From: <u>Fischer, Shane</u>

To: SWD Waste; Tafuni, Steven; Madden, Melissa

Cc: Chris Collins; Jacolyn Abdala; Stephen Whaley; Anthony Detweiler; Sarah Metcalfe; Al-Khalaf, Laila

Subject: Lena Road Landfill Annual Site Life Reporting Year 2023

Date: Friday, April 28, 2023 12:59:26 PM

Attachments: Lena Road Landfill Annual Site Life Reporting Year 2023.pdf

EXTERNAL MESSAGE

This email originated outside of DEP. Please use caution when opening attachments, clicking links, or responding to this email.

In accordance with Permit No. 39884-021-SO-01, please find attached the Manatee County Lena Road Landfill Remaining Disposal Capacity and Site Life calculations for Reporting Year 2023.

Please let us know if you have any comments.

Thanks

Shane R. Fischer, P.E.
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SCS ENGINEERS

April 28, 2023 File No. 09217088.28

Florida Department of Environmental Protection Solid Waste Section, MS 4565 2600 Blair Stone Road Tallahassee, Florida 32399

Remaining Disposal Capacity and Site Life - Reporting Year 2023 Subject:

Lena Road Landfill - Manatee County

Permit No.: 39884-021-S0-01

Dear Mr. Jarmolowski:

On behalf of the Manatee County, Solid Waste Division (SWD), SCS Engineers (SCS) has prepared the remaining disposal capacity and site life estimate for the Lena Road Landfill, located in Manatee County, Florida in accordance with Rule 62-701.500(13)(c) and Section 2 - Specific Condition Part C.15.b of the facility's solid waste operation permit. As required by the Specific Condition an aerial topographic survey of the landfill was conducted on January 27, 2023 by Pickett & Associates, Inc. (Pickett) and was used in the preparation of the site life calculations. Please refer to Attachment A for a copy of the Pickett Survey.

Based on the attached calculations, there is roughly 9,038,169 CY of remaining capacity in Stage II which relates to approximately 17.8 years as of the survey date. The anticipated closure year is near mid-2040. Please refer to Attachment B for the remaining life and capacity calculations. If you have any questions regarding the information contained herein, please contact the undersigned at (813) 804-6714.

Sincerely,

Robert Curtis, P.E. **Project Director** SCS Engineers

Shane R. Fischer, P.E. Vice President/Office Manager

SCS Engineers

SRF/RBC:srf

cc: Christian Collins, Manatee County Jacolyn Abdala, Manatee County Stephen Whaley, Manatee County Anthony Detweiler, Manatee County Sarah Metcalfe, Manatee County

This item has been digitally signed and sealed by Shane R. Fischer, PE on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.



ATTACHMENT A

PICKETT AERIAL TOPOGRAPHIC SURVEY FLOWN JANUARY 27, 2023



LIDAR SURVEY REPORT

Lena Road Landfill LiDAR Topographic Survey Manatee County, Florida

Prepared for:

SCS ENGINEERS Environmental Consultants and Contractors

Pickett Project No.: 23-000-1898

Title/Type of Survey: Airborne LiDAR Topographic Survey

Date of Survey: Airborne LiDAR and imagery acquired 01/27/2023

Date of Report: 02/14/2023

NOTE: THIS REPORT AND ACCOMPANYING DIGITAL DATA, ARE NOT FULL AND COMPLETE WITHOUT THE OTHER AND ARE NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

PROJECT DESCRIPTION

Pickett and Associates, Inc. performed an aerial LiDAR topographic survey of the Lena Road Landfill for SCS Engineers. The surveyed site is located approximately 8 miles east of Bradenton, FL as shown in the image below. The goal of this project was to collect LiDAR data to produce map products with absolute horizontal accuracies of 0.3 foot RMSE (calculated as 1/10000 x



Pickett and Associates, LLC

Altitude) or better and absolute vertical accuracies of 0.15 foot RMSE or better (typically 0.25 foot or better at the 95% confidence interval). Digital color imagery was also to be collected to produce an Ortho-mosaic with 3 inch per pixel GSD.



The LiDAR survey area (outlined in yellow above) is approximately 5.5 square miles, with a nominal buffer of 300 feet for the imagery area (outlined in blue above).

LiDAR and imagery were acquired on 01/27/2023 between 11:56am and 12:24pm EST.



Pickett and Associates, LLC

METHODOLOGY:

Pickett and Associates, Inc. performed an airborne LiDAR survey of the project area using our Optech Galaxy T2000 LiDAR sensor and PhaseOne iXU-RS1000 digital camera (100MP).

Sensor parameters as planned for flight:

Flying Height LiDAR 3500' AGL
Air speed 100 knots
Field of View 40° (±20°)
System PRF 600 kHz
Scan Frequency 89 Hz
Power Medium
Roll compensator On

Mean Point Density 15.03 pts/m² on a single pass

Flying Height Imagery 3500' AGL Camera focal length 70mm

DATUM:

HORIZONTAL:

Final coordinates are referenced to the West Zone of the Florida State Plane Coordinate System, North American Datum of 1983, Adjustment of 2011.

VERTICAL:

Final elevations are referenced to the National Geodetic Vertical Datum of 1929, Geoid 12B.

All data is delivered in U.S. Survey Feet.

Airborne data is based on the published values for the Continuously Operating Reference Station (CORS) "GSPS", operated by the Florida Department of Transportation as part of the Florida Permanent Reference Network. Station "GSPS" has a dual-frequency GPS/GLONASS geodetic sensor.

Station "GSPS" Name: Manatee

Latitude: 27° 29' 5.80621" N Longitude: 82° 21' 4.31706" W

Height: -5.608m



LIDAR DATA PROCESSING:

Smoothed Best Estimate of Trajectory (SBET):

Using Applanix POSPac MMS, the initial trajectory of the aircraft was processed together with the static GPS/GLONASS data collected during flight to produce the SBET. Distance from base station reached a maximum of 11.25 km (7 mi). A minimum of 8 GPS, 5 GLONASS and 5 GALILEO satellites were in view and used for processing. The Positional Dilution of Precision (PDOP) did not exceed 1.6 during data acquisition. Resultant Position Error RMS values for north and east were 0.010 m or better, and for down were 0.025 m or better, during data acquisition.

Calibrated Point Cloud:

The range files and SBET were processed using Optech's LiDAR Mapping Suite to create a georeferenced, calibrated point cloud. Initial relative height differences were reported to be 0.03 m or better in the resultant point cloud data for hard surfaces and open areas.

