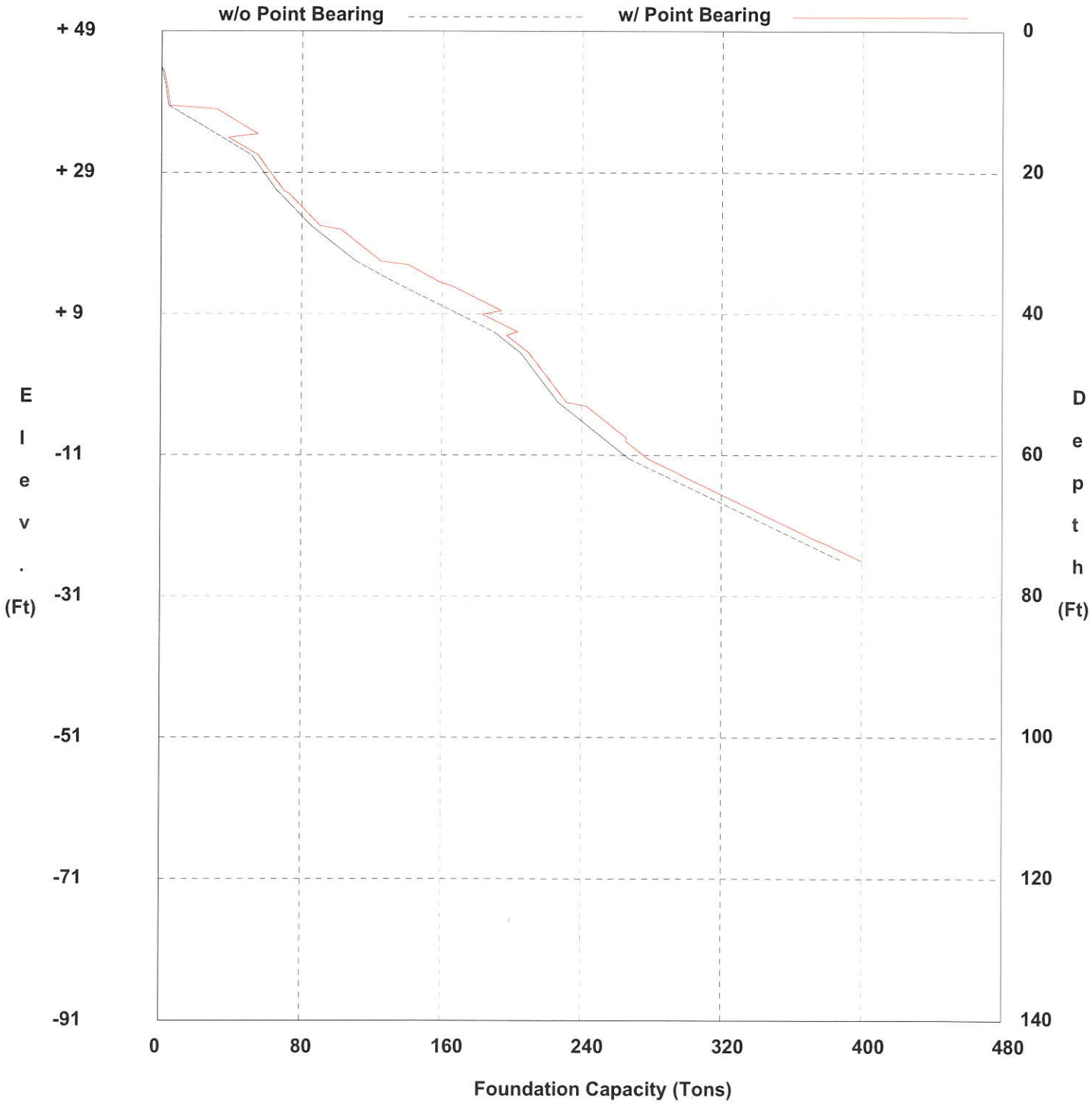
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-47	District	
Highway		Structure	Bridge Borings	Date	3/5/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	36.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 43.5

+49 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



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FOUNDATION CAPACITY

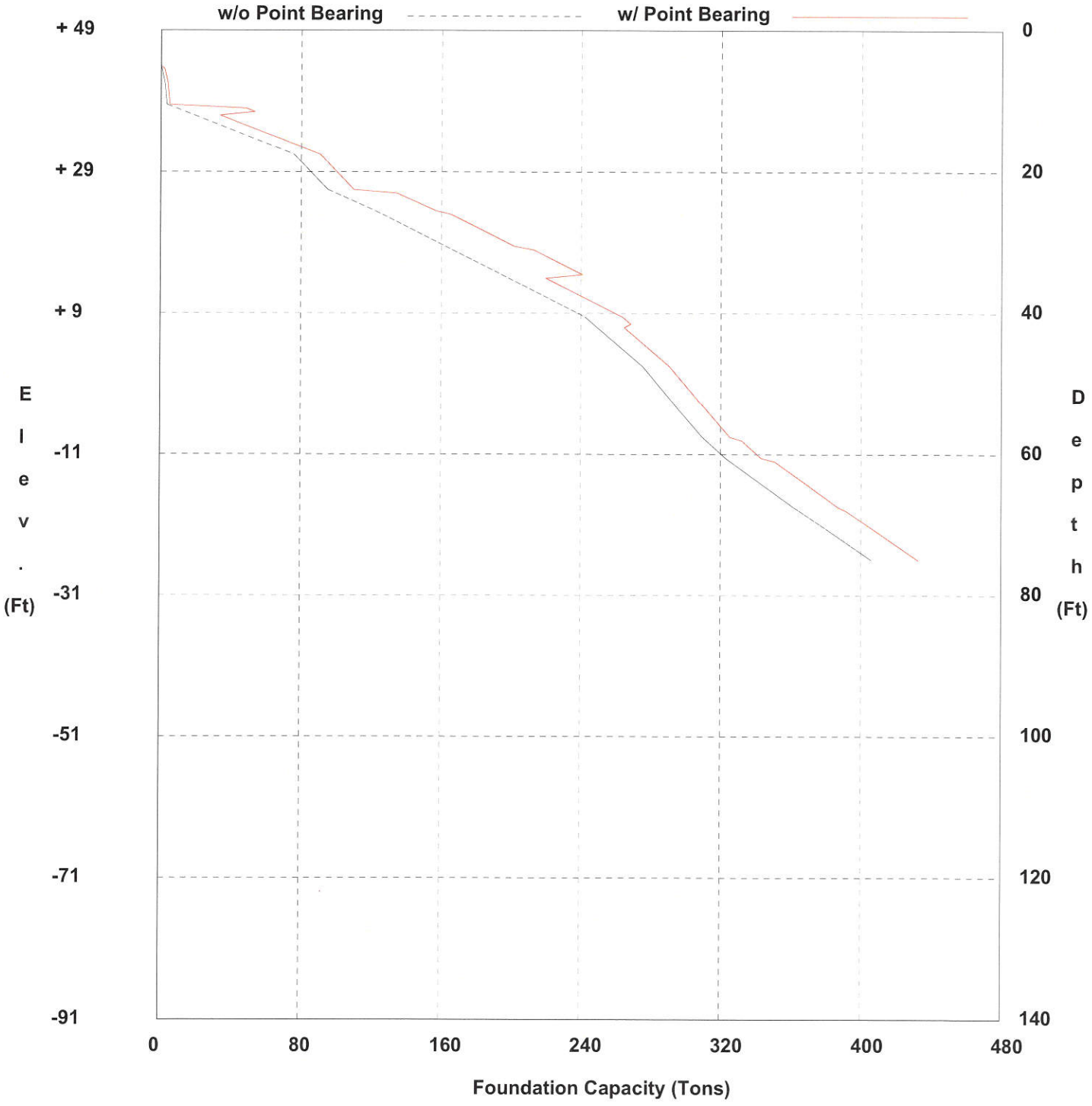
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-46	District	
Highway		Structure	Bridge Borings	Date	3/5/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	13.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 40

+49 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



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FOUNDATION CAPACITY

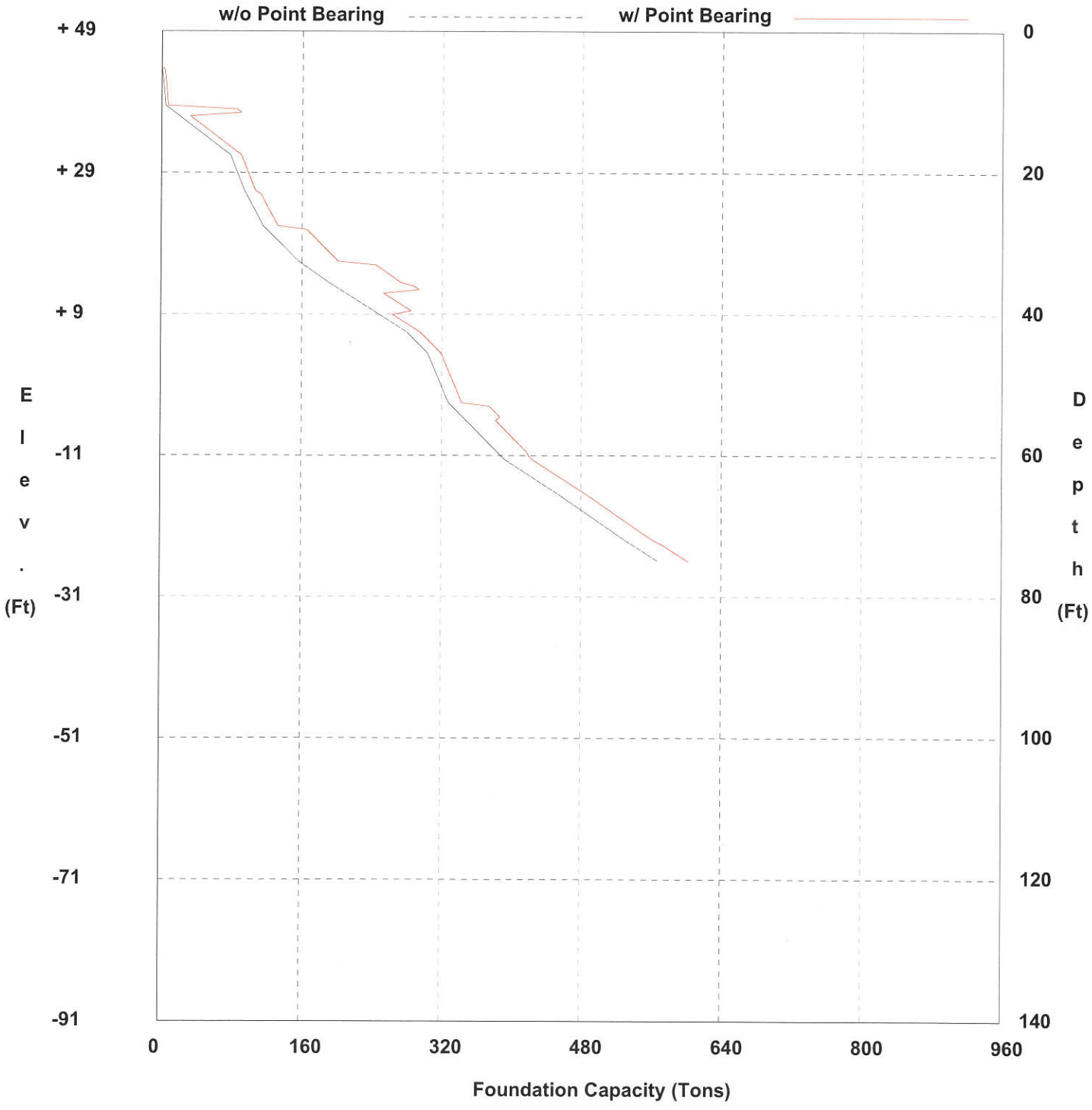
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-47	District	
Highway		Structure	Bridge Borings	Date	3/5/2015
Control		Station		Grnd. Elev.	49.00 ft
		Offset		GW Elev.	36.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 40

+49 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



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FM 88

FOUNDATION CAPACITY

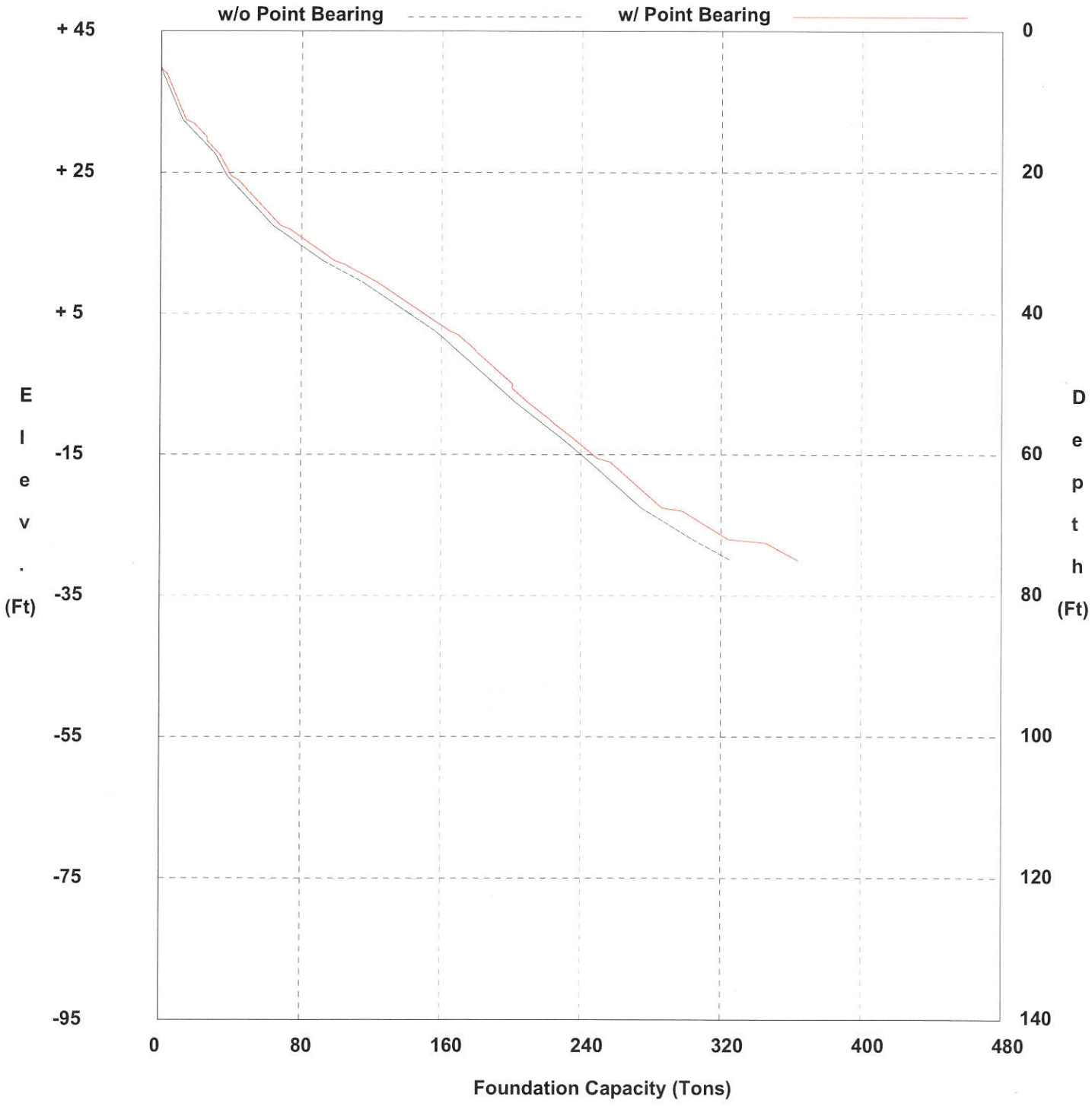
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-48	District	
Highway		Structure	Bridge Borings	Date	3/30/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	34.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 39.5

+45 Top Hole Elevation
+40 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

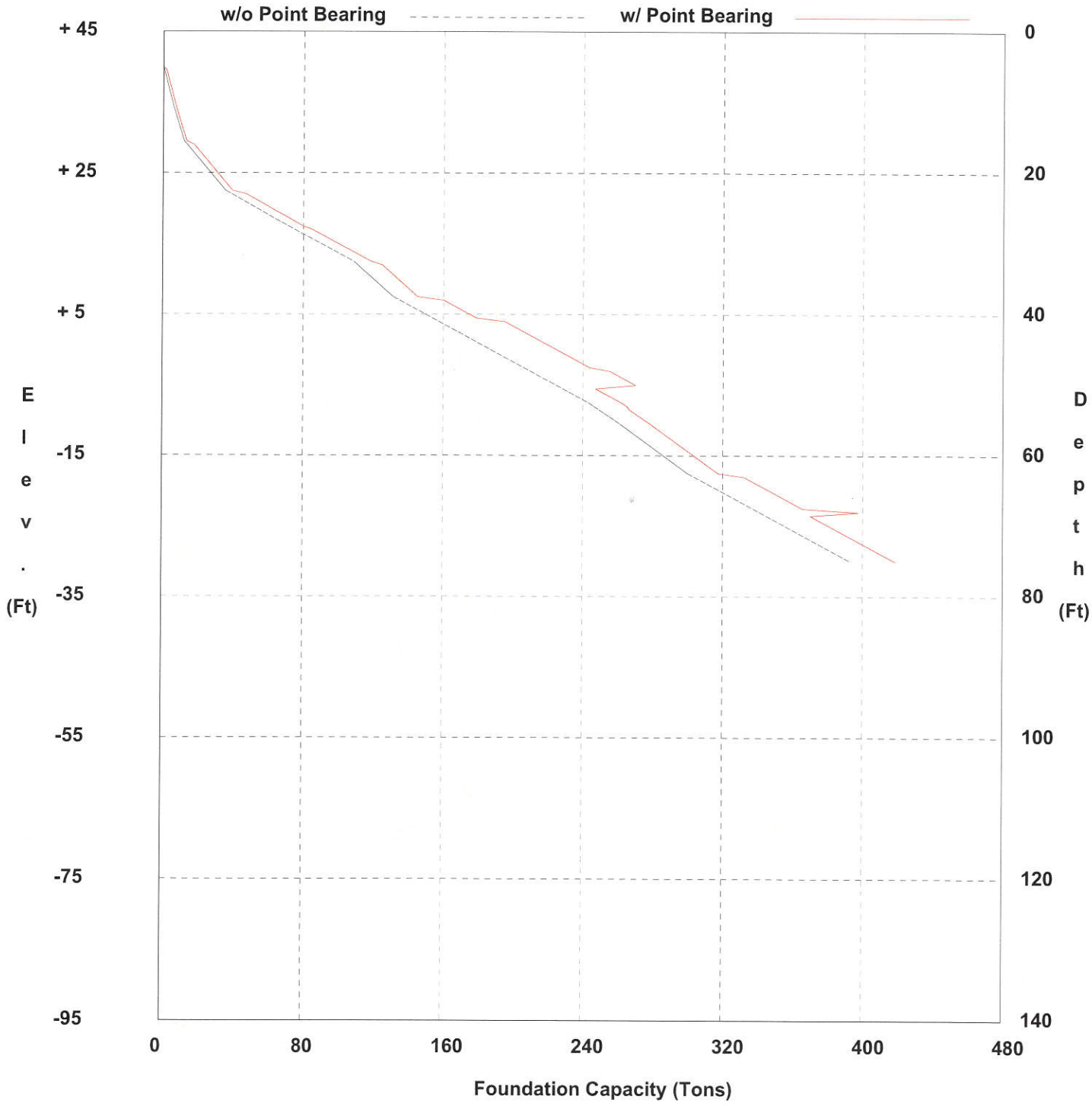
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-49	District	
Highway		Structure	Bridge Borings	Date	3/30/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	34.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 39.5

+45 Top Hole Elevation
+40 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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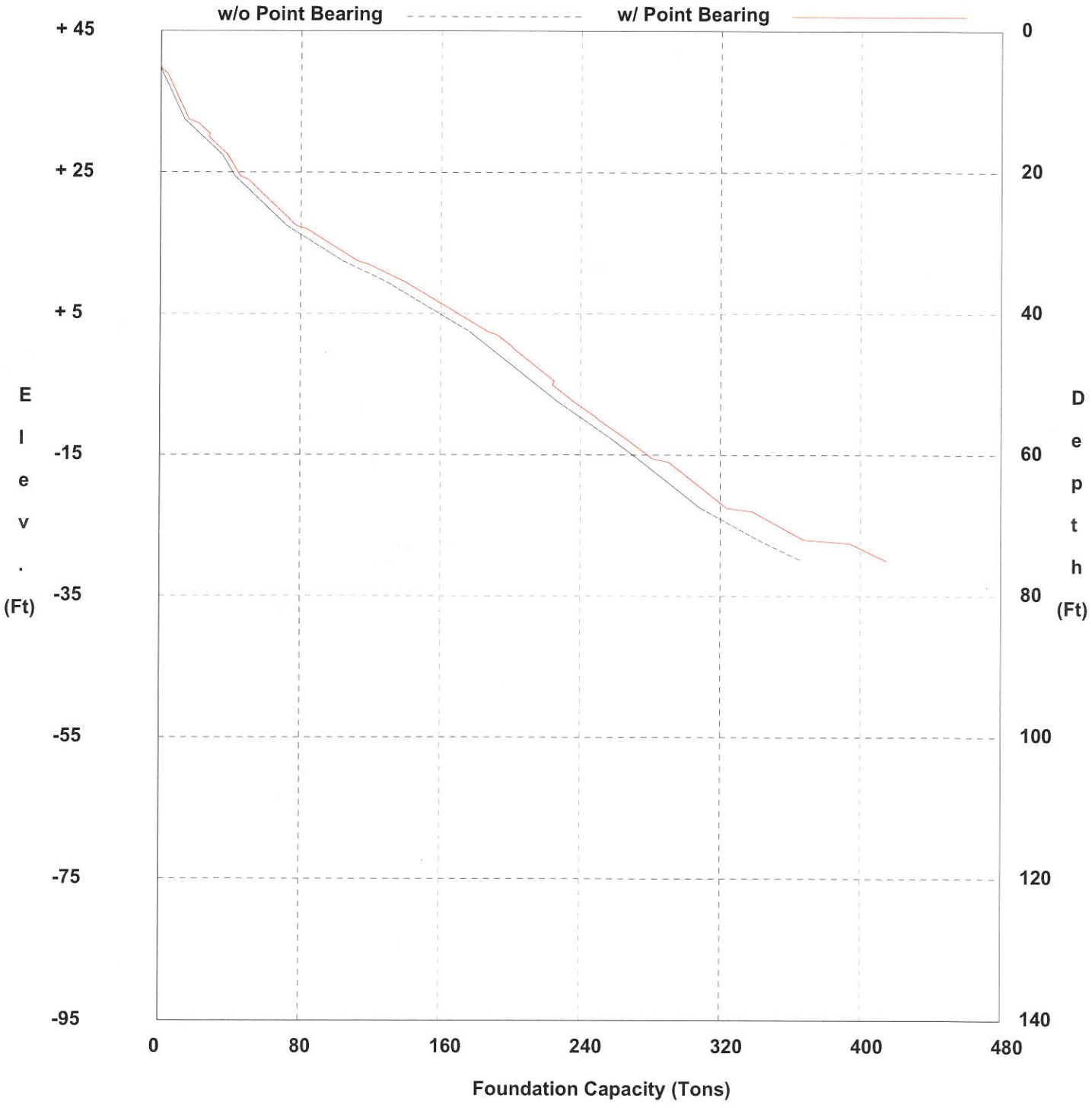
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-48	District	
Highway		Structure	Bridge Borings	Date	3/30/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	34.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 39.5

+45 Top Hole Elevation
+40 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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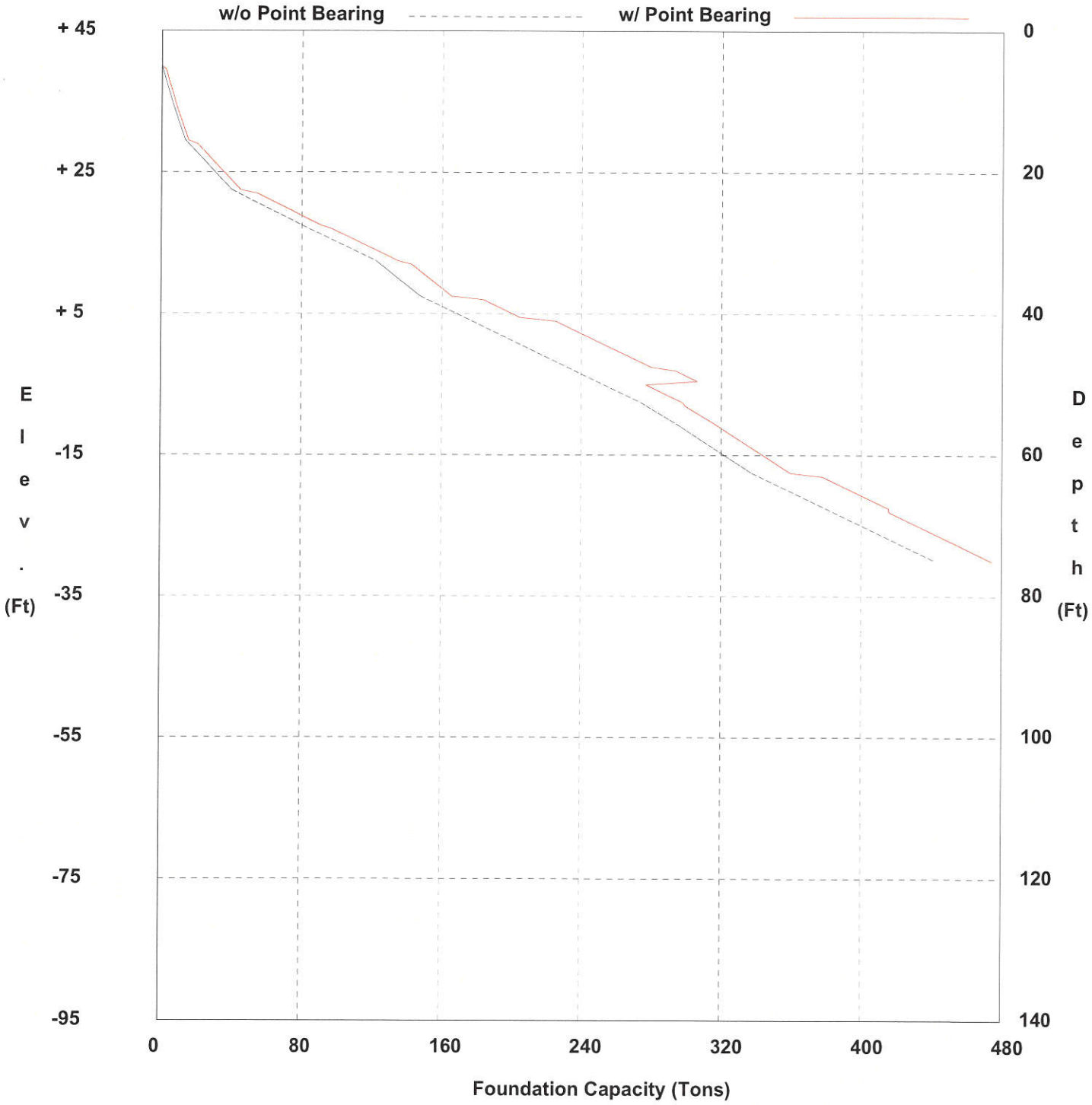
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-49	District	
Highway		Structure	Bridge Borings	Date	3/30/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	34.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 39.5

+45 Top Hole Elevation
+40 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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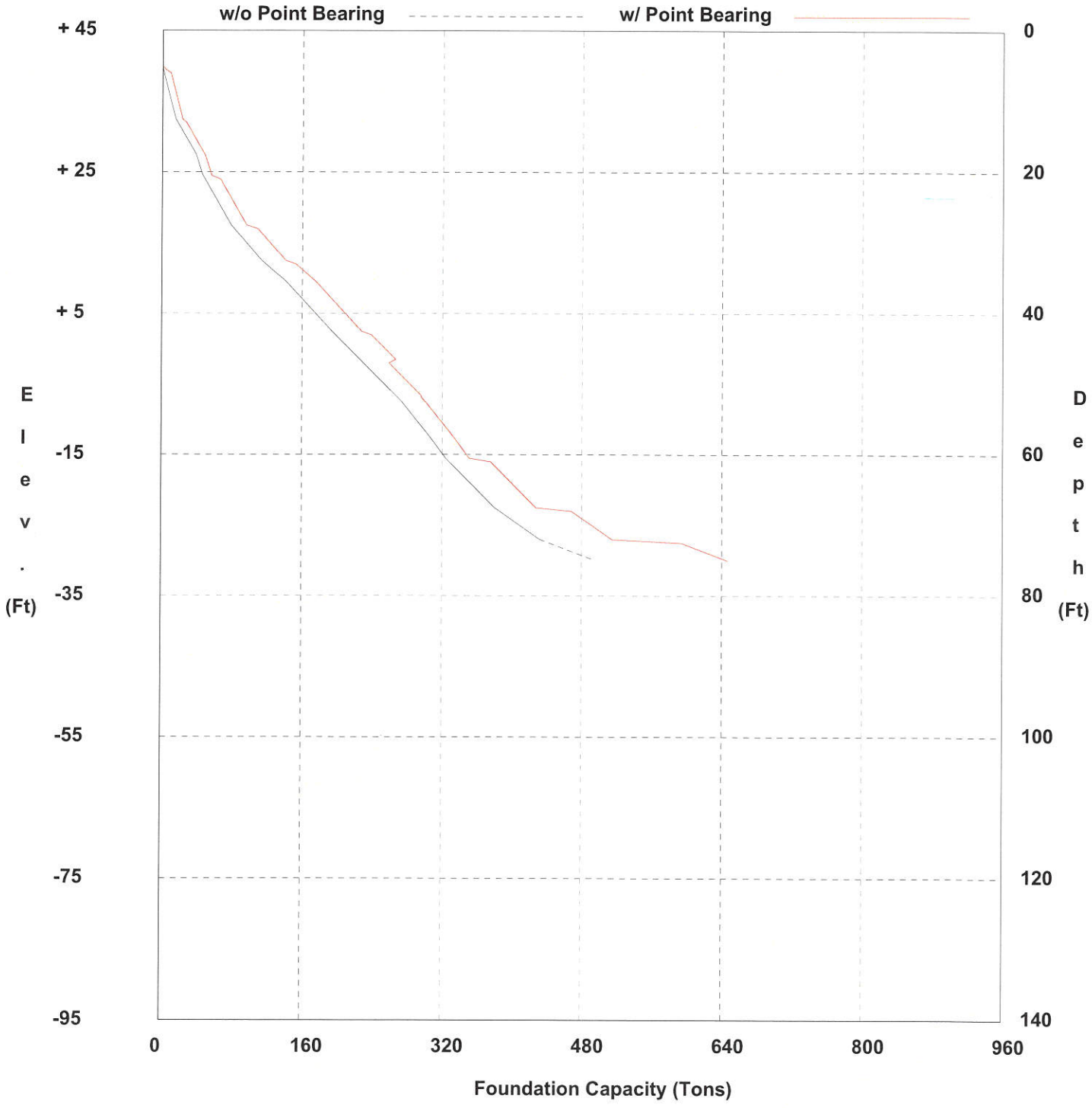
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-48	District	
Highway		Structure	Bridge Borings	Date	3/30/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	34.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 36

+45 Top Hole Elevation
+40 Disregard Elevation

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



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FOUNDATION CAPACITY

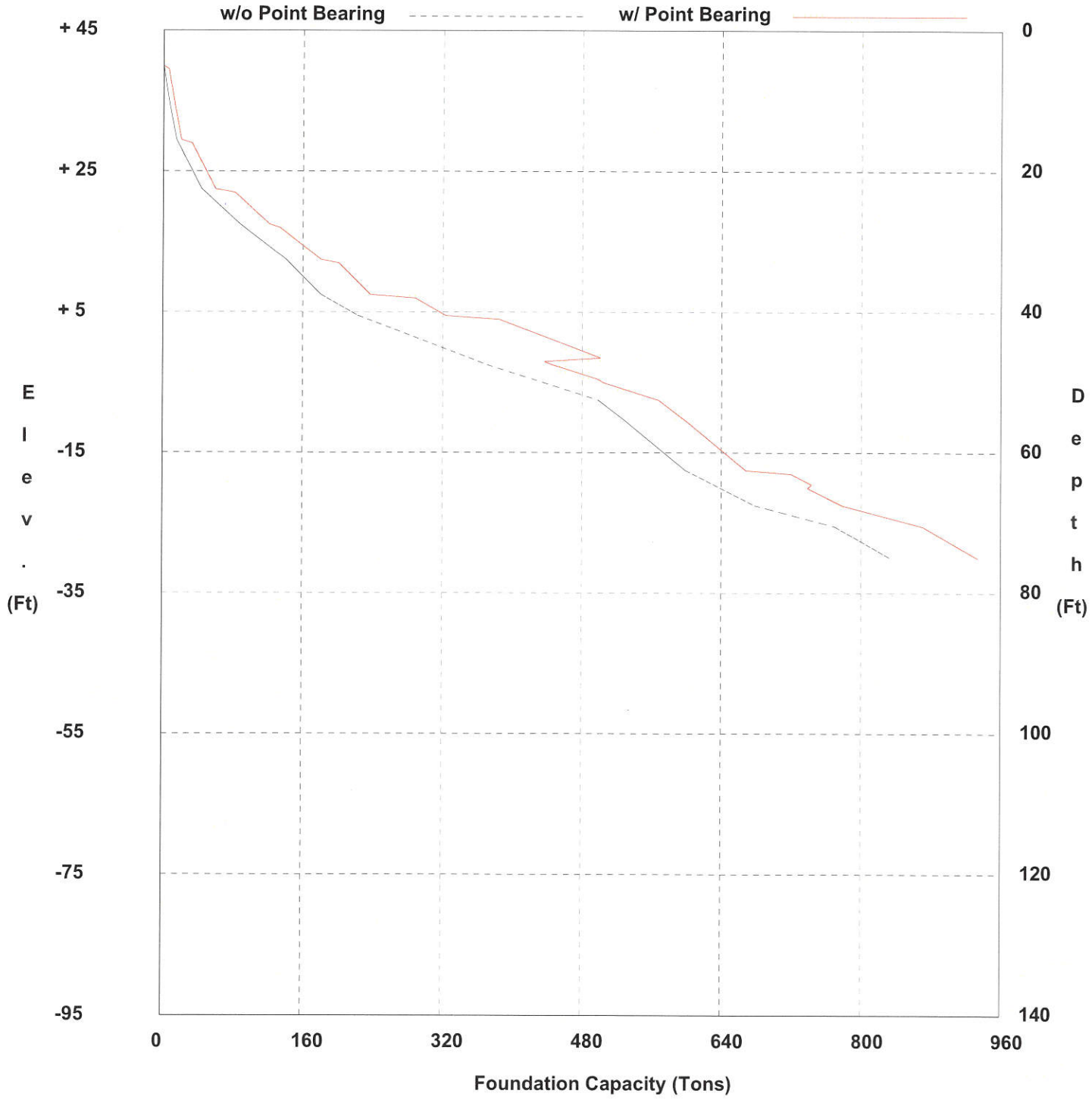
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-49	District	
Highway		Structure	Bridge Borings	Date	3/30/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	34.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 36

+45 Top Hole Elevation
+40 Disregard Elevation

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



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CR 40

FOUNDATION CAPACITY

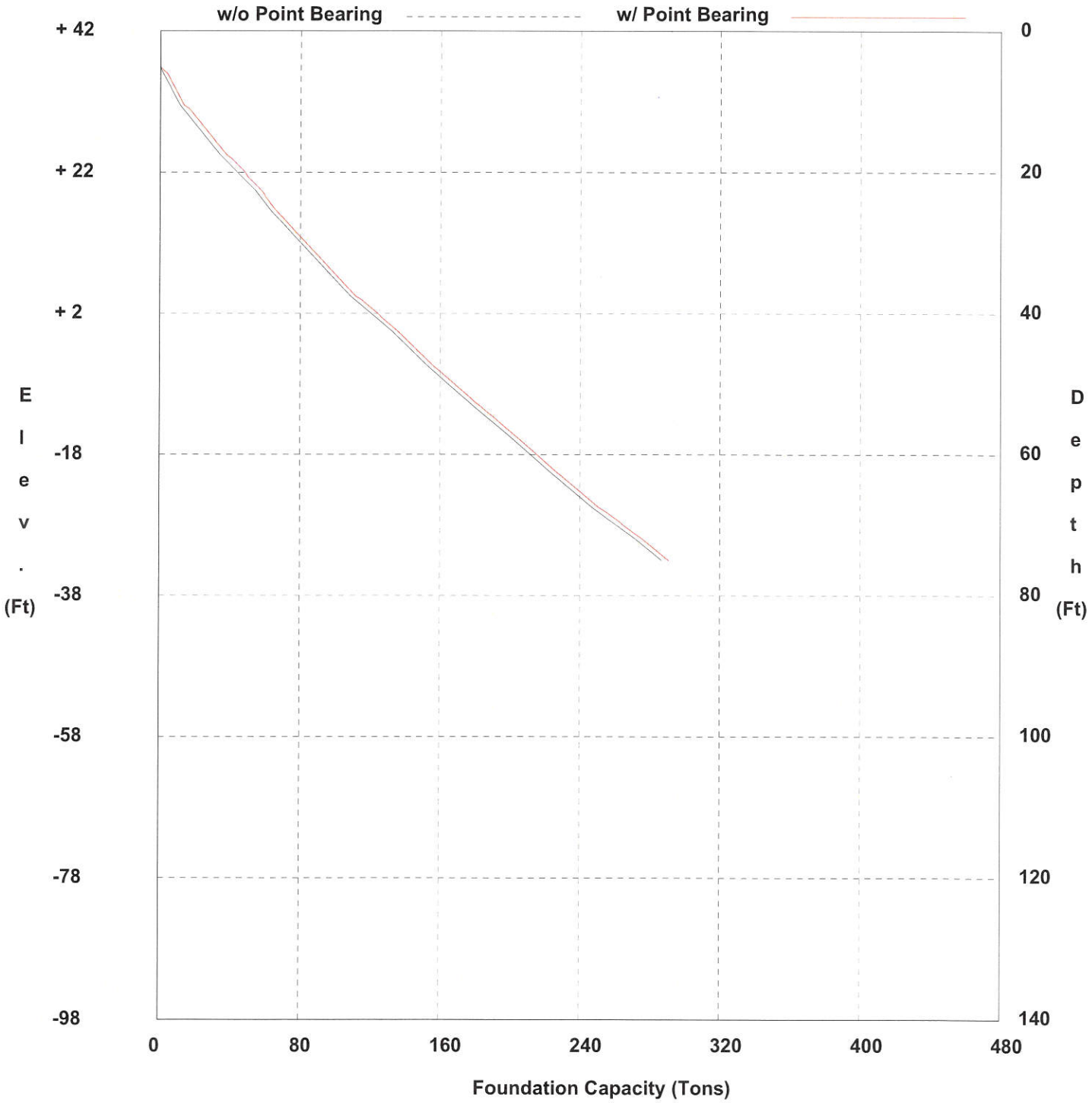
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-50	District	
Highway		Structure	Bridge Borings	Date	3/15/2015
Control		Station		Grnd. Elev.	42.00 ft
		Offset		GW Elev.	30.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 36.5

+42 Top Hole Elevation
+37 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

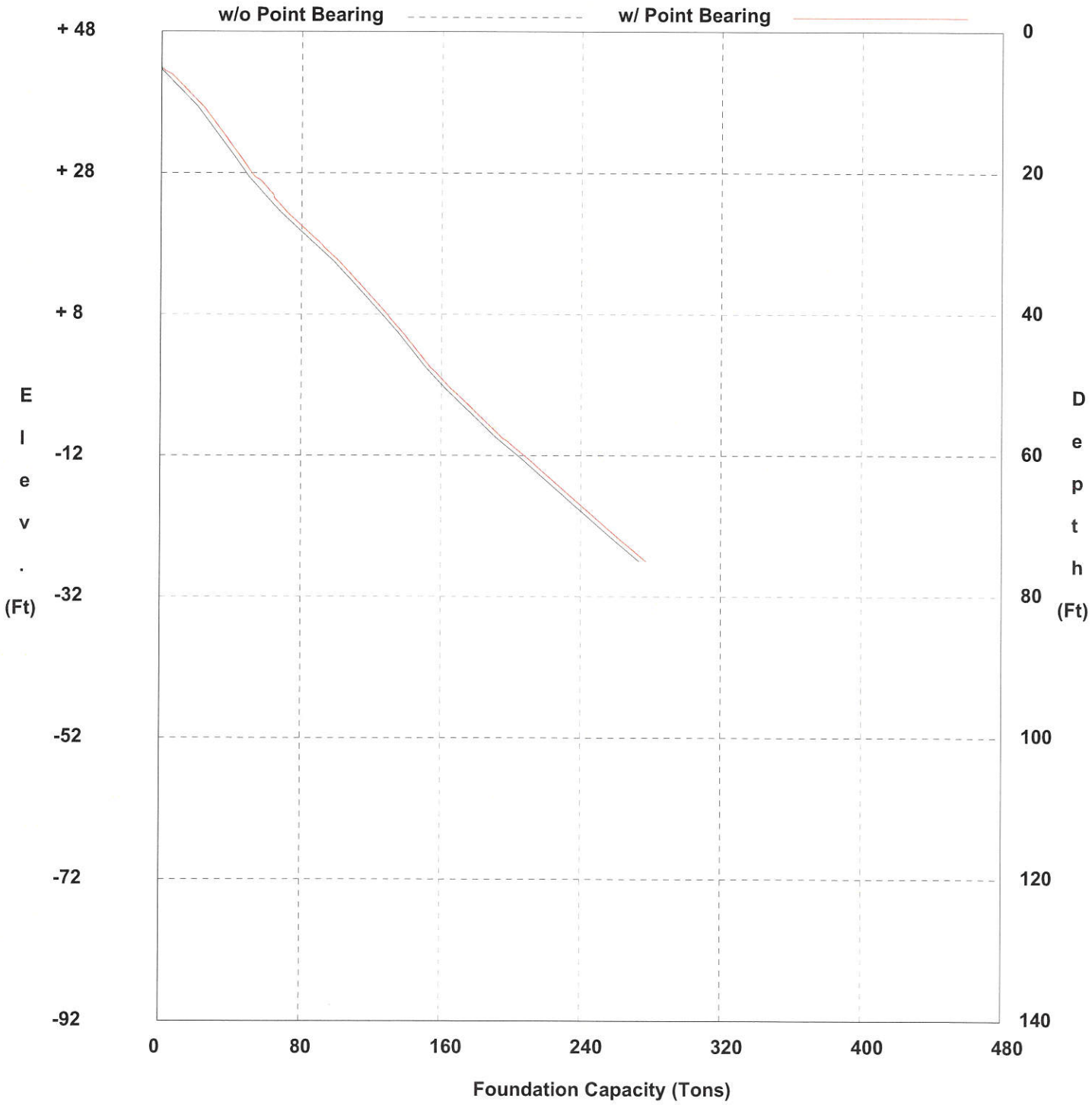
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-51	District	
Highway		Structure	Bridge Borings	Date	3/15/2015
Control		Station		Grnd. Elev.	48.00 ft
		Offset		GW Elev.	30.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 42.5

+48 Top Hole Elevation
+43 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

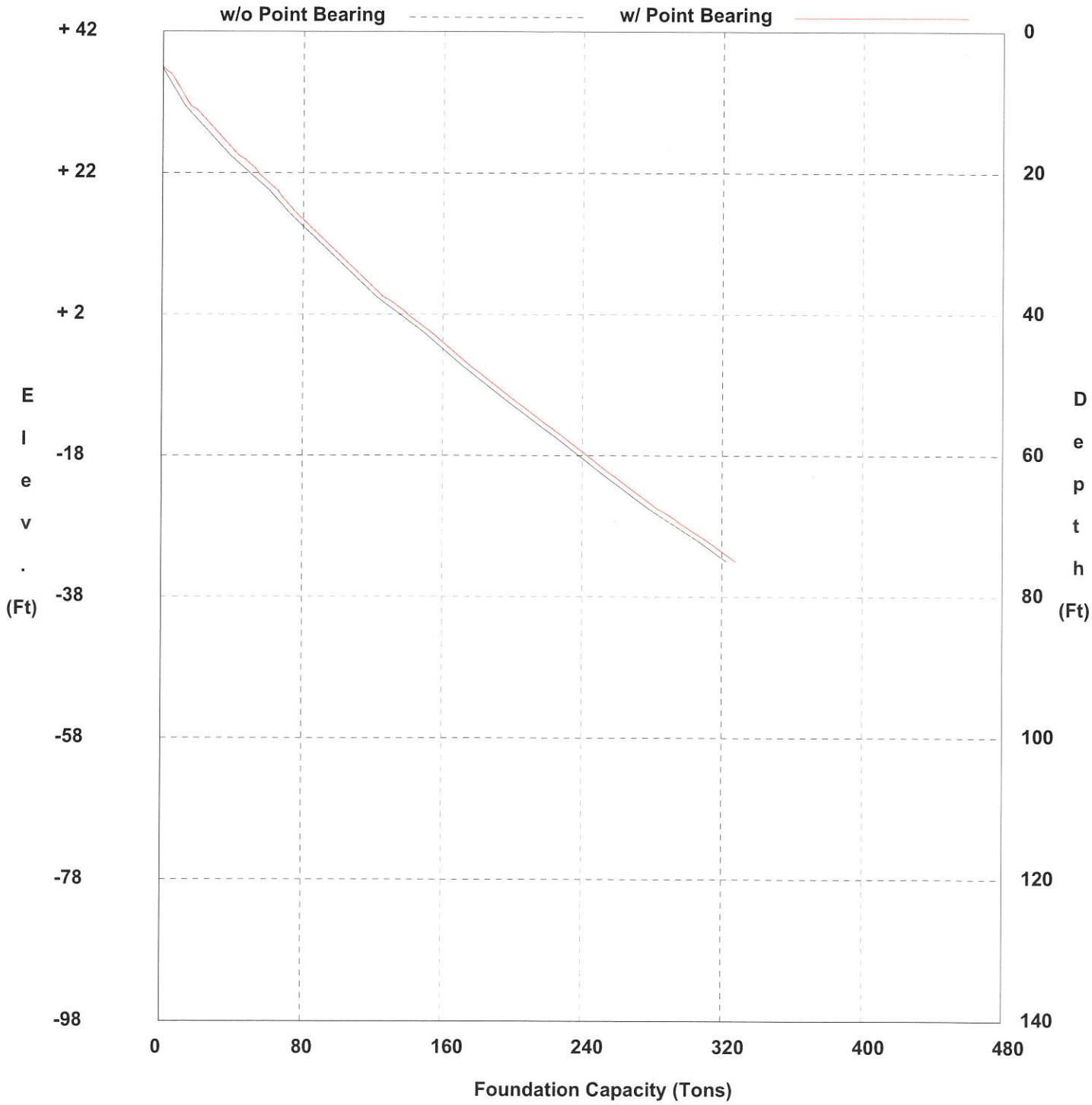
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-50	District	
Highway		Structure	Bridge Borings	Date	3/15/2015
Control		Station		Grnd. Elev.	42.00 ft
		Offset		GW Elev.	30.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 36.5

+42 Top Hole Elevation
+37 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

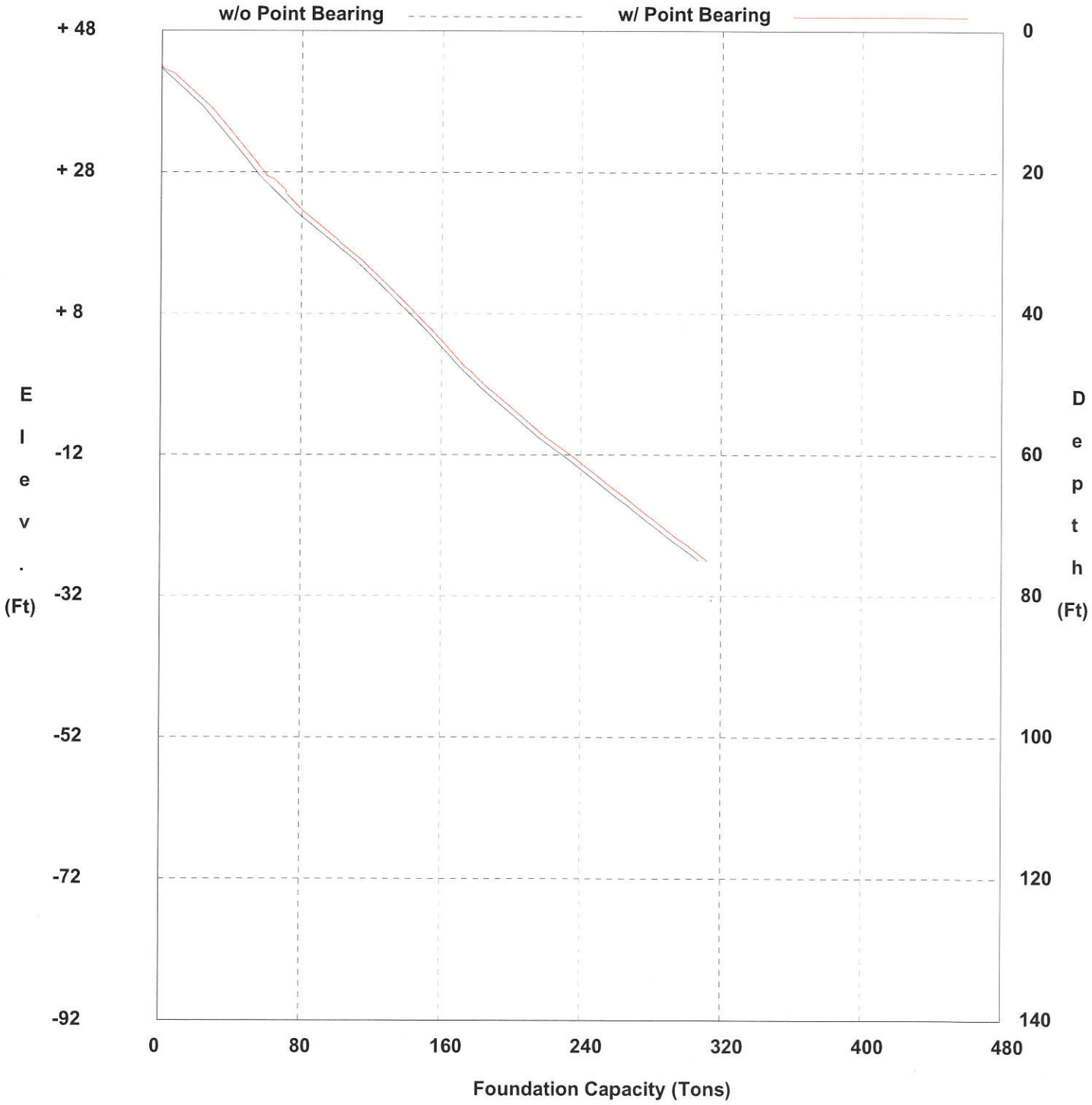
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Version 3.1

County	Willacy	Hole	B-BRG-51	District	
Highway		Structure	Bridge Borings	Date	3/15/2015
Control		Station		Grnd. Elev.	48.00 ft
		Offset		GW Elev.	30.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 42.5

+48 Top Hole Elevation
+43 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

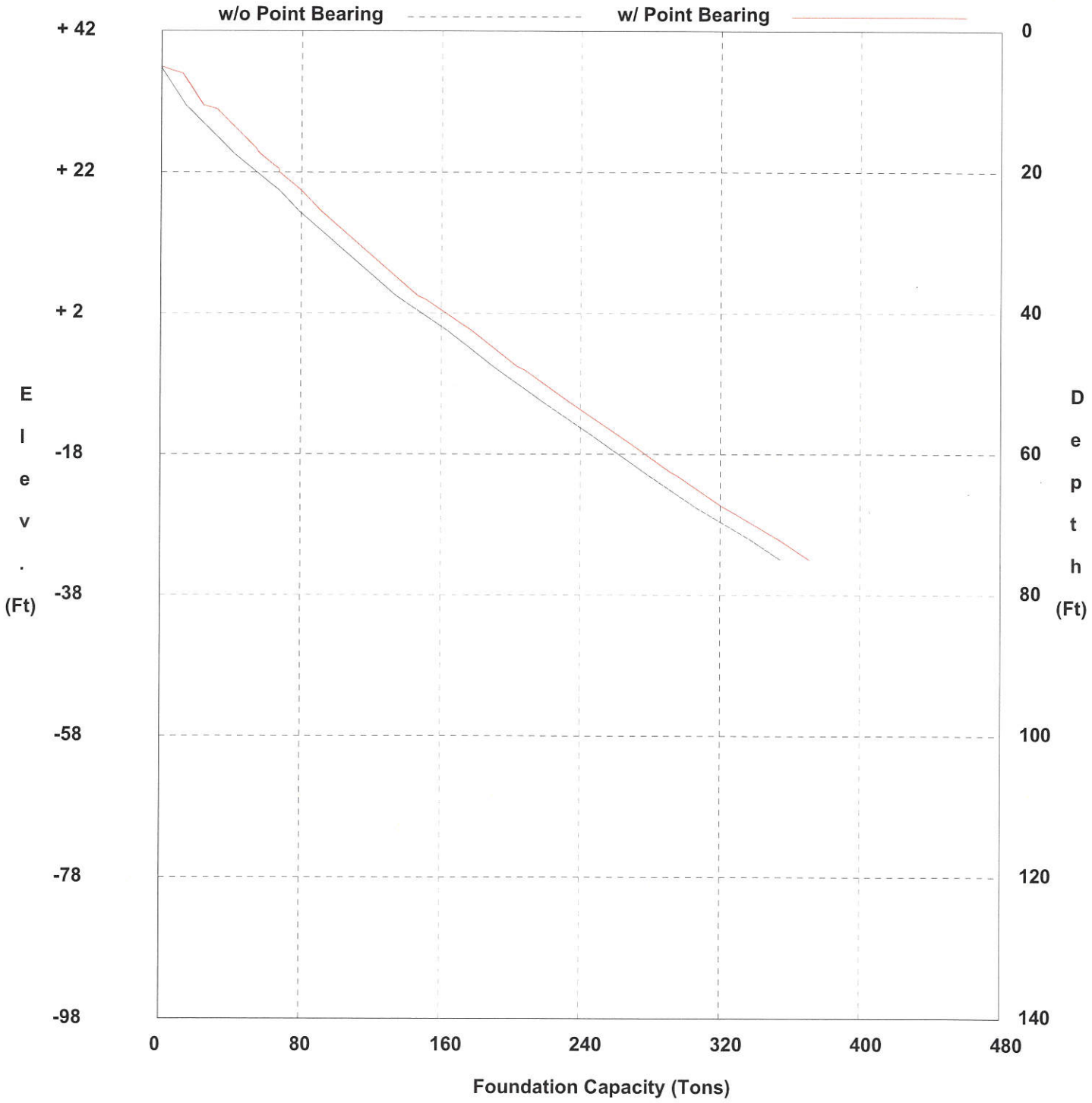
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Version 3.1

County	Willacy	Hole	B-BRG-50	District	
Highway		Structure	Bridge Borings	Date	3/15/2015
Control		Station		Grnd. Elev.	42.00 ft
		Offset		GW Elev.	30.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 33

+42 Top Hole Elevation
+37 Disregard Elevation

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



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FOUNDATION CAPACITY

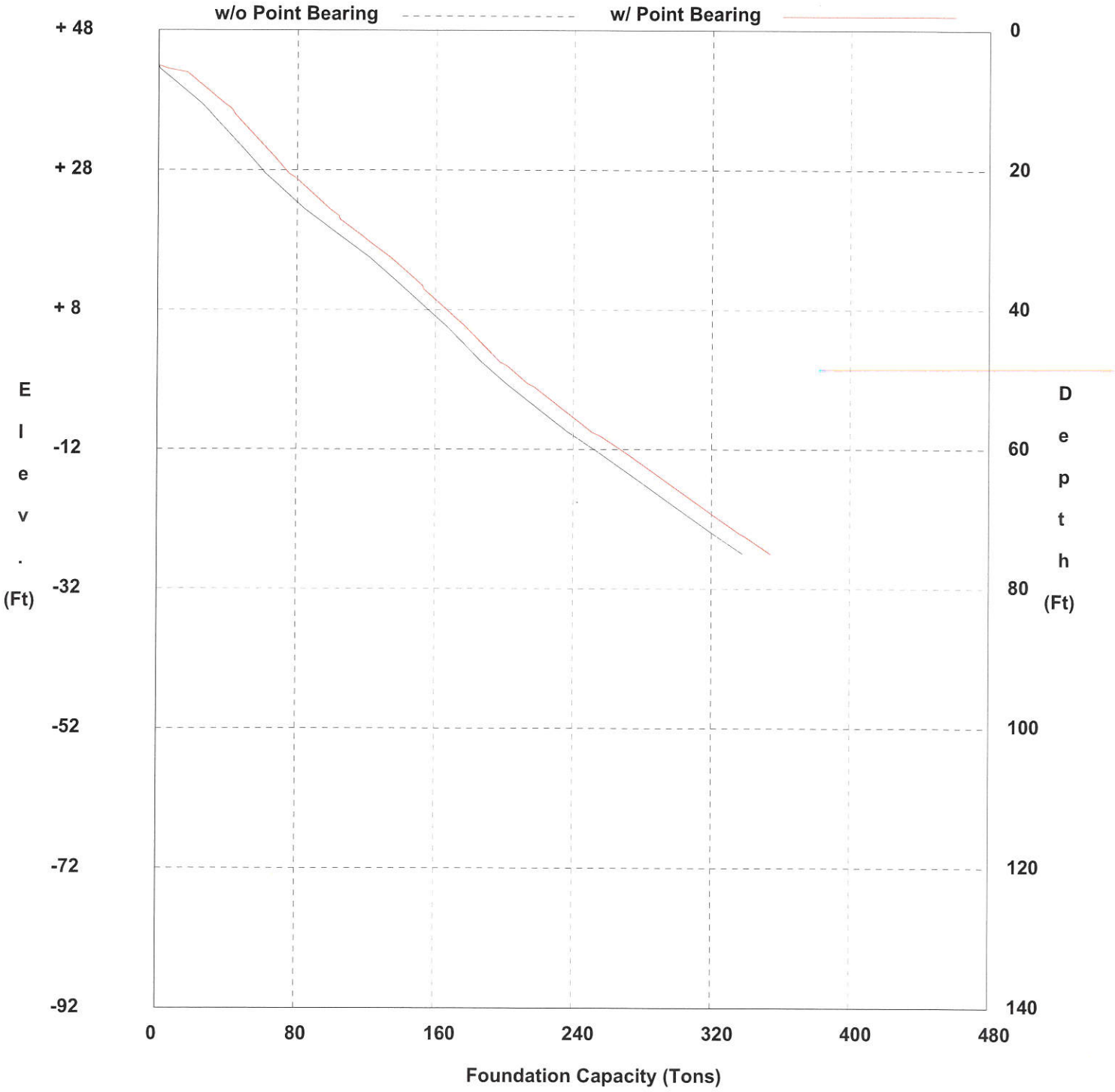
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Version 3.1

County	Willacy	Hole	B-BRG-51	District	
Highway		Structure	Bridge Borings	Date	3/15/2015
Control		Station		Grnd. Elev.	48.00 ft
		Offset		GW Elev.	30.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 39

+48 Top Hole Elevation
+43 Disregard Elevation

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



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CR 60

FOUNDATION CAPACITY

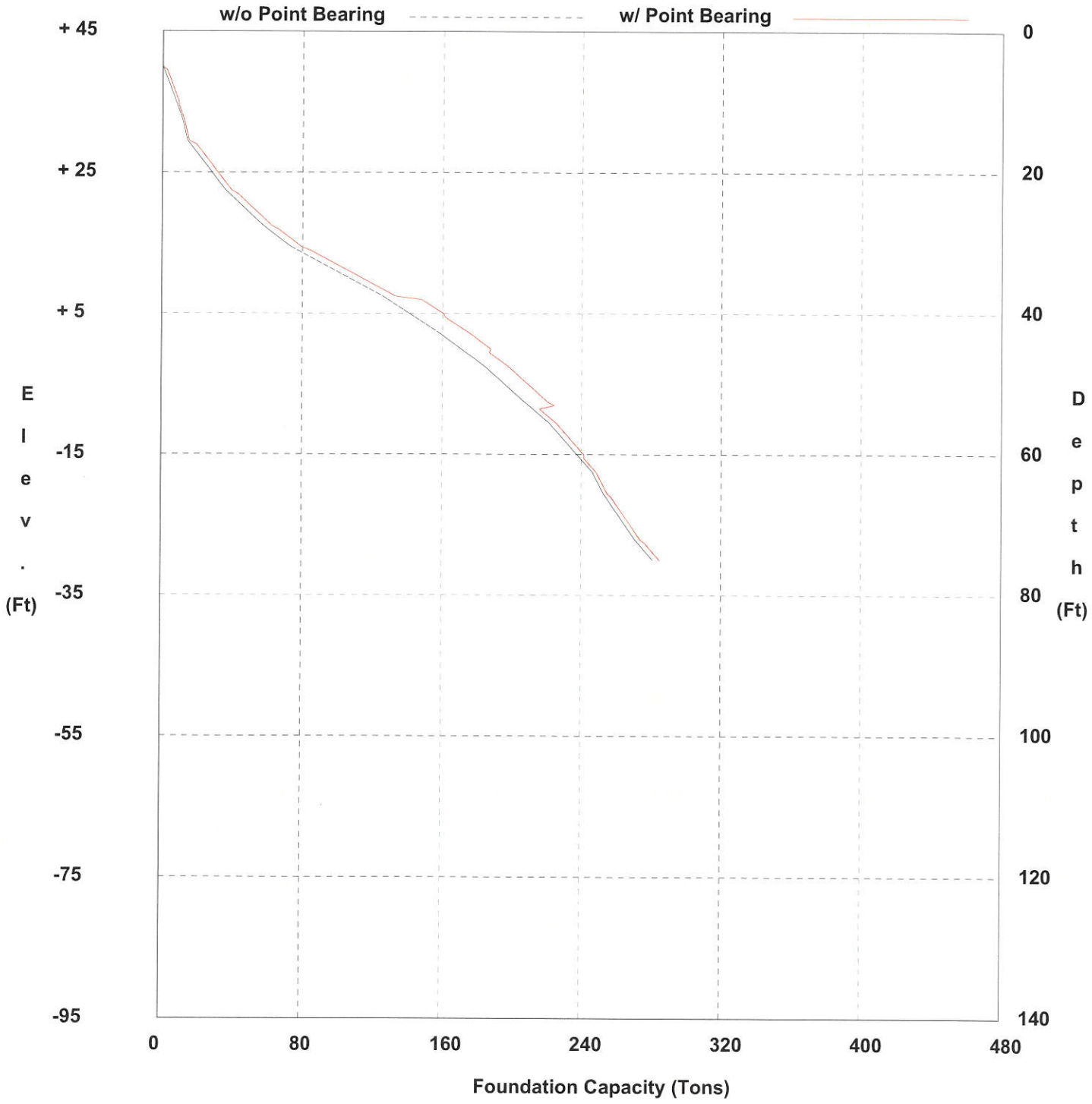
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-52	District	
Highway		Structure	Bridge Borings	Date	3/13/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	32.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 39.5

+45 Top Hole Elevation
+40 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

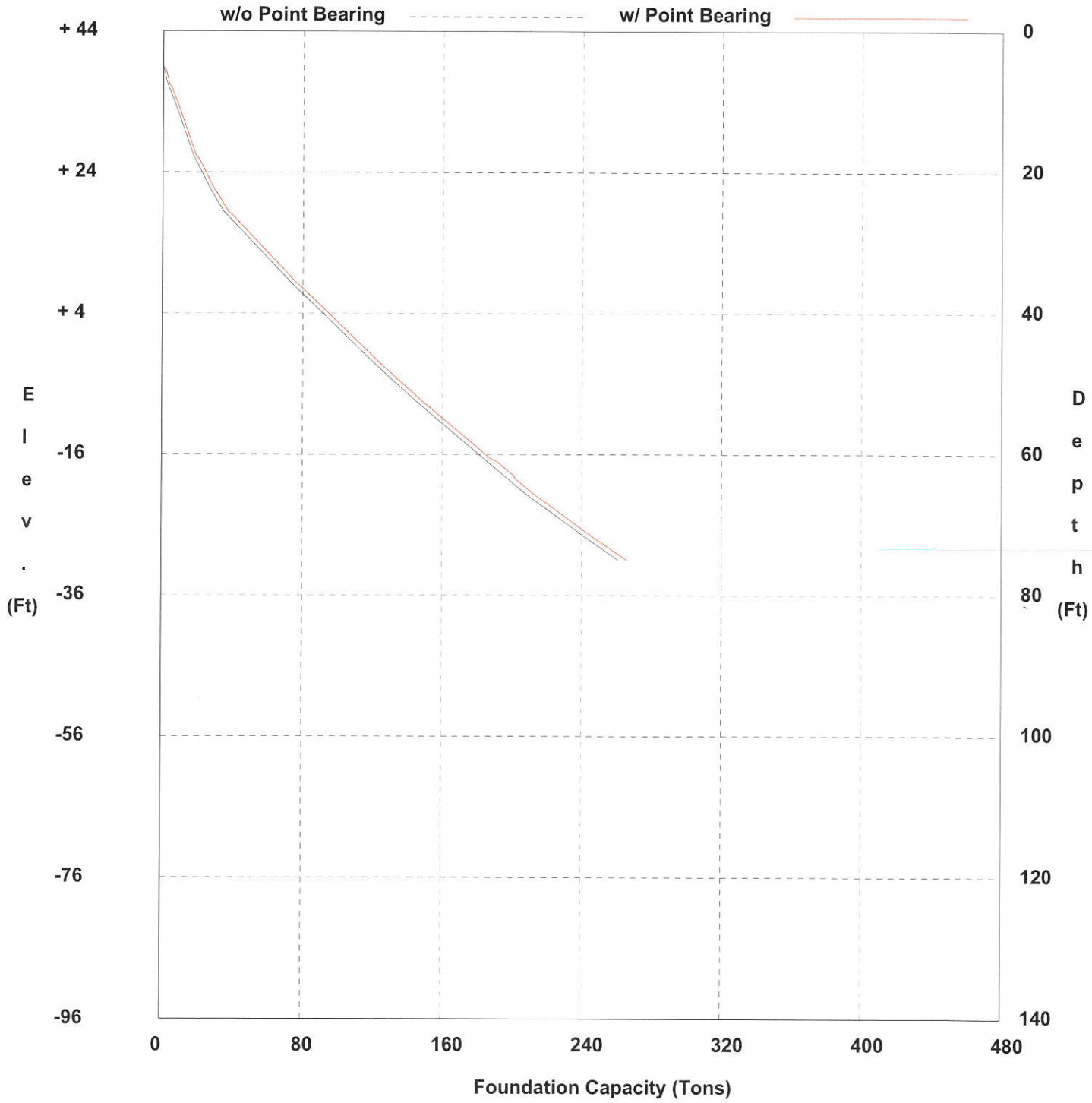
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-53	District	
Highway		Structure	Bridge Borings	Date	3/13/2015
Control		Station		Grnd. Elev.	44.00 ft
		Offset		GW Elev.	31.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 38.5

+44 Top Hole Elevation
+39 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

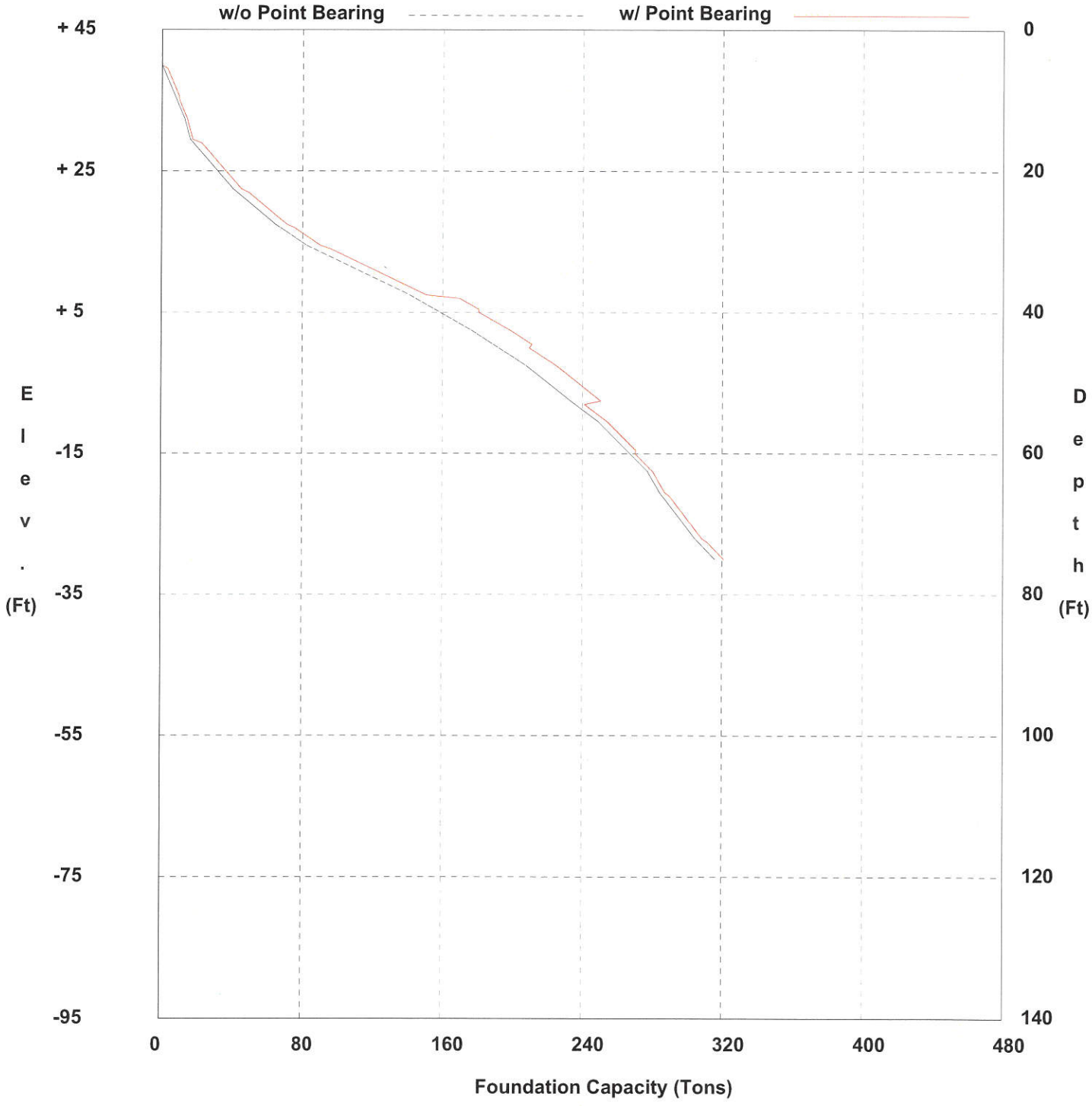
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-52	District	
Highway		Structure	Bridge Borings	Date	3/13/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	32.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 39.5

+45 Top Hole Elevation
+40 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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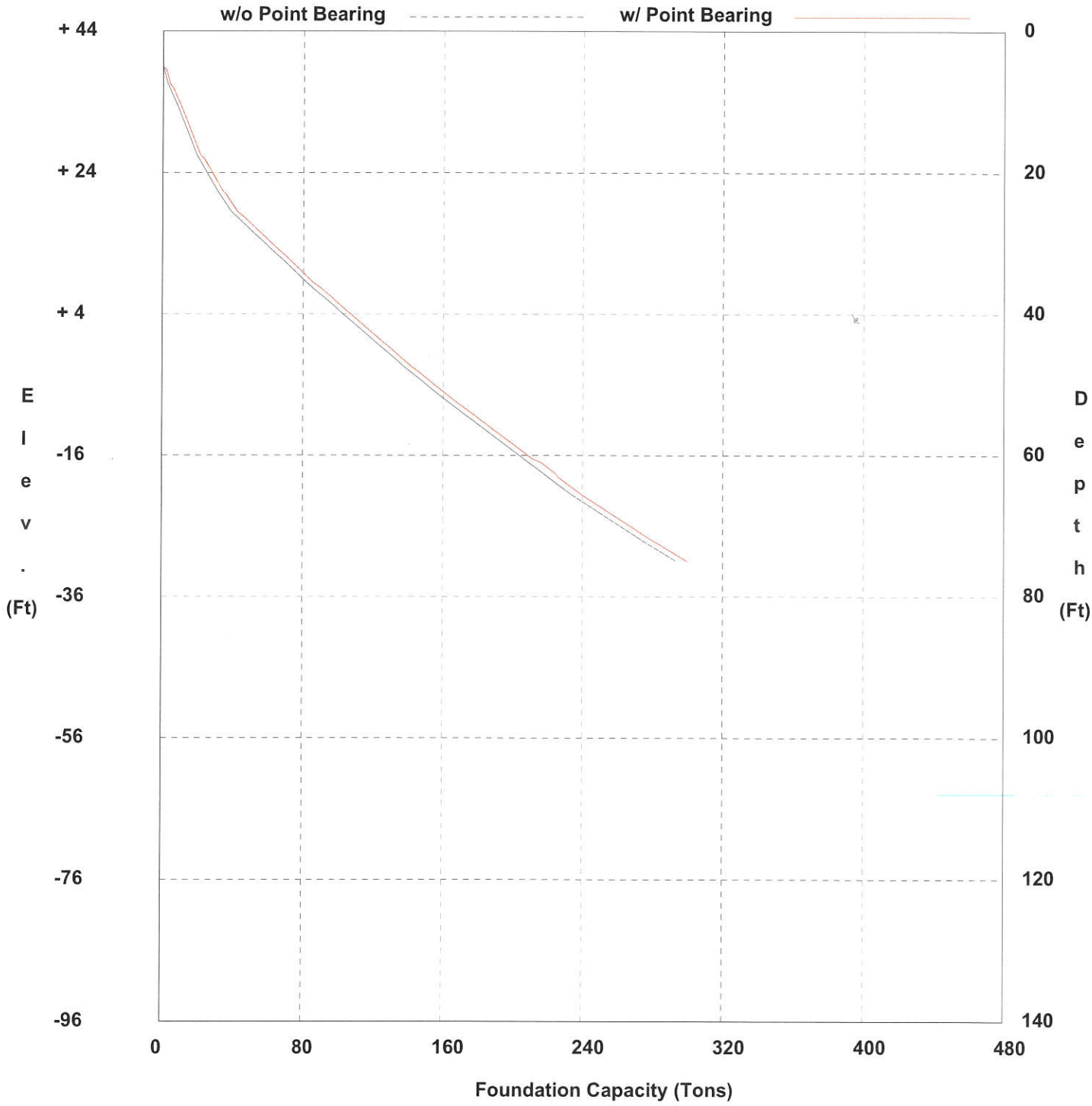
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Version 3.1

County	Willacy	Hole	B-BRG-53	District	
Highway		Structure	Bridge Borings	Date	3/13/2015
Control		Station		Grnd. Elev.	44.00 ft
		Offset		GW Elev.	31.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 38.5

+44 Top Hole Elevation
+39 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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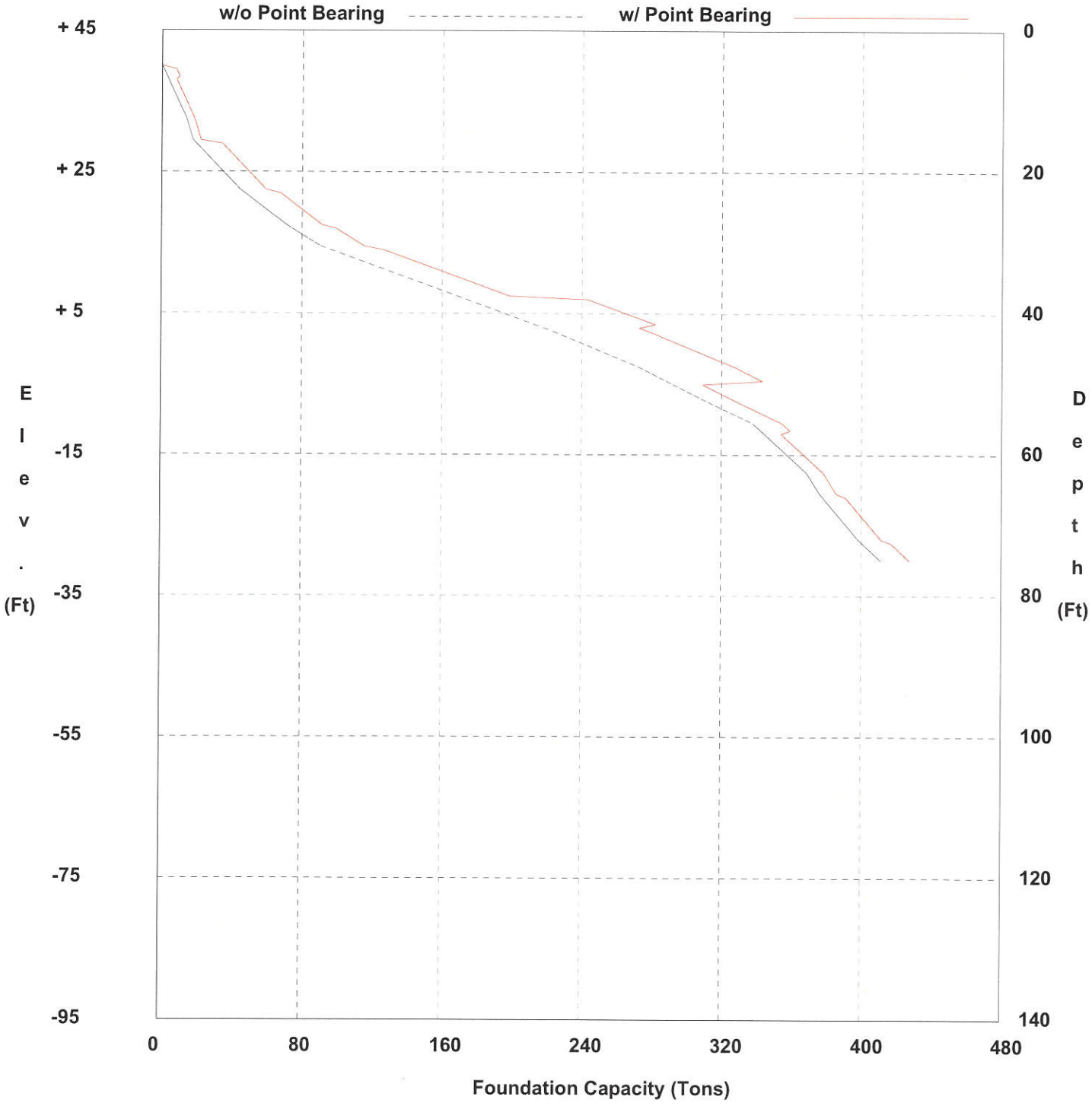
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-52	District	
Highway		Structure	Bridge Borings	Date	3/13/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	32.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 36

+45 Top Hole Elevation
+40 Disregard Elevation

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



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FOUNDATION CAPACITY

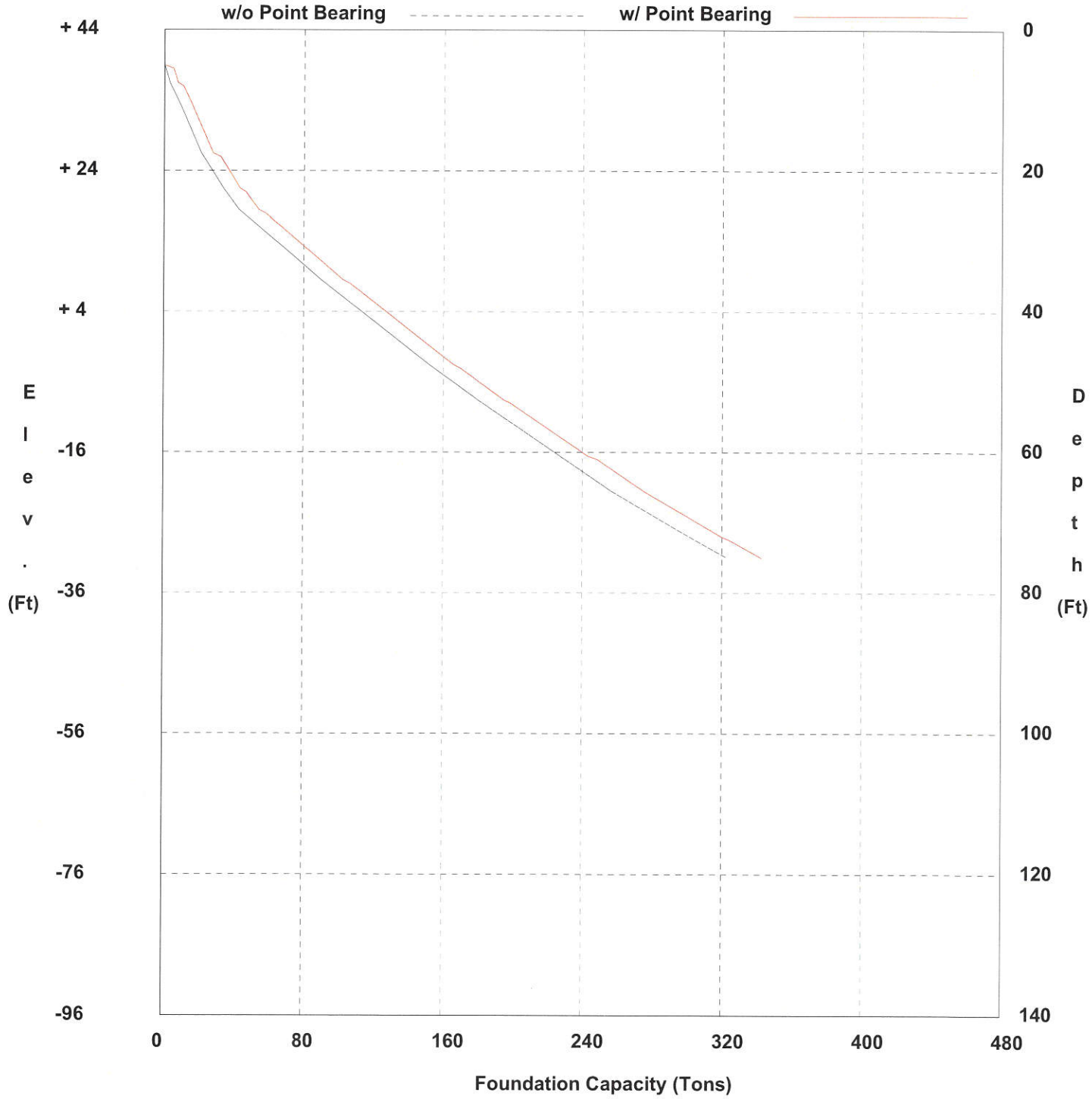
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-53	District	
Highway		Structure	Bridge Borings	Date	3/13/2015
Control		Station		Grnd. Elev.	44.00 ft
		Offset		GW Elev.	31.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 35

+44 Top Hole Elevation
+39 Disregard Elevation

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



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CEMETERY RD (CR 65)

FOUNDATION CAPACITY

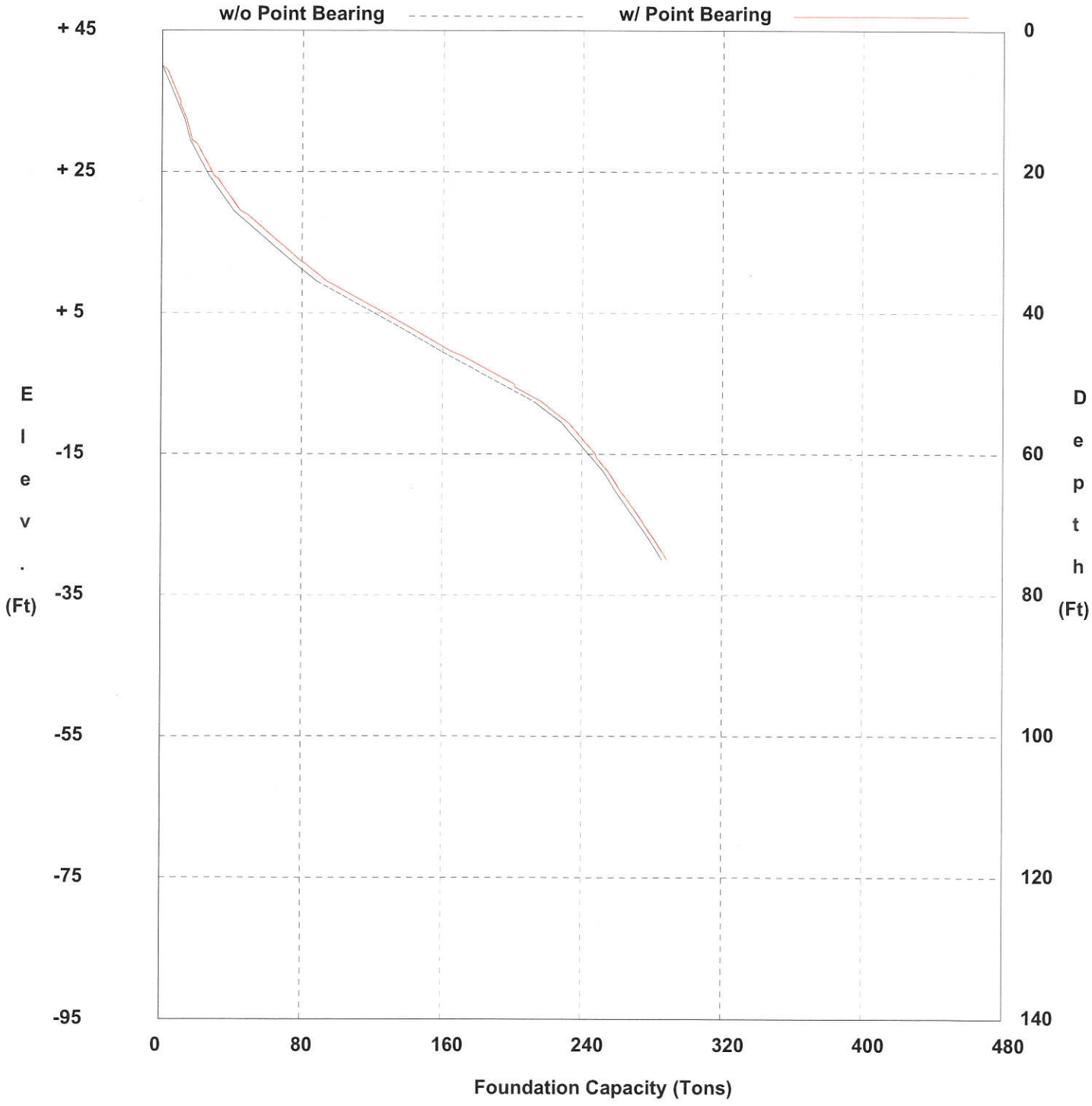
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-54	District	
Highway		Structure	Bridge Borings	Date	3/10/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	31.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 39.5

+45 Top Hole Elevation
+40 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

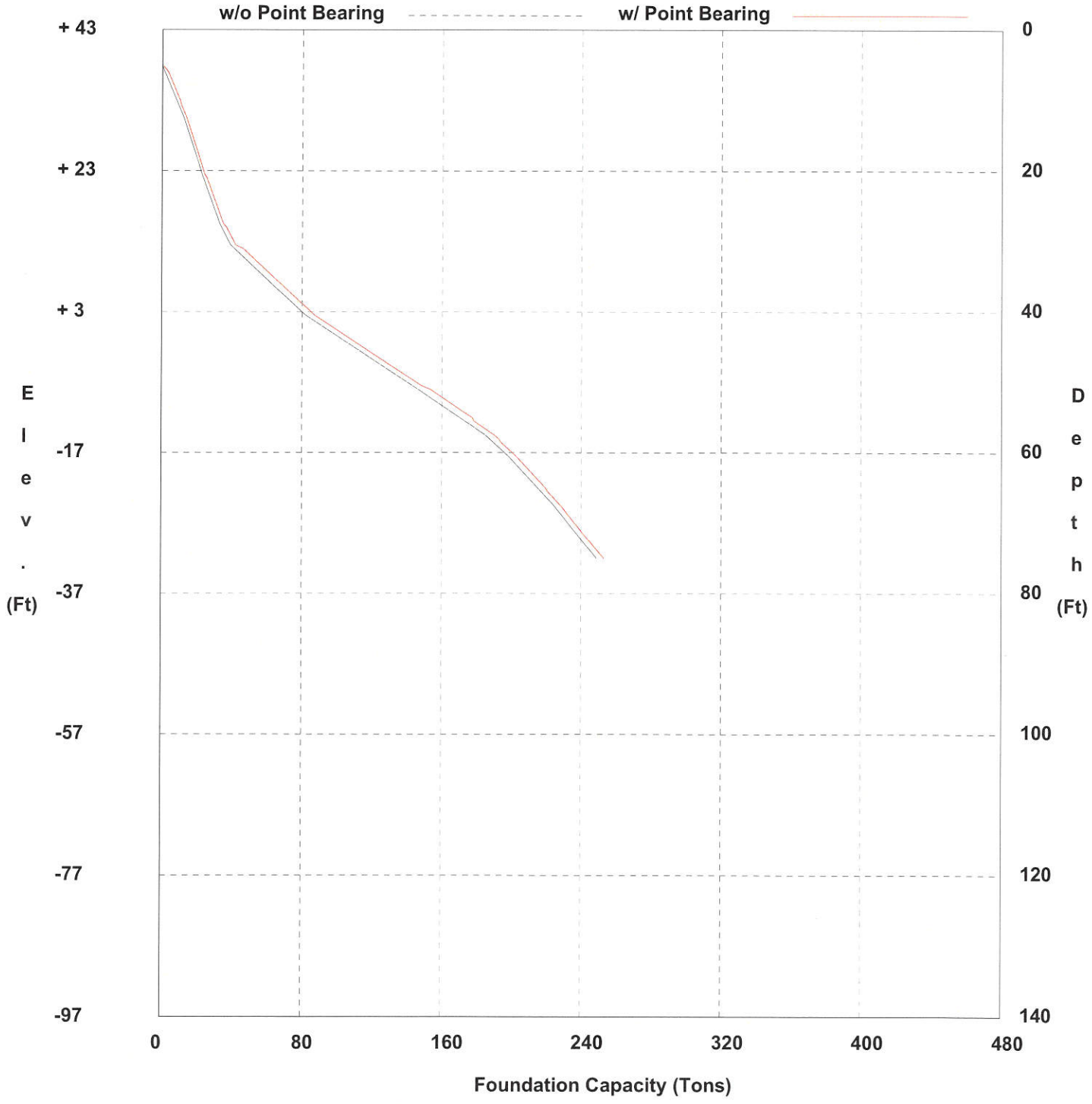
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-55	District	
Highway		Structure	Bridge Borings	Date	3/10/2015
Control		Station		Grnd. Elev.	43.00 ft
		Offset		GW Elev.	26.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 37.5

+43 Top Hole Elevation
+38 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

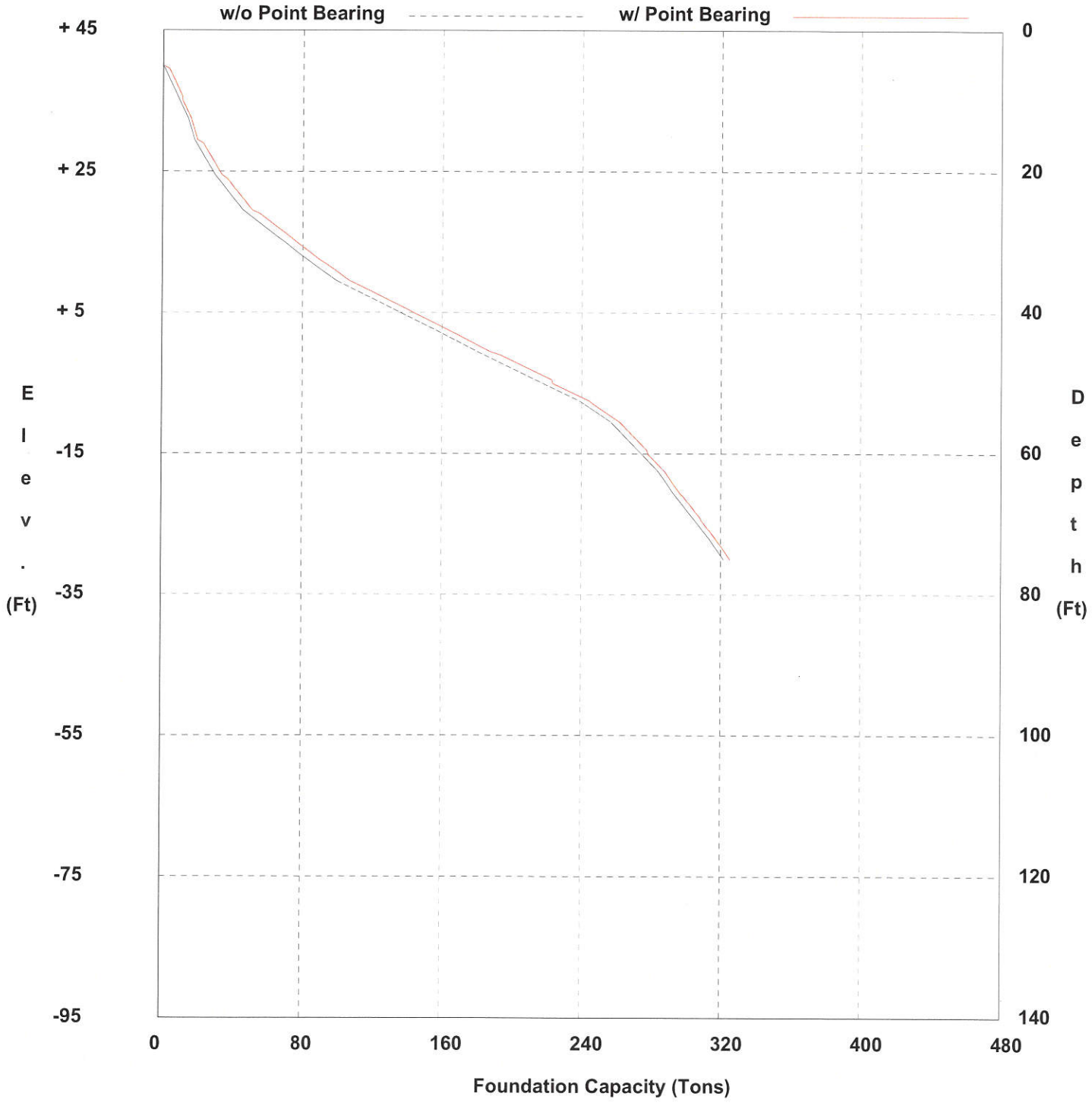
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-54	District	
Highway		Structure	Bridge Borings	Date	3/10/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	31.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 39.5

+45 Top Hole Elevation
+40 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

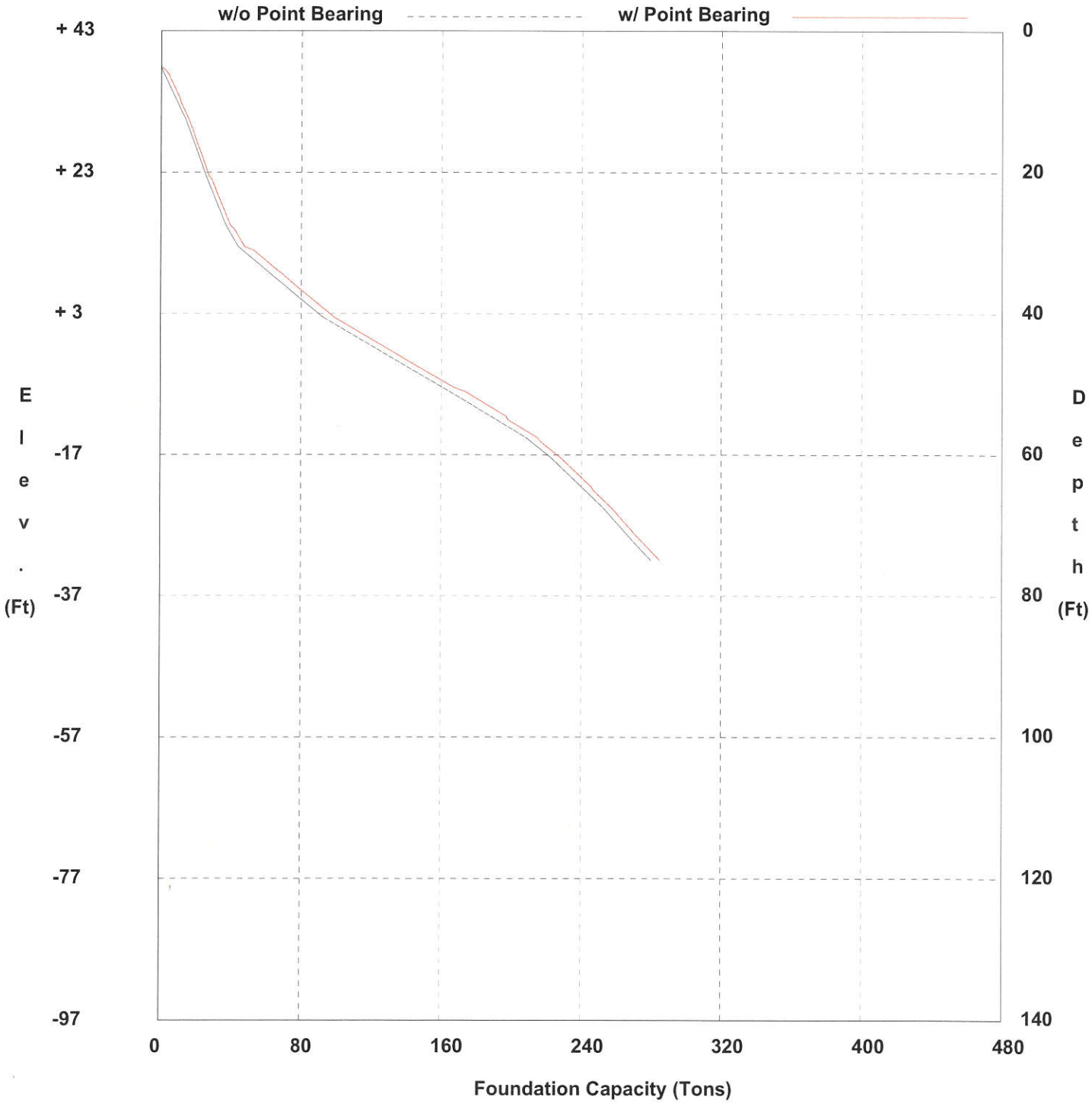
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-55	District	
Highway		Structure	Bridge Borings	Date	3/10/2015
Control		Station		Grnd. Elev.	43.00 ft
		Offset		GW Elev.	26.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 37.5

+43 Top Hole Elevation
+38 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

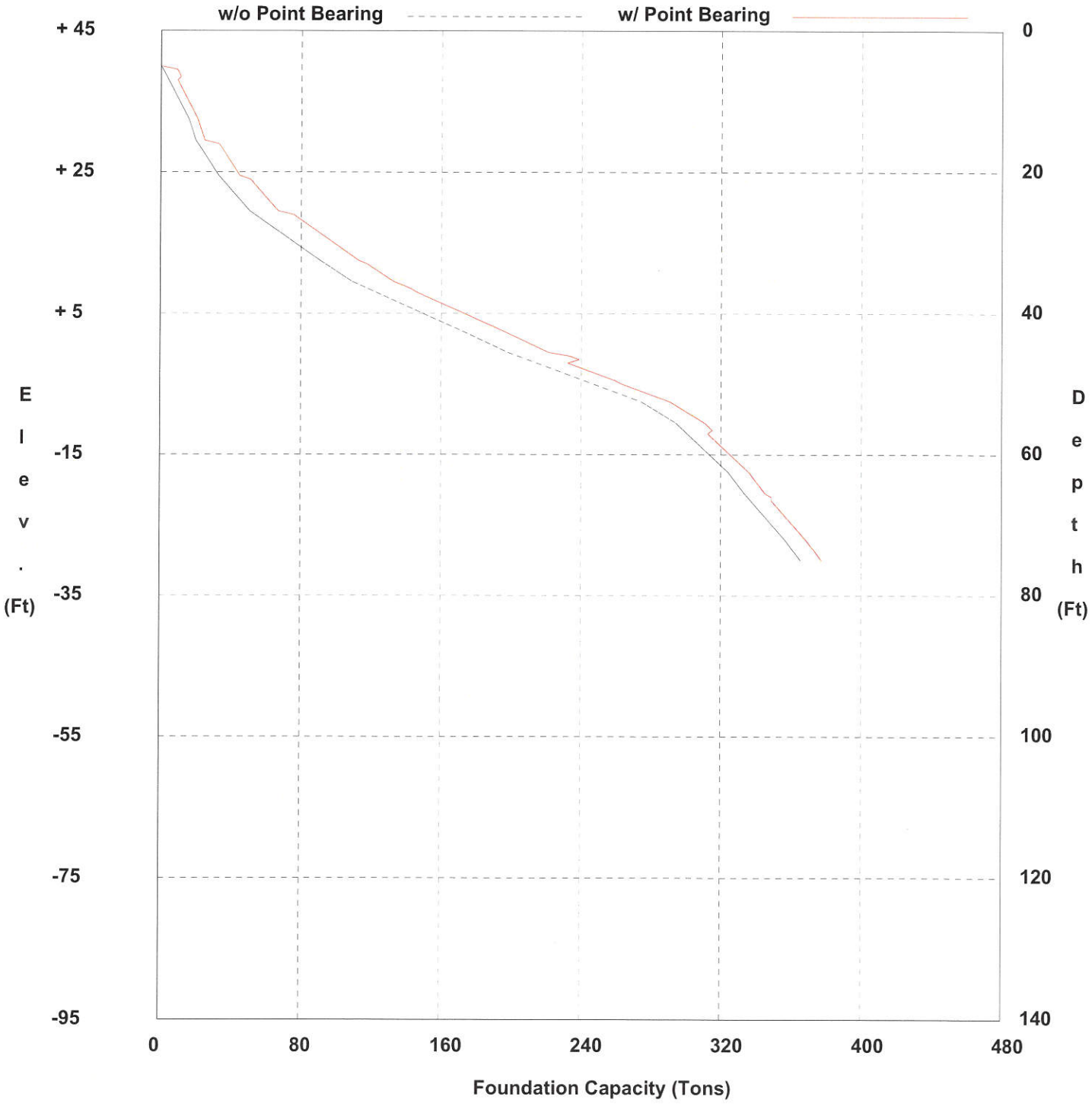
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-54	District	
Highway		Structure	Bridge Borings	Date	3/10/2015
Control		Station		Grnd. Elev.	45.00 ft
		Offset		GW Elev.	31.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 36

+45 Top Hole Elevation
+40 Disregard Elevation

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



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FOUNDATION CAPACITY

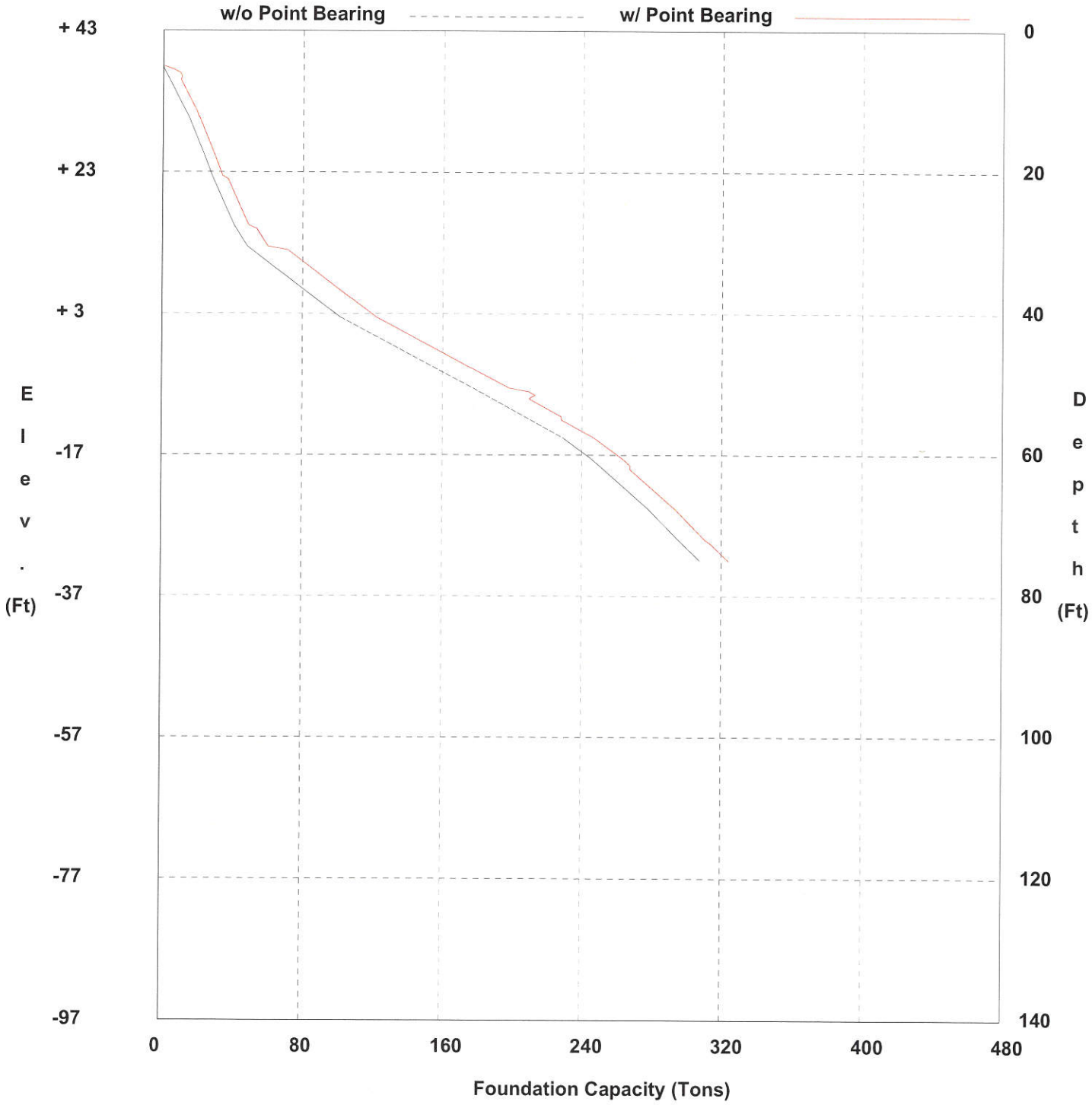
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-55	District	
Highway		Structure	Bridge Borings	Date	3/10/2015
Control		Station		Grnd. Elev.	43.00 ft
		Offset		GW Elev.	26.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 34

+43 Top Hole Elevation
+38 Disregard Elevation

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



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FM 1015

FOUNDATION CAPACITY

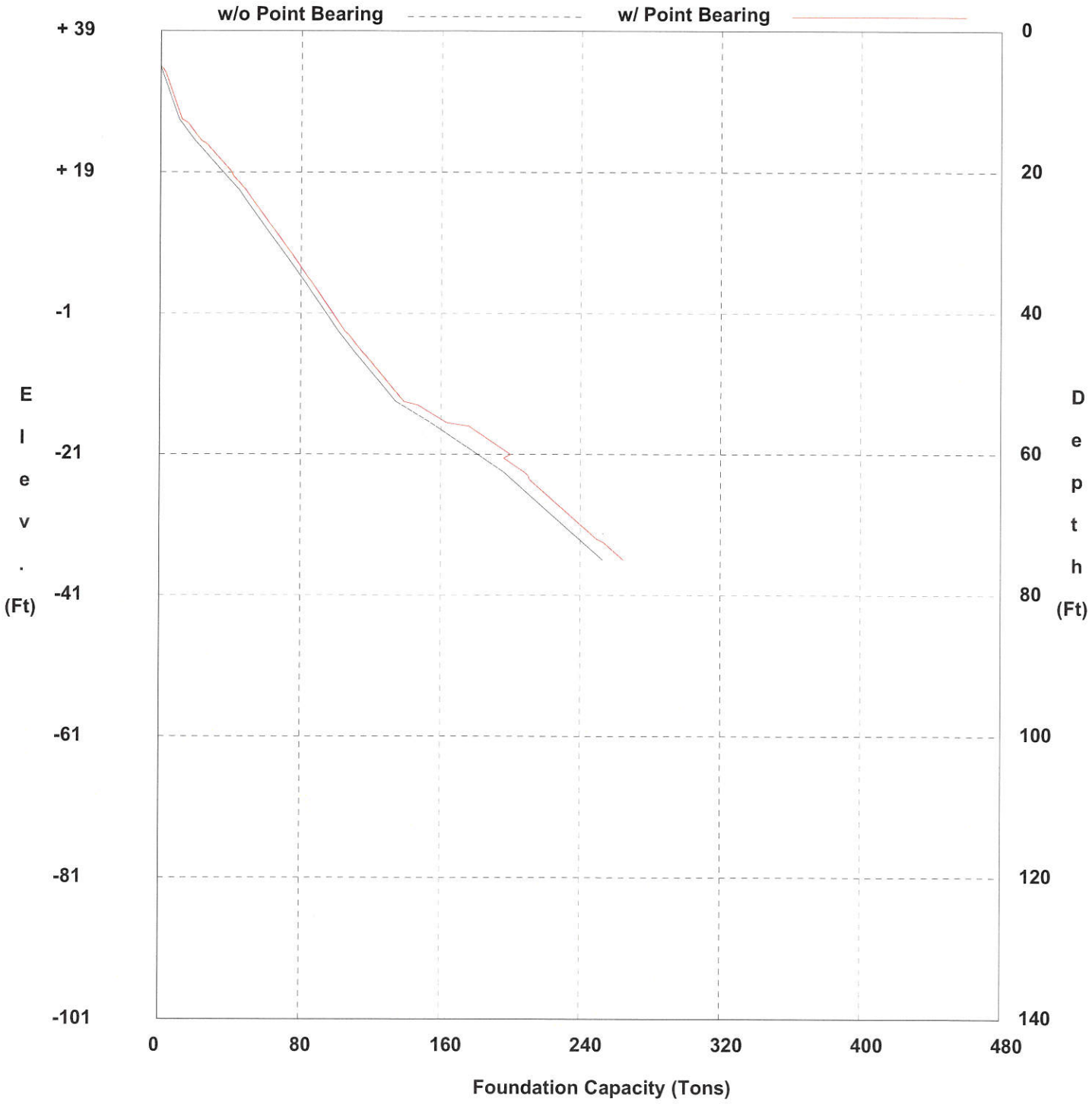
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-56	District	
Highway		Structure	Bridge Borings	Date	3/31/2015
Control		Station		Grnd. Elev.	39.00 ft
		Offset		GW Elev.	26.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 33.5

+39 Top Hole Elevation
+34 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

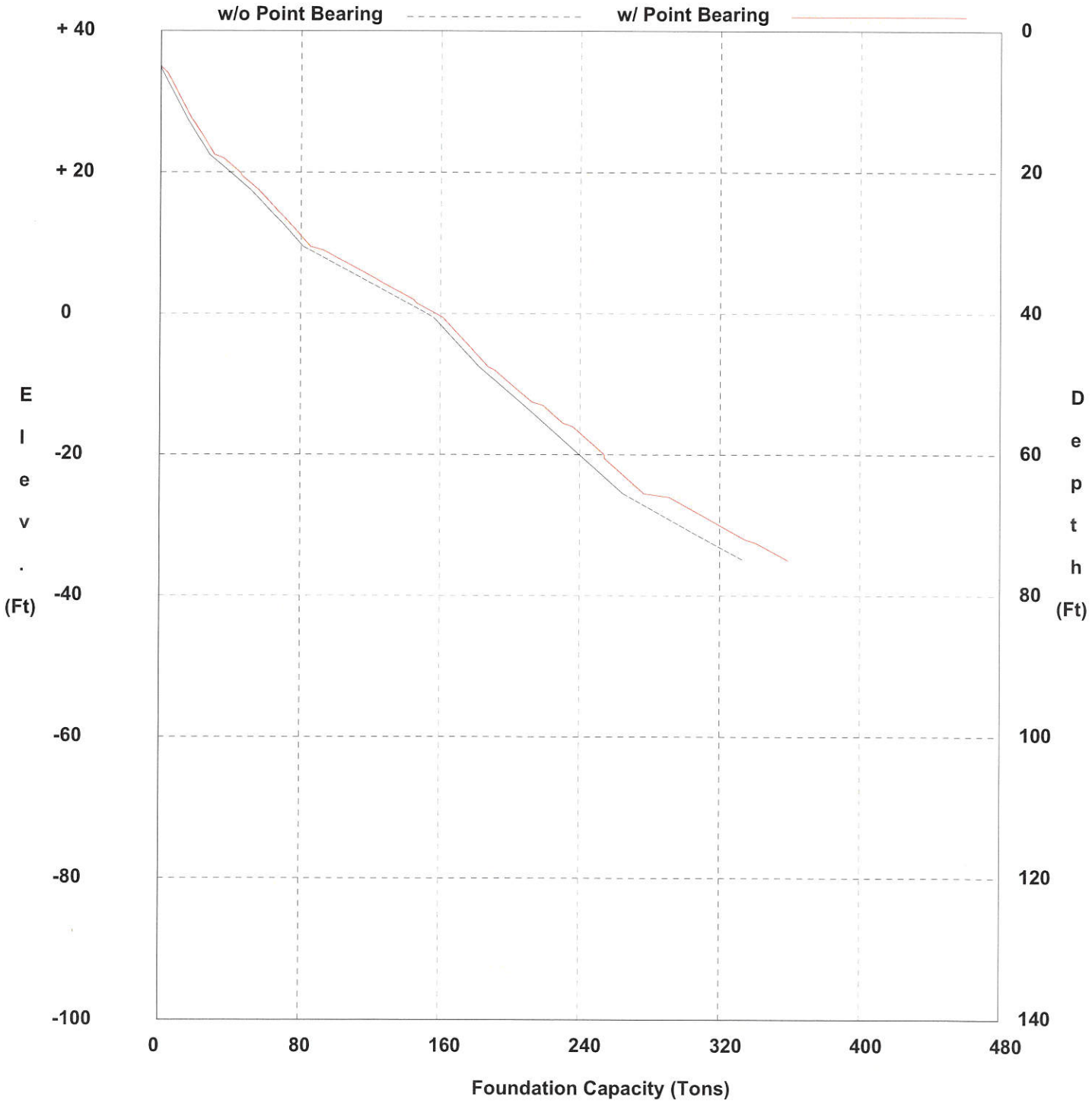
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-57	District	
Highway		Structure	Bridge Borings	Date	3/31/2015
Control		Station		Grnd. Elev.	40.00 ft
		Offset		GW Elev.	26.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 34.5

+40 Top Hole Elevation
+35 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

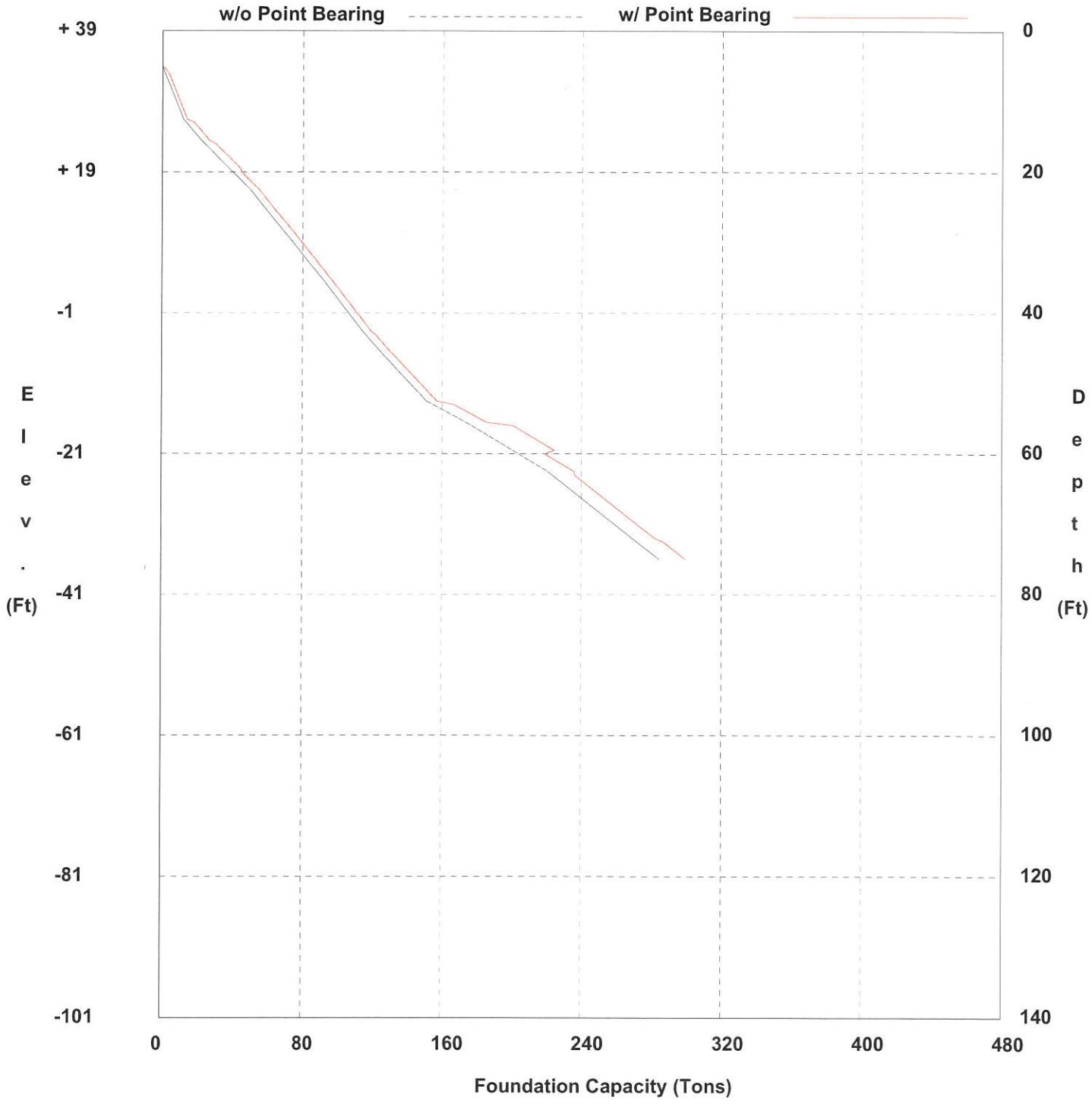
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-56	District	
Highway		Structure	Bridge Borings	Date	3/31/2015
Control		Station		Grnd. Elev.	39.00 ft
		Offset		GW Elev.	26.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 33.5

+39 Top Hole Elevation
+34 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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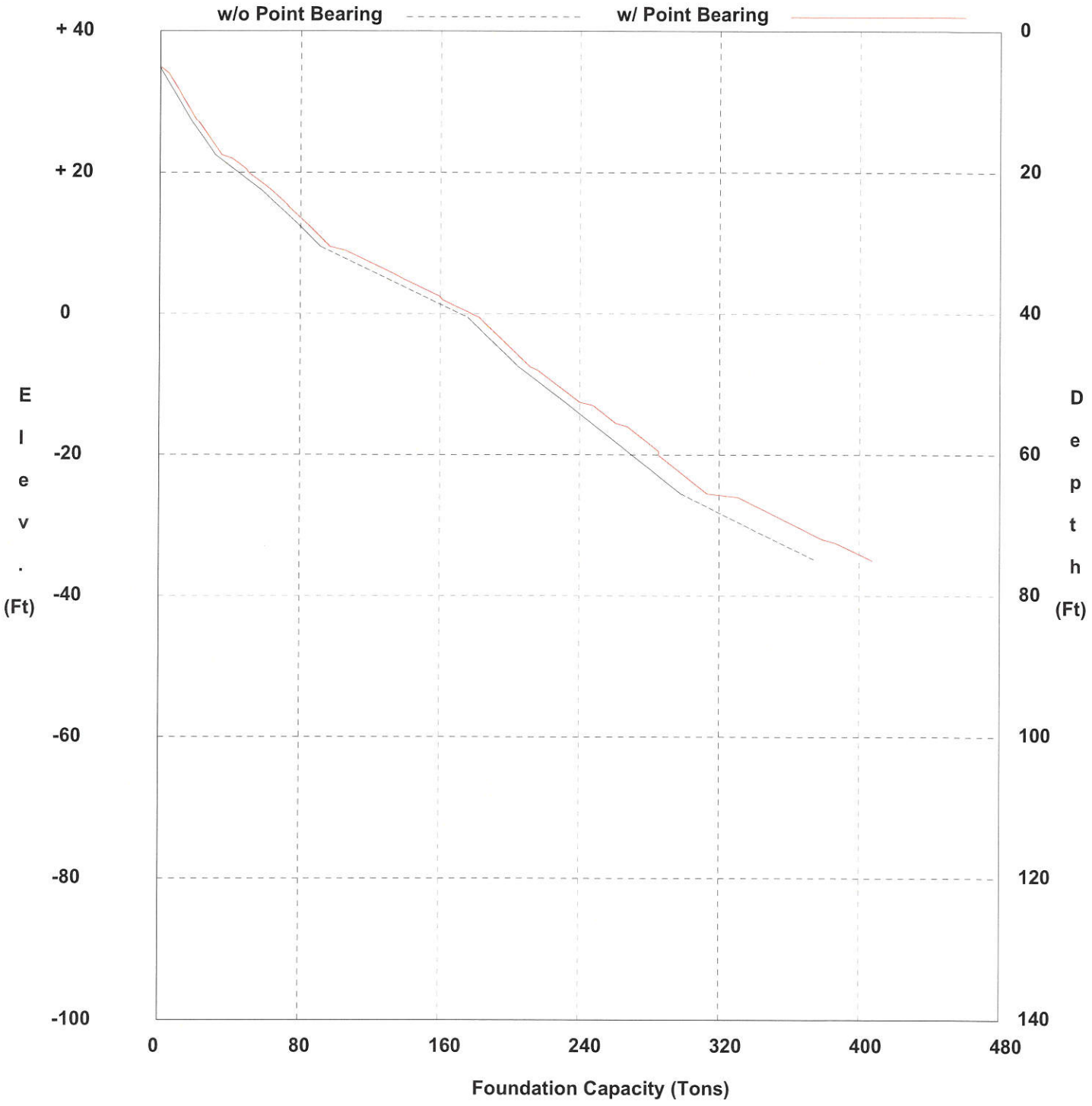
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-57	District	
Highway		Structure	Bridge Borings	Date	3/31/2015
Control		Station		Grnd. Elev.	40.00 ft
		Offset		GW Elev.	26.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 34.5

+40 Top Hole Elevation
+35 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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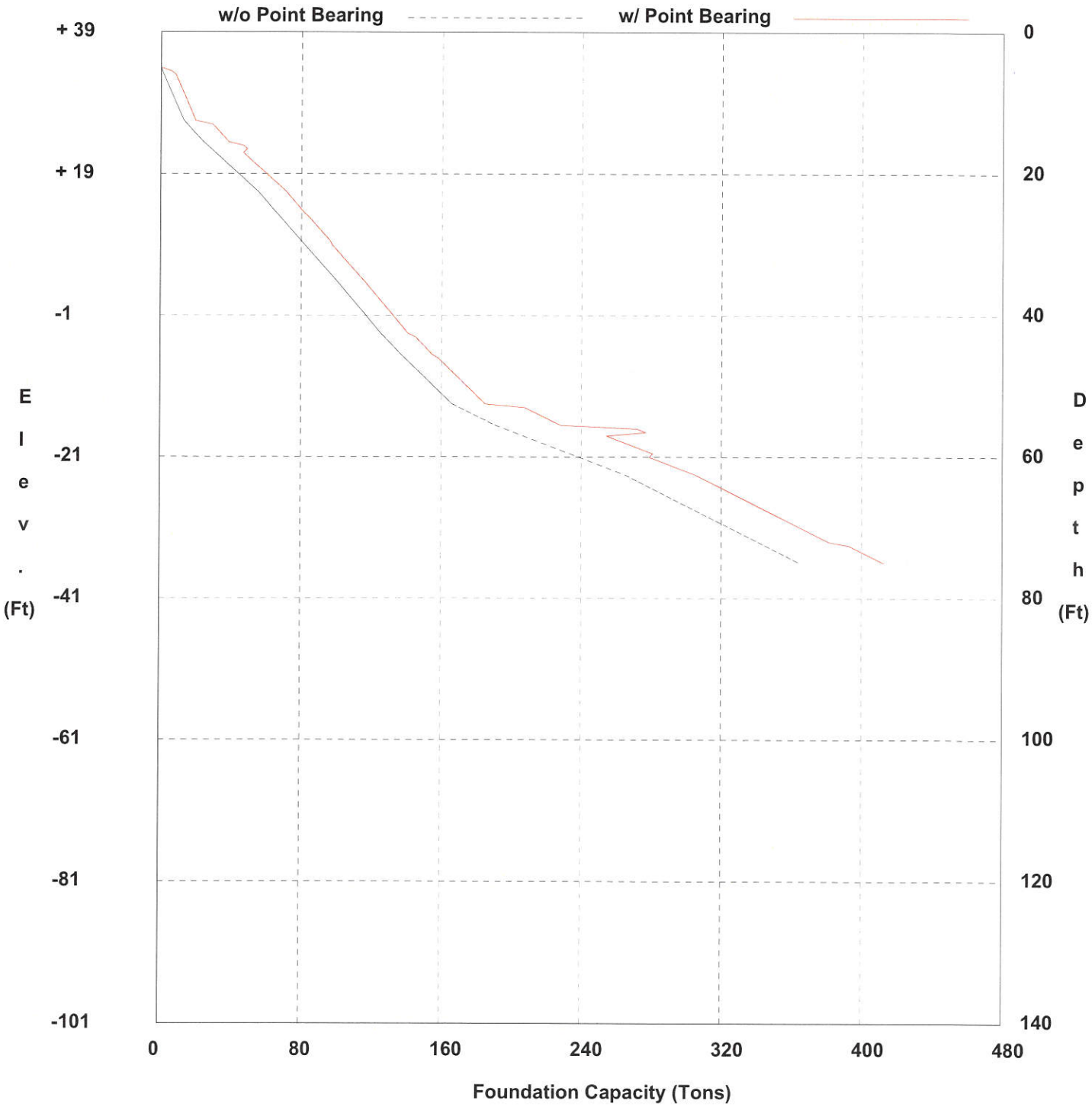
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-56	District	
Highway		Structure	Bridge Borings	Date	3/31/2015
Control		Station		Grnd. Elev.	39.00 ft
		Offset		GW Elev.	26.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 30

+39 Top Hole Elevation
+34 Disregard Elevation

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



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FOUNDATION CAPACITY

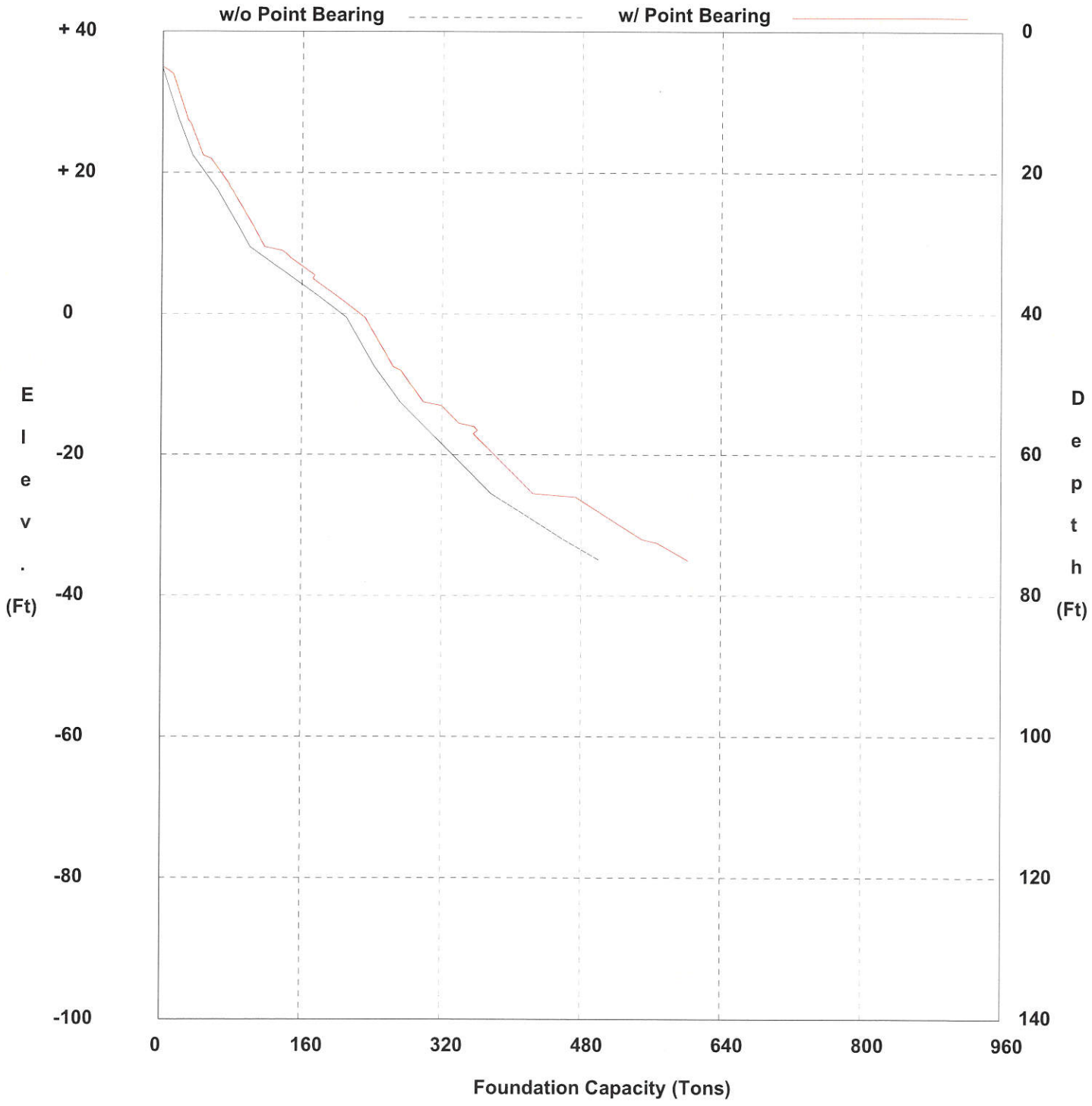
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-57	District	
Highway		Structure	Bridge Borings	Date	3/31/2015
Control		Station		Grnd. Elev.	40.00 ft
		Offset		GW Elev.	26.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 31

+40 Top Hole Elevation
+35 Disregard Elevation

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



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SH 186 (1-WEST CROSSING)

FOUNDATION CAPACITY

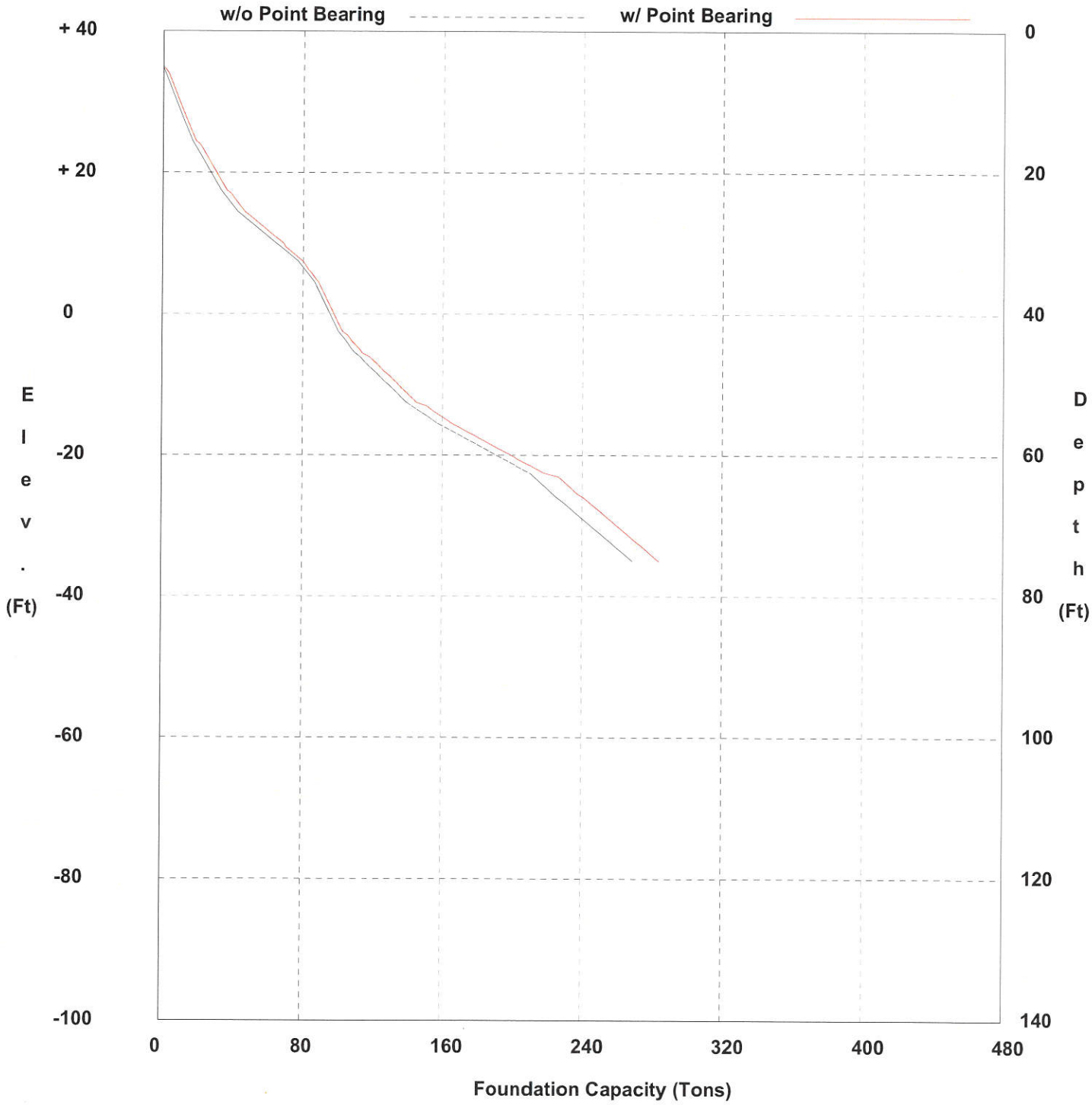
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-58	District	
Highway		Structure	Bridge Borings	Date	4/2/2015
Control		Station		Grnd. Elev.	40.00 ft
		Offset		GW Elev.	25.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 34.5

+40 Top Hole Elevation
+35 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

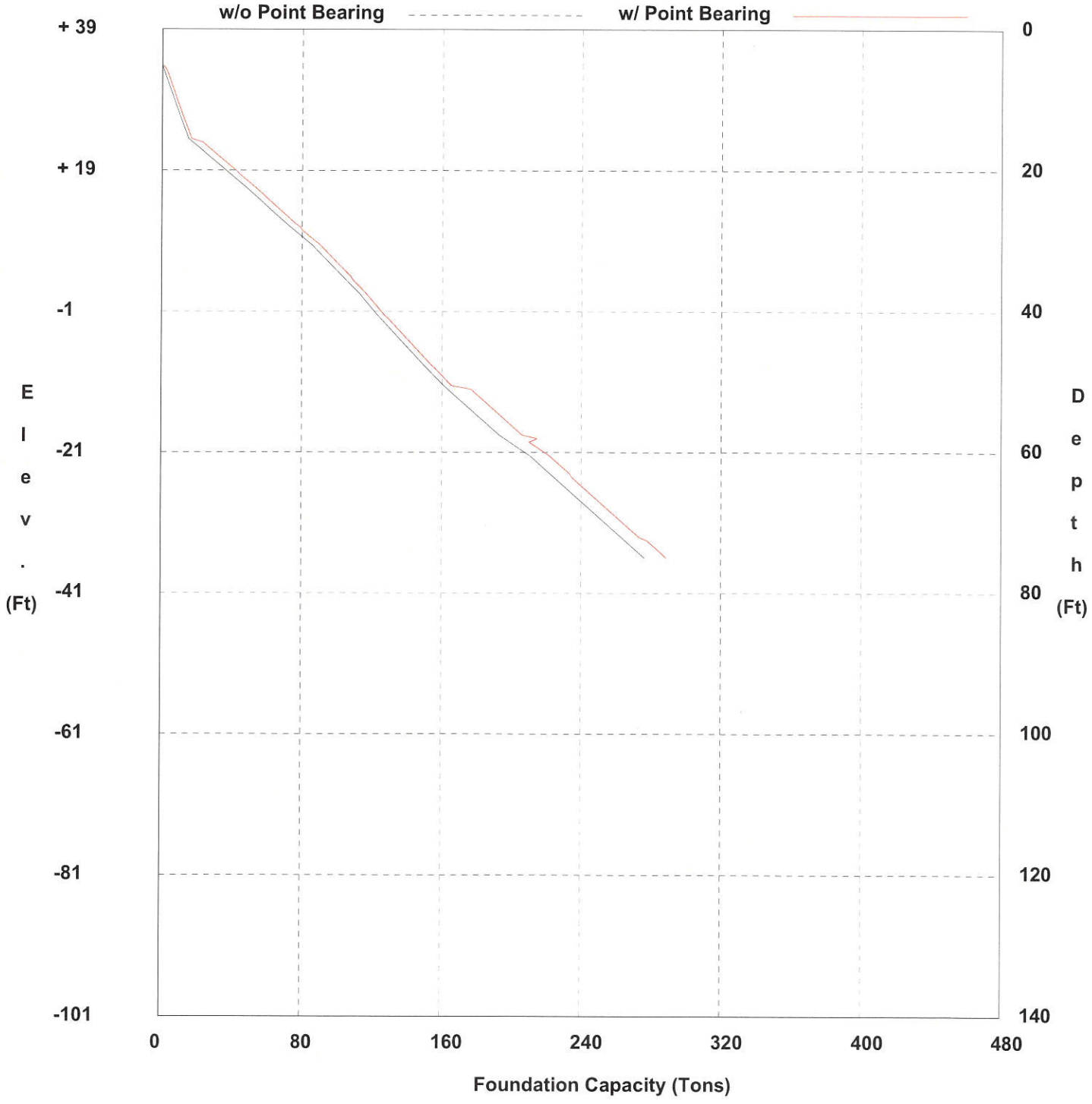
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-59	District	
Highway		Structure	Bridge Borings	Date	4/1/2015
Control		Station		Grnd. Elev.	39.00 ft
		Offset		GW Elev.	26.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 33.5

+39 Top Hole Elevation
+34 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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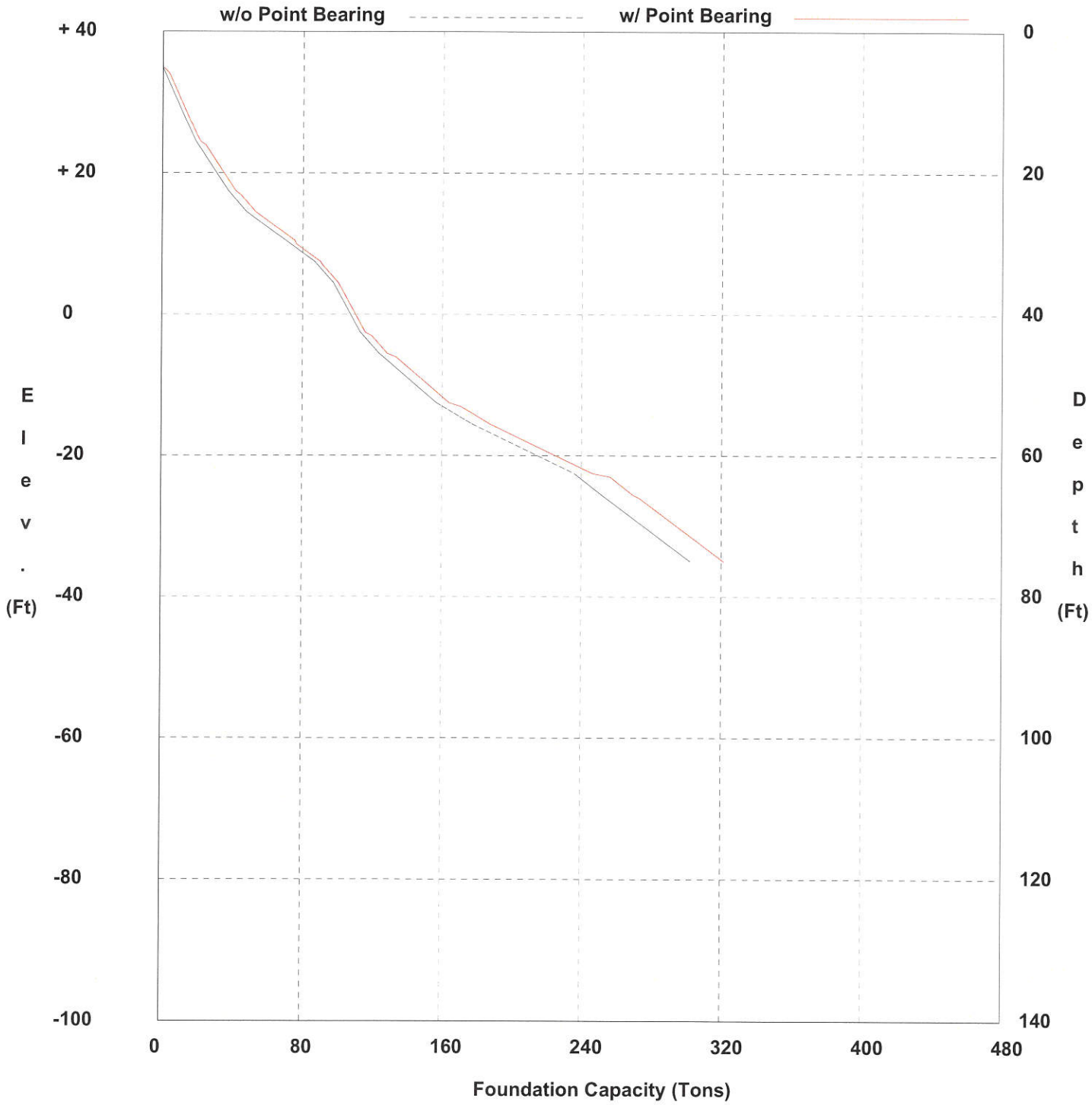
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-58	District	
Highway		Structure	Bridge Borings	Date	4/2/2015
Control		Station		Grnd. Elev.	40.00 ft
		Offset		GW Elev.	25.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 34.5

+40 Top Hole Elevation
+35 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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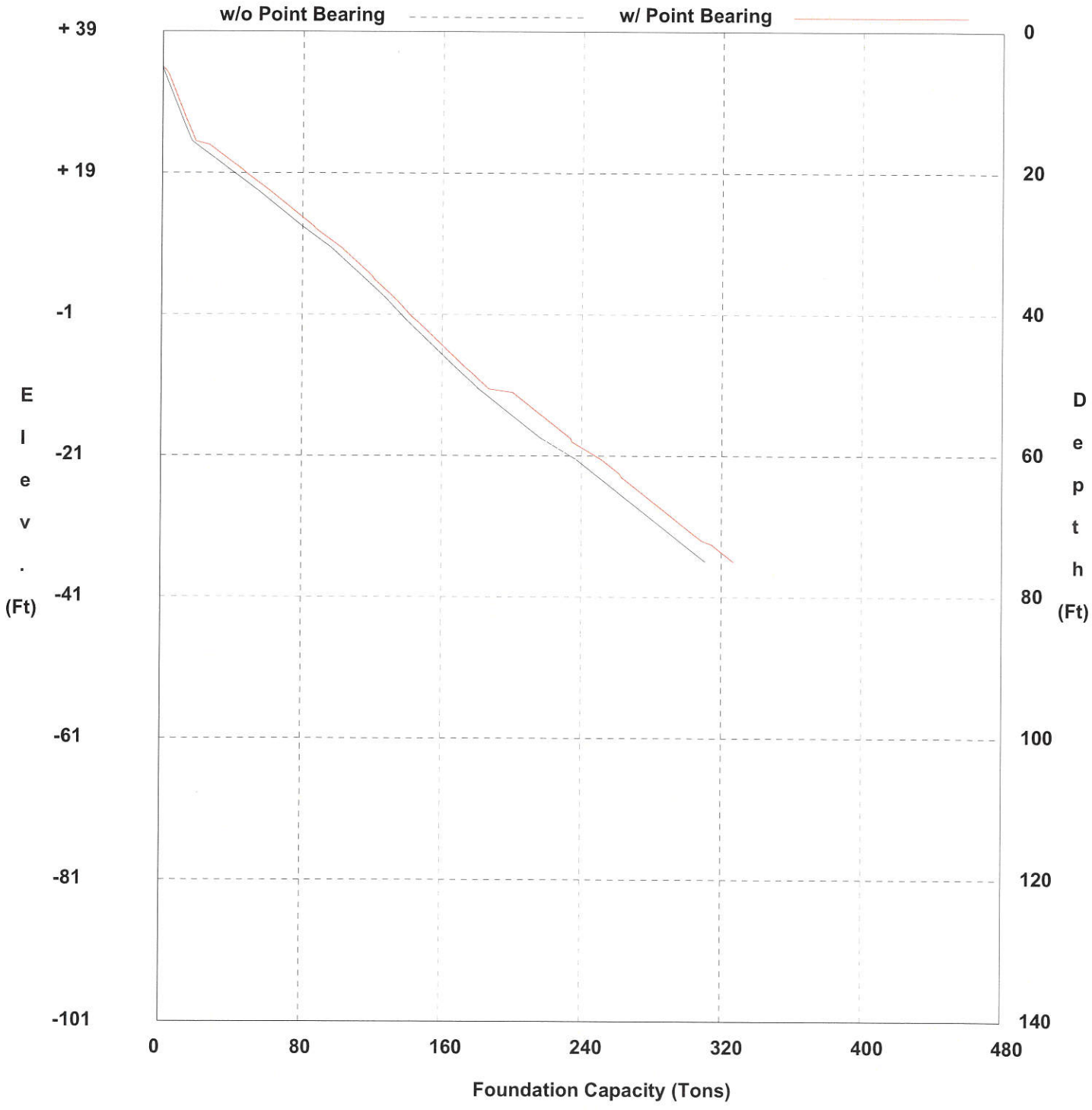
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-59	District	
Highway		Structure	Bridge Borings	Date	4/1/2015
Control		Station		Grnd. Elev.	39.00 ft
		Offset		GW Elev.	26.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 33.5

+39 Top Hole Elevation
+34 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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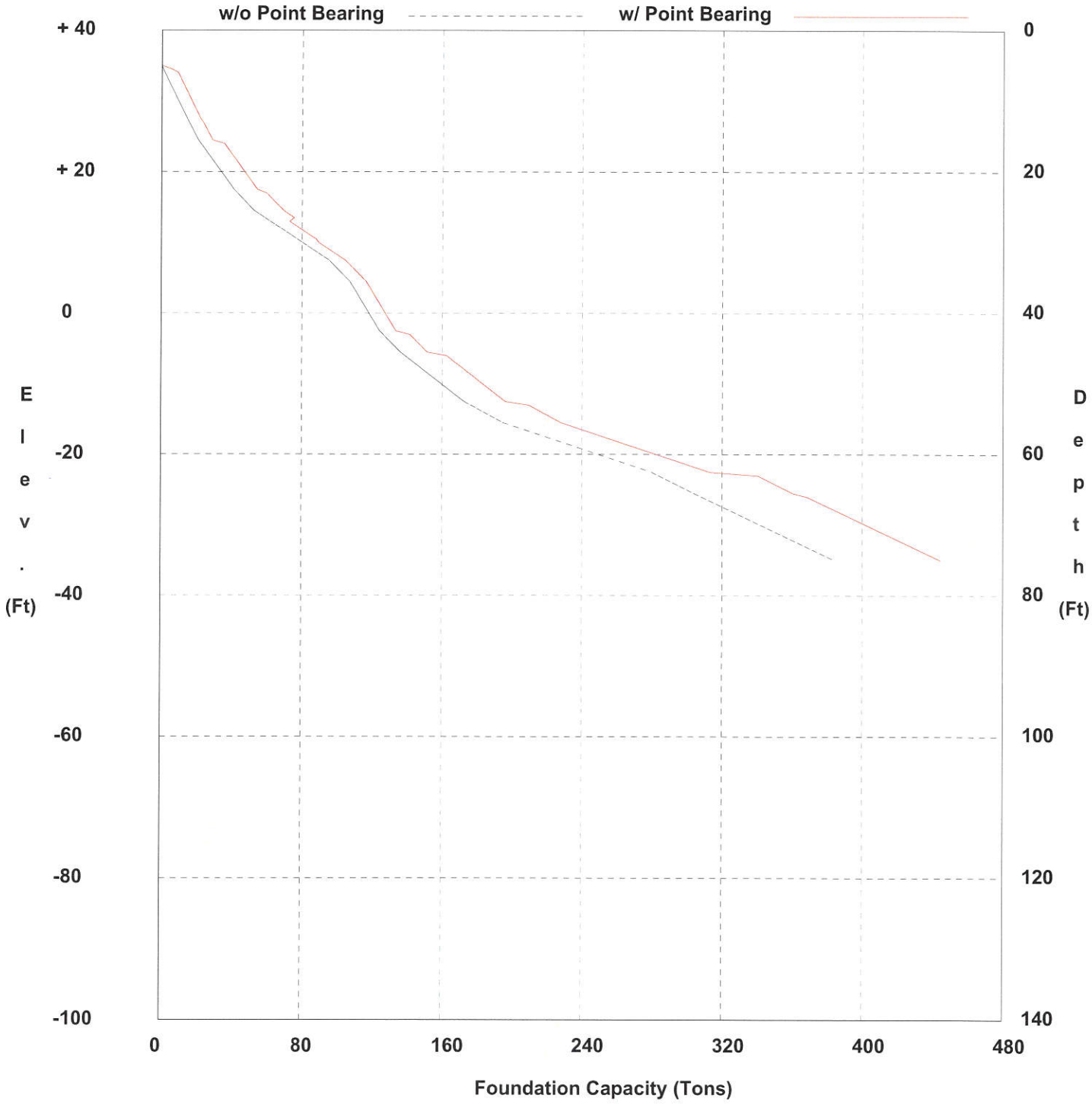
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-58	District	
Highway		Structure	Bridge Borings	Date	4/2/2015
Control		Station		Grnd. Elev.	40.00 ft
		Offset		GW Elev.	25.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 31

+40 Top Hole Elevation
+35 Disregard Elevation

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



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FOUNDATION CAPACITY

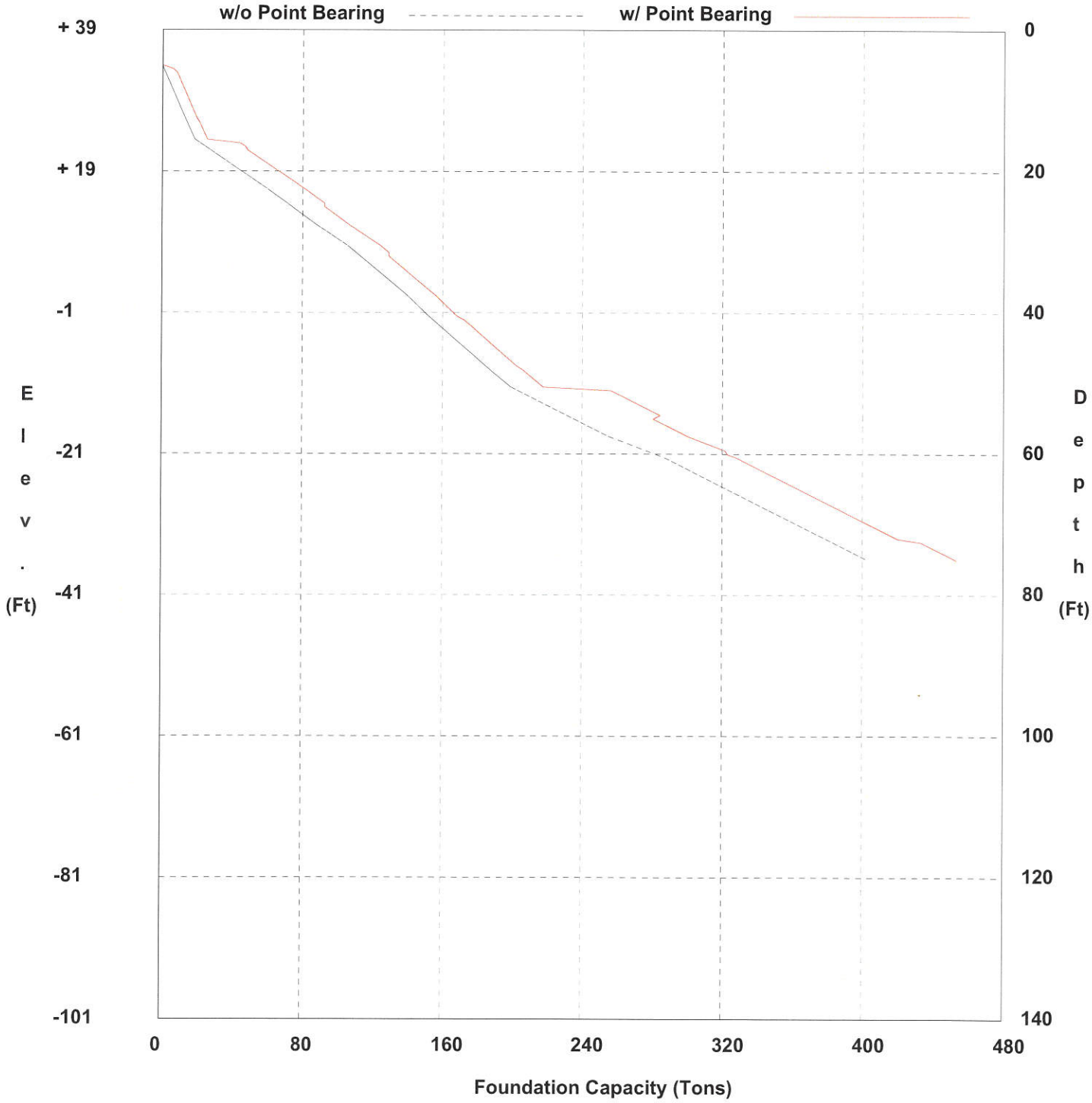
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-59	District	
Highway		Structure	Bridge Borings	Date	4/1/2015
Control		Station		Grnd. Elev.	39.00 ft
		Offset		GW Elev.	26.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 30

+39 Top Hole Elevation
+34 Disregard Elevation

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



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IDT RD (FM 105)

FOUNDATION CAPACITY

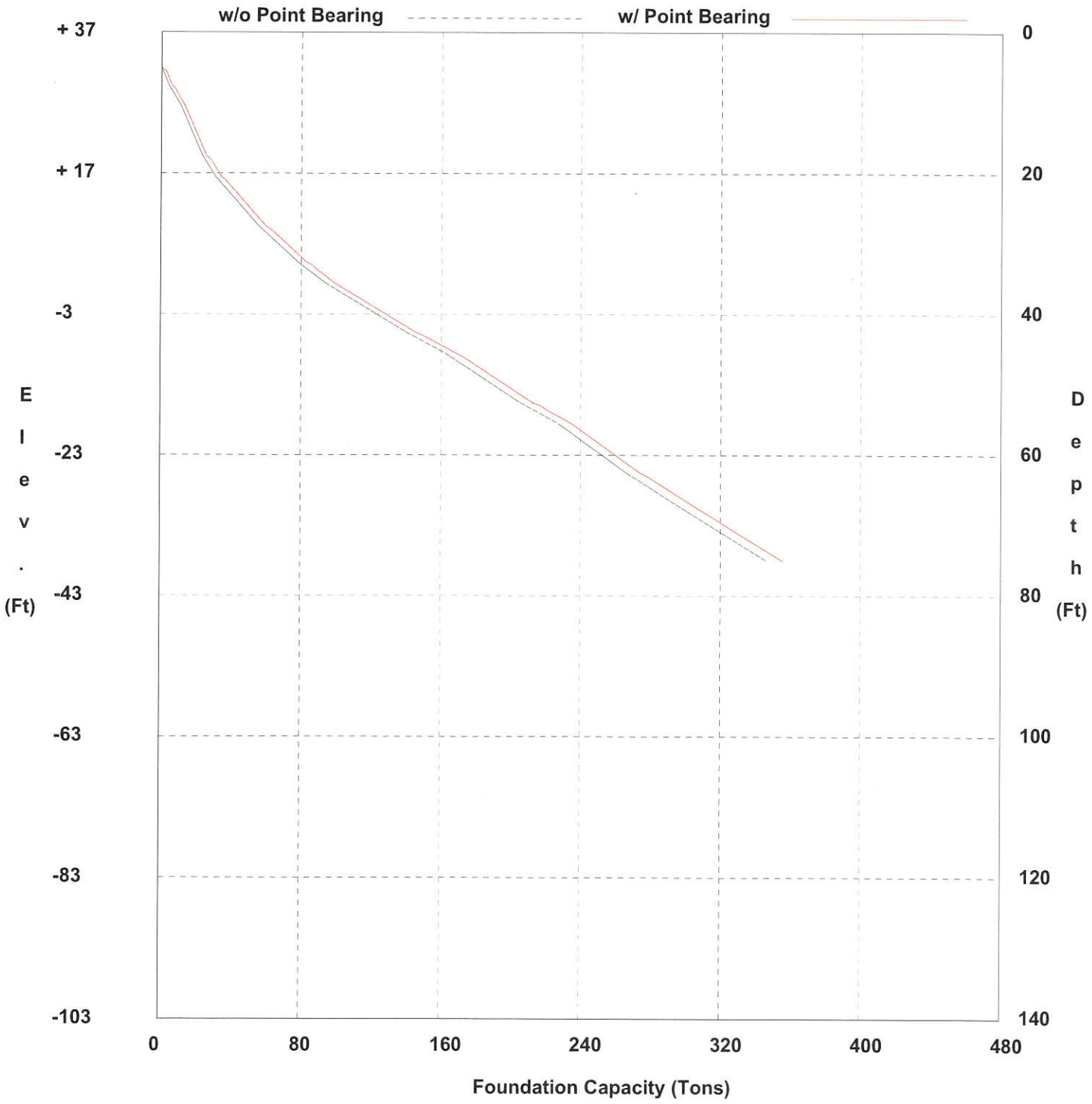
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-60	District	
Highway		Structure	Bridge Borings	Date	3/11/2015
Control		Station		Grnd. Elev.	37.00 ft
		Offset		GW Elev.	20.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 31.5

+37 Top Hole Elevation
+32 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

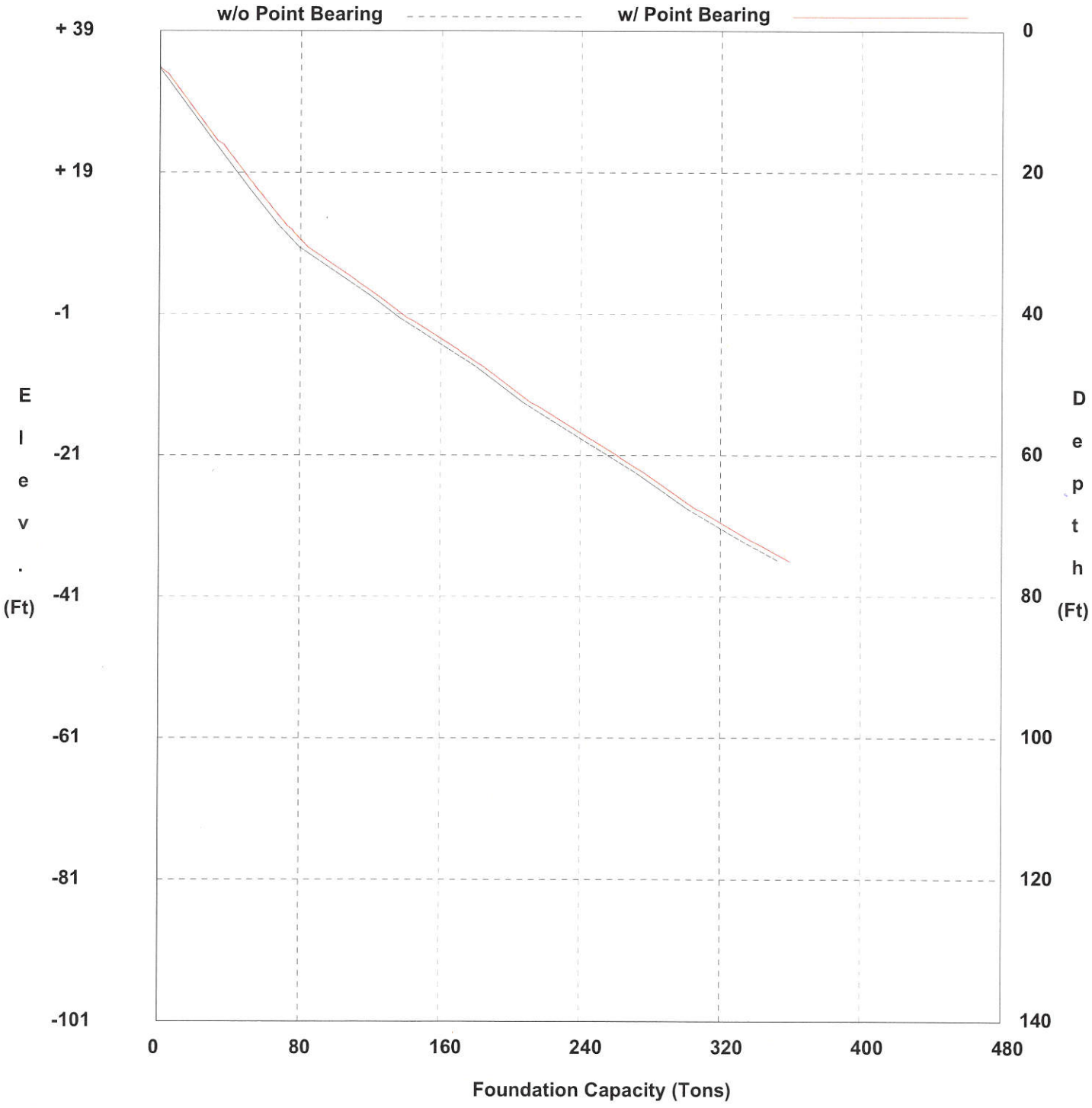
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-61	District	
Highway		Structure	Bridge Borings	Date	3/11/2015
Control		Station		Grnd. Elev.	39.00 ft
		Offset		GW Elev.	26.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 33.5

+39 Top Hole Elevation
+34 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

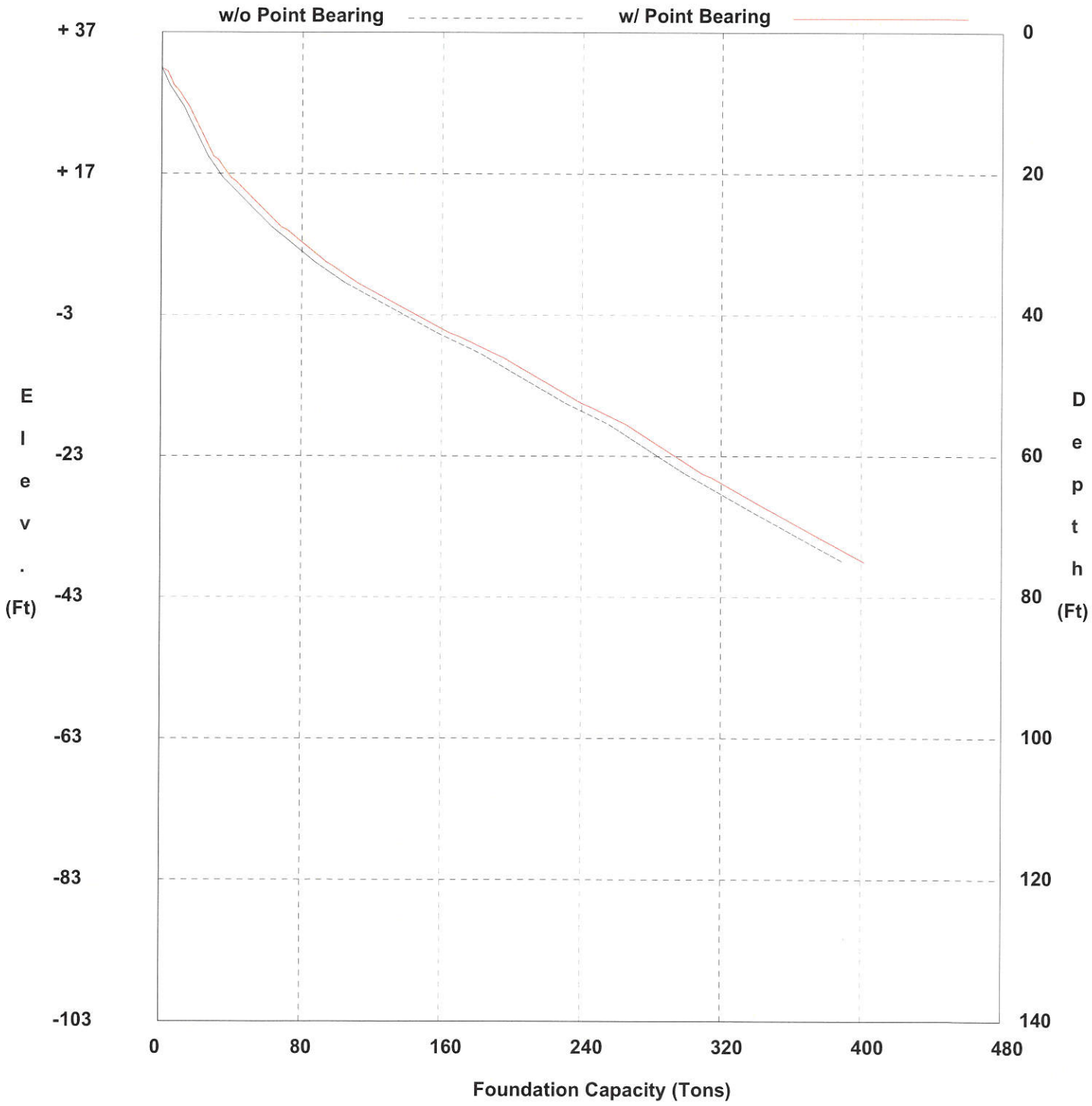
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-60	District	
Highway		Structure	Bridge Borings	Date	3/11/2015
Control		Station		Grnd. Elev.	37.00 ft
		Offset		GW Elev.	20.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 31.5

+37 Top Hole Elevation
+32 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

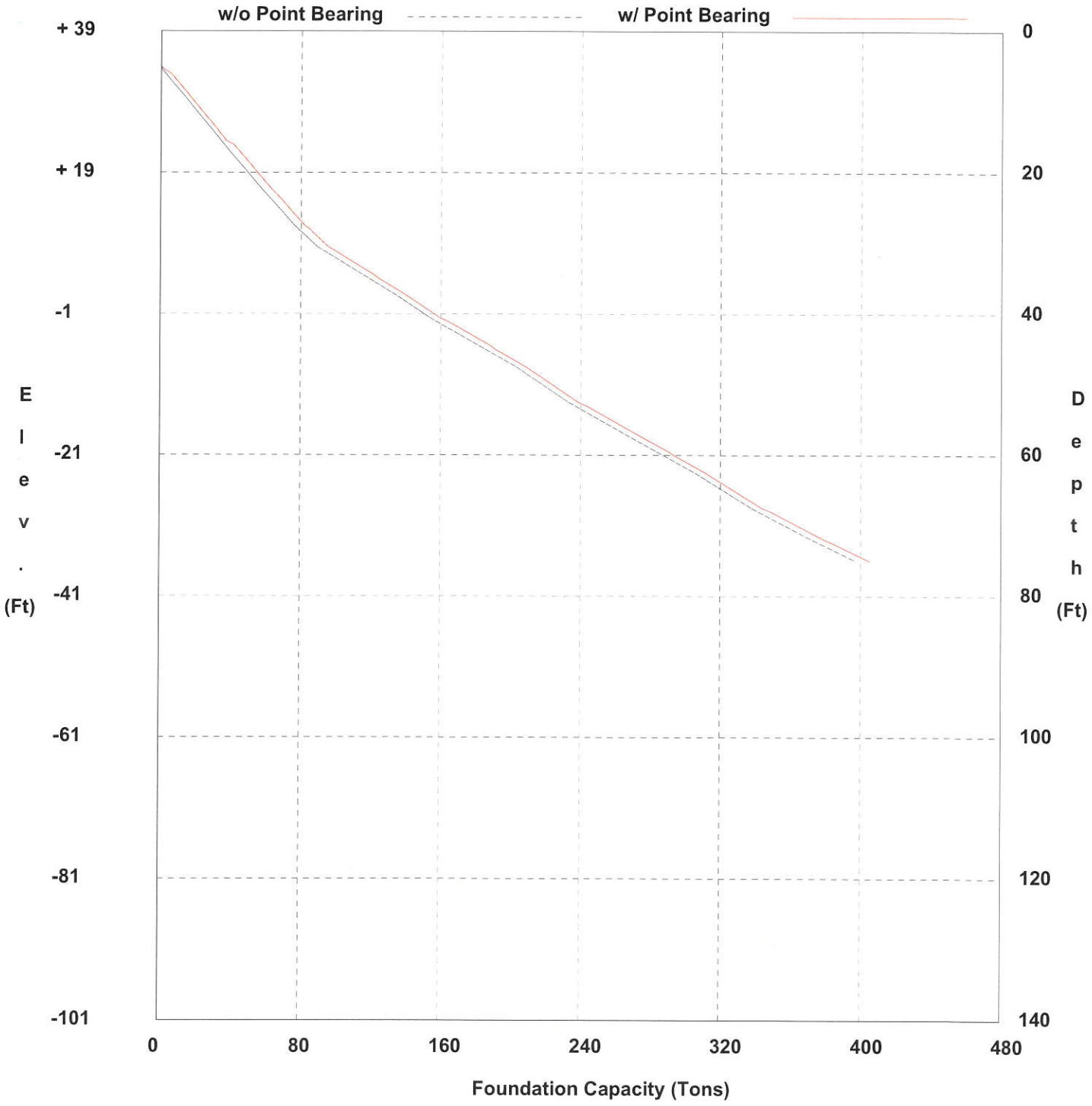
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-61	District	
Highway		Structure	Bridge Borings	Date	3/11/2015
Control		Station		Grnd. Elev.	39.00 ft
		Offset		GW Elev.	26.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 33.5

+39 Top Hole Elevation
+34 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

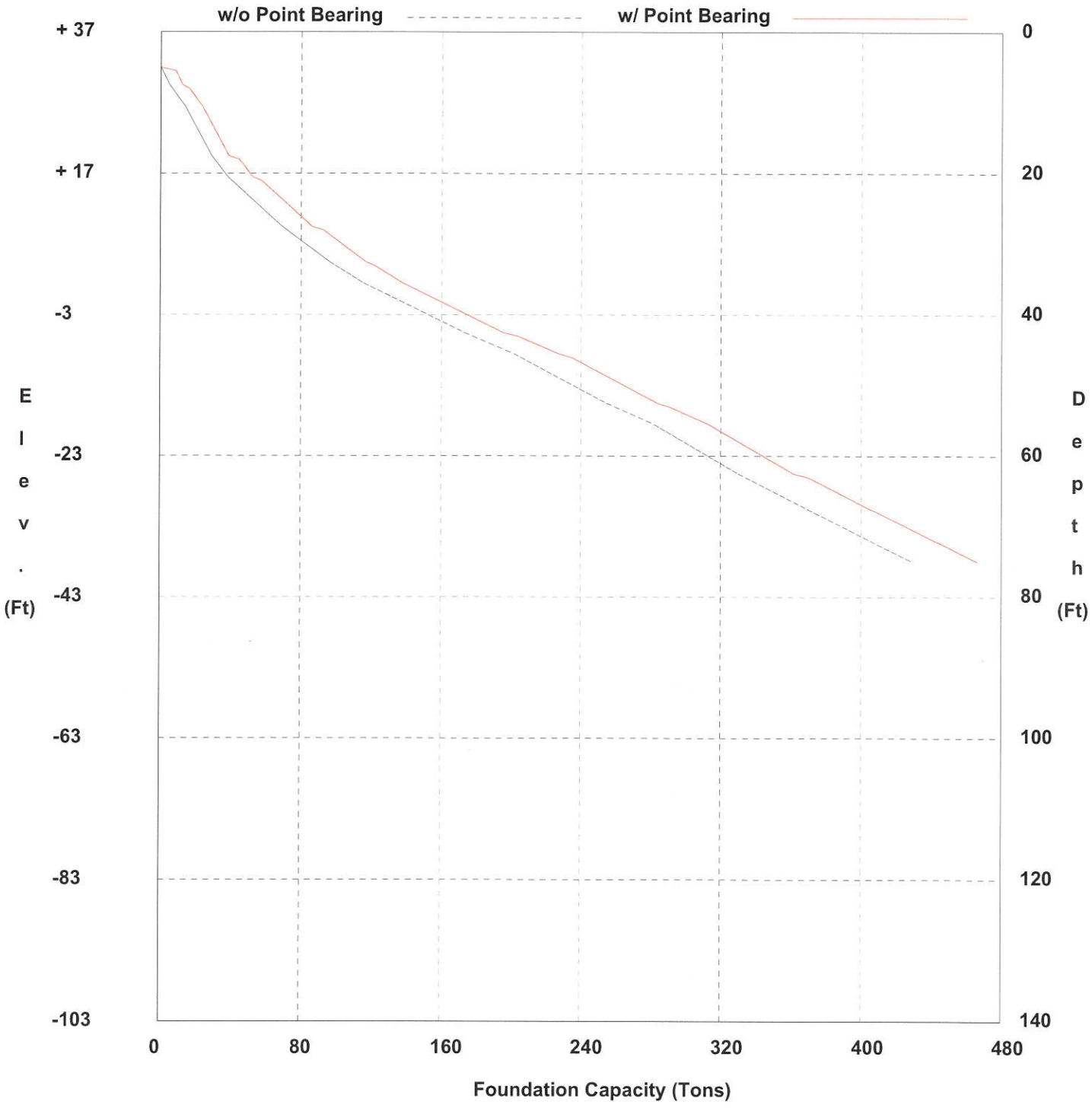
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-60	District	
Highway		Structure	Bridge Borings	Date	3/11/2015
Control		Station		Grnd. Elev.	37.00 ft
		Offset		GW Elev.	20.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 28

+37 Top Hole Elevation
+32 Disregard Elevation

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



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FOUNDATION CAPACITY

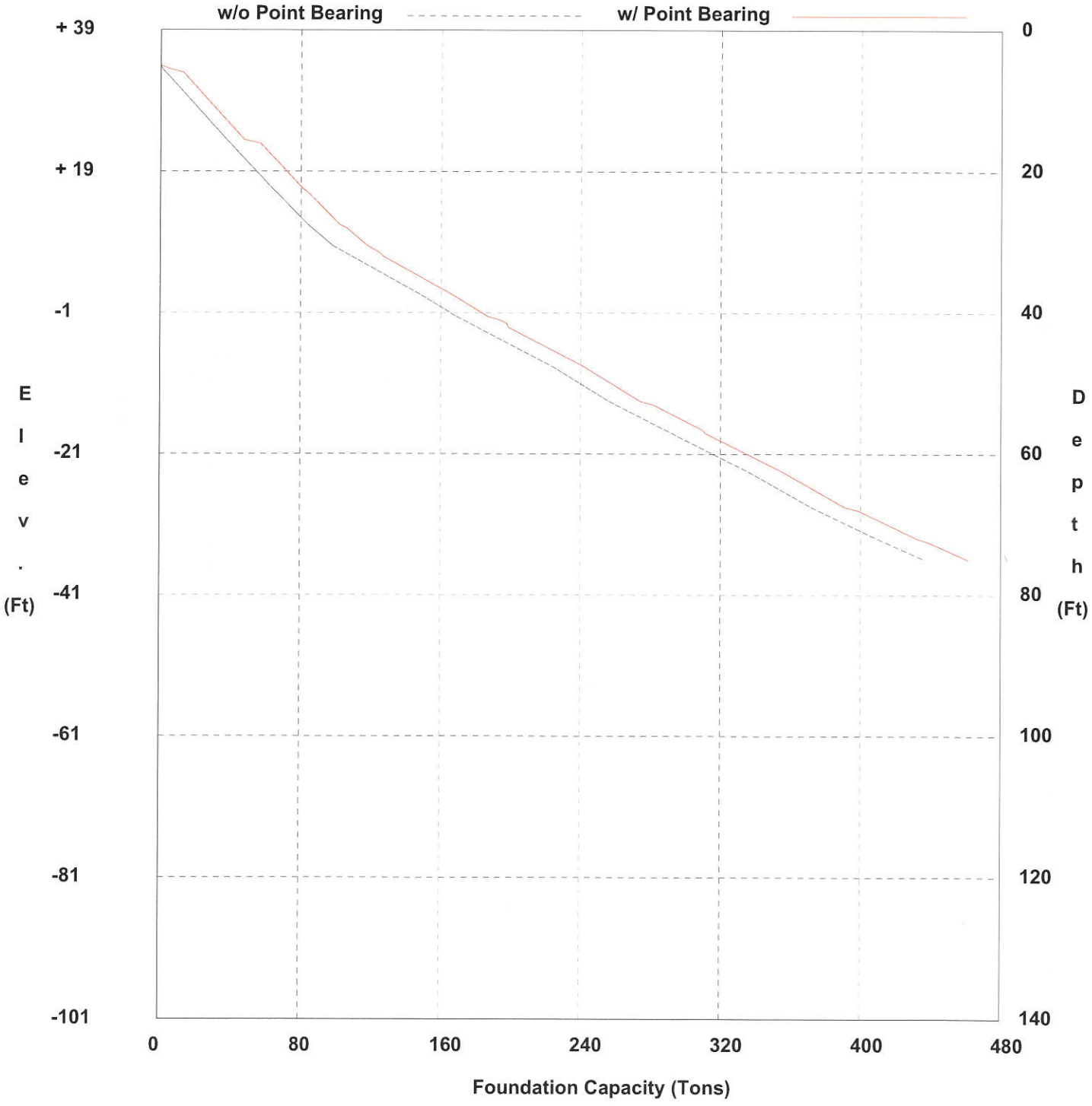
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-61	District	
Highway		Structure	Bridge Borings	Date	3/11/2015
Control		Station		Grnd. Elev.	39.00 ft
		Offset		GW Elev.	26.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 30

+39 Top Hole Elevation
+34 Disregard Elevation

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



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WEAVER CR (FM 141)

FOUNDATION CAPACITY

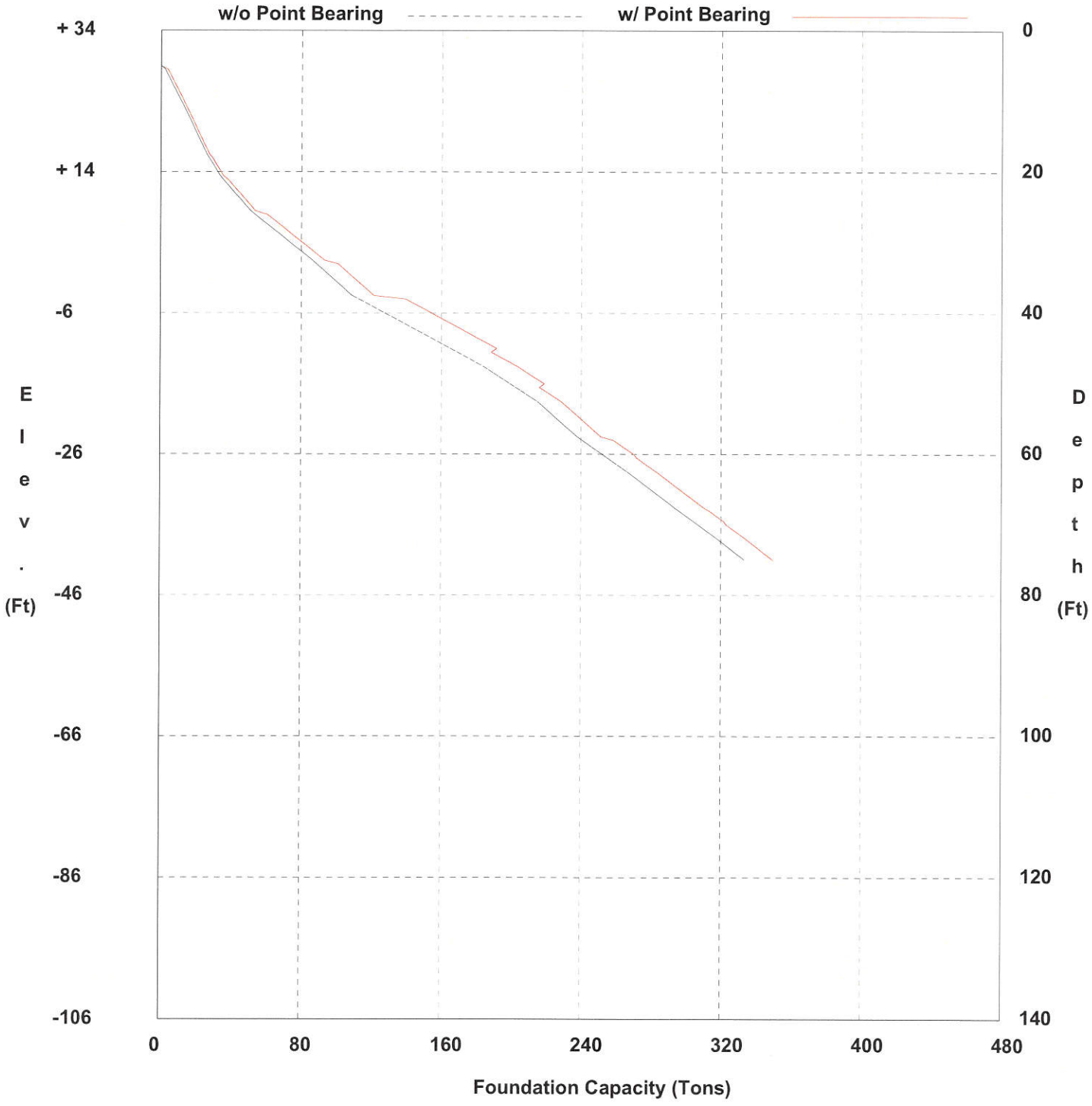
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-66	District	
Highway		Structure	Bridge Borings	Date	3/16/2015
Control		Station		Grnd. Elev.	34.00 ft
		Offset		GW Elev.	11.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 28.5

+34 Top Hole Elevation
+29 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

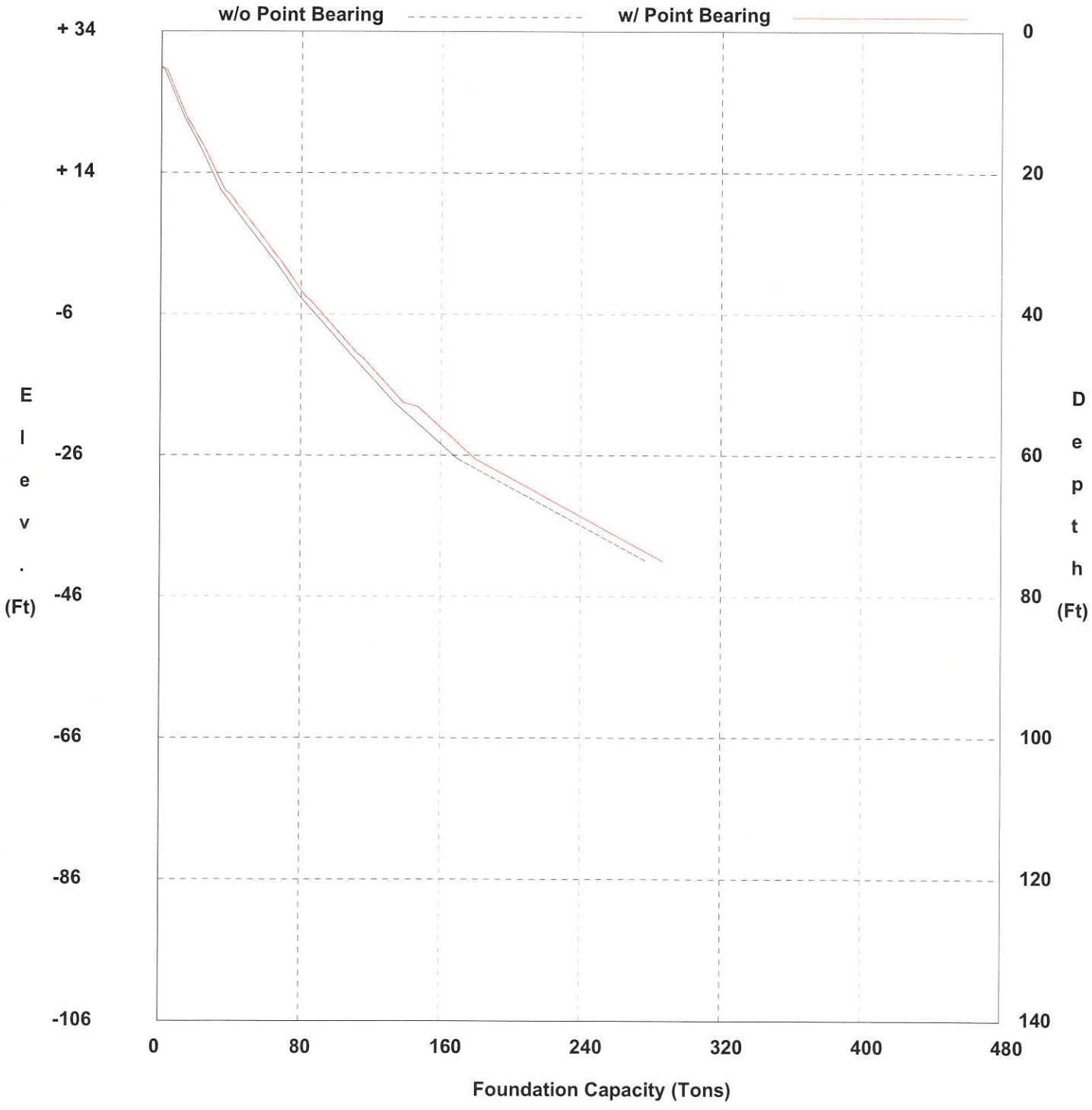
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-67	District	
Highway		Structure	Bridge Borings	Date	3/16/2015
Control		Station		Grnd. Elev.	34.00 ft
		Offset		GW Elev.	16.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 28.5

+34 Top Hole Elevation
+29 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

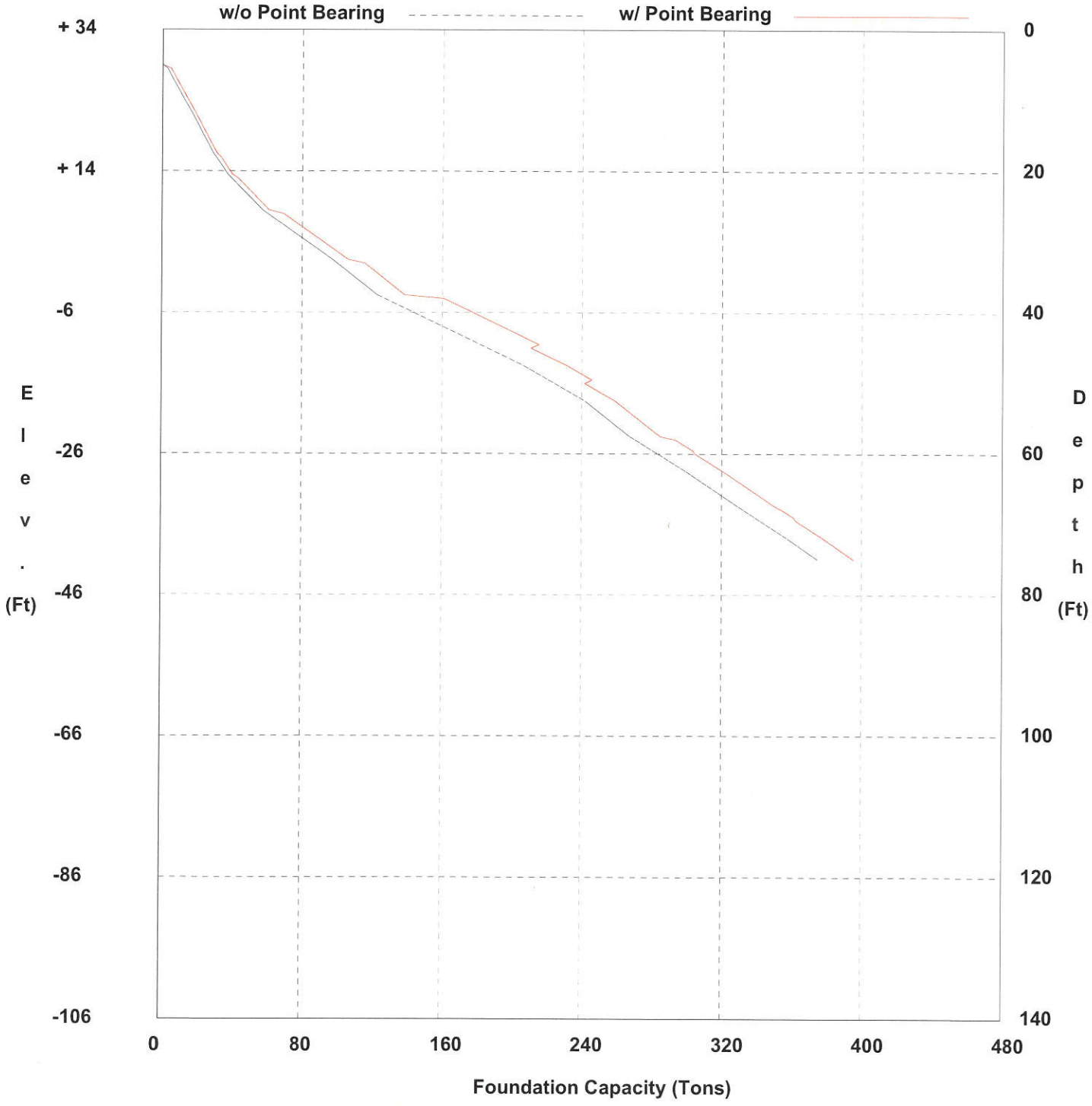
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-66	District	
Highway		Structure	Bridge Borings	Date	3/16/2015
Control		Station		Grnd. Elev.	34.00 ft
		Offset		GW Elev.	11.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 28.5

+34 Top Hole Elevation
+29 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

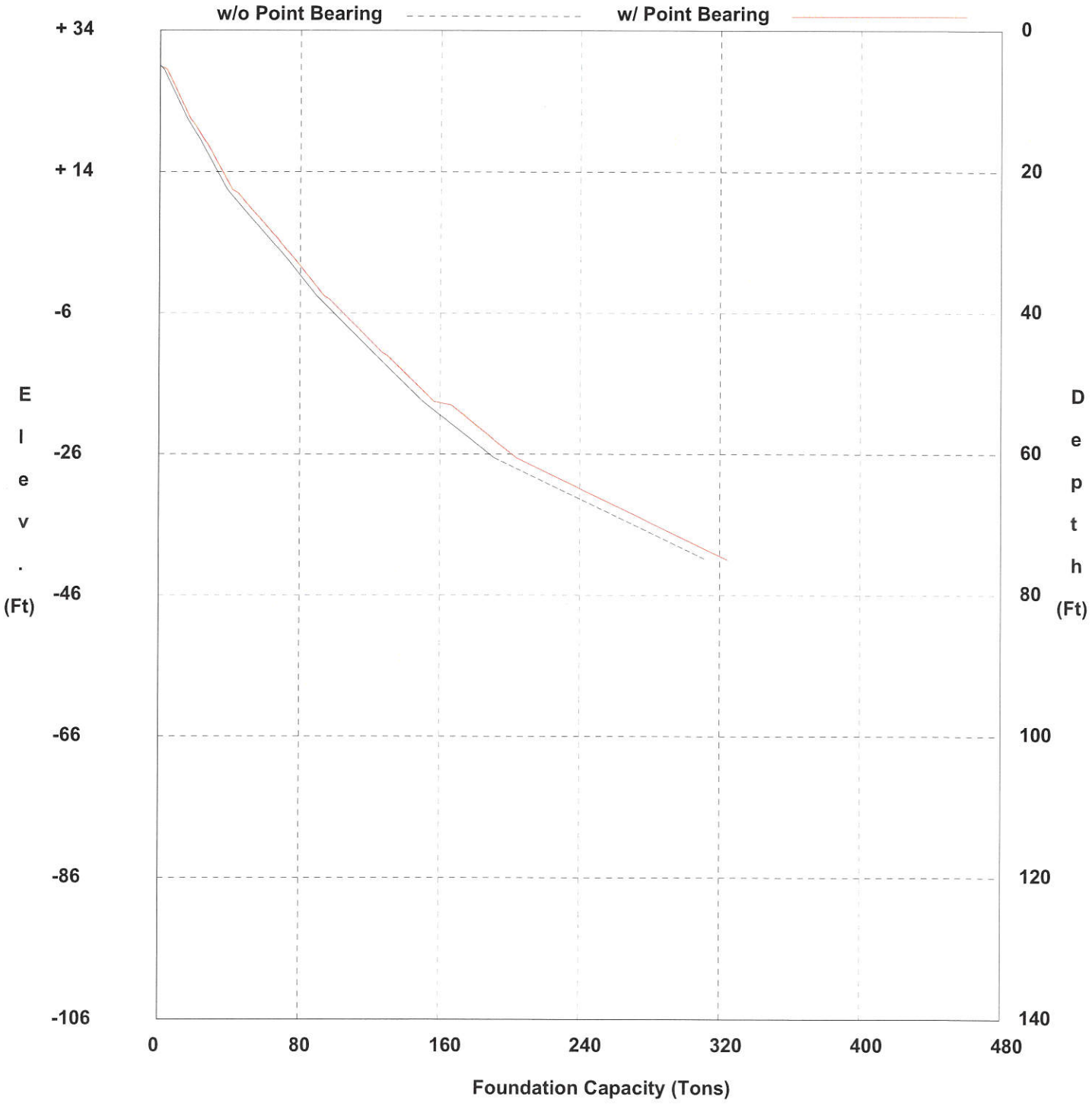
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-67	District	
Highway		Structure	Bridge Borings	Date	3/16/2015
Control		Station		Grnd. Elev.	34.00 ft
		Offset		GW Elev.	16.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 28.5

+34 Top Hole Elevation
+29 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

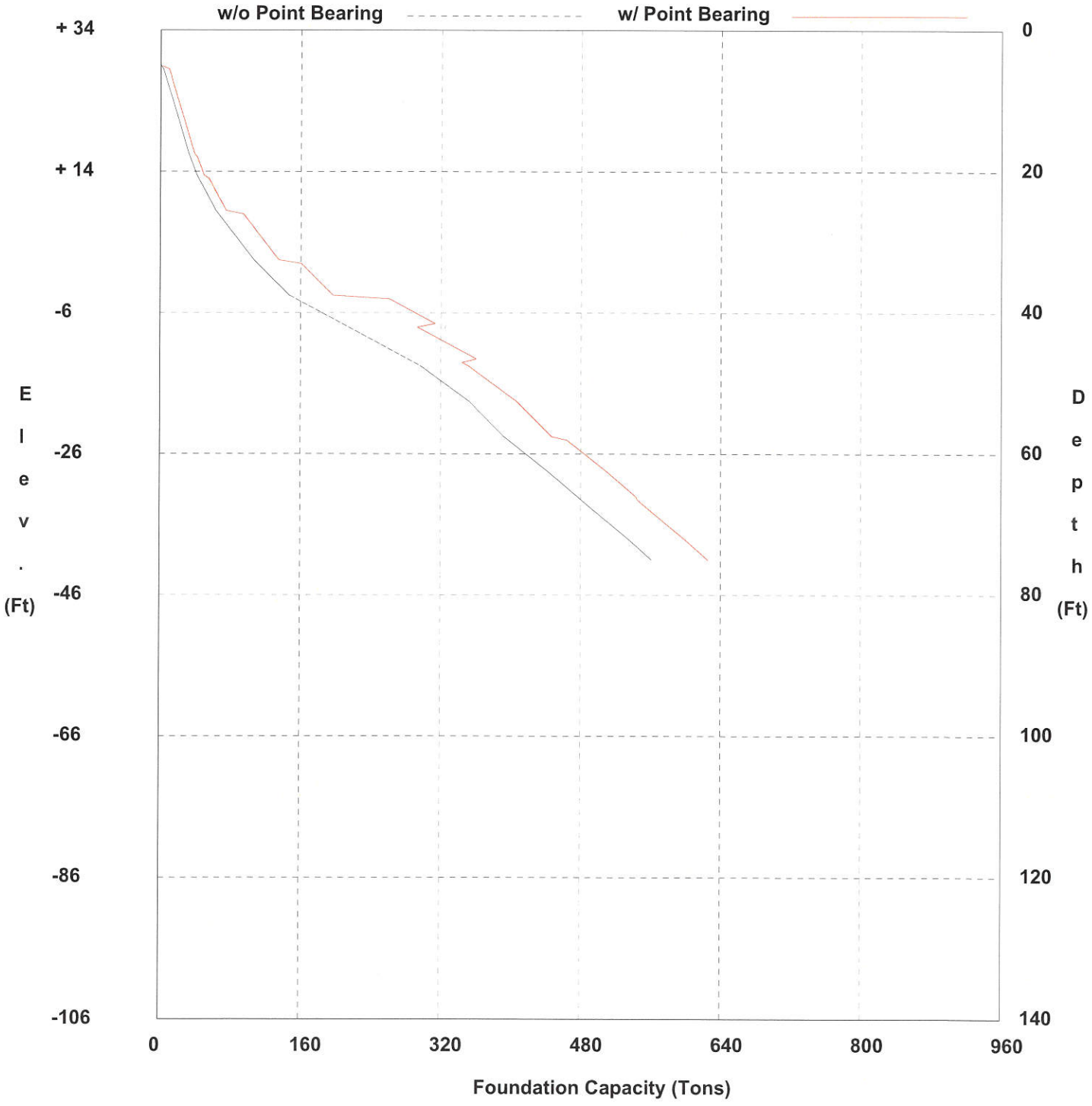
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-66	District	
Highway		Structure	Bridge Borings	Date	3/16/2015
Control		Station		Grnd. Elev.	34.00 ft
		Offset		GW Elev.	11.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 25

+34 Top Hole Elevation
+29 Disregard Elevation

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



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FOUNDATION CAPACITY

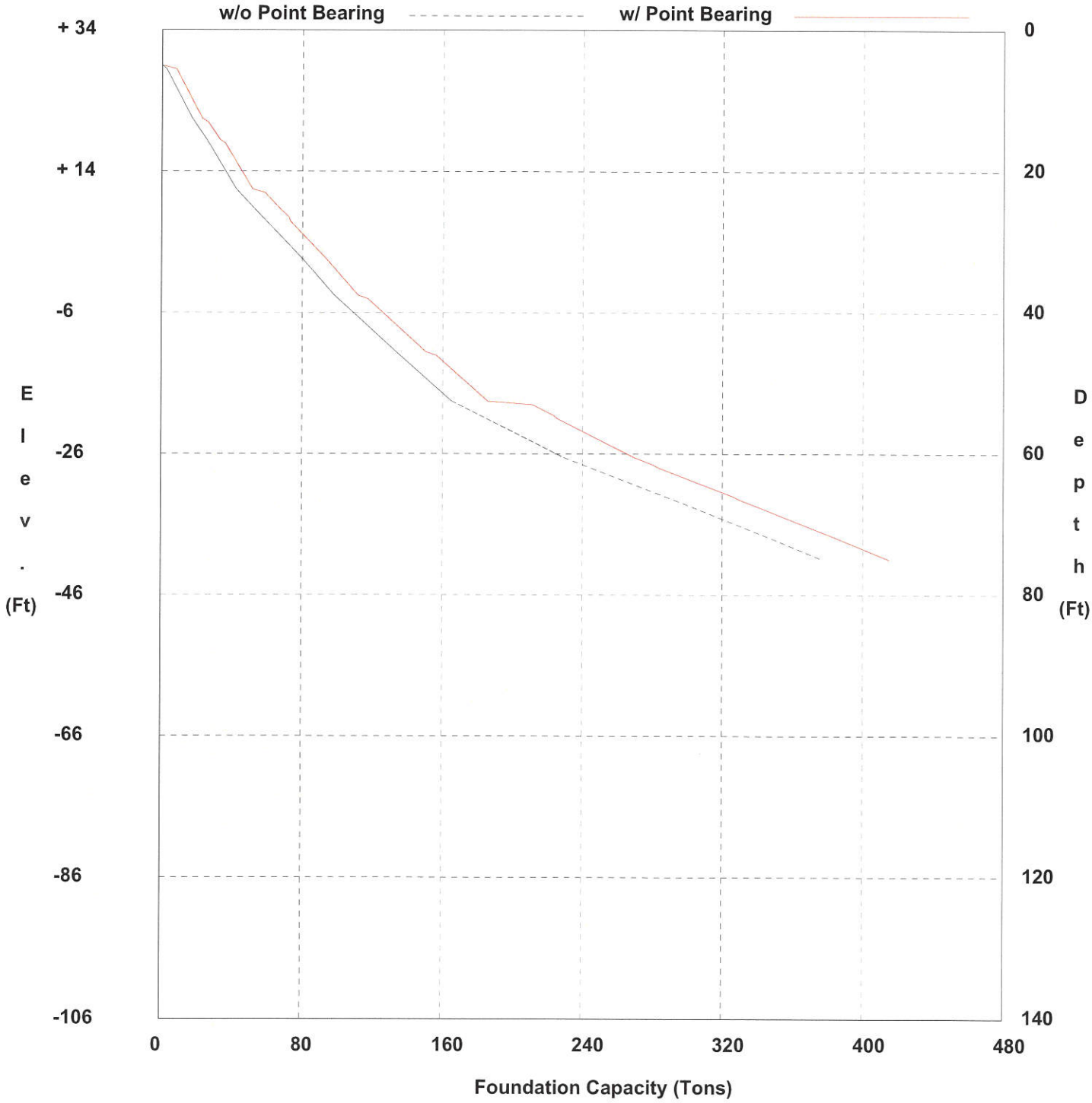
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-67	District	
Highway		Structure	Bridge Borings	Date	3/16/2015
Control		Station		Grnd. Elev.	34.00 ft
		Offset		GW Elev.	16.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 25

+34 Top Hole Elevation
+29 Disregard Elevation

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



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HUMPHREY CR (FM 156)

FOUNDATION CAPACITY

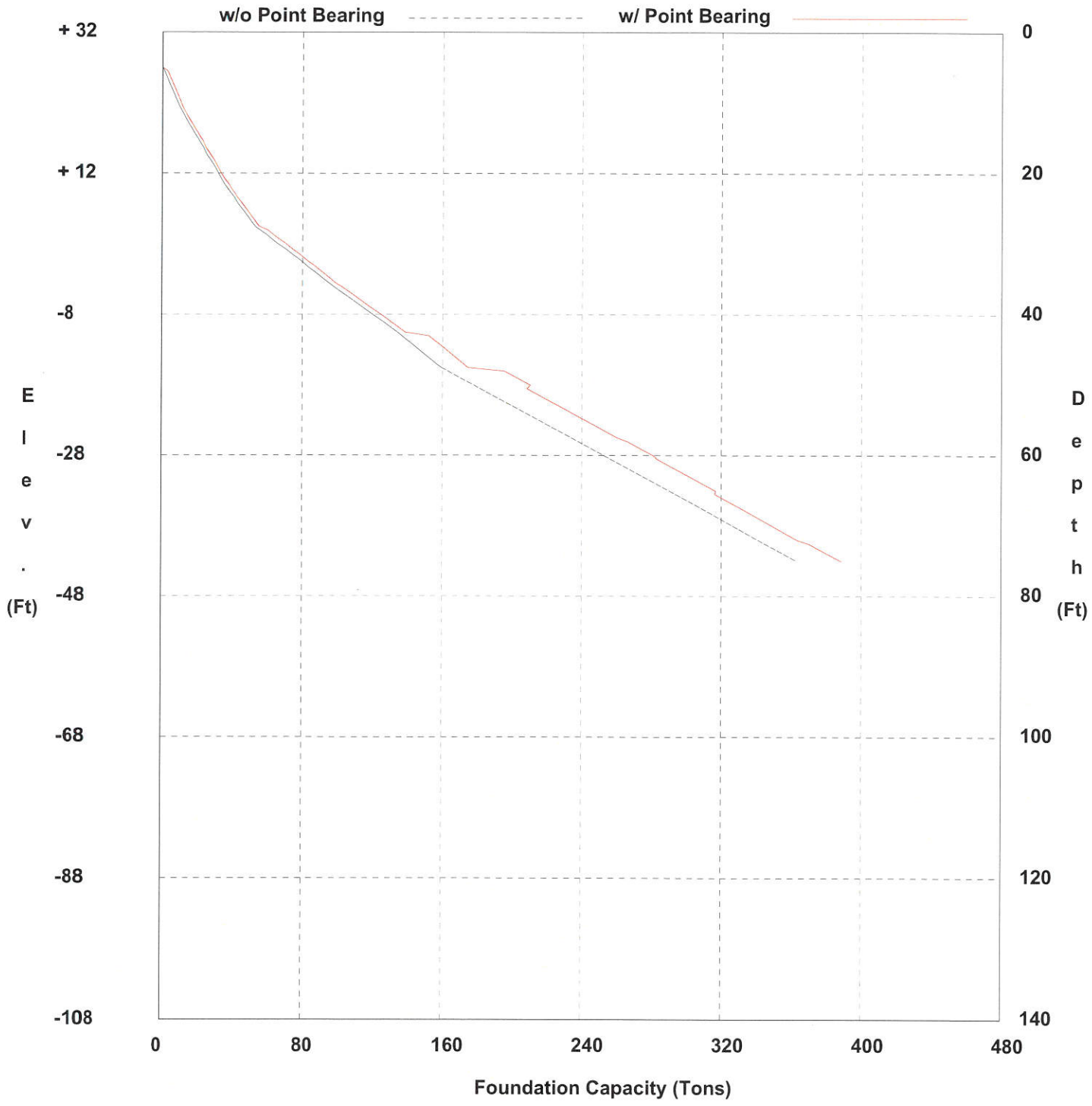
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-70	District	
Highway		Structure	Bridge Borings	Date	3/17/2015
Control		Station		Grnd. Elev.	32.00 ft
		Offset		GW Elev.	23.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 26.5

+32 Top Hole Elevation
+27 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

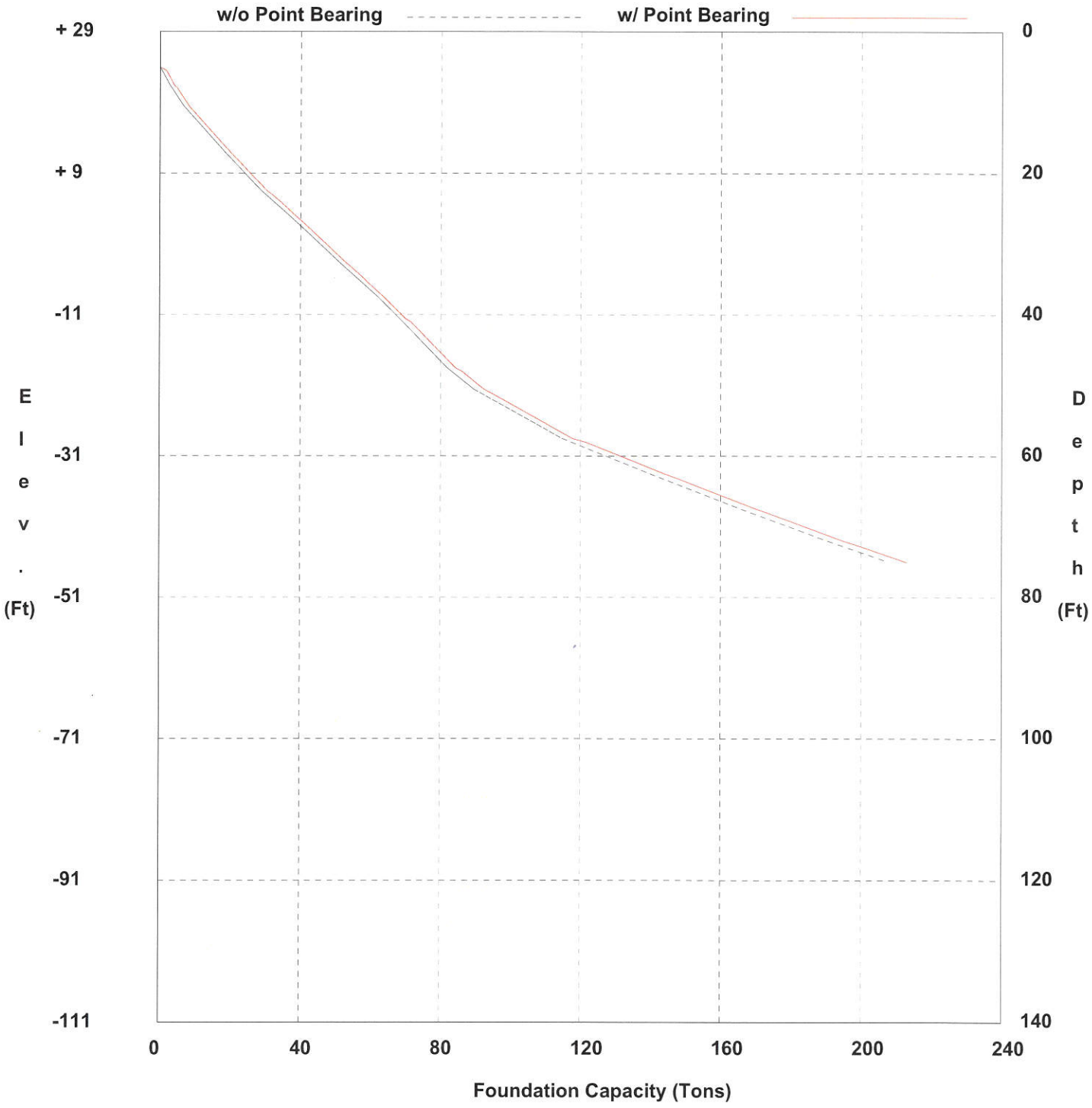
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-71	District	
Highway		Structure	Bridge Borings	Date	3/17/2015
Control		Station		Grnd. Elev.	29.00 ft
		Offset		GW Elev.	21.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 23.5

+29 Top Hole Elevation
+24 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

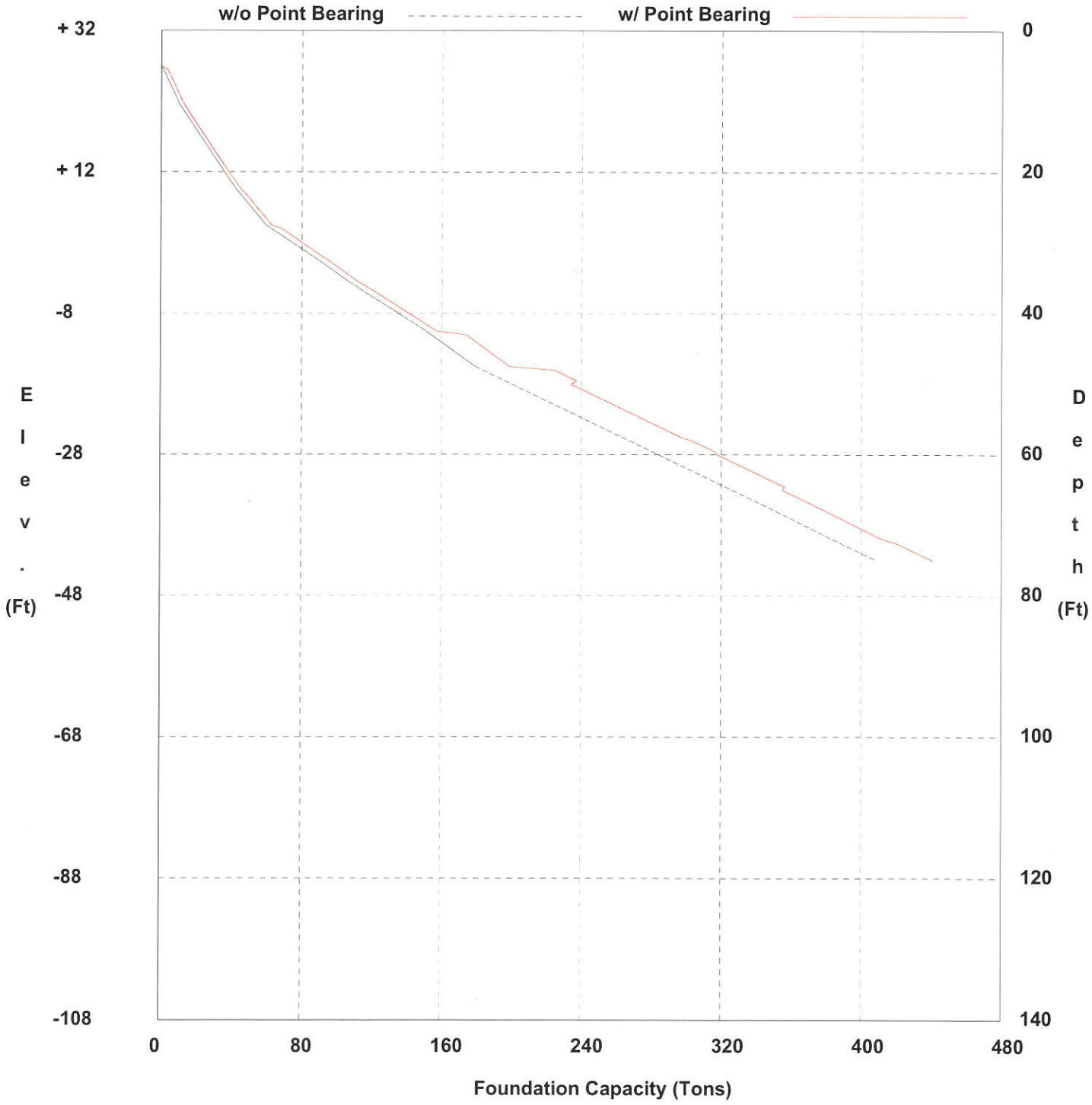
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-70	District	
Highway		Structure	Bridge Borings	Date	3/17/2015
Control		Station		Grnd. Elev.	32.00 ft
		Offset		GW Elev.	23.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 26.5

+32 Top Hole Elevation
+27 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

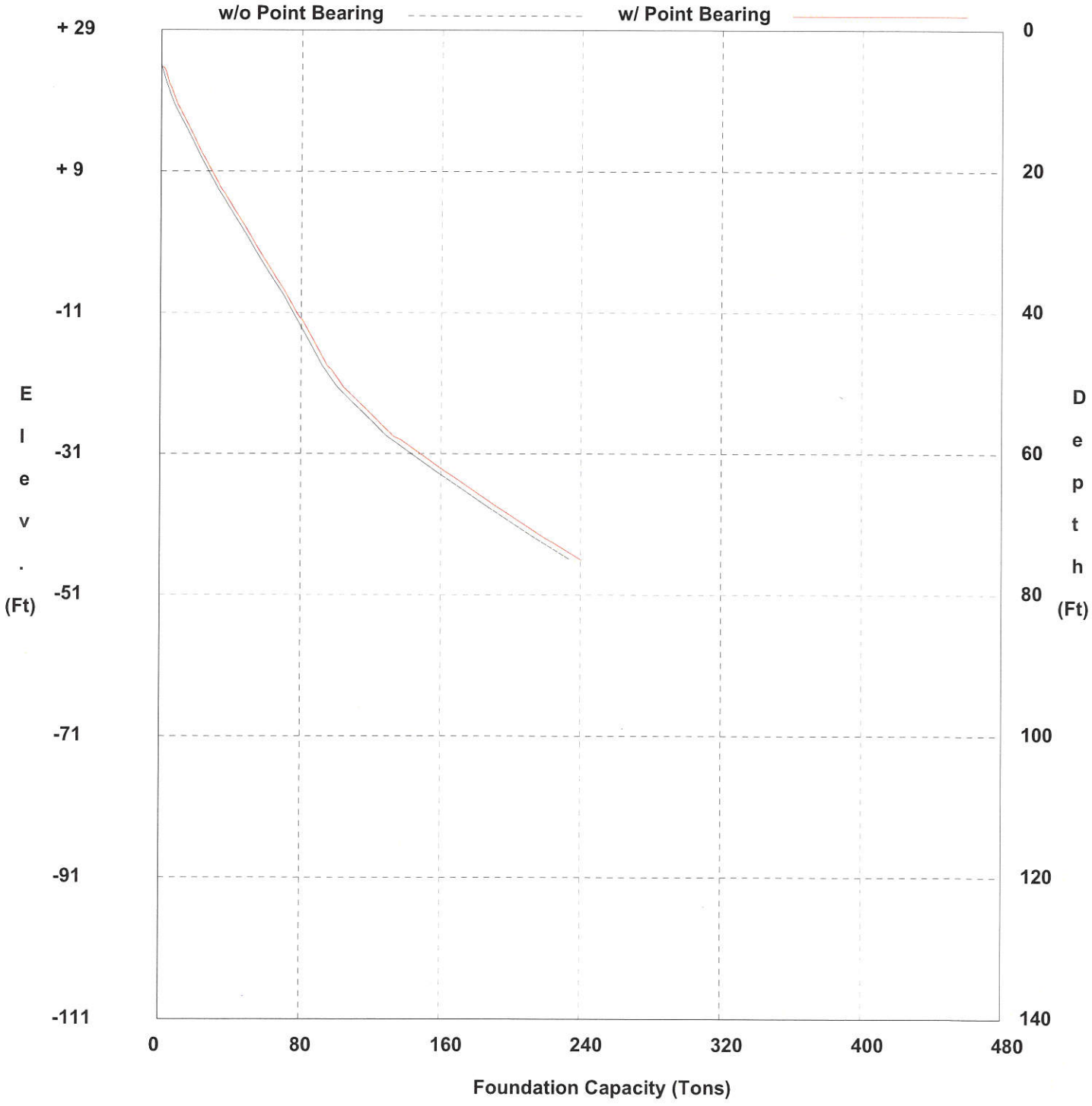
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-71	District	
Highway		Structure	Bridge Borings	Date	3/17/2015
Control		Station		Grnd. Elev.	29.00 ft
		Offset		GW Elev.	21.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 23.5

+29 Top Hole Elevation
+24 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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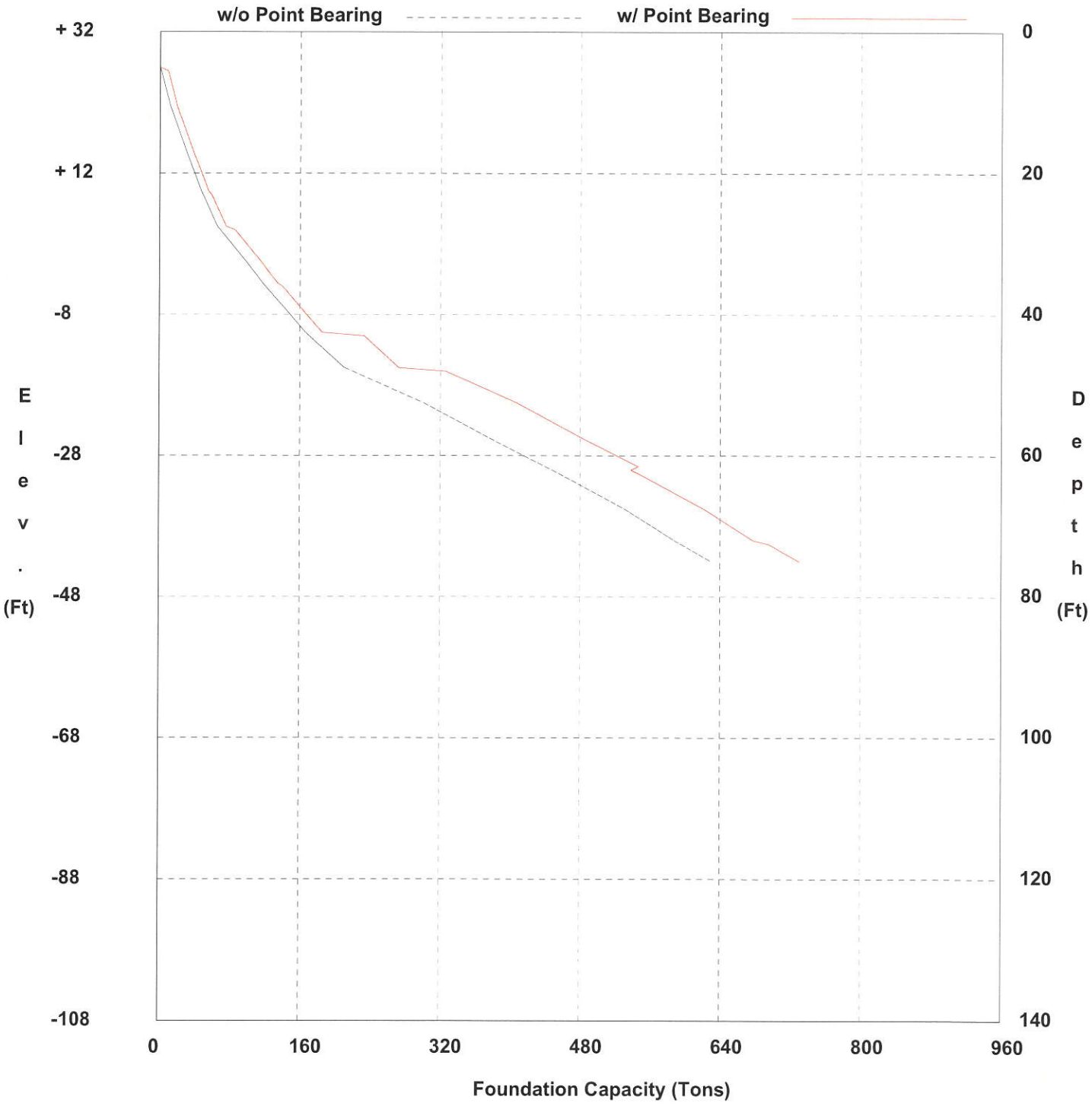
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-70	District	
Highway		Structure	Bridge Borings	Date	3/17/2015
Control		Station		Grnd. Elev.	32.00 ft
		Offset		GW Elev.	23.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 23

+32 Top Hole Elevation
+27 Disregard Elevation

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



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FOUNDATION CAPACITY

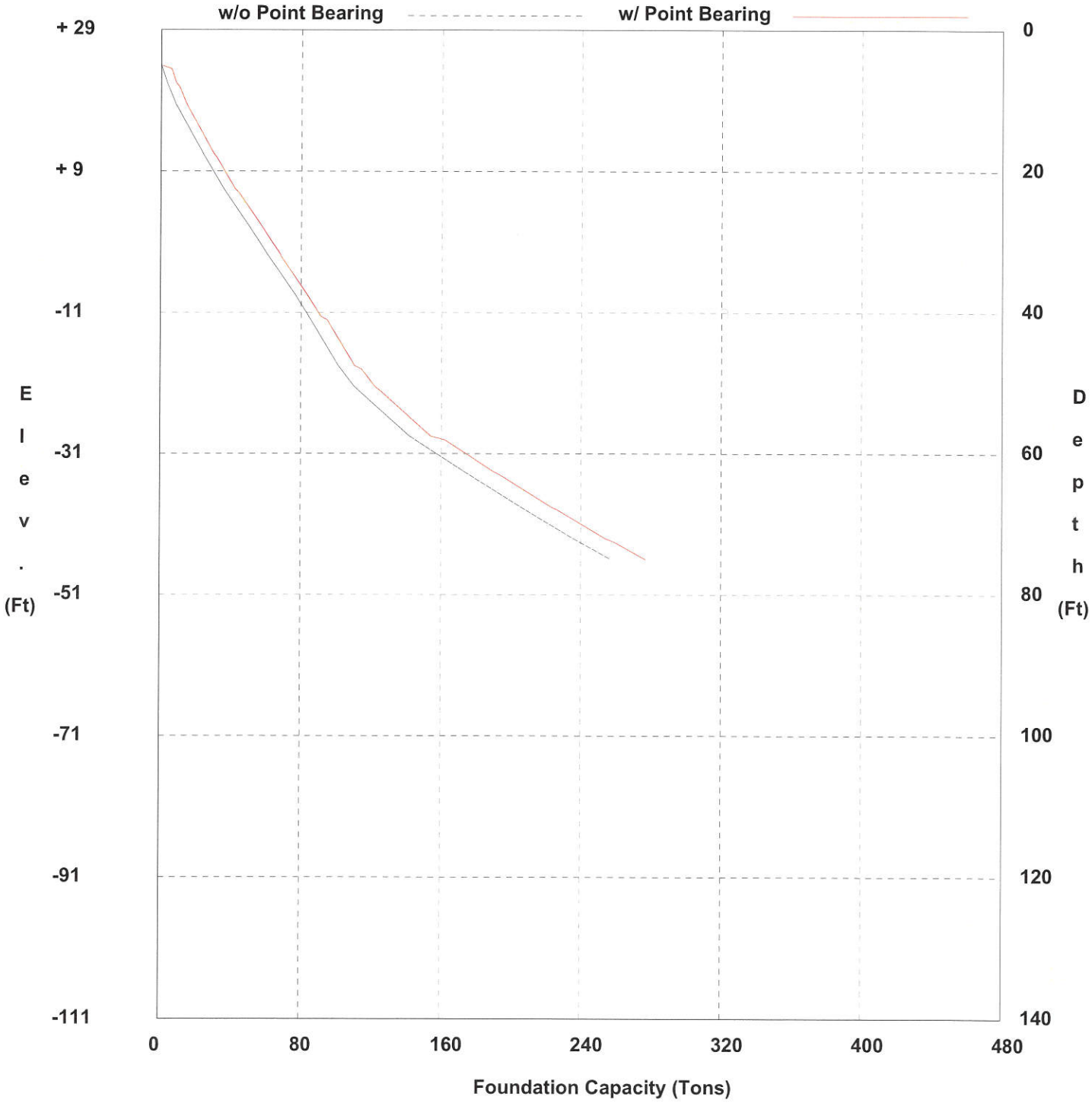
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Version 3.1

County	Willacy	Hole	B-BRG-71	District	
Highway		Structure	Bridge Borings	Date	3/17/2015
Control		Station		Grnd. Elev.	29.00 ft
		Offset		GW Elev.	21.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 20

+29 Top Hole Elevation
+24 Disregard Elevation

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



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SPENCE CR

FOUNDATION CAPACITY

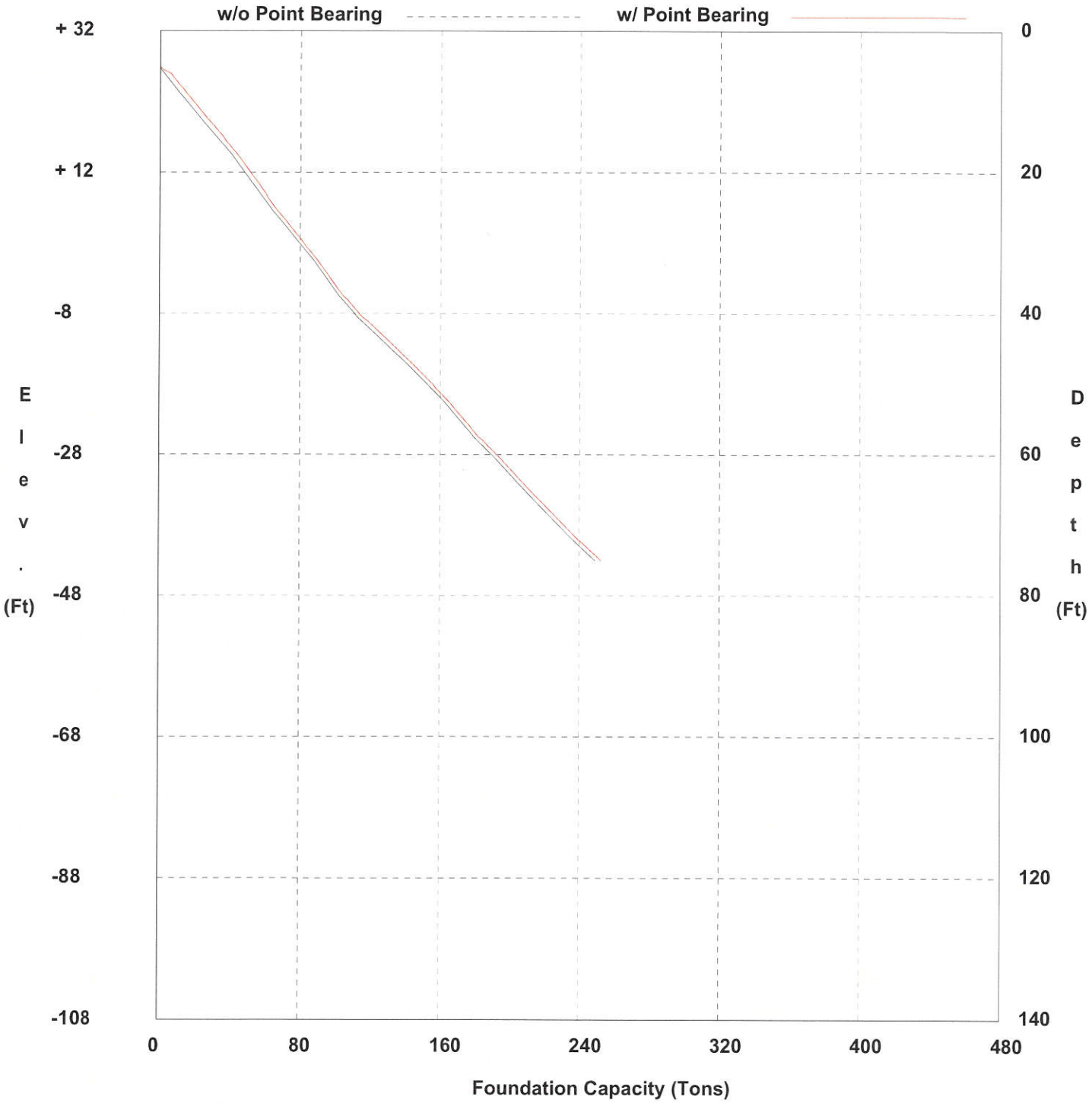
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Version 3.1

County	Willacy	Hole	B-BRG-72	District	
Highway		Structure	Bridge Borings	Date	3/18/2015
Control		Station		Grnd. Elev.	32.00 ft
		Offset		GW Elev.	14.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 26.5

+32 Top Hole Elevation
+27 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

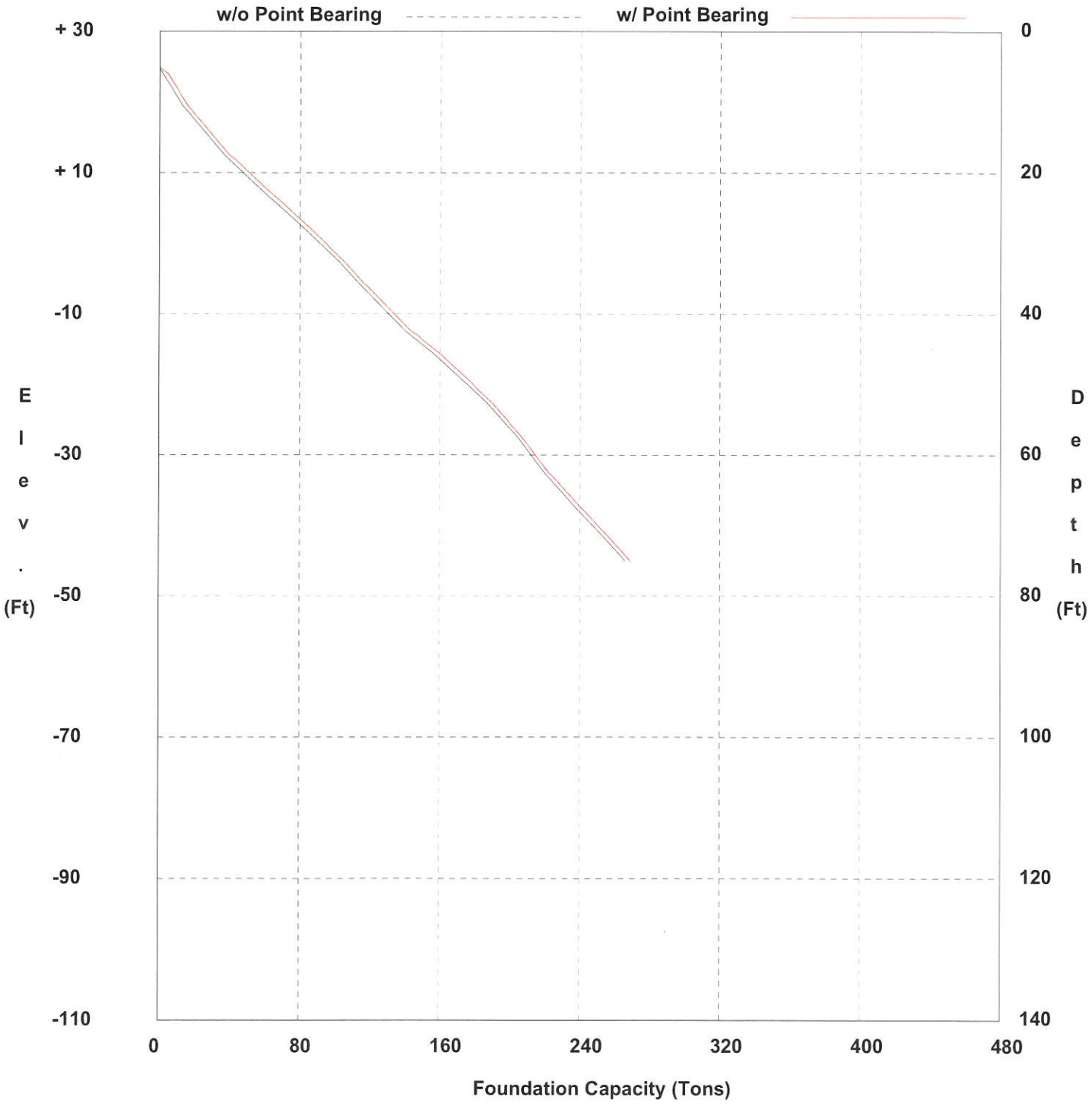
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Version 3.1

County	Willacy	Hole	B-BRG-73	District	
Highway		Structure	Bridge Borings	Date	3/18/2015
Control		Station		Grnd. Elev.	30.00 ft
		Offset		GW Elev.	12.00 ft

16 inch Square Pile
0 ton Design Load
Tip Elevation = + 24.5

+30 Top Hole Elevation
+25 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

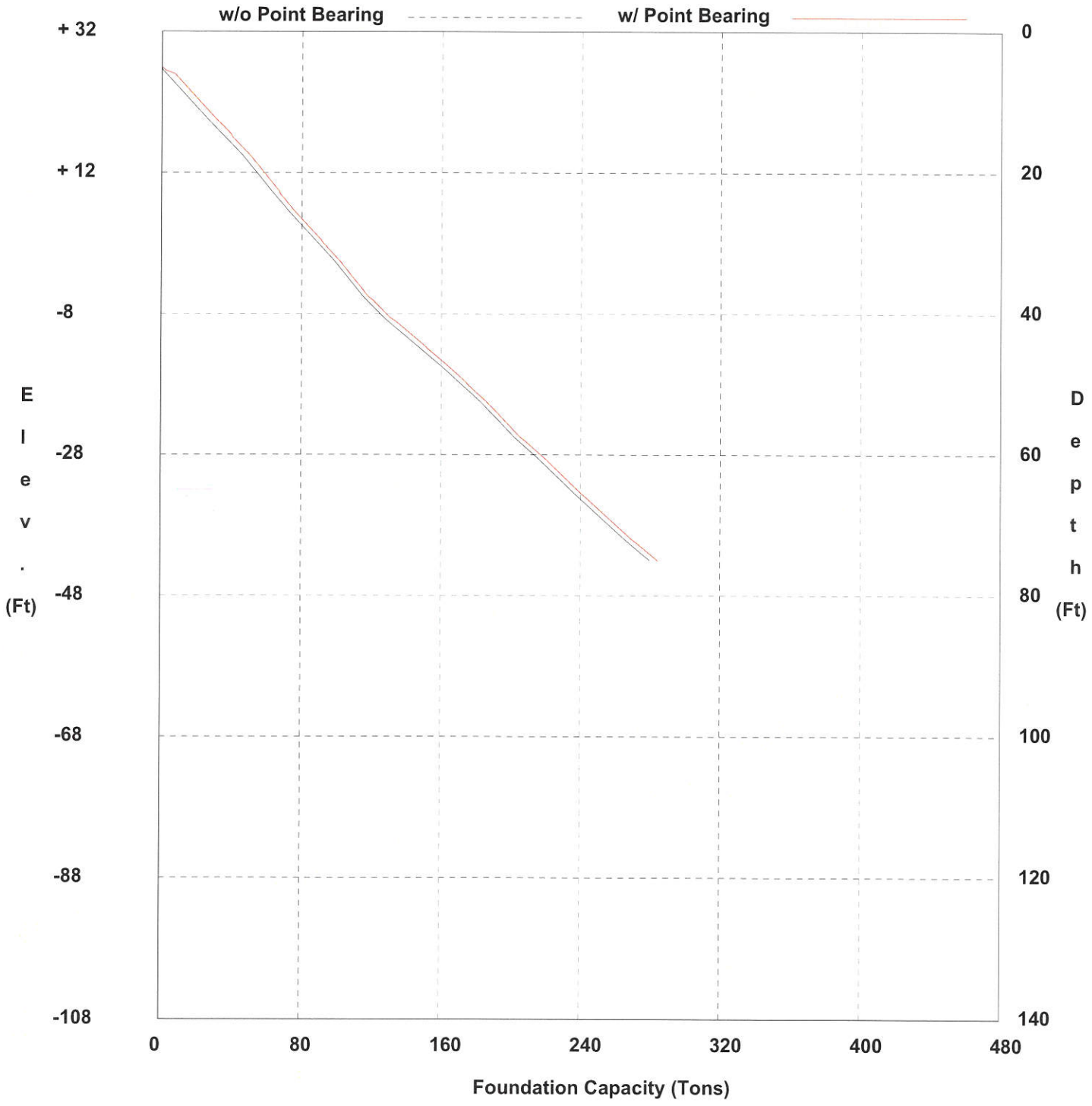
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-72	District	
Highway		Structure	Bridge Borings	Date	3/18/2015
Control		Station		Grnd. Elev.	32.00 ft
		Offset		GW Elev.	14.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 26.5

+32 Top Hole Elevation
+27 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

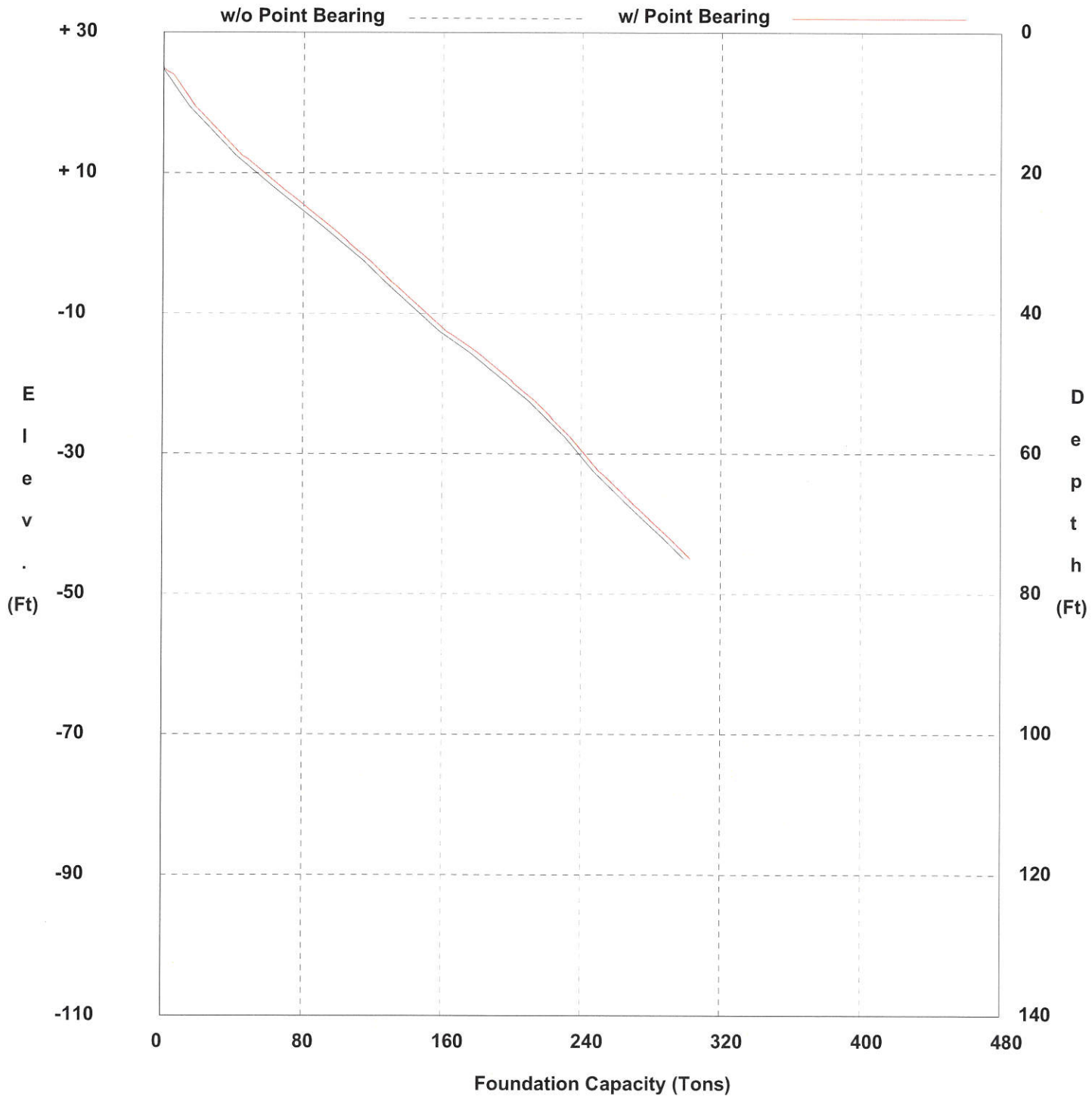
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-73	District	
Highway		Structure	Bridge Borings	Date	3/18/2015
Control		Station		Grnd. Elev.	30.00 ft
		Offset		GW Elev.	12.00 ft

18 inch Square Pile
0 ton Design Load
Tip Elevation = + 24.5

+30 Top Hole Elevation
+25 Disregard Elevation
Skin Friction Limit = 1.4 tsf

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



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FOUNDATION CAPACITY

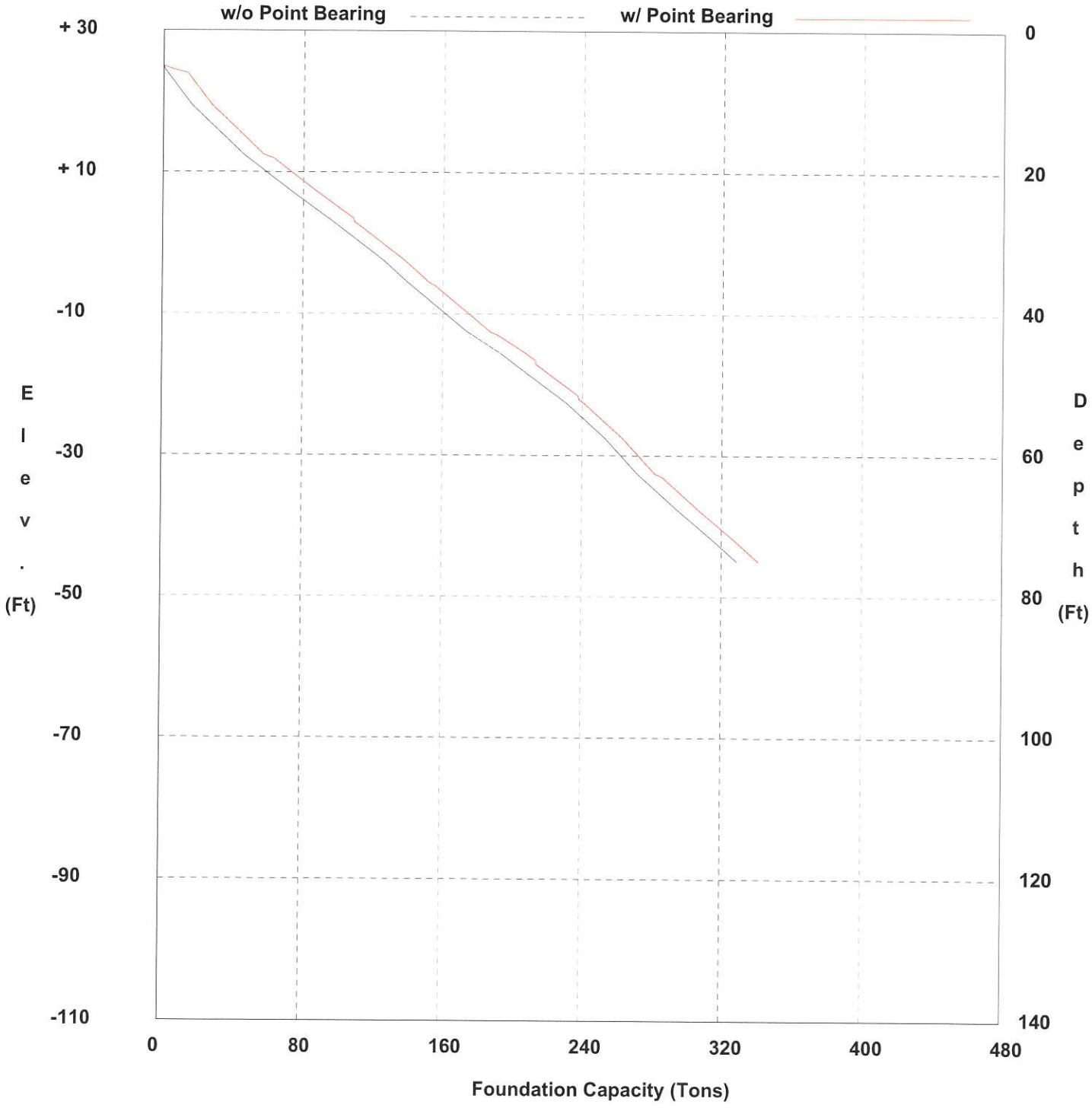
WinCore
Version 3.1

County	Willacy	Hole	B-BRG-73	District	
Highway		Structure	Bridge Borings	Date	3/18/2015
Control		Station		Grnd. Elev.	30.00 ft
		Offset		GW Elev.	12.00 ft

36 inch Drilled Shaft
0 ton Design Load
Tip Elevation = + 21

+30 Top Hole Elevation
+25 Disregard Elevation

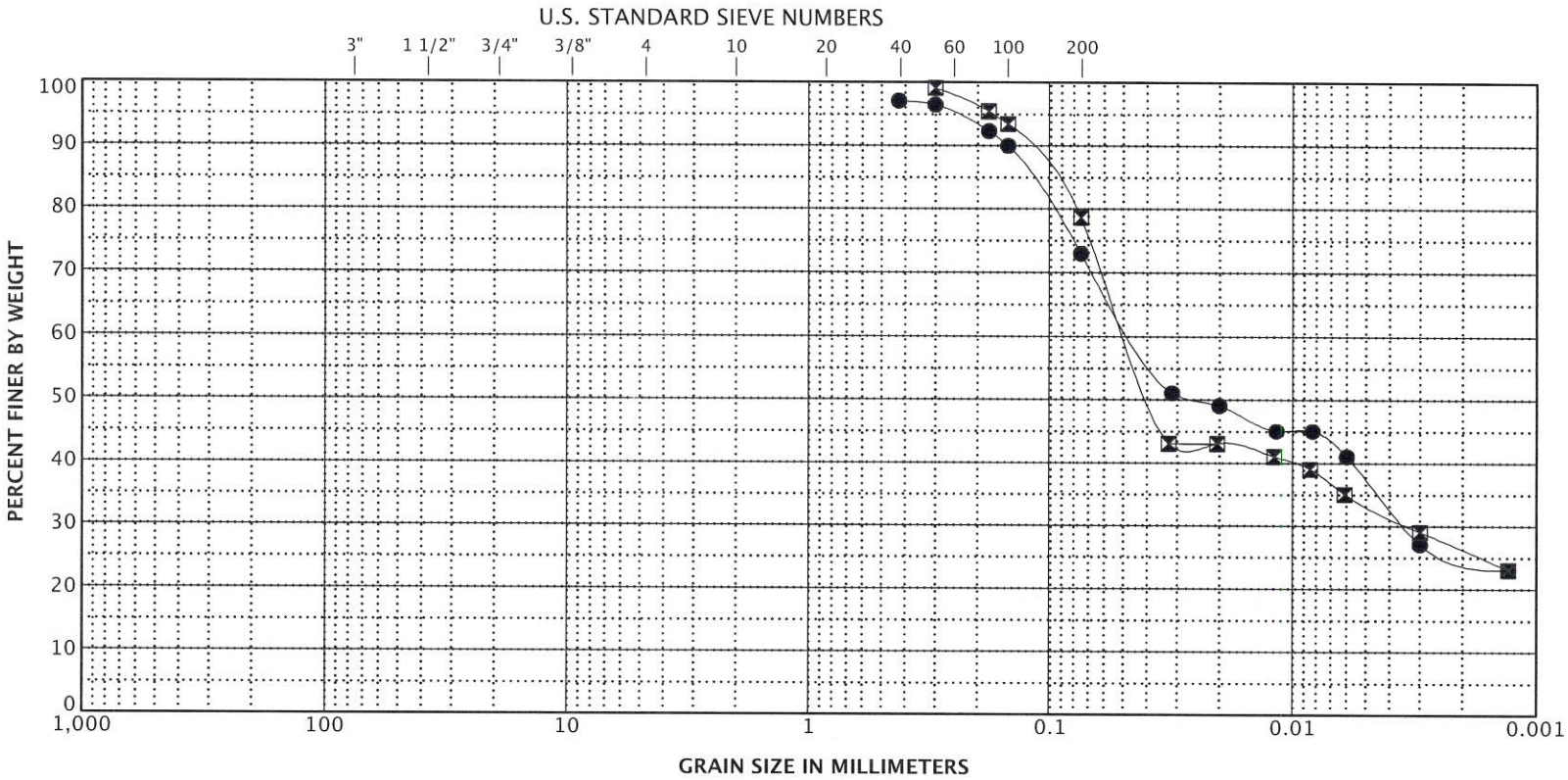
Disregard above hard strata disabled
Pb: 2 Diameters Below Tip Checked
TCP Capacity Values Used
0.7 Soil Reduction Factor Used



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GRADATION CURVES

AND D50 – D90 SCOUR PARAMETERS



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

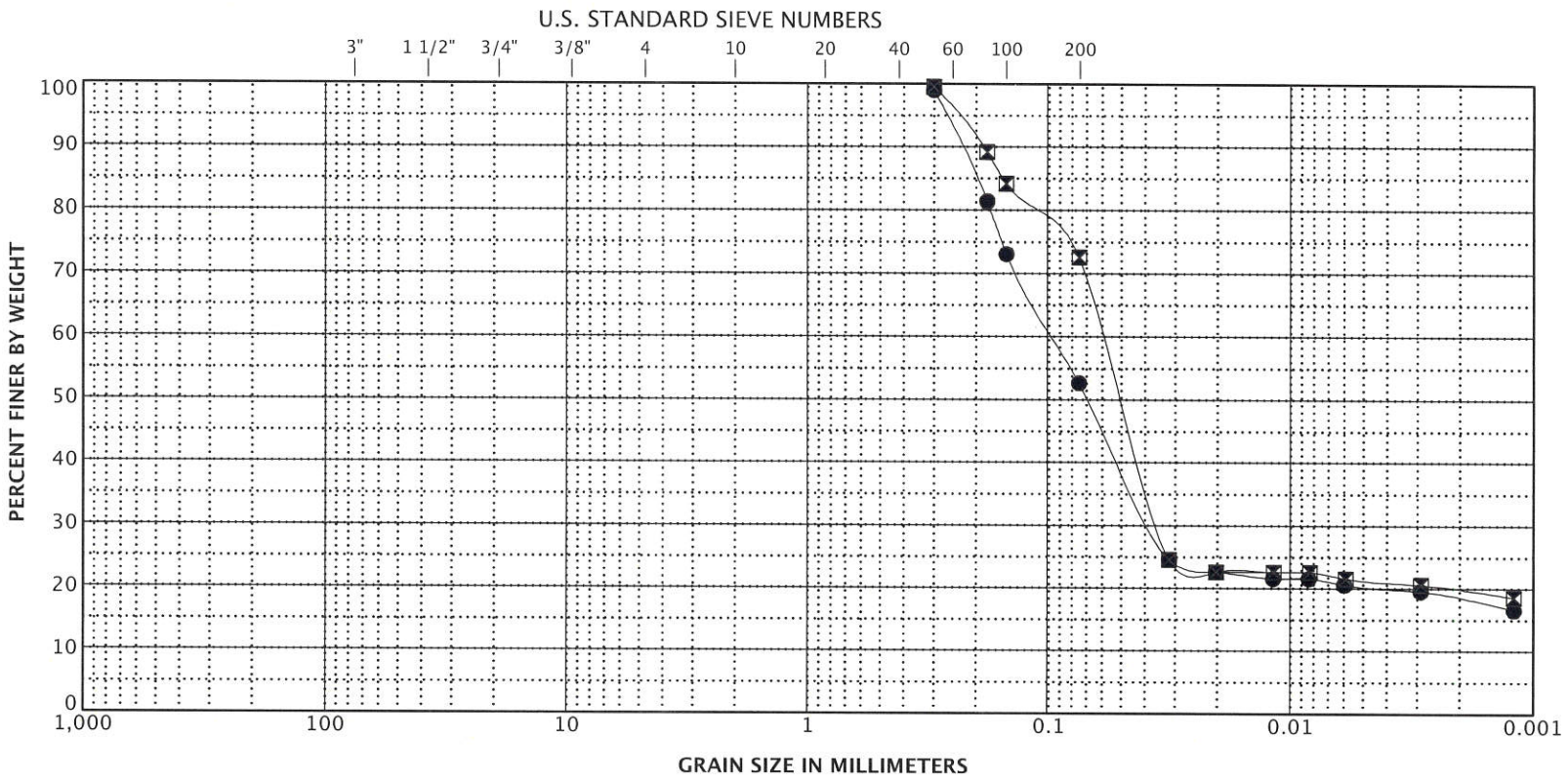
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-37	20.0		0.04	0.02	0.00			0	24	36	37
⊠	B-BRG-38	15.0		0.05	0.04	0.00			0	20	45	33

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

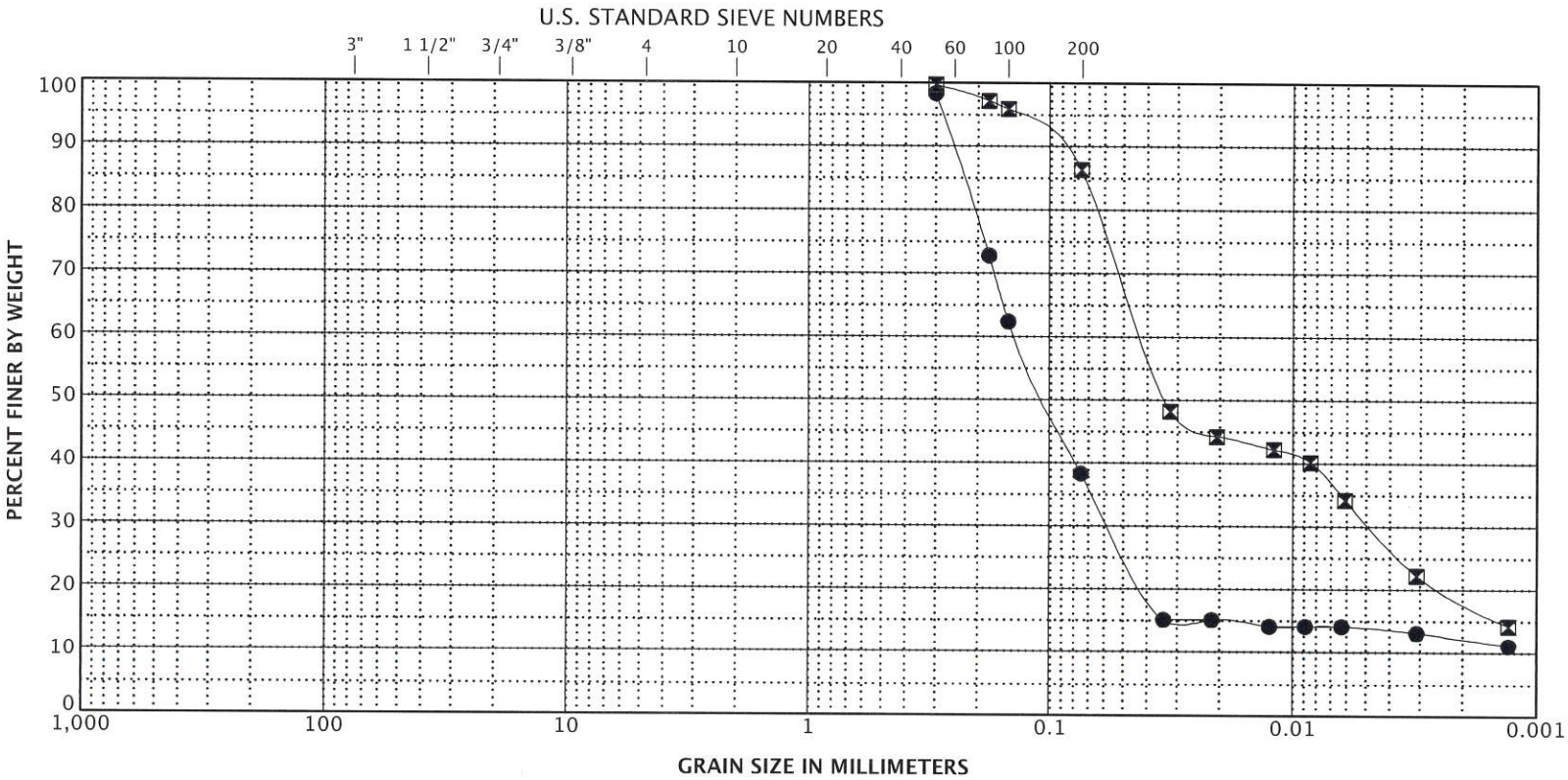
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-39	5.0		0.10	0.07	0.04			0	46	32	20
⊠	B-BRG-40	20.0		0.06	0.05	0.03			0	27	51	21

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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-BRG-41	5.0		0.14	0.11	0.06			0	60	25	14
⊠	B-BRG-42	20.0		0.04	0.03	0.00			0	13	56	31

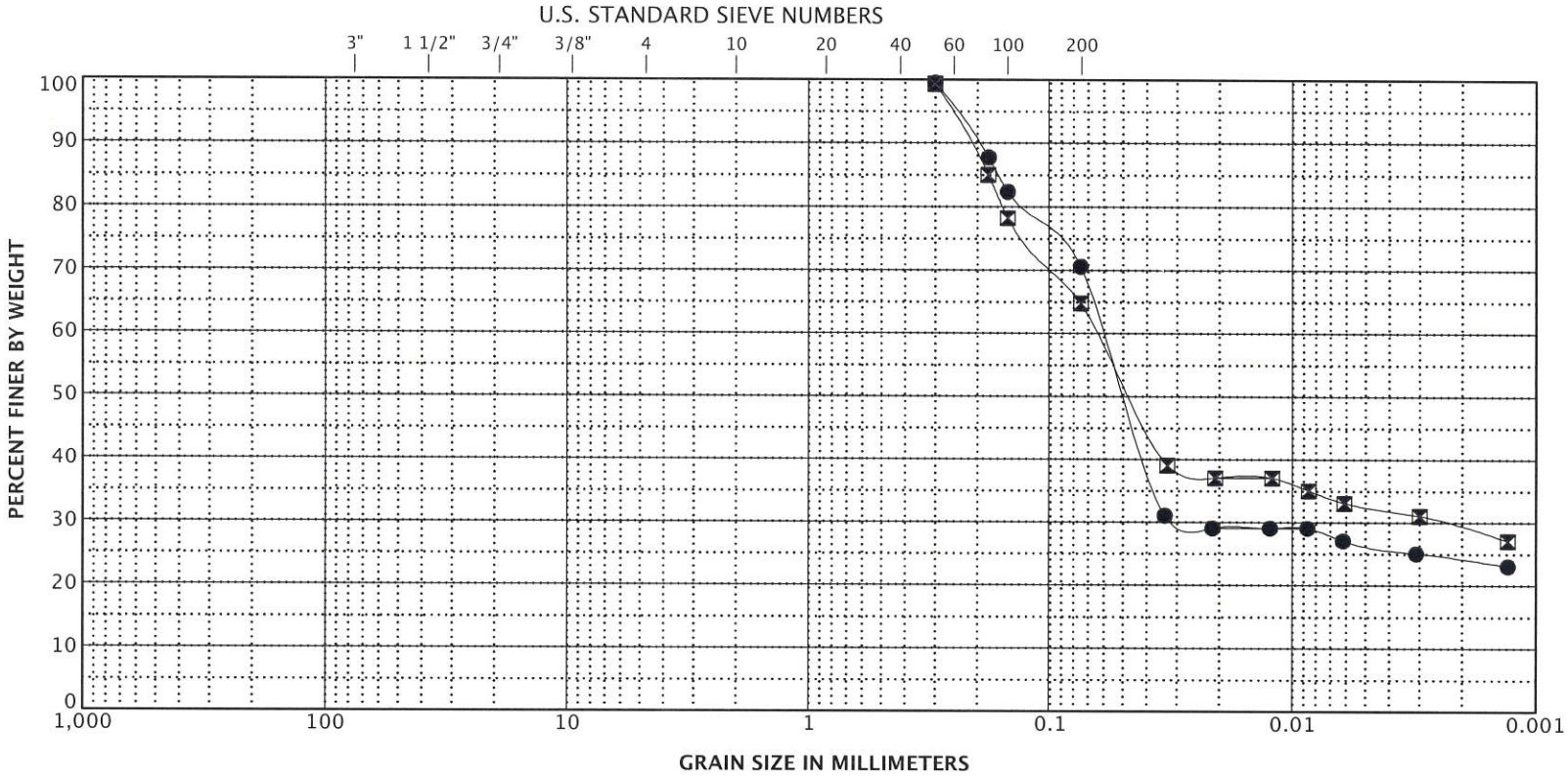
L&G Engineering Laboratory
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Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE

GRAIN SIZE NO P200 S&B- RAYMONDVILLE DRAIN WILLACY.GPJ GEODESIGN.GDT PRINT DATE: 4/28/15:



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

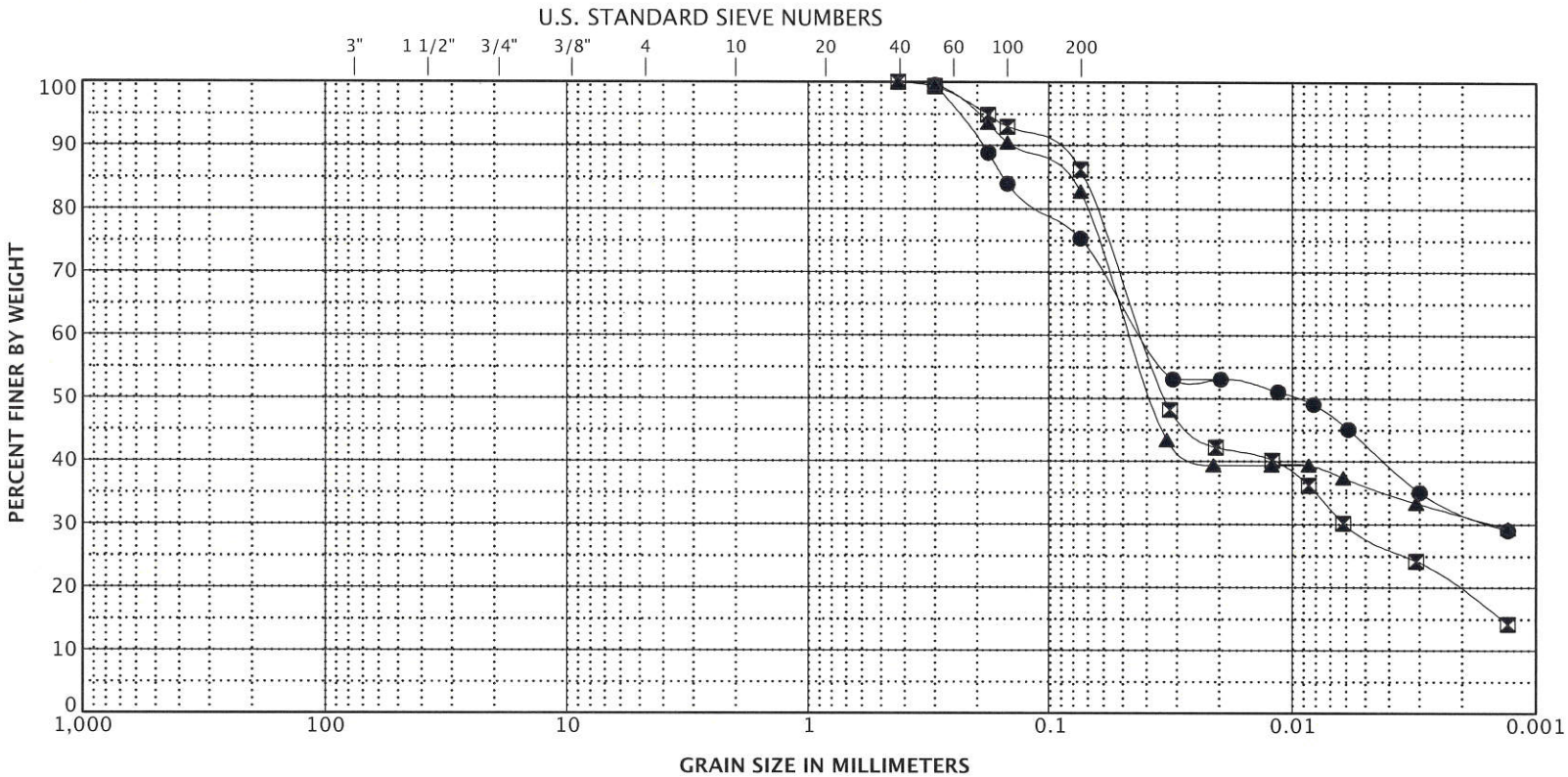
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-43	5.0		0.06	0.05	0.03			0	29	44	26
⊠	B-BRG-44	10.0		0.06	0.05	0.00			0	35	32	33

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Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

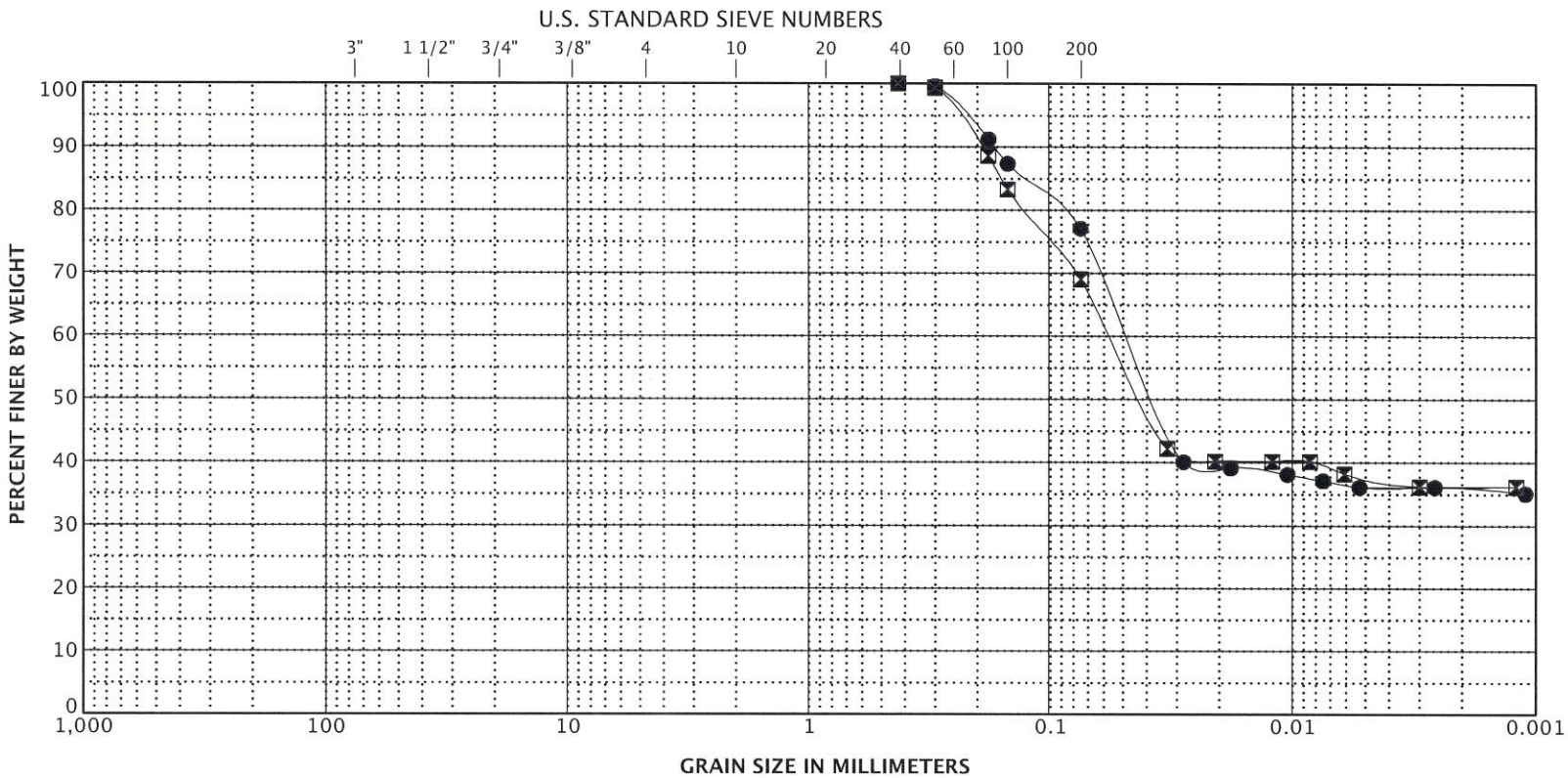
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-45	15.0		0.04	0.01	0.00			0	24	33	43
⊠	B-BRG-46	25.0		0.04	0.03	0.01			0	14	58	28
▲	B-BRG-47	10.0		0.05	0.04	0.00			0	17	47	36

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Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

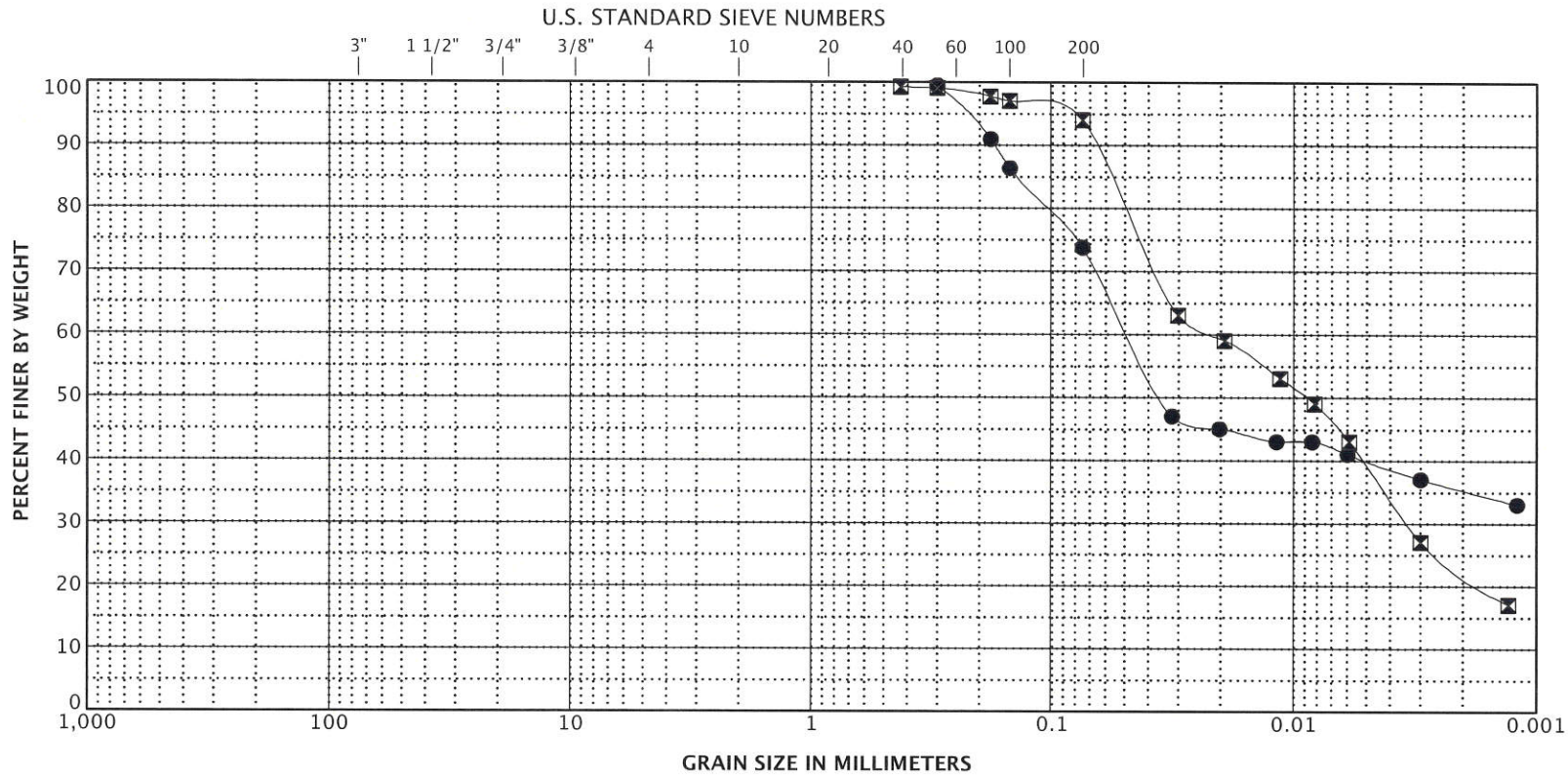
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-48	5.0		0.05	0.04				0	23	41	36
⊠	B-BRG-49	10.0		0.06	0.04				0	31	31	38

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Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

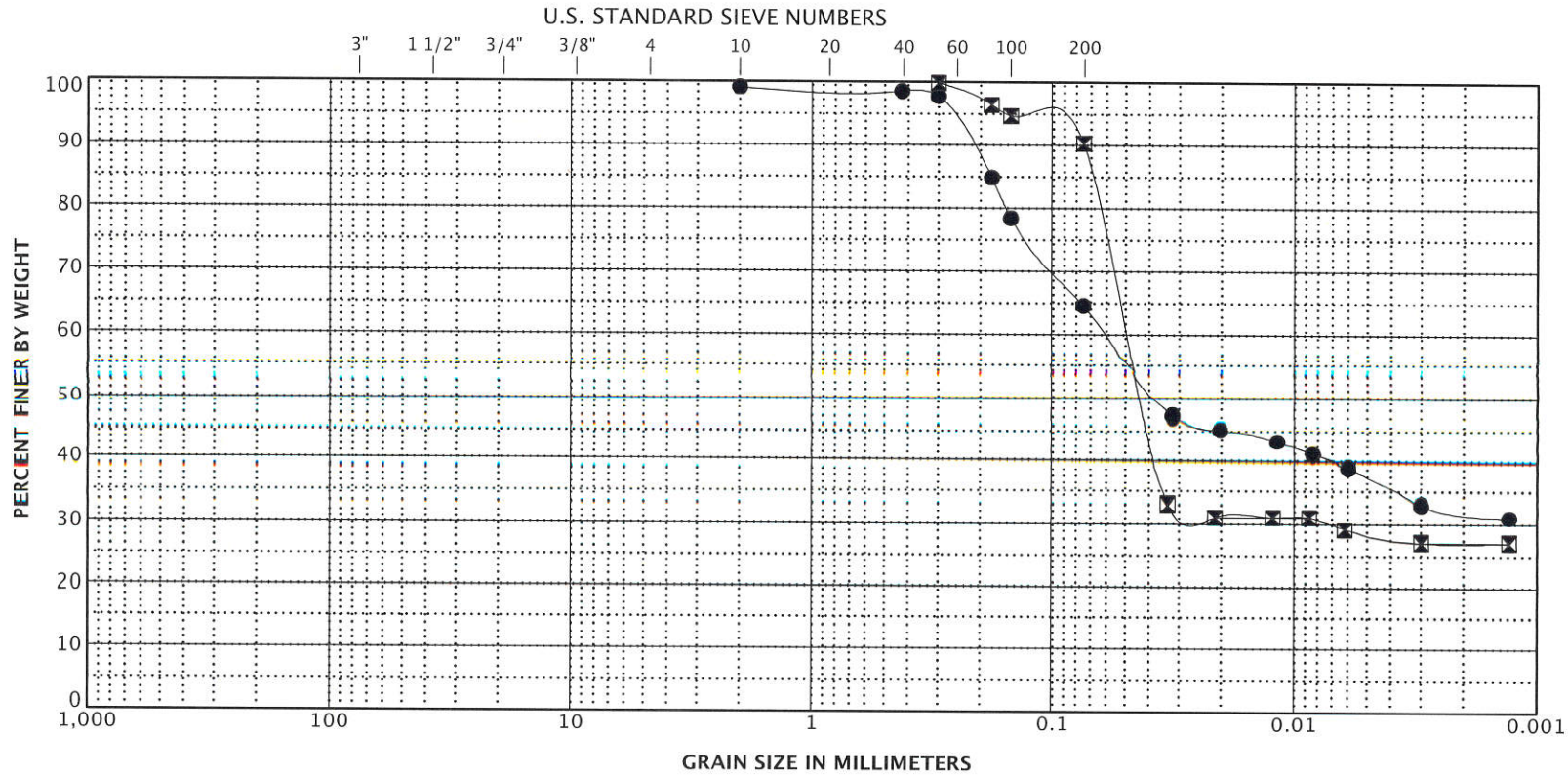
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-50	5.0		0.05	0.04				0	26	34	40
⊠	B-BRG-51	20.0		0.02	0.01	0.00			0	5	55	39

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Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

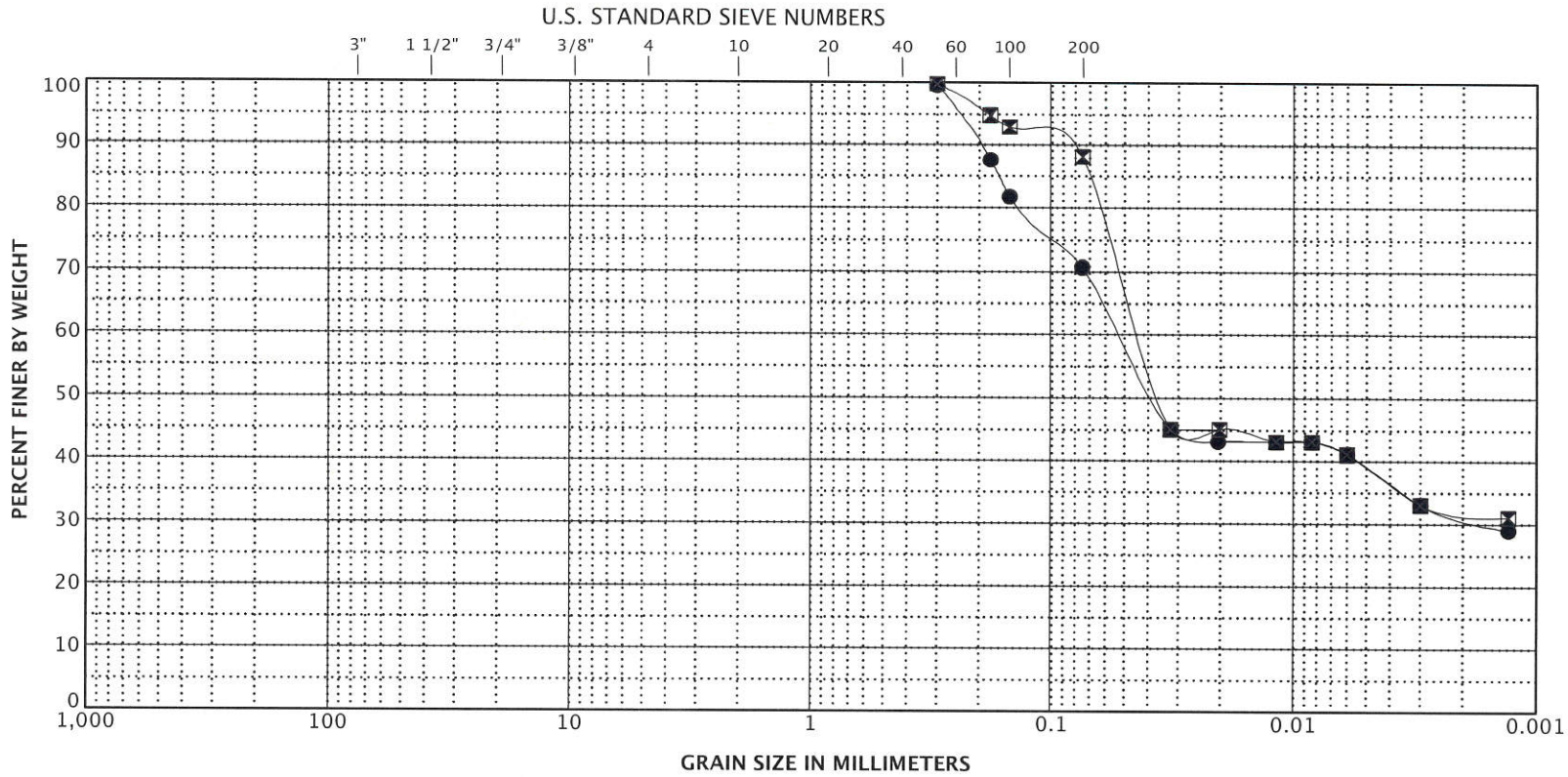
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●	B-BRG-52	10.0		0.06	0.04				0	35	27	37
⊠	B-BRG-53	5.0		0.05	0.04	0.01			0	10	62	28

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

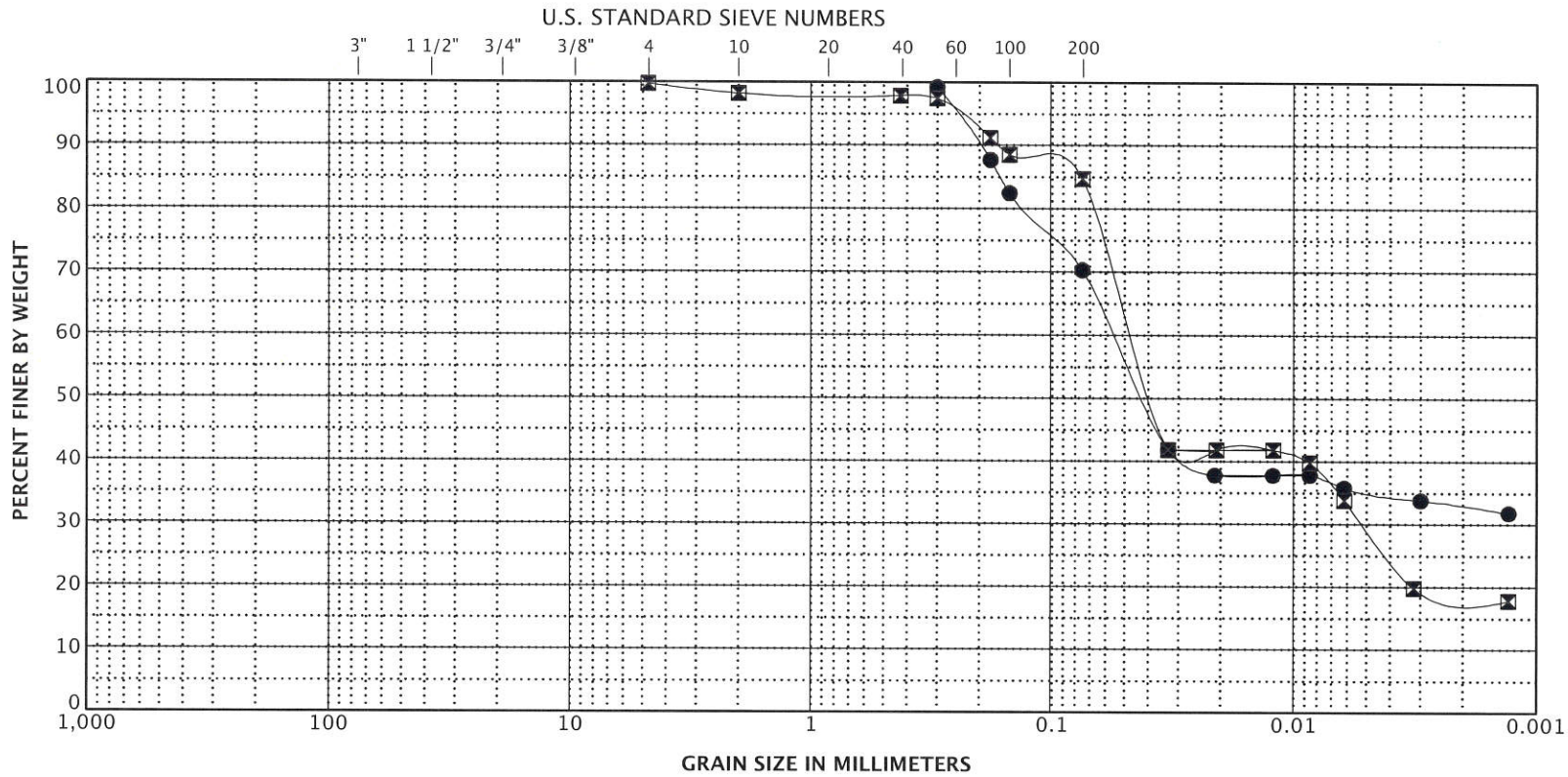
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-54	15.0		0.05	0.04	0.00			0	29	32	39
⊠	B-BRG-55	10.0		0.04	0.04				0	11	49	39

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

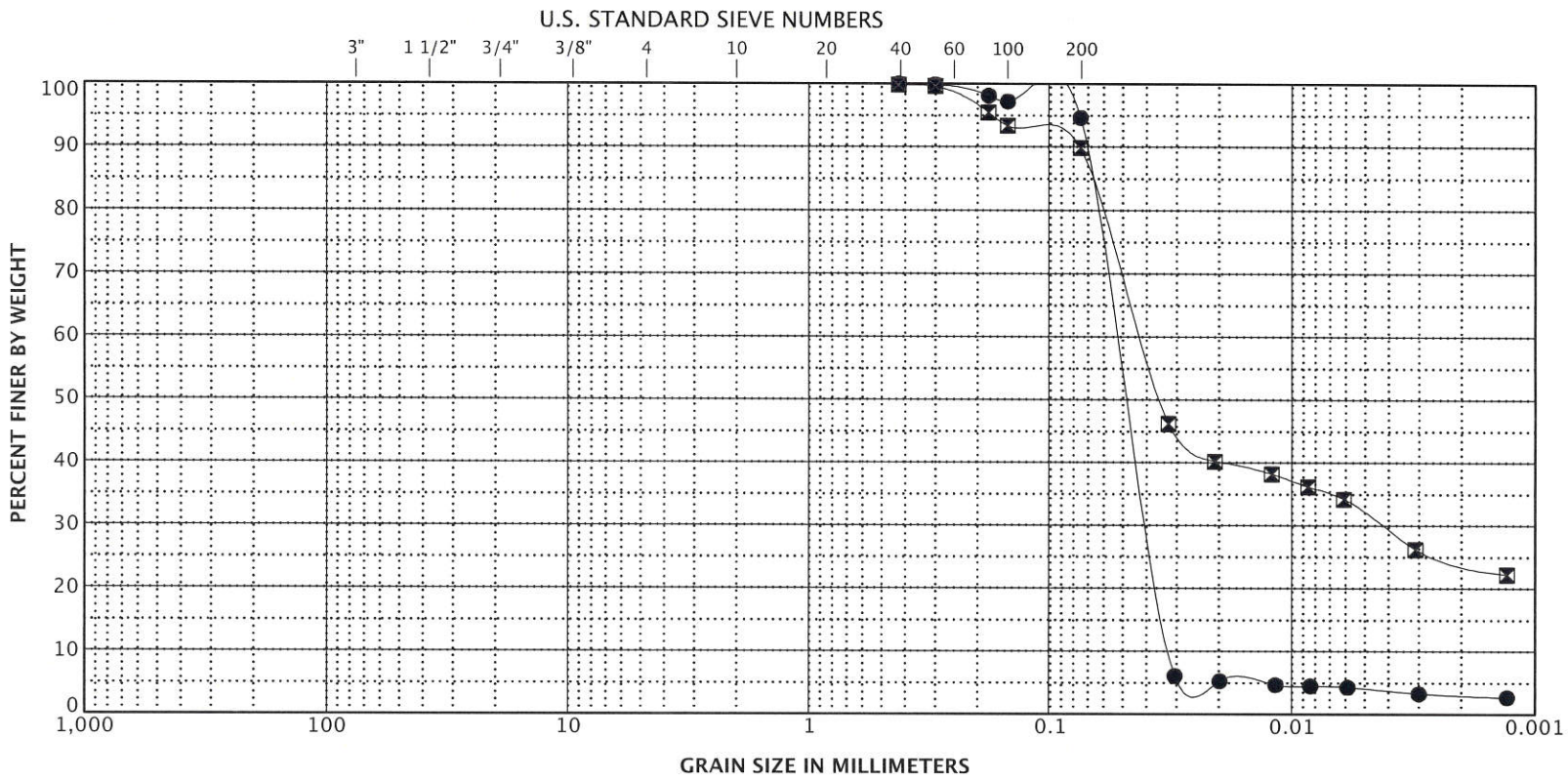
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-56	5.0		0.06	0.04				0	29	35	35
⊠	B-BRG-57	20.0		0.05	0.04	0.01			0	15	55	29

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

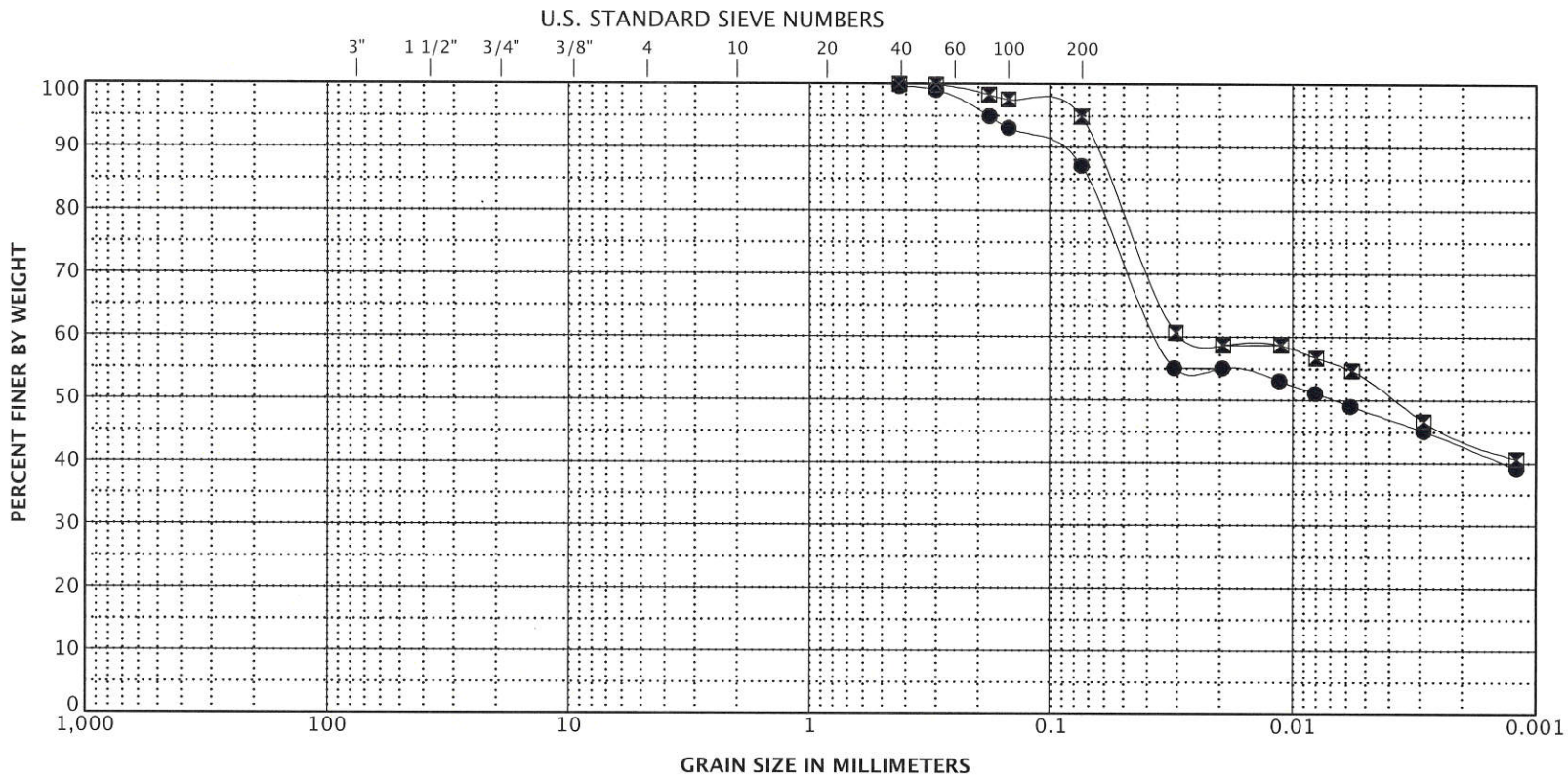
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-58	25.0		0.05	0.05	0.04	0.03	0.02	0	5	91	4
⊠	B-BRG-59	20.0		0.04	0.03	0.00			0	10	58	32

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

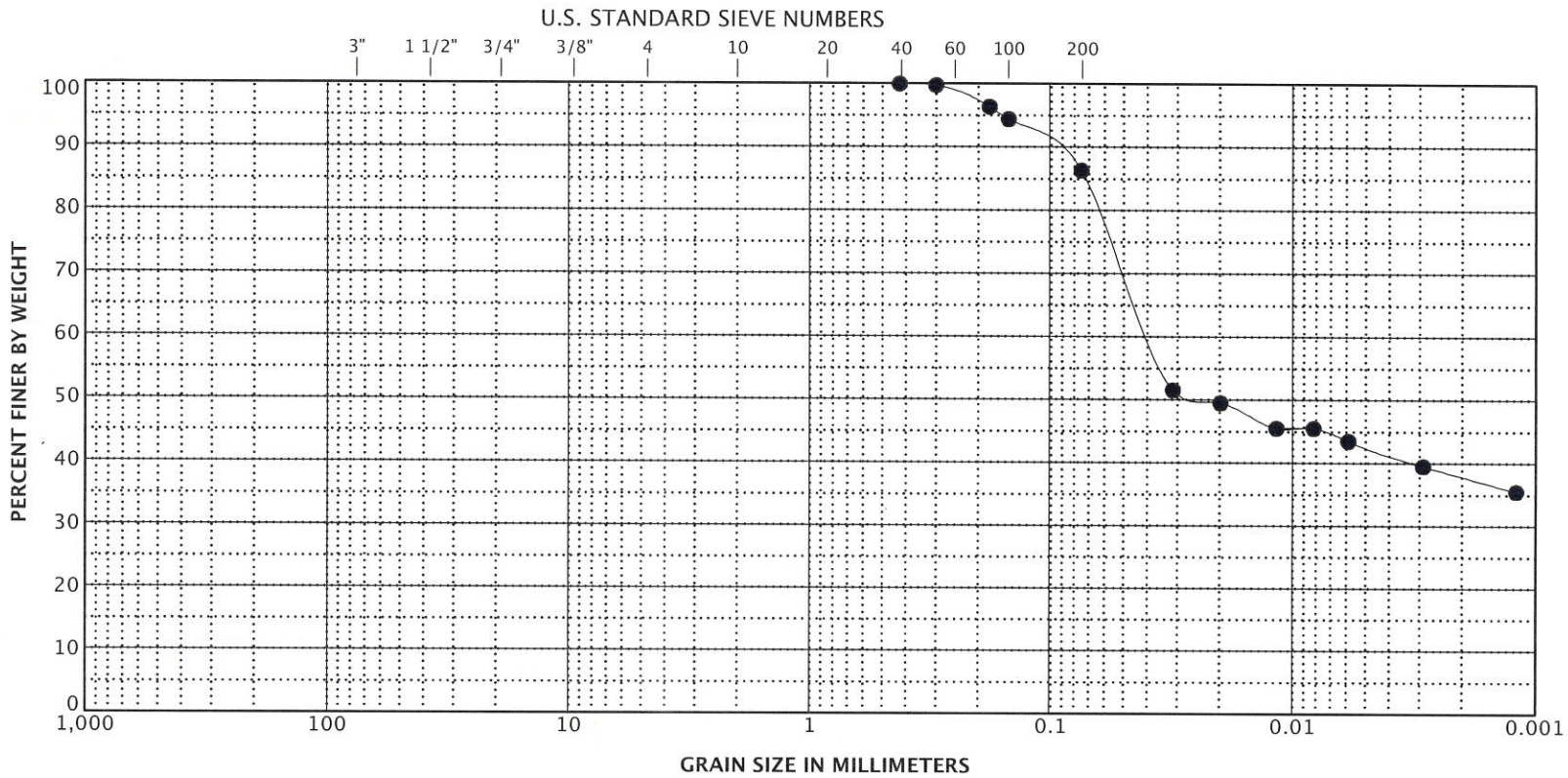
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-60	5.0		0.04	0.01				0	13	39	48
⊠	B-BRG-61	10.0		0.03	0.00				0	5	42	53

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

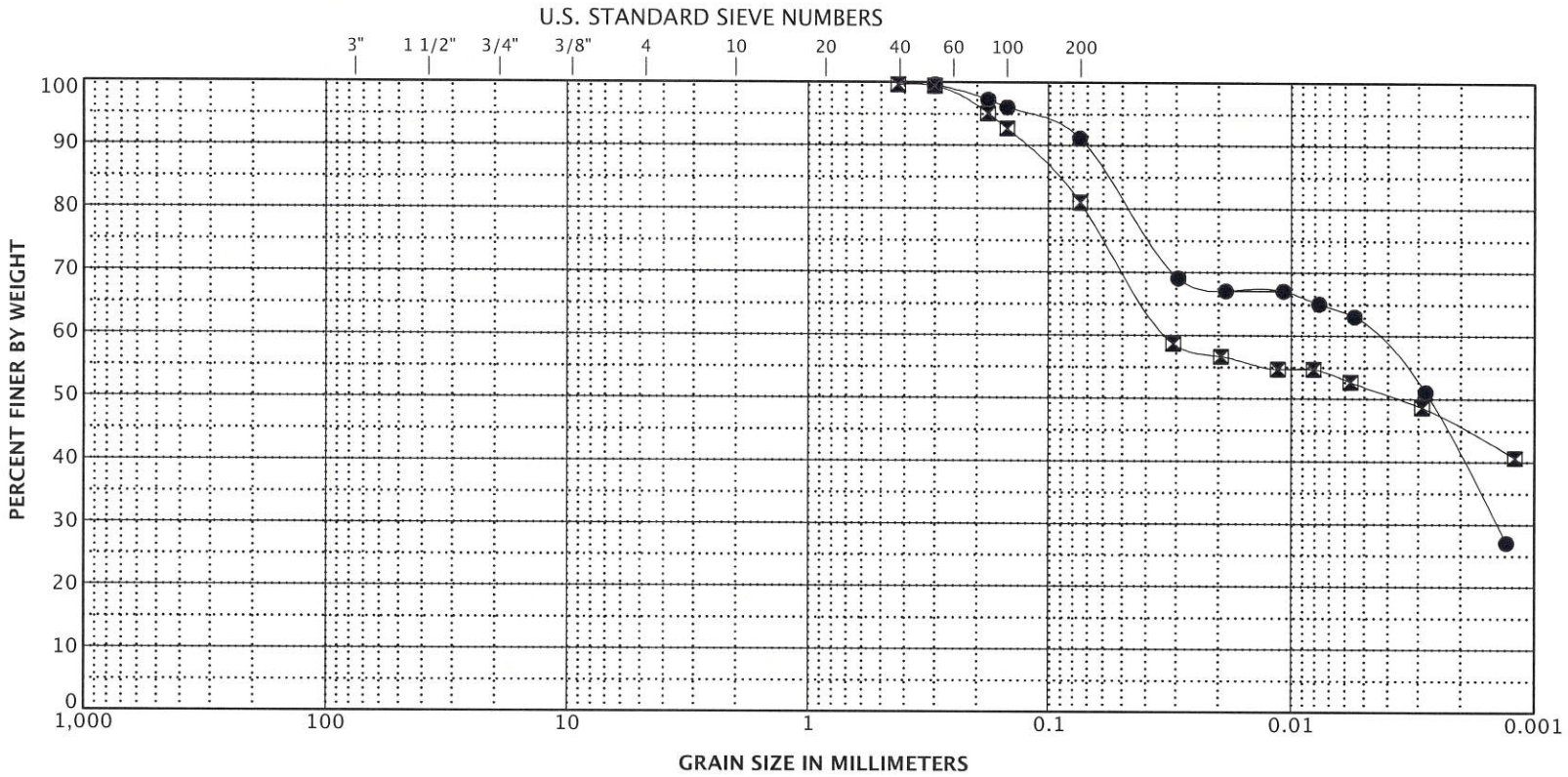
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-65	5.0		0.04	0.02				0	14	44	43

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

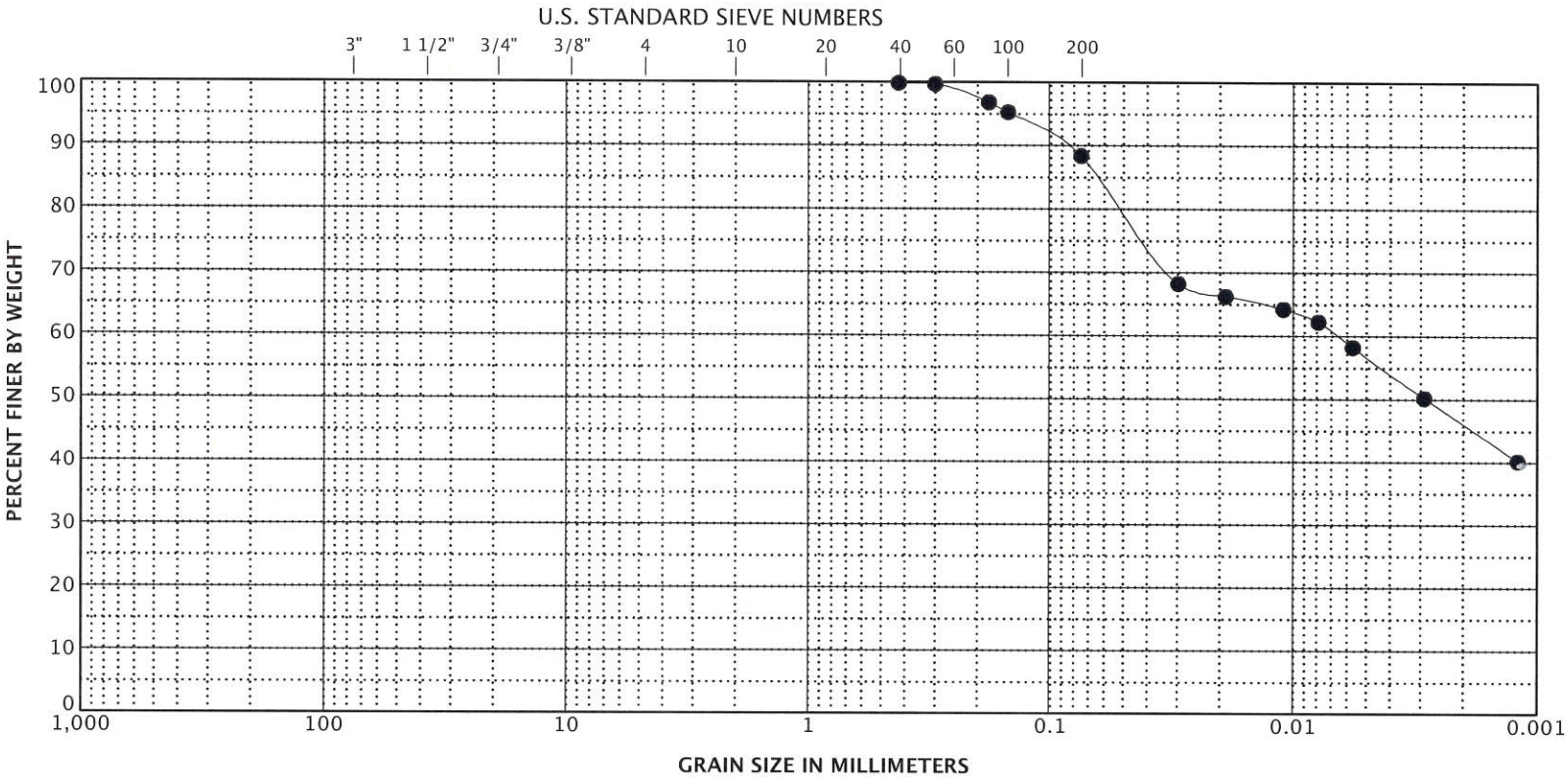
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-66	10.0		0.00	0.00	0.00			0	9	30	61
⊠	B-BRG-67	5.0		0.03	0.00				0	19	29	52

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

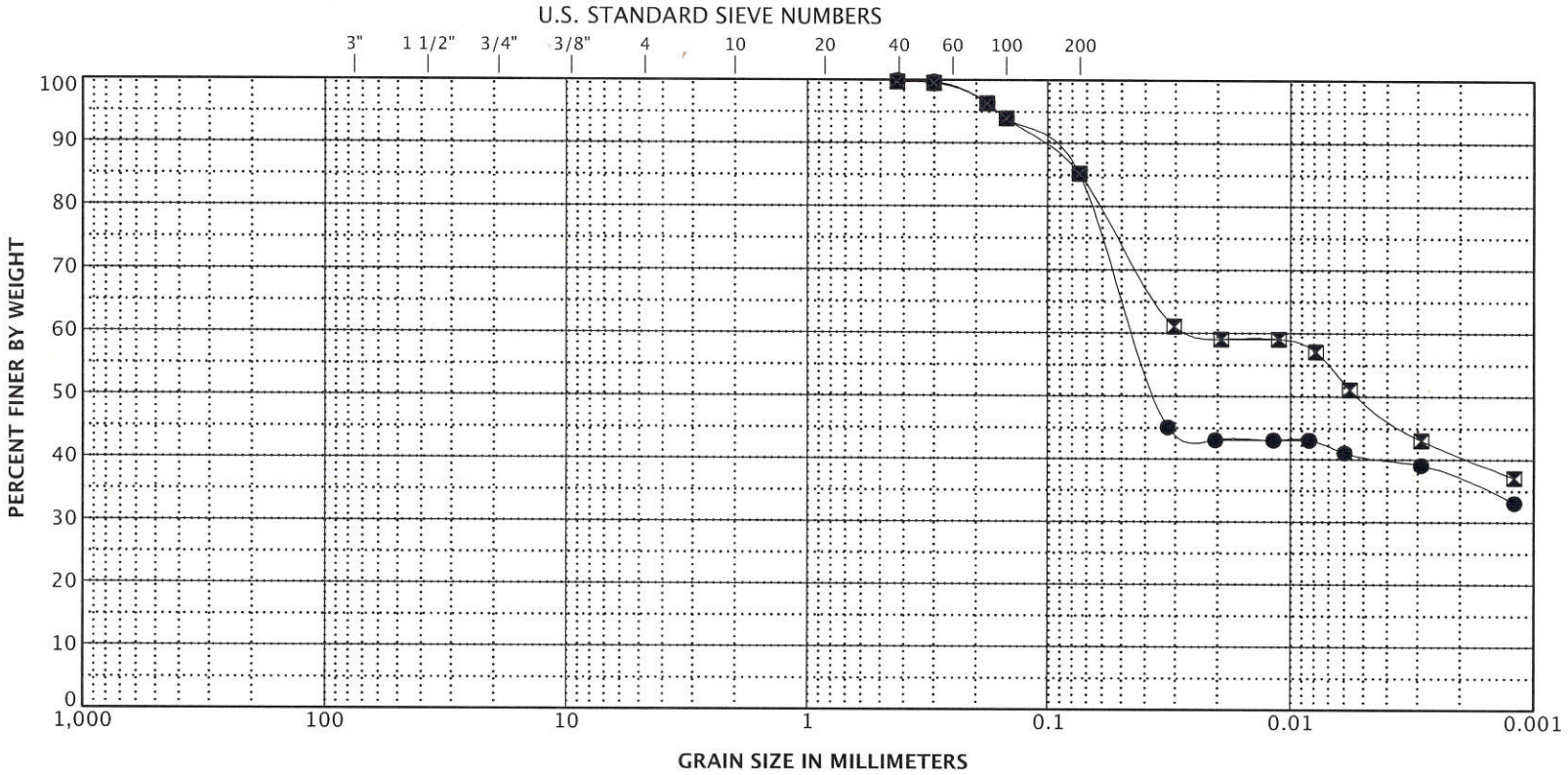
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-68	10.0		0.01	0.00				0	11	32	57

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

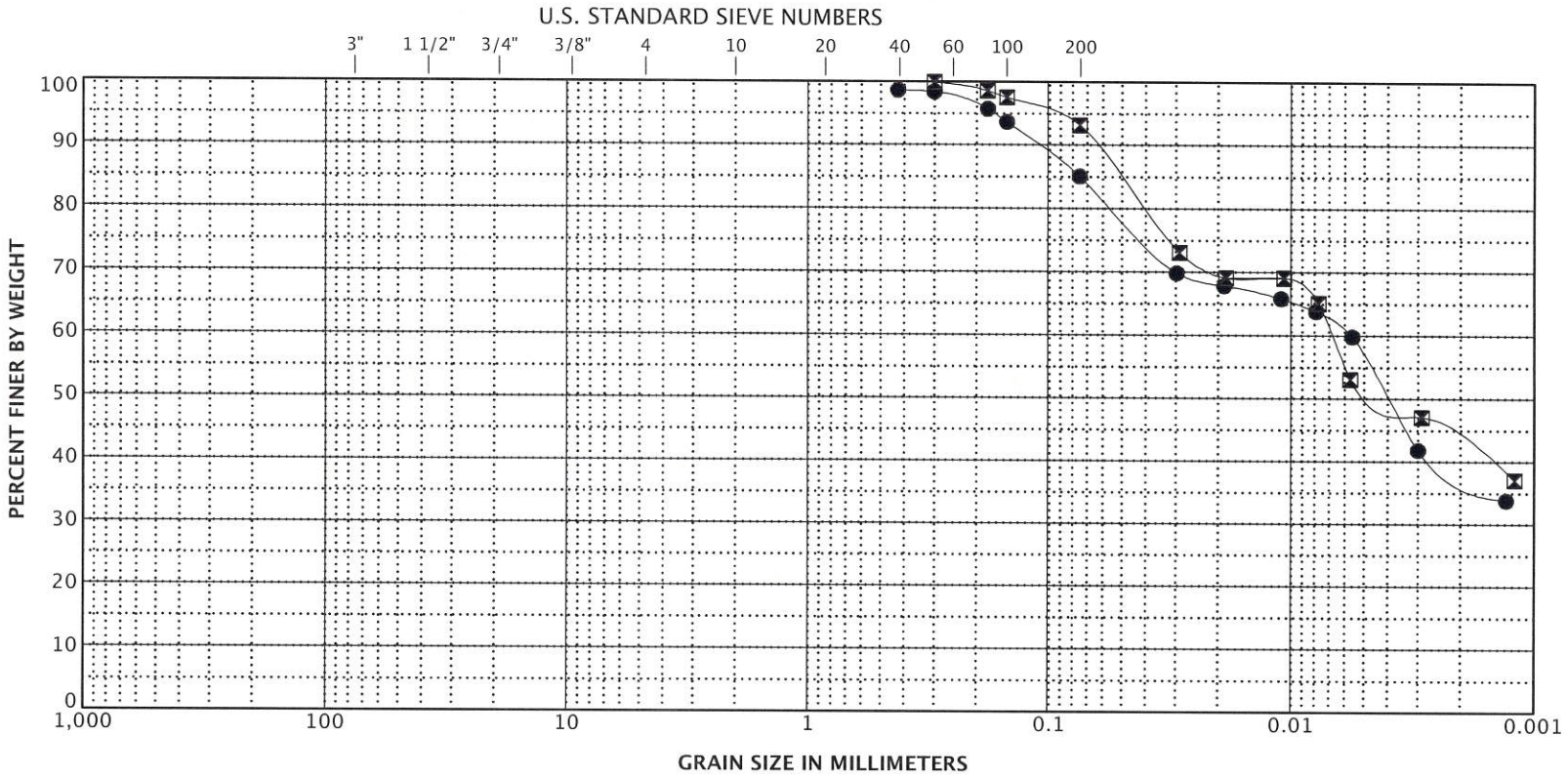
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-70	5.0		0.04	0.04				0	15	45	41
⊠	B-BRG-71	10.0		0.02	0.01				0	15	36	50

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

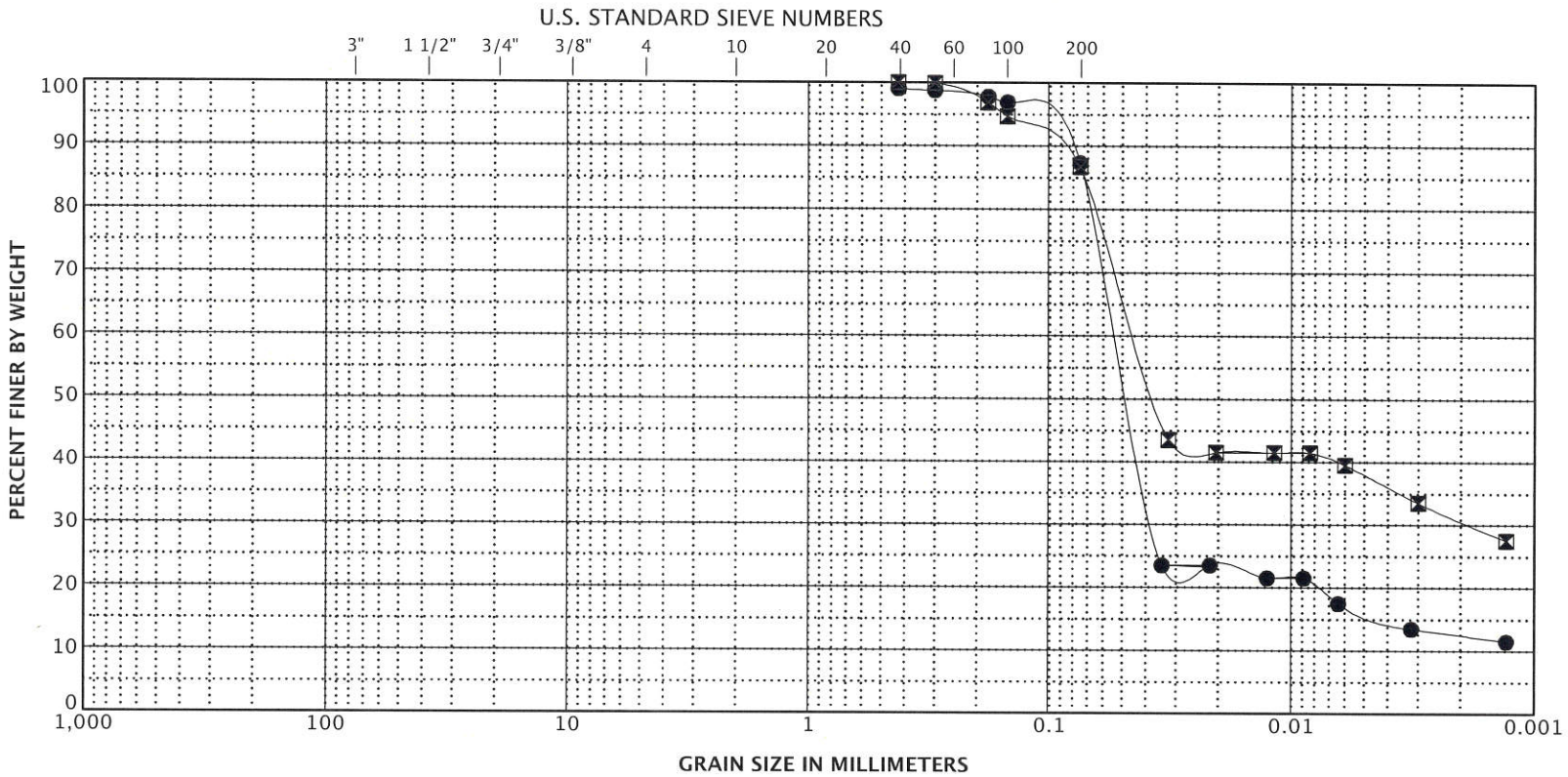
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-72	10.0		0.01	0.00				0	14	28	57
⊠	B-BRG-73	15.0		0.01	0.00				0	7	41	52

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

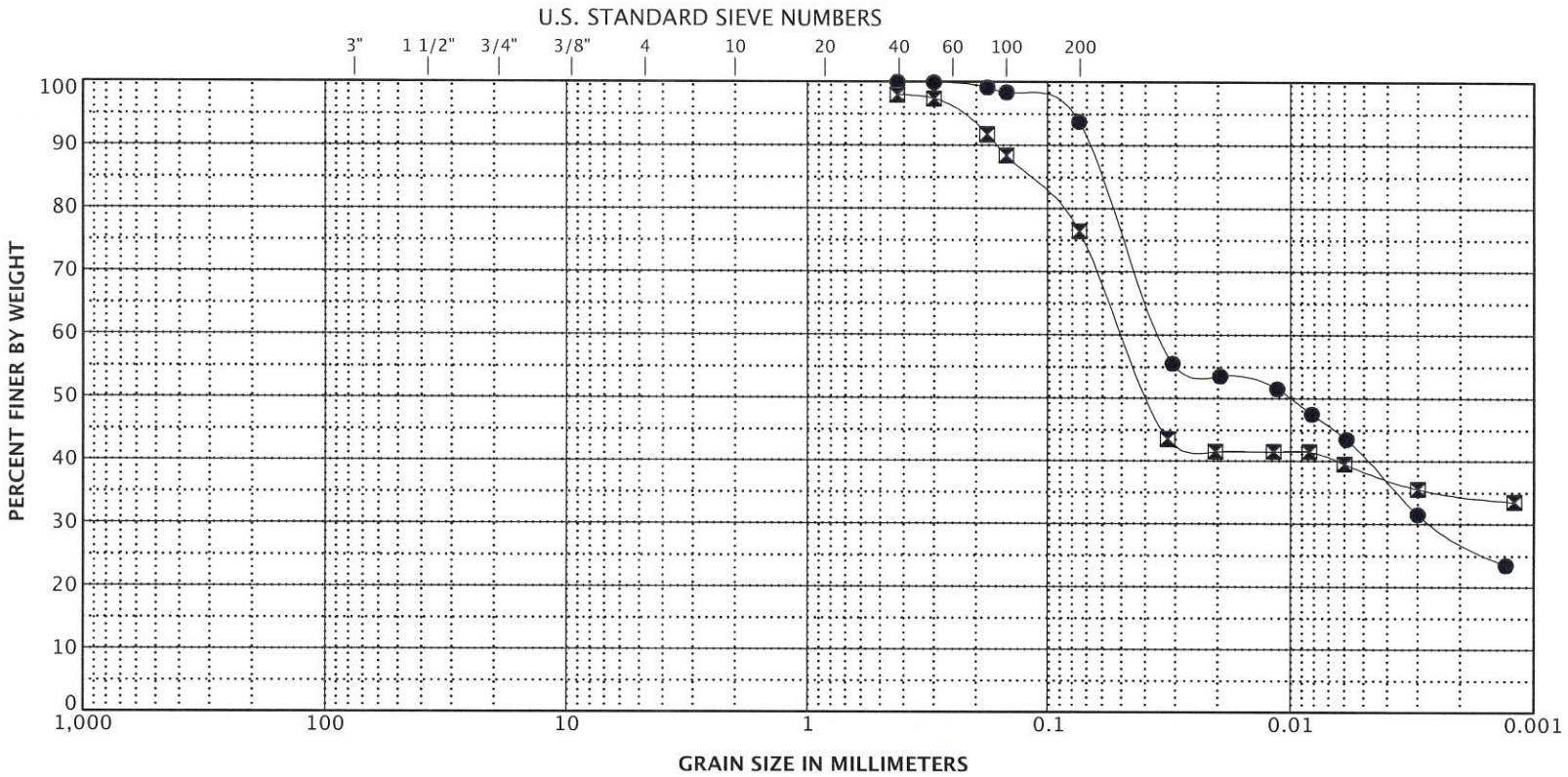
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-74	25.0		0.05	0.05	0.04			0	12	71	16
⊠	B-BRG-75	10.0		0.04	0.04	0.00			0	13	49	38

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

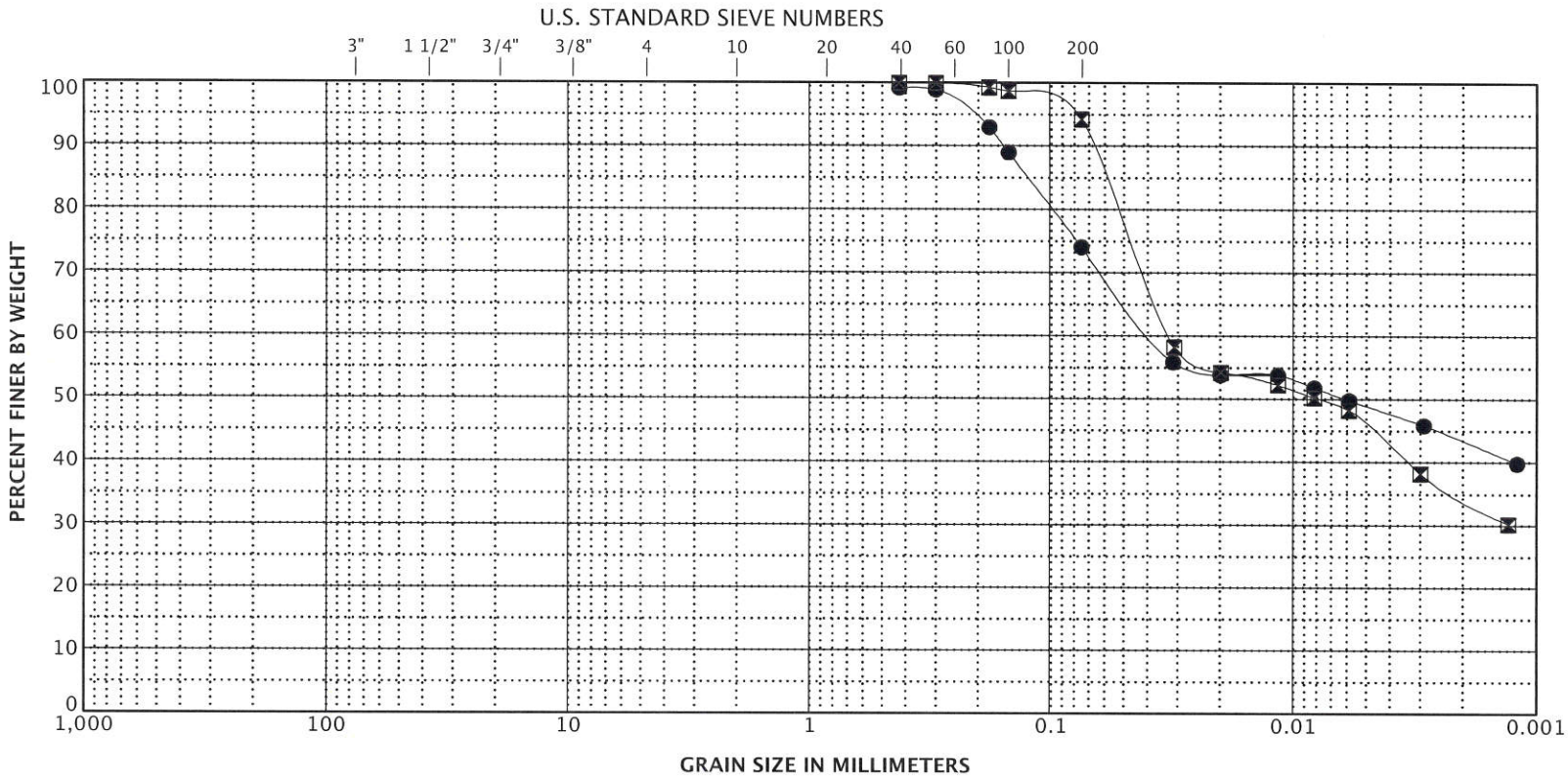
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-76	20.0		0.03	0.01	0.00			0	6	53	41
⊠	B-BRG-77	15.0		0.05	0.04				0	21	38	38

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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

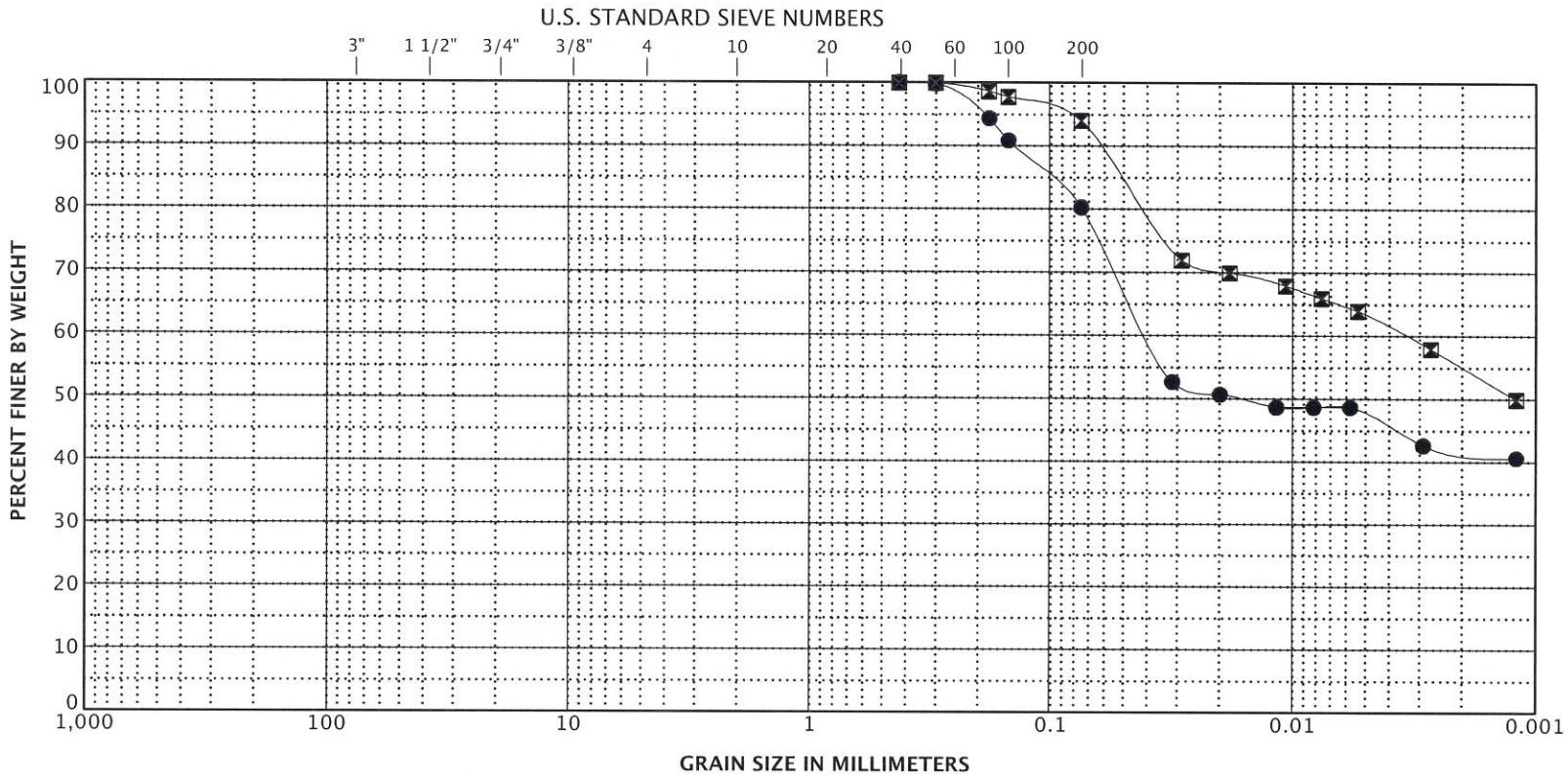
KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60	D50	D30	D10	D5	GRAVEL (PERCENT)	SAND (PERCENT)	SILT (PERCENT)	CLAY (PERCENT)
●	B-BRG-78	10.0		0.04	0.01				0	25	25	49
⊠	B-BRG-79	20.0		0.03	0.01				0	6	48	46

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE



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-BRG-80	20.0		0.04	0.02				0	20	33	47
⊠	B-BRG-81	10.0		0.00	0.00				0	6	31	63

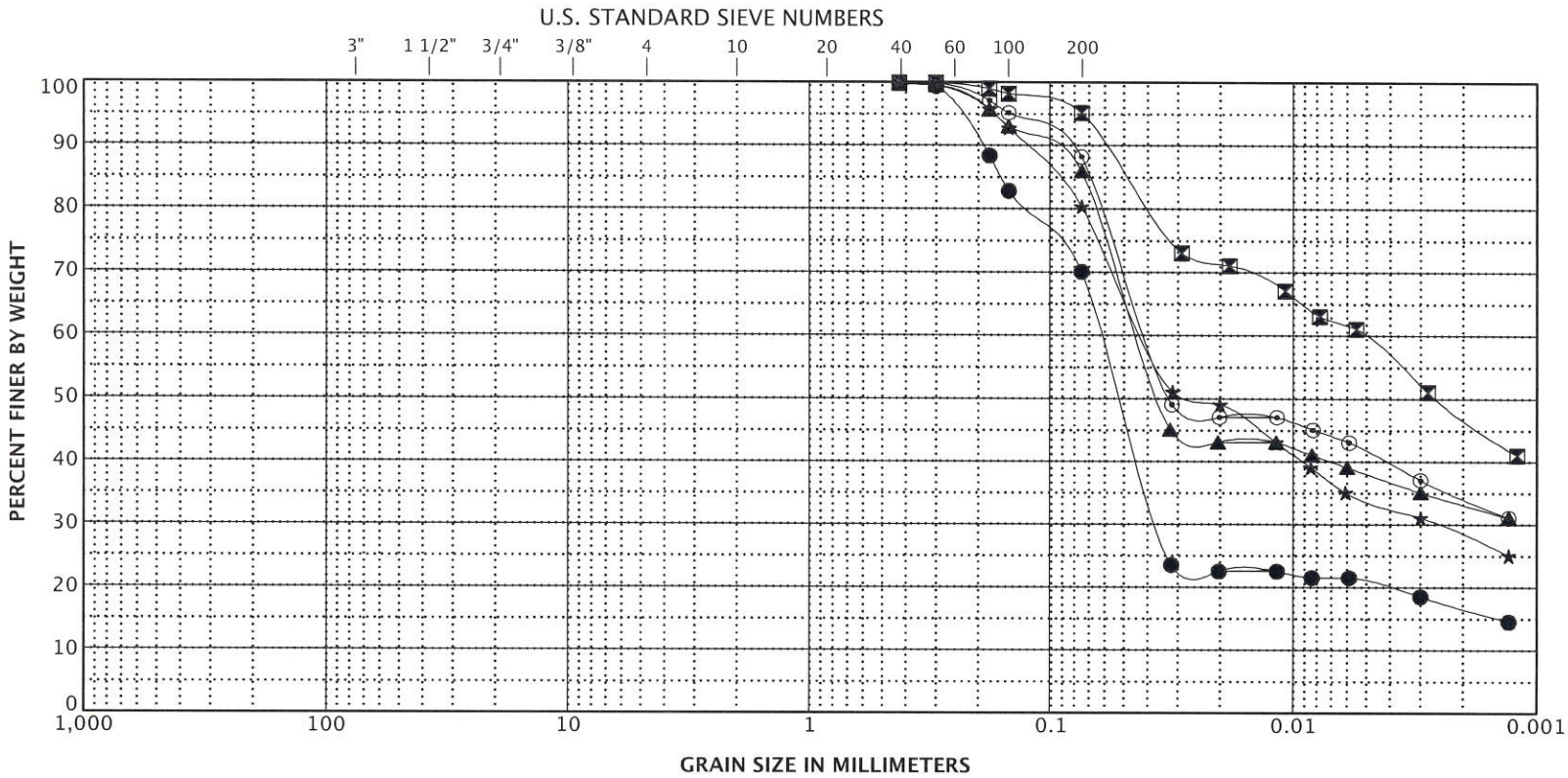
L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE

GRAIN SIZE NO P200 S&B- RAYMONDVILLE DRAIN WILLACY.GPJ GEODESIGN.GDT PRINT DATE: 4/28/15:



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-BRG-83	20.0		0.06	0.05	0.04			0	30	49	21
⊠	B-BRG-84	25.0		0.01	0.00				0	5	36	60
▲	B-BRG-85	10.0		0.04	0.04				0	14	48	38
★	B-BRG-86	20.0		0.04	0.02	0.00			0	19	46	34
⊙	B-BRG-87	20.0		0.04	0.03				0	12	47	42

L&G Engineering Laboratory
Construction Material Testing
Geotechnical Engineering

GRAIN-SIZE TEST RESULTS

RAYMONDVILLE DRAIN
HIDALGO COUNTY

FIGURE

Boring #	*Sample Depth (ft.)	D50 (mm)	D90 (mm)
BRG-37	20	0.02	0.16
BRG-38	15	0.04	0.12
BRG-39	5	0.07	0.22
BRG-40	20	0.05	0.19
BRG-41	5	0.11	0.25
BRG-42	20	0.03	0.085
BRG-43	5	0.05	0.19
BRG-44	10	0.05	0.22
BRG-45	15	0.01	0.19
BRG-46	25	0.03	0.09
BRG-47	10	0.04	0.15
BRG-48	5	0.04	0.18
BRG-49	10	0.04	0.19
BRG-50	5	0.04	0.18
BRG-51	20	0.01	0.065
BRG-52	10	0.04	0.22
BRG-53	5	0.04	0.075
BRG-54	15	0.04	0.2
BRG-55	10	0.04	0.08
BRG-56	5	0.04	0.2
BRG-57	20	0.04	0.17
BRG-58	25	0.05	0.07
BRG-59	25	0.03	0.075
BRG-60	5	0.01	0.09
BRG-61	10	0	0.065
BRG-65	5	0.02	0.09
BRG-66	10	0	0.07
BRG-67	5	0	0.13
BRG-68	10	0	0.085
BRG-70	5	0.04	0.11
BRG-71	10	0.01	0.09
BRG-72	10	0	0.11
BRG-73	15	0	0.065
BRG-74	25	0.05	0.08
BRG-75	10	0.04	0.085
BRG-76	20	0.01	0.068
BRG-77	15	0.04	0.17
BRG-78	10	0.01	0.17

BRG-79	20	0.01	0.067
BRG-80	20	0.02	0.16
BRG-81	10	0	0.062
BRG-83	20	0.05	0.19
BRG-84	25	0	0.059
BRG-85	10	0.04	0.09
BRG-86	20	0.02	0.13
BRG-87	20	0.03	0.08

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

BY BORING LOCATION

Raymondville Drain (Willacy County) - Bridge Inventory (Soil Testing by Bridge Analysis)

	Bridge Name (Crossing)	Bridge Borings	All Borings Completed	Sulfate Content (ppm)	Sulfate Resistant Conc. Recommended
1	CR 10 (County Line Rd.)	37, 38	Y	1260/780	Y
2	CR 15	39, 40	Y	5880/780	Y
3	CR 3000 W (1 - West Crossing)	41, 42	Y	820/1900	Y
4	CR 25	43, 44	Y	420/660	N
5	CR 30 (Roland Rd.)	45, 46	Y	380/120	Y
6	CR 3000 W (2 - East Crossing)	46, 47	Y	120/2600	Y
7	FM 88	48, 49	Y	500/440	N
8	CR 40	50, 51	Y	1080/2960	Y
9	CR 60 (Tamezville Rd.)	52, 53	Y	1600/1120	Y
10	Cemetary Rd. (CR 65)	54, 55	Y	500/1240	Y
11	FM 1015	56, 57	Y	620/760	N
12	SH 186 (1 - West Crossing)	58, 59	Y	2100/160	Y
13	IDT Rd. (FM 105)	60, 61	Y	3180/3700	Y
16	Weaver CR (FM 141)	66, 67	Y	780/1300	Y
18	Humphrey CR (Rancho Carlo Rd. - FM 156)	70, 71	Y	1520/1680	Y
19	Spence CR	72, 73	Y	560/840	N
20	Lopez CR (Simon Gomez Rd.)	74, 75	Y	100/600	N
21	Ramirez CR	76, 77	Y	140/420	N
22	Access Drive #3	78, 79	Y	900/140	N
23	Missouri Pacific RR (at Bus. 77)	80, 81	Y	900/1000	Y
24	Business 77	81, 82	Y	1000	Y
25	US 77	83, 84, 85, 86, 87	Y	500-1080	Y

AI -50132 **8.**

DRAINAGE - CONSENT

Meeting Date: 06/23/2015

Submitted For: Lora Briones

Submitted By: Claudette Guerrero, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

Request approval to issue payment after review & audit procedures are complete:

R. Gutierrez Engineering Corporation.

General Fund:

A. Inv#3823 in the amount of $15,970.35 related to Work Authorization No. 2-Special Services for Aluminum Structural Plate Arch Repair.

B. Inv#3795 in the amount of $601.43 related to Work Authorization No. 3-Construction Material Testing for Seminole Valley Drain Improvements. PO#624631-R.

C. Inv#3494 in the amount of $28,908.20 related to North San Juan Lateral Project.

BACKGROUND

Fiscal Impact

Attachments

R. Gtz Inv#3823

R. Gtz Inv#3795

Form Review

Inbox	**Reviewed By**	**Date**
Budget & Management	Veronica Ortiz	06/18/2015 11:59 AM
Final Approval	Monica Badillo	06/19/2015 05:25 PM

Form Started By: Claudette Guerrero Started On: 06/16/2015 04:16 PM

Final Approval Date: 06/19/2015

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: **5/29/2015**

Engineer/Firm Name: **R.Gutierrez Eng.**

Project Name/Number: **Aluminum Structural Plate Arch Repair**

Invoice No.: **3823**

Purchase Order No.:

Received By: **Rosa Arce**

Forwarded to: **Joey Garza**

Total # of Pages Submitted: **24**

Attachments: **Engineering Report**

Additional Comments:

R. Gutierrez Engineering Corporation

Transmittal Form

TO: Raul Sesin
c/o Noe Saldivar
Hidalgo County Drainage Dist. No. 1
902 N. Doolittle
Edinburg, TX 78539

FROM: Jaime Jaimez, Jr.
SUBJECT: Mission Inlet Arch Culvert - Aluminum Liner Plate Repair
PROJECT NO.: ENG14.007
DATE: May 29, 2015

WE ARE SENDING YOU X ATTACHED ___ UNDER SEPARATE COVER VIA Hand Delivery THE FOLLOWING ITEMS:

___ BLUEPRINTS	___ PLANS	___ SHOP DRAWINGS	___ CD
___ CHANGE ORDER	___ SAMPLES	___ PAYMENT REQUEST	X OTHER: INVOICE
X BID TABULATION	___ CONTRACT DOCUMENTS	___ RECORD DRAWINGS	___ 3 1/2" DISKETTE

QUANTITY / SETS	DATED	ITEM DESCRIPTION
1	5/29/15	Invoice 3823
1	4/30/15	CBC Engineers Invoice(s)
1	4/30/15	CBC Engineering Rpt

THESE ARE TRANSMITTED AS CHECKED BELOW:

___ FOR BIDS DUE	___ APPROVED AS NOTED	___ FOR YOUR RECORDS
___ FOR APPROVAL	___ APPROVED AS SUBMITTED	___ FOR YOUR ACKNOWLEDGEMENT
___ FOR YOUR USE	___ RETURN FOR CORRECTIONS	___ RESUBMIT FOR APPORVAL
___ AS REQUESTED	X FOR FURTHER PROCESSING	___ ON LOAN
___ FOR REVIEW AND COMMENT	___ FOR SIGNATURE	___ OTHER

COMMENTS:

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
MAY 29 2015
4:46 AM / PM
BY: Rosa Ane

Copy Distribution: file

Received by:

130 East Park Ave. - Pharr, TX 78577 - Tel: 956 - 782 - 2557 - Fax: 956 - 782 - 2558 - Email: jaime@rgec.net

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

MAY 29 2015
4:46 AM (PM)
BY: RosaAne

R. Gutierrez Engineering Corporation
Professional Engineers & Land Surveyors
130 E. PARK AVENUE • PHARR, TEXAS 78577
(TEL) 956-782-2557 • (FAX) 956-782-2558
Engineering Firm F-486 • Surveying Firm #101650-00

Invoice Number 3823
Date 5/29/2015
Due on receipt

Invoice

Hidalgo County Drainage District No. 1
Raul Sesin
902 N. Doolittle Road
Edinburg, TX 78542

Project: Aluminum Structural Plate Arch REPAIR

Project No.: ENG14.007
Contract No.: WA#2
PO No.

Const. Cost
% of Const. Cost
Billing Fee 51,240.00

Phase	*Phase Fee*	*% Complete*	*Fee Earned*	*Prior Billing*	*Current Fee*
Preliminary Project Coordination Services	4,878.00	100.00%	4,878.00	4,878.00	0.00
Plans Specs and Estimate	10,239.00	100.00%	10,239.00	10,239.00	0.00
Bidding & Construction Administration	3,905.00	100.00%	3,905.00	3,905.00	0.00
Forensic Analysis of Aluminized Structural Plate Arch	32,000.00	97.52%	31,205.95	15,235.60	15,970.35
Other Direct Costs	222.00	100.00%	222.00	222.00	0.00

Balance Due ***$15,970.35***

CBC Engineers

Centerville Office

CBC Engineers and Associates, Ltd.
125 Westpark Rd. Centerville, Ohio 45459
Phone: 937-428-6150 Fax: 937-428-6154

Invoice

Mr. Ramrio Gutierrez, P.E.
R. Gutierrez Engineering Corporation
Professional Engineers & Land Surveyors
130 Park Avenue
Pharr, Texas 78577

Tax Payer I.D. No. 31-1443075
Invoice Number 16268-5
CBC Work Order No 16268
Date: April 30, 2014

Description of Professional Services:

Provide Evaluation of an Existing Aluminum Structural Plate (ALSP) Single Radius Arch with Design Span of 24 feet and Rise of 12 feet & The Aluminum Liner Plate Reline Repair -Under McColl Road, McAllen, Hidalgo County, Texas; CBC Work Order Number 16268

Scope:

Provide Repeat Shape Measurements of Repaired ALSP Single Radius Arch by Taking Laser Shape Readings and Plotting the Geometry Against Design and Past Measurements to See if there is any Additional Movement along the Structure. Take Laser Shape Readings of the Replacement Aluminum Liner Plate Repair.

Engineering Design Charges	QUANTITY	UNIT PRICE	EXTENSION
Chief Engineer	4.00 Hours	$200.00	$800.00
Senior Project Manager	4.00 Hours	$125.00	$500.00
Engineer	3.00 Hours	$110.00	$330.00
Cad Technician	10.00 Hours	$70.00	$700.00
Clerical	1.00 Hours	$47.00	$47.00
		Estimated Sub Total:	**$2,377.00**
Travel Expenses			
Hotel (3 Nights - 2 Technicians)	5.00 Each	$307.05	$1,535.25
Per Diem (4 days - 2 Technicians)	5.00 Each	$75.00	$375.00
Airfare w/ Luggage Cost	0.00 Each	$0.00	$0.00
Travel Miles From/To Dayton, Ohic	2974.00 Miles	$0.65	$1,933.10
Sr. Project Manager Travel Time	50.00 Hours	$125.00	$6,250.00
Project Technician Travel Time	50.00 Hours	$70.00	$3,500.00
		Estimated Sub Total:	**$13,593.35**
		Invoice Total:	**$15,970.35**

Contract Amount:	$16,000.00
Previous Invoice:	$0.00
Current Invoice:	$15,970.35
Contract Remainder	$29.65

Joseph A Dennis, Jr.
Sr. Project Manager
JAD/rs

Please note that this invoice is payable upon receipt.
Invoices older than 30 days will be subject to a 1.5% monthly interest rate.

Visit us at www.cbceng.com

CBC Engineers

Dayton Office

ENGINEERING REPORT

TO: R. Gutierrez Engineering Corporation
Professional Engineers & Land Surveyors
130 E. Park Avenue
Pharr, Texas 78577

DATE: April 30, 2015

NO: 16268D-5-0415-05

ATTN: Mr. Ramiro Gutierrez, P.E.
President

Re: Follow-Up Shape Measurements of the Existing ALSP Single Radius Arch with Aluminum Arch Liner; McColl Road, McAllen, Hidalgo County, Texas; CBC Report No. 16268D-5-0415-05

We are pleased to submit our report for the above referenced project. After the aluminum arch liner was installed and fully back-grouted, a CBC technician performed laser shape measurements on November 10, 2014 at the same stations previously measured as previously reported in CBC Report No. 16268D-4-1114-05, dated November 19, 2014. These previous shape measurements revealed that there had been essentially no change in the structure shape geometry at the measured stations between the October 26, 2014 measurements prior to the aluminum arch liner installation and the November 10, 2014 measurements after the arch liner installation. Subsequent to the above measurements, a CBC technician again performed laser shape measurements on April 29, 2015 at the same stations previously measured. These current laser shape measurements are attached herewith in Appendix A, and show that there has been essentially no change in the structure shape geometry at the measured stations between the previous November 10, 2014 measurements and the current April 29, 2015 measurements.

While performing the shape measurements, the CBC technician observed a hole in the arch near the crown at approximate Station 3+74.5 which appeared to have been created during the guardrail installation above the structure. This hole should be properly repaired and any voids outside of the arch should be properly filled. The CBC technician also observed white staining/streaking on the inside of the arch which appeared to be emanating from small points of corrosion in the arch wall. This condition was not observed during previous CBC site visits. It

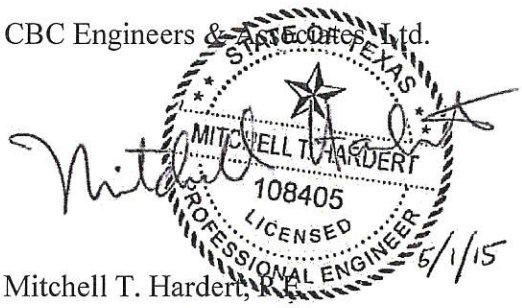
is not clear through observation if this corrosion is a result of interior surface corrosion or corrosion that began on the soil-structure interface and progressed through the pipe wall to the surface. The evaluation of the cause of the apparent corrosion is beyond the scope of this report, however this condition should continue to be observed on a routine basis for signs of changes in severity and/or extent, and work should be undertaken to determine what is causing the perceived corrosion of the aluminum arch. Photographs taken during the current site visit are attached in Appendix B.

Our professional services have been performed in accordance with generally accepted geotechnical engineering principles and practices. No other warranty, expressed or implied, is made. This report has been prepared for the exclusive use of R. Gutierrez Engineering Corporation for specific application to the structure herein described. Anyone reviewing this report must interpret and draw their own conclusions regarding specific construction techniques and methods chosen. CBC Engineers & Associates, ltd. is not responsible for the independent conclusions, opinions or recommendations made by others.

If you have any questions, please contact us.

Respectfully submitted,

CBC Engineers & Associates, Ltd.



Mitchell T. Hardert, P.E.
Chief Engineer

MTH/lb
ec: Client (rgutierrez@rgec.net)
1-File

APPENDIX A

SHAPE MEASUREMENTS

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 2+43

CBC Engineers

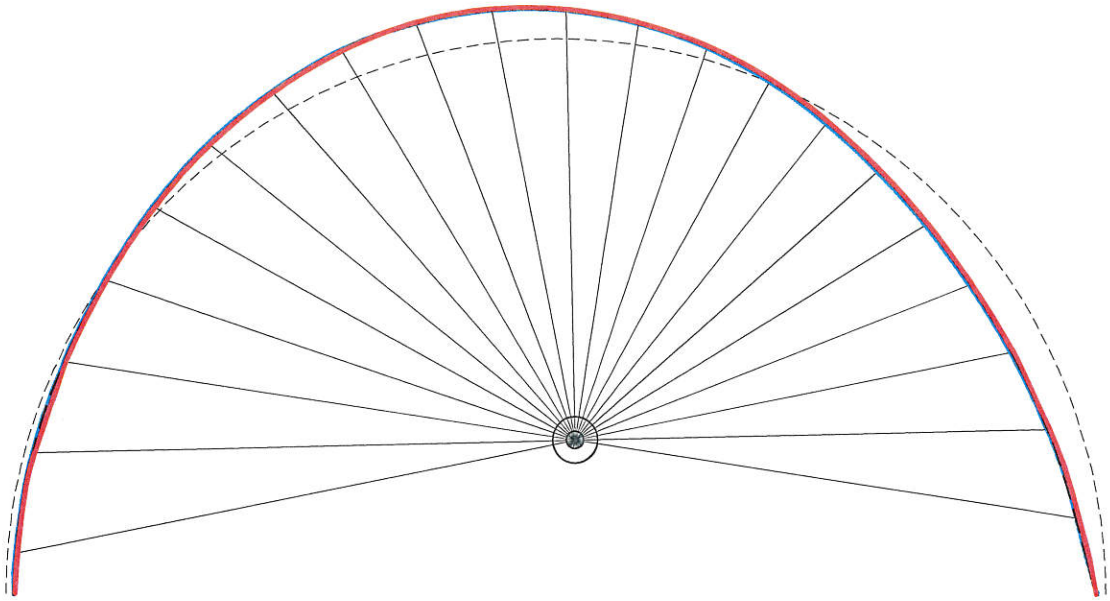
Client: R. GUTIERREZ ENGINEERING CORPORATION

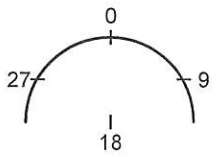
DATE: 4/29/15

Project No.: CBC-16268

Sections plotted facing Southeast

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise





- - - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
= ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
= ARCH SHAPE AFTER LINER INSTALLATION (11/10/14)
= ARCH SHAPE AFTER LINER INSTALLATION (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	9.52	9	10.57	18	0.00	27	11.99
1	9.34	10	11.34	19	0.00	28	11.44
2	9.20	11	0.00	20	0.00	29	10.99
3	9.09	12	0.00	21	0.00	30	10.67
4	9.03	13	0.00	22	0.00	31	10.42
5	9.06	14	0.00	23	0.00	32	10.21
6	9.21	15	0.00	24	0.00	33	10.05
7	9.49	16	0.00	25	0.00	34	9.89
8	9.95	17	0.00	26	12.60	35	9.71

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 2+55

CBC Engineers

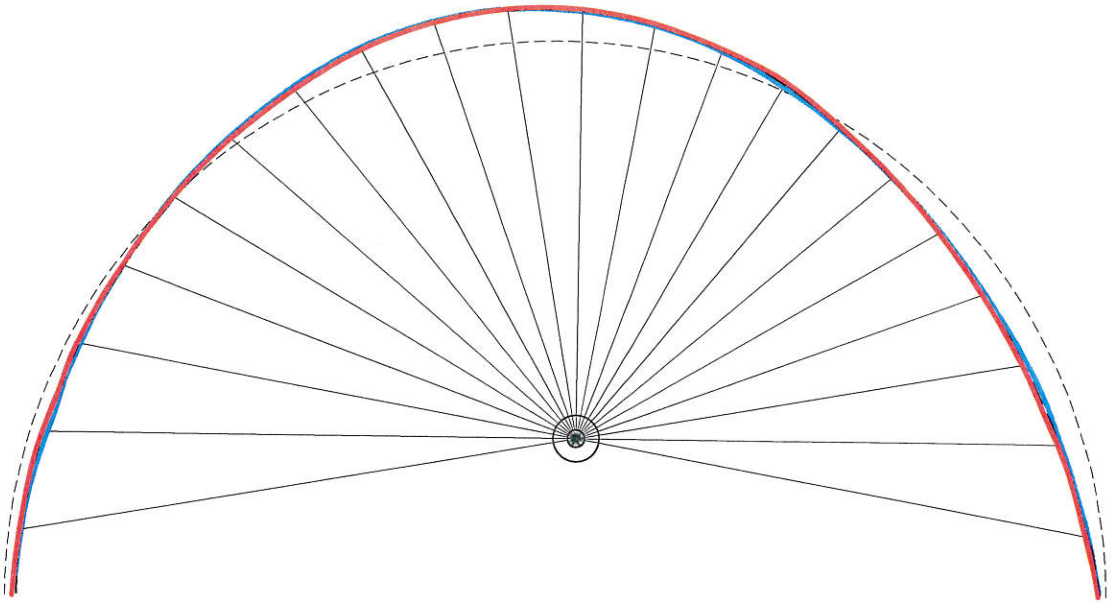
Client: R. GUTIERREZ ENGINEERING CORPORATION

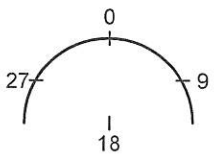
Project No.: CBC-16268

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise

DATE: 4/29/15

Sections plotted facing Southeast





- - - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
——— = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (11/10/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	9.48	9	10.71	18	0.00	27	11.83
1	9.33	10	11.51	19	0.00	28	11.27
2	9.21	11	0.00	20	0.00	29	10.78
3	9.17	12	0.00	21	0.00	30	10.42
4	9.08	13	0.00	22	0.00	31	10.14
5	9.13	14	0.00	23	0.00	32	9.94
6	9.29	15	0.00	24	0.00	33	9.83
7	9.61	16	0.00	25	0.00	34	9.72
8	10.08	17	0.00	26	12.48	35	9.61

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 2+70

CBC Engineers

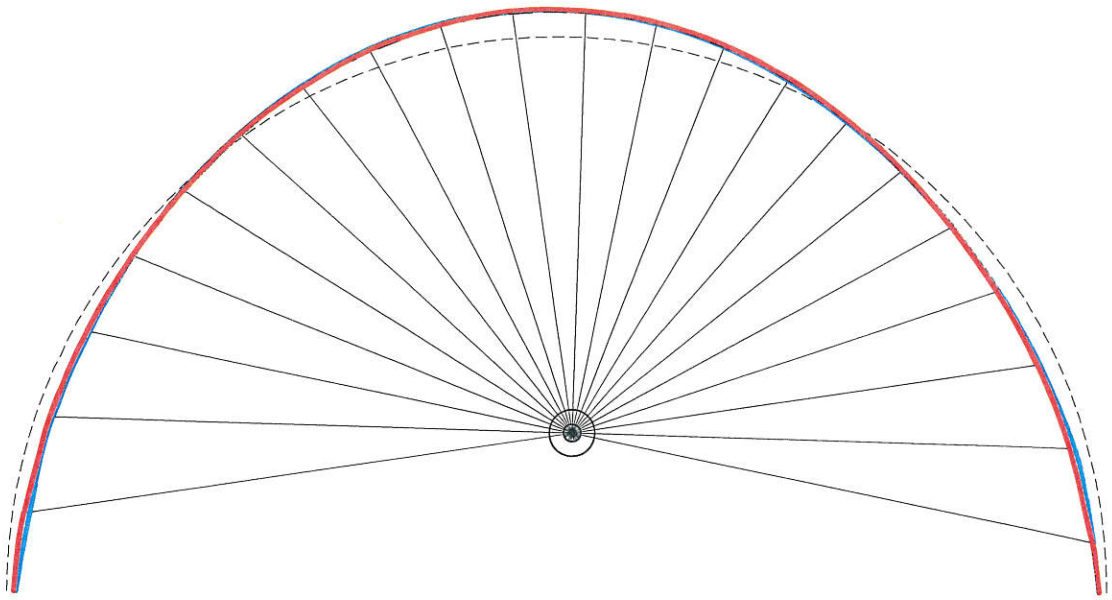
Client: R. GUTIERREZ ENGINEERING CORPORATION

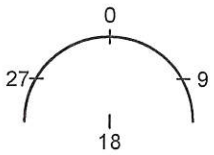
Project No.: CBC-16268

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise

DATE: 4/29/15

Sections plotted facing Southeast





- - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
= ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
= ARCH SHAPE AFTER LINER INSTALLATION (11/10/14)
= ARCH SHAPE AFTER LINER INSTALLATION (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	9.33	9	11.06	18	0.00	27	11.59
1	9.27	10	11.80	19	0.00	28	11.01
2	9.22	11	0.00	20	0.00	29	10.53
3	9.21	12	0.00	21	0.00	30	10.16
4	9.24	13	0.00	22	0.00	31	9.90
5	9.37	14	0.00	23	0.00	32	9.71
6	9.60	15	0.00	24	0.00	33	9.59
7	9.96	16	0.00	25	0.00	34	9.48
8	10.45	17	0.00	26	12.27	35	9.42

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 2+85

CBC Engineers

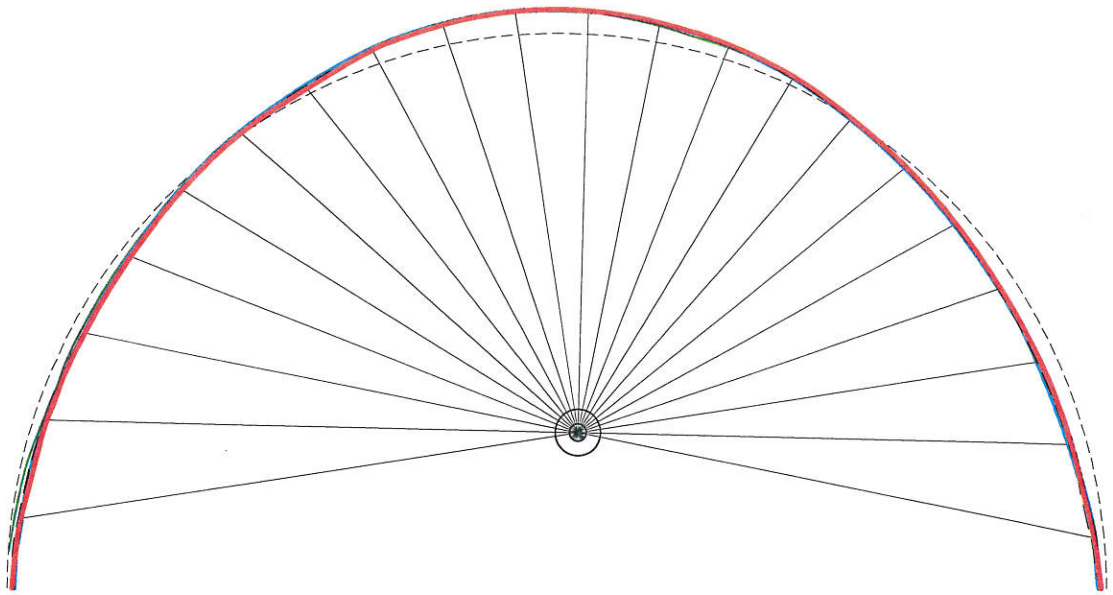
Client: R. GUTIERREZ ENGINEERING CORPORATION

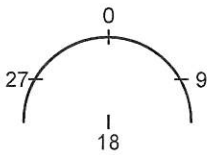
DATE: 4/29/15

Project No.: CBC-16268

Sections plotted facing Southeast

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise





- - - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
——— = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (11/10/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	9.32	9	10.99	18	0.00	27	11.77
1	9.24	10	11.70	19	0.00	28	11.16
2	9.20	11	0.00	20	0.00	29	10.66
3	9.21	12	0.00	21	0.00	30	10.29
4	9.25	13	0.00	22	0.00	31	10.00
5	9.39	14	0.00	23	0.00	32	9.73
6	9.61	15	0.00	24	0.00	33	9.62
7	9.94	16	0.00	25	0.00	34	9.50
8	10.42	17	0.00	26	12.47	35	9.41

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 3+00

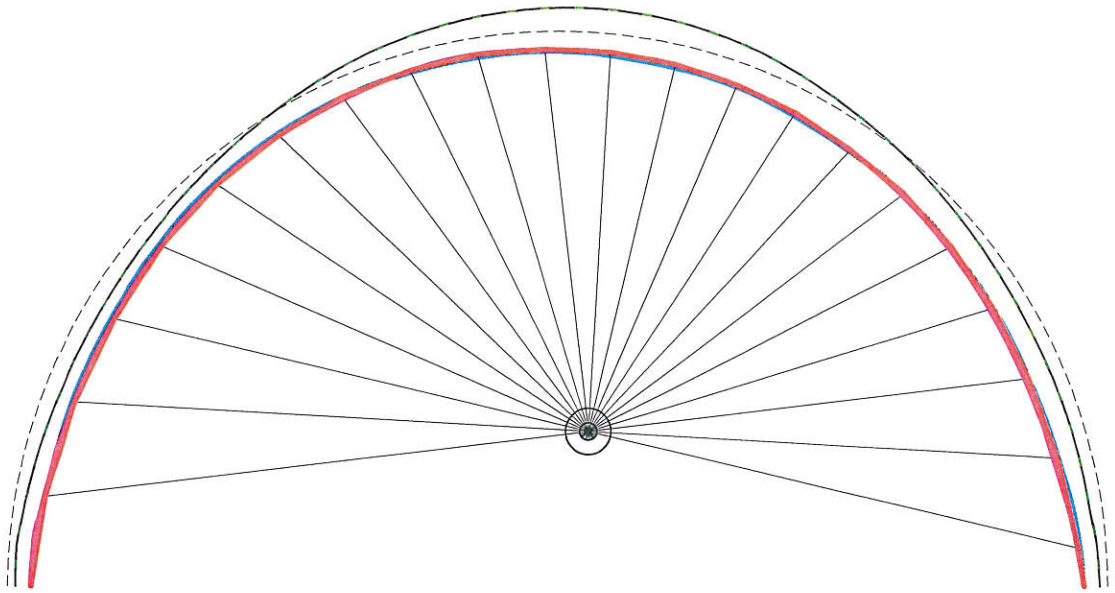
Client: R. GUTIERREZ ENGINEERING CORPORATION

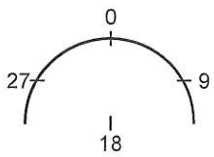
Project No.: CBC-16268

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise

DATE: 4/29/15

Sections plotted facing Southeast





- = THEORETICAL SHAPE
- = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
- = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
- = LINER INSTALLATION PRIOR TO GROUTING (11/3/14)
- = LINER INSTALLATION AFTER GROUTING (11/10/14)
- = LINER INSTALLATION AFTER GROUTING (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	8.41	9	10.45	18	0.00	27	11.42
1	8.35	10	11.19	19	0.00	28	10.83
2	8.35	11	0.00	20	0.00	29	10.35
3	8.43	12	0.00	21	0.00	30	9.92
4	8.55	13	0.00	22	0.00	31	9.53
5	8.78	14	0.00	23	0.00	32	9.21
6	9.06	15	0.00	24	0.00	33	8.93
7	9.42	16	0.00	25	0.00	34	8.70
8	9.88	17	0.00	26	12.12	35	8.52

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 3+08

CBC Engineers

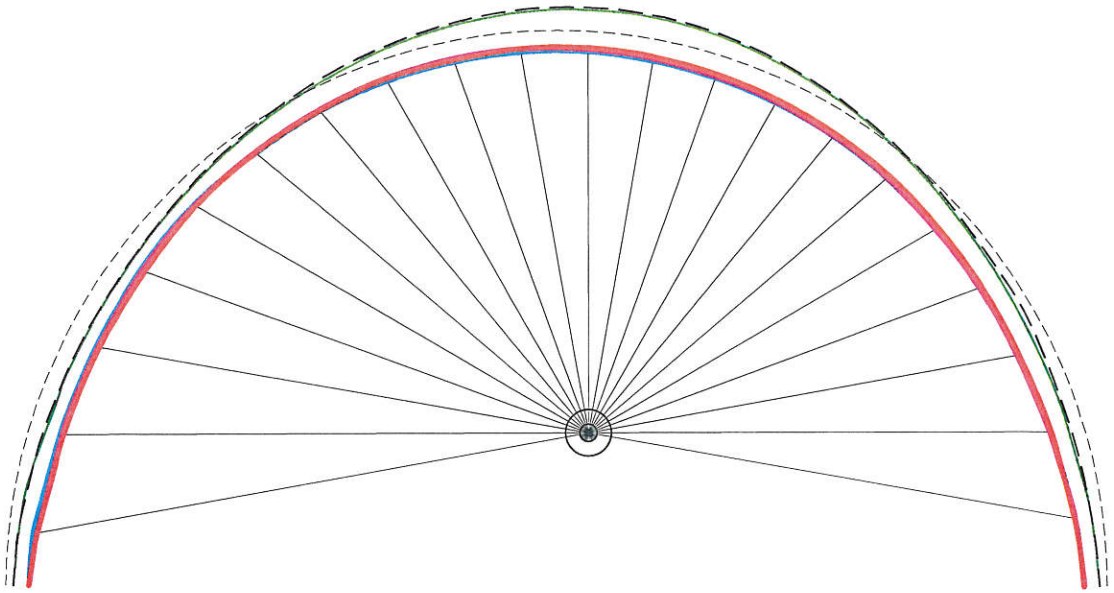
Client: R. GUTIERREZ ENGINEERING CORPORATION

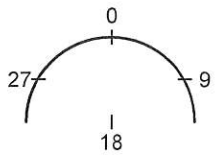
DATE: 4/29/15

Project No.: CBC-16268

Sections plotted facing Southeast

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise





- - - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
= ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
= LINER INSTALLATION PRIOR TO GROUTING (11/3/14)
= LINER INSTALLATION AFTER GROUTING (11/10/14)
= LINER INSTALLATION AFTER GROUTING (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	8.52	9	10.29	18	0.00	27	11.63
1	8.45	10	10.95	19	0.00	28	11.02
2	8.44	11	0.00	20	0.00	29	10.48
3	8.50	12	0.00	21	0.00	30	10.06
4	8.61	13	0.00	22	0.00	31	9.65
5	8.80	14	0.00	23	0.00	32	9.31
6	9.03	15	0.00	24	0.00	33	9.04
7	9.36	16	0.00	25	0.00	34	8.78
8	9.76	17	0.00	26	12.39	35	8.63

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 3+16

CBC Engineers

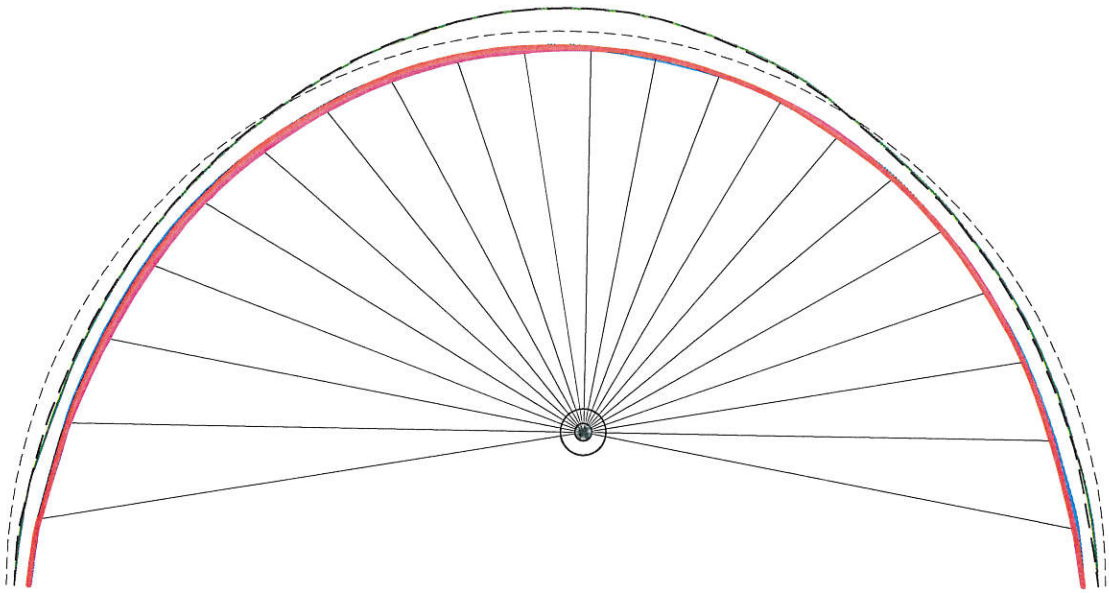
Client: R. GUTIERREZ ENGINEERING CORPORATION

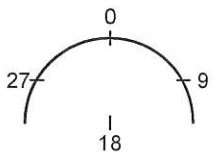
DATE: 4/29/15

Project No.: CBC-16268

Sections plotted facing Southeast

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise





- - - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
——— = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
——— = LINER INSTALLATION PRIOR TO GROUTING (11/3/14)
——— = LINER INSTALLATION AFTER GROUTING (11/10/14)
——— = LINER INSTALLATION AFTER GROUTING (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	8.51	9	10.43	18	0.00	27	11.44
1	8.48	10	11.12	19	0.00	28	10.84
2	8.49	11	0.00	20	0.00	29	10.35
3	8.57	12	0.00	21	0.00	30	9.93
4	8.68	13	0.00	22	0.00	31	9.57
5	8.92	14	0.00	23	0.00	32	9.23
6	9.19	15	0.00	24	0.00	33	8.99
7	9.51	16	0.00	25	0.00	34	8.79
8	9.93	17	0.00	26	12.18	35	8.62

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 3+22

CBC Engineers

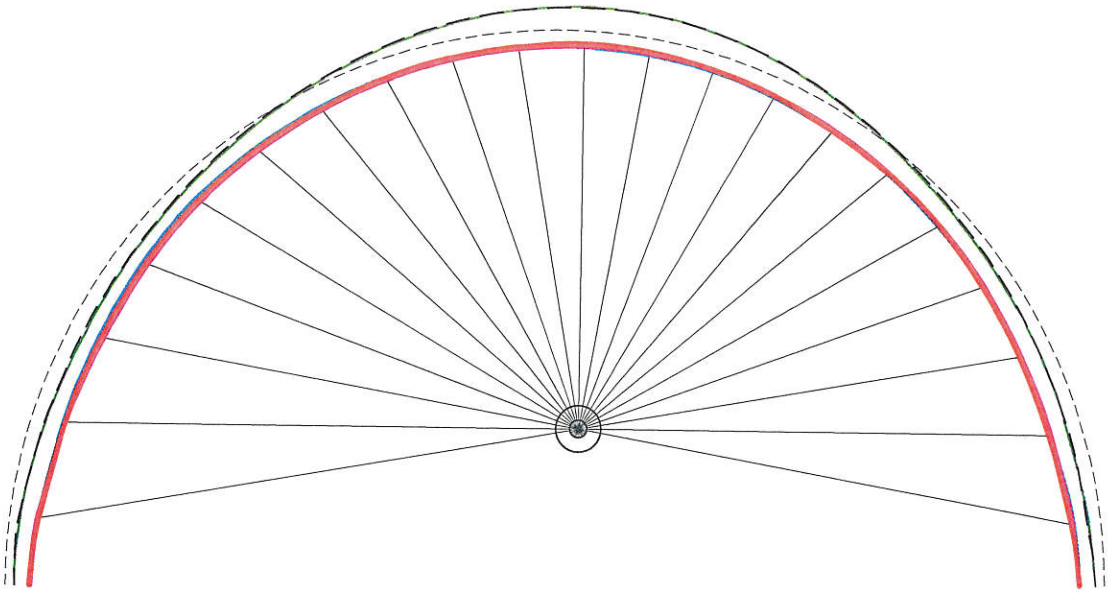
Client: R. GUTIERREZ ENGINEERING CORPORATION

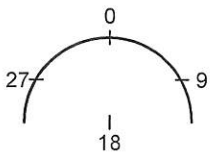
DATE: 4/29/15

Project No.: CBC-16268

Sections plotted facing Southeast

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise





- - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
——— = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
——— = LINER INSTALLATION PRIOR TO GROUTING (11/3/14)
——— = LINER INSTALLATION AFTER GROUTING (11/10/14)
——— = LINER INSTALLATION AFTER GROUTING (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	8.52	9	10.47	18	0.00	27	11.41
1	8.49	10	11.15	19	0.00	28	10.79
2	8.50	11	0.00	20	0.00	29	10.29
3	8.58	12	0.00	21	0.00	30	9.86
4	8.70	13	0.00	22	0.00	31	9.47
5	8.94	14	0.00	23	0.00	32	9.13
6	9.21	15	0.00	24	0.00	33	8.89
7	9.53	16	0.00	25	0.00	34	8.70
8	9.94	17	0.00	26	12.13	35	8.57

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 3+30

CBC Engineers

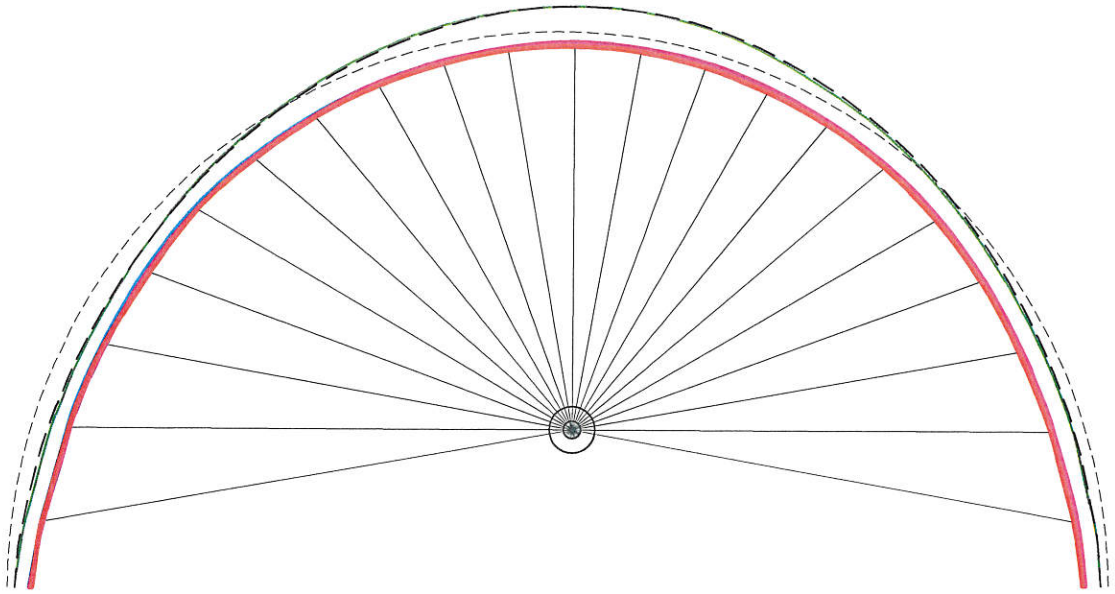
Client: R. GUTIERREZ ENGINEERING CORPORATION

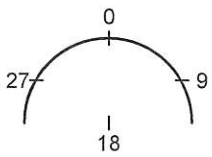
DATE: 4/29/15

Project No.: CBC-16268

Sections plotted facing Southeast

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise





- - - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
——————— = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
——————— = LINER INSTALLATION PRIOR TO GROUTING (11/3/14)
——————— = LINER INSTALLATION AFTER GROUTING (11/10/14)
——————— = LINER INSTALLATION AFTER GROUTING (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	8.49	9	10.65	18	0.00	27	11.16
1	8.50	10	11.33	19	0.00	28	10.55
2	8.55	11	0.00	20	0.00	29	10.01
3	8.65	12	0.00	21	0.00	30	9.65
4	8.83	13	0.00	22	0.00	31	9.27
5	9.06	14	0.00	23	0.00	32	8.99
6	9.34	15	0.00	24	0.00	33	8.77
7	9.69	16	0.00	25	0.00	34	8.61
8	10.11	17	0.00	26	11.90	35	8.53

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 3+45

CBC Engineers

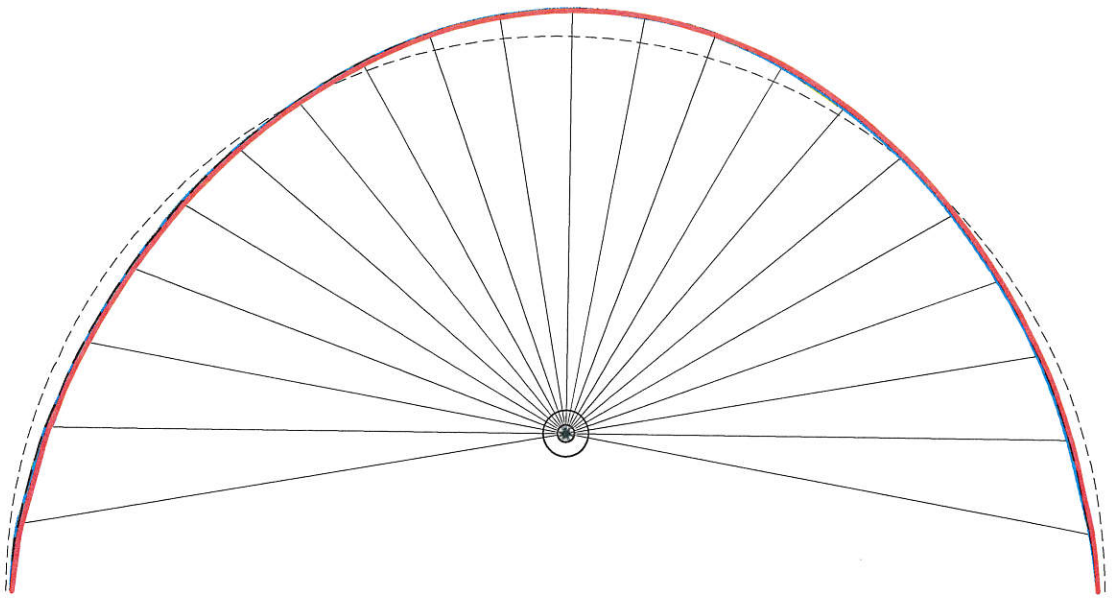
Client: R. GUTIERREZ ENGINEERING CORPORATION

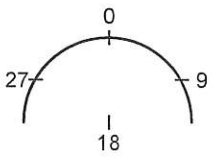
Project No.: CBC-16268

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise

DATE: 4/29/15

Sections plotted facing Southeast





- ---------- = THEORETICAL SHAPE
- — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
- ——— = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
- ——— = ARCH SHAPE AFTER LINER INSTALLATION (11/10/14)
- ——— = ARCH SHAPE AFTER LINER INSTALLATION (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	9.34	9	11.24	18	0.00	27	11.46
1	9.37	10	11.90	19	0.00	28	10.81
2	9.41	11	0.00	20	0.00	29	10.28
3	9.47	12	0.00	21	0.00	30	9.89
4	9.54	13	0.00	22	0.00	31	9.61
5	9.69	14	0.00	23	0.00	32	9.43
6	9.92	15	0.00	24	0.00	33	9.33
7	10.24	16	0.00	25	0.00	34	9.31
8	10.69	17	0.00	26	12.21	35	9.31

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 3+60

CBC Engineers

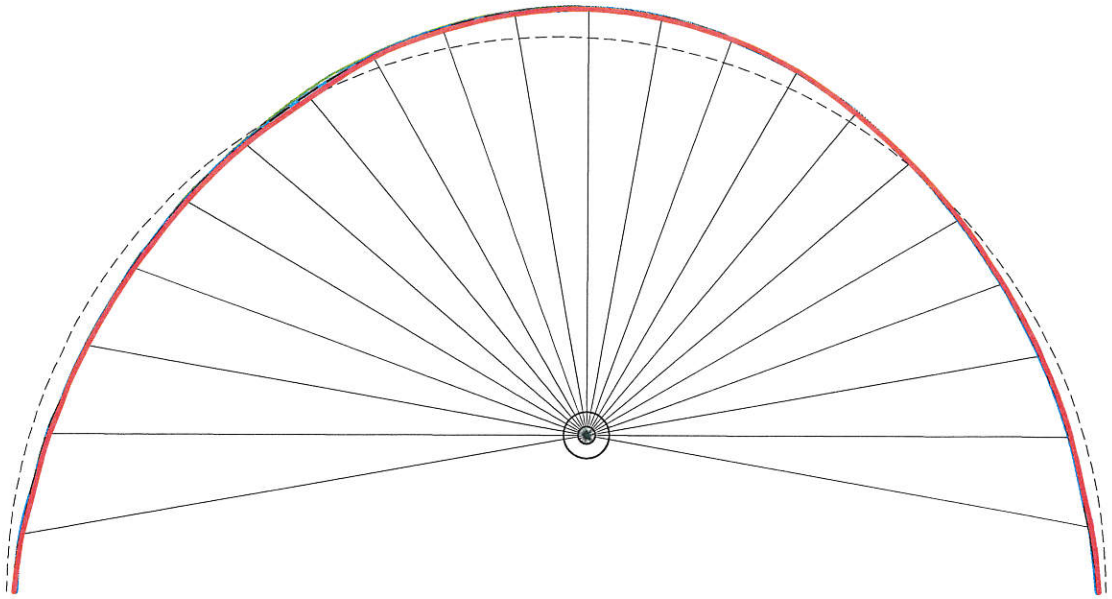
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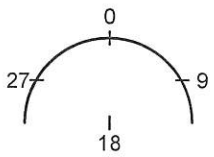
Project No.: CBC-16268

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise

DATE: 4/29/15

Sections plotted facing Southeast





---------- = THEORETICAL SHAPE

— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)

= ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)

= ARCH SHAPE AFTER LINER INSTALLATION (11/10/14)

= ARCH SHAPE AFTER LINER INSTALLATION (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	9.41	9	10.78	18	0.00	27	11.90
1	9.35	10	11.41	19	0.00	28	11.24
2	9.32	11	0.00	20	0.00	29	10.69
3	9.31	12	0.00	21	0.00	30	10.27
4	9.31	13	0.00	22	0.00	31	9.95
5	9.40	14	0.00	23	0.00	32	9.70
6	9.59	15	0.00	24	0.00	33	9.61
7	9.87	16	0.00	25	0.00	34	9.50
8	10.28	17	0.00	26	12.67	35	9.44

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 3+75

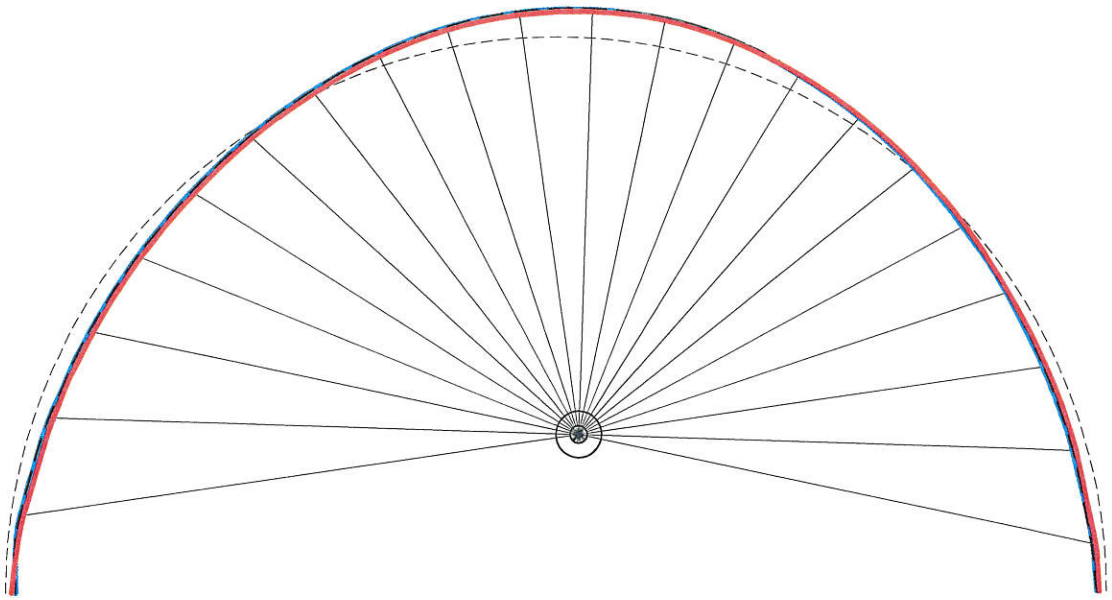
Client: R. GUTIERREZ ENGINEERING CORPORATION

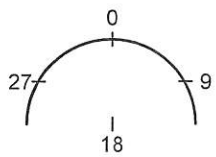
Project No.: CBC-16268

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise

DATE: 4/29/15

Sections plotted facing Southeast





---------- = THEORETICAL SHAPE

— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)

———— = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)

———— = ARCH SHAPE AFTER LINER INSTALLATION (11/10/14)

———— = ARCH SHAPE AFTER LINER INSTALLATION (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	9.34	9	11.07	18	0.00	27	11.65
1	9.34	10	11.72	19	0.00	28	11.00
2	9.33	11	0.00	20	0.00	29	10.48
3	9.35	12	0.00	21	0.00	30	10.07
4	9.42	13	0.00	22	0.00	31	9.79
5	9.55	14	0.00	23	0.00	32	9.57
6	9.76	15	0.00	24	0.00	33	9.46
7	10.06	16	0.00	25	0.00	34	9.40
8	10.51	17	0.00	26	12.40	35	9.36

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 3+90

CBC Engineers

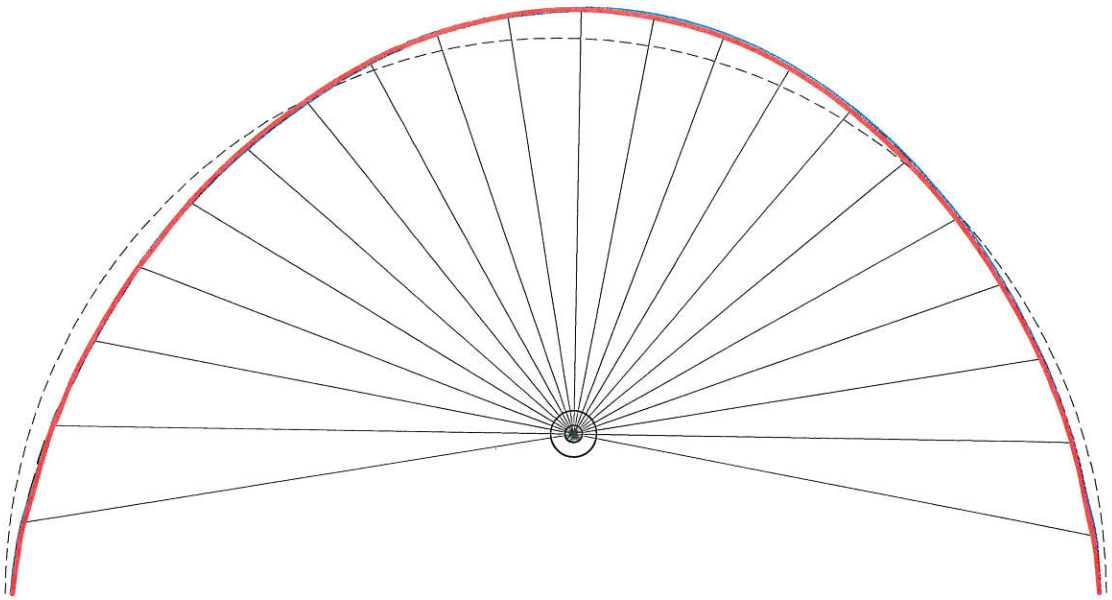
Client: R. GUTIERREZ ENGINEERING CORPORATION

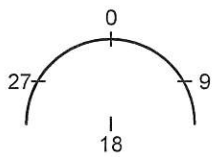
DATE: 4/29/15

Project No.: CBC-16268

Sections plotted facing Southeast

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise





- - - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
——— = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (11/10/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	9.38	9	11.09	18	0.00	27	11.53
1	9.37	10	11.75	19	0.00	28	10.87
2	9.40	11	0.00	20	0.00	29	10.33
3	9.42	12	0.00	21	0.00	30	9.94
4	9.46	13	0.00	22	0.00	31	9.66
5	9.57	14	0.00	23	0.00	32	9.47
6	9.78	15	0.00	24	0.00	33	9.40
7	10.10	16	0.00	25	0.00	34	9.36
8	10.54	17	0.00	26	12.30	35	9.36

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 4+05

CBC Engineers

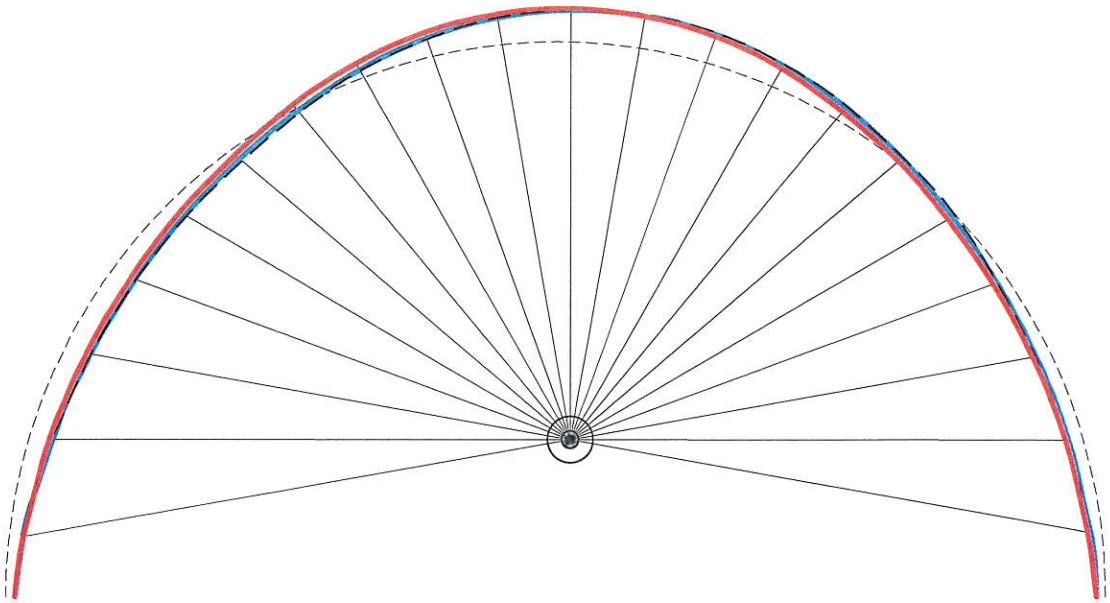
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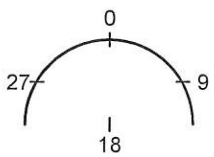
DATE: 4/29/15

Project No.: CBC-16268

Sections plotted facing Southeast

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise





- - - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
——— = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (11/10/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	9.52	9	11.01	18	0.00	27	11.53
1	9.49	10	11.69	19	0.00	28	10.89
2	9.48	11	0.00	20	0.00	29	10.38
3	9.46	12	0.00	21	0.00	30	10.01
4	9.46	13	0.00	22	0.00	31	9.75
5	9.56	14	0.00	23	0.00	32	9.64
6	9.73	15	0.00	24	0.00	33	9.58
7	10.03	16	0.00	25	0.00	34	9.56
8	10.46	17	0.00	26	12.28	35	9.54

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 4+20

CBC Engineers

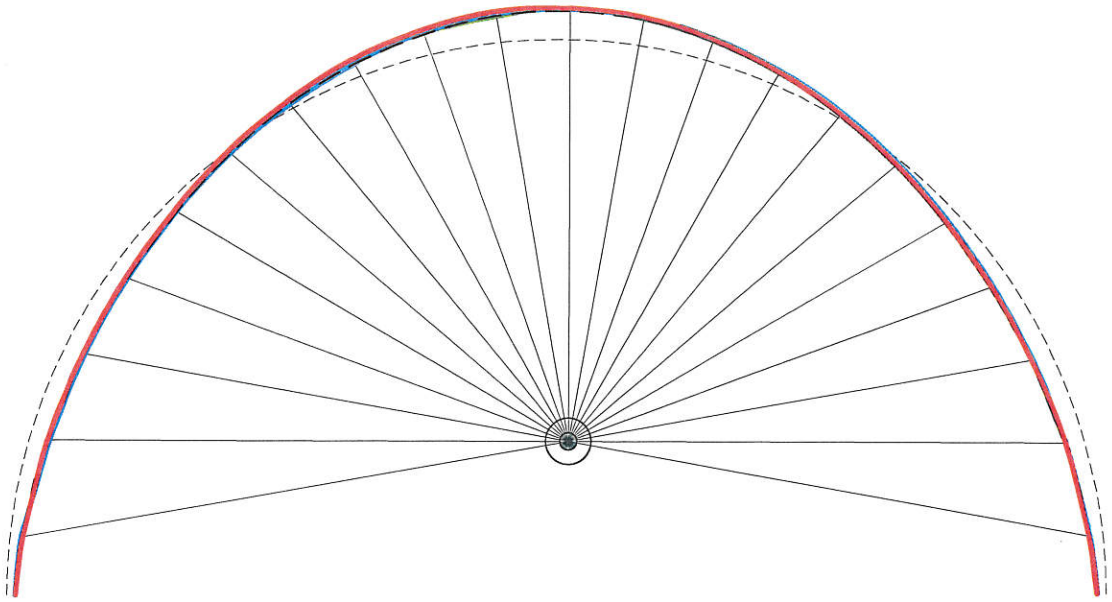
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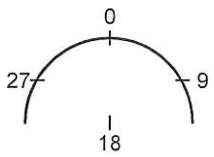
DATE: 4/29/15

Project No.: CBC-16268

Sections plotted facing Southeast

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise





- - - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
——— = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (11/10/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (4/29/15)

ACTUAL MEASUREMENTS (ft.)

0	9.56	9	11.07	18	0.00	27	11.55
1	9.51	10	11.77	19	0.00	28	10.94
2	9.45	11	0.00	20	0.00	29	10.47
3	9.42	12	0.00	21	0.00	30	10.13
4	9.44	13	0.00	22	0.00	31	9.92
5	9.53	14	0.00	23	0.00	32	9.78
6	9.71	15	0.00	24	0.00	33	9.71
7	10.02	16	0.00	25	0.00	34	9.65
8	10.48	17	0.00	26	12.26	35	9.63

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

ALSP SRA; McCOLL Rd, McALLEN, TX

Sta.: 4+23

CBC Engineers

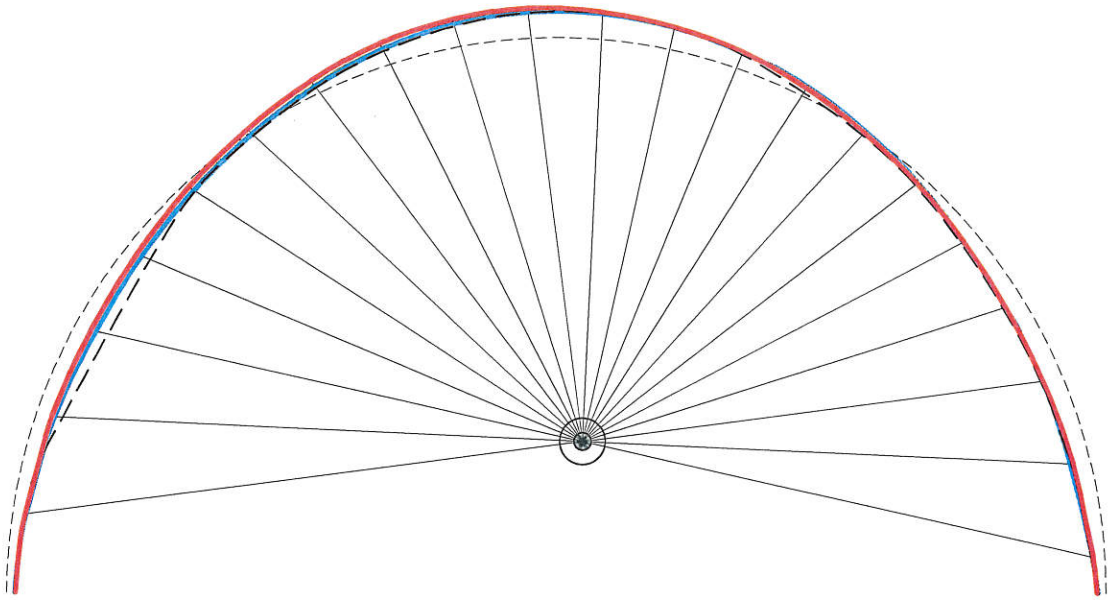
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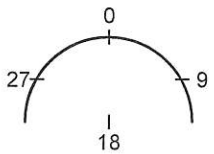
DATE: 4/29/15

Project No.: CBC-16268

Sections plotted facing Southeast

Pipe: LINER PLATE RELINE for Aluminum Structural Plate Single Radius Arch 24'-0" Span x 12'-0" Rise





- - - - - - - - - - = THEORETICAL SHAPE
— — — — — = PREVIOUS ARCH SHAPE MEASURED (4/28/14)
——— = ARCH SHAPE PRIOR TO LINER INSTALLATION (10/26/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (11/10/14)
——— = ARCH SHAPE AFTER LINER INSTALLATION (4/29/15)

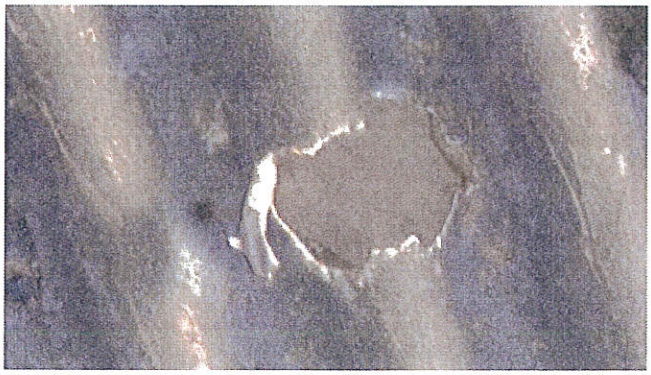
ACTUAL MEASUREMENTS (ft.)

0	9.49	9	10.95	18	0.00	27	11.76
1	9.38	10	11.64	19	0.00	28	11.16
2	9.32	11	0.00	20	0.00	29	10.70
3	9.27	12	0.00	21	0.00	30	10.37
4	9.27	13	0.00	22	0.00	31	10.14
5	9.38	14	0.00	23	0.00	32	9.99
6	9.58	15	0.00	24	0.00	33	9.88
7	9.90	16	0.00	25	0.00	34	9.75
8	10.36	17	0.00	26	12.43	35	9.64

Comments: (Description of any Tears, Leakage, Gaskets, Sediment, Bulges, Flat areas, Etc. Photograph if applicable)

APPENDIX B

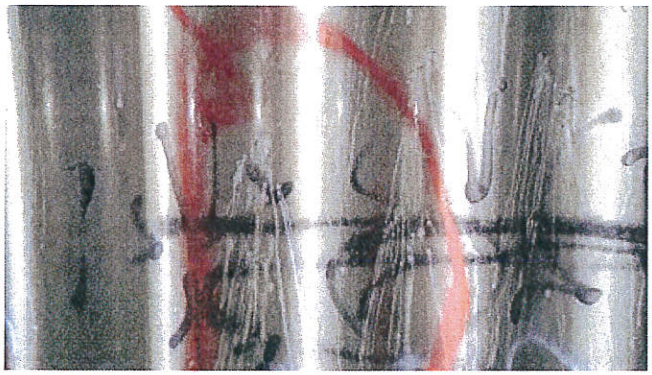
PHOTOGRAPHS



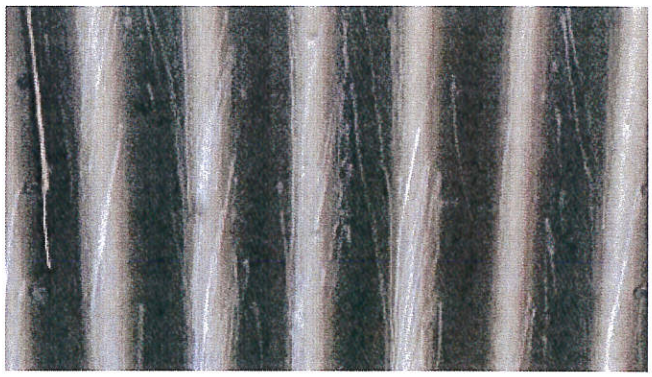
PHOTOGRAPH 1



PHOTOGRAPH 2



PHOTOGRAPH 3



PHOTOGRAPH 4



PHOTOGRAPH 5



PHOTOGRAPH 6

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: 4-14-15

Engineer/Firm Name: R. Gutierrez Eng. Corp.

Project Name/Number: 2012 Bond Ref.-R-K Rural Drainage Dev.

Invoice No.: 3795

Purchase Order No.: 0241631-R

Received By: Rosa Arce

Forwarded to: Joey Garza

Total # of Pages Submitted: 7 + Transmittal

Attachments: CD: _____ USB: _____ Other: _____ N/A: ✓

Additional Comments: _____

R. Gutierrez Engineering Corporation
Professional Engineers & Land Surveyors
130 E. PARK AVENUE • PHARR, TEXAS 78577
(TEL) 956-782-2557 • (FAX) 956-782-2558
Engineering Firm F - 486 • Surveying Firm #101650-00

Invoice Number 3795
Date 4/14/2015
Due on receipt

Invoice

HIDALGO COUNTY DRAINAGE DISTRICT #1
APR 14 2015
4:48 AM PM
BY: Rosadre

Hidalgo County Drainage District No. 1
Godfrey Garza, Jr.
902 N. Doolittle Road
Edinburg, TX 78542

Project: R-K Rural Drain Development Prog.- Pct2-2

Project No.: ENG13.001
Contract No.: WA#3
PO No. 624631-R

Const. Cost
% of Const. Cost
Billing Fee 11,328.08

Phase	Phase Fee	% Complete	Fee Earned	Prior Billing	Current Fee
Northside Village	2,832.02	62.99%		1,783.93	0.00
Hidden Valley Estates	2,832.02	0.00%			0.00
Minnesota Meadows	2,832.02	0.00%			0.00
Seminole Valley	2,832.02	40.00%	1,132.73	531.30	601.43

Balance Due **$601.43**

VISIT OUR WEBSITE AT:
www.rkci.com

INVOICE

INVOICE # :R025373

CONSULTANTS * ENVIRONMENTAL * FACILITIES * INFRASTRUCTURE

BILLING DATE :
1/28/2015

PROJECT :
AMD1408500
Hidalgo County Pct. 2 Rural

CLIENT :
A13388 R Gutierrez Engineering Corp.

RABA KISTNER

Ramiro Gutierrez
R Gutierrez Engineering Corp.
130 East Park Avenue
Pharr, TX 78577

REMITTANCE ADDRESS:
RABA KISTNER, INC.
P.O. BOX 971037
DALLAS, TX 75397-1037

PHONE (210) 699-9090

CONSULTING SERVICES

INVOICE SUMMARY INFORMATION

Drainage Development Seminole Valley Drainage Improvements 2014 - Alamo, Hidalgo County, Texas
Project Administration 10% - RKCI Proposal No. PMD14-055-00
RETMC

FOR PROFESSIONAL SERVICES RENDERED THROUGH: 1/10/2015

SERVICE DATE	12/17/2014	236.50
SERVICE DATE	12/18/2014	114.00
SERVICE DATE	01/10/2015	35.05

AMOUNT DUE THIS INVOICE ** 385.55

THIS IS AN INTERIM INVOICE UNLESS OTHERWISE NOTED

RK PROJECT MANAGER: JORGE L PEREZ
CLIENT PHONE: 956-782-2557

PROJECT ACCOUNTS RECEIVABLE SUMMARY

Amount Due This Invoice	$	385.55
Total of Previous Invoices - Currently Unpaid		531.30
Total Due And Payable	$	916.85

RABA KISTNER

BILLING DATE : 1/28/2015

PROJECT : AMD1408500 A13388
Hidalgo County Pct. 2 Rural
R Gutierrez Engineering Corp.

INVOICE # :R025373

SALARY / EXPENSE DETAILED BACKUP

DESCRIPTION	REMARKS	QUANTITY	RATE	AMOUNT
12/17/2014				
CMT FIELD & LABORATORY TESTING				
VEHICLE TRAVEL CHARGE	M14-014206	1.00	45.000	45.00
CONCRETE COMPRESSIVE STRENGTH TESTS	M14-014206	5.00	14.500	72.50
TECHNICIAN TIME-CONCRETE TESTING	M14-014206	2.00	46.000	92.00
AIR CONTENT OF CONCRETE	M14-014206	1.00	27.000	27.00
			SUBTOTAL	**236.50**
12/18/2014				
CMT FIELD & LABORATORY TESTING				
VEHICLE TRAVEL CHARGE	M14-014206	1.00	45.000	45.00
TECHNICIAN TIME-PICK UP OF SPECIMEN(S)	M14-014206	1.50	46.000	69.00
			SUBTOTAL	**114.00**
01/10/2015				
CMT FIELD & LABORATORY TESTING				
PROJECT ADMINISTRATION (MARKUP OF INVOICED BILLING CYCLE) SUBTOTAL 10%		1.00	35.050	35.05
			SUBTOTAL	**35.05**
			**** TOTAL PROJECT AMD1408500**	**385.55**

LABORATORY TEST REPORT

Compressive Strength Test

RABA KISTNER CONSULTANTS
Raba Kistner Consultants Inc.
800 East Hackberry
McAllen, Texas 78501
(956) 682-5332 • FAX(956) 682-5487
www.rkci.com
TBPE Firm F-3257

ATTN.: MR. RAMIO GUTIERREZ, P.E., PRESIDENT
TO: **R. GUTIERREZ ENGINEERING CORPORATION**
130 E. PARK AVENUE
PHARR, TEXAS 78577

PROJECT NO.: AMD14-085-00
CAST DATE: 12/17/2014
ASSIGNMENT NO.: M14-014206
REPORT VERSION: A
TECHNICIAN: VICTOR SALINAS IIII

PROJECT: Hidalgo County Pct. 2 Rural Drainage Development Seminole Valley Drainage Imp. 2014, Alamo, Tx.

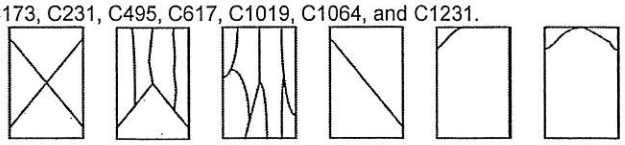
SAMPLE LOCATION: Rip-Rap Section Located on the South Side of Canal Before Owassa Road

SET INDEX:	Set 1 of 1				
SUPPLIER:	L & R Ready Mix	BATCH TIME:	10:52 a.m.	AIR CONTENT (%):	1.0
TRUCK NO:	200	SAMPLE TIME:	11:30 a.m.	UNIT WEIGHT (pcf):	ND
TICKET NO:	8276	SAMPLE TEMP. (°F):	75	FIELD CURED (day):	1
SAMPLED AT (cu yds):	9	AMBIENT TEMP. (°F):	75	SAMPLE TYPE:	Concrete Cylinder
DESIGN STR.(psi):	2,000	SLUMP (in.):	4.00	SAMPLE SIZE(in.):	4 x 8
PRODUCT NO.:	3500			CYLINDER DIAMETER(in.):	

SPECIMEN NUMBER	DATE OF TEST	AGE (days)	LOAD (lbs)	DIAMETER (in)	AREA (in.²)	STRENGTH (psi)	PERCENT OF DESIGN	FRACTURE TYPE	TESTED BY
1	12/24/2014	7	43,030	4.00	12.57	3,420	171	Type 3	E. Arredondo
2	12/24/2014	7	41,430	4.00	12.57	3,300	165	Type 5	E. Arredondo
3	01/14/2015	28	55,045	4.00	12.57	4,380	219	Type 2	A. Hernandez
4	01/14/2015	28	56,035	4.00	12.57	4,460	223	Type 2	A. Hernandez
5	01/14/2015	28	51,260	4.00	12.57	4,080	204	Type 3	A. Hernandez

NOTE: Some information on this test report provided by others. Testing and reporting was conducted in general accordance with the following applicable A.S.T.M. references: C31, C39, C109, C138, C143, C172, C173, C231, C495, C617, C1019, C1064, and C1231.

TYPES OF FRACTURE



Type 1 Type 2 Type 3 Type 4 Type 5 Type 6

REMARKS: Mr. Juan Uribe w/R. Gutierrez Engineering Corporation was verbally notified of field test results. ND-Not Determined; NP-Not Provided; NA-Not Applicable. Mr. Juan Uribe w/R. Gutierrez Engineering Corporation was notified of concrete batch time on 12-18-14. Mr. Uribe indicated that TxDOT Class "B" Concrete (2000 PSI) was specified.

NOTICE: Raba Kistner Consultants, Inc. considers the data and information contained in this report to be proprietary. This information is intended only for the use of the recipient(s) named herein. Test results presented herein relate only to those items tested. This document and any information contained herein shall not be disclosed and shall not be duplicated or used in whole or in part for any purpose other than to validate test results without written approval from Raba Kistner Consultants, Inc.

COPIES TO: Above (1)
RDH Site & Concrete(1)
R. Gutierrez Engineering Corporation(2)

RABA KISTNER CONSULTANTS, INC.

BY: Carlos Ceballos Jr. 01/14/2015

STATE OF TEXAS
CARLOS CEBALLOS JR.
100224
LICENSED
PROFESSIONAL ENGINEER

VISIT OUR WEBSITE AT:
www.rkci.com

INVOICE

INVOICE # :R025423

CONSULTANTS * ENVIRONMENTAL * FACILITIES * INFRASTRUCTURE

BILLING DATE :
2/23/2015

PROJECT :
AMD1408500
Hidalgo County Pct. 2 Rural

CLIENT :
A13388 R Gutierrez Engineering Corp.

RABA KISTNER

Ramiro Gutierrez
R Gutierrez Engineering Corp.
130 East Park Avenue
Pharr, TX 78577

REMITTANCE ADDRESS:
RABA KISTNER, INC.
P.O. BOX 971037
DALLAS, TX 75397-1037

PHONE (210) 699-9090

CONSULTING SERVICES

INVOICE SUMMARY INFORMATION

Drainage Development Seminole Valley Drainage Improvements 2014 - Alamo, Hidalgo County, Texas
Project Administration 10% - RKCI Proposal No. PMD14-055-00
RETMC

FOR PROFESSIONAL SERVICES RENDERED THROUGH: 2/7/2015

SERVICE DATE	02/02/2015	196.25
SERVICE DATE	02/07/2015	19.63

AMOUNT DUE THIS INVOICE ** 215.88

THIS IS AN INTERIM INVOICE UNLESS OTHERWISE NOTED

RK PROJECT MANAGER: JORGE L PEREZ
CLIENT PHONE: 956-782-2557

PROJECT ACCOUNTS RECEIVABLE SUMMARY

Amount Due This Invoice	$	215.88
Total of Previous Invoices - Currently Unpaid		916.85
Total Due And Payable	$	1,132.73

RABA KISTNER

BILLING DATE : 2/23/2015

PROJECT : AMD1408500 A13388
Hidalgo County Pct. 2 Rural
R Gutierrez Engineering Corp.

INVOICE # :R025423

SALARY / EXPENSE DETAILED BACKUP

DESCRIPTION	REMARKS	QUANTITY	RATE	AMOUNT
02/02/2015				
CMT FIELD & LABORATORY TESTING				
VEHICLE TRAVEL CHARGE	M15-010347	1.00	45.000	45.00
FIELD DENSITY TEST-UTILITY BACKFILL	M15-010347	3.00	19.750	59.25
TECHNICIAN TIME-DENSITY TESTING-UTILITY BACKFILL	M15-010347	2.00	46.000	92.00
			SUBTOTAL	**196.25**
02/07/2015				
CMT FIELD & LABORATORY TESTING				
PROJECT ADMINISTRATION (MARKUP OF INVOICED BILLING CYCLE) SUBTOTAL 10%		1.00	19.630	19.63
			SUBTOTAL	**19.63**
		** TOTAL PROJECT AMD1408500		**215.88**

FIELD TEST REPORT

Soil/Base Material Nuclear Density Test

RABA KISTNER CONSULTANTS
Raba Kistner Consultants Inc.
800 East Hackberry
McAllen, Texas 78501
(956) 682-5332 • FAX(956) 682-5487
www.rkci.com
TBPE Firm F-3257

ATTN.: MR. RAMIO GUTIERREZ, P.E., PRESIDENT
TO: **R. GUTIERREZ ENGINEERING CORPORATION**
130 E. PARK AVENUE
PHARR, TEXAS 78577

PROJECT NO.: AMD14-085-00
DATE OF TEST: 02/02/2015
ASSIGNMENT NO.: M15-010347
REPORT VERSION: A
SHEET NUMBER: 1 of 1
TECHNICIAN: ALEJANDRO BERNAL

PROJECT: Hidalgo County Pct. 2 Rural Drainage Development
Seminole Valley Drainage Imp. 2014, Alamo, Tx.

TEST NO.	TEST LOCATION	SOIL TYPE	LIFT NO. /DEPTH	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PROCTOR (%)	CONFORM
	60" Diameter RCP Storm Drain Line						
1	Near STA.: 23 + 00, on Centerline of Trench	1	FINAL	17.5	106.8	101.5	Yes
2	Near STA.: 18 + 00, on Centerline of Trench	1	FINAL	15.6	105.7	100.5	Yes
3	Near STA.: 13 + 00, on Centerline of Trench	1	FINAL	16.1	106.1	100.9	Yes

CURVE ID.	SOIL TYPE	OPTIMUM MOISTURE (%)	MAX. DRY DENSITY (PCF)	REQUIRED MOISTURE (%)	REQUIRED DENSITY (%)	LAB TEST PROCEDURE
1	Brown Lean Clay w/Sand (Backfill Material) (PI:28)	17.4	105.2	15.4-20.4	95	ASTM D 698 Method A

REFERENCE: Backfill/Utility Line
FIELD TEST PROCEDURE: ASTM D 6938
GAUGE NUMBER: 1
PERSON NOTIFIED: Mr. Juan Uribe w/R. Gutierrez Engineering Corp.
CONTRACTOR: RDH Site & Concrete
REMARKS: Lift and station information is provided by contractor.

*** - Indicates noncompliance with specifications.**

NOTICE: Raba Kistner Consultants, Inc. considers the data and information contained in this report to be proprietary. This information is intended only for the use of the recipient(s) named herein. Test results presented herein relate only to those items tested. This document and any information contained herein shall not be disclosed and shall not be duplicated or used in whole or in part for any purpose other than to validate test results without written approval from Raba Kistner Consultants, Inc.

COPIES TO: Above (1)
RDH Site & Concrete (1)
R. Gutierrez Engineering Corporation (2)

RABA KISTNER CONSULTANTS, INC.

BY: Carlos Ceballos
02/06/2015

STATE OF TEXAS
CARLOS CEBALLOS JR.
100224
LICENSED
PROFESSIONAL ENGINEER

R. Gutierrez Engineering Corporation

Transmittal Form

TO: Noe Saldivar
Hidalgo County Drainage Dist. No. 1
902 N. Doolittle
Edinburg TX 78542

FROM: Jaime Jaimez, Jr.
SUBJECT: 2012 Bond Referendum-R-K Rural Drainage Developmen
PROJECT NO.: ENG13.001
DATE: April 14, 2015

WE ARE SENDING YOU X ATTACHED ___ UNDER SEPARATE COVER VIA Hand Delivery THE FOLLOWING ITEMS:

___ BLUEPRINTS	___ PLANS	___ SHOP DRAWINGS	___ CD
___ CHANGE ORDER	___ SAMPLES	___ PAYMENT REQUEST	X OTHER: INVOICE
___ BID TABULATION	___ CONTRACT DOCUMENTS	___ RECORD DRAWINGS	___ 3 1/2" DISKETTE

QUANTITY / SETS	DATED	ITEM DESCRIPTION
1	4/14/15	Invoice 3795 with backup (R-K Invoices)

THESE ARE TRANSMITTED AS CHECKED BELOW:

___ FOR BIDS DUE	___ APPROVED AS NOTED	___ FOR YOUR RECORDS
___ FOR APPROVAL	___ APPROVED AS SUBMITTED	___ FOR YOUR ACKNOWLEDGEMENT
___ FOR YOUR USE	___ RETURN FOR CORRECTIONS	___ RESUBMIT FOR APPORVAL
___ AS REQUESTED	X FOR FURTHER PROCESSING	___ ON LOAN
___ FOR REVIEW AND COMMENT	___ FOR SIGNATURE	___ OTHER

COMMENTS:

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
APR 14 2015
4:48 AM / PM
BY: Rosa Cruz

Copy Distribution: file

Received by:

130 East Park Ave. - Pharr, TX 78577 - Tel: 956 - 782 - 2557 - Fax: 956 - 782 - 2558 - Email: jaime@rgec.net

AI -50179 **9.**

DRAINAGE - CONSENT

Meeting Date: 06/23/2015

Submitted For: Jaime Salazar

Submitted By: Lora Briones, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

A.) Change Order No. 2 for Construction Contract No. HCDD1-14-031-12-02 "Spanish Palms Subdivision" in the amount of $7,395.03. Reviewed and approved by Drainage District General Manager.

B.) Change Order No. 3 for Construction Contract No. HCDD1-13-022-04-29B "FM 495 Drain - Wisconsin Road Crossing" approval of rain days. Reviewed and approved by Drainage District General Manager.

BACKGROUND

Fiscal Impact

Attachments

No file(s) attached.

Form Review

Inbox	**Reviewed By**	**Date**
Budget & Management	Veronica Ortiz	06/18/2015 10:44 AM
Final Approval	Monica Badillo	06/19/2015 05:25 PM
Form Started By: Lora Briones		Started On: 06/18/2015 10:28 AM
Final Approval Date: 06/19/2015		

AI -50122 **10.**

DRAINAGE - CONSENT

Meeting Date: 06/23/2015

Submitted By: Claudette Guerrero,
DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

Request to issue payment after review and audit procedures are complete:

TEDSI Infrastructure Group.

A) Inv#20152303 in the amount of $18,868.80 from Tedsi Infrastructure Group related to Work Authorization no. 8-General Management Services for the Lower Rio Grande Valley Regional Water Management Program. PO#623578.

B)Inv#20142204 in the amount of $95,442.44 from Tedsi Infrastructure Group related to Work Authorization no. 13-Preliminary Engineering Report for Lower Rio Grande Valley Regional Water Management Program. PO#623666,623958, 625152,626144.

C)Inv#20152356 in the amount of $6,002.05 from Tedsi Infrastructure Group related to Work Authorization no. 14-Preliminary Planning & Development of the Lower Rio Grande Regional Water Management Program. PO#623576.

D)Inv#20152354 in the amount of $3,660.00 from Tedsi Infrastructure Group related to Work Authorization no. 12-Legal Services for the Lower Rio Grande Valley Regional Water Management Program. PO#623665.

E) Inv#20142178 in the amount of $159,944.34 from Tedsi Infrastructure Group related to Work Authorization no. 13-Preliminary Engineering Report for Lower Rio Grande Valley Regional Water Management Program. PO#623666, 623958,625152,626144.

BACKGROUND

Fiscal Impact

Attachments

Tedsi Inv#20152303
Tedsi Inv#20142178
Tedsi Inv#20152354
Tedsi Inv#20152356
Tedsi Inv#20142204

Form Review

Inbox	Reviewed By	Date
Budget & Management	Veronica Ortiz	06/19/2015 11:23 AM
Final Approval	Monica Badillo	06/19/2015 05:25 PM

Form Started By: Claudette Guerrero Started On: 06/16/2015 02:08 PM

Final Approval Date: 06/19/2015

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: 4-24-15

Engineer/Firm Name: TEDSI Infrastructure

Project Name/Number: LRGVRWMP - General manag. Consult.

Invoice No.: 20152303

Purchase Order No.: 623578

Received By: Rosa W

Forwarded to: Joey Garza

Total # of Pages Submitted: 8.

Attachments: CD: ✓ WA#8 Backup. USB: _____ Other: _____ N/A: _____

Additional Comments: _____

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

APR 24 2015
12:00 AM PM
BY:

TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1640
Consulting Engineers
1201 East Expressway 83 • Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

April 22, 2015
Project No: 2013-1128-08
Invoice No: 20152303

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-08 Lower Rio Grande Valley Regional Water Management Program - General Management Consultant

Precinct No. 1 2012 Bond Referendum
General Engineering Management Services
Account No. 13-133-433-360-010-000-43340
P. O. No. 623578
Work Authorization No. 8

Professional Services from March 01, 2015 to March 31, 2015
Fee

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing	
Preliminary Planning & Development	856,165.48	54.6323	467,742.89	458,593.05	9,149.84	
Preliminary Engineering	261,709.66	18.8441	49,316.83	39,779.87	9,536.96	
Expenses	524,590.34	37.7059	197,801.51	197,801.51	0.00	
Total Fee	1,642,465.48		714,861.23	696,174.43	18,686.80	
		Total Fee				**18,686.80**

Billing Summary	Current	Prior	To-Date
Total Billings	18,686.80	696,174.21	714,861.01
Total Fee			1,642,465.48
Remaining Fee			927,604.47

Total this Invoice **$18,686.80**

Outstanding Invoices

Number	Date	Balance
20152222	2/18/2015	1,670.08
20152273	3/30/2015	4,568.50
Total		**6,238.58**

Total Now Due **$24,925.38**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: _____ Date: 4.22.15
Mark W. Lupher, P.E./RPLS
Executive Vice President

PROJECT: Delta Watershed Project - GCM
CLIENT: Hidalgo County Drainage District No. 1

TEDSI JOB NUMBER: 2013-1128-08

PROGRESS REPORT NO. 016

Progress Period March 01, 2015 Through March 31, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
I. GCM FOR ENGINEERING MANAGEMENT					
(A) PRELIMINARY PROJECT PLANNING AND DEVELOPMENT					
(1) Administrative Policy & Procedures	$105,432.80	93.16%	$98,224.32	$98,224.32	**$0.00**
(2) Project Development Schedule	$53,143.60	84.68%	$45,000.00	$45,000.00	**$0.00**
(3) Construction Estimate	$50,894.20	13.09%	$6,659.94	$3,000.00	**$3,659.94**
(4) QC/QA Program Development	$51,885.22	90.00%	$46,695.19	$46,695.19	**$0.00**
(5) Subcontract Administration	$49,684.28	90.00%	$44,715.85	$44,715.85	**$0.00**
(6) Funding Source	$119,911.08	48.39%	$58,027.40	$52,537.50	**$5,489.90**
(7) Capital Improvement Program	$129,253.80	0.20%	$256.85	$256.85	**$0.00**
(8) Management/ Coordination of Engineering Activities	$133,975.80	44.05%	$59,020.73	$59,020.73	**$0.00**
(9) Implementation of QC/QA Program	$46,927.50	25.54%	$11,985.17	$11,985.17	**$0.00**
(10) Computer Database Development Platform	$115,057.20	84.44%	$97,157.44	$97,157.44	**$0.00**
SUB TOTAL I.A	$856,165.48	54.63%	$467,742.89	$458,593.05	**$9,149.84**
(B) PRELIMINARY ENGINEERING					
(1) Preliminary Concept Conference	$57,250.80	57.30%	$32,802.94	$23,265.98	**$9,536.96**
(2) Management/Coordination of Engineering	$42,799.96	34.00%	$14,551.07	$14,551.07	**$0.00**
(3) Implementation of QA/QC Program	$36,624.10	5.36%	$1,962.82	$1,962.82	**$0.00**
(4) Preparation of "***Preliminary Engineering***	$84,677.60	0.00%	$0.00	$0.00	**$0.00**
(5) Coordination with all Reviewing Agencies	$40,357.20	0.00%	$0.00	$0.00	**$0.00**
SUB TOTAL I.B	$261,709.66	18.84%	$49,316.83	$39,779.87	$9,536.96
TOTAL LABOR COSTS	$1,117,875.14	$0.73	$517,059.72	$498,372.92	$18,686.80

PROJECT: Delta Watershed Project - GCM
CLIENT: Hidalgo County Drainage District No. 1

TEDSI JOB NUMBER: 2013-1128-08

PROGRESS REPORT NO. 016

Progress Period March 01, 2015 Through March 31, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
DIRECT EXPENSES					
TRAVEL					
Lodging/Hotel (Austin)	$648.00	0.00%	$0.00	$0.00	**$0.00**
Lodging/Hotel Taxes/fees (Austin @ 9%)	$58.32	0.00%	$0.00	$0.00	**$0.00**
Per Diem (Austin)	$426.00	0.00%	$0.00	$0.00	**$0.00**
Lodging/Hotel (Washington DC)	$1,356.00	0.00%	$0.00	$0.00	**$0.00**
Lodging/Hotel Taxes/fees (Washington DC @	$196.62	0.00%	$0.00	$0.00	**$0.00**
Per Diem (Washington DC)	$426.00	0.00%	$0.00	$0.00	**$0.00**
Mileage	$5,650.00	0.00%	$0.00	$0.00	**$0.00**
Rental Car (Taxes/Fees not included; Insurance	$450.00	0.00%	$0.00	$0.00	**$0.00**
Rental Car Fuel	$299.40	0.00%	$0.00	$0.00	**$0.00**
Air Travel -In State- Short Notice (Coach)	$6,000.00	0.00%	$0.00	$0.00	**$0.00**
Air Travel - Out of State - Short Notice (Coach)	$9,000.00	0.00%	$0.00	$0.00	**$0.00**
Luggage (with air travel)	$1,200.00	0.00%	$0.00	$0.00	**$0.00**
Parking	$420.00	0.00%	$0.00	$0.00	**$0.00**
Taxi/Cab fare	$480.00	0.00%	$0.00	$0.00	**$0.00**
Internet	$270.00	0.00%	$0.00	$0.00	**$0.00**
Telephone	$2,700.00	0.00%	$0.00	$0.00	**$0.00**
Conference Calls	$12,000.00	0.00%	$0.00	$0.00	**$0.00**
Postage & Shipping	$9,600.00	0.00%	$0.00	$0.00	**$0.00**
Overnight Mail - letter size	$1,800.00	0.00%	$0.00	$0.00	**$0.00**
Overnight Mail - oversized box	$3,000.00	0.00%	$0.00	$0.00	**$0.00**
Courier Services	$1,200.00	0.00%	$0.00	$0.00	**$0.00**
COMPUTER SYSTEM					
GIS Server, Web Hosting, Work Stations, Software, Licensing, Plotter, Printers, etc.	$382,990.00	51.65%	$197,801.51	$197,801.51	**$0.00**

PROJECT: Delta Watershed Project - GCM
CLIENT: Hidalgo County Drainage District No. 1

TEDSI JOB NUMBER: 2013-1128-08

PROGRESS REPORT NO. 016

Progress Period March 01, 2015 Through March 31, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
PRINTING					
Photocopies B/W (8 1/2" X 11")	$1,050.00	0.00%	$0.00	$0.00	**$0.00**
Photocopies B/W (11" X 17")	$1,650.00	0.00%	$0.00	$0.00	**$0.00**
Photocopies Color (8 1/2" X 11")	$1,800.00	0.00%	$0.00	$0.00	**$0.00**
Photocopies Color (11" X 17")	$6,750.00	0.00%	$0.00	$0.00	**$0.00**
Digital Ortho Plotting (on bond)	$10,000.00	0.00%	$0.00	$0.00	**$0.00**
Bond Paper Plot (Blueline/Blackline)	$4,500.00	0.00%	$0.00	$0.00	**$0.00**
Plots (B/W on Bond)	$12,000.00	0.00%	$0.00	$0.00	**$0.00**
Plots (Color on Bond)	$8,000.00	0.00%	$0.00	$0.00	**$0.00**
Plots (Color on Photographic Paper)	$5,000.00	0.00%	$0.00	$0.00	**$0.00**
Mounting Color Graphics on Foam Board	$10,000.00	0.00%	$0.00	$0.00	**$0.00**
Presentation Boards 30" X 40" Color Mounted	$4,200.00	0.00%	$0.00	$0.00	**$0.00**
Report Binding	$1,200.00	0.00%	$0.00	$0.00	**$0.00**
Notebooks	$720.00	0.00%	$0.00	$0.00	**$0.00**
Reproduction of CD/DVD	$15,500.00	0.00%	$0.00	$0.00	**$0.00**
CDs	$1,550.00	0.00%	$0.00	$0.00	**$0.00**
4" X 6" Digital Color Print	$500.00	0.00%	$0.00	$0.00	**$0.00**

TOTAL DIRECT EXPENSES	$524,590.34	37.71%	$197,801.51	$197,801.51	**$0.00**

TOTAL (LABOR AND DIRECT EXPENSES)	$1,642,465.48	43.52%	$714,861.23	$696,174.43	$18,686.80

TOTAL INVOICE AMOUNT DUE: $18,686.80

TEDSI INFRASTRUCTURE GROUP *Consulting Engineers* TEDSI TBPE F-1640	Project Progress Report
TO: Hidalgo County Drainage District No. 1	DATE: April 22, 2015
FROM: Mr. Mark Lupher, P.E., Project Manager	TEDSI PROJECT NO.: 2013-1128-08
REFERENCE: Hourly Progress Report	
Progress Report for Invoice No. 20152303, March 01 thru March 31, 2015	

- Week Report by Week for Jason Adams
  - Week of: 03-28-2015
    - Coordination with Raba Kistner on new Geotechnical Borings and Recommendations
  - Week of: 04-04-2015
    - Assist in generating Maps for Water Rights Application
    - Modifications to Construction Estimate based on meeting with Raba Kistner and their Recommendatins
    - Assist in generating maps/brochures for Legislative team members

- Week Report by Week for Mariano Manzano
  - Week of: 03-28-2015
    - Generate Maps for Water Rights Application
    - Coordination with team on Water Rights Application
  - Week of: 04-04-2015
    - Finalizing Maps for Water Rights Application
    - Coordination with team on Water Rights Application

- Week Report by Week for Mark Corbitt
  - Week of: 04-04-2015
    - Coordination with team on Water Rights Application
    - Review of Construction Estimate revisions based on Raba Kistner's latest Recommendations
    -

- Week Report by Week for Mark Lupher
  - Week of: 03-07-2015
    - Coordination with team on Water Rights Application
    - Coordinate with Legislative team memebers on funding sources
  - Week of: 03-14-2015
    - Meeting with HCDD#1 to discuss DRWMP
    - Coordination with team on Water Rights Application
    - Coordinate with Legislative team memebers on funding sources
  - Week of: 03-21-2015
    - Coordination with team on Water Rights Application
    - Coordinate with Legislative team memebers on funding sources

- Week Report by Week for Samantha DeLeon
  - Week of: 03-21-2015
    - Coordination with Irrigation Districts on requirements for TDS and salinity
    - Coordination with team on Water Rights Application
  - Week of: 03-28-2015
    - Coordination with Raba Kistner on new Geotechnical Borings and Recommendations
    - Coordination with team on Water Rights Application
    - Coordination with team on Region M Ammendment
  - Week of: 04-04-2015
    - Coordination with team on Water Rights Application
    - Finalizing Water Rights Application

- Week Report by Week for Jose Vasquez
  - Week of: 04-04-2015
    - Coordination with Raba Kistner on survey in the proposed Delta Reservoir

WORK AUTHORIZATION #8
LABOR DETAIL
DELTA AREA WATERSHED

March 2015	Principal Engineer	Project Manager (VIII)	Sr. Engineer (V)	Sr. Engineer (V)	Project Engineer (III)	Project Engineer (II)	Engr. In Training (E.I.T.)	Sr. Engr. Designer	Engr. Designer	CADD Operator	Sr. GIS Designer	GIS Designer	GIS System Manager	IT System Manager	Project Admin	Assistant Admin
	J. Salinas	M. Lupher	M. Corbitt	J. Sanchez	E. Dietrich		S. DeLeon/J. Adams		R. Cavazos	J. Adams	J. Perez		M. Manzano	A. Bray	D. Castillo	C. Garza
	$266.62	$232.61	$187.37	$187.37	$159.15	$144.56	$122.87	$117.57	$109.24	$104.61	$135.00	$90.00	$175.00	$180.00	$178.37	$73.13
Dates:																
3/3/2015		2														
3/4/2015		4														
3/5/2015		9														
3/9/2015		9														
3/11/2015		4														
3/16/2015		9					4.5									
3/17/2015							2									
3/18/2015		4														
3/23/2015													9			
3/24/2015							2						9			
3/25/2015							2						9			
3/26/2015							7						9			
3/27/2015													4			
3/30/2015			4				13.5		2				9			
3/31/2015			3				9						9			
Total	$0.00	$9,537.01	$1,311.59	$0.00	$0.00	$0.00	$4,914.80	$0.00	$218.48	$0.00	$0.00	$0.00	$10,150.00	$0.00	$0.00	$0.00
	0	41	7	0	0	0	40	0	2	0	0	0	58	0	0	0

	Total This Month **$26,131.88**

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: April 23, 2015

REF.: Delta Area Watershed March Invoice

TEDSI PROJECT NO.: 2013-1128-08

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
1	Invoice No. 20152303 for Project No. 2013-1128-08
1	Progress Report No. 016
1	Project Progress Report
1	Labor Detail
1	CD-of digital copies of invoice, progress reports and labor detail

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

APR 24 2015

12:00 AM / PM

BY: Rosalva

Signed: for: Clay
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

HIDALGO COUNTY DRAINAGE DISTRICT NUMBER ONE

902 NORTH DOOLITTLE EDINBURG, TEXAS 78542 (956) 292-7080 FAX (956) 292-7083

HCDD#1

GODFREY GARZA, JR.
MANAGER

INVOICE PROCESSING CHECKLIST

Date Received: 12-24-2014

Engineer/Firm Name: TEDSI

Project Name/Number: Delta Watershed PER

Invoice No: 20142178

Logged in and Scanned: 10AM 12/24 By: R.Arce Forwarded to: J.Garza

Engineer	Name	Date	Comment
Scope of work reviewed			

Accounting	Name	Date	Comment
Encumberance			
Purchase Order Attached			
Audit			
Final Approval for Agenda			

	Name	Date	Comment
Placed on Agenda			

Additional Comments: _____

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022
TBPE F-1640

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
DEC 24 2014
830 AM / PM
BY: RosaArce

December 22, 2014
Project No: 2013-1128-13
Invoice No: 20142178

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-13 Lower Rio Grande Valley Regional Water Management Program - Preliminary Engineering Report

Precinct No. 1 - 2012 Bond Referendum
P. O. No. 623666
Account Number 13-133-433-360-4330-010-000

Professional Services from September 01, 2014 to November 30, 2014

Fee

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
Preliminary Engineering Report	71,922.36	100.00	71,922.36	71,922.36	0.00
Data Collection	42,610.70	100.00	42,610.70	42,610.70	0.00
Geographical Information	80,256.16	100.00	80,256.16	80,256.16	0.00
Hydrologic Analysis Verification	68,952.49	100.00	68,952.49	42,750.54	26,201.95
Hydraulic Analysis Verification	68,952.49	100.00	68,952.49	40,475.11	28,477.38
Flood Plain Mapping Verification	100,097.80	12.52	12,532.24	0.00	12,532.24
Raw Water Collection	161,061.24	93.73	150,962.70	61,251.59	89,711.11
Alternate Solutions	70,599.48	4.28	3,021.66	0.00	3,021.66
Geotechnical Investigations Reports	61,494.09	91.2389	56,106.53	56,106.53	0.00
Final Report	150,648.64	0.50	753.24	753.24	0.00
WAM Willicy County	163,471.94	95.00	155,298.34	155,298.34	0.00
WAM Hidalgo County	171,876.14	95.00	163,282.33	163,282.33	0.00
Sub Surface Boring	140,895.00	0.00	0.00	0.00	0.00
Total Fee	1,352,838.53		874,651.24	714,706.90	159,944.34
		Total Fee			**159,944.34**
				Total this Phase	**$159,944.34**

Billing Summary	Current	Prior	To-Date
Total Billings	159,944.34	1,243,791.26	1,403,735.60
Total Fee			2,038,795.53
Remaining Fee			635,059.93

Project	2013-1128-13	LRGVRWMP - PER	Invoice	20142178

Total this Invoice **$159,944.34**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: _____ Date: 12.22.14

Mark W. Lupher, P.E., RPLS
Executive Vice President

PROJECT: Lower Rio Grande Valley Regional Water Management Program - Preliminary Engineering
INVOICE No. 20142178

TEDSI JOB NUMBER: 2013-1128-13

PROGRESS REPORT NO. 011

Progress Period September 1, 2014 Through November 30, 2014

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
III. PRELIMINARY ENGINEERING, DESIGN AND CONSTRUCTION					
(A) PRELIMINARY ENGINEERING					
(1) Preliminary Field Surveying	$71,922.36	100.00%	$71,922.36	$71,922.36	**$0.00**
(2) Data Collection	$42,610.70	100.00%	$42,610.70	$42,610.70	**$0.00**
(3) Geographical Information System	$80,256.16	100.00%	$80,256.16	$80,256.16	**$0.00**
(4) Hydrologic Analysis Verification	$68,952.49	100.00%	$68,952.49	$42,750.54	**$26,201.95**
(5) Hydraulic Analysis Verification	$68,952.49	100.00%	$68,952.49	$40,475.11	**$28,477.38**
H&H Sub Consultants - CSE	$685,957.00	77.13%	$529,084.36	$529,084.36	**$0.00**
(6) Flood Plain Mapping Verification	$100,097.80	12.52%	$12,532.24	$0.00	**$12,532.24**
(7) Raw Water Collection & distribution System	$161,061.24	93.73%	$150,962.70	$61,251.59	**$89,711.11**
(9) Alternate Solutions & Recommendations	$70,599.48	4.28%	$3,021.66	$0.00	**$3,021.66**
Geotechnical Investigations	$61,494.09	91.24%	$56,106.53	$56,106.53	**$0.00**
(10) Final Report- ***"Preliminary Engineering***	$150,648.64	0.50%	$753.24	$753.24	**$0.00**
SA #2 WAM Willacy County	$163,471.94	95.00%	$155,298.34	$155,298.34	**$0.00**
SA #2 WAM Hidalgo County	$171,876.14	95.00%	$163,282.33	$163,282.33	**$0.00**
Sub Surface Boring	$140,895.00	0.00%	$0.00	$0.00	**$0.00**
SUB TOTAL III.A	$2,038,795.53	68.85%	$1,403,735.60	$1,243,791.26	**$159,944.34**

TOTAL (LABOR AND DIRECT EXPENSES)	$2,038,795.53	68.85%	$1,403,735.60	$1,243,791.26	**$159,944.34**

CSE Direct Expenses					
Travel	$10,000.00	0.00%	$0.00	$0.00	**$0.00**

TOTAL LABOR AND DIRECT EXPENSES	$2,048,795.53	68.52%	$1,403,735.60	$1,243,791.26	**$159,944.34**

TOTAL INVOICE AMOUNT DUE: $159,944.34

LRGVWMP – WA#1A – WAM Modeling Analysis
Monthly Progress Report No. #03– September – November 2014

Period of Coverage: September thru November 2014
Date of Submittal: December 23, 2014
Submitted To: Claudette Guerrero, HCDD #1
PREPARED BY: Mark Lupher, P.E., TEDSI Infrastructure, Inc.

