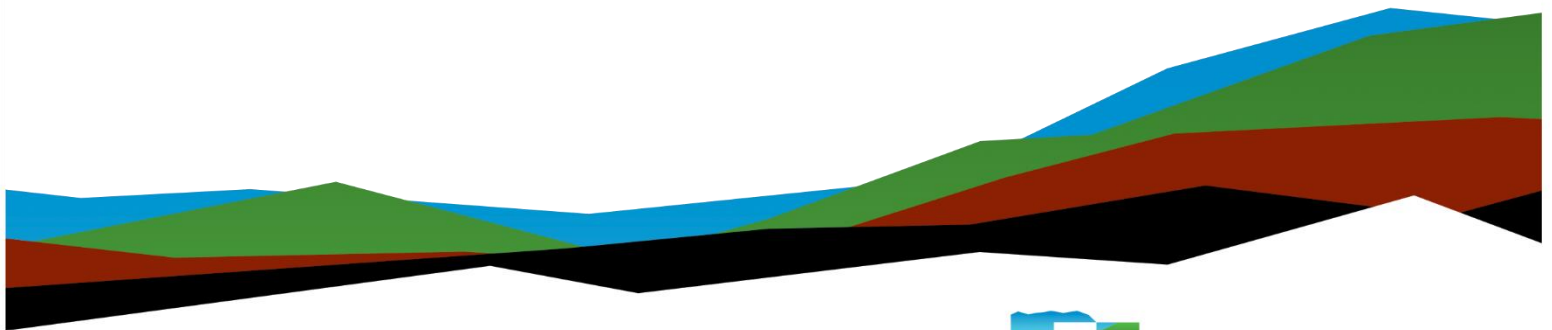


G.W Oliver Road over Little Lotts Creek Bridge Foundation Investigation (LRFD) Bridge # 1 Report

March 4, 2026 | Terracon Project No. ES255161

Prepared for:

Kimley-Horn and Associates Inc.
25 Bull Street, Ste. 400
Savannah, GA 31401



Nationwide
[Terracon.com](https://www.terracon.com)

- Facilities
- Environmental
- Geotechnical
- Materials



2201 Rowland Avenue
Savannah, GA 31404
P (912) 629-4000
Terracon.com

March 4, 2026

Kimley-Horn and Associates Inc.
25 Bull Street, Ste. 400
Savannah, GA 31401

Attn: Mr. Hunt Rhodes
P: (912) 328 4445
E: Rhodes.hunt@kimley-horn.com

Re: Bridge Foundation Investigation (LRFD) Bridge # 1 Report

G.W Oliver Road over Little Lotts Creek
Statesboro, Bulloch County, GA
Terracon Project No. ES255161

Dear Mr. Hunt:

We have completed the scope of the Bridge Foundation Investigation (LRFD) Bridge # 1 for the above referenced project in general accordance with Terracon Proposal No. PES255161 dated June 19, 2025. This report presents the findings of the subsurface exploration and provides geotechnical recommendations for the design and construction of the project.

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

Sincerely,

Terracon

Nurudeen Abidoye

Nurudeen Abidoye, M.S.
Senior Staff Geotechnical Engineer



Guoming Lin, Ph.D., G.E., BC.GE
Senior Consultant

Bridge Foundation Investigation (LRFD), Br. # 1
Bulloch County
Terracon Project # ES255161
March 4, 2026

LOCATION (See Map) G.W. Oliver over little Lott Creek, Bridge No.1

GENERAL INFORMATION

GEOLOGIC FORMATION Neogene undifferentiated Formation of the Georgia Coastal Plain Region.

SUBSURFACE FEATURES Below the surface material, the site consists of medium dense sands to depths of 2 to 6 feet BGS, EL +140 to +137 feet, followed by 56 to 65 feet of very loose to loose sands or occasional soft to stiff clays to (approx. elevation) +82 to +76 feet.
 Below the weak soils the site consists of medium dense to very dense sands interbedded with loose sands to the termination of SPT borings at depths of 110 to 115 feet, BGS, or (approx. elevation) +34 to +28 feet.
 Groundwater was encountered in the SPT borings at depths of approximately 7 feet BGS, or (approx. elevation) +137 to 136 feet. For additional information see the boring layout and boring logs.

SITE CLASSIFICATION We recommend a site class of E, per AASHTO LRFD 9th Edition Section 3.10.3.1.

1.0 – FOUNDATION RECOMMENDATIONS

Bents	Pile Bent (Type)
Bents 1 & 4	PSC
Bents 2 & 3	PSC

1.1 – Pile Properties

6.5 ksi (28-day Concrete Strength) PSC Pile Data

Pile Type	Pile Size (in)	Nominal Compression Stress (ksi)	Nominal Tension Stress (ksi)		Maximum Factored Structural Resistance (kips)
			Normal Env.	Severe Env.	
PSC	20 x 20	4.375	1.392	1.150	1252

1.2 – DESIGN LOADS

Bents	Maximum Factored Strength Limit State Load (kips)	Maximum Factored Service Limit State Load (kips)	Factored Extreme Event I Limit State Load (kips)
1 & 4	214	145	105
2 & 3	281	218	238

2.0 -- FOUNDATION DESIGN

2.1 -- PILE FOUNDATION DESIGN

Bents	Pile Type	Size (in)	Down Drag *** (kips)	Scour (Kips)	Driving Resistance* (kips)
1	PSC	20	--	--	329
2	PSC	20	--	34.3	467
3	PSC	20	--	37.5	470
4	PSC	20	--	--	329

Note¹: Driving resistance is equivalent to pile capacity during construction. For intermediate bents or bents prone to scour, the post-construction pile capacity is reduced by the scour load if a 100-year scour event occurs.

2.2 – LATERAL DISPLACEMENT DESIGN

Bents	Pile Type	Size	Maximum Strength Limit (kips)		Maximum Lateral Deflection (inches)	
			Axial	Shear	Fixed Head	Free Head
Bent 1	PSC	20	44	11	0.15	0.39
Bent 2	PSC	20	113	9	1.58	7.80
Bent 2*	PSC	20	113	9	0.39	1.61
Bent 3	PSC	20	113	9	1.54	7.79
Bent 3*	PSC	20	113	9	0.39	1.59
Bent 4	PSC	20	44	11	0.16	0.39

Note*: Pile deflection analysis did not include scour considerations.

3.0 -- FOUNDATION ELEVATIONS

Bents	Minimum Tip	Estimated Tip
Bent 1	+82	+70
Bent 2	+68	+55
Bent 3	+70	+55
Bent 4	+80	+70

4.0 -- GENERAL NOTES

Elevations All elevations are based on benchmark elevation of a nail in asphalt located 7.63 feet left of station 107+18.51 on construction limit. With Elevation 143.64'. Northing: 854388.99 and Easting 767547.31.

Waiting Period None required.

Theoretical Scour Appears feasible for the material encountered.

As Built Foundation Information The as built foundation information should be forwarded to the Geotechnical Engineering Bureau upon completion of the foundation system.

4.1 -- PILE FOUNDATION NOTES

PDO Driving resistance after minimum tip elevations are achieved in conjunction with GDOT Standard Specification 520.3.05.D.2 and Special Provision 523 Dynamic Pile Testing. Perform one PDA test at Bent 1 Left, Bent 2 Right, Bent 3 Left and Bent 4 Right.

*** Nominal Bearing Resistance of Single Pile** Driving resistance is based on the following field verification method and resistance factor ϕ_{dyn} per AASHTO LRFD 2020 (10.5.5.2.3-1):

Resistance Determination Method

Resistance Factor

Driving criteria established by dynamic testing of at least two piles per site condition, but no less than 2% of the production piles.

0.65

Drivability A drivability analysis has not been completed on the above mentioned piles to their respective estimated tips.

Freeze Bearing Piles should not be overdriven at this site. If dynamic bearing has not been achieved by 2 feet above the Estimated Tip Elevation, pile driving should be stopped for a minimum of 24 hours and re-started with a warm hammer to check for "freeze" bearing.

Corrosion Resistant PSC Piling The corrosion series test results of soil and water are summarized in the following table.

Corrosion Test	Requirement	Test Result
pH	5.5 to 9.5	5.3 to 7.01
Resistivity	Greater than 4000 ohm-cm	1,200 to 30,000
Chloride Content	Less than 100 ppm	21 to 47.2

Sulfate Concentration	Less than 200 ppm	12.9 to 97
--------------------------	----------------------	------------

Based on the test results, no special provisions for corrosion protection of prestressed concrete (PSC) piles are recommended for the foundation of this bridge.

Test Piles We recommend that PSC test piles be set up at Bent 1 Left, Bent 2 Right, Bent 3 Left and Bent 4 Right to help determine pile order lengths. They should be of sufficient length to reach a depth of 5 feet below the Estimated Tip Elevation.

Special Problems Erratic pile lengths can be expected.

5.0 – QA / QC

Prepared By Name: Nurudeen Abidoye, M.S.

Reviewed By Name: Guoming Lin, Ph.D., G.E., BC.GE.

**Approved By
Signature:**



Geotechnical Engineering Report

G.W. Oliver Road over Little Lotts Creek | Statesboro, GA

March 4, 2026 | Terracon Project No. ES255161



Attachments

Exploration and Testing Procedures

Field Exploration

Number of Borings	Type of Exploration	Maximum Boring Depth (feet)	Location
4	Standard Penetration Test (SPT) Boring	115	Project Area

Boring Layout and Elevations: Terracon personnel provided the boring layout and elevation readings obtained in the field using survey grade Trimble R12 system (Feet, NAVD 88)

Subsurface Exploration Procedures: The soil test borings were performed in accordance with ASTM D1586 with a truck-mounted drilling rig using mud rotary drilling techniques. The SPT samples were taken at 2-foot intervals in the upper ten (10) feet and at 5-foot intervals thereafter using the split-barrel sampling procedures. In the split barrel sampling procedure, the number of blows required to advance a standard 2-inch O.D. split barrel sampler the last 12 inches of the typical total 18-inch penetration by means of a 140-pound hammer with a free fall of 30 inches, is the standard penetration resistance value (SPT-N). This value is used to estimate the in situ relative density of cohesionless soils and consistency of cohesive soils.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water Content of Soil and Rock Mass (Moisture)
- ASTM D422 Standard Test Method for Particle-Size Analysis of Soils

Geotechnical Engineering Report

G.W. Oliver Road over Little Lotts Creek | Statesboro, GA

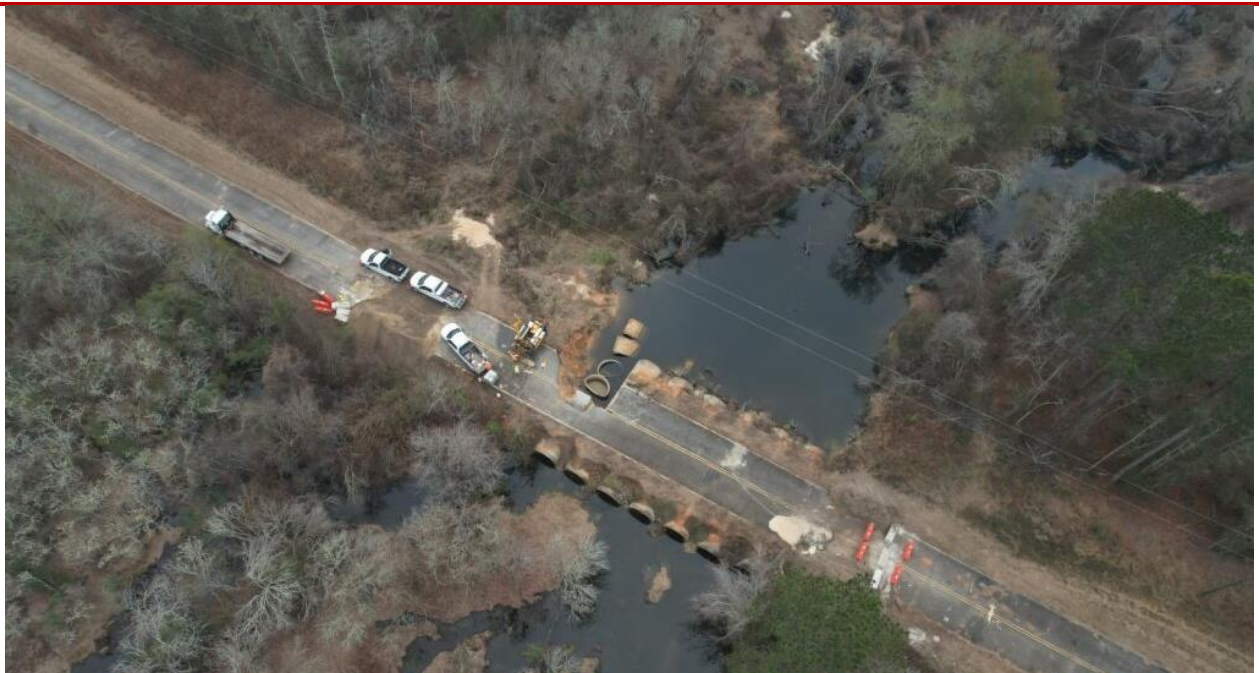
March 4, 2026 | Terracon Project No. ES255161



- ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

The laboratory testing program often included examination of soil samples by an engineer. Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the Unified Soil Classification System.

Photography Log



Existing condition near the proposed bridge



Deteriorated culvert pipes discharging into Little Lotts Creek

Site Location and Exploration Plans

Contents:

Site Location

Exploration Plan

Typical Soil Profile and Proposed Design Plan

Geotechnical Engineering Report

G.W. Oliver Road over Little Lotts Creek | Statesboro, GA

March 4, 2026 | Terracon Project No. ES255161



Site Location

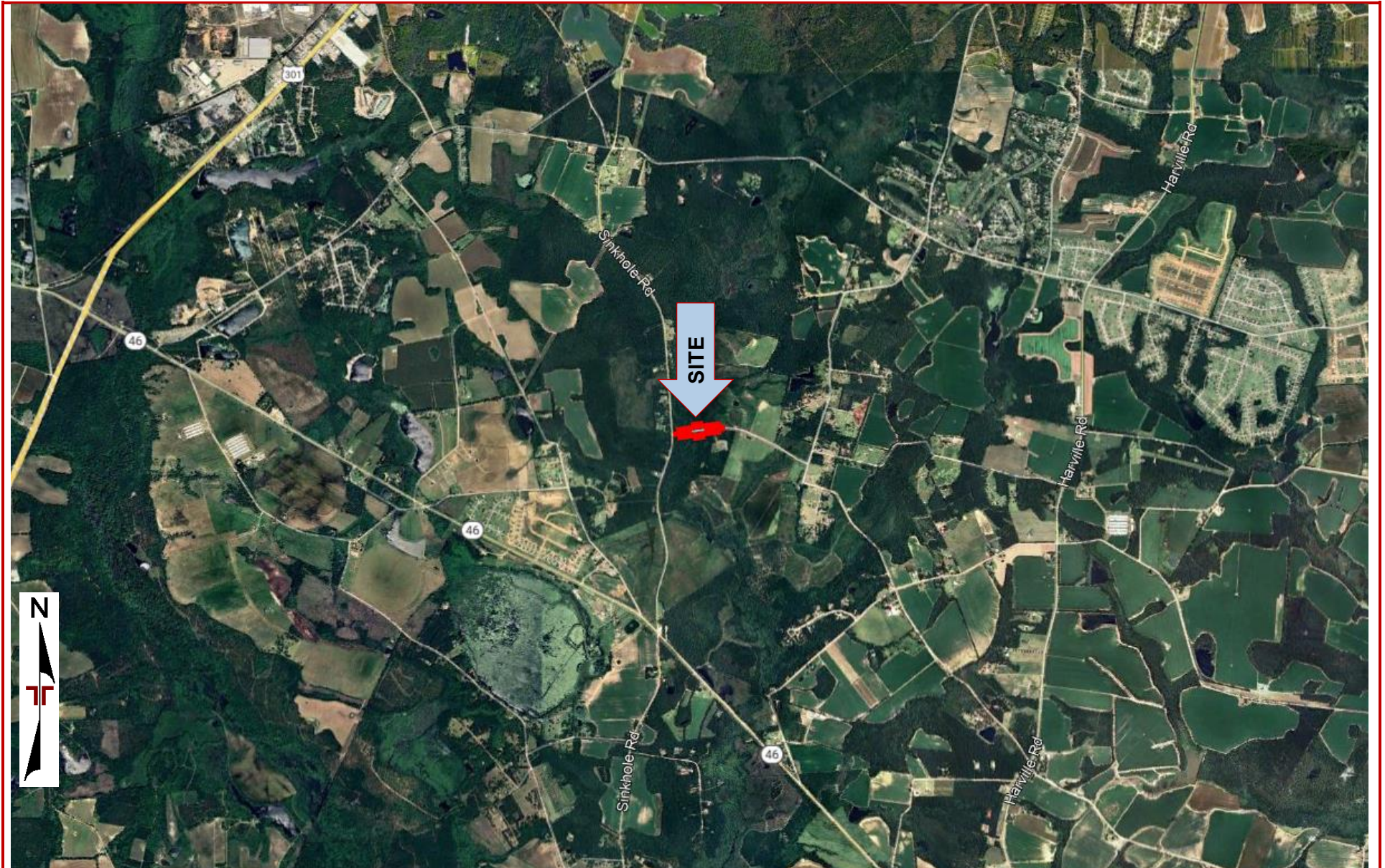


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Geotechnical Engineering Report

G.W. Oliver Road over Little Lotts Creek | Statesboro, GA
March 4, 2026 | Terracon Project No. ES255161



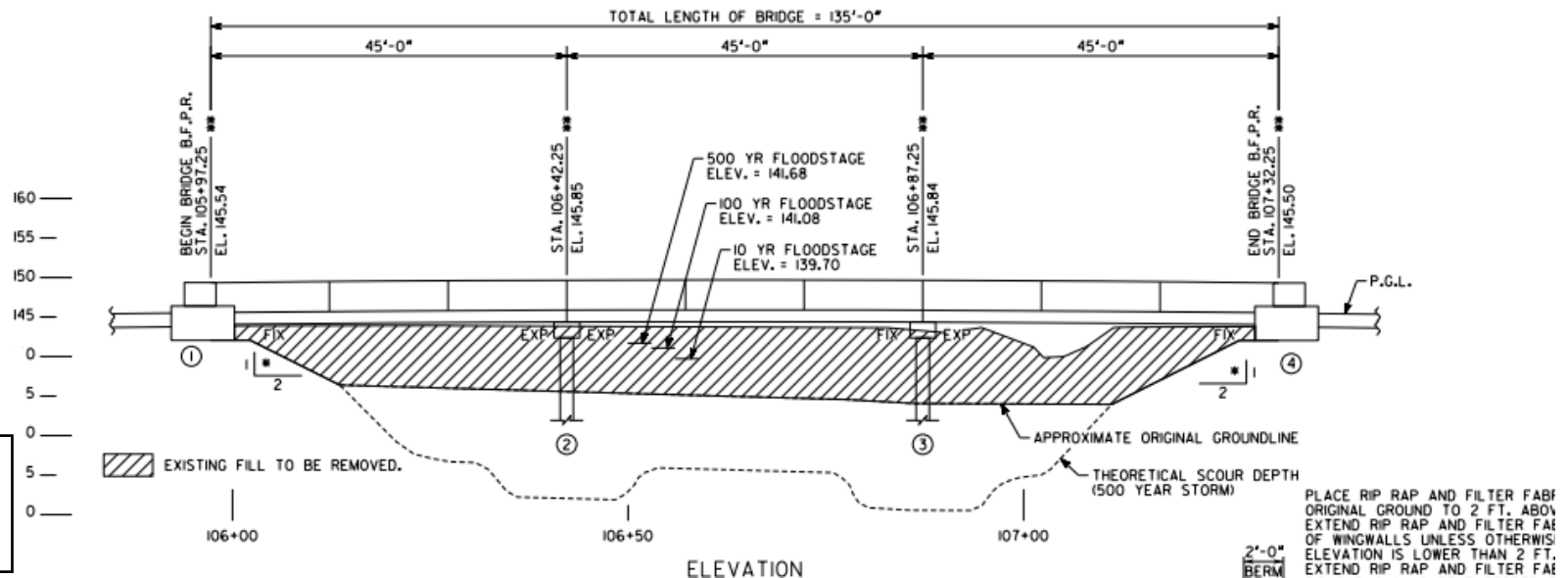
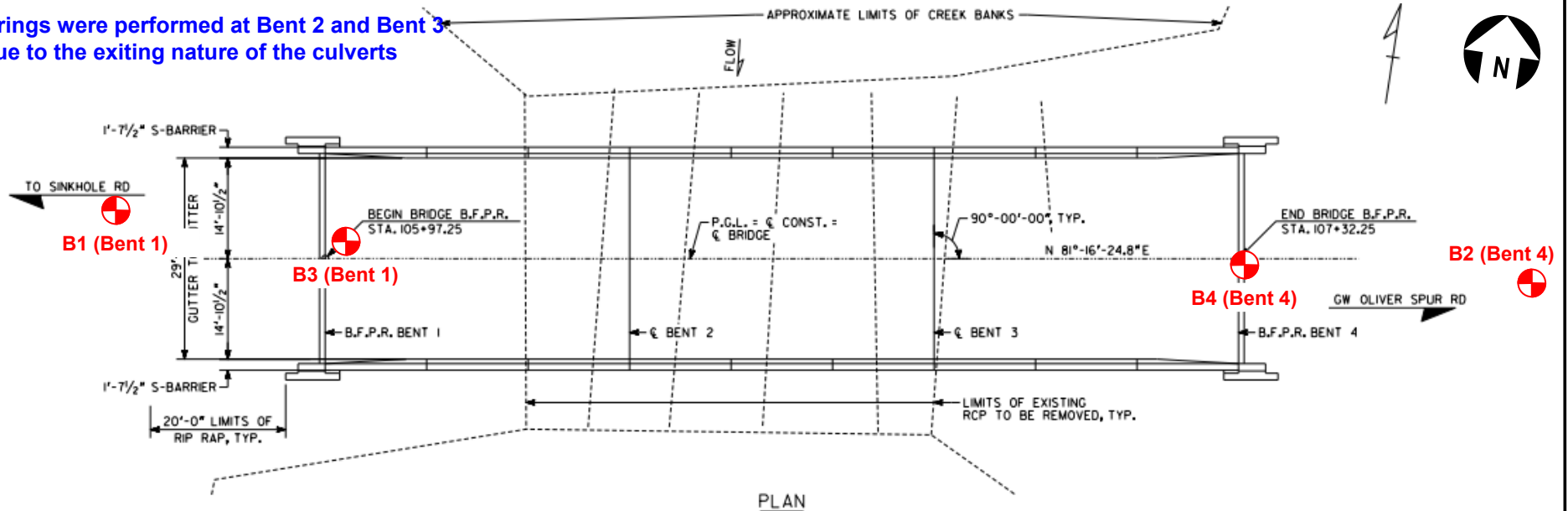
Exploration Plan



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

No borings were performed at Bent 2 and Bent 3
due to the exiting nature of the culverts



NOTES:

BRIDGE DESIGN PLAN PROVIDED TO TERRACON BY KIMLEY-HORN VIA EMAIL ON 12-05-25.

ALL EXPLORATION LOCATIONS WERE LOCATED IN THE FIELD USING A GPS UNIT AND / OR SITE LANDMARKS. EXPLORATION LOCATIONS SHOULD BE CONSIDERED APPROXIMATE. DIAGRAM IS FOR GENERAL LOCATION ONLY; NOT INTENDED FOR CONSTRUCTION PURPOSES.

Project Manager: NAA

Drawn by: NAA

Checked by: CZ

Approved by: GL

Project No.

Scale: N.T.S.

File Name: ES255161

Date: 3/4/26

Terracon

2201 Rowland Avenue Savannah, Georgia 31404

Phone (912) 629 4000 Fax (912) 629 4001

EXPLORATION PLAN

G.W. Oliver over Little Lotts Road

Statesboro

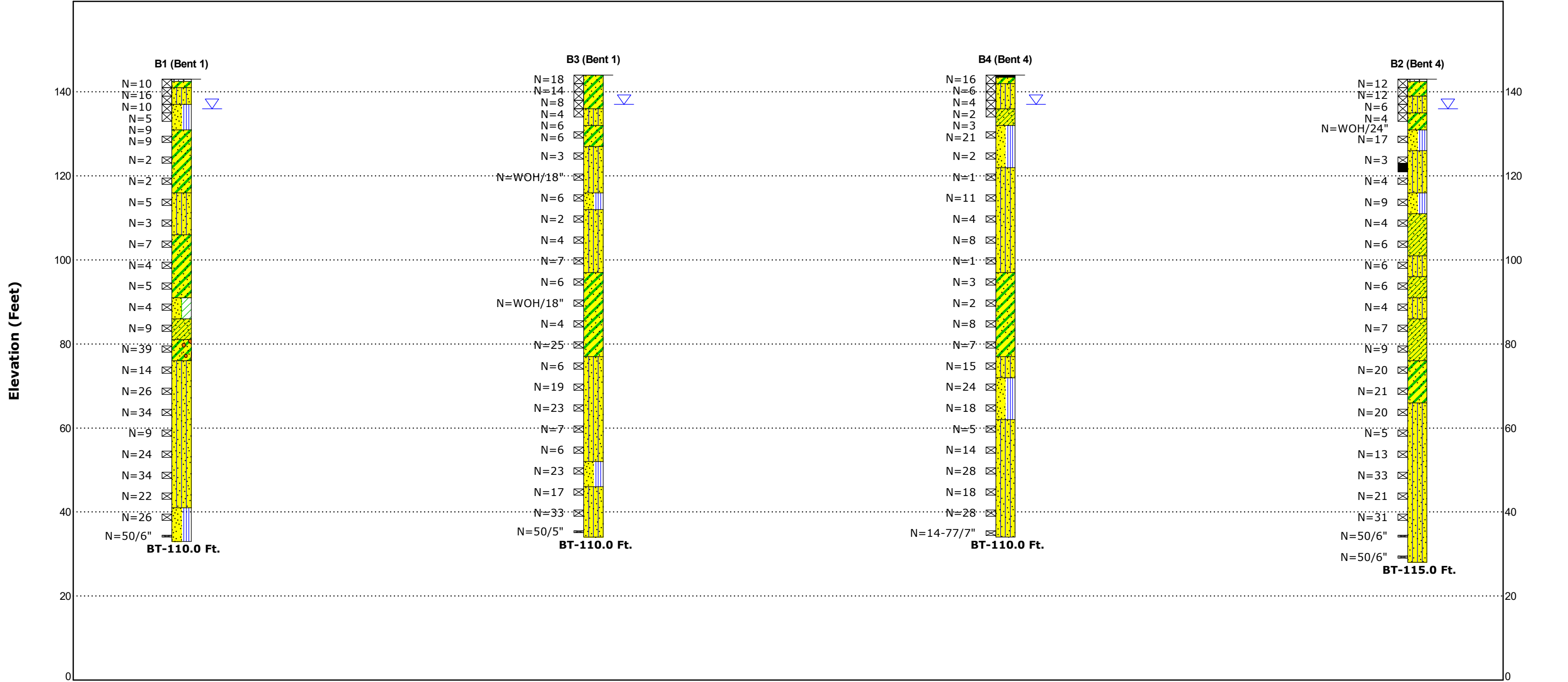
Bulloch County, Georgia

Exploration and Laboratory Results

Contents:

- Subsurface Profile Cross Section
- SPT Boring Logs
- HA Boring Logs
- Summary of Laboratory Results
- Atterberg Limits
- Grain Size Distribution
- Corrosion Test Results

Subsurface Profile



Notes	Water Level Observations	Explanation	Material Legend
See Exploration Plan for orientation of soil profile. See General Notes in Supporting Information for symbols and soil classifications. Soils profile provided for illustration purposes only. Soils between borings may differ AR - Auger Refusal BT - Boring Termination	Water Level Reading at time of drilling. Water Level Reading after drilling.	B1 (Bent 1) Moisture Content — %w Sampling (See General Notes) AR BT Borehole Number LL PL — Liquid and Plastic Limits Borehole Lithology Borehole Termination Type	Topsoil Clayey Sand Silty Sand Poorly-graded Sand with Silt Poorly-graded Sand with Clay Sandy Lean Clay Clayey Sand with Gravel Asphalt

Boring Log No. B1 (Bent 1)

Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Percent Fines	Water Content (%)	Atterberg Limits
	Latitude: 32.3485° Longitude: -81.8065°								LL-PL-PI
	Depth (Ft.)		Elevation: 143 (Ft.)						
	0.5	TOPSOIL , with vegetation	142.5			3-5-5-11 N=10			
	2.0	CLAYEY SAND (SC) , fine to medium grained, red/orange/brown, medium dense	141			7-8-8-7 N=16			
	6.0	SILTY SAND (SM) , with trace mulch and wood debris, fine to medium grained, dark brown/light brown, medium dense	137			5-6-4-5 N=10			
		POORLY GRADED SAND WITH SILT (SP-SM) , fine to coarse grained, brown/gray, loose				1-2-3-3 N=5			
	12.0		131			3-4-5-3 N=9	8.1	21.0	NP
		CLAYEY SAND (SC) , fine to medium grained, light gray/orange, loose				4-5-4 N=9			
		light gray, very loose				1-1-1 N=2			
						1-1-1 N=2			
	27.0		116						
		SILTY SAND (SM) , fine to medium grained, light gray, loose				2-2-3 N=5			
		very loose				1-1-2 N=3	13.3	32.4	NP
	37.0		106						
		CLAYEY SAND (SC) , fine to medium grained, light gray, loose				3-3-4 N=7			
		no recovery				2-2-2 N=4			
	52.0		91			2-2-3 N=5	19.8	33.9	50-18-32
		POORLY GRADED SAND WITH CLAY (SP-SC) , fine to coarse grained, light gray, loose				1-2-2 N=4			
	57.0		86						
		SANDY LEAN CLAY (CL) , light gray, stiff				1-3-6			
			60						

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevation Reference: Elevation measured in the field in feet, NAVD 88.

Notes

Hammer Efficiency = 77.2%

Water Level Observations

Groundwater encountered @ 7 ft BGS

Drill Rig
BR-2500

Hammer Type
Automatic

Driller
Independent Drilling

Logged by
LH

Boring Started
08-25-2025

Boring Completed
08-26-2025

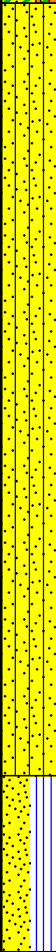
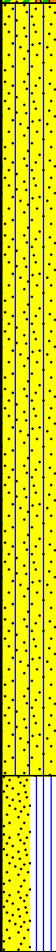
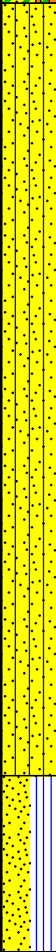
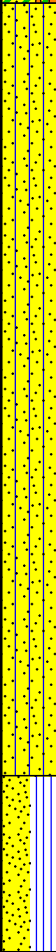
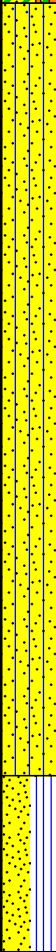
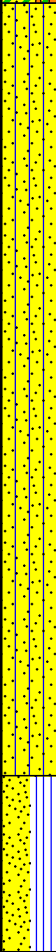
Advancement Method

Mud Rotary

Abandonment Method

Boring backfilled with Auger Cuttings and/or Bentonite

Boring Log No. B1 (Bent 1)

Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Percent Fines	Water Content (%)	Atterberg Limits
	Latitude: 32.3485° Longitude: -81.8065°								LL-PL-PI
	Depth (Ft.)	Elevation: 143 (Ft.)							
	SANDY LEAN CLAY (CL) , light gray, stiff <i>(continued)</i>					N=9			
	62.0	81							
	CLAYEY SAND (SC) , fine to coarse grained, light gray, dense								
					X	9-21-18 N=39	29.0	71.0	75-28-47
	67.0	76							
	SILTY SAND (SM) , fine to coarse grained, light gray, medium dense				X	4-6-8 N=14			
			70		X	7-12-14 N=26			
	dense		80		X	11-15-19 N=34			
	loose				X	5-4-5 N=9	12.8	31.9	NP
	medium dense		90		X	8-10-14 N=24			
	dense				X	9-13-21 N=34			
	medium dense		100		X	4-9-13 N=22			
	102.0	41							
	POORLY GRADED SAND WITH SILT (SP-SM) , fine to medium grained, light gray, medium dense								
					X	10-12-14 N=26	11.9	31.8	NP
									
	110.0	33			X	N=50/6"			
	Boring Terminated at 110 Feet		110						

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevation Reference: Elevation measured in the field in feet, NAVD 88.

Notes

Hammer Efficiency = 77.2%

Water Level Observations

 Groundwater encountered @ 7 ft BGS

Drill Rig
BR-2500

Hammer Type
Automatic

Driller
Independent Drilling

Logged by
LH

Boring Started
08-25-2025

Boring Completed
08-26-2025

Advancement Method

Mud Rotary

Abandonment Method

Boring backfilled with Auger Cuttings and/or Bentonite

Boring Log No. B3 (Bent 1)

Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Percent Fines	Water Content (%)	Atterberg Limits
	Latitude: 32.3485° Longitude: -81.8063°								LL-PL-PI
	Depth (Ft.)	Elevation: 144 (Ft.)							
		CLAYEY SAND (SC) , with topsoil and vegetation, fine to medium grained, orange/red/brown, medium dense orange/red			X	19-9-9-9 N=18			
		fine to coarse grained, loose			X	9-7-7-7 N=14			
		orange			X	2-3-5-5 N=8			
	8.0		136		▽	4-3-1-2 N=4			
					X	1-2-4-4 N=6			
		SILTY SAND (SM) , fine to medium grained, orange, loose			X				
	12.0		132						
		CLAYEY SAND (SC) , fine to medium grained, light gray/light green, loose			X	2-2-4 N=6	37.6	35.3	58-23-35
	17.0		127						
		SILTY SAND (SM) , fine to medium grained, light gray, very loose			X	2-1-2 N=3			
		light gray/tan			X	N=WOH/18"			
	28.0		116						
		POORLY GRADED SAND WITH SILT (SP-SM) , fine to medium grained, light gray/tan, loose			X	3-2-4 N=6			
	32.0		112						
		SILTY SAND (SM) , fine to medium grained, light gray, very loose			X	0-1-1 N=2	12.3	33.1	NP
		loose			X	0-2-2 N=4			
					X	2-3-4 N=7			
	47.0		97						
		CLAYEY SAND (SC) , fine to coarse grained, light gray, loose			X	3-3-3 N=6			
		no recovery [53.5"-55" BGS], very loose			X	N=WOH/18"			
		with organics, loose			X	3-1-3			
					X				

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevation Reference: Elevation measured in the field in feet, NAVD 88.

Water Level Observations

Groundwater encountered @ 7 ft BGS

Drill Rig
DR 621

Hammer Type
Automatic

Driller
LP/NN

Logged by
LH

Boring Started
01-06-2026

Boring Completed
01-06-2026

Notes

WOH=Weight of Hammer

Advancement Method

Mud Rotary

Abandonment Method

Boring backfilled with Auger Cuttings and/or Bentonite

Boring Log No. B3 (Bent 1)

Graphic Log	Location: See Exploration Plan Latitude: 32.3485° Longitude: -81.8063° Depth (Ft.) Elevation: 144 (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Percent Fines	Water Content (%)	Atterberg Limits
								LL-PL-PI
	CLAYEY SAND (SC) , fine to coarse grained, light gray, loose (continued) light gray/green, medium dense	67.0			N=4			
		77			2-7-18 N=25			
	SILTY SAND (SM) , no recovery [68.5"-70" BGS], fine to medium grained, light gray, loose medium dense	70			1-2-4 N=6			
					7-7-12 N=19	12.4	35.8	NP
		80			7-10-13 N=23			
					3-3-4 N=7			
	no recovery [83.5"-85" BGS], loose light gray/light brown, loose	90			4-3-3 N=6			
		92.0			9-10-13 N=23			
	POORLY GRADED SAND WITH SILT (SP-SM) , fine to coarse grained, light gray, medium dense	52						
		98.0			4-6-11 N=17			
	SILTY SAND (SM) , fine to medium grained, light gray, medium dense dense	46			11-14-19 N=33			
		100			N=50/5"			
	very dense	110.0						
	Boring Terminated at 110 Feet	34						
		110						

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
See [Supporting Information](#) for explanation of symbols and abbreviations.
Elevation Reference: Elevation measured in the field in feet, NAVD 88.

Water Level Observations
 Groundwater encountered @ 7 ft BGS

Drill Rig
DR 621

Hammer Type
Automatic

Driller
LP/NN

Notes

Advancement Method
Mud Rotary

Logged by
LH

Abandonment Method
Boring backfilled with Auger Cuttings and/or Bentonite

Boring Started
01-06-2026

Boring Completed
01-06-2026

Boring Log No. B4 (Bent 4)

Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Percent Fines	Water Content (%)	Atterberg Limits
	Latitude: 32.3485° Longitude: -81.8059°								LL-PL-PI
	Depth (Ft.)	Elevation: 144 (Ft.)							
	0.5	ASPHALT CONCRETE , [6" thick]	143.5			11-8-8-7 N=16			
	2.0	CLAYEY SAND (SC) , fine to medium grained, brown, medium dense	142			2-3-3-2 N=6			
		SILTY SAND (SM) , trace pebbles, fine to medium grained, orange/brown, loose				1-2-2-1 N=4			
		trace organics (wood), brown/gray, very loose				0-1-1-1 N=2			
	8.0	SANDY LEAN CLAY (CL) , trace pebbles, brown/gray, soft	136			1-1-2-1 N=3			
	12.0		132						
		POORLY GRADED SAND WITH SILT (SP-SM) , fine to coarse grained, light brown, medium dense				6-11-10 N=21			
		light brown/olive, very loose							
	22.0		122			3-1-1 N=2	10.1	37.0	NP
		SILTY SAND (SM) , fine to medium grained, gray, very loose				0-0-1 N=1			
		light brown/gray, medium dense				5-5-6 N=11			
		light gray, loose				1-1-3 N=4			
		light olive green, very loose				3-3-5 N=8			
	47.0		97			0-0-1 N=1	12.8	36.8	NP
		CLAYEY SAND (SC) , fine to medium grained, light gray, very loose				3-2-1 N=3	42.2	76.4	41-18-23
		loose				0-1-1 N=2			
						3-4-4			

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevation Reference: Elevation measured in the field in feet, NAVD 88.

Water Level Observations

Groundwater encountered @ 7 ft BGS

Drill Rig
DR 621

Hammer Type
Automatic

Driller
LP/NN

Logged by
LH

Boring Started
01-08-2026

Boring Completed
01-08-2026

Notes

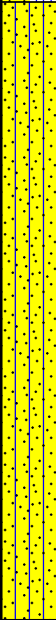
Advancement Method

Mud Rotary

Abandonment Method

Boring backfilled with Auger Cuttings and/or Bentonite

Boring Log No. B4 (Bent 4)

Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Percent Fines	Water Content (%)	Atterberg Limits
	Latitude: 32.3485° Longitude: -81.8059°								LL-PL-PI
	Depth (Ft.)	Elevation: 144 (Ft.)							
	CLAYEY SAND (SC) , fine to medium grained, light gray, very loose <i>(continued)</i>					N=8			
	67.0	77			X	2-2-5 N=7			
	SILTY SAND (SM) , fine to medium grained, light gray, medium dense				X	3-6-9 N=15			
	72.0	72							
	POORLY GRADED SAND WITH SILT (SP-SM) , fine to coarse grained, light gray, medium dense				X	7-10-14 N=24			
					X	7-9-9 N=18			
	82.0	62							
	SILTY SAND (SM) , no recovery [83.5"-85" BGS], fine to medium grained, light gray, loose				X	2-2-3 N=5			
					X	6-5-9 N=14			
					X	6-10-18 N=28			
					X	3-5-13 N=18			
					X	11-14-14 N=28			
	110.0	34			X	N=14-77/7"			
	Boring Terminated at 110 Feet								

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevation Reference: Elevation measured in the field in feet, NAVD 88.

Water Level Observations

 Groundwater encountered @ 7 ft BGS

Drill Rig
DR 621

Hammer Type
Automatic

Driller
LP/NN

Logged by
LH

Boring Started
01-08-2026

Boring Completed
01-08-2026

Notes

Advancement Method

Mud Rotary

Abandonment Method

Boring backfilled with Auger Cuttings and/or Bentonite

Boring Log No. B2 (Bent 4)

Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Percent Fines	Water Content (%)	Atterberg Limits
	Latitude: 32.3485° Longitude: -81.8058°								LL-PL-PI
	Depth (Ft.)	Elevation: 143 (Ft.)							
	0.5	TOPSOIL , with vegetation	142.5			4-6-6-6 N=12			
	4.0	CLAYEY SAND (SC) , fine to medium grained, red/orange/brown, medium dense	139			4-5-7-5 N=12			
		SILTY SAND (SM) , fine to medium grained, brown/gray, loose				4-4-2-1 N=6			
	8.0		135			3-3-1-1 N=4			
		CLAYEY SAND (SC) , fine to medium grained, gray, very loose				N=WOH/24"	29.2	18.4	40-17-23
	12.0		131						
		POORLY GRADED SAND WITH SILT (SP-SM) , with trace pebbles, fine to coarse grained, light gray, medium dense				8-9-8 N=17			
	17.0		126						
		SILTY SAND (SM) , fine to medium grained, light gray, very loose				0-1-2 N=3	15.4	34.5	NP
		shelby tube [20'-22' ft BGS]							
		loose				1-2-2 N=4	13.1	31.6	NP
	27.0		116						
		POORLY GRADED SAND WITH SILT (SP-SM) , fine to medium grained, light gray, loose				4-4-5 N=9			
	32.0		111						
		SANDY LEAN CLAY (CL) , light gray, soft				3-2-2 N=4			
		medium stiff				2-3-3 N=6			
	42.0		101						
		SILTY SAND (SM) , fine to medium grained, light gray, loose				2-2-4 N=6	12.5	33.2	NP
	47.0		96						
		SANDY LEAN CLAY (CL) , light gray, medium stiff				2-2-4 N=6			
	52.0		91						
		SILTY SAND (SM) , fine to medium grained, light gray, loose				1-2-2 N=4			
	57.0		86						
		SANDY LEAN CLAY (CL) , light gray, medium stiff				2-2-5			

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevation Reference: Elevation measured in the field in feet, NAVD 88.

Notes

Hammer Efficiency = 77.2%
WOH - Weight of Hammer

Water Level Observations

Groundwater encountered @ 7 ft BGS

Drill Rig
BR-2500

Hammer Type
Automatic

Driller
Independent Drilling

Logged by
LH

Boring Started
08-26-2025

Boring Completed
08-26-2025

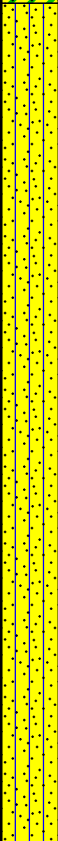
Advancement Method

Mud Rotary

Abandonment Method

Boring backfilled with Auger Cuttings and/or Bentonite

Boring Log No. B2 (Bent 4)

Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Percent Fines	Water Content (%)	Atterberg Limits
	Latitude: 32.3485° Longitude: -81.8058°								LL-PL-PI
	Depth (Ft.)	Elevation: 143 (Ft.)							
	<u>SANDY LEAN CLAY (CL)</u> , light gray, medium stiff (<i>continued</i>)					N=7			
	stiff				X	3-4-5 N=9			
67.0		76							
	<u>CLAYEY SAND (SC)</u> , fine to medium grained, light gray, medium dense					4-6-14 N=20			
					X	9-11-10 N=21			
77.0		66							
	<u>SILTY SAND (SM)</u> , fine to medium grained, light gray, medium dense					7-9-11 N=20			
	loose				X	0-2-3 N=5	15.8	36.7	NP
	medium dense								
					X	6-4-9 N=13			
	dense				X	9-15-18 N=33			
	medium dense				X	6-9-12 N=21			
	dense				X	10-14-17 N=31			
	with trace limestone fragment, very dense				X	N=50/6"			
					X	N=50/6"			
	115.0		28						
	<i>Boring Terminated at 115 Feet</i>								

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevation Reference: Elevation measured in the field in feet, NAVD 88.

Notes

Hammer Efficiency = 77.2%
WOH - Weight of Hammer

Water Level Observations

Groundwater encountered @ 7 ft BGS

Drill Rig
BR-2500

Hammer Type
Automatic

Driller
Independent Drilling

Logged by
LH

Boring Started
08-26-2025

Boring Completed
08-26-2025

Advancement Method

Mud Rotary

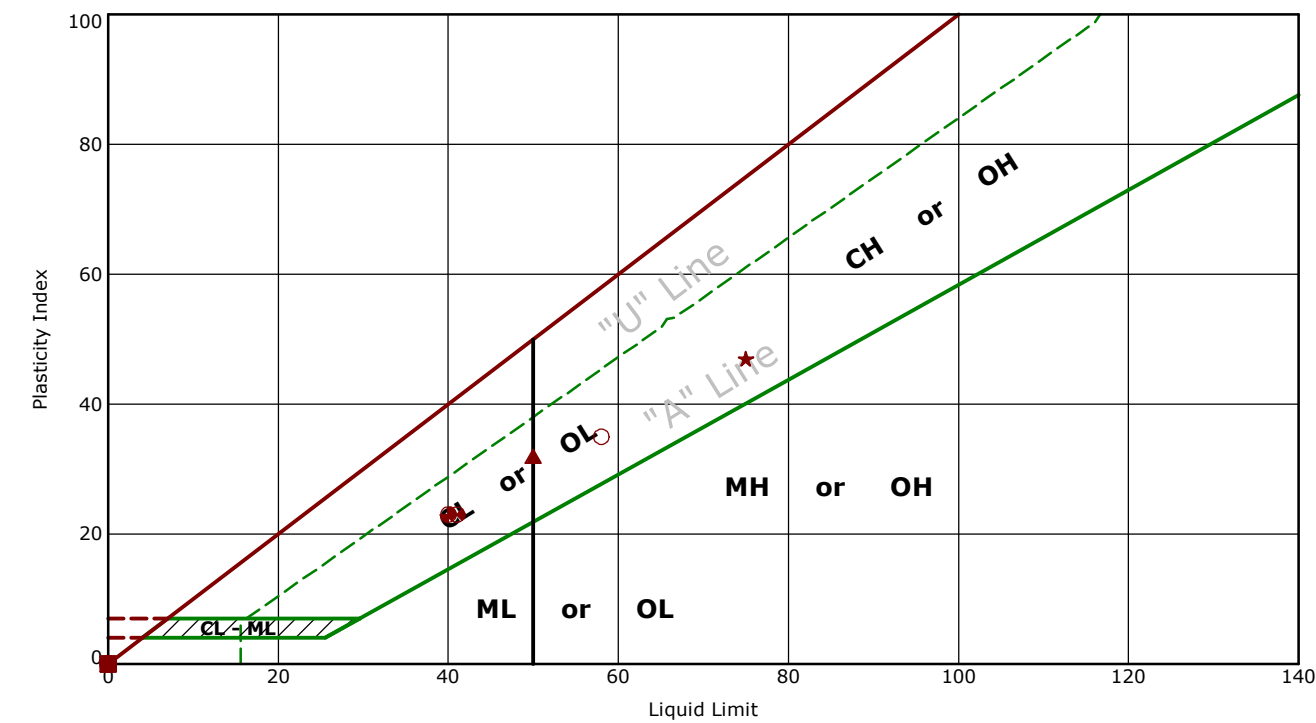
Abandonment Method

Boring backfilled with Auger Cuttings and/or Bentonite

Summary of Laboratory Results

Boring ID	Depth (Ft.)	Soil Classification USCS	Water Content (%)	% Gravel	% Sand	% Fines	Liquid Limit	Plastic Limit	Plasticity Index
B1 (Bent 1)	8-10	POORLY GRADED SAND WITH SILT(SP-SM)	21.0	1.8	90.1	8.1	NP	NP	NP
B1 (Bent 1)	33.5-35	SILTY SAND(SM)	32.4	0.0	86.7	13.3	NP	NP	NP
B1 (Bent 1)	48.5-50	CLAYEY SAND(SC)	33.9	0.4	79.9	19.8	50	18	32
B1 (Bent 1)	63.5-65	CLAYEY SAND WITH GRAVEL(SC)	71.0	18.5	52.4	29.0	75	28	47
B1 (Bent 1)	83.5-85	SILTY SAND(SM)	31.9	0.0	87.2	12.8	NP	NP	NP
B1 (Bent 1)	103.5-105	POORLY GRADED SAND WITH SILT(SP-SM)	31.8	0.1	88.0	11.9	NP	NP	NP
B3 (Bent 1)	13.5-15	CLAYEY SAND(SC)	35.3	0.0	62.4	37.6	58	23	35
B3 (Bent 1)	33.5-35	SILTY SAND(SM)	33.1	0.0	87.7	12.3	NP	NP	NP
B3 (Bent 1)	73.5-75	SILTY SAND(SM)	35.8	0.0	87.6	12.4	NP	NP	NP
B4 (Bent 4)	18.5-20	POORLY GRADED SAND WITH SILT(SP-SM)	37.0	0.0	89.9	10.1	NP	NP	NP
B4 (Bent 4)	43.5-45	SILTY SAND(SM)	36.8	0.0	87.2	12.8	NP	NP	NP
B4 (Bent 4)	48.5-50	CLAYEY SAND(SC)	76.4	0.0	57.8	42.2	41	18	23
B2 (Bent 4)	8-10	CLAYEY SAND(SC)	18.4	0.0	70.8	29.2	40	17	23
B2 (Bent 4)	18.5-20	SILTY SAND(SM)	34.5	0.1	84.5	15.4	NP	NP	NP
B2 (Bent 4)	23.5-25	SILTY SAND(SM)	31.6	0.0	86.9	13.1	NP	NP	NP
B2 (Bent 4)	43.5-45	SILTY SAND(SM)	33.2	0.0	87.5	12.5	NP	NP	NP
B2 (Bent 4)	83.5-85	SILTY SAND(SM)	36.7	0.0	84.2	15.8	NP	NP	NP

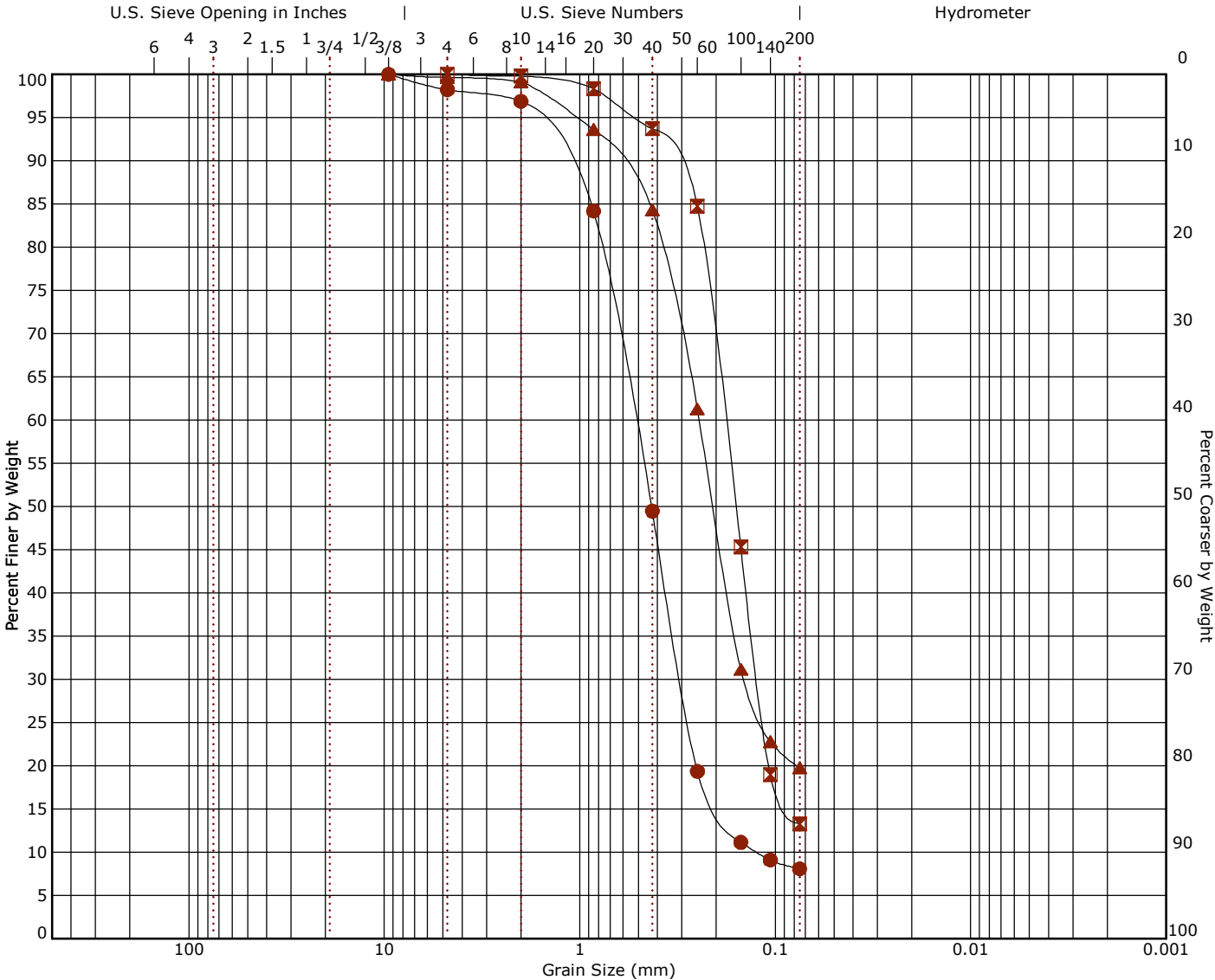
Atterberg Limit Results
ASTM D4318



	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	B1 (Bent 1)	8 - 10	NP	NP	NP	8.1	SP-SM	POORLY GRADED SAND with SILT
⊠	B1 (Bent 1)	33.5 - 35	NP	NP	NP	13.3	SM	SILTY SAND
▲	B1 (Bent 1)	48.5 - 50	50	18	32	19.8	SC	CLAYEY SAND
★	B1 (Bent 1)	63.5 - 65	75	28	47	29.0	SC	CLAYEY SAND with GRAVEL
⊙	B1 (Bent 1)	83.5 - 85	NP	NP	NP	12.8	SM	SILTY SAND
⊕	B1 (Bent 1)	103.5 - 105	NP	NP	NP	11.9	SP-SM	POORLY GRADED SAND with SILT
○	B3 (Bent 1)	13.5 - 15	58	23	35	37.6	SC	CLAYEY SAND
△	B3 (Bent 1)	33.5 - 35	NP	NP	NP	12.3	SM	SILTY SAND
⊗	B3 (Bent 1)	73.5 - 75	NP	NP	NP	12.4	SM	SILTY SAND
⊕	B4 (Bent 4)	18.5 - 20	NP	NP	NP	10.1	SP-SM	POORLY GRADED SAND with SILT
□	B4 (Bent 4)	43.5 - 45	NP	NP	NP	12.8	SM	SILTY SAND
⊕	B4 (Bent 4)	48.5 - 50	41	18	23	42.2	SC	CLAYEY SAND
⊕	B2 (Bent 4)	8 - 10	40	17	23	29.2	SC	CLAYEY SAND
★	B2 (Bent 4)	18.5 - 20	NP	NP	NP	15.4	SM	SILTY SAND
⊗	B2 (Bent 4)	23.5 - 25	NP	NP	NP	13.1	SM	SILTY SAND
■	B2 (Bent 4)	43.5 - 45	NP	NP	NP	12.5	SM	SILTY SAND
◆	B2 (Bent 4)	83.5 - 85	NP	NP	NP	15.8	SM	SILTY SAND

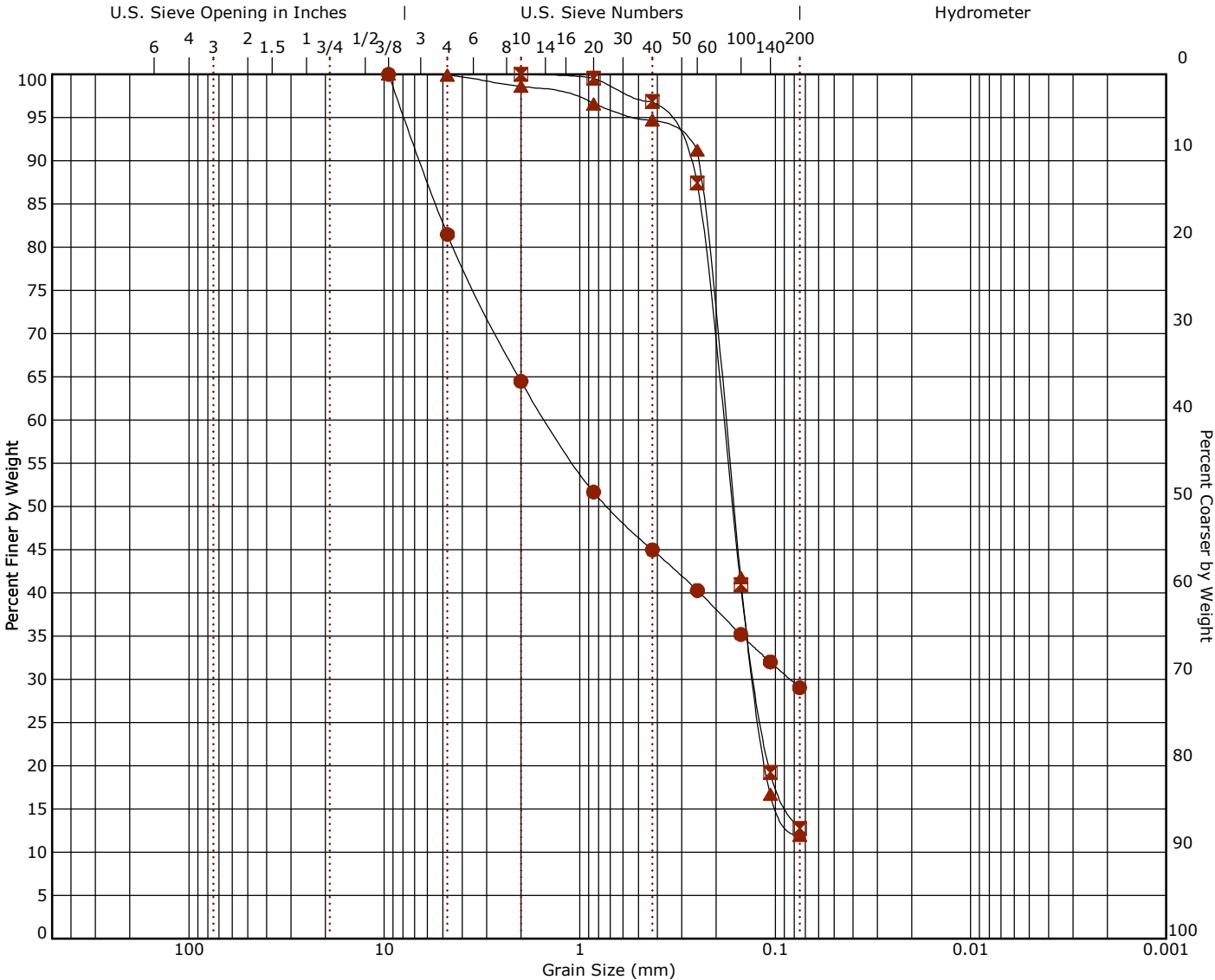
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Grain Size Distribution
ASTM D422 / ASTM C136 / AASHTO T27



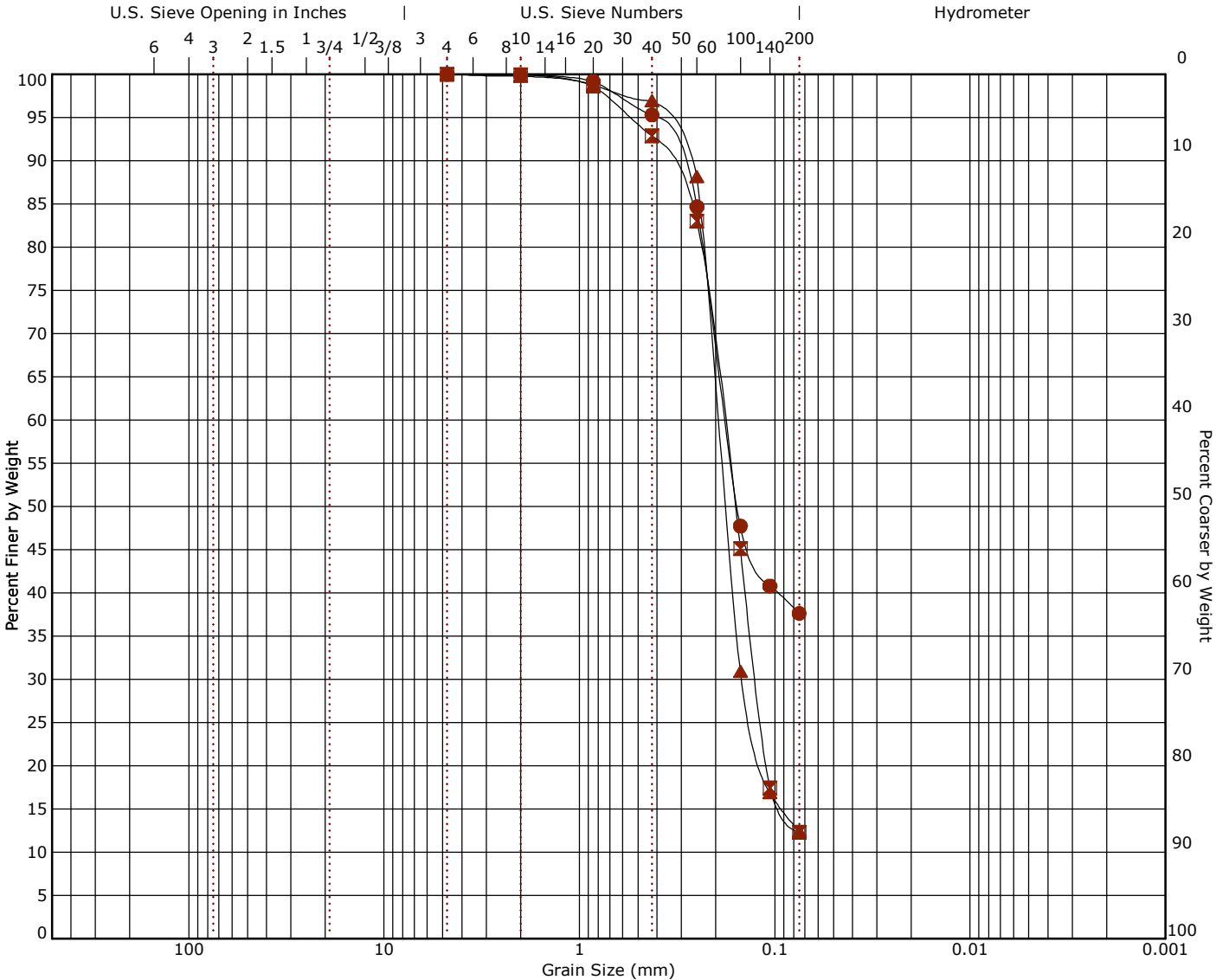
Cobbles		Gravel		Sand			Silt or Clay				
		coarse	fine	coarse	medium	fine					
Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS			
● B1 (Bent 1)	8 - 10	0.0	1.8	90.1	8.1			SP-SM			
✘ B1 (Bent 1)	33.5 - 35	0.0	0.0	86.7	13.3			SM			
▲ B1 (Bent 1)	48.5 - 50	0.0	0.4	79.9	19.8			SC			
Description				●		✘		▲		Grain Size	
● POORLY GRADED SAND with SILT				Sieve	% Finer	Sieve	% Finer	Sieve	% Finer		
✘ SILTY SAND				3/8"	100.0	#4	100.0	3/8"	100.0	D ₆₀	0.524
▲ CLAYEY SAND				#4	98.21	#10	99.78	#4	99.65		
				#10	96.87	#20	98.36	#10	99.12	0.124	
				#20	84.19	#40	93.71	#20	93.61		
				#40	49.46	#60	84.73	#40	84.33		
				#60	19.35	#100	45.34	#60	61.28		
				#100	11.14	#140	18.98	#100	31.15		
				#140	9.1	#200	13.3	#140	22.79		
				#200	8.08			#200	19.75		
											</

Grain Size Distribution
ASTM D422 / ASTM C136 / AASHTO T27



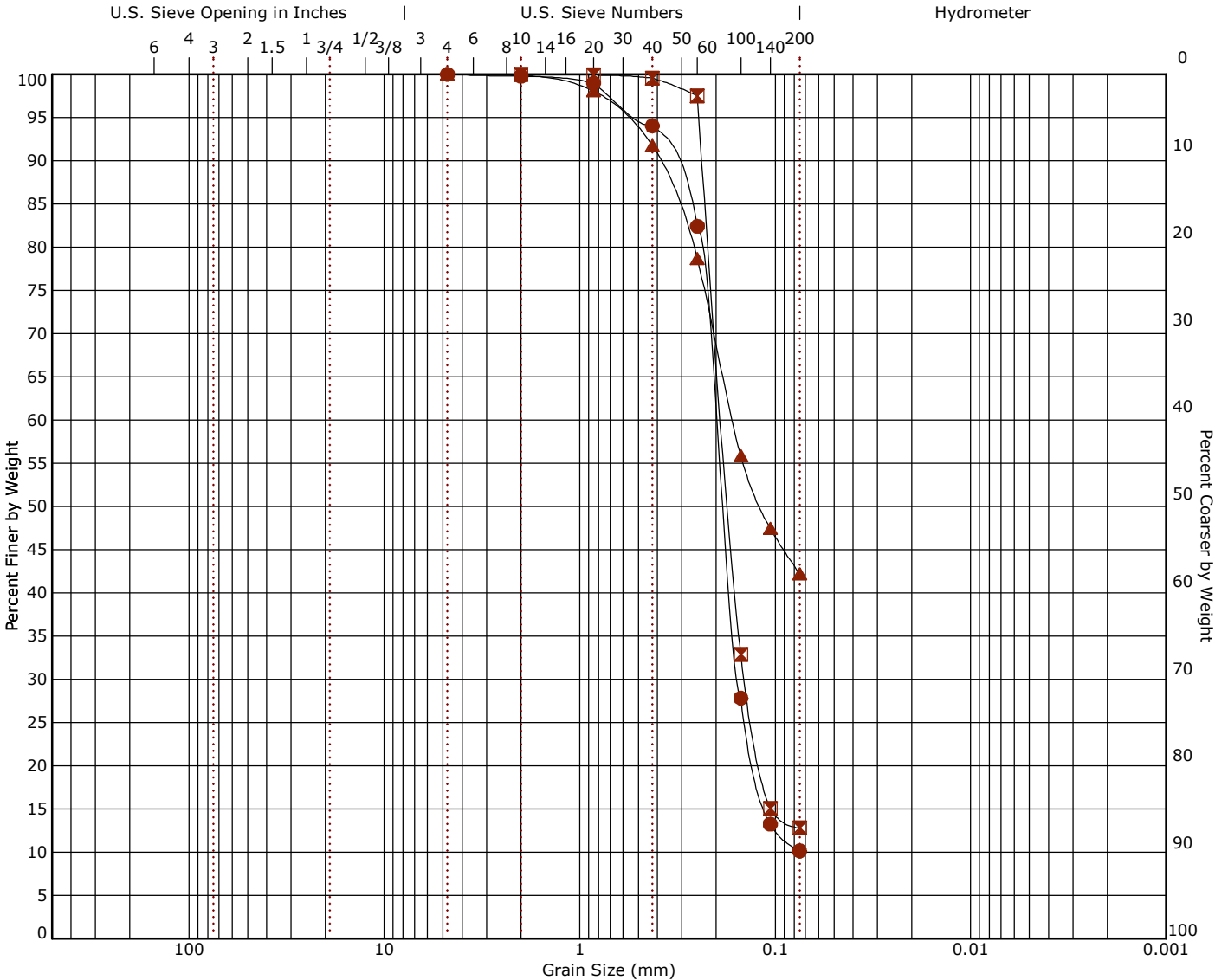
		Gravel		Sand			Silt or Clay	
		coarse	fine	coarse	medium	fine		
Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS
● B1 (Bent 1)	63.5 - 65	0.0	18.5	52.4	29.0			SC
☒ B1 (Bent 1)	83.5 - 85	0.0	0.0	87.2	12.8			SM
▲ B1 (Bent 1)	103.5 - 105	0.0	0.1	88.0	11.9			SP-SM
Description		●		☒		▲		Grain Size
●	CLAYEY SAND with GRAVEL	Sieve	% Finer	Sieve	% Finer	Sieve	% Finer	
☒	SILTY SAND	3/8"	100.0	#10	100.0	3/8"	100.0	D ₆₀
▲	POORLY GRADED SAND with SILT	#4	81.47	#20	99.58	#4	99.92	
		#10	64.48	#40	96.84	#10	98.59	
		#20	51.67	#60	87.47	#20	96.59	D ₁₀
		#40	44.98	#100	40.95	#40	94.71	
		#60	40.27	#140	19.2	#60	91.22	
		#100	35.19	#200	12.78	#100	41.74	
		#140	32.01			#140	16.68	
		#200	29.03			#200	11.95	
Remarks								Coefficients
●								
☒								C _c
▲								C _u
								1.38
								2.78

Grain Size Distribution
ASTM D422 / ASTM C136 / AASHTO T27



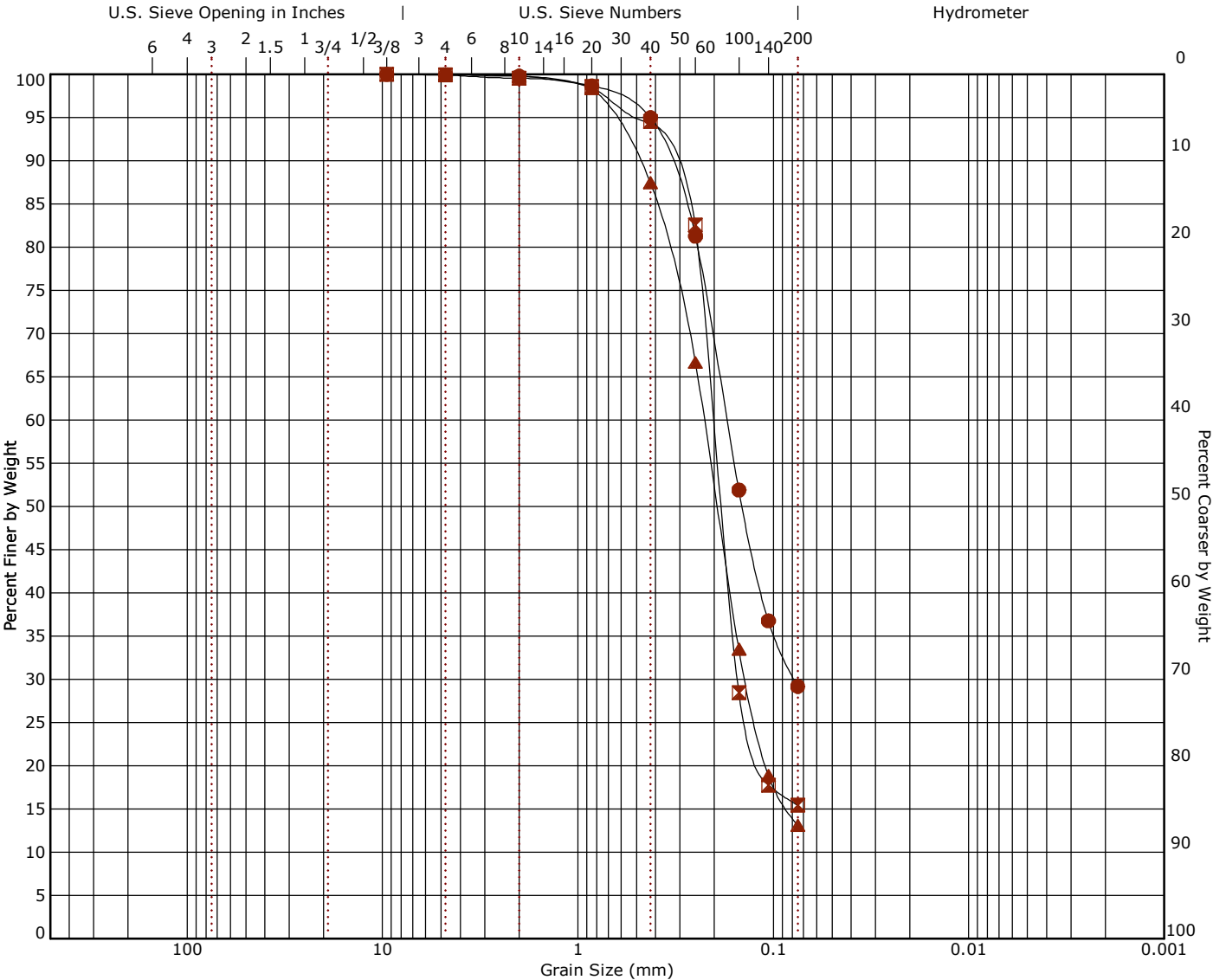
Cobbles		Gravel		Sand			Silt or Clay						
		coarse	fine	coarse	medium	fine							
Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS					
● B3 (Bent 1)	13.5 - 15	0.0	0.0	62.4	37.6			SC					
☒ B3 (Bent 1)	33.5 - 35	0.0	0.0	87.7	12.3			SM					
▲ B3 (Bent 1)	73.5 - 75	0.0	0.0	87.6	12.4			SM					
Description				●		☒		▲		Grain Size			
● CLAYEY SAND				Sieve	% Finer	Sieve	% Finer	Sieve	% Finer		●	☒	▲
☒ SILTY SAND				#4	100.0	#4	100.0	#4	100.0	D ₆₀	0.178	0.183	0.194
				#10	99.96	#10	99.94	#10	99.78				
▲ SILTY SAND				#20	99.19	#20	98.64	#20	98.79				
				#40	95.3	#40	92.86	#40	96.95	D ₁₀			
				#60	84.66	#60	83.02	#60	88.19				
				#100	47.73	#100	45.14	#100	30.93				
				#140	40.8	#140	17.46	#140	16.88	Coefficients			
				#200	37.63	#200	12.3	#200	12.4				
								</					

Grain Size Distribution
ASTM D422 / ASTM C136 / AASHTO T27



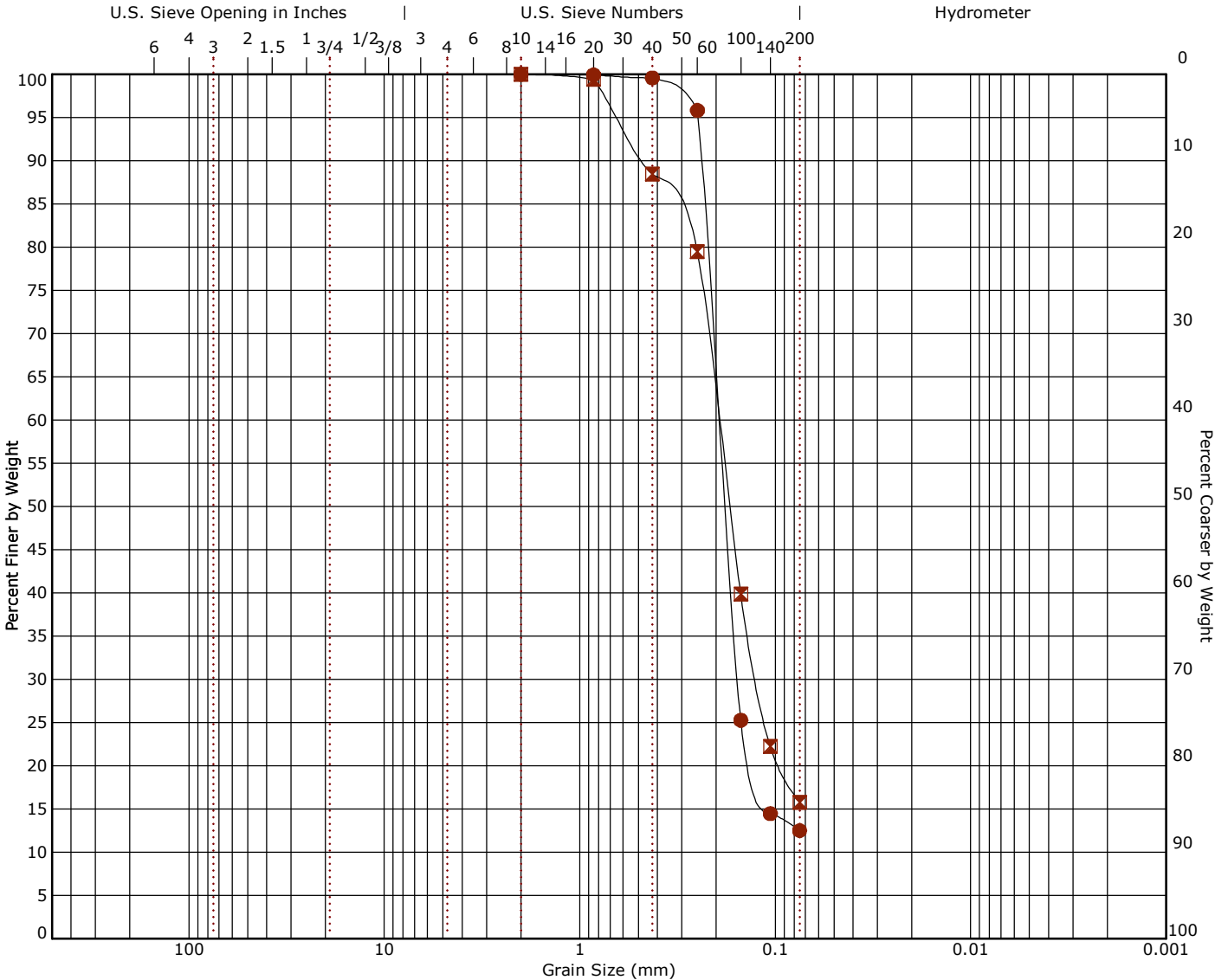
Cobbles		Gravel		Sand			Silt or Clay						
		coarse	fine	coarse	medium	fine							
Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS					
● B4 (Bent 4)	18.5 - 20	0.0	0.0	89.9	10.1			SP-SM					
☒ B4 (Bent 4)	43.5 - 45	0.0	0.0	87.2	12.8			SM					
▲ B4 (Bent 4)	48.5 - 50	0.0	0.0	57.8	42.2			SC					
Description				●		☒		▲		Grain Size			
● POORLY GRADED SAND with SILT				Sieve	% Finer	Sieve	% Finer	Sieve	% Finer		●	☒	▲
☒ SILTY SAND				#4	100.0	#60	97.47	#4	100.0	D ₆₀	0.203	0.186	0.165
				#10	99.78	#100	32.86	#10	99.87				
▲ CLAYEY SAND				#20	98.96	#140	15.05	#20	98.08				
				#40	94.03	#200	12.79	#40	91.76	D ₁₀			
				#60	82.41	#10	100.0	#60	78.67				
				#100	27.82	#20	99.91	#100	55.88				
Remarks				#140	13.24	#40	99.54	#140	47.47	Coefficients			
				#200	10.15			#200	42.2				
●											●	☒	▲
☒										C _c	1.57		
▲										C _u	2.75		

Grain Size Distribution
ASTM D422 / ASTM C136 / AASHTO T27



Cobbles		Gravel		Sand			Silt or Clay				
		coarse	fine	coarse	medium	fine					
Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS			
● B2 (Bent 4)	8 - 10	0.0	0.0	70.8	29.2			SC			
⊠ B2 (Bent 4)	18.5 - 20	0.0	0.1	84.5	15.4			SM			
▲ B2 (Bent 4)	23.5 - 25	0.0	0.0	86.9	13.1			SM			
Description				●		⊠		▲		Grain Size	
● CLAYEY SAND				Sieve	% Finer	Sieve	% Finer	Sieve	% Finer		
⊠ SILTY SAND				3/8"	100.0	3/8"	100.0	#4	100.0	D ₆₀	0.173
				#4	99.96	#4	99.92	#10	99.8		
▲ SILTY SAND				#10	99.81	#10	99.56	#20	98.33		
				#20	98.64	#20	98.57	#40	87.45		
				#40	94.99	#40	94.53	#60	66.66	D ₁₀	
				#60	81.26	#60	82.53	#100	33.47		
				#100	51.89	#100	28.47	#140	18.88	Coefficients	
				#140	36.77	#140	17.77	#200	13.13		
				#200	29.18	#200	15.42				
●											
⊠											
▲											
										C _c	
										C _u	

Grain Size Distribution
ASTM D422 / ASTM C136 / AASHTO T27



Cobbles		Gravel		Sand			Silt or Clay		
		coarse	fine	coarse	medium	fine			
Boring ID	Depth	% Cobbles	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS	
● B2 (Bent 4)	43.5 - 45	0.0	0.0	87.5	12.5			SM	
✖ B2 (Bent 4)	83.5 - 85	0.0	0.0	84.2	15.8			SM	
Description				●		✖		Grain Size	
● SILTY SAND				Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
✖ SILTY SAND				#10	100.0	#10	100.0		
				#20	99.94	#20	99.44	D ₆₀	0.193
				#40	99.58	#40	88.49	0.194	
				#60	95.81	#60	79.47		
Remarks				#100	25.27	#100	39.86	D ₁₀	
				#140	14.47	#140	22.25		
●				#200	12.5	#200	15.79		
✖								Coefficients	
									●
								✖	
								C _c	2.59
								C _u	3.99

**Client**

Kimley-Horn and Associates Inc
Savannah, GA

Project

GW Oliver Road BFI
ES255161

Date Received: 1/16/2026

Corrosivity Suite - Results

Sample Location		B3	B3	B4
Sample Depth (ft.)		6.0-8.0'	58.5-60.0'	33.5-35.0'
Acidity (pH)	AASHTO T289	5.3	6.8	6.5
Water Soluble Sulfate Ion Content (mg/Kg)	ASTM C1580	20	97	70
Water Soluble Sulfide Content (mg/Kg)	AWWA 4500-S,D	Nil	Nil	Nil
Water Soluble Chloride Ion Content (mg/Kg)	ASTM D512	21	Nil	31
Oxidation-Reduction Potential (RmV)	ASTM G200	445.6	486.8	445.0
Total Dissolved Salts (mg/Kg)	AWWA 2520 B	56	65	75
Electrical Resistivity ($\Omega \cdot \text{cm}$)	ASTM G57	30000	1200	4800

Verified By: Myles Warner
1/21/2026

These tests were performed in general accordance with the applicable AASHTO, ASTM, and AWWA test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced without the full written consent of Terracon Consultants Inc.. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar materials.

ANALYTICAL REPORT

PREPARED FOR

Attn: Leah Moore
Terracon Consultants, Inc.
2201 Rowland Avenue
Savannah, Georgia 31404

Generated 12/11/2025 2:57:48 PM

JOB DESCRIPTION

GW Oliver Road

JOB NUMBER

680-268514-1

Eurofins Savannah

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Southeast, LLC Project Manager.

Authorization



Generated
12/11/2025 2:57:48 PM

Authorized for release by
Nikita Kuruganty, Project Manager
Nikita.Kuruganty@et.eurofinsus.com
(912)354-7858

Sample Summary

Client: Terracon Consultants, Inc.
Project/Site: GW Oliver Road

Job ID: 680-268514-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
680-268514-1	Upstream	Water	12/04/25 11:25	12/04/25 13:49	Georgia
680-268514-2	Downstream	Water	12/04/25 11:32	12/04/25 13:49	Georgia

- 1
- 2
- 3
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- 10
- 11
- 12
- 13

Method Summary

Client: Terracon Consultants, Inc.
Project/Site: GW Oliver Road

Job ID: 680-268514-1

Method	Method Description	Protocol	Laboratory
300.0-1993 R2.1	Anions, Ion Chromatography	MCAWW	EET SAV
2510B-2011	Conductivity, Specific Conductance	SM	EET SAV

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EET SAV = Eurofins Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Definitions/Glossary

Client: Terracon Consultants, Inc.
Project/Site: GW Oliver Road

Job ID: 680-268514-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
-----------	-----------------------

E	Result exceeded calibration range.
U	Indicates the analyte was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
-----------	-----------------------

U	Indicates the analyte was analyzed for but not detected.
---	--

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Terracon Consultants, Inc.
Project: GW Oliver Road

Job ID: 680-268514-1

Job ID: 680-268514-1

Eurofins Savannah

Job Narrative 680-268514-1

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

Receipt

The samples were received on 12/4/2025 1:49 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.9°C.

HPLC/IC

Method 300_ORGFM_28D: The native sample, matrix spike, and matrix spike duplicate (MS/MSD) associated with analytical batch 680-887526 were performed at the same dilution. Due to the additional level of analyte present in the spiked samples, the concentration of Chloride in the MS/MSD was above the instrument calibration range. The data have been reported and qualified.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

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Detection Summary

Client: Terracon Consultants, Inc.
Project/Site: GW Oliver Road

Job ID: 680-268514-1

Client Sample ID: Upstream

Lab Sample ID: 680-268514-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	12.9		5.00	2.00	mg/L	5		300.0-1993 R2.1	Total/NA
Chloride	47.2		2.50	1.00	mg/L	5		300.0-1993 R2.1	Total/NA
Specific Conductance	394		5.00	5.00	umho/cm @ 25C	1		2510B-2011	Total/NA

Client Sample ID: Downstream

Lab Sample ID: 680-268514-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	12.9		5.00	2.00	mg/L	5		300.0-1993 R2.1	Total/NA
Chloride	47.0		2.50	1.00	mg/L	5		300.0-1993 R2.1	Total/NA
Specific Conductance	393		5.00	5.00	umho/cm @ 25C	1		2510B-2011	Total/NA

Upstream:

Electrical Resistivity = $1/\text{specific conductance} = 1/394 = 0.002538 \text{ uohm-cm} \times 1 \times 10^6 = \mathbf{2,500 \text{ ohm-cm}}$

Acidity (pH) - 6.97

Downstream:

Electrical Resistivity = $1/\text{specific conductance} = 1/393 = 0.002544 \text{ uohm-cm} \times 1 \times 10^6 = \mathbf{2,500 \text{ ohm-cm}}$

Acidity (pH) - 7.01

Client Sample Results

Client: Terracon Consultants, Inc.
Project/Site: GW Oliver Road

Job ID: 680-268514-1

Client Sample ID: Upstream

Date Collected: 12/04/25 11:25

Date Received: 12/04/25 13:49

Lab Sample ID: 680-268514-1

Matrix: Water

Method: MCAWW 300.0-1993 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	12.9		5.00	2.00	mg/L			12/06/25 16:10	5
Chloride	47.2		2.50	1.00	mg/L			12/06/25 16:10	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance (SM 2510B-2011)	394		5.00	5.00	umho/cm @ 25C			12/11/25 09:46	1
Resistivity (SM 2510B-2011)	5.00	U	5.00	5.00	Mohm-cm			12/11/25 09:46	1

Client Sample ID: Downstream

Date Collected: 12/04/25 11:32

Date Received: 12/04/25 13:49

Lab Sample ID: 680-268514-2

Matrix: Water

Method: MCAWW 300.0-1993 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	12.9		5.00	2.00	mg/L			12/06/25 17:02	5
Chloride	47.0		2.50	1.00	mg/L			12/06/25 17:02	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance (SM 2510B-2011)	393		5.00	5.00	umho/cm @ 25C			12/11/25 09:44	1
Resistivity (SM 2510B-2011)	5.00	U	5.00	5.00	Mohm-cm			12/11/25 09:44	1

QC Sample Results

Client: Terracon Consultants, Inc.
Project/Site: GW Oliver Road

Job ID: 680-268514-1

Method: 300.0-1993 R2.1 - Anions, Ion Chromatography

Lab Sample ID: MB 680-887526/2

Matrix: Water

Analysis Batch: 887526

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.400	U	1.00	0.400	mg/L			12/06/25 11:47	1
Chloride	0.200	U	0.500	0.200	mg/L			12/06/25 11:47	1

Lab Sample ID: LCS 680-887526/3

Matrix: Water

Analysis Batch: 887526

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	10.0	9.062		mg/L		91	90 - 110
Chloride	10.0	9.407		mg/L		94	90 - 110

Lab Sample ID: LCSD 680-887526/4

Matrix: Water

Analysis Batch: 887526

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate	10.0	9.051		mg/L		91	90 - 110	0	15
Chloride	10.0	9.385		mg/L		94	90 - 110	0	15

Lab Sample ID: 680-268514-1 MS

Matrix: Water

Analysis Batch: 887526

Client Sample ID: Upstream

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	12.9		50.0	56.18		mg/L		87	80 - 120
Chloride	47.2		50.0	101.8	E	mg/L		109	80 - 120

Lab Sample ID: 680-268514-1 MSD

Matrix: Water

Analysis Batch: 887526

Client Sample ID: Upstream

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate	12.9		50.0	56.10		mg/L		86	80 - 120	0	15
Chloride	47.2		50.0	101.8	E	mg/L		109	80 - 120	0	15

Method: 2510B-2011 - Conductivity, Specific Conductance

Lab Sample ID: MB 680-887610/4

Matrix: Water

Analysis Batch: 887610

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	5.00	U	5.00	5.00	umho/cm @ 25C			12/11/25 09:34	1
Resistivity	5.00	U	5.00	5.00	Mohm-cm			12/11/25 09:34	1

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QC Sample Results

Client: Terracon Consultants, Inc.
Project/Site: GW Oliver Road

Job ID: 680-268514-1

Method: 2510B-2011 - Conductivity, Specific Conductance (Continued)

Lab Sample ID: LCS 680-887610/5

Matrix: Water

Analysis Batch: 887610

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Specific Conductance	1000	996.0		umho/cm @ 25C		100	90 - 110

Lab Sample ID: LCSD 680-887610/35

Matrix: Water

Analysis Batch: 887610

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Specific Conductance	1000	1000		umho/cm @ 25C		100	90 - 110	0	10

QC Association Summary

Client: Terracon Consultants, Inc.
Project/Site: GW Oliver Road

Job ID: 680-268514-1

HPLC/IC

Analysis Batch: 887526

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-268514-1	Upstream	Total/NA	Water	300.0-1993 R2.1	
680-268514-2	Downstream	Total/NA	Water	300.0-1993 R2.1	
MB 680-887526/2	Method Blank	Total/NA	Water	300.0-1993 R2.1	
LCS 680-887526/3	Lab Control Sample	Total/NA	Water	300.0-1993 R2.1	
LCSD 680-887526/4	Lab Control Sample Dup	Total/NA	Water	300.0-1993 R2.1	
680-268514-1 MS	Upstream	Total/NA	Water	300.0-1993 R2.1	
680-268514-1 MSD	Upstream	Total/NA	Water	300.0-1993 R2.1	

General Chemistry

Analysis Batch: 887610

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-268514-1	Upstream	Total/NA	Water	2510B-2011	
680-268514-2	Downstream	Total/NA	Water	2510B-2011	
MB 680-887610/4	Method Blank	Total/NA	Water	2510B-2011	
LCS 680-887610/5	Lab Control Sample	Total/NA	Water	2510B-2011	
LCSD 680-887610/35	Lab Control Sample Dup	Total/NA	Water	2510B-2011	

Lab Chronicle

Client: Terracon Consultants, Inc.
Project/Site: GW Oliver Road

Job ID: 680-268514-1

Client Sample ID: Upstream

Date Collected: 12/04/25 11:25

Date Received: 12/04/25 13:49

Lab Sample ID: 680-268514-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0-1993 R2.1		5	2 mL	2 mL	887526	12/06/25 16:10	AS	EET SAV
		Instrument ID: CICR								
Total/NA	Analysis	2510B-2011		1			887610	12/11/25 09:46	BWR	EET SAV
		Instrument ID: MANTECH 2								

Client Sample ID: Downstream

Date Collected: 12/04/25 11:32

Date Received: 12/04/25 13:49

Lab Sample ID: 680-268514-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0-1993 R2.1		5	2 mL	2 mL	887526	12/06/25 17:02	AS	EET SAV
		Instrument ID: CICR								
Total/NA	Analysis	2510B-2011		1			887610	12/11/25 09:44	BWR	EET SAV
		Instrument ID: MANTECH 2								

Laboratory References:

EET SAV = Eurofins Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Environment Testing

Ver: 10/10/2021 11/2025

Login Sample Receipt Checklist

Client: Terracon Consultants, Inc.

Job Number: 680-268514-1

Login Number: 268514

List Source: Eurofins Savannah

List Number: 1

Creator: Faught, Timothy

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Accreditation/Certification Summary

Client: Terracon Consultants, Inc.
Project/Site: GW Oliver Road

Job ID: 680-268514-1

Laboratory: Eurofins Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Florida	NELAP	E87052	06-30-26
Georgia	State	E87052	06-30-26
South Carolina	State	98001	06-30-26

1
2
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10
11
12
13

pH 5.3
Resistivity 30000

Sample Number: B3
Sample Depth: 6 to 8 feet

Project Number: ES255161

County: Bulloch

Project Name: G.W. Oliver Road over Little Lotts Creek

Pipe Culvert Material Alternates

TYPE OF INSTALLATION			PIPE TYPE										
			CONCRETE	STEEL			ALLUMINUM	THERMOPLASTIC					
			REINFORCED CONCRETE AASHTO M-170	CORRUGATED STEEL ALUMINUM COATED (TYPE 2) AASHTO M-36	CORRUGATED STEEL PLAIN ZINC COATED AASHTO M-36	POLYMER COATED STEEL AASHTO M-245	CORRUGATED ALUMINUM AASHTO M-196	CORRUGATED HDPE AASHTO M-252	CORRUGATED SMOOTHED LINED HDPE TYPE "S" AASHTO M-294	CORRUGATED SMOOTH LINED POLYPROPYLENE AASHTO M 330	PVC CORRUGATED SMOOTH INTERIOR ASTM F-949	PVC Profile Wall Drain Pipe AASHTO M-304	
S T O R M D R A I N	NON-TRAVEL BEARING (OUTSIDE ROADBED)	INTERSTATE	X										
		NON INTERSTATE	X	X		X	X		X	X	X	X	
	TRAVEL BEARING (INSIDE ROADBED)	GRADE ≤ 10%	ADT < 1,500	X	X		X	X		X	X	X	X
			1,500 < ADT < 5,000	X	X		X	X		X	X	X	X
			5,000 < ADT < 15,000	X						X	X	X	X
			ADT > 15,000 & INTERSTATES	X									
		GRADE > 10%				X			X	X	X	X	
	SIDE DRAIN		X	X		X	X		X	X	X	X	
PERMANENT SLOPE DRAIN			X	X	X	X		X	X	X	X		
PERFORATED UNDERDRAIN			X	X		X	X	X	X	X	X		

NOTES:

- Allowable materials are indicated by an "X".
- Structural, installation, fill height and backfill requirements of storm drain pipe will be in accordance with Georgia Standard 1030-D or 1030-P and the Standard Specifications
- The Contractor shall provide additional storm sewer capacity calculations if a pipe material other than concrete is selected.
- Pipe used under mechanically stabilized earth (MSE) walls, within MSE wall backfill, or within five feet of an MSE wall face shall be Class V Concrete Pipe.

pH 6.8
 Resistivity 1200

Sample Number: B3
 Sample Depth: 58.5 to 60 feet

Project Number: ES255161
Project Name: G.W. Oliver Road over Little Lotts Creek

County: Bulloch

Pipe Culvert Material Alternates

TYPE OF INSTALLATION			PIPE TYPE										
			CONCRETE	STEEL				ALLUMINUM	THERMOPLASTIC				
			REINFORCED CONCRETE AASHTO M-170	CORRUGATED STEEL ALUMINUM COATED (TYPE 2) AASHTO M-36	CORRUGATED STEEL PLAIN ZINC COATED AASHTO M-36	POLYMER COATED STEEL AASHTO M-245	CORRUGATED ALUMINUM AASHTO M-196	CORRUGATED HDPE AASHTO M-252	CORRUGATED SMOOTHED LINED HDPE TYPE "S" AASHTO M-294	CORRUGATED SMOOTH LINED POLYPROPYLENE AASHTO M 330	PVC CORRUGATED SMOOTH INTERIOR ASTM F-949	PVC Profile Wall Drain Pipe AASHTO M-304	
S T O R M D R A I N	NON-TRAVEL BEARING (OUTSIDE ROADBED)	INTERSTATE	X										
		NON INTERSTATE	X			X			X	X	X	X	
	TRAVEL BEARING (INSIDE ROADBED)	GRADE ≤ 10%	ADT < 1,500	X			X			X	X	X	X
			1,500 < ADT < 5,000	X			X			X	X	X	X
			5,000 < ADT < 15,000	X						X	X	X	X
			ADT > 15,000 & INTERSTATES	X									
			GRADE > 10%				X			X	X	X	X
	SIDE DRAIN		X			X			X	X	X	X	
PERMANENT SLOPE DRAIN			X	X	X	X		X	X	X	X		
PERFORATED UNDERDRAIN			X	X		X	X	X	X	X	X		

NOTES:

- 1 Allowable materials are indicated by an "X".
- 2 Structural, installation, fill height and backfill requirements of storm drain pipe will be in accordance with Georgia Standard 1030-D or 1030-P and the Standard Specifications
- 3 The Contractor shall provide additional storm sewer capacity calculations if a pipe material other than concrete is selected.
- 4 Pipe used under mechanically stabilized earth (MSE) walls, within MSE wall backfill, or within five feet of an MSE wall face shall be Class V Concrete Pipe.

pH 6.5
 Resistivity 4800

Sample Number: B4
 Sample Depth: 33.5 to 35 feet

Project Number: ES255161
Project Name: G.W. Oliver Road over Little Lotts Creek

County: Bulloch

Pipe Culvert Material Alternates

TYPE OF INSTALLATION			PIPE TYPE										
			CONCRETE	STEEL				ALLUMINUM	THERMOPLASTIC				
			REINFORCED CONCRETE AASHTO M-170	CORRUGATED STEEL ALUMINUM COATED (TYPE 2) AASHTO M-36	CORRUGATED STEEL PLAIN ZINC COATED AASHTO M-36	POLYMER COATED STEEL AASHTO M-245	CORRUGATED ALUMINUM AASHTO M-196	CORRUGATED HDPE AASHTO M-252	CORRUGATED SMOOTHED LINED HDPE TYPE "S" AASHTO M-294	CORRUGATED SMOOTH LINED POLYPROPYLENE AASHTO M 330	PVC CORRUGATED SMOOTH INTERIOR ASTM F-949	PVC Profile Wall Drain Pipe AASHTO M-304	
S T O R M D R A I N	NON-TRAVEL BEARING (OUTSIDE ROADBED)	INTERSTATE	X										
		NON INTERSTATE	X			X	X		X	X	X	X	
	TRAVEL BEARING (INSIDE ROADBED)	GRADE ≤ 10%	ADT < 1,500	X			X	X		X	X	X	X
			1,500 < ADT < 5,000	X			X	X		X	X	X	X
			5,000 < ADT < 15,000	X						X	X	X	X
			ADT > 15,000 & INTERSTATES	X									
		GRADE > 10%				X				X	X	X	X
	SIDE DRAIN		X			X	X		X	X	X	X	
PERMANENT SLOPE DRAIN			X	X	X	X		X	X	X	X		
PERFORATED UNDERDRAIN			X	X		X	X	X	X	X	X		

NOTES:

- 1 Allowable materials are indicated by an "X".
- 2 Structural, installation, fill height and backfill requirements of storm drain pipe will be in accordance with Georgia Standard 1030-D or 1030-P and the Standard Specifications
- 3 The Contractor shall provide additional storm sewer capacity calculations if a pipe material other than concrete is selected.
- 4 Pipe used under mechanically stabilized earth (MSE) walls, within MSE wall backfill, or within five feet of an MSE wall face shall be Class V Concrete Pipe.

Supporting Information

Contents:

Seismic Analysis Result
General Notes
Unified Soil Classification System
APILE Analyses for 20" PSC Piles
LPILE Analyses Result
SPT Hammer Calibration
Foundation Load Letter

User-Specified Input

Existing Bridge Serial Number

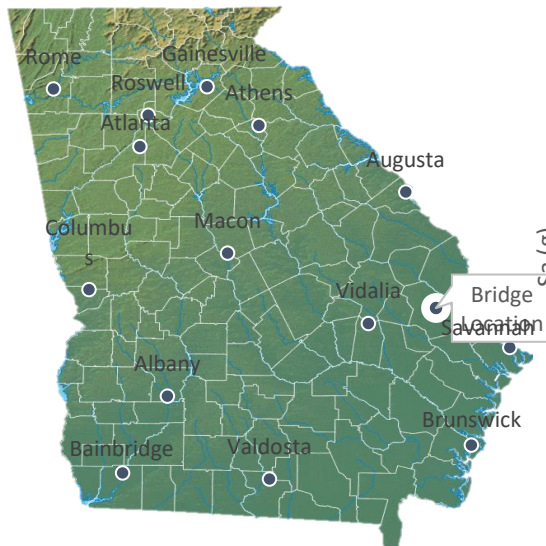
or

Bridge Coordinates °N

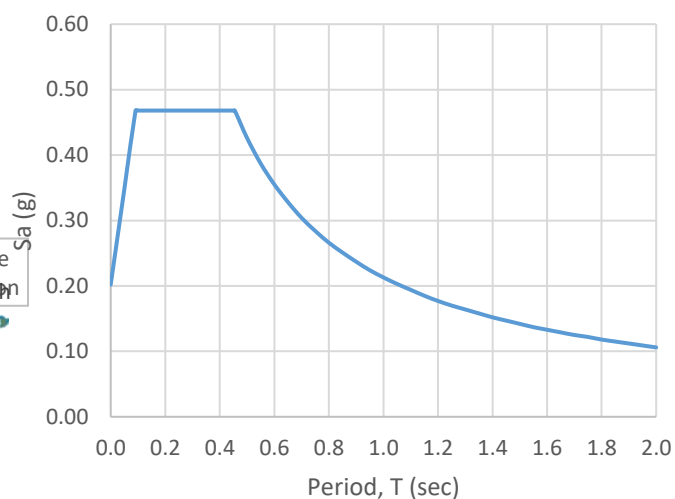
 °W

Building Code Reference Document 2009 AASHTO Guide Spec for LRFD Seismic Bridge Design

(which utilizes USGS hazard data available in 2002)

Site Soil Classification Soft clay soil


Design Response Spectrum



USGS-Provided Output

Latitude = 32.348 °N

Longitude = -81.806 °W

Site Class = E

Zone = 2 AASHTO LRFD 3.10.6

PGA = 0.081 g $A_s = 0.202$ g

 $S_s = 0.187$ g $S_{Ds} = 0.468$ g

 $S_1 = 0.061$ g $S_{d1} = 0.213$ g

Web services are provided by the U.S. Geological Survey. This spreadsheet was developed by the Georgia Department of Transportation (GDOT) as a front end to easily navigate stored seismic data. GDOT provides no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.

Project Name: GW Oliver Road
 Project Number: ES255161
 Project Location: Bulloch County, Georgia



Boring	B1	ETR	77.2%	
Sample	di	N	N60	di / N60
1	2	10	13	0.1554
2	2	16	21	0.0972
3	2	10	13	0.1554
4	2	5	6	0.3109
5	2	9	12	0.1727
6	5	9	12	0.4318
7	5	2	3	1.9430
8	5	2	3	1.9430
9	5	5	6	0.7772
10	5	3	4	1.2953
11	5	7	9	0.5551
12	5	4	5	0.9715
13	5	5	6	0.7772
14	5	4	5	0.9715
15	5	9	12	0.4318
16	5	39	50	0.0996
17	5	14	18	0.2776
18	5	26	33	0.1495
19	5	34	44	0.1143
20	5	9	12	0.4318
21	5	24	31	0.1619
22	5	34	44	0.1143
23	5	22	28	0.1766
Σ		100	Σ	12.5147

di = layer thickness N = spt blow count

$$\bar{N} = \Sigma di / \Sigma (di/N) \quad \bar{N} \boxed{8.0}$$

If the boring was terminated before 100' in depth, we assumed the soils between the termination depth and 100 ft will have the same N value as the N value measured at the termination depth. The N60 value was limited to 100.

Boring	B2	ETR	77.2%	
Sample	di	N	N60	di / N60
1	2	12	15	0.1295
2	2	12	15	0.1295
3	2	6	8	0.2591
4	2	4	5	0.3886
5	2	1	1	1.5544
6	5	17	22	0.2286
7	5	3	4	1.2953
8	5	4	5	0.9715
9	5	9	12	0.4318
10	5	4	5	0.9715
11	5	6	8	0.6477
12	5	6	8	0.6477
13	5	6	8	0.6477
14	5	4	5	0.9715
15	5	7	9	0.5551
16	5	9	12	0.4318
17	5	20	26	0.1943
18	5	21	27	0.1850
19	5	20	26	0.1943
20	5	5	6	0.7772
21	5	13	17	0.2989
22	5	33	42	0.1178
23	5	21	27	0.1850
Σ		100	Σ	12.2139

di = layer thickness N = spt blow count

$$\bar{N} = \Sigma di / \Sigma (di/N) \quad \bar{N} \boxed{8.2}$$

If the boring was terminated before 100' in depth, we assumed the soils between the termination depth and 100 ft will have the same N value as the N value measured at the termination depth. The N60 value was limited to 100.

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING		Auger	GROUNDWATER		Groundwater Initially Encountered	FIELD TESTS	(HP)	Hand Penetrometer		
		Split Spoon			Groundwater Level After a Specified Period of Time		(T)	Torvane		
		Shelby Tube			Static Groundwater Level After a Specified Period of Time		(b/f)	Standard Penetration Test (blows per foot)		
		Macro Core			No Groundwater Observed		(PID)	Photo-Ionization Detector		
		No Recovery		Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.				(OVA)	Organic Vapor Analyzer	
		Rock Core								
		Ring Sampler								

DESCRIPTIVE SOIL CLASSIFICATION

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

LOCATION AND ELEVATION NOTES

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

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
	Descriptive Term (Density)	Std. Penetration Resistance (blows per foot)	Descriptive Term (Consistency)	Undrained Shear Strength (kips per square foot)	Std. Penetration Resistance (blows per foot)
	Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
	Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
	Medium Dense	10 - 29	Medium-Stiff	0.50 to 1.00	5 - 7
	Dense	30 - 50	Stiff	1.00 to 2.00	8 - 14
	Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
			Hard	above 4.00	> 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

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

GRAIN SIZE TERMINOLOGY

<u>Descriptive Term(s)</u> <u>of other constituents</u>	<u>Percent of</u> <u>Dry Weight</u>
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

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

PLASTICITY DESCRIPTION

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

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification	
				Group Symbol	Group Name ^B
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	Cu ≥ 4 and 1 ≤ Cc ≤ 3 ^E	GW	Well-graded gravel ^F
			Cu < 4 and/or [Cc < 1 or Cc > 3.0] ^E	GP	Poorly graded gravel ^F
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH	GM	Silty gravel ^{F, G, H}
			Fines classify as CL or CH	GC	Clayey gravel ^{F, G, H}
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	Cu ≥ 6 and 1 ≤ Cc ≤ 3 ^E	SW	Well-graded sand ^I
			Cu < 6 and/or [Cc < 1 or Cc > 3.0] ^E	SP	Poorly graded sand ^I
		Sands with Fines: More than 12% fines ^D	Fines classify as ML or MH	SM	Silty sand ^{G, H, I}
			Fines classify as CL or CH	SC	Clayey sand ^{G, H, I}
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	PI > 7 and plots above "A" line ^J	CL	Lean clay ^{K, L, M}
			PI < 4 or plots below "A" line ^J	ML	Silt ^{K, L, M}
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OL	Organic clay ^{K, L, M, N} Organic silt ^{K, L, M, O}
	Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above "A" line	CH	Fat clay ^{K, L, M}
			PI plots below "A" line	MH	Elastic silt ^{K, L, M}
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OH	Organic clay ^{K, L, M, P} Organic silt ^{K, L, M, Q}
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

^A Based on the material passing the 3-inch (75-mm) sieve.

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

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

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

^F If soil contains ≥ 15% sand, add "with sand" to group name.

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

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

^I If soil contains ≥ 15% gravel, add "with gravel" to group name.

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

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

^L If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

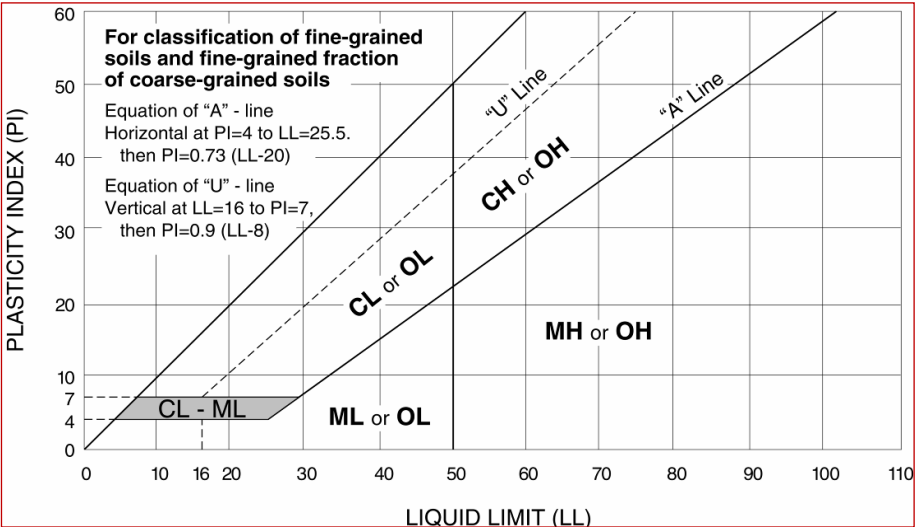
^M If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

^N PI ≥ 4 and plots on or above "A" line.

^O PI < 4 or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.



Special Provision 523 - Dynamic Pile Testing

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

SPECIAL PROVISION

Bulloch County

SECTION 523 - DYNAMIC PILE TESTING

523.1 General Description

The work consists of performing dynamic pile testing using the Pile Driving Analyzer (PDA) to monitor the driving of piles with accelerometer and strain gauges attached to the piles. Piles to be dynamically tested will be identified in the Special Provision or on the Plans. Prior to pile driving, the Engineer will determine production or test piles to be dynamically tested. Perform the dynamic pile testing in accordance with ASTM D4945-12.

Take dynamic measurements during driving of any required piles. Drive the pile as shown in the Special Provisions or on the Plans.

523.2 Materials

Furnish measuring instruments for dynamic pile testing. Attach instruments near the top of the piles with bolts placed in drilled holes. Furnish materials, labor and equipment necessary for installation of the instruments.

523.3 Construction Requirements

Measure wave speed prior to driving piles. Wave speed measurements will not be required for Steel H piles or metal shell piles. When wave speed measurements are performed, place the piles in a horizontal position not in contact with other piles.

Perform dynamic pile testing during driving. Modify the driving to reduce the stress and/or eliminate the damage, should the recommended stress level be exceeded or if damage occurs (determined visually or as indicated by the instrumentation).

Do not exceed the following maximum driving stresses, as determined by the dynamic pile testing:

1. For Steel piles:

0.9 F_y , where F_y = Yield strength of steel

2. For Prestressed Concrete Piles:

Compression:

$$\sigma_{dr} = (0.85f'_c - f_{pe})$$

Tension in Normal Environments:

$$\sigma_{dr} = (0.095\sqrt{f'_c} + f_{pe})$$

Tension in Severe Corrosive Environments:

$$\sigma_{dr} = \phi_{da}f_{pe}$$

where;

σ_{dr} = maximum allowed driving stress, ksi

f'_c = specified minimum 28-day compressive strength of concrete, ksi

f_{pe} = effective prestress in concrete, ksi, (after all losses) at the time of driving taken as 0.78 times the initial prestress force

Re-drive friction piles that do not obtain bearing after a freeze period of a minimum of 24 hours or for a period designated on the Plans, whichever is longer. Reset the gauges if required. Re-strike the pile with a warm hammer until a maximum penetration of 3 inches (76 mm) or 40 blows is reached, whichever occurs first. The Engineer may modify the Pile Driving Objective based on the results of the PDA work.

Provide two weeks' notice prior to the driving of designated piles and cooperate with the Engineer in connection with the performance of Dynamic Pile Testing.

Provide a complete report consisting of but not limited to PDA field monitoring data, results of CAPWAP computer analyses, and recommendations such as pile lengths, hammer fuel setting, and valid driving criteria. Valid driving criteria is defined as having the required hammer having a hammer set greater than 3 blows per inch and less than 10 blows per inch at the driving resistance for that pile. Submit the report electronically in PDF format and the electronic data files of the PDA analysis and CAPWAP to the Geotechnical Bureau and allow seven (7) calendar days for review and approval before proceeding with driving production piles.

523.4 Measurement

The Dynamic Pile Tests performed in accordance with these Specifications will be counted separately for payment. (Refer to plans summary sheet for the required amount of PDA testing.)

523.5 Payment

The Dynamic Pile Test completed and accepted will be paid for at the Contract unit Price. This payment will be full compensation for all costs of complying with this specification, including incidentals, additional work, and any delays incurred in conjunction therewith.

Payment will be made under:

Item No. 523. Dynamic Pile Test _____ Per Each

Office of Materials and Testing

Geotechnical Engineering Report

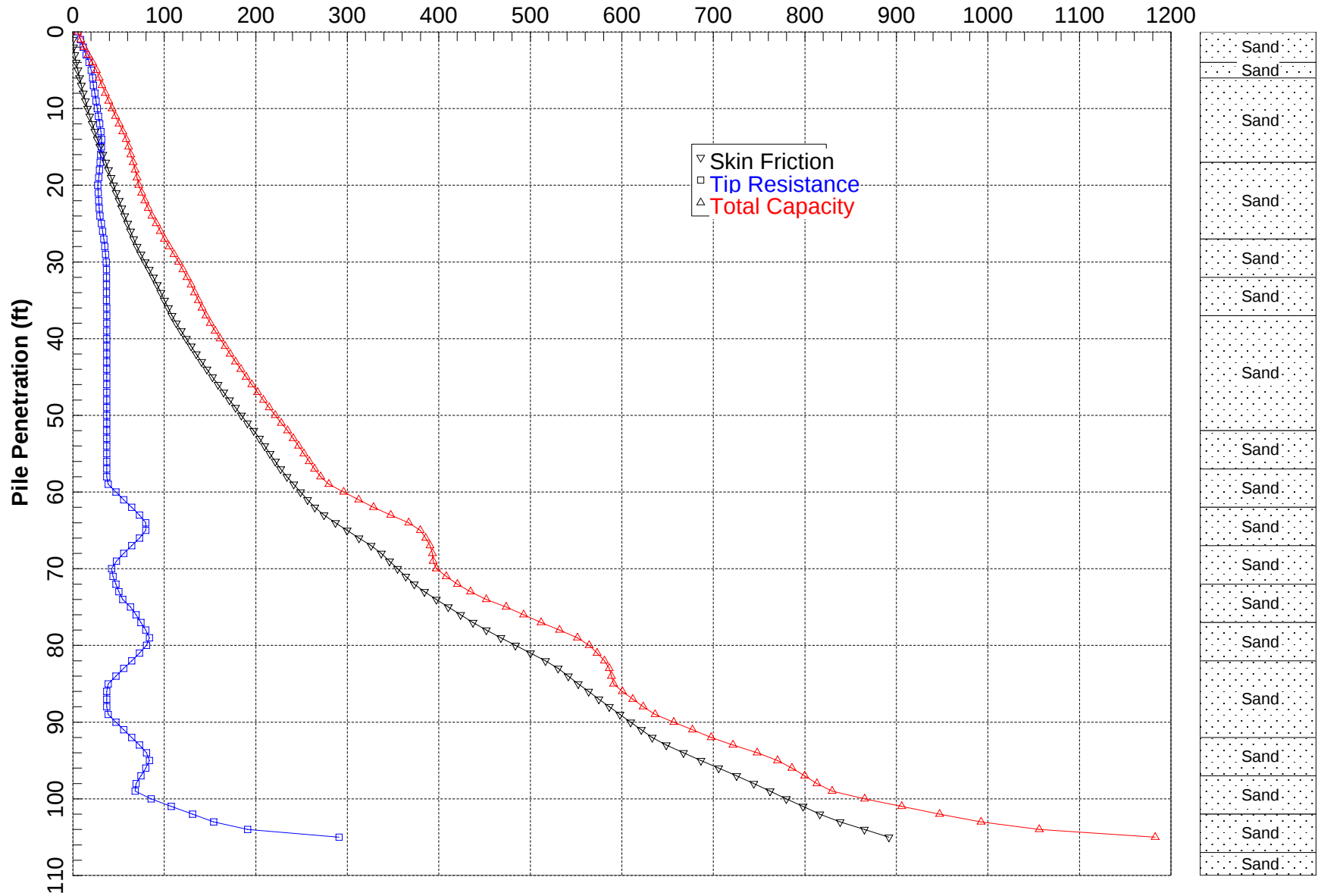
GW Oliver Road BFI | Statesboro, GA

March 4, 2026 | Terracon Project No. ES255161



A-Pile Analyses Results

Ultimate Axial Capacity (kips)



=====

APILE for Windows, Version 2023.10.3

Serial Number : 506768014

A Program for Analyzing the Axial Capacity
and Short-term Settlement of Driven Piles
under Axial Loading.
(c) Copyright ENSOFT, Inc., 1987-2023
All Rights Reserved

=====

This program is licensed to :

Terracon, Inc.
APILE Global, Global License

Path to file locations : C:\Users\naabidoye\OneDrive - Terracon
Consultants Inc\Documents\Deen Terracon Project 2025\Project\ES255161 GW Oliver Road
BFI - General\07 Working Files\02 Calculations\Axial Capacity\
Name of input data file : 20inch PSC_Bent 1_B3_rev.ap10d
Name of output file : 20inch PSC_Bent 1_B3_rev.ap10o
Name of plot output file : 20inch PSC_Bent 1_B3_rev.ap10p

Time and Date of Analysis

Date: January 20, 2026 Time: 14:45:16

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* INPUT INFORMATION *

PROJECT DESCRIPTION :
G.W. Oliver Over Little Lotts Creek
DESIGNER :
JOB NUMBER : ES255161

METHOD FOR UNIT LOAD TRANSFERS :
- FHWA (Federal Highway Administration)
Unfactored Unit Side Friction and Unit Side Resistance are used.

COMPUTATION METHOD(S) FOR PILE CAPACITY :

- FHWA (Federal Highway Administration)

TYPE OF LOADING :

- COMPRESSION

PILE TYPE :

Precast concrete pile (Square/Rectangular/Orthogonal)

AVERAGE DEPTH TO ESTIMATE TIP RESISTANCE:

- USE 1.5 DIAMETERS ABOVE AND BELOW TIP

DATA FOR AXIAL STIFFNESS :

- MODULUS OF ELASTICITY = 0.400E+07 PSI
- CROSS SECTION AREA = 400.00 IN2

NONCIRCULAR PILE PROPERTIES :

- TOTAL PILE LENGTH, TL = 105.00 FT.
- BATTER ANGLE = 0.00 DEG
- PILE STICKUP LENGTH, PSL = 0.00 FT.
- ZERO FRICTION LENGTH, ZFL = 0.00 FT.
- PERIMETER OF PILE = 80.00 IN.
- TIP AREA OF PILE = 400.00 IN2
- INCREMENT OF PILE LENGTH
USED IN COMPUTATION = 1.00 FT.
- PRINTING INCREMENT = 1

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/FT^3	FRICTION ANGLE DEGREES	Nq FACTOR FHWA
0.00	SAND	0.80*	110.00	31.00	35.20**
4.00	SAND	0.80*	110.00	31.00	35.20**
4.00	SAND	0.80*	100.00	28.00	22.80**
6.00	SAND	0.80*	100.00	28.00	22.80**
6.00	SAND	0.80*	37.60	28.00	22.80**
17.00	SAND	0.80*	37.60	28.00	22.80**
17.00	SAND	0.80*	27.60	26.00	17.40**
27.00	SAND	0.80*	27.60	26.00	17.40**
27.00	SAND	0.80*	37.60	28.00	22.80**
32.00	SAND	0.80*	37.60	28.00	22.80**
32.00	SAND	0.80*	27.60	26.00	17.40**
37.00	SAND	0.80*	27.60	26.00	17.40**
37.00	SAND	0.80*	37.60	28.00	22.80**
52.00	SAND	0.80*	37.60	28.00	22.80**
52.00	SAND	0.80*	27.60	26.00	17.40**
57.00	SAND	0.80*	27.60	26.00	17.40**
57.00	SAND	0.80*	37.60	28.00	22.80**

62.00	SAND	0.80*	37.60	28.00	22.80**
62.00	SAND	0.80*	52.60	32.00	40.40**
67.00	SAND	0.80*	52.60	32.00	40.40**
67.00	SAND	0.80*	37.60	28.00	22.80**
72.00	SAND	0.80*	37.60	28.00	22.80**
72.00	SAND	0.80*	47.60	31.00	35.20**
77.00	SAND	0.80*	47.60	31.00	35.20**
77.00	SAND	0.80*	52.60	32.00	40.40**
82.00	SAND	0.80*	52.60	32.00	40.40**
82.00	SAND	0.80*	37.60	28.00	22.80**
92.00	SAND	0.80*	37.60	28.00	22.80**
92.00	SAND	0.80*	52.60	32.00	40.40**
97.00	SAND	0.80*	52.60	32.00	40.40**
97.00	SAND	0.80*	47.60	31.00	35.20**
102.00	SAND	0.80*	47.60	31.00	35.20**
102.00	SAND	0.80*	57.60	34.00	55.60**
107.00	SAND	0.80*	57.60	34.00	55.60**
107.00	SAND	0.80*	67.60	38.00	110.40**
110.00	SAND	0.80*	67.60	38.00	110.40**

[illegible]

0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00

* MAXIMUM UNIT FRICTION AND/OR MAXIMUM UNIT BEARING
WERE SET TO LARGE VALUES INDICATING THAT APILE
USES THE LIMITS SPECIFIED BY EACH SELECTED
CRITERIA (IF ANY).