Survey Control and LiDAR Accuracy:

The point cloud was compared to the horizontal and vertical coordinates for seven (7) photo-identifiable points and 25 vertical QC points, all on hard surfaces, and as field-surveyed by Pickett.

Survey control coordinates are based on field surveys using Real Time Kinematic (RTK) A Trimble Rover with multiple occupations on each point was used for redundancy. Local check ties were made to National Geodetic Survey (NGS) Control I75 84 A20 (PID AG8417). Based on redundant measurements to this point, the expected horizontal and vertical positional precision for this survey is _0.10_ feet.

These points were used to refine the vertical accuracy of the overall dataset, with statistical results shown below. For horizontal accuracy, the control points were compared to the location of the PID points, which are seen in the TIN view of intensity data.

No. Points	Average Z Error	RMSE₂ of Sample	Absolute Vertical Accuracy (95% Confidence Level)
32	0.000′	0.059'	0.115′

All control points are listed in Exhibit 'A'.

Final overall point density of the LiDAR point cloud within the area to be feature-coded is 3.14 points per square foot (33.8 points per square meter).



Pickett and Associates, LLC

Feature-Coding and Planimetrics:

The point cloud was used to generate a digital surface terrain model and 1-foot contours of the project area. Planimetrics of visible man-made features and Hydro-enforced breaklines were also produced.

Orthometric Imagery:

Aerial imagery was acquired at an altitude of 3000 feet to create orthometric imagery with a Ground Sample Distance (GSD) of 3 inches per pixel. The imagery was compared to the PID points and found to be within 2 pixels (0.5 foot).

DELIVERABLES:

- AutoCAD Civil3D drawing file (*.dwg format)
 - o Digital surface
 - o Contours, 1-foot interval
 - Spot Heights
 - Planimetrics of visible man-made features
 - Hydro-enforced breaklines (water courses greater than 20 feet wide)
- Ortho-mosaic, 3" GSD (*.ecw or *.tif format)
- This Certified Survey Report

Craig Emrick, P.S.M.

Florida Registration No. 6451 Pickett and Associates, LLC.