This study covers the following activities:

1. Coordination and meetings
2. Data collection and assimilation
3. Rainfall data analysis
4. Irrigation practice investigation
5. Statistical analysis
6. Estimation of subwatershed & hydrologic parameters
7. Watershed delineations
8. Revision to TCEQ WAM model
9. WAM modeling analysis
10. Report

PROGRESS TO REPORT FOR THIS PERIOD

Activity 1 – Coordination and Meetings

Coordinated with HCDD1, TCEQ, TWDB, and project team members.

Activity 2 – Data Collection and Assimilation

Completed data collection and evaluation. Addressed Comments from TCEQ and Data Collection Points

Activity 3 – Rainfall data analysis

Completed rainfall data analysis. Addressed Comments from H&H Section of TCEQ

Activity 4 – Investigated irrigation practice patterns for the study area

Obtained irrigation diversion records and determined irrigation return flows. Addressed more details on how we arrived at Avg. 1146 Acft/mo.

Activity 5 – Statistical analysis

Completed statistical analysis and established relationships between rainfall depth and stream flow. Addressed concerns on rainfall depth & stream flows used in channels.

Activity 5 – Watershed delineations

Completed watershed delineations for the project. Addressed water right revisions for Engleman ID.

Activity 6 – TECQ WAM model revision

Completed TCEQ WAM model revisions as required by TCEQ. Minor changes to WAM Model based on Activity 5-items addressed

Activity 8 –WAM Modeling Analysis

Completed WAM modeling analysis and determined water availability, firm yields, and water rights at each diversion point. Addressed comments from TCEQ.

Activity 9 – Letter report.

Completed draft reports to TCEQ and TWDB. Revised Report and sent to TCEQ for processing letter to TWDB.

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: December 23, 2014

REF.: Delta Watershed PER September thru November Invoice

TEDSI PROJECT NO.: 2013-1128-13

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
1	Invoice No. 20142178 for Project No. 2013-1128-13
1	Progress Report No. 011
1	Monthly Progress Report No. 11
1	CD PDF Files

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
DEC 24 2014
830 AM / PM
BY: Rosa Arce

Signed: for. Clay
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

JUN 01 2015
8:40 AM / PM
BY: Rosa Diaz

TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1640
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

May 27, 2015
Project No: 2013-1128-12
Invoice No: 20152354

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-12 Lower Rio Grande Valley Regional Water Management Program - Legal

Precinct No. 1 - 2012 Bond Referendum
Account No. 13-133-433-360-43340-010-000
P.O. No. 623665

Professional Services from April 01, 2015 to April 30, 2015

Phase 200 Water Rights - BBS, PC

Consultants

Reimbursable Consultants Expense

4/30/2015	Beatty Bangle Strama, PC – Invoice No. 17704	2,400.00	
	Total Consultants	**2,400.00**	**2,400.00**

Billing Summary	**Current**	**Prior**	**To-Date**
Consultants	2,400.00	56,325.00	58,725.00
Total Fee			80,000.00
Remaining Fee			21,275.00

Total this Phase **$2,400.00**

Phase 300 Water Rights - BHDA, LLP

Consultants

Reimbursable Consultants Expense

4/30/2015	Bickerstaff Heath Delgado Acosta LLP – Invoice No. 97460	1,260.00	
	Total Consultants	**1,260.00**	**1,260.00**

Billing Summary	**Current**	**Prior**	**To-Date**
Consultants	1,260.00	53,257.40	54,517.40
Total Fee			65,400.00
Remaining Fee			10,882.60

Total this Phase **$1,260.00**

Total this Invoice **$3,660.00**

Project	2013-1128-12	LRGVRWMP - Legal	Invoice	20152354

Outstanding Invoices

Number	Date	Balance
20152306	4/22/2015	6,705.44
Total		**6,705.44**

Total Now Due **$10,365.44**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: _____ Date: 5.27.15
Mark W. Lupher, P.E., RPLS
Executive Vice President

POSTED

BBS BEATTY BANGLE STRAMA PC

April 30, 2015

Jesse Salinas
TEDSI Infrastructure Group
1201 East Expressway 83
Mission, TX 78572

Invoice No. 17704

In Reference To: *Hidalgo County Delta Watershed Project and Hidalgo County Drainage District No. 1*

Professional Services

		Hours	Rate	Amount
04/07/15 ELIII	Review HCDD draft WMS amendment prepared by Black & Veatch, review draft response to TWDB comments on proposed amendment, review draft of proposed amendment memo prepared by Black & Veatch, correspondence with TEDSI team, phone call with team leader	2.50	300.00/hr	750.00
04/08/15 ELIII	Review various correspondence, including correspondence to District Manager regarding needed resolutions, review revised changes to water plan amendment documents	1.50	300.00/hr	450.00
04/13/15 ELIII	Monthly water brief, review correspondence submitting amendment documents to TWDB from regional planning group	4.00	300.00/hr	1,200.00
	For professional services rendered	8.00		$2,400.00
	Previous balance			$4,425.00

TEDSI INFRASTRUCTURE GROUP
Project No. 2013-1128-12 Phase No. 200
☐ Lump Sum ☒ Approved ☐ Hold
☒ Hourly ☐ Rejected ☐ Process
Sign [signature] Date 5/27/15

400 West 15th Street | Suite 1450 | Austin, Texas 78701

T (512) 879-5050 | F (512) 879-5040 | bbsfirm.com

		Amount
	Accounts receivable transactions	
4/13/2015	Payment - Thank You(No. 49754)	($1,500.00)
4/27/2015	Payment - Thank You(No. 49783)	($2,925.00)
	Balance due	$2,400.00

POSTED

Bickerstaff Heath Delgado Acosta LLP

3711 S. Mo-Pac Expy. Building One, Suite 300 Austin, Texas 78746 (512) 472-8021 Fax (512) 320-5638 Tax ID No 74-2153894

Hidalgo County Drainage District No. 1
c/o TEDSI Infrastructure Group, Inc.
1201 E. Expressway 83
Mission, TX 78572

May 07, 2015
Client: 003978
Matter: 000001
Invoice #: 97460
Bill Atty: DM

Page: 1

RE: Drainage Improvements

For Professional Services Rendered Through April 30, 2015

SERVICES

Date	Person	Description of Services	Hours	
4/8/2015	EWR	Review and comment on regional plan documents; email same.	2.7	
4/21/2015	EWR	Prepare final changes to application; draft cover letter and calculate fees.	1.5	
		Total Professional Services	4.2	$1,260.00

BILLING RECAP

		Level	Hours	Rate	Amount
EWR	Emily Rogers	Partner	4.2	$300.00	$1,260.00

Total Services	$1,260.00
Total Current Charges	$1,260.00

TEDSI INFRASTRUCTURE GROUP
Project No. 2013-112T-12 Phase No. 300
☐ Lump Sum ☒ Approved ☐ Hold
☒ Hourly ☐ Rejected ☐ Process
Sign MLW Date 5/27/15

PAY THIS AMOUNT **$1,260.00**

PROJECT: Lower Rio Grande Valley Regional Water Supply Program - Legal
CLIENT: HCDD#1

TEDSI JOB NUMBER: 2013-1128-12

PROGRESS REPORT NO. 018

Progress Period April 01, 2015 Through April 30, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
II. GCM FOR PRELIMINARY PROJECT PLANNING AND DEVELOPMENT					
(5) Water Rights, TEDSI	$39,063.14	99.99%	$39,060.95	$39,060.95	**$0.00**
(6) Water Rights Sub Consultant BBS, PC	$80,000.00	73.41%	$58,725.00	$56,325.00	**$2,400.00**
(7) Water Rights Sub Consultant BHDA, LLP	$65,400.00	83.36%	$54,517.40	$53,257.40	**$1,260.00**
Additional Expenses	$22,000.00	3.12%	$686.73	$686.73	**$0.00**
SUB TOTAL II	$206,463.14	74.10%	$152,990.08	$149,330.08	**$3,660.00**

TOTAL LABOR EXPENSES	$206,463.14	74.10%	$152,990.08	$149,330.08	**$3,660.00**

TOTAL INVOICE AMOUNT DUE: $3,660.00

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Mr. Noe Saldivar
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78539

DATE: May 28, 2015

REF.: Delta Watershed Legal Water Rights Project April Invoice

TEDSI PROJECT NO.: 2013-1128-12

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
1	Invoice No. 20152354 for Project No. 2013-1128-12 along with Sub Invoices
1	Progress Report No. 018
1	CD-Digital copies of Invoice and Progress Reports

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JUN 01 2015
8:40 AM / PM
BY: Rosa Cruz

Signed: for: _____
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1640
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

May 27, 2015
Project No: 2013-1128-14
Invoice No: 20152356

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JUN 01 2015
8:40 AM PM
BY: Rosa Lee

Project 2013-1128-14 LRGVRWMP - Preliminary Planning & Development

Precinct No. 1 2012 Bond Referendum
Field Surveying, Water Quality and Architectural Services
Account No. 13-133-433-360-010-000-43340
P. O. No. 623576
Work Authorization No. 14

Professional Services from April 01, 2015 to April 30, 2015

Fee

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
Field Surveying - TEDSI	81,571.20	38.9139	31,742.54	31,742.54	0.00
Water Quality Samples & Analysis *	140,280.76	59.6489	83,675.93	77,673.88	6,002.05
Architectural Services	70,128.10	0.00	0.00	0.00	0.00
Total Fee	291,980.06		115,418.47	109,416.42	6,002.05
		Total Fee			**6,002.05**

Billing Summary	**Current**	**Prior**	**To-Date**
Total Billings	6,002.05	109,416.42	115,418.47
Total Fee			291,980.06
Remaining Fee			176,561.59

Total this Invoice **$6,002.05**

Outstanding Invoices

Number	Date	Balance
20152308	4/29/2015	2,699.00
Total		**2,699.00**

Total Now Due **$8,701.05**

*Supplemental Agreement No. 1 to Work Authorization No. 14 - $75,987.00

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: _____ Date: 5.27.15
Mark W. Lupher, P.E., RPLS
Executive Vice President

POSTED

AM TEST, INC.

13600 NE 126TH PL
SUITE C
KIRKLAND, WA 98034

Phone # 425-885-1664

Invoice

DATE	INVOICE #
4/30/2015	86037

BILL TO

TEDSI INFRASTRUCTURE GROUP
1201 E. EXPRESSWAY 83
MISSION, TX 78572

___PLEASE CHECK HERE IF YOU PREFER YOUR INVOICES AND STATEMENTS SENT BY E-MAIL.
MY E-MAIL ADDRESS IS:

_____

P.O. NO.	TERMS	PROJECT
PROJ# 2013-1128-...	Net 30	DRWMP

QUANTITY	DESCRIPTION	RATE	SERVICED	AMOUNT
2	HETEROTROPHIC PLATE COUNT	20.00		40.00
2	PH WATER	10.00		20.00
2	ALKALINITY	15.00		30.00
2	TOTAL ORGANIC CARBON-WATER	30.00		60.00
2	CHLORIDE	12.00		24.00
2	COLOR	10.00		20.00
2	HARDNESS	12.00		24.00
2	AMMONIA NITROGEN	15.00		30.00
2	NO2/NO3	25.00		50.00
2	TOTAL DISSOLVED SOLIDS	15.00		30.00
2	SULFATE	15.00		30.00
2	TURBIDITY ANALYSIS	10.00		20.00
2	DISSOLVED METALS	20.00		40.00
2	TOTAL METALS	70.00		140.00
2	SILICA	20.00		40.00
2	PESTICIDES	150.00		300.00
	SAMPLE NUMBERS: 15-A004116-17			

TEDSI INFRASTRUCTURE GROUP
Project No. 2013-1128-14 Phase No. 200
☒ Lump Sum ☒ Approved ☐ Hold
☐ Hourly ☐ Rejected ☐ Process
Signature [illegible] Date 5/27/15

TERMS:NET 30 DAYS PAST DUE ACCOUNTS 1.5 PERCENT INTEREST PER MONTH

Total	$898.00
Payments/Credits	$0.00
Balance Due	$898.00

WE ACCEPT VISA & MASTER CARD.

EFFECTIVE IMMEDIATELY, ON INVOICES 60 DAYS PAST DUE A $25 LATE FEE WILL BE CHARGED MONTHLY UNTIL INVOICE IS PAID.

POSTED

AM TEST, INC.

13600 NE 126TH PL
SUITE C
KIRKLAND, WA 98034

Phone # 425-885-1664

Invoice

DATE	INVOICE #
4/30/2015	86038

BILL TO
TEDSI INFRASTRUCTURE GROUP 1201 E. EXPRESSWAY 83 MISSION, TX 78572

____PLEASE CHECK HERE IF YOU PREFER YOUR INVOICES AND STATEMENTS SENT BY E-MAIL.
MY E-MAIL ADDRESS IS:

_____

P.O. NO.	TERMS	PROJECT
PROJ# 2013-1128-...	Net 30	DRWMP

QUANTITY	DESCRIPTION	RATE	SERVICED	AMOUNT
11	HETEROTROPHIC PLATE COUNT	20.00		220.00
11	PH WATER	10.00		110.00
11	ALKALINITY	15.00		165.00
11	TOTAL ORGANIC CARBON-WATER	30.00		330.00
11	CHLORIDE	12.00		132.00
11	COLOR	10.00		110.00
11	HARDNESS	12.00		132.00
11	AMMONIA NITROGEN	15.00		165.00
11	NO2/NO3	25.00		275.00
11	TOTAL DISSOLVED SOLIDS	15.00		165.00
11	SULFATE	15.00		165.00
11	TURBIDITY ANALYSIS	10.00		110.00
11	DISSOLVED METALS	20.00		220.00
11	TOTAL METALS	70.00		770.00
11	SILICA	20.00		220.00
11	PESTICIDES	150.00		1,650.00
11	TOTAL SUSPENDED SOLIDS	15.00		165.00
	SAMPLE NUMBERS: 15-A003675-85			

TEDSI INFRASTRUCTURE GROUP
Project No. 2013-1128-14 Phase No. 200
☒ Lump Sum ☒ Approved ☐ Hold
☐ Hourly ☐ Rejected ☐ Process
Sign [signature] Date 5/27/15

TERMS:NET 30 DAYS PAST DUE ACCOUNTS 1 1/2 PERCENT INTEREST PER MONTH

Total	$5,104.00
Payments/Credits	$0.00
Balance Due	$5,104.00

WE ACCEPT VISA & MASTER CARD.

EFFECTIVE IMMEDIATELY, ON INVOICES 60 DAYS PAST DUE A $25 LATE FEE WILL BE CHARGED MONTHLY UNTIL INVOICE IS PAID.

PROJECT: Lower Rio Grande Valley Regional Water Management Program
CLIENT: Hidalgo County Drainage District No. 1

TEDSI JOB NUMBER: 2013-1128-14

PROGRESS REPORT NO. 014

Progress Period April 01, 2015 Through April 30, 2015

DESCRIPTION	ESTIMATED COST	PERCENT COMPLETE	INVOICE TO DATE	PREVIOUS INVOICE	AMOUNT DUE
II. GCM FOR PRELIMINARY PROJECT PLANNING AND DEVELOPMENT					
(5) Architect Services	$70,128.10	0.00%	$0.00	$0.00	**$0.00**
SUB TOTAL II	$70,128.10	0.00%	$0.00	$0.00	**$0.00**
III. PRELIMINARY ENGINEERING, DESIGN AND CONSTRUCTION					
(A) PRELIMINARY ENGINEERING					
(1) Preliminary Field Surveying	$81,571.20	38.91%	$31,742.54	$31,742.54	**$0.00**
(7) Raw Water Sampling and Analysis	$64,293.76	65.79%	$42,300.06	$42,300.01	**$0.05**
Water Analysis Sub	$75,987.00	54.45%	$41,375.87	$35,373.87	**$6,002.00**
SUB TOTAL III.A	$221,851.96	52.02%	$115,418.47	$109,416.42	**$6,002.05**
TOTAL LABOR EXPENSES	$291,980.06	39.53%	$115,418.47	$109,416.42	**$6,002.05**

TOTAL INVOICE AMOUNT DUE: $6,002.05

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Mr. Noe Saldivar
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: May 28, 2015

REF.: ~~Delta Watershed PPD~~ April Invoice

TEDSI PROJECT NO.: 2013-1128-14

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
1	Invoice No. 20152356 for Project No. 2013-1128-14 along with sub invoice
1	Progress Report No. 014
1	CD (invoice backup)
	.

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JUN 01 2015
8:40 AM / PM
BY: Rosa Lee

Signed: for: Clay
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received: 3.24.15

Engineer/Firm Name: TEDSI

Project Name/Number: LRGVRWMP-Preliminary Eng. Report

Invoice No.: 20142204

Purchase Order No.: 623666, 623958, 625152, 626144

Received By: Rosa Arce

Forwarded to: Joey Garza

Additional Comments:

RECEIVED
HIDALGO COUNTY
DRAINAGE DIST. #1
MAR 2 4 2015
4:10 AM / PM
BY: Rosalrce

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022
TBPE F-1640

January 22, 2014
Project No: 2013-1128-13
Invoice No: 20142204

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-13 Lower Rio Grande Valley Regional Water Management Program-Preliminary Engineering Report

Precinct No. 1 – 2012 Bond Referendum
P. O. No. 623666, 623958, 625152, 626144
Account Number 13-133-433-360-4330-010-000

Professional Services from December 01, 2014 to December 31, 2014

Fee

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
P.O. 62366					
Preliminary Engineering Report	71,922.36	100.00	71,922.36	71,922.36	0.00
Data Collection	42,610.70	100.00	42,610.70	42,610.70	0.00
Geographical Information	80,256.16	100.00	80,256.16	80,256.16	0.00
Hydrologic Analysis Verification	68,952.49	100.00	68,952.49	68,952.49	0.00
Hydraulic Analysis Verification	68,952.49	100.00	68,952.49	68,952.49	0.00
H&H Subconsultant-CSE	685,957.00	84.9553	582,757.00	529,094.36	53,672.64
Flood Plain Mapping Verification	100,097.80	24.54	24,564.00	12,532.24	12,031.76
Raw Water Collection	161,061.24	93.73	150,962.70	150,962.70	0.00
Alternate Solutions	70,599.48	4.28	3,021.66	3,021.66	0.00
Final Report	150,648.64	20.24	30,491.28	753.24	29,738.04
P.O. 623958-S.A. No. 1					
Geotechnical Investigations Reports	61,494.09	91.2389	56,106.53	56,106.53	0.00
P.O. 625152-S.A. No. 2					
WAM Willicy County	163,471.94	95.00	155,298.34	155,298.34	0.00
WAM Hidalgo County	171,876.14	95.00	163,282.33	163,282.33	0.00
P.O. 626144-S.A. No. 3					
Sub Surface Boring	140,895.00	0.00	0.00	0.00	0.00
Total Fee	2,038,795.53		1,499,178.04	1,403,735.60	95,442.44

Total Fee **95,442.44**

Total this Phase **$95,442.44**

Project	2012-1128-13	LRGVRWMP-PER	Invoice	20142204

Billing Summary	Current	Prior	To-Date
Total Billings	95,442.44	1,403,735.60	1,499,178.04
Total Fee			2,038,795.53
Remaining Fee			539,617.49

Total this Invoice **$95,442.44**

Outstanding Invoices

Number	Date	Balance
20142178	12/22/2014	159,944.34
Total		**159,944.34**

Total Now Due **$255,386.78**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: _____ Date: 3.17.15

Mark W. Lupher, P.E., RPLS
Executive Vice President

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: March 23, 2015

REF.: Delta Watershed PER Revised Sept thru Nov. 2014 and Dec. 2014 Invoice

TEDSI PROJECT NO.: 2013-1128-13

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
1	Revised Invoice No. 20142178 for Project No. 2013-1128-13
1	Revised Invoice No. 20142204 for Project No. 2013-1128-13

REMARKS:

Enclosed please find revised invoice for the above referenced project. Revised invoices were emailed on 3-19-15. Should .you have any questions, please do not hesistate to ask.

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1

MAR 2 4 2015

4:10 AM PM

BY: Rosa Arce

Signed: for: _____
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

AI -50193 **11.**

DRAINAGE - CONSENT

Meeting Date: 06/23/2015

Submitted For: Lora Briones

Submitted By: Lora Briones, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

2013 Bond Series - L&G Engineering Invoices:

A.) Approval of Invoice # 11325165 in the amount of $7,834.04 for Engineering Services for WA # 1 of the La Joya Watershed for the month of May, related to Public involvement and Hydrology. P.O. 622086

B.) Approval of Invoice # 11325173 in the amount of $ 85,084.80 for Engineering Services for WA # 6A of the La Joya Watershed Improvements relating to Hydrologic Map and ROW aquisition services. P.O. 626941 in the amount of $268,175.43 approved on April 28-2015 and an increase of $ 54,324.22 which is on the regular agenda for June 23, 2015.

BACKGROUND

Fiscal Impact

Attachments

L&G Engineers Invoice No. 11325165
L&G Engineers Invoice No. 11325173

Form Review

Inbox	**Reviewed By**	**Date**
Budget & Management	Veronica Ortiz	06/18/2015 03:52 PM
Final Approval	Monica Badillo	06/19/2015 05:25 PM
Form Started By: Lora Briones		Started On: 06/18/2015 02:24 PM
Final Approval Date: 06/19/2015		

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received:	6/12/2015
Engineer/Firm Name:	L&G Engineering
Project Name/Number:	La Joya Watershed Imp. WA No.6A
Invoice No.:	11325173
Purchase Order No.:	626941
Received By:	Rosa Arce
Forwarded to:	Claudette Guerrero
Total # of Pages Submitted:	11 pg.
Attachments:	CD: Task No. 1, 2, 5 & 6

Additional Comments:

L &G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956)565-9813 Fax (956)565-9018

INVOICE#: 11325173
INVOICE DATE: 5/31/2015

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JUN 11 2015
8:00 AM / PM
BY: Rosa Ana

BILL TO:
Hidalgo County Drainage District#1
902 N. Doolittle
Edinburg, TX 78542

JOB:130106
La Joya Watershed Imp
WA#6A P.O #626941

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
Engineering services for the month of May 2015.						
FC 102 - Feasibility Studies						
10201-Preliminary Design Values	1,575.64		1,575.64	1,575.64	100.0	-
10202-Preliminary Route Location on Uncontrolld Mapping	1,575.64		1,575.64	1,575.64	100.0	-
10203-Uncontrolled Mapping	1,575.64		1,575.64	1,575.64	100.0	-
10204-Preliminary Hydrologic Map	1,575.64		1,575.64	1,575.64	100.0	-
10205-Preliminary ROW Requirements	1,575.64		1,575.64	1,575.64	100.0	-
10206-Preliminary Cost Estimates	1,575.64		1,575.64	1,575.64	100.0	-
10207-Preliminary Environmental Analysis	1,575.64		1,575.64	1,575.64	100.0	-
10208-Proj. Fact Sheet w/Est. Local Cost vs. Total Proj. Cost	1,575.64		1,575.64	1,575.64	100.0	-
10209-Meetings, Coord. & Support for Project Dvlpment	1,575.64		1,575.64	1,575.64	100.0	-
FC 110 - Route and Design Studies						
11004-Preliminary Cost Estimates	5,627.30		5,627.30	5,627.30	100.0	-
11005-Design Schematic	8,103.29		8,103.29	8,103.29	100.0	-
11006-Preliminary ROW Requirements	7,503.05		7,503.05	7,503.05	100.0	-
FC 130 - Right-of-Way Data						
13008-Coordination and Management of Right-of-Way Data	6,330.75			0.00	0.0	6,330.75
13020-ROW Map / SUB	11,200.00			0.00	0.0	11,200.00
FC 150 - Field Surveying						
15030-Horizontal and Vertical Ties	12,784.00			0.00	0.0	12,784.00
15040-Determine Changes in Topogrophy	30,257.00			0.00	0.0	30,257.00
15060-Final Reports	3,364.00			0.00	0.0	3,364.00
15070-Project Management Oversight	1,246.00			0.00	0.0	1,246.00
FC 161 - Drainage						
16101-Hydrologic Map	7,228.00		3,614.00	3,614.00	50.0	3,614.00
16102-Hydraulic Drainage Study - Culverts	5,352.16		2,676.08	2,676.08	50.0	2,676.08
16103-Hydraulic Drainage Study - Channels	5,352.16		2,676.08	2,676.08	50.0	2,676.08
16104-Hydraulic Drianage Study - Irrigation Canals / Siphons	6,602.72		4,952.04	4,952.04	75.0	1,650.68
16105-Layout, Struc. Dsgn and Detail. Drainage Features-Culvert	6,602.72		3,301.36	3,301.36	50.0	3,301.36
16106-Layout, Struc. Dsgn and Detail. Drainage Features-Storm S	6,602.72		3,301.36	3,301.36	50.0	3,301.36
16107-Layout, Struc. Dsgn and Detail. Drainage Features-Outfall	6,602.72		3,301.36	3,301.36	50.0	3,301.36
16108-Layout, Struc. Dsgn and Detail. Drainage Features-Summary	6,602.72		4,952.04	4,952.04	75.0	1,650.68
16109-Layout, Struc. Dsgn and Detail. Drainage Features-Storm W	6,602.72		3,301.36	3,301.36	50.0	3,301.36
16111-Storm Water Pollution Prevention Plan (SW3P)	7,228.00		3,614.00	3,614.00	50.0	3,614.00

L &G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956)565-9813 Fax (956)565-9018

INVOICE#: 11325173
INVOICE DATE: 5/31/2015

BILL TO:
Hidalgo County Drainage District#1
902 N. Doolittle
Edinburg, TX 78542

JOB:130106
La Joya Watershed Imp
WA#6A P.O #626941

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
FC 163 - Miscellaneous Roadway						
16306-Special Utility Details (Irrigation Lines)	4,301.76		3,226.32	3,226.32	75.0	1,075.44
16307-Miscellaneous Structures	4,301.76		3,226.32	3,226.32	75.0	1,075.44
16301-Foundation Studies	4,301.76			0.00	0.0	4,301.76
16302-Utility Agreements and Exhibits	4,301.76		3,226.32	3,226.32	75.0	1,075.44
16303-Railroad Sketches	4,301.76		4,301.76	4,301.76	100.0	-
16304-Traffic Signal Agreement Sketches	4,301.76			0.00	0.0	4,301.76
16305-Estimate	4,301.76			0.00	0.0	4,301.76
16308-Specifications and General Notes	4,301.76			0.00	0.0	4,301.76
FC 600 - Right-of-Way Acquisition Services						
60000-ROW Acquisition Administration	23,800.00			0.00	0.0	23,800.00
60001-Title Services Fees	2,400.00			0.00	0.0	2,400.00
60002-Appraisal Services Fees	3,000.00			0.00	0.0	3,000.00
60003-Appraisal Services Review Fees	1,400.00			0.00	0.0	1,400.00
60004-Parcel Negotiations	14,000.00			0.00	0.0	14,000.00
60005-Closing Sevices Fees	800.00			0.00	0.0	800.00
60030-Appraisal Services Fees / SUB	8,000.00			0.00	0.0	8,000.00
60040-Appraisal Review Fees / SUB	1,800.00			0.00	0.0	1,800.00
Compensable Utilities						
60101-Preliminary Design Consultations	5,877.20			0.00	0.0	5,877.20
60102-Field Observations and Verifications	5,877.20			0.00	0.0	5,877.20
60103-Exchange of Information with Utility Providers	14,630.48			0.00	0.0	14,630.48
60104-Confirmation of Property Interests	14,630.48			0.00	0.0	14,630.48
60105-Develop and execute release of Easements	14,630.48			0.00	0.0	14,630.48
60106-Coordination and Development of Joint Use Agreements	6,552.44			0.00	0.0	6,552.44
60107-Utility meetings throughout project development	5,314.50			0.00	0.0	5,314.50
TOTALS:	322,499.65	0.00	85,084.80	85,084.80	26.4	237,414.85

ORIGINAL CONTRACT SUM	$	322,499.65
CHANGE BY CHANGE ORDER	$	0.00
CONTRACT SUM TO DATE	$	322,499.65
TOTAL COMPLETED TO DATE	$	85,084.80
LESS PREVIOUS INVOICES	$	0.00
CURRENT PAYMENT DUE	$	85,084.80

PROJECT MANAGER'S SIGNATURE

L&G Consulting Engineers, Inc
2100 W. Expressway 83
Mercedes, Texas 78570
(956) 565-9813

Project Workhour Report
La Joya Watershed Improvements WA#2
Reference:Inv#11325173
Date: 05/31/15
P.O.#622697

	Hrs		Rate	Total
Senior Project Manager	118.00	X	212.59	$25,085.62
Senior Engineer	122.00	X	175.07	$21,358.54
Project Engineer	88.00	X	121.92	$10,728.96
ROW Administrator	0.00	X	106.29	$0.00
Environmental Scientis/Specialist	20.00	X	78.16	$1,563.20
Seinior Engineer Tech	148.00	X	78.16	$11,567.68
Engineer Tech	164.00	X	75.03	$12,304.92
Admin/Clerical	44.00	X	56.27	$2,475.88

Grand Total of Hours $ 85,084.80

(Difference due to rounding hours) $ -

Invoice Summary

Man Hours	$ 85,084.80
Sub Contract	

(See Attached Sub Invoice for Man Hour Breakdown)



Total Per Invoice Submitted **$ 85,084.80**

L&G Consulting Engineers, Inc.

June 10, 2015

Mr. Raul Sesin, P.E. – District Manager
Hidalgo County Drainage District #1
902 N. Doolittle
Edinburg, Texas 78542

RE: Work Authorization #6A on La Joya Watershed Improvement Project
Job # 130106
P.O. # 626941

Dear Mr. Sesin,

Attached for your review and approval is our invoice for the services rendered during the month of May 2015 on the subject referenced project.

The following is attached:

- L&G's Invoice #11325173
- CD w/ Electronic Files of Data for:
  - Task 1, 2, 5 & 6

		% COMPL
TASK #1 – FC 102 – Feasibility Studies		
FC 10201 ~ Preliminary Design Values	L&G	100%
The property owner in the area was contacted. Several meetings were held with the property owner and his wife. Preliminary design concepts were established based on conversations with the owner.		
FC 10202 ~ Preliminary Route Location on Uncontrolled Mapping	L&G	100%
Based on meetings with the property owner several design alternatives were generated. The design alternatives were placed on maps and discussed in detail with the property owner as well as with Hidalgo County Drainage District #1 and Hidalgo County Irrigation District #1.		
FC 10203 ~ Uncontrolled Mapping	L&G	100%
A Preliminary location exhibit was produced that contained the design alternatives. GIS information (property owner info, utility info, etc…) was placed on the exhibit. Contours to show water flow and natural ground elevations were also added to the exhibit. The design alternatives were investigated for least impact to utilities, as well as least impact to the property owner. Based on this information a route was decided on.		

FC 10204 ~ Preliminary Hydrologic Map	L&G	100%
A preliminary Hydrologic Map was produced using the latest available LIDAR and GIS information. Drainage patterns were generated in order to see what areas affected the proposed outfall. 10, 25, & 50 year design flows were calculated based on the drainage patterns. These flows will be used in the design of the ditch and upstream pipe.		
FC 10205~ Preliminary ROW Requirements	L&G	100%
Utilizing the Hidalgo County Appraisal District information, we obtained the names of the property owner(s) that would be affected by the proposed ditch design alternatives. Meetings with all affected property owners were held.		
FC 10206~ Preliminary Cost Estimates	L&G	100%
A preliminary cost estimate of a 48-IN RCP and final box structures under the irrigation district canal and railroad, was calculated.		
FC 10207 ~ Preliminary Environmental Analysis	L&G	100%
After discussing the preferred alignment with the property owners/interests in the area. The proposed alignment was reviewed for any fatal flaws, that would keep the proposed project from being built. No fatal flaws were found on the preferred alignment.		
FC 10208 ~ Project Fact Sheet with Est. Local Cost vs. Total Project Cost	L&G	100%
A project fact sheet, in excel format, was generated. The project fact sheet provides a summary of the estimated local costs versus the total project costs for the project.		
FC 10209 ~ Meetings, Coordination & Support for Project Development	L&G	100%
Numerous coordination meetings with Hidalgo County Drainage District #1, Hidalgo County Irrigation District #1, Texas Department of Transportation, Hidalgo County Pct#3, and affected property owners have been conducted.		
TASK #2 – FC 110 – Route and Design Studies		
FC 11004 ~ Preliminary Cost Estimates	L&G	100%
A preliminary cost estimate was created based off of the proposed 48-IN RCP extending south of the Edinburg Main Canal to old Military Rd.		
FC 11005 ~ Design Schematic	L&G	100%
A design schematic was created based off of the proposed alignment that all stakeholders had agreed to. A vertical and Horizontal alignment is represented on the schematic to show the concepts and design that will be placed on the plan sheets and will be submitted to TxDOT.		

FC 11006 ~ Preliminary ROW Requirements	L&G	100%
Based off of the design, the preliminary ROW needs of the proposed project were placed on the schematic. Meetings were held with the Irrigation district to discuss the use of 30-ft of their 200-ft ROW as a joint use agreement. The proposed ROW information was presented to the surveyor so that he could perform his tasks, such as Right-of-way data collect, and topographic surveying.		
TASK #3 - FC 130 – Right-of-Way Data		
FC 13008 ~ Coordination and Management of Right-of-Way Data (FC 130) and Field Surveying (FC 150)	L&G	0%
No update – No invoice.		
FC 13020 ~ ROW Mapping / SUB	L&G	0%
No update – No invoice.		
TASK #4 – FC 150 – Field Surveying		
FC 15030 ~ Field Surveying (Control Horizontal and Vertical Ties)	L&G	0%
No update – No invoice.		
FC 15040 ~ Determine Topography, Cross Sections and Pot Holing	L&G	0%
No update – No invoice.		
FC 15060 ~ Final Reports and Deliverables	L&G	0%
No update – No invoice.		
FC 15070 ~ Project Management and Oversight	L&G	0%
No update – No invoice.		
TASK #5 - FC 161 - Drainage		
FC 16101 ~ Hydrologic Map	L&G	50%
A Hydrologic map containing contours and LIDAR information was created. Drainage areas that are contributing to the proposed outfall have been created/sized. The amount of flow generated from these areas was calculated and added to the proposed outfall. The discharge determination is an ongoing process with the utilization of HEC-HMS modeling as well as HEC-RAS modeling.		

FC 16102 ~ Hydraulic Drainage Study - Culverts	L&G	50%
Utilizing the Federal Highway Administrations' HY-8 7.0 culvert design and analysis program, we analyzed the existing 5'x5' box culvert structure, currently under Old Military Highway, to determine what additional capacity of water is able to flow through that culvert. With the use of the HEC-RAS Model, culvert sizing of the intermediate and final culvert crossings at the Edinburg Main Canal and at the railroad/Chihuahua Rd. is nearing completion.		
FC 16103 ~ Hydraulic Drainage Study - Channels	L&G	50%
The HEC-HMS program is being utilized, to ensure that the downstream drainage improvements, south of the Edinburg Main Canal, do not have an adverse affect to the proposed upstream channel that was previously designed.		
FC 16104 ~ Hydraulic Drainage Study – Irrigation Canals/Siphons	L&G	75%
Meetings with the Hidalgo County Irrigation District #1 were held to discuss the construction of the proposed culvert under or over the Edinburg Main Canal. The Irrigation district would prefer that the culvert go under the Main Canal. After reviewing design issues, this option looks to be the best option. In our conversations with the Irrigation District it was discussed that at this time there is a maximum of 50 cfs flowing through the Edinburg Main Canal. We placed a bypass pipe in our plan set, to aid in the construction of the proposed culverts at this location, that would convey 50 or more CFS.		
FC 16105 ~ Layout, Structural Design and Detailing of Drainage Features - Culverts	L&G	50%
Culvert layouts at the Edinburg Main Canal and at the Railroad/Chihuahua Rd. were created. Plan and profile views of the culvert crossing were included on the sheet. Final culvert box designs were placed at these locations based off of the upstream culvert crossing at US 83. Final design of these structures is nearing completion with the use of a HEC-RAS model.		
FC 16106 ~ Layout, Structural Design and Detailing of Drainage Features – Storm Sewers	L&G	50%
The proposed pipe system and man hole locations were put in place to best fit the available right-of-way. This system of pipes, from the Edinburg Main Canal south to Old Military Highway, has been placed on sheets that contain the plan and profile of the pipe location. Final design of these structures is nearing completion with the use of a HEC-RAS model.		
FC 16107 ~ Layout, Structural Design and Detailing of Drainage Features – Outfall Channel(s) Outside of ROW	L&G	50%
The outfall channel just north of Old Military Highway has a preliminary design that was placed on sheets. Final design is being finalized with the HEC-RAS model.		

FC 16108 ~ Layout, Structural Design and Detailing of Drainage Features – Summary of Qtys	L&G	75%
Pipe, ditch, and other various drainage quantities were calculated per sheet for the project. All quantities, item numbers, and description codes were then transferred to the Estimated Quantity Sheet (EQ). These same quantities were placed on the Engineer's estimate and all sheets were submitted to TxDOT. Item and description codes may change based on the findings of the HEC-RAS and HEC-HMS models.		
FC 16109 ~ Layout, Structural Design and Detailing of Drainage Features – Storm Water Management Facilities	L&G	50%
Storm water pollution prevention items such as rock filter dams, silt fences, and construction exits, etc…, are being proposed throughout the project. Final sheets will be created once the SW3P plan has been completed.		
FC 16111 ~ Storm Water Pollution Prevention Plan (SW3P)	L&G	50%
Review of the entire facility that is being proposed and the effects that the building of this facility will have the natural environment is being reviewed in greater detail. Once the SW3P plan has been discussed in detail the SW3P sheets will be finalized.		
TASK #6 - FC 163 – Miscellaneous Roadway		
FC 16306 ~ Special Utility Details (Irrigation Lines)	L&G	75%
A by-pass detail has been created so that construction of the culverts at the irrigation canal can be done as one whole cast-in-place unit. The irrigation canal would need to be dewatered so that construction can take place.		
FC 16307 ~ Miscellaneous Structures	L&G	75%
Miscellaneous structures were reviewed in the area of the proposed drainage system. There are several existing structures such as a 24-IN RCP and a 5'x5' box culvert that will remain in place at the request of the stakeholders that own them. We continue to review all topographic information to ensure that all structures are accounted for.		
FC 16301 ~ Foundation Studies	L&G	0%
No update		
FC 16302 ~ Utility Agreements and Exhibits	L&G	75%
Meetings with Hidalgo County Irrigation District #1 were held to discuss the use of 30-ft of their 200-ft of irrigation Right-of-way as a joint use agreement with Hidalgo County Drainage District. The Irrigation District was willing to enter into a joint use agreement with the Drainage District. Exhibits were created that outlined the location and widths of the joint use agreement and the location and widths of the proposed drainage easement. This information was distributed to the surveyor for his use.		

FC 16303 ~ Railroad Sketches	L&G	100%
Railroad culvert layouts were completed and submitted to TxDOT. No additional information has been requested from TxDOT.		
FC 16304 ~ Traffic Signal Agreement Sketches	L&G	0%
No Update		
FC 16305 ~ Estimate	L&G	0%
No update		
FC 16308 ~ Specifications and General Notes	L&G	0%
No update		
TASK #7 - FC 600 – Right-of-Way Acquisition Services – Compensable Utilities		
FC 60000 ~ Right of Way Administration Aquisition	L&G	0%
No update		
FC 60001 ~ Title Services	L&G	0%
No update		
FC 60002 – Appraisal Services	L&G	0%
No update		
FC 60003 ~ Appraisal Review	L&G	0%
No update		
FC 60004 ~ Parcel Negotiations	L&G	0%
No update		
FC 60005 ~ Closing Services	L&G	0%
No update		
FC 60030 ~ Appraisal Services / SUB	L&G	0%
No update		
FC 60040 – Appraisal Review / SUB	L&G	0%
No update		
FC 60101 ~ Preliminary Design Consultations	L&G	0%
No update		

FC 60102 ~ Field Observations and Verifications	L&G	0%
No update		
FC 60103 ~ Exchange of Information with Utility Providers	L&G	0%
No update		
FC 60104 ~ Confirmation of Property Interests	L&G	0%
No update		
FC 60105 ~ Develop and Execute Release of Easements	L&G	0%
No update		
FC 60106 ~ Coordination and Development of Joint Use Agreements	L&G	0%
No update		
FC 60107 ~ Utility Meetings Throughout Project Development	L&G	0%
No update		

Should you have any questions regarding this submittal or would like clarification on any aspect of the project, please do not hesitate to call me at (956) 585-1909.

Sincerely,

Armando Sandoval, P.E.
Project Manager
L&G Engineering

L&G Engineering
Transportation Consulting Engineers

2100 W. Expressway 83
Mercedes, TX 78570
Phone: (956) 565-9813
Fax: (956) 565-9018
Toll Free: (888) 565-9813

900 S. Stewart Rd., Ste. 10
Mission, TX 78572
Phone: (956) 585-1909
Fax: (956) 585-1927
Toll Free: (866) 585-1909

Firm No. F-4105

Letter of Transmittal

Mr. Raul Sesin, P.E. – District Manager
Hidalgo County Drainage District #1
902 N. Doolittle Rd.
Edinburg, Texas 78542

DATE: June 10, 2015

Project: Progress Report & Invoice Package for Various Work Authorizations
La Joya Watershed Improvement Project

L&G PROJECT NO.:

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☒ Hand Carry
☐ E-Mail	☐ Lonestar Overnight	☐ Pick up

COPIES	DESCRIPTION
1	Progress Report and Invoice Package (including CD w/Electronic Files) for the following Project:
	• Work Authorization #6A on La Joya Watershed Improvement Project
	○ P.O. #626941, Invoice #11325173

REMARKS:

If you have any questions or comments, please feel free to contact me, Mr. Armando Sandoval, P.E. at (956) 585-1909.

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JUN 11 2015
8:00 AM PM
BY:

Thank you,

a. J. Sandoval, P.E.

Signed: _____

If enclosures are not as stated, please notify us.

Hidalgo County Drainage District No. 1

902 North Doolittle Road Edinburg, Texas 78542 Office: (956) 292-7080 Fax: (956) 292-7089

Invoice Processing Checklist

Date Received:	6/12/2015
Engineer/Firm Name:	L&G Engineering
Project Name/Number:	La Joya Watershed Imp. WA No.6A
Invoice No.:	11325173
Purchase Order No.:	626941
Received By:	Rosa Arce
Forwarded to:	Claudette Guerrero
Total # of Pages Submitted:	11 pg.
Attachments:	CD: Task No. 1, 2, 5 & 6

Additional Comments:

L &G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956)565-9813 Fax (956)565-9018

INVOICE#: 11325173
INVOICE DATE: 5/31/2015

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JUN 11 2015
8:00 AM / PM
BY: Rosa Ana

BILL TO:
Hidalgo County Drainage District#1
902 N. Doolittle
Edinburg, TX 78542

JOB:130106
La Joya Watershed Imp
WA#6A P.O #626941

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
Engineering services for the month of May 2015.						
FC 102 - Feasibility Studies						
10201-Preliminary Design Values	1,575.64		1,575.64	1,575.64	100.0	-
10202-Preliminary Route Location on Uncontrolld Mapping	1,575.64		1,575.64	1,575.64	100.0	-
10203-Uncontrolled Mapping	1,575.64		1,575.64	1,575.64	100.0	-
10204-Preliminary Hydrologic Map	1,575.64		1,575.64	1,575.64	100.0	-
10205-Preliminary ROW Requirements	1,575.64		1,575.64	1,575.64	100.0	-
10206-Preliminary Cost Estimates	1,575.64		1,575.64	1,575.64	100.0	-
10207-Preliminary Environmental Analysis	1,575.64		1,575.64	1,575.64	100.0	-
10208-Proj. Fact Sheet w/Est. Local Cost vs. Total Proj. Cost	1,575.64		1,575.64	1,575.64	100.0	-
10209-Meetings, Coord. & Support for Project Dvlpment	1,575.64		1,575.64	1,575.64	100.0	-
FC 110 - Route and Design Studies						
11004-Preliminary Cost Estimates	5,627.30		5,627.30	5,627.30	100.0	-
11005-Design Schematic	8,103.29		8,103.29	8,103.29	100.0	-
11006-Preliminary ROW Requirements	7,503.05		7,503.05	7,503.05	100.0	-
FC 130 - Right-of-Way Data						
13008-Coordination and Management of Right-of-Way Data	6,330.75			0.00	0.0	6,330.75
13020-ROW Map / SUB	11,200.00			0.00	0.0	11,200.00
FC 150 - Field Surveying						
15030-Horizontal and Vertical Ties	12,784.00			0.00	0.0	12,784.00
15040-Determine Changes in Topogrophy	30,257.00			0.00	0.0	30,257.00
15060-Final Reports	3,364.00			0.00	0.0	3,364.00
15070-Project Management Oversight	1,246.00			0.00	0.0	1,246.00
FC 161 - Drainage						
16101-Hydrologic Map	7,228.00		3,614.00	3,614.00	50.0	3,614.00
16102-Hydraulic Drainage Study - Culverts	5,352.16		2,676.08	2,676.08	50.0	2,676.08
16103-Hydraulic Drainage Study - Channels	5,352.16		2,676.08	2,676.08	50.0	2,676.08
16104-Hydraulic Drianage Study - Irrigation Canals / Siphons	6,602.72		4,952.04	4,952.04	75.0	1,650.68
16105-Layout, Struc. Dsgn and Detail. Drainage Features-Culvert	6,602.72		3,301.36	3,301.36	50.0	3,301.36
16106-Layout, Struc. Dsgn and Detail. Drainage Features-Storm S	6,602.72		3,301.36	3,301.36	50.0	3,301.36
16107-Layout, Struc. Dsgn and Detail. Drainage Features-Outfall	6,602.72		3,301.36	3,301.36	50.0	3,301.36
16108-Layout, Struc. Dsgn and Detail. Drainage Features-Summary	6,602.72		4,952.04	4,952.04	75.0	1,650.68
16109-Layout, Struc. Dsgn and Detail. Drainage Features-Storm W	6,602.72		3,301.36	3,301.36	50.0	3,301.36
16111-Storm Water Pollution Prevention Plan (SW3P)	7,228.00		3,614.00	3,614.00	50.0	3,614.00

L &G Consulting Engineers Inc
2100 W. Expressway 83
Mercedes, TX 78570
(956)565-9813 Fax (956)565-9018

INVOICE#: 11325173
INVOICE DATE: 5/31/2015

BILL TO:
Hidalgo County Drainage District#1
902 N. Doolittle
Edinburg, TX 78542

JOB:130106
La Joya Watershed Imp
WA#6A P.O #626941

DESCRIPTION	CONTRACT	PREVIOUS APPLICATIONS	CURRENT COMPLETED	TOTAL COMPLETED	% COMPL	BALANCE TO FINISH
FC 163 - Miscellaneous Roadway						
16306-Special Utility Details (Irrigation Lines)	4,301.76		3,226.32	3,226.32	75.0	1,075.44
16307-Miscellaneous Structures	4,301.76		3,226.32	3,226.32	75.0	1,075.44
16301-Foundation Studies	4,301.76			0.00	0.0	4,301.76
16302-Utility Agreements and Exhibits	4,301.76		3,226.32	3,226.32	75.0	1,075.44
16303-Railroad Sketches	4,301.76		4,301.76	4,301.76	100.0	-
16304-Traffic Signal Agreement Sketches	4,301.76			0.00	0.0	4,301.76
16305-Estimate	4,301.76			0.00	0.0	4,301.76
16308-Specifications and General Notes	4,301.76			0.00	0.0	4,301.76
FC 600 - Right-of-Way Acquisition Services						
60000-ROW Acquisition Administration	23,800.00			0.00	0.0	23,800.00
60001-Title Services Fees	2,400.00			0.00	0.0	2,400.00
60002-Appraisal Services Fees	3,000.00			0.00	0.0	3,000.00
60003-Appraisal Services Review Fees	1,400.00			0.00	0.0	1,400.00
60004-Parcel Negotiations	14,000.00			0.00	0.0	14,000.00
60005-Closing Sevices Fees	800.00			0.00	0.0	800.00
60030-Appraisal Services Fees / SUB	8,000.00			0.00	0.0	8,000.00
60040-Appraisal Review Fees / SUB	1,800.00			0.00	0.0	1,800.00
Compensable Utilities						
60101-Preliminary Design Consultations	5,877.20			0.00	0.0	5,877.20
60102-Field Observations and Verifications	5,877.20			0.00	0.0	5,877.20
60103-Exchange of Information with Utility Providers	14,630.48			0.00	0.0	14,630.48
60104-Confirmation of Property Interests	14,630.48			0.00	0.0	14,630.48
60105-Develop and execute release of Easements	14,630.48			0.00	0.0	14,630.48
60106-Coordination and Development of Joint Use Agreements	6,552.44			0.00	0.0	6,552.44
60107-Utility meetings throughout project development	5,314.50			0.00	0.0	5,314.50
TOTALS:	322,499.65	0.00	85,084.80	85,084.80	26.4	237,414.85

ORIGINAL CONTRACT SUM	$	322,499.65
CHANGE BY CHANGE ORDER	$	0.00
CONTRACT SUM TO DATE	$	322,499.65
TOTAL COMPLETED TO DATE	$	85,084.80
LESS PREVIOUS INVOICES	$	0.00
CURRENT PAYMENT DUE	$	85,084.80

PROJECT MANAGER'S SIGNATURE

L&G Consulting Engineers, Inc
2100 W. Expressway 83
Mercedes, Texas 78570
(956) 565-9813

Project Workhour Report
La Joya Watershed Improvements WA#2
Reference:Inv#11325173
Date: 05/31/15
P.O.#622697

	Hrs		Rate	Total
Senior Project Manager	118.00	X	212.59	$25,085.62
Senior Engineer	122.00	X	175.07	$21,358.54
Project Engineer	88.00	X	121.92	$10,728.96
ROW Administrator	0.00	X	106.29	$0.00
Environmental Scientis/Specialist	20.00	X	78.16	$1,563.20
Seinior Engineer Tech	148.00	X	78.16	$11,567.68
Engineer Tech	164.00	X	75.03	$12,304.92
Admin/Clerical	44.00	X	56.27	$2,475.88

Grand Total of Hours $ 85,084.80

(Difference due to rounding hours) $ -

Invoice Summary

Man Hours	$ 85,084.80
Sub Contract	

(See Attached Sub Invoice for Man Hour Breakdown)



Total Per Invoice Submitted **$ 85,084.80**

L&G Consulting Engineers, Inc.

June 10, 2015

Mr. Raul Sesin, P.E. – District Manager
Hidalgo County Drainage District #1
902 N. Doolittle
Edinburg, Texas 78542

RE: Work Authorization #6A on La Joya Watershed Improvement Project
Job # 130106
P.O. # 626941

Dear Mr. Sesin,

Attached for your review and approval is our invoice for the services rendered during the month of May 2015 on the subject referenced project.

The following is attached:

- L&G's Invoice #11325173
- CD w/ Electronic Files of Data for:
  - Task 1, 2, 5 & 6

		% COMPL
TASK #1 – FC 102 – Feasibility Studies		
FC 10201 ~ Preliminary Design Values	L&G	100%
The property owner in the area was contacted. Several meetings were held with the property owner and his wife. Preliminary design concepts were established based on conversations with the owner.		
FC 10202 ~ Preliminary Route Location on Uncontrolled Mapping	L&G	100%
Based on meetings with the property owner several design alternatives were generated. The design alternatives were placed on maps and discussed in detail with the property owner as well as with Hidalgo County Drainage District #1 and Hidalgo County Irrigation District #1.		
FC 10203 ~ Uncontrolled Mapping	L&G	100%
A Preliminary location exhibit was produced that contained the design alternatives. GIS information (property owner info, utility info, etc…) was placed on the exhibit. Contours to show water flow and natural ground elevations were also added to the exhibit. The design alternatives were investigated for least impact to utilities, as well as least impact to the property owner. Based on this information a route was decided on.		

FC 10204 ~ Preliminary Hydrologic Map	L&G	100%
A preliminary Hydrologic Map was produced using the latest available LIDAR and GIS information. Drainage patterns were generated in order to see what areas affected the proposed outfall. 10, 25, & 50 year design flows were calculated based on the drainage patterns. These flows will be used in the design of the ditch and upstream pipe.		
FC 10205~ Preliminary ROW Requirements	L&G	100%
Utilizing the Hidalgo County Appraisal District information, we obtained the names of the property owner(s) that would be affected by the proposed ditch design alternatives. Meetings with all affected property owners were held.		
FC 10206~ Preliminary Cost Estimates	L&G	100%
A preliminary cost estimate of a 48-IN RCP and final box structures under the irrigation district canal and railroad, was calculated.		
FC 10207 ~ Preliminary Environmental Analysis	L&G	100%
After discussing the preferred alignment with the property owners/interests in the area. The proposed alignment was reviewed for any fatal flaws, that would keep the proposed project from being built. No fatal flaws were found on the preferred alignment.		
FC 10208 ~ Project Fact Sheet with Est. Local Cost vs. Total Project Cost	L&G	100%
A project fact sheet, in excel format, was generated. The project fact sheet provides a summary of the estimated local costs versus the total project costs for the project.		
FC 10209 ~ Meetings, Coordination & Support for Project Development	L&G	100%
Numerous coordination meetings with Hidalgo County Drainage District #1, Hidalgo County Irrigation District #1, Texas Department of Transportation, Hidalgo County Pct#3, and affected property owners have been conducted.		
TASK #2 – FC 110 – Route and Design Studies		
FC 11004 ~ Preliminary Cost Estimates	L&G	100%
A preliminary cost estimate was created based off of the proposed 48-IN RCP extending south of the Edinburg Main Canal to old Military Rd.		
FC 11005 ~ Design Schematic	L&G	100%
A design schematic was created based off of the proposed alignment that all stakeholders had agreed to. A vertical and Horizontal alignment is represented on the schematic to show the concepts and design that will be placed on the plan sheets and will be submitted to TxDOT.		

FC 11006 ~ Preliminary ROW Requirements	L&G	100%
Based off of the design, the preliminary ROW needs of the proposed project were placed on the schematic. Meetings were held with the Irrigation district to discuss the use of 30-ft of their 200-ft ROW as a joint use agreement. The proposed ROW information was presented to the surveyor so that he could perform his tasks, such as Right-of-way data collect, and topographic surveying.		
TASK #3 - FC 130 – Right-of-Way Data		
FC 13008 ~ Coordination and Management of Right-of-Way Data (FC 130) and Field Surveying (FC 150)	L&G	0%
No update – No invoice.		
FC 13020 ~ ROW Mapping / SUB	L&G	0%
No update – No invoice.		
TASK #4 – FC 150 – Field Surveying		
FC 15030 ~ Field Surveying (Control Horizontal and Vertical Ties)	L&G	0%
No update – No invoice.		
FC 15040 ~ Determine Topography, Cross Sections and Pot Holing	L&G	0%
No update – No invoice.		
FC 15060 ~ Final Reports and Deliverables	L&G	0%
No update – No invoice.		
FC 15070 ~ Project Management and Oversight	L&G	0%
No update – No invoice.		
TASK #5 - FC 161 - Drainage		
FC 16101 ~ Hydrologic Map	L&G	50%
A Hydrologic map containing contours and LIDAR information was created. Drainage areas that are contributing to the proposed outfall have been created/sized. The amount of flow generated from these areas was calculated and added to the proposed outfall. The discharge determination is an ongoing process with the utilization of HEC-HMS modeling as well as HEC-RAS modeling.		

FC 16102 ~ Hydraulic Drainage Study - Culverts	L&G	50%
Utilizing the Federal Highway Administrations' HY-8 7.0 culvert design and analysis program, we analyzed the existing 5'x5' box culvert structure, currently under Old Military Highway, to determine what additional capacity of water is able to flow through that culvert. With the use of the HEC-RAS Model, culvert sizing of the intermediate and final culvert crossings at the Edinburg Main Canal and at the railroad/Chihuahua Rd. is nearing completion.		
FC 16103 ~ Hydraulic Drainage Study - Channels	L&G	50%
The HEC-HMS program is being utilized, to ensure that the downstream drainage improvements, south of the Edinburg Main Canal, do not have an adverse affect to the proposed upstream channel that was previously designed.		
FC 16104 ~ Hydraulic Drainage Study – Irrigation Canals/Siphons	L&G	75%
Meetings with the Hidalgo County Irrigation District #1 were held to discuss the construction of the proposed culvert under or over the Edinburg Main Canal. The Irrigation district would prefer that the culvert go under the Main Canal. After reviewing design issues, this option looks to be the best option. In our conversations with the Irrigation District it was discussed that at this time there is a maximum of 50 cfs flowing through the Edinburg Main Canal. We placed a bypass pipe in our plan set, to aid in the construction of the proposed culverts at this location, that would convey 50 or more CFS.		
FC 16105 ~ Layout, Structural Design and Detailing of Drainage Features - Culverts	L&G	50%
Culvert layouts at the Edinburg Main Canal and at the Railroad/Chihuahua Rd. were created. Plan and profile views of the culvert crossing were included on the sheet. Final culvert box designs were placed at these locations based off of the upstream culvert crossing at US 83. Final design of these structures is nearing completion with the use of a HEC-RAS model.		
FC 16106 ~ Layout, Structural Design and Detailing of Drainage Features – Storm Sewers	L&G	50%
The proposed pipe system and man hole locations were put in place to best fit the available right-of-way. This system of pipes, from the Edinburg Main Canal south to Old Military Highway, has been placed on sheets that contain the plan and profile of the pipe location. Final design of these structures is nearing completion with the use of a HEC-RAS model.		
FC 16107 ~ Layout, Structural Design and Detailing of Drainage Features – Outfall Channel(s) Outside of ROW	L&G	50%
The outfall channel just north of Old Military Highway has a preliminary design that was placed on sheets. Final design is being finalized with the HEC-RAS model.		

FC 16108 ~ Layout, Structural Design and Detailing of Drainage Features – Summary of Qtys	L&G	75%
Pipe, ditch, and other various drainage quantities were calculated per sheet for the project. All quantities, item numbers, and description codes were then transferred to the Estimated Quantity Sheet (EQ). These same quantities were placed on the Engineer's estimate and all sheets were submitted to TxDOT. Item and description codes may change based on the findings of the HEC-RAS and HEC-HMS models.		
FC 16109 ~ Layout, Structural Design and Detailing of Drainage Features – Storm Water Management Facilities	L&G	50%
Storm water pollution prevention items such as rock filter dams, silt fences, and construction exits, etc…, are being proposed throughout the project. Final sheets will be created once the SW3P plan has been completed.		
FC 16111 ~ Storm Water Pollution Prevention Plan (SW3P)	L&G	50%
Review of the entire facility that is being proposed and the effects that the building of this facility will have the natural environment is being reviewed in greater detail. Once the SW3P plan has been discussed in detail the SW3P sheets will be finalized.		
TASK #6 - FC 163 – Miscellaneous Roadway		
FC 16306 ~ Special Utility Details (Irrigation Lines)	L&G	75%
A by-pass detail has been created so that construction of the culverts at the irrigation canal can be done as one whole cast-in-place unit. The irrigation canal would need to be dewatered so that construction can take place.		
FC 16307 ~ Miscellaneous Structures	L&G	75%
Miscellaneous structures were reviewed in the area of the proposed drainage system. There are several existing structures such as a 24-IN RCP and a 5'x5' box culvert that will remain in place at the request of the stakeholders that own them. We continue to review all topographic information to ensure that all structures are accounted for.		
FC 16301 ~ Foundation Studies	L&G	0%
No update		
FC 16302 ~ Utility Agreements and Exhibits	L&G	75%
Meetings with Hidalgo County Irrigation District #1 were held to discuss the use of 30-ft of their 200-ft of irrigation Right-of-way as a joint use agreement with Hidalgo County Drainage District. The Irrigation District was willing to enter into a joint use agreement with the Drainage District. Exhibits were created that outlined the location and widths of the joint use agreement and the location and widths of the proposed drainage easement. This information was distributed to the surveyor for his use.		

FC 16303 ~ Railroad Sketches	L&G	100%
Railroad culvert layouts were completed and submitted to TxDOT. No additional information has been requested from TxDOT.		
FC 16304 ~ Traffic Signal Agreement Sketches	L&G	0%
No Update		
FC 16305 ~ Estimate	L&G	0%
No update		
FC 16308 ~ Specifications and General Notes	L&G	0%
No update		
TASK #7 - FC 600 – Right-of-Way Acquisition Services – Compensable Utilities		
FC 60000 ~ Right of Way Administration Aquisition	L&G	0%
No update		
FC 60001 ~ Title Services	L&G	0%
No update		
FC 60002 – Appraisal Services	L&G	0%
No update		
FC 60003 ~ Appraisal Review	L&G	0%
No update		
FC 60004 ~ Parcel Negotiations	L&G	0%
No update		
FC 60005 ~ Closing Services	L&G	0%
No update		
FC 60030 ~ Appraisal Services / SUB	L&G	0%
No update		
FC 60040 – Appraisal Review / SUB	L&G	0%
No update		
FC 60101 ~ Preliminary Design Consultations	L&G	0%
No update		

FC 60102 ~ Field Observations and Verifications	L&G	0%
No update		
FC 60103 ~ Exchange of Information with Utility Providers	L&G	0%
No update		
FC 60104 ~ Confirmation of Property Interests	L&G	0%
No update		
FC 60105 ~ Develop and Execute Release of Easements	L&G	0%
No update		
FC 60106 ~ Coordination and Development of Joint Use Agreements	L&G	0%
No update		
FC 60107 ~ Utility Meetings Throughout Project Development	L&G	0%
No update		

Should you have any questions regarding this submittal or would like clarification on any aspect of the project, please do not hesitate to call me at (956) 585-1909.

Sincerely,

Armando Sandoval, P.E.
Project Manager
L&G Engineering

L&G Engineering
Transportation Consulting Engineers

2100 W. Expressway 83
Mercedes, TX 78570
Phone: (956) 565-9813
Fax: (956) 565-9018
Toll Free: (888) 565-9813

900 S. Stewart Rd., Ste. 10
Mission, TX 78572
Phone: (956) 585-1909
Fax: (956) 585-1927
Toll Free: (866) 585-1909

Firm No. F-4105

Letter of Transmittal

Mr. Raul Sesin, P.E. – District Manager
Hidalgo County Drainage District #1
902 N. Doolittle Rd.
Edinburg, Texas 78542

DATE: June 10, 2015

Project: Progress Report & Invoice Package for Various Work Authorizations
La Joya Watershed Improvement Project

L&G PROJECT NO.:

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☒ Hand Carry
☐ E-Mail	☐ Lonestar Overnight	☐ Pick up

COPIES	DESCRIPTION
1	Progress Report and Invoice Package (including CD w/Electronic Files) for the following Project:
	• Work Authorization #6A on La Joya Watershed Improvement Project
	○ P.O. #626941, Invoice #11325173

REMARKS:

If you have any questions or comments, please feel free to contact me, Mr. Armando Sandoval, P.E. at (956) 585-1909.

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
JUN 11 2015
8:00 AM PM
BY:

Thank you,

a. J. Sandoval, P.E.

Signed: _____

If enclosures are not as stated, please notify us.

AI -50239 **12.**

DRAINAGE - CONSENT

Meeting Date: 06/23/2015

Submitted By: Claudette Guerrero, DRAINAGE DISTRICT

Department: DRAINAGE DISTRICT

Information

CAPTION

2013 Bonds:
Request approval to issue payment on the followings:

Tedsi Infrastructure Group

A) Inv#20141803 in the amount of $6,460.99 from Tedsi Infrastructure Group related to Work Authorization No. 4A-Engineering Services for Monte Cristo Drain Control Structure. Service Period 12-01-2013 through 01-31-2015. PO#623103.

B) Inv#20141804 in the amount of $6,430.99 from Tedsi Infrastructure Group related to Work Authorization No. 4B Engineering Services for Weslaco North Lateral Control Structure. Service Period from 12-01-2013 through 01-31-2015. PO#623104.

BACKGROUND

Fiscal Impact

Attachments

Tedsi Inv#20141803
Tedsi Inv#20141804

Form Review

Inbox	**Reviewed By**	**Date**
Budget & Management	Veronica Ortiz	06/19/2015 03:55 PM
Final Approval	Monica Badillo	06/19/2015 05:25 PM

Form Started By: Claudette Guerrero Started On: 06/19/2015 03:17 PM

Final Approval Date: 06/19/2015

CK#1941

TEDSI INFRASTRUCTURE GROUP
TEDSI TBPE F-1840
Consulting Engineers
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

February 20, 2014
Project No: 2013-1128-4A
Invoice No: 20141803

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

HIDALGO COUNTY
FEB 26 2014
DRAINAGE DISTRICT #1

Project 2013-1128-4A Monte Cristo Drain Control Structure

P.O. No. 623103
Account No. 13-133-433-370-010-007-43340

Professional Services from December 01, 2013 to January 31, 2014

Fee

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing	
Design	21,536.62	90.00	19,382.96	12,921.97	6,460.99	
Topo	5,451.75	100.00	5,451.75	5,451.75	0.00	
Geotechnical	5,987.03	100.00	5,987.03	5,987.03	0.00	
Total Fee	32,975.40		30,821.74	24,360.75	6,460.99	
		Total Fee				**6,460.99**
				Total this Phase		**$6,460.99**

Billing Summary	**Current**	**Prior**	**To-Date**
Total Billings	6,460.99	24,360.75	30,821.74
Total Fee			32,975.40
Remaining Fee			2,153.66

Total this Invoice **$6,460.99**

Approved
02/26/14

*Pending Raba's Invoice & Lefevre

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

HIDALGO COUNTY DID
OCT 28 2014
BY: CLAUDETTE G.

Authorized By: _____ Date: 2.20.14
Mark W. Lupher, P.E., RPLS
Executive Vice President

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 • Mission, Texas 78572
(956) 424-7898

Project Progress Report

TO: Hidalgo County Drainage District No. 1	DATE: Feb 25, 2014
FROM: Mr. Mark W. Lupher, P.E.; Executive Vice President	TEDSI PROJECT NO.: 2013-1128-4A/B
REFERENCE: Monte Cristo and Weslaco North Lateral Control Structures	
Progress Report for Invoice No. 2013-1128-4A/B, JAN 2014	

1. PS&E was completed during this period. 100% Plans submitted.
2. Geotechnical and Survey are currently 100% complete
3. The plans are currently reday for letting pending the final review from the Drainage District.

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: February 25, 2014

REF.: Monte Cristo Drain January Invoice

TEDSI PROJECT NO.: 2013-1128-04A

TRANSMITTED:

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☐ As Requested	☐ Reply ASAP	☐ As Noted Below

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COPIES	DESCRIPTION
1	Invoice No.20141803 for Project No. 2013-1128-04A
1	Progress Report
1	CD PDF Files
	Lonestar Airbill No. ZQ923885

REMARKS

JNJ NEEDS 2 BE ADDED 2 AGENDA 4 PART ATTY RVW & AUDIT.

Thank y

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
FEB 26 2014
10 AM / PM
BY: Rosaura

Signed: for Claudia Zapata
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
TBPE F-1640
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

February 20, 2014
Project No: 2013-1128-4A
Invoice No: 20141803

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

HIDALGO COUNTY
FEB 26 2014
DRAINAGE DISTRICT #1

Project 2013-1128-4A Monte Cristo Drain Control Structure

P.O. No. 623103
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PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

13-133-433-370-43340-010-007

Authorized By: _____ Date: 2.20.14
Mark W. Lupher, P.E., RPLS
Executive Vice President

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 E. Expressway 83 • Mission, Texas 78572
(956) 424-7898

Project Progress Report

TO: Hidalgo County Drainage District No. 1	**DATE:** Feb 25, 2014
FROM: Mr. Mark W. Lupher, P.E.; Executive Vice President	**TEDSI PROJECT NO.:** 2013-1128-4A/B
REFERENCE: Monte Cristo and Weslaco North Lateral Control Structures	
Progress Report for Invoice No. 2013-1128-4A/B, JAN 2014	

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TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: February 25, 2014

REF.: Monte Cristo Drain January Invoice

TEDSI PROJECT NO.: 2013-1128-04A

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	Lonestar Airbill No. ZQ923885

REMARKS:

Thank you,

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DRAINAGE DISTRICT #1
FEB 26 2014
10 AM / PM
BY: Rosaura

Signed: for Claudia Zapata
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

HIDALGO COUNTY DRAINAGE DISTRICT NUMBER ONE

902 NORTH DOCUTTLE EDINBURG, TEXAS 78542 (956) 292-7080 FAX (956) 292-7089

HCDD#1

GODFREY GARZA, JR.
MANAGER

INVOICE PROCESSING CHECKLIST

Date Received: 2-26-14

Engineer/Firm Name: TEAS Infrastructure Grap

Project Name/Number: Monte Cristo Drain Jan. Invoice / 2013-1128-01A

Invoice No: 20141803

Logged in and Scanned 10 2/26 By: Rosa Orce Forwarded to: Silvia Sanchez

Engineer	Name	Date	Comment
Scope of work reviewed	MM	2/26	

Accounting	Name	Date	Comment
Encumberance			
Purchase Order Attached			
Audit	CM	2/27	
Final Approval for Agenda			

	Name	Date	Comment
Placed on Agenda			

Additional Comments: Orig to MR

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: February 25, 2014

REF.: Monte Cristo Drain January Invoice

TEDSI PROJECT NO.: 2013-1128-04A

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Thank you,

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BY: Rosaura

Signed: for Claudette Guerrero
Mark W. Lupher, P.E., RPLS

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TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 East Expressway 83 • Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022
TBPE F-1840

February 20, 2014
Project No: 2013-1128-4A
Invoice No: 20141803

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

HIDALGO COUNTY
FEB 26 2014
DRAINAGE DISTRICT #1

Project 2013-1128-4A Monte Cristo Drain Control Structure

P.O. No. 623103
Account No. 13-133-433-370-010-007-43340

Professional Services from December 01, 2013 to January 31, 2014

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PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

Authorized By: _____ Date: 2.20.14
Mark W. Lupher, P.E., RPLS
Executive Vice President

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Project Progress Report

TO: Hidalgo County Drainage District No. 1	DATE: Feb 25, 2014
FROM: Mr. Mark W. Lupher, P.E.; Executive Vice President	TEDSI PROJECT NO.: 2013-1128-4A/B
REFERENCE: Monte Cristo and Weslaco North Lateral Control Structures	

Progress Report for Invoice No. 2013-1128-4A/B, JAN 2014

1. PS&E was completed during this period. 100% Plans submitted.
2. Geotechnical and Survey are currently 100% complete
3. The plans are currently reday for letting pending the final review from the Drainage District.

EXHIBIT "F"

SUPPLEMENTAL AGREEMENT NO. 1
TO WORK AUTHORIZATION NO. 4A

THIS **SUPPLEMENTAL AGREEMENT No. 1** is made pursuant to the terms and conditions of **Work Authorization No. 4A** made by and between Hidalgo County Drainage District No. 1, hereinafter called the "**Owner**", and TEDSI Infrastructure Group, Inc. hereinafter call the "**Engineer**".

WITNESSETH

WHEREAS, the **Owner** and the **Engineer** executed Work Authorization No. 4A on the 17th day of July, 2013 concerning the **Design Field Topo Survey, Geotechnical Boring Report, Hydrologic & Hydraulics analysis, PS&E, and Construction Phase Services for the Monte Cristo Drain Control Structure identified in the 2012 HCDD # 1 Bond Referendum.**

WHEREAS, it has become necessary to amend Work Authorization No. 4A to delete Exhibit "D" in its entirety and replace with a new Revised Exhibit "D" dated 6/18/14.

A. AGREEMENT

NOW THEREFORE, premises considered, the **Owner** and the **Engineer** agree that said Work Authorization No. 4A is amended as follows:

I. Delete existing Exhibit "D" in its entirety and insert in lie thereof Exhibit "D-1" dated 6/18/14. All fees and costs remain the same.

All other provisions are unchanged and remain in full force and effect.

IN WITNESS WHEREOF, the **Engineer** and the **Owner** have caused this Supplemental Agreement No. 1 to Work Authorization No. 4A for Professional Services to be executed as of the 29th day of ~~June~~ July 2014.

ENGINEER:
TEDSI Infrastructure Group, Inc.

BY: _____
Jesse Salinas, President / CEO

OWNER:
Hidalgo County Drainage District No. 1

BY: Ramon Garcia
Ramon Garcia, Chairman

ATTACHMENTS:
Revised EXHIBIT D -Not to Exceed Fee Proposal
Revised EXHIBIT B
Attest as to form:
Atlas, Hall & Rodriguez, L.L.P.

_____
By: Stephen L. Crain

APPROVED BY HIDALGO COUNTY DRAINAGE DISTRICT NO. 1 BOARD OF DIRECTORS ON: 7/29/14

REVISED EXHIBIT D-1 (6-18-14)
WORK AUTHORIZATION NO. 4A
Lump Sum Fee Estimate

Monte Cristo Drain Control Structure

Construction Cost Estimate

Monte Cristo Control Structure	$	287,155.00
TOTAL CONSTRUCTION COST	**$**	**287,155.00**

Basic Services

LaFEVRE (PS&E)	$9112.00
TEDSI	
GCM - (Scope B - Basic)	$1,150.00
Contract Phase - " "	$4,350.00
Construction Phase - " "	$5,924.40
Sub – Total	**$20,536.40**

Special Services

Geotechnical & Survey

RABA	$5,987.00
TEDSI	$6,452.00
Sub – Total	**$12,439.00**

TOTAL WORK AUTHORIZATION No. 4A	**$32,975.40**

RABA KISTNER

GEOTECHNICAL ENGINEERING STUDY

FOR

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1 DRAINAGE IMPROVEMENTS PROJECT
PROPOSED 72-INCH DIAMETER REINFORCED CONCRETE PIPE (RCP) AT THE MONTE CRISTO DRAIN
HIDALGO COUNTY, TEXAS

RABA KISTNER
CONSULTANTS

Raba Kistner
Consultants, Inc.
800 E. Hackberry
McAllen, TX 78501
www.rkci.com

P 956 :: 682 :: 5332
F 956 :: 682 :: 5487
TBPE Firm F-3257

Project No. AMA13-058-00
November 6, 2013

Mr. Richard LeFevre, B.S. M.S., P.E.
LeFevre Engineering & Management Consulting, LLC
612 Nolana, Suite 520
McAllen, Texas 78504

RE: Geotechnical Engineering Study
Hidalgo County Drainage District No. 1 Drainage Improvements Project
Proposed 72-Inch Diameter Reinforced Concrete Pipe (RCP)
At the Monte Cristo Drain
Hidalgo County, Texas

Dear Mr. LeFevre:

Raba Kistner Consultants Inc. (RKCI) is pleased to submit this report of our Geotechnical Engineering Study for the above referenced project. This study was performed in accordance with **RKCI** Proposal PMA13-082-00, dated September 23, 2013. Authorization to proceed with this study was received by our firm via electronic mail attachment on October 2, 2013.

The purpose of our study was to explore and evaluate subsurface soil conditions at the project site to develop information to be used for the design and construction of the proposed about 100-ft long, 72-inch diameter RCP to be installed at the Monte Cristo Drain.

We appreciate the opportunity to be of service to you on this project. Should you have any questions about the information presented in this report, or if we may be of additional assistance on the materials testing-quality control program during construction, please call us.

Very truly yours,

RABA KISTNER CONSULTANTS, INC.

STATE OF TEXAS
JOHN DOUGLAS BROWN
96185
LICENSED
PROFESSIONAL ENGINEER

John D. Brown, P.E.
Manager, Geotechnical Services

Isidoro Ariona, P.E., PMP
Vice President

JDB/IA/dar

Attachments

Copies Submitted: Above (3-Bound, 1-Electronic)

GEOTECHNICAL ENGINEERING STUDY

For

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1 DRAINAGE IMPROVEMENTS PROJECT PROPOSED 72-INCH DIAMETER REINFORCED CONCRETE PIPE (RCP) AT THE MONTE CRISTO DRAIN HIDALGO COUNTY, TEXAS

Prepared for

LEFEVRE ENGINEERING & MANAGEMENT CONSULTING, LLC
McAllen, Texas

Prepared by

RABA KISTNER CONSULTANTS, INC.
McAllen, Texas

RKCI PROJECT NO. AMA13-058-00

November 6, 2013

RABAKISTNER

TABLE OF CONTENTS

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PROJECT DESCRIPTION **1**

LIMITATIONS **1**

BORINGS AND LABORATORY TESTS **2**

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GROUNDWATER 3

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CORROSIVITY POTENTIAL 4
Corrosion of Steel 4
Degradation of Concrete 5

CONSTRUCTION CONSIDERATIONS **6**

GENERAL 6

TRENCHING AND SHORING 7

DEWATERING 7

TRENCH BACKFILL 7

CONSTRUCTION RELATED SERVICES **8**

CONSTRUCTION MATERIALS TESTING AND OBSERVATION SERVICES 8

ATTACHMENTS

Figure No.

Boring Location Map 1
Boring Logs 2, 3
Key to Terms and Symbols 4
Results of Soil Sample Analyses 5
Important Information About Your Geotechnical Engineering Report

INTRODUCTION

Raba Kistner Consultants, Inc. (RKCI) has completed the authorized subsurface exploration and excavation, bedding and backfill recommendations for the proposed 72-inch diameter RCP at the Monte Cristo Drain. This report briefly describes the procedures utilized during this study and presents our findings along with our recommendations for RCP installation.

PROJECT DESCRIPTION

On the basis of the information provided to us by the CLIENT, we understand that the proposed project consists of the design and construction of an approximately 100-ft long, about 72-inch diameter RCP to be installed parallel to the existing 72-inch diameter RCP line at the Monte Cristo Drain. The existing Monte Cristo Drain is located about 900-ft South of Monte Cristo Road (Farm-to-Market [F.M] Road 1925) and is 4,000-ft East of La Blanca Road (F.M. 493) in Hidalgo County, Texas.

LIMITATIONS

This engineering report has been prepared in accordance with accepted Geotechnical Engineering practices in the McAllen area by Geotechnical firms conducting similar work under similar circumstances and is meant for the use of LeFevre Engineering & Management Consulting, LLC (CLIENT) and its representatives for design purposes. This report may not contain sufficient information for purposes of other parties or other uses and is not intended for use in determining construction means and methods.

The recommendations submitted in this report are based on the data obtained from two borings drilled at this site and our understanding of the project information provided to us by others. If the project information described in this report is incorrect, is altered, or if new information is available, we should be retained to review and modify our recommendations.

This report may not reflect the actual variations of the subsurface conditions across the site. The nature and extent of variations across the site may not become evident until construction commences. The construction process itself may also alter subsurface conditions. If variations appear evident at the time of construction, it may be necessary to reevaluate our recommendations after performing on-site observations and tests to establish the engineering impact of the variations.

The scope of our Geotechnical Engineering Study does not include an environmental assessment of the air, soil, rock, or water conditions either on or adjacent to the site. No environmental opinions are presented in this report. **RKCI**'s scope of work does not include the investigation, detection, or design related to the prevention of any biological pollutants. The term "biological pollutants" includes, but is not limited to, mold, fungi, spores, bacteria, and viruses, and the byproduct of any such biological organisms.

If final grade elevations are significantly different from those provided to us by others by more than plus or minus 1 ft, our office should be informed about these changes. If needed and/or if desired, we will reexamine our analyses and make supplemental recommendations.

BORINGS AND LABORATORY TESTS

Subsurface conditions at the site were evaluated by two borings (designated as B-1 and B-2) drilled at the locations shown on the Boring Location Map, Figure 1. The boring locations were located by an **RKCI** representative based on a site plan and by measuring distances from existing references using tape, angles, pacing, etc. The borings were drilled to a depth of 30-ft below the ground surface elevation existing at the time of our study using a truck-mounted drilling rig.

The borings were drilled utilizing straight flight auger methods, and were backfilled with the auger cuttings generated during the drilling activities. During drilling operations, the following samples were collected:

Type of Sample	Number Collected
Undisturbed Shelby Tube (ST)	4
Split-Spoon (Standard Penetration Test)	14

The ST and SPT samples were obtained in general accordance with accepted standard practices. The SPT results are presented as "blows per foot" on the boring logs and on Figure 5, where "blows per foot" refers to the number of blows by a falling hammer required for 1-ft of penetration into the existing subsurface materials. Representative portions of the samples were sealed in containers to reduce moisture loss, labeled, packaged, and transported to our laboratory for subsequent testing and classification.

In the laboratory, each sample was evaluated and visually classified by a member of our Geotechnical Engineering staff in general accordance with the Unified Soil Classification System (USCS). The geotechnical engineering properties of the strata were evaluated by the laboratory tests tabulated in the following table.

Type of Test	Number Conducted
Natural Moisture Content	18
Atterberg Limits	4
Percent Passing a No. 200 Sieve	4
Hydrometer	2
Unconfined Compression	2
Total Chloride	1
Total Sulfate	1
pH	1
Soil Resistivity	1

The laboratory tests are presented in graphical or numerical form on the boring logs illustrated on Figures 2 and 3. A key to the classification of terms and symbols used on the logs is presented on Figure 4. The results of the laboratory and field testing are also tabulated on Figure 5 for ease of reference.

Samples will be retained in our laboratory for 30 days after submittal of this report. Other arrangements may be provided at the request of the CLIENT.

STRATIGRAPHY

The soils that underline the proposed RCP alignment consist of moderately plastic cohesive sandy lean clays (CL) and semi-cohesive clayey sands (SC) to depths of 15 to 20-ft, followed by non-plastic cohesionless silty sands to the 30-ft boring completion depths. The boring logs should be consulted for more specific stratigraphic information. The lines designating the interfaces between strata on the boring logs represent approximate boundaries. Transitions between strata may be gradual.

The upper 2-ft to 10-ft deep clayey sands have a loose relative density based on SPT N-values of 8 to 10 blows per foot. Measured plasticity indices (PI) within the semi-cohesive soils range from 14 to 15 percent. A fines content of 43 percent was measured on a clayey sand sample recovered from the 2-ft depth in boring B-1. Undrained shear strength of 2.02 tsf was measured on a clayey sand sample, based on an unconfined compressive strength test. The tested sample measured a dry unit weight of 118 pcf.

The surficial clayey sands are underlain by firm to hard consistency sandy lean clays. These clays measured a PI of 13 percent. Measured moisture contents vary from 9 to 16 percent. Undrained shear strength of 2.7 tsf was measured on a cohesive sample obtained from the 5-ft depth in boring B-2 during laboratory unconfined compression testing. The tested sample had a dry unit weight of 118 pcf. Based on grain size analyses, the percentage of fines passing a No. 200 Sieve ranges from 52 to 65 percent.

GROUNDWATER

Groundwater level measurements obtained during drilling are summarized in the following table.

Groundwater Level Measurements

Boring No.	Boring Depth (ft)	Groundwater Depth During Drilling (ft)	Groundwater Depth (ft) after 15 Minutes	Groundwater Depth (ft) after 24 Hours
B-1	30	19.5	16.5	18
B-2	30	20	17	19

It is possible for groundwater to exist beneath this site at shallower depths on a transient basis, particularly in interbedded sand seams following periods of precipitation. Fluctuations in groundwater levels are possible due to variations in rainfall and surface water run-off. The construction process itself may also cause variations in the groundwater levels.

The project boring logs indicate that the proposed RCP will be founded within cohesionless sands that are primarily water bearing. Based on the findings in our borings and on our experience in this region, we believe that mechanical dewatering will be required to control groundwater seepage encountered during trenching and installation of RCP. We recommend that the Contractor include in his or her bid a cost per linear foot for installation of a dewatering system, in case temporary earthen berm and conventional sump-and-pump dewatering methods are not successful.

SIEVE ANALYSIS

Sieve analysis with hydrometer tests were performed on selected two soil samples. The sand/silt/clay fractions for each test sample are listed in the table below.

Boring No.	Depth (ft)	Sand Content (%)	Silt Content (%)	Clay Content (%)	Visual Classification
B-1	10	39	34	27	Sandy Lean Clay
B-2	22	48	25	27	Sandy Lean Clay

CORROSIVITY POTENTIAL

Steel and concrete elements in contact with soil are subject to degradation from corrosion or chemical attach. The corrosivity characteristics of the upper soils were preliminarily evaluated using pH, electrical resistivity, sulfate content, and chloride content laboratory tests.

Corrosion of Steel

The measurable soil properties that indicate the corrosion potential for steel in contact with soil are soil pH, chloride ion concentration, and soil electrical resistivity. Corrosion of steel is most likely to occur in environments that have chloride ions, even in low concentrations, very low or very high pH, and/or low resistivity.

The table blow presents general guidelines concerning the corrosion potential of a soil as a function of chloride ion concentration, pH, and electrical resistivity. Each of the columns on this table should be used independently of the others when evaluating corrosion potential. For instance, it is not necessary to have an electrical resistivity of less than 1,000 ohm-cm and a pH of less than 4.0 to indicate a *Very High* potential for corrosion.

Soil Corrosion Potential

Electrical Resistivity Ohm-cm[1]	Chloride Content, ppm	pH[2]	Corrosion Potential
<1,000			Very High
1,000 – 3,000	>500	<4 or >10	High
3,000 – 10,000	<500		Moderate
>10,000		>4 or <10	Mild

(1) After Roberge, 2000
(2) After DOE-HDBK-1015/1-93

Soil pH, chloride and sulfate content, and electrical resistivity laboratory tests were conducted on a composite semi-cohesive soil sample obtained from Borings B-1 and B-2 from a depth of about 0 to 1.5-ft below the ground surface elevation existing at the time of our study. The laboratory test results are shown in the table below.

Chemical and Electrical Resistivity Test Results

Boring No.	Sampling Interval (ft)	Soil Type	pH	Ion Concentration Chloride (ppm)	Ion Concentration Sulfate (ppm)	Electrical Resistivity (ohm-cm)
B-1/B-2	0 – 1.5	Clayey Sand	9.8	36.2	140	2639

BRL – Below Recordable Limit (5mg/kg)

Based on the chemical and electrical resistivity laboratory test results and the general guidelines from the table titled *"Soil Corrosion Potential"*, the shallow natural soils appear to have a *"moderate to high"* potential for corrosion of unprotected steel.

Degradation of Concrete

The degradation of concrete is caused by chemical agents in the soil or groundwater that react with concrete to either dissolve the cement paste or precipitate larger compounds which cause cracking and flaking. The concentration of water-soluble sulfates in the soils is a good indicator of the potential for chemical attack of concrete. Sulfate concentrations in soil can be used to evaluate the need for protection of concrete based on the general guidelines shown in the following table.

Sulfate Attack Potential

Sulfate Ion Concentration, ppm or mg/kg	Aggressiveness (1)
>20,000	Very Severe
2,000 to 20,000	Severe
1,000 to 2,000	Moderate
<1,000	Negligible

(1) ACI 318-05/ACI 318R-05

On the basis of soil sulfate concentration data shown on the table title *"Chemical and Electrical Resistivity Test Results"* and the general guidelines from the *"Sulfate Attack Potential"* table, the soils have a *"negligible"* potential for attacking concrete. Based on the measured soil sulfate concentration, the American Concrete Institute (ACI) Committee Report 201.2R indicates that special requirements for sulfate resistance are not needed (that is, American Society for Testing a Materials (ASTM) C 150 Types I and II are applicable).

Degradation of concrete can also be advanced by the aggregates selected for the concrete mixtures. Alkali-silica reactivity (ASR), a chemical reaction between Portland cement concrete and certain aggregates, can directly cause expansion damage in concrete structures or can expedite other reactions that in turn cause damage, such as rebar corrosion.

Three requirements must be met for ASR expansion to occur: (1) reactive forms of silica or silicate in the aggregate; (2) sufficient alkali (sodium and potassium) primarily from the cement; and (3) sufficiently available moisture in the concrete. If one of the three requirements is not met, expansion due to ASR cannot occur. The concrete aggregates should be checked for ASR characteristics.

CONSTRUCTION CONSIDERATIONS

GENERAL

A 100-ft long, 72-inch diameter RCP will be installed parallel to the existing 72-inch diameter RCP at the Monte Cristo Drain. We recommend that the culvert opening on the floodway side of the existing levee be installed flush with the levee in order to reduce turbulence during flood events.

The project borings indicate the soil profile underneath RCP is comprised primarily of cohesionless silty sands. In addition, the sands are mostly water bearing; the groundwater level will fluctuate in response to the water level in the adjacent drainage channels.

TRENCHING AND SHORING

The most common method of installing conduit within the embankment or foundation of a levee is by the open cut method. All vertical excavations deeper than 5-ft must be provided with a trench safety system in accordance with the current Occupational Safety and Health Administration (OSHA) standards (29 CFR, Part 1926, Subpart P). The OSHA standards include provisions for the design of sloping and/or benched trench excavations in single or multiple layer soil stratigraphies less than 20-ft deep, in lieu of bracing and shoring. Sloping or benching for excavations greater than 20-ft deep must be designed by a registered professional engineer. The regulations specify maximum slope declivities contingent on soil type. The cohesionless sands encountered in the project borings would be classified as "Type C". A trench shield (box), if used, should be designed to withstand lateral loads imposed by specific site soil conditions.

DEWATERING

Based on the subsurface conditions encountered in the borings, and the typical fluctuations in groundwater levels in this region, groundwater may be encountered during the storm sewer line construction activities. Excavations below the groundwater table generally require lowering the piezometric level to permit construction in a relatively dry state. This should be performed to control seepage into the excavations and to reduce artesian water pressures below the bottom of the excavations. Deep wells and/or well point systems, as well as sumps and pumps after completion of the excavations are commonly used. The implementation of one and/or more of these methods might be anticipated for the construction of the proposed storm sewer lines. A minimum groundwater drawdown of at least 5 ft below the bottom of the storm sewer line should be anticipated by the General Contractor in order to allow the construction operations to proceed on the bottom of the excavations. The design of dewatering systems is beyond the scope of this study. The General Contractor should be prepared to control excess water encountered in the excavations due to perched water pockets, seepage, and/or rainfall. Proper construction procedures and equipment will be critical for proper performance of the dewatered excavations. Additionally, protection of personnel entering the excavations and providing a dry, stable subgrade upon which to construct foundations will be crucial.

TRENCH BACKFILL

The trench bottoms should be uniform and level so that the pipe barrel will have full support along its full length. The pipe bedding materials from the trench bottom to the bottom of the pipe (or to a minimum distance above or below the top of the pipe if recommended by the pipe manufacturer) should consist at a minimum of 6 inches of compacted granular materials (preferably well-graded crushed rock and gravel or well-graded sand materials, such as GW, SP, SW, or mixtures of the same per the American Society for Testing and Materials (ASTM) D2487 and meeting the pipe manufacturer's recommendations. The excavated soils during the trench construction should be stockpiled on site, separating the on-site sandy lean clays (CL) from the on-site clayey sands (SC), to be subsequently reused as backfill. The backfill material should primarily consist of the on-site sandy lean clays (CL) excavated during the trench construction. If the volume of the on-site sandy lean clays (CL) is not sufficient, then the on-site clayey sands (SC) excavated during the trench construction may be utilized, mainly on the upper lifts of backfill material. The backfill material above the bedding material should be placed and compacted in accordance with the following paragraphs.

In roadway areas or areas that will support future structures, the backfill material from the bottom of the trench excavation up to 30 inches below the proposed finished subgrade elevation should be placed in maximum 8-inch uniform thickness lifts, moisture-conditioned to within the range of three percentage points below the optimum moisture content to three percentage points above the optimum moisture content and compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM D698 laboratory compaction procedures.

Furthermore, in roadway areas or areas that will support future structures, the backfill material from 30 inches below the proposed finished subgrade elevation up to the proposed finished grade elevation should be placed in maximum 8-inch uniform thickness lifts, moisture-conditioned to within the range of three percentage points below the optimum moisture content to three percentage points above the optimum moisture content and compacted to a minimum of 98 percent of the maximum dry density as determined by ASTM D698 laboratory compaction procedures.

The trench bedding and backfill material should be tested by **RKCI** personnel for physical properties and compaction as specified.

CONSTRUCTION RELATED SERVICES

CONSTRUCTION MATERIALS TESTING AND OBSERVATION SERVICES

As presented in the attachment to this report, *Important Information About Your Geotechnical Engineering Report*, subsurface conditions can vary across a project site. The conditions described in this report are based on interpolations derived from a limited number of data points. Variations will be encountered during construction, and only the geotechnical design engineer will be able to determine if these conditions are different than those assumed for design.

Construction problems resulting from variations or anomalies in subsurface conditions are among the most prevalent on construction projects and often lead to delays, changes, cost overruns, and disputes. These variations and anomalies can best be addressed if the geotechnical engineer of record, **RKCI,** is retained to perform construction observation and testing services during the construction of the project. This is because:

- **RKCI** has an intimate understanding of the geotechnical engineering report's findings and recommendations. **RKCI** understands how the report should be interpreted and can provide such interpretations on site, on the CLIENT's behalf.
- **RKCI** knows what subsurface conditions are anticipated at the site.
- **RKCI** is familiar with the goals of the CLIENT and project design professionals, having worked with them in the development of the geotechnical workscope. This enables **RKCI** to suggest remedial measures (when needed) which help meet the CLIENT's and the design teams' requirements.
- **RKCI** has a vested interest in client satisfaction, and thus assigns qualified personnel whose principal concern is client satisfaction. This concern is exhibited by the manner in

which contractors' work is tested, evaluated and reported, and in selection of alternative approaches when such may become necessary.

- **RKCI** cannot be held accountable for problems which result due to misinterpretation of our findings or recommendations when we are not on hand to provide the interpretation which is required.
-

BUDGETING FOR CONSTRUCTION TESTING

Appropriate budgets need to be developed for the required construction testing and observation activities. At the appropriate time before construction, we advise that **RKCI** and the project designers meet and jointly develop the testing budgets, as well as review the testing specifications as it pertains to this project.

Once the construction testing budget and scope of work are finalized, we encourage a preconstruction meeting with the selected contractor to review the scope of work to make sure it is consistent with the construction means and methods proposed by the contractor. **RKCI** looks forward to the opportunity to provide continued support on this project, and would welcome the opportunity to meet with the Project Team to develop both a scope and budget for these services.

* * * * * * * * * * * * * * * * * * *

The following figures are attached and complete this report:

Figure 1	Boring Location Map
Figure 2 & 3	Logs of Borings
Figure 4	Key to Terms and Symbols
Figure 5	Results of Soil Sample Analyses

ATTACHMENTS



RABA KISTNER
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BORING LOCATION MAP
HIDALGO COUNTY
DRAINAGE DISTRICT NO. 1
DRAINAGE IMPROVEMENTS
MONTE CRISTO LATERAL DRAIN
HIDALGO COUNTY, TEXAS

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.:	AMA13-058-00
ISSUE DATE:	11-05-13
DRAWN BY:	DV
CHECKED BY:	SC
REVIEWED BY:	KML

FIGURE
1

© 2010 by Raba-Kistner Consultants, Inc.

O:\Active Projects\McAllen\2013\AMA13 - McAllen\AMA13-058-00 Monte Cristo Lateral Drain Improvements\Drawings\Figure 1 - 11x17.dwg

LOG OF BORING NO. B-1

Hidalgo County Drainage District No. 1 Drainage Improvements
Monte Cristo Lateral Drain
Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT²	PLASTICITY INDEX	% -200
			SURFACE ELEVATION: Ex. Grade ft			0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 (PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT) 10 20 30 40 50 60 70 80		
0			**CLAYEY SAND (SC)** loose, brown, with calcareous nodules	8			15	43
5				10	117		14	
10			**SANDY LEAN CLAY (CL)** stiff, brown, with calcareous nodules	12				61
15			**SILTY SAND (SM)** medium dense to dense, brown	27				
20			- saturated below a depth of about 19-1/2 ft	31				
25				34				
30				44				
			Boring terminated at a depth of about 30 ft.					
35			NOTES: During the drilling operations, groundwater was encountered at a depth of about 19.5 ft. Upon completion of the drilling operations, groundwater was measured at a depth of about 16.5 ft. **24-HOUR OBSERVATIONS** Groundwater was measured at a depth of about 18 ft.					

DEPTH DRILLED:	30.0 ft	**DEPTH TO WATER:**	18 ft	**PROJ. No.:**	AMA13-058-00
DATE DRILLED:	10/8/2013	**DATE MEASURED:**	10/9/13	**FIGURE:**	2

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-2

Hidalgo County Drainage District No. 1 Drainage Improvements
Monte Cristo Lateral Drain
Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT²	PLASTICITY INDEX	% -200
			SURFACE ELEVATION: Ex. Grade ft					
			CLAYEY SAND (SC) loose, brown, with calcareous nodules	8			15	
			SANDY LEAN CLAY (CL) firm to hard, brown, with calcareous nodules	4				52
5					118			
				40			13	
10								
15				37				65
20			**SILTY SAND (SM)** medium dense to very dense, brown, saturated	24				
25				50/ 11"				
30				50/8"				
			Boring terminated at a depth of about 30 ft.					
35			NOTES: During the drilling operations, groundwater was encountered at a depth of about 20 ft. Upon completion of the drilling operations, groundwater was measured at a depth of about 17 ft.					
			24-HOUR GROUNDWATER OBSERVATIONS Grondwater was measured at a depth of about 19 ft.					

SHEAR STRENGTH, TONS/FT²: 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

PLASTIC LIMIT / WATER CONTENT / LIQUID LIMIT: 10 20 30 40 50 60 70 80

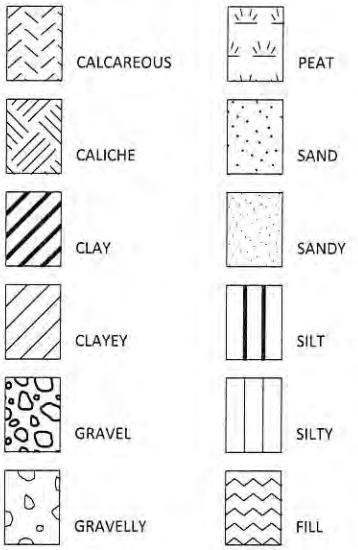
DEPTH DRILLED:	30.0 ft	**DEPTH TO WATER:**	19 ft
DATE DRILLED:	10/8/2013	**DATE MEASURED:**	10/9/13
PROJ. No.:	AMA13-058-00		
FIGURE:	3		

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

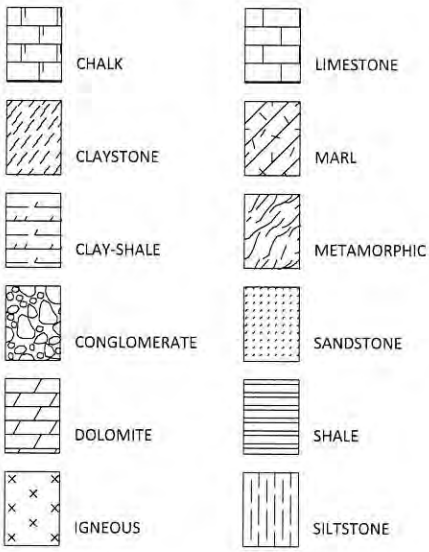
KEY TO TERMS AND SYMBOLS

MATERIAL TYPES

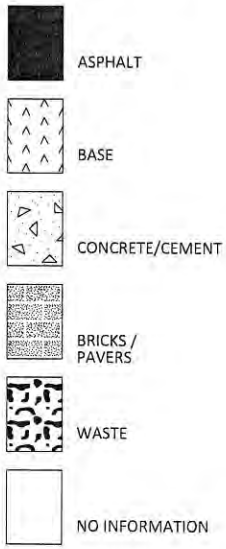
SOIL TERMS



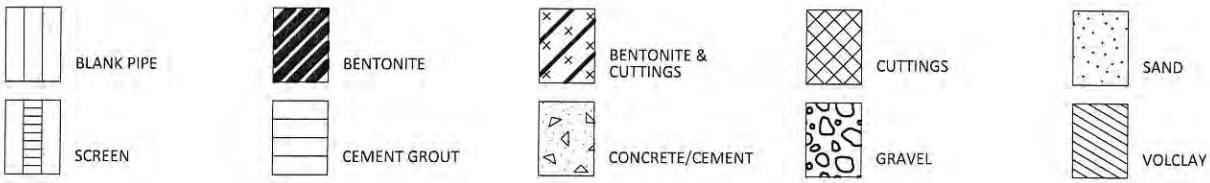
ROCK TERMS



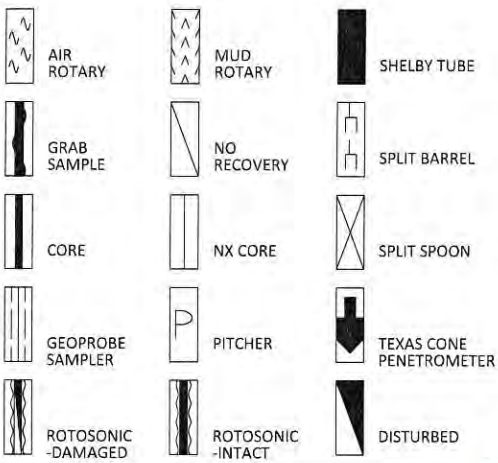
OTHER



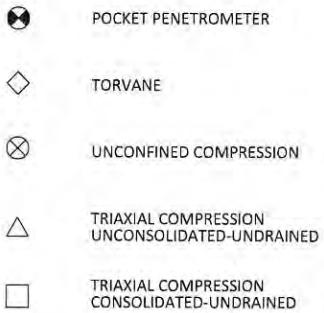
WELL CONSTRUCTION AND PLUGGING MATERIALS



SAMPLE TYPES



STRENGTH TEST TYPES



NOTE: VALUES SYMBOLIZED ON BORING LOGS REPRESENT SHEAR STRENGTHS UNLESS OTHERWISE NOTED

PROJECT NO. AMA13-058-00

KEY TO TERMS AND SYMBOLS (CONT'D)

TERMINOLOGY

Terms used in this report to describe soils with regard to their consistency or conditions are in general accordance with the discussion presented in Article 45 of SOILS MECHANICS IN ENGINEERING PRACTICE, Terzaghi and Peck, John Wiley & Sons, Inc., 1967, using the most reliable information available from the field and laboratory investigations. Terms used for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in American Society for Testing and Materials D2487-06 and D2488-00, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics; 2005.

The depths shown on the boring logs are not exact, and have been estimated to the nearest half-foot. Depth measurements may be presented in a manner that implies greater precision in depth measurement, i.e 6.71 meters. The reader should understand and interpret this information only within the stated half-foot tolerance on depth measurements.

RELATIVE DENSITY

Penetration Resistance Blows per ft	Relative Density
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
> 50	Very Dense

COHESIVE STRENGTH

Resistance Blows per ft	Consistency	Cohesion TSF
0 - 2	Very Soft	0 - 0.125
2 - 4	Soft	0.125 - 0.25
4 - 8	Firm	0.25 - 0.5
8 - 15	Stiff	0.5 - 1.0
15 - 30	Very Stiff	1.0 - 2.0
> 30	Hard	> 2.0

PLASTICITY

Plasticity Index	Degree of Plasticity
0 - 5	None
5 - 10	Low
10 - 20	Moderate
20 - 40	Plastic
> 40	Highly Plastic

ABBREVIATIONS

B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
BTEX = Total BTEX
TPH = Total Petroleum Hydrocarbons
ND = Not Detected
NA = Not Analyzed
NR = Not Recorded/No Recovery
OVA = Organic Vapor Analyzer
ppm = Parts Per Million

Qam, Qas, Qal = Quaternary Alluvium
Qat = Low Terrace Deposits
Qbc = Beaumont Formation
Qt = Fluviatile Terrace Deposits
Qao = Seymour Formation
Qle = Leona Formation
Q-Tu = Uvalde Gravel
Ewi = Wilcox Formation
Emi = Midway Group
Mc = Catahoula Formation
El = Laredo Formation
Kknm = Navarro Group and Marlbrook Marl
Kpg = Pecan Gap Chalk
Kau = Austin Chalk

Kef = Eagle Ford Shale
Kbu = Buda Limestone
Kdr = Del Rio Clay
Kft = Fort Terrett Member
Kgt = Georgetown Formation
Kep = Person Formation
Kek = Kainer Formation
Kes = Escondido Formation
Kew = Walnut Formation
Kgr = Glen Rose Formation
Kgru = Upper Glen Rose Formation
Kgrl = Lower Glen Rose Formation
Kh = Hensell Sand

KEY TO TERMS AND SYMBOLS (CONT'D)

TERMINOLOGY

SOIL STRUCTURE

Slickensided	Having planes of weakness that appear slick and glossy.
Fissured	Containing shrinkage or relief cracks, often filled with fine sand or silt; usually more or less vertical.
Pocket	Inclusion of material of different texture that is smaller than the diameter of the sample.
Parting	Inclusion less than 1/8 inch thick extending through the sample.
Seam	Inclusion 1/8 inch to 3 inches thick extending through the sample.
Layer	Inclusion greater than 3 inches thick extending through the sample.
Laminated	Soil sample composed of alternating partings or seams of different soil type.
Interlayered	Soil sample composed of alternating layers of different soil type.
Intermixed	Soil sample composed of pockets of different soil type and layered or laminated structure is not evident.
Calcareous	Having appreciable quantities of carbonate.
Carbonate	Having more than 50% carbonate content.

SAMPLING METHODS

RELATIVELY UNDISTURBED SAMPLING

Cohesive soil samples are to be collected using three-inch thin-walled tubes in general accordance with the Standard Practice for Thin-Walled Tube Sampling of Soils (ASTM D1587) and granular soil samples are to be collected using two-inch split-barrel samplers in general accordance with the Standard Method for Penetration Test and Split-Barrel Sampling of Soils (ASTM D1586). Cohesive soil samples may be extruded on-site when appropriate handling and storage techniques maintain sample integrity and moisture content.

STANDARD PENETRATION TEST (SPT)

A 2-in.-OD, 1-3/8-in.-ID split spoon sampler is driven 1.5 ft into undisturbed soil with a 140-pound hammer free falling 30 in. After the sampler is seated 6 in. into undisturbed soil, the number of blows required to drive the sampler the last 12 in. is the Standard Penetration Resistance or "N" value, which is recorded as blows per foot as described below.

SPLIT-BARREL SAMPLER DRIVING RECORD

Blows Per Foot	Description
25	25 blows drove sampler 12 inches, after initial 6 inches of seating.
50/7"	50 blows drove sampler 7 inches, after initial 6 inches of seating.
Ref/3"	50 blows drove sampler 3 inches during initial 6-inch seating interval.

NOTE: To avoid damage to sampling tools, driving is limited to 50 blows during or after seating interval.

RESULTS OF SOIL SAMPLE ANALYSES

PROJECT NAME: Hidalgo County Drainage District No. 1 Drainage Improvements
Monte Cristo Lateral Drain
Hidalgo County, Texas

FILE NAME: AMA13-058-00.GPJ 11/5/2013

Boring No.	Sample Depth (ft)	Blows per ft	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	USCS	Dry Unit Weight (pcf)	% -200 Sieve	Shear Strength (tsf)	Strength Test
B-1	0.0 to 1.5	8	13	28	13	15	SC				
	2.0 to 4.0		7						43		
	5.0 to 6.5	10	14	28	14	14	SC				
	7.0 to 9.0		13					117		2.02	UC
	10.0 to 11.5	12	16						61		
	15.0 to 16.5	27	16								
	20.0 to 21.5	31	25								
	25.0 to 26.5	34	18								
	28.5 to 30.0	44	17								
B-2	0.0 to 1.5	8	13	29	14	15	SC				
	2.5 to 4.0	4	9						52		
	5.0 to 7.0		11					118		2.70	UC
	7.5 to 9.0	40	16	31	18	13	CL				
	10.0 to 12.0		15							2.25	PP
	15.0 to 16.5	37	14						65		
	20.0 to 21.5	24	27								
	25.0 to 26.5	50/ 11"	19								
	28.5 to 30.0	50/8"	22								

PP = Pocket Penetrometer TV = Torvane UC = Unconfined Compression FV = Field Vane UU = Unconsolidated Undrained Triaxial

CU = Consolidated Undrained Triaxial CNBD = Cound Not Be Determined

PROJECT NO. AMA13-058-00

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

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IIGER06045.0M

CONSULTANTS • ENVIRONMENTAL • FACILITIES • INFRASTRUCTURE

San Antonio, TX

Austin, TX	Dallas, TX	McAllen, TX
Brownsville, TX	El Paso, TX	Mexico
Corpus Christi, TX	Houston, TX	Salt Lake City, UT

RABAKISTNER

HCDD#1
HIDALGO COUNTY
DRAINAGE DISTRICT
902 N. DOOLITTLE
EDINBURG, TEXAS 78542

623103

PURCHASE ORDER

Date	Number
7/22/2013	623103

Vendor Address:
TEDSI INFRASTRUCTURE GROUP
1201 E. EXPRESSWAY 83
MISSION, TX 78572

Attention:

Shipping Address: 902 N. Doolittle
Edinburg, TX 78542

PCT #1 2012 BOND REFERENDUM IMP. PROJECTS. W/A #4-A FOR DESIGN FIELD TOPO SURVEY, GEO-BORING REP, H&H ANALYSIS, PS&E FOR MONTE CRISTO DRAIN CONTROL SERVICES. APPROVED BY B.O.D ON 7-17-13

Shipping Method:

VENDOR NOTES
1. DO NOT ADD TO, ALTER THIS PURCHASE ORDER. THIS ORDER IS NOT RENEWABLE.
2. TAX EXEMPTION: THIS PURCHASE ORDER MAY BE ACCEPTED IN LIEU OF EXEMPTION CERTIFICATE.
3. THIS ORDER IS ALSO PLACED F.O.B. DESTINATION. VENDOR MUST REPAY ALL SHIPPING COSTS.
4. INVOICE EACH PURCHASE ORDER SINGLY. ORIGINAL INVOICES ARE REQUIRED. CUSTOMER COPY MAY BE ACCEPTED.
5. PAYMENT WILL BE MADE ONLY FOR BONA FIDE AND FULLY COMPLETED ORDERS, UNLESS OTHERWISE ATTACHED.

Item Code	Description	GL Code	Dist... Code	Quantity	Unit Price	Total	Date Received
	DESIGN FIELD-CONSTRUCTION ...	43340	370	1.00	21,536.62	21,536.62	
	TOPO	43340	370	1.00	5,451.75	5,451.75	
	GOETECHNICAL REPORT	43340	370	1.00	5,987.03	5,987.03	

Purchase Order Total: $32,975.40

Vendor Name TEDSI INFRASTRUCTURE GROUP 7/22/2013 623103

Item Code	Item Description	Unit of Measure	Quantity	Unit Price	Total
	DESIGN FIELD-CONSTRUCTION COST		1.00	21,536.62	21,536.62
	TOPO		1.00	5,451.75	5,451.75
	GOETECHNICAL REPORT		1.00	5,987.03	5,987.03

Purchase Order Total: $32,975.40

Authorized By: Lau Bruno

P.O. # 623103

HCDD#1

Hidalgo County Drainage District #1
902 N. Doolittle Rd.
Edinburg, TX 78542
Office#: (956) 292-7080
Fax#: (956) 292-7089

REQUISITION FORM

DATE: 07.22.2013 REQUESTED BY: G. Garza

UNIT#: Pct. 1 2012 Bond Referendum Imp. Projects / PREPARED BY: J. Salazar

VENDOR'S NAME: Texas Johns Group

PHONE: (____)_____ PERSON CONTACTED: M. Luphe

QTY.	PARTS #	DESCRIPTION	UNIT PRICE	TOTAL
1		Work Auth No. 4A for Design	$32,975.40	$32,975.40
		field Topo Survey, Geotech		
		H&H Analysis, PS&E		
		Mowe Creek Drain Control		
		Structures		

Approval By: Dylan / OM

Date: 7/22/13

TOTAL: $32,975.40

13-133-433-370-010-007-43340

If over $1,000.00 Please Attach 3 Quotes

PARTS ORDERED BY: _____ DATE: _____

PARTS RECEIVED BY: _____ DATE: _____ ENC. SESSION: 7237

COMMENTS: Approved by B.D.D. on 07.17.2013

WARRANTY IF APPLICABLE: _____

EXHIBIT "E"

PROFESSIONAL ENGINEERING SERVICES CONTRACT #

WORK AUTHORIZATION FORM

WORK AUTHORIZATION NO. 4A

THIS WORK AUTHORIZATION is made pursuant to the terms and conditions of Section I.A. of the Agreement made by and between HIDALGO COUNTY DRAINAGE DISTRICT NO. 1 hereinafter called the "Owner", and TEDSI Infrastructure Group, Inc., professional Engineers hereinafter called "Engineer".

PART 1. SCOPE OF WORK

The purpose of this Work Authorization is for the Engineer to provide Design Field Topo Survey, Geotechnical Boring Report, Hydrologic & Hydraulics analysis, PS&E, and Construction Phase Services for the Monte Cristo Drain Control Structure listed on the Master Drainage System 2012 Bond Projects as Project #15 and indicated below:

The scope of services to be provided by the Owner is identified in EXHIBIT "A"- Scope of Services to be Provided by the Owner attached hereto.

The scope of services to be provided by the Engineer is identified in EXHIBIT "B" – Scope of Services to be Provided by the Engineer attached hereto.

PART 2. ESTIMATED COST

The estimated lump sum cost for services under this Work Authorization #4A is $ 32,975.40. This amount is based upon the costs outlined in the Estimated Cost Proposal attached hereto as EXHIBIT "D".

PART 3. PAYMENT

Compensation and payment to the Engineer for the services established under this Work Authorization shall be made in accordance with Article/Part/Section 5, 6 and 7 of the Agreement.

PART 4. FUNDING

This Work Authorization No. 4A shall be funded through funding source:
Account No. 13-133-433-370-010-007-43340
Requisition Number 623103

PART 5. PERIOD OF SERVICE
This Work Authorization shall become effective on the date of final acceptance of the parties hereto, and terminate upon completion of scopes of the work authorization.

PART 6. RESPONSIBILITIES AND OBLIGATIONS
This Authorization does not waive the parties' responsibilities and obligations provided under the Agreement.

PART 7. ACKNOWLEDGEMENT AND CONFIRMATION
Acknowledgement and confirmation by TEDSI Infrastructure Group, Inc. as to content and detail of this Work Authorization No. 4A.

BY: _____
Jesse Salinas, President/CEO

PART 8. ACCEPTANCE AND APPROVAL
This Work Authorization is hereby accepted, approved by the Hidalgo County Drainage District No. 1 and TEDSI Infrastructure Group, Inc. as indicated below and effective as of 17th **day of July , 2013.**

THE ENGINEER:

TEDSI Infrastructure Group, Inc

_____
By: Jesse Salinas, President/CEO

APPROVED AS TO FORM:
ATLAS, HALL & RODRIGUEZ, LLP

By: _____

THE OWNER:

Hidalgo County Drainage District No. 1

_____
By: Ramon Garcia, Chairman

APPROVED BY HIDALGO
COUNTY DRAINAGE DISTRICT
NO. 1 BOARD OF DIRECTORS
ON: 7/17/13

EXHIBIT "A"

Services to be provided by the Owner

The following provides an outline of the services to be provided by the **OWNER** in the development of the **"Project"**.

The **OWNER** will provide to the **ENGINEER** the following:

(1) Authorization to the **ENGINEER** to begin work in accordance with Section 3 of this Agreement.

(2) Payment for work performed by the **ENGINEER**, and accepted by the **OWNER** in accordance with Section 6 of the Agreement.

(3) Assistance to the **ENGINEER**, as necessary, to obtain the required data and information from other local, regional, State and Federal agencies that the **ENGINEER** cannot easily obtain.

(4) Provide any available relevant data the **OWNER** may have on file concerning the **"Project"**.

(5) Provide timely review and decisions in response to the **ENGINEER**'S request for information and/or required submittals and deliverables.

(6) Attend and participate in progress meetings as required and as coordinated and conducted by the **ENGINEER**.

(7) Attend the Preliminary Concept Conference coordinated and conducted by the **ENGINEER** and more particularly identified in Attachment "B" of the Agreement.

(8) Review and approve the **"Project"** design criteria.

EXHIBIT "B"
Services to be Provided by the Engineer

INDEX

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(5) Management/Coordination of Engineering Activities 4
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EXHIBIT "B"
Services to be Provided by the Engineer

CLASSIFICATION OF SERVICES. In accordance with Article 2.2 of this Agreement, the services to be provided by the **Engineer** shall be classified as either ***Basic Services*** or ***Special Services.*** The expanded descriptions of the services identified later in this exhibit and to be provided by the **Engineer** are classified as follows:

Management:

I. ENGINEERING MANAGEMENT (*EM*)

(A) Preliminary Project Planning and Development

(1) Project Development Schedule	***Basic***
(2) Construction Estimate	***Basic***
(3) Quality Control / Quality Assurance Program	***Basic***
(4) Subcontract Administration	***Basic***
(5) Management / Coordination of Engineering Activities	***Basic***
(6) Implementation of QC/QA Program	***Basic***

(B) Preliminary Engineering

(1) Preliminary Concept Conference	***Basic***
(2) Management / Coordination of Engineering Activities	***Basic***
(3) Implementation of QC/QA Program	***Basic***
(4) Preparation of ***"Preliminary Engineering Report"***	***Basic***
(5) Coordination with all reviewing agencies (FEMA, USACE, etc.)	***Basic***

(C) Final Design

(1) Design Concept Conference	***Basic***
(2) Management / Coordination of Engineering Activities	***Basic***
(3) Implementation of QC/QA Program	***Basic***

(D) Construction Management

(1) Construction Bidding	***Basic***
(2) Owner's Representative	***Basic***
(3) Defects and Deficiencies	***Basic***
(4) Monthly Construction Progress Reports	***Basic***
(5) Recommendations for Payment to the Construction Contractor	***Basic***
(6) Project Site Management	***Special***
(7) Implementation of QC/QA Program	***Basic***
(8) Change Orders	***Special***
(9) Final Acceptance, Shop Drawing Review	***Basic***

II. PRELIMINARY ENGINEERING, FINAL DESIGN & CONSTRUCTION

(A) Preliminary Engineering:

(1) Data Collection	***Basic***
(2) Final Report – ***"Preliminary Engineering Report"***	***Basic***

(B) Final Design:

(1) Design Field Surveying	***Special***
(2) Geotechnical Investigations and Reports	***Special***
(3) Channel / Drainage Design	***Basic***

EXHIBIT "B"
Services to be Provided by the Engineer

(4) Plans, Specifications & Estimates	*Basic*
(C) Construction:	
(1) Construction Bidding Documents	*Basic*
(2) Project Site Representation:	*Special*
a. Engineering Support Data for Defects & Deficiencies	*Special*
b. Weekly Construction Reports	*Special*
c. Measurement / Calculations for Contractor Payment	*Special*
d. Project Engineer / Resident Engineer Services	*Special*
(3) Miscellaneous Technical Activities:	
a. Construction Field Surveying	*Special*
b. Shop Drawing Review	*Basic*
c. Control of Materials & Equipment	*Special*
d. Change Orders	*Basic*
(4) Final Acceptance:	
a. As-Built Drawings	*Basic*

EXPANDED DESCRIPTIONS OF SERVICES. The expanded descriptions of the services to be provided by the Engineer are described on the following pages.

EXHIBIT "B"
Services to be Provided by the Engineer

I. ENGINEERING MANAGEMENT (*EM*)

The following outline provides a summary for the ***basic*** and ***special services*** to be provided by the **Engineer** under services of this Agreement. The contractual services will be outlined in each Work Authorization as outlined in Article 7.

For these services, the **Engineer** shall manage the **Project Team,** consisting of various sub-providers, in the development of the **Project.** The services will include the following:

(A) **Preliminary Project Planning and Development.** In general, this will include the ***management*** of the preliminary planning process and advance project development (APD) that is required for the **Project.** (A summary of specific requirements for ***engineering*** activities are outlined later in this exhibit.) The **Engineer** will identify, coordinate, and implement the ***management*** requirements for preliminary planning and advance **Project** development for the **Project.** Specific work activities to be provided by the **Engineer** will include:

(1) **Project Development Schedule.** The **Engineer** will prepare a **Project Development Schedule.** This schedule will be developed from the notice to proceed with work through final record drawings. The schedule will be monitored, by the **Engineer,** throughout **Project** development. It will be provided, as well as any updates, to the **Owner** and each **Project Team** member as a part of the **Work Plan** identified in (1). The schedule will identify all major milestones and **Project** deliverables. The **Engineer** will inform the **Owner** (in reasonable advance of the delay) should the **Engineer** encounter delays that would prevent the performance of all work in accordance with the established schedule.

(2) **Construction Estimate.** The **Engineer** shall prepare a preliminary estimate for the construction of the **Project**. The preliminary construction estimate shall be monitored, verified and updated throughout the course of **Project** development.

(3) **Quality Control / Quality Assurance (QC/QA) Program.** The **Engineer** shall develop a quality control and quality assurance program for the **Project** to ensure the **Project Team** is producing quality work for the **Project**.

(4) **Subcontract Administration.** The **Engineer** shall initiate, execute and monitor all subcontracts for the duration of the **Project**. The **Engineer** shall advise and/or provide recommendations to the **Owner**, as the **Project** progresses, should additional sub-providers be required. All subcontracting and assignment will be in accordance with Article 14.

(B) **Preliminary Engineering.** The **Engineer** will ultimately deliver the final recommendations for the design of the project in the ***"Preliminary Engineering Report"***. (Specific requirements for ***engineering*** activities are outlined later in this exhibit under II - Preliminary Engineering, Design and Construction.) The **Engineer** shall ***manage*** and coordinate the activities of the **Project Team** in the collection of geographical information and ***engineering*** data, the selection of computer software, and the distribution of **Project** information and status to the **Owner** and **Project Team**

EXHIBIT "B"
Services to be Provided by the Engineer

throughout the development of the *"Preliminary Engineering Report"*. Specific *management* tasks to be provided by the **Engineer** will include:

(1) **Preliminary Concept Conference.** The **Engineer** will coordinate and conduct a preliminary concept conference (PCC) with the **Owner**, and any other stakeholders approved by the **Owner**. At the PCC, the **Engineer** will outline the issues and aspects involved in the development of the ***"Preliminary Engineering Report"***, identify existing conditions and design requirements, and present the approach to the development of the report for approval by the **Owner**.

(2) **Management/Coordination of Engineering Activities.** The **Engineer** shall ***manage*** and coordinate the **Project Team** in the preparation of specific ***engineering*** work activities, tasks, special services for the final development of the ***"Preliminary Engineering Report"***, including Field Surveying, Data Collection, the development of a Geographical Information System, Hydrologic/Hydraulic Analysis, Flood Plain Mapping, Alternate Solutions, and Final Recommendations (more particularly defined with the ***engineering*** activities identified in this exhibit under II - Preliminary Engineering, Design and Construction (**Preliminary Engineering**)).

(3) **Implement QC/QA Program.** The **Engineer** will monitor and perform the QC/QA program developed to ensure the quality of the ***"Preliminary Engineering Report"***, and its compliance with standards of sound ***engineering*** principles and the agreed-upon design criteria established at the PCC.

(4) **Coordination with various agencies.** The development of the ***"Preliminary Engineering Report"*** may require documentation and/or coordination with various agencies. The **Engineer** will act as a liaison for the **Owner**, and will attend any meetings, and develop / prepare any required correspondence, documentation, and/or applications to satisfy the applicable Federal, State, and local regulations.

(C) Final Design. After the **Owner** has approved the **Engineer**'s final recommendations as shown in the ***"Preliminary Engineering Report"*** and the recommendations meet all Federal, State, and County permitting requirements, the **Engineer**, will coordinate the activities of the **Project Team** during the final design of the **Project** by developing and preparing all policies and procedures, managing the sub-providers activities and performance, and performing quality control and quality assurance for all design documents associated with the **Project**. One of the primary deliverables for the **Engineer** to provide the **Owner** is a complete and approved set of plans, specifications, and estimate (PS&E) for each phase of construction of the **Project**. Specific ***management*** work activities to be provided by the **Engineer** will include:

(1) **Design Concept Conference (DCC).** The **Engineer** shall coordinate and conduct a design concept conference with the **Owner** and **Project Team**.

(2) **Management/Coordination of Engineering Activities.** The **Engineer** shall ***manage*** and coordinate the **Project Team** in the development of the documents for final design, including:

EXHIBIT "B"
Services to be Provided by the Engineer

Right of Way Data, Design Field Surveying, Geotechnical Investigations, Permitting, Channel/Drainage Design, Roadway Design, Bridge Design, PS&E, and other miscellaneous design and plan preparation items (more particularly defined with the engineering activities identified in this exhibit under II – Preliminary Engineering, Design and Construction (**Final Design**)).

(3) **Implement QC/QA Program**. The **Engineer** shall monitor and perform the QC/QA program developed to ensure the quality of the documents associated with Right of Way Data (Mapping), Design Field Surveying, Geotechnical Investigations, Permitting, Channel/Drainage Design, Roadway Design, Bridge Design, PS&E, and other miscellaneous design and plan preparation items (more particularly defined with the ***engineering*** activities identified in this exhibit under II – Preliminary Engineering, Design and Construction (**Final Design Engineering**)). These designs shall in all respects combine the application of sound ***engineering*** principles with a high degree of economy and shall be submitted to the applicable City, County, State, and/or Federal agencies for approval.

(D) Construction Management. The **Engineer** shall provide construction ***management*** services for each authorized construction contract of the **Project.** The **Engineer** shall also assist the **Owner** in the advertisement for construction bids, the opening and tabulation of the bids, provide a recommendation as to the proper action on all bid proposals received, and assist in the preparation of formal contract documents for the award of contracts. Specific ***management*** work activities to be provided by the **Engineer** will include:

(1) **Construction Bidding Documents.** The **Engineer** shall perform the following in preparation of the construction bidding documents:

(a) Upon completion of QC/QA, the **Engineer** shall furnish to the **Owner** all necessary copies of approved plans, specifications, **Engineer's** estimate, notices to bidders, and proposals for each authorized construction contract.

(b) The **Engineer** shall assist the **Owner** in advertising for each authorized construction contract for the **Project.**

(c) The **Engineer** shall assist the **Owner** in the opening and tabulation of bids for each authorized construction for the **Project,** and recommend to the **Owner** as to the proper action on all bid proposals received.

(d) The **Engineer** shall assist the **Owner** in the preparation of formal contract documents for the award of construction contracts.

(2) **Owner's Representative.** In general, the **Engineer** shall provide the ***management*** activities required for consultation and advisement to the **Owner** during construction, and act as the **Owner's** representative as provided in the General Conditions of the Construction Contract. The extent and limitations of the duties, responsibilities and the authority of the **Engineer** as assigned in the General Conditions of the Contract shall not be modified, except as the

EXHIBIT "B"
Services to be Provided by the Engineer

Engineer may otherwise agree in writing.

(3) **Defects and Deficiencies.** In providing the ***management and administration*** of the authorized construction contract, the **Engineer** shall use the **Engineer**'s best efforts to protect the **Owner** against defects and deficiencies in the work of the construction contractor, hereinafter called the **"Contractor"**. The **Engineer** does not guarantee the performance of the **Contractor;** however, the **Engineer** will promptly notify the **Owner** of any such defect or deficiency, and take all steps possible to require the **Contractor** to correct the defect or deficiency.

(4) **Progress Reports.** The **Engineer** will obtain the daily and weekly reports provided from the ***engineering*** activities identified under II – Preliminary Engineering, Design, and Construction (**Construction**) in this exhibit and prepare a monthly progress report, which outlines the construction progress in a form and manner satisfactory to the Owner.

(5) **Contractor Payment.** The **Engineer** shall obtain the measurements and calculated quantities prepared under the ***engineering*** activities identified under II – Preliminary Engineering, Design, and Construction (**Construction**) in this exhibit, and review and approve the monthly and final estimates for payments to the **Contractor** for those items of work accepted and conforming to the construction contract specifications. The **Engineer** will furnish to the **Owner** any necessary certifications as to payments to the **Contractor** and suppliers. *Note: The **Engineer** is not responsible for actual payments to the **Contractor.***

(6) **Project Site Management.** The **Engineer** will coordinate and monitor the **Project** site representation of the authorized construction contract by providing the following special services, if authorized by **Owner**:

Project Manager. The **Engineer** will provide visits by the ***Project Manager*** or a competent representative of the **Engineer** to the site of construction at least twice a month for the purpose of monitoring the **Contractor**'s progress and conformance to the construction contract plans and specifications. In the capacity of site inspection, the **Engineer** will issue instructions from the **Owner** to the **Contractor** and the ***Resident Engineering Representative***, issuing necessary interpretations and clarifications of construction contract documents, and make recommendations to the **Owner** as to the acceptability of the **Contractor**'s progress and work.

(7) **Implement QC/QA Program.** The **Engineer** will monitor and perform the QC/QA program developed to ensure the quality of the ***engineering*** services and documents associated with Field Surveying, Shop Drawings, Control of Materials & Equipment, Change Orders, Performance Testing, and As-Built Drawings, more particularly identified under II – Preliminary Engineering, Design, and Construction (**Construction**) in this exhibit. These services shall in all respects combine the application of sound ***engineering*** principles with a high degree of economy and shall be submitted to the applicable City, County, State, Federal agencies for approval.

(8) **Change Orders.** When applicable, the **Engineer** will review and provide recommendations for all change orders developed under II – Preliminary Engineering, Design, and Construction

EXHIBIT "B"
Services to be Provided by the Engineer

(**Construction**) in this exhibit for purpose of preparing construction contract change orders. These change orders may be required due to actual field conditions encountered or new requirements directed by the **Owner**. The **Engineer** will prepare, explain, and submit proposed change orders, when applicable.

(9) **Final Acceptance.** Following the completion of construction by the **Contractor**, the **Engineer** will provide the services required for the final inspection and recommendation for **Project** acceptance. This will include coordinating the activities required for the inspection for conformance and recordkeeping of the necessary performance tests required by the construction contract specifications. The **Engineer** will also review and approve all as-built drawings (to show the work as actually constructed), and furnish to the **Owner** one set of prints of the as-built drawings. *Note: Services to be provided by the **Engineer** for Items II and III primarily involve the **engineering** work tasks for the **Project**.*

II. PRELIMINARY ENGINEERING, DESIGN & CONSTRUCTION

The services listed below to be provided by the **Engineer** are a summary of the services; the actual contractual services will be identified in each work authorization as outlined in Article 7 of the Agreement. The services shall be divided into three phases with ***engineering*** work activities, as follows:

(A) Preliminary Engineering. For this phase, the **Engineer** will ultimately deliver the ***"Preliminary Engineering Report"***. Subsequently, the **Engineer** will prepare the ***"Preliminary Engineering Report"*** in sufficient detail to indicate clearly the problems involved and the alternate solutions available to the **Owner**; to include preliminary layouts, sketches, and cost estimates for the **Project**, and to set forth clearly the **Engineer**'s recommendations. Specific ***engineering*** work activities, tasks, and/or special services to be provided by the **Engineer** will include:

(1) <u>Preliminary Field Surveying</u>

(a) The **Engineer** shall establish benchmark identifications, if not already provided by the **Owner**.

(b) The **Engineer** shall obtain data for existing drainage facilities and/or structures, including size, type, and flowline (upstream & downstream) elevations of structures.

(c) The **Engineer** shall obtain profiles of intersecting roadways that cross existing and proposed channels.

(d) The **Engineer** shall obtain flood plain and cross-sections (along with appropriate overbank data), and establish reach lengths, as required.

(2) <u>Data Collection</u>

(a) The **Engineer** shall perform site visits for field reconnaissance.

(3) **Final Report**
The **Engineer** shall prepare five (5) bound, color copies of the final ***"Preliminary Engineering Report"***, including all attachments, exhibits, preliminary layouts, sketches, profiles, and cost estimates.

(B) Final Design. After the **Owner** has approved the **Engineer**'s final recommendations as shown in the ***"Preliminary Engineering Report"*** and the recommendations meet all Federal, State, and County regulations and requirements (including permitting), the **Engineer** will perform all required ***engineering*** activities to provide the **Owner** with a complete and approved set of plans, specifications, and estimate (PS&E) for each phase of construction of the **Project**. Specific ***engineering*** activities, tasks, and/or special services to be provided by the **Engineer** will include:

(1) **Design Field Surveying (Special Services)**
The **Engineer** shall perform field surveys and provide field layouts and/or information necessary to collect information required in the final design of the **Project**. This may include, but not be limited to, additional channel sections for the determination of final earthwork, roadway cross sections and profiles for intersecting roadways, soil bore staking, and right-of-way staking.

(2) **Geotechnical Investigations (Special Services)**
The **Engineer** shall perform geotechnical investigations and testing for the purpose of foundation studies and design for any pavement, retaining walls, bridges, and/or miscellaneous structures that may be required for final design.

(3) **Channel/Drainage Design**
The **Engineer** shall perform channel / drainage design for the proposed improvements to existing channels and/or facilities, as well as the proposed channels of the **Project**. The design of drainage improvements shall conform to the **Project** design criteria, and when possible, the standard designs required by the **Owner** (City, County, or State) of any associated roadways. These designs shall in all respects combine the application of sound ***engineering*** principles with a high degree of economy, and shall be submitted to the applicable City, County, State, and/or Federal agencies for approval.

(4) **Plans, Specifications & Estimates (PS&E)**
(a) The **Engineer** shall prepare contract drawings, specifications and estimates for construction of the **Project** or portions of the **Project** as authorized by the **Owner**. These documents shall in all respects combine the application of sound ***engineering*** principles with a high degree of economy, and shall be submitted to the applicable City, County, State, and/or Federal agencies for approval.

b) All final plan sheets shall be developed, by the **Engineer**, on 11" x 17" reproducible, 4 mil, double-matte, white, opaque film.

(c) Graphics files shall be developed by the **Engineer** in Microstation design file format, and must plot consistent with the reproducible plots submitted.

(c) **Plan Sheets.** Plan sheets developed by the **Engineer** shall include, but not be limited to, title sheet, typical sections, sequence of construction, traffic control (as applicable), specification data (including schedules for minimum sampling and testing), estimate and quantity, plan-profile, channel details, roadway details (as applicable), bridge and culvert details, hydraulic details, and standards. (Standards may be used from governing entities, but must be signed and dated by the **Project Engineer** of responsible supervision as being applicable to the **Project**.)

(d) **Specifications.** Whenever possible, the **Engineer** shall use the Texas Department of Transportation's 1993 Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges. Other specifications may be developed by the **Engineer**, but must incorporate, to the extent possible, references to standard requirements of AASHTO design and AASHTO testing procedures.

(e) **Estimates.** The **Engineer** shall prepare detailed cost estimates and proposals of authorized construction, which shall include summaries of bid items and quantities based, insofar as practicable, on the unit price system of bidding. The **Engineer** shall not be required to guarantee the accuracy of those estimates.

(C) Construction Phase Services. The **Engineer** shall provide ***engineering*** services for each authorized construction contract of the **Project**. Specific ***engineering*** work activities, tasks, and/or special services to be provided by the **Engineer** will include:

(1) **Construction Bidding**

The **Engineer** shall prepare the documents for all necessary copies of approved plans, specifications, notices to bidders, and proposals.

Note: Services for assistance in advertising for each authorized construction contract for the **Project**, opening and tabulation of bids, recommendations to the **Owner** as to the proper action on all bid proposals received, and the preparation of formal contract documents for the award of each construction contract will be performed by the **Engineer**.

(2) **Project Site Representation**

(a) In general, the **Engineer** shall provide the ***engineering support and data*** required for consultation and advisement to the **Owner**, and to protect the **Owner** against defects and deficiencies in the work of the **Contractor**.

(b) **Daily and Weekly Reports.** The **Engineer** shall provide the ***engineering support and data*** required to monitor the **Contractor**'s progress with weekly reports. This information will be utilized for the development of the ***monthly progress report*** to be provided to the **Owner** as identified under I – Engineering Management in this exhibit.

(c) **Contractor Payment.** The **Engineer** shall take measurements and calculate quantities, in accordance with the construction contract specifications, of those items of work accepted and conforming to the construction contract specifications, for the preparation of the monthly and final estimates for payment to the **Contractor** as identified and performed under I – Engineering Management in this Exhibit. *Note:* The **Engineer** is not responsible for actual payments to the **Contractor**.

(d) The **Engineer** will provide **Project** site representation of the authorized construction contract as follows:

(i) **Project Engineer.** The **Engineer** will provide visits by the ***Project Engineer*** or a competent representative of the **Engineer** to the site of construction at least three times each week for the purpose of monitoring the **Contractor**'s progress and conformance to the construction contract plans and specifications.

(ii) **Resident Engineer.** If authorized by the **Owner**, the **Engineer** will furnish the services of a ***Resident Engineer*** and/or construction representative(s) for continuous on-the-site representation.

(3) **Miscellaneous Technical Activities**

(a) **Construction Field Surveying.** The **Engineer** shall perform all field surveys and field layouts, including construction staking and right-of-way staking.

(b) **Shop Drawings.** The **Engineer** shall review and check all shop or working drawings furnished by the **Contractor**.

(c) **Control of Materials & Equipment.** The **Engineer** shall provide inspection of all materials and equipment furnished/used by the **Contractor** as follows:

(i) Review and record all laboratory, shop and mill tests of materials and equipment for compliance with the construction contract specifications.

(ii) Observe and/or perform **Project** record testing and/or independent assurance testing as outlined in the construction contract specifications.

(d) **Change Orders.** When applicable, the **Engineer** will prepare the ***engineering*** data, including plan sheet drawings, specifications, and estimates, for the preparation of construction contract change orders, which may be required due to actual field conditions encountered or new requirements directed by the **Owner**.

(4) **Final Acceptance**

(b) **As-Built Drawings.** The **Engineer** shall develop as-built drawings to show the work as actually constructed.

EXHIBIT D
WORK AUTHORIZATION NO. 4A
Lump Sum Fee Estimate

Monte Cristo Drain Control Structure

Construction Cost Esimate

Monte Cristo Control Structure	$	287,155.00
TOTAL CONSTRUCTION COST	**$**	**287,155.00**

Basic Services

Construction Cost ($287,155) x 7.5%	Fee	$	21,536.62

Additional Services

Topo	$	5,451.75
Geotechnical Report	$	5,987.03
TOTAL WORK AUTHORIZATION No. 4A	**$**	**32,975.40**

RABA KISTNER CONSULTANTS

Raba Kistner
Consultants, Inc.
800 E. Hackberry
McAllen, TX 78501
www.rkci.com

P 956 :: 682 :: 5332
F 956 :: 682 :: 5487
TBPE Firm F-339

Proposal No. PMA13-018-00 (Revised)
March 14, 2013

Mr. Mark W. Lupher, P.E., R.P.L.S., C.F.M.
Executive Vice President
TEDSI Infrastructure Group
738 Highway 6 South, Suite 430
Houston, Texas 77079

Re: Revised Proposal for Geotechnical Engineering Services
Hidalgo County Drainage District No. 1 – 2012 Bond Fund Project
Drainage Improvements Project - Proposed East Donna Drain Flood Pumps
Hidalgo County, Texas

Dear Mr. Lupher:

On the basis of the documents received by our office from you via electronic-mail attachment on Wednesday, February 27, 2013, our subsequent telephone conversations held on the same date, and our meeting held with Mr. Craig Stong, P.E., with your Mission office on Friday, March 8, 2013, we thank you for selecting **Raba Kistner Consultants, Inc. (RKCI)** to provide Geotechnical Engineering Services to TEDSI Infrastructure Group (CLIENT) for the above-referenced project. Please note that the original of this proposal document was revised in order to incorporate a reduction in the scope and cost of our services and the provision of a detailed cost breakdown, based on the comments provided by Mr. Stong during our meeting held on Friday, March 8, 2013. The broad objectives of our study will be to determine subsurface conditions within the site, to develop information to be used by others for the foundation design of the proposed flood pump structures to be installed at an existing levee at the East Donna Drain, and to conduct geotechnical analyses pertaining to the stability of the subject levee segment of the East Donna Drain in general accordance with the U.S. Army Corps of Engineers (USACE) document EM 1110-2-1913 *Design and Construction of Levees*, the manual utilized as a standard in designing and evaluating the new construction and modification of Federal levees. Described in this letter are:

- our understanding of pertinent project characteristics;
- our proposed scope for field and laboratory study;
- our proposed scope for engineering evaluation and reporting;
- our tentative project schedule; and
- our project lump sum fee.

PROJECT DESCRIPTION

On the basis of the information provided to us by the CLIENT, we understand that the proposed project consists of the design and construction of a 12-inch to 18-inch diameter steel pipe with an associated suction end cup, manifold, check valve and fittings; a gateway structure with a sluice gate; a 10 ft by 10 ft dual concrete box; and their associated channel crossing improvements, to be installed through an existing earthen levee along the East Donna Drain, in order to pump water downstream in a flood event. The project site is located about 1,400 ft south of the existing Weslaco Wastewater Treatment Plant, at the intersection of the East Donna Drain and an earthen floodway levee in Hidalgo County, Texas.

The proposed channel crossing improvements will also include the design and construction of 6-inch thick, concrete rip-rap along the surface of the existing levee and an about 12 ft by 12 ft, staging area along the landside of the levee where portable pumps transported in trucks could can be connected to pump water from the landside of the levee to the floodside of the levee when required by rising water level conditions.

FIELD STUDY

On the basis of the information provided to us by the CLIENT, geologic evidence, and our past experience with subsurface conditions in the vicinity of this site, we propose to conduct the following drilling scheme.

Proposed Flood Pump Site	Number of Borings	Depth, ft. *
Top of Existing Levee Structure	1	70
Downstream of Existing Levee Structure (Floodway Area)	1	30
Upstream of Existing Levee Structure (Landside Area)	1	50

* below the existing ground surface elevation, or auger refusal, whichever occurs first.

We understand that the CLIENT will assist **RKCI** in locating the borings in the field with a survey crew. Our scope of services does not include surveying of the boring locations. However, **RKCI** recommends that the final boring locations be surveyed in the field by the CLIENT.

Samples will be taken using conventional split-spoon and/or Shelby tube sampling techniques in general accordance with applicable American Society for Testing and Materials (ASTM) standards. Representative portions of the samples will be sealed, identified, packaged, and transported to our laboratory for subsequent testing and classification.

Please note that prior to our drilling operations, **RKCI** requires that the CLIENT provide permit(s) issued by the International Boundary and Water Commission (IBWC) and any other public entities having jurisdiction in order to allow our drilling crew to access the project located within the existing levee right-of-way and the floodway area.

Upon completion of drilling activities, water level readings, if applicable, will be recorded in the open boreholes. The boreholes will be backfilled with grout in general accordance with IBWC guidelines.

LABORATORY STUDY

Upon completion of the subsurface exploration, a general testing program will be designed to define the classification and shrink/swell characteristics of the subsurface conditions. The testing program is anticipated to include moisture content determinations, Atterberg Limits (plasticity) tests, unconfined compressive strength tests, grain size analyses, consolidation tests, consolidated undrained (CU-bar) triaxial shear strength tests, and flexible wall constant head permeability tests. The laboratory testing will be performed in general accordance with applicable ASTM standards.

ENGINEERING ANALYSIS AND REPORT

The results of the field and laboratory phases of the study will be reviewed by our staff of engineers. The results of our review, together with the supporting field and laboratory data, will be presented in a written, engineering report. Included therein will be recommendations concerning the design and construction of the foundation system for the proposed flood pump structure, and our geotechnical analyses pertaining to the stability of the subject levee segment of the East Donna Drain in general accordance with the USACE document EM 1110-2-1913 *Design and Construction of Levees*. The Geotechnical Engineering Report may also include the following information and recommendations:

- A summary of the field and laboratory sampling and testing program;
- Boring logs and laboratory testing results;
- A review of the general site conditions including a description of the site, the subsurface stratigraphy, groundwater conditions, and the presence and condition of fill materials, if encountered.
- Foundation design considerations and recommendations, including:
  - expansive, soil-related movements using an empirical method for predicting Potential Vertical Rise (PVR) developed by the Texas Department of Transportation (TxDOT);
  - shallow foundation recommendations;
  - available soil-bearing pressures;
  - settlement estimations, where applicable; and
  - groundwater considerations.
- Foundation construction considerations, including:
  - site drainage;
  - site preparation;
  - select fill materials;
  - shallow foundation excavations;
  - potential reuse of on-site materials as select fill materials;

  - excavation considerations; and
  - fill placement compaction requirements.

- Seismic region condition evaluations.
- Stability analyses of the subject levee segment of the East Donna Drain in general accordance with the USACE document EM 1110-2-1913 *Design and Construction of Levees*, including:
  - through seepage and underseepage analyses (if the seepage analysis identifies potential problems, then the analysis will be repeated to include potential/engineering solutions in place in order to identify possible alternatives to control the seepage);
  - slope stability analyses (in accordance with the USACE document EM 1110-2-1913, the design cases to be analyzed include the end of construction, sudden drawdown, and steady seepage from full flood stage (fully developed phreatic surface). Factors of safety will be estimated for each of these cases for the proposed project design affecting the existing earthen levee structure; and
  - settlement analyses (analysis using physical properties of the foundation and embankment materials to assess the potential loos of freeboard of the levee or damage to the proposed structures in the embankment as a result of settlement).

Since site grading plans can result in changes in the foundation subgrade conditions, final site grading plans will be helpful information in the preparation of engineering recommendations. In the absence of final site grading information, we will prepare recommendations based on the existing ground surface elevations.

The final report will be reproduced in three, spirally-bound copies.

TENTATIVE PROJECT SCHEDULE

Based on our present workload and weather permitting, it is anticipated that the field exploration phase of this study can begin within five working days of receiving written authorization to proceed, provided that the site is accessible to our truck-mounted drill rigs and utility clearance has been provided by the CLIENT. The field exploration and laboratory testing phases of the study are expected to take approximately fifteen working days to complete. The report will be submitted within an additional fifteen working days following completion of the laboratory testing. The above schedule does not account for delays due to inclement weather. We will be pleased to provide the design team with verbal design information as the data becomes available.

LUMP SUM COST

The total lump sum cost for the study outlined herein is $20,762.71 (Please refer to the enclosed cost breakdown for detailed information on the estimation of this lump sum cost). Should unusual subsurface conditions be encountered in the field that indicate the desirability of significantly broadening the scope of the study, we will contact you to receive written authorization before proceeding with any additional work. Additional services will be billed on a unit basis in accordance with the negotiated fees established in the executed agreement between both parties.

RKCI has been provided with a site plan illustrating the limits of the subject drainage improvements project. It is our understanding that access to all boring locations for a conventional, truck-mounted drilling rig, underground utility clearance, and the required permits will be provided by the CLIENT prior to our field exploration services.

It should be noted that our study scope (and project cost) does not include plan review or earthwork and foundation excavation observations during the construction of the project. However, plan review and construction observation costs should be included in the project budget.

It should also be noted that our study scope (and project cost) does not include professional time or travel expenses for participation in design team meetings. If these services are required, they will be billed at our standard billing rates for professional time plus expenses.

ACCEPTANCE

We appreciate the opportunity of submitting this proposal and look forward to working with you in the development of this project, which will be carried out accordance with this letter and the following attachments:

Attachment	Description
I	Standard Terms and Conditions

Please return one signed original of this contract to provide written authorization for our firm to commence work on the services outlined herein. Our invoices are due and payable upon receipt at P.O. Box 971037, Dallas, Dallas County, Texas 75397-1037.

RKCI considers the data and information contained in this proposal to be proprietary. This statement of qualifications and any information contained herein shall not be disclosed and shall not be duplicated or used in whole or in part for any purpose other than to evaluate this proposal.

Very truly yours,

RABA KISTNER CONSULTANTS, INC.

Katrin M. Leonard, P.E.
Associate

Isidoro Arjona, P.E., PMP
Vice President

Copies submitted: Above (2)

LHG/KML/IA

Attachment

Accepted By: _____
(Signature)

_____
(Typed or Printed Name)

_____
(Title)

Date: _____

RABA KISTNER

STANDARD TERMS AND CONDITIONS

1. **SERVICES.** Raba Kistner, Inc., by and through one of its subsidiaries (Raba Kistner Consultants, Inc., Raba Kistner Environmental, Inc., Raba Kistner Facilities, Inc. or Raba Kistner Infrastructure, Inc.) (the relevant subsidiary, being engaged to provide the services to CLIENT in connection with the delivery of this instrument, is referred to as "RK" herein) is being engaged by the CLIENT to render professional services involving only RK's tests and observation reports, advice, judgment and opinion. RK shall apply professional judgment in determining the extent to which RK complies with any given standard identified in RK's instruments of professional services.

2. **INFORMATION PROVIDED BY CLIENT.** CLIENT may provide or direct RK to utilize or rely upon certain information in the performance of RK's services. RK will not conduct an independent evaluation of the accuracy or completeness of such information and shall not be responsible for any errors or omissions in such information. The CLIENT shall be responsible for providing the location of all underground utilities and other structures in the vicinity of our borings or excavations. RK will not accept responsibility and will not be liable for affecting or damaging any underground utility, underground storage tank, or other subsurface condition not previously identified and located, or improperly located, by the CLIENT, a utility, or a utility locating agency.

3. **SITE ACCESS AND SITE SAFETY.** CLIENT shall provide right-of-entry to the buildings and sites which are the subjects of RK's services. CLIENT represents that it possesses authority for such right-of-entry and that the building/site operator(s) possess the necessary permits and licenses for current activities at the site. RK shall be responsible for supervision and site safety measures of its own employees and subconsultants and shall not be responsible for the supervision or health and safety precautions of any other parties, including CLIENT, CLIENT'S contractors, subcontractors, or other parties present at the site.

4. **SUBSURFACE EXPLORATIONS.** Subsurface conditions throughout the site may vary from those depicted on logs of discrete borings, test pits, or other exploratory services. CLIENT understands RK's layout of boring and test locations is approximate and that RK may deviate a reasonable distance from those locations. RK will take reasonable precautions to reduce damage to the site when performing services; however, CLIENT accepts that invasive services such as drilling or sampling may damage or alter the site. Site restoration is not provided unless specifically included in the scope of services.

5. **CHANGED CONDITIONS.** If, during the term of this Agreement, circumstances or conditions that were not originally contemplated by or known to RK are uncovered or revealed, to the extent that they affect the scope of services, compensation, schedule, allocation of risks or other material terms of this Agreement, RK may call for renegotiation of appropriate portions of this Agreement. RK shall notify the CLIENT of the changed conditions necessitating renegotiation, and RK and the CLIENT shall promptly and in good faith enter into renegotiation of this Agreement to address the changed conditions. If changes cannot be agreed to with respect to changed conditions, the parties shall utilize the Dispute Resolution/Litigation procedures in this Agreement.

6. **TESTING AND OBSERVATIONS.** CLIENT understands that testing and observation are discrete sampling procedures, and that such procedures indicate conditions only at the depths, locations, and times the procedures were performed. RK will provide test results and opinions based on tests and field observations only for the work tested. CLIENT understands that testing and observation are not continuous or exhaustive, and are conducted to reduce – not eliminate – project risk. CLIENT agrees to the level or amount of testing performed and the associated risk. CLIENT is responsible (even if delegated to contractor) for notifying and scheduling RK so RK can perform these services. RK shall not be responsible for the quality and completeness of contractor's work or their adherence to the project documents, and RK's performance of testing and observation services shall not relieve contractor in any way from its responsibility for defects discovered in its work, or create a warranty or guarantee. RK will not supervise or direct the work performed by contractor or its subcontractors and is not responsible for their means and methods.

7. **ESTIMATE OF FEES FOR CONSTRUCTION AND MATERIALS TESTING SERVICES.** If included as part of RK's proposal, RK will, to the best of its ability, perform the scope of services related to Construction and Materials Testing Services within the proposed fee estimate provided by RK. RK's proposal fees are based upon an estimate of the services required to meet the requirements of the project as listed in the specification and following generally accepted engineering practices. The CLIENT recognizes that unforeseen circumstances along with changes in scope and project/contractor's schedules can influence the successful completion of the scope of services within the estimated proposed fees. Because the contractor has sole control over the project and determines the means and methods used to build/construct the project, RK's service fees are estimates and not lump sum or guaranteed maximum fees. The CLIENT is fully responsible for payment of all services provided, including retests of contractor's failed areas.

8. **RIGHT TO RETAIN SUB-CONSULTANTS.** CLIENT acknowledges that while performing the services and work products, situations or circumstances may occur where RK determines that in its judgment the services of sub-consultants may be necessary.

9. **TOXIC AND HAZARDOUS MATERIALS.** CLIENT shall provide RK with all information within CLIENT'S possession or knowledge as to the potential or presence of toxic or hazardous materials or pollutants at the site. CLIENT agrees that RK neither created nor contributed to the creation or existence of any toxic or hazardous materials or pollutants. In no event shall RK be required to sign a hazardous waste manifest or take title to any toxic or hazardous materials or pollutants. If unanticipated toxic or hazardous materials or pollutants are encountered while performing RK's services, RK reserves the right to stop field operations and notify the CLIENT and CLIENT assumes responsibility to notify appropriate regulatory agencies. RK and CLIENT must mutually agree to remobilize.

10. **NO THIRD-PARTY BENEFICIARIES.** The services and any report prepared under this Agreement are for the sole benefit and sole use of CLIENT and are not for the use of any other party or person. Only CLIENT may rely upon the services and any report or work product. Nothing in this Agreement, or any subsequent amendments or modifications, or in any report issued under this Agreement, shall create a contractual relationship with or a cause of action in the favor of any third party against either RK or CLIENT.

11. **LEED PROJECTS.** Unless specifically addressed elsewhere in this agreement, RK has no responsibility or liability, including duty to defend or duty to indemnify, any party (including but not limited to CLIENT, owner, owner's agents, architects, engineers, contractors, construction managers, subcontractors) for the LEED certification process including: developing, producing, or retaining any documentation relating to the calculation of LEED points; and attainment of LEED certification points or LEED ratings.

12. **STANDARD OF CARE.** RK shall perform its professional services in accordance with the standard of care and diligence normally practiced by recognized professional firms in performing services of a similar nature, in the same locality, under similar circumstances. CLIENT expressly acknowledges that RK makes no other warranties or guarantees, expressed or implied, regarding its professional services or its work products.

13. **LIMITATION OF LIABILITY.** To the greatest extent permitted by law, CLIENT'S sole remedy against RK for claims and liabilities in any way arising out of or directly or indirectly related to the error, omission, or other professional negligence of RK's work for CLIENT will not exceed an aggregate limit of $100,000 or the amount of RK's fee, whichever is greater for that portion of RK's work found to be defective, regardless of the legal theory which remedy is sought, whether based on negligence [whether sole or concurrent, active or passive], breach of contract, breach of warranty, strict liability or otherwise.

14. **CONSEQUENTIAL DAMAGES.** Neither CLIENT nor RK will be liable to the other for any special, consequential, incidental or penal losses or damages including but not limited to losses, damages or claims related to the unavailability of property or facilities, shutdowns or service interruptions, loss of use, profits, revenue, or inventory, or for use charges, cost of capital, or claims of the other party and/or its customers.

15. **SUSPENSION OF SERVICES.** If the CLIENT fails to make payments when due or otherwise is in breach of this Agreement, RK may suspend performance of services upon seven (7) calendar days' notice to the CLIENT. RK shall have no liability whatsoever to the CLIENT for any costs or damages as a result of such suspension. Upon payment in full by the CLIENT, RK may resume services under this Agreement, and the time schedule and compensation shall be equitably adjusted to compensate for the period of suspension plus any other reasonable time and expense necessary for RK to resume performance. Payment of invoices shall not be subject to any discounts or set-offs by the CLIENT unless agreed to in writing by RK. Payment to RK for services rendered and expenses incurred will be due and payable regardless of any subsequent suspension or termination of this Agreement by either party.

16. **INDEMNIFICATION. TO THE FULLEST EXTENT PERMITTED BY LAW, RK AGREES TO INDEMNIFY AND HOLD THE CLIENT HARMLESS FROM AND AGAINST LIABILITIES, DAMAGES AND COSTS TO THE EXTENT CAUSED BY RK'S NEGLIGENT PERFORMANCE OF SERVICES UNDER THIS AGREEMENT AND TO THE EXTENT THAT RK IS RESPONSIBLE FOR THE LIABILITIES, DAMAGES AND COSTS ON A COMPARATIVE BASIS OF FAULT AND RESPONSIBILITY BETWEEN RK AND THE CLIENT. NEITHER CLIENT NOR RK IS RESPONSIBLE FOR DAMAGES OR LIABILITIES CAUSED BY THE NEGLIGENCE OF THE OTHER PARTY. IN NO EVENT SHALL THE INDEMNIFICATION OBLIGATION EXTEND BEYOND THE DATE WHEN THE INSTITUTION OF LEGAL OR EQUITABLE PROCEEDINGS FOR PROFESSIONAL NEGLIGENCE WOULD BE BARRED BY AN APPLICABLE STATUTE OF REPOSE OR STATUTE OF LIMITATIONS. THIS INDEMNIFICATION EXPRESSLY EXCLUDES THE DUTY OF RK TO DEFEND THE CLIENT. HOWEVER, THE ABSENCE OF THE DUTY TO DEFEND SHALL NOT PRECLUDE THE CLIENT FROM SEEKING RECOVERY OF ITS REASONABLE ATTORNEYS' FEES AS PART OF ITS DAMAGES. THE CLIENT AGREES TO LOOK SOLELY TO THE CORPORATE ASSETS, INCLUDING BUT NOT LIMITED TO INSURANCE POLICIES, OF RK, WITH RESPECT TO SATISFACTION OF ANY LIABILITIES THAT MAY ARISE OUT OF THE PERFORMANCE OF THIS AGREEMENT. ACCORDINGLY, NO EMPLOYEE, PRINCIPAL, DIRECTOR, OFFICER, PARTNER, OR SHAREHOLDER OF RK SHALL BE SUBJECT TO ANY PERSONAL LIABILITY ARISING OUT OF OR RELATING TO THE PERFORMANCE OF THIS AGREEMENT.**

17. **DISPUTE RESOLUTION/LITIGATION.** All claims, disputes, and other controversy between RK and CLIENT arising out of or in any way related to the services provided by RK shall be submitted to mediation, before and as a condition precedent to other remedies provided by law. If a dispute at law arises related to these services and that dispute requires litigation as provided above, the CLIENT assents to personal jurisdiction in the State of RK's principal place of business; the claim will be brought and tried in judicial jurisdiction of the court of the county where RK's principal place of business is located, and CLIENT waives the right to remove action to any other county or jurisdiction; and the prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' and expert witness fees, and other claim-related expenses. As a condition precedent to mediation of any claim arising out of the services provided under this Agreement, CLIENT shall obtain the written opinion from a registered, independent, and reputable professional engineer that RK has violated the standard of care applicable to RK's performance of services, in a form that meets the requirements of Texas Civil Practice & Remedies Code Chapter 150.

18. **TERMINATION OF CONTRACT.** CLIENT and RK may terminate services at any time upon ten (10) calendar days' written notice. In the event of termination, CLIENT agrees to fully compensate RK for services performed including reimbursable expenses through the termination date, as well as reasonable demobilization expenses. RK will terminate services without waiving any claims or incurring any liability.

19. **STATUTE OF LIMITATIONS.** Any applicable statute of limitations will commence to run and any cause of action shall be deemed to have accrued not later than the earlier of the following: (1) the date on which RK issues its report under this Agreement; or (2) if RK is retained to perform construction observation, the date of substantial completion of the project.

20. **FORCE MAJEURE.** Neither party shall be liable in damages or have the right to terminate this Agreement for any delay or default in performing hereunder if such delay or default is caused by conditions beyond its control ("Force Majeure") including, but not limited to Acts of God, Government restrictions (including the denial or cancellation of any export or other necessary license), wars, insurrections and/or any other cause beyond the reasonable control of the party whose performance is affected. Force Majeure may not be claimed as a cause for delay in payment of money due and payable hereunder.

21. **NO ASSIGNMENT.** Neither RK nor CLIENT shall assign, sublet, or transfer its interest in this Agreement without the express written consent of the other.

22. **SEVERABILITY.** Each provision of this Agreement is intended to be severable. If any terms or provisions of this agreement shall be held to be invalid, illegal, or unenforceable for any reason whatsoever, the validity, legality, and enforceability of the remaining provisions hereof shall remain in full force and effect and shall not in any way be affected or impaired thereby. Moreover, to the maximum extent allowed by law, the Parties hereto stipulate that any offending provisions will be modified or altered, as necessary, so as to give such provision the maximum permissible effect and application intended.

23. **ENTIRE AGREEMENT.** This Agreement, and all of its attachments, constitutes the entire, integrated Agreement between the Parties to it, and this Agreement supersedes all other Agreements, oral or written between the Parties, concerning the subject set forth in this Agreement. This Agreement may not be amended except in writing, with that amendment being signed by both Parties.

ATTACHMENT II - COST BREAKDOWN

PROJECT NAME: DRAINAGE IMPROVEMENTS PROJECT - EAST DONNA DRAIN - FLOOD PUMPS
DATE: March 14, 2013

CLIENT: TEDSI INFRASTRUCTURE GROUP

ATTN: MARK LUPHER, PE, RPLS, CFM

PROPOSAL NO.: PMA13-018-00 (Revised)

Structure	Number	Depth	Soil	Rock	Total
Top of Levee	1	70	70	–	*70*
Toe of Levee	1	50	50	–	*50*
	1	30	30		*30*
					0
					0
					0
Totals	3	150	150	0	*150*

FIELD DRILLING OPERATIONS	QUANTITY		UNIT PRICE	TOTAL
Auger Drilling (soil)	60	ft	$13.85	$831.00
Standard Wet Rotary	90	ft	$18.47	$1,662.30
Geologists (logging)	18	hr	$101.00	$1,818.00
Field Coordination	2	hr	$135.00	$270.00
Mobilization of truck-mounted rig	100	mile	$4.23	$423.00
Field Logger Trip Charge	150	mile	$0.50	$75.00
Standard Penetration Test	20	test	$35.54	$710.80
Shelby Tube	19	test	$35.54	$675.26
Grout Backfill	150	ft	$2.79	$418.50
Logger Truck Charge	2	day	$46.79	$93.58
			Field Drilling Operations Subtotal:	$6,977.44

LABORATORY TESTS	QUANTITY		UNIT PRICE	TOTAL
Unconfined Compression (includes γ_{dry}) - soil	4	ea.	$45.04	$180.16
Consolidation without SG	3	ea.	$579.03	$1,737.09
Moisture Content Determination	39	ea.	$12.81	$499.59
Plasticity Index (Atterberg Limits)	12	ea.	$88.79	$1,065.48
Particle Size Analyses Part II (hydrometer)	3	ea.	$162.65	$487.95
Amount Minus 200 Sieve	6	lbs.	$44.00	$264.00
CU-Bar Tests	2	lbs.	$1,300.00	$2,600.00
Flexible Wall Constant Head Permeability	3	ea.	$457.00	$1,371.00
			Laboratory Testing Subtotal:	$8,205.27

ENGINEERING AND REPORT	QUANTITY		UNIT PRICE	TOTAL
Project Manager (VIII)	4	hrs.	$185.00	$740.00
Sr. Engineer (V)	8	hrs.	$185.00	$1,480.00
Project Engineer (III)	8	hrs.	$165.00	$1,320.00
Engineer in Training (EIT)	12	hrs.	$105.00	$1,260.00
Project Adminstrator	12	hrs.	$65.00	$780.00
			Engineering and Report Writing Subtotal:	$5,580.00
			TOTAL:	$20,762.71

2013-1128-04A/04B
Control Structures



14-02-25

TEDSI INFRASTRUCTURE GROUP
Consulting Engine
1201 East Expressway 83 • Mission, Texas
Tel: (956)
Fax: (9

TEDSI
TBPE F-1940

RE: TEDSI Invoice # 20141803 & 20141804 (2013-1128-04A & 1128-04B)

From : Claudia Garza <CGarza@tedsi.com> Tue, Nov 25, 2014 08:12 AM

Subject : RE: TEDSI Invoice # 20141803 & 20141804 (2013-1128-04A & 1128-04B)

To : Claudette Guerrero <claudette.guerrero@hcdd1.org>

Cc : Mark Lupher <MLupher@tedsi.com>

VC-5289

Good morning Claudette,

We still have not received payment on the invoices mentioned above.

You mentioned payment was issued with Check no. 1941 in the amount of $6,460.99 and Check No. 1942 in the amount of $6,430.99 on 10-28-2014 to our Mission office.

Please stop payment on those checks as previously mentioned below and reissue as soon as possible and send to our corporate office listed below:
Tedsi Infrastructure Group
738 Highway 6 South
Suite 430
Houston, Texas 77079

Thank you,

Claudia Garza
Project Administrator
TEDSI INFRASTRUCTURE GROUP
1201 E. Expressway 83
Mission, Texas 78572
Tel: 956.424.7898
Ext.: 103
Fax: 956.424.7022
www.tedsi.com
Email: cgarza@tedsi.com

This e-mail and any files transmitted with it are confidential and are intended solely for the use of the individual or entity to whom they are addressed. If you are NOT the intended recipient and receive this communication, please delete this message and any attachments. Thank you.

From: Claudia Garza
Sent: Tuesday, November 18, 2014 9:24 AM
To: 'Claudette Guerrero'
Cc: Mark Lupher
Subject: RE: TEDSI Invoice # 20141803 & 20141804 (2013-1128-04A & 1128-04B)

Hidalgo County Drainage District #1
Unposted General Ledger Transactions - VOIDED CKS REPORT
APV
VC-5289

Invoice Nu...	Vendor	P.O. Number	Transacti...	Effective...	Year Code	Fund Code	Functi... Code	Budget Code	GL Short Title	GL Code	Debit	Credit
00001941	TEDSI	20141803	PROJECT...	11/25/2014	14	133			Cash Capital	10130	6,460.99	
00001941	TEDSI	20141803	PROJECT...	11/25/2014	14	133			Accounts Payabl	20200		6,460.99
Total 00001941											6,460.99	6,460.99
									Total VC-5289		6,460.99	6,460.99
Report Total											6,460.99	6,460.99

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
TEDSI
TBPE F-1640
1201 East Expressway 83 ♦ Mission, Texas 78572
Tel: (956) 424-7898
Fax: (956) 424-7022

February 20, 2014
Project No: 2013-1128-4B
Invoice No: 20141804

Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 North Doolittle Road
Edinburg, TX 78542

Project 2013-1128-4B Weslaco North Lateral Control Structure

P. O. No. 623104
Account No. 13-133-433-370-010-008-43340

Professional Services from December 01, 2013 to January 31, 2014
Fee

Billing Phase	Fee	Percent Complete	Earned	Previous Fee Billing	Current Fee Billing
Design	21,436.62	90.00	19,292.96	12,861.97	6,430.99
Topo	6,445.15	100.00	6,445.15	6,445.15	0.00
Geotechnical	6,039.33	100.00	6,039.33	6,039.33	0.00
Total Fee	33,921.10		31,777.44	25,346.45	6,430.99

Total Fee **6,430.99**

Billing Summary	Current	Prior	To-Date
Total Billings	6,430.99	25,346.45	31,777.44
Total Fee			33,921.10
Remaining Fee			2,143.66

Total this Invoice **$6,430.99**

PLEASE REMIT PAYMENT TO:
TEDSI Infrastructure Group, Inc.
738 Highway 6 South, Suite 430
Houston, Texas 77079

13-133-433-370-43340-010-008

HIDALGO COUNTY
FEB 26 2014
DRAINAGE DISTRICT #1

Authorized By: _____ Date: 2.20.14
Mark W. Lupher, P.E., RPLS
Executive Vice President

TEDSI INFRASTRUCTURE GROUP Consulting Engineers 1201 E. Expressway 83 ♦ Mission, Texas 78572 (956) 424-7898	Project Progress Report
TO: Hidalgo County Drainage District No. 1	DATE: Feb 25, 2014
FROM: Mr. Mark W. Lupher, P.E.; Executive Vice President	TEDSI PROJECT NO.: 2013-1128-4A/B
REFERENCE: Monte Cristo and Weslaco North Lateral Control Structures	
Progress Report for Invoice No. 2013-1128-4A/B, JAN 2014	

1. PS&E was completed during this period. 100% Plans submitted.
2. Geotechnical and Survey are currently 100% complete
3. The plans are currently reday for letting pending the final review from the Drainage District.

COPIES of PLANS - ON CD?

NOTE: BACK-UP Rcvd by Colbit; Reflects geotech Report DONE by RABA KISTNER; RABA WAS NOT MENTIONED ON WA#4B AS A SUB- NEED 2 ADD LL LUMP SUMS >> STILL NEED 2 MENTION ON WA language

WW PLAN Sheets CLEARLY Reflect LEFEURE DOING DESIGN; LEFEURE WAS NOT RECORDED AS SUB 4 this WA; NEED to ADD - LUMP SUM -

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: February 25, 2014

REF.: Weslaco North Lateral January Invoice

TEDSI PROJECT NO.: 2013-1128-04B

TRANSMITTED:

☒	For Your Use	☐	Please comment	☐	Approved as Noted
☐	As Requested	☐	Reply ASAP	☐	As Noted Below

VIA:

☐	US Mail	☐	Courier	☐	Hand Carry
☐	E-Mail	☒	LoneStar Overnight	☐	FedEx

COPIES	DESCRIPTION
1	Invoice No.20141804 for Project No. 2013-1128-04B
1	Progress Report
1	CD PDF Files (See CD attached in 2013-1128-04A)
	Lonestar Airbill No. ZQ923885

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
FEB 26 2014
10 AM / PM
BY: RosaArce

Signed: for Claudette Guerrero
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

RABA KISTNER

GEOTECHNICAL ENGINEERING STUDY

FOR

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1 DRAINAGE IMPROVEMENTS PROJECT
PROPOSED BOX CULVERT AT THE WESLACO NORTH LATERAL DRAIN
HIDALGO COUNTY, TEXAS

RABA KISTNER CONSULTANTS

Raba Kistner
Consultants, Inc.
800 E. Hackberry
McAllen, TX 78501
www.rkci.com

P 956 :: 682 :: 5332
F 956 :: 682 :: 5487
TBPE Firm F-3257

Project No. AMA13-059-00
November 7, 2013

Mr. Richard LeFevre, B.S. M.S., P.E.
LeFevre Engineering & Management Consulting, LLC
612 Nolana, Suite 520
McAllen, Texas 78504

RE: Geotechnical Engineering Study
Hidalgo County Drainage District No. 1 Drainage Improvements Project
Proposed Box Culvert at the Weslaco North Lateral Drain
Hidalgo County, Texas

Dear Mr. LeFevre:

Raba Kistner Consultants Inc. (RKCI) is pleased to submit this report of our Geotechnical Engineering Study for the above referenced project. This study was performed in accordance with **RKCI** Proposal PMA13-083-00, dated September 23, 2013. Authorization to proceed with this study was received by our firm via electronic mail attachment on October 2, 2013.

The purpose of our study was to explore and evaluate subsurface soil conditions at the project site to develop information to be used for the design and construction of the proposed about 60-ft long, 10-ft by 10–ft concrete box culvert to be installed at the Weslaco North Lateral Drain.

We appreciate the opportunity to be of service to you on this project. Should you have any questions about the information presented in this report, or if we may be of additional assistance on the materials testing-quality control program during construction, please call us.

Very truly yours,

RABA KISTNER CONSULTANTS, INC.

STATE OF TEXAS
JOHN DOUGLAS BROWN
96185
LICENSED
PROFESSIONAL ENGINEER

John D. Brown, P.E.
Manager, Geotechnical Services

Isidoro Arjona, P.E., PMP
Vice President

JDB/IA/dar

Attachments

Copies Submitted: Above (3-Bound, 1-Electronic)

GEOTECHNICAL ENGINEERING STUDY

For

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1 DRAINAGE IMPROVEMENTS PROJECT
PROPOSED BOX CLUVERT AT THE WESLACO NORTH LATERAL DRAIN
HIDALGO COUNTY, TEXAS

Prepared for

LEFEVRE ENGINEERING & MANAGEMENT CONSULTING, LLC
McAllen, Texas

Prepared by

RABA KISTNER CONSULTANTS, INC.
McAllen, Texas

RKCI PROJECT NO. AMA13-059-00

November 7, 2013

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Corrosivity Test Results ..... A-1 thru A-3
Sieve Analysis w/ Hydrometer Test Results A-4

INTRODUCTION

Raba Kistner Consultants, Inc. (RKCI) has completed the authorized subsurface exploration and design and construction recommendations for the proposed concrete box culvert to be installed at the Weslaco North Lateral Drain. This report briefly describes the procedures utilized during this study and presents our findings along with our recommendations for box culvert installation.

PROJECT DESCRIPTION

On the basis of the information provided to us by the CLIENT, we understand that the proposed project consists of the design and construction of an approximately 60-ft long, 10-ft by 10-ft concrete box culvert to be installed parallel to the existing box culvert structure at the Weslaco North Lateral Drain. The existing Weslaco North Lateral Drain is located about 1,400-ft South of Mile 16-½ North Road (State Highway [S.H] 107) and 4,800-ft East of La Blanca Road (Farm-to-Market [F.M.] Road 493) in Hidalgo County, Texas.

LIMITATIONS

This engineering report has been prepared in accordance with accepted Geotechnical Engineering practices in the McAllen area by Geotechnical firms conducting similar work under similar circumstances and is meant for the use of LeFevre Engineering & Management Consulting, LLC (CLIENT) and its representatives for design purposes. This report may not contain sufficient information for purposes of other parties or other uses and is not intended for use in determining construction means and methods.

The recommendations submitted in this report are based on the data obtained from two borings drilled at this site and our understanding of the project information provided to us by others. If the project information described in this report is incorrect, is altered, or if new information is available, we should be retained to review and modify our recommendations.

This report may not reflect the actual variations of the subsurface conditions across the site. The nature and extent of variations across the site may not become evident until construction commences. The construction process itself may also alter subsurface conditions. If variations appear evident at the time of construction, it may be necessary to reevaluate our recommendations after performing on-site observations and tests to establish the engineering impact of the variations.

The scope of our Geotechnical Engineering Study does not include an environmental assessment of the air, soil, rock, or water conditions either on or adjacent to the site. No environmental opinions are presented in this report. **RKCI**'s scope of work does not include the investigation, detection, or design related to the prevention of any biological pollutants. The term "biological pollutants" includes, but is not limited to, mold, fungi, spores, bacteria, and viruses, and the byproduct of any such biological organisms.

If final grade elevations are significantly different from those provided to us by others by more than plus or minus 1 ft, our office should be informed about these changes. If needed and/or if desired, we will reexamine our analyses and make supplemental recommendations.

BORINGS AND LABORATORY TESTS

Subsurface conditions at the site were evaluated by two borings (designated as B-1 and B-2) drilled at the locations shown on the Boring Location Map, Figure 1. The boring locations were located by an **RKCI** representative based on a site plan and by measuring distances from existing references using tape, angles, pacing, etc. The borings were drilled to a depth of 30-ft below the ground surface elevation existing at the time of our study using a truck-mounted drilling rig.

The borings were drilled utilizing straight flight auger methods, and were backfilled with the auger cuttings generated during the drilling activities. During drilling operations, the following samples were collected:

Type of Sample	Number Collected
Undisturbed Shelby Tube (ST)	4
Split-Spoon (Standard Penetration Test)	14

The ST and SPT samples were obtained in general accordance with accepted standard practices. The SPT results are presented as "blows per foot" on the boring logs and on Figure 5, where "blows per foot" refers to the number of blows by a falling hammer required for 1-ft of penetration into the existing subsurface materials. Representative portions of the samples were sealed in containers to reduce moisture loss, labeled, packaged, and transported to our laboratory for subsequent testing and classification.

In the laboratory, each sample was evaluated and visually classified by a member of our Geotechnical Engineering staff in general accordance with the Unified Soil Classification System (USCS). The geotechnical engineering properties of the strata were evaluated by the laboratory tests tabulated in the following table.

Type of Test	Number Conducted
Natural Moisture Content	18
Atterberg Limits	4
Percent Passing a No. 200 Sieve	4
Hydrometer	2
Unconfined Compression	2
Total Chloride	1
Total Sulfate	1
pH	1
Soil Resistivity	1

The laboratory tests are presented in graphical or numerical form on the boring logs illustrated on Figures 2 and 3. A key to the classification of terms and symbols used on the logs is presented on Figure 4. The results of the laboratory and field testing are also tabulated on Figure 5 for ease of reference.

Samples will be retained in our laboratory for 30 days after submittal of this report. Other arrangements may be provided at the request of the CLIENT.

STRATIGRAPHY

The soil profile along the proposed box culvert alignment consists of levee embankment material (moderately plastic to plastic cohesive sandy lean clays (CL) and lean clays with sand (CL)) to depths of 20-ft to 25-ft, followed by non-plastic cohesionless silty sands to the 30-ft boring completion depths. The boring logs should be consulted for more specific stratigraphic information. The lines designating the interfaces between strata on the boring logs represent approximate boundaries. Transitions between strata may be gradual.

The upper 20-ft to 25-ft deep cohesive clays have firm to very stiff consistencies based on SPT N-values of 5 to 22 blows per foot. Measured plasticity indices (PI) within the cohesive soils range from 16 to 29 percent. Fines contents of 70 to 76 percent were measured on selected sandy lean clay/lean clay with sand samples. Undrained shear strengths of 1.97 tsf to 3.25 tsf were measured on selected sandy lean clay samples. The tested samples measured dry unit weights 105 pcf and 114 pcf, respectively.

The levee embankment clays are underlain by medium dense to dense silty sands. The cohesionless sands registered SPT N-values ranging from 13 to 31 blows per foot.

GROUNDWATER

Groundwater level measurements obtained during drilling are summarized in the following table.

Groundwater Level Measurements

Boring No.	Boring Depth (ft)	Groundwater Depth During Drilling (ft)	Groundwater Depth (ft) after Completion of Drilling	Groundwater Depth (ft) after 24 Hours
B-1	30	19	14.5	13.5
B-2	30	25	16	13

It is possible for groundwater to exist beneath this site at shallower depths on a transient basis, particularly in interbedded sand seams following periods of precipitation. Fluctuations in groundwater levels are possible due to variations in rainfall and surface water run-off. The construction process itself may also cause variations in the groundwater levels.

The project boring logs indicate that the proposed box culvert will be founded within cohesionless sands that are water bearing. Based on the findings in our borings and on our experience in this region, we believe that mechanical dewatering will be required to control groundwater seepage encountered during trenching and installation of the box culvert structure. We recommend that the Contractor include in his or her bid a cost per linear foot for installation of a dewatering system, in case temporary earthen berm and conventional sump-and-pump dewatering methods are not successful.

SIEVE ANALYSIS

Sieve analysis with hydrometer tests were performed on selected two soil samples. The sand/silt/clay fractions for each test sample are listed in the table below.

Boring No.	Depth (ft)	Sand Content (%)	Silt Content (%)	Clay Content (%)	Visual Classification
B-1	5	30	29	41	Sandy Lean Clay
B-2	10	24	33	43	Lean Clay w/ Sand

CORROSIVITY POTENTIAL

Steel and concrete elements in contact with soil are subject to degradation from corrosion or chemical attach. The corrosivity characteristics of the upper soils were preliminarily evaluated using pH, electrical resistivity, sulfate content, and chloride content laboratory tests.

Corrosion of Steel

The measurable soil properties that indicate the corrosion potential for steel in contact with soil are soil pH, chloride ion concentration, and soil electrical resistivity. Corrosion of steel is most likely to occur in environments that have chloride ions, even in low concentrations, very low or very high pH, and/or low resistivity.

The table blow presents general guidelines concerning the corrosion potential of a soil as a function of chloride ion concentration, pH, and electrical resistivity. Each of the columns on this table should be used independently of the others when evaluating corrosion potential. For instance, it is not necessary to have an electrical resistivity of less than 1,000 ohm-cm and a pH of less than 4.0 to indicate a *Very High* potential for corrosion.

Soil Corrosion Potential

Electrical Resistivity Ohm-cm[1]	Chloride Content, ppm	pH[2]	Corrosion Potential
<1,000			Very High
1,000 – 3,000	>500	<4 or >10	High
3,000 – 10,000	<500		Moderate
>10,000		>4 or <10	Mild

(1) After Roberge, 2000
(2) After DOE-HDBK-1015/1-93

Soil pH, chloride and sulfate content, and electrical resistivity laboratory tests were conducted on a composite cohesive soil sample obtained from Borings B-1 and B-2 from a depth of about 0 to 1.5-ft below the ground surface elevation existing at the time of our study. The laboratory test results are shown in the table below.

Chemical and Electrical Resistivity Test Results

Boring No.	Sampling Interval (ft)	Soil Type	pH	Ion Concentration Chloride (ppm)	Ion Concentration Sulfate (ppm)	Electrical Resistivity (ohm-cm)
B-1/B-2	0 – 1.5	Lean Clay w/ Sand	8.7	18.6	100	4514

Based on the chemical and electrical resistivity laboratory test results and the general guidelines from the table titled *"Soil Corrosion Potential"*, the shallow natural soils appear to have a *"moderate"* potential for corrosion of unprotected steel.

Degradation of Concrete

The degradation of concrete is caused by chemical agents in the soil or groundwater that react with concrete to either dissolve the cement paste or precipitate larger compounds which cause cracking and flaking. The concentration of water-soluble sulfates in the soils is a good indicator of the potential for chemical attack of concrete. Sulfate concentrations in soil can be used to evaluate the need for protection of concrete based on the general guidelines shown in the following table.

Sulfate Attack Potential

Sulfate Ion Concentration, ppm or mg/kg	Aggressiveness (1)
>20,000	Very Severe
2,000 to 20,000	Severe
1,000 to 2,000	Moderate
<1,000	Negligible

(1) ACI 318-05/ACI 318R-05

On the basis of soil sulfate concentration data shown on the table title *"Chemical and Electrical Resistivity Test Results"* and the general guidelines from the *"Sulfate Attack Potential"* table, the soils have a *"negligible"* potential for attacking concrete. Based on the measured soil sulfate concentration, the American Concrete Institute (ACI) Committee Report 201.2R indicates that special requirements for sulfate resistance are not needed (that is, American Society for Testing a Materials (ASTM) C 150 Types I and II are applicable).

Degradation of concrete can also be advanced by the aggregates selected for the concrete mixtures. Alkali-silica reactivity (ASR), a chemical reaction between Portland cement concrete and certain aggregates, can directly cause expansion damage in concrete structures or can expedite other reactions that in turn cause damage, such as rebar corrosion.

Three requirements must be met for ASR expansion to occur: (1) reactive forms of silica or silicate in the aggregate; (2) sufficient alkali (sodium and potassium) primarily from the cement; and (3) sufficiently available moisture in the concrete. If one of the three requirements is not met, expansion due to ASR cannot occur. The concrete aggregates should be checked for ASR characteristics.

CONSTRUCTION CONSIDERATIONS

CONCRETE BOX CULVERT

General

A 10-ft by 10-ft box culvert will be installed through the existing levee as part of the proposed improvements. In addition, a gatewell structure will be constructed near the south terminus of the box culvert to prevent backflow during flood events. The reinforced concrete gatewell will be supported on a 12-inch thick reinforced concrete slab. We recommend that the culvert opening on the floodway side of the existing levee be installed flush with the levee in order to reduce turbulence during flood events.

The soil profile underneath the box culvert transitions from very stiff consistency, plastic clays to a medium dense to dense silty sand. Based on the water level measurements obtained from borings B-1 and B-2 and

presented in the table entitled "Groundwater Level Measurements", and the box culvert profile sheets provided by the CLIENT, the base of the box culvert will be below the groundwater table.

Design

Cast-in-place concrete culverts must support soil overburden, temporary hydrostatic forces, and lateral earth pressures. Design loads for concrete culvert pipe are calculated as vertical pressures and backfill pressures are controlled by the backfill requirements. Concentrated live loads for roadways may be ignored when the induced vertical stress fields are equal to or less than 100 psf, or a depth of 8 ft[1]. A review of the plan and profile sheet for the proposed levee improvements indicates the levee road is situated at least 8-ft above the top of the dual box culverts.

Lateral Earth Pressures

For open-cut techniques, the walls of the culvert will be subjected to lateral earth pressures developed from placed backfill. The magnitude of the lateral earth pressures is primarily dependent on the following factors:

a. Type of backfill materials used
b. Amount of compactive effort in placing the backfill
c. Method of construction
d. Rigidity of the walls

The excavated clay soils are preferred as backfill materials because of their low permeabilities. Cohesive on-site fill should be placed in maximum 8-in. lifts and compacted by sheepsfoot or tamping foot equipment to 98% of the maximum dry density as determined by ASTM D 698. The plastic fill material should be moisture-adjusted to three to five percentage points above the optimum moisture content to reduce swell potential.

The lateral earth pressures may be calculated by multiplying the equivalent fluid density for the backfill type by the depth below the ground surface. The equivalent fluid densities for various backfill materials and compaction efforts are outlined in the following table.

Soil Type	Equivalent Fluid Density (pcf)	
	Above Water Table	Below Water Table*
Non-select cohesive backfill (PI>20)	75 100	105 113
Bank sand (Fines content <25%)	55 75	88 96

[1] "Engineering and Design, Conduits, Culverts, and Pipes, Manual No. 1110-2-2902", Department of the Army, U.S. Army Corps of Engineers, Washington, DC, October 1997

Surcharge load adjacent to below grade walls should also be considered. Local surcharge loads adjacent to walls, if present, should be incorporated into the pressure diagrams. A surcharge load, q, will typical result in a lateral load equal to 0.4Q to 0.5Q. As a factor of safety for lateral design, the surcharge loads should be multiplied by a factor of 1.5.

CONSTRUCTION

Bedding and Backfill

The box culvert should be bedded with a granular filter medium for 33 to 50 percent of the pipe length along the landside of the culvert alignment. The sand filter medium should have a minimum thickness of 8-inches. Cement-stabilized sand (1.5 sack) may be used as bedding material for the remaining culvert alignment.

Impervious on-site clays should be placed and compacted behind the box culvert walls in accordance with the guidelines presented in the section entitled *Lateral Earth Pressures*. The remainder of the backfill should be placed in 8-inch thick loose lifts and compacted to 98 percent of the maximum dry density (ASTM D 698) at a water content within two percentage points of the optimum moisture.

Gatewell Foundation

The base of the gatewell structure will bear on either water bearing cohesionless sands or on cohesive clays just above the clay/sand contact. Because of the difficulties involved with construction below the groundwater table in cohesionless soils, i.e. maintaining an undisturbed subgrade prior to concrete placement, we recommend that the concrete gatewell be supported on an 18-inch to 24-inch thick crushed gravel pad. The gravel pad should be wrapped in woven geotextile to prevent migration of fines and a reduction in section thickness.

Trenching and Shoring

The most common method of installing conduit within the embankment or foundation of a levee is by the open cut method. All vertical excavations deeper than 5-ft must be provided with a trench safety system in accordance with the current Occupational Safety and Health Administration (OSHA) standards (29 CFR, Part 1926, Subpart P). The OSHA standards include provisions for the design of sloping and/or benched trench excavations in single or multiple layer soil stratigraphies less than 20-ft deep, in lieu of bracing and shoring. Sloping or benching for excavations greater than 20-ft deep must be designed by a registered professional engineer. The regulations specify maximum slope declivities contingent on soil type. The stiff to very stiff cohesive clays encountered in the project borings would be classified as "Type B". The underlying cohesionless sands would be classified as 'Type C". A trench shield (box), if used, should be designed to withstand lateral loads imposed by specific site soil conditions.

DEWATERING

Based on the subsurface conditions encountered in the borings, and the typical fluctuations in groundwater levels in this region, groundwater may be encountered during the storm sewer line construction activities. Excavations below the groundwater table generally require lowering the

piezometric level to permit construction in a relatively dry state. This should be performed to control seepage into the excavations and to reduce artesian water pressures below the bottom of the excavations. Deep wells and/or well point systems, as well as sumps and pumps after completion of the excavations are commonly used. The implementation of one and/or more of these methods might be anticipated for the construction of the proposed box culvert structure. A minimum groundwater drawdown of at least 5 ft below the bottom of the box culvert should be anticipated by the General Contractor in order to allow the construction operations to proceed on the bottom of the excavations. The design of dewatering systems is beyond the scope of this study. The General Contractor should be prepared to control excess water encountered in the excavations due to perched water pockets, seepage, and/or rainfall. Proper construction procedures and equipment will be critical for proper performance of the dewatered excavations. Additionally, protection of personnel entering the excavations and providing a dry, stable subgrade upon which to construct foundations will be crucial.

The trench bedding and backfill material should be tested by **RKCI** personnel for physical properties and compaction as specified.

CONSTRUCTION RELATED SERVICES

CONSTRUCTION MATERIALS TESTING AND OBSERVATION SERVICES

As presented in the attachment to this report, *Important Information About Your Geotechnical Engineering Report*, subsurface conditions can vary across a project site. The conditions described in this report are based on interpolations derived from a limited number of data points. Variations will be encountered during construction, and only the geotechnical design engineer will be able to determine if these conditions are different than those assumed for design.

Construction problems resulting from variations or anomalies in subsurface conditions are among the most prevalent on construction projects and often lead to delays, changes, cost overruns, and disputes. These variations and anomalies can best be addressed if the geotechnical engineer of record, **RKCI,** is retained to perform construction observation and testing services during the construction of the project. This is because:

- **RKCI** has an intimate understanding of the geotechnical engineering report's findings and recommendations. **RKCI** understands how the report should be interpreted and can provide such interpretations on site, on the CLIENT's behalf.
- **RKCI** knows what subsurface conditions are anticipated at the site.
- **RKCI** is familiar with the goals of the CLIENT and project design professionals, having worked with them in the development of the geotechnical workscope. This enables **RKCI** to suggest remedial measures (when needed) which help meet the CLIENT's and the design teams' requirements.
- **RKCI** has a vested interest in client satisfaction, and thus assigns qualified personnel whose principal concern is client satisfaction. This concern is exhibited by the manner in which contractors' work is tested, evaluated and reported, and in selection of alternative approaches when such may become necessary.

- **RKCI** cannot be held accountable for problems which result due to misinterpretation of our findings or recommendations when we are not on hand to provide the interpretation which is required.

BUDGETING FOR CONSTRUCTION TESTING

Appropriate budgets need to be developed for the required construction testing and observation activities. At the appropriate time before construction, we advise that **RKCI** and the project designers meet and jointly develop the testing budgets, as well as review the testing specifications as it pertains to this project.

Once the construction testing budget and scope of work are finalized, we encourage a preconstruction meeting with the selected contractor to review the scope of work to make sure it is consistent with the construction means and methods proposed by the contractor. **RKCI** looks forward to the opportunity to provide continued support on this project, and would welcome the opportunity to meet with the Project Team to develop both a scope and budget for these services.

* * * * * * * * * * * * * * * * * * *

The following figures are attached and complete this report:

Figure 1	Boring Location Map
Figure 2 & 3	Logs of Borings
Figure 4	Key to Terms and Symbols
Figure 5	Results of Soil Sample Analyses

ATTACHMENTS



RABA KISTNER CONSULTANTS
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Facilities • Infrastructure
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(956)682-5332 TEL
(956)682-5487 FAX
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TBPE Firm F-3257

BORING LOCATION MAP
HIDALGO COUNTY
DRAINAGE DISTRICT NO. 1
DRAINAGE IMPROVEMENTS
WESLACO NORTH LATERAL DRAIN
HIDALGO COUNTY, TEXAS

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.:	AMA13-059-00
ISSUE DATE:	11-05-13
DRAWN BY:	DV
CHECKED BY:	SC
REVIEWED BY:	KML

FIGURE
1

© 2010 by Raba-Kistner Consultants, Inc.

O:\Active Projects\McAllen\2013\AMA13 - McAllen AMA13-059-00 Weslaco Lateral Drain Improvements\Drawings\Figure 1 - 11x17.dwg

LOG OF BORING NO. B-1

Hidalgo County Drainage District No. 1 Drainage Improvements
Weslaco North Lateral Drain
Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT² (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) PLASTIC LIMIT / WATER CONTENT / LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			SURFACE ELEVATION: Ex. Grade ft					
			LEAN CLAY with SAND (CL) very stiff to firm, brown, with calcareous nodules	22 5			16	75
5			**SANDY LEAN CLAY (CL)** very stiff to stiff to very stiff, brown	17	105		28	70
10								
15				14				
20			- saturated below at a depth of about 19 ft	17				
25			**SILTY SAND (SM)** medium dense to dense, brown, saturated	21 31				
30			Boring terminated at a depth of about 30 ft.					
35			NOTES: During the drilling operations, groundwater was encountered at a depth of about 19 ft. Upon completion of the drilling operations, groundwater was measured at a depth of about 14.5 ft. **24-HOUR OBSERVATIONS** Groundwater was measured at a depth of about 13.5 ft.					

DEPTH DRILLED:	30.0 ft	**DEPTH TO WATER:**	13.5 ft	**PROJ. No.:**	AMA13-059-00
DATE DRILLED:	10/8/2013	**DATE MEASURED:**	10/9/13	**FIGURE:**	2

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

LOG OF BORING NO. B-2

Hidalgo County Drainage District No. 1 Drainage Improvements
Weslaco North Lateral Drain
Hidalgo County, Texas

RABA KISTNER
TBPE Firm Registration No. F-3257

DRILLING METHOD: Straight Flight Auger

LOCATION: See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT^2 (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0) / PLASTIC LIMIT / WATER CONTENT / LIQUID LIMIT (10 20 30 40 50 60 70 80)	PLASTICITY INDEX	% -200
			SURFACE ELEVATION: Ex. Grade ft					
			LEAN CLAY with SAND (CL) very stiff to hard to stiff to very stiff, brown, with calcareous nodules and black ferrous stains	22			26	
					114			
5				12				74
							29	
10				8				76
15				18				
20			**SILTY SAND (SM)** medium dense, brown	19				
25			- saturated below a depth of about 25 ft	13				
				24				
30			Boring terminated at a depth of about 30 ft.					
			NOTES: During the drilling operations, groundwater was encountered at a depth of about 25 ft. Upon completion of the drilling operations, groundwater was measured at a depth of about 16 ft.					
35			**24-HOUR OBSERVATIONS** Groundwater was measured at a depth of about 13 ft.					

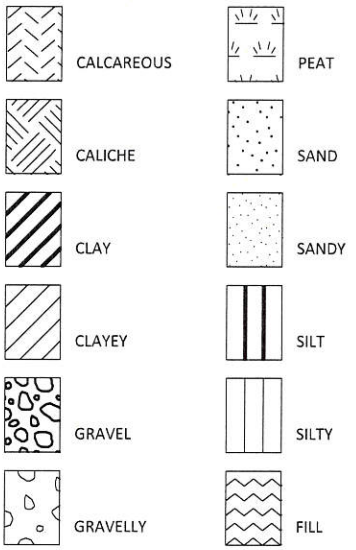
DEPTH DRILLED:	30.0 ft	**DEPTH TO WATER:**	13 ft	**PROJ. No.:**	AMA13-059-00
DATE DRILLED:	10/8/2013	**DATE MEASURED:**	10/9/13	**FIGURE:**	3

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

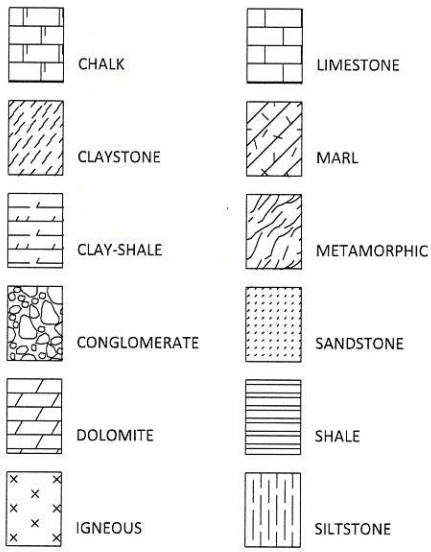
KEY TO TERMS AND SYMBOLS

MATERIAL TYPES

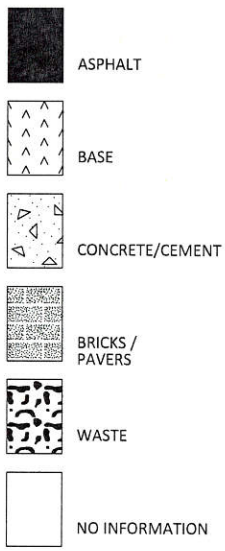
SOIL TERMS



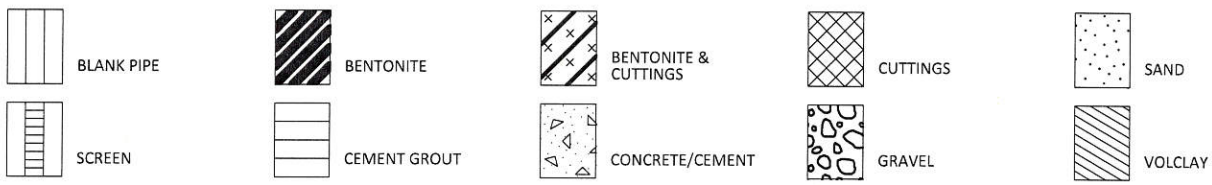
ROCK TERMS



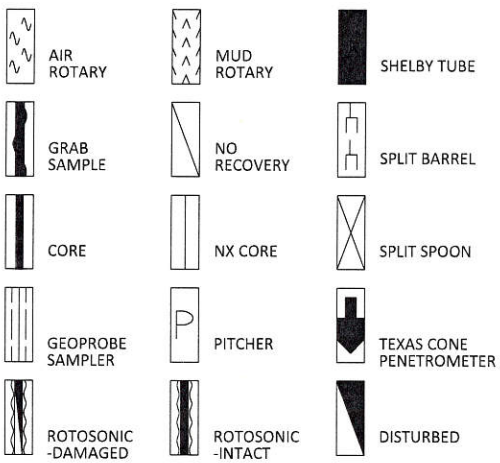
OTHER



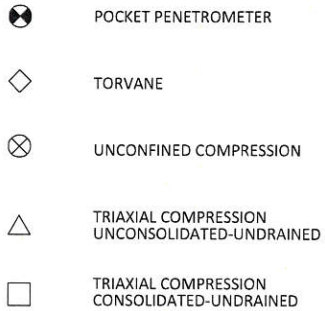
WELL CONSTRUCTION AND PLUGGING MATERIALS



SAMPLE TYPES



STRENGTH TEST TYPES



NOTE: VALUES SYMBOLIZED ON BORING LOGS REPRESENT SHEAR STRENGTHS UNLESS OTHERWISE NOTED

PROJECT NO. AMA13-059-00

KEY TO TERMS AND SYMBOLS (CONT'D)

TERMINOLOGY

Terms used in this report to describe soils with regard to their consistency or conditions are in general accordance with the discussion presented in Article 45 of SOILS MECHANICS IN ENGINEERING PRACTICE, Terzaghi and Peck, John Wiley & Sons, Inc., 1967, using the most reliable information available from the field and laboratory investigations. Terms used for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in American Society for Testing and Materials D2487-06 and D2488-00, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics; 2005.

The depths shown on the boring logs are not exact, and have been estimated to the nearest half-foot. Depth measurements may be presented in a manner that implies greater precision in depth measurement, i.e 6.71 meters. The reader should understand and interpret this information only within the stated half-foot tolerance on depth measurements.

RELATIVE DENSITY

Penetration Resistance Blows per ft	Relative Density
0 - 4	Very Loose
4 - 10	Loose
10 - 30	Medium Dense
30 - 50	Dense
> 50	Very Dense

COHESIVE STRENGTH

Resistance Blows per ft	Consistency	Cohesion TSF
0 - 2	Very Soft	0 - 0.125
2 - 4	Soft	0.125 - 0.25
4 - 8	Firm	0.25 - 0.5
8 - 15	Stiff	0.5 - 1.0
15 - 30	Very Stiff	1.0 - 2.0
> 30	Hard	> 2.0

PLASTICITY

Plasticity Index	Degree of Plasticity
0 - 5	None
5 - 10	Low
10 - 20	Moderate
20 - 40	Plastic
> 40	Highly Plastic

ABBREVIATIONS

B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
BTEX = Total BTEX
TPH = Total Petroleum Hydrocarbons
ND = Not Detected
NA = Not Analyzed
NR = Not Recorded/No Recovery
OVA = Organic Vapor Analyzer
ppm = Parts Per Million

Qam, Qas, Qal = Quaternary Alluvium
Qat = Low Terrace Deposits
Qbc = Beaumont Formation
Qt = Fluviatile Terrace Deposits
Qao = Seymour Formation
Qle = Leona Formation
Q-Tu = Uvalde Gravel
Ewi = Wilcox Formation
Emi = Midway Group
Mc = Catahoula Formation
El = Laredo Formation
Kknm = Navarro Group and Marlbrook Marl
Kpg = Pecan Gap Chalk
Kau = Austin Chalk

Kef = Eagle Ford Shale
Kbu = Buda Limestone
Kdr = Del Rio Clay
Kft = Fort Terrett Member
Kgt = Georgetown Formation
Kep = Person Formation
Kek = Kainer Formation
Kes = Escondido Formation
Kew = Walnut Formation
Kgr = Glen Rose Formation
Kgru = Upper Glen Rose Formation
Kgrl = Lower Glen Rose Formation
Kh = Hensell Sand

KEY TO TERMS AND SYMBOLS (CONT'D)

TERMINOLOGY

SOIL STRUCTURE

Slickensided	Having planes of weakness that appear slick and glossy.
Fissured	Containing shrinkage or relief cracks, often filled with fine sand or silt; usually more or less vertical.
Pocket	Inclusion of material of different texture that is smaller than the diameter of the sample.
Parting	Inclusion less than 1/8 inch thick extending through the sample.
Seam	Inclusion 1/8 inch to 3 inches thick extending through the sample.
Layer	Inclusion greater than 3 inches thick extending through the sample.
Laminated	Soil sample composed of alternating partings or seams of different soil type.
Interlayered	Soil sample composed of alternating layers of different soil type.
Intermixed	Soil sample composed of pockets of different soil type and layered or laminated structure is not evident.
Calcareous	Having appreciable quantities of carbonate.
Carbonate	Having more than 50% carbonate content.

SAMPLING METHODS

RELATIVELY UNDISTURBED SAMPLING

Cohesive soil samples are to be collected using three-inch thin-walled tubes in general accordance with the Standard Practice for Thin-Walled Tube Sampling of Soils (ASTM D1587) and granular soil samples are to be collected using two-inch split-barrel samplers in general accordance with the Standard Method for Penetration Test and Split-Barrel Sampling of Soils (ASTM D1586). Cohesive soil samples may be extruded on-site when appropriate handling and storage techniques maintain sample integrity and moisture content.

STANDARD PENETRATION TEST (SPT)

A 2-in.-OD, 1-3/8-in.-ID split spoon sampler is driven 1.5 ft into undisturbed soil with a 140-pound hammer free falling 30 in. After the sampler is seated 6 in. into undisturbed soil, the number of blows required to drive the sampler the last 12 in. is the Standard Penetration Resistance or "N" value, which is recorded as blows per foot as described below.

SPLIT-BARREL SAMPLER DRIVING RECORD

Blows Per Foot	Description
25	25 blows drove sampler 12 inches, after initial 6 inches of seating.
50/7"	50 blows drove sampler 7 inches, after initial 6 inches of seating.
Ref/3"	50 blows drove sampler 3 inches during initial 6-inch seating interval.

NOTE: To avoid damage to sampling tools, driving is limited to 50 blows during or after seating interval.

RESULTS OF SOIL SAMPLE ANALYSES

PROJECT NAME: Hidalgo County Drainage District No. 1 Drainage Improvements
Weslaco North Lateral Drain
Hidalgo County, Texas

FILE NAME: AMA13-059-00.GPJ 11/6/2013

Boring No.	Sample Depth (ft)	Blows per ft	Water Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	USCS	Dry Unit Weight (pcf)	% -200 Sieve	Shear Strength (tsf)	Strength Test
B-1	0.0 to 1.5	22	12						75		
	2.5 to 4.0	5	16	30	14	16	CL				
	5.0 to 7.0		13						70	1.25	PP
	7.5 to 9.0	17	18	44	16	28	CL				
	10.0 to 12.0		21					105		1.97	UC
	15.0 to 16.5	14	26								
	20.0 to 21.5	17	18								
	25.0 to 26.5	21	24								
	28.5 to 30.0	31	22								
B-2	0.0 to 1.5	22	13	42	16	26	CL				
	2.0 to 4.0		15					114		3.25	UC
	5.0 to 6.5	12	18						74		
	7.0 to 9.0		19	45	16	29	CL			1.00	PP
	10.0 to 11.5	8	22						76		
	15.0 to 16.5	18	22								
	20.0 to 21.5	19	18								
	25.0 to 26.5	13	20								
	28.5 to 30.0	24	22								

PP = Pocket Penetrometer TV = Torvane UC = Unconfined Compression FV = Field Vane UU = Unconsolidated Undrained Triaxial

CU = Consolidated Undrained Triaxial CNBD = Cound Not Be Determined

PROJECT NO. AMA13-059-00

RABAKISTNER

FIGURE 5

APPENDIX A

SAN ANTONIO TESTING LABORATORY, INC.

Cert. No. T104704360-12-8

Raba-Kistner Consultants, Inc.
800 E. Houston
McAllen TX, 78501

Project: Weslaco Lateral Drain Improvement

Project Number: AMA13-059-00
Project Manager: Saul Cruz

Reported:
10/23/13 18:50
Received:
10/14/13 12:51

Report No. 1310218

Sample ID #: Composite from B-1 & B-2 0' to 1.5'

Sampling Method: Composite

Lab Sample ID #: 1310218-01

Sample Matrix: Solid

Date/Time Collected: 10/11/13 00:00

Analyte	Result	Units	PQL	Prep Method	Batch	Analyzed	Method	Analyst	Notes
General Chemistry									
Total Chloride *	18.6	mg/kg	1.00	TXDOT-620J	B343060	10/16/13 22:25	300.0	AK	

Raba-Kistner Consultants, Inc.
800 E. Houston
McAllen TX, 78501

Project: Weslaco Lateral Drain Improvement

Project Number: AMA13-059-00
Project Manager: Saul Cruz

Reported:
10/23/13 18:50
Received:
10/14/13 12:51

Report No. 1310218

General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch B343060 - TXDOT-620J									
Blank (B343060-BLK1)				Prepared: 10/15/13 11:07 Analyzed: 10/16/13 10:47					
Total Chloride	<1.00	1.00	mg/kg						
LCS (B343060-BS1)				Prepared: 10/15/13 11:07 Analyzed: 10/16/13 11:04					
Total Chloride	4.72	1.00	mg/kg	5.00		94	90-110		
LCS Dup (B343060-BSD1)				Prepared: 10/15/13 11:07 Analyzed: 10/16/13 11:21					
Total Chloride	4.72	1.00	mg/kg	5.00		94	90-110	0.1	30
Duplicate (B343060-DUP1)		**Source: 1310207-01**		Prepared: 10/15/13 11:07 Analyzed: 10/16/13 22:08					
Total Chloride	17.1	1.00	mg/kg		16.6			3	30
Matrix Spike (B343060-MS1)		**Source: 1310207-01**		Prepared: 10/15/13 11:07 Analyzed: 10/16/13 20:58					
Total Chloride	69.2	1.00	mg/kg	50.0	16.6	105	80-120		

Definitions and Notes

All quality control samples and checks are within acceptance limits unless otherwise indicated.
Test results pertain only to those items tested.
All samples were in good condition when received by the laboratory unless otherwise noted.

PQL	Practical Quantitation Limit
MCL	Maximum Contaminant Level
mg/Kg	Milligrams per Kilogram (Parts per Million)
mg/L	Milligrams per Liter (Parts per Million)
PPM	Parts per Million
F/NF	Found / Not Found
*	TNI / NELAC accredited analyte
RMCCL	Recommended Maximum Concentration of Contaminants Level
µR/hr	MicroRoentgens per hour (Measure of Radioactivity Level)

Test Methods: Standard Methods for the Examination of Water and Wastewater, 20th Edition 1998
Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020, Rev. March 1983
EPA SW Test Methods for the Examination of Solid Waste, SW-846, 1996

SAN ANTONIO TESTING LABORATORY, INC.

Cert. No. T104704360-12-8

Raba-Kistner Consultants, Inc.
800 E. Houston
McAllen TX, 78501

Project: Weslaco Lateral Drain Improvement

Project Number: AMA13-059-00
Project Manager: Saul Cruz

Reported:
10/23/13 18:50
Received:
10/14/13 12:51

Report No. 1310218

Sandra Felix For Marcela Gracia Hawk, President For

Richard Hawk, General Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

RESISTIVITY DETERMINATION

TxDOT, TEX-129-E (1999)

Project No.:	AMA13-059-00	Tested By:	MDS	Date:	10 18 13
Assignment No.:		Prepared By:	MDS	Date:	10 18 13
Sample I.D.:	Weslaco Lateral Drainage	Calculated By:	MDS	Date:	10 18 13
Material:	Existing Subgrade	Checked By:	MDS	Date:	10 18 13

Water Added Total (mL)	Multiplier	Dial Reading	Resistance (ohms)
0			
50			
100	10K	5.4	
150			
200	1K	1.9	
250			
300	1K	1.4	
350			
400	1K	1.3	
450			
500	1K	1.3	
550			
600	1K	1.3	
650			
700	1K	1.4	
750			
800			
850			
900			
950			
1000			

Mass of Soil (grams) = 1300

Soil Box Factor X Minimum Resistance = Resistivity:

3.472 X 1300 = 4513.6 **ohm-cm**

Oven No.:			Balance No.:		
Oven In-Calibration/Calibration Due:			In-Calibration/Calibration Due:		

Revision & Date	Preparation Date	Filename and Path
D, February 2011	A, December 2, 2008	W:\SA Quality Assurance\Soils\Forms\Resistivity Determination.doc

SOIL pH DETERMINATION
(Tx DOT, TEX-128-E, ASTM C 977)

Raba Kistner

PROJECT NO: AMAI3-059-00 TESTED BY: M,D,S DATE: 10-21-13
PROJECT NAME: Weslaco Lateral Drainage PREPARED BY: DATE:
ASSIGNMENT NO: MATERIAL:

TEX-128-E

pH = 8.7

ASTM C 977

% LIME ADDED	pH
RAW	
1.0 %	
1.5 %	
2.0 %	
2.5 %	
3.0 %	
3.5 %	
4.0 %	
4.5 %	
5.0 %	
5.5 %	
6.0 %	
6.5 %	
7.0 %	
7.5 %	
8.0 %	

Scale No. _____

Raba-Kistner

Raba Kistner

SULFATE CONTENT OF SOILS – COLORIMETIRC METHOD
(TEX-145-E)

PROJECT NO: AMA13-059-01 LOCATION:
PROJECT NAME: Wesloco Lateral Drainage TESTED BY: M.D.S DATE: 10-9-13
ASSIGNMENT NO: SAMPLED BY: DATE:

BORING NO: SAMPLE NO: DEPTH:

TRIPLICATE	SAMPLE 1	SAMPLE 2	SAMPLE 3
READING 1	5	5	5
READING 2	5	5	5
READING 3	5	5	5
AVERAGE	5	5	5
TOTAL AVERAGE	5		

CIRCLE FACTOR FOR CALCULATION (20) 40
SULFATE CONTENT CALCULATION 20 x 5 = 100 (ppm)

BORING NO: SAMPLE NO: DEPTH:

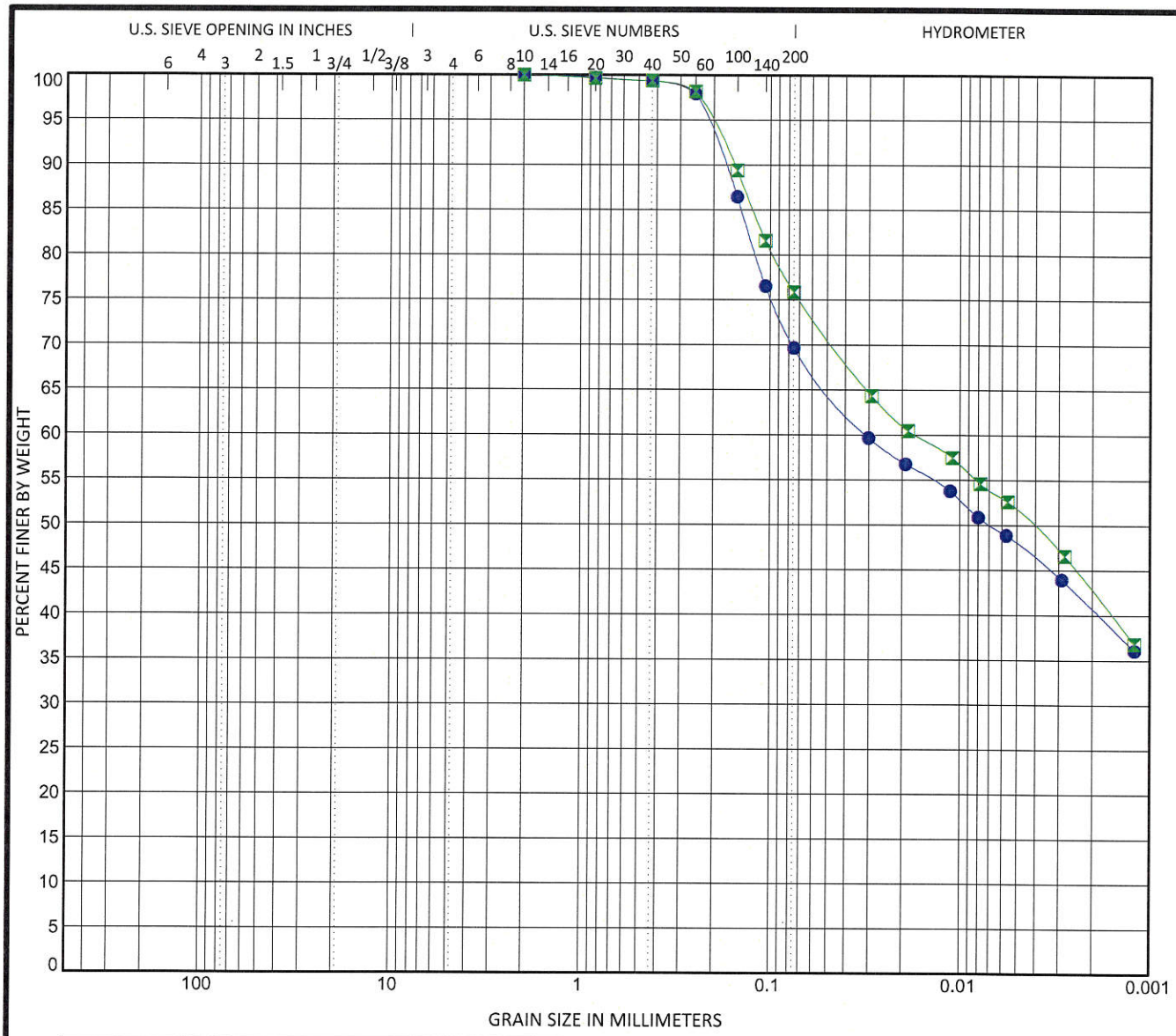
TRIPLICATE	SAMPLE 1	SAMPLE 2	SAMPLE 3
READING 1			
READING 2			
READING 3			
AVERAGE			
TOTAL AVERAGE			

CIRCLE FACTOR FOR CALCULATION 20 40
SULFATE CONTENT CALCULATION ____ x ____ = ____ (ppm)

BORING NO: SAMPLE NO: DEPTH:

TRIPLICATE	SAMPLE 1	SAMPLE 2	SAMPLE 3
READING 1			
READING 2			
READING 3			
AVERAGE			
TOTAL AVERAGE			

CIRCLE FACTOR FOR CALCULATION 20 40
SULFATE CONTENT CALCULATION ____ x ____ = ____ (ppm)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	B-1	5.0	SANDY LEAN CLAY (CL)					
⊠	B-2	10.0	LEAN CLAY with SAND (CL)					
▲								
★								
⊙								

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-1	5.0	2	0.031			0.0	30.3	21.7	48.0
⊠	B-2	10.0	2	0.017			0.0	24.1	24.2	51.7
▲										
★										
⊙										

RABA KISTNER
TBPE Firm Registration No. F-3257

800 E. Hackberry
McAllen, Texas 78501
(956) 682-5332
(956) 682-5487 fax
www.rkci.com

GRAIN SIZE DISTRIBUTION

Hidalgo County Drainage District No. 1
Drainage Improvements
Weslaco North Lateral Drain
Hidalgo County, Texas

FIGURE 1

R-K GRAIN SIZE AMA13-059-00.GPJ RKCI.GDT 11/6/13

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —* should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

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IIGER06045.0M

CONSULTANTS • ENVIRONMENTAL • FACILITIES • INFRASTRUCTURE

San Antonio, TX

Austin, TX	Dallas, TX	McAllen, TX
Brownsville, TX	El Paso, TX	Mexico
Corpus Christi, TX	Houston, TX	Salt Lake City, UT

RABAKISTNER

2013-1128-04A/04B
Control Structures

14-02-25

TEDSI INFRASTRUCTURE GROUP
Consulting Engin
1201 East Expressway 83 • Mission, Texas
Tel: (956)
Fax: (9

TEDSI
TBPE F-1940

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Project Progress Report

TO: Hidalgo County Drainage District No. 1	**DATE:** Feb 25, 2014
FROM: Mr. Mark W. Lupher, P.E.; Executive Vice President	**TEDSI PROJECT NO.:** 2013-1128-4A/B
REFERENCE: Monte Cristo and Weslaco North Lateral Control Structures	

Progress Report for Invoice No. 2013-1128-4A/B, JAN 2014

1. PS&E was completed during this period. 100% Plans submitted.
2. Geotechnical and Survey are currently 100% complete
3. The plans are currently reday for letting pending the final review from the Drainage District.

TEDSI INFRASTRUCTURE GROUP
TEDSI
Consulting Engineers
1201 E. Expressway 83 ♦ Mission, Texas 78572
(956) 424-7898

Letter of Transmittal

TO:
Ms. Claudette Guerrero
Hidalgo County Drainage District No. 1
902 N. Doolittle Road
Edinburg, Texas 78542

DATE: February 25, 2014

REF.: Weslaco North Lateral January Invoice

TEDSI PROJECT NO.: 2013-1128-04B

TRANSMITTED:

☒ For Your Use	☐ Please comment	☐ Approved as Noted
☐ As Requested	☐ Reply ASAP	☐ As Noted Below

VIA:

☐ US Mail	☐ Courier	☐ Hand Carry
☐ E-Mail	☒ LoneStar Overnight	☐ FedEx

COPIES	DESCRIPTION
1	Invoice No.20141804 for Project No. 2013-1128-04B
1	Progress Report
1	CD PDF Files (See CD attached in 2013-1128-04A)
	Lonestar Airbill No. ZQ923885

REMARKS:

Thank you,

RECEIVED
HIDALGO COUNTY
DRAINAGE DISTRICT #1
FEB 26 2014
10 AM / PM
BY: Rosalrce

Signed: for Claudia Jaime
Mark W. Lupher, P.E., RPLS

If enclosures are not as stated, please notify us.

HCDD#1
HIDALGO COUNTY
DRAINAGE DISTRICT
902 N. DOOLITTLE
EDINBURG, TEXAS 78542

PURCHASE ORDER

Date	Number
7/22/2013	623104

Attention:

Vendor Address:
TEDSI INFRASTRUCTURE GROUP
1201 E. EXPRESSWAY 83
MISSION, TX 78572

Shipping Address: 902 N. Doolittle
Edinburg, TX 78542

PCT#1 BOND REFERENDUM IMP. PROJECTS. W/A #4-B, DESIGN FIELD TOPO SURVEY, GEO TECH, H&H ANALYSIS, PS&E FOR WESLACO NORTH LATERAL CONTROL STRUCTURE. APPROVED BY B.O.D. 7-17-13

Shipping Method:

VENDOR NOTES
1. DO NOT ADD TO, ALTER THIS PURCHASE ORDER. THIS ORDER IS NOT RENEWABLE.
2. TAX EXEMPTION: THIS PURCHASE ORDER MAY BE ACCEPTED IN LIEU OF EXEMPTION CERTIFICATE.
3. THIS ORDER IS ALSO PLACED F.O.B. DESTINATION. VENDOR MUST REPAY ALL SHIPPING COSTS.
4. INVOICE EACH PURCHASE ORDER SINGLY. ORIGINAL INVOICES ARE REQUIRED. CUSTOMER COPY MAY BE ACCEPTED.
5. PAYMENT WILL BE MADE ONLY FOR BONA FIDE AND FULLY COMPLETED ORDERS, UNLESS OTHERWISE ATTACHED.

Item Code	Description	GL Code	Dist... Code	Quantity	Unit Price	Total	Date Received
	DESIGN FIELD-CONSTRUCTION ...	43340	370	1.00	21,436.62	21,436.62	
	TOPO	43340	370	1.00	6,445.15	6,445.15	
	GEOTECHNICAL REPORT	43340	370	1.00	6,039.33	6,039.33	

Purchase Order Total: $33,921.10

Vendor Name TEDSI INFRASTRUCTURE GROUP 7/22/2013 623104

Item Code	Item Description	Unit of Measure	Quantity	Unit Price	Total
	DESIGN FIELD-CONSTRUCTION COST F...		1.00	21,436.62	21,436.62
	TOPO		1.00	6,445.15	6,445.15
	GEOTECHNICAL REPORT		1.00	6,039.33	6,039.33

Purchase Order Total: $33,921.10

Authorized By: Lon Burns

HCDD#1

HIDALGO COUNTY DRAINAGE DISTRICT

902 N. DOOLITTLE
EDINBURG, TEXAS 78542

623104

PURCHASE ORDER

Date	Number
7/22/2013	623104

Vendor Address:
TEDSI INFRASTRUCTURE GROUP
1201 E. EXPRESSWAY 83
MISSION, TX 78572

Attention:

Shipping Address: 902 N. Doolittle
Edinburg, TX 78542

PCT#1 BOND REFERENDUM IMP. PROJECTS. W/A #4-B, DESIGN FIELD TOPO SURVEY, GEO TECH, H&H ANALYSIS, PS&E FOR WESLACO NORTH LATERAL CONTROL STRUCTURE. APPROVED BY B.O.D. 7-17-13

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Purchase Order Total: $33,921.10

Vendor Name TEDSI INFRASTRUCTURE GROUP 7/22/2013 623104

Item Code	Item Description	Unit of Measure	Quantity	Unit Price	Total
	DESIGN FIELD-CONSTRUCTION COST F...		1.00	21,436.62	21,436.62
	TOPO		1.00	6,445.15	6,445.15
	GEOTECHNICAL REPORT		1.00	6,039.33	6,039.33

Purchase Order Total: $33,921.10

Authorized By: Lon Burnam

P.O. # 623104

HCDD#1

Hidalgo County Drainage District #1
902 N. Doolittle Rd.
Edinburg, TX 78542
Office#: (956) 292-7080
Fax#: (956) 292-7089

REQUISITION FORM

DATE: 07.22.2013

REQUESTED BY: G. Garza

UNIT#: Pct. 1 2012 Bond Retrenchment Imp. Projects

PREPARED BY: J. Salazar

VENDOR'S NAME: Tedsi Invir. Group

PHONE: (____)_____

PERSON CONTACTED: M. Lupher

QTY.	PARTS #	DESCRIPTION	UNIT PRICE	TOTAL
1		Work Auth No. 4 B. Design	$33,921.10	$33,921.10
		Field Topo Survey, Geo Tech		
		H+H Analysis, PS+E		
		Weslaco North Lateral		
		Common Structure		

Approval By: Sylvia Ortiz

Date: 7-22-13

TOTAL: $33,921.10

13-133-433-370-010-003-43340

If over $1,000.00 Please Attach 3 Quotes

PARTS ORDERED BY: _____ DATE: _____

PARTS RECEIVED BY: _____ DATE: _____ ENC. SESSION: 7237

COMMENTS: Approved by B.O.D. on 07.17.2013

WARRANTY, IF APPLICABLE: _____

EXHIBIT "E"

PROFESSIONAL ENGINEERING SERVICES CONTRACT #

WORK AUTHORIZATION FORM

WORK AUTHORIZATION NO. 4B

THIS WORK AUTHORIZATION is made pursuant to the terms and conditions of Section I.A. of the Agreement made by and between HIDALGO COUNTY DRAINAGE DISTRICT NO. 1 hereinafter called the "Owner", and TEDSI Infrastructure Group, Inc., professional Engineers hereinafter called "Engineer".

PART 1. SCOPE OF WORK

The purpose of this Work Authorization is for the Engineer to provide Design Field Topo Survey, Geotechnical Boring Report, Hydrologic & Hydraulics analysis, PS&E, and Construction Phase Services for the Weslaco North Lateral Control Structure listed on the Master Drainage System 2012 Bond Projects as Project #16 and indicated below:

The scope of services to be provided by the Owner is identified in EXHIBIT "A"- Scope of Services to be Provided by the Owner attached hereto.

The scope of services to be provided by the Engineer is identified in EXHIBIT "B" – Scope of Services to be Provided by the Engineer attached hereto.

PART 2. ESTIMATED COST

The estimated lump sum cost for services under this Work Authorization #4B is $ 33,921.10. This amount is based upon the costs outlined in the Estimated Cost Proposal attached hereto as EXHIBIT "D".

PART 3. PAYMENT

Compensation and payment to the Engineer for the services established under this Work Authorization shall be made in accordance with Article/Part/Section 5, 6 and 7 of the Agreement.

PART 4. FUNDING

This Work Authorization No. 4B shall be funded through funding source:
Account No. 13-133-433-370-010-008-43340
Requisition Number 623104

PART 5. PERIOD OF SERVICE
This Work Authorization shall become effective on the date of final acceptance of the parties hereto, and terminate upon completion of scopes of the work authorization.

PART 6. RESPONSIBILITIES AND OBLIGATIONS
This Authorization does not waive the parties' responsibilities and obligations provided under the Agreement.

PART 7. ACKNOWLEDGEMENT AND CONFIRMATION
Acknowledgement and confirmation by TEDSI Infrastructure Group, Inc. as to content and detail of this Work Authorization No. 4B.

BY: _____
Jesse Salinas, President/CEO

PART 8. ACCEPTANCE AND APPROVAL
This Work Authorization is hereby accepted, approved by the Hidalgo County Drainage District No. 1 and TEDSI Infrastructure Group, Inc. as indicated below and effective as of 17th **day of July , 2013.**

THE ENGINEER:

TEDSI Infrastructure Group, Inc

_____
By: Jesse Salinas, President/CEO

APPROVED AS TO FORM:
ATLAS, HALL & RODRIGUEZ, LLP

By: _____

THE OWNER:

Hidalgo County Drainage District No. 1

Ramon Garcia
By: Ramon Garcia, Chairman

APPROVED BY HIDALGO
COUNTY DRAINAGE DISTRICT
NO. 1 BOARD OF DIRECTORS
ON: 7/17/13

EXHIBIT "A"

Services to be provided by the Owner

The following provides an outline of the services to be provided by the **OWNER** in the development of the **"Project"**.

The **OWNER** will provide to the **ENGINEER** the following:

(1) Authorization to the **ENGINEER** to begin work in accordance with Section 3 of this Agreement.

(2) Payment for work performed by the **ENGINEER**, and accepted by the **OWNER** in accordance with Section 6 of the Agreement.

(3) Assistance to the **ENGINEER**, as necessary, to obtain the required data and information from other local, regional, State and Federal agencies that the **ENGINEER** cannot easily obtain.

(4) Provide any available relevant data the **OWNER** may have on file concerning the **"Project"**.

(5) Provide timely review and decisions in response to the **ENGINEER**'S request for information and/or required submittals and deliverables.

(6) Attend and participate in progress meetings as required and as coordinated and conducted by the **ENGINEER**.

(7) Attend the Preliminary Concept Conference coordinated and conducted by the **ENGINEER** and more particularly identified in Attachment "B" of the Agreement.

(8) Review and approve the **"Project"** design criteria.

EXHIBIT "B"
Services to be Provided by the Engineer

INDEX

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(5) Management/Coordination of Engineering Activities 4
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EXHIBIT "B"
Services to be Provided by the Engineer

CLASSIFICATION OF SERVICES. In accordance with Article 2.2 of this Agreement, the services to be provided by the **Engineer** shall be classified as either ***Basic Services*** or ***Special Services.*** The expanded descriptions of the services identified later in this exhibit and to be provided by the **Engineer** are classified as follows:

Management:

I. ENGINEERING MANAGEMENT (*EM*)

(A) Preliminary Project Planning and Development

(1) Project Development Schedule	*Basic*
(2) Construction Estimate	*Basic*
(3) Quality Control / Quality Assurance Program	*Basic*
(4) Subcontract Administration	*Basic*
(5) Management / Coordination of Engineering Activities	*Basic*
(6) Implementation of QC/QA Program	*Basic*

(B) Preliminary Engineering

(1) Preliminary Concept Conference	*Basic*
(2) Management / Coordination of Engineering Activities	*Basic*
(3) Implementation of QC/QA Program	*Basic*
(4) Preparation of ***"Preliminary Engineering Report"***	*Basic*
(5) Coordination with all reviewing agencies (FEMA, USACE, etc.)	*Basic*

(C) Final Design

(1) Design Concept Conference	*Basic*
(2) Management / Coordination of Engineering Activities	*Basic*
(3) Implementation of QC/QA Program	*Basic*

(D) Construction Management

(1) Construction Bidding	*Basic*
(2) Owner's Representative	*Basic*
(3) Defects and Deficiencies	*Basic*
(4) Monthly Construction Progress Reports	*Basic*
(5) Recommendations for Payment to the Construction Contractor	*Basic*
(6) Project Site Management	*Special*
(7) Implementation of QC/QA Program	*Basic*
(8) Change Orders	*Special*
(9) Final Acceptance, Shop Drawing Review	*Basic*

II. PRELIMINARY ENGINEERING, FINAL DESIGN & CONSTRUCTION

(A) Preliminary Engineering:

(1) Data Collection	*Basic*
(2) Final Report – ***"Preliminary Engineering Report"***	*Basic*

(B) Final Design:

(1) Design Field Surveying	*Special*
(2) Geotechnical Investigations and Reports	*Special*
(3) Channel / Drainage Design	*Basic*

EXHIBIT "B"
Services to be Provided by the Engineer

(4) Plans, Specifications & Estimates	*Basic*
(C) Construction:	
(1) Construction Bidding Documents	*Basic*
(2) Project Site Representation:	*Special*
a. Engineering Support Data for Defects & Deficiencies	*Special*
b. Weekly Construction Reports	*Special*
c. Measurement / Calculations for Contractor Payment	*Special*
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(3) Miscellaneous Technical Activities:	
a. Construction Field Surveying	*Special*
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d. Change Orders	*Basic*
(4) Final Acceptance:	
a. As-Built Drawings	*Basic*

EXPANDED DESCRIPTIONS OF SERVICES. The expanded descriptions of the services to be provided by the Engineer are described on the following pages.

EXHIBIT "B"
Services to be Provided by the Engineer

I. ENGINEERING MANAGEMENT (*EM*)

The following outline provides a summary for the ***basic*** and ***special services*** to be provided by the **Engineer** under services of this Agreement. The contractual services will be outlined in each Work Authorization as outlined in Article 7.

For these services, the **Engineer** shall manage the **Project Team,** consisting of various sub-providers, in the development of the **Project.** The services will include the following:

(A) **Preliminary Project Planning and Development.** In general, this will include the ***management*** of the preliminary planning process and advance project development (APD) that is required for the **Project.** (A summary of specific requirements for ***engineering*** activities are outlined later in this exhibit.) The **Engineer** will identify, coordinate, and implement the ***management*** requirements for preliminary planning and advance **Project** development for the **Project.** Specific work activities to be provided by the **Engineer** will include:

(1) **Project Development Schedule.** The **Engineer** will prepare a **Project Development Schedule.** This schedule will be developed from the notice to proceed with work through final record drawings. The schedule will be monitored, by the **Engineer,** throughout **Project** development. It will be provided, as well as any updates, to the **Owner** and each **Project Team** member as a part of the **Work Plan** identified in (1). The schedule will identify all major milestones and **Project** deliverables. The **Engineer** will inform the **Owner** (in reasonable advance of the delay) should the **Engineer** encounter delays that would prevent the performance of all work in accordance with the established schedule.

(2) **Construction Estimate.** The **Engineer** shall prepare a preliminary estimate for the construction of the **Project.** The preliminary construction estimate shall be monitored, verified and updated throughout the course of **Project** development.

(3) **Quality Control / Quality Assurance (QC/QA) Program.** The **Engineer** shall develop a quality control and quality assurance program for the **Project** to ensure the **Project Team** is producing quality work for the **Project.**

(4) **Subcontract Administration.** The **Engineer** shall initiate, execute and monitor all subcontracts for the duration of the **Project.** The **Engineer** shall advise and/or provide recommendations to the **Owner,** as the **Project** progresses, should additional sub-providers be required. All subcontracting and assignment will be in accordance with Article 14.

(B) **Preliminary Engineering.** The **Engineer** will ultimately deliver the final recommendations for the design of the project in the ***"Preliminary Engineering Report".*** (Specific requirements for ***engineering*** activities are outlined later in this exhibit under II - Preliminary Engineering, Design and Construction.) The **Engineer** shall ***manage*** and coordinate the activities of the **Project Team** in the collection of geographical information and ***engineering*** data, the selection of computer software, and the distribution of **Project** information and status to the **Owner** and **Project Team**

EXHIBIT "B"
Services to be Provided by the Engineer

throughout the development of the ***"Preliminary Engineering Report"***. Specific ***management*** tasks to be provided by the **Engineer** will include:

(1) **Preliminary Concept Conference.** The **Engineer** will coordinate and conduct a preliminary concept conference (PCC) with the **Owner**, and any other stakeholders approved by the **Owner**. At the PCC, the **Engineer** will outline the issues and aspects involved in the development of the ***"Preliminary Engineering Report"***, identify existing conditions and design requirements, and present the approach to the development of the report for approval by the **Owner**.

(2) **Management/Coordination of Engineering Activities.** The **Engineer** shall ***manage*** and coordinate the **Project Team** in the preparation of specific ***engineering*** work activities, tasks, special services for the final development of the ***"Preliminary Engineering Report"***, including Field Surveying, Data Collection, the development of a Geographical Information System, Hydrologic/Hydraulic Analysis, Flood Plain Mapping, Alternate Solutions, and Final Recommendations (more particularly defined with the ***engineering*** activities identified in this exhibit under II - Preliminary Engineering, Design and Construction (**Preliminary Engineering**)).

(3) **Implement QC/QA Program.** The **Engineer** will monitor and perform the QC/QA program developed to ensure the quality of the ***"Preliminary Engineering Report"***, and its compliance with standards of sound ***engineering*** principles and the agreed-upon design criteria established at the PCC.

(4) **Coordination with various agencies.** The development of the ***"Preliminary Engineering Report"*** may require documentation and/or coordination with various agencies. The **Engineer** will act as a liaison for the **Owner**, and will attend any meetings, and develop / prepare any required correspondence, documentation, and/or applications to satisfy the applicable Federal, State, and local regulations.

(C) **Final Design.** After the **Owner** has approved the **Engineer**'s final recommendations as shown in the ***"Preliminary Engineering Report"*** and the recommendations meet all Federal, State, and County permitting requirements, the **Engineer**, will coordinate the activities of the **Project Team** during the final design of the **Project** by developing and preparing all policies and procedures, managing the sub-providers activities and performance, and performing quality control and quality assurance for all design documents associated with the **Project**. One of the primary deliverables for the **Engineer** to provide the **Owner** is a complete and approved set of plans, specifications, and estimate (PS&E) for each phase of construction of the **Project**. Specific ***management*** work activities to be provided by the **Engineer** will include:

(1) **Design Concept Conference (DCC).** The **Engineer** shall coordinate and conduct a design concept conference with the **Owner** and **Project Team**.

(2) **Management/Coordination of Engineering Activities.** The **Engineer** shall ***manage*** and coordinate the **Project Team** in the development of the documents for final design, including:

EXHIBIT "B"
Services to be Provided by the Engineer

Right of Way Data, Design Field Surveying, Geotechnical Investigations, Permitting, Channel/Drainage Design, Roadway Design, Bridge Design, PS&E, and other miscellaneous design and plan preparation items (more particularly defined with the engineering activities identified in this exhibit under II – Preliminary Engineering, Design and Construction (**Final Design**)).

(3) **Implement QC/QA Program.** The **Engineer** shall monitor and perform the QC/QA program developed to ensure the quality of the documents associated with Right of Way Data (Mapping), Design Field Surveying, Geotechnical Investigations, Permitting, Channel/Drainage Design, Roadway Design, Bridge Design, PS&E, and other miscellaneous design and plan preparation items (more particularly defined with the ***engineering*** activities identified in this exhibit under II – Preliminary Engineering, Design and Construction (**Final Design Engineering**)). These designs shall in all respects combine the application of sound ***engineering*** principles with a high degree of economy and shall be submitted to the applicable City, County, State, and/or Federal agencies for approval.

(D) Construction Management. The **Engineer** shall provide construction ***management*** services for each authorized construction contract of the **Project.** The **Engineer** shall also assist the **Owner** in the advertisement for construction bids, the opening and tabulation of the bids, provide a recommendation as to the proper action on all bid proposals received, and assist in the preparation of formal contract documents for the award of contracts. Specific ***management*** work activities to be provided by the **Engineer** will include:

(1) **Construction Bidding Documents.** The **Engineer** shall perform the following in preparation of the construction bidding documents:

(a) Upon completion of QC/QA, the **Engineer** shall furnish to the **Owner** all necessary copies of approved plans, specifications, **Engineer's** estimate, notices to bidders, and proposals for each authorized construction contract.

(b) The **Engineer** shall assist the **Owner** in advertising for each authorized construction contract for the **Project.**

(c) The **Engineer** shall assist the **Owner** in the opening and tabulation of bids for each authorized construction for the **Project,** and recommend to the **Owner** as to the proper action on all bid proposals received.

(d) The **Engineer** shall assist the **Owner** in the preparation of formal contract documents for the award of construction contracts.

(2) **Owner's Representative.** In general, the **Engineer** shall provide the ***management*** activities required for consultation and advisement to the **Owner** during construction, and act as the **Owner's** representative as provided in the General Conditions of the Construction Contract. The extent and limitations of the duties, responsibilities and the authority of the **Engineer** as assigned in the General Conditions of the Contract shall not be modified, except as the

EXHIBIT "B"
Services to be Provided by the Engineer

Engineer may otherwise agree in writing.

(3) **Defects and Deficiencies.** In providing the ***management and administration*** of the authorized construction contract, the **Engineer** shall use the **Engineer**'s best efforts to protect the **Owner** against defects and deficiencies in the work of the construction contractor, hereinafter called the **"Contractor"**. The **Engineer** does not guarantee the performance of the **Contractor;** however, the **Engineer** will promptly notify the **Owner** of any such defect or deficiency, and take all steps possible to require the **Contractor** to correct the defect or deficiency.

(4) **Progress Reports.** The **Engineer** will obtain the daily and weekly reports provided from the ***engineering*** activities identified under II – Preliminary Engineering, Design, and Construction (**Construction**) in this exhibit and prepare a monthly progress report, which outlines the construction progress in a form and manner satisfactory to the Owner.

(5) **Contractor Payment**. The **Engineer** shall obtain the measurements and calculated quantities prepared under the ***engineering*** activities identified under II – Preliminary Engineering, Design, and Construction (**Construction**) in this exhibit, and review and approve the monthly and final estimates for payments to the **Contractor** for those items of work accepted and conforming to the construction contract specifications. The **Engineer** will furnish to the **Owner** any necessary certifications as to payments to the **Contractor** and suppliers. *Note: The **Engineer** is not responsible for actual payments to the **Contractor.***

(6) **Project Site Management**. The **Engineer** will coordinate and monitor the **Project** site representation of the authorized construction contract by providing the following special services, if authorized by **Owner**:

Project Manager. The **Engineer** will provide visits by the ***Project Manager*** or a competent representative of the **Engineer** to the site of construction at least twice a month for the purpose of monitoring the **Contractor**'s progress and conformance to the construction contract plans and specifications. In the capacity of site inspection, the **Engineer** will issue instructions from the **Owner** to the **Contractor** and the ***Resident Engineering Representative***, issuing necessary interpretations and clarifications of construction contract documents, and make recommendations to the **Owner** as to the acceptability of the **Contractor**'s progress and work.

(7) **Implement QC/QA Program**. The **Engineer** will monitor and perform the QC/QA program developed to ensure the quality of the ***engineering*** services and documents associated with Field Surveying, Shop Drawings, Control of Materials & Equipment, Change Orders, Performance Testing, and As-Built Drawings, more particularly identified under II – Preliminary Engineering, Design, and Construction (**Construction**) in this exhibit. These services shall in all respects combine the application of sound ***engineering*** principles with a high degree of economy and shall be submitted to the applicable City, County, State, Federal agencies for approval.

(8) **Change Orders**. When applicable, the **Engineer** will review and provide recommendations for all change orders developed under II – Preliminary Engineering, Design, and Construction

EXHIBIT "B"
Services to be Provided by the Engineer

(**Construction**) in this exhibit for purpose of preparing construction contract change orders. These change orders may be required due to actual field conditions encountered or new requirements directed by the **Owner**. The **Engineer** will prepare, explain, and submit proposed change orders, when applicable.

(9) **Final Acceptance.** Following the completion of construction by the **Contractor**, the **Engineer** will provide the services required for the final inspection and recommendation for **Project** acceptance. This will include coordinating the activities required for the inspection for conformance and recordkeeping of the necessary performance tests required by the construction contract specifications. The **Engineer** will also review and approve all as-built drawings (to show the work as actually constructed), and furnish to the **Owner** one set of prints of the as-built drawings. *Note: Services to be provided by the **Engineer** for Items II and III primarily involve the **engineering** work tasks for the **Project.***

II. PRELIMINARY ENGINEERING, DESIGN & CONSTRUCTION

The services listed below to be provided by the **Engineer** are a summary of the services; the actual contractual services will be identified in each work authorization as outlined in Article 7 of the Agreement. The services shall be divided into three phases with ***engineering*** work activities, as follows:

(A) **Preliminary Engineering.** For this phase, the **Engineer** will ultimately deliver the ***"Preliminary Engineering Report".*** Subsequently, the **Engineer** will prepare the ***"Preliminary Engineering Report"*** in sufficient detail to indicate clearly the problems involved and the alternate solutions available to the **Owner**; to include preliminary layouts, sketches, and cost estimates for the **Project**, and to set forth clearly the **Engineer**'s recommendations. Specific ***engineering*** work activities, tasks, and/or special services to be provided by the **Engineer** will include:

(1) <u>Preliminary Field Surveying</u>

(a) The **Engineer** shall establish benchmark identifications, if not already provided by the **Owner**.

(b) The **Engineer** shall obtain data for existing drainage facilities and/or structures, including size, type, and flowline (upstream & downstream) elevations of structures.

(c) The **Engineer** shall obtain profiles of intersecting roadways that cross existing and proposed channels.

(d) The **Engineer** shall obtain flood plain and cross-sections (along with appropriate overbank data), and establish reach lengths, as required.

(2) <u>Data Collection</u>

(a) The **Engineer** shall perform site visits for field reconnaissance.

(3) Final Report

The **Engineer** shall prepare five (5) bound, color copies of the final ***"Preliminary Engineering Report"***, including all attachments, exhibits, preliminary layouts, sketches, profiles, and cost estimates.

(B) Final Design. After the **Owner** has approved the **Engineer**'s final recommendations as shown in the ***"Preliminary Engineering Report"*** and the recommendations meet all Federal, State, and County regulations and requirements (including permitting), the **Engineer** will perform all required ***engineering*** activities to provide the **Owner** with a complete and approved set of plans, specifications, and estimate (PS&E) for each phase of construction of the **Project**. Specific ***engineering*** activities, tasks, and/or special services to be provided by the **Engineer** will include:

(1) **Design Field Surveying (Special Services)**

The **Engineer** shall perform field surveys and provide field layouts and/or information necessary to collect information required in the final design of the **Project**. This may include, but not be limited to, additional channel sections for the determination of final earthwork, roadway cross sections and profiles for intersecting roadways, soil bore staking, and right-of-way staking.

(2) **Geotechnical Investigations (Special Services)**

The **Engineer** shall perform geotechnical investigations and testing for the purpose of foundation studies and design for any pavement, retaining walls, bridges, and/or miscellaneous structures that may be required for final design.

(3) **Channel/Drainage Design**

The **Engineer** shall perform channel / drainage design for the proposed improvements to existing channels and/or facilities, as well as the proposed channels of the **Project**. The design of drainage improvements shall conform to the **Project** design criteria, and when possible, the standard designs required by the **Owner** (City, County, or State) of any associated roadways. These designs shall in all respects combine the application of sound ***engineering*** principles with a high degree of economy, and shall be submitted to the applicable City, County, State, and/or Federal agencies for approval.

(4) **Plans, Specifications & Estimates (PS&E)**

(a) The **Engineer** shall prepare contract drawings, specifications and estimates for construction of the **Project** or portions of the **Project** as authorized by the **Owner**. These documents shall in all respects combine the application of sound ***engineering*** principles with a high degree of economy, and shall be submitted to the applicable City, County, State, and/or Federal agencies for approval.

b) All final plan sheets shall be developed, by the **Engineer**, on 11" x 17" reproducible, 4 mil, double-matte, white, opaque film.

(c) Graphics files shall be developed by the **Engineer** in Microstation design file format, and must plot consistent with the reproducible plots submitted.

(c) **Plan Sheets.** Plan sheets developed by the **Engineer** shall include, but not be limited to, title sheet, typical sections, sequence of construction, traffic control (as applicable), specification data (including schedules for minimum sampling and testing), estimate and quantity, plan-profile, channel details, roadway details (as applicable), bridge and culvert details, hydraulic details, and standards. (Standards may be used from governing entities, but must be signed and dated by the **Project Engineer** of responsible supervision as being applicable to the **Project**.)

(d) **Specifications.** Whenever possible, the **Engineer** shall use the Texas Department of Transportation's 1993 Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges. Other specifications may be developed by the **Engineer**, but must incorporate, to the extent possible, references to standard requirements of AASHTO design and AASHTO testing procedures.

(e) **Estimates.** The **Engineer** shall prepare detailed cost estimates and proposals of authorized construction, which shall include summaries of bid items and quantities based, insofar as practicable, on the unit price system of bidding. The **Engineer** shall not be required to guarantee the accuracy of those estimates.

(C) Construction Phase Services. The **Engineer** shall provide ***engineering*** services for each authorized construction contract of the **Project**. Specific ***engineering*** work activities, tasks, and/or special services to be provided by the **Engineer** will include:

(1) **Construction Bidding**

The **Engineer** shall prepare the documents for all necessary copies of approved plans, specifications, notices to bidders, and proposals.

Note: Services for assistance in advertising for each authorized construction contract for the **Project**, opening and tabulation of bids, recommendations to the **Owner** as to the proper action on all bid proposals received, and the preparation of formal contract documents for the award of each construction contract will be performed by the **Engineer**.

(2) **Project Site Representation**

(a) In general, the **Engineer** shall provide the ***engineering support and data*** required for consultation and advisement to the **Owner**, and to protect the **Owner** against defects and deficiencies in the work of the **Contractor**.

(b) **Daily and Weekly Reports.** The **Engineer** shall provide the ***engineering support and data*** required to monitor the **Contractor**'s progress with weekly reports. This information will be utilized for the development of the ***monthly progress report*** to be provided to the **Owner** as identified under I – Engineering Management in this exhibit.

(c) **Contractor Payment.** The **Engineer** shall take measurements and calculate quantities, in accordance with the construction contract specifications, of those items of work accepted and conforming to the construction contract specifications, for the preparation of the monthly and final estimates for payment to the **Contractor** as identified and performed under I – Engineering Management in this Exhibit. *Note:* The **Engineer** is not responsible for actual payments to the **Contractor**.

(d) The **Engineer** will provide **Project** site representation of the authorized construction contract as follows:

(i) **Project Engineer.** The **Engineer** will provide visits by the ***Project Engineer*** or a competent representative of the **Engineer** to the site of construction at least three times each week for the purpose of monitoring the **Contractor**'s progress and conformance to the construction contract plans and specifications.

(ii) **Resident Engineer.** If authorized by the **Owner**, the **Engineer** will furnish the services of a ***Resident Engineer*** and/or construction representative(s) for continuous on-the-site representation.

(3) **Miscellaneous Technical Activities**

(a) **Construction Field Surveying.** The **Engineer** shall perform all field surveys and field layouts, including construction staking and right-of-way staking.

(b) **Shop Drawings.** The **Engineer** shall review and check all shop or working drawings furnished by the **Contractor**.

(c) **Control of Materials & Equipment.** The **Engineer** shall provide inspection of all materials and equipment furnished/used by the **Contractor** as follows:

(i) Review and record all laboratory, shop and mill tests of materials and equipment for compliance with the construction contract specifications.

(ii) Observe and/or perform **Project** record testing and/or independent assurance testing as outlined in the construction contract specifications.

(d) **Change Orders.** When applicable, the **Engineer** will prepare the ***engineering*** data, including plan sheet drawings, specifications, and estimates, for the preparation of construction contract change orders, which may be required due to actual field conditions encountered or new requirements directed by the **Owner**.

(4) **Final Acceptance**

(b) **As-Built Drawings.** The **Engineer** shall develop as-built drawings to show the work as actually constructed.

EXHIBIT D
WORK AUTHORIZATION NO. 4B
Lump Sum Fee Estimate

Weslaco North Lateral Control Structure

Construction Cost Esimate

Weslaco North Control Structure	$	287,155.00
TOTAL CONSTRUCTION COST	**$**	**287,155.00**

Basic Services

Construction Cost ($287,155) x 7.5%	Fee	$	21,436.62

Additional Services

Topo	$	6,445.15
Geotechnical Report	$	6,039.33

TOTAL WORK AUTHORIZATION No. 4B	**$**	**33,921.10**

EXHIBIT "F"

SUPPLEMENTAL AGREEMENT NO. 1
TO WORK AUTHORIZATION NO. 4B

THIS **SUPPLEMENTAL AGREEMENT No. 1** is made pursuant to the terms and conditions of **Work Authorization No. 4B** made by and between Hidalgo County Drainage District No. 1, hereinafter called the "**Owner**", and TEDSI Infrastructure Group, Inc. hereinafter call the "**Engineer**".

WITNESSETH

WHEREAS, the **Owner** and the **Engineer** executed Work Authorization No. 4B on the 17th day of July, 2013 concerning the **Design Field Topo Survey, Geotechnical Boring Report, Hydrologic & Hydraulics analysis, PS&E, and Construction Phase Services for the Weslaco North Lateral Control Structre identified in the 2012 HCDD # 1 Bond Referendum.**

WHEREAS, it has become necessary to amend Work Authorization No. 4B to delete Exhibit "D" in its entirety and replace with a new Revised Exhibit "D" dated 6/18/14.

A. AGREEMENT

NOW THEREFORE, premises considered, the **Owner** and the **Engineer** agree that said Work Authorization No. 4B is amended as follows:

I. Delete existing Exhibit "D" in its entirety and insert in lieu thereof Exhibit "D-1" dated 6/18/14. All fees and costs remain the same.

All other provisions are unchanged and remain in full force and effect.

IN WITNESS WHEREOF, the **Engineer** and the **Owner** have caused this Supplemental Agreement No. 1 to Work Authorization No. 4B for Professional Services to be executed as of the 29th day of ~~June,~~ July 2014.

ENGINEER:
TEDSI Infrastructure Group, Inc.

BY: _____
Jesse Salinas, President / CEO

OWNER:
Hidalgo County Drainage District No. 1

BY: Ramon Garcia
Ramon Garcia, Chairman

ATTACHMENTS:
Revised EXHIBIT D -Not to Exceed Fee Proposal
Revised EXHIBIT B
Attest as to form:
Atlas, Hall & Rodriguez, L.L.P.

_____
By: Stephen L. Crain

APPROVED BY HIDALGO COUNTY DRAINAGE DISTRICT NO. 1 BOARD OF DIRECTORS
ON: 7/29/14

REVISED EXHIBIT D-1 (6-18-14)
WORK AUTHORIZATION NO. 4B
Lump Sum Fee Estimate

Weslaco North Lateral Control Structure

Construction Cost Estimate

Weslaco North Control Structure	$	287,155.00
TOTAL CONSTRUCTION COST	**$**	**287,155.00**

Basic Services

LaFEVRE	$9,112.00
TEDSI	
GCM -	$1,250.00
Contract Phase -	$4,350.00
Construction Phase -	$5,724.62
Sub – Total	**$20,436.62**

Special Services

Geotechnical & Survey

RABA	$6,039.33
TEDSI	$6,445.15
Sub – Total	**$12,484.48**

TOTAL WORK AUTHORIZATION No. 4A **$32,921.10**

Hidalgo County Drainage District #1
Detail Encumbrance Ledger
13 - Year 2013
133 - CIP 2013 BOND SERIES
433 - Drainage Flood Control
From 1/1/2013 Through 3/31/2014

Vendor Name	Origin...	Docume...	Doc Date	Effective D...	B...	F...	F...	GL Co...	Increase	Decrease	Document Description	Session ID
	623104		7/22/2013	7/22/2013			Opening Balance		0.00		ENGINEERING & ARCHITECTURAL	
TEDSI INFRASTRUC... GROUP	623104	623104	7/22/2013	7/22/2013	370	010	008	43340	21,436.62		ENGINEERING & ARCHITECTURAL	ENC-7237
TEDSI INFRASTRUC... GROUP	623104	623104	7/22/2013	7/22/2013	370	010	008	43340	6,445.15		ENGINEERING & ARCHITECTURAL	ENC-7237
TEDSI INFRASTRUC... GROUP	623104	623104	7/22/2013	7/22/2013	370	010	008	43340	6,039.33		ENGINEERING & ARCHITECTURAL	ENC-7237
							Transaction Total		33,921.10	0.00		
				... 7/22/2013					33,921.10			
	623104		12/3/2013	12/3/2013			Opening Balance		0.00		API-51972-20131714 System Generated Liquidation	
TEDSI INFRASTRUC... GROUP	623104	0033	12/3/2013	12/3/2013	370	010	008	43340		3,215.49	API-51972-20131714 System Generated Liquidation	<ENLAPI2013...
TEDSI INFRASTRUC... GROUP	623104	0034	12/3/2013	12/3/2013	370	010	008	43340		6,445.15	API-51972-20131714 System Generated Liquidation	<ENLAPI2013...
TEDSI INFRASTRUC... GROUP	623104	0035	12/3/2013	12/3/2013	370	010	008	43340		6,039.33	API-51972-20131714 System Generated Liquidation	<ENLAPI2013...
							Transaction Total		0.00	15,699.97		
				... 12/3/2013						15,699.97		
	623104		1/7/2014	1/7/2014			Opening Balance		0.00		API-51990-20131740 System Generated Liquidation	
TEDSI INFRASTRUC... GROUP	623104	0042	1/7/2014	1/7/2014	370	010	008	43340		9,646.48	API-51990-20131740 System Generated Liquidation	<ENLAPI2014...
							Transaction Total		0.00	9,646.48		
				...e 1/7/2014						9,646.48		

Hidalgo County Drainage District #1
Detail Encumbrance Ledger
13 - Year 2013
133 - CIP 2013 BOND SERIES
433 - Drainage Flood Control
From 1/1/2013 Through 3/31/2014

Vendor Name	Origin...	Docume...	Doc Date	Effective D...	B...	F...	F...	GL Co...	Increase	Decrease	Document Description	Session ID
	Balanc...								8,574.65			
Report Opening/Current Balance									0.00	0.00		
Report Transaction Totals									33,921.10	25,346.45		
Report Current Balances									33,921.10	25,346.45		
Report Difference									8,574.65			

Budget Name: 370 Control Structures RESOLUTION BUDGET OF 8 at the cost of $139,000 each **Budget for Precinct** **#1 3 at $139,000**												
Engineer - Tedsi Infrastructure **Contract:** **2013 bond contract**	**BOD Date**	**PO #**	**Basic Engineering Services**	**Engineering Speical Services**	**ROW**	**Construction**	**Payment Applied**	**Invoice #**	**Check #**	**Check Date**	**Encumbrance Balance Available**
Project(s):											
1. Donna N. Lateral	$139,900.00										
2. Monte Cristo Drain Control estimated construction **$287,155.00**	$139,900.00										
3. Weslaco North Lateral	$139,900.00										
	$419,700.00										
1. Donna North Lateral											
No activity Engineer - Tedsi Infrastructure											
2. Monte Cristo Drain Control Structure	7/17/2013	623103	$ 21,536.62	$ 11,438.78	-	-					**$ 32,975.40**
Work Authorization #4-A-							$ 14,669.27	20131713	1773	12/3/2013	$ 18,306.13
For design field Topo Surveying, Geo Boring Rep. H&H Analysis, Ps&E for							$ 9,691.48	20131739	1793	1/7/2014	$ 8,614.65
Monte Cristo Drain Control											
*8-18-14-No Bids Received; readvertise w/Weslaco N. Lateral											
3. Weslaco North Lateral											
Work Authorization #4-B-	7/17/2013	623104	$ 33,921.10				$ -				**$ 33,921.10**
For design field Topo Surveying, Geo Boring Rep. H&H Analysis, Ps&E for							$ 15,699.97	20131714	1774	12/3/2013	$ 18,221.13
Weslaco North Lateral Control Structure							$ 9,646.48	20131740	1794	1/7/2014	$ 8,574.65
*8-18-14-Rejected sole bid; readvertised w/Montecristo Drain											
Pubget for Precinct #1 Control Structures	$ 419,700.00		$ 55,457.72	$ 11,438.78	$ -	$ -	$ 49,707.20				$ 17,189.30
Amount I Encumbered	$ 66,896.50								$ 66,896.50		
Amount Available for completion of projects	$ 352,803.50										

RE: TEDSI Invoice # 20141803 & 20141804 (2013-1128-04A & 1128-04B)

From : Claudia Garza <CGarza@tedsi.com> Tue, Nov 25, 2014 08:12 AM

Subject : RE: TEDSI Invoice # 20141803 & 20141804 (2013-1128-04A & 1128-04B)

To : Claudette Guerrero <claudette.guerrero@hcdd1.org>

Cc : Mark Lupher <MLupher@tedsi.com>

VC-5290

Good morning Claudette,

We still have not received payment on the invoices mentioned above.

You mentioned payment was issued with Check no. 1941 in the amount of $6,460.99 and Check No. 1942 in the amount of $6,430.99 on 10-28-2014 to our Mission office.

Please stop payment on those checks as previously mentioned below and reissue as soon as possible and send to our corporate office listed below:
Tedsi Infrastructure Group
738 Highway 6 South
Suite 430
Houston, Texas 77079

Thank you,

Claudia Garza
Project Administrator
TEDSI INFRASTRUCTURE GROUP
1201 E. Expressway 83
Mission, Texas 78572
Tel: 956.424.7898
Ext.: 103
Fax: 956.424.7022
www.tedsi.com
Email: cgarza@tedsi.com

This e-mail and any files transmitted with it are confidential and are intended solely for the use of the individual or entity to whom they are addressed. If you are NOT the intended recipient and receive this communication, please delete this message and any attachments. Thank you.

From: Claudia Garza
Sent: Tuesday, November 18, 2014 9:24 AM
To: 'Claudette Guerrero'
Cc: Mark Lupher
Subject: RE: TEDSI Invoice # 20141803 & 20141804 (2013-1128-04A & 1128-04B)

Hidalgo County Drainage District #1
Unposted General Ledger Transactions - VOIDED CKS REPORT
APV
VC-5290

Invoice Nu...	Vendor	P.O. Number	Transacti...	Effective...	Year Code	Fund Code	Functi... Code	Budget Code	GL Short Title	GL Code	Debit	Credit
00001942	TEDSI	20141804	PROJECT	11/25/2014	14	133			Cash Capital	10130	6,430.99	
00001942	TEDSI	20141804	PROJECT...	11/25/2014	14	133			Accounts Payabl	20200		6,430.99
Total 00001942											6,430.99	6,430.99
									Total VC-5290		6,430.99	6,430.99
Report Total											6,430.99	6,430.99