DEPTH FT.	LRFD FACTOR ON UNIT FRICTION	LRFD FACTOR ON UNIT BEARING
0.00	1.000	1.000
4.00	1.000	1.000
4.00	1.000	1.000
6.00	1.000	1.000
6.00	1.000	1.000
17.00	1.000	1.000
17.00	1.000	1.000
27.00	1.000	1.000
27.00	1.000	1.000
32.00	1.000	1.000
32.00	1.000	1.000
37.00	1.000	1.000
37.00	1.000	1.000
52.00	1.000	1.000
52.00	1.000	1.000
57.00	1.000	1.000
57.00	1.000	1.000
62.00	1.000	1.000
62.00	1.000	1.000
67.00	1.000	1.000
67.00	1.000	1.000
72.00	1.000	1.000
72.00	1.000	1.000
77.00	1.000	1.000
77.00	1.000	1.000

82.00	1.000	1.000
82.00	1.000	1.000
92.00	1.000	1.000
92.00	1.000	1.000
97.00	1.000	1.000
97.00	1.000	1.000
102.00	1.000	1.000
102.00	1.000	1.000
107.00	1.000	1.000
107.00	1.000	1.000
110.00	1.000	1.000

DEPTH FT.	Z PEAK IN.	T RESIDUAL
0.00	0.255 *	0.00
4.00	0.255 *	0.00
4.00	0.255 *	0.00
6.00	0.255 *	0.00
6.00	0.255 *	0.00
17.00	0.255 *	0.00
17.00	0.255 *	0.00
27.00	0.255 *	0.00
27.00	0.255 *	0.00
32.00	0.255 *	0.00
32.00	0.255 *	0.00
37.00	0.255 *	0.00
37.00	0.255 *	0.00
52.00	0.255 *	0.00
52.00	0.255 *	0.00
57.00	0.255 *	0.00
57.00	0.255 *	0.00
62.00	0.255 *	0.00
62.00	0.255 *	0.00
67.00	0.255 *	0.00
67.00	0.255 *	0.00
72.00	0.255 *	0.00
72.00	0.255 *	0.00
77.00	0.255 *	0.00
77.00	0.255 *	0.00
82.00	0.255 *	0.00
82.00	0.255 *	0.00
92.00	0.255 *	0.00
92.00	0.255 *	0.00
97.00	0.255 *	0.00
97.00	0.255 *	0.00
102.00	0.255 *	0.00
102.00	0.255 *	0.00

107.00	0.255 *	0.00
107.00	0.255 *	0.00
110.00	0.255 *	0.00

* DEFAULT VALUE = 0.01 D

1

 * COMPUTATION RESULT *

 * FED. HWY. METHOD *

	PILE LENGTH BELOW GND. FT.	SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
	0.00	0.0	5.2	5.2
Pile starting @ 142' EL	1.00	0.2	8.6	8.8
	2.00	0.9	11.3	12.2
	3.00	2.1	14.5	16.6
	4.00	3.7	17.7	21.5
	5.00	5.5	20.2	25.6
	6.00	7.3	21.7	29.0
	7.00	9.3	22.5	31.8
	8.00	11.5	24.0	35.5
	9.00	13.7	25.5	39.3
	10.00	16.1	26.8	43.0
	11.00	18.6	28.1	46.7
	12.00	21.2	29.4	50.6
	13.00	24.0	30.7	54.6
	14.00	26.8	31.6	58.4
	15.00	29.8	31.2	60.9
	16.00	32.8	30.6	63.4
	17.00	36.0	29.9	66.0
	18.00	39.0	29.2	68.2
	19.00	41.8	28.3	70.1
	20.00	44.6	27.3	72.0
	21.00	47.5	27.7	75.2
	22.00	50.5	28.3	78.8
	23.00	53.6	29.0	82.5
	24.00	56.7	29.8	86.5
	25.00	59.9	31.2	91.1

26.00	63.1	32.6	95.7
27.00	66.4	33.8	100.2
28.00	70.2	34.9	105.1
29.00	74.5	35.9	110.4
30.00	78.9	36.7	115.6
31.00	83.4	36.9	120.3
32.00	88.0	36.9	124.9
33.00	92.3	36.9	129.2
34.00	96.3	36.9	133.1
35.00	100.3	36.9	137.2
36.00	104.3	37.0	141.3
37.00	108.5	37.0	145.5
38.00	113.2	37.0	150.2
39.00	118.5	37.0	155.5
40.00	123.9	37.0	160.9
41.00	129.4	37.0	166.4
42.00	135.0	37.0	172.0
43.00	140.8	37.0	177.8
44.00	146.6	37.0	183.6
45.00	152.6	37.0	189.6
46.00	158.7	37.0	195.7
47.00	164.9	37.0	201.9
48.00	171.2	37.0	208.2
49.00	177.7	37.0	214.7
50.00	184.2	37.0	221.2
51.00	190.9	37.0	227.9
52.00	197.7	37.0	234.7
53.00	204.0	37.0	241.0
54.00	209.7	37.0	246.7
55.00	215.5	37.0	252.5
56.00	221.3	37.0	258.3
57.00	227.2	37.0	264.2
58.00	233.9	37.0	270.9
59.00	241.4	38.6	279.9
60.00	248.9	47.2	296.1
61.00	256.6	55.7	312.4
62.00	264.4	64.3	328.7
63.00	274.5	72.9	347.4
64.00	287.0	79.9	367.0
65.00	299.8	79.9	379.7
66.00	312.8	72.9	385.7
67.00	326.1	64.3	390.4
68.00	337.1	55.7	392.9
69.00	346.0	47.7	393.7
70.00	354.9	42.4	397.3
71.00	364.0	44.0	408.0
72.00	373.2	47.2	420.4
73.00	384.2	50.4	434.7
74.00	397.2	54.6	451.8
75.00	410.3	63.2	473.5

Minimum Pile Tip at +82' EL

76.00	423.7	69.2	492.8
77.00	437.2	74.5	511.8
78.00	451.9	79.9	531.8
79.00	467.7	83.7	551.4
80.00	483.7	80.5	564.2
81.00	500.0	72.9	572.9
82.00	516.5	64.3	580.9
83.00	530.3	55.7	586.1
84.00	541.3	47.2	588.5
85.00	552.4	38.6	590.9
86.00	563.6	37.0	600.6
87.00	574.9	37.0	611.9
88.00	586.3	37.0	623.3
89.00	597.9	38.6	636.4
90.00	609.5	47.2	656.7
91.00	621.3	55.7	677.1
92.00	633.2	64.3	697.5
93.00	648.5	72.9	721.5
94.00	667.4	80.5	747.9
95.00	686.5	83.7	770.2
96.00	705.8	79.9	785.7
97.00	725.4	74.5	799.9
98.00	744.1	69.2	813.2
99.00	761.8	68.0	829.8
100.00	779.8	85.7	865.4
101.00	797.9	107.7	905.7
102.00	816.3	130.8	947.1
103.00	838.6	153.9	992.5
104.00	865.0	191.0	1056.1
105.00	891.8	291.0	1182.8

NOTES:

- AN ASTERISK IS PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

 * COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
 * CURVES FOR AXIAL LOADING *

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.4167E-01	0.0000E+00	0.0000E+00

			0.6042E-02	0.4074E-01
			0.1007E-01	0.7894E-01
			0.1510E-01	0.1451E+00
			0.1812E-01	0.2037E+00
			0.2014E-01	0.2546E+00
			0.2014E-01	0.5093E+00
			0.2014E-01	0.7639E+00
			0.2014E-01	0.1273E+01
			0.2014E-01	0.5093E+01
2	10	0.2000E+01		
			0.0000E+00	0.0000E+00
			0.2900E+00	0.4074E-01
			0.4833E+00	0.7894E-01
			0.7250E+00	0.1451E+00
			0.8700E+00	0.2037E+00
			0.9667E+00	0.2546E+00
			0.9667E+00	0.5093E+00
			0.9667E+00	0.7639E+00
			0.9667E+00	0.1273E+01
			0.9667E+00	0.5093E+01
3	10	0.3958E+01		
			0.0000E+00	0.0000E+00
			0.5740E+00	0.4074E-01
			0.9566E+00	0.7894E-01
			0.1435E+01	0.1451E+00
			0.1722E+01	0.2037E+00
			0.1913E+01	0.2546E+00
			0.1913E+01	0.5093E+00
			0.1913E+01	0.7639E+00
			0.1913E+01	0.1273E+01
			0.1913E+01	0.5093E+01
4	10	0.4042E+01		
			0.0000E+00	0.0000E+00
			0.5775E+00	0.4074E-01
			0.9625E+00	0.7894E-01
			0.1444E+01	0.1451E+00
			0.1733E+01	0.2037E+00
			0.1925E+01	0.2546E+00
			0.1925E+01	0.5093E+00
			0.1925E+01	0.7639E+00
			0.1925E+01	0.1273E+01
			0.1925E+01	0.5093E+01
5	10	0.5000E+01		
			0.0000E+00	0.0000E+00
			0.5208E+00	0.4074E-01
			0.8680E+00	0.7894E-01
			0.1302E+01	0.1451E+00
			0.1562E+01	0.2037E+00
			0.1736E+01	0.2546E+00
			0.1736E+01	0.5093E+00

			0.1736E+01	0.7639E+00
			0.1736E+01	0.1273E+01
			0.1736E+01	0.5093E+01
6	10	0.5958E+01		
			0.0000E+00	0.0000E+00
			0.6132E+00	0.4074E-01
			0.1022E+01	0.7894E-01
			0.1533E+01	0.1451E+00
			0.1840E+01	0.2037E+00
			0.2044E+01	0.2546E+00
			0.2044E+01	0.5093E+00
			0.2044E+01	0.7639E+00
			0.2044E+01	0.1273E+01
			0.2044E+01	0.5093E+01
7	10	0.6042E+01		
			0.0000E+00	0.0000E+00
			0.6187E+00	0.4074E-01
			0.1031E+01	0.7894E-01
			0.1547E+01	0.1451E+00
			0.1856E+01	0.2037E+00
			0.2062E+01	0.2546E+00
			0.2062E+01	0.5093E+00
			0.2062E+01	0.7639E+00
			0.2062E+01	0.1273E+01
			0.2062E+01	0.5093E+01
8	10	0.1150E+02		
			0.0000E+00	0.0000E+00
			0.8167E+00	0.4074E-01
			0.1361E+01	0.7894E-01
			0.2042E+01	0.1451E+00
			0.2450E+01	0.2037E+00
			0.2722E+01	0.2546E+00
			0.2722E+01	0.5093E+00
			0.2722E+01	0.7639E+00
			0.2722E+01	0.1273E+01
			0.2722E+01	0.5093E+01
9	10	0.1696E+02		
			0.0000E+00	0.0000E+00
			0.1015E+01	0.4074E-01
			0.1691E+01	0.7894E-01
			0.2537E+01	0.1451E+00
			0.3044E+01	0.2037E+00
			0.3382E+01	0.2546E+00
			0.3382E+01	0.5093E+00
			0.3382E+01	0.7639E+00
			0.3382E+01	0.1273E+01
			0.3382E+01	0.5093E+01
10	10	0.1704E+02		
			0.0000E+00	0.0000E+00
			0.1009E+01	0.4074E-01

11	10	0.2200E+02	0.1682E+01	0.7894E-01
			0.2523E+01	0.1451E+00
			0.3028E+01	0.2037E+00
			0.3364E+01	0.2546E+00
			0.3364E+01	0.5093E+00
			0.3364E+01	0.7639E+00
			0.3364E+01	0.1273E+01
			0.3364E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.9404E+00	0.4074E-01
12	10	0.2696E+02	0.1567E+01	0.7894E-01
			0.2351E+01	0.1451E+00
			0.2821E+01	0.2037E+00
			0.3135E+01	0.2546E+00
			0.3135E+01	0.5093E+00
			0.3135E+01	0.7639E+00
			0.3135E+01	0.1273E+01
			0.3135E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1048E+01	0.4074E-01
13	10	0.2704E+02	0.1747E+01	0.7894E-01
			0.2621E+01	0.1451E+00
			0.3145E+01	0.2037E+00
			0.3495E+01	0.2546E+00
			0.3495E+01	0.5093E+00
			0.3495E+01	0.7639E+00
			0.3495E+01	0.1273E+01
			0.3495E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1061E+01	0.4074E-01
14	10	0.2950E+02	0.1768E+01	0.7894E-01
			0.2651E+01	0.1451E+00
			0.3182E+01	0.2037E+00
			0.3535E+01	0.2546E+00
			0.3535E+01	0.5093E+00
			0.3535E+01	0.7639E+00
			0.3535E+01	0.1273E+01
			0.3535E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1373E+01	0.4074E-01
			0.2288E+01	0.7894E-01
			0.3432E+01	0.1451E+00
			0.4119E+01	0.2037E+00
			0.4577E+01	0.2546E+00
			0.4577E+01	0.5093E+00
			0.4577E+01	0.7639E+00

15	10	0.3196E+02	0.4577E+01	0.1273E+01
			0.4577E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1462E+01	0.4074E-01
			0.2437E+01	0.7894E-01
			0.3655E+01	0.1451E+00
			0.4386E+01	0.2037E+00
			0.4874E+01	0.2546E+00
			0.4874E+01	0.5093E+00
			0.4874E+01	0.7639E+00
16	10	0.3204E+02	0.4874E+01	0.1273E+01
			0.4874E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1453E+01	0.4074E-01
			0.2422E+01	0.7894E-01
			0.3634E+01	0.1451E+00
			0.4360E+01	0.2037E+00
			0.4845E+01	0.2546E+00
			0.4845E+01	0.5093E+00
			0.4845E+01	0.7639E+00
17	10	0.3450E+02	0.4845E+01	0.1273E+01
			0.4845E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1252E+01	0.4074E-01
			0.2087E+01	0.7894E-01
			0.3130E+01	0.1451E+00
			0.3757E+01	0.2037E+00
			0.4174E+01	0.2546E+00
			0.4174E+01	0.5093E+00
			0.4174E+01	0.7639E+00
18	10	0.3696E+02	0.4174E+01	0.1273E+01
			0.4174E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1306E+01	0.4074E-01
			0.2176E+01	0.7894E-01
			0.3264E+01	0.1451E+00
			0.3917E+01	0.2037E+00
			0.4352E+01	0.2546E+00
			0.4352E+01	0.5093E+00
			0.4352E+01	0.7639E+00
19	10	0.3704E+02	0.4352E+01	0.1273E+01
			0.4352E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1320E+01	0.4074E-01
			0.2200E+01	0.7894E-01

			0.3301E+01	0.1451E+00
			0.3961E+01	0.2037E+00
			0.4401E+01	0.2546E+00
			0.4401E+01	0.5093E+00
			0.4401E+01	0.7639E+00
			0.4401E+01	0.1273E+01
			0.4401E+01	0.5093E+01
20	10	0.4450E+02		
			0.0000E+00	0.0000E+00
			0.1869E+01	0.4074E-01
			0.3114E+01	0.7894E-01
			0.4672E+01	0.1451E+00
			0.5606E+01	0.2037E+00
			0.6229E+01	0.2546E+00
			0.6229E+01	0.5093E+00
			0.6229E+01	0.7639E+00
			0.6229E+01	0.1273E+01
			0.6229E+01	0.5093E+01
21	10	0.5196E+02		
			0.0000E+00	0.0000E+00
			0.2139E+01	0.4074E-01
			0.3565E+01	0.7894E-01
			0.5348E+01	0.1451E+00
			0.6417E+01	0.2037E+00
			0.7130E+01	0.2546E+00
			0.7130E+01	0.5093E+00
			0.7130E+01	0.7639E+00
			0.7130E+01	0.1273E+01
			0.7130E+01	0.5093E+01
22	10	0.5204E+02		
			0.0000E+00	0.0000E+00
			0.2125E+01	0.4074E-01
			0.3542E+01	0.7894E-01
			0.5313E+01	0.1451E+00
			0.6376E+01	0.2037E+00
			0.7084E+01	0.2546E+00
			0.7084E+01	0.5093E+00
			0.7084E+01	0.7639E+00
			0.7084E+01	0.1273E+01
			0.7084E+01	0.5093E+01
23	10	0.5450E+02		
			0.0000E+00	0.0000E+00
			0.1806E+01	0.4074E-01
			0.3010E+01	0.7894E-01
			0.4516E+01	0.1451E+00
			0.5419E+01	0.2037E+00
			0.6021E+01	0.2546E+00
			0.6021E+01	0.5093E+00
			0.6021E+01	0.7639E+00
			0.6021E+01	0.1273E+01

24	10	0.5696E+02	0.6021E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1860E+01	0.4074E-01
			0.3100E+01	0.7894E-01
			0.4649E+01	0.1451E+00
			0.5579E+01	0.2037E+00
			0.6199E+01	0.2546E+00
			0.6199E+01	0.5093E+00
			0.6199E+01	0.7639E+00
			0.6199E+01	0.1273E+01
			0.6199E+01	0.5093E+01
25	10	0.5704E+02	0.0000E+00	0.0000E+00
			0.1879E+01	0.4074E-01
			0.3132E+01	0.7894E-01
			0.4698E+01	0.1451E+00
			0.5638E+01	0.2037E+00
			0.6265E+01	0.2546E+00
			0.6265E+01	0.5093E+00
			0.6265E+01	0.7639E+00
			0.6265E+01	0.1273E+01
			0.6265E+01	0.5093E+01
26	10	0.5950E+02	0.0000E+00	0.0000E+00
			0.2364E+01	0.4074E-01
			0.3941E+01	0.7894E-01
			0.5911E+01	0.1451E+00
			0.7093E+01	0.2037E+00
			0.7881E+01	0.2546E+00
			0.7881E+01	0.5093E+00
			0.7881E+01	0.7639E+00
			0.7881E+01	0.1273E+01
			0.7881E+01	0.5093E+01
27	10	0.6196E+02	0.0000E+00	0.0000E+00
			0.2454E+01	0.4074E-01
			0.4089E+01	0.7894E-01
			0.6134E+01	0.1451E+00
			0.7361E+01	0.2037E+00
			0.8178E+01	0.2546E+00
			0.8178E+01	0.5093E+00
			0.8178E+01	0.7639E+00
			0.8178E+01	0.1273E+01
			0.8178E+01	0.5093E+01
28	10	0.6204E+02	0.0000E+00	0.0000E+00
			0.2514E+01	0.4074E-01
			0.4190E+01	0.7894E-01
			0.6285E+01	0.1451E+00

			0.7542E+01	0.2037E+00
			0.8380E+01	0.2546E+00
			0.8380E+01	0.5093E+00
			0.8380E+01	0.7639E+00
			0.8380E+01	0.1273E+01
			0.8380E+01	0.5093E+01
29	10	0.6450E+02		
			0.0000E+00	0.0000E+00
			0.3987E+01	0.4074E-01
			0.6644E+01	0.7894E-01
			0.9967E+01	0.1451E+00
			0.1196E+02	0.2037E+00
			0.1329E+02	0.2546E+00
			0.1329E+02	0.5093E+00
			0.1329E+02	0.7639E+00
			0.1329E+02	0.1273E+01
			0.1329E+02	0.5093E+01
30	10	0.6696E+02		
			0.0000E+00	0.0000E+00
			0.4179E+01	0.4074E-01
			0.6965E+01	0.7894E-01
			0.1045E+02	0.1451E+00
			0.1254E+02	0.2037E+00
			0.1393E+02	0.2546E+00
			0.1393E+02	0.5093E+00
			0.1393E+02	0.7639E+00
			0.1393E+02	0.1273E+01
			0.1393E+02	0.5093E+01
31	10	0.6704E+02		
			0.0000E+00	0.0000E+00
			0.4123E+01	0.4074E-01
			0.6871E+01	0.7894E-01
			0.1031E+02	0.1451E+00
			0.1237E+02	0.2037E+00
			0.1374E+02	0.2546E+00
			0.1374E+02	0.5093E+00
			0.1374E+02	0.7639E+00
			0.1374E+02	0.1273E+01
			0.1374E+02	0.5093E+01
32	10	0.6950E+02		
			0.0000E+00	0.0000E+00
			0.2799E+01	0.4074E-01
			0.4666E+01	0.7894E-01
			0.6998E+01	0.1451E+00
			0.8398E+01	0.2037E+00
			0.9331E+01	0.2546E+00
			0.9331E+01	0.5093E+00
			0.9331E+01	0.7639E+00
			0.9331E+01	0.1273E+01
			0.9331E+01	0.5093E+01

33	10	0.7196E+02	0.0000E+00	0.0000E+00
			0.2888E+01	0.4074E-01
			0.4814E+01	0.7894E-01
			0.7221E+01	0.1451E+00
			0.8665E+01	0.2037E+00
			0.9628E+01	0.2546E+00
			0.9628E+01	0.5093E+00
			0.9628E+01	0.7639E+00
			0.9628E+01	0.1273E+01
			0.9628E+01	0.5093E+01
34	10	0.7204E+02	0.0000E+00	0.0000E+00
			0.2937E+01	0.4074E-01
			0.4895E+01	0.7894E-01
			0.7342E+01	0.1451E+00
			0.8810E+01	0.2037E+00
			0.9789E+01	0.2546E+00
			0.9789E+01	0.5093E+00
			0.9789E+01	0.7639E+00
			0.9789E+01	0.1273E+01
			0.9789E+01	0.5093E+01
35	10	0.7450E+02	0.0000E+00	0.0000E+00
			0.4107E+01	0.4074E-01
			0.6845E+01	0.7894E-01
			0.1027E+02	0.1451E+00
			0.1232E+02	0.2037E+00
			0.1369E+02	0.2546E+00
			0.1369E+02	0.5093E+00
			0.1369E+02	0.7639E+00
			0.1369E+02	0.1273E+01
			0.1369E+02	0.5093E+01
36	10	0.7696E+02	0.0000E+00	0.0000E+00
			0.4261E+01	0.4074E-01
			0.7102E+01	0.7894E-01
			0.1065E+02	0.1451E+00
			0.1278E+02	0.2037E+00
			0.1420E+02	0.2546E+00
			0.1420E+02	0.5093E+00
			0.1420E+02	0.7639E+00
			0.1420E+02	0.1273E+01
			0.1420E+02	0.5093E+01
37	10	0.7704E+02	0.0000E+00	0.0000E+00
			0.4290E+01	0.4074E-01
			0.7150E+01	0.7894E-01
			0.1073E+02	0.1451E+00
			0.1287E+02	0.2037E+00

			0.1430E+02	0.2546E+00
			0.1430E+02	0.5093E+00
			0.1430E+02	0.7639E+00
			0.1430E+02	0.1273E+01
			0.1430E+02	0.5093E+01
38	10	0.7950E+02		
			0.0000E+00	0.0000E+00
			0.5013E+01	0.4074E-01
			0.8354E+01	0.7894E-01
			0.1253E+02	0.1451E+00
			0.1504E+02	0.2037E+00
			0.1671E+02	0.2546E+00
			0.1671E+02	0.5093E+00
			0.1671E+02	0.7639E+00
			0.1671E+02	0.1273E+01
			0.1671E+02	0.5093E+01
39	10	0.8196E+02		
			0.0000E+00	0.0000E+00
			0.5205E+01	0.4074E-01
			0.8675E+01	0.7894E-01
			0.1301E+02	0.1451E+00
			0.1562E+02	0.2037E+00
			0.1735E+02	0.2546E+00
			0.1735E+02	0.5093E+00
			0.1735E+02	0.7639E+00
			0.1735E+02	0.1273E+01
			0.1735E+02	0.5093E+01
40	10	0.8204E+02		
			0.0000E+00	0.0000E+00
			0.5134E+01	0.4074E-01
			0.8556E+01	0.7894E-01
			0.1283E+02	0.1451E+00
			0.1540E+02	0.2037E+00
			0.1711E+02	0.2546E+00
			0.1711E+02	0.5093E+00
			0.1711E+02	0.7639E+00
			0.1711E+02	0.1273E+01
			0.1711E+02	0.5093E+01
41	10	0.8700E+02		
			0.0000E+00	0.0000E+00
			0.3554E+01	0.4074E-01
			0.5924E+01	0.7894E-01
			0.8886E+01	0.1451E+00
			0.1066E+02	0.2037E+00
			0.1185E+02	0.2546E+00
			0.1185E+02	0.5093E+00
			0.1185E+02	0.7639E+00
			0.1185E+02	0.1273E+01
			0.1185E+02	0.5093E+01
42	10	0.9196E+02		

			0.0000E+00	0.0000E+00
			0.3734E+01	0.4074E-01
			0.6224E+01	0.7894E-01
			0.9336E+01	0.1451E+00
			0.1120E+02	0.2037E+00
			0.1245E+02	0.2546E+00
			0.1245E+02	0.5093E+00
			0.1245E+02	0.7639E+00
			0.1245E+02	0.1273E+01
			0.1245E+02	0.5093E+01
43	10	0.9204E+02		
			0.0000E+00	0.0000E+00
			0.3824E+01	0.4074E-01
			0.6373E+01	0.7894E-01
			0.9559E+01	0.1451E+00
			0.1147E+02	0.2037E+00
			0.1275E+02	0.2546E+00
			0.1275E+02	0.5093E+00
			0.1275E+02	0.7639E+00
			0.1275E+02	0.1273E+01
			0.1275E+02	0.5093E+01
44	10	0.9450E+02		
			0.0000E+00	0.0000E+00
			0.5964E+01	0.4074E-01
			0.9940E+01	0.7894E-01
			0.1491E+02	0.1451E+00
			0.1789E+02	0.2037E+00
			0.1988E+02	0.2546E+00
			0.1988E+02	0.5093E+00
			0.1988E+02	0.7639E+00
			0.1988E+02	0.1273E+01
			0.1988E+02	0.5093E+01
45	10	0.9696E+02		
			0.0000E+00	0.0000E+00
			0.6157E+01	0.4074E-01
			0.1026E+02	0.7894E-01
			0.1539E+02	0.1451E+00
			0.1847E+02	0.2037E+00
			0.2052E+02	0.2546E+00
			0.2052E+02	0.5093E+00
			0.2052E+02	0.7639E+00
			0.2052E+02	0.1273E+01
			0.2052E+02	0.5093E+01
46	10	0.9704E+02		
			0.0000E+00	0.0000E+00
			0.6133E+01	0.4074E-01
			0.1022E+02	0.7894E-01
			0.1533E+02	0.1451E+00
			0.1840E+02	0.2037E+00
			0.2044E+02	0.2546E+00

47	10	0.9950E+02	0.2044E+02	0.5093E+00
			0.2044E+02	0.7639E+00
			0.2044E+02	0.1273E+01
			0.2044E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.5610E+01	0.4074E-01
			0.9349E+01	0.7894E-01
			0.1402E+02	0.1451E+00
			0.1683E+02	0.2037E+00
			0.1870E+02	0.2546E+00
			0.1870E+02	0.5093E+00
			0.1870E+02	0.7639E+00
			0.1870E+02	0.1273E+01
48	10	0.1020E+03	0.1870E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.5764E+01	0.4074E-01
			0.9606E+01	0.7894E-01
			0.1441E+02	0.1451E+00
			0.1729E+02	0.2037E+00
			0.1921E+02	0.2546E+00
			0.1921E+02	0.5093E+00
			0.1921E+02	0.7639E+00
			0.1921E+02	0.1273E+01
			0.1921E+02	0.5093E+01
49	10	0.1020E+03	0.0000E+00	0.0000E+00
			0.5868E+01	0.4074E-01
			0.9780E+01	0.7894E-01
			0.1467E+02	0.1451E+00
			0.1760E+02	0.2037E+00
			0.1956E+02	0.2546E+00
			0.1956E+02	0.5093E+00
			0.1956E+02	0.7639E+00
			0.1956E+02	0.1273E+01
			0.1956E+02	0.5093E+01
50	10	0.1045E+03	0.0000E+00	0.0000E+00
			0.8362E+01	0.4074E-01
			0.1394E+02	0.7894E-01
			0.2091E+02	0.1451E+00
			0.2509E+02	0.2037E+00
			0.2787E+02	0.2546E+00
			0.2787E+02	0.5093E+00
			0.2787E+02	0.7639E+00
			0.2787E+02	0.1273E+01
			0.2787E+02	0.5093E+01
51	10	0.1070E+03	0.0000E+00	0.0000E+00
			0.0000E+00	0.0000E+00

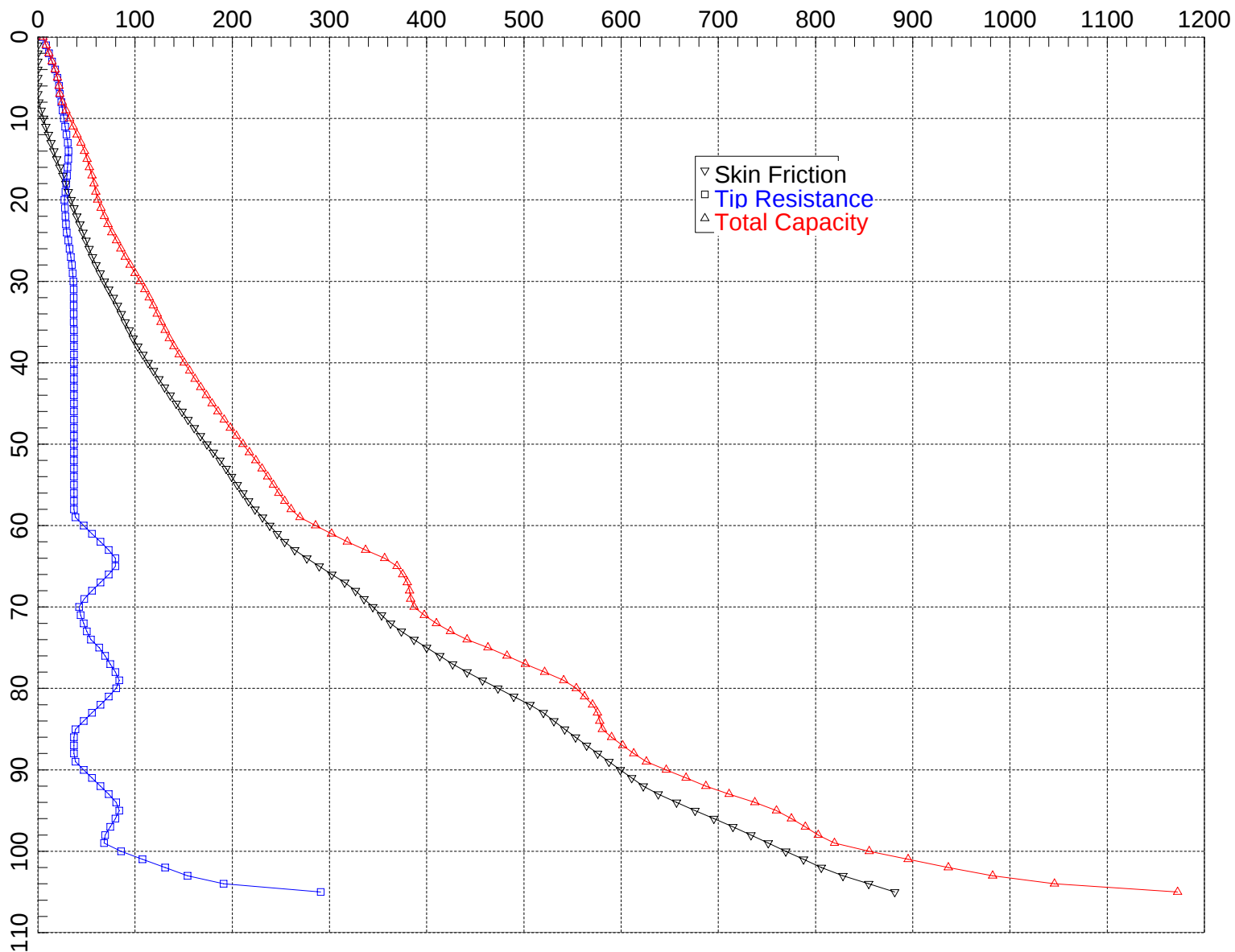
			0.8415E+01	0.4074E-01
			0.1403E+02	0.7894E-01
			0.2104E+02	0.1451E+00
			0.2525E+02	0.2037E+00
			0.2805E+02	0.2546E+00
			0.2805E+02	0.5093E+00
			0.2805E+02	0.7639E+00
			0.2805E+02	0.1273E+01
			0.2805E+02	0.5093E+01
52	10	0.1070E+03	0.0000E+00	0.0000E+00
			0.8415E+01	0.4074E-01
			0.1403E+02	0.7894E-01
			0.2104E+02	0.1451E+00
			0.2525E+02	0.2037E+00
			0.2805E+02	0.2546E+00
			0.2805E+02	0.5093E+00
			0.2805E+02	0.7639E+00
			0.2805E+02	0.1273E+01
			0.2805E+02	0.5093E+01
53	10	0.1085E+03	0.0000E+00	0.0000E+00
			0.8415E+01	0.4074E-01
			0.1403E+02	0.7894E-01
			0.2104E+02	0.1451E+00
			0.2525E+02	0.2037E+00
			0.2805E+02	0.2546E+00
			0.2805E+02	0.5093E+00
			0.2805E+02	0.7639E+00
			0.2805E+02	0.1273E+01
			0.2805E+02	0.5093E+01
54	10	0.1100E+03	0.0000E+00	0.0000E+00
			0.8415E+01	0.4074E-01
			0.1403E+02	0.7894E-01
			0.2104E+02	0.1451E+00
			0.2525E+02	0.2037E+00
			0.2805E+02	0.2546E+00
			0.2805E+02	0.5093E+00
			0.2805E+02	0.7639E+00
			0.2805E+02	0.1273E+01
			0.2805E+02	0.5093E+01
TIP	LOAD	TIP		
	KIP	MOVEMENT		
		IN.		
0.0000E+00		0.0000E+00		
0.1818E+02		0.1273E-01		

0.3637E+02	0.2546E-01
0.7274E+02	0.5093E-01
0.1455E+03	0.3310E+00
0.2182E+03	0.1070E+01
0.2619E+03	0.1859E+01
0.2910E+03	0.2546E+01
0.2910E+03	0.3820E+01
0.2910E+03	0.5093E+01

LOAD VERSUS SETTLEMENT CURVE

TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.1677E+01	0.8472E-03	0.1428E+00	0.1000E-03
0.1677E+02	0.8472E-02	0.1428E+01	0.1000E-02
0.8458E+02	0.4259E-01	0.7141E+01	0.5000E-02
0.1652E+03	0.8490E-01	0.1428E+02	0.1000E-01
0.3038E+03	0.1638E+00	0.2856E+02	0.2000E-01
0.5867E+03	0.3500E+00	0.7141E+02	0.5000E-01
0.7177E+03	0.4583E+00	0.8029E+02	0.8000E-01
0.7818E+03	0.5184E+00	0.8548E+02	0.1000E+00
0.9758E+03	0.7498E+00	0.1114E+03	0.2000E+00
0.1054E+04	0.1110E+01	0.1621E+03	0.5000E+00
0.1083E+04	0.1433E+01	0.1917E+03	0.8000E+00
0.1103E+04	0.1648E+01	0.2114E+03	0.1000E+01
0.1159E+04	0.2693E+01	0.2678E+03	0.2000E+01

Ultimate Axial Capacity (kips)

[illegible]

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APILE for Windows, Version 2023.10.3

Serial Number : 506768014

A Program for Analyzing the Axial Capacity
and Short-term Settlement of Driven Piles
under Axial Loading.
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This program is licensed to :

Terracon, Inc.
APILE Global, Global License

Path to file locations : C:\Users\naabidoye\OneDrive - Terracon
Consultants Inc\Documents\Deen Terracon Project 2025\Project\ES255161 GW Oliver Road
BFI - General\07 Working Files\02 Calculations\Axial Capacity\
Name of input data file : 20inch PSC_Bent 2_B3_Rev.ap10d
Name of output file : 20inch PSC_Bent 2_B3_Rev.ap10o
Name of plot output file : 20inch PSC_Bent 2_B3_Rev.ap10p

Time and Date of Analysis

Date: January 20, 2026 Time: 15:03:45

1

* INPUT INFORMATION *

PROJECT DESCRIPTION :
G.W. Oliver Over Little Lotts Creek
DESIGNER :
JOB NUMBER : ES255161

METHOD FOR UNIT LOAD TRANSFERS :
- FHWA (Federal Highway Administration)
Unfactored Unit Side Friction and Unit Side Resistance are used.

COMPUTATION METHOD(S) FOR PILE CAPACITY :

- FHWA (Federal Highway Administration)

TYPE OF LOADING :

- COMPRESSION

PILE TYPE :

Precast concrete pile (Square/Rectangular/Orthogonal)

AVERAGE DEPTH TO ESTIMATE TIP RESISTANCE:

- USE 1.5 DIAMETERS ABOVE AND BELOW TIP

DATA FOR AXIAL STIFFNESS :

- MODULUS OF ELASTICITY = 0.400E+07 PSI
- CROSS SECTION AREA = 400.00 IN2

NONCIRCULAR PILE PROPERTIES :

- TOTAL PILE LENGTH, TL = 105.00 FT.
- BATTER ANGLE = 0.00 DEG
- PILE STICKUP LENGTH, PSL = 0.00 FT.
- ZERO FRICTION LENGTH, ZFL = 8.00 FT.
- PERIMETER OF PILE = 80.00 IN.
- TIP AREA OF PILE = 400.00 IN2
- INCREMENT OF PILE LENGTH
USED IN COMPUTATION = 1.00 FT.
- PRINTING INCREMENT = 1

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/FT^3	FRICTION ANGLE DEGREES	Nq FACTOR FHWA
0.00	SAND	0.80*	110.00	31.00	35.20**
4.00	SAND	0.80*	110.00	31.00	35.20**
4.00	SAND	0.80*	100.00	28.00	22.80**
6.00	SAND	0.80*	100.00	28.00	22.80**
6.00	SAND	0.80*	37.60	28.00	22.80**
17.00	SAND	0.80*	37.60	28.00	22.80**
17.00	SAND	0.80*	27.60	26.00	17.40**
27.00	SAND	0.80*	27.60	26.00	17.40**
27.00	SAND	0.80*	37.60	28.00	22.80**
32.00	SAND	0.80*	37.60	28.00	22.80**
32.00	SAND	0.80*	27.60	26.00	17.40**
37.00	SAND	0.80*	27.60	26.00	17.40**
37.00	SAND	0.80*	37.60	28.00	22.80**
52.00	SAND	0.80*	37.60	28.00	22.80**
52.00	SAND	0.80*	27.60	26.00	17.40**
57.00	SAND	0.80*	27.60	26.00	17.40**
57.00	SAND	0.80*	37.60	28.00	22.80**

62.00	SAND	0.80*	37.60	28.00	22.80**
62.00	SAND	0.80*	52.60	32.00	40.40**
67.00	SAND	0.80*	52.60	32.00	40.40**
67.00	SAND	0.80*	37.60	28.00	22.80**
72.00	SAND	0.80*	37.60	28.00	22.80**
72.00	SAND	0.80*	47.60	31.00	35.20**
77.00	SAND	0.80*	47.60	31.00	35.20**
77.00	SAND	0.80*	52.60	32.00	40.40**
82.00	SAND	0.80*	52.60	32.00	40.40**
82.00	SAND	0.80*	37.60	28.00	22.80**
92.00	SAND	0.80*	37.60	28.00	22.80**
92.00	SAND	0.80*	52.60	32.00	40.40**
97.00	SAND	0.80*	52.60	32.00	40.40**
97.00	SAND	0.80*	47.60	31.00	35.20**
102.00	SAND	0.80*	47.60	31.00	35.20**
102.00	SAND	0.80*	57.60	34.00	55.60**
107.00	SAND	0.80*	57.60	34.00	55.60**
107.00	SAND	0.80*	67.60	38.00	110.40**
110.00	SAND	0.80*	67.60	38.00	110.40**

[illegible]

0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00

* MAXIMUM UNIT FRICTION AND/OR MAXIMUM UNIT BEARING
WERE SET TO LARGE VALUES INDICATING THAT APILE
USES THE LIMITS SPECIFIED BY EACH SELECTED
CRITERIA (IF ANY).

DEPTH FT.	LRFD FACTOR ON UNIT FRICTION	LRFD FACTOR ON UNIT BEARING
0.00	1.000	1.000
4.00	1.000	1.000
4.00	1.000	1.000
6.00	1.000	1.000
6.00	1.000	1.000
17.00	1.000	1.000
17.00	1.000	1.000
27.00	1.000	1.000
27.00	1.000	1.000
32.00	1.000	1.000
32.00	1.000	1.000
37.00	1.000	1.000
37.00	1.000	1.000
52.00	1.000	1.000
52.00	1.000	1.000
57.00	1.000	1.000
57.00	1.000	1.000
62.00	1.000	1.000
62.00	1.000	1.000
67.00	1.000	1.000
67.00	1.000	1.000
72.00	1.000	1.000
72.00	1.000	1.000
77.00	1.000	1.000
77.00	1.000	1.000

82.00	1.000	1.000
82.00	1.000	1.000
92.00	1.000	1.000
92.00	1.000	1.000
97.00	1.000	1.000
97.00	1.000	1.000
102.00	1.000	1.000
102.00	1.000	1.000
107.00	1.000	1.000
107.00	1.000	1.000
110.00	1.000	1.000

DEPTH FT.	Z PEAK IN.	T RESIDUAL
0.00	0.255 *	0.00
4.00	0.255 *	0.00
4.00	0.255 *	0.00
6.00	0.255 *	0.00
6.00	0.255 *	0.00
17.00	0.255 *	0.00
17.00	0.255 *	0.00
27.00	0.255 *	0.00
27.00	0.255 *	0.00
32.00	0.255 *	0.00
32.00	0.255 *	0.00
37.00	0.255 *	0.00
37.00	0.255 *	0.00
52.00	0.255 *	0.00
52.00	0.255 *	0.00
57.00	0.255 *	0.00
57.00	0.255 *	0.00
62.00	0.255 *	0.00
62.00	0.255 *	0.00
67.00	0.255 *	0.00
67.00	0.255 *	0.00
72.00	0.255 *	0.00
72.00	0.255 *	0.00
77.00	0.255 *	0.00
77.00	0.255 *	0.00
82.00	0.255 *	0.00
82.00	0.255 *	0.00
92.00	0.255 *	0.00
92.00	0.255 *	0.00
97.00	0.255 *	0.00
97.00	0.255 *	0.00
102.00	0.255 *	0.00
102.00	0.255 *	0.00

107.00	0.255 *	0.00
107.00	0.255 *	0.00
110.00	0.255 *	0.00

* DEFAULT VALUE = 0.01 D

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 * COMPUTATION RESULT *

 * FED. HWY. METHOD *

	PILE LENGTH BELOW GND. FT.	SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
	0.00	0.0	5.2	5.2
~ Pile Top Elevation @ 142.5'	1.00	0.0	8.6	8.6
	2.00	0.0	11.3	11.3
	3.00	0.0	14.5	14.5
	4.00	0.0	17.7	17.7
	5.00	0.0	20.2	20.2
	6.00	0.0	21.7	21.7
	7.00	0.0	22.5	22.5
Ground-line Elevation @ 136'	8.00	1.1	24.0	25.1
	9.00	3.4	25.5	28.9
	10.00	5.8	26.8	32.6
	11.00	8.2	28.1	36.4
	12.00	10.9	29.4	40.2
	13.00	13.6	30.7	44.3
	14.00	16.4	31.6	48.1
	15.00	19.4	31.2	50.6
	16.00	22.5	30.6	53.1
	17.00	25.7	29.9	55.6
	18.00	28.7	29.2	57.8
	19.00	31.4	28.3	59.7
Scour load at Elevation @ 124.5' is ~34.3 kips	20.00	34.3	27.3	61.6
	21.00	37.2	27.7	64.8
	22.00	40.1	28.3	68.5
	23.00	43.2	29.0	72.2
	24.00	46.3	29.8	76.1
	25.00	49.5	31.2	80.7

26.00	52.7	32.6	85.3
27.00	56.1	33.8	89.8
28.00	59.8	34.9	94.8
29.00	64.1	35.9	100.0
30.00	68.5	36.7	105.3
31.00	73.0	36.9	109.9
32.00	77.7	36.9	114.5
33.00	81.9	36.9	118.8
34.00	85.9	36.9	122.8
35.00	89.9	36.9	126.8
36.00	94.0	37.0	130.9
37.00	98.1	37.0	135.1
38.00	102.8	37.0	139.8
39.00	108.1	37.0	145.1
40.00	113.5	37.0	150.5
41.00	119.0	37.0	156.0
42.00	124.6	37.0	161.6
43.00	130.4	37.0	167.4
44.00	136.3	37.0	173.3
45.00	142.2	37.0	179.2
46.00	148.3	37.0	185.3
47.00	154.5	37.0	191.5
48.00	160.9	37.0	197.9
49.00	167.3	37.0	204.3
50.00	173.9	37.0	210.9
51.00	180.6	37.0	217.6
52.00	187.3	37.0	224.3
53.00	193.6	37.0	230.6
54.00	199.3	37.0	236.3
55.00	205.1	37.0	242.1
56.00	210.9	37.0	247.9
57.00	216.9	37.0	253.9
58.00	223.5	37.0	260.5
59.00	231.0	38.6	269.6
60.00	238.6	47.2	285.7
61.00	246.2	55.7	302.0
62.00	254.0	64.3	318.4
63.00	264.2	72.9	337.1
64.00	276.7	79.9	356.6
65.00	289.4	79.9	369.4
66.00	302.4	72.9	375.3
67.00	315.7	64.3	380.0
68.00	326.8	55.7	382.5
69.00	335.6	47.7	383.4
70.00	344.6	42.4	386.9
71.00	353.6	44.0	397.6
72.00	362.8	47.2	410.0
73.00	373.9	50.4	424.3
74.00	386.8	54.6	441.4
75.00	400.0	63.2	463.1

76.00	413.3	69.2	482.5	Minimum Pile Tip at +68' EL
77.00	426.8	74.5	501.4	
78.00	441.5	79.9	521.4	
79.00	457.3	83.7	541.0	
80.00	473.3	80.5	553.9	
81.00	489.6	72.9	562.5	
82.00	506.2	64.3	570.5	
83.00	520.0	55.7	575.7	
84.00	530.9	47.2	578.1	
85.00	542.0	38.6	580.6	
86.00	553.2	37.0	590.2	
87.00	564.5	37.0	601.5	
88.00	576.0	37.0	613.0	
89.00	587.5	38.6	626.1	
90.00	599.2	47.2	646.3	
91.00	610.9	55.7	666.7	
92.00	622.8	64.3	687.2	
93.00	638.2	72.9	711.1	
94.00	657.0	80.5	737.5	
95.00	676.1	83.7	759.8	
96.00	695.4	79.9	775.3	
97.00	715.0	74.5	789.6	
98.00	733.7	69.2	802.8	
99.00	751.4	68.0	819.4	
100.00	769.4	85.7	855.1	
101.00	787.6	107.7	895.3	
102.00	805.9	130.8	936.7	
103.00	828.3	153.9	982.1	
104.00	854.7	191.0	1045.7	
105.00	881.4	291.0	1172.4	

NOTES:

- AN ASTERISK IS PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

 * COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *
 * CURVES FOR AXIAL LOADING *

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.4167E-01	0.0000E+00	0.0000E+00

			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
			0.0000E+00	0.5093E+01
2	10	0.2000E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
			0.0000E+00	0.5093E+01
3	10	0.3958E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
			0.0000E+00	0.5093E+01
4	10	0.4042E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
			0.0000E+00	0.5093E+01
5	10	0.5000E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00

6	10	0.5958E+01	0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
			0.0000E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
			0.0000E+00	0.5093E+01
7	10	0.6042E+01	0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
			0.0000E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.8167E+00	0.4074E-01
			0.1361E+01	0.7894E-01
8	10	0.1150E+02	0.2042E+01	0.1451E+00
			0.2450E+01	0.2037E+00
			0.2722E+01	0.2546E+00
			0.2722E+01	0.5093E+00
			0.2722E+01	0.7639E+00
			0.2722E+01	0.1273E+01
			0.2722E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1015E+01	0.4074E-01
			0.1691E+01	0.7894E-01
			0.2537E+01	0.1451E+00
			0.3044E+01	0.2037E+00
			0.3382E+01	0.2546E+00
9	10	0.1696E+02	0.3382E+01	0.5093E+00
			0.3382E+01	0.7639E+00
			0.3382E+01	0.1273E+01
			0.3382E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1015E+01	0.4074E-01
			0.1691E+01	0.7894E-01
			0.2537E+01	0.1451E+00
			0.3044E+01	0.2037E+00
			0.3382E+01	0.2546E+00
			0.3382E+01	0.5093E+00
			0.3382E+01	0.7639E+00
			0.3382E+01	0.1273E+01
10	10	0.1704E+02	0.3382E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1009E+01	0.4074E-01

11	10	0.2200E+02	0.1682E+01	0.7894E-01
			0.2523E+01	0.1451E+00
			0.3028E+01	0.2037E+00
			0.3364E+01	0.2546E+00
			0.3364E+01	0.5093E+00
			0.3364E+01	0.7639E+00
			0.3364E+01	0.1273E+01
			0.3364E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.9404E+00	0.4074E-01
			0.1567E+01	0.7894E-01
			0.2351E+01	0.1451E+00
			0.2821E+01	0.2037E+00
			0.3135E+01	0.2546E+00
12	10	0.2696E+02	0.3135E+01	0.5093E+00
			0.3135E+01	0.7639E+00
			0.3135E+01	0.1273E+01
			0.3135E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1048E+01	0.4074E-01
			0.1747E+01	0.7894E-01
			0.2621E+01	0.1451E+00
			0.3145E+01	0.2037E+00
			0.3495E+01	0.2546E+00
			0.3495E+01	0.5093E+00
			0.3495E+01	0.7639E+00
			0.3495E+01	0.1273E+01
			0.3495E+01	0.5093E+01
13	10	0.2704E+02	0.0000E+00	0.0000E+00
			0.1061E+01	0.4074E-01
			0.1768E+01	0.7894E-01
			0.2651E+01	0.1451E+00
			0.3182E+01	0.2037E+00
			0.3535E+01	0.2546E+00
			0.3535E+01	0.5093E+00
			0.3535E+01	0.7639E+00
			0.3535E+01	0.1273E+01
			0.3535E+01	0.5093E+01
14	10	0.2950E+02	0.0000E+00	0.0000E+00
			0.1373E+01	0.4074E-01
			0.2288E+01	0.7894E-01
			0.3432E+01	0.1451E+00
			0.4119E+01	0.2037E+00
			0.4577E+01	0.2546E+00
			0.4577E+01	0.5093E+00
			0.4577E+01	0.7639E+00

15	10	0.3196E+02	0.4577E+01	0.1273E+01
			0.4577E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1462E+01	0.4074E-01
			0.2437E+01	0.7894E-01
			0.3655E+01	0.1451E+00
			0.4386E+01	0.2037E+00
			0.4874E+01	0.2546E+00
			0.4874E+01	0.5093E+00
			0.4874E+01	0.7639E+00
16	10	0.3204E+02	0.4874E+01	0.1273E+01
			0.4874E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1453E+01	0.4074E-01
			0.2422E+01	0.7894E-01
			0.3634E+01	0.1451E+00
			0.4360E+01	0.2037E+00
			0.4845E+01	0.2546E+00
			0.4845E+01	0.5093E+00
			0.4845E+01	0.7639E+00
17	10	0.3450E+02	0.4845E+01	0.1273E+01
			0.4845E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1252E+01	0.4074E-01
			0.2087E+01	0.7894E-01
			0.3130E+01	0.1451E+00
			0.3757E+01	0.2037E+00
			0.4174E+01	0.2546E+00
			0.4174E+01	0.5093E+00
			0.4174E+01	0.7639E+00
18	10	0.3696E+02	0.4174E+01	0.1273E+01
			0.4174E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1306E+01	0.4074E-01
			0.2176E+01	0.7894E-01
			0.3264E+01	0.1451E+00
			0.3917E+01	0.2037E+00
			0.4352E+01	0.2546E+00
			0.4352E+01	0.5093E+00
			0.4352E+01	0.7639E+00
19	10	0.3704E+02	0.4352E+01	0.1273E+01
			0.4352E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1320E+01	0.4074E-01
			0.2200E+01	0.7894E-01

			0.3301E+01	0.1451E+00
			0.3961E+01	0.2037E+00
			0.4401E+01	0.2546E+00
			0.4401E+01	0.5093E+00
			0.4401E+01	0.7639E+00
			0.4401E+01	0.1273E+01
			0.4401E+01	0.5093E+01
20	10	0.4450E+02		
			0.0000E+00	0.0000E+00
			0.1869E+01	0.4074E-01
			0.3114E+01	0.7894E-01
			0.4672E+01	0.1451E+00
			0.5606E+01	0.2037E+00
			0.6229E+01	0.2546E+00
			0.6229E+01	0.5093E+00
			0.6229E+01	0.7639E+00
			0.6229E+01	0.1273E+01
			0.6229E+01	0.5093E+01
21	10	0.5196E+02		
			0.0000E+00	0.0000E+00
			0.2139E+01	0.4074E-01
			0.3565E+01	0.7894E-01
			0.5348E+01	0.1451E+00
			0.6417E+01	0.2037E+00
			0.7130E+01	0.2546E+00
			0.7130E+01	0.5093E+00
			0.7130E+01	0.7639E+00
			0.7130E+01	0.1273E+01
			0.7130E+01	0.5093E+01
22	10	0.5204E+02		
			0.0000E+00	0.0000E+00
			0.2125E+01	0.4074E-01
			0.3542E+01	0.7894E-01
			0.5313E+01	0.1451E+00
			0.6376E+01	0.2037E+00
			0.7084E+01	0.2546E+00
			0.7084E+01	0.5093E+00
			0.7084E+01	0.7639E+00
			0.7084E+01	0.1273E+01
			0.7084E+01	0.5093E+01
23	10	0.5450E+02		
			0.0000E+00	0.0000E+00
			0.1806E+01	0.4074E-01
			0.3010E+01	0.7894E-01
			0.4516E+01	0.1451E+00
			0.5419E+01	0.2037E+00
			0.6021E+01	0.2546E+00
			0.6021E+01	0.5093E+00
			0.6021E+01	0.7639E+00
			0.6021E+01	0.1273E+01

24	10	0.5696E+02	0.6021E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1860E+01	0.4074E-01
			0.3100E+01	0.7894E-01
			0.4649E+01	0.1451E+00
			0.5579E+01	0.2037E+00
			0.6199E+01	0.2546E+00
			0.6199E+01	0.5093E+00
			0.6199E+01	0.7639E+00
			0.6199E+01	0.1273E+01
			0.6199E+01	0.5093E+01
25	10	0.5704E+02	0.0000E+00	0.0000E+00
			0.1879E+01	0.4074E-01
			0.3132E+01	0.7894E-01
			0.4698E+01	0.1451E+00
			0.5638E+01	0.2037E+00
			0.6265E+01	0.2546E+00
			0.6265E+01	0.5093E+00
			0.6265E+01	0.7639E+00
			0.6265E+01	0.1273E+01
			0.6265E+01	0.5093E+01
26	10	0.5950E+02	0.0000E+00	0.0000E+00
			0.2364E+01	0.4074E-01
			0.3941E+01	0.7894E-01
			0.5911E+01	0.1451E+00
			0.7093E+01	0.2037E+00
			0.7881E+01	0.2546E+00
			0.7881E+01	0.5093E+00
			0.7881E+01	0.7639E+00
			0.7881E+01	0.1273E+01
			0.7881E+01	0.5093E+01
27	10	0.6196E+02	0.0000E+00	0.0000E+00
			0.2454E+01	0.4074E-01
			0.4089E+01	0.7894E-01
			0.6134E+01	0.1451E+00
			0.7361E+01	0.2037E+00
			0.8178E+01	0.2546E+00
			0.8178E+01	0.5093E+00
			0.8178E+01	0.7639E+00
			0.8178E+01	0.1273E+01
			0.8178E+01	0.5093E+01
28	10	0.6204E+02	0.0000E+00	0.0000E+00
			0.2514E+01	0.4074E-01
			0.4190E+01	0.7894E-01
			0.6285E+01	0.1451E+00

			0.7542E+01	0.2037E+00
			0.8380E+01	0.2546E+00
			0.8380E+01	0.5093E+00
			0.8380E+01	0.7639E+00
			0.8380E+01	0.1273E+01
			0.8380E+01	0.5093E+01
29	10	0.6450E+02		
			0.0000E+00	0.0000E+00
			0.3987E+01	0.4074E-01
			0.6644E+01	0.7894E-01
			0.9967E+01	0.1451E+00
			0.1196E+02	0.2037E+00
			0.1329E+02	0.2546E+00
			0.1329E+02	0.5093E+00
			0.1329E+02	0.7639E+00
			0.1329E+02	0.1273E+01
			0.1329E+02	0.5093E+01
30	10	0.6696E+02		
			0.0000E+00	0.0000E+00
			0.4179E+01	0.4074E-01
			0.6965E+01	0.7894E-01
			0.1045E+02	0.1451E+00
			0.1254E+02	0.2037E+00
			0.1393E+02	0.2546E+00
			0.1393E+02	0.5093E+00
			0.1393E+02	0.7639E+00
			0.1393E+02	0.1273E+01
			0.1393E+02	0.5093E+01
31	10	0.6704E+02		
			0.0000E+00	0.0000E+00
			0.4123E+01	0.4074E-01
			0.6871E+01	0.7894E-01
			0.1031E+02	0.1451E+00
			0.1237E+02	0.2037E+00
			0.1374E+02	0.2546E+00
			0.1374E+02	0.5093E+00
			0.1374E+02	0.7639E+00
			0.1374E+02	0.1273E+01
			0.1374E+02	0.5093E+01
32	10	0.6950E+02		
			0.0000E+00	0.0000E+00
			0.2799E+01	0.4074E-01
			0.4666E+01	0.7894E-01
			0.6998E+01	0.1451E+00
			0.8398E+01	0.2037E+00
			0.9331E+01	0.2546E+00
			0.9331E+01	0.5093E+00
			0.9331E+01	0.7639E+00
			0.9331E+01	0.1273E+01
			0.9331E+01	0.5093E+01

33	10	0.7196E+02	0.0000E+00	0.0000E+00
			0.2888E+01	0.4074E-01
			0.4814E+01	0.7894E-01
			0.7221E+01	0.1451E+00
			0.8665E+01	0.2037E+00
			0.9628E+01	0.2546E+00
			0.9628E+01	0.5093E+00
			0.9628E+01	0.7639E+00
			0.9628E+01	0.1273E+01
			0.9628E+01	0.5093E+01
34	10	0.7204E+02	0.0000E+00	0.0000E+00
			0.2937E+01	0.4074E-01
			0.4895E+01	0.7894E-01
			0.7342E+01	0.1451E+00
			0.8810E+01	0.2037E+00
			0.9789E+01	0.2546E+00
			0.9789E+01	0.5093E+00
			0.9789E+01	0.7639E+00
			0.9789E+01	0.1273E+01
			0.9789E+01	0.5093E+01
35	10	0.7450E+02	0.0000E+00	0.0000E+00
			0.4107E+01	0.4074E-01
			0.6845E+01	0.7894E-01
			0.1027E+02	0.1451E+00
			0.1232E+02	0.2037E+00
			0.1369E+02	0.2546E+00
			0.1369E+02	0.5093E+00
			0.1369E+02	0.7639E+00
			0.1369E+02	0.1273E+01
			0.1369E+02	0.5093E+01
36	10	0.7696E+02	0.0000E+00	0.0000E+00
			0.4261E+01	0.4074E-01
			0.7102E+01	0.7894E-01
			0.1065E+02	0.1451E+00
			0.1278E+02	0.2037E+00
			0.1420E+02	0.2546E+00
			0.1420E+02	0.5093E+00
			0.1420E+02	0.7639E+00
			0.1420E+02	0.1273E+01
			0.1420E+02	0.5093E+01
37	10	0.7704E+02	0.0000E+00	0.0000E+00
			0.4290E+01	0.4074E-01
			0.7150E+01	0.7894E-01
			0.1073E+02	0.1451E+00
			0.1287E+02	0.2037E+00

			0.1430E+02	0.2546E+00
			0.1430E+02	0.5093E+00
			0.1430E+02	0.7639E+00
			0.1430E+02	0.1273E+01
			0.1430E+02	0.5093E+01
38	10	0.7950E+02		
			0.0000E+00	0.0000E+00
			0.5013E+01	0.4074E-01
			0.8354E+01	0.7894E-01
			0.1253E+02	0.1451E+00
			0.1504E+02	0.2037E+00
			0.1671E+02	0.2546E+00
			0.1671E+02	0.5093E+00
			0.1671E+02	0.7639E+00
			0.1671E+02	0.1273E+01
			0.1671E+02	0.5093E+01
39	10	0.8196E+02		
			0.0000E+00	0.0000E+00
			0.5205E+01	0.4074E-01
			0.8675E+01	0.7894E-01
			0.1301E+02	0.1451E+00
			0.1562E+02	0.2037E+00
			0.1735E+02	0.2546E+00
			0.1735E+02	0.5093E+00
			0.1735E+02	0.7639E+00
			0.1735E+02	0.1273E+01
			0.1735E+02	0.5093E+01
40	10	0.8204E+02		
			0.0000E+00	0.0000E+00
			0.5134E+01	0.4074E-01
			0.8556E+01	0.7894E-01
			0.1283E+02	0.1451E+00
			0.1540E+02	0.2037E+00
			0.1711E+02	0.2546E+00
			0.1711E+02	0.5093E+00
			0.1711E+02	0.7639E+00
			0.1711E+02	0.1273E+01
			0.1711E+02	0.5093E+01
41	10	0.8700E+02		
			0.0000E+00	0.0000E+00
			0.3554E+01	0.4074E-01
			0.5924E+01	0.7894E-01
			0.8886E+01	0.1451E+00
			0.1066E+02	0.2037E+00
			0.1185E+02	0.2546E+00
			0.1185E+02	0.5093E+00
			0.1185E+02	0.7639E+00
			0.1185E+02	0.1273E+01
			0.1185E+02	0.5093E+01
42	10	0.9196E+02		

			0.0000E+00	0.0000E+00
			0.3734E+01	0.4074E-01
			0.6224E+01	0.7894E-01
			0.9336E+01	0.1451E+00
			0.1120E+02	0.2037E+00
			0.1245E+02	0.2546E+00
			0.1245E+02	0.5093E+00
			0.1245E+02	0.7639E+00
			0.1245E+02	0.1273E+01
			0.1245E+02	0.5093E+01
43	10	0.9204E+02		
			0.0000E+00	0.0000E+00
			0.3824E+01	0.4074E-01
			0.6373E+01	0.7894E-01
			0.9559E+01	0.1451E+00
			0.1147E+02	0.2037E+00
			0.1275E+02	0.2546E+00
			0.1275E+02	0.5093E+00
			0.1275E+02	0.7639E+00
			0.1275E+02	0.1273E+01
			0.1275E+02	0.5093E+01
44	10	0.9450E+02		
			0.0000E+00	0.0000E+00
			0.5964E+01	0.4074E-01
			0.9940E+01	0.7894E-01
			0.1491E+02	0.1451E+00
			0.1789E+02	0.2037E+00
			0.1988E+02	0.2546E+00
			0.1988E+02	0.5093E+00
			0.1988E+02	0.7639E+00
			0.1988E+02	0.1273E+01
			0.1988E+02	0.5093E+01
45	10	0.9696E+02		
			0.0000E+00	0.0000E+00
			0.6157E+01	0.4074E-01
			0.1026E+02	0.7894E-01
			0.1539E+02	0.1451E+00
			0.1847E+02	0.2037E+00
			0.2052E+02	0.2546E+00
			0.2052E+02	0.5093E+00
			0.2052E+02	0.7639E+00
			0.2052E+02	0.1273E+01
			0.2052E+02	0.5093E+01
46	10	0.9704E+02		
			0.0000E+00	0.0000E+00
			0.6133E+01	0.4074E-01
			0.1022E+02	0.7894E-01
			0.1533E+02	0.1451E+00
			0.1840E+02	0.2037E+00
			0.2044E+02	0.2546E+00

			0.2044E+02	0.5093E+00
			0.2044E+02	0.7639E+00
			0.2044E+02	0.1273E+01
			0.2044E+02	0.5093E+01
47	10	0.9950E+02		
			0.0000E+00	0.0000E+00
			0.5610E+01	0.4074E-01
			0.9349E+01	0.7894E-01
			0.1402E+02	0.1451E+00
			0.1683E+02	0.2037E+00
			0.1870E+02	0.2546E+00
			0.1870E+02	0.5093E+00
			0.1870E+02	0.7639E+00
			0.1870E+02	0.1273E+01
			0.1870E+02	0.5093E+01
48	10	0.1020E+03		
			0.0000E+00	0.0000E+00
			0.5764E+01	0.4074E-01
			0.9606E+01	0.7894E-01
			0.1441E+02	0.1451E+00
			0.1729E+02	0.2037E+00
			0.1921E+02	0.2546E+00
			0.1921E+02	0.5093E+00
			0.1921E+02	0.7639E+00
			0.1921E+02	0.1273E+01
			0.1921E+02	0.5093E+01
49	10	0.1020E+03		
			0.0000E+00	0.0000E+00
			0.5868E+01	0.4074E-01
			0.9780E+01	0.7894E-01
			0.1467E+02	0.1451E+00
			0.1760E+02	0.2037E+00
			0.1956E+02	0.2546E+00
			0.1956E+02	0.5093E+00
			0.1956E+02	0.7639E+00
			0.1956E+02	0.1273E+01
			0.1956E+02	0.5093E+01
50	10	0.1045E+03		
			0.0000E+00	0.0000E+00
			0.8362E+01	0.4074E-01
			0.1394E+02	0.7894E-01
			0.2091E+02	0.1451E+00
			0.2509E+02	0.2037E+00
			0.2787E+02	0.2546E+00
			0.2787E+02	0.5093E+00
			0.2787E+02	0.7639E+00
			0.2787E+02	0.1273E+01
			0.2787E+02	0.5093E+01
51	10	0.1070E+03		
			0.0000E+00	0.0000E+00

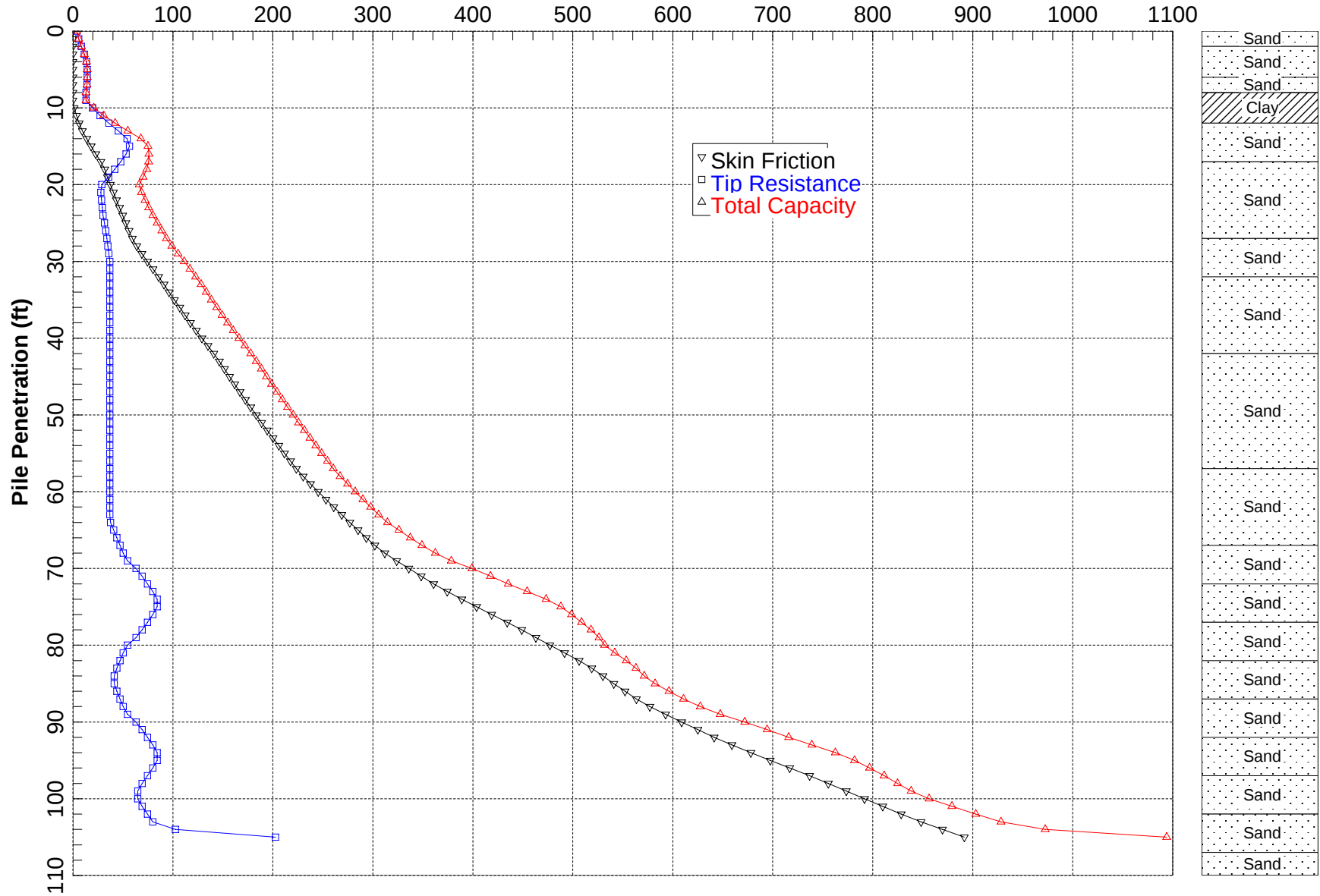
			0.8415E+01	0.4074E-01
			0.1403E+02	0.7894E-01
			0.2104E+02	0.1451E+00
			0.2525E+02	0.2037E+00
			0.2805E+02	0.2546E+00
			0.2805E+02	0.5093E+00
			0.2805E+02	0.7639E+00
			0.2805E+02	0.1273E+01
			0.2805E+02	0.5093E+01
52	10	0.1070E+03	0.0000E+00	0.0000E+00
			0.8415E+01	0.4074E-01
			0.1403E+02	0.7894E-01
			0.2104E+02	0.1451E+00
			0.2525E+02	0.2037E+00
			0.2805E+02	0.2546E+00
			0.2805E+02	0.5093E+00
			0.2805E+02	0.7639E+00
			0.2805E+02	0.1273E+01
			0.2805E+02	0.5093E+01
53	10	0.1085E+03	0.0000E+00	0.0000E+00
			0.8415E+01	0.4074E-01
			0.1403E+02	0.7894E-01
			0.2104E+02	0.1451E+00
			0.2525E+02	0.2037E+00
			0.2805E+02	0.2546E+00
			0.2805E+02	0.5093E+00
			0.2805E+02	0.7639E+00
			0.2805E+02	0.1273E+01
			0.2805E+02	0.5093E+01
54	10	0.1100E+03	0.0000E+00	0.0000E+00
			0.8415E+01	0.4074E-01
			0.1403E+02	0.7894E-01
			0.2104E+02	0.1451E+00
			0.2525E+02	0.2037E+00
			0.2805E+02	0.2546E+00
			0.2805E+02	0.5093E+00
			0.2805E+02	0.7639E+00
			0.2805E+02	0.1273E+01
			0.2805E+02	0.5093E+01
TIP	LOAD	TIP		
	KIP	MOVEMENT		
		IN.		
0.0000E+00		0.0000E+00		
0.1818E+02		0.1273E-01		

0.3637E+02	0.2546E-01
0.7274E+02	0.5093E-01
0.1455E+03	0.3310E+00
0.2182E+03	0.1070E+01
0.2619E+03	0.1859E+01
0.2910E+03	0.2546E+01
0.2910E+03	0.3820E+01
0.2910E+03	0.5093E+01

LOAD VERSUS SETTLEMENT CURVE

TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.1612E+01	0.8448E-03	0.1428E+00	0.1000E-03
0.1612E+02	0.8448E-02	0.1428E+01	0.1000E-02
0.8129E+02	0.4247E-01	0.7141E+01	0.5000E-02
0.1596E+03	0.8469E-01	0.1428E+02	0.1000E-01
0.2951E+03	0.1635E+00	0.2856E+02	0.2000E-01
0.5754E+03	0.3496E+00	0.7141E+02	0.5000E-01
0.7064E+03	0.4579E+00	0.8029E+02	0.8000E-01
0.7705E+03	0.5180E+00	0.8548E+02	0.1000E+00
0.9645E+03	0.7494E+00	0.1114E+03	0.2000E+00
0.1042E+04	0.1109E+01	0.1621E+03	0.5000E+00
0.1072E+04	0.1433E+01	0.1917E+03	0.8000E+00
0.1092E+04	0.1648E+01	0.2114E+03	0.1000E+01
0.1148E+04	0.2693E+01	0.2678E+03	0.2000E+01

20" PSC Bent 3_B4
Ultimate Axial Capacity (kips)



=====

APILE for Windows, Version 2023.10.3

Serial Number : 506768014

A Program for Analyzing the Axial Capacity
and Short-term Settlement of Driven Piles
under Axial Loading.
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This program is licensed to :

Terracon, Inc.
APILE Global, Global License

Path to file locations : C:\Users\naabidoye\OneDrive - Terracon
Consultants Inc\Documents\Deen Terracon Project 2025\Project\ES255161 GW Oliver Road
BFI - General\07 Working Files\02 Calculations\Axial Capacity\
Name of input data file : 20inch PSC_Bent 3_B4_Rev.ap10d
Name of output file : 20inch PSC_Bent 3_B4_Rev.ap10o
Name of plot output file : 20inch PSC_Bent 3_B4_Rev.ap10p

Time and Date of Analysis

Date: January 20, 2026 Time: 15:31:47

1

* INPUT INFORMATION *

PROJECT DESCRIPTION :
G.W. Oliver Over Little Lotts Creek
DESIGNER :
JOB NUMBER : ES255161

METHOD FOR UNIT LOAD TRANSFERS :
- FHWA (Federal Highway Administration)
Unfactored Unit Side Friction and Unit Side Resistance are used.

COMPUTATION METHOD(S) FOR PILE CAPACITY :

- FHWA (Federal Highway Administration)

TYPE OF LOADING :

- COMPRESSION

PILE TYPE :

Precast concrete pile (Square/Rectangular/Orthogonal)

AVERAGE DEPTH TO ESTIMATE TIP RESISTANCE:

- USE 1.5 DIAMETERS ABOVE AND BELOW TIP

DATA FOR AXIAL STIFFNESS :

- MODULUS OF ELASTICITY = 0.400E+07 PSI

- CROSS SECTION AREA = 400.00 IN2

NONCIRCULAR PILE PROPERTIES :

- TOTAL PILE LENGTH, TL = 105.00 FT.

- BATTER ANGLE = 0.00 DEG

- PILE STICKUP LENGTH, PSL = 0.00 FT.

- ZERO FRICTION LENGTH, ZFL = 10.00 FT.

- PERIMETER OF PILE = 80.00 IN.

- TIP AREA OF PILE = 400.00 IN2

- INCREMENT OF PILE LENGTH
USED IN COMPUTATION = 1.00 FT.

- PRINTING INCREMENT = 1

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/FT^3	FRICTION ANGLE DEGREES	Nq FACTOR FHWA
0.00	SAND	0.80*	110.00	31.00	35.20**
2.00	SAND	0.80*	110.00	31.00	35.20**
2.00	SAND	0.80*	100.00	28.00	22.80**
6.00	SAND	0.80*	100.00	28.00	22.80**
6.00	SAND	0.80*	27.60	26.00	17.40**
8.00	SAND	0.80*	27.60	26.00	17.40**
8.00	CLAY	0.80*	32.60	0.00	4.80**
12.00	CLAY	0.80*	32.60	0.00	4.80**
12.00	SAND	0.80*	52.60	32.00	40.40**
17.00	SAND	0.80*	52.60	32.00	40.40**
17.00	SAND	0.80*	27.60	26.00	17.40**
27.00	SAND	0.80*	27.60	26.00	17.40**
27.00	SAND	0.80*	47.60	30.00	30.00**
32.00	SAND	0.80*	47.60	30.00	30.00**
32.00	SAND	0.80*	37.60	28.00	22.80**
42.00	SAND	0.80*	37.60	28.00	22.80**
42.00	SAND	0.80*	27.60	26.00	17.40**

57.00	SAND	0.80*	27.60	26.00	17.40**
57.00	SAND	0.80*	37.60	28.00	22.80**
67.00	SAND	0.80*	37.60	28.00	22.80**
67.00	SAND	0.80*	47.60	31.00	35.20**
72.00	SAND	0.80*	47.60	31.00	35.20**
72.00	SAND	0.80*	52.60	32.00	40.40**
77.00	SAND	0.80*	52.60	32.00	40.40**
77.00	SAND	0.80*	47.60	31.00	35.20**
82.00	SAND	0.80*	47.60	31.00	35.20**
82.00	SAND	0.80*	37.60	28.00	22.80**
87.00	SAND	0.80*	37.60	28.00	22.80**
87.00	SAND	0.80*	47.60	31.00	35.20**
92.00	SAND	0.80*	47.60	31.00	35.20**
92.00	SAND	0.80*	52.60	32.00	40.40**
97.00	SAND	0.80*	52.60	32.00	40.40**
97.00	SAND	0.80*	47.60	31.00	35.20**
102.00	SAND	0.80*	47.60	31.00	35.20**
102.00	SAND	0.80*	52.60	32.00	40.40**
107.00	SAND	0.80*	52.60	32.00	40.40**
107.00	SAND	0.80*	67.60	38.00	110.40**
110.00	SAND	0.80*	67.60	38.00	110.40**

[illegible]

0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00

* MAXIMUM UNIT FRICTION AND/OR MAXIMUM UNIT BEARING WERE SET TO LARGE VALUES INDICATING THAT APILE USES THE LIMITS SPECIFIED BY EACH SELECTED CRITERIA (IF ANY).

DEPTH FT.	LRFD FACTOR ON UNIT FRICTION	LRFD FACTOR ON UNIT BEARING
0.00	1.000	1.000
2.00	1.000	1.000
2.00	1.000	1.000
6.00	1.000	1.000
6.00	1.000	1.000
8.00	1.000	1.000
8.00	1.000	1.000
12.00	1.000	1.000
12.00	1.000	1.000
17.00	1.000	1.000
17.00	1.000	1.000
27.00	1.000	1.000
27.00	1.000	1.000
32.00	1.000	1.000
32.00	1.000	1.000
42.00	1.000	1.000
42.00	1.000	1.000
57.00	1.000	1.000
57.00	1.000	1.000
67.00	1.000	1.000
67.00	1.000	1.000

72.00	1.000	1.000
72.00	1.000	1.000
77.00	1.000	1.000
77.00	1.000	1.000
82.00	1.000	1.000
82.00	1.000	1.000
87.00	1.000	1.000
87.00	1.000	1.000
92.00	1.000	1.000
92.00	1.000	1.000
97.00	1.000	1.000
97.00	1.000	1.000
102.00	1.000	1.000
102.00	1.000	1.000
107.00	1.000	1.000
107.00	1.000	1.000
110.00	1.000	1.000

DEPTH FT.	Z PEAK IN.	T RESIDUAL
0.00	0.255 *	0.00
2.00	0.255 *	0.00
2.00	0.255 *	0.00
6.00	0.255 *	0.00
6.00	0.255 *	0.00
8.00	0.255 *	0.00
8.00	0.255 *	0.90 **
12.00	0.255 *	0.90 **
12.00	0.255 *	0.00
17.00	0.255 *	0.00
17.00	0.255 *	0.00
27.00	0.255 *	0.00
27.00	0.255 *	0.00
32.00	0.255 *	0.00
32.00	0.255 *	0.00
42.00	0.255 *	0.00
42.00	0.255 *	0.00
57.00	0.255 *	0.00
57.00	0.255 *	0.00
67.00	0.255 *	0.00
67.00	0.255 *	0.00
72.00	0.255 *	0.00
72.00	0.255 *	0.00
77.00	0.255 *	0.00
77.00	0.255 *	0.00
82.00	0.255 *	0.00
82.00	0.255 *	0.00

87.00	0.255	*	0.00
87.00	0.255	*	0.00
92.00	0.255	*	0.00
92.00	0.255	*	0.00
97.00	0.255	*	0.00
97.00	0.255	*	0.00
102.00	0.255	*	0.00
102.00	0.255	*	0.00
107.00	0.255	*	0.00
107.00	0.255	*	0.00
110.00	0.255	*	0.00

* DEFAULT VALUE = 0.01 D

** DEFAULT VALUE = 0.9

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 * COMPUTATION RESULT *

 * FED. HWY. METHOD *

	PILE LENGTH BELOW GND. FT.	SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
	0.00	0.0	3.8	3.8
- Pile Top Elevation @ 142.5'	1.00	0.0	5.9	5.9
	2.00	0.0	8.5	8.5
	3.00	0.0	11.4	11.4
	4.00	0.0	13.5	13.5
	5.00	0.0	14.4	14.4
	6.00	0.0	14.4	14.4
	7.00	0.0	14.0	14.0
	8.00	0.0	13.1	13.1
	9.00	0.0	13.0	13.0
Ground-line Elevation @ 134'	10.00	1.2	19.7	21.0
	11.00	3.7	27.1	30.9
	12.00	6.2	35.9	42.2
	13.00	9.5	45.5	55.0
	14.00	13.8	54.1	67.9
	15.00	18.2	56.7	75.0
	16.00	22.9	53.2	76.1

Scour load at Elevation @
124.5' is ~37.5 kips

17.00	27.9	47.8	75.7
18.00	31.8	41.9	73.8
19.00	34.6	35.6	70.3
20.00	37.5	28.8	66.3
21.00	40.5	28.0	68.5
22.00	43.5	28.7	72.2
23.00	46.6	29.3	75.9
24.00	49.7	30.1	79.9
25.00	52.9	31.5	84.4
26.00	56.2	32.8	89.0
27.00	59.6	34.0	93.5
28.00	63.8	35.0	98.9
29.00	69.1	36.0	105.1
30.00	74.5	36.9	111.3
31.00	80.1	37.0	117.1
32.00	85.8	37.0	122.8
33.00	91.2	37.0	128.2
34.00	96.3	37.0	133.3
35.00	101.5	37.0	138.5
36.00	106.8	37.0	143.8
37.00	112.2	37.0	149.2
38.00	117.7	37.0	154.7
39.00	123.3	37.0	160.3
40.00	129.1	37.0	166.1
41.00	135.0	37.0	172.0
42.00	140.9	37.0	177.9
43.00	146.5	37.0	183.5
44.00	151.5	37.0	188.5
45.00	156.6	37.0	193.6
46.00	161.8	37.0	198.8
47.00	167.1	37.0	204.1
48.00	172.4	37.0	209.4
49.00	177.8	37.0	214.8
50.00	183.3	37.0	220.3
51.00	188.8	37.0	225.8
52.00	194.4	37.0	231.4
53.00	200.1	37.0	237.1
54.00	205.9	37.0	242.9
55.00	211.7	37.0	248.7
56.00	217.6	37.0	254.6
57.00	223.5	37.0	260.5
58.00	230.2	37.0	267.2
59.00	237.7	37.0	274.7
60.00	245.3	37.0	282.3
61.00	253.1	37.0	290.1
62.00	260.9	37.0	297.9
63.00	268.9	37.0	305.9
64.00	277.0	37.6	314.5
65.00	285.2	40.8	325.9
66.00	293.5	44.0	337.5

67.00	301.9	47.2	349.1
68.00	312.0	50.4	362.4
69.00	323.9	54.6	378.5
70.00	336.0	63.2	399.2
71.00	348.3	69.2	417.5
72.00	360.8	74.5	435.3
73.00	374.3	79.9	454.3
74.00	389.0	84.3	473.3
75.00	403.8	84.3	488.1
76.00	418.9	79.9	498.8
77.00	434.3	74.5	508.8
78.00	449.0	69.2	518.1
79.00	463.0	63.2	526.2
80.00	477.2	54.6	531.8
81.00	491.6	50.4	542.0
82.00	506.2	47.2	553.4
83.00	519.0	44.0	563.0
84.00	530.0	41.4	571.3
85.00	541.0	41.4	582.4
86.00	552.2	44.0	596.2
87.00	563.5	47.2	610.7
88.00	577.0	50.4	627.4
89.00	592.8	54.6	647.4
90.00	608.8	63.2	672.0
91.00	625.0	69.2	694.2
92.00	641.4	74.5	715.9
93.00	659.1	79.9	739.0
94.00	678.1	84.3	762.5
95.00	697.4	84.3	781.7
96.00	716.9	79.9	796.9
97.00	736.7	74.5	811.3
98.00	755.6	69.2	824.7
99.00	773.5	64.8	838.3
100.00	791.6	64.8	856.4
101.00	809.9	69.2	879.1
102.00	828.5	74.5	903.0
103.00	848.4	79.9	928.3
104.00	869.8	102.6	972.4
105.00	891.5	202.6	1094.0

Minimum Pile Tip at +70' EL

NOTES:

- AN ASTERISK IS PLACED IN THE END-BEARING COLUMN IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *

* CURVES FOR AXIAL LOADING

*

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.4167E-01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
2	10	0.1000E+01	0.0000E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
3	10	0.1958E+01	0.0000E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
4	10	0.2042E+01	0.0000E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01

5	10	0.4000E+01	0.0000E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
6	10	0.5958E+01	0.0000E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
7	10	0.6042E+01	0.0000E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
8	10	0.7000E+01	0.0000E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
9	10	0.7958E+01	0.0000E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00

			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
			0.0000E+00	0.5093E+01
10	10	0.8042E+01		
			0.0000E+00	0.0000E+00
			0.0000E+00	0.4074E-01
			0.0000E+00	0.7894E-01
			0.0000E+00	0.1451E+00
			0.0000E+00	0.2037E+00
			0.0000E+00	0.2546E+00
			0.0000E+00	0.5093E+00
			0.0000E+00	0.7639E+00
			0.0000E+00	0.1273E+01
			0.0000E+00	0.5093E+01
11	10	0.1000E+02		
			0.0000E+00	0.0000E+00
			0.7813E+00	0.4074E-01
			0.1302E+01	0.7894E-01
			0.1953E+01	0.1451E+00
			0.2344E+01	0.2037E+00
			0.2604E+01	0.2546E+00
			0.2344E+01	0.5093E+00
			0.2344E+01	0.7639E+00
			0.2344E+01	0.1273E+01
			0.2344E+01	0.5093E+01
12	10	0.1196E+02		
			0.0000E+00	0.0000E+00
			0.7813E+00	0.4074E-01
			0.1302E+01	0.7894E-01
			0.1953E+01	0.1451E+00
			0.2344E+01	0.2037E+00
			0.2604E+01	0.2546E+00
			0.2344E+01	0.5093E+00
			0.2344E+01	0.7639E+00
			0.2344E+01	0.1273E+01
			0.2344E+01	0.5093E+01
13	10	0.1204E+02		
			0.0000E+00	0.0000E+00
			0.8019E+00	0.4074E-01
			0.1337E+01	0.7894E-01
			0.2005E+01	0.1451E+00
			0.2406E+01	0.2037E+00
			0.2673E+01	0.2546E+00
			0.2673E+01	0.5093E+00
			0.2673E+01	0.7639E+00
			0.2673E+01	0.1273E+01
			0.2673E+01	0.5093E+01

14	10	0.1450E+02	0.0000E+00	0.0000E+00
			0.1395E+01	0.4074E-01
			0.2326E+01	0.7894E-01
			0.3489E+01	0.1451E+00
			0.4186E+01	0.2037E+00
			0.4652E+01	0.2546E+00
			0.4652E+01	0.5093E+00
			0.4652E+01	0.7639E+00
			0.4652E+01	0.1273E+01
			0.4652E+01	0.5093E+01
15	10	0.1696E+02	0.0000E+00	0.0000E+00
			0.1588E+01	0.4074E-01
			0.2647E+01	0.7894E-01
			0.3970E+01	0.1451E+00
			0.4764E+01	0.2037E+00
			0.5294E+01	0.2546E+00
			0.5294E+01	0.5093E+00
			0.5294E+01	0.7639E+00
			0.5294E+01	0.1273E+01
			0.5294E+01	0.5093E+01
16	10	0.1704E+02	0.0000E+00	0.0000E+00
			0.1561E+01	0.4074E-01
			0.2602E+01	0.7894E-01
			0.3903E+01	0.1451E+00
			0.4683E+01	0.2037E+00
			0.5204E+01	0.2546E+00
			0.5204E+01	0.5093E+00
			0.5204E+01	0.7639E+00
			0.5204E+01	0.1273E+01
			0.5204E+01	0.5093E+01
17	10	0.2200E+02	0.0000E+00	0.0000E+00
			0.9523E+00	0.4074E-01
			0.1587E+01	0.7894E-01
			0.2381E+01	0.1451E+00
			0.2857E+01	0.2037E+00
			0.3174E+01	0.2546E+00
			0.3174E+01	0.5093E+00
			0.3174E+01	0.7639E+00
			0.3174E+01	0.1273E+01
			0.3174E+01	0.5093E+01
18	10	0.2696E+02	0.0000E+00	0.0000E+00
			0.1060E+01	0.4074E-01
			0.1767E+01	0.7894E-01
			0.2651E+01	0.1451E+00
			0.3181E+01	0.2037E+00

			0.3534E+01	0.2546E+00
			0.3534E+01	0.5093E+00
			0.3534E+01	0.7639E+00
			0.3534E+01	0.1273E+01
			0.3534E+01	0.5093E+01
19	10	0.2704E+02		
			0.0000E+00	0.0000E+00
			0.1084E+01	0.4074E-01
			0.1806E+01	0.7894E-01
			0.2710E+01	0.1451E+00
			0.3252E+01	0.2037E+00
			0.3613E+01	0.2546E+00
			0.3613E+01	0.5093E+00
			0.3613E+01	0.7639E+00
			0.3613E+01	0.1273E+01
			0.3613E+01	0.5093E+01
20	10	0.2950E+02		
			0.0000E+00	0.0000E+00
			0.1689E+01	0.4074E-01
			0.2815E+01	0.7894E-01
			0.4222E+01	0.1451E+00
			0.5066E+01	0.2037E+00
			0.5629E+01	0.2546E+00
			0.5629E+01	0.5093E+00
			0.5629E+01	0.7639E+00
			0.5629E+01	0.1273E+01
			0.5629E+01	0.5093E+01
21	10	0.3196E+02		
			0.0000E+00	0.0000E+00
			0.1824E+01	0.4074E-01
			0.3040E+01	0.7894E-01
			0.4560E+01	0.1451E+00
			0.5471E+01	0.2037E+00
			0.6079E+01	0.2546E+00
			0.6079E+01	0.5093E+00
			0.6079E+01	0.7639E+00
			0.6079E+01	0.1273E+01
			0.6079E+01	0.5093E+01
22	10	0.3204E+02		
			0.0000E+00	0.0000E+00
			0.1815E+01	0.4074E-01
			0.3025E+01	0.7894E-01
			0.4538E+01	0.1451E+00
			0.5445E+01	0.2037E+00
			0.6050E+01	0.2546E+00
			0.6050E+01	0.5093E+00
			0.6050E+01	0.7639E+00
			0.6050E+01	0.1273E+01
			0.6050E+01	0.5093E+01
23	10	0.3700E+02		

			0.0000E+00	0.0000E+00
			0.1708E+01	0.4074E-01
			0.2846E+01	0.7894E-01
			0.4269E+01	0.1451E+00
			0.5123E+01	0.2037E+00
			0.5692E+01	0.2546E+00
			0.5692E+01	0.5093E+00
			0.5692E+01	0.7639E+00
			0.5692E+01	0.1273E+01
			0.5692E+01	0.5093E+01
24	10	0.4196E+02		
			0.0000E+00	0.0000E+00
			0.1887E+01	0.4074E-01
			0.3146E+01	0.7894E-01
			0.4719E+01	0.1451E+00
			0.5662E+01	0.2037E+00
			0.6291E+01	0.2546E+00
			0.6291E+01	0.5093E+00
			0.6291E+01	0.7639E+00
			0.6291E+01	0.1273E+01
			0.6291E+01	0.5093E+01
25	10	0.4204E+02		
			0.0000E+00	0.0000E+00
			0.1876E+01	0.4074E-01
			0.3126E+01	0.7894E-01
			0.4689E+01	0.1451E+00
			0.5627E+01	0.2037E+00
			0.6252E+01	0.2546E+00
			0.6252E+01	0.5093E+00
			0.6252E+01	0.7639E+00
			0.6252E+01	0.1273E+01
			0.6252E+01	0.5093E+01
26	10	0.4950E+02		
			0.0000E+00	0.0000E+00
			0.1709E+01	0.4074E-01
			0.2849E+01	0.7894E-01
			0.4273E+01	0.1451E+00
			0.5127E+01	0.2037E+00
			0.5697E+01	0.2546E+00
			0.5697E+01	0.5093E+00
			0.5697E+01	0.7639E+00
			0.5697E+01	0.1273E+01
			0.5697E+01	0.5093E+01
27	10	0.5696E+02		
			0.0000E+00	0.0000E+00
			0.1872E+01	0.4074E-01
			0.3119E+01	0.7894E-01
			0.4679E+01	0.1451E+00
			0.5615E+01	0.2037E+00
			0.6239E+01	0.2546E+00

			0.6239E+01	0.5093E+00
			0.6239E+01	0.7639E+00
			0.6239E+01	0.1273E+01
			0.6239E+01	0.5093E+01
28	10	0.5704E+02		
			0.0000E+00	0.0000E+00
			0.1891E+01	0.4074E-01
			0.3152E+01	0.7894E-01
			0.4728E+01	0.1451E+00
			0.5674E+01	0.2037E+00
			0.6304E+01	0.2546E+00
			0.6304E+01	0.5093E+00
			0.6304E+01	0.7639E+00
			0.6304E+01	0.1273E+01
			0.6304E+01	0.5093E+01
29	10	0.6200E+02		
			0.0000E+00	0.0000E+00
			0.2470E+01	0.4074E-01
			0.4116E+01	0.7894E-01
			0.6174E+01	0.1451E+00
			0.7409E+01	0.2037E+00
			0.8232E+01	0.2546E+00
			0.8232E+01	0.5093E+00
			0.8232E+01	0.7639E+00
			0.8232E+01	0.1273E+01
			0.8232E+01	0.5093E+01
30	10	0.6696E+02		
			0.0000E+00	0.0000E+00
			0.2649E+01	0.4074E-01
			0.4416E+01	0.7894E-01
			0.6623E+01	0.1451E+00
			0.7948E+01	0.2037E+00
			0.8831E+01	0.2546E+00
			0.8831E+01	0.5093E+00
			0.8831E+01	0.7639E+00
			0.8831E+01	0.1273E+01
			0.8831E+01	0.5093E+01
31	10	0.6704E+02		
			0.0000E+00	0.0000E+00
			0.2694E+01	0.4074E-01
			0.4490E+01	0.7894E-01
			0.6735E+01	0.1451E+00
			0.8082E+01	0.2037E+00
			0.8980E+01	0.2546E+00
			0.8980E+01	0.5093E+00
			0.8980E+01	0.7639E+00
			0.8980E+01	0.1273E+01
			0.8980E+01	0.5093E+01
32	10	0.6950E+02		
			0.0000E+00	0.0000E+00

			0.3780E+01	0.4074E-01
			0.6300E+01	0.7894E-01
			0.9450E+01	0.1451E+00
			0.1134E+02	0.2037E+00
			0.1260E+02	0.2546E+00
			0.1260E+02	0.5093E+00
			0.1260E+02	0.7639E+00
			0.1260E+02	0.1273E+01
			0.1260E+02	0.5093E+01
33	10	0.7196E+02		
			0.0000E+00	0.0000E+00
			0.3934E+01	0.4074E-01
			0.6557E+01	0.7894E-01
			0.9836E+01	0.1451E+00
			0.1180E+02	0.2037E+00
			0.1311E+02	0.2546E+00
			0.1311E+02	0.5093E+00
			0.1311E+02	0.7639E+00
			0.1311E+02	0.1273E+01
			0.1311E+02	0.5093E+01
34	10	0.7204E+02		
			0.0000E+00	0.0000E+00
			0.3961E+01	0.4074E-01
			0.6602E+01	0.7894E-01
			0.9903E+01	0.1451E+00
			0.1188E+02	0.2037E+00
			0.1320E+02	0.2546E+00
			0.1320E+02	0.5093E+00
			0.1320E+02	0.7639E+00
			0.1320E+02	0.1273E+01
			0.1320E+02	0.5093E+01
35	10	0.7450E+02		
			0.0000E+00	0.0000E+00
			0.4643E+01	0.4074E-01
			0.7739E+01	0.7894E-01
			0.1161E+02	0.1451E+00
			0.1393E+02	0.2037E+00
			0.1548E+02	0.2546E+00
			0.1548E+02	0.5093E+00
			0.1548E+02	0.7639E+00
			0.1548E+02	0.1273E+01
			0.1548E+02	0.5093E+01
36	10	0.7696E+02		
			0.0000E+00	0.0000E+00
			0.4836E+01	0.4074E-01
			0.8060E+01	0.7894E-01
			0.1209E+02	0.1451E+00
			0.1451E+02	0.2037E+00
			0.1612E+02	0.2546E+00
			0.1612E+02	0.5093E+00

			0.1612E+02	0.7639E+00
			0.1612E+02	0.1273E+01
			0.1612E+02	0.5093E+01
37	10	0.7704E+02		
			0.0000E+00	0.0000E+00
			0.4819E+01	0.4074E-01
			0.8031E+01	0.7894E-01
			0.1205E+02	0.1451E+00
			0.1446E+02	0.2037E+00
			0.1606E+02	0.2546E+00
			0.1606E+02	0.5093E+00
			0.1606E+02	0.7639E+00
			0.1606E+02	0.1273E+01
			0.1606E+02	0.5093E+01
38	10	0.7950E+02		
			0.0000E+00	0.0000E+00
			0.4440E+01	0.4074E-01
			0.7401E+01	0.7894E-01
			0.1110E+02	0.1451E+00
			0.1332E+02	0.2037E+00
			0.1480E+02	0.2546E+00
			0.1480E+02	0.5093E+00
			0.1480E+02	0.7639E+00
			0.1480E+02	0.1273E+01
			0.1480E+02	0.5093E+01
39	10	0.8196E+02		
			0.0000E+00	0.0000E+00
			0.4595E+01	0.4074E-01
			0.7658E+01	0.7894E-01
			0.1149E+02	0.1451E+00
			0.1378E+02	0.2037E+00
			0.1532E+02	0.2546E+00
			0.1532E+02	0.5093E+00
			0.1532E+02	0.7639E+00
			0.1532E+02	0.1273E+01
			0.1532E+02	0.5093E+01
40	10	0.8204E+02		
			0.0000E+00	0.0000E+00
			0.4547E+01	0.4074E-01
			0.7579E+01	0.7894E-01
			0.1137E+02	0.1451E+00
			0.1364E+02	0.2037E+00
			0.1516E+02	0.2546E+00
			0.1516E+02	0.5093E+00
			0.1516E+02	0.7639E+00
			0.1516E+02	0.1273E+01
			0.1516E+02	0.5093E+01
41	10	0.8450E+02		
			0.0000E+00	0.0000E+00
			0.3454E+01	0.4074E-01

			0.5757E+01	0.7894E-01
			0.8635E+01	0.1451E+00
			0.1036E+02	0.2037E+00
			0.1151E+02	0.2546E+00
			0.1151E+02	0.5093E+00
			0.1151E+02	0.7639E+00
			0.1151E+02	0.1273E+01
			0.1151E+02	0.5093E+01
42	10	0.8696E+02		
			0.0000E+00	0.0000E+00
			0.3543E+01	0.4074E-01
			0.5906E+01	0.7894E-01
			0.8858E+01	0.1451E+00
			0.1063E+02	0.2037E+00
			0.1181E+02	0.2546E+00
			0.1181E+02	0.5093E+00
			0.1181E+02	0.7639E+00
			0.1181E+02	0.1273E+01
			0.1181E+02	0.5093E+01
43	10	0.8704E+02		
			0.0000E+00	0.0000E+00
			0.3602E+01	0.4074E-01
			0.6003E+01	0.7894E-01
			0.9004E+01	0.1451E+00
			0.1080E+02	0.2037E+00
			0.1201E+02	0.2546E+00
			0.1201E+02	0.5093E+00
			0.1201E+02	0.7639E+00
			0.1201E+02	0.1273E+01
			0.1201E+02	0.5093E+01
44	10	0.8950E+02		
			0.0000E+00	0.0000E+00
			0.5002E+01	0.4074E-01
			0.8337E+01	0.7894E-01
			0.1250E+02	0.1451E+00
			0.1501E+02	0.2037E+00
			0.1667E+02	0.2546E+00
			0.1667E+02	0.5093E+00
			0.1667E+02	0.7639E+00
			0.1667E+02	0.1273E+01
			0.1667E+02	0.5093E+01
45	10	0.9196E+02		
			0.0000E+00	0.0000E+00
			0.5156E+01	0.4074E-01
			0.8594E+01	0.7894E-01
			0.1289E+02	0.1451E+00
			0.1547E+02	0.2037E+00
			0.1719E+02	0.2546E+00
			0.1719E+02	0.5093E+00
			0.1719E+02	0.7639E+00

46	10	0.9204E+02	0.1719E+02	0.1273E+01
			0.1719E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.5190E+01	0.4074E-01
			0.8650E+01	0.7894E-01
			0.1297E+02	0.1451E+00
			0.1557E+02	0.2037E+00
			0.1730E+02	0.2546E+00
			0.1730E+02	0.5093E+00
			0.1730E+02	0.7639E+00
47	10	0.9450E+02	0.1730E+02	0.1273E+01
			0.1730E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.6024E+01	0.4074E-01
			0.1004E+02	0.7894E-01
			0.1506E+02	0.1451E+00
			0.1807E+02	0.2037E+00
			0.2008E+02	0.2546E+00
			0.2008E+02	0.5093E+00
			0.2008E+02	0.7639E+00
48	10	0.9696E+02	0.2008E+02	0.1273E+01
			0.2008E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.6216E+01	0.4074E-01
			0.1036E+02	0.7894E-01
			0.1554E+02	0.1451E+00
			0.1865E+02	0.2037E+00
			0.2072E+02	0.2546E+00
			0.2072E+02	0.5093E+00
			0.2072E+02	0.7639E+00
49	10	0.9704E+02	0.2072E+02	0.1273E+01
			0.2072E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.6192E+01	0.4074E-01
			0.1032E+02	0.7894E-01
			0.1548E+02	0.1451E+00
			0.1858E+02	0.2037E+00
			0.2064E+02	0.2546E+00
			0.2064E+02	0.5093E+00
			0.2064E+02	0.7639E+00
50	10	0.9950E+02	0.2064E+02	0.1273E+01
			0.2064E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.5662E+01	0.4074E-01
			0.9437E+01	0.7894E-01

			0.1416E+02	0.1451E+00
			0.1699E+02	0.2037E+00
			0.1887E+02	0.2546E+00
			0.1887E+02	0.5093E+00
			0.1887E+02	0.7639E+00
			0.1887E+02	0.1273E+01
			0.1887E+02	0.5093E+01
51	10	0.1020E+03		
			0.0000E+00	0.0000E+00
			0.5817E+01	0.4074E-01
			0.9694E+01	0.7894E-01
			0.1454E+02	0.1451E+00
			0.1745E+02	0.2037E+00
			0.1939E+02	0.2546E+00
			0.1939E+02	0.5093E+00
			0.1939E+02	0.7639E+00
			0.1939E+02	0.1273E+01
			0.1939E+02	0.5093E+01
52	10	0.1020E+03		
			0.0000E+00	0.0000E+00
			0.5854E+01	0.4074E-01
			0.9757E+01	0.7894E-01
			0.1463E+02	0.1451E+00
			0.1756E+02	0.2037E+00
			0.1951E+02	0.2546E+00
			0.1951E+02	0.5093E+00
			0.1951E+02	0.7639E+00
			0.1951E+02	0.1273E+01
			0.1951E+02	0.5093E+01
53	10	0.1045E+03		
			0.0000E+00	0.0000E+00
			0.6770E+01	0.4074E-01
			0.1128E+02	0.7894E-01
			0.1692E+02	0.1451E+00
			0.2031E+02	0.2037E+00
			0.2257E+02	0.2546E+00
			0.2257E+02	0.5093E+00
			0.2257E+02	0.7639E+00
			0.2257E+02	0.1273E+01
			0.2257E+02	0.5093E+01
54	10	0.1070E+03		
			0.0000E+00	0.0000E+00
			0.6809E+01	0.4074E-01
			0.1135E+02	0.7894E-01
			0.1702E+02	0.1451E+00
			0.2043E+02	0.2037E+00
			0.2270E+02	0.2546E+00
			0.2270E+02	0.5093E+00
			0.2270E+02	0.7639E+00
			0.2270E+02	0.1273E+01

55	10	0.1070E+03	0.2270E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.6809E+01	0.4074E-01
			0.1135E+02	0.7894E-01
			0.1702E+02	0.1451E+00
			0.2043E+02	0.2037E+00
			0.2270E+02	0.2546E+00
			0.2270E+02	0.5093E+00
			0.2270E+02	0.7639E+00
			0.2270E+02	0.1273E+01
56	10	0.1085E+03	0.2270E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.6809E+01	0.4074E-01
			0.1135E+02	0.7894E-01
			0.1702E+02	0.1451E+00
			0.2043E+02	0.2037E+00
			0.2270E+02	0.2546E+00
			0.2270E+02	0.5093E+00
			0.2270E+02	0.7639E+00
			0.2270E+02	0.1273E+01
57	10	0.1100E+03	0.2270E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.6809E+01	0.4074E-01
			0.1135E+02	0.7894E-01
			0.1702E+02	0.1451E+00
			0.2043E+02	0.2037E+00
			0.2270E+02	0.2546E+00
			0.2270E+02	0.5093E+00
			0.2270E+02	0.7639E+00
			0.2270E+02	0.1273E+01
			0.2270E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.6809E+01	0.4074E-01
			0.1135E+02	0.7894E-01
			0.1702E+02	0.1451E+00
			0.2043E+02	0.2037E+00
			0.2270E+02	0.2546E+00
			0.2270E+02	0.5093E+00
			0.2270E+02	0.7639E+00
			0.2270E+02	0.1273E+01

TIP LOAD KIP	TIP MOVEMENT IN.
0.0000E+00	0.0000E+00
0.1266E+02	0.1273E-01
0.2532E+02	0.2546E-01
0.5064E+02	0.5093E-01
0.1013E+03	0.3310E+00
0.1519E+03	0.1070E+01
0.1823E+03	0.1859E+01
0.2026E+03	0.2546E+01
0.2026E+03	0.3820E+01
0.2026E+03	0.5093E+01

LOAD VERSUS SETTLEMENT CURVE

TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.1508E+01	0.7830E-03	0.9943E-01	0.1000E-03
0.1508E+02	0.7830E-02	0.9943E+00	0.1000E-02
0.7601E+02	0.3934E-01	0.4971E+01	0.5000E-02
0.1498E+03	0.7853E-01	0.9943E+01	0.1000E-01
0.2782E+03	0.1521E+00	0.1989E+02	0.2000E-01
0.5449E+03	0.3264E+00	0.4971E+02	0.5000E-01
0.6780E+03	0.4343E+00	0.5589E+02	0.8000E-01
0.7421E+03	0.4940E+00	0.5951E+02	0.1000E+00
0.9374E+03	0.7241E+00	0.7759E+02	0.2000E+00
0.1003E+04	0.1074E+01	0.1129E+03	0.5000E+00
0.1023E+04	0.1390E+01	0.1334E+03	0.8000E+00
0.1037E+04	0.1601E+01	0.1471E+03	0.1000E+01
0.1076E+04	0.2632E+01	0.1865E+03	0.2000E+01

Ultimate Axial Capacity (kips)



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APILE for Windows, Version 2023.10.3

Serial Number : 506768014

A Program for Analyzing the Axial Capacity
and Short-term Settlement of Driven Piles
under Axial Loading.
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APILE Global, Global License

Path to file locations : C:\Users\naabidoye\OneDrive - Terracon
Consultants Inc\Documents\Deen Terracon Project 2025\Project\ES255161 GW Oliver Road
BFI - General\07 Working Files\02 Calculations\Axial Capacity\
Name of input data file : 20inch PSC_Bent 4_B4_Rev.ap10d
Name of output file : 20inch PSC_Bent 4_B4_Rev.ap10o
Name of plot output file : 20inch PSC_Bent 4_B4_Rev.ap10p

Time and Date of Analysis

Date: January 20, 2026 Time: 15:14:45

1

* INPUT INFORMATION *

PROJECT DESCRIPTION :
G.W. Oliver Over Little Lotts Creek
DESIGNER :
JOB NUMBER : ES255161

METHOD FOR UNIT LOAD TRANSFERS :
- FHWA (Federal Highway Administration)
Unfactored Unit Side Friction and Unit Side Resistance are used.

COMPUTATION METHOD(S) FOR PILE CAPACITY :

- FHWA (Federal Highway Administration)

TYPE OF LOADING :

- COMPRESSION

PILE TYPE :

Precast concrete pile (Square/Rectangular/Orthogonal)

AVERAGE DEPTH TO ESTIMATE TIP RESISTANCE:

- USE 1.5 DIAMETERS ABOVE AND BELOW TIP

DATA FOR AXIAL STIFFNESS :

- MODULUS OF ELASTICITY = 0.400E+07 PSI

- CROSS SECTION AREA = 400.00 IN²

NONCIRCULAR PILE PROPERTIES :

- TOTAL PILE LENGTH, TL = 105.00 FT.

- BATTER ANGLE = 0.00 DEG

- PILE STICKUP LENGTH, PSL = 0.00 FT.

- ZERO FRICTION LENGTH, ZFL = 0.00 FT.

- PERIMETER OF PILE = 80.00 IN.

- TIP AREA OF PILE = 400.00 IN²

- INCREMENT OF PILE LENGTH
USED IN COMPUTATION = 1.00 FT.

- PRINTING INCREMENT = 1

SOIL INFORMATIONS :

DEPTH FT.	SOIL TYPE	LATERAL EARTH PRESSURE	EFFECTIVE UNIT WEIGHT LB/FT ³	FRICTION ANGLE DEGREES	Nq FACTOR FHWA
0.00	SAND	0.80*	110.00	31.00	35.20**
2.00	SAND	0.80*	110.00	31.00	35.20**
2.00	SAND	0.80*	100.00	28.00	22.80**
6.00	SAND	0.80*	100.00	28.00	22.80**
6.00	SAND	0.80*	27.60	26.00	17.40**
8.00	SAND	0.80*	27.60	26.00	17.40**
8.00	CLAY	0.80*	32.60	0.00	4.80**
12.00	CLAY	0.80*	32.60	0.00	4.80**
12.00	SAND	0.80*	52.60	32.00	40.40**
17.00	SAND	0.80*	52.60	32.00	40.40**
17.00	SAND	0.80*	27.60	26.00	17.40**
27.00	SAND	0.80*	27.60	26.00	17.40**
27.00	SAND	0.80*	47.60	30.00	30.00**
32.00	SAND	0.80*	47.60	30.00	30.00**
32.00	SAND	0.80*	37.60	28.00	22.80**
42.00	SAND	0.80*	37.60	28.00	22.80**
42.00	SAND	0.80*	27.60	26.00	17.40**

57.00	SAND	0.80*	27.60	26.00	17.40**
57.00	SAND	0.80*	37.60	28.00	22.80**
67.00	SAND	0.80*	37.60	28.00	22.80**
67.00	SAND	0.80*	47.60	31.00	35.20**
72.00	SAND	0.80*	47.60	31.00	35.20**
72.00	SAND	0.80*	52.60	32.00	40.40**
77.00	SAND	0.80*	52.60	32.00	40.40**
77.00	SAND	0.80*	47.60	31.00	35.20**
82.00	SAND	0.80*	47.60	31.00	35.20**
82.00	SAND	0.80*	37.60	28.00	22.80**
87.00	SAND	0.80*	37.60	28.00	22.80**
87.00	SAND	0.80*	47.60	31.00	35.20**
92.00	SAND	0.80*	47.60	31.00	35.20**
92.00	SAND	0.80*	52.60	32.00	40.40**
97.00	SAND	0.80*	52.60	32.00	40.40**
97.00	SAND	0.80*	47.60	31.00	35.20**
102.00	SAND	0.80*	47.60	31.00	35.20**
102.00	SAND	0.80*	52.60	32.00	40.40**
107.00	SAND	0.80*	52.60	32.00	40.40**
107.00	SAND	0.80*	67.60	38.00	110.40**
110.00	SAND	0.80*	67.60	38.00	110.40**

* VALUE ASSUMED BY THE PROGRAM

** VALUE ESTIMATED BY THE PROGRAM BASED ON FRICTION ANGLE

[illegible]

0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00
0.10E+08*	0.10E+08*	0.00	0.00	0.00	0.00	0.00

* MAXIMUM UNIT FRICTION AND/OR MAXIMUM UNIT BEARING
WERE SET TO LARGE VALUES INDICATING THAT APILE
USES THE LIMITS SPECIFIED BY EACH SELECTED
CRITERIA (IF ANY).

DEPTH FT.	LRFD FACTOR ON UNIT FRICTION	LRFD FACTOR ON UNIT BEARING
0.00	1.000	1.000
2.00	1.000	1.000
2.00	1.000	1.000
6.00	1.000	1.000
6.00	1.000	1.000
8.00	1.000	1.000
8.00	1.000	1.000
12.00	1.000	1.000
12.00	1.000	1.000
17.00	1.000	1.000
17.00	1.000	1.000
27.00	1.000	1.000
27.00	1.000	1.000
32.00	1.000	1.000
32.00	1.000	1.000
42.00	1.000	1.000
42.00	1.000	1.000
57.00	1.000	1.000
57.00	1.000	1.000
67.00	1.000	1.000
67.00	1.000	1.000

72.00	1.000	1.000
72.00	1.000	1.000
77.00	1.000	1.000
77.00	1.000	1.000
82.00	1.000	1.000
82.00	1.000	1.000
87.00	1.000	1.000
87.00	1.000	1.000
92.00	1.000	1.000
92.00	1.000	1.000
97.00	1.000	1.000
97.00	1.000	1.000
102.00	1.000	1.000
102.00	1.000	1.000
107.00	1.000	1.000
107.00	1.000	1.000
110.00	1.000	1.000

DEPTH FT.	Z PEAK IN.	T RESIDUAL
0.00	0.255 *	0.00
2.00	0.255 *	0.00
2.00	0.255 *	0.00
6.00	0.255 *	0.00
6.00	0.255 *	0.00
8.00	0.255 *	0.00
8.00	0.255 *	0.90 **
12.00	0.255 *	0.90 **
12.00	0.255 *	0.00
17.00	0.255 *	0.00
17.00	0.255 *	0.00
27.00	0.255 *	0.00
27.00	0.255 *	0.00
32.00	0.255 *	0.00
32.00	0.255 *	0.00
42.00	0.255 *	0.00
42.00	0.255 *	0.00
57.00	0.255 *	0.00
57.00	0.255 *	0.00
67.00	0.255 *	0.00
67.00	0.255 *	0.00
72.00	0.255 *	0.00
72.00	0.255 *	0.00
77.00	0.255 *	0.00
77.00	0.255 *	0.00
82.00	0.255 *	0.00
82.00	0.255 *	0.00

87.00	0.255	*	0.00
87.00	0.255	*	0.00
92.00	0.255	*	0.00
92.00	0.255	*	0.00
97.00	0.255	*	0.00
97.00	0.255	*	0.00
102.00	0.255	*	0.00
102.00	0.255	*	0.00
107.00	0.255	*	0.00
107.00	0.255	*	0.00
110.00	0.255	*	0.00

* DEFAULT VALUE = 0.01 D

** DEFAULT VALUE = 0.9

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 * COMPUTATION RESULT *

 * FED. HWY. METHOD *

	PILE LENGTH BELOW GND. FT.	SKIN FRICTION KIP	END BEARING KIP	ULTIMATE CAPACITY KIP
	0.00	0.0	3.8	3.8
	1.00	0.2	5.9	6.1
Pile starting @ 142' EL	2.00	0.9	8.5	9.4
	3.00	1.9	11.4	13.3
	4.00	3.0	13.5	16.5
	5.00	4.5	14.4	18.9
	6.00	6.2	14.4	20.6
	7.00	8.0	14.0	22.0
	8.00	9.7	13.1	22.7
	9.00	11.8	13.0	24.7
	10.00	14.3	19.7	34.0
	11.00	16.8	27.1	43.9
	12.00	19.3	35.9	55.2
	13.00	22.6	45.5	68.0
	14.00	26.8	54.1	80.9
	15.00	31.3	56.7	88.0
	16.00	36.0	53.2	89.2

17.00	40.9	47.8	88.7
18.00	44.9	41.9	86.8
19.00	47.7	35.6	83.3
20.00	50.5	28.8	79.3
21.00	53.5	28.0	81.5
22.00	56.5	28.7	85.2
23.00	59.6	29.3	88.9
24.00	62.7	30.1	92.9
25.00	66.0	31.5	97.5
26.00	69.3	32.8	102.0
27.00	72.6	34.0	106.6
28.00	76.9	35.0	111.9
29.00	82.1	36.0	118.1
30.00	87.5	36.9	124.4
31.00	93.1	37.0	130.1
32.00	98.8	37.0	135.8
33.00	104.3	37.0	141.3
34.00	109.3	37.0	146.3
35.00	114.5	37.0	151.5
36.00	119.8	37.0	156.8
37.00	125.2	37.0	162.2
38.00	130.7	37.0	167.7
39.00	136.4	37.0	173.4
40.00	142.1	37.0	179.1
41.00	148.0	37.0	185.0
42.00	154.0	37.0	191.0
43.00	159.5	37.0	196.5
44.00	164.6	37.0	201.6
45.00	169.7	37.0	206.7
46.00	174.9	37.0	211.9
47.00	180.1	37.0	217.1
48.00	185.5	37.0	222.5
49.00	190.9	37.0	227.9
50.00	196.3	37.0	233.3
51.00	201.9	37.0	238.9
52.00	207.5	37.0	244.5
53.00	213.1	37.0	250.1
54.00	218.9	37.0	255.9
55.00	224.7	37.0	261.7
56.00	230.6	37.0	267.6
57.00	236.6	37.0	273.6
58.00	243.3	37.0	280.3
59.00	250.8	37.0	287.8
60.00	258.4	37.0	295.4
61.00	266.1	37.0	303.1
62.00	274.0	37.0	311.0
63.00	281.9	37.0	318.9
64.00	290.0	37.6	327.6
65.00	298.2	40.8	339.0
66.00	306.5	44.0	350.5

Minimum Pile Tip at +80' EL

67.00	314.9	47.2	362.1
68.00	325.1	50.4	375.5
69.00	337.0	54.6	391.5
70.00	349.0	63.2	412.2
71.00	361.3	69.2	430.5
72.00	373.8	74.5	448.4
73.00	387.4	79.9	467.3
74.00	402.0	84.3	486.3
75.00	416.8	84.3	501.2
76.00	432.0	79.9	511.9
77.00	447.3	74.5	521.9
78.00	462.0	69.2	531.2
79.00	476.0	63.2	539.2
80.00	490.2	54.6	544.8
81.00	504.6	50.4	555.0
82.00	519.3	47.2	566.5
83.00	532.0	44.0	576.0
84.00	543.0	41.4	584.4
85.00	554.0	41.4	595.4
86.00	565.2	44.0	609.2
87.00	576.5	47.2	623.7
88.00	590.0	50.4	640.4
89.00	605.8	54.6	660.4
90.00	621.8	63.2	685.0
91.00	638.0	69.2	707.2
92.00	654.4	74.5	729.0
93.00	672.1	79.9	752.1
94.00	691.2	84.3	775.5
95.00	710.5	84.3	794.8
96.00	730.0	79.9	809.9
97.00	749.8	74.5	824.3
98.00	768.6	69.2	837.8
99.00	786.5	64.8	851.3
100.00	804.7	64.8	869.4
101.00	823.0	69.2	892.1
102.00	841.5	74.5	916.0
103.00	861.4	79.9	941.4
104.00	882.9	102.6	985.5
105.00	904.5	202.6	1107.1

NOTES:

- AN ASTERISK IS PLACED IN THE END-BEARING COLUMN
IF THE TIP RESISTANCE IS CONTROLLED BY THE FRICTION
OF SOIL PLUG INSIDE AN OPEN-ENDED PIPE PILE.

* COMPUTE LOAD-DISTRIBUTION AND LOAD-SETTLEMENT *

* CURVES FOR AXIAL LOADING

*

T-Z CURVE NO.	NO. OF POINTS	DEPTH TO CURVE FT.	LOAD TRANSFER PSI	PILE MOVEMENT IN.
1	10	0.4167E-01		
			0.0000E+00	0.0000E+00
			0.6042E-02	0.4074E-01
			0.1007E-01	0.7894E-01
			0.1510E-01	0.1451E+00
			0.1812E-01	0.2037E+00
			0.2014E-01	0.2546E+00
			0.2014E-01	0.5093E+00
			0.2014E-01	0.7639E+00
			0.2014E-01	0.1273E+01
2	10	0.1000E+01	0.2014E-01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.1450E+00	0.4074E-01
			0.2417E+00	0.7894E-01
			0.3625E+00	0.1451E+00
			0.4350E+00	0.2037E+00
			0.4833E+00	0.2546E+00
			0.4833E+00	0.5093E+00
			0.4833E+00	0.7639E+00
3	10	0.1958E+01	0.4833E+00	0.1273E+01
			0.4833E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.2840E+00	0.4074E-01
			0.4733E+00	0.7894E-01
			0.7099E+00	0.1451E+00
			0.8519E+00	0.2037E+00
			0.9465E+00	0.2546E+00
			0.9465E+00	0.5093E+00
4	10	0.2042E+01	0.9465E+00	0.7639E+00
			0.9465E+00	0.1273E+01
			0.9465E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.2908E+00	0.4074E-01
			0.4846E+00	0.7894E-01
			0.7269E+00	0.1451E+00
			0.8723E+00	0.2037E+00
			0.9692E+00	0.2546E+00
			0.9692E+00	0.5093E+00
			0.9692E+00	0.7639E+00
			0.9692E+00	0.1273E+01

5	10	0.4000E+01	0.9692E+00	0.5093E+01
			0.0000E+00	0.0000E+00
			0.4051E+00	0.4074E-01
			0.6751E+00	0.7894E-01
			0.1013E+01	0.1451E+00
			0.1215E+01	0.2037E+00
			0.1350E+01	0.2546E+00
			0.1350E+01	0.5093E+00
			0.1350E+01	0.7639E+00
			0.1350E+01	0.1273E+01
6	10	0.5958E+01	0.1350E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.5939E+00	0.4074E-01
			0.9899E+00	0.7894E-01
			0.1485E+01	0.1451E+00
			0.1782E+01	0.2037E+00
			0.1980E+01	0.2546E+00
			0.1980E+01	0.5093E+00
			0.1980E+01	0.7639E+00
			0.1980E+01	0.1273E+01
7	10	0.6042E+01	0.1980E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.5943E+00	0.4074E-01
			0.9905E+00	0.7894E-01
			0.1486E+01	0.1451E+00
			0.1783E+01	0.2037E+00
			0.1981E+01	0.2546E+00
			0.1981E+01	0.5093E+00
			0.1981E+01	0.7639E+00
			0.1981E+01	0.1273E+01
8	10	0.7000E+01	0.1981E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.5111E+00	0.4074E-01
			0.8518E+00	0.7894E-01
			0.1278E+01	0.1451E+00
			0.1533E+01	0.2037E+00
			0.1704E+01	0.2546E+00
			0.1704E+01	0.5093E+00
			0.1704E+01	0.7639E+00
			0.1704E+01	0.1273E+01
9	10	0.7958E+01	0.1704E+01	0.5093E+01
			0.0000E+00	0.0000E+00
			0.5320E+00	0.4074E-01
			0.8866E+00	0.7894E-01
			0.1330E+01	0.1451E+00

			0.1596E+01	0.2037E+00
			0.1773E+01	0.2546E+00
			0.1773E+01	0.5093E+00
			0.1773E+01	0.7639E+00
			0.1773E+01	0.1273E+01
			0.1773E+01	0.5093E+01
10	10	0.8042E+01		
			0.0000E+00	0.0000E+00
			0.5432E+00	0.4074E-01
			0.9054E+00	0.7894E-01
			0.1358E+01	0.1451E+00
			0.1630E+01	0.2037E+00
			0.1811E+01	0.2546E+00
			0.1630E+01	0.5093E+00
			0.1630E+01	0.7639E+00
			0.1630E+01	0.1273E+01
			0.1630E+01	0.5093E+01
11	10	0.1000E+02		
			0.0000E+00	0.0000E+00
			0.7813E+00	0.4074E-01
			0.1302E+01	0.7894E-01
			0.1953E+01	0.1451E+00
			0.2344E+01	0.2037E+00
			0.2604E+01	0.2546E+00
			0.2344E+01	0.5093E+00
			0.2344E+01	0.7639E+00
			0.2344E+01	0.1273E+01
			0.2344E+01	0.5093E+01
12	10	0.1196E+02		
			0.0000E+00	0.0000E+00
			0.7813E+00	0.4074E-01
			0.1302E+01	0.7894E-01
			0.1953E+01	0.1451E+00
			0.2344E+01	0.2037E+00
			0.2604E+01	0.2546E+00
			0.2344E+01	0.5093E+00
			0.2344E+01	0.7639E+00
			0.2344E+01	0.1273E+01
			0.2344E+01	0.5093E+01
13	10	0.1204E+02		
			0.0000E+00	0.0000E+00
			0.8019E+00	0.4074E-01
			0.1337E+01	0.7894E-01
			0.2005E+01	0.1451E+00
			0.2406E+01	0.2037E+00
			0.2673E+01	0.2546E+00
			0.2673E+01	0.5093E+00
			0.2673E+01	0.7639E+00
			0.2673E+01	0.1273E+01
			0.2673E+01	0.5093E+01

14	10	0.1450E+02	0.0000E+00	0.0000E+00
			0.1395E+01	0.4074E-01
			0.2326E+01	0.7894E-01
			0.3489E+01	0.1451E+00
			0.4186E+01	0.2037E+00
			0.4652E+01	0.2546E+00
			0.4652E+01	0.5093E+00
			0.4652E+01	0.7639E+00
			0.4652E+01	0.1273E+01
			0.4652E+01	0.5093E+01
15	10	0.1696E+02	0.0000E+00	0.0000E+00
			0.1588E+01	0.4074E-01
			0.2647E+01	0.7894E-01
			0.3970E+01	0.1451E+00
			0.4764E+01	0.2037E+00
			0.5294E+01	0.2546E+00
			0.5294E+01	0.5093E+00
			0.5294E+01	0.7639E+00
			0.5294E+01	0.1273E+01
			0.5294E+01	0.5093E+01
16	10	0.1704E+02	0.0000E+00	0.0000E+00
			0.1561E+01	0.4074E-01
			0.2602E+01	0.7894E-01
			0.3903E+01	0.1451E+00
			0.4683E+01	0.2037E+00
			0.5204E+01	0.2546E+00
			0.5204E+01	0.5093E+00
			0.5204E+01	0.7639E+00
			0.5204E+01	0.1273E+01
			0.5204E+01	0.5093E+01
17	10	0.2200E+02	0.0000E+00	0.0000E+00
			0.9523E+00	0.4074E-01
			0.1587E+01	0.7894E-01
			0.2381E+01	0.1451E+00
			0.2857E+01	0.2037E+00
			0.3174E+01	0.2546E+00
			0.3174E+01	0.5093E+00
			0.3174E+01	0.7639E+00
			0.3174E+01	0.1273E+01
			0.3174E+01	0.5093E+01
18	10	0.2696E+02	0.0000E+00	0.0000E+00
			0.1060E+01	0.4074E-01
			0.1767E+01	0.7894E-01
			0.2651E+01	0.1451E+00
			0.3181E+01	0.2037E+00

			0.3534E+01	0.2546E+00
			0.3534E+01	0.5093E+00
			0.3534E+01	0.7639E+00
			0.3534E+01	0.1273E+01
			0.3534E+01	0.5093E+01
19	10	0.2704E+02		
			0.0000E+00	0.0000E+00
			0.1084E+01	0.4074E-01
			0.1806E+01	0.7894E-01
			0.2710E+01	0.1451E+00
			0.3252E+01	0.2037E+00
			0.3613E+01	0.2546E+00
			0.3613E+01	0.5093E+00
			0.3613E+01	0.7639E+00
			0.3613E+01	0.1273E+01
			0.3613E+01	0.5093E+01
20	10	0.2950E+02		
			0.0000E+00	0.0000E+00
			0.1689E+01	0.4074E-01
			0.2815E+01	0.7894E-01
			0.4222E+01	0.1451E+00
			0.5066E+01	0.2037E+00
			0.5629E+01	0.2546E+00
			0.5629E+01	0.5093E+00
			0.5629E+01	0.7639E+00
			0.5629E+01	0.1273E+01
			0.5629E+01	0.5093E+01
21	10	0.3196E+02		
			0.0000E+00	0.0000E+00
			0.1824E+01	0.4074E-01
			0.3040E+01	0.7894E-01
			0.4560E+01	0.1451E+00
			0.5471E+01	0.2037E+00
			0.6079E+01	0.2546E+00
			0.6079E+01	0.5093E+00
			0.6079E+01	0.7639E+00
			0.6079E+01	0.1273E+01
			0.6079E+01	0.5093E+01
22	10	0.3204E+02		
			0.0000E+00	0.0000E+00
			0.1815E+01	0.4074E-01
			0.3025E+01	0.7894E-01
			0.4538E+01	0.1451E+00
			0.5445E+01	0.2037E+00
			0.6050E+01	0.2546E+00
			0.6050E+01	0.5093E+00
			0.6050E+01	0.7639E+00
			0.6050E+01	0.1273E+01
			0.6050E+01	0.5093E+01
23	10	0.3700E+02		

			0.0000E+00	0.0000E+00
			0.1708E+01	0.4074E-01
			0.2846E+01	0.7894E-01
			0.4269E+01	0.1451E+00
			0.5123E+01	0.2037E+00
			0.5692E+01	0.2546E+00
			0.5692E+01	0.5093E+00
			0.5692E+01	0.7639E+00
			0.5692E+01	0.1273E+01
			0.5692E+01	0.5093E+01
24	10	0.4196E+02		
			0.0000E+00	0.0000E+00
			0.1887E+01	0.4074E-01
			0.3146E+01	0.7894E-01
			0.4719E+01	0.1451E+00
			0.5662E+01	0.2037E+00
			0.6291E+01	0.2546E+00
			0.6291E+01	0.5093E+00
			0.6291E+01	0.7639E+00
			0.6291E+01	0.1273E+01
			0.6291E+01	0.5093E+01
25	10	0.4204E+02		
			0.0000E+00	0.0000E+00
			0.1876E+01	0.4074E-01
			0.3126E+01	0.7894E-01
			0.4689E+01	0.1451E+00
			0.5627E+01	0.2037E+00
			0.6252E+01	0.2546E+00
			0.6252E+01	0.5093E+00
			0.6252E+01	0.7639E+00
			0.6252E+01	0.1273E+01
			0.6252E+01	0.5093E+01
26	10	0.4950E+02		
			0.0000E+00	0.0000E+00
			0.1709E+01	0.4074E-01
			0.2849E+01	0.7894E-01
			0.4273E+01	0.1451E+00
			0.5127E+01	0.2037E+00
			0.5697E+01	0.2546E+00
			0.5697E+01	0.5093E+00
			0.5697E+01	0.7639E+00
			0.5697E+01	0.1273E+01
			0.5697E+01	0.5093E+01
27	10	0.5696E+02		
			0.0000E+00	0.0000E+00
			0.1872E+01	0.4074E-01
			0.3119E+01	0.7894E-01
			0.4679E+01	0.1451E+00
			0.5615E+01	0.2037E+00
			0.6239E+01	0.2546E+00

			0.6239E+01	0.5093E+00
			0.6239E+01	0.7639E+00
			0.6239E+01	0.1273E+01
			0.6239E+01	0.5093E+01
28	10	0.5704E+02		
			0.0000E+00	0.0000E+00
			0.1891E+01	0.4074E-01
			0.3152E+01	0.7894E-01
			0.4728E+01	0.1451E+00
			0.5674E+01	0.2037E+00
			0.6304E+01	0.2546E+00
			0.6304E+01	0.5093E+00
			0.6304E+01	0.7639E+00
			0.6304E+01	0.1273E+01
			0.6304E+01	0.5093E+01
29	10	0.6200E+02		
			0.0000E+00	0.0000E+00
			0.2470E+01	0.4074E-01
			0.4116E+01	0.7894E-01
			0.6174E+01	0.1451E+00
			0.7409E+01	0.2037E+00
			0.8232E+01	0.2546E+00
			0.8232E+01	0.5093E+00
			0.8232E+01	0.7639E+00
			0.8232E+01	0.1273E+01
			0.8232E+01	0.5093E+01
30	10	0.6696E+02		
			0.0000E+00	0.0000E+00
			0.2649E+01	0.4074E-01
			0.4416E+01	0.7894E-01
			0.6623E+01	0.1451E+00
			0.7948E+01	0.2037E+00
			0.8831E+01	0.2546E+00
			0.8831E+01	0.5093E+00
			0.8831E+01	0.7639E+00
			0.8831E+01	0.1273E+01
			0.8831E+01	0.5093E+01
31	10	0.6704E+02		
			0.0000E+00	0.0000E+00
			0.2694E+01	0.4074E-01
			0.4490E+01	0.7894E-01
			0.6735E+01	0.1451E+00
			0.8082E+01	0.2037E+00
			0.8980E+01	0.2546E+00
			0.8980E+01	0.5093E+00
			0.8980E+01	0.7639E+00
			0.8980E+01	0.1273E+01
			0.8980E+01	0.5093E+01
32	10	0.6950E+02		
			0.0000E+00	0.0000E+00

			0.3780E+01	0.4074E-01
			0.6300E+01	0.7894E-01
			0.9450E+01	0.1451E+00
			0.1134E+02	0.2037E+00
			0.1260E+02	0.2546E+00
			0.1260E+02	0.5093E+00
			0.1260E+02	0.7639E+00
			0.1260E+02	0.1273E+01
			0.1260E+02	0.5093E+01
33	10	0.7196E+02		
			0.0000E+00	0.0000E+00
			0.3934E+01	0.4074E-01
			0.6557E+01	0.7894E-01
			0.9836E+01	0.1451E+00
			0.1180E+02	0.2037E+00
			0.1311E+02	0.2546E+00
			0.1311E+02	0.5093E+00
			0.1311E+02	0.7639E+00
			0.1311E+02	0.1273E+01
			0.1311E+02	0.5093E+01
34	10	0.7204E+02		
			0.0000E+00	0.0000E+00
			0.3961E+01	0.4074E-01
			0.6602E+01	0.7894E-01
			0.9903E+01	0.1451E+00
			0.1188E+02	0.2037E+00
			0.1320E+02	0.2546E+00
			0.1320E+02	0.5093E+00
			0.1320E+02	0.7639E+00
			0.1320E+02	0.1273E+01
			0.1320E+02	0.5093E+01
35	10	0.7450E+02		
			0.0000E+00	0.0000E+00
			0.4643E+01	0.4074E-01
			0.7739E+01	0.7894E-01
			0.1161E+02	0.1451E+00
			0.1393E+02	0.2037E+00
			0.1548E+02	0.2546E+00
			0.1548E+02	0.5093E+00
			0.1548E+02	0.7639E+00
			0.1548E+02	0.1273E+01
			0.1548E+02	0.5093E+01
36	10	0.7696E+02		
			0.0000E+00	0.0000E+00
			0.4836E+01	0.4074E-01
			0.8060E+01	0.7894E-01
			0.1209E+02	0.1451E+00
			0.1451E+02	0.2037E+00
			0.1612E+02	0.2546E+00
			0.1612E+02	0.5093E+00

			0.1612E+02	0.7639E+00
			0.1612E+02	0.1273E+01
			0.1612E+02	0.5093E+01
37	10	0.7704E+02		
			0.0000E+00	0.0000E+00
			0.4819E+01	0.4074E-01
			0.8031E+01	0.7894E-01
			0.1205E+02	0.1451E+00
			0.1446E+02	0.2037E+00
			0.1606E+02	0.2546E+00
			0.1606E+02	0.5093E+00
			0.1606E+02	0.7639E+00
			0.1606E+02	0.1273E+01
			0.1606E+02	0.5093E+01
38	10	0.7950E+02		
			0.0000E+00	0.0000E+00
			0.4440E+01	0.4074E-01
			0.7401E+01	0.7894E-01
			0.1110E+02	0.1451E+00
			0.1332E+02	0.2037E+00
			0.1480E+02	0.2546E+00
			0.1480E+02	0.5093E+00
			0.1480E+02	0.7639E+00
			0.1480E+02	0.1273E+01
			0.1480E+02	0.5093E+01
39	10	0.8196E+02		
			0.0000E+00	0.0000E+00
			0.4595E+01	0.4074E-01
			0.7658E+01	0.7894E-01
			0.1149E+02	0.1451E+00
			0.1378E+02	0.2037E+00
			0.1532E+02	0.2546E+00
			0.1532E+02	0.5093E+00
			0.1532E+02	0.7639E+00
			0.1532E+02	0.1273E+01
			0.1532E+02	0.5093E+01
40	10	0.8204E+02		
			0.0000E+00	0.0000E+00
			0.4547E+01	0.4074E-01
			0.7579E+01	0.7894E-01
			0.1137E+02	0.1451E+00
			0.1364E+02	0.2037E+00
			0.1516E+02	0.2546E+00
			0.1516E+02	0.5093E+00
			0.1516E+02	0.7639E+00
			0.1516E+02	0.1273E+01
			0.1516E+02	0.5093E+01
41	10	0.8450E+02		
			0.0000E+00	0.0000E+00
			0.3454E+01	0.4074E-01

			0.5757E+01	0.7894E-01
			0.8635E+01	0.1451E+00
			0.1036E+02	0.2037E+00
			0.1151E+02	0.2546E+00
			0.1151E+02	0.5093E+00
			0.1151E+02	0.7639E+00
			0.1151E+02	0.1273E+01
			0.1151E+02	0.5093E+01
42	10	0.8696E+02		
			0.0000E+00	0.0000E+00
			0.3543E+01	0.4074E-01
			0.5906E+01	0.7894E-01
			0.8858E+01	0.1451E+00
			0.1063E+02	0.2037E+00
			0.1181E+02	0.2546E+00
			0.1181E+02	0.5093E+00
			0.1181E+02	0.7639E+00
			0.1181E+02	0.1273E+01
			0.1181E+02	0.5093E+01
43	10	0.8704E+02		
			0.0000E+00	0.0000E+00
			0.3602E+01	0.4074E-01
			0.6003E+01	0.7894E-01
			0.9004E+01	0.1451E+00
			0.1080E+02	0.2037E+00
			0.1201E+02	0.2546E+00
			0.1201E+02	0.5093E+00
			0.1201E+02	0.7639E+00
			0.1201E+02	0.1273E+01
			0.1201E+02	0.5093E+01
44	10	0.8950E+02		
			0.0000E+00	0.0000E+00
			0.5002E+01	0.4074E-01
			0.8337E+01	0.7894E-01
			0.1250E+02	0.1451E+00
			0.1501E+02	0.2037E+00
			0.1667E+02	0.2546E+00
			0.1667E+02	0.5093E+00
			0.1667E+02	0.7639E+00
			0.1667E+02	0.1273E+01
			0.1667E+02	0.5093E+01
45	10	0.9196E+02		
			0.0000E+00	0.0000E+00
			0.5156E+01	0.4074E-01
			0.8594E+01	0.7894E-01
			0.1289E+02	0.1451E+00
			0.1547E+02	0.2037E+00
			0.1719E+02	0.2546E+00
			0.1719E+02	0.5093E+00
			0.1719E+02	0.7639E+00

46	10	0.9204E+02	0.1719E+02	0.1273E+01
			0.1719E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.5190E+01	0.4074E-01
			0.8650E+01	0.7894E-01
			0.1297E+02	0.1451E+00
			0.1557E+02	0.2037E+00
			0.1730E+02	0.2546E+00
			0.1730E+02	0.5093E+00
			0.1730E+02	0.7639E+00
47	10	0.9450E+02	0.1730E+02	0.1273E+01
			0.1730E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.6024E+01	0.4074E-01
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			0.1506E+02	0.1451E+00
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			0.2008E+02	0.2546E+00
			0.2008E+02	0.5093E+00
			0.2008E+02	0.7639E+00
48	10	0.9696E+02	0.2008E+02	0.1273E+01
			0.2008E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.6216E+01	0.4074E-01
			0.1036E+02	0.7894E-01
			0.1554E+02	0.1451E+00
			0.1865E+02	0.2037E+00
			0.2072E+02	0.2546E+00
			0.2072E+02	0.5093E+00
			0.2072E+02	0.7639E+00
49	10	0.9704E+02	0.2072E+02	0.1273E+01
			0.2072E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.6192E+01	0.4074E-01
			0.1032E+02	0.7894E-01
			0.1548E+02	0.1451E+00
			0.1858E+02	0.2037E+00
			0.2064E+02	0.2546E+00
			0.2064E+02	0.5093E+00
			0.2064E+02	0.7639E+00
50	10	0.9950E+02	0.2064E+02	0.1273E+01
			0.2064E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.5662E+01	0.4074E-01
			0.9437E+01	0.7894E-01

			0.1416E+02	0.1451E+00
			0.1699E+02	0.2037E+00
			0.1887E+02	0.2546E+00
			0.1887E+02	0.5093E+00
			0.1887E+02	0.7639E+00
			0.1887E+02	0.1273E+01
			0.1887E+02	0.5093E+01
51	10	0.1020E+03		
			0.0000E+00	0.0000E+00
			0.5817E+01	0.4074E-01
			0.9694E+01	0.7894E-01
			0.1454E+02	0.1451E+00
			0.1745E+02	0.2037E+00
			0.1939E+02	0.2546E+00
			0.1939E+02	0.5093E+00
			0.1939E+02	0.7639E+00
			0.1939E+02	0.1273E+01
			0.1939E+02	0.5093E+01
52	10	0.1020E+03		
			0.0000E+00	0.0000E+00
			0.5854E+01	0.4074E-01
			0.9757E+01	0.7894E-01
			0.1463E+02	0.1451E+00
			0.1756E+02	0.2037E+00
			0.1951E+02	0.2546E+00
			0.1951E+02	0.5093E+00
			0.1951E+02	0.7639E+00
			0.1951E+02	0.1273E+01
			0.1951E+02	0.5093E+01
53	10	0.1045E+03		
			0.0000E+00	0.0000E+00
			0.6770E+01	0.4074E-01
			0.1128E+02	0.7894E-01
			0.1692E+02	0.1451E+00
			0.2031E+02	0.2037E+00
			0.2257E+02	0.2546E+00
			0.2257E+02	0.5093E+00
			0.2257E+02	0.7639E+00
			0.2257E+02	0.1273E+01
			0.2257E+02	0.5093E+01
54	10	0.1070E+03		
			0.0000E+00	0.0000E+00
			0.6809E+01	0.4074E-01
			0.1135E+02	0.7894E-01
			0.1702E+02	0.1451E+00
			0.2043E+02	0.2037E+00
			0.2270E+02	0.2546E+00
			0.2270E+02	0.5093E+00
			0.2270E+02	0.7639E+00
			0.2270E+02	0.1273E+01

55	10	0.1070E+03	0.2270E+02	0.5093E+01
			0.0000E+00	0.0000E+00
			0.6809E+01	0.4074E-01
			0.1135E+02	0.7894E-01
			0.1702E+02	0.1451E+00
			0.2043E+02	0.2037E+00
			0.2270E+02	0.2546E+00
			0.2270E+02	0.5093E+00
			0.2270E+02	0.7639E+00
			0.2270E+02	0.1273E+01
			0.2270E+02	0.5093E+01
56	10	0.1085E+03	0.0000E+00	0.0000E+00
			0.6809E+01	0.4074E-01
			0.1135E+02	0.7894E-01
			0.1702E+02	0.1451E+00
			0.2043E+02	0.2037E+00
			0.2270E+02	0.2546E+00
			0.2270E+02	0.5093E+00
			0.2270E+02	0.7639E+00
			0.2270E+02	0.1273E+01
			0.2270E+02	0.5093E+01
57	10	0.1100E+03	0.0000E+00	0.0000E+00
			0.6809E+01	0.4074E-01
			0.1135E+02	0.7894E-01
			0.1702E+02	0.1451E+00
			0.2043E+02	0.2037E+00
			0.2270E+02	0.2546E+00
			0.2270E+02	0.5093E+00
			0.2270E+02	0.7639E+00
			0.2270E+02	0.1273E+01
			0.2270E+02	0.5093E+01

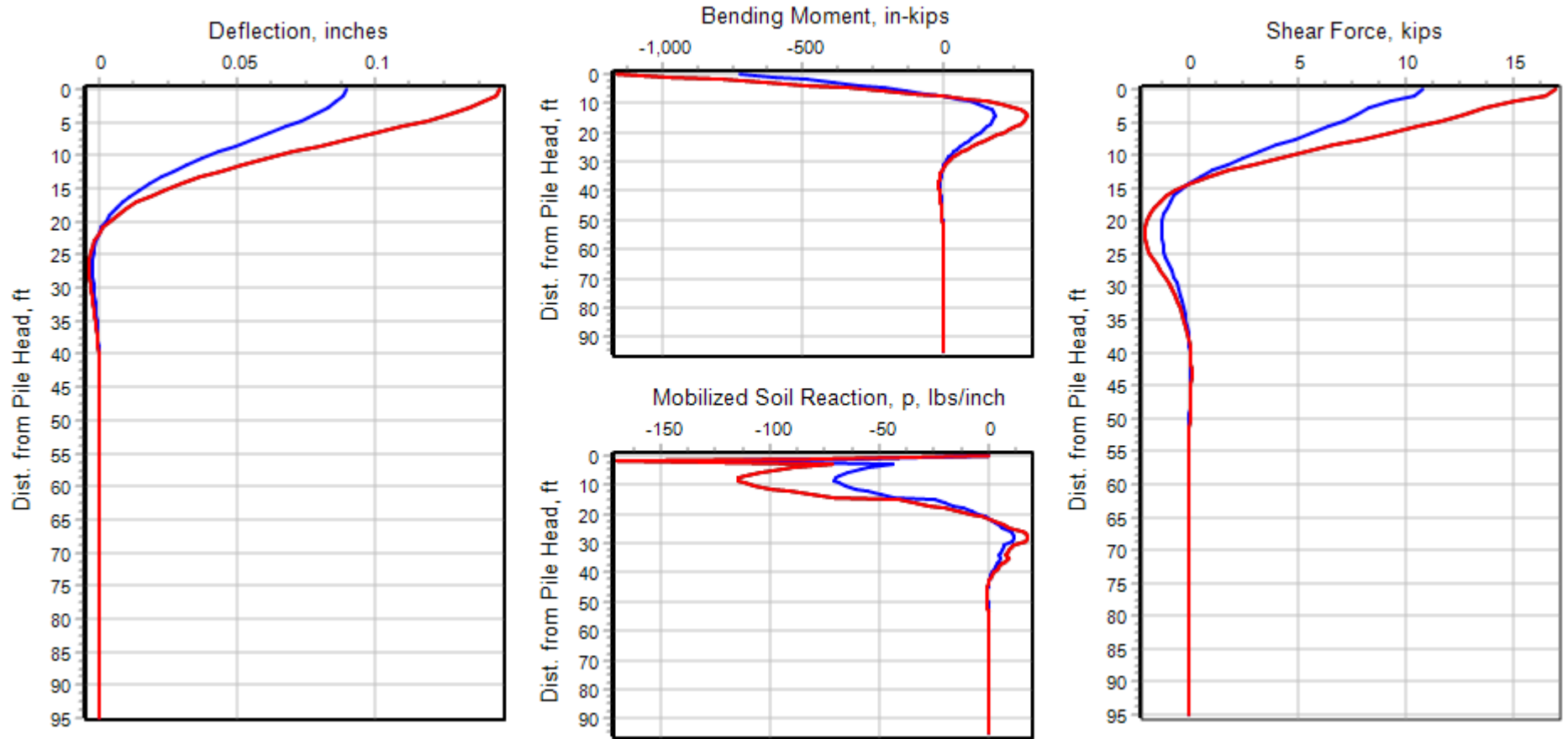
TIP LOAD KIP	TIP MOVEMENT IN.
0.0000E+00	0.0000E+00
0.1266E+02	0.1273E-01
0.2532E+02	0.2546E-01
0.5064E+02	0.5093E-01
0.1013E+03	0.3310E+00
0.1519E+03	0.1070E+01
0.1823E+03	0.1859E+01
0.2026E+03	0.2546E+01
0.2026E+03	0.3820E+01
0.2026E+03	0.5093E+01

LOAD VERSUS SETTLEMENT CURVE

TOP LOAD KIP	TOP MOVEMENT IN.	TIP LOAD KIP	TIP MOVEMENT IN.
0.1581E+01	0.7864E-03	0.9943E-01	0.1000E-03
0.1581E+02	0.7864E-02	0.9943E+00	0.1000E-02
0.7972E+02	0.3951E-01	0.4971E+01	0.5000E-02
0.1563E+03	0.7883E-01	0.9943E+01	0.1000E-01
0.2884E+03	0.1526E+00	0.1989E+02	0.2000E-01
0.5589E+03	0.3270E+00	0.4971E+02	0.5000E-01
0.6918E+03	0.4350E+00	0.5589E+02	0.8000E-01
0.7558E+03	0.4946E+00	0.5951E+02	0.1000E+00
0.9511E+03	0.7248E+00	0.7759E+02	0.2000E+00
0.1016E+04	0.1074E+01	0.1129E+03	0.5000E+00
0.1037E+04	0.1390E+01	0.1334E+03	0.8000E+00
0.1051E+04	0.1601E+01	0.1471E+03	0.1000E+01
0.1090E+04	0.2632E+01	0.1865E+03	0.2000E+01

L-Pile Analyses Results & Soil Parameters

20" PSC Piles for Bent 1, Static Loading, Fixed Head



Maximum Pile Head Deflection

— 0.15 inches (44 Axial with 11 shear)

— 0.09 inches (214 Axial with 7 shear)

— 0.15 inches (43 Axial with 11 shear)

Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142' (NAVD 88)
- Resistance factor of 0.65 was applied to the Shear load.
- Loading condition for case 1 is similar to case 3.

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026

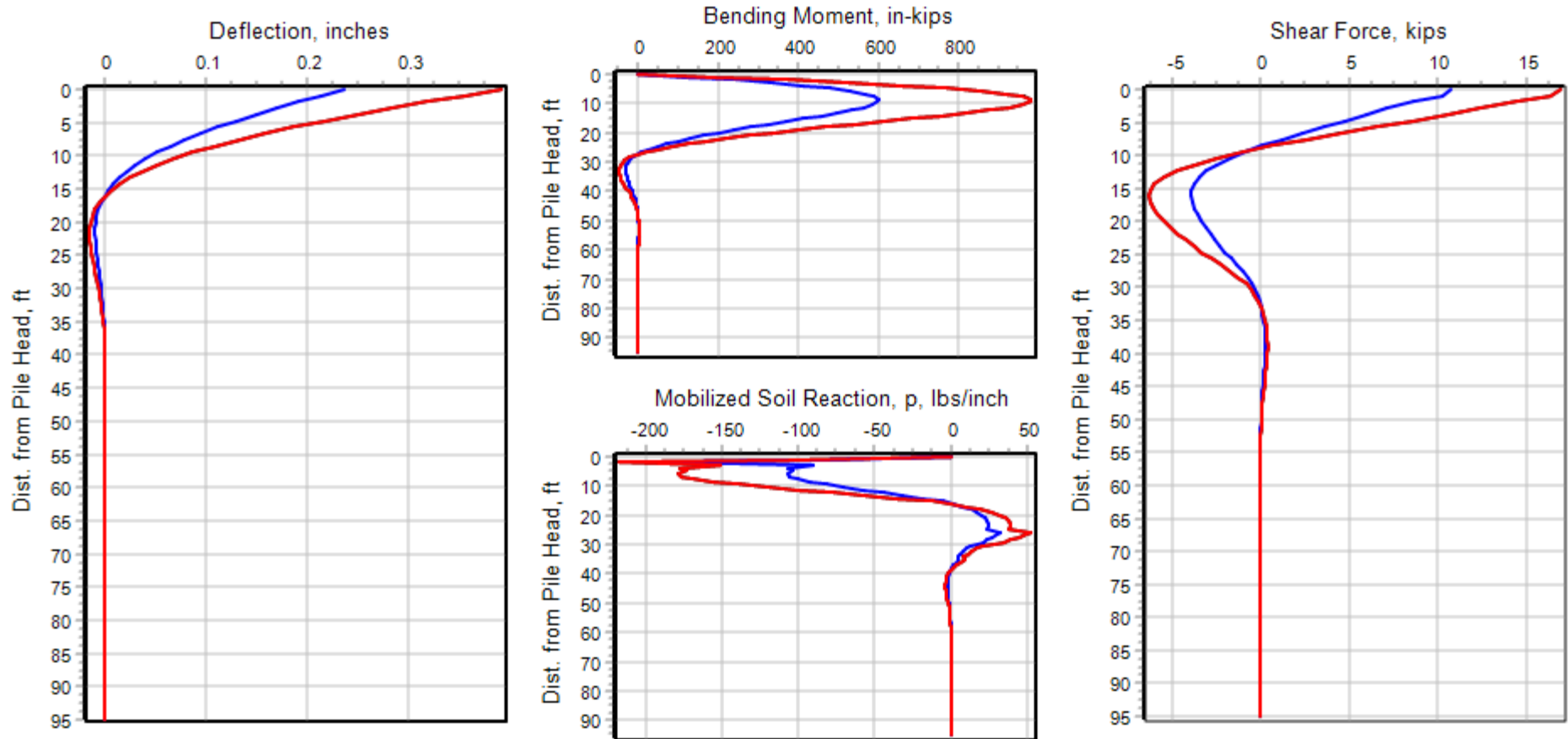


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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

20" PSC Piles for Bent 1, Static Loading, Free Head



Maximum Pile Head Deflection

— 0.39 inches (44 Axial with 11 shear)

— 0.24 inches (214 Axial with 7 shear)

— 0.39 inches (43 Axial with 11 shear)

Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142' (NAVD 88)
- Resistance factor of 0.65 was applied to the Shear load.
- Loading condition for case 1 is similar to case 3.

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026

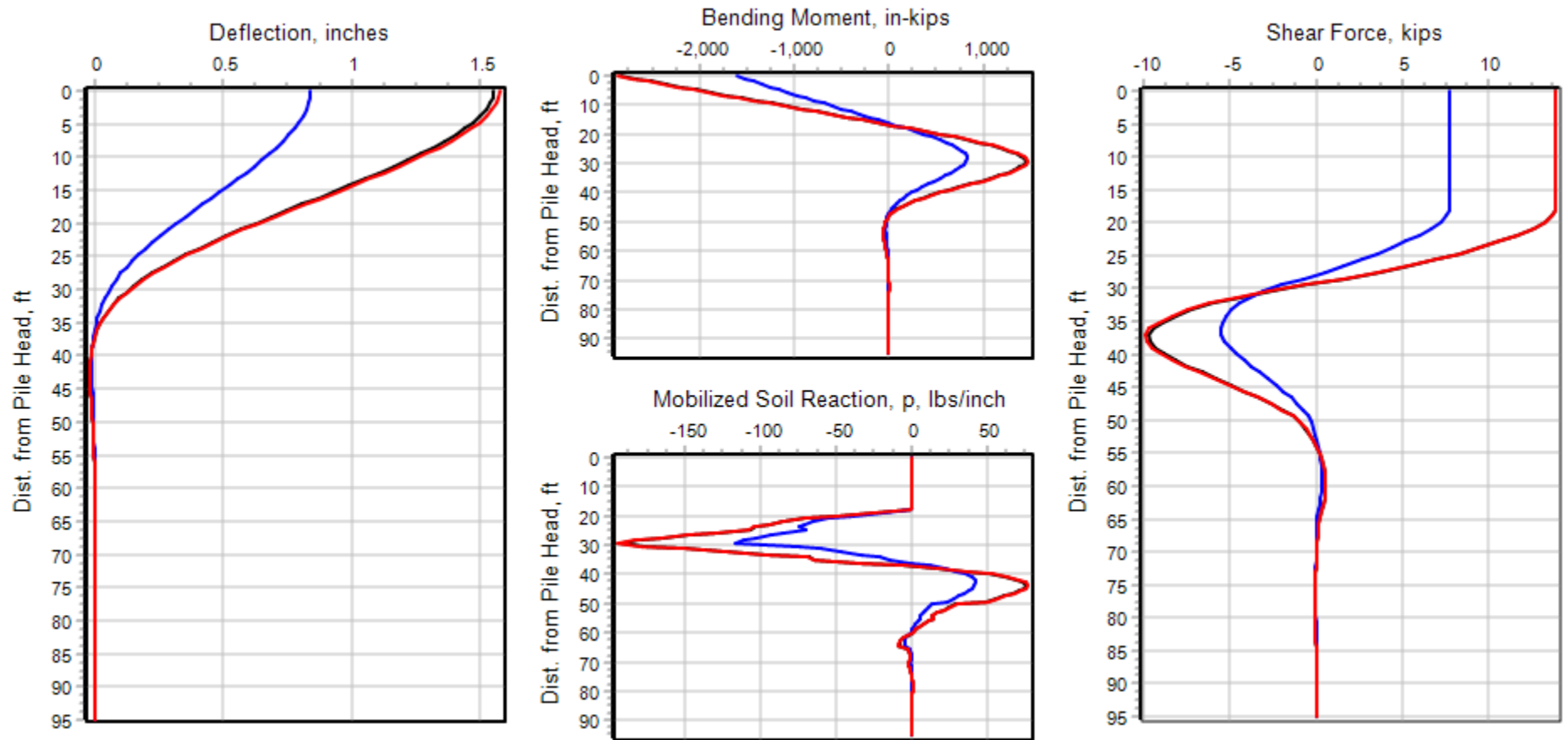


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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

20" PSC Piles for Bent 2, Static Loading, Fixed Head



Maximum Pile Head Deflection

— 1.55 inches (66 Axial with 9 shear)

— 0.84 inches (281 Axial with 5 shear)

— 1.58 inches (113 Axial with 9 shear)

Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142.50' (NAVD 88)
- Top of pile to 100-yr scour 18' is at EL 124.50' (NAVD 88).
- Resistance factor of 0.65 was applied to the Shear load.

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026

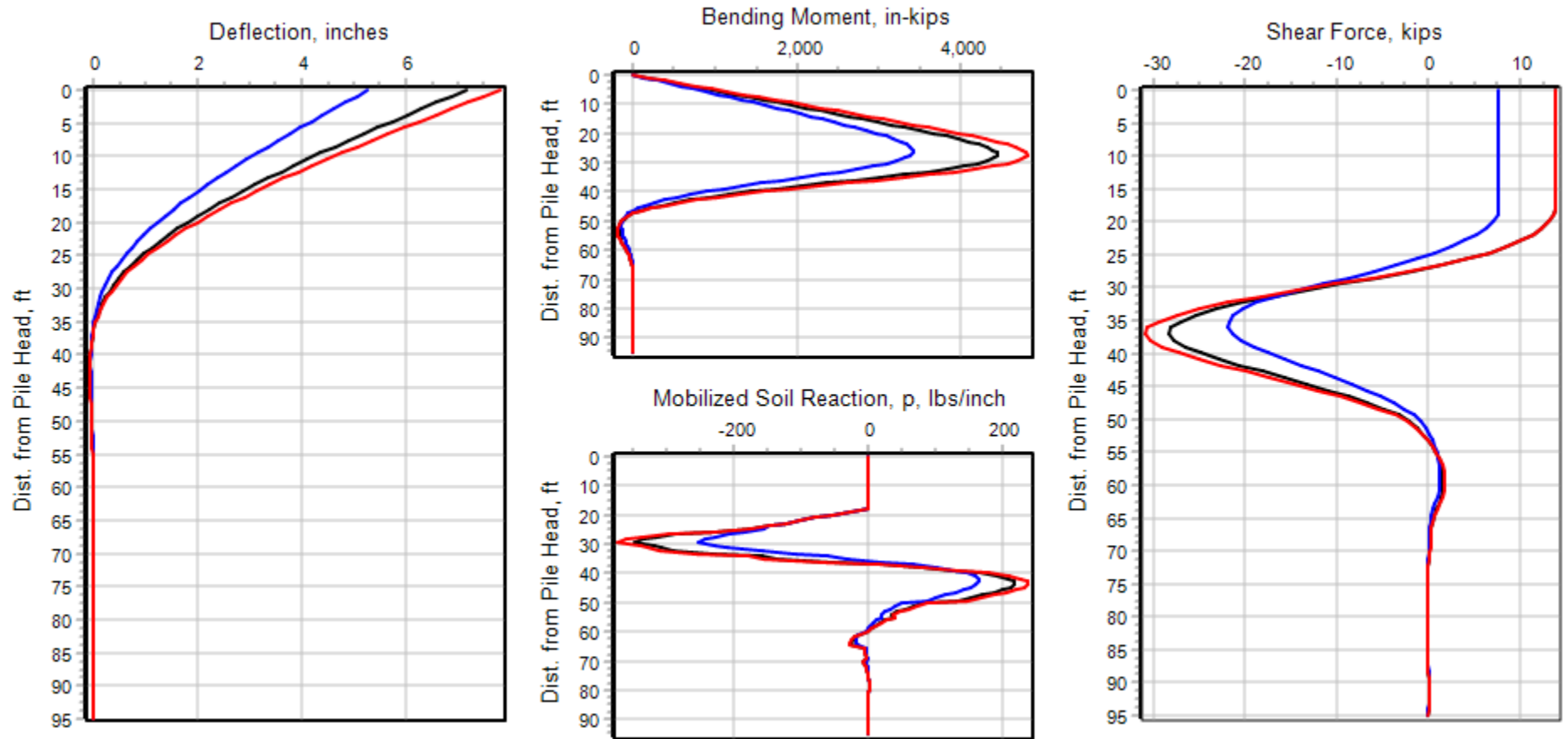


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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

20" PSC Piles for Bent 2, Static Loading, Free Head



Maximum Pile Head Deflection

- 7.16 inches (66 Axial with 9 shear)
- 5.27 inches (281 Axial with 5 shear)
- 7.80 inches (113 Axial with 9 shear)

Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142.50' (NAVD 88)
- Top of pile to 100-yr scour 18' is at EL 124.50' (NAVD 88).
- Resistance factor of 0.65 was applied to the Shear load.

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026

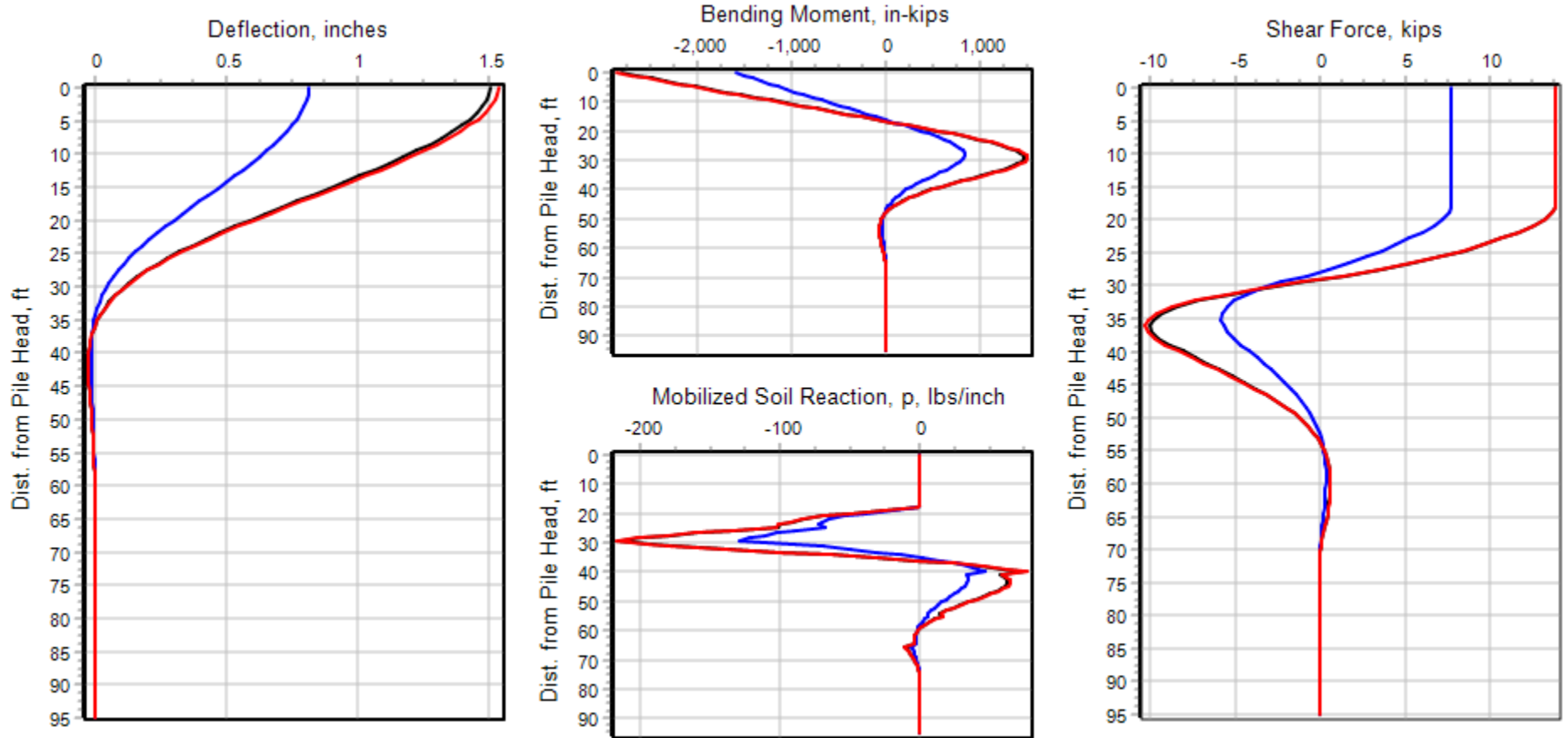


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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

20" PSC Piles for Bent 3, Static Loading, Fixed Head



Maximum Pile Head Deflection

- 1.51 inches (66 Axial with 9 shear)
- 0.82 inches (281 Axial with 5 shear)
- 1.54 inches (113 Axial with 9 shear)

Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142.50' (NAVD 88)
- Top of pile to 100-yr scour 18' is at EL 124.50' (NAVD 88).
- Resistance factor of 0.65 was applied to the Shear load.

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026

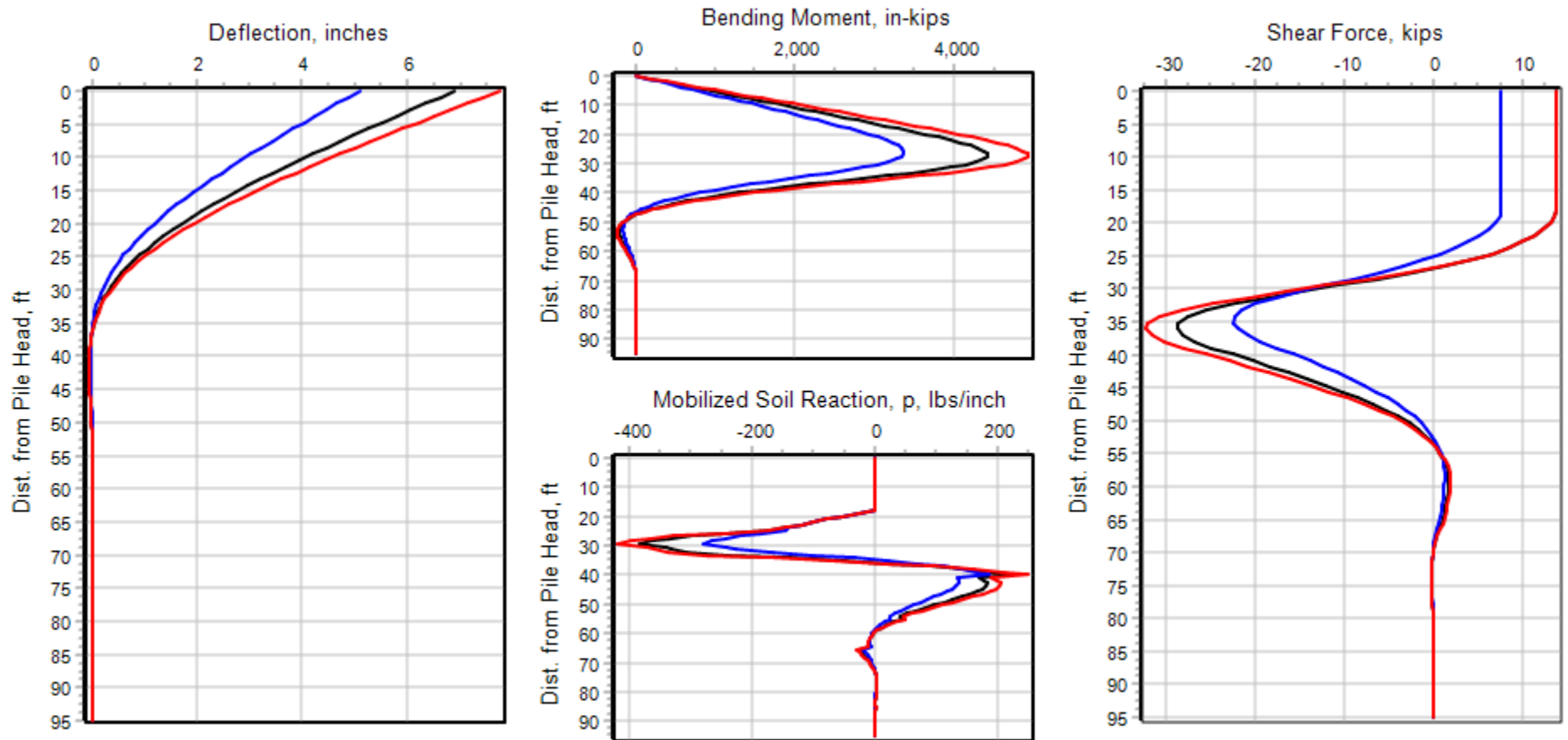


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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

20" PSC Piles for Bent 3, Static Loading, Free Head



Maximum Pile Head Deflection

— 6.93 inches (66 Axial with 9 shear)

— 5.10 inches (281 Axial with 5 shear)

— 7.79 inches (113 Axial with 9 shear)

Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142.50' (NAVD 88)
- Top of pile to 100-yr scour 18' is at EL 124.50' (NAVD 88).
- Resistance factor of 0.65 was applied to the Shear load.

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026

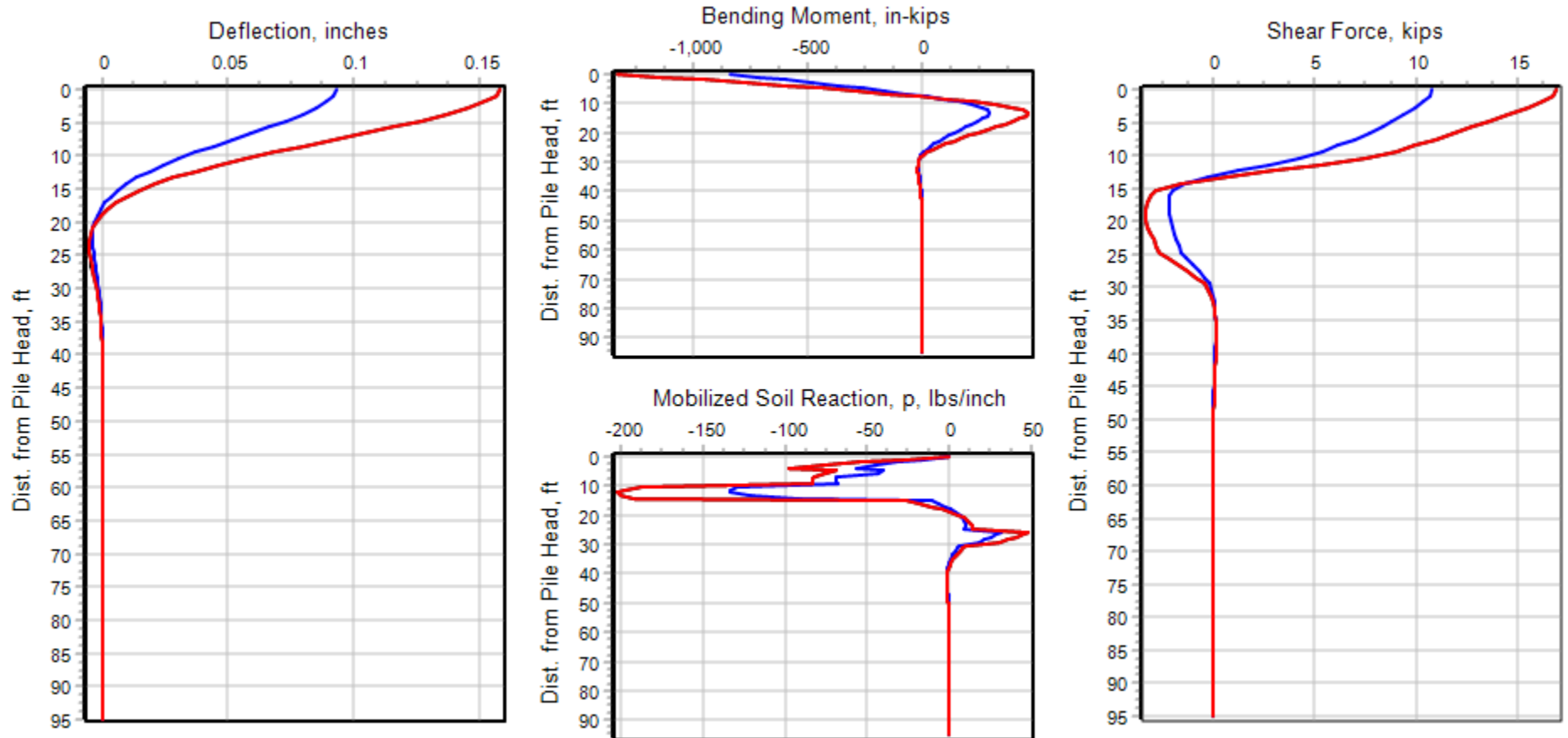


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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

20" PSC Piles for Bent 4, Static Loading, Fixed Head



Maximum Pile Head Deflection

— 0.16 inches (44 Axial with 11 shear)

— 0.09 inches (214 Axial with 7 shear)

— 0.16 inches (43 Axial with 11 shear)

Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142' (NAVD 88)
- Resistance factor of 0.65 was applied to the Shear load.
- Loading condition for case 1 is similar to case 3

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026

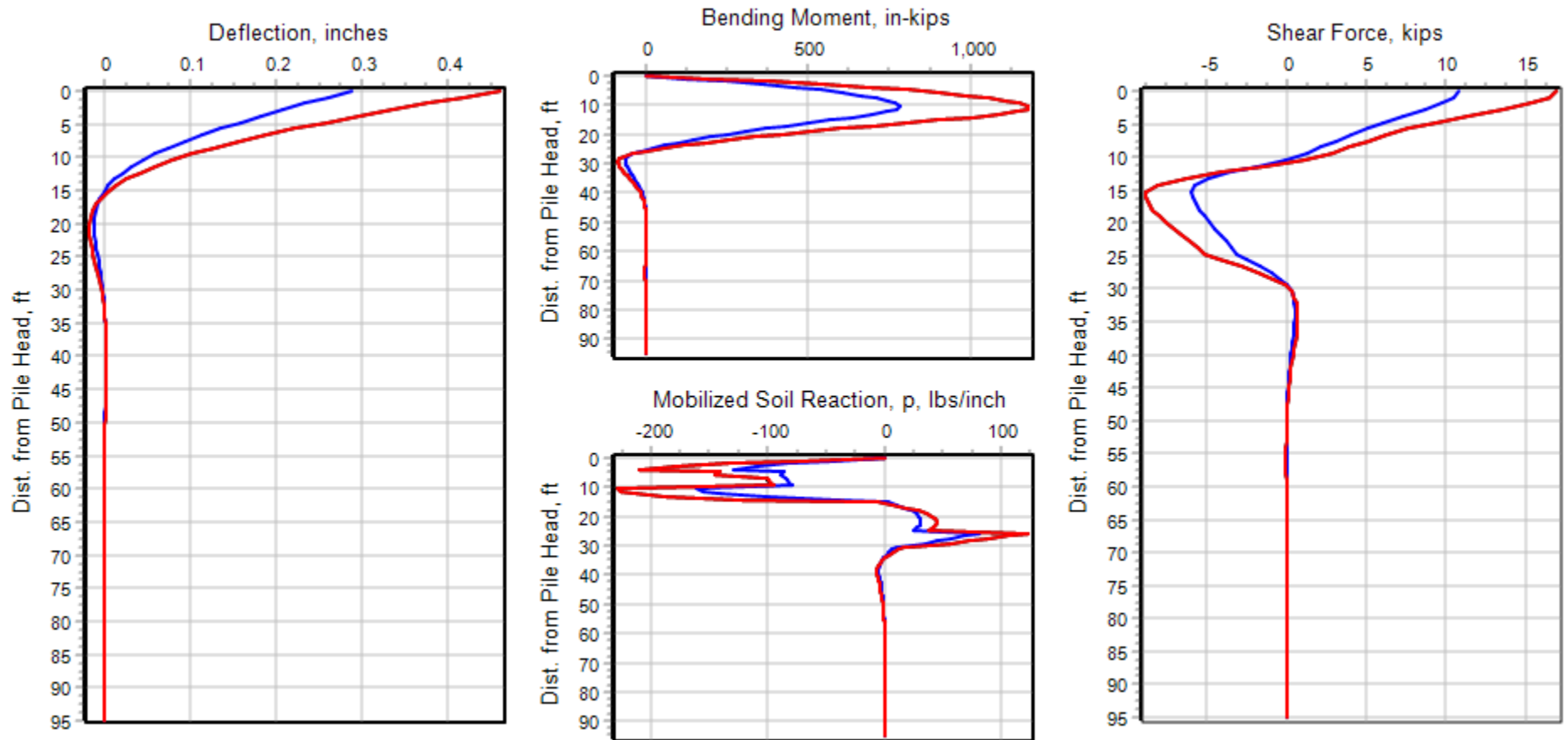


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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

20" PSC Piles for Bent 4, Static Loading, Free Head



Maximum Pile Head Deflection

- 0.39 inches (44 Axial with 11 shear)
- 0.24 inches (214 Axial with 7 shear)
- 0.39 inches (43 Axial with 11 shear)

Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142' (NAVD 88)
- Resistance factor of 0.65 was applied to the Shear load.
- Loading condition for case 1 is similar to case 3

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026



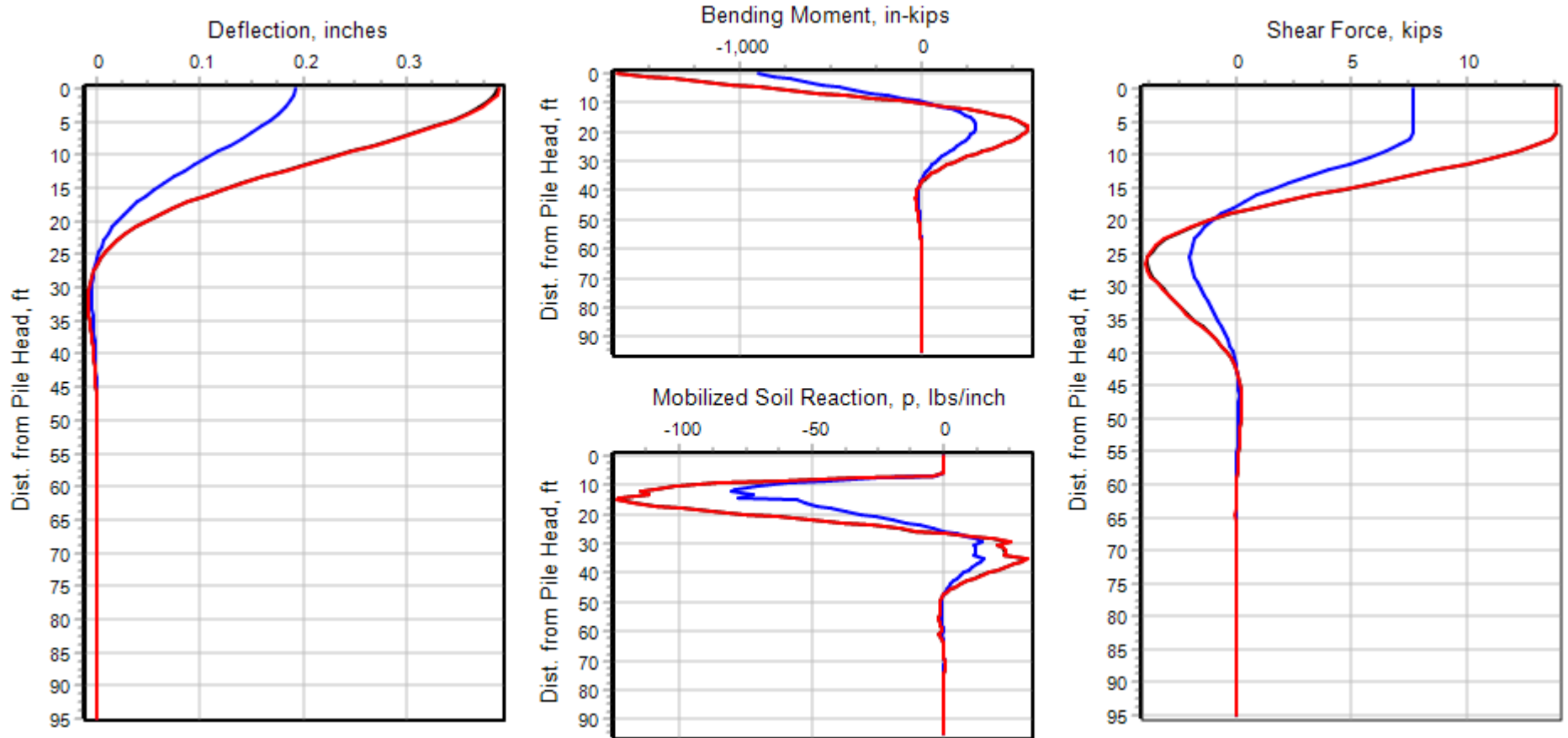
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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

L-Pile Analyses Results for Intermediate Bents (without Scour)

20" PSC Piles for Bent 2, Static Loading, Fixed Head



Maximum Pile Head Deflection

— 0.39 inches (66 Axial with 9 shear)

— 0.19 inches (281 Axial with 5 shear)

— 0.39 inches (113 Axial with 9 shear)

Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142.50' (NAVD 88)
- Top of pile to groundline is 6.5', at EL 136' (NAVD 88).
- Resistance factor of 0.65 was applied to the Shear load.

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026

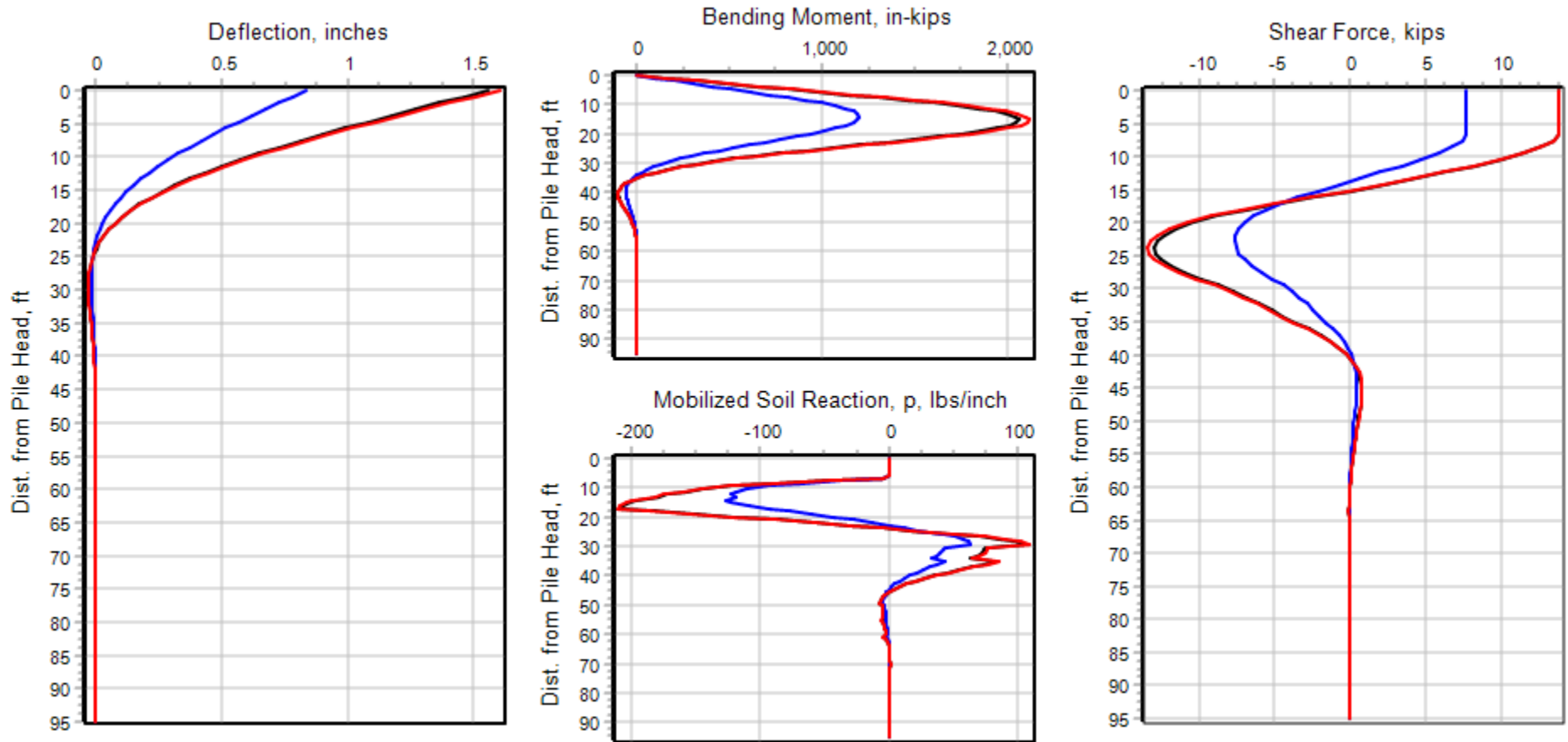


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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

20" PSC Piles for Bent 2, Static Loading, Free Head



Maximum Pile Head Deflection

- 1.56 inches (66 Axial with 9 shear)
- 0.84 inches (281 Axial with 5 shear)
- 1.61 inches (113 Axial with 9 shear)

Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142.50' (NAVD 88)
- Top of pile to groundline is 6.5', at EL 136' (NAVD 88).
- Resistance factor of 0.65 was applied to the Shear load.

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026

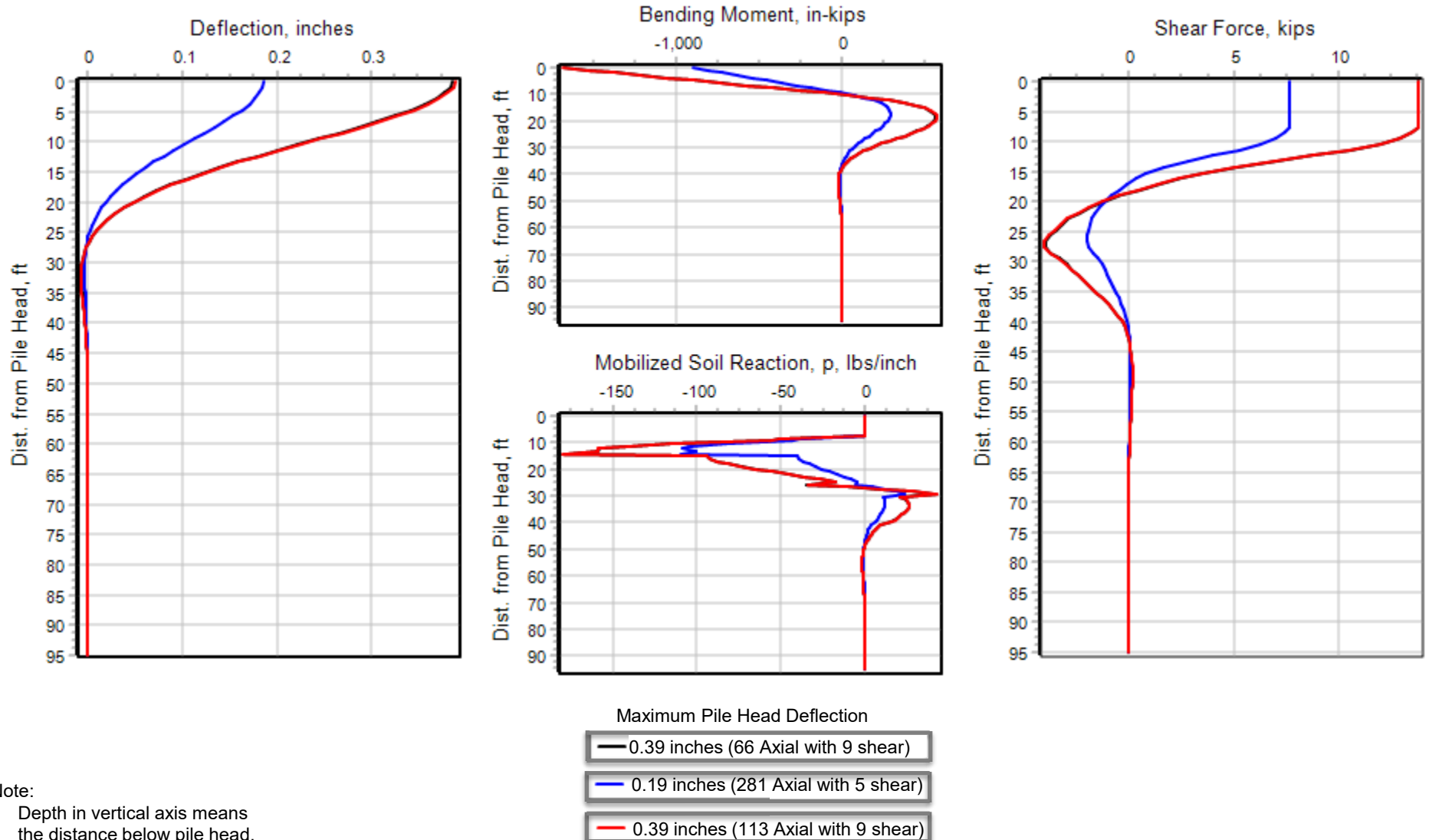


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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

20" PSC Piles for Bent 3, Static Loading, Fixed Head



Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142.50' (NAVD 88)
- Top of pile to groundline is 8.5', at EL 134' (NAVD 88).
- Resistance factor of 0.65 was applied to the Shear load.

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026

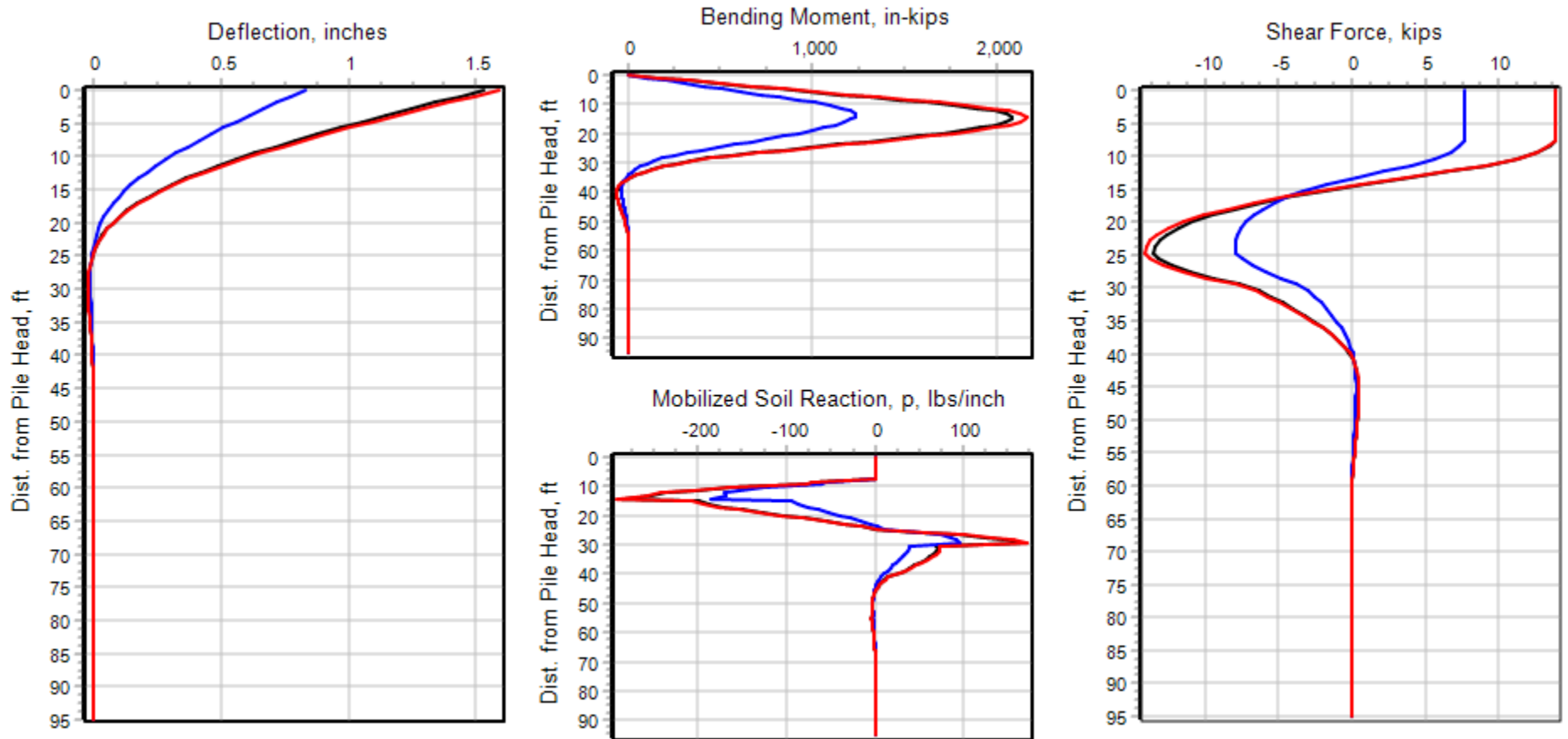


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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

20" PSC Piles for Bent 3, Static Loading, Free Head



Maximum Pile Head Deflection

— 1.53 inches (66 Axial with 9 shear)

— 0.83 inches (281 Axial with 5 shear)

— 1.59 inches (113 Axial with 9 shear)

Note:

- Depth in vertical axis means the distance below pile head.
- Pile head is at EL +142.50' (NAVD 88)
- Top of pile to groundline is 8.5', at EL 134' (NAVD 88).
- Resistance factor of 0.65 was applied to the Shear load.

Project Manager:	NAA	Project No.	ES255161
Drawn by:	NAA	Scale:	N.T.S.
Checked by:	CZ	File Name:	
Approved by:	GL	Date:	02/18/2026



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LPILE Analyses

G.W. Oliver Road Over Little Lotts Creek
Statesboro, Georgia

Recommended Soil Parameter Report

G.W. Oliver Road Over Little Lotts Creek | Statesboro, Georgia
March 4, 2026 | Terracon Project No. ES255161



Soil Parameters for Lpile Analyses (Bent 1, PSC)

Layer No.	Approx. Top Elev. (ft)	Approx. Bottom Elev. (ft)	Soil Type	Average SPT N	Effective Unit Weight (pcf)	Friction Angle (deg)	Undrained Shear Strength (psf)	Soil Modulus k-value (pci)	E50
1	142	140	sand	14	110	31	-	Use Program Default Values	
2	140	138	sand	8	100	28	-		
3	138	127	sand	6	37.6	28	-		
4	127	117	sand	1	27.6	26	-		
5	117	112	sand	6	37.6	28	-		
6	112	107	sand	2	27.6	26	-		
7	107	92	sand	6	37.6	28	-		
8	92	87	sand	1	27.6	26	-		
9	87	82	sand	4	37.6	28	-		
10	82	77	sand	25	52.6	32	-		
11	77	72	sand	6	37.6	28	-		
12	72	67	sand	19	47.6	31	-		
13	67	62	sand	23	52.6	32	-		
14	62	52	sand	6	37.6	28	-		
15	52	47	sand	23	52.6	32	-		
16	47	42	sand	17	47.6	31	-		
17	42	37	sand	33	57.6	34	-		
18	37	29	sand	100	67.6	38	-		

- Note:
- 1. Soil profile based on B3;
 - 2. Pile Top is at EL +142.50 feet

Recommended Soil Parameter Report

G.W. Oliver Road Over Little Lotts Creek | Statesboro, Georgia
March 4, 2026 | Terracon Project No. ES255161



Soil Parameters for Lpile Analyses (Bent 2, PSC)

Layer No.	Approx. Top Elev. (ft)	Approx. Bottom Elev. (ft)	Soil Type	Average SPT N	Effective Unit Weight (pcf)	Friction Angle (deg)	Undrained Shear Strength (psf)	Soil Modulus k-value (pci)	E50
1	124.5	117	sand	1	27.6	26	-	Use Program Default Values	
2	117	112	sand	6	37.6	28	-		
3	112	107	sand	2	27.6	26	-		
4	107	92	sand	6	37.6	28	-		
5	92	87	sand	1	27.6	26	-		
6	87	82	sand	4	37.6	28	-		
7	82	77	sand	25	52.6	32	-		
8	77	72	sand	6	37.6	28	-		
9	72	67	sand	19	47.6	31	-		
10	67	62	sand	23	52.6	32	-		
11	62	52	sand	6	37.6	28	-		
12	52	47	sand	23	52.6	32	-		
13	47	42	sand	17	47.6	31	-		
14	42	37	sand	33	57.6	34	-		
15	37	29	sand	100	67.6	38	-		

- Note:
- 1. Soil profile based on B3;
 - 2. Pile Top is at EL +142.50 feet
 - 3. Top of Pile to 100-year scour 18’ is at EL 124.50 feet

Recommended Soil Parameter Report

G.W. Oliver Road Over Little Lotts Creek | Statesboro, Georgia
March 4, 2026 | Terracon Project No. ES255161



Soil Parameters for Lpile Analyses (Bent 3, PSC)

Layer No.	Approx. Top Elev. (ft)	Approx. Bottom Elev. (ft)	Soil Type	Average SPT N	Effective Unit Weight (pcf)	Friction Angle (deg)	Undrained Shear Strength (psf)	Soil Modulus k-value (pci)	E50
1	124.5	117	sand	1	27.6	26	-	Use Program Default Values	
2	117	112	sand	11	47.6	30	-		
3	112	102	sand	8	37.6	28	-		
4	102	87	sand	2	27.6	26	-		
5	87	77	sand	7	37.6	28	-		
6	77	72	sand	15	47.6	31	-		
7	72	67	sand	24	52.6	32	-		
8	67	62	sand	18	47.6	31	-		
9	62	57	sand	5	37.6	28	-		
10	57	52	sand	14	47.6	31	-		
11	52	47	sand	28	52.6	32	-		
12	47	42	sand	18	47.6	31	-		
13	42	37	sand	28	52.6	32	-		
14	37	29	sand	77	67.6	38	-		

- Note:
- 1. Soil profile based on B4;
 - 2. Pile Top is at EL +142.50 feet
 - 3. Top of Pile to 100-year scour 18' is at EL 124.50 feet

Recommended Soil Parameter Report

G.W. Oliver Road Over Little Lotts Creek | Statesboro, Georgia
March 4, 2026 | Terracon Project No. ES255161



Soil Parameters for Lpile Analyses (Bent 4, PSC)

Layer No.	Approx. Top Elev. (ft)	Approx. Bottom Elev. (ft)	Soil Type	Average SPT N	Effective Unit Weight (pcf)	Friction Angle (deg)	Undrained Shear Strength (psf)	Soil Modulus k-value (pci)	E50
1	142	138	sand	4	100	28	-	Use Program Default Values	
2	138	136	sand	2	27.6	26	-		
3	136	132	clay	3	32.6	-	375		
4	132	127	sand	21	52.6	32	-		
5	127	117	sand	1	27.6	26	-		
6	117	112	sand	11	47.6	30	-		
7	112	102	sand	8	37.6	28	-		
8	102	87	sand	2	27.6	26	-		
9	87	77	sand	7	37.6	28	-		
10	77	72	sand	15	47.6	31	-		
11	72	67	sand	24	52.6	32	-		
12	67	62	sand	18	47.6	31	-		
13	62	57	sand	5	37.6	28	-		
14	57	52	sand	14	47.6	31	-		
15	52	47	sand	28	52.6	32	-		
16	47	42	sand	18	47.6	31	-		
17	42	37	sand	28	52.6	32	-		
18	37	29	sand	77	67.6	38	-		

Note:
1. Soil profile based on B4;
2. Pile Top is at EL +142 feet

Geotechnical Engineering Report

GW Oliver Road BFI | Statesboro, GA

March 4, 2026 | Terracon Project No. ES255161



SPT Hammer Calibration

Summary of SPT Test Results

Project: IDI, DR-25, BR-2500, SER# BRR-16, Test Date: 12/14/2024

FMX: Maximum Force
VMX: Maximum Velocity
BPM: Blows/Minute

EFV: Maximum Energy
ETR: Energy Transfer Ratio - Rated

Instr. Length ft	Blows Applied /6"	N Value	N60 Value	Average FMX kips	Average VMX ft/s	Average BPM bpm	Average EFV ft-lb	Average ETR %
34.50	6-7-8	15	19	31	18.4	43.9	269	76.9
37.00	4-5-5	10	12	30	17.7	40.8	270	77.2
39.50	3-2-8	10	12	29	19.5	35.9	267	76.2
69.50	11-12-15	27	34	30	18.2	36.2	275	78.6
72.00	10-12-13	25	32	29	17.8	35.1	267	76.3
Overall Average Values:				30	18.2	37.7	270	77.2
Standard Deviation:				1	0.8	4.7	5	1.4
Overall Maximum Value:				32	19.7	44.2	283	80.7
Overall Minimum Value:				27	16.0	6.6	255	72.9

Geotechnical Engineering Report

GW Oliver Road BFI | Statesboro, GA

March 4, 2026 | Terracon Project No. ES255161



Foundation Load Letter

Job:

G.W. Oliver over Little Lotts Creek

Subject:

Foundation Loads - Preliminary

Sheet No. 1 of 1

Designed by: KNK Date: 1/28/26

Checked by: NMB Date: 1/28/26

Bent(s)	Foundation Type	Min. Const. DL (unfactored), kips	Controlling Load	Max. Design Loads, kips						Pile Size	Stress Limits*		Max. Factored Structural Resistance*, kips	Assumed Top of Pile El. (±)	Assumed El. For Point of Fixity (±)	Top of Pile to 100-yr Scour (±)
				Strength Limit		Service Limit		Extreme Event			Compression, ksi	Tension (Severe), ksi				
				Axial	Shear	Axial	Shear	Axial	Shear							
1 & 4	Pile End Bent	44	Max Axial	214	7	145	5	105	5	20" SQ. PSC	4.375	1.150	1252	142.00	120.00	0
			Max Shear	43	11	46	7	54	10							
2 & 3	Pile Bent	66	Max Axial	281	5	218	4	238	5	20" SQ. PSC	4.375	1.150	1252	142.50	100.50	18
			Max Shear	113	9	77	6	70	6							

Notes:

- * From GDOT Bridge and Structures Design Manual (10/3/25) - Table 4.2.2.4-1
- A resistance factor of 0.75 from LFRD 5.5.4.2 was used for compression controlled sections. 28-day concrete strength is 6.5 ksi.
- Bridge consists of a 45'-45'-45' span arrangement.
- Loads are provided per pile at top of pile.
- No scour is assumed at end bents. Total scour is the same at both pile bents (9.30' for 100-yr storm, 13.50' for 500-yr storm).