Florida Registration No. LB 364

January 27, 2023

Aerial Survey Date

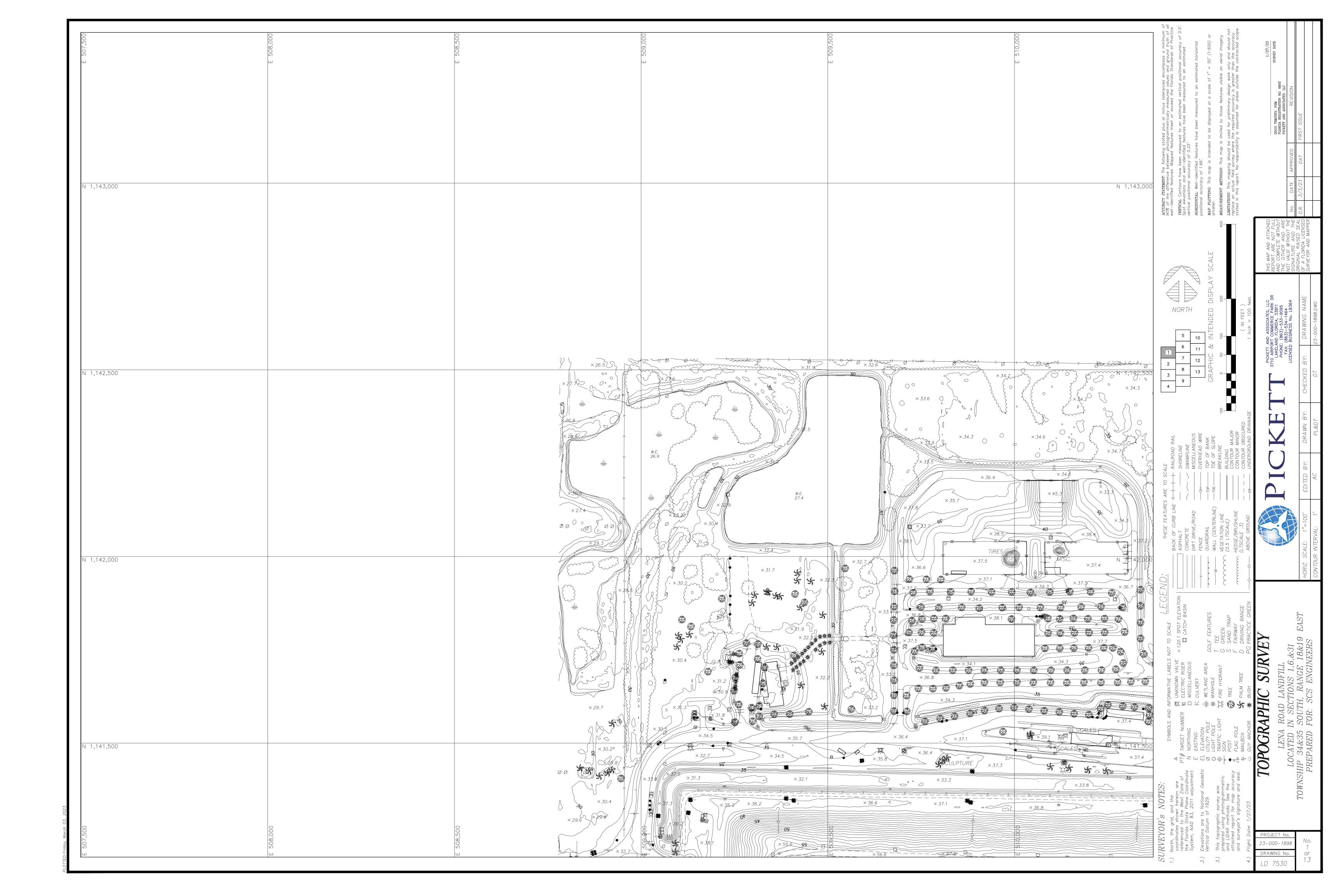


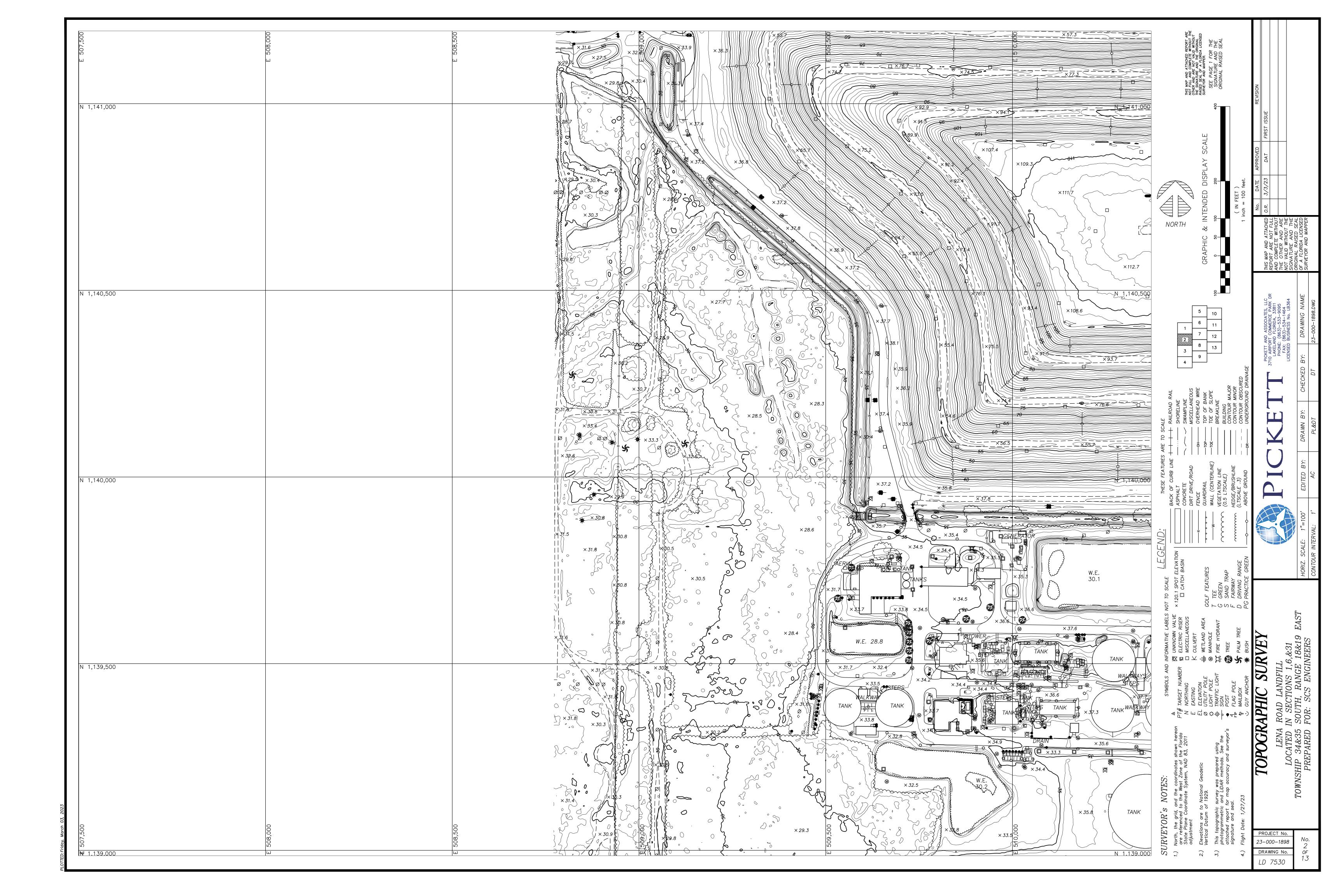


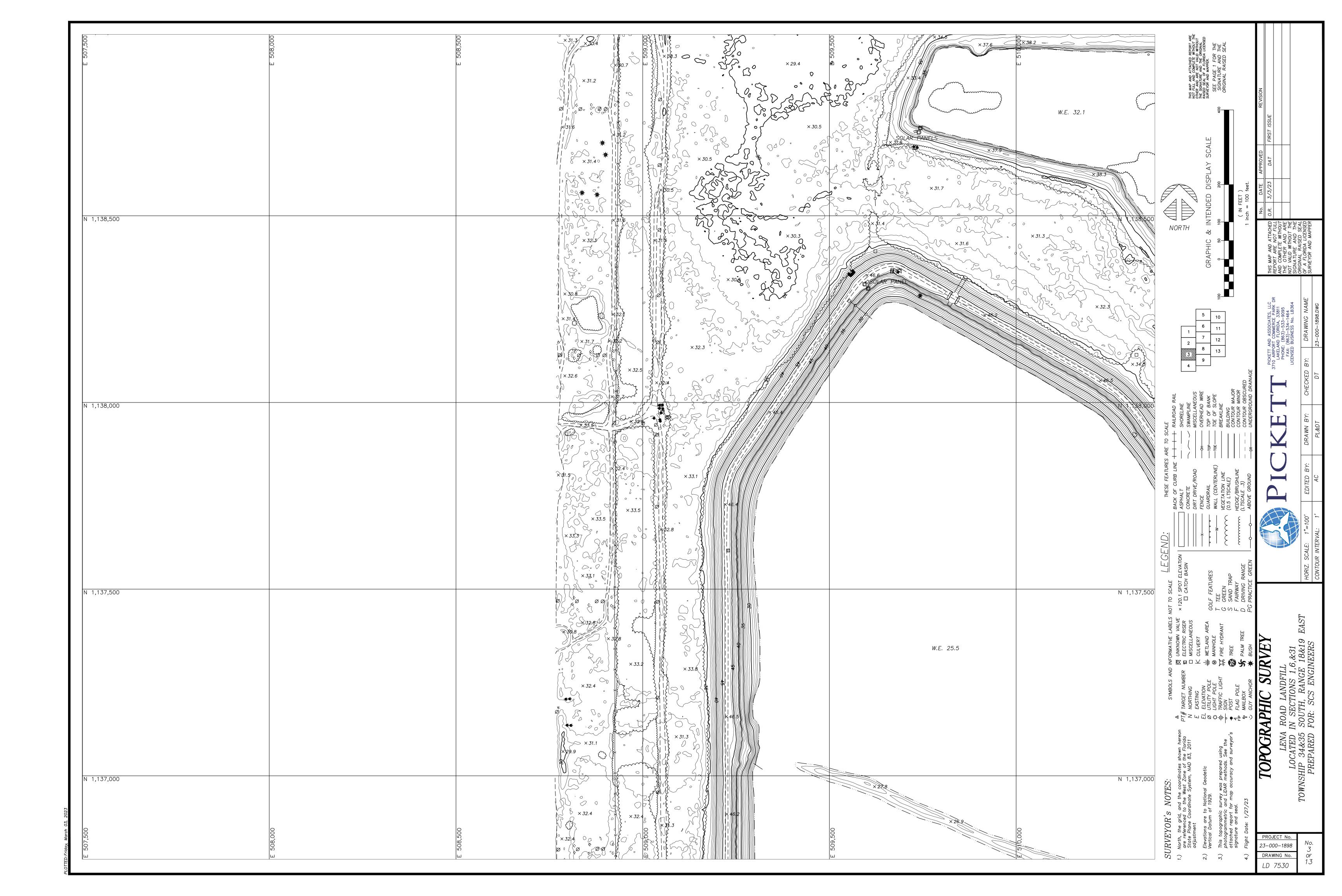
Exhibit 'A' - Survey Control

Point	Easting	Northing	Elevation	Description	
T-1	509165.88	1141545.95	33.96	Aerial Cross Target	
PID-1	511092.73	1138428.30	38.90	SE Corner of Stop Bar	
PID-2	513590.75	1138562.79	40.93	Center of Manhole Cover	
PID-3	513482.01	1144105.55	38.32	Corner of Concrete Base	
PID-4	512336.06	1144330.78	39.12	Corner of Concrete Base	
PID-5	508797.91	1146038.75	22.80	Corner of Sidewalk	
PID-6	514071.03	1145790.59	30.64	Corner of Sidewalk	
8014	509135.43	1141516.52	34.53	Vertical QC	
8015	509157.94	1141518.32	34.61	Vertical QC	
8016	509179.19	1141518.91	34.68	Vertical QC	
8017	509203.26	1141519.01	34.79	Vertical QC	
8018	509226.43	1141519.06	34.89	Vertical QC	
8028	511220.47	1138440.51	38.93	Vertical QC	
8029	511130.98	1138440.83	38.92	Vertical QC	
8030	511153.29	1138440.66	38.92	Vertical QC	
8032	511197.78	1138440.56	38.96	Vertical QC	
8036	511175.76	1138440.43	38.91	Vertical QC	
8041	513576.39	1138642.32	43.74	Vertical QC	
8042	513581.94	1138668.11	43.92	Vertical QC	
8043	513583.23	1138695.43	43.95	Vertical QC	
8050	513563.88	1138617.93	43.63	Vertical QC	
8054	513583.35	1138724.35	43.89	Vertical QC	
8056	513603.37	1143009.94	40.79	Vertical QC	
8057	513603.21	1142983.54	40.83	Vertical QC	
8058	513603.21	1142959.85	40.99	Vertical QC	
8059	513602.86	1142935.99	40.96	Vertical QC	
8065	513602.81	1143036.81	40.78	Vertical QC	
8070	512383.85	1144186.22	39.71	Vertical QC	
8071	512383.86	1144210.03	39.73	Vertical QC	
8072	512383.95	1144233.72	39.76	Vertical QC	
8073	512383.55	1144255.04	39.78	Vertical QC	
8074	512385.84	1144276.19	39.78	Vertical QC	

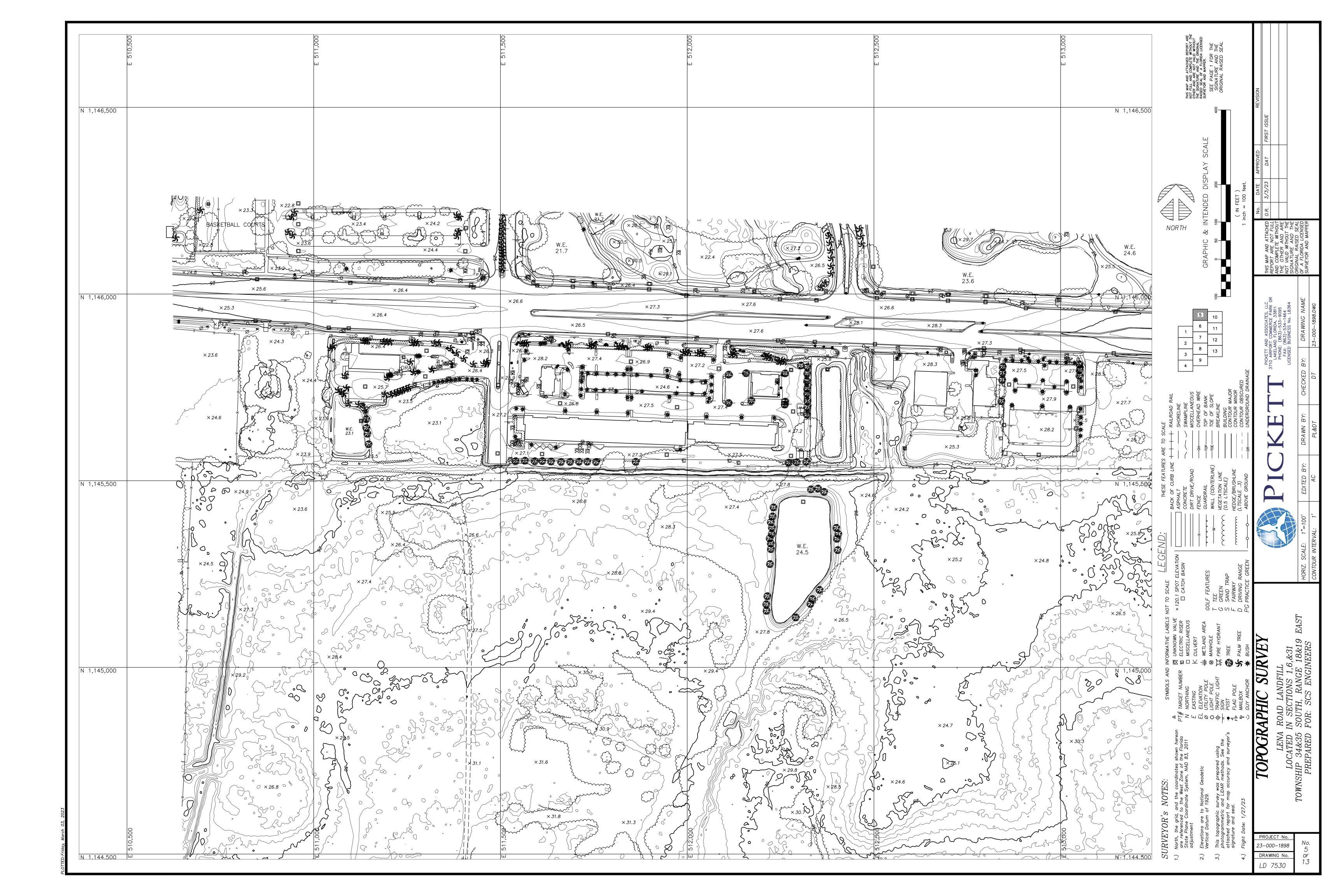


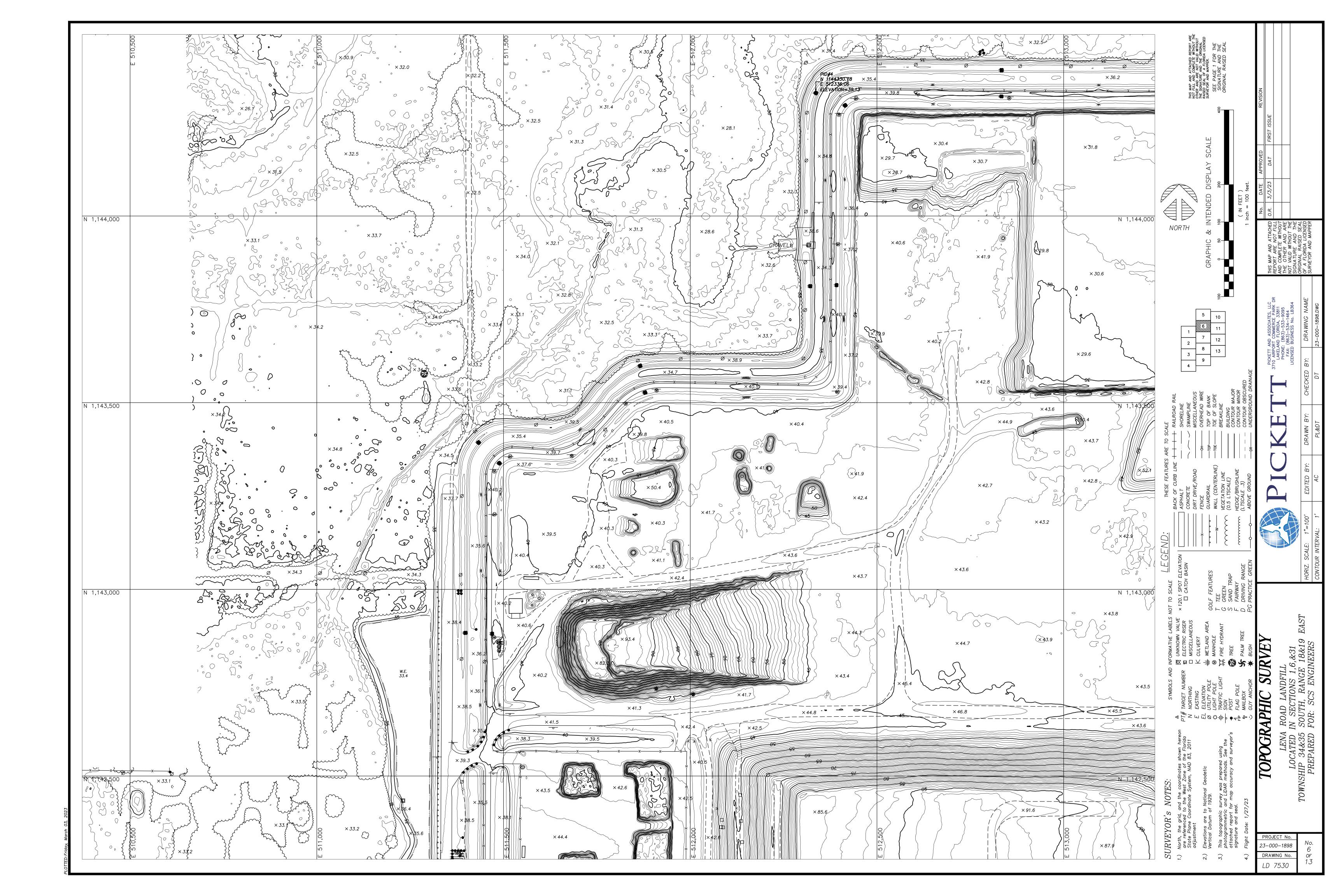


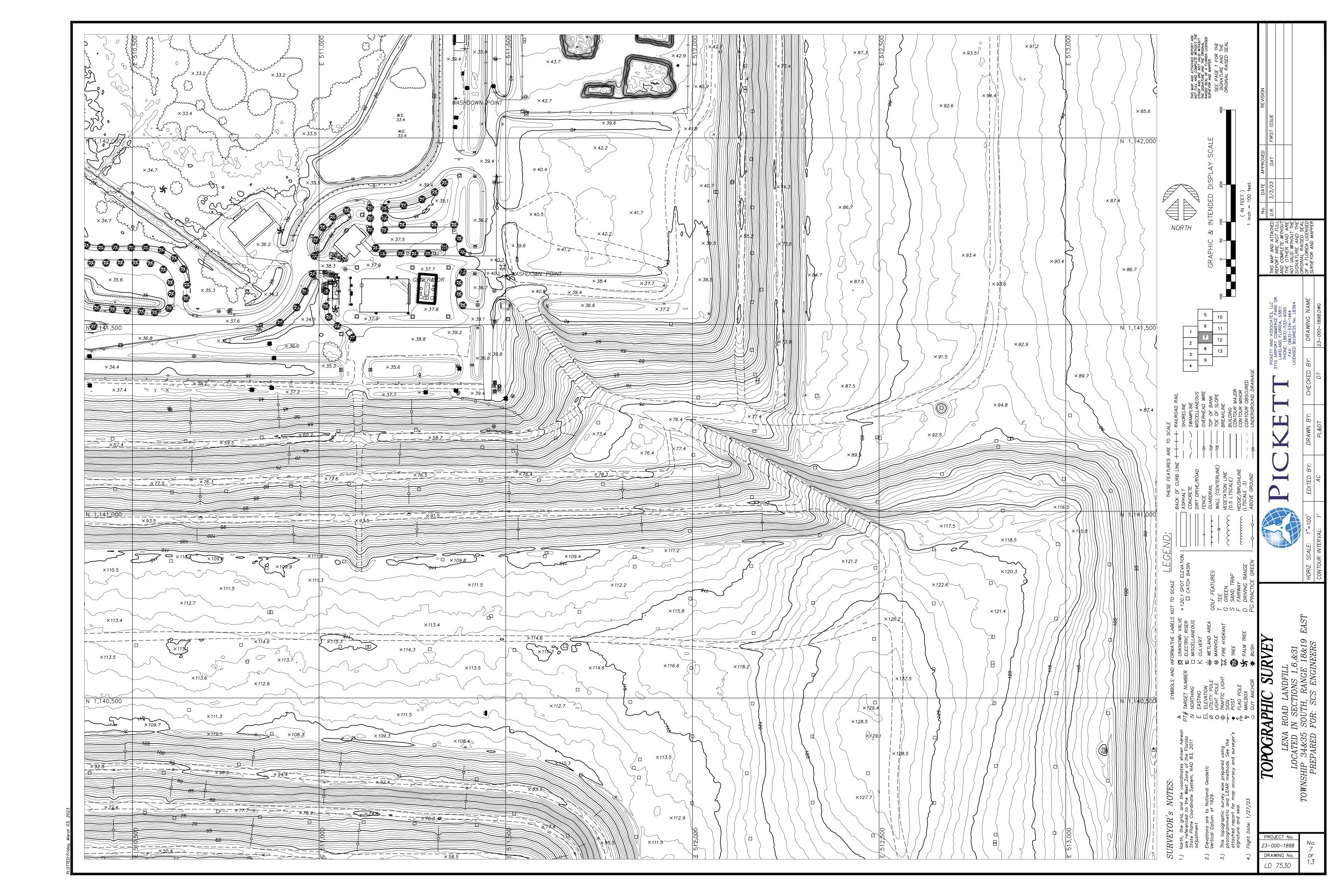


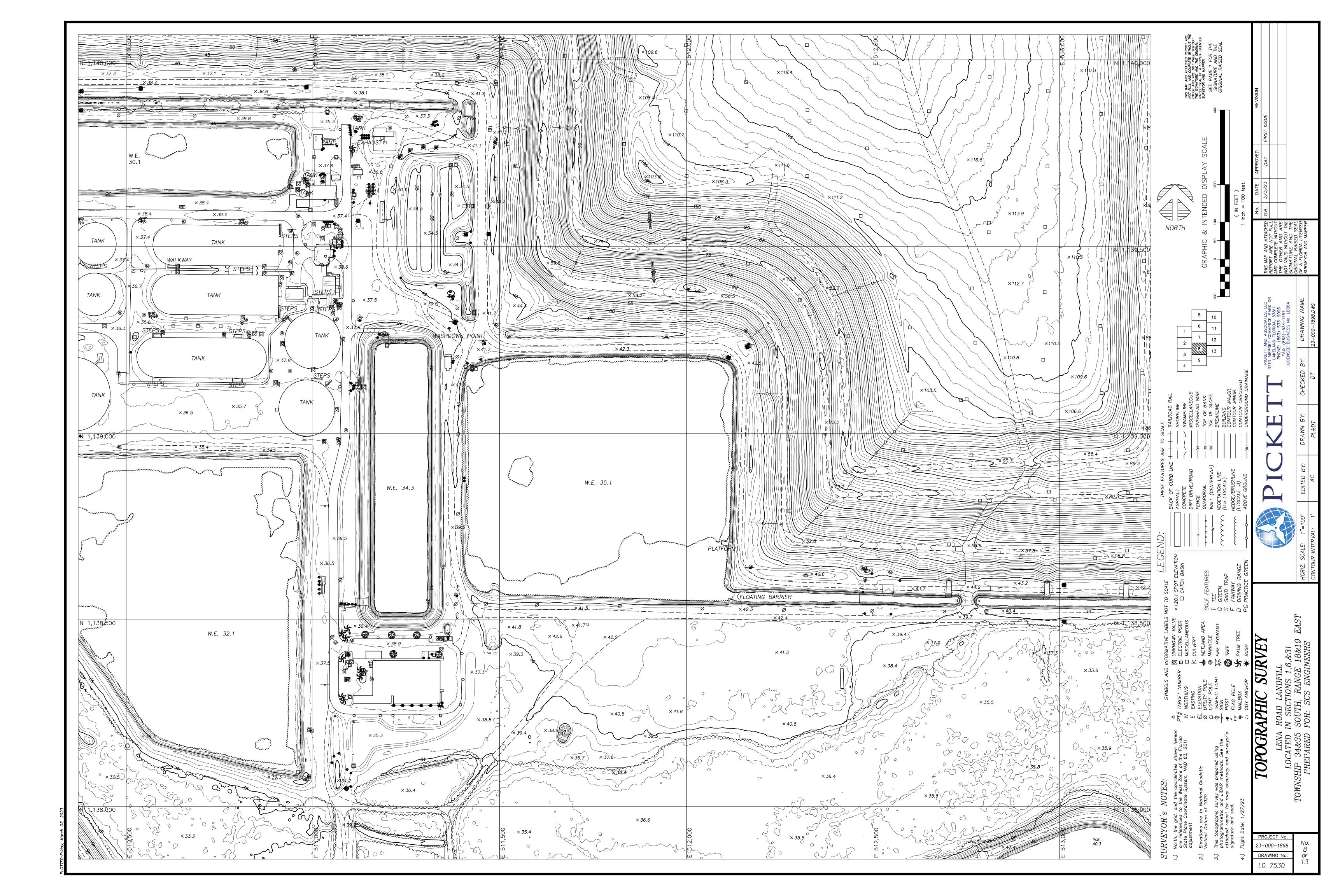




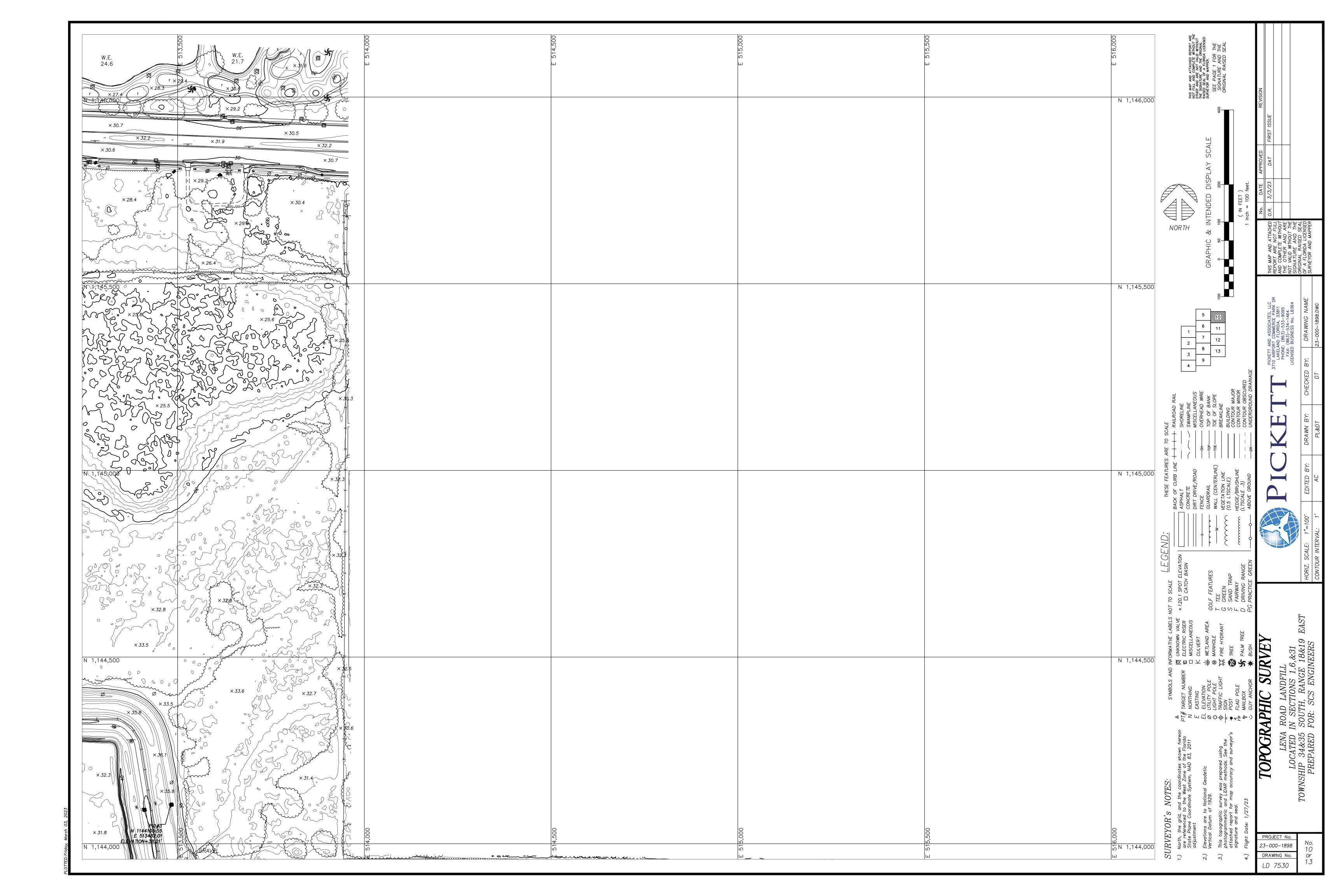


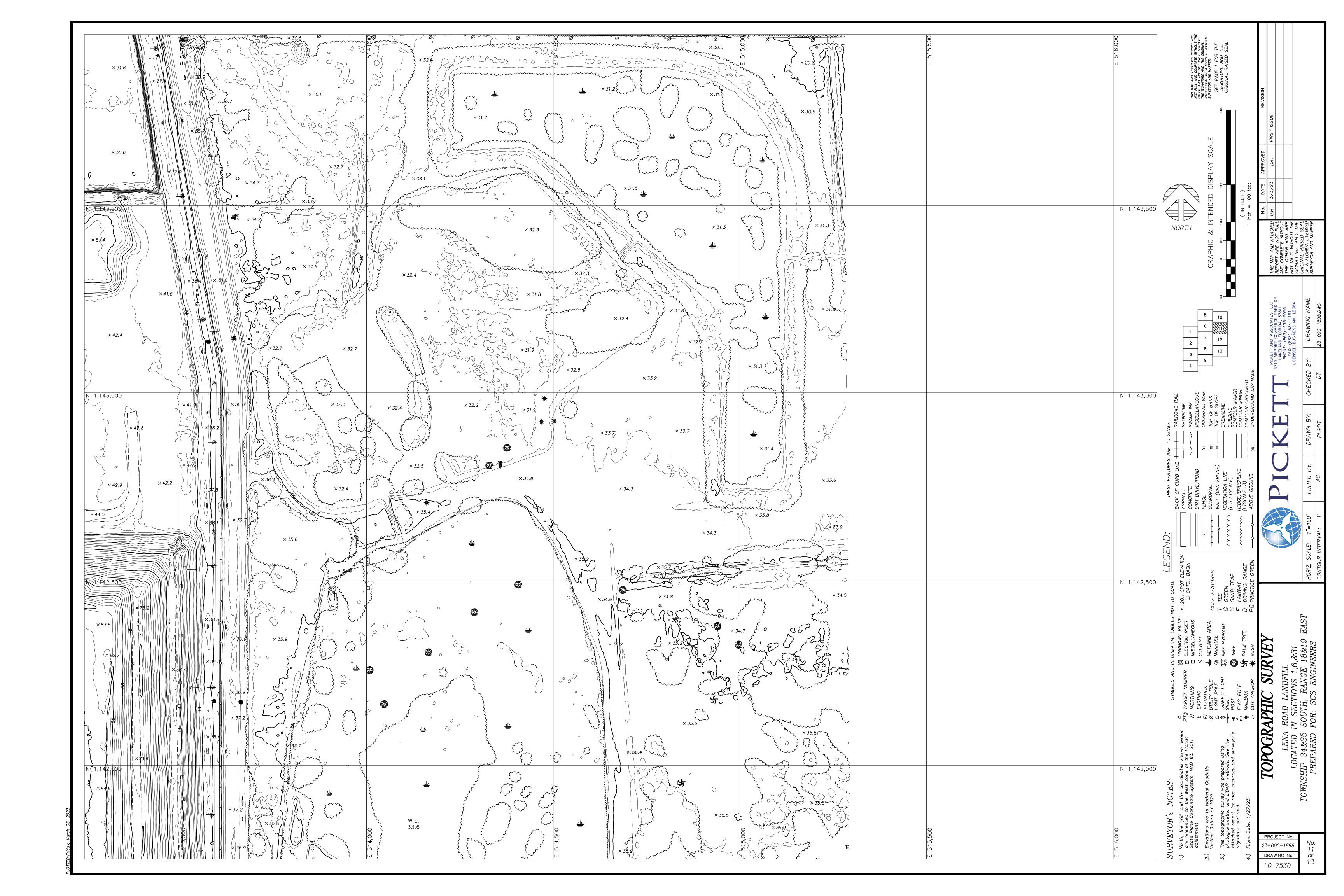


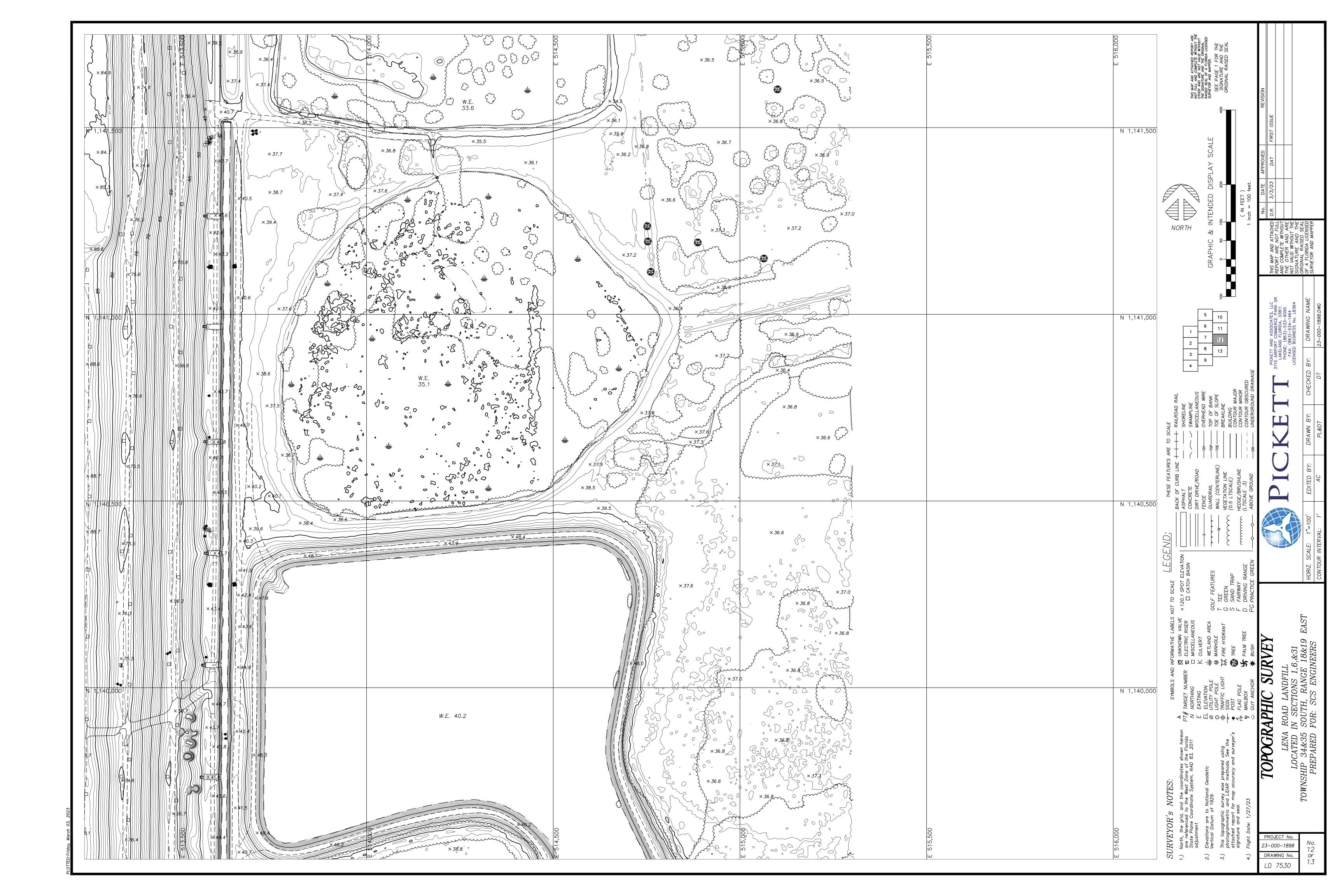














ATTACHMENT B REMAINING LIFE AND CAPACITY CALCULATIONS

	SCS ENGINEERS				
		SHEET	1	OF	1
CLIENT	PROJECT		JOB NO.		
Manatee County	Lena Road Landfill Site Life Calculation:	S	09217088.28		
SUBJECT		BY		DATE	
Projected Remaining Capacity and Site Life - 5 Year Average		SRF		4/28/2023	
Lena Road Landfill		CHECKED		DATE	
		RBC		4/28/2023	

	Historical	Volume	Apparent
Reporting	Tonnages	Used	Density
Year	(Tons) ¹	(CY)	(lbs/CY)
2019	292,722.41	480,380	1,218.71
2020	330,794.09	477,956	1,384.20
2021	300,284.89	510,892	1,175.53
2022	351,397.09	507,849	1,383.86
2023	381,174.26	563,853	1,352.03
	5-Year Average =	508,186	1,302.87

5-Year Average Density = 1,302.87 Lbs / CY

Volume Consumed

Between 1/31/22 and 1/27/23 = 563,853 CY

Average Volume Consumed (5-Year Average) = 508,186 CY

Remaining Volume For Waste Placement (Final Closure Cap System Removed)

Remaining Volume as of 1/31/22 = 9,602,023 CY

Remaining Volume as of 1/27/23 = 9,602,023 CY - 563,853 CY = 9,038,169 CY

Remaining Capacity as of January 27, 2023

Remaining Years of Life From 1/27/23³ = 9,038,169 / 508,186 = 17.8 Years

Year of Closure = 2040.8

Notes:

- 1 Waste received for this reporting year is the amount reported by Manatee County from scale data reports for full months, estimated by SCS for partial months.
- 2 Volume remaining based on calculating airspace between top of waste elevation and January 27, 2023 topographic survey using AutoCAD 3D.
- 3 Remaining life is calculated by dividing the average volume consumed per year into remaining volume for waste placement.