



The Department of Planning and Development Services

City Hall | 16 Colomba Road | DeBary, FL 32713

Development Review Committee (DRC) Meeting

Tuesday, June 6th, 2023 – 9:30 AM

DRC AGENDA

1. CALL TO ORDER
2. ROLL CALL
3. APPROVAL OF MINUTES
 - DRC meeting on May 16th, 2023
4. NEW BUSINESS
 - **Case # 23-01-ODP-Highbanks Townhomes**; *First Review*, Applicant is requesting approval of an Overall Development Plan for a new residential development in the Glen Abbey PUD, consisting of 126 townhomes.
 - **Case # 23-01-CPA-450 South Charles Richard Beall**; *First Review*, Applicant is requesting review of a Comprehensive Plan Future Land Use Map (FLUM) Amendment to amend the City's FLUM to reclassify the property addressed as 450 South Charles Richard Beall Boulevard from Commercial/Retail to Industrial/Service.
 - **Case # 23-01-REZ-450 South Charles Richard Beall**; *First Review*, Applicant is requesting review of a Zoning Map Amendment to change the zoning classification of the property addressed as 450 South Charles Richard Beall Boulevard from B-3 (Shopping Center) and I-1 (Light Industrial) to exclusively I-1.
5. ADDITIONAL BUSINESS:
6. DISCUSSION:
7. ADJOURNMENT:

DISTRIBUTION:

Technical Review Staff:

- Steven Bapp, AICP, *Growth Management Director - Planning and Zoning (SBapp@DeBary.org)*
- Joseph Barker, *Senior Planner - Planning and Zoning (JBarker@DeBary.org)*
- Kayla Burney, *Planning Technician - Planning and Zoning (KBurney@DeBary.org)*
- Kevin Hare, *Construction Manager (KHare@DeBary.org)*
- Amy Long, *Deputy Public Works Director (ALong@DeBary.org)*
- Chad Qualls, *Public Works Superintendent (CQualls@DeBary.org)*
- Robert Scott, *Orange City Fire Department (RScott@ourorangecity.com)*
- Merylene Thomas, *Senior Planner - Planning and Zoning (MThomas@DeBary.org)*
- Richard Villasenor, *City Engineer (RVillasenor@DeBary.org)*
- Steve Wood, *Building Inspector (Buildingofficial@DeBary.org)*
- E-Sciences, *Environmental Management Consultant (troberts@res.us)*
- Fishback Dominick, *Legal Consultant (DLangley@fishbacklaw.com)*
- SurvTech Solutions, *Surveying Consultant (rfowler@survtechsolutions.com)*
- TEDS, *Transportation Consultant (FerrellFred@stanleygroup.com)*
- Volusia County Utilities, *Utilities (ErinReed@volusia.org)*

PLEASE NOTE: Each DRC project on the agenda will take approximately 30 minutes unless otherwise noted.

APPLICANT(S): Please plan to attend the DRC meeting to discuss your project and review the comments with reviewers. Individuals with disabilities needing assistance to participate in any of these proceedings should contact the City Clerk at least three (3) working days in advance of the meeting date and time at (386) 601-0219.



**City of DeBary
Development Review Committee Meeting
May 16, 2023 - MINUTES**

CALL TO ORDER:

The meeting of the City of DeBary Development Review Committee was called to order by Steven Bapp, Growth Management Director, at 9:30 am.

DRC MEMBERS PRESENT:

Steven Bapp, City of DeBary
Robert Scott, Orange City Fire Department
Amy Long, City of DeBary
Richard Villasenor, City of DeBary
Steve Wood, City of DeBary

OTHERS PRESENT:

Joseph Barker, City of DeBary
Phyllis Butlien, City of DeBary
Christopher Karl, Orange City Fire Department
Stephen Maxwell
Chad Qualls, City of DeBary
Carmen Rosamonda, City of DeBary
Shari Simmans, City of DeBary
Richard Zwolak, WSP

APPROVAL OF MINUTES:

Amy Long made a motion to approve the May 2, 2023 DRC Meeting Minutes, seconded by Richard Villasenor. The motion was approved by a 5-0 vote.

ADDITIONS, DELETIONS, OR AMENDMENTS TO THE AGENDA:

None

OLD BUSINESS:

None

NEW BUSINESS:

Duke Energy IPUD Amendment

Project # 22-02-MAJPUD-Duke Energy Hydrogen

Richard Zwolak of WSP, a representative for the applicant, came forward to speak.

Robert Scott made a motion to recommend approval of the major PUD amendment, seconded by Richard Villasenor. The motion passed by a 5-0 vote.

30 Sanctuary Avenue Garage Apartment

Project # 23-01-SE-30 Sanctuary

Stephen Maxwell, the applicant, came forward to speak.

Richard Villasenor asked if a permit from the Health Department for expanding the drain field has been obtained. Mr. Maxwell stated he has contacted the Health Department, but a permit has not been issued yet. Mr. Villasenor stated confirmation from the Health Department of the permit will be necessary.

Mr. Villasenor asked Mr. Maxwell if he has discussed the issue of the driveway apron with the St. John's River Estates Homeowners Association. Mr. Maxwell stated the Homeowners Association is not requiring an additional driveway apron.

Chairman Bapp stated that elements such as window size will be addressed during the building permit process.

Christopher Karl asked if the culvert would be able to sustain the weight of a fire truck. Mr. Maxwell stated it can.

Richard Villasenor made a motion to recommend approval of the special exception, seconded by Amy Long. The motion passed by a 5-0 vote.

ADJOURNMENT:

The meeting was adjourned at 9:41 AM.



DRC 6-6-2023

Subject Case # 23-01-ODP-Highbanks Townhomes

Applicant: George Stredonsky Trust

Application Summary:

The applicant is requesting approval of an Overall Development Plan for 126 Townhome units off of East Highbanks Road.

Planning & Zoning

Joseph Barker, Senior Planner, AICP Candidate

Regarding Case # 23-01-ODP-Highbanks Townhomes, staff offers the following comments.

1. Comprehensive Plan Review:

Staff has reviewed the application against the policies contained within the City's Comprehensive Plan (Plan) to determine compliance with the Plan, and consistency with the City's Land Development Code.

A. Management of Natural Resources

The goal of the City's Management of Natural Resources element is to facilitate the proper management of natural resources through their appropriate conservation, protection and use, consistent with the desired growth and development of the community to ensure the highest environmental quality possible.

(1) Please see comments from Environmental Management.

(2) Data provided by Volusia County indicate this site is within the Gopher Tortoise Overlay and is a Scrubjay natural community. Please see comments from Environmental Management.





B. Future Land Use

The goal of the City's Future Land Use element of the Plan is to facilitate the development and use of land, including permanent open space, in an organized arrangement which supports the appropriate development of the overall community, including an efficient multi-modal transportation system that enhances the well-being of the City's residents and businesses.

(1) Consideration of the City's 5-year Capital Improvement Program (CIP) should be considered. There are multiple projects within the CIP that could be impacted by this development, including the East Highbanks right-turn-lane.

(2) The current R/MD classification was designated to this area in 2010, during the City's required Comprehensive Plan Evaluation and Appraisal Report (EAR). The R/MD boundary was drawn with the intent to align with the multifamily land use designation of the Glen Abbey PUD, according to the City's EAR report. However, no clear land use designation boundaries are depicted in the Glen Abbey PUD. This issue is further compounded by the constructed Glen Abbey roadway network differing significantly from what was depicted on the original Master Development Plan. Objective 5.4 states in regard to the FLUM that, for interpretation purposes and where appropriate, the boundary line(s) may be interpreted as being located within 600 feet of the actual scaled location in order to ensure that such line follows a logical boundary, such as a road, railroad, water course, property line, etc. Where there is a question as to the actual location of a boundary, the City Council will make the final determination.

City Staff has interpreted as the R/MD classification applying to the entire property, and finds the proposed use is acceptable. Townhouses are permitted in R/MD with a maximum net density of 14 dwelling units per acre. This project would be roughly 10 dwelling units per acre.

(3) Regarding impact on the natural environment, please refer to comments from Environmental Management. Please note that architectural elevations will need to be submitted to ensure compatibility in appearance with the overall community (Glen Abbey). These may be submitted during the Preliminary Plat & Construction Plan application. Consideration will need to be given in regard to pedestrian connectivity and accessibility.





C. Transportation

The goal of the City's Transportation element is to facilitate the development of a safe, cost-effective, coordinated, connected, energy efficient, multimodal transportation system for the movement of people and goods to benefit the social, economic and physical development of the City and to reduce greenhouse gas emissions and vehicle miles of travel.

- (1) Please see comments from Transportation.**
- (2) Please see comments from Transportation.**
- (3) Proper consideration must be given to the development of appropriate facilities.**
- (4) Consideration should be given to creating bicycle and pedestrian connections to U.S. Highway 17/92.**

D. Public Facilities Infrastructure

The goal of the City's Public Facilities Infrastructure element is to facilitate the development of adequate public infrastructure to serve the appropriate growth and development of the City, and with appropriate consideration to managing important natural resources.

- (1) Please see comments from Volusia County Utilities.**
- (2) Please see comments from Volusia County Utilities.**
- (3) Please see comments from Engineering.**

E. Recreation & Culture

The goal of the City's Recreation & Culture element is to facilitate the availability of recreational and cultural activities and to enhance the overall quality of life of the residents of the community; to facilitate the provisions of adequate facilities and programs through close cooperation between the City, community groups, and businesses.





- (1) This project would not push the City LOS standard for parks beyond the adopted threshold and the proposed project contains a 0.30-acre amenity center.**

F. Housing

The goal of the City's Housing element is to cooperate with the public and private sectors to ensure an adequate supply of affordable housing to support the appropriate future development of the City.

- (1) The potential need for affordable housing should be considered in evaluating this project.**

G. Capital Improvements

The goal of the City's Capital Improvements element is to facilitate the efficient provision of public facilities through coordination between needs and resources and through coordination between capital projects plans and the community's objectives as set forth in this Plan.

- (1) According to the 2022-2023 School Year LOS Chart (revised 3/1/2023), DeBary Elementary's utilization rate with reserve was 116.5% for the current year. For the 2023-2024 School Year, it is projected to be 124.1%. The established regulatory LOS is 115%. For more information regarding public school facility capacity, please see Chapter 12 of the Plan.**

For all other elements of the Plan not discussed in this report, the project has been determined to be consistent with those elements.

2. Land Development Code Review:

The proposed project has been reviewed against the provisions of the City's Land Development Code (LDC). This property is zoned Planned Unit Development (PUD), Swallows Golf and Country Club. Thus, the project is subject to the zoning regulations prescribed in Volusia County Resolution # 1978-96, specifically the Swallows Golf and Country Club Development Agreement (DA). This PUD is commonly referred to as "Glen Abbey" and will be referenced as such herein.



A. Zoning Classification

(1) **Section 1 of the DA requires Glen Abbey to be developed in accordance with the Community Development Plan (CDP). The CDP indicates this area to be multi-family residential.**

(2) **Please correct Sheet C5.0.:**

- Maximum number of units: 526. The proposed number of units is 126
- Maximum height: 2 stories/35 feet, whichever is less. The proposed project meets this requirement.
- Minimum length of buildings: 200 feet. The proposed project meets this requirement.
- Minimum required floor area:
 - 750 square feet for a one-bedroom unit
 - 950 square feet for a two-bedroom units
 - 950 square feet plus an additional 150 square feet for each additional bedroom for units larger than 950 square feet.
- Minimum spacing between buildings:
 - Side to side: 25 feet. **Multiple buildings fail to meet this requirement.**
 - Side to front or rear: 50 feet.
 - Front to front: 50 feet.
 - Rear to rear: 50 feet. **Multiple buildings fail to meet this requirement.**
 - Front to rear: 85 feet.
 - Setback from parking areas: 10 feet.
 - Setback from public right-of-way: 50 feet. **Multiple buildings fail to meet this requirement.**
 - Setback from private drives: 30 feet. **Multiple buildings fail to meet this requirement.**
 - Setback from project perimeter boundary line: 50 feet. **Multiple buildings fail to meet this requirement.**
- Minimum number of parking spaces: 2 spaces per dwelling unit. **252 parking spaces are required. Only 48 are provided.**
- Minimum setbacks from parking areas and interior drives: 10 feet from perimeter boundary line.





- (3) For this project to be approved in its current form, a major PUD amendment would be necessary. Please see LDC Chapter 3, Article III, Division 3, Section 3-108 for more information.**

B. Supplementary Regulations

- (1) Please provide the total area of the buildings so that staff may evaluate the project against the requirements of LDC Chapter 3, Article III, Division 4, Section 3-129(8).**
- (2) Please provide bicycle spaces as required by LDC Chapter 3, Article III, Division 4, Section 3-129(10).**
- (3) Please note there shall be no discharge of liquid or solid wastes into any public or private sewage disposal system, or into or on the ground, or into any stream, waterway, water body or drainage canal, nor any accumulation of any liquid or solid wastes, in violation of the applicable provisions of the Comprehensive Plan, chapter 4 of the LDC, or applicable state standards.**

C. Overall Development Plan Requirements

Please provide the following existing site details in accordance with LDC Chapter 4, Article II, Division 2, Section 4-44.:

- (1) Vicinity map at a scale no smaller than one inch equals 2,000 feet with sufficient information to locate the property in the field.
- (2) Current zoning and existing uses of subject property and of adjacent and surrounding properties.
- (3) Proposed location of water and wastewater treatment facility lines.
- (4) Total linear feet in streets.
- (5) Property lines, rights-of-way, pavement widths, easements, streets, driveways, railroads, utility transmission lines, storm sewers, ditches and culverts, sanitary sewers, water mains, bridges, buildings, bulkhead and bulkhead lines.
- (6) Currently wooded areas.





Public Works Department
Amy Long, Deputy Public Works Director

Comments are forthcoming.

Fire Services
Robert Scott, Fire Marshal

1. Water line are shown on plans, but doesn't show any Fire Hydrants placement. Provide details on Fire Hydrants and Fire Flow requirement per the Florida Fire Prevention Code 7th ED of NFPA 1 Chapter 18 Section 18.1.3.2 and 18.4 for review.
 2. Page C1.0 shows dead-end roads. Provide details on distance length of roadways. The Florida Fire Prevention Code 7th ED of NFPA 1 Chapter 18 Section 18.2.3.5.4.
 3. Provide CAD Drawings for turning radius. The Florida Fire Prevention Code 7th ED of NFPA 1 Chapter 18 Section 18.2.3.5.3.
 4. Plans don't show any Fire Lanes. Provide details to meet the Florida Fire Prevention Code 7th ED of NFPA 1 Chapter 18 Section 18.2.3.6.3.
-

Engineering
Richard Villaseñor, P.E., City Engineer

Comments are forthcoming.

Building Department
Steve Wood, Building Official

Comments are forthcoming.





Volusia County Utilities

Erin Reed, PhD, P.E., Water & Utilities Senior Engineer

VCU has reviewed the submittal below and has the following comment:

1. Please show the connections to existing water and sewer. Connection to the VCU potable water main will need to include a master meter per VCU standards. Reclaimed water is not available to this site.

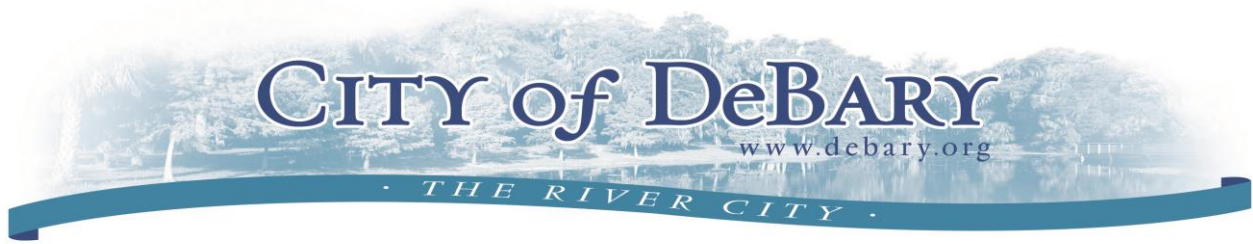
Environmental Management

Tom Roberts, Regional Science Manager, RES

RES Florida Consulting, LLC d/b/a E Sciences (E Sciences) has reviewed the 18 digital files provided by Joseph Barker, Planner II, City of DeBary (City) relating to the Highbanks Townhomes Overall Development Plan (ODP) Review – 1st submittal, a proposed ~18-acre development located on E Highbanks Road in DeBary, Florida. This review is focused on wetland, tree ordinance, and protected species compliance. Listed below are questions/comments generated by this review:

1. Per Sec 5-88, Please show the designated tree protection areas on sheets L0.50, L0.51 and L0.52. Additionally, please include the square footage calculations of each designated tree protection area.
2. Per Sec 5-93, Please provide a table detailing tree replacement and mitigation calculations for the on-site trees scheduled for removal.
3. Please provide a landscape and irrigation plan for the site.
4. Multiple wetlands appear to be located on the site and in the footprint of development. Additionally, there is a proposed stormwater pond located on the west side of the site. Please provide a copy of the St Johns River Water Management District (SJRWMD) ERP permit obtained for the site.
5. The site contains suitable habitat for gopher tortoise and Florida scrub-jay according to a map produced by Volusia County and accessible through their website. Therefore, a Biological Report addressing the wetlands, gopher tortoise, scrub-jay, and other protected species will be required.





Surveyor

Ryan Fowler, Surveyor, SurvTech Solutions

No comments have been received.

Transportation

Tanya King, PE, Senior Transportation Engineer, TEDS

1. Although the E Highbanks Road segment does not meet the required 5% impact threshold, this roadway provides direct access to the property and therefore should be included in the study analysis. Please include this segment in the study analysis.
2. On page 6, Data Collection, include count data will be collected when school is in session and not on an early release day.
3. On Page 6, Analysis Scenarios, the existing Year is 2025. Please clarify when the existing counts will be collected and change this date to reflect that year
4. On page 7, Documentation, include that a copy will be submitted to Volusia County for review.

END OF COMMENTS

A written response to each of the above comments will be required when revisions are re-submitted to the City. Please be advised that additional comments may be forthcoming after a review of the revised plan set has been completed.

If you should have any questions, please feel free to contact me at 386-601-0203.

Steven Bapp, AICP

Sbapp@debary.org

Director of Growth Management

City of DeBary



OVERALL DEVELOPMENT PLANS FOR Highbanks Townhomes

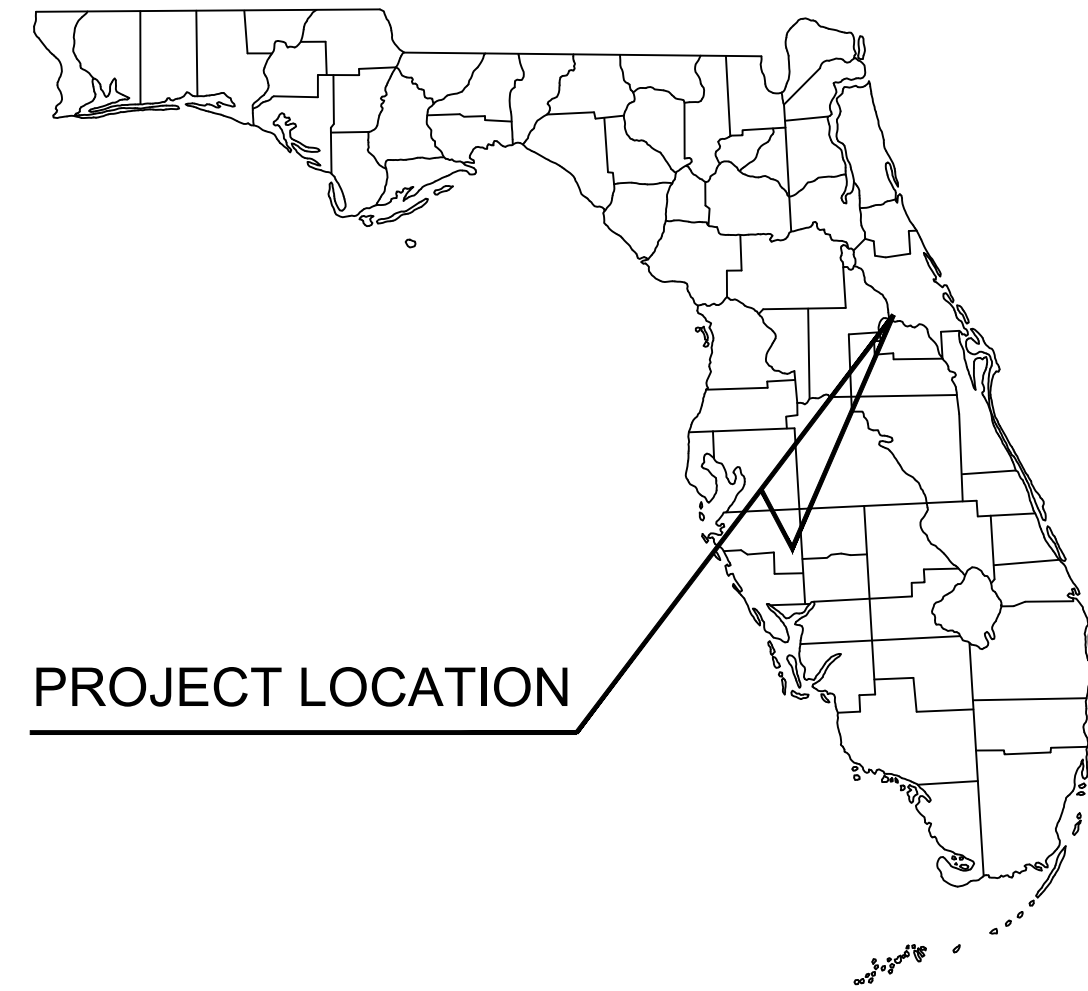
DEBARY, FLORIDA

April 7, 2023

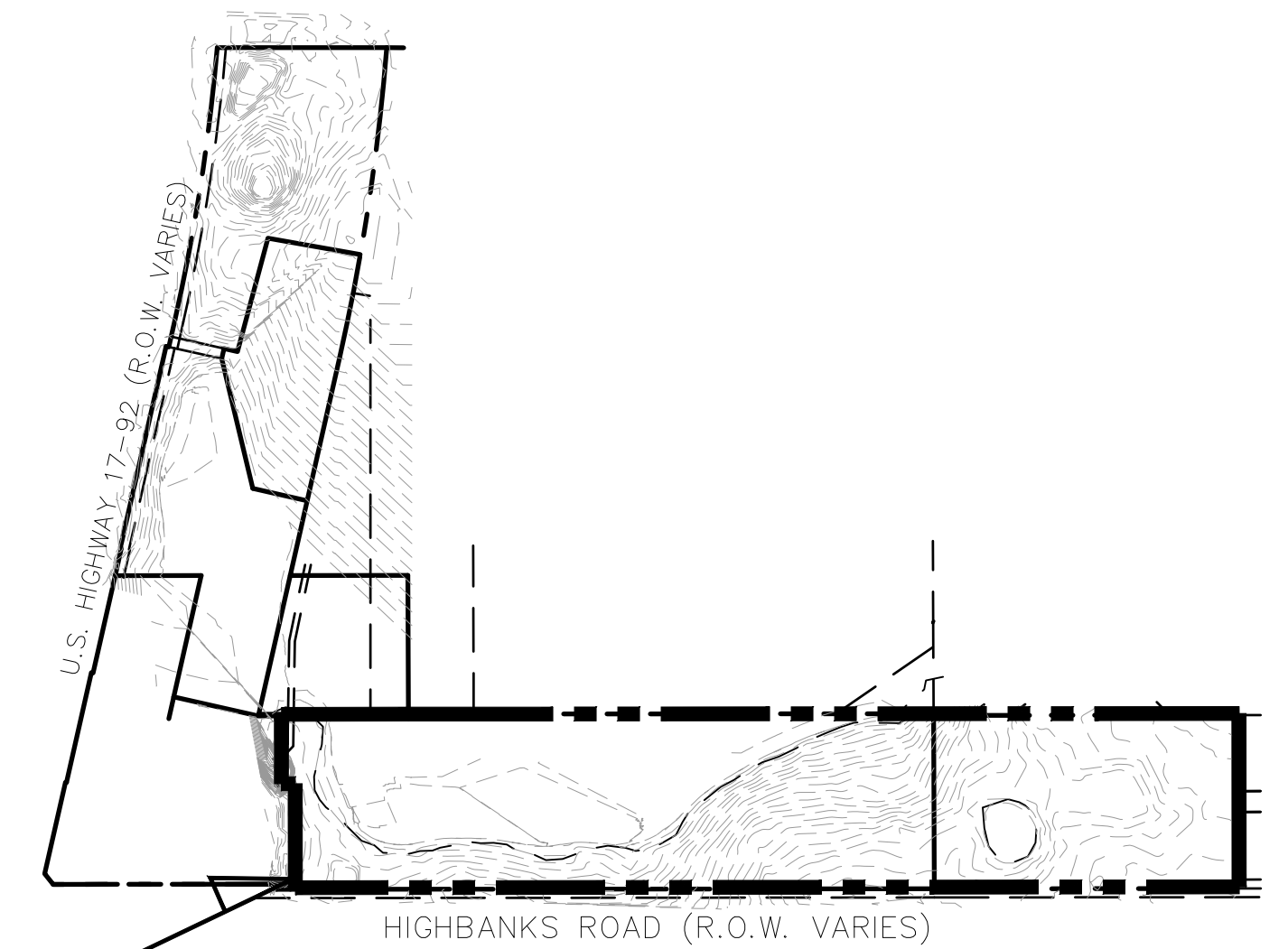
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80-26-00-00-00-65



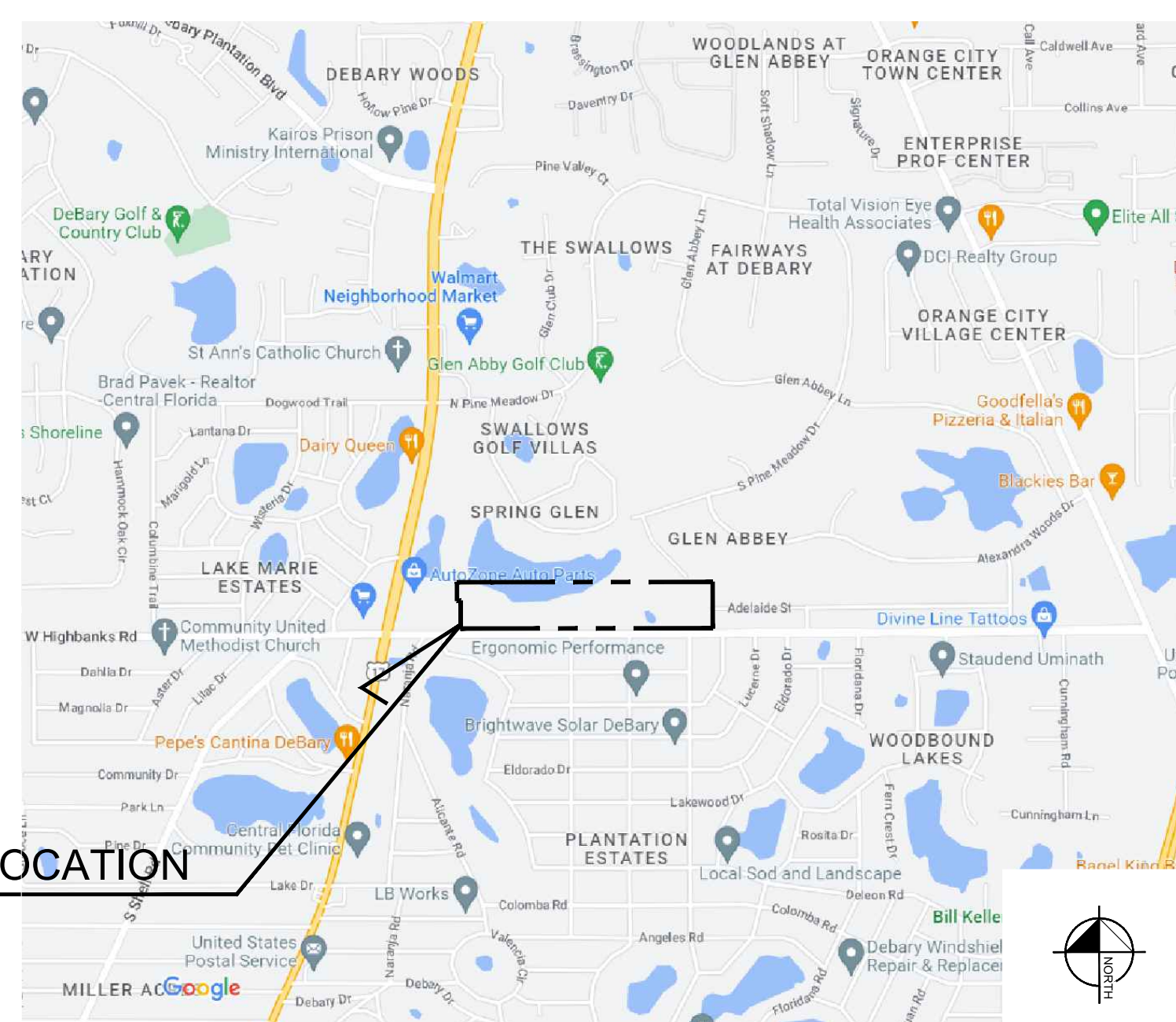
PROJECT LOCATION



Highbanks Road (R.O.W. VARIES)

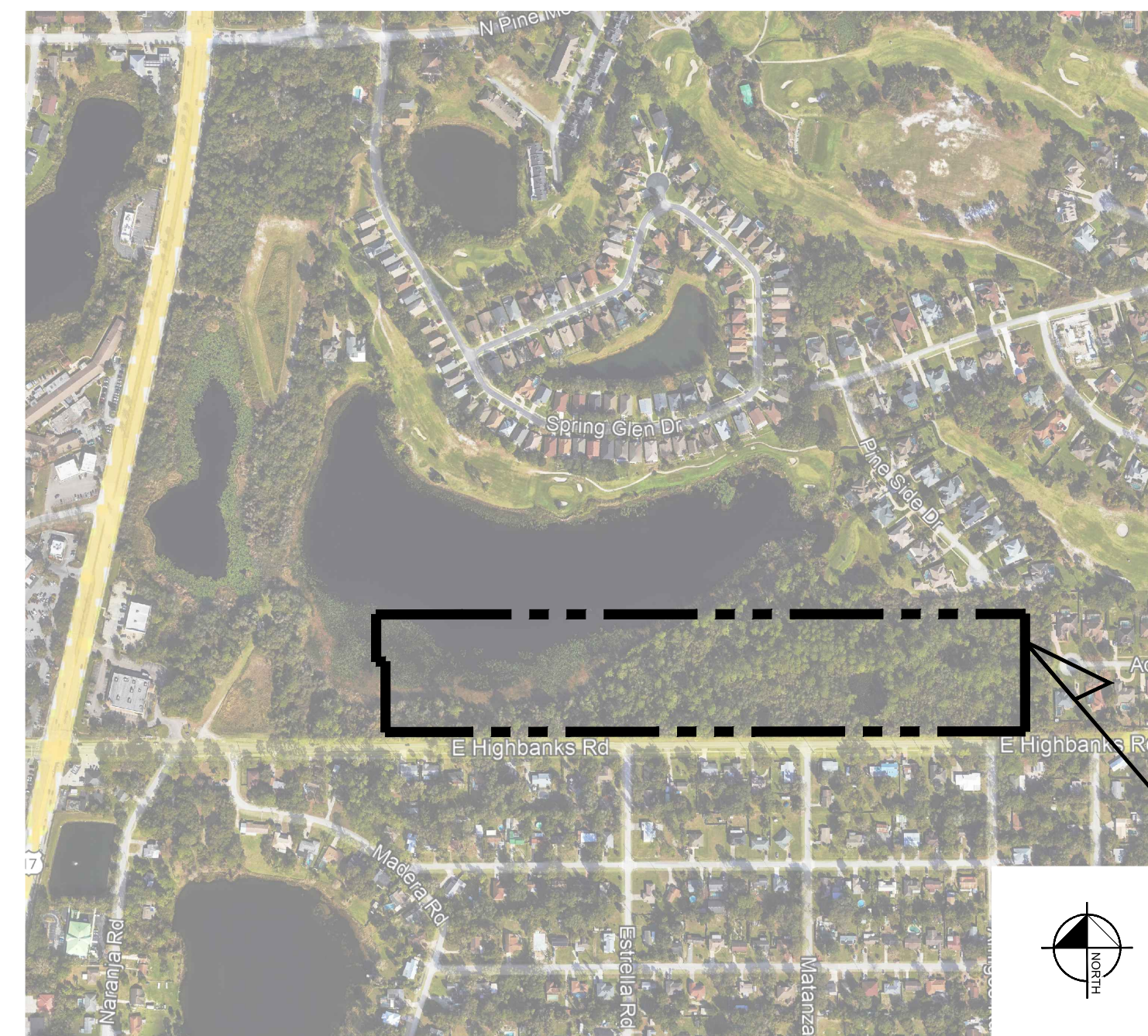
PROJECT LOCATION

TOPOGRAPHIC MAP



PROJECT LOCATION

VICINITY MAP



PROJECT LOCATION

AERIAL MAP

SECTION 27, TOWNSHIP 18, RANGE 30

UTILITY PROVIDERS

WATER, SEWER, & RECLAIM WATER:
VOLUSIA COUNTY WATER & UTILITY
3151 E. NEW YORK
DELAND, FL 32720
CONTACT: EARL FARMER
PHONE: (386) 804-7788

POWER:
DUKE ENERGY
400 N SPRING GARDEN AVE
DELAND, FL 32720
PHONE: (800) 700-8744

GAS:
FLORIDA GAS TRANSMISSION COMPANY
2405 LUCIEN WAY, SUITE 200
MAITLAND, FL 32751
CONTACT: JOSEPH E. SANCHEZ
PHONE: (407) 838-7171

PROJECT TEAM

DEVELOPER:
TAILWINDS DEVELOPMENT, LLC
100 COLONIAL CENTER PKWY,
LAKE MARY, FL 32746
CONTACT: STEPHEN T. INFANTINO
PHONE: (407) 724-6051
EMAIL: SINFANTINO@TWDRE.COM

OWNER:
STEDRONSKY GEORGE R TR
1111 S LAKEMONT AVE
WINTER PARK, FLORIDA 32782

CIVIL ENGINEER:
KIMLEY-HORN AND ASSOCIATES, INC.
189 S. ORANGE AVENUE, SUITE 1000
ORLANDO, FL 32801
CONTACT: BROOKS A. STICKLER, P.E.
PHONE: (407) 427-1677
EMAIL: BROOKS.STICKLER@KIMLEY-HORN.COM

SURVEYOR
CHARLES ROB DEFOOR
P.O. BOX 1472
GENEVA, FLORIDA 32732
PHONE: (407) 880-9811

SHEET INDEX

C0.0	COVER
C1.0-C1.3	SITE PLAN
C2.0-C2.3	PAVING, GRADING, AND DRAINAGE
C3.0-C3.3	UTILITY PLAN
C4.0	TYPICAL ROAD SECTIONS
C5.0	LOT DIMENSIONS
L0.50	OVERALL TREE MITIGATION PLAN

PREPARED BY
Kimley»Horn

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CALL 48 HOURS
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IT'S THE LAW!
DIAL 811

**Know what's below.
Call before you dig.**

SUNSHINE STATE ONE CALL OF FLORIDA, INC.



**Know what's below.
Call before you dig.**

JOSHUA M. ENOT, P.E.

FLORIDA LICENSE NUMBER
93160

4/7/2023

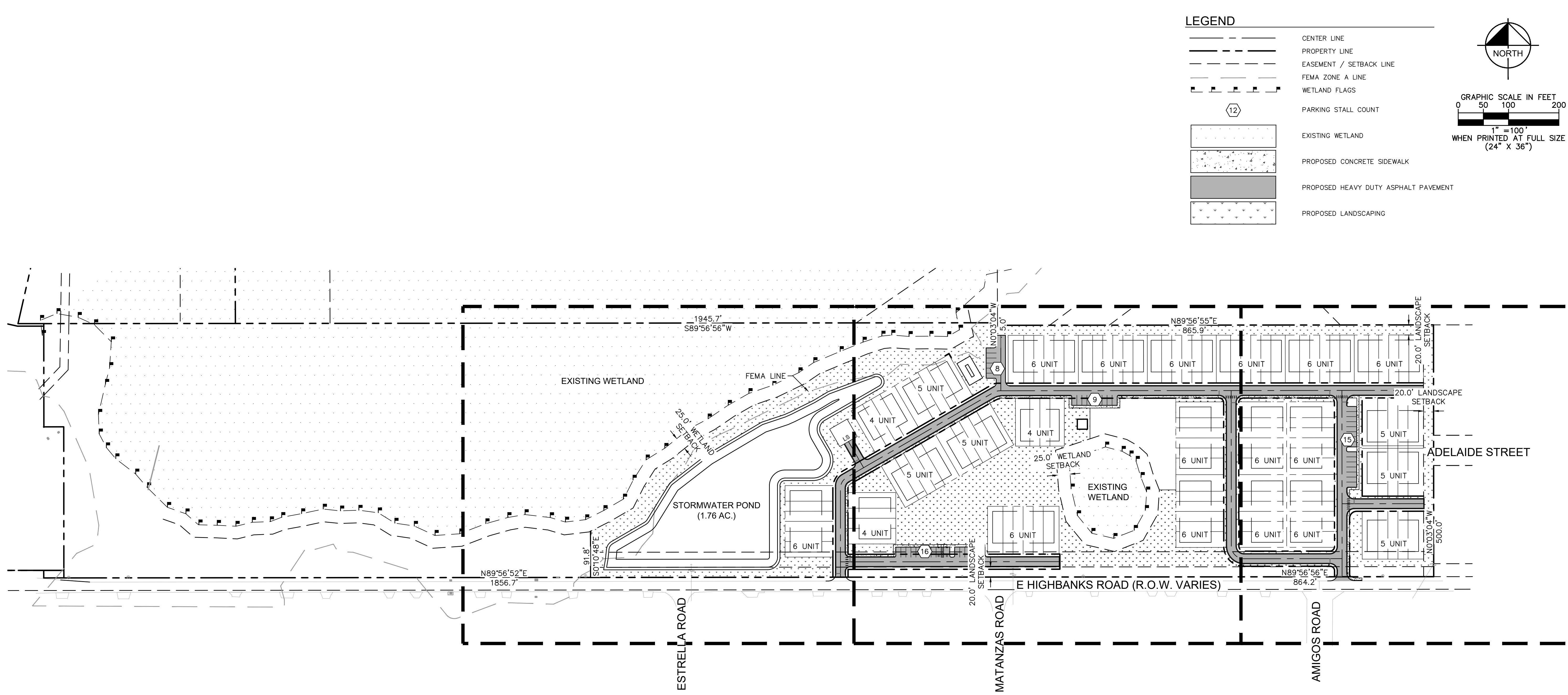
NO.	DESCRIPTION	DATE

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Drawing name: K:\ORL\Civil\240908007-E Highbanks Townhomes\CADD\ODP\PlanSheets\C0.0 - COVER.dwg by: Jeremih.Martinez
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Plotted By: Martinez, Jeremiah Sheet Set: 149.03.004 - Sanford MF @ STC Layout: C1.0 OVERALL SITE PLAN April 07, 2023 10:59:21am K:\ORL_Civil\249098007-E_Highbanks Townhomes\CAD\PlanSheets\C1.0_OVERALL SITE PLAN.dwg This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



LEGEND

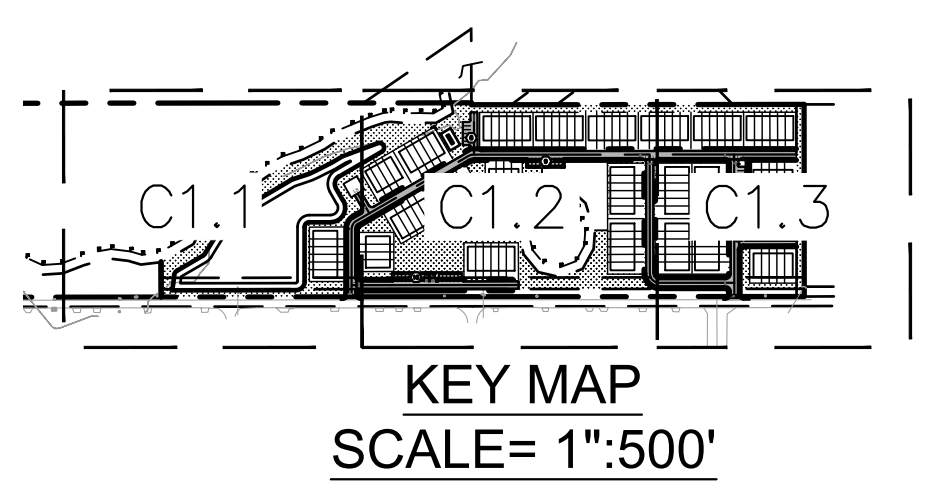
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- PROPERTY LINE
- EASEMENT / SETBACK LINE
- FEMA ZONE A LINE
- WETLAND FLAGS
- PARKING STALL COUNT
- EXISTING WETLAND
- PROPOSED CONCRETE SIDEWALK
- PROPOSED HEAVY DUTY ASPHALT PAVEMENT
- PROPOSED LANDSCAPING

GRAPHIC SCALE IN FEET
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1" = 100'
WHEN PRINTED AT FULL SIZE (24" X 36")

NORTH

SITE DATA

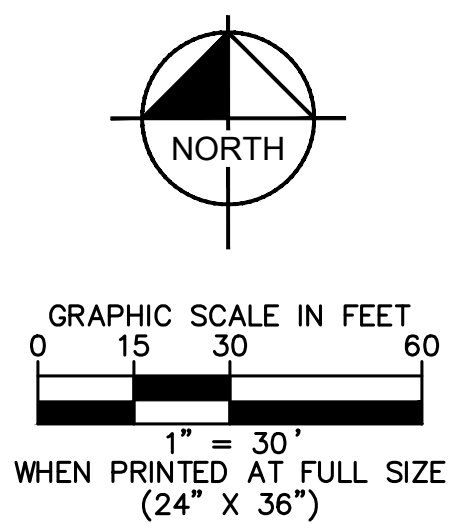
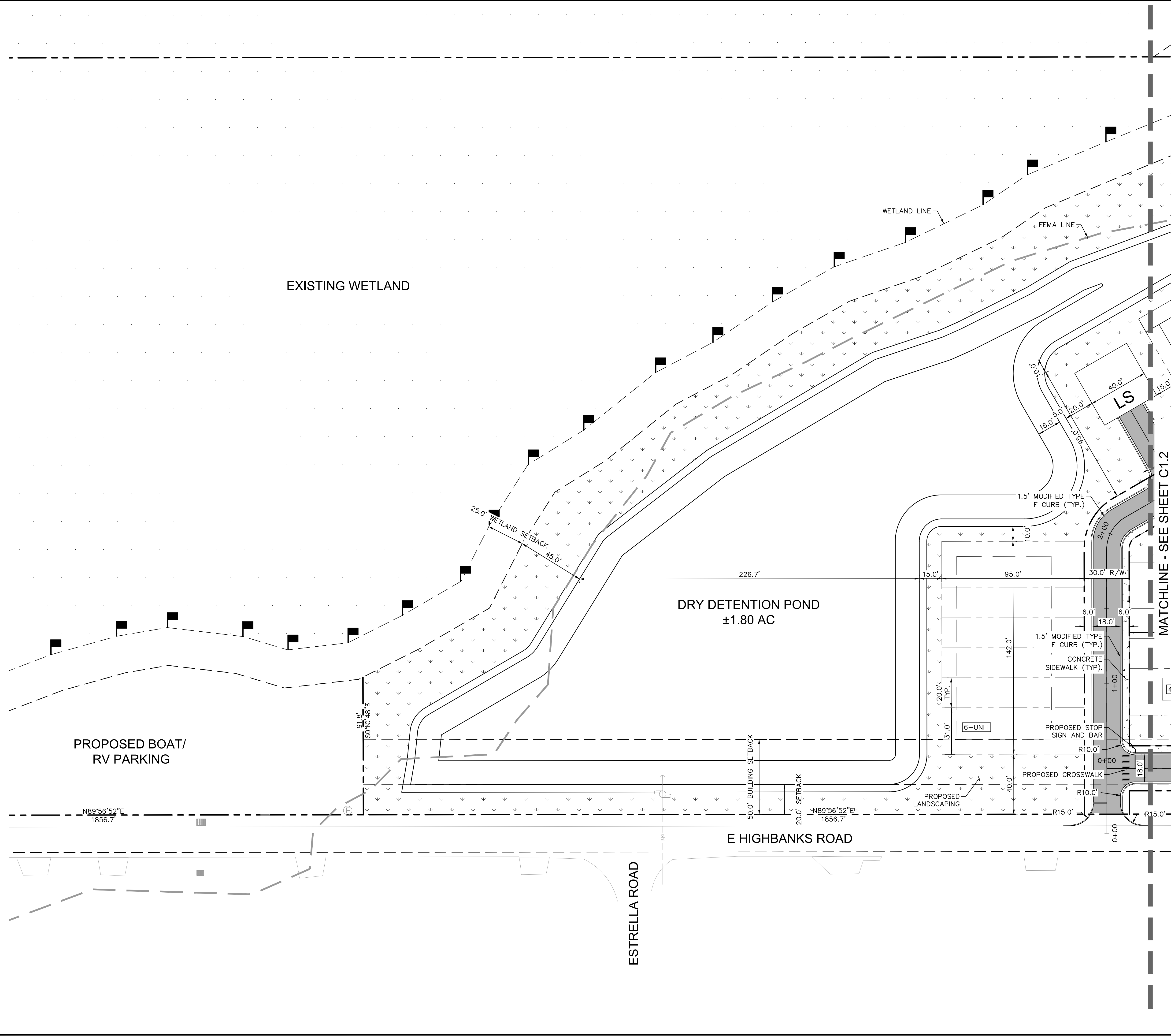
ADDRESS:	E HIGHBANKS RD DEBARY, FL 32713	LOT COVERAGE	
APN:	802700000062 802600000065	TOTAL SITE AREA:	771,480 S.F. (17.71 AC)
ZONING DISTRICT:	PLANNED UNIT DEVELOPMENT (PUD)	WETLAND AREA:	37,020 S.F. (0.85 AC)
LAND USE:	RESIDENTIAL	STORMWATER POND	76,754 S.F. (1.76 AC)
		IMPERVIOUS AREA:	328,292 S.F. (7.53 AC)
		PERVIOUS AREA	329,414 S.F. (7.57 AC)
		TOWNHOMES:	
		14 BUILDINGS - 6 UNIT	
		6 BUILDINGS - 5 UNIT	
		3 BUILDINGS - 4 UNIT	
		126 UNITS TOTAL	
		PARKING / LANDSCAPE BUFFER	
		FRONT: 20.0'	
		REAR: 20.0'	
		SIDE (E): 20.0'	
		SIDE (W): 25.0'	
		PARKING TABLE:	PROVIDED
		STANDARD	46
		ACCESSIBLE	2
		TOTAL:	48



KHA PROJECT		LICENSED PROFESSIONAL			
		JOSHUA M. ENOT FLORIDA LICENSE NUMBER 100652 PE			
DATE	SCALE AS SHOWN	DESIGNED BY	DRAWN BY	CHECKED BY	DATE:
OVERALL SITE PLAN		OVERALL DEVELOPMENT PLANS - E HIGHBANKS TOWNHOMES			
		SHEET NUMBER C1.0			
KIMLEY-HORN		189 S. ORANGE AVE., SUITE 1000, ORLANDO, FL 32801 PHONE: 407-898-1511 WWW.KIMLEY-HORN.COM REGISTRY No. 696		REVISIONS	DATE

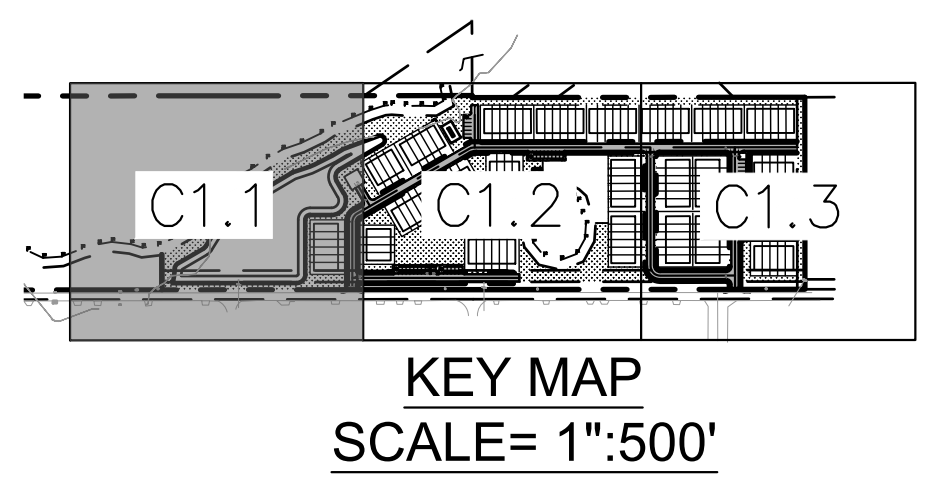
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LEGEND

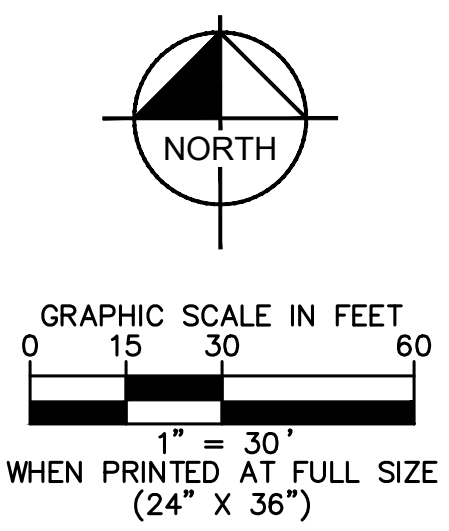
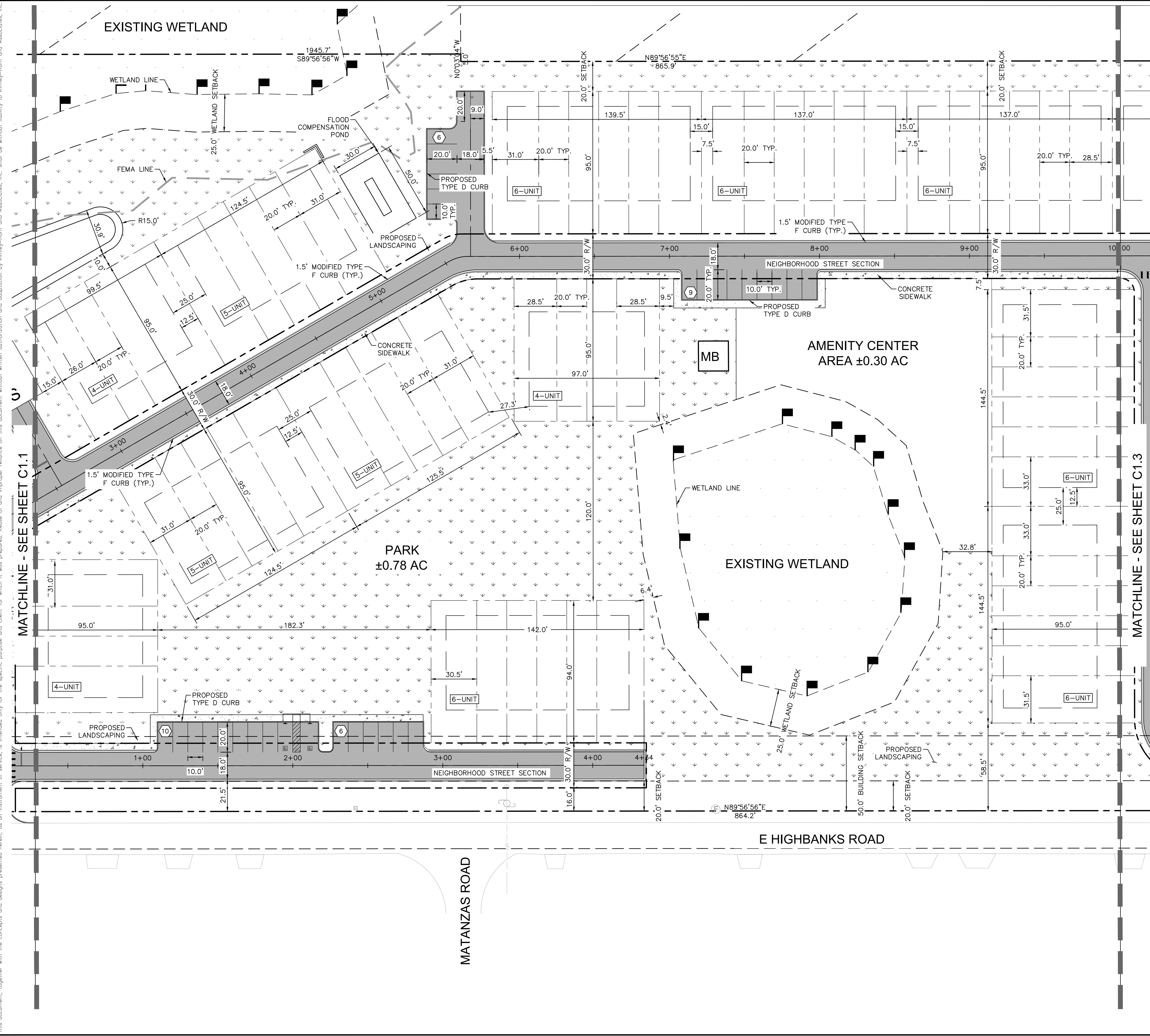
	CENTER LINE
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	WETLAND PRESERVATION AREA
	PROPOSED CONCRETE SIDEWALK
	PROPOSED HEAVY DUTY ASPHALT PAVEMENT
	PROPOSED LANDSCAPING



<p>Kimley»Horn 189 S. ORANGE AVE., SUITE 1000, ORLANDO, FL 32801 PHONE: 407-898-1511 WWW.KIMLEY-HORN.COM REGISTRY No. 696</p>		LICENSED PROFESSIONAL JOSHUA M. ENOT FLORIDA LICENSE NUMBER 100652 PE DATE:
		KHA PROJECT DATE SCALE AS SHOWN DESIGNED BY DRAWN BY CHECKED BY
<p>SITE PLAN</p>		OVERALL DEVELOPMENT PLANS- E HIGHBANKS TOWNHOMES
SHEET NUMBER C1.1		REVISIONS No. BY DATE

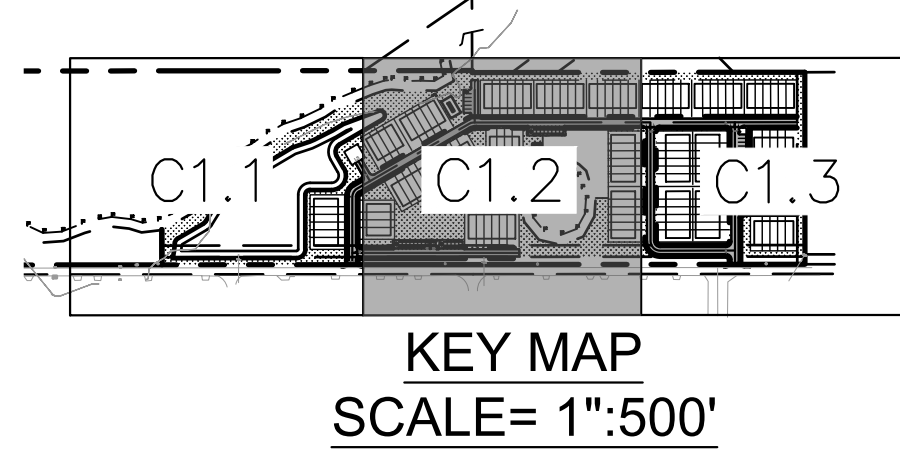
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Plotted By: Martinez, Jeremiah Sheet: 149.03.004 - Sanford, FL @ STC Layout: C1.2 SITE PLAN - April 07, 2023, 10:59:31am K:\ORL\Civil\249098007-E Highbanks Townhomes\CADD\00P\PlanSheets\C1.1 - SITE PLAN.dwg
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LEGEND

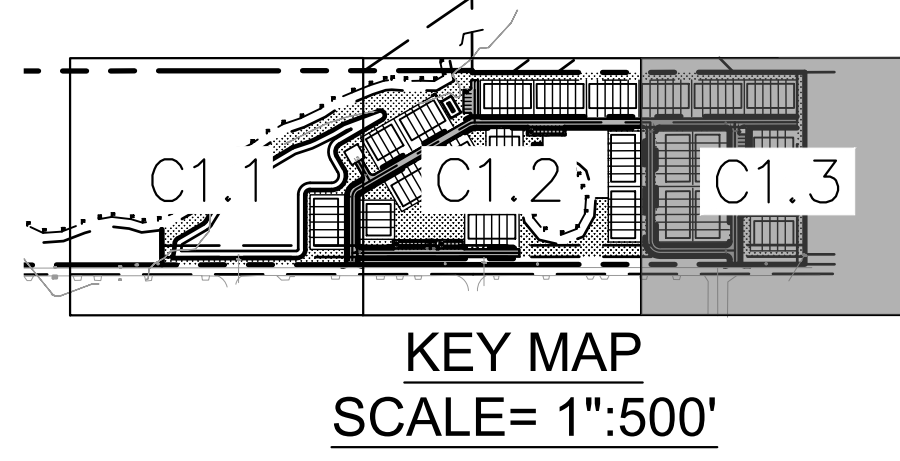
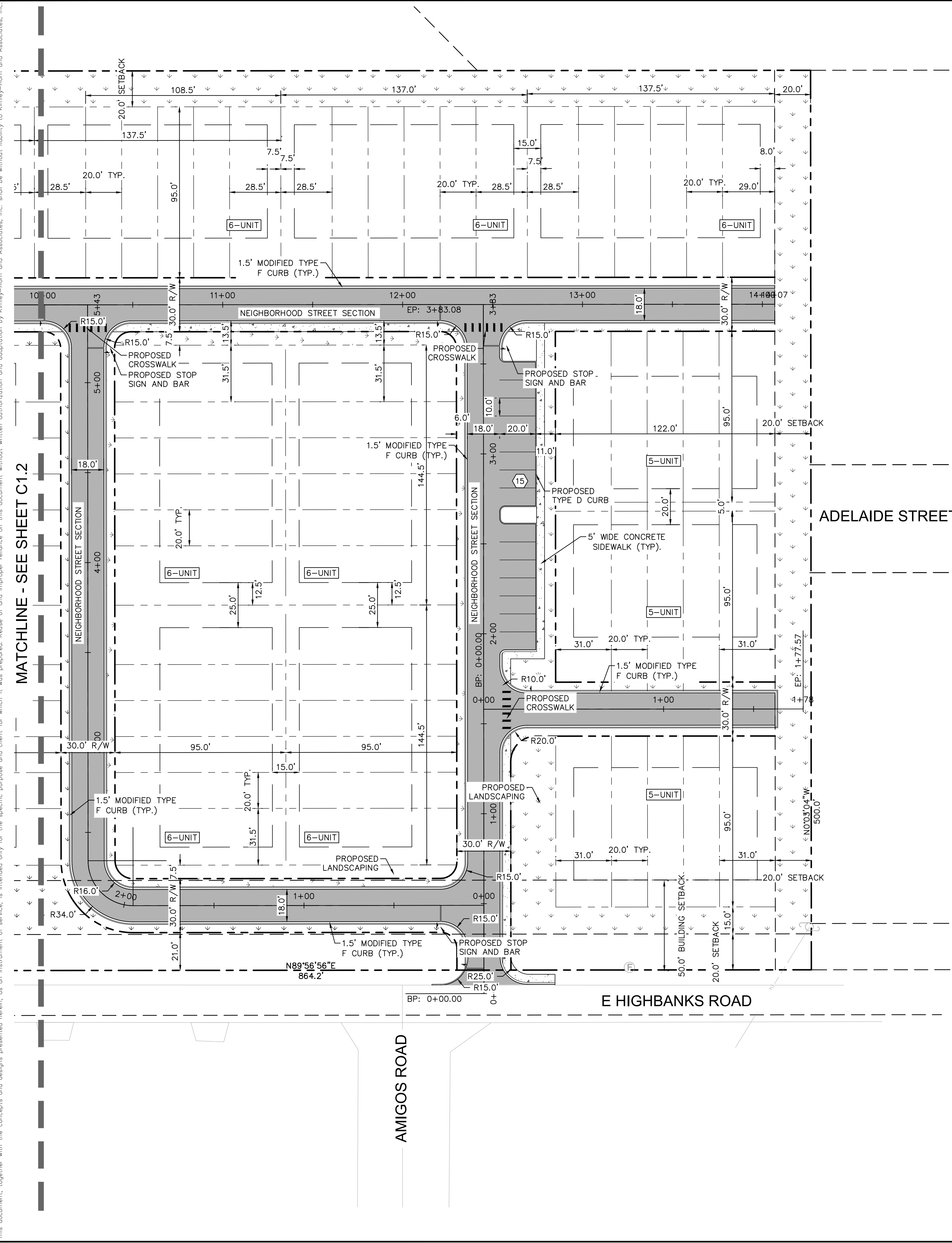
	CENTER LINE
	PROPERTY LINE
	EASEMENT / SETBACK LINE
	FEMA ZONE A LINE
	WETLAND FLAGS
	PARKING STALL COUNT
	WETLAND PRESERVATION AREA
	PROPOSED CONCRETE SIDEWALK
	PROPOSED HEAVY DUTY ASPHALT PAVEMENT
	PROPOSED LANDSCAPING



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KHA PROJECT	LICENSED PROFESSIONAL	DATE	JOSHUA M. ENOT FLORIDA LICENSE NUMBER 100652 FE DATE:
SCALE AS SHOWN	DESIGNED BY	DRAWN BY	CHECKED BY
SITE PLAN		REVISIONS	
OVERALL DEVELOPMENT PLANS- E HIGHBANKS TOWNHOMES		SHEET NUMBER	DATE
C1.2			

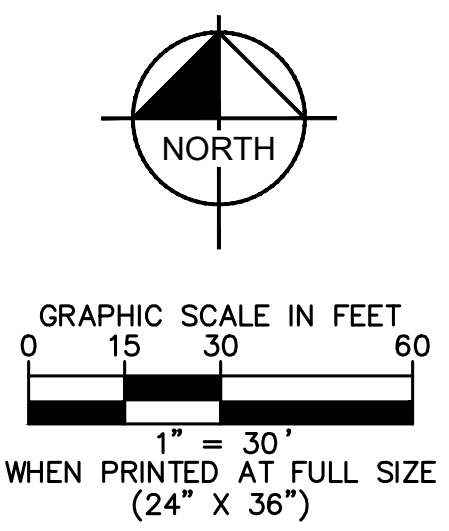
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Plotted By: Martinez, Jeremiah Sheet: 149.033004 - Sanford MF @ STC Layout: C1.3 SITE PLAN - April 07, 2023, 10:59:32am. K:\ORL\Civil\249098007-E_Highbanks_Townhomes\CADD\ODP\PlanSheets\C1.1- SITE PLAN.dwg
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LEGEND

	CENTER LINE
	PROPERTY LINE
	EASEMENT / SETBACK LINE
	FEMA ZONE A LINE
	WETLAND FLAGS
	PARKING STALL COUNT
	WETLAND PRESERVATION AREA
	PROPOSED CONCRETE SIDEWALK
	PROPOSED HEAVY DUTY ASPHALT PAVEMENT
	PROPOSED LANDSCAPING



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	LICENSED PROFESSIONAL JOSHUA M. ENOT FLORIDA LICENSE NUMBER 100652 PE DATE:
SITE PLAN	KHA PROJECT DATE SCALE AS SHOWN DESIGNED BY DRAWN BY CHECKED BY
OVERALL DEVELOPMENT PLANS- E HIGHBANKS TOWNHOMES	SHEET NUMBER C1.3
REVISIONS	No. BY DATE

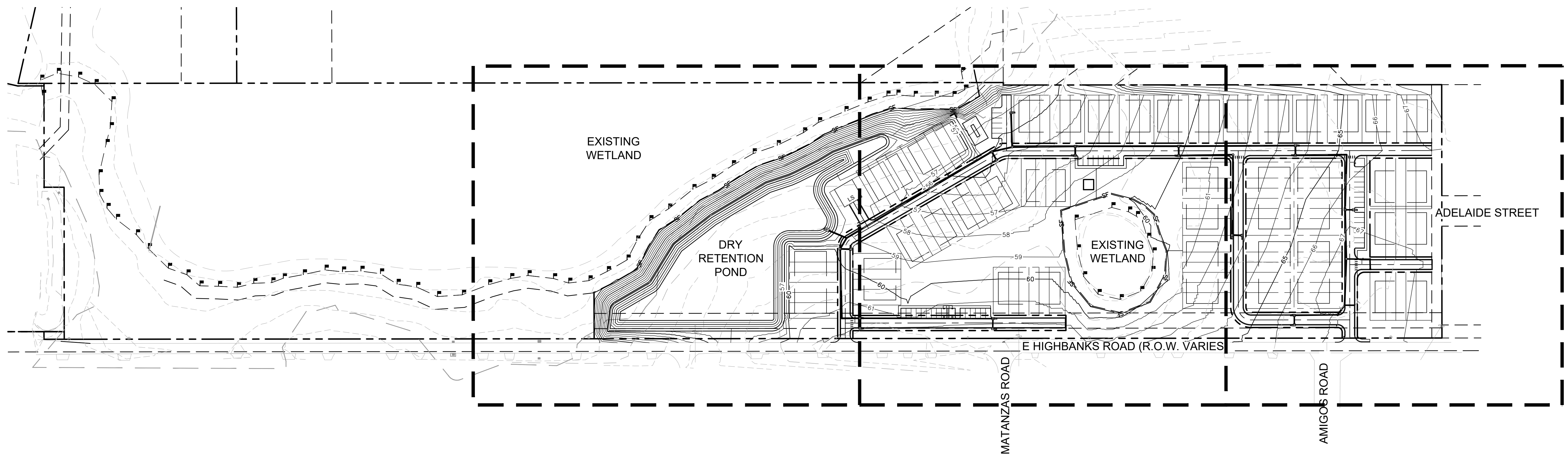
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Plotted By: Martinez, Jeremiah Sheet: 149.033004 - Sontford MF @ STC Layout: C2.0 OVERALL PAVING, GRADING AND DRAINAGE April 07, 2023, 10:59:43am K:\ORL\Civil\249096007-E Highbanks Townhomes\CADD\OP\PlanSheets\C2.0 - OVERALL PAVING, GRADING AND DRAINAGE.dwg

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GENERAL NOTES

1. MASTER STORMWATER SYSTEM WILL BE DESIGNED AND PERMITTED AS PART OF THE CONSTRUCTION PLAN REVIEW.
2. LOT GRADING WILL BE INCLUDED AS PART OF THE CONSTRUCTION PLAN REVIEW AS WELL AS FINISHED FLOOR ELEVATIONS.
3. STORMWATER CRITERIA WILL BE CONSISTENT WITH THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT AND THE CITY OF DEBARY REQUIREMENTS.
4. DRY STORMWATER SIZE AND AREA TO BE DETERMINED DURING MASS GRADING, STORMWATER DESIGN, AND PERMITTING.



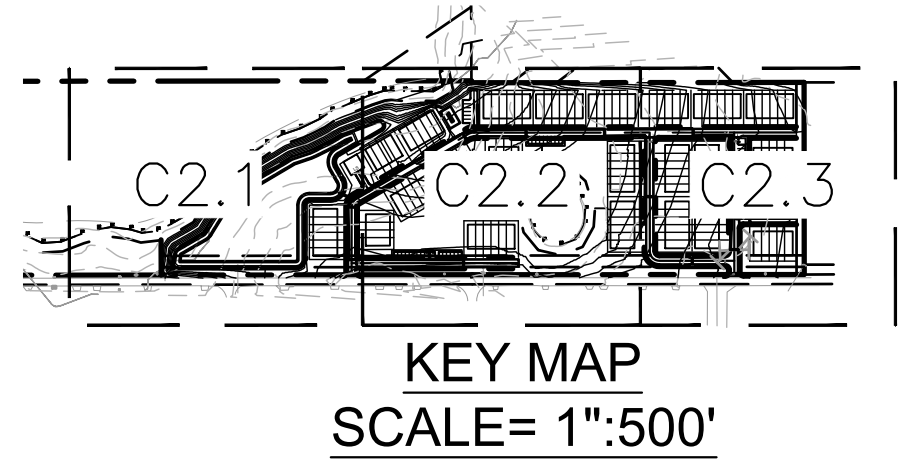
LEGEND

- CENTER LINE
- PROPERTY LINE
- EASEMENT / SETBACK LINE
- FEMA ZONE A LINE
- WETLAND FLAGS
- SF- SILT FENCE
- X.X'- EXISTING CONTOUR
- X.X'- PROPOSED CONTOUR
- PROPOSED STORMWATER PIPE
- CURB INLET/CATCH BASIN INLET

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

1" = 100'
WHEN PRINTED AT FULL SIZE
(24" X 36")



**OVERALL PAVING,
GRADING AND
DRAINAGE**

**OVERALL
DEVELOPMENT PLANS-
E HIGHBANKS
TOWNHOMES**

Kimley»Horn

189 S. ORANGE AVE., SUITE 1000, ORLANDO, FL 32801
PHONE: 407-898-1511
WWW.KIMLEY-HORN.COM REGISTRY No. 696

LICENSED PROFESSIONAL
JOSHUA M. ENOT
FLORIDA LICENSE NUMBER
100652 FE

KHA PROJECT
DATE
SCALE AS SHOWN
DESIGNED BY
DRAWN BY
CHECKED BY

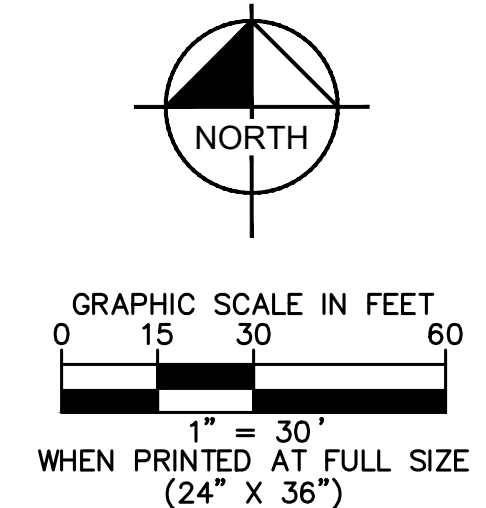
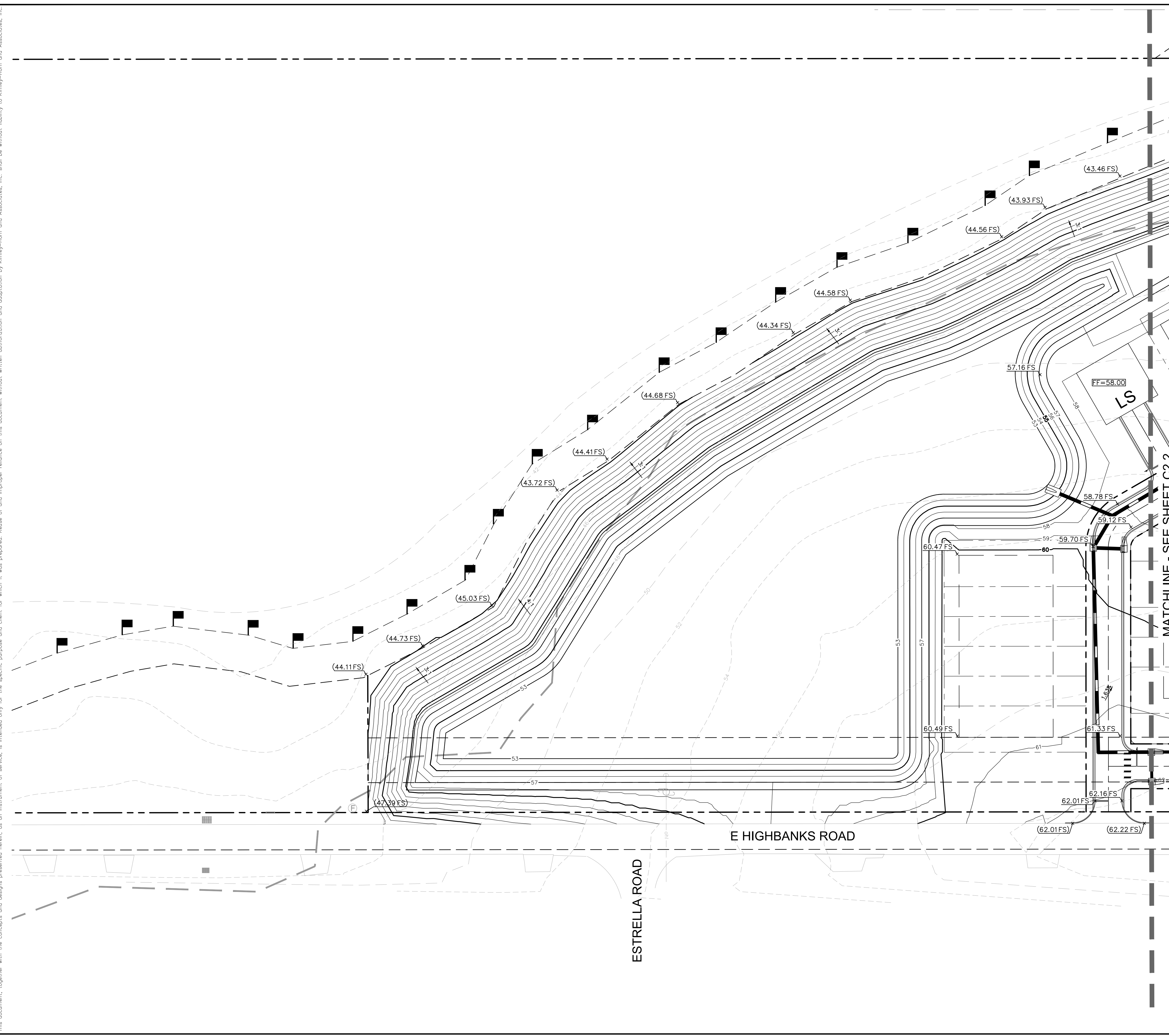
NO.	REVISIONS	DATE	BY

SHEET NUMBER
C2.0

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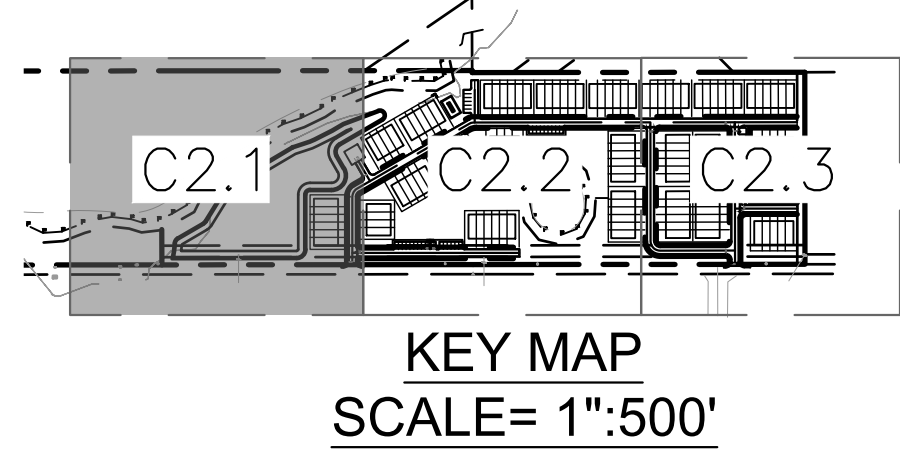
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LEGEND

- CENTER LINE
- PROPERTY LINE
- EASEMENT / SETBACK LINE
- FEMA LINE
- WETLAND FLAGS
- SILT FENCE
- EXISTING CONTOUR
- PROPOSED CONTOUR

MATCHLINE - SEE SHEET C2.2



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	JOSHUA M. ENOT FLORIDA LICENSE NUMBER 100652 FE		DATE		
189 S. ORANGE AVE., SUITE 1000, ORLANDO, FL 32801 PHONE: 407-898-1511 WWW.KIMLEY-HORN.COM REGISTRY No. 696		SCALE AS SHOWN		DESIGNED BY	
WWW.KIMLEY-HORN.COM REGISTRY No. 696		DRAWN BY		CHECKED BY	
REVISIONS		No.		DATE	
BY		No.		DATE	

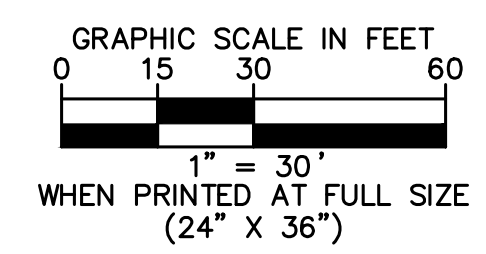
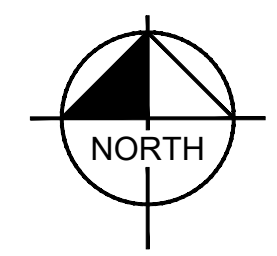
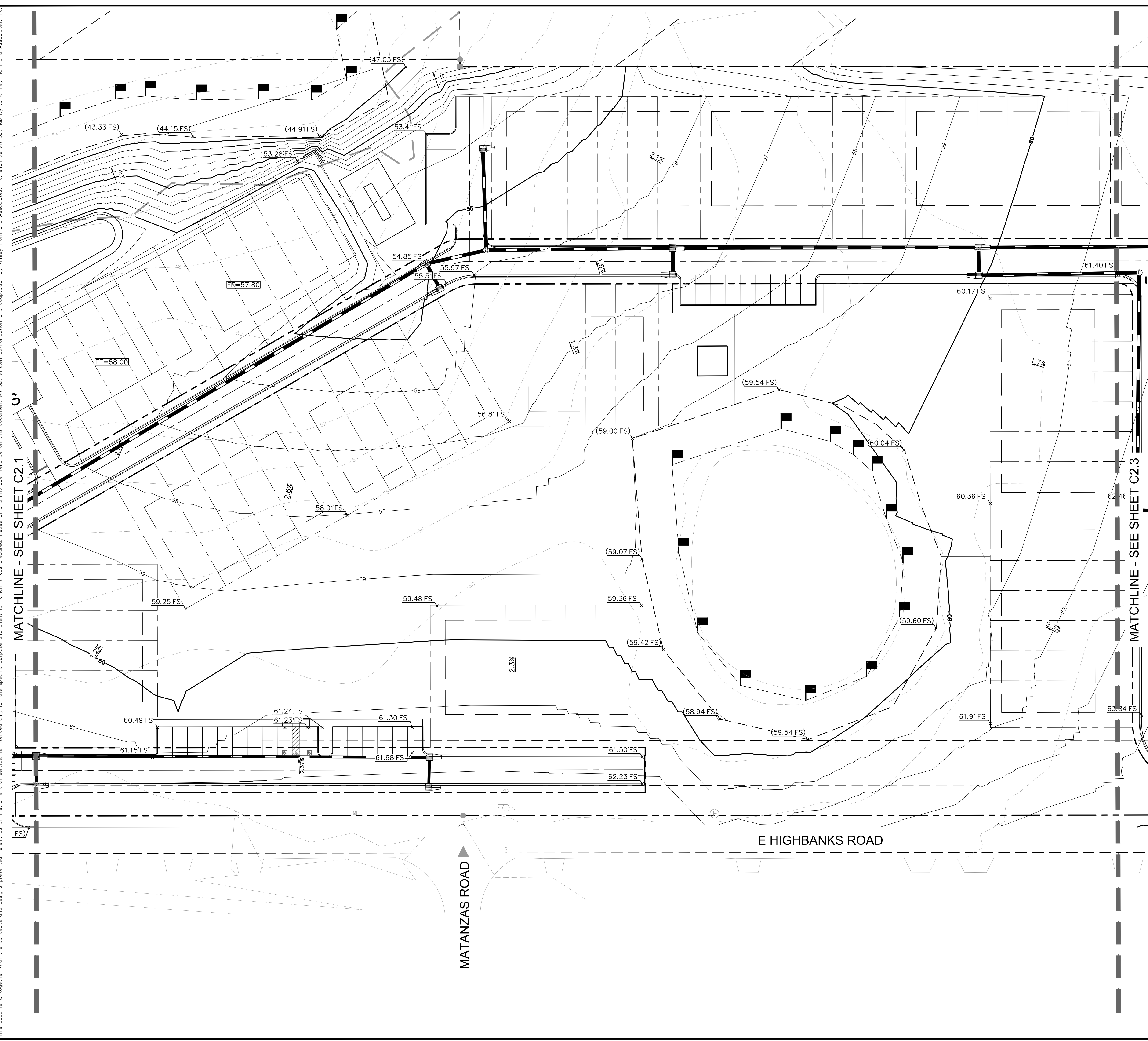
**PAVING, GRADING
AND DRAINAGE
PLAN**

**OVERALL
DEVELOPMENT PLANS-
E HIGHBANKS
TOWNHOMES**

SHEET NUMBER
C2.1

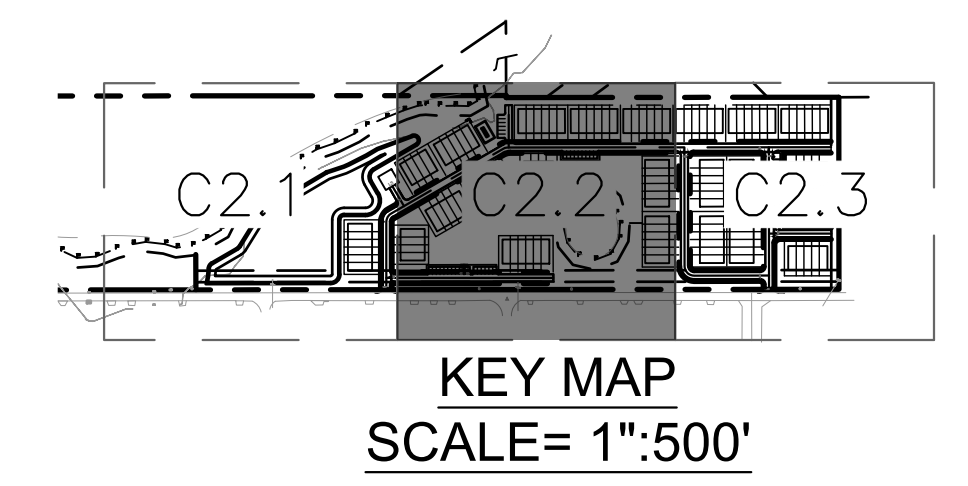
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LEGEND

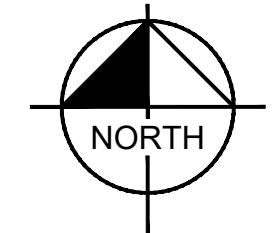
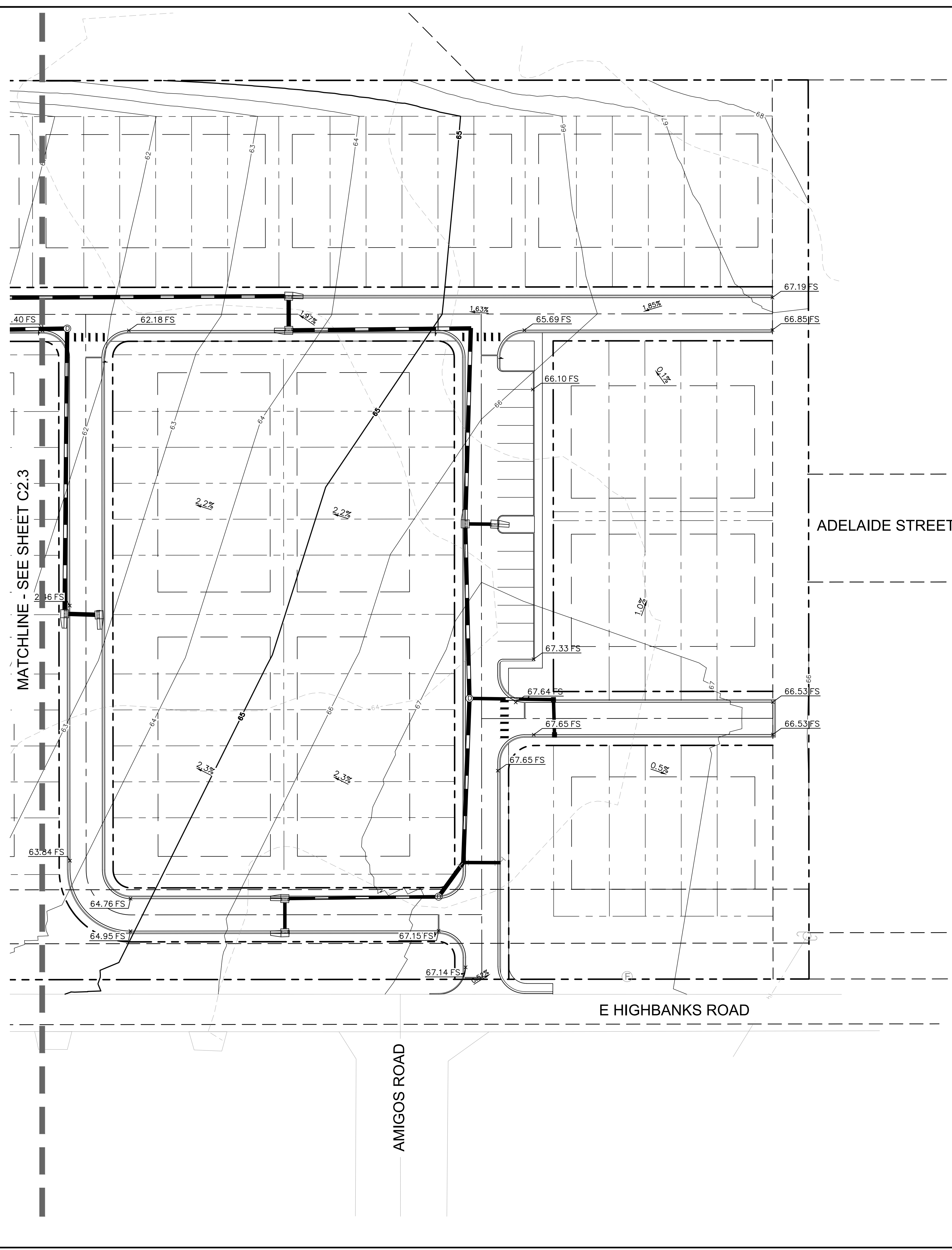
	CENTER LINE
	PROPERTY LINE
	EASEMENT / SETBACK LINE
	FEMA LINE
	WETLAND FLAGS
	SILT FENCE
	EXISTING CONTOUR
	PROPOSED CONTOUR



<p>OVERALL DEVELOPMENT PLANS- E HIGHBANKS TOWNHOMES</p>		<p>PAVING, GRADING AND DRAINAGE PLAN</p>		<p>Kimley»Horn</p> <p>189 S. ORANGE AVE., SUITE 1000, ORLANDO, FL 32801 PHONE: 407-898-1511 WWW.KIMLEY-HORN.COM REGISTRY No. 696</p>	
		<p>LICENSED PROFESSIONAL</p> <p>JOSHUA M. ENOT FLORIDA LICENSE NUMBER 100652 PE</p>	<p>KHA PROJECT</p> <p>DATE</p> <p>SCALE AS SHOWN</p> <p>DESIGNED BY</p> <p>DRAWN BY</p> <p>CHECKED BY</p>	<p>DATE</p> <p>DATE</p>	<p>REVISIONS</p> <p>No.</p> <p>BY</p>
<p>SHEET NUMBER</p> <p>C2.2</p>					

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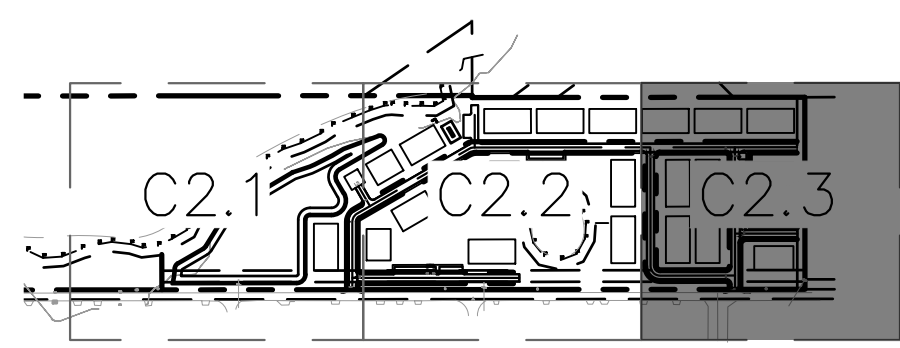
Plotted By: Martinez, Jeremiah Sheet: 149.033004 - Sanford, MF @ STC Layout: C2.3 PAVING, GRADING AND DRAINAGE PLAN April 07, 2023 10:59:54am K:\ORL\Civil\249098007-E Highbanks Townhomes\CADD\ODP\PlanSheets\C2.1- PAVING, GRADING, AND DRAINAGE.dwg
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GRAPHIC SCALE IN FEET
0 15 30 60
1" = 30'
WHEN PRINTED AT FULL SIZE
(24" X 36")

LEGEND

- CENTER LINE
- - - PROPERTY LINE
- - - EASEMENT / SETBACK LINE
- - - FEMA LINE
- WETLAND FLAGS
- SF - SILT FENCE
- - - X.X' EXISTING CONTOUR
- - - X.X' PROPOSED CONTOUR



KEY MAP
SCALE= 1":500'

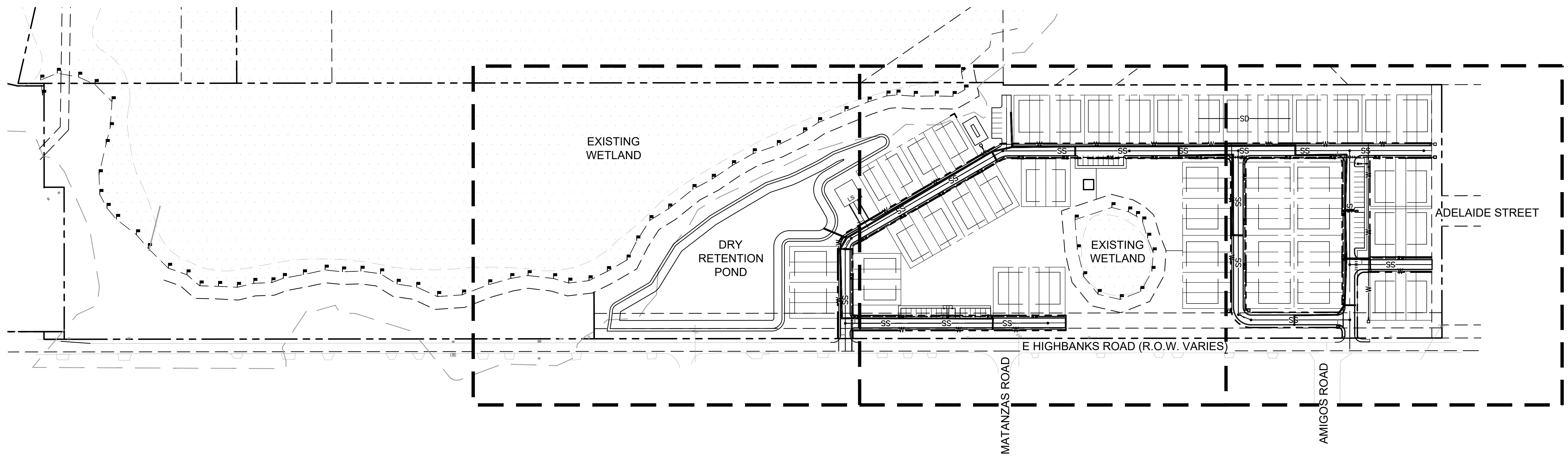
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KHA PROJECT	LICENSED PROFESSIONAL	JOSHUA M. ENOT FLORIDA LICENSE NUMBER 100652 PE		
DATE	SCALE AS SHOWN	DESIGNED BY	DRAWN BY	CHECKED BY
PAVING, GRADING AND DRAINAGE PLAN		OVERALL DEVELOPMENT PLANS- E HIGHBANKS TOWNHOMES		
SHEET NUMBER C2.3		REVISIONS No. BY DATE		

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GENERAL NOTES

1. A GRAVITY SEWER MAIN WILL BE PROVIDED AND SHALL DISCHARGE WASTEWATER INTO THE LIFT STATIONS LOCATED ON THE SOUTHWEST OF THE SITE.
2. FINAL GRAVITY SEWER MAIN AND FORCE MAIN LAYOUTS AND CONNECTIONS FOR ALL LOTS SHALL BE DETERMINED AT THE TIME OF INDIVIDUAL LOT DESIGN/CONSTRUCTION PERMITTING.
3. PROPOSED FORCE MAIN WILL CONNECT TO EXISTING FORCE MAIN TBD.
4. FIRE HYDRANT LOCATIONS SHALL BE DETERMINED AT TIME OF CONSTRUCTION PLAN REVIEW. HYDRANTS SHALL BE ARRANGED AT ENTRANCES SO THAT FIRE TRUCKS DO NOT HAVE TO PASS ANY BUILDING BEFORE REACHING AT LEAST ONE HYDRANT. THE MINIMUM REQUIRED HYDRANTS WILL BE INSTALLED WITH THE MASTER INFRASTRUCTURE. HOWEVER, ADDITIONAL FIRE HYDRANTS MAY BE REQUIRED UPON INDIVIDUAL LOT DEVELOPMENT.
5. FINAL WATER MAIN LAYOUTS AND CONNECTIONS TO THE EXISTING WATER MAIN FOR ALL LOTS SHALL BE DETERMINED AT TIME OF INDIVIDUAL LOT DESIGN/CONSTRUCTION PERMITTING.
6. ALL FIRE FLOW, FIRE HYDRANT LAYOUT, AND FIRE LANE MARKINGS WILL BE ACCORDANCE WITH "THE FLORIDA FIRE PREVENTION CODE 6TH EDITION CHAPTER 18". THIS WILL BE INCORPORATED DURING CONSTRUCTION PLAN REVIEW WHEN STRUCTURES AND LOTS ARE PROPOSED.



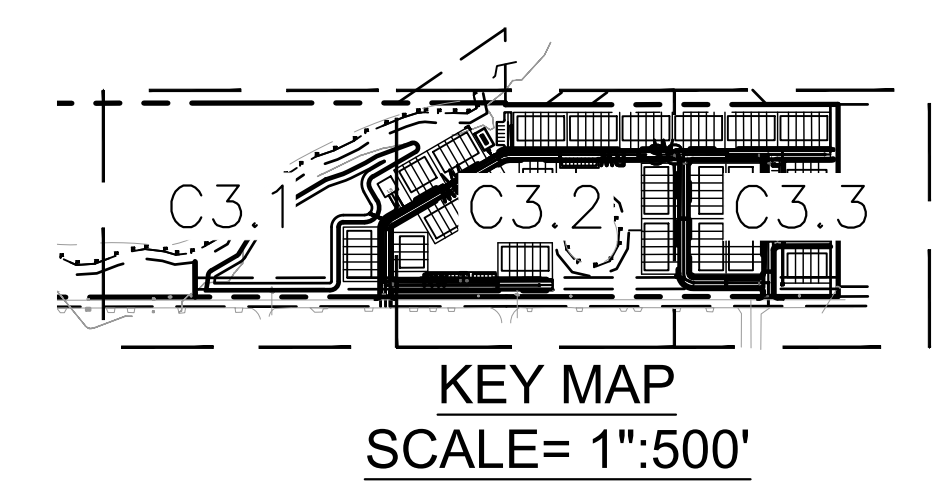
LEGEND

- CENTER LINE
- PROPERTY LINE
- EASEMENT / SETBACK LINE
- FEMA ZONE A LINE
- WETLAND FLAGS
- W --- EXISTING WATER LINE
- SS --- EXISTING SANITARY SEWER LINE
- SD --- EXISTING STORM DRAIN LINE
- W --- PROPOSED WATER LINE
- SS --- PROPOSED SANITARY SEWER LINE

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

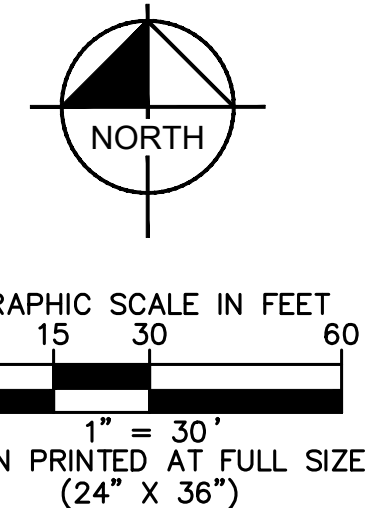
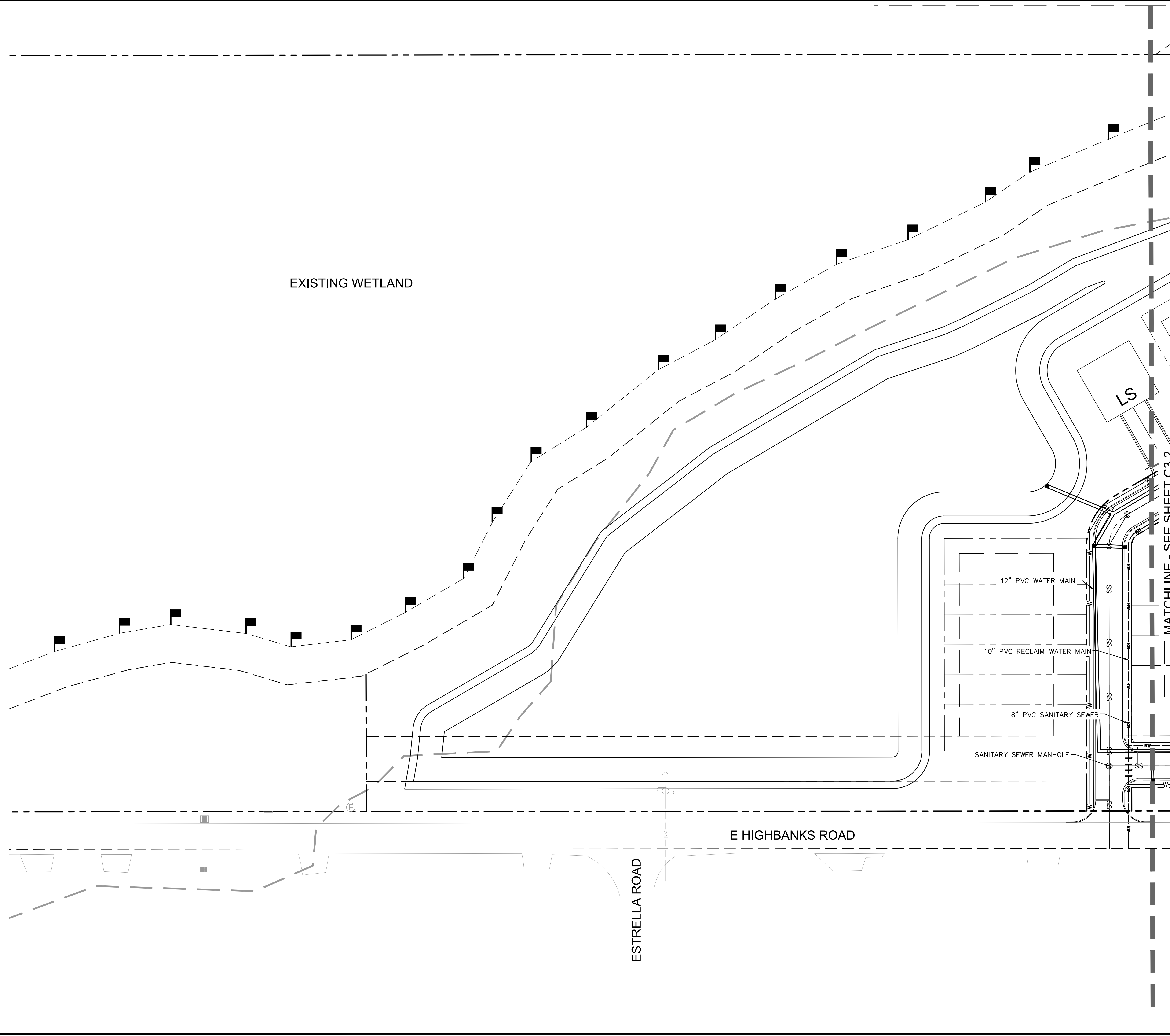
1" = 100'
WHEN PRINTED AT FULL SIZE
(24" X 36")



OVERALL DEVELOPMENT PLANS- E HIGHBANKS TOWNHOMES	OVERALL UTILITY PLAN		KHA PROJECT DATE SCALE AS SHOWN DESIGNED BY DRAWN BY CHECKED BY	LICENSED PROFESSIONAL JOSHUA M. ENOT FLORIDA LICENSE NUMBER 100652 FE DATE:	<p>189 S. ORANGE AVE., SUITE 1000, ORLANDO, FL 32801 PHONE: 407-898-1511 WWW.KIMLEY-HORN.COM REGISTRY No. 696</p>	REVISIONS No. BY DATE
	SHEET NUMBER C3.0					

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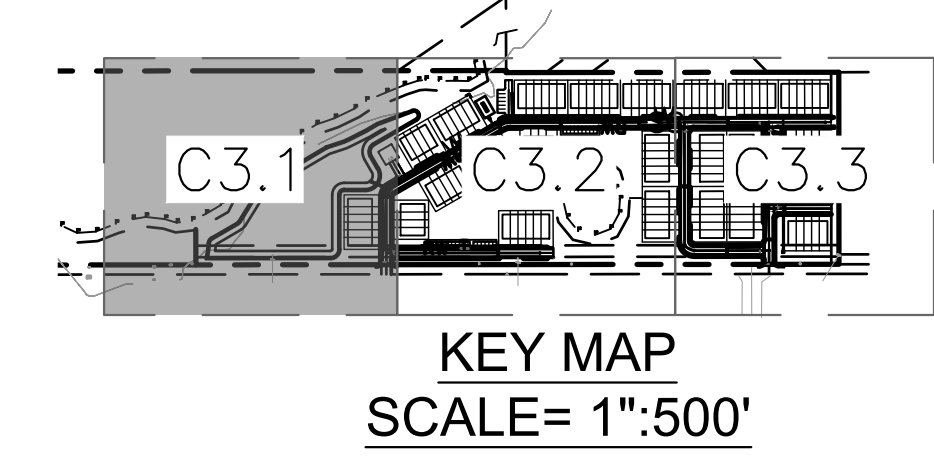
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LEGEND

---	CENTER LINE
----	PROPERTY LINE
- - - -	EASEMENT / SETBACK LINE
----	FEMA ZONE A LINE
■	WETLAND FLAGS
W	EXISTING WATER LINE
SS	EXISTING SANITARY SEWER LINE
W	EXISTING STORM DRAIN LINE
W	PROPOSED WATER LINE
SS	PROPOSED SANITARY SEWER LINE

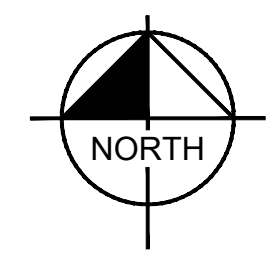
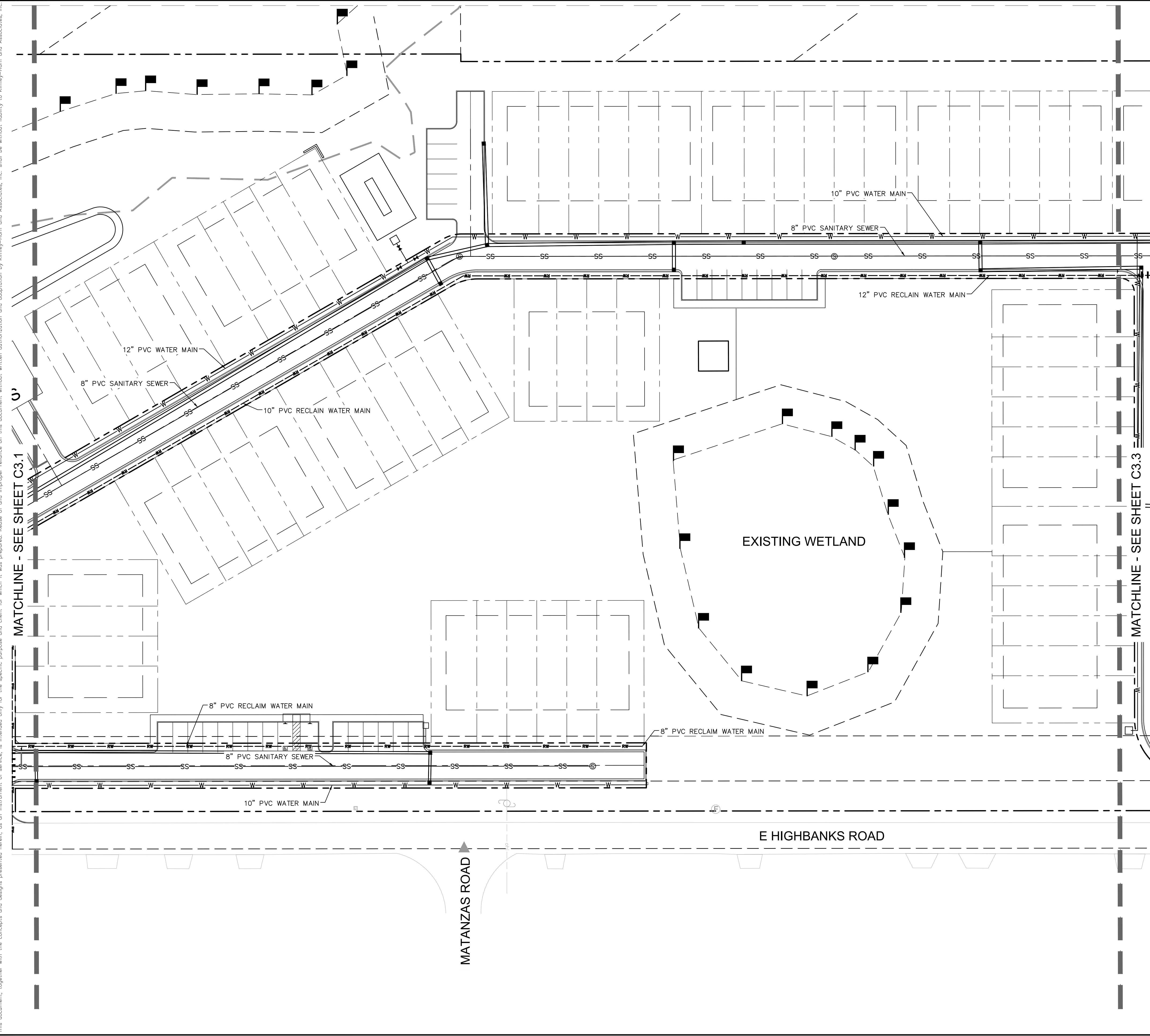
MATCHLINE - SEE SHEET C3.2



UTILITY PLAN	OVERALL DEVELOPMENT PLANS- E HIGHBANKS TOWNHOMES
LICENSED PROFESSIONAL JOSHUA M. ENOT FLORIDA LICENSE NUMBER 100652 FE DATE:	KHA PROJECT DATE SCALE AS SHOWN DESIGNED BY DRAWN BY CHECKED BY
Kimley»Horn 189 S. ORANGE AVE., SUITE 1000, ORLANDO, FL 32801 PHONE: 407-898-1511 WWW.KIMLEY-HORN.COM REGISTRY NO. 696	
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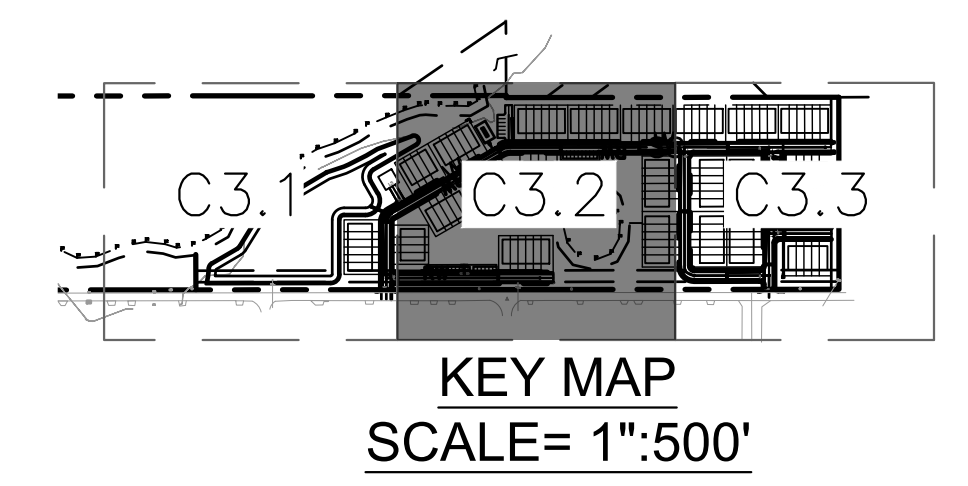
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GRAPHIC SCALE IN FEET
 0 15 30 60
 1" = 30'
 WHEN PRINTED AT FULL SIZE
 (24" X 36")

LEGEND

	CENTER LINE
	PROPERTY LINE
	EASEMENT / SETBACK LINE
	FEMA ZONE A LINE
	WETLAND FLAGS
	EXISTING WATER LINE
	EXISTING SANITARY SEWER LINE
	EXISTING STORM DRAIN LINE
	PROPOSED WATER LINE
	PROPOSED SANITARY SEWER LINE



No.	REVISIONS	DATE	BY

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 PHONE: 407-898-1511
 WWW.KIMLEY-HORN.COM REGISTRY No. 696

LICENSED PROFESSIONAL
 JOSHUA M. ENOT
 FLORIDA LICENSE NUMBER
 100652 PE
 DATE:

KHA PROJECT
 DATE
 SCALE AS SHOWN
 DESIGNED BY
 DRAWN BY
 CHECKED BY

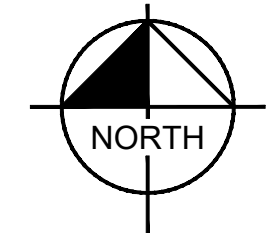
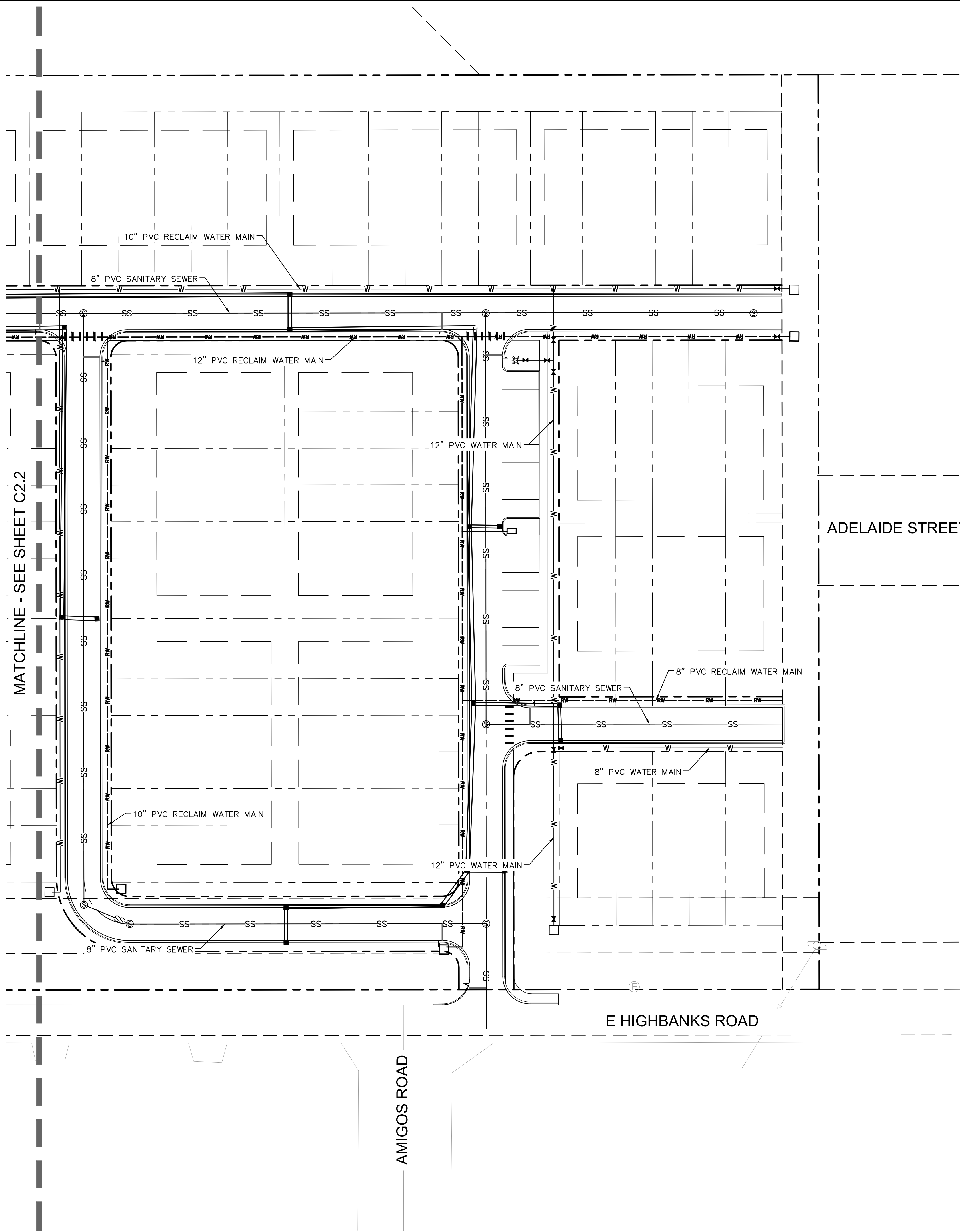
**OVERALL DEVELOPMENT PLANS-
 E HIGHBANKS TOWNHOMES**

SHEET NUMBER
C3.2

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Plotted By: Martinez, Jeremiah Sheet: 149.033004 - Sanford, MF @ STC Layout: C3.3 UTILITY PLAN April 07, 2023 11:00:18am K:\ORL\Civil\249098007-E Highbanks Townhomes\CAADD\000\PlanSheets\C3.1- UTILITY PLAN.dwg This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

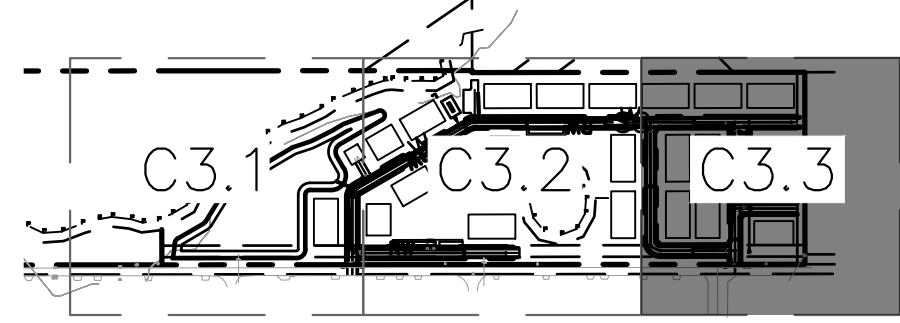
MATCHLINE - SEE SHEET C2.2



GRAPHIC SCALE IN FEET
 0 15 30 60
 1" = 30'
 WHEN PRINTED AT FULL SIZE
 (24" X 36")

LEGEND

- CENTER LINE
- - - - - PROPERTY LINE
- - - - - EASEMENT / SETBACK LINE
- - - - - FEMA ZONE A LINE
- - - - - WETLAND FLAGS
- - - - - EXISTING WATER LINE
- - - - - EXISTING SANITARY SEWER LINE
- - - - - EXISTING STORM DRAIN LINE
- - - - - PROPOSED WATER LINE
- - - - - PROPOSED SANITARY SEWER LINE



KEY MAP
 SCALE= 1":500'

No.	REVISIONS	BY	DATE

Kimley»Horn
 189 S. ORANGE AVE., SUITE 1000, ORLANDO, FL 32801
 PHONE: 407-898-1511
 WWW.KIMLEY-HORN.COM REGISTRY No. 696

LICENSED PROFESSIONAL
 JOSHUA M. ENOT
 FLORIDA LICENSE NUMBER
 100652 PE
 DATE:

KHA PROJECT
 DATE
 SCALE AS SHOWN
 DESIGNED BY
 DRAWN BY
 CHECKED BY

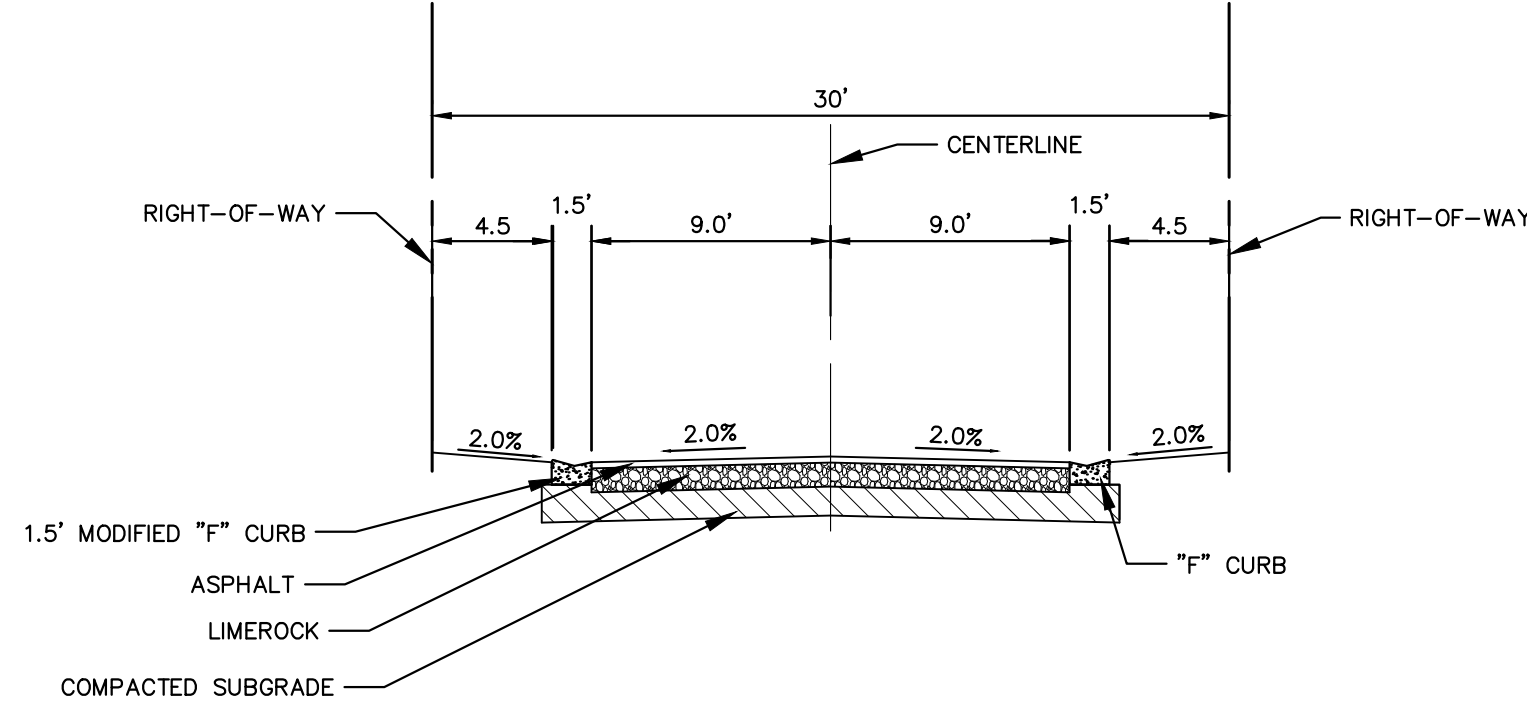
**OVERALL
 DEVELOPMENT PLANS-
 E HIGHBANKS
 TOWNHOMES**

SHEET NUMBER
C3.3

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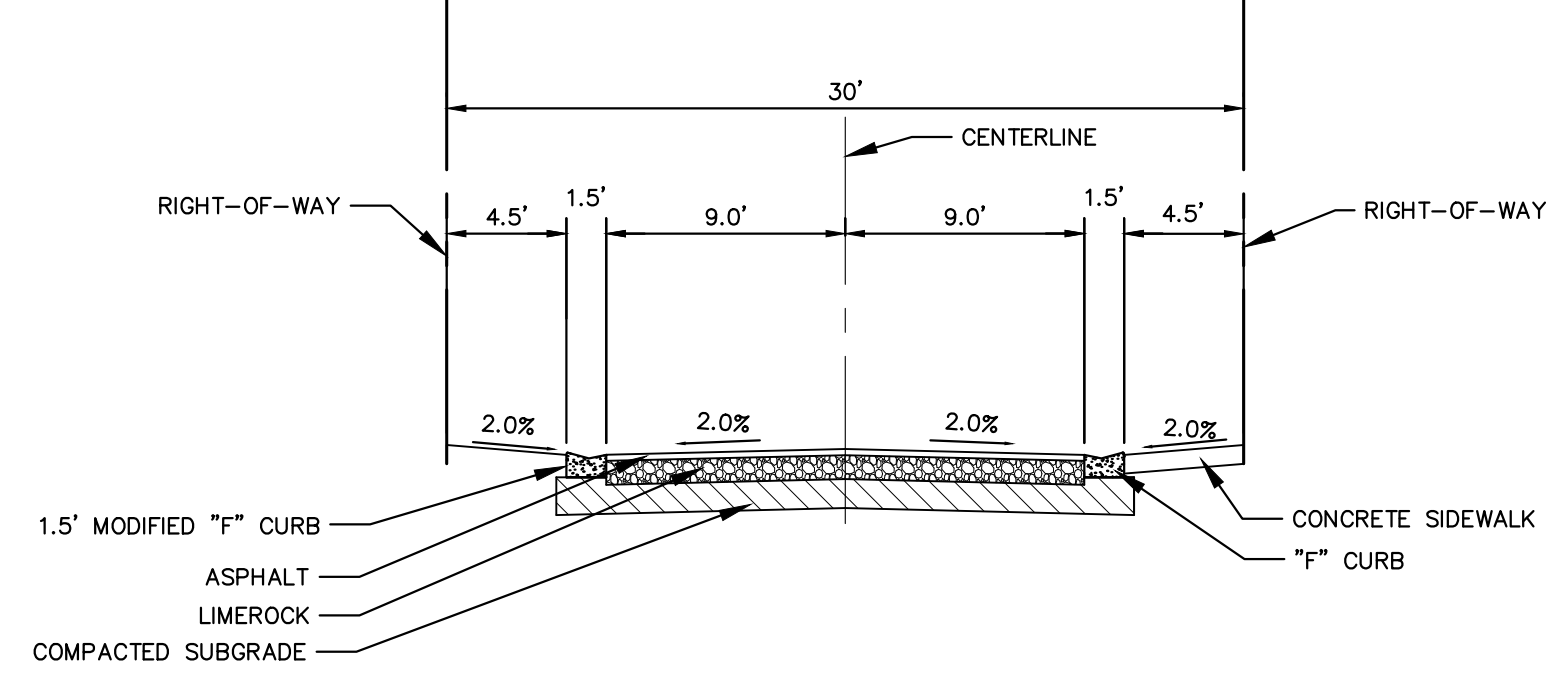
Plotted By: Martinez, Jeremiah Sheet: 149.033004 - Sanford, MF @ STC Layout: 04.0 TYPICAL SECTIONS April 07, 2023 11:00:23am K:\ORL\Civil\249098007-E Highbanks Townhomes\CADD\ODP\PlanSheets\C4.0 - TYPICAL SECTIONS.dwg

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TYPICAL NEIGHBORHOOD STREET SECTION-1

N.T.S.
PUBLIC ROAD / ROW
(FRONT LOADED LOTS)



TYPICAL NEIGHBORHOOD STREET SECTION-2

N.T.S.
PUBLIC ROAD / ROW
(FRONT LOADED LOTS)

**OVERALL
DEVELOPMENT PLANS-
E HIGHBANKS
TOWNHOMES**

TYPICAL SECTIONS

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DATE
SCALE AS SHOWN
DESIGNED BY
DRAWN BY
CHECKED BY

LICENSED PROFESSIONAL
JOSHUA M. ENOT
FLORIDA LICENSE NUMBER
100652 PE
DATE:

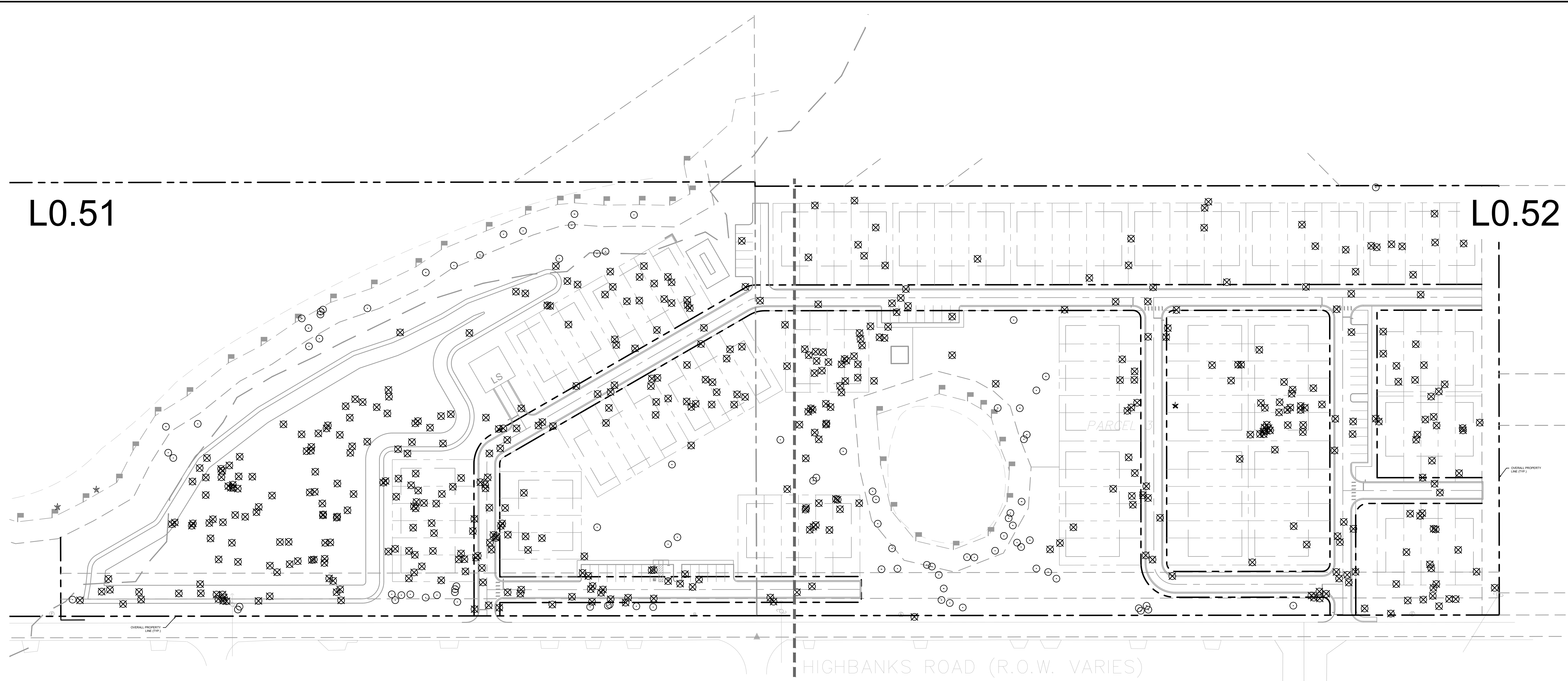
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Plotted By: Martinez, Jeremiah - Sheet Set: E HIGHBANK TOWNHOMES - Layout: L0.50 - April 07, 2023 - 11:00:38am - K:\Orl_Civil\249095007-E Highbanks Townhomes\CA03\001\PlanSheet\L0.50 - TREE MITIGATION PLAN.dwg
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LEGEND: SEE L0.53 FOR TREE DATA TABLE

- SITE TREES PRESERVE IN PLACE
- TREES TO BE REMOVED
- SITE PALMS PRESERVE IN PLACE
- PALMS TO BE REMOVED

TREE MITIGATION TABLE	
PER SEC 5-88	
REQUIRED:	TOTAL SITE AREA
714,123 SF	
15%	REQUIRED PROTECTION
107,118.45 SF	
PROVIDED:	WETLAND PRESERVATION AREA
27,139 SF	
481974.8 SF	OPEN SPACE
509,113.8 SF	TOTAL
AREA TREE PROTECTION REQUIREMENT MET	

TREE DATA			
SPECIES	PRESERVE	REMOVE	TOTAL
BLACK CHERRY	0	8	8
MAGNOLIA	0	8	8
OAK	393	2,235	2,628
PALM	25	12	37
PINE	796	3,633	4,429
GRAND TOTAL	1,214	5,896	7,110

GRAPHIC SCALE IN FEET
 0 30 60 120

NORTH

CALL 2 WORKING DAYS BEFORE YOU DIG

IT'S THE LAW! DIAL 811

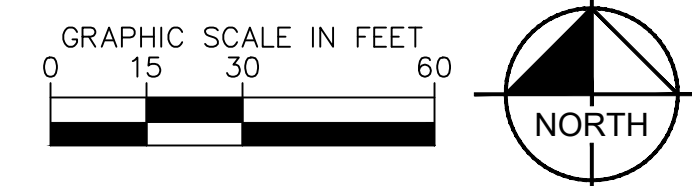
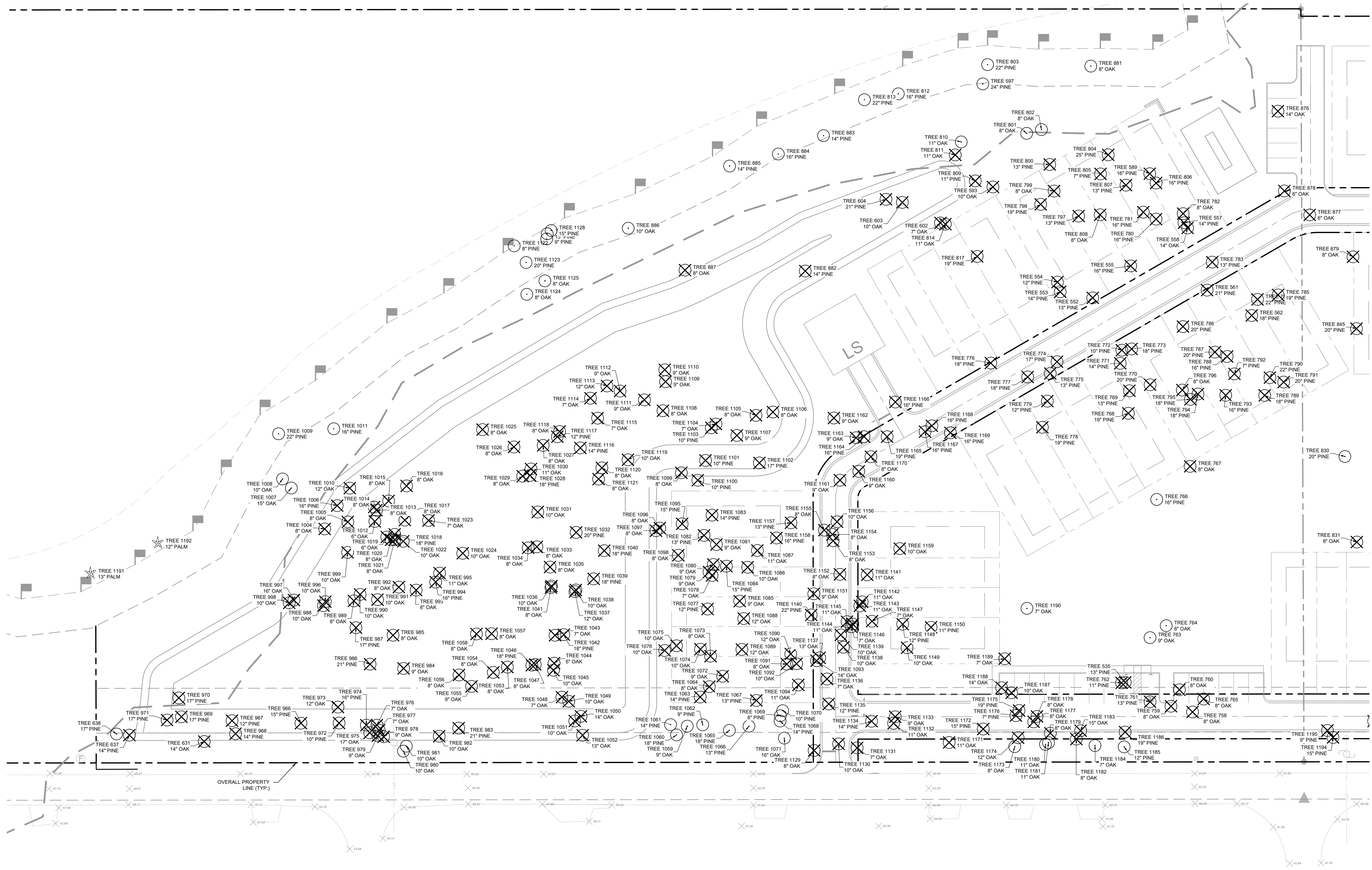
Know what's below. Call before you dig.

SUNSHINE STATE ONE CALL OF FLORIDA, INC.

<h2 style="margin: 0;">E HIGHBANK TOWNHOMES</h2>	<h3 style="margin: 0;">OVERALL TREE MITIGATION PLAN</h3>		FLORIDA DEBARY				
	SHEET NUMBER <h1 style="margin: 0;">L0.50</h1>	KHA PROJECT 249095007	DATE 03.31.2023	SCALE AS SHOWN	DESIGNED BY KHA	DRAWN BY RYP	CHECKED BY ASIL
		© 2023 KIMLEY-HORN AND ASSOCIATES, INC. 189 S. ORANGE AVENUE, SUITE 1000, ORLANDO, FL 32801 PHONE: 407-898-1511 WWW.KIMLEY-HORN.COM		REVISIONS No. DATE BY			

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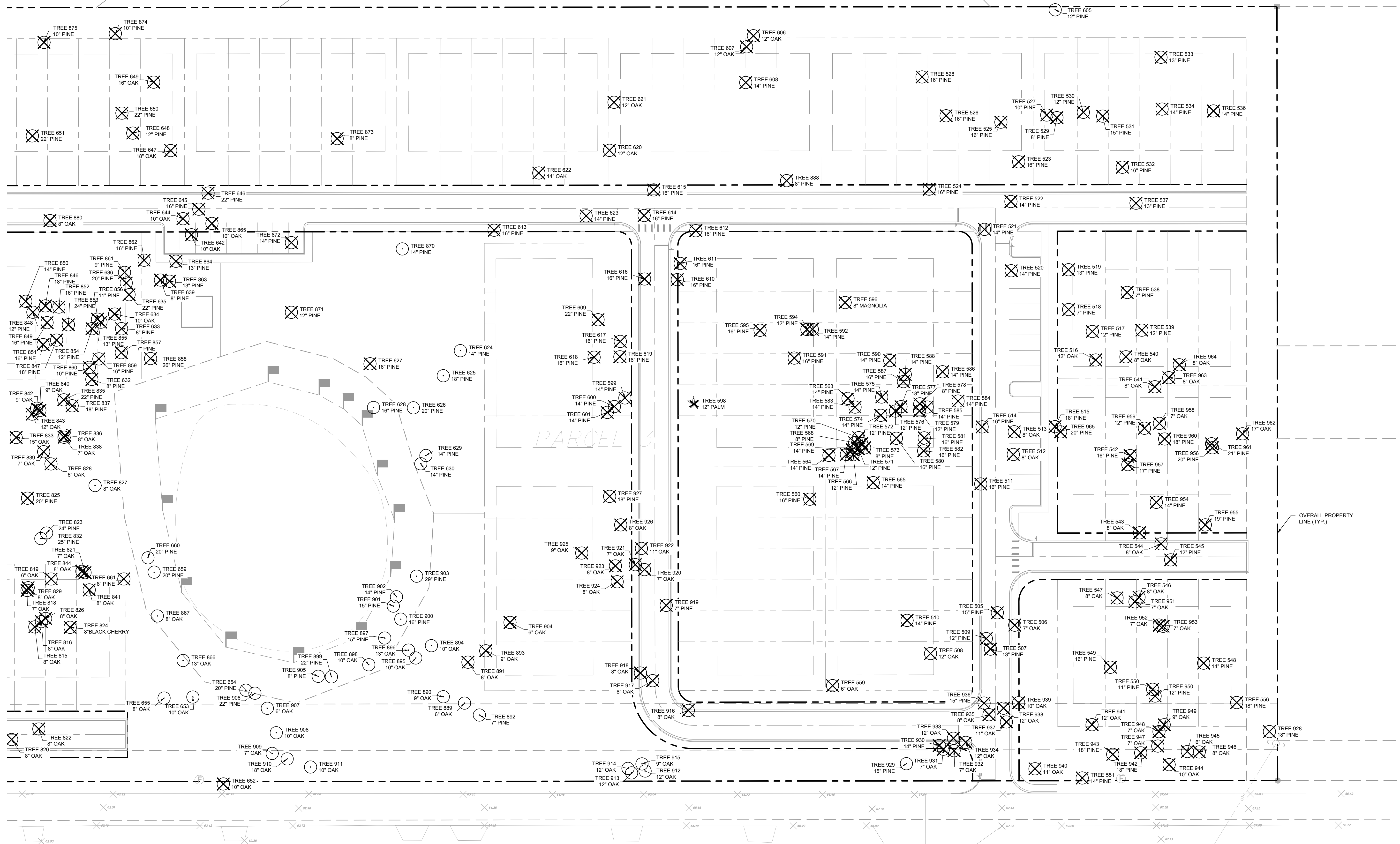
KHA PROJECT: 249095007
 DATE: 03.31.2023
 SCALE: AS SHOWN
 DESIGNED BY: KHA
 DRAWN BY: RYP
 CHECKED BY: ASL
 DATE: 4/7/2023

TREE MITIGATION PLAN

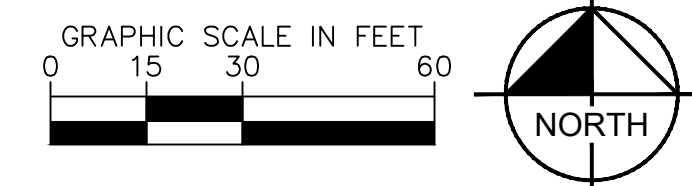
E HIGHBANK TOWNHOMES
 FLORIDA
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L0.51

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Plotted By: Martinez, Jeremiah Sheet: Set E - HIGHBANK TOWNHOMES Layout: L0.52 April 07, 2023 11:00:40am K:_Orl_Civil\249595007-E_Highbanks_Townhomes\CADD\001\PlanSheet\L0.52 - TREE MITIGATION PLAN.dwg This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



HIGHBANKS ROAD (R.O.W. VARIES)



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KHA PROJECT: 249095007
 DATE: 03.31.2023
 SCALE: AS SHOWN
 DESIGNED BY: KHA
 DRAWN BY: RYP
 CHECKED BY: ASL
 DATE: 4/7/2023

TREE MITIGATION PLAN

E HIGHBANK TOWNHOMES
 FLORIDA
 DEBARY
 SHEET NUMBER
L0.52

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TREE NUMBER	SPECIES	DBH (INCHES)	ACTION	DESCRIPTION
1014	OAK	8"	REMOVE	
1015	OAK	8"	REMOVE	
1016	OAK	8"	REMOVE	
1017	OAK	8"	REMOVE	
1018	PINE	18"	REMOVE	
1019	OAK	6"	REMOVE	
1020	OAK	8"	REMOVE	
1021	OAK	8"	REMOVE	
1022	OAK	10"	REMOVE	
1023	OAK	7"	REMOVE	
1024	OAK	10"	REMOVE	
1025	OAK	8"	REMOVE	
1026	OAK	8"	REMOVE	
1027	OAK	8"	REMOVE	
1028	PINE	18"	REMOVE	
1029	OAK	8"	REMOVE	
1030	OAK	11"	REMOVE	
1031	OAK	10"	REMOVE	
1032	PINE	20"	REMOVE	
1033	OAK	8"	REMOVE	
1034	OAK	8"	REMOVE	
1035	OAK	8"	REMOVE	
1036	OAK	10"	REMOVE	
1037	OAK	12"	REMOVE	
1038	OAK	10"	REMOVE	
1039	PINE	18"	REMOVE	
1040	PINE	18"	REMOVE	
1041	OAK	8"	REMOVE	
1042	PINE	18"	REMOVE	
1043	OAK	7"	REMOVE	
1044	OAK	6"	REMOVE	
1045	OAK	10"	REMOVE	
1046	PINE	18"	REMOVE	
1047	OAK	8"	REMOVE	
1048	OAK	7"	REMOVE	
1049	OAK	10"	REMOVE	
1050	OAK	14"	REMOVE	
1051	OAK	10"	REMOVE	
1052	OAK	13"	REMOVE	
1053	OAK	8"	REMOVE	
1054	OAK	8"	REMOVE	
1055	OAK	9"	REMOVE	
1056	OAK	8"	REMOVE	
1057	OAK	8"	REMOVE	
1058	OAK	8"	REMOVE	
1059	OAK	9"	PRESERVE	
1060	PINE	18"	PRESERVE	
1061	PINE	14"	PRESERVE	
1062	PINE	9"	PRESERVE	
1063	PINE	14"	REMOVE	
1064	OAK	8"	REMOVE	
1065	PINE	18"	PRESERVE	
1066	PINE	13"	PRESERVE	
1067	PINE	13"	REMOVE	
1068	PINE	14"	PRESERVE	
1069	PINE	8"	PRESERVE	
1070	PINE	10"	PRESERVE	
1071	OAK	16"	PRESERVE	
1072	OAK	9"	REMOVE	
1073	OAK	8"	REMOVE	
1074	OAK	10"	REMOVE	
1075	OAK	10"	REMOVE	
1076	OAK	10"	REMOVE	
1077	PINE	12"	REMOVE	
1078	OAK	7"	REMOVE	
1079	OAK	9"	REMOVE	
1080	OAK	9"	REMOVE	
1081	OAK	9"	REMOVE	
1082	PINE	13"	REMOVE	
1083	PINE	14"	REMOVE	
1084	PINE	15"	REMOVE	
1085	OAK	9"	REMOVE	
1086	OAK	10"	REMOVE	
1087	OAK	11"	REMOVE	
1088	OAK	12"	REMOVE	
1089	OAK	12"	REMOVE	
1090	OAK	12"	REMOVE	
1091	OAK	8"	REMOVE	
1092	OAK	10"	REMOVE	
1093	OAK	14"	REMOVE	
1094	OAK	11"	REMOVE	
1095	PINE	15"	REMOVE	
1096	OAK	8"	REMOVE	
1097	OAK	8"	REMOVE	
1098	OAK	8"	REMOVE	
1099	OAK	8"	REMOVE	
1100	PINE	10"	REMOVE	
1101	PINE	10"	REMOVE	
1102	PINE	17"	REMOVE	
1103	PINE	10"	REMOVE	
1104	OAK	7"	REMOVE	
1105	OAK	8"	REMOVE	
1106	OAK	8"	REMOVE	
1107	OAK	9"	REMOVE	
1108	OAK	8"	REMOVE	
1109	OAK	9"	REMOVE	
1110	OAK	9"	REMOVE	
1111	OAK	9"	REMOVE	
1112	OAK	9"	REMOVE	
1113	OAK	12"	REMOVE	

TREE NUMBER	SPECIES	DBH (INCHES)	ACTION	DESCRIPTION
1114	OAK	7"	REMOVE	
1115	OAK	7"	REMOVE	
1116	PINE	14"	REMOVE	
1117	PINE	12"	REMOVE	
1118	OAK	8"	REMOVE	
1119	OAK	10"	REMOVE	
1120	OAK	8"	REMOVE	
1121	OAK	8"	REMOVE	
1122	PINE	8"	PRESERVE	
1123	PINE	20"	PRESERVE	
1124	OAK	8"	PRESERVE	
1125	OAK	8"	PRESERVE	
1126	PINE	9"	PRESERVE	
1127	PINE	15"	PRESERVE	
1128	PINE	15"	PRESERVE	
1129	OAK	8"	REMOVE	
1130	OAK	10"	REMOVE	
1131	OAK	7"	REMOVE	
1132	OAK	11"	REMOVE	
1133	OAK	9"	REMOVE	
1134	PINE	14"	REMOVE	
1135	PINE	12"	REMOVE	
1136	OAK	7"	REMOVE	
1137	OAK	13"	REMOVE	
1138	OAK	10"	REMOVE	
1139	OAK	10"	REMOVE	
1140	PINE	22"	REMOVE	
1141	OAK	11"	REMOVE	
1142	OAK	11"	REMOVE	
1143	OAK	11"	REMOVE	
1144	OAK	11"	REMOVE	
1145	OAK	11"	REMOVE	
1146	OAK	7"	REMOVE	
1147	OAK	7"	REMOVE	
1148	PINE	12"	REMOVE	
1149	OAK	10"	REMOVE	
1150	PINE	11"	REMOVE	
1151	OAK	9"	REMOVE	
1152	OAK	8"	REMOVE	
1153	OAK	8"	REMOVE	
1154	OAK	8"	REMOVE	
1155	OAK	8"	REMOVE	
1156	OAK	10"	REMOVE	
1157	PINE	13"	REMOVE	
1158	PINE	16"	REMOVE	
1159	OAK	10"	REMOVE	
1160	OAK	9"	REMOVE	
1161	OAK	9"	REMOVE	
1162	OAK	9"	REMOVE	
1163	OAK	9"	REMOVE	
1164	PINE	16"	REMOVE	
1165	PINE	19"	REMOVE	
1166	PINE	16"	REMOVE	
1167	PINE	16"	REMOVE	
1168	PINE	16"	REMOVE	
1169	PINE	16"	REMOVE	
1170	OAK	8"	REMOVE	
1171	OAK	11"	REMOVE	
1172	PINE	15"	REMOVE	
1173	OAK	8"	PRESERVE	
1174	OAK	12"	REMOVE	
1175	PINE	19"	REMOVE	
1176	PINE	7"	REMOVE	
1177	OAK	8"	REMOVE	
1178	OAK	8"	REMOVE	
1179	OAK	8"	REMOVE	
1180	OAK	11"	PRESERVE	
1181	OAK	11"	PRESERVE	
1182	OAK	8"	REMOVE	
1183	OAK	15"	REMOVE	
1184	OAK	7"	PRESERVE	
1185	PINE	12"	PRESERVE	
1186	PINE	19"	REMOVE	
1187	OAK	10"	REMOVE	
1188	OAK	14"	REMOVE	
1189	OAK	7"	REMOVE	
1190	OAK	7"	PRESERVE	
1191	PALM	13"	PRESERVE	
1192	PALM	12"	PRESERVE	
1194	PINE	15"	REMOVE	
1195	PINE	9"	REMOVE	

TREE MITIGATION TABLE	
PER SEC 5-88	
REQUIRED:	
714,123 SF	TOTAL SITE AREA
15%	REQUIRED PROTECTION
107118.45 SF	
PROVIDED:	
27,139 SF	WETLAND PRESERVATION AREA
481974.8 SF	OPEN SPACE
509,113.8 SF	TOTAL
AREA TREE PROTECTION REQUIREMENT MET	

TREE DATA			
SPECIES	PRESERVE	REMOVE	TOTAL
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MAGNOLIA	0	8	8
OAK	393	2,235	2,628
PALM	25	12	37
PINE	796	3,633	4,429
GRAND TOTAL	1,214	5,896	7,110

KHA PROJECT
249098007
DATE
03.31.2023
SCALE AS SHOWN
DESIGNED BY KHA
DRAWN BY RYP
CHECKED BY ASL
DATE: 4/7/2023

TREE DATA

E HIGHBANK TOWNHOMES

SHEET NUMBER
L0.54

Kimley»Horn
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PHONE: 407-898-1511
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DEBARY FLORIDA

CHECKED BY: ASL
DATE: 4/7/2023

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Plotted By: Morfinez, Jeremiah - Sheet: Set E - HighBank - Townhomes - 249095007 - E - Highbanks - Townhomes - CADW - 001 - PlotSheet - L0.55 - TREE MITIGATION PLAN.dwg
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TREE MITIGATION SPECIFICATIONS

A. GENERAL

- 1. CONTRACTOR SHALL ADHERE TO ALL TREE PROTECTION REQUIREMENTS LISTED IN THESE SPECIFICATIONS AND/OR THOSE LISTED IN THE CITY OR COUNTY ZONING CODE. TREE PROTECTION (LATEST EDITION), WHICHEVER IS MORE STRINGENT SHALL APPLY.
2. CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION PROCEDURES WITH THE PROJECT ARBORIST PRIOR TO BEGINNING WORK.
3. ANY AREAS SUBJECT TO EROSION MUST BE ADEQUATELY STABILIZED WITH VEGETATION MATERIAL THAT WILL, WITHIN A REASONABLE TIME FRAME, DETER SOIL DISTURBANCE.
4. NO SIGNS, BUILDING PERMITS, WIRES OR OTHER ATTACHMENTS OF ANY KIND SHALL BE ATTACHED TO ANY TREE OR PALM. GUY WIRES DESIGNED TO PROTECT TREES ARE EXCLUDED FROM THIS PROHIBITION.
5. EXISTING TREE LOCATIONS AND SIZES ARE ESTIMATES AND ARE BASED ON A SURVEY PROVIDED BY THE OWNER SELECTED SURVEYOR.
6. CONTRACTOR SHALL COORDINATE TREE REMOVAL WITH PERMITTING AGENCY AND PROJECT ARBORIST PRIOR TO CONSTRUCTION. NO PERSON MAY REMOVE OR CAUSE TO BE REMOVED ANY PROTECTED TREE OR PALM WITHOUT FIRST HAVING PROCURED A PERMIT AS PROVIDED BY THE APPROPRIATE PERMITTING AGENCY.
7. FOR PROTECTED TREES OR PALMS BEING REMOVED, THE CONTRACTOR MUST GIVE THE PERMITTING AGENCY REASONABLE OPPORTUNITY TO RELOCATE TREES DESIGNATED FOR REMOVAL TO ANOTHER SITE AT THE PERMITTING AGENCY'S EXPENSE.
8. CONTRACTOR IS RESPONSIBLE FOR POSSESSING ALL REQUIRED APPLICATOR LICENSES, BUSINESS REGISTRATIONS AND INSURANCE, PESTICIDE LABELS, AND MATERIAL DATA SAFETY SHEETS. THE CONTRACTOR IS ALSO RESPONSIBLE FOR HAVING ALL SPILL CONTAINMENT MATERIALS AND REQUIRED PERSONAL PROTECTIVE EQUIPMENT FOR PESTICIDE APPLICATIONS AND ACCIDENTAL SPILLS ON SITE AT ALL TIMES. THE OWNER RESERVES THE RIGHT TO INSPECT EACH APPLICATOR AND HAVE THESE MATERIALS PRESENTED BEFORE AND DURING ANY PESTICIDE TREATMENT.
9. WHERE TRAFFIC AREAS ARE PROPOSED WITHIN THE DRIP LINE OF PROTECTED TREES AND LESS THAN FOUR (4) INCHES OF GRADE CHANGE ARE PROPOSED, PERMEABLE SURFACES THAT ALLOW AIR AND WATER INTO THE SOIL SHOULD BE USED IN LIEU OF ASPHALT OR OTHER SUCH IMPERVIOUS SURFACES.
10. TREE WELLS OF AN APPROVED DESIGN SHALL BE CONSTRUCTED AROUND ALL TREES TO BE PRESERVED WHEN MORE THAN FOUR INCHES OF FILL IS TO BE DEPOSITED WITHIN THE DRIP LINE AREA OF THOSE TREES. COORDINATE WITH PROJECT ARBORIST.
11. THE SEQUENCE OF TREE MITIGATION AND PRESERVATION MEASURES IS IMPERATIVE TO THE HEALTH AND SURVIVABILITY OF THE SUBJECT TREES AND SHALL BE COORDINATED WITH THE OWNER SELECTED PROJECT ARBORIST. THE DESIRED SEQUENCE IS OUTLINED BELOW:
a. TREE PROTECTION FENCING.
b. ROOT PRUNING AND ROOT BARRIERS.
c. CLEARING.
d. TREE CANOPY PRUNING.
e. FERTILIZATION.
f. INSECTICIDE.
g. IRRIGATION.

B. TREE PROTECTION FENCING

- 1. PRIOR TO THE ERECTION OF ANY TREE PROTECTION FENCING, ALL FOREIGN SURFACE MATERIAL, TRASH OR DEBRIS SHALL BE REMOVED FROM THE AREA TO BE ENCLOSED BY THE FENCING. AFTER ERECTION OF THE FENCING NO SUCH MATERIAL OR LITTER SHALL BE PERMITTED TO REMAIN WITHIN THE PROTECTED AREA.
2. TREE PROTECTION FENCING SHALL BE PLACED AROUND ALL PROTECTED TREES TO CREATE A PROTECTIVE ROOT ZONE AND SHALL REMAIN IN PLACE UNTIL SITE CLEARING, LAND ALTERATION, AND CONSTRUCTION ACTIVITIES ARE COMPLETE.
3. NATIVE GROUND COVER AND UNDERSTORY VEGETATION EXISTING WITHIN THE PROTECTED AREA SHALL REMAIN THROUGHOUT CONSTRUCTION. OTHER DESIGNATED VEGETATION AND INVASIVE PLANT SPECIES SHALL BE REMOVED ONLY BY MANUAL LABOR UTILIZING HAND TOOLS, OR BY OTHER METHODS APPROVED BY THE PROJECT ARBORIST.
4. TREE PROTECTION FENCING TYPES AND LOCATIONS SHALL BE ERECTED AS SHOWN ON THE TREE MITIGATION PLANS AND DETAILS, OR AS REQUESTED BY LOCAL AGENCY.
5. FINAL LOCATIONS SHALL BE COORDINATED WITH AND APPROVED BY THE PROJECT ARBORIST.
6. NO MATERIALS, EQUIPMENT, SPOIL, WASTE OR WASHOUT WATER MAY BE DEPOSITED, STORED, OR PARKED WITHIN 20 FEET OF THE TREE PROTECTION ZONE.
7. EROSION CONTROL DEVICES SUCH AS SILT FENCING, DEBRIS BASINS, AND WATER DIVERSION STRUCTURES SHALL BE INSTALLED TO PREVENT SILTATION AND/OR EROSION WITHIN THE TREE PROTECTION ZONE.
8. CONSTRUCTION ACTIVITY SHALL NOT DESTROY OR IRREVERSIBLY HARM THE ROOT SYSTEM OF PROTECTED TREES. POST HOLES AND TRENCHES LOCATED CLOSE TO PROTECTED TREES SHALL BE ADJUSTED TO AVOID DAMAGE TO MAJOR ROOTS.
9. DO NOT INSTALL CONDUIT, DRAIN OR IRRIGATION LINES, OR ANY UTILITY LINE WITHIN THE TREE PROTECTION ZONE WITHOUT THE APPROVAL OF THE PROJECT ARBORIST. IF LINES MUST TRAVERSE THE PROTECTION AREA, THEY SHALL BE TUNNELED OR BORED UNDER THE TREE.
10. CONTRACTOR'S ACCESS TO FENCED TREE PROTECTION AREAS WILL BE PERMITTED ONLY WITH APPROVAL OF THE PROJECT ARBORIST.
11. EXCAVATION OR GRADING REQUIRED WITHIN THE PROTECTED AREA SHALL BE LIMITED TO THREE (3) INCHES OF CUT OR FILL. COORDINATE WITH PROJECT ARBORIST.
12. STRUCTURES AND UNDERGROUND FEATURES TO BE REMOVED WITHIN THE TREE PROTECTION ZONE SHALL BE COORDINATED WITH THE PROJECT ARBORIST.
13. TREE PROTECTION FENCING AROUND TREES TO BE RELOCATED SHALL BE ERECTED UNTIL THE TREE IS READY TO BE RELOCATED AND NEW FENCING SHALL BE ERECTED AT THE TREES NEW LOCATION AND WILL REMAIN IN PLACE UNTIL ALL CONSTRUCTION ACTIVITIES ARE COMPLETE.
14. IF ANY DAMAGE TO TREE PROTECTION FENCING SHOULD OCCUR BY ACCIDENT OR NEGLIGENCE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMMEDIATE REPAIRS.
15. IF TEMPORARY HAUL OR ACCESS ROADS MUST PASS OVER THE PROTECTED AREA OF TREES TO BE PRESERVED, A ROAD BED OF SIX (6) INCHES OF MULCH OR GRAVEL SHALL BE CREATED TO PROTECT THE SOIL. THE ROAD BED MATERIAL SHALL BE REPLENISHED AS NECESSARY TO MAINTAIN A SIX (6) INCH ROAD BED AT ALL TIMES. CONTRACTOR SHALL REMOVE ALL SUCH MATERIALS FROM THE SITE AS SOON AS TEMPORARY ACCESS IS NO LONGER NECESSARY.
16. CONTRACTOR SHALL COORDINATE WITH THE PROJECT ARBORIST PRIOR TO THE REMOVAL OF ALL TREE PROTECTION FENCING.

C. ROOT PRUNING/TRENCHING

- 1. TRENCHING LOCATIONS SHALL BE APPROVED IN THE FIELD BY THE PROJECT ARBORIST.
2. TRENCHING EQUIPMENT THAT WILL TURN AT HIGH RPM'S IS PREFERRED, AND SHALL BE APPROVED BY THE PROJECT ARBORIST. APPROVED EQUIPMENT WILL BE USED TO PERFORM ALL ROOT PRUNING OPERATIONS. A MINIMUM DEPTH OF THREE FEET IS REQUIRED.
3. INSTALL ROOT BARRIER WHERE DESIGNATED. SEE TREE MITIGATION PLAN AND DETAIL SHEETS.
4. THE TRENCH SHALL BE BACKFILLED WITH PREVIOUSLY EXCAVATED SOIL AND COMPACTED IMMEDIATELY.
5. TREES TO BE RELOCATED SHALL BE ROOT PRUNED A MINIMUM OF TWELVE (12) WEEKS PRIOR TO TREE RELOCATION.
6. WHEN THE TREE ROOT ZONE WILL BE DISTURBED, AFFECTED ROOTS MUST BE SEVERED BY CLEAN PRUNING CUTS AT THE POINT WHERE CONSTRUCTION IMPACTS THE ROOTS.

D. CLEARING

- 1. ANY BRUSH CLEARING REQUIRED WITHIN THE TREE PROTECTION ZONE SHALL BE ACCOMPLISHED WITH HAND-OPERATED EQUIPMENT.
2. CONTRACTOR SHALL CLEAR ALL TREE PROTECTION AREAS OF VINES, SHRUBS, GROUND COVERS, WEEDS, SAPLINGS, AND INVASIVES LISTED ON THE LATEST EDITION OF THE FLORIDA EXOTIC PEST PLANT COUNCIL'S LIST OF INVASIVE SPECIES.
3. PROJECT ARBORIST MUST APPROVE METHODS OTHER THAN HAND CLEARING.

- 4. A TWO (2) INCH LAYER OF MULCH SHALL BE APPLIED OVER THE SURFACE OF EXPOSED ROOTS OF PROTECTED TREES DURING THE SITE CLEARING PHASE.

E. TREE CANOPY PRUNING

- 1. TREE PRUNING SPECIFICATIONS SHALL BE DEFINED BASED ON SPECIFIC RECOMMENDATIONS OF THE PROJECT ARBORIST. INFORMATION PRESENTED BELOW SHOULD BE USED AS A GUIDELINE.
2. CONTRACTOR SHALL VISIT THE SITE WITH THE PROJECT ARBORIST TO VERIFY THE EXTENT OF REQUIRED PRUNING.
3. ALL PRUNING SHALL BE PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS OF A QUALIFIED INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA) CERTIFIED ARBORIST OR AN AMERICAN SOCIETY OF CONSULTING ARBORISTS (ASCA) REGISTERED CONSULTING ARBORIST (RCA).
4. AT LEAST ONE MEMBER OF THE PRUNING CREW SHALL BE AN ISA CERTIFIED ARBORIST.
5. WHILE IN THE TREE, THE ARBORIST SHALL PERFORM AN AERIAL INSPECTION TO IDENTIFY DEFECTS THAT REQUIRE TREATMENT. ANY ADDITIONAL WORK NEEDED SHALL BE REPORTED TO THE OWNER.
6. PRUNING CUTS SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE ANSI A300 PRUNING STANDARD (AMERICAN NATIONAL STANDARD FOR TREE CARE OPERATIONS) AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF ANSI Z133.1 SAFETY STANDARD. PRUNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ISA'S 'BEST MANAGEMENT PRACTICES: TREE PRUNING'.
7. WHERE TEMPORARY CLEARANCE IS NEEDED FOR ACCESS, BRANCHES SHALL BE TIED BACK TO HOLD THEM OUT OF THE CLEARANCE ZONE.
8. NO MORE THAN 20 PERCENT OF LIVE FOLIAGE SHALL BE REMOVED WITHIN ANY TREE.
9. ALL TREES WITHIN THE PROJECT AREA SHALL BE PRUNED AS FOLLOWS:
a. LIVE BRANCH PRUNING SHOULD BE PERFORMED ONLY WHEN THE DANGER OF INSECT OR DISEASE INFESTATION IS NOT PRESENT.
b. REMOVE STUBS, CUTTING OUTSIDE THE WOUND WOOD TISSUE THAT HAS FORMED AROUND THE BRANCH.
c. CLEANING, FOR THE SELECTIVE REMOVAL OF DEAD, DISEASED, BROKEN, OR CROSSING BRANCHES DOWN TO ONE INCH IN DIAMETER OR AS DIRECTED BY THE PROJECT ARBORIST.
d. PRUNING CUTS LARGER THAN 4 INCHES IN DIAMETER, EXCEPT FOR DEAD WOOD, SHALL BE AVOIDED.
e. PRUNING CUTS THAT EXPOSE HEARTWOOD SHALL BE AVOIDED WHENEVER POSSIBLE.
f. ALL TREES WITH CROWNS THAT PROJECT INTO PARKING LOT/ROADWAY AREAS SHALL BE RAISED TO 14 FEET ABOVE FINISHED GRADE.
g. ALL TREES WITH CROWNS THAT PROJECT INTO SIDEWALK AREAS SHALL BE RAISED TO A HEIGHT OF 8 FEET ABOVE FINISHED GRADE.
9. TREES, WHO'S ROOT SYSTEMS WILL BE IMPACTED SHALL RECEIVE THE FOLLOWING PRUNING TO COMPENSATE FOR ROOT LOSS:
a. THE LOCATION AND SIZE OF BRANCHES FOR REDUCTION SHALL BE DEFINED BY THE PROJECT ARBORIST.
b. REDUCTION, OR THE SELECTIVE PRUNING TO REDUCE TREE HEIGHT OR SPREAD.
c. REDUCE END WEIGHT ON HEAVY, HORIZONTAL BRANCHES BY SELECTIVELY REMOVING SMALL DIAMETER BRANCHES, NO GREATER THAN 2 TO 3 INCHES, NEAR THE ENDS OF SCAFFOLD BRANCHES.
d. RAISING SHALL CONSIST OF SELECTIVE PRUNING TO PROVIDE VERTICAL CLEARANCE.
10. PROPOSED/REPLACEMENT TREES
a. PRUNING SHALL BE LIMITED TO CLEANING.
11. BRUSH SHALL BE CHIPPED AND SPREAD (ONLY WHEN DISEASE OR INSECT INFESTATION IS NOT PRESENT) UNDERNEATH TREES WITHIN THE TREE PROTECTION ZONE TO A MAXIMUM DEPTH OF THREE (3) INCHES, LEAVING THE TRUNK CLEAR OF MULCH.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL EXCESS DEBRIS ON A DAILY BASIS.

F. FERTILIZATION

- 1. CONTRACTOR SHALL COORDINATE FERTILIZATION PLAN, FOLLOWING BEST MANAGEMENT PRACTICES WITH THE PROJECT ARBORIST PRIOR TO COMMENCEMENT OF WORK.
2. EVERY EFFORT SHALL BE MADE TO UTILIZE CHEMICALS OF AN ORGANIC OR BIODEGRADABLE NATURE IN ORDER TO OFFER THE LEAST IMPACT TO THE NATURAL ENVIRONMENT. CONTRACTOR IS RESPONSIBLE FOR MIXING, APPLYING, AND DISPOSAL OF ALL CHEMICALS IN ACCORDANCE WITH STRICT ADHERENCE TO MANUFACTURER'S SPECIFICATIONS. COORDINATE WITH PROJECT ARBORIST FOR FURTHER INSTRUCTION.
3. ONLY TREES AFFECTED BY CONSTRUCTION OR AS SHOWN ON THE TREE MITIGATION PLAN AND TREE INVENTORY SCHEDULE SHALL BE TREATED.
4. TREES SPECIFIED TO RECEIVE FERTILIZER SHALL BE TREATED AS FOLLOWS:
a. MIX FERTILIZER ACCORDING TO MANUFACTURER'S SPECIFICATIONS INTO A TANK WITH AGITATION CAPABILITY.
b. MIX WETTING AGENT ACCORDING TO MANUFACTURER'S SPECIFICATIONS INTO SAME TANK WITH FERTILIZER. AGITATE MIX.
c. INJECT THE MIXTURE WITH A HYDRAULIC INJECTION SYSTEM INTO THE UPPER 6-12 INCHES OF SOIL WITH A SOIL PROBE. INJECT AT THE RATE OF ONE THIRD (1/3) GALLON AT EACH INJECTION SITE.
d. THE CRITICAL ROOT ZONE AREA PLUS 2' BEYOND THE CRITICAL ROOT ZONE SHALL BE INJECTED, BUT NOT BEYOND ROOT PRUNING LOCATIONS.
e. FERTILIZER SHALL BE INSTALLED PRIOR TO THE INSTALLATION OF ANY AERATION SYSTEMS.
f. EMPTY PRODUCT CONTAINERS SHALL BE STOCKPILED FOR INSPECTION BY THE PROJECT ARBORIST PRIOR TO DISPOSAL.

G. INSECTICIDE

- 7. NOTIFY PROJECT ARBORIST IF ANY INFESTATION IS NOTICED.
8. FOLLOW PROJECT ARBORIST'S RECOMMENDED PROCEDURES.
9. FOLLOW ALL MANUFACTURERS' RECOMMENDATIONS CONCERNING APPLICATION. READ ALL WARNING LABELS.
10. ANY PETS, AS WELL AS, THE PETS FOOD AND WATER BOWLS SHOULD BE REMOVED FROM THE AREA AND ANY SWIMMING POOLS SHOULD BE COVERED. COORDINATE WITH PROJECT ARBORIST FOR FURTHER INSTRUCTION.
11. ENSURE COMPLETE COVERAGE AND REAPPLY 2-3 MONTHS AFTER INITIAL APPLICATION UTILIZING SAME PROCEDURE.

H. IRRIGATION

- 1. EVERY EFFORT SHALL BE MADE TO WATER THE PRESERVED TREES AND TRANSPLANTS. CONTRACTOR SHALL IRRIGATE BY HAND OR BY TEMPORARY IRRIGATION.
2. IRRIGATE AS REQUIRED BY PROJECT ARBORIST UNTIL PERMANENT IRRIGATION IS INSTALLED AND OPERATING.
3. UNDERGROUND IRRIGATION SHALL NOT BE INSTALLED WITHIN THE DRIP LINES OF EXISTING TREES UNLESS ROOT PROTECTION MEASURES ARE PROVIDED AND APPROVED BY PROJECT ARBORIST.

I. TREE REMOVALS

- 1. PRIOR TO AND DURING LAND CLEARING, INCLUDING GRUBBING, ALL TREES TO BE REMOVED SHALL BE CLEARLY MARKED BY PROJECT ARBORIST WITH RED SURVEY RIBBONS AT 36 INCHES MINIMUM ABOVE GRADE.
2. CONTRACTOR SHALL REMOVE ALL TREES AS SHOWN ON THE TREE MITIGATION PLANS AFTER THE TREE PROTECTION FENCING IS INSTALLED.
3. ALL TREES SHOWN TO BE REMOVED SHALL BE FELLED WITH A CHAIN SAW AND STUMP GROUND 6" BELOW SURFACE. ANY TREE SHOWN TO BE REMOVED THAT IS IN AN AREA WHERE COMPACTION IS CRITICAL SHALL BE FELLED WITH A CHAIN SAW AND STUMP REMOVED BY CONTRACTOR.
4. ALL WOOD AND STUMPS FROM REMOVALS SHALL BE HAULED FROM THE SITE THE SAME DAY, EXCEPT FOR TOPS. ALL TOPS ARE TO BE MULCHED AND STOCKPILED OR HAULED DIRECTLY TO MULCHED AREAS FOR RELOCATED TREES IF SCHEDULING PERMITS. TOPS

- SHALL BE CHIPPED AND PLACED IN THE TREE PROTECTION ZONE TO A DEPTH OF THREE (3) INCHES. ALL EXCESS WOOD CHIPS SHOULD BE HAULED OFF SITE AFTER TRANSPLANTING IS COMPLETE.

L. TOPSOIL

- 10. CONTRACTOR SHALL COORDINATE ALL EARTHWORK OPERATIONS WITHIN TREE PROTECTION AREAS WITH THE PROJECT ARBORIST PRIOR TO BEGINNING WORK.
11. ALL TOPSOIL SHALL BE NATURAL, FRIABLE, FERTILE, FINE LOAMY SOIL POSSESSING CHARACTERISTICS OF REPRESENTATIVE TOPSOIL IN THE VICINITY THAT PRODUCES HEAVY GROWTH.
12. TOPSOIL PH RANGE OF 5.5 TO 7.0, 3-5 PERCENT ORGANIC MATERIAL MINIMUM, FREE FROM SUBSOIL, OBJECTIONABLE WEEDS, LITTER, SODS, STIFF CLAY, STONES LARGER THAN ONE (1) INCH IN DIAMETER, STUMPS, ROOTS, TRASH, TOXIC SUBSTANCES, OR ANY OTHER MATERIAL WHICH MAY BE HARMFUL TO PLANT GROWTH.
13. VERIFY AMOUNT STOCKPILED IF ANY, AND SUPPLY ADDITIONAL AS NEEDED FROM NATURALLY WELL-DRAINED SITES WHERE TOPSOIL OCCURS AT LEAST FOUR (4) INCHES DEEP. DO NOT OBTAIN TOPSOIL FROM BOGS OR MARSHES.
14. PROJECT ARBORIST SHALL APPROVE ALL TOPSOIL PRIOR TO PLACEMENT.

M. REPAIR OF DAMAGED TREES

- 1. IF DAMAGE TO ANY TREE SHOULD OCCUR BY ACCIDENT OR NEGLIGENCE DURING THE CONSTRUCTION PERIOD, THE PROJECT ARBORIST SHALL APPRAISE THE DAMAGE AND MAKE RECOMMENDATIONS TO THE OWNER FOR REPAIR BY THE CONTRACTOR.
2. IF ANY TREE DESIGNATED TO BE SAVED IS REMOVED FROM THE SITE WITHOUT PERMISSION OF THE OWNER'S REPRESENTATIVE, THE PROJECT ARBORIST SHALL APPRAISE THE TREE AND MAKE RECOMMENDATIONS TO THE OWNER FOR REPLACEMENT BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OF THE TREE AND ANY FEES THAT MAY BE ASSESSED TO THE OWNER BY THE GOVERNING AGENCY.

1 TYPICAL TREE MITIGATION NOTES

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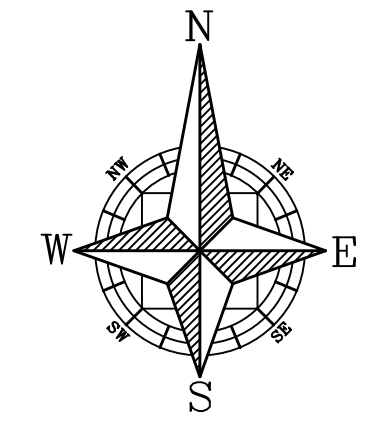
Table with 2 columns: No., DATE

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Project metadata table: KHA PROJECT 249095007, DATE 03.31.2023, SCALE AS SHOWN, DESIGNED BY KHA, DRAWN BY RYP, CHECKED BY ASIL, DATE 4/7/2023

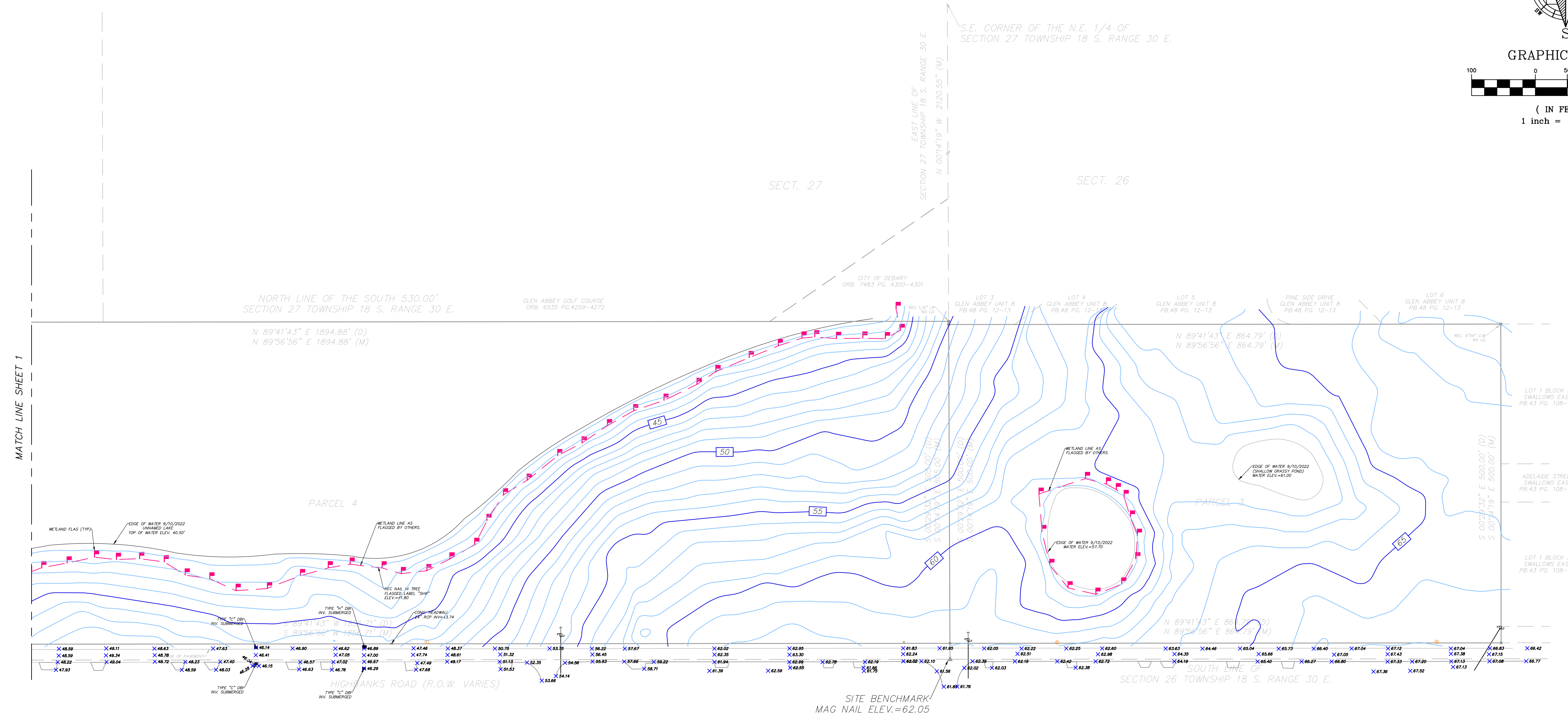
TREE SPECIFICATIONS

E HIGHBANK TOWNHOMES logo and location: FLORIDA, DEBARY



GRAPHIC SCALE

(IN FEET)
1 inch = 100 ft.



UTILITY LOCATION NOTE: UTILITIES WERE LOCATED AS MARKED PER LOCATE TICKET # 214204790. MOST OF THE DRAINAGE STRUCTURES SHOWN WERE FULLY CHARGED DUE TO THE HIGH WATER LEVEL AND ACCURATE INVERTS WERE UNABLE TO BE MEASURED. THE COMMUNICATION PROVIDER'S LOCATE SERVICE DECLINED TO MARK THE FIBER OPTIC AND COMMUNICATION LINES FOR A SURVEY. THESE UTILITIES WERE LOCATED BY VISIBLE PERMANENT MARKERS AND APPURTENANCES.

- MARKED COMMUNICATIONS
MARKED SANITARY
MARKED WATER
MARKED GAS
MARKED POWER

- LEGEND
SYMBOLS FOR: SURVEY MONUMENTS (WOOD, CONCRETE, BRASS), BOUNDARIES, UTILITIES, AND SURVEY DATA POINTS.

NOTES

- 1. BEARINGS ARE BASED ON THE SOUTH LINE OF THE SOUTHEAST 1/4 SECTION 27 TOWNSHIP 18 SOUTH RANGE 30 EAST, (PL. EAST NAD83).
2. THE SURVEY SHOWN HEREON WAS SUPERVISED BY THE LEGAL DESCRIPTION PROVIDED BY THE CLIENT.
3. ROOF OVERHANGS AND FOOTERS HAVE NOT BEEN LOCATED.
4. NO IMPROVEMENTS OR UTILITIES HAVE BEEN LOCATED EXCEPT AS SHOWN.
5. THIS SURVEY IS NOT VALID WITHOUT THE SURVEYOR'S SEAL.
6. THIS SURVEY IS NOT VALID FOR ANY REAL ESTATE TRANSACTIONS 90 DAYS BEYOND THE FINAL SURVEY DATE SHOWN.
7. THE SURVEYOR HAS NOT ABSTRACTED THE LANDS HEREON FOR EASEMENTS OR RIGHT-OF-WAY OF RECORD.
8. THERE MAY BE ADDITIONAL RESTRICTIONS THAT ARE NOT RECORDED ON THIS PLAT THAT MAY BE FOUND IN THE PUBLIC RECORDS OF THIS COUNTY.
9. ALL BEARINGS / ANGLES AND DISTANCES ARE PLAT AND MEASURED UNLESS NOTED OTHERWISE.
10. ELEVATIONS ARE BASED ON THE F.D.O.T. F.P.R.N. NETWORK (NAVD 88).
11. SEE BOUNDARY AND TREE SURVEYS FOR OTHER SURVEY INFORMATION.

TOPOGRAPHIC SURVEY

CERTIFIED TO: Savi Investments, LLC c/o Suresh Gupta
HF Huntsville, LLC
Old Republic National Title Insurance Company
George Stedrosky, III, Trustee

PREPARED BY: CHARLES ROB DEFOOR
PROFESSIONAL LAND SURVEYOR
P.O. BOX 1472, GENEVA, FLA. 32732 / (407) 880-9811 WWW.DEFOORSURVEYING.COM

I HEREBY CERTIFY THAT THIS SURVEY MEETS OR EXCEEDS THE MINIMUM TECHNICAL STANDARDS AND IS ELECTRONICALLY SIGNED AND SEALED AS SET FORTH BY THE FLORIDA BOARD OF LAND SURVEYORS, PURSUANT TO SECTION 464-12.000, F.S.; 12-13-002, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 412.04, 412.071, FLORIDA STATUTES.

CHARLES R. DEFOOR, PLS 4189

DATE SIGNED: 8-21-2022

SURVEY DATE: 8-17-2022
DRAWN DATE: 8-25-2022
DRAWN BY: JR
SCALE: 1"=100'
SHEET: 2 OF 2
REVISION DATE:



Stormwater Calculation Report

For
East Highbanks Townhomes
Debary, FL

Prepared By
Kimley-Horn, Inc.
Joshua Enot, P.E.
189 South Orange Avenue, Suite 1000
Orlando, FL 32801

April 7, 2023

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1 INTRODUCTION AND PURPOSE

The project site is located north of E Highbanks Rd and east of US-17 (Refer to Appendix A for location maps). The project is within APN parcel no. 802700000062 and 802600000065 and is currently zoned PUD, planned unit development. The project will comply with City of DeBary, Volusia County, and the St. Johns River Water Management District regulations. The site currently falls under the Lake Monroe Watershed.

EXISTING CONDITONS

The project is disturbing approximately 17.2 acres of land. The site is currently undeveloped and contains two existing wetlands on-site is mainly heavy forested. The site currently has no existing stormwater drainage system with all stormwater runoff sheet flowing toward the lake (which will be referred to in the remaining of the report as "Wetland 1". Refer to Appendix C). The existing drainage pattern shows the stormwater flowing into three basins. Basin 1 shows all stormwater runoff sheet flowing Northwest towards the lake/Wetland1. The remaining basins 2 and 3 show stormwater sheet flowing into either the other existing wetland (Wetland 2) or small shallow pond (Pond 1) on-site. The existing Wetland 1 and Pond 1 will eventually overtop, and the stormwater will bypass the existing land weir and flow towards Basin 1. Ultimately all stormwater will either percolate down to the soil or flow into the existing Wetland 1 outfall. The current basin is a closed basin.

PROPOSED SITE CONDITONS

The proposed development includes 23 townhomes buildings consisting of 126 total units. The development contains an associated park, amenity area, drive aisles, and a proposed dry detention pond. The existing wetland and 25' buffer surrounding it, will remain undisturbed. The proposed stormwater development will function as a single closed drainage area basin per existing conditions. The proposed stormwater runoff will flow into three basins. Basin 1 will sheetflow directly to the existing Wetland 1. Basin 2 will collect all runoff through sheet flow and curb and gutter and pipe to the retention pond. Basin 3 will flow and stay in the undisturbed Wetland 2 area (Refer to Appendix C). Existing drainage patterns were maintained wherever possible and ultimately all runoffs will percolate down to the soil or be treated and directed to the existing lake.

METHODOLOGY

The stormwater runoff from the pre-development and post-development basins was determined using Advanced Interconnected Channel & Pond Routing (ICPR Ver. 4.04) by Streamline Technologies, Inc. Please refer to **Appendix C** for the nodal diagram and **Appendix C** for the input report, basin summary, and drainage analysis summaries.

The Stormwater runoff from the residential subdivision will be treated by using dry detention ponds. Runoff from the on-site post-development basins will be collected through secondary stormwater conveyance systems. The dry pond will provide the required presumptive treatment and nutrient removal (nitrogen and phosphorous) for each of these

basins based on the permanent pool volume and max residence time of 21 days. This includes the required treatment of 2.5" of runoff over the basin requirement or 1" over impervious. The final pond discharge on-site will be to the existing wetlands which will eventually outfall to the St. Johns River. All stormwater treatment and attenuation is managed by on-site proposed stormwater pond. Please see the stage/storage for the pond systems within **Appendix C**. Per requirement for the 25-year, 24 hour storm event, the pre-development conditions exceeded the post-development conditions. Refer to Appendix C for further information. See below for summary:

Storm Event	Pre-Conditions Q (CFS)	Post-Conditions Q (CFS)
10yr-24hr	1.77	1.23
25yr-24hr	5.43	3.94

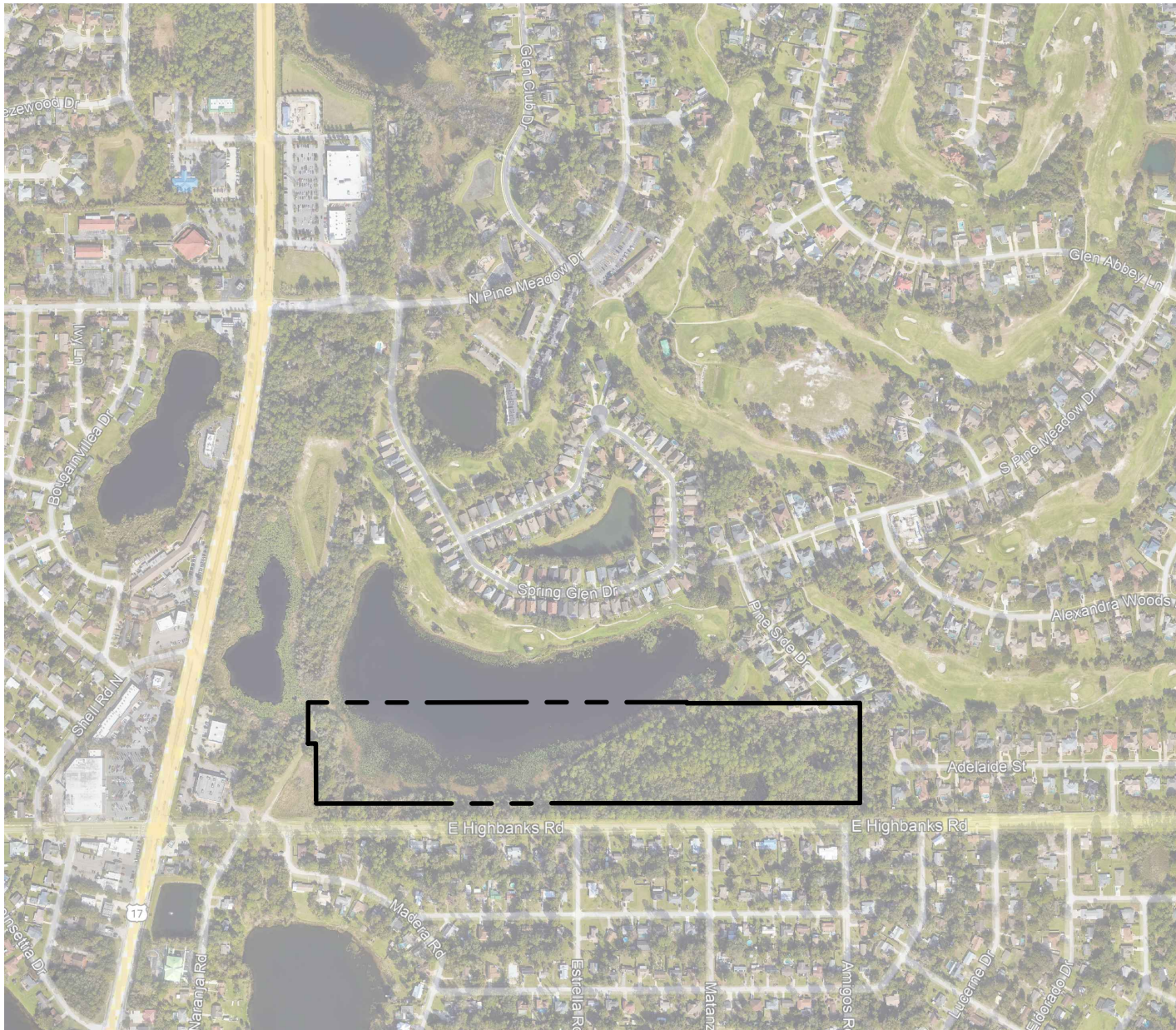
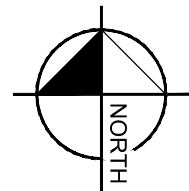
The proposed dry pond has a top of pond at 57.0'. During the following storm events, the pond will stage:

Storm Event	Pond Stage
10yr-24hr	55.61
25yr-24hr	55.92
100yr-24hr	56.48

CONCLUSION

The design of the proposed stormwater management system meets or exceeds all the requirements of the City of Debarry and SJRWMD by providing sufficient treatment volume within the wet ponds, exceeding nutrient removal requirements and limiting the proposed development discharge for the SJRWMD 25year/24hour storm.

APPENDICES A
General Location Map



This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

SCALE	N.T.S.
DESIGNED BY	DVS
DRAWN BY	DVS
CHECKED BY	JE

Kimley»Horn
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DATE	04/07/2023
PROJECT NO.	249098007

**GENERAL LOCATION MAP
 HIGHBANKS TOWNHOMES**

DESIGN ENGINEER:	
FLORIDA P.E. LICENSE NO.:	

SHEET NO.:	EX-1
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APPENDICES B
Geotechnical Report



ECS Florida, LLC.

Preliminary Geotechnical Engineering Report

Debary Parcels – E Highbanks Road

E Highbanks Road and Matanzas Road
Debary, Florida 32713

ECS Project Number 56:1540

April 20, 2022



April 20, 2022

Savi Investments, LLC
C/O Mr. Stephen T. Infantino
5200 Vineland Road, Suite 200
Orlando, FL 32811

ECS Project No. 56:1540

Reference: Preliminary Subsurface Exploration and Geotechnical Engineering Report
Debary Parcels – E Highbanks Road
E Highbanks Road and Matanzas Road,
Debary, Florida 32713

Dear Mr. Infantino:

ECS Florida, LLC. (ECS) has completed the preliminary subsurface exploration, laboratory testing, and preliminary geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our agreed-to scope of work. This report briefly presents our understanding of the anticipated construction, describes the preliminary field exploration performed, presents the data obtained, and provides our preliminary geotechnical engineering evaluation of the site and subsurface conditions at the property.

It has been our pleasure to be of service to **Savi Investments, LLC** during the phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify subsurface conditions assumed for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Florida, LLC.

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EXECUTIVE SUMMARY

The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, our principal foundation recommendations are summarized. Information gleaned from the executive summary should not be utilized in lieu of reading the entire geotechnical report.

- The borings generally encountered loose to medium dense Fine Sand (SP) and Fine Sand with silt (SP-SM) below the topsoil to the termination depths of the borings at 20 feet below existing ground surface. Groundwater was encountered at the time of drilling, ranging at depths from 1.5 to 5.0 feet below the existing ground surface. We preliminarily estimate the normal seasonal high groundwater table to be approximately from existing ground surface to a depth of 3.5 feet below the existing ground surface at the time of our exploration.
- Based on the preliminary exploration, it appears that proposed single-family townhome buildings can be supported on conventional shallow foundations designed with a maximum allowable soil bearing pressures on the order of 2,500 to 3,000 pounds per square foot (psf).
- We consider the subsurface conditions at the site favorable for support of a flexible pavement section when constructed on properly prepared subgrade soils. The normal seasonal high groundwater levels are preliminarily estimated near the existing ground surface at some of the boring locations. Therefore, satisfactory performance of the pavement is dependent on the integrity of the base layer beneath the asphalt. Adequate separation between the normal seasonal high groundwater level and the bottom of base course should be maintained. The required separation can be achieved by elevating the parking areas using structural fill soils or use of pavement underdrains.
- The fine Sand (SP) and fine Sand with silt (SP-SM) soils encountered below the topsoil to the termination depths of borings are considered suitable to be used as structural fill.
- Additional field testing will be necessary to formulate detailed foundation design and site preparation and earthwork construction recommendations. We recommend that additional soil test borings be conducted within the building footprints areas, prior to the final design.

1.0 INTRODUCTION

1.1 GENERAL

The purpose of this study was to provide a preliminary geotechnical exploration and engineering evaluation for the proposed residential development.

The recommendations developed for this report are based on project information supplied by you via email dated January 10, 2022. This report contains the results of our preliminary subsurface explorations and laboratory testing programs, site characterization, preliminary engineering analyses and recommendations relative to any adverse effects the subsurface conditions may impose on the proposed development. Once the final site plan is completed, ECS should be notified to perform a final subsurface exploration, as appropriate, and provide a final geotechnical report.

1.2 SCOPE OF SERVICES

To obtain the necessary geotechnical information required for this preliminary evaluation, Standard Penetration Test (SPT) borings were performed at locations selected by ECS. These borings were located at regular intervals across the site area. A laboratory-testing program was also implemented to characterize the physical and engineering properties of the subsurface soils.

This report discusses our exploratory and testing procedures, presents our findings and evaluations and includes the following.

- A brief review and description of our field and laboratory test procedures and the results of testing conducted.
- A review of surface topographical features and site conditions.
- A review of area and site geologic conditions.
- A review of subsurface soil stratigraphy with pertinent available physical properties.
- Final copies of our soil test borings.
- A preliminary engineering evaluation of the site relative to the proposed construction.
- Evaluation of the suitability of the encountered soils to be used as structural fill.

1.3 AUTHORIZATION

Our services were provided in accordance with our Proposal No. 56:1295, dated February 21, 2022, as authorized by you on February 24, 2022, which includes the Terms and Conditions of Master Services Agreement.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

The project site is located north of intersection of East Highbanks Road and Matanzas Road, Debary, Florida. The site is bordered to the north by a stormwater pond and developed residential neighbourhood, to the east by developed single family subdivision, to the west by undeveloped parcels and to the south by East Highbanks Road. The general site location is shown below.



Site Location

2.2 CURRENT SITE CONDITIONS

At the time of our exploration, the site was undeveloped and thickly wooded with surface cover consisting of trees, brush and two small ponds in the south and southwest portion. A site survey was not available to our office at the time of this report preparation. However based on publicly available information, we understand that the site generally slopes from southeast towards northwest with elevations within the proposed construction area between El. 44 to 66. These elevations estimates are based on public USGS topographic maps (not a site specific survey); thus, these elevations should not be used in project design.

2.3 PAST SITE HISTORY/USES

ECS has reviewed aerial photographs of the subject site on Historic Aerials. The aerial photographs reviewed were dated 1952, 1957, 1984, 1999, 2005, 2007, 2010, 2013, 2015, 2017 and 2019. The 1952 through 2019 aerial photographs show the subject property is thickly wooded with two ponds in the south and southwest portion with no major changes of the site features observed.

2.4 WEB SOIL SURVEY

Based on the Web Soil Survey for Volusia County, Florida, as prepared by the U.S. Department of Agriculture Natural Resource Conservation Service, the predominant soil types existing within the

site area are described in the following table. The site area is illustrated superimposed on the USDA-NRCS Soil Survey Map included as the following figure:

Web Soil Survey

Soil Type	Constituents	Drainage Class	Water Table
8 - Basinger Fine Sand, frequently ponded, 0 to 1 percent slopes	Sand	Poorly drained	About 0 inches
17 - Daytona Sand, 0 to 5 percent slopes	Sand	Moderately Well Drained	About 42 to 60 inches
37 - Orsino Fine Sand, 0 to 5 percent slopes	Sand	Moderately Well Drained	About 42 to 60 inches
49 - Pomona Fine Sand	Sand and Sandy Loam	Poorly Drained	About 6 to 18 inches

Soil mapping of the site vicinity included soil types and numbers are presented in below, obtained from the USDA Web Soil site.



Site Soil Survey

2.5 PROPOSED CONSTRUCTION

We understand the proposed construction may includes single-family residential townhome buildings. We were not provided a site plan with structure locations or detailed structural loading and grading information. For the purposes of this report, we anticipate maximum column, wall, and floor loads of 50 kips, 3 kips per linear foot (klf) and 150 pounds per square foot (psf), respectively. We also expect that 3 to 4 feet of fill and/or cuts will be required to achieve final grade at some structural areas.

3.0 FIELD EXPLORATION

3.1 FIELD EXPLORATION PROGRAM

The field exploration was planned with the objective of characterizing the project site in general geotechnical and geological terms and to evaluate subsequent field and laboratory data to assist in the determination of geotechnical recommendations.

3.1.1 SPT Borings

We performed 8 SPT borings, drilled to a depths of 20 feet below the existing ground surface, in general accordance with the methodology outlined in ASTM D 1586 to explore the subsurface conditions within the area of the proposed construction. Split-spoon soil samples recovered during performance of the borings were visually classified in the field and representative portions of the samples were transported to our laboratory for further evaluation.

3.2 SOIL PROBE TESTING

The soil probe testing was performed around the existing pond area adjacent to Boring Location P-05, utilizing a 8-foot-long soil probe. Soil probes are conducted by hand pushing a small diameter steel rod into the soft soils until penetration was refused. Generally, the probes can be pushed through very soft to relatively stiff fine sand or silty fine sand with many organic materials. It is possible that the probes could terminate on obstructions such as roots or buried debris, while organic soil deposits could exist below the probed depths. The probes were performed to estimate the extent of very loose/soft material around the existing pond area to a maximum depth limited by the soil probe length. Based on the results of the probes performed, we observed very loose soils to depths of approximately 1.5 to 4 feet (the penetration depth). The attached Boring Location Diagram attached in Appendix-A depicts the approximate locations of the probes. The depths of very loose soil penetrated by the soil probe are presented below.

Soil Probe Testing Depths

Soil Probe Number/Location	Penetration Depth (feet) (Loose/soft soil)
SP-1	2
SP-2	2
SP-3	3
SP-4	2
SP-5	2
SP-6	1.5
SP-7	2
SP-8	3
SP-9	3.5
SP-10	3

Soil Probe Number/Location	Penetration Depth (feet) (Loose/soft soil)
SP-11	3
SP-12	4
SP-13	4
SP-14	3.5
SP-15	3.5
SP-16	3.5
SP-17	3.5
SP-18	3.5

3.3 LABORATORY TESTING

Each sample was visually classified on the basis of texture and plasticity in accordance with ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) and including USCS classification symbols, and ASTM D2487 Standard Practice for Classification for Engineering Purposes (Unified Soil Classification System (USCS)). After classification, the samples were grouped in the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions. The stratification lines between strata on the logs are approximate; in situ, the transitions may be gradual.

The laboratory testing consisted of selected tests performed on samples obtained during our field exploration operations. Classification and index property tests were performed on representative soil samples. Laboratory tests performed on the selected sample included percent fines tests (ASTM D1140), moisture content tests (ASTM D2216) and organic content tests (ASTM D2974).

4.0 SUBSURFACE CHARACTERIZATION

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil strata encountered during our subsurface exploration. For subsurface information at a specific location, refer to the Subsurface Cross Sections in Appendix A and the Boring Logs in Appendix B.

Subsurface Stratigraphy for SPT'S

Approximate Depth Range (ft)	Stratum	Description	Ranges of SPT ⁽¹⁾ N-values (bpf)
0 - 0.5	-	Topsoil	-
0.5 - 20	I	Loose to Medium Dense, Fine Sand (SP) and Fine Sand with Silt (SP-SM).	4 to 21

Notes: (1) Standard Penetration Test.

4.1 GROUNDWATER OBSERVATIONS

Groundwater levels were measured during our field exploration and are presented in our boring logs in Appendix B. Groundwater depths measured at the time of drilling, ranging from 1.5 to 5 feet below the ground surface. Variations in the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors.

The normal seasonal high groundwater level is affected by a number of factors. The drainage characteristics of the soils, land surface elevation, relief points such as drainage ditches, lakes, rivers, swamp areas, etc., and distance to relief points are some of the more important factors influencing the seasonal high groundwater level.

Based on our interpretation of the site conditions, including the boring logs and Web Soil Survey, we preliminarily estimate the normal seasonal high groundwater level at the boring locations to be at the depths shown on the boring logs. It is possible that groundwater levels may exceed the estimated normal seasonal high groundwater level and rise above the existing ground surface as a result of significant or prolonged rains.

5.0 DESIGN RECOMMENDATIONS

Our preliminary geotechnical engineering evaluation of the site and subsurface conditions at the property, with respect to the anticipated construction, are based upon: 1) our site observations; 2) the limited field data obtained; and 3) our understanding of the project information as presented in this report. As the project progresses and more definitive information becomes available concerning the locations and proposed final grades for the buildings, retention areas and pavement areas, and detailed structural loadings become known, we recommend this information be supplied to us so that detailed foundation design and site preparation/earthwork construction recommendations can be provided prior to final design. In this regard, additional field testing, which we feel is necessary to formulate detailed foundation design and site preparation and earthwork construction recommendations, should be conducted prior to final design.

5.1 STRUCTURES

The results of our preliminary exploration indicate that, with proper site preparation, the existing soils, as encountered at the boring locations, are suitable for supporting the single-family residential townhome building structures with estimated column loads of up to approximately 100 kips on conventional shallow foundations. It appears maximum allowable soil bearing pressures for shallow foundations supporting the proposed structures will be on the order of 2,500 to 3,000 psf. Site preparation for these structures is anticipated to consist of surficial densification of the cleared and grubbed subgrade. Based on the results of the borings, sufficient densification should be achievable by compacting the cleared and grubbed/stripped ground surface with conventional compaction equipment.

5.2 PAVEMENT AREAS

The encountered shallow soils are considered suitable for the support of flexible and rigid pavement. The groundwater level was observed at depths of 1.5 to 5 feet below the ground surface. It is anticipated that the parking and driveway areas will be constructed with flexible pavement (i.e., asphalt wearing surface supported on limerock). Satisfactory performance of the pavement is dependent on the integrity of the base layer beneath the asphalt. Adequate separation between the normal seasonal high groundwater level and the bottom of the base course should be maintained. Where the groundwater is at shallow depths, the required separation can be achieved by elevating the parking areas using structural fill soils or use of pavement underdrains.

5.3 STORMWATER MANAGEMENT AREAS

Based on the boring results and classification of the soil samples, the fine sand (SP) and fine sand with silt (SP-SM) encountered in the borings, are considered suitable for fill soil. These soils were encountered at the boring locations to a depth of 20 feet below the existing ground surface.

6.0 CLOSING

Our geotechnical exploration has been performed, our findings obtained, and our preliminary recommendations prepared, in accordance with generally accepted geotechnical engineering principles and practices. ECS is not responsible for any independent conclusions, interpretation, opinions, or recommendations made by others based on the data contained in this report.

Our scope of services was intended to evaluate the soil conditions within the zone of soil influenced by the foundation system. Our scope of services does not address geologic conditions, such as sinkholes or soil conditions existing below the depth of the soil borings.

If any of the project description information discussed in this report is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted immediately in order that we can review the report in light of the changes and provide additional or alternate recommendations as may be required to reflect the proposed construction.

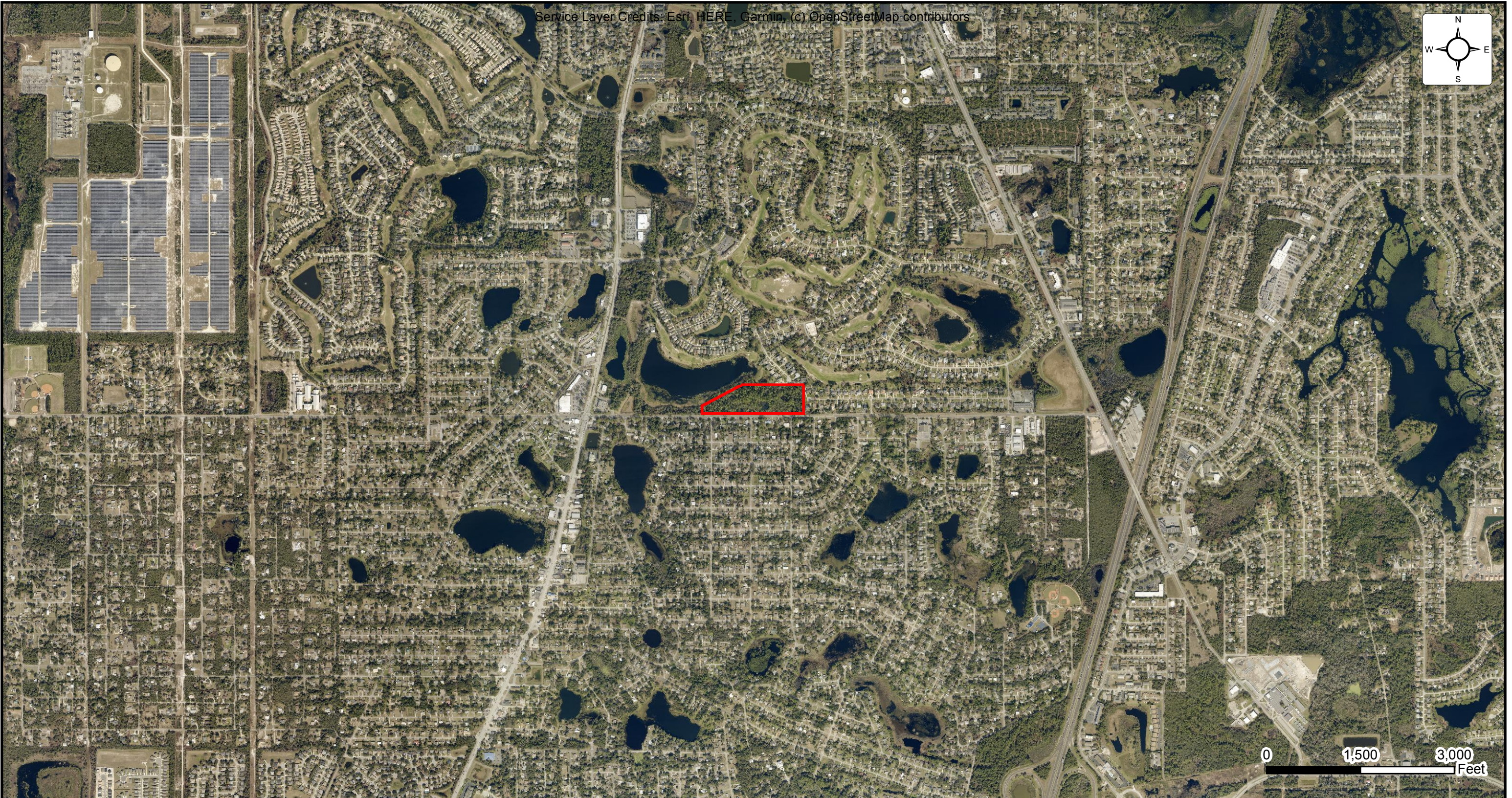
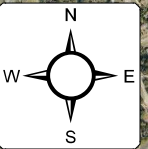
As previously mentioned, additional field testing, if any, which we feel is necessary to formulate detailed foundation design and site preparation and earthwork construction recommendations, should be conducted prior to final design.

Appendix A - Drawings and Reports

Site Location Diagram

Boring Location Diagram

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

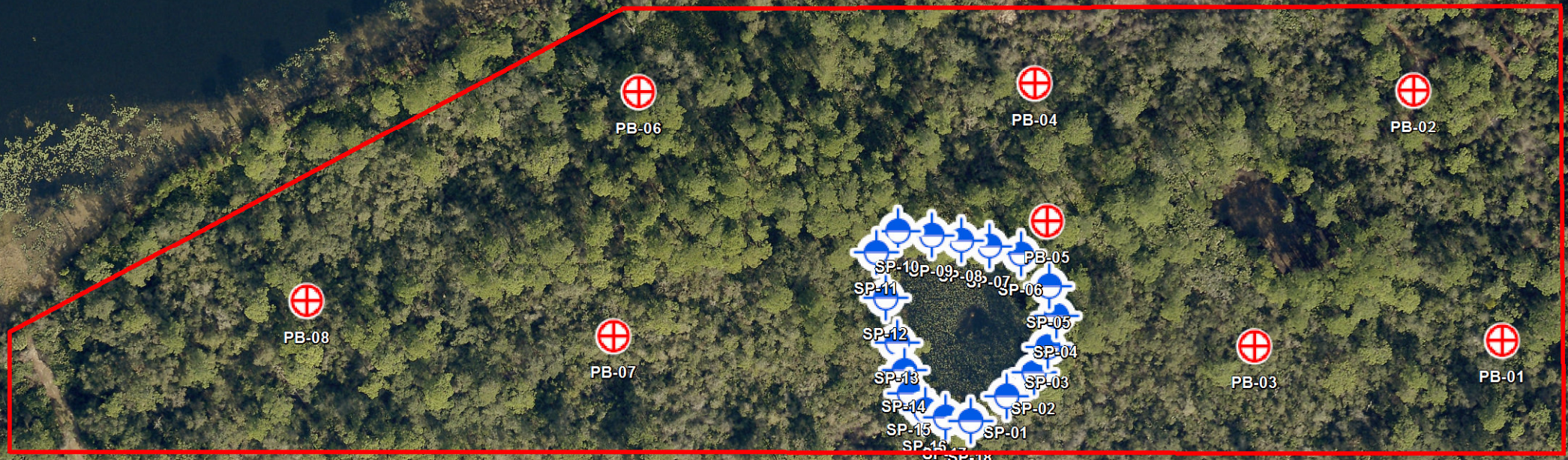


0 1,500 3,000 Feet





SITE LOCATION DIAGRAM
DEBARY PARCELS E HIGHBANKS
ROAD
EAST HIGHBANKS ROAD, DEBARY, FLORIDA
SAVI INVESTMENTS

ENGINEER
DS05
SCALE
AS NOTED
PROJECT NO.
56:1540
SHEET
1 OF 1
DATE
4/20/2022



Legend

-  Approximate SPT Boring Locations
-  Approximate Soil Probe Locations



**BORING LOCATION DIAGRAM
DEBARY PARCELS E HIGHBANKS
ROAD
EAST HIGHBANKS ROAD, DEBARY, FLORIDA
SAVI INVESTMENTS**



ENGINEER	DS05
SCALE	AS NOTED
PROJECT NO.	56:1540
SHEET	1 OF 1
DATE	4/20/2022

Appendix B – Field Operations

Reference Notes

Exploration Procedures

Boring Logs

REFERENCE NOTES FOR BORING LOGS

MATERIAL ^{1,2}	
	ASPHALT
	CONCRETE
	GRAVEL
	TOPSOIL
	VOID
	BRICK
	AGGREGATE BASE COURSE
	GW WELL-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GP POORLY-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GM SILTY GRAVEL gravel-sand-silt mixtures
	GC CLAYEY GRAVEL gravel-sand-clay mixtures
	SW WELL-GRADED SAND gravelly sand, little or no fines
	SP POORLY-GRADED SAND gravelly sand, little or no fines
	SM SILTY SAND sand-silt mixtures
	SC CLAYEY SAND sand-clay mixtures
	ML SILT non-plastic to medium plasticity
	MH ELASTIC SILT high plasticity
	CL LEAN CLAY low to medium plasticity
	CH FAT CLAY high plasticity
	OL ORGANIC SILT or CLAY non-plastic to low plasticity
	OH ORGANIC SILT or CLAY high plasticity
	PT PEAT highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS			
SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION		
DESIGNATION	PARTICLE SIZES	
Boulders	12 inches (300 mm) or larger	
Cobbles	3 inches to 12 inches (75 mm to 300 mm)	
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")	<0.074 mm (smaller than a No. 200 sieve)	

COHESIVE SILTS & CLAYS		
UNCONFINED COMPRESSIVE STRENGTH, QP ⁴	SPT ⁵ (BPF)	CONSISTENCY ⁷ (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

RELATIVE AMOUNT ⁷	COARSE GRAINED (%) ⁸	FINE GRAINED (%) ⁸
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective (ex: "Silty")	25 - 45	30 - 45

GRAVELS, SANDS & NON-COHESIVE SILTS	
SPT ⁵	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

WATER LEVELS ⁶	
	WL (First Encountered)
	WL (Completion)
	WL (Seasonal High Water)
	WL (Stabilized)

FILL AND ROCK			
	FILL		POSSIBLE FILL
	PROBABLE FILL		ROCK

¹Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

²To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

³Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

⁴Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

⁵Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

⁶The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

⁷Minor deviation from ASTM D 2488-17 Note 14.

⁸Percentages are estimated to the nearest 5% per ASTM D 2488-17.



SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling

Standard Penetration Testing, or **SPT**, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

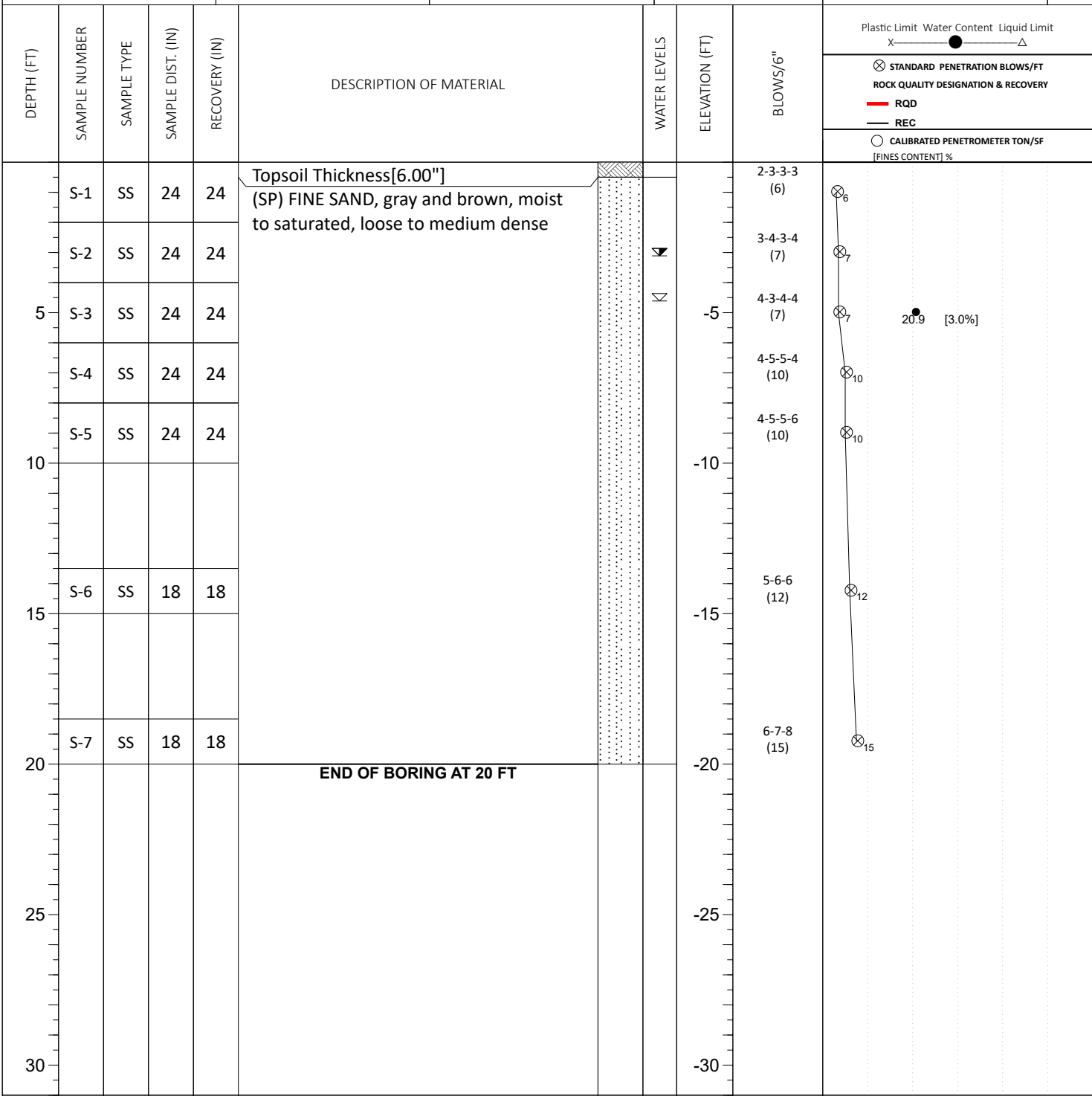
SPT Procedure:

- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 12 inches (in 3 or 4 Increments of 6 inches each)
- Auger is advanced* and an additional SPT is performed
- One SPT test is typically performed for every two to five feet
- Obtain two-inch diameter soil sample



**Drilling Methods May Vary*— The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.

SITE LOCATION: East Highbanks Road and Matanzas Road, DeBary, Florida 32713	LOSS OF CIRCULATION 			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING

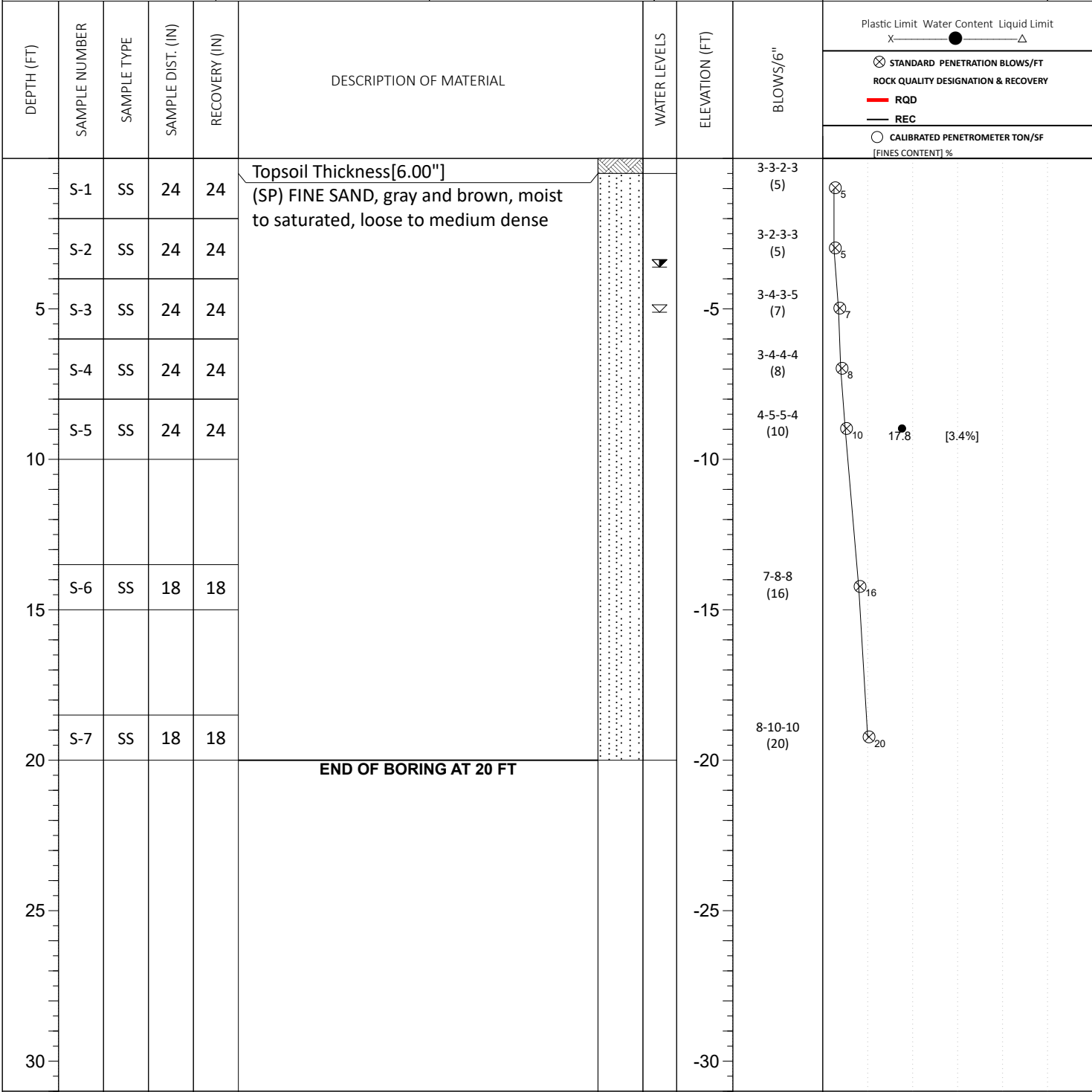


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

∇ WL (First Encountered) 4.50	BORING STARTED: Mar 31 2022	CAVE IN DEPTH:
▼ WL (Completion)	BORING COMPLETED: Mar 31 2022	HAMMER TYPE: Auto
∇ WL (Seasonal High Water) 3.00	EQUIPMENT: ATV	DRILLING METHOD:
∇ WL (Stabilized)	LOGGED BY: JWT1	

GEOTECHNICAL BOREHOLE LOG

SITE LOCATION: East Highbanks Road and Matanzas Road, DeBary, Florida 32713	LOSS OF CIRCULATION 			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING

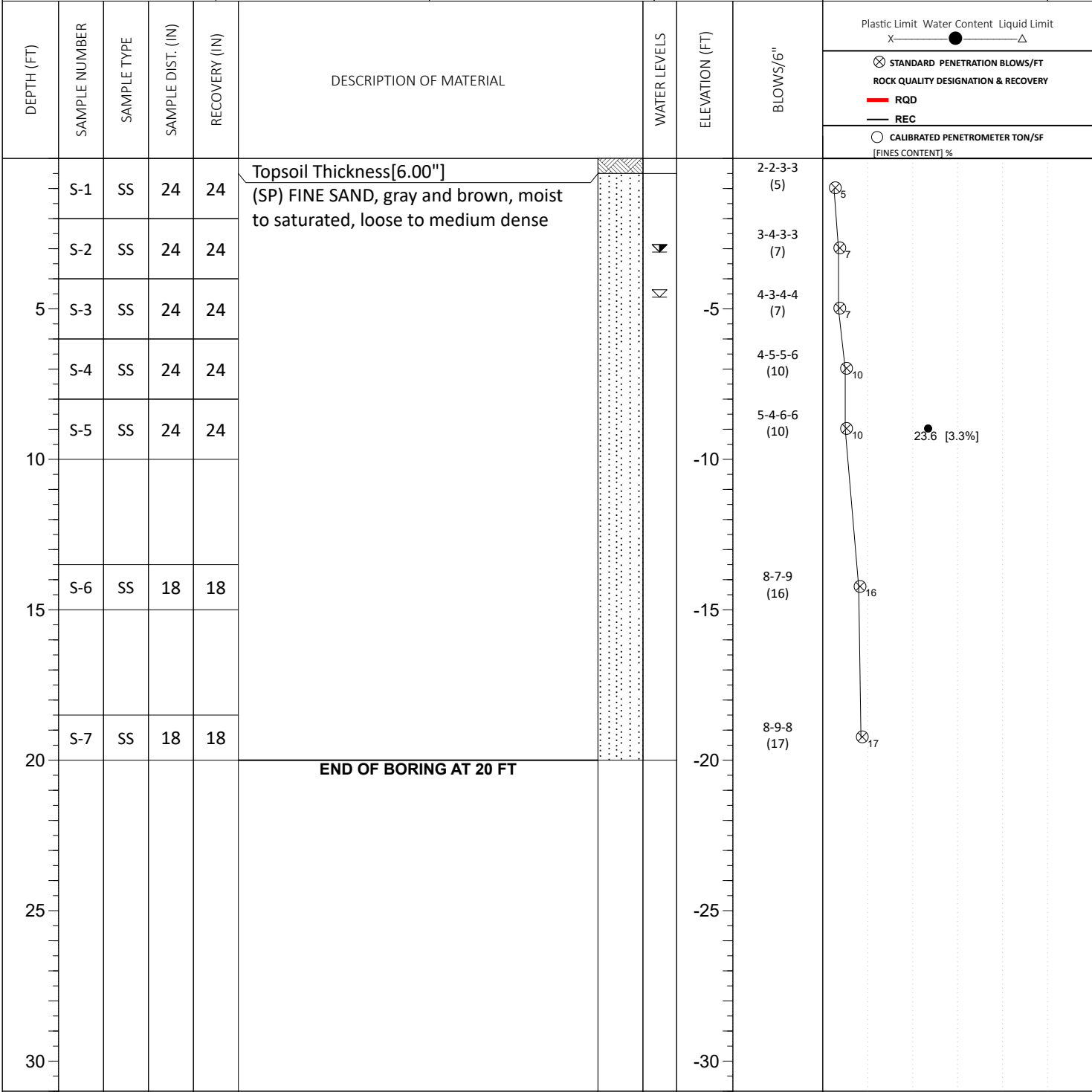


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

∇ WL (First Encountered)	5.00	BORING STARTED:	Mar 31 2022	CAVE IN DEPTH:
▼ WL (Completion)		BORING COMPLETED:	Mar 31 2022	HAMMER TYPE: Auto
∇ WL (Seasonal High Water)	3.50	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:
∇ WL (Stabilized)		ATV	JWT1	

GEOTECHNICAL BOREHOLE LOG

SITE LOCATION: East Highbanks Road and Matanzas Road, DeBary, Florida 32713	LOSS OF CIRCULATION 			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING



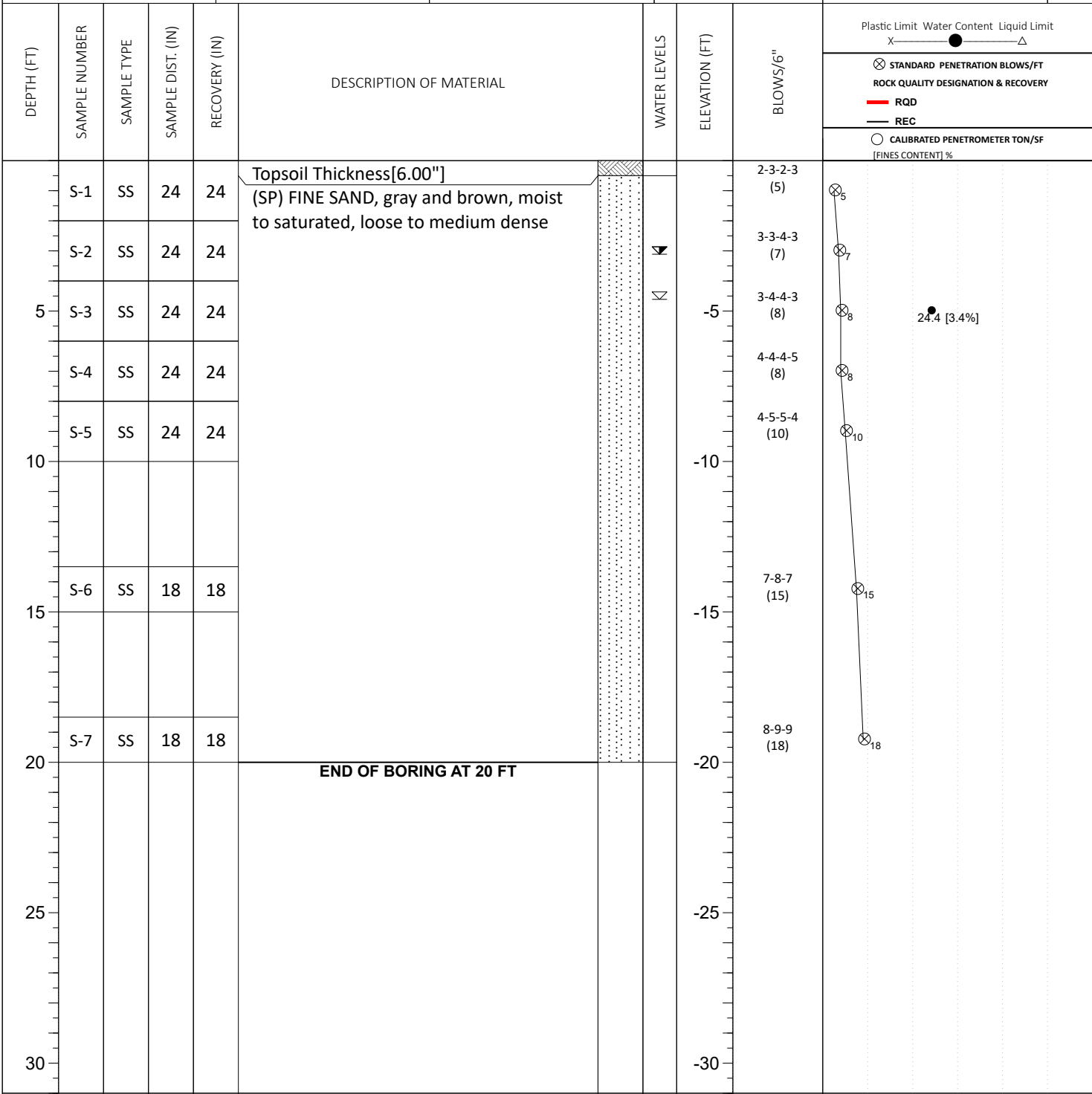
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

⊗ WL (First Encountered) 4.50	BORING STARTED: Mar 31 2022	CAVE IN DEPTH:
▼ WL (Completion)	BORING COMPLETED: Mar 31 2022	HAMMER TYPE: Auto
⊗ WL (Seasonal High Water) 3.00	EQUIPMENT: ATV	LOGGED BY: JWT1
⊗ WL (Stabilized)		DRILLING METHOD:

GEOTECHNICAL BOREHOLE LOG

SITE LOCATION:
East Highbanks Road and Matanzas Road, DeBary, Florida 32713

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	LOSS OF CIRCULATION
				BOTTOM OF CASING

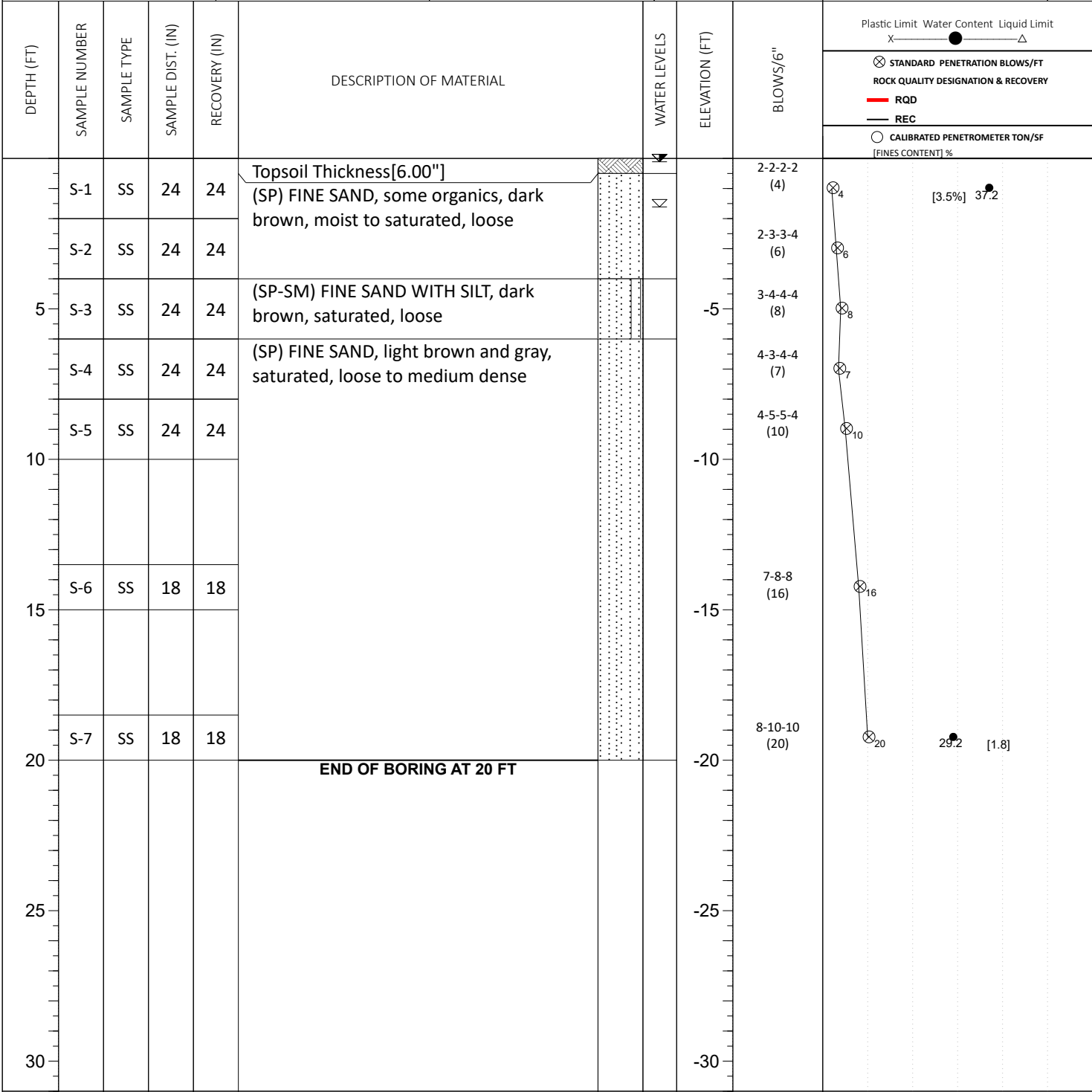


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

∇ WL (First Encountered) 4.50	BORING STARTED: Mar 31 2022	CAVE IN DEPTH:
▼ WL (Completion)	BORING COMPLETED: Mar 31 2022	HAMMER TYPE: Auto
∇ WL (Seasonal High Water) 3.00	EQUIPMENT: ATV	DRILLING METHOD:
∇ WL (Stabilized)	LOGGED BY: JWT1	

GEOTECHNICAL BOREHOLE LOG

SITE LOCATION: East Highbanks Road and Matanzas Road, DeBary, Florida 32713	LOSS OF CIRCULATION 			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING

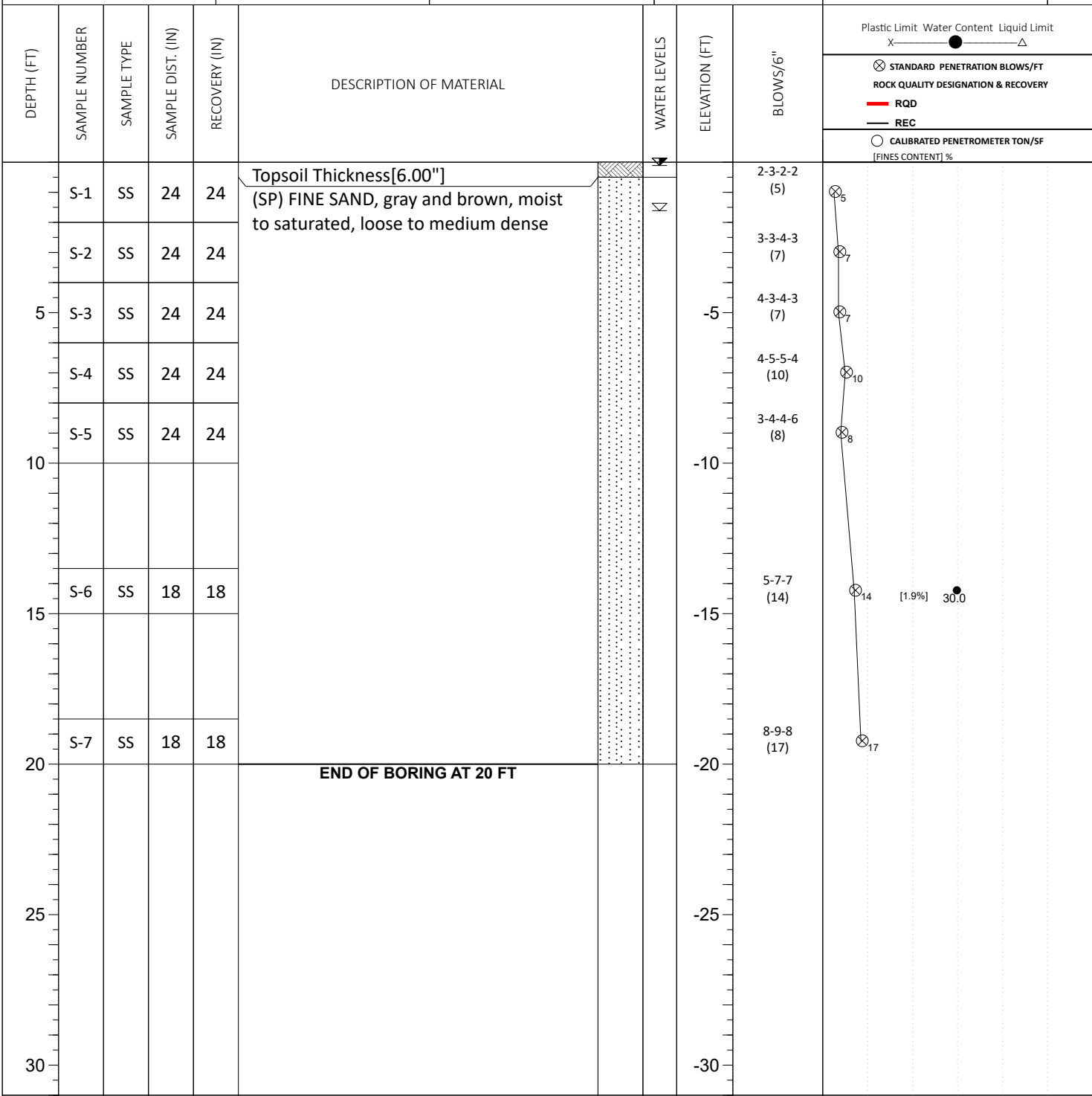


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▼ WL (First Encountered) 1.50	BORING STARTED: Mar 31 2022	CAVE IN DEPTH:
▼ WL (Completion)	BORING COMPLETED: Mar 31 2022	HAMMER TYPE: Auto
▼ WL (Seasonal High Water) 0.00	EQUIPMENT: ATV	DRILLING METHOD:
▼ WL (Stabilized)	LOGGED BY: JWT1	

GEOTECHNICAL BOREHOLE LOG

SITE LOCATION: East Highbanks Road and Matanzas Road, DeBary, Florida 32713				LOSS OF CIRCULATION
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING

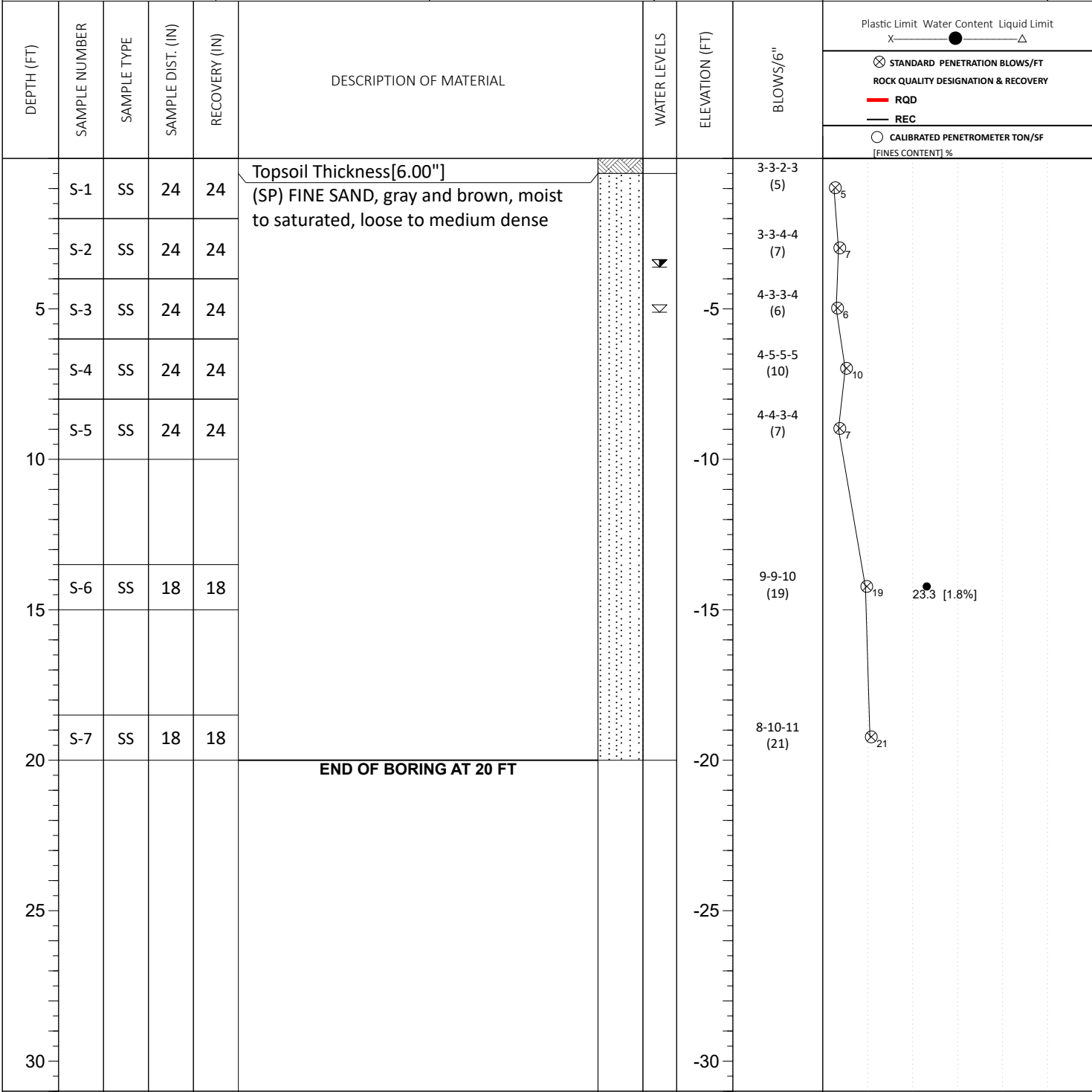


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	1.50	BORING STARTED:	Mar 31 2022	CAVE IN DEPTH:
▼ WL (Completion)		BORING COMPLETED:	Mar 31 2022	HAMMER TYPE: Auto
▽ WL (Seasonal High Water)	0.00	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:
▽ WL (Stabilized)		ATV	JWT1	

GEOTECHNICAL BOREHOLE LOG

SITE LOCATION: East Highbanks Road and Matanzas Road, DeBary, Florida 32713	LOSS OF CIRCULATION 			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING

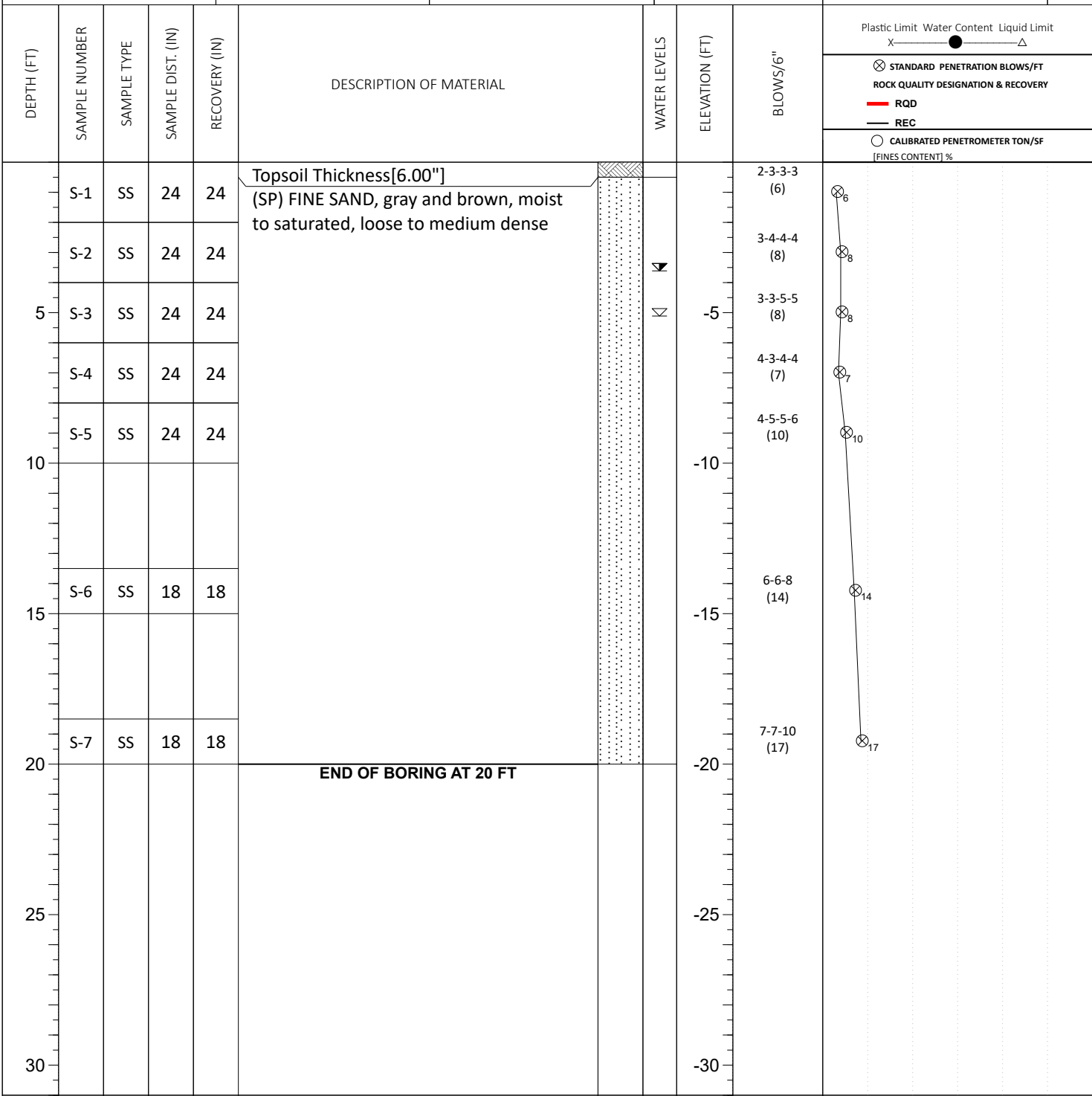


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

∇ WL (First Encountered) 5.00	BORING STARTED: Mar 31 2022	CAVE IN DEPTH:
▼ WL (Completion)	BORING COMPLETED: Mar 31 2022	HAMMER TYPE: Auto
∇ WL (Seasonal High Water) 3.50	EQUIPMENT: ATV	DRILLING METHOD:
∇ WL (Stabilized)	LOGGED BY: JWT1	

GEOTECHNICAL BOREHOLE LOG

SITE LOCATION: East Highbanks Road and Matanzas Road, DeBary, Florida 32713	LOSS OF CIRCULATION 			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

∇ WL (First Encountered) 5.00	BORING STARTED: Mar 31 2022	CAVE IN DEPTH:
▼ WL (Completion)	BORING COMPLETED: Mar 31 2022	HAMMER TYPE: Auto
∇ WL (Seasonal High Water) 3.50	EQUIPMENT: ATV	LOGGED BY: JWT1
∇ WL (Stabilized)		DRILLING METHOD:

GEOTECHNICAL BOREHOLE LOG

Appendix C – Laboratory Testing

Laboratory Testing Summary

Laboratory Testing Summary

Sample Source	Sample Number	Start Depth (feet)	End Depth (feet)	Sample Distance (feet)	MC ¹ (%)	Soil Type ²	Atterberg Limits ³			Percent Passing No. 200 Sieve ⁴	Moisture - Density (Corr.) ⁵		CBR Value ⁶	Organic Content
							LL	PL	PI		Maximum Density (pcf)	Optimum Moisture (%)		
P-01	S-3	4.0	6.0	2.0	20.9	SP				3.0				
P-02	S-5	8.0	10.0	2.0	17.8	SP				3.4				
P-03	S-5	8.0	10.0	2.0	23.6	SP				3.3			0.7	
P-04	S-3	4.0	6.0	2.0	24.4	SP				3.4			0.7	
P-05	S-1	0.0	2.0	2.0	37.2	SP				3.5			4.2	
P-05	S-7	18.5	20.0	1.5	29.2	SP				1.8				
P-06	S-6	13.5	15.0	1.5	30.0	SP				1.9			0.4	
P-07	S-6	13.5	15.0	1.5	23.3	SP				1.8			0.3	

Notes: 1. ASTM D 2216, 2. ASTM D 2487, 3. ASTM D 4318, 4. ASTM D 1140, 5. See test reports for test method, 6. See test reports for test method

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ration, OC: Organic Content (ASTM D 2974)

Project No.: 56:1540
Project Name: DeBary Parcels E Highbanks Road
PM: Vinay Kumar Arebelli
PE: David Spangler
Printed On: April 19, 2022

ECS Florida, LLC - Daytona Beach

2330 South Nova Road, Suite A
 South Daytona, FL 32119

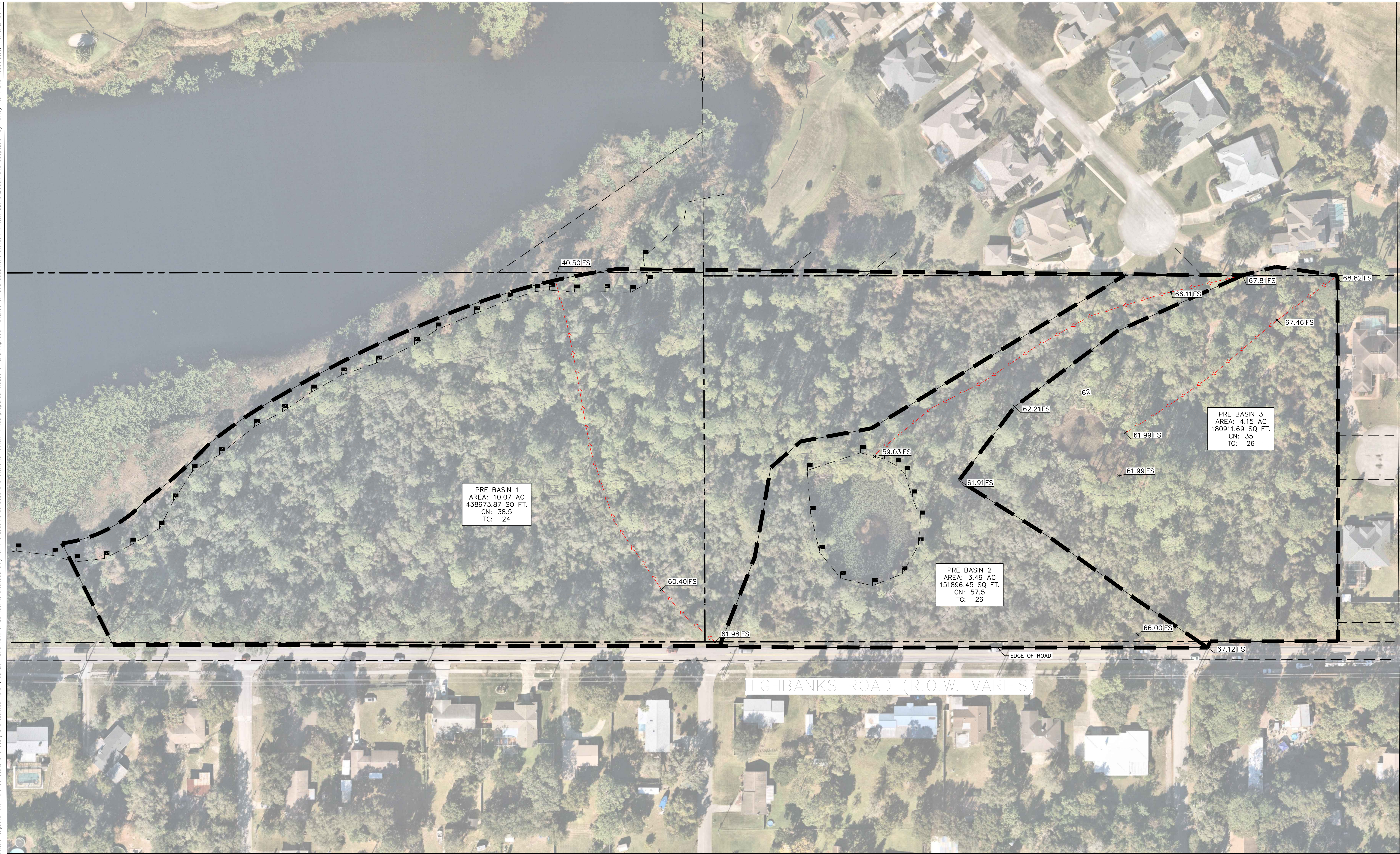
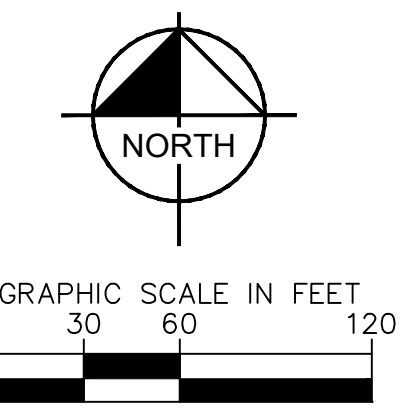
Phone: 386-944-9588
Fax: 386-944-9589 fax

APPENDICES C
Pre-Conditions Plan
Post-Conditions Plan

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LEGEND

- — — — — CENTER LINE
- - - - - PROPERTY LINE
- · - · - · EASEMENT / SETBACK LINE
- — — — — BASIN DELINATION
- → → → → TIME OF CONCENTRATION PATH



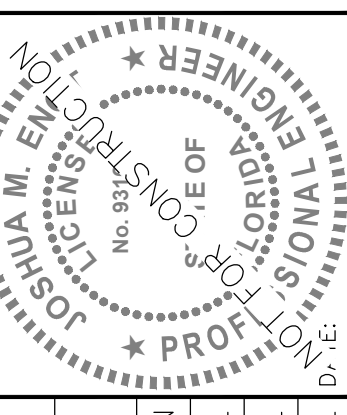
PRE BASIN 1
 AREA: 10.07 AC
 438673.87 SQ FT.
 CN: 38.5
 TC: 24

PRE BASIN 2
 AREA: 3.49 AC
 151896.45 SQ FT.
 CN: 57.5
 TC: 26

PRE BASIN 3
 AREA: 4.15 AC
 180911.69 SQ FT.
 CN: 35
 TC: 26

No.	REVISIONS	DATE	BY

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 189 S. ORANGE AVENUE, SUITE 1000, ORLANDO, FL 32801
 PHONE: 407-898-1511
 WWW.KIMLEY-HORN.COM REGISTRY NO. 35106

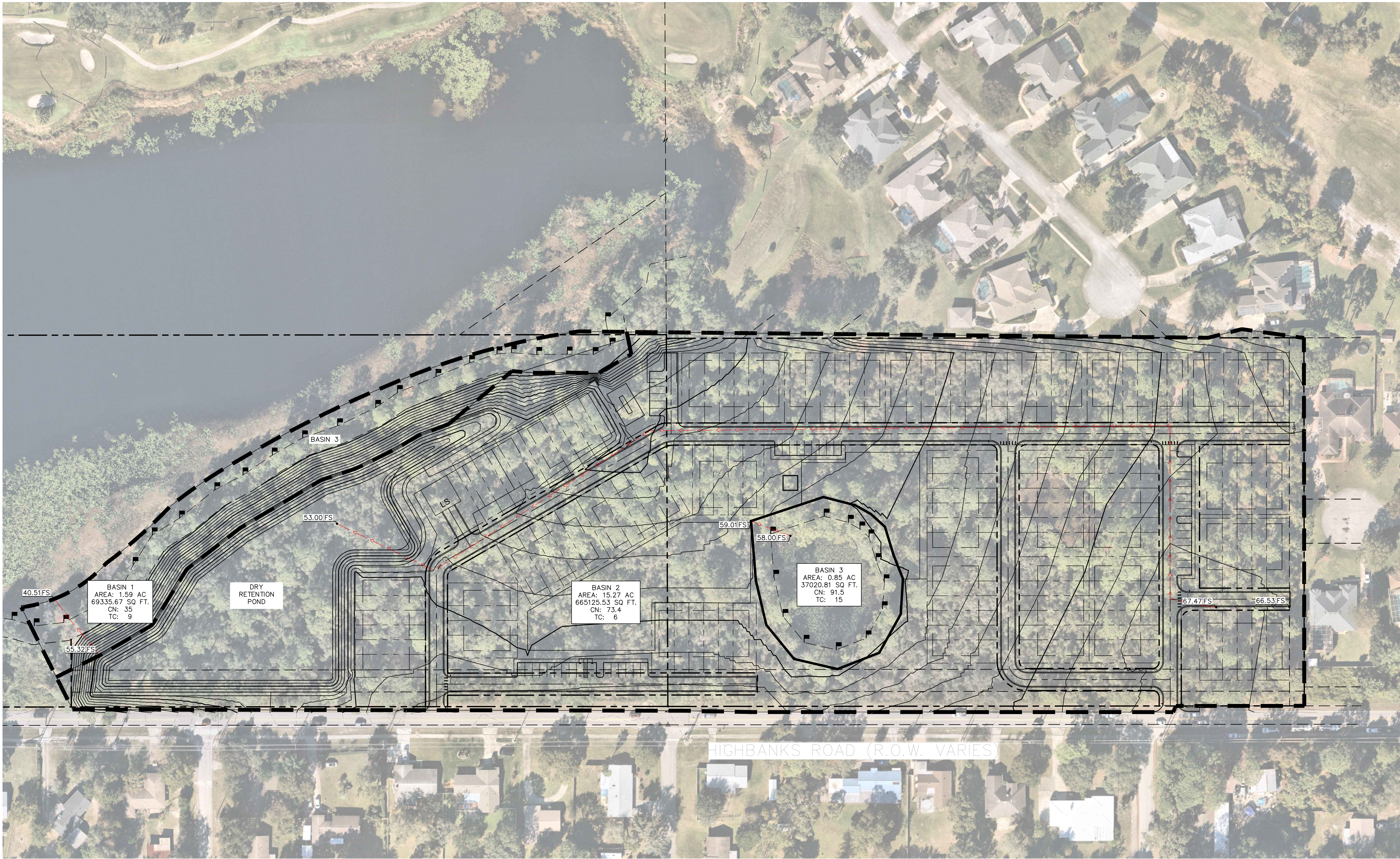


KHA PROJECT	149786004
DATE	
SCALE	AS SHOWN
DESIGNED BY	
DRAWN BY	
CHECKED BY	

**PRE DEVELOPMENT
 BASIN MAP**

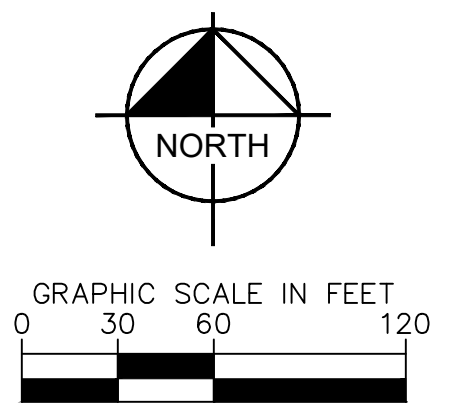
**E HIGHBANKS
 TOWNHOMES
 DEBARY**
 VOLUSIA COUNTY FLORIDA

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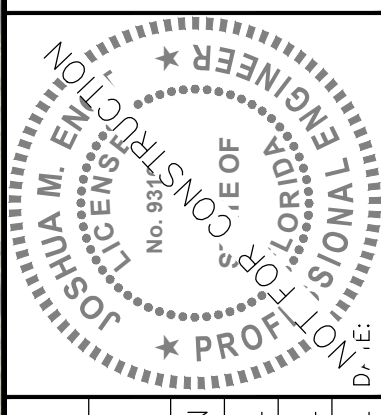
LEGEND

- — — — — CENTER LINE
- — — — — PROPERTY LINE
- - - - - EASEMENT / SETBACK LINE
- — — — — BASIN DELINATION
- → → → → TIME OF CONCENTRATION PATH



No.	REVISIONS	DATE	BY

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KHA PROJECT 149786004	DATE
SCALE AS SHOWN	DATE
DESIGNED BY	CHECKED BY
DRAWN BY	

**POST DEVELOPMENT
 BASIN MAP**

**E HIGHBANKS
 TOWNHOMES
 DEBARY**
 VOLUSIA COUNTY FLORIDA

SHEET NUMBER
EX-1

APPENDICES D
ICPR Calculations

Worksheet 3 : Time of Concentration (T_c) or travel time (T_t)

Project	<u>Pine Meadows</u>	By	<u>DVS</u>	Date	<u>3/16/2023</u>
Location	<u>Debary, FL</u>	Checked	<u>JE</u>	Date	<u>3/16/2023</u>
		Pre	<u>X</u>	Post	<u></u>
		T _c	<u>X</u>	T _t	<u></u>

Basin

Sheet flow (Applicable to T_c only)

	Segment ID	BASIN 1	BASIN 2	BASIN 3
1.	Surface Description (Table 3-1)	Woods (Dense Underbrush)	Woods (Dense Underbrush)	Woods (Dense Underbrush)
2.	Manning's Roughness coeff., n (Table 3-1)	0.45	0.45	0.45
3.	Flow Length, L (total L ≤ 300 ft)	ft 300	300	300
4.	2-Yr 24-Hr rainfall, P ₂	in 4.3	4.3	4.3
5.	Land slope, s	ft/ft 0.0311	0.014	0.016
6.	T _t = 0.007(nL) ^{0.8} / P ₂ ^{0.5} s ^{0.4}	hr 0.68	0.95	0.88

Shallow Concentrated Flow

	Segment ID	BASIN 1	BASIN 2	BASIN 3
7.	Surface Description (Paved or Unpaved)	Woods (Dense Underbrush)	Woods (Dense Underbrush)	Woods (Dense Underbrush)
8.	Flow Length, L	ft 259	263	58
9.	Watercourse slope, s	ft/ft 0.047	0.0178	0.033
10.	Average Velocity, V (figure 3-1)	ft/s 3.5	2.2	2.9
11.	T _t = L / 3600V	hr 0.02	0.03	0.01

Channel Flow

	Segment ID	BASIN 1	BASIN 2	BASIN 3
12.	Cross sectional flow area, a	ft ²		
13.	Wetted perimeter, p _w	ft		
14.	Hydraulic Radius, r = a / p _w	ft 0.00	0.00	0.00
15.	Channel Slope, s	ft/ft		
16.	Manning's Roughness coeff., n			
17.	V = 1.49 r ^{2/3} s ^{1/2} / n	ft/s 0.00	0.00	0.00
18.	Flow Length, L	ft		
19.	T _t = L / 3600V	hr 0.00	0.00	0.00
20.	Watershed or subarea T _c or T _t (Adding T _t in Steps 6,11,and 19)	hr 0.71	0.99	0.89
	or			
		min 42	59	53

(210-VI-TR-55, Second Ed., June 1986)

CURVE NUMBER WORKSHEET
PRE-DEVELOPMENT BASIN "PRE-1"

Basin Area = 10.07 acres

AREA	SCS SOIL TYPE	COVER TYPE AND CONDITIONS	CURVE NUMBER	SUB TOTAL
	A	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	68	0.0
	A	Cover 50% to 75%	49	0.0
	A	Cover > 75%	39	0.0
	B	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	79	0.0
	B	Cover 50% to 75%	69	0.0
	B	Cover > 75%	61	0.0
	C	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	86	0.0
	C	Cover 50% to 75%	79	0.0
	C	Cover > 75%	74	0.0
	D	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	89	0.0
	D	Cover 50% to 75%	84	0.0
	D	Cover > 75%	80	0.0
9.29	A	Woods(Forest, Orchard) Cover < 50%	45	0.0
	A	Cover 50% to 75%	35	325.2
	A	Cover > 75%	25	0.0
	B	Woods(Forest, Orchard) Cover < 50%	66	0.0
	B	Cover 50% to 75%	60	0.0
	B	Cover > 75%	55	0.0
	C	Woods(Forest, Orchard) Cover < 50%	77	0.0
	C	Cover 50% to 75%	74	0.0
	C	Cover > 75%	70	0.0
0.78	D	Woods(Forest, Orchard) Cover < 50%	83	0.0
	D	Cover 50% to 75%	80	62.3
	D	Cover > 75%	77	0.0
	A,B,C,D	Impervious (Pond)	100	0.0
	A,B,C,D	Impervious (Pavement, Concrete, Roofs)	98	0.0

AREA A
AREA D

WEIGHTED CURVE NUMBER = 38.5

WEIGHTED CURVE NUMBER = SUM (CN*AREA) / TOTAL AREA

CURVE NUMBER WORKSHEET
PRE-DEVELOPMENT BASIN "PRE-2"

Basin Area = 3.49 acres

AREA	SCS SOIL TYPE	COVER TYPE AND CONDITIONS	CURVE NUMBER	SUB TOTAL
	A	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	68	0.0
	A	Cover 50% to 75%	49	0.0
	A	Cover > 75%	39	0.0
	B	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	79	0.0
	B	Cover 50% to 75%	69	0.0
	B	Cover > 75%	61	0.0
	C	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	86	0.0
	C	Cover 50% to 75%	79	0.0
	C	Cover > 75%	74	0.0
	D	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	89	0.0
	D	Cover 50% to 75%	84	0.0
	D	Cover > 75%	80	0.0
1.96	A	Woods(Forest, Orchard) Cover < 50%	45	0.0
	A	Cover 50% to 75%	35	68.5
	A	Cover > 75%	25	0.0
	B	Woods(Forest, Orchard) Cover < 50%	66	0.0
	B	Cover 50% to 75%	60	0.0
	B	Cover > 75%	55	0.0
	C	Woods(Forest, Orchard) Cover < 50%	77	0.0
	C	Cover 50% to 75%	74	0.0
	C	Cover > 75%	70	0.0
1.05	D	Woods(Forest, Orchard) Cover < 50%	83	0.0
	D	Cover 50% to 75%	80	84.3
	D	Cover > 75%	77	0.0
0.48	A,B,C,D	Impervious (Pond)	100	47.8
	A,B,C,D	Impervious (Pavement, Concrete, Roofs)	98	0.0

WEIGHTED CURVE NUMBER = 57.5

WEIGHTED CURVE NUMBER = SUM (CN*AREA) / TOTAL AREA

CURVE NUMBER WORKSHEET
PRE-DEVELOPMENT BASIN "PRE-3"

Basin Area = 4.15 acres

AREA	SCS SOIL TYPE	COVER TYPE AND CONDITIONS	CURVE NUMBER	SUB TOTAL
[Yellow Box]	A	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	68	0.0
	A	Cover 50% to 75%	49	0.0
	A	Cover > 75%	39	0.0
[Yellow Box]	B	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	79	0.0
	B	Cover 50% to 75%	69	0.0
	B	Cover > 75%	61	0.0
[Yellow Box]	C	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	86	0.0
	C	Cover 50% to 75%	79	0.0
	C	Cover > 75%	74	0.0
[Yellow Box]	D	Grass (Lawns, Parks, Golf Courses, etc.) Cover < 50%	89	0.0
	D	Cover 50% to 75%	84	0.0
	D	Cover > 75%	80	0.0
4.15	A	Woods(Forest, Orchard) Cover < 50%	45	0.0
	A	Cover 50% to 75%	35	145.3
	A	Cover > 75%	25	0.0
[Yellow Box]	B	Woods(Forest, Orchard) Cover < 50%	66	0.0
	B	Cover 50% to 75%	60	0.0
	B	Cover > 75%	55	0.0
[Yellow Box]	C	Woods(Forest, Orchard) Cover < 50%	77	0.0
	C	Cover 50% to 75%	74	0.0
	C	Cover > 75%	70	0.0
[Yellow Box]	D	Woods(Forest, Orchard) Cover < 50%	83	0.0
	D	Cover 50% to 75%	80	0.0
	D	Cover > 75%	77	0.0
[Yellow Box]	A,B,C,D	Impervious (Pond)	100	0.0
	A,B,C,D	Impervious (Pavement, Concrete, Roofs)	98	0.0

WEIGHTED CURVE NUMBER = 35.0

WEIGHTED CURVE NUMBER = SUM (CN*AREA) / TOTAL AREA

Worksheet 3 : Time of Concentration (T_c) or travel time (T_t)

Project Pine Meadows By DVS Date 3/16/2023
 Location Debary, FL Checked JE Date 3/16/2023
 Pre _____ Post X
 T_c _____ T_t X

Basin

--	--	--

Sheet flow (Applicable to T_c only)

Segment ID	BASIN 1	BASIN 2	BASIN 3
1. Surface Description (Table 3-1)	Woods (Dense Underbrush)	Pavement	Woods (Dense Underbrush)
2. Manning's Roughness coeff., n (Table 3-1)	0.45	0.012	0.45
3. Flow Length, L (total L ≤ 300 ft)	ft 100	100	60
4. 2-Yr 24-Hr rainfall, P ₂	in 4.3	4.3	4.3
5. Land slope, s	ft/ft 0.1571	0.0108	0.02
6. T _t = 0.007(nL) ^{0.8} / P ₂ ^{0.5} s ^{0.4}	hr 0.15	0.02	0.24

Shallow Concentrated Flow

Segment ID	BASIN 1	BASIN 1	BASIN 3
7. Surface Description (Paved or Unpaved)	Woods (Dense Underbrush)	UNPAVED	Woods (Dense Underbrush)
8. Flow Length, L	ft 0	1501	0
9. Watercourse slope, s	ft/ft 0.000	0.0801	0.000
10. Average Velocity, V (figure 3-1)	ft/s 3.2	6	0
11. T _t = L / 3600V	hr 0.00	0.07	0.00

Channel Flow

Segment ID			
12. Cross sectional flow area, a	ft ²		
13. Wetted perimeter, p _w	ft		
14. Hydraulic Radius, r = a / p _w	ft	0.00	0.00
15. Channel Slope, s	ft/ft		
16. Manning's Roughness coeff., n			
17. V = 1.49 r ^{2/3} s ^{1/2} / n	ft/s	0.00	0.00
18. Flow Length, L	ft		
19. T _t = L / 3600V	hr	0.00	0.00
20. Watershed or subarea T _c or T _t (Adding T _t in Steps 6,11,and 19)	hr	0.15	0.09
or	min	9	6
			15

CURVE NUMBER WORKSHEET
 POST-DEVELOPMENT BASIN "POST BASIN 1"

Basin Area = 1.59 acres

AREA	SCS SOIL TYPE	COVER TYPE AND CONDITIONS	CURVE NUMBER	SUB TOTAL
		Grass (Lawns, Parks, Golf Courses, etc.)		
	A	Cover < 50%	68	0.0
	A	Cover 50% to 75%	49	0.0
	A	Cover > 75%	39	0.0
		Grass (Lawns, Parks, Golf Courses, etc.)		
	B	Cover < 50%	79	0.0
	B	Cover 50% to 75%	69	0.0
	B	Cover > 75%	61	0.0
		Grass (Lawns, Parks, Golf Courses, etc.)		
	C	Cover < 50%	86	0.0
	C	Cover 50% to 75%	79	0.0
	C	Cover > 75%	74	0.0
		Grass (Lawns, Parks, Golf Courses, etc.)		
	D	Cover < 50%	89	0.0
	D	Cover 50% to 75%	84	0.0
	D	Cover > 75%	80	0.0
		Woods(Forest, Orchard)		
1.59	A	Cover < 50%	45	0.0
	A	Cover 50% to 75%	35	55.7
	A	Cover > 75%	25	0.0
		Woods(Forest, Orchard)		
	B	Cover < 50%	66	0.0
	B	Cover 50% to 75%	60	0.0
	B	Cover > 75%	55	0.0
		Woods(Forest, Orchard)		
	C	Cover < 50%	77	0.0
	C	Cover 50% to 75%	74	0.0
	C	Cover > 75%	70	0.0
		Woods(Forest, Orchard)		
	D	Cover < 50%	83	0.0
	D	Cover 50% to 75%	80	0.0
	D	Cover > 75%	77	0.0
	A,B,C,D	Impervious (Pond)	100	0.0
	A,B,C,D	Impervious (Pavement, Concrete, Roofs)	98	0.0

WEIGHTED CURVE NUMBER = 35.0

WEIGHTED CURVE NUMBER = SUM (CN*AREA) / TOTAL AREA

CURVE NUMBER WORKSHEET
 POST-DEVELOPMENT BASIN "POST BASIN 2"

Basin Area = 15.27 acres

AREA	SCS SOIL TYPE	COVER TYPE AND CONDITIONS	CURVE NUMBER	SUB TOTAL
		Grass (Lawns, Parks, Golf Courses, etc.)		
7.73	A	Cover < 50%	68	0.0
	A	Cover 50% to 75%	49	378.9
	A	Cover > 75%	39	0.0
		Grass (Lawns, Parks, Golf Courses, etc.)		
	B	Cover < 50%	79	0.0
	B	Cover 50% to 75%	69	0.0
	B	Cover > 75%	61	0.0
		Grass (Lawns, Parks, Golf Courses, etc.)		
	C	Cover < 50%	86	0.0
	C	Cover 50% to 75%	79	0.0
	C	Cover > 75%	74	0.0
		Grass (Lawns, Parks, Golf Courses, etc.)		
	D	Cover < 50%	89	0.0
	D	Cover 50% to 75%	84	0.0
	D	Cover > 75%	80	0.0
		Woods(Forest, Orchard)		
	A	Cover < 50%	45	0.0
	A	Cover 50% to 75%	35	0.0
	A	Cover > 75%	25	0.0
		Woods(Forest, Orchard)		
	B	Cover < 50%	66	0.0
	B	Cover 50% to 75%	60	0.0
	B	Cover > 75%	55	0.0
		Woods(Forest, Orchard)		
	C	Cover < 50%	77	0.0
	C	Cover 50% to 75%	74	0.0
	C	Cover > 75%	70	0.0
		Woods(Forest, Orchard)		
	D	Cover < 50%	83	0.0
	D	Cover 50% to 75%	80	0.0
	D	Cover > 75%	77	0.0
1.49	A,B,C,D	Impervious (Pond)	100	149.0
6.05	A,B,C,D	Impervious (Pavement, Concrete, Roofs)	98	592.9

WEIGHTED CURVE NUMBER = 73.4

WEIGHTED CURVE NUMBER = SUM (CN*AREA) / TOTAL AREA

CURVE NUMBER WORKSHEET
 POST-DEVELOPMENT BASIN "POST BASIN 2"

Basin Area = acres

AREA	SCS SOIL TYPE	COVER TYPE AND CONDITIONS	CURVE NUMBER	SUB TOTAL
		Grass (Lawns, Parks, Golf Courses, etc.)		
	A	Cover < 50%	68	0.0
	A	Cover 50% to 75%	49	0.0
	A	Cover > 75%	39	0.0
		Grass (Lawns, Parks, Golf Courses, etc.)		
	B	Cover < 50%	79	0.0
	B	Cover 50% to 75%	69	0.0
	B	Cover > 75%	61	0.0
		Grass (Lawns, Parks, Golf Courses, etc.)		
	C	Cover < 50%	86	0.0
	C	Cover 50% to 75%	79	0.0
	C	Cover > 75%	74	0.0
		Grass (Lawns, Parks, Golf Courses, etc.)		
0.45	D	Cover < 50%	89	0.0
	D	Cover 50% to 75%	84	37.8
	D	Cover > 75%	80	0.0
		Woods(Forest, Orchard)		
	A	Cover < 50%	45	0.0
	A	Cover 50% to 75%	35	0.0
	A	Cover > 75%	25	0.0
		Woods(Forest, Orchard)		
	B	Cover < 50%	66	0.0
	B	Cover 50% to 75%	60	0.0
	B	Cover > 75%	55	0.0
		Woods(Forest, Orchard)		
	C	Cover < 50%	77	0.0
	C	Cover 50% to 75%	74	0.0
	C	Cover > 75%	70	0.0
		Woods(Forest, Orchard)		
	D	Cover < 50%	83	0.0
	D	Cover 50% to 75%	80	0.0
	D	Cover > 75%	77	0.0
0.40	A,B,C,D	Impervious (Pond)	100	40.0
	A,B,C,D	Impervious (Pavement, Concrete, Roofs)	98	0.0

WEIGHTED CURVE NUMBER = 91.5

WEIGHTED CURVE NUMBER = SUM (CN*AREA) / TOTAL AREA

Node Max Conditions [POST-HIGHLANDS]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
POND 1	100-YR-24HR	57.00	56.48	-0.0010	79.55	24.89	72347
WETLAND 1	100-YR-24HR	41.50	41.50	0.0007	24.88	0.00	0
POND 1	10YR-24 HR	57.00	55.61	0.0010	36.23	1.23	67339
WETLAND 1	10YR-24 HR	41.50	41.50	0.0007	1.23	0.00	0
POND 1	25YR-24 HR	57.00	55.92	0.0010	51.68	3.95	69117
WETLAND 1	25YR-24 HR	41.50	41.50	0.0007	3.94	0.00	0

Node Max Conditions [PRE-HIGHLANDS]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
PRE DEPRES 1	PRE 10 YR-24 HR	61.40	61.69	0.0010	3.38	2.65	10454
PRE WETLAND 1	PRE 10 YR-24 HR	46.70	46.84	0.0001	1.77	0.00	0
PRE WETLAND 2	PRE 10 YR-24 HR	58.90	58.79	0.0010	2.65	0.00	29678
PRE DEPRES 1	PRE 100YR-24 HR	61.40	61.84	0.0010	13.57	13.52	10454
PRE WETLAND 1	PRE 100YR-24 HR	46.70	46.84	0.0001	15.12	0.00	0
PRE WETLAND 2	PRE 100YR-24 HR	58.90	60.53	0.0010	13.52	0.90	30928
PRE DEPRES 1	PRE 25 YR-24 HR	61.40	61.76	0.0010	6.57	6.36	10454
PRE WETLAND 1	PRE 25 YR-24 HR	46.70	46.84	0.0001	5.43	0.00	0
PRE WETLAND 2	PRE 25 YR-24 HR	58.90	59.51	0.0010	6.36	0.00	30928

Simple Basin: BASIN 1

Scenario: POST-HIGHLANDS
Node: POND 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH323
Peaking Factor: 323.0
Area: 1.5900 ac
Curve Number: 35.0
% Impervious: 0.00
% DCIA: 0.00
% Direct: 0.00
Rainfall Name:

Comment:

Simple Basin: BASIN 2

Scenario: POST-HIGHLANDS
Node: POND 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 9999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 15.2700 ac
Curve Number: 73.4
% Impervious: 0.00
% DCIA: 0.00
% Direct: 0.00
Rainfall Name:

Comment:

Simple Basin: BASIN 3

Scenario: POST-HIGHLANDS
Node: POND 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 15.0000 min
Max Allowable Q: 9999.00 cfs

Time Shift: 0.0000 hr
Unit Hydrograph: UH323
Peaking Factor: 323.0
Area: 0.8500 ac
Curve Number: 35.0
% Impervious: 0.00
% DCIA: 0.00
% Direct: 0.00
Rainfall Name:

Comment:

Simple Basin: PRE BASIN 1

Scenario: PRE-HIGHLANDS
Node: PRE WETLAND 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 24.0000 min
Max Allowable Q: 999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 10.7000 ac
Curve Number: 38.5
% Impervious: 0.00
% DCIA: 0.00
% Direct: 0.00
Rainfall Name:

Comment:

Simple Basin: PRE BASIN 2

Scenario: PRE-HIGHLANDS
Node: PRE DEPRES 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 26.0000 min
Max Allowable Q: 999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 3.4900 ac
Curve Number: 58.0
% Impervious: 0.00
% DCIA: 0.00

% Direct: 0.00
 Rainfall Name:

Comment:

Simple Basin: PRE BASIN 3

Scenario: PRE-HIGHLANDS
 Node: PRE DEPRES 1
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 26.0000 min
 Max Allowable Q: 9999.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH484
 Peaking Factor: 484.0
 Area: 4.1500 ac
 Curve Number: 38.5
 % Impervious: 0.00
 % DCIA: 0.00
 % Direct: 0.00
 Rainfall Name:

Comment:

Node: POND 1

Scenario: POST-HIGHLANDS
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 53.00 ft
 Warning Stage: 57.00 ft

Stage [ft]	Area [ac]	Area [ft2]
53.00	1.2000	52272
54.00	1.3310	57978
55.00	1.4630	63728
56.00	1.5980	69609
57.00	1.7300	75359

Comment:

Node: WETLAND 1

Scenario: POST-HIGHLANDS

Type: Time/Stage
 Base Flow: 0.00 cfs
 Initial Stage: 40.50 ft
 Warning Stage: 41.50 ft
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	40.50
0	0	0	12.0000	41.50
0	0	0	96.0000	41.00

External Hydrograph

Comment:

Node: PRE DEPRES 1

Scenario: PRE-HIGHLANDS
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 61.00 ft
 Warning Stage: 61.40 ft

Stage [ft]	Area [ac]	Area [ft2]
61.00	0.2200	9583
61.40	0.2400	10454

Comment:

Node: PRE WETLAND 1

Scenario: PRE-HIGHLANDS
 Type: Time/Stage
 Base Flow: 0.00 cfs
 Initial Stage: 46.70 ft
 Warning Stage: 46.70 ft
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	46.70
0	0	0	12.0000	46.70
0	0	0	96.0000	47.70

Comment:

Node: PRE WETLAND 2

Scenario: PRE-HIGHLANDS
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 57.70 ft
 Warning Stage: 58.90 ft

Stage [ft]	Area [ac]	Area [ft2]
57.70	0.4000	17424
58.00	0.4700	20473
58.90	0.7100	30928

Comment:

Drop Structure Link: CS-1		Upstream Pipe	Downstream Pipe
Scenario:	POST-HIGHLANDS	Invert: 41.50 ft	Invert: 40.50 ft
From Node:	POND 1	Manning's N: 0.0130	Manning's N: 0.0110
To Node:	WETLAND 1	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 2.50 ft	Max Depth: 2.50 ft
Flow Direction:	Both	Bottom Clip	
Solution:	Combine	Default: 0.00 ft	Default: 0.00 ft
Increments:	0	Op Table:	Op Table:
Pipe Count:	1	Ref Node:	Ref Node:
Damping:	0.0000 ft	Manning's N: 0.0000	Manning's N: 0.0000
Length:	50.00 ft	Top Clip	
FHWA Code:	0	Default: 0.00 ft	Default: 0.00 ft
Entr Loss Coef:	0.00	Op Table:	Op Table:
Exit Loss Coef:	0.00	Ref Node:	Ref Node:
Bend Loss Coef:	0.00	Manning's N: 0.0000	Manning's N: 0.0000
Bend Location:	0.00 dec		
Energy Switch:	Diff Wave		

Pipe Comment:

Weir Component	
Weir:	1
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Sharp Crested Vertical
Geometry Type:	Rectangular
Invert:	55.25 ft
Control Elevation:	55.25 ft
Max Depth:	0.75 ft
Max Width:	1.75 ft
Fillet:	0.00 ft
	Bottom Clip
	Default: 0.00 ft
	Op Table:
	Ref Node:
	Top Clip
	Default: 0.00 ft
	Op Table:
	Ref Node:
	Discharge Coefficients
	Weir Default: 3.200
	Weir Table:
	Orifice Default: 0.600
	Orifice Table:

Weir Comment:

Weir Component	
Weir: 2	Bottom Clip
Weir Count: 1	Default: 0.00 ft
Weir Flow Direction: Both	Op Table:
Damping: 0.0000 ft	Ref Node:
Weir Type: Horizontal	Top Clip
Geometry Type: Rectangular	Default: 0.00 ft
Invert: 56.00 ft	Op Table:
Control Elevation: 56.00 ft	Ref Node:
Max Depth: 3.00 ft	Discharge Coefficients
Max Width: 3.00 ft	Weir Default: 3.200
Fillet: 0.00 ft	Weir Table:
	Orifice Default: 0.600
	Orifice Table:

Weir Comment:

Weir Component	
Weir: 3	Bottom Clip
Weir Count: 1	Default: 0.00 ft
Weir Flow Direction: Both	Op Table:
Damping: 0.0000 ft	Ref Node:
Weir Type: Sharp Crested Vertical	Top Clip
Geometry Type: Rectangular	Default: 0.00 ft
Invert: 55.71 ft	Op Table:
Control Elevation: 55.71 ft	Ref Node:
Max Depth: 1.29 ft	Discharge Coefficients
Max Width: 3.00 ft	Weir Default: 3.200
Fillet: 0.00 ft	Weir Table:
	Orifice Default: 0.600
	Orifice Table:

Weir Comment:

Drop Structure Comment:

Weir Link: PRE LW 1	
Scenario: PRE-HIGHLANDS	Bottom Clip
From Node: PRE WETLAND 2	Default: 0.00 ft
To Node: PRE WETLAND 1	Op Table:
Link Count: 1	Ref Node:
Flow Direction: Both	Top Clip
Damping: 0.0000 ft	Default: 0.00 ft
Weir Type: Broad Crested Vertical	Op Table:
Geometry Type: Irregular	Ref Node:
Invert: 60.50 ft	Discharge Coefficients
Control Elevation: 60.50 ft	Weir Default: 2.800

Cross Section: PRE LW 1 CS

Weir Table:
Orifice Default: 0.600
Orifice Table:

Comment:

Weir Link: PRE LW 2

Scenario: PRE-HIGHLANDS	Bottom Clip
From Node: PRE DEPRES 1	Default: 0.00 ft
To Node: PRE WETLAND 2	Op Table:
Link Count: 1	Ref Node:
Flow Direction: Both	Top Clip
Damping: 0.0000 ft	Default: 0.00 ft
Weir Type: Broad Crested Vertical	Op Table:
Geometry Type: Irregular	Ref Node:
Invert: 61.53 ft	Discharge Coefficients
Control Elevation: 61.52 ft	Weir Default: 2.800
Cross Section: PRE LW 2 CS	Weir Table:
	Orifice Default: 0.600
	Orifice Table:

Comment:

Simulation: 100-YR-24HR

Scenario: POST-HIGHLANDS
Run Date/Time: 4/6/2023 10:04:38 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
 Reference ET Folder:
 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
 Extern Hydrograph Set:
 Curve Number Set:

 Green-Ampt Set:
 Vertical Layers Set:
 Impervious Set:
 Roughness Set:
 Crop Coef Set:
 Fillable Porosity Set:
 Conductivity Set:
 Leakage Set:

Tolerances & Options

Time Marching: SAOR
 Max Iterations: 6
 Over-Relax Weight Fact: 0.5 dec
 dZ Tolerance: 0.0010 ft

 Max dZ: 1.0000 ft
 Link Optimizer Tol: 0.0001 ft

 Edge Length Option: Automatic

 Dflt Damping (2D): 0.0050 ft
 Min Node Srf Area (2D): 100 ft2
 Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
 ET for Manual Basins: False

 Smp/Man Basin Rain Opt: Global
 OF Region Rain Opt: Global
 Rainfall Name: ~FLMOD
 Rainfall Amount: 10.60 in
 Storm Duration: 24.0000 hr

 Dflt Damping (1D): 0.0050 ft
 Min Node Srf Area (1D): 100 ft2
 Energy Switch (1D): Energy

Comment:

Simulation: 10YR-24 HR

Scenario: POST-HIGHLANDS
 Run Date/Time: 4/6/2023 10:04:44 PM
 Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
 Reference ET Folder:
 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
 Extern Hydrograph Set:
 Curve Number Set:

 Green-Ampt Set:
 Vertical Layers Set:
 Impervious Set:
 Roughness Set:
 Crop Coef Set:
 Fillable Porosity Set:

Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	ET for Manual Basins: False
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain Global
	Opt:
Max dZ: 1.0000 ft	OF Region Rain Opt: Global
Link Optimizer Tol: 0.0001 ft	Rainfall Name: ~FLMOD
	Rainfall Amount: 6.29 in
Edge Length Option: Automatic	Storm Duration: 24.0000 hr
Dflt Damping (2D): 0.0050 ft	Dflt Damping (1D): 0.0050 ft
Min Node Srf Area 100 ft2	Min Node Srf Area 100 ft2
(2D):	(1D):
Energy Switch (2D): Energy	Energy Switch (1D): Energy

Comment:

Simulation: 25YR-24 HR

Scenario: POST-HIGHLANDS
Run Date/Time: 4/6/2023 10:04:49 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
 Reference ET Folder:
 Unit Hydrograph
 Folder:

Lookup Tables

Boundary Stage Set:
 Extern Hydrograph Set:
 Curve Number Set:

 Green-Ampt Set:
 Vertical Layers Set:
 Impervious Set:
 Roughness Set:
 Crop Coef Set:
 Fillable Porosity Set:
 Conductivity Set:
 Leakage Set:

Tolerances & Options

Time Marching: SAOR
 Max Iterations: 6
 Over-Relax Weight: 0.5 dec
 Fact:
 dZ Tolerance: 0.0010 ft

 Max dZ: 1.0000 ft
 Link Optimizer Tol: 0.0001 ft

 Edge Length Option: Automatic

 Dflt Damping (2D): 0.0050 ft
 Min Node Srf Area: 100 ft2
 (2D):
 Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
 ET for Manual Basins: False

 Smp/Man Basin Rain: Global
 Opt:
 OF Region Rain Opt: Global
 Rainfall Name: ~FLMOD
 Rainfall Amount: 7.89 in
 Storm Duration: 24.0000 hr

 Dflt Damping (1D): 0.0050 ft
 Min Node Srf Area: 100 ft2
 (1D):
 Energy Switch (1D): Energy

Comment:

Simulation: PRE 10 YR-24 HR

Scenario: PRE-HIGHLANDS
 Run Date/Time: 4/6/2023 10:04:55 PM
 Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
 Reference ET Folder:
 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
 Extern Hydrograph Set:
 Curve Number Set:

 Green-Ampt Set:
 Vertical Layers Set:
 Impervious Set:
 Roughness Set:
 Crop Coef Set:
 Fillable Porosity Set:

Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	ET for Manual Basins: False
Over-Relax Weight: 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain Opt: Global
	OF Region Rain Opt: Global
Max dZ: 1.0000 ft	Rainfall Name: ~FLMOD
Link Optimizer Tol: 0.0001 ft	Rainfall Amount: 6.29 in
	Storm Duration: 24.0000 hr
Edge Length Option: Automatic	
Dflt Damping (2D): 0.0050 ft	Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2	Min Node Srf Area (1D): 100 ft2
	Energy Switch (1D): Energy
Energy Switch (2D): Energy	

Comment:

Simulation: PRE 100YR-24 HR

Scenario: PRE-HIGHLANDS
Run Date/Time: 4/6/2023 10:05:00 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:

Green-Ampt Set:
Vertical Layers Set:
Impervious Set:
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FLMOD
Rainfall Amount: 10.60 in
Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: PRE 25 YR-24 HR

Scenario: PRE-HIGHLANDS
 Run Date/Time: 4/6/2023 10:05:04 PM
 Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
 Reference ET Folder:
 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
 Extern Hydrograph Set:
 Curve Number Set:

 Green-Ampt Set:
 Vertical Layers Set:
 Impervious Set:
 Roughness Set:
 Crop Coef Set:
 Fillable Porosity Set:

Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	ET for Manual Basins: False
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain Global
	Opt:
Max dZ: 1.0000 ft	OF Region Rain Opt: Global
Link Optimizer Tol: 0.0001 ft	Rainfall Name: ~FLMOD
	Rainfall Amount: 7.89 in
Edge Length Option: Automatic	Storm Duration: 24.0000 hr
Dflt Damping (2D): 0.0050 ft	Dflt Damping (1D): 0.0050 ft
Min Node Srf Area 100 ft2	Min Node Srf Area 100 ft2
(2D):	(1D):
Energy Switch (2D): Energy	Energy Switch (1D): Energy

Comment:



MEMORANDUM

To: Richard Villaseñor, P.E.
City Engineer
City of DeBary

From: Emanuelle D Rodriguez, P.E.
Kimley-Horn and Associates, Inc.

Date: May 26, 2023

Subject: Traffic Impact Analysis Methodology
E Highbanks Townhomes – City of DeBary, FL

Purpose

Kimley-Horn has been retained to prepare a Traffic Impact Analysis (TIA) for the above-referenced project to accompany applications submitted to the City of DeBary for site plan permits.

The following is a TIA methodology outline for the project. The forthcoming TIA will follow the methodology herein and the policies and guidelines of the City of DeBary, and the River to Sea Transportation Planning Organization (R2CTPO).

Project Description

The proposed development consists of 129 townhome dwelling units to be located on a vacant property generally located on the north side of E Highbanks Road east of US 17/92 in the City of DeBary, Florida. Buildout is anticipated in Year 2025.

Access to the site will be provided via two (2) proposed full-access driveways along E Highbanks Road. The project driveways are shown on the site plan provided in **Attachment A**.



Trip Generation

Trip generation for the proposed project was calculated per procedures published in the Institute of Transportation Engineer’s (ITE) *Trip Generation Manual, 11th Edition*. Land Use Code (LUC) 220 – Multifamily Housing (Low-Rise) (Not close to rail transit) was used to represent the proposed development. Relevant excerpts from the ITE *Trip Generation Manual* are provided in **Attachment B**.

Table 1 provides the Daily, AM peak hour, and PM peak hour trip generation summaries for the proposed development.

Table 1: Trip Generation Summary

Daily	Land Use	ITE LUC	Size	Units	ITE Trip Rate ¹	Daily Trip Generation				
						Total	In ¹		Out ¹	
	Multifamily Housing (Low-Rise) (Not Close to Rail Transit)	220	129	DU	6.99	902	50%	451	50%	451
	Total Generated Trips					902		451		451
AM Peak Hour	Land Use	ITE LUC	Size	Units	ITE Trip Rate ¹	AM Peak Hour Trip Generation				
						Total	In ¹		Out ¹	
	Multifamily Housing (Low-Rise) (Not Close to Rail Transit)	220	129	DU	0.49	63	24%	15	76%	48
	Total Generated Trips					63		15		48
PM Peak Hour	Land Use	ITE LUC	Size	Units	ITE Trip Rate ¹	PM Peak Hour Trip Generation				
						Total	In ¹		Out ¹	
	Multifamily Housing (Low-Rise) (Not Close to Rail Transit)	220	129	DU	0.59	76	63%	48	37%	28
	Total Generated Trips					76		48		28

Notes: ¹ Vehicle trip rate and directional splits per ITE Trip Generation Manual, 11th Edition



Trip Distribution and Trip Assignment

Projected traffic demand on study area facilities was derived with the use of the latest adopted regional travel demand model. Socioeconomic data for the project was coded into the appropriate traffic analysis zone (TAZ) within the Central Florida Regional Planning Model (CFRPM v7) set and situated within the surrounding roadway network to appropriately represent project access. The model was used to assign trips for all trip purposes between allocated origin and destination pairs, and the resulting trip distribution to and from the subject TAZ was documented. The resulting model outputs showing the percent of daily project distribution and truck trip distribution are provided in **Attachment C**.

Multimodal Analysis

An analysis of connectivity to existing and future funded transit, bicycle, pedestrian, and trail facilities will be conducted at adjacent roadways to the project site. This analysis will include locations of transit stops and connectivity to the project site as well as consideration of connectivity of sidewalks and bicycle facilities around the proposed development.

Transportation Improvements

The City of DeBary Capital Improvement Program (CIP), Volusia County's Capital Improvement Program (CIP), R2CTPO's Transportation Improvement Program (TIP), and FDOT's Five-Year Work Program were reviewed to identify any roadway capacity improvements within the study area. The City of DeBary CIP includes improvements related to right-turn lanes on East Highbanks Road and turn lanes at Highbanks Road / 17-92 to be funded in FY 2023-2024.

Study Area

Based on the R2CTPO TIA Guidelines, a TIA is not required for developments generating less than 100 peak hour two-way external trips. As shown in **Table 1**, the proposed townhome development generates less than 100 peak hour two-way external trips. Therefore, a limited study area will be analyzed in the forthcoming TIA. The study area will include the following, as shown in **Figure 1**:

Study Intersections:

1. US 17/92 & E Highbanks Road (*signalized*)
2. Enterprise Road & E Highbanks Road (*signalized*)
3. E Highbanks Road & Project Driveway #1 (*full-access stop-controlled*)
4. E Highbanks Road & Project Driveway #2 (*full-access stop-controlled*)

Study Segments:

- US 17/92, from Valencia Road to Highbanks Road
- US 17/92, from Highbanks Road to DeBary Plantation Boulevard



Table 2: Roadway Segment Significance Test (PM Peak Hour)

Roadway From To		Roadway Attributes ¹					Peak 2-Way LOS Capacity ¹	Critical / Near Critical	PM Peak Hour Trips	In = 48	Out = 28	Max % Impact ³	Segment Impact? ⁴	Included in Study Area
		Agency	Functional Classification	Area Type	Adopted LOS	Number of Lanes			% Assign ²	NB /EB	SB / WB			
US 17/92														
Valencia Rd	Highbanks Rd	State	Principal Arterial	U	D	4	3,580		43%	21	12	0.92%	No	Yes ⁵
Highbanks Rd	DeBary Plantation Blvd	State	Principal Arterial	U	D	4	3,580		22%	6	11	0.47%	No	Yes ⁵
E Highbanks Rd														
US 17/92	Enterprise Rd	City	Collector	U	U	2	1,368		68%	33	19	3.80%	Yes	Yes
Enterprise Rd														
Deltona Blvd	Highbanks Rd	County	Minor Arterial	U	D	2	2,740		16%	8	4	0.44%	No	No
Highbanks Rd	Saxon Blvd	County	Minor Arterial	U	D	2	3,410		16%	4	8	0.35%	No	No

Notes:

1. Data obtained from Volusia County 2021 AADT Spreadsheet
2. Percent project traffic assignment was calculated as the maximum across the segment
3. Percent impact was calculated as the PM peak hour peak direction (PHPD) traffic divided by the PHPD service volume
4. In accordance with R2CTPO guidelines, the minimum threshold for significance was at least 3% impact of the peak hour peak direction trips
5. Major segments to which the site has most direct access are included in the study area

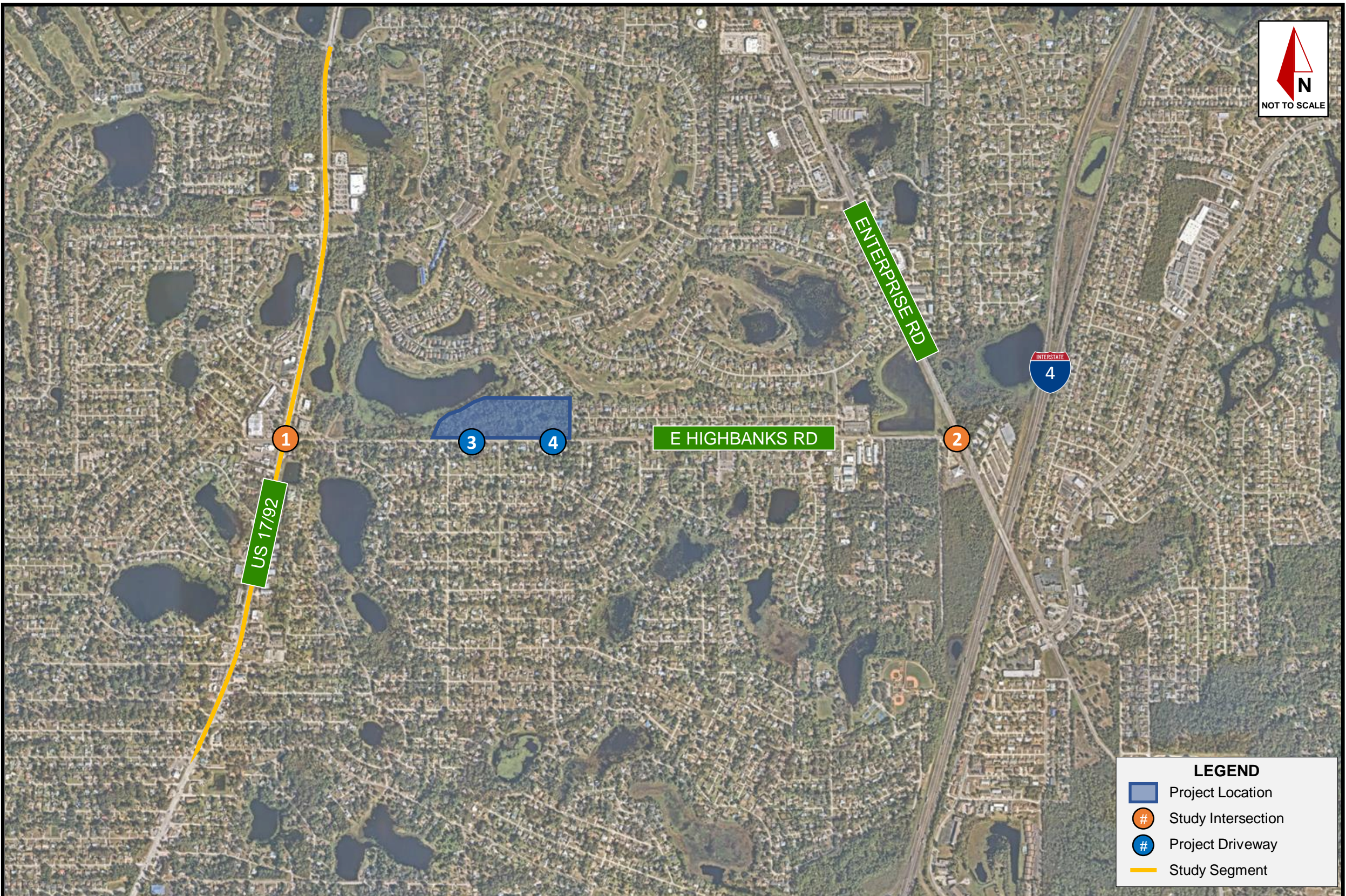


Figure 1: Project Location Map

E Highbanks Townhomes | DeBary, Florida

Project No: 249098007

April 2023

Page 5

Kimley»Horn

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 1530 Cornerstone Blvd, Suite 200, Daytona Beach, FL, 32117
 Phone: (386)-271-0273



Data Collection

Turning movement counts (TMCs) will be collected at the study area intersections on a standard mid-weekday (Tuesday, Wednesday, or Thursday) during the AM (7:00 AM to 9:00 PM) peak period and PM (4:00 PM to 6:00 PM) peak period. Existing TMCs will be adjusted by a seasonal factor based on the 2021 data from FDOT's Florida Traffic Online (FTO) Web Application.

Background Growth Rate

Historical growth rates have been calculated in accordance with Volusia County's Segment Growth Rates and Vested Trips Instructions Policy (October 2020) and based on historical data provided in Volusia County's 2021 Traffic Counts & Model Volumes report. These historical growth rates were determined by utilizing five or ten years of AADT data in order to achieve a Trend R^2 percentage of at least 70%. If 70% was unobtainable from the available historical AADT data on a segment, the growth rate was assumed to be consistent with an upstream or downstream segment with an R^2 of at least 70%. A minimum background growth rate of 2% was applied.

Historical growth rates through buildout year 2025 were compared to vested trip quantities for each study segment according to vested trip information provided in the 2022 Volusia County Vested Trip Database. Vested trips were not included for the study segments, so vested trips from the nearest downstream segment were applied. Growth rate calculations and vested trip data are provided in **Attachment D**.

Analysis Scenarios

Traffic analyses will be performed for existing (Year 2025), background (Year 2025), and buildout (Year 2025) conditions as follows:

- **Roadway Segment Analysis:** Roadway segment analyses will be conducted by comparing the existing, background, and buildout daily and PM peak hour volumes to the available roadway segment capacity. Buildout volumes will be developed by adding anticipated project trips to background volumes.



- **Intersection Analysis:** Intersection operational analyses will be performed in the AM and PM peak hours for all study area intersections using procedures outlined in the *Highway Capacity Manual, 6th Edition* with *Synchro* (v11) software. For signalized study area intersections, the existing timing and phasing plans will be used. Necessary signal timing adjustments to achieve acceptable conditions for any signalized study area intersection will be included. For turn lanes where project traffic is assigned, a queueing analysis will be performed that considers required deceleration lengths and anticipated queues under existing, future background, and future buildout conditions. Per Volusia County TIA Guidelines, for intersection LOS failures, the TIA will include a queue analysis table that identifies the storage needed to support the buildout condition and calculates the turn lane costs based on the latest FDOT Long Range Estimates for both right and left turns.

Mitigation of Impacts

Improvement recommendations will be provided to mitigate project impacts to any study area roadway segments or intersections expected to operate beyond their adopted Level of Service by the buildout year 2025. Any improvement recommendations will be consistent with the City of DeBary and Volusia County comprehensive plan transportation elements. A concurrency mitigation strategy will be included in the TIA, if needed.

Any proportionate share payment costs will be calculated per Florida Statute 163, using construction cost estimates approved by Volusia County.

Documentation

The TIA methodology checklist required by the R2CTPO guidelines is provided in **Attachment E**.

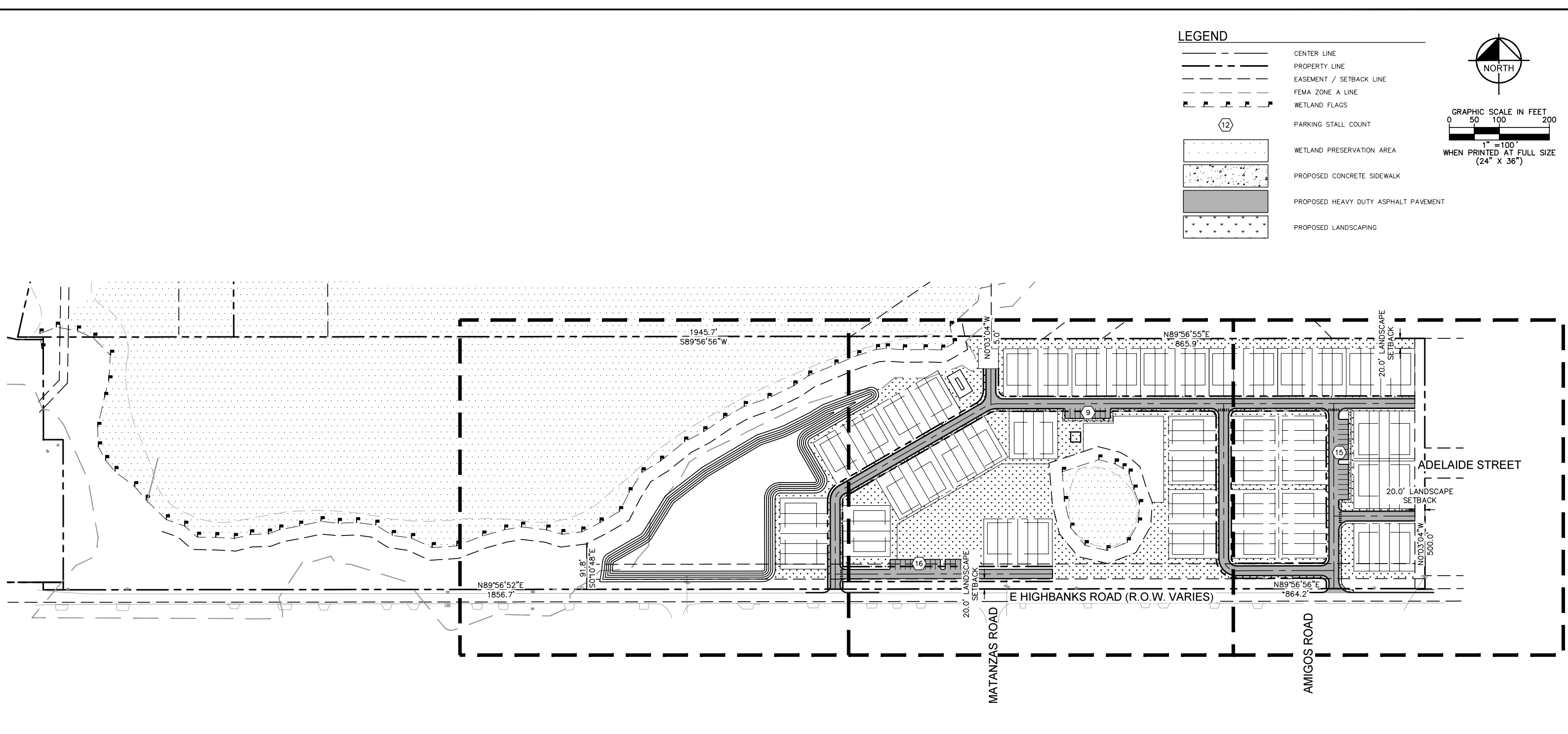
All analyses and findings of the TIA will be documented in a report. An electronic copy will be signed and sealed by a registered professional engineer and submitted to the City of DeBary for review.

ATTACHMENT A
Site Plan

THIS INFORMATION IS PROVIDED TO YOU AT THE REQUEST OF OUR CLIENT AND IS SOLELY FOR YOUR INFORMATION AND CONVENIENCE. THESE PLANS ARE PRELIMINARY ONLY AND SUBJECT TO SIGNIFICANT REVISION BEFORE CONSTRUCTION PLANS ARE ISSUED. NEITHER KIMLEY-HORN NOR KIMLEY-HORN'S CLIENT WILL BE RESPONSIBLE FOR ANY LOSSES OR COSTS ASSOCIATED WITH RELIANCE ON THIS PRELIMINARY INFORMATION OR CHANGES IN THE INFORMATION PRIOR TO FINAL DESIGN.

Plotted By: Martinez, Jeremiah. Sheet Set: 149300004 - Somford M.F. @ STC. Layout: C1.0 OVERALL SITE PLAN. March 30, 2023. 08:17:51am. k:\ORL_Civil\249098007-E Highbanks Townhomes\CADD\DDP\PlanSheets\C1.0 - OVERALL SITE PLAN.dwg

This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



LEGEND

- CENTER LINE
- PROPERTY LINE
- EASEMENT / SETBACK LINE
- FEMA ZONE A LINE
- WETLAND FLAGS
- PARKING STALL COUNT
- WETLAND PRESERVATION AREA
- PROPOSED CONCRETE SIDEWALK
- PROPOSED HEAVY DUTY ASPHALT PAVEMENT
- PROPOSED LANDSCAPING

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

1" = 100'
WHEN PRINTED AT FULL SIZE
(24" x 36")

SITE DATA

ADDRESS: E HIGHBANKS RD DEBARY, FL 32713

APN: 802700000062
802600000065

ZONING DISTRICT: PLANNED UNIT DEVELOPMENT (PUD)

LAND USE: RESIDENTIAL

LOT COVERAGE

TOTAL SITE AREA:	714,123 S.F.	(16.39 AC)	100%
WETLAND PRESERVATION AREA:	27,139 S.F.	(0.63 AC)	3.8%
ROAD/PAVEMENT AREA:	88,000 S.F.	(2.02 AC)	12.3%
LOT AREA:	116,829.2 S.F.	(2.68 AC)	16.4%
OPEN SPACE:	481,974.8 S.F.	(11.06 AC)	37.5%

TOWNHOMES:

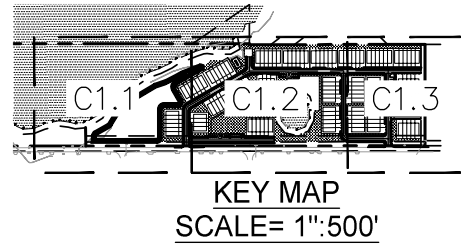
6 UNIT	16 BUILDINGS	96 UNITS
5 UNIT	5 BUILDINGS	25 UNITS
4 UNIT	2 BUILDINGS	8 UNITS
TOTAL:	23 BUILDINGS	129 UNITS

PARKING/LANDSCAPE BUFFER

FRONT:	20.0'
REAR:	20.0'
SIDE (E):	20.0'
SIDE (W):	25.0'

PARKING TABLE:

STANDARD	38
ACCESSIBLE	2
TOTAL:	40



<p>OVERALL SITE PLAN</p>	<p>OVERALL DEVELOPMENT PLANS - E HIGHBANKS TOWNHOMES</p>						
<p>KHA PROJECT</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>DATE</td> <td>DESIGNED BY</td> <td>CHECKED BY</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	DATE	DESIGNED BY	CHECKED BY				<p>LICENSED PROFESSIONAL</p> <p>JOSHUA M. ENOT FLORIDA LICENSE NUMBER 100652 FE</p>
DATE	DESIGNED BY	CHECKED BY					
<p>SCALE AS SHOWN</p> <p>DRAWN BY</p>	<p>DATE:</p>						
<p>SHEET NUMBER</p> <p>C1.0</p>	<p>REVISIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>No.</th> <th>DATE</th> <th>BY</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	No.	DATE	BY			
No.	DATE	BY					

Kimley-Horn

189 S. ORANGE AVE., SUITE 1000, ORLANDO, FL 32801
PHONE: 407-898-1511
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ATTACHMENT B

Excerpts from ITE Trip Generation Manual

Land Use: 220

Multifamily Housing (Low-Rise)

Description

Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have two or three floors (levels). Various configurations fit this description, including walkup apartment, mansion apartment, and stacked townhouse.

- A walkup apartment typically is two or three floors in height with dwelling units that are accessed by a single or multiple entrances with stairways and hallways.
- A mansion apartment is a single structure that contains several apartments within what appears to be a single-family dwelling unit.
- A fourplex is a single two-story structure with two matching dwelling units on the ground and second floors. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.
- A stacked townhouse is designed to match the external appearance of a townhouse. But, unlike a townhouse dwelling unit that only shares walls with an adjoining unit, the stacked townhouse units share both floors and walls. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.

Multifamily housing (mid-rise) (Land Use 221), multifamily housing (high-rise) (Land Use 222), affordable housing (Land Use 223), and off-campus student apartment (low-rise) (Land Use 225) are related land uses.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is $\frac{1}{2}$ mile or less.

Additional Data

For the three sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.72 residents per occupied dwelling unit.

For the two sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96.2 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip

generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

For the three sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.72 residents per occupied dwelling unit.

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1980s, the 1990s, the 2000s, the 2010s, and the 2020s in British Columbia (CAN), California, Delaware, Florida, Georgia, Illinois, Indiana, Maine, Maryland, Massachusetts, Minnesota, New Jersey, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, and Washington.

Source Numbers

188, 204, 237, 300, 305, 306, 320, 321, 357, 390, 412, 525, 530, 579, 583, 638, 864, 866, 896, 901, 903, 904, 936, 939, 944, 946, 947, 948, 963, 964, 966, 967, 1012, 1013, 1014, 1036, 1047, 1056, 1071, 1076

Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 22

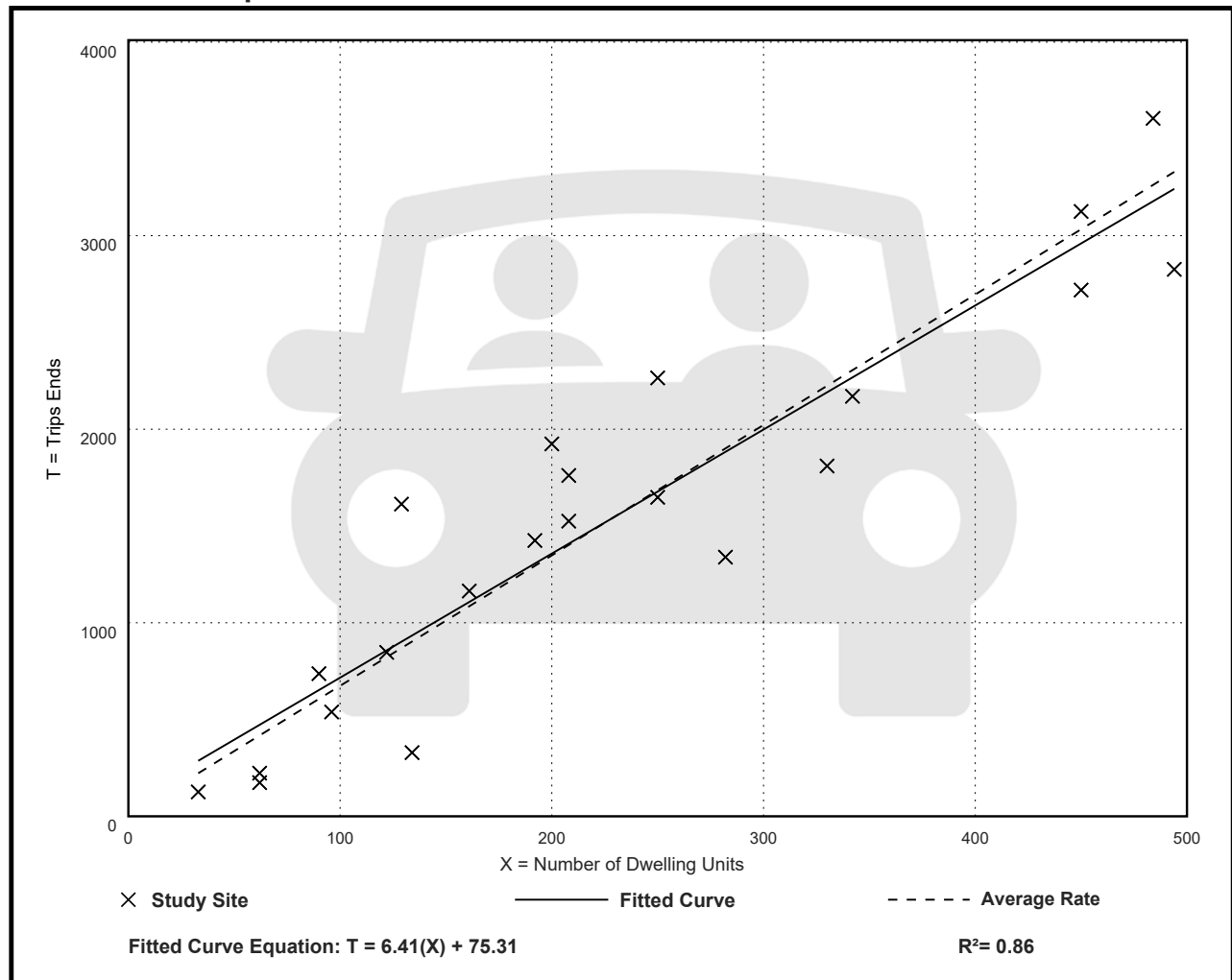
Avg. Num. of Dwelling Units: 229

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units

On a: **Weekday,**

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 49

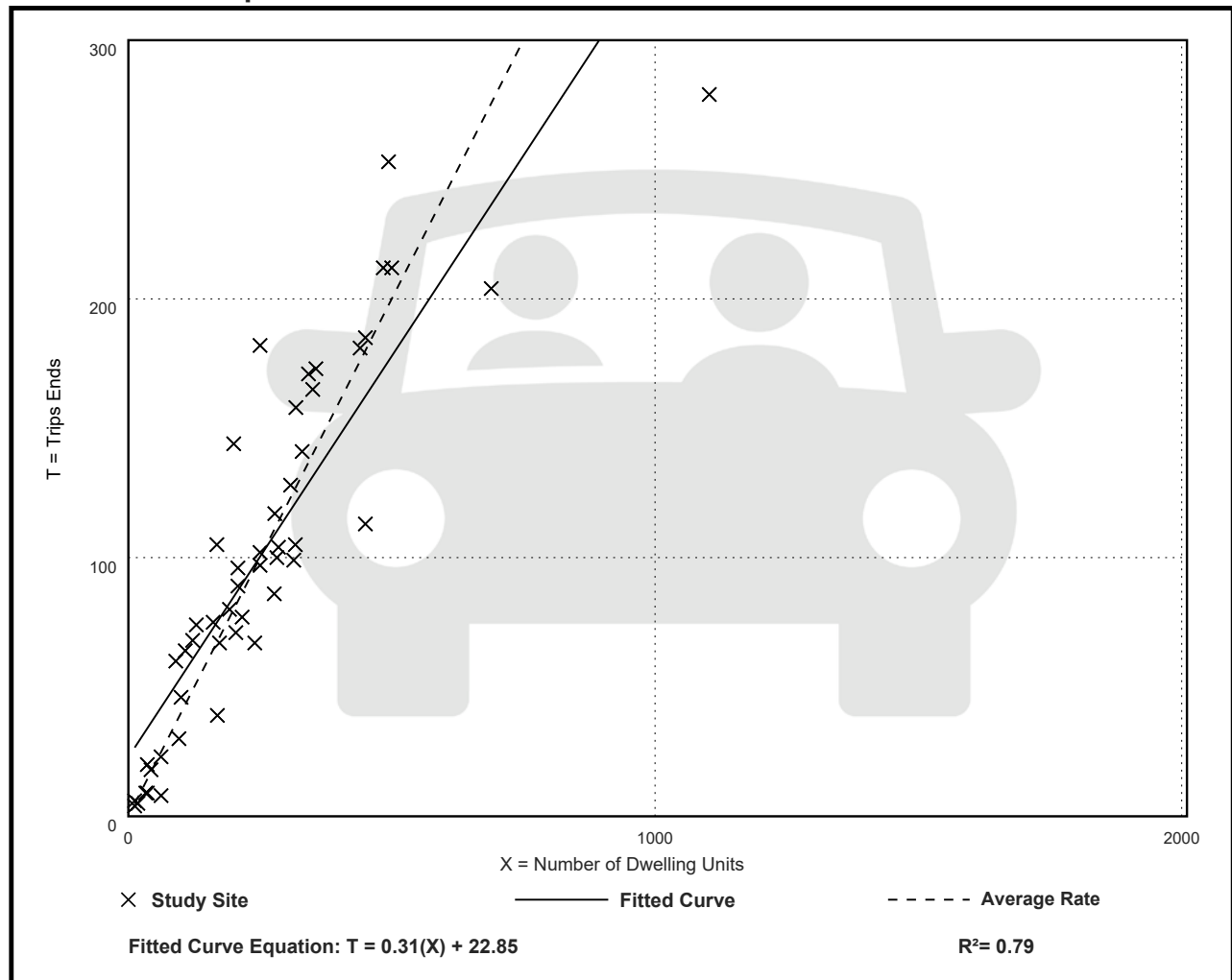
Avg. Num. of Dwelling Units: 249

Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 59

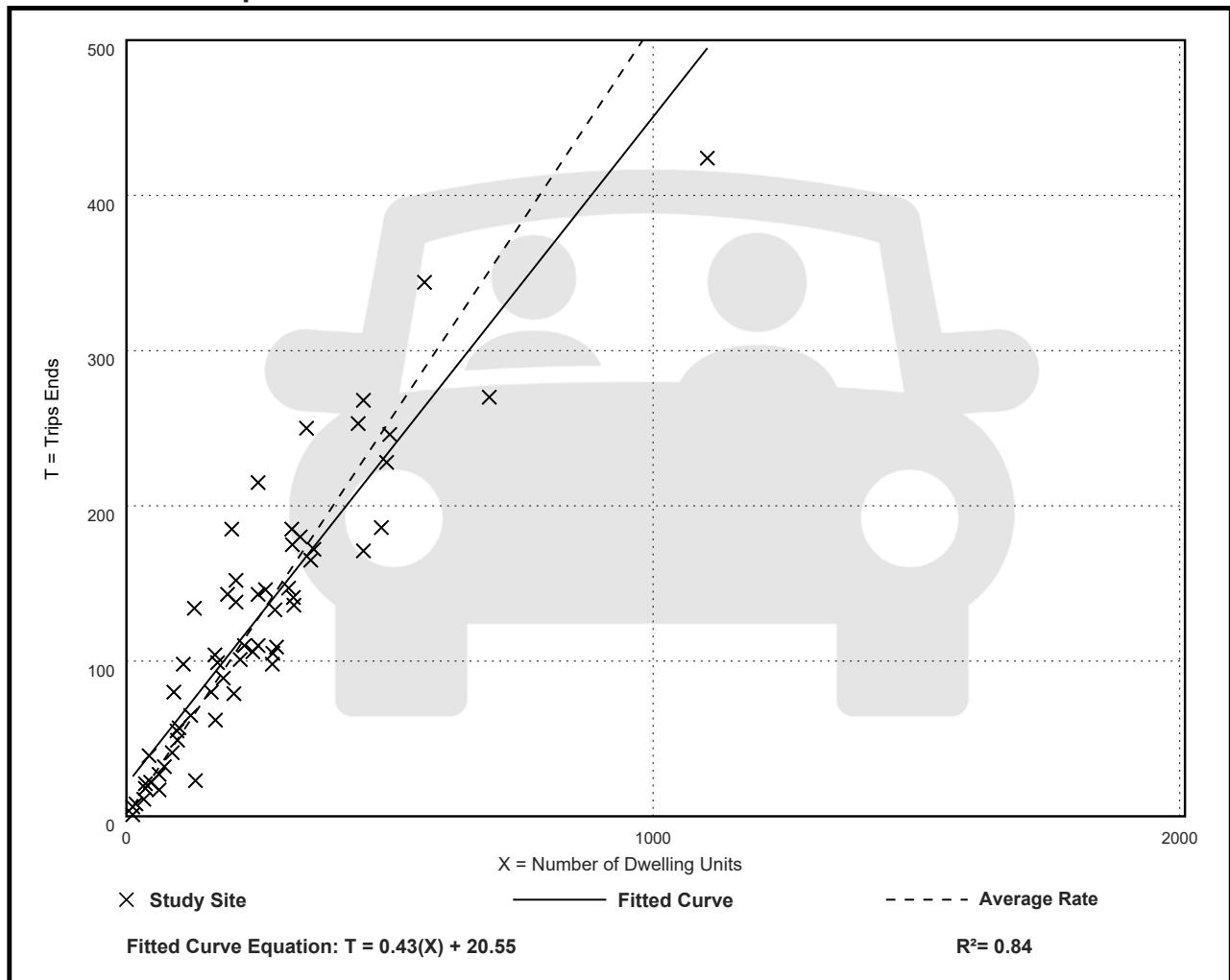
Avg. Num. of Dwelling Units: 241

Directional Distribution: 63% entering, 37% exiting

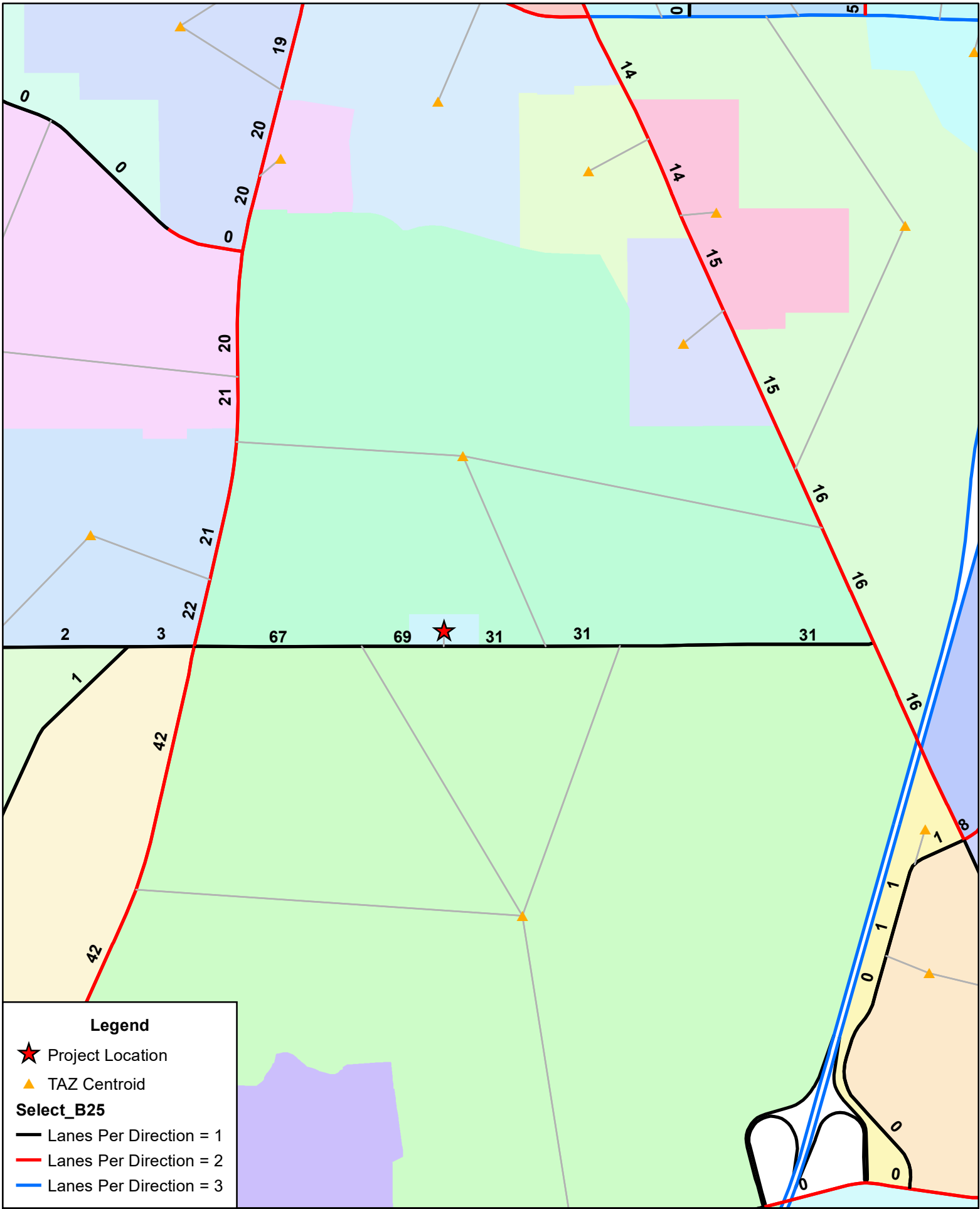
Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation

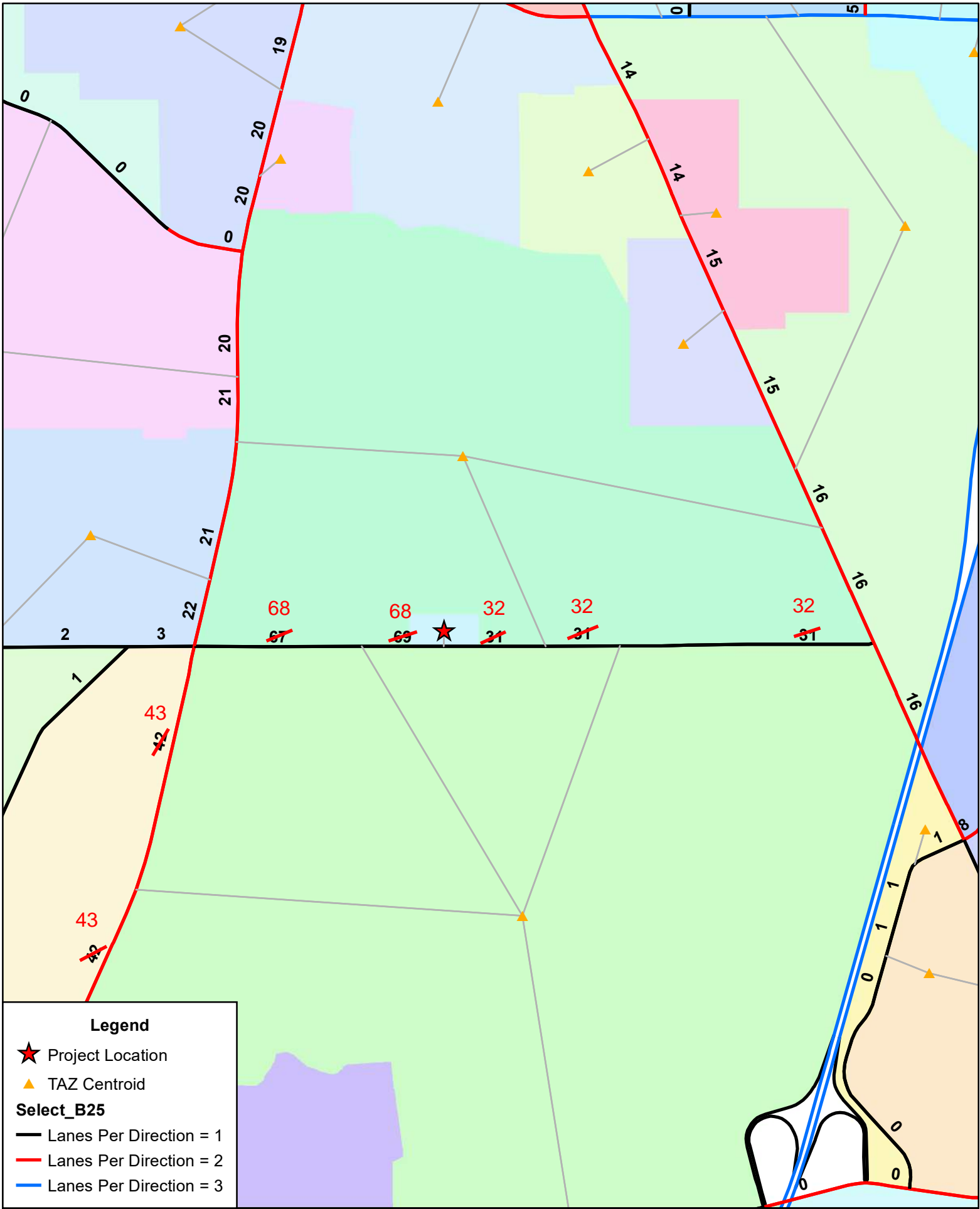


ATTACHMENT C
CFRPM7 Model Output



Trip Distribution - Highbanks Townhomes
 CFRPMv7 - 2025 - 4/11/2023





Trip Distribution - Highbanks Townhomes
 CFRPMv7 - 2025 - 4/11/2023



ATTACHMENT D

Growth Rate Calculations and Vested Trip Data

Growth Rate Determination

Roadway From To		Station # ¹	Time Period Yielding Greatest R ² Value	Regression Analysis (Growth Rate) Used	Trend R ²	Use Upstream/ Downstream Trend Growth Rate?	Trend Annual Historical Growth Rate	Growth Category ²		Proposed Growth Rate (prior to vested trip check) ²	Vested Trips vs. Annual Growth Rate (PM Peak)				Vested Trips > Growth Rate?	Proposed Trend Growth Rate AND/OR Vested Trips ²
								Achieved R ² >=0.7 OR Adjacent Trend Growth Rate Used	Unable to Obtain R ² >=0.7		2021 Peak Hour Volume ¹	2025 Background Traffic Peak Hour Volume	Peak Hour Background Growth			
													Background Volumes Total Growth (from 2021 to 2025)	Vested Trips ³		
US 17/92																
Valencia Rd	Highbanks Rd	7	10 years	Linear	73.07%	No	2.30%	Low to Medium	-	2.30%	2,295	2,506	211	0	No	2.3%
Highbanks Rd	DeBary Plantation Blvd	8	5 years	Linear	75.00%	No	-1.19%	Negative	-	2.00%	2,160	2,333	173	0	No	2%
E Highbanks Rd																
US 17/92	Enterprise Rd	8004	10 years	Linear	49.60%	N/A	67.78%	High	TRUE	2.00%	369	399	30	0	No	2%

Notes:

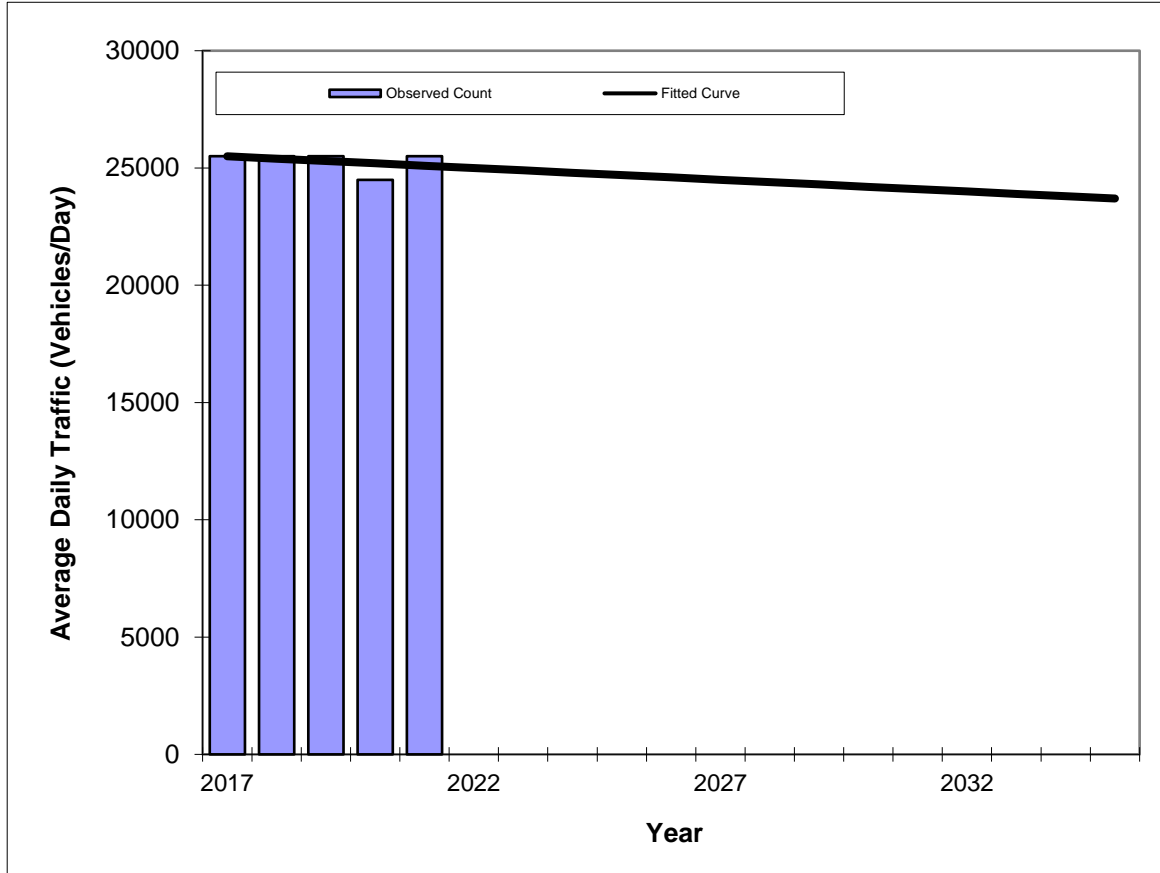
1. Station numbers and historical AADT information were obtained from FDOT's Florida Traffic Online (FTO) database.
2. Growth rates were determined based on the 'Volusia County's Segment Growth Rates and Vested Trips Instructions Policy' methodology provided by VCTE.
3. Vested trip were obtained from Volusia County's 2022 vested trip spreadsheet.

Traffic Trends - V2.0

US 17/92 -- Valencia Road to Highbanks Road

PIN#	0
Location	1

County:	Volusia (79)
Station #:	0
Highway:	US 17/92



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2017	25500	25500
2018	25500	25400
2019	25500	25300
2020	24500	25200
2021	25500	25100
2024 Opening Year Trend		
2024	N/A	24800
2026 Mid-Year Trend		
2026	N/A	24600
2027 Design Year Trend		
2027	N/A	24500
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-100
Trend R-squared:	12.50%
Trend Annual Historic Growth Rate:	-0.39%
Trend Growth Rate (2021 to Design Year):	-0.40%
Printed:	14-Apr-23
Straight Line Growth Option	

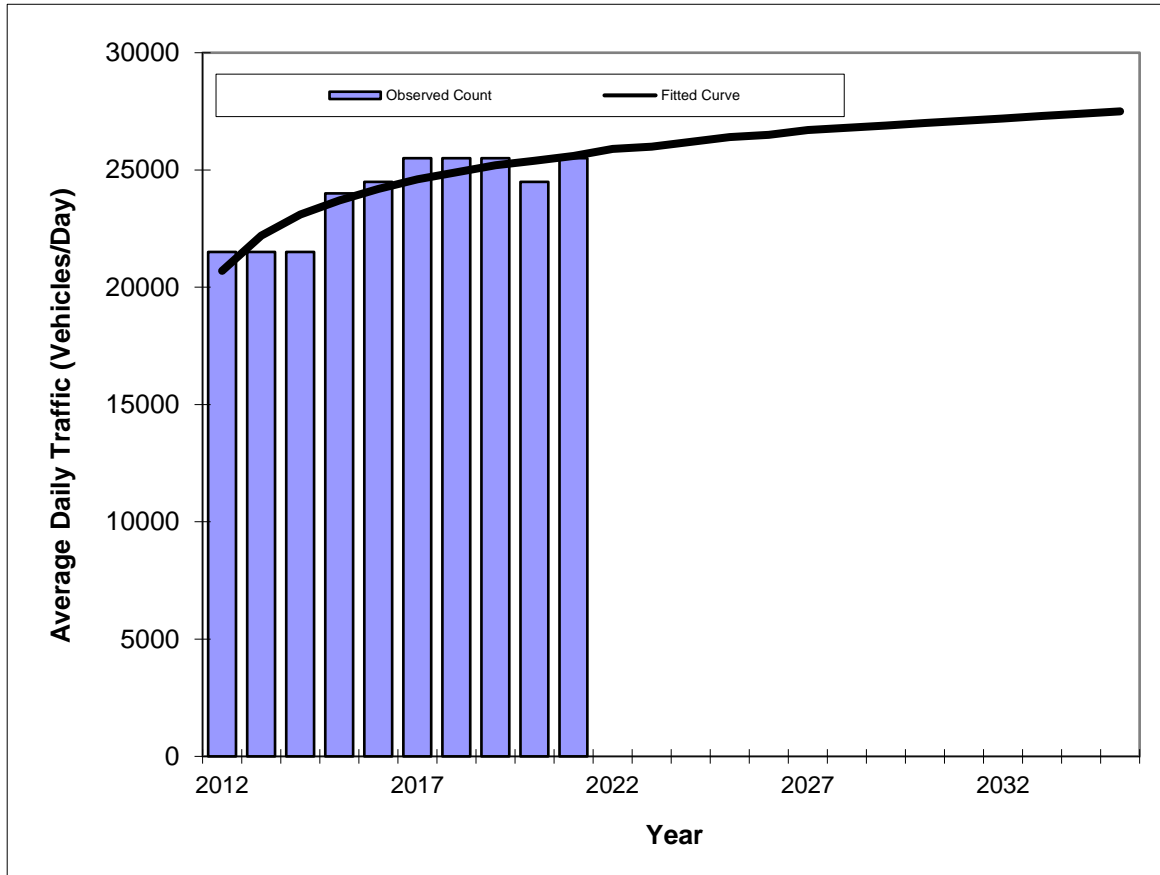
*Axle-Adjusted

Traffic Trends - V2.0

US 17/92 -- Valencia Road to Highbanks Road

PIN#	0
Location	1

County:	Volusia (79)
Station #:	0
Highway:	US 17/92



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	21500	20700
2013	21500	22200
2014	21500	23100
2015	24000	23700
2016	24500	24200
2017	25500	24600
2018	25500	24900
2019	25500	25200
2020	24500	25400
2021	25500	25600
2024 Opening Year Trend		
2024	N/A	26200
2026 Mid-Year Trend		
2026	N/A	26500
2027 Design Year Trend		
2027	N/A	26700
TRANPLAN Forecasts/Trends		

Trend R-squared:	78.61%
Compounded Annual Historic Growth Rate:	2.39%
Compounded Growth Rate (2021 to Design Year):	0.70%
Printed:	14-Apr-23
Decaying Exponential Growth Option	

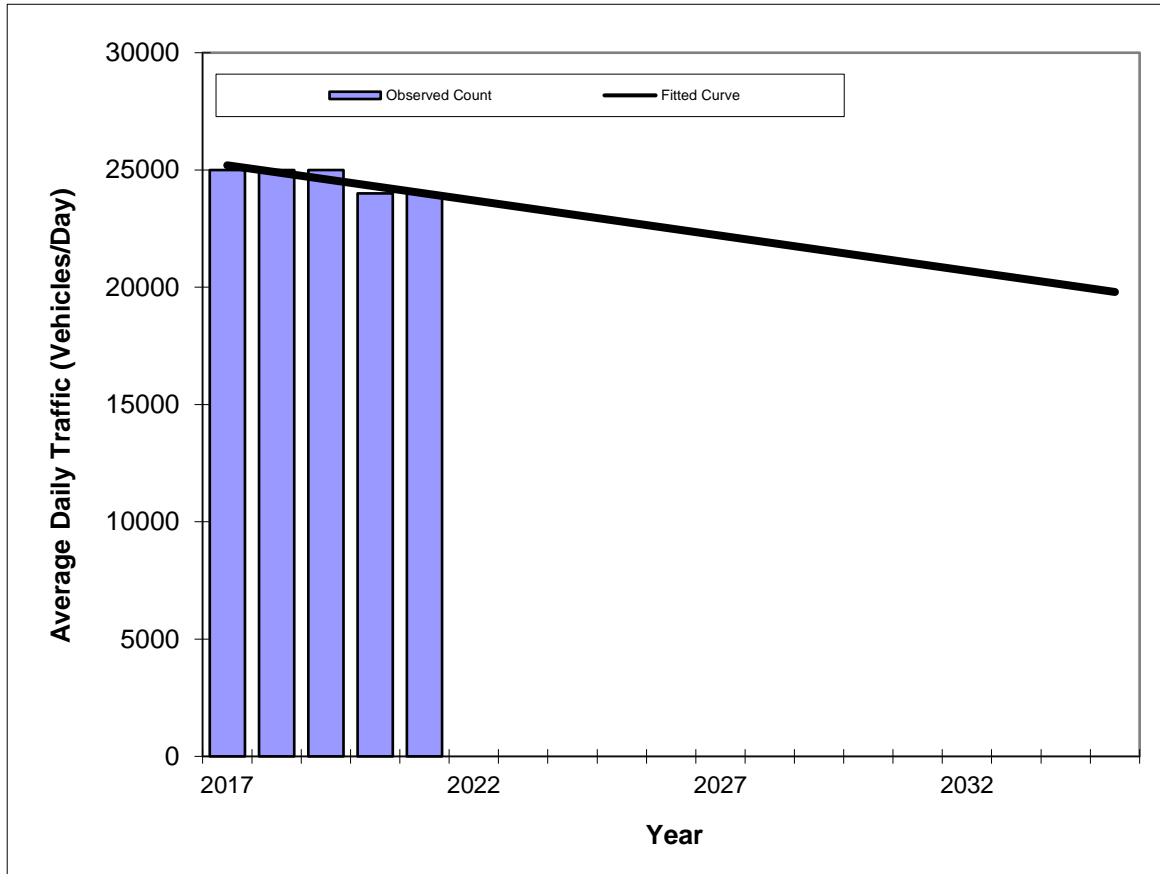
*Axle-Adjusted

Traffic Trends - V2.0

US 17/92 -- Highbanks Road to DeBary Plantation Boulevard

PIN#	0
Location	1

County:	Volusia (79)
Station #:	0
Highway:	US 17/92



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2017	25000	25200
2018	25000	24900
2019	25000	24600
2020	24000	24300
2021	24000	24000
2024 Opening Year Trend		
2024	N/A	23100
2026 Mid-Year Trend		
2026	N/A	22500
2027 Design Year Trend		
2027	N/A	22200
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-300
Trend R-squared:	75.00%
Trend Annual Historic Growth Rate:	-1.19%
Trend Growth Rate (2021 to Design Year):	-1.25%
Printed:	14-Apr-23
Straight Line Growth Option	

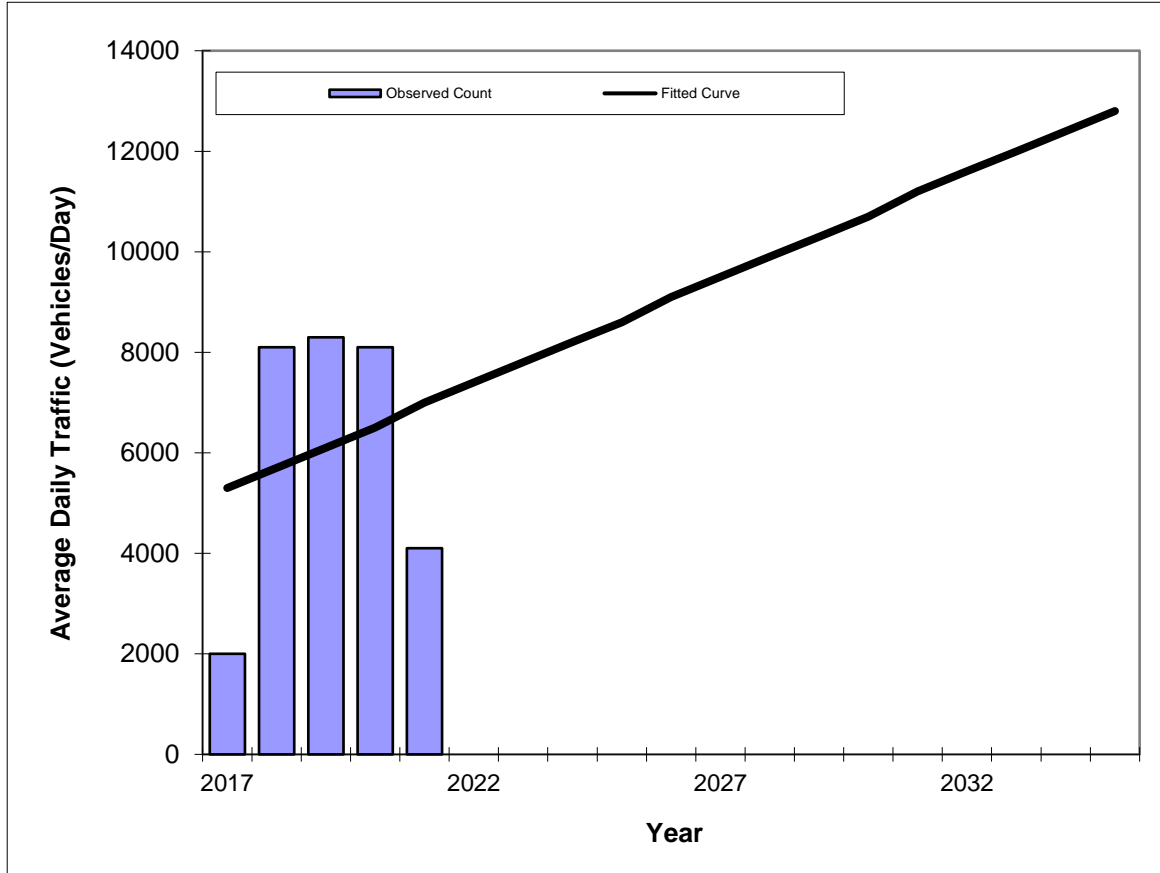
*Axle-Adjusted

Traffic Trends - V2.0

HIGHBANKS RD. -- US 17/92 to Enterprise Rd

PIN#	0
Location	1

County:	Volusia (79)
Station #:	0
Highway:	HIGHBANKS RD.



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2017	2000	5300
2018	8100	5700
2019	8300	6100
2020	8100	6500
2021	4100	7000
2024 Opening Year Trend		
2024	N/A	8200
2026 Mid-Year Trend		
2026	N/A	9100
2027 Design Year Trend		
2027	N/A	9500
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	420
Trend R-squared:	5.24%
Trend Annual Historic Growth Rate:	8.02%
Trend Growth Rate (2021 to Design Year):	5.95%
Printed:	17-Apr-23
Straight Line Growth Option	

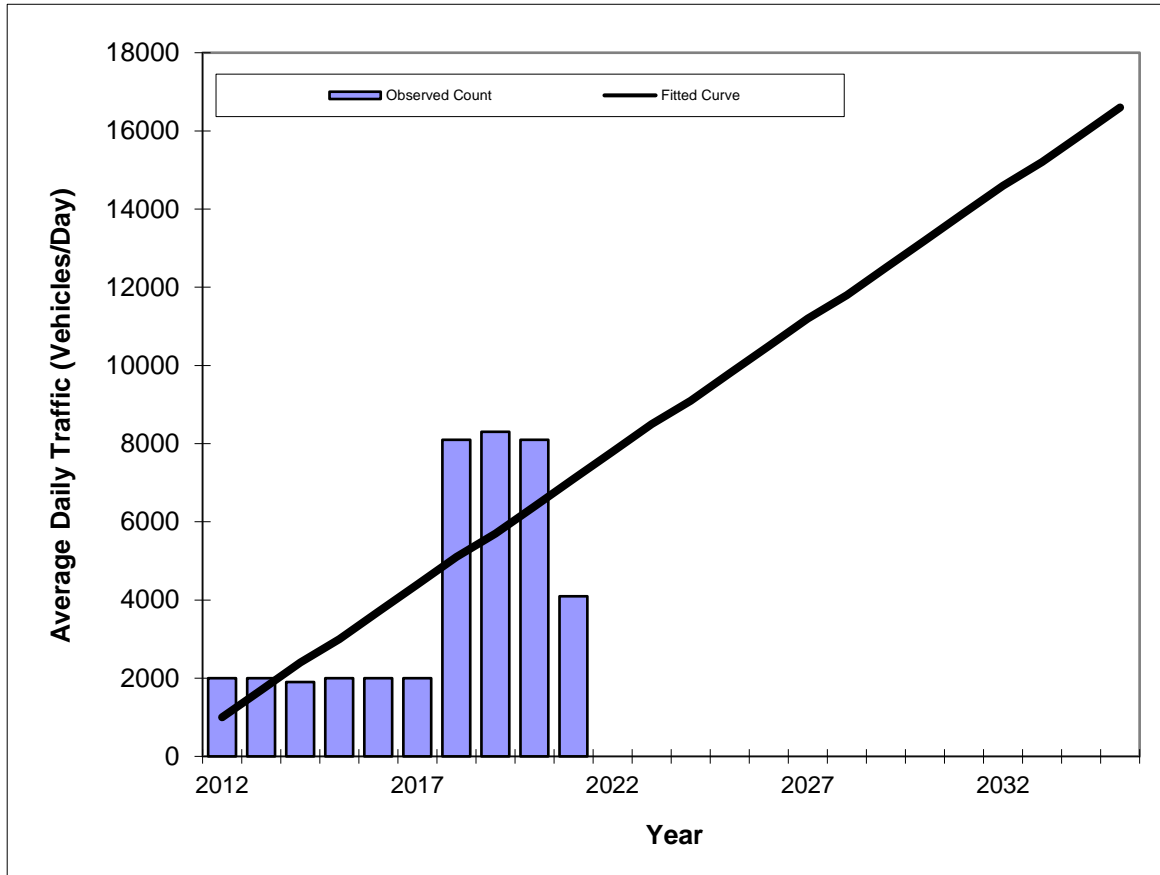
*Axle-Adjusted

Traffic Trends - V2.0

HIGHBANKS RD. -- US 17/92 to Enterprise Rd

PIN#	0
Location	1

County:	Volusia (79)
Station #:	0
Highway:	HIGHBANKS RD.



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	2000	1000
2013	2000	1700
2014	1900	2400
2015	2000	3000
2016	2000	3700
2017	2000	4400
2018	8100	5100
2019	8300	5700
2020	8100	6400
2021	4100	7100
2024 Opening Year Trend		
2024	N/A	9100
2026 Mid-Year Trend		
2026	N/A	10500
2027 Design Year Trend		
2027	N/A	11200
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	678
Trend R-squared:	49.60%
Trend Annual Historic Growth Rate:	67.78%
Trend Growth Rate (2021 to Design Year):	9.62%
Printed:	17-Apr-23

Straight Line Growth Option

*Axle-Adjusted

Orange City Area/Deltona/DeBary/Deland/Lake Helen

Roadway	Segment	2019 peak hour by VCTE*	Capacity	Total Vested Trips
<i>I-4 Segments based on AADT V/C</i>				
<i>I-4</i>	<i>Seminole County to Dirksen</i>	<i>111,000</i>	<i>111,800</i>	<i>20</i>
<i>I-4</i>	<i>Dirksen to Saxon</i>	<i>111,000</i>	<i>111,800</i>	<i>1682</i>
<i>I-4</i>	<i>Saxon to SR 472</i>	<i>99,000</i>	<i>111,800</i>	<i>1116</i>
<i>I-4</i>	<i>SR 472 to Orange Camp</i>	<i>82,000</i>	<i>111,800</i>	<i>983</i>
<i>I-4</i>	<i>Orange Camp to SR 44</i>	<i>80,000</i>	<i>111,800</i>	<i>237</i>
<i>I-4</i>	<i>Dirksen to Saxon</i>	<i>n/a</i>	<i>10060</i>	<i>491</i>
<i>I-4</i>	<i>Saxon to SR 472</i>	<i>6770</i>	<i>10060</i>	<i>388</i>
<i>I-4</i>	<i>SR 472 to Orange Camp</i>	<i>5980</i>	<i>10060</i>	<i>419</i>
<i>I-4</i>	<i>Orange Camp to SR 44</i>	<i>n/a</i>	<i>10060</i>	<i>186</i>
Graves Ave	VMP to Kentucky Ave	1990	1620	523
Graves Ave	Kentucky to Howland	1340	1620	1021
Saxon Blvd	VMP to FDOT Park n Ride	3530	3410	343
Saxon Blvd	Park n Ride to I-4	3670	3410	345
Saxon Blvd	I-4 to Normandy Blvd	3210	3410	331
Saxon Blvd	Tivoli Drive to Providence	970	1020	28
Highbanks Rd	Westside Connector to US 17-92		2740	166
Dirksen Drive	US 17/92 to Sunrise Blvd	840	2060	485
Dirksen Drive	Sunrise Blvd to WB I-4 Ramps	1180	2740	526
DeBary Ave	WB I-4 Ramps to EB I-4 ramps	1720	2740	413
DeBary Ave	I-4 to Deltona Blvd	1680	2740	156
DeBary Ave	Deltona Blvd to Enterprise St	1450	2740	15
DeBary Ave	Enterprise St to Main St	2140	2740	224
DeBary Ave	Main St to Providence Blvd	2070	2740	531
Doyle Road	Providence Blvd to Garfield	1160	2530	463
Doyle Road	Garfield to Saxon Blvd	1050	2530	215
Doyle Road	Saxon Blvd to Courtland	820	2530	326
Doyle Road	Courtland Blvd to SR 415	660	2530	529
Grand Ave	Minnesota Ave to SR 44	190	1020	127
Howland Blvd	I-4 to Wolf Pack Run	2680	3410	981
Howland Blvd	Wolf Pack Run to Catalina Blvd	2510	3410	845
Howland Blvd	Catalina Blvd to Providence Blvd	1950	3410	478

Howland Blvd	Providence Blvd to Elkcam	1420	1230	302
Providence Blvd	Howland Blvd to Elkcam Blvd	820	1270	56
Providence Blvd	Elkcam Blvd to Fort Smith Blvd	1150	1020	68
Providence Blvd	Fort Smith Blvd to Tivoli Drive	1260	2740	10
Providence Blvd	Tivoli Drive to Saxon Blvd	760	1330	0
Providence Blvd	Saxon Blvd to Normandy	700	1020	0
Providence Blvd	Normandy to Anderson Drive	1030	1020	26
Providence Blvd	Anderson Drive to Doyle Rd	1190	1020	42
Main Street	I-4 to Lakeview Drive	750	950	62
Orange Camp Rd	17-92 to Princeton	1,240	1270	179
Orange Camp Rd	Princeton to Blue Lake Ave	1,030	1540	189
Orange Camp Rd	Blue Lake Ave to MLK	1,210	1540	223
Orange Camp Rd	MLK to I-4	1,200	1540	357
Kepler Road	US 92 to Minnesota Ave	1120	1540	127
Kepler Road	Minnesota Ave to SR 44	1440	1540	293
MLK	SR 44 to Beresford Rd ext	870	1540	272
MLK	Beresford to Taylor Rd	780	1540	495
MLK	Taylor to Orange Camp	960	1540	353
MLK	Orange Camp to Cassadaga Rd	1120	1540	493
MLK	Cassadaga to SR 472	1210	1540	402
Kentucky	SR 472 to Graves	960	1540	443
VMP	Graves Ave to Rhode Island	1420	1620	304
VMP	Rhode Island to Harley Strickland		1540	411
SR 44	Shell Rd to Grand Ave	1110	2170	61
SR 44	Grand Ave to Old New York Ave		2170	250
SR 44	Old New York Ave to SR 15A		2170	325
SR 44	Blue Lake Ave to Kepler Rd	1270	1712	97
SR 44	Kepler Rd to Summit Ave	1510	1712	212
SR 472	MLK to I-4	3000	3580	0
US 17-92	Valencia to Dirksen	2030	3580	207
US 17-92	Dirksen to Ft Florida	n/a	3580	279
US 17-92	Ft Florida to Barwick	3210	3580	601
US 17-92	Barwick Rd to Seminole County	3210	3580	859
US 17-92	Beresford Ave to Euclid Ave	n/a	1480	30
US 17-92	Euclid Ave to SR 44	n/a	1410	56
US 17-92	SR 44 to Plymouth Ave	n/a	1410	114
US 17-92	Taylor Rd to SR 427	4470	5390	113
US 17	Lake Winona Rd. to SR 40	690	790	12
Ft Florida Rd	Highbanks to Ft Florida	150	1020	195
Ft Florida Rd	Ft Florida to Barwick	150	1020	195

Ft Florida Rd	Barwick Rd to US 17-92	150	1020	235
Beresford Rd	Spring Garden to SR 15A			34
Beresford Ave	SR 15A to US 17-92			28
Beresford Ave	US 17-92 to Amelia Ave	934	1330	102
Beresford Ave	Amelia Ave to Hill Ave	634	1620	143
Beresford Ave	Hill Ave to Blue Lake Ave	561	1230	136
Beresford Ave	Blue Lake Ave to Kepler Rd	n/a	1230	75
Blue Lake Ave	Orange Camp to Taylor	550	1540	68
Blue Lake Ave	Taylor to Beresford	830	1230	216
Blue Lake Ave	Beresford to Voorhis	460	1020	48
Blue Lake Ave	Voorhis to SR 44	350	1020	45
Spring Garden Ave	Beresford Ave to Beresford Rd W			76
Spring Garden Ave	Beresford Rd to McGregor Rd			39
Taylor Rd	Stratford to Blue Lake	530	1020	56
Taylor Rd	Blue Lake to MLK	610	1230	309
SR 15A	SR 44 to Beresford Ave			118
Plymouth Ave	Stone Street to Clara Ave	710	1,020	145
Plymouth Ave	Clara Ave to US 17-92	920	1,270	135
Lake Helen Osteen	Catalina Blvd to Haulover Blvd	960	1020	59
Lake Helen Osteen	Haulover Blvd to Elkcam Blvd	770	1020	0
Catalina Blvd	Howland Blvd to Sixma Road	1002	960	151
Catalina Blvd	Sixma Rd to Lake Helen Osteen	856	960	136
Normandy Blvd	Graves Ave to Rhode Island	787	1150	872
Normandy Blvd	Rhode Island to Elkcam Blvd	636	2630	665
Normandy Blvd	Elkcam Blvd to Saxon Blvd	599	2630	416
Normandy Blvd	Saxon Blvd to Deltona Blvd	936	2630	104
US 17	Lake Winona to SR 40	690	790	61
Amelia Ave	Ohio to Minnesota Ave	1040	1020	0

ATTACHMENT E

R2CTPO TIA Methodology Checklist

TIA METHODOLOGY SUBMISSION CHECKLIST

Project Name: Highbanks Townhomes

Location: DeBary, FL

TRANSPORTATION IMPACT ANALYSIS METHODOLOGY	DESCRIPTION	INFORMATION INCLUDED		
		YES	NO	Remarks ¹
	Type of TIA Methodology: <input type="checkbox"/> COMP PLAN <input type="checkbox"/> REZONING <input checked="" type="checkbox"/> SITE PLAN	X		
	LAND USES being analyzed (# of units, sq. feet, etc.)	X		129 Townhome DU
	BUILD-OUT SCHEDULE proposed (state year(s))	X		2025
	Conceptual Site Plan or Proposed Access description	X		Attachment A
	SITE LOCATION MAP relative to surrounding roadway network	X		
	Analysis Period(s): <input checked="" type="checkbox"/> AM <input type="checkbox"/> Mid-Day <input checked="" type="checkbox"/> PM <input type="checkbox"/> Weekend	X		
	Traffic Volume Counts (Day & Time)		X	To be collected later
	Vested Trip Information (verify with nearby local government(s))	X		Provided by County
	Proposed Project trip generation (check all that apply): <input checked="" type="checkbox"/> Daily <input checked="" type="checkbox"/> 2-Way Peak Hour	X		
	<input type="checkbox"/> Internal Capture <input type="checkbox"/> Pass By Capture (<14% Adjacent Road)			
	Proposed project trip distribution and assignment (include map) <input checked="" type="checkbox"/> CFRPM <input type="checkbox"/> by Engineering Judgment	X		
	ROADWAY SIGNIFICANCE TEST TABLE - (includes all 3-mile radius roadway segments, Number of Lanes, Adopted LOS Capacity (cite source), Project Distribution percentages, Project Trips, Project Trips/adopted capacity ratio, 3% significance test check) ALONG WITH all Critical & Near-Critical map road segments within the appropriate radius (3-mile radius for all uses except Parks/Recreational uses (1.5 mile radius) & Convenience Stores (1-mile radius)	X		
	ANALYSIS MAP - 3-mile study area boundary including all Critical & Near-Critical map road segments and intersections within the appropriate radius	X		
	Proposed roadway segment to be analyzed (list)	X		
	Proposed intersections to be analyzed (list)	X		
	Proposed Critical & Near-Critical segments to be analyzed (list)	X		
	Background Traffic/Build-Out Traffic: <input type="checkbox"/> CFRPM <input checked="" type="checkbox"/> Historical Growth Rate (state & justify proposed minimum)	X		Attachment D
	Segment Analysis <input type="checkbox"/> Signalized Corridor Analysis Required if Part of Signal System	X		
	Intersection Analysis <input type="checkbox"/> HCS <input checked="" type="checkbox"/> Synchro <input type="checkbox"/> Other	X		
	List Programmed Improvements within first three years: <input checked="" type="checkbox"/> FDOT Work Program <input checked="" type="checkbox"/> County CIP <input checked="" type="checkbox"/> City CIP	X		Turn Lanes (Highbanks & US 17/92) to be funded in FY 2023/2024
	Proposed Alternative Modes Study (commit to studying project's alternative mode needs associated with transit connection, pedestrian & bicycle facilities, school student access needs, etc.) <input type="checkbox"/> Study to Include TPO's Transit Development Guidelines	X		
	Transportation Improvements (commit to identifying roadway & intersection improvements in TIA if deficiencies are identified)	X		
	Concurrency mitigation strategy (commit to including this in TIA)	X		

¹ - Remarks: Justify "NO"

Submitted By: Emanuelle D Rodriguez, P.E. - Kimley-Horn

Date: 04/17/2023



DRC 6-6-2023

Subject Case # 23-01-CPA-450 South Charles Richard Beall

Applicant: Florida Public Utilities

Application Summary:

The applicant is requesting approval of a Comprehensive Plan Future Land Use Map Amendment to change the land use designation of the subject property from Commercial/Retail to Industrial/Service.

Planning & Zoning

Joseph Barker, Senior Planner, AICP Candidate

Comprehensive Plan Review:

Staff has reviewed the application against the policies contained within the City's Comprehensive Plan (Plan) to determine compliance with the Plan, and consistency with the City's Land Development Code.

1. Economic Development

The goal of the Economic Development element of the Plan is to facilitate the stable, on-going development of the economy of the City, while making wise use of resources, including man-made resources, natural resources, and human resources. Objective 3.2 mandates that the City maintain an inventory of good land appropriate for development of employment uses, as well as an inventory of finished building space. Policy 3.204 mandates that the City provide for high quality mixed uses in appropriate locations to support downtown redevelopment, transit oriented development (TOD), and economic development in commercial and industrial locations.

- A. Given that the property is adjacent to the TOD Overlay District and is less than a quarter-mile from the upcoming DeBary Main Street, consideration should be given to the City's policy of providing high quality mixed use in support of DeBary Main Street and the TOD Overlay District.**





2. Future Land Use

The goal of the City's Future Land Use element of the Plan is to facilitate the development and use of land, including permanent open space, in an organized arrangement which supports the appropriate development of the overall community, including an efficient multi-modal transportation system that enhances the well-being of the City's residents and businesses.

- A. The potential impact of this project on the TOD must be considered.**
- B. Policy 5.404(c)(3) states areas on the periphery of lands in the I/S classification can be considered to help ease the transition to non-industrial areas. Consideration of this policy could relieve potential compatibility issues with the TOD Overlay District, as the existing and proposed uses are relatively low intensity forms of industrial.**
- C. With adequate screening, the proposed project should not have a negative impact on the appearance of the overall community. Reasonableness of the development vis-à-vis good design, orderly pattern of development, and compatibility with the development of nearby areas should be considered when evaluating this project. However, Policy 5.404(c)(3) could resolve any issues with Policy 5.505.**

For all other elements of the Plan not discussed in this report, the project has been determined to be consistent with those elements.

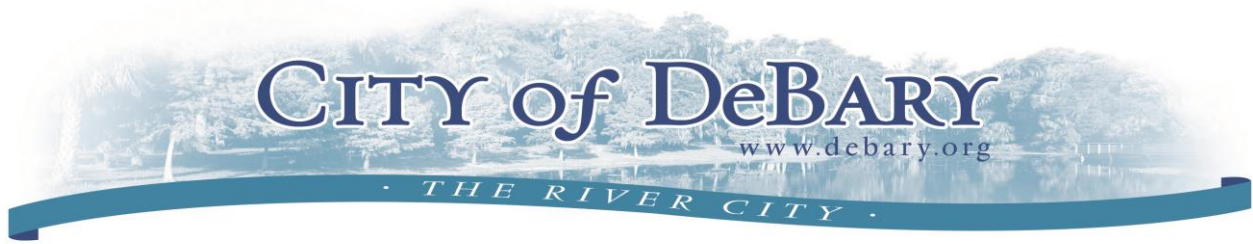
**Public Works Department
Amy Long, Deputy Public Works Director**

No comments have been received.

**Fire Services
Robert Scott, Fire Marshal**

No comments have been received.





Engineering
Richard Villaseñor, P.E., City Engineer

No comments have been received.

Building Department
Steve Wood, Building Official

No comments have been received.

Fishback-Dominick
Dan Langley

No comments have been received.

END OF COMMENTS

A written response to each of the above comments will be required when revisions are re-submitted to the City. Please be advised that additional comments may be forthcoming after a review of the revised plan set has been completed.

If you should have any questions, please feel free to contact me at 386-601-0203.

Steven Bapp, AICP
Sbapp@debary.org
Director of Growth Management
City of DeBary

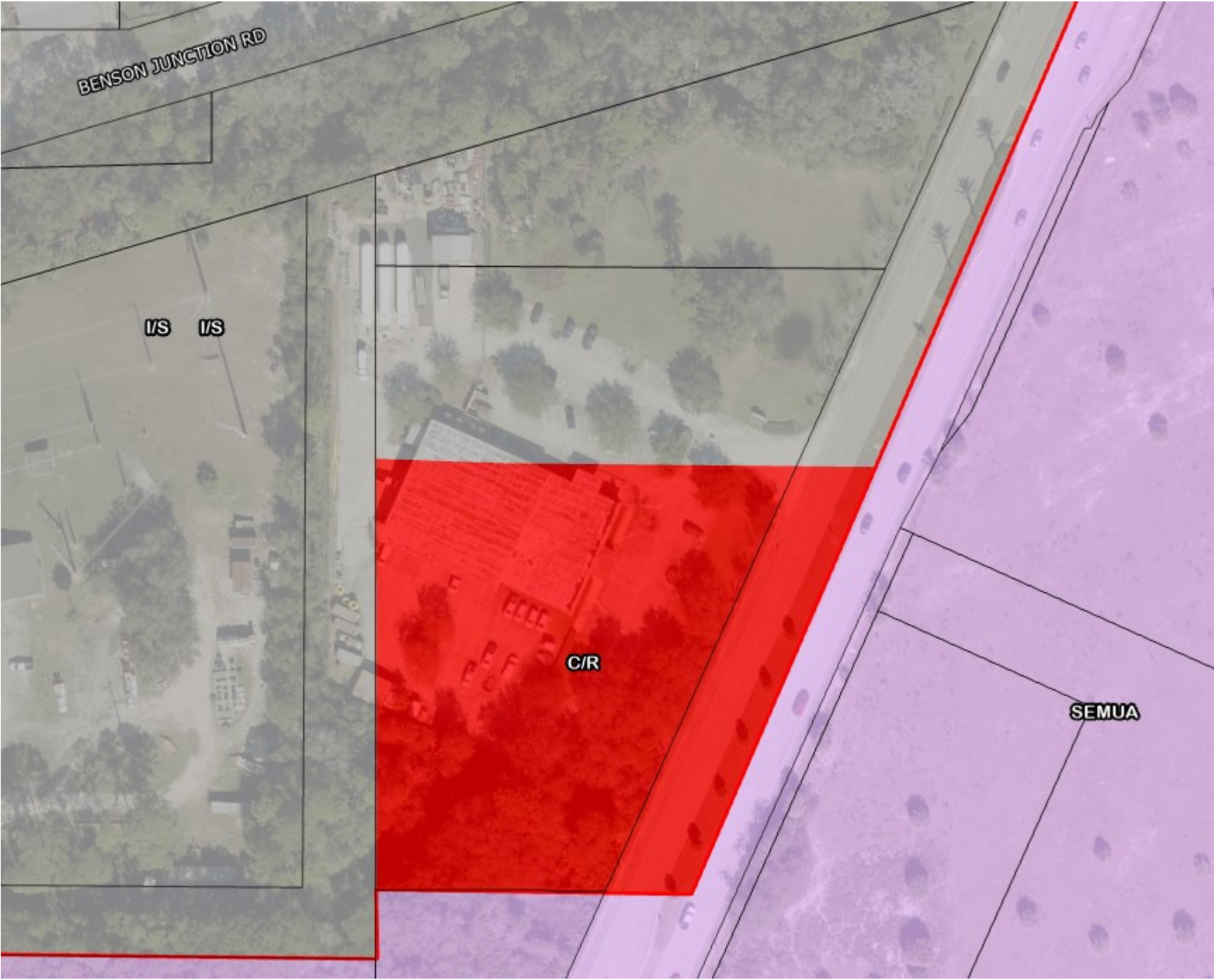


BENSON JUNCTION RD

I/S I/S

C/R

SEMUA



May 16, 2023

**Subject: Justification for Comprehensive Plan Amendment
PARCEL ID 900400000110 and 900400000050
450 S Charles Richard Beall Blvd
Debary, FL 32713**

To Whom It May Concern,

Engineered Permits Inc. (EPI) has been made aware that the overall property is split zoned and has inconsistent future Land Use requiring a Comprehensive Plan Amendment and Zoning amendment. This is as summarized per the DRC comments from the May 2, 2023 meeting below.

"This property is unusual in that it has a split FLUM designation: The southern half of the property is designated as Commercial/Retail (C/R) and the northern half Industrial/Service (I/S). The C/R half is where most of the footprint of the existing primary structure is located, and is the location of the proposed accessory structures. The purpose and intent of the C/R designation is to identify locations for a variety of commercial uses. The proposed use of the project-training facility is inconsistent with Policy 5.403(b)(1), which describes the types of uses that should be in this classification. In addition, Land Development Code Chapter 3, Article I, Section 3.2a's "Zoning/Future Land Use Compatibility Matrix" does not list I-1 as an allowable zoning classification for C/R. Therefore, a FLUM Amendment to the Plan will be necessary. The I/S half of the property would be consistent with the proposed project, as per Policy 5.404(c), which describes the types of uses that should be in this classification. A FLUM Amendment to I/S would resolve the FLUM inconsistency issue. Policy 5.404(c)(3) states areas on the periphery of lands in the I/S classification can be considered to help ease the transition to non-industrial areas. Consideration of this policy could relieve potential compatibility issues with the TOD Overlay District, as the existing and proposed uses are relatively low intensity forms of industrial."

The justification to allow the Comprehensive plan and Zoning Change is the majority of the property is designated "I/S, Industrial/Services" per the Future Land Use Map dated April 17, 2023, while the Southern portion of the property is designated "C/R, Commercial/Retail" (see attached). All intended future land use of the subject lot falls within the confines of the "I/S" designation outlined in **Policy 5.404(c)**. Florida Public Utilities (FPU) is therefore requesting to have the "C/R" designation removed and replaced with "I/S". Per the above comment from Senior Planner, Joseph Barker, this action will ensure that the entire lot use is consistent with **Policy 5.404**.

In addition we are also request that the Zoning is also made consistent. Currently the majority of the parcel is within the I-1 zoning with a small section on the south in the MPUD zoning. This was just recently changed as of the April 17, 2023 date. The zoning change would unify the property and make the property consistent with the industrial zoning and allow the activity for Safety Town.

REAL PROPERTY DESCRIPTION

THAT PORTION OF THE EAST HALF OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST, LYING WEST OF STATE HIGHWAY 43, EXCEPT THAT PORTION THEREOF, DESCRIBED AS FOLLOWS, TO WIT:

BEGINNING AT A POINT 58.3 FEET NORTH OF THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST; THENCE NORTH 80.0 FEET TO THE SOUTH RIGHT OF WAY LINE OF THE FLORIDA COAST RAILROAD; THENCE NORTHEASTERLY ALONG SAID RIGHT OF WAY 599.08 FEET TO THE RIGHT OF WAY OF THE STATE HIGHWAY #3; THENCE SOUTHWESTERLY ALONG THE RIGHT OF WAY OF THE STATE HIGHWAY #3, 28.66 FEET; THENCE WEST 48.74 FEET, MORE OR LESS TO BEGINNING.

ALSO EXCEPT ANY PORTION THEREOF LYING NORTH OF THE AFORESAID SOUTH RIGHT OF WAY LINE OF THE FLORIDA EAST COAST RAILROAD AND ALSO EXCEPT THAT PORTION THEREOF DESCRIBED AS FOLLOWS, TO WIT:

BEGINNING ON THE WESTERLY SIDE OF STATE HIGHWAY NO. 3 AT A POINT 53.57 FEET NORTH OF THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST; THENCE RUN NORTH 649.15 FEET; THENCE EAST 288.75 FEET TO THE WESTERLY SIDE OF THE RIGHT OF WAY OF STATE HIGHWAY 43; THENCE SOUTHWESTERLY ALONG THE WESTERLY SIDE OF THE RIGHT OF WAY OF SAID STATE HIGHWAY #3, 711.82 FEET TO THE BEGINNING. TOGETHER WITH:

A PORTION OF THE EAST 1/2 OF THE SOUTHEAST 1/4 OF SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST, VOLUSIA COUNTY, FLORIDA, ALSO BEING A PORTION OF THE LANDS DESCRIBED IN DEED BOOK 230, PAGE 284, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, DESCRIBED AS FOLLOWS:

COMMENCE AT THE SOUTHWEST CORNER OF THE EAST 1/2 OF THE SOUTHEAST 1/4 OF SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST, VOLUSIA COUNTY, FLORIDA; THENCE NORTH 00°34'45" EAST, ALONG THE WESTERLY SIDE OF SAID EAST 1/2 OF THE SOUTHEAST 1/4 OF SAID SECTION 4, AND ALONG THE CENTERLINE OF AN UNNAMED ROAD HAVING A 50.00 FOOT RIGHT-OF-WAY, ACCORDING TO THE PLAT OF VOLUSIA PARK, AS RECORDED IN MAP BOOK 4, PAGE 78, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, A DISTANCE OF 1462.83 FEET, TO A POINT ON THE NORTH LINE OF THE SOUTH 1462.72 FEET OF THE EAST 1/2 OF THE SOUTHEAST 1/4 OF SAID SECTION 4, SAID LINE ALSO BEING THE SOUTH LINE OF THE LANDS DESCRIBED IN DEED BOOK 270, PAGE 439, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE NORTH 89°51'45" EAST, ALONG SAID LINE, A DISTANCE OF 25.00 FEET, TO A POINT ON THE WEST LINE OF BLOCK 15, SAID VOLUSIA PARK AND THE POINT OF BEGINNING; THENCE CONTINUE NORTH 89°51'45" EAST ALONG SAID LINE, A DISTANCE OF 24.49 FEET, TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY NO. 17 AND 92, HAVING A 100.00 FOOT RIGHT-OF-WAY; THENCE SOUTH 24°14'09" WEST, ALONG SAID RIGHT-OF-WAY LINE, A DISTANCE OF 24.89 FEET, TO A POINT ON THE NORTH LINE OF THE SOUTH 22.70 FEET OF LOT 17, SAID VOLUSIA PARK; SAID LINE ALSO BEING THE NORTH LINE OF THE LANDS DESCRIBED IN DEED BOOK 297, PAGE 451, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE SOUTH 89°51'45" WEST, ALONG SAID LINE, AND ALONG THE NORTH LINE OF THE SOUTH 22.70 FEET OF LOT 24, SAID VOLUSIA PARK, A DISTANCE OF 21.42 FEET, TO A POINT ON AFORESAID WEST LINE OF BLOCK 15, SAID VOLUSIA PARK; THENCE NORTH 00°36'46" EAST, ALONG SAID LINE, A DISTANCE OF 21.74 FEET, TO THE POINT OF BEGINNING.

ALL OF LOTS 21, 22, 23 AND THE SOUTH 22.70 FEET OF LOT 24, OF BLOCK 15 AND THAT PART OF LOTS 18, 19, 20 AND THE SOUTH 22.70 FEET OF LOT 17, OF BLOCK 15, LYING WESTERLY OF STATE HIGHWAY NO. 3 (A.K.A. U.S. HIGHWAY NO. 17 & 92), ACCORDING TO THE PLAT THEREOF, AS RECORDED IN MAP BOOK 4, PAGE 78, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA AND THAT PART OF THE ADJACENT VACATED EAST 1/2 OF THE UNNAMED STREET LYING WESTERLY OF BLOCK 15, VOLUSIA PARK, BOUNDED ON THE SOUTH BY THE WESTERLY EXTENSION OF THE SOUTH LINE OF SAID BLOCK 15, AND BOUNDED ON THE NORTH BY THE WESTERLY EXTENSION OF THE NORTH LINE OF THE SOUTH 22.70 FEET OF SAID LOTS 17 AND 24, BLOCK 15.

BOUNDARY SURVEY

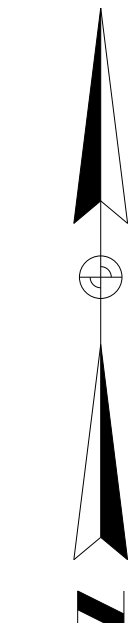
FOR

FLORIDA PUBLIC UTILITIES

SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST
VOLUSIA COUNTY, FLORIDA

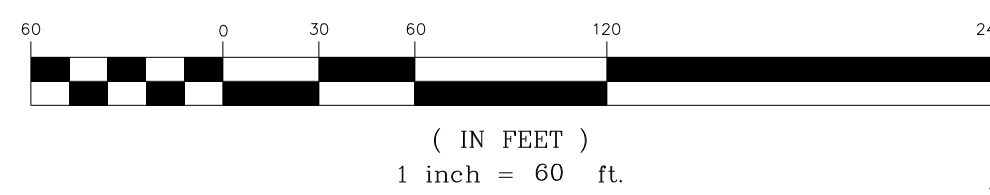
SURVEYOR'S NOTES

- 1.) SURVEYOR HAS NOT ABSTRACTED LANDS SHOWN HEREON FOR EASEMENTS, RIGHTS-OF-WAY, OR ANY OTHER MATTER OF RECORD WHICH MIGHT AFFECT THE TITLE OR USE OF SAID LANDS.
- 2.) NO UNDERGROUND INSTALLATIONS OR VISIBLE IMPROVEMENTS LOCATED OTHER THAN SHOWN.
- 3.) BEARINGS ARE BASED ON A PREVIOUS SURVEY BY OTHERS PROVIDED BY CLIENT.
- 4.) NO PROPERTY DESCRIPTION WAS PROVIDED TO THE SURVEYOR BY THE CLIENT.
- 5.) ELEVATIONS ARE TRUE BASED ON A ONSITE BENCHMARK TAKEN FROM PREVIOUS SURVEY BY OTHERS.
- 6.) COMPLETE TITLE WORK NOT PROVIDED, SURVEYOR RESEARCH PUBLIC RECORDS TRYING TO DETERMINE OWNERSHIP.



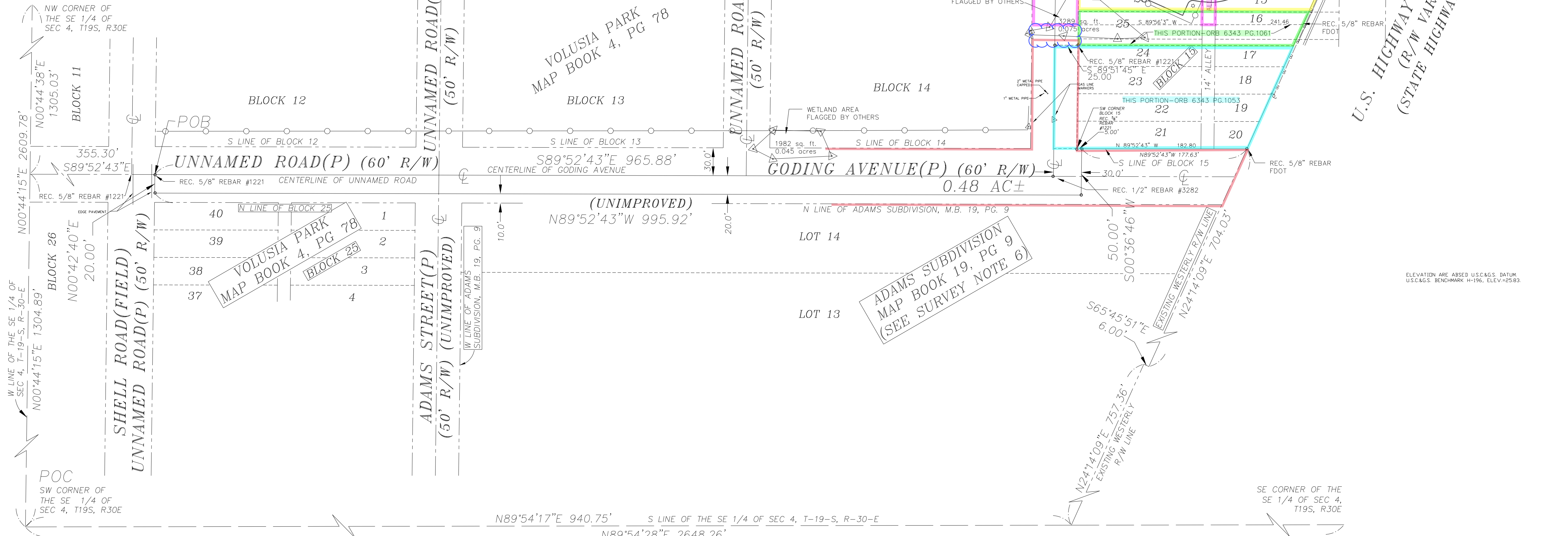
(SEE NOTE #3)

GRAPHIC SCALE



ABBREVIATION LEGEND

- N = NORTH
- S = SOUTH
- E = EAST
- W = WEST
- SEC. = SECTION
- FND. = FOUND
- CONC. MON. = CONCRETE MONUMENT
- COR. = CORNER
- NO. = NUMBER
- P.B. = PLAT BOOK
- PG. = PAGE
- PP. = PAGES
- REF. = REFERENCE
- MEAS. = MEASURED
- INFO. = INFORMATION
- N.T.S. = NOT TO SCALE
- C/L = CENTER LINE
- ELEV. = ELEVATION
- CONC. = CONCRETE
- INV. = INVERT
- NO # = NO IDENTIFICATION NUMBER
- T = TOWNSHIP
- R = RANGE
- MSL = MEAN SEA LEVEL
- U.T. = UNDERGROUND TELEPHONE
- WL = UNDERGROUND WATER LINE
- R.L. = UNDERGROUND RECLAIMED WATER LINE
- R.C.P. = REINFORCED CONCRETE PIPE
- WM = WATER METER
- GV = GAS VALVE
- WV = WATER VALVE
- HYD = FIRE HYDRANT
- LP = LIGHT POLE
- (D.O.T.) = DEPARTMENT OF TRANSPORTATION
- (RAD.) = RADIAL
- O.R. = OFFICIAL RECORD
- D.B. = DEED BOOK
- P.O.B. = POINT OF BEGINNING
- P.O.C. = POINT OF COMMENCEMENT
- W/ = WITH
- P.L.S. # 5807 = PROFESSIONAL LAND SURVEYOR REGISTRATION NUMBER 5807
- TYP. = TYPICAL
- PROP. = PROPERTY
- R. = RADIUS
- Δ = DELTA
- L = ARC LENGTH
- P.C. = POINT OF CURVATURE
- P.I. = POINT OF INTERSECTION
- P.T. = POINT OF TANGENCY
- TAN. = TANGENT
- C. = CHORD
- C.B. = CHORD BEARING
- R/W = RIGHT-OF-WAY
- (T) = TOP OF CURB
- (B) = BOTTOM OF CURB
- (A) = ACTUAL
- (P) = PLAT
- (D) = DESCRIPTION
- (C) = COMPUTED
- CALC. = CALCULATED
- CCR # = CERTIFIED CORNER RECORD NUMBER
- B.M. = BENCH MARK
- O.U. = OVERHEAD UTILITY LINES
- C.M.P. = CORRUGATED METAL PIPE
- T.B.M. = TEMPORARY BENCH MARK
- LB # = LICENSE BUSINESS NUMBER
- (N.R.) = NON-RADIAL



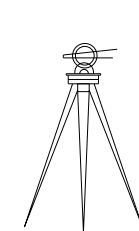
CERTIFIED TO:

FLORIDA PUBLIC UTILITIES

THIS IS TO CERTIFY THAT THIS SURVEY, AS SHOWN HEREON, MEETS THE MINIMUM TECHNICAL STANDARDS AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS IN CHAPTER 61C17-6, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.

SCOTT BECHIR, P.S.M.
FLORIDA REGISTRATION NUMBER 5807
NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

DATE	REVISION	REVISED BY	CHECKED BY
4/19/10	ADDED VACATED ROAD	S.R.B.	S.R.B.



SCOTT'S SURVEYING SERVICES, INC.
LB # 7442
8 S. HWY. 17-92, SUITE 8-A
DEBARY, FLORIDA 32713
PH. (386) 668-7332 FAX 668-7337

COMPUTED BY: S.R.B. DRAWN BY: S.R.B. CHECKED BY: S.R.B. FIELD BY: C.M. DATE: 10/19/09

BOUNDARY SURVEY		PROJECT NUMBER:
FOR		09-99
FLORIDA PUBLIC UTILITIES		DATE:
		10/17/09
		SCALE:
		1" = 60'
VOLUSIA COUNTY, FLORIDA		SHEET 1 OF 1



DRC 6-6-2023

Subject Case # 23-01-CPA-450 South Charles Richard Beall

Applicant: Florida Public Utilities

Application Summary:

The applicant is requesting approval of a Zoning Map Amendment to change the zoning classification of the subject property from B-3 and I-1 split zoning to exclusively I-1.

Planning & Zoning

Joseph Barker, Senior Planner, AICP Candidate

Land Development Code Review:

The proposed project has been reviewed against the provisions of the City's Land Development Code (LDC).

Zoning Classification

The proposed amendment would rezone the 60' strip of B-3 to I-1, Light Industrial. I-1 properties are subject to the restrictions of LDC Chapter 3, Article III, Division 3, Section 3-107.

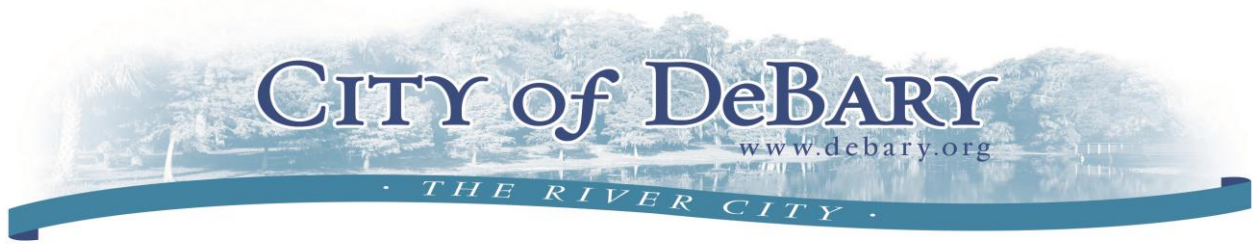
The parcel rezoning conforms to these restrictions.

Public Works Department

Amy Long, Deputy Public Works Director

No comments have been received.





Fire Services
Robert Scott, Fire Marshal

No comments have been received.

Engineering
Richard Villaseñor, P.E., City Engineer

No comments have been received.

Building Department
Steve Wood, Building Official

No comments have been received.

Fishback-Dominick
Dan Langley

No comments have been received.

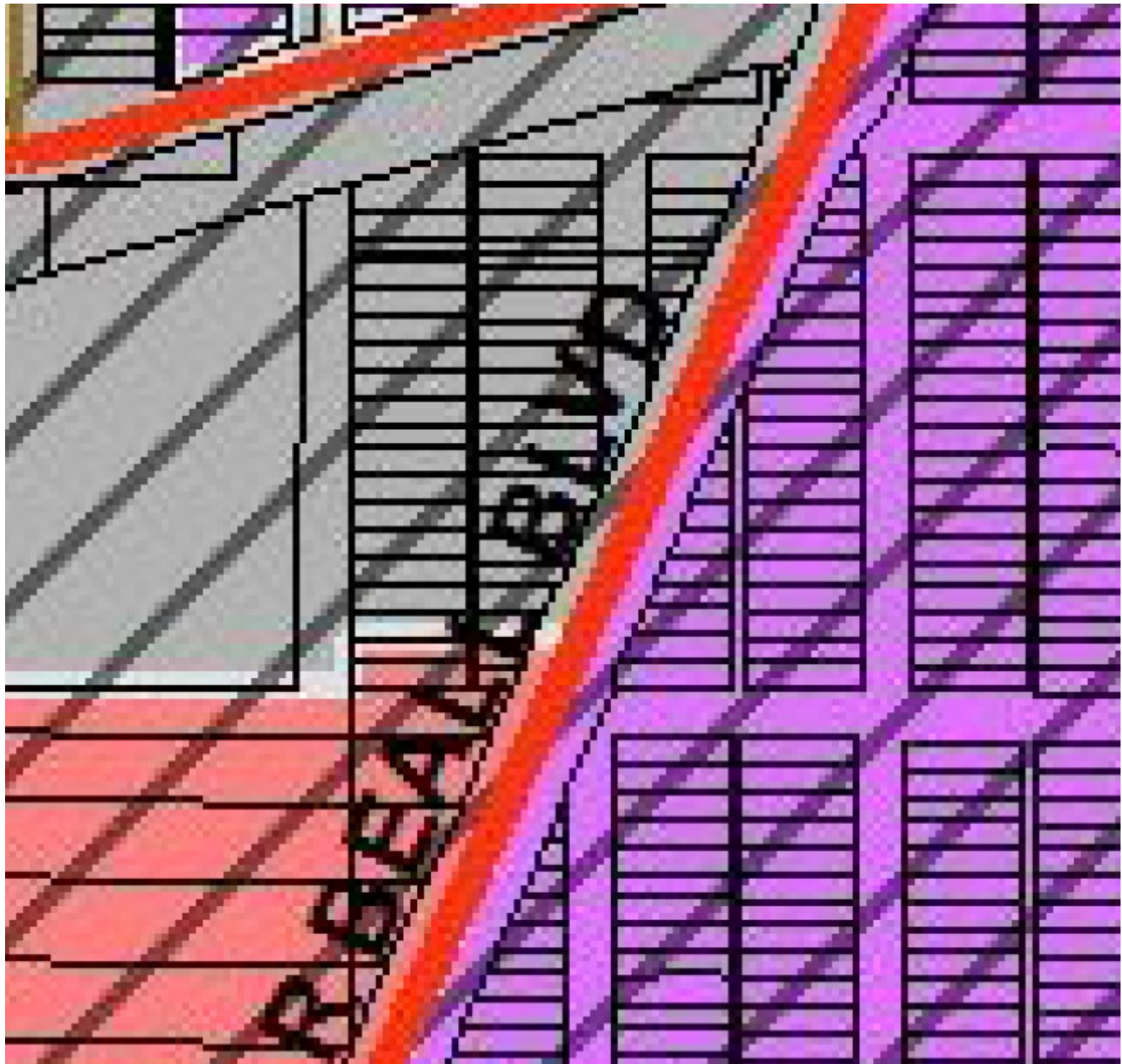
END OF COMMENTS

A written response to each of the above comments will be required when revisions are re-submitted to the City. Please be advised that additional comments may be forthcoming after a review of the revised plan set has been completed.

If you should have any questions, please feel free to contact me at 386-601-0203.

Steven Bapp, AICP
Sbapp@debary.org
Director of Growth Management
City of DeBary





May 16, 2023

**Subject: Justification for Comprehensive Plan Amendment
PARCEL ID 900400000110 and 900400000050
450 S Charles Richard Beall Blvd
Debary, FL 32713**

To Whom It May Concern,

Engineered Permits Inc. (EPI) has been made aware that the overall property is split zoned and has inconsistent future Land Use requiring a Comprehensive Plan Amendment and Zoning amendment. This is as summarized per the DRC comments from the May 2, 2023 meeting below.

"This property is unusual in that it has a split FLUM designation: The southern half of the property is designated as Commercial/Retail (C/R) and the northern half Industrial/Service (I/S). The C/R half is where most of the footprint of the existing primary structure is located, and is the location of the proposed accessory structures. The purpose and intent of the C/R designation is to identify locations for a variety of commercial uses. The proposed use of the project-training facility is inconsistent with Policy 5.403(b)(1), which describes the types of uses that should be in this classification. In addition, Land Development Code Chapter 3, Article I, Section 3.2a's "Zoning/Future Land Use Compatibility Matrix" does not list I-1 as an allowable zoning classification for C/R. Therefore, a FLUM Amendment to the Plan will be necessary. The I/S half of the property would be consistent with the proposed project, as per Policy 5.404(c), which describes the types of uses that should be in this classification. A FLUM Amendment to I/S would resolve the FLUM inconsistency issue. Policy 5.404(c)(3) states areas on the periphery of lands in the I/S classification can be considered to help ease the transition to non-industrial areas. Consideration of this policy could relieve potential compatibility issues with the TOD Overlay District, as the existing and proposed uses are relatively low intensity forms of industrial."

The justification to allow the Comprehensive plan and Zoning Change is the majority of the property is designated "I/S, Industrial/Services" per the Future Land Use Map dated April 17, 2023, while the Southern portion of the property is designated "C/R, Commercial/Retail" (see attached). All intended future land use of the subject lot falls within the confines of the "I/S" designation outlined in **Policy 5.404(c)**. Florida Public Utilities (FPU) is therefore requesting to have the "C/R" designation removed and replaced with "I/S". Per the above comment from Senior Planner, Joseph Barker, this action will ensure that the entire lot use is consistent with **Policy 5.404**.

In addition we are also request that the Zoning is also made consistent. Currently the majority of the parcel is within the I-1 zoning with a small section on the south in the MPUD zoning. This was just recently changed as of the April 17, 2023 date. The zoning change would unify the property and make the property consistent with the industrial zoning and allow the activity for Safety Town.

REAL PROPERTY DESCRIPTION

THAT PORTION OF THE EAST HALF OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST, LYING WEST OF STATE HIGHWAY 43, EXCEPT THAT PORTION THEREOF, DESCRIBED AS FOLLOWS, TO WIT:

BEGINNING AT A POINT 58.3 FEET NORTH OF THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST; THENCE NORTH 80.0 FEET TO THE SOUTH RIGHT OF WAY LINE OF THE FLORIDA COAST RAILROAD; THENCE NORTHEASTERLY ALONG SAID RIGHT OF WAY 599.08 FEET TO THE RIGHT OF WAY OF THE STATE HIGHWAY #3; THENCE SOUTHWESTERLY ALONG THE RIGHT OF WAY OF THE STATE HIGHWAY #3, 281.66 FEET; THENCE WEST 48.74 FEET, MORE OR LESS TO BEGINNING.

ALSO EXCEPT ANY PORTION THEREOF LYING NORTH OF THE AFORESAID SOUTH RIGHT OF WAY LINE OF THE FLORIDA EAST COAST RAILROAD AND ALSO EXCEPT THAT PORTION THEREOF DESCRIBED AS FOLLOWS, TO WIT:

BEGINNING ON THE WESTERLY SIDE OF STATE HIGHWAY NO. 3 AT A POINT 53.57 FEET NORTH OF THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST; THENCE RUN NORTH 649.15 FEET; THENCE EAST 288.75 FEET TO THE WESTERLY SIDE OF THE RIGHT OF WAY OF STATE HIGHWAY 43; THENCE SOUTHWESTERLY ALONG THE WESTERLY SIDE OF THE RIGHT OF WAY OF SAID STATE HIGHWAY #3, 711.82 FEET TO THE BEGINNING. TOGETHER WITH:

A PORTION OF THE EAST 1/2 OF THE SOUTHEAST 1/4 OF SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST, VOLUSIA COUNTY, FLORIDA, ALSO BEING A PORTION OF THE LANDS DESCRIBED IN DEED BOOK 230, PAGE 284, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, DESCRIBED AS FOLLOWS:

COMMENCE AT THE SOUTHWEST CORNER OF THE EAST 1/2 OF THE SOUTHEAST 1/4 OF SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST, VOLUSIA COUNTY, FLORIDA; THENCE NORTH 00°34'45" EAST, ALONG THE WESTERLY SIDE OF SAID EAST 1/2 OF THE SOUTHEAST 1/4 OF SAID SECTION 4, AND ALONG THE CENTERLINE OF AN UNNAMED ROAD HAVING A 50.00 FOOT RIGHT-OF-WAY, ACCORDING TO THE PLAT OF VOLUSIA PARK, AS RECORDED IN MAP BOOK 4, PAGE 78, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; A DISTANCE OF 1462.83 FEET, TO A POINT ON THE NORTH LINE OF THE SOUTH 1462.72 FEET OF THE EAST 1/2 OF THE SOUTHEAST 1/4 OF SAID SECTION 4, SAID LINE ALSO BEING THE SOUTH LINE OF THE LANDS DESCRIBED IN DEED BOOK 270, PAGE 439, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE NORTH 89°51'17" EAST, ALONG SAID LINE, A DISTANCE OF 25.00 FEET, TO A POINT ON THE WEST LINE OF BLOCK 15, SAID VOLUSIA PARK AND THE POINT OF BEGINNING; THENCE CONTINUE NORTH 89°51'17" EAST ALONG SAID LINE, A DISTANCE OF 241.46 FEET, TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY NO. 17 AND 92, HAVING A 100.00 FOOT RIGHT-OF-WAY; THENCE SOUTH 24°14'09" WEST, ALONG SAID RIGHT-OF-WAY LINE, A DISTANCE OF 24.89 FEET, TO A POINT ON THE NORTH LINE OF THE SOUTH 22.70 FEET OF LOT 17, SAID VOLUSIA PARK; SAID LINE ALSO BEING THE NORTH LINE OF THE LANDS DESCRIBED IN DEED BOOK 297, PAGE 451, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE SOUTH 89°51'45" WEST, ALONG SAID LINE, AND ALONG THE NORTH LINE OF THE SOUTH 22.70 FEET OF LOT 24, SAID VOLUSIA PARK, A DISTANCE OF 21.42 FEET, TO A POINT ON AFORESAID WEST LINE OF BLOCK 15, SAID VOLUSIA PARK; THENCE NORTH 00°36'46" EAST, ALONG SAID LINE, A DISTANCE OF 21.74 FEET, TO THE POINT OF BEGINNING.

ALL OF LOTS 21, 22, 23 AND THE SOUTH 22.70 FEET OF LOT 24, OF BLOCK 15 AND THAT PART OF LOTS 18, 19, 20 AND THE SOUTH 22.70 FEET OF LOT 17, OF BLOCK 15, LYING WESTERLY OF STATE HIGHWAY NO. 3 (A.K.A. U.S. HIGHWAY NO. 17 & 92), ACCORDING TO THE PLAT THEREOF, AS RECORDED IN MAP BOOK 4, PAGE 78, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA AND THAT PART OF THE ADJACENT VACATED EAST 1/2 OF THE UNNAMED STREET LYING WESTERLY OF BLOCK 15, VOLUSIA PARK, BOUNDED ON THE SOUTH BY THE WESTERLY EXTENSION OF THE SOUTH LINE OF SAID BLOCK 15, AND BOUNDED ON THE NORTH BY THE WESTERLY EXTENSION OF THE NORTH LINE OF THE SOUTH 22.70 FEET OF SAID LOTS 17 AND 24, BLOCK 15.

BOUNDARY SURVEY

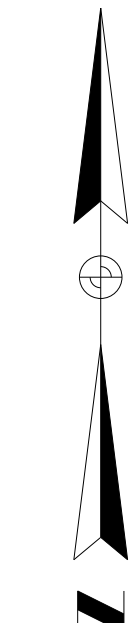
FOR

FLORIDA PUBLIC UTILITIES

SECTION 4, TOWNSHIP 19 SOUTH, RANGE 30 EAST
VOLUSIA COUNTY, FLORIDA

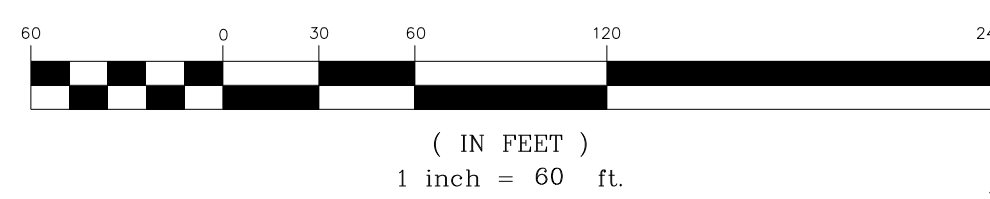
SURVEYOR'S NOTES

- 1.) SURVEYOR HAS NOT ABSTRACTED LANDS SHOWN HEREON FOR EASEMENTS, RIGHTS-OF-WAY, OR ANY OTHER MATTER OF RECORD WHICH MIGHT AFFECT THE TITLE OR USE OF SAID LANDS.
- 2.) NO UNDERGROUND INSTALLATIONS OR VISIBLE IMPROVEMENTS LOCATED OTHER THAN SHOWN.
- 3.) BEARINGS ARE BASED ON A PREVIOUS SURVEY BY OTHERS PROVIDED BY CLIENT.
- 4.) NO PROPERTY DESCRIPTION WAS PROVIDED TO THE SURVEYOR BY THE CLIENT.
- 5.) ELEVATIONS ARE TRUE BASED ON A ONSITE BENCHMARK TAKEN FROM PREVIOUS SURVEY BY OTHERS.
- 6.) COMPLETE TITLE WORK NOT PROVIDED, SURVEYOR RESEARCH PUBLIC RECORDS TRYING TO DETERMINE OWNERSHIP.



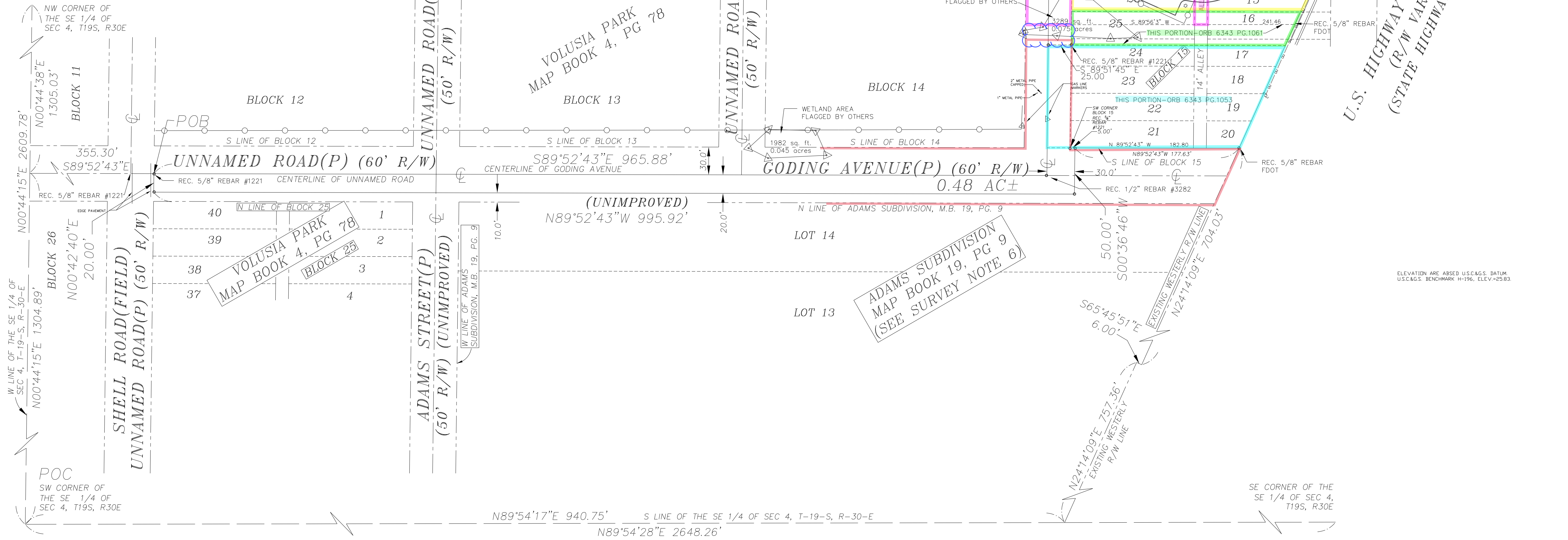
(SEE NOTE #3)

GRAPHIC SCALE



ABBREVIATION LEGEND

- N = NORTH
- S = SOUTH
- E = EAST
- W = WEST
- SEC. = SECTION
- FND. = FOUND
- CONC. MON. = CONCRETE MONUMENT
- COR. = CORNER
- NO. = NUMBER
- P.B. = PLAT BOOK
- PG. = PAGE
- PP. = PAGES
- REF. = REFERENCE
- MEAS. = MEASURED
- INFO. = INFORMATION
- N.T.S. = NOT TO SCALE
- C/L = CENTER LINE
- ELEV. = ELEVATION
- CONC. = CONCRETE
- INV. = INVERT
- NO # = NO IDENTIFICATION NUMBER
- T = TOWNSHIP
- R = RANGE
- MSL = MEAN SEA LEVEL
- U.T. = UNDERGROUND TELEPHONE
- WL = UNDERGROUND WATER LINE
- R.L. = UNDERGROUND RECLAIMED WATER LINE
- R.C.P. = REINFORCED CONCRETE PIPE
- WM = WATER METER
- GV = GAS VALVE
- WV = WATER VALVE
- HYD = FIRE HYDRANT
- LP = LIGHT POLE
- (D.O.T.) = DEPARTMENT OF TRANSPORTATION
- (RAD.) = RADIAL
- O.R. = OFFICIAL RECORD
- D.B. = DEED BOOK
- P.O.B. = POINT OF BEGINNING
- P.O.C. = POINT OF COMMENCEMENT
- W/ = WITH
- P.L.S. # 5807 = PROFESSIONAL LAND SURVEYOR REGISTRATION NUMBER 5807
- TYP. = TYPICAL
- PROP. = PROPERTY
- R. = RADIUS
- Δ = DELTA
- L = ARC LENGTH
- P.C. = POINT OF CURVATURE
- P.I. = POINT OF INTERSECTION
- P.T. = POINT OF TANGENCY
- TAN. = TANGENT
- C. = CHORD
- C.B. = CHORD BEARING
- R/W = RIGHT-OF-WAY
- (T) = TOP OF CURB
- (B) = BOTTOM OF CURB
- (A) = ACTUAL
- (P) = PLAT
- (D) = DESCRIPTION
- (C) = COMPUTED
- CALC. = CALCULATED
- CCR # = CERTIFIED CORNER RECORD NUMBER
- B.M. = BENCH MARK
- O.U. = OVERHEAD UTILITY LINES
- C.M.P. = CORRUGATED METAL PIPE
- T.B.M. = TEMPORARY BENCH MARK
- LB # = LICENSE BUSINESS NUMBER
- (N.R.) = NON-RADIAL



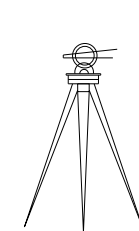
CERTIFIED TO:

FLORIDA PUBLIC UTILITIES

THIS IS TO CERTIFY THAT THIS SURVEY, AS SHOWN HEREON, MEETS THE MINIMUM TECHNICAL STANDARDS AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS IN CHAPTER 61C17-6, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.

SCOTT BECHIR, P.S.M.
FLORIDA REGISTRATION NUMBER 5807
NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

DATE	REVISION	REVISED BY	CHECKED BY
4/19/10	ADDED VACATED ROAD	S.R.B.	S.R.B.



SCOTT'S SURVEYING SERVICES, INC.
LB # 7442
8 S. HWY. 17-92, SUITE 8-A
DEBARY, FLORIDA 32713
PH. (386) 668-7332 FAX 668-7337

COMPUTED BY: S.R.B. DRAWN BY: S.R.B. CHECKED BY: S.R.B. FIELD BY: C.M. DATE: 10/19/09

BOUNDARY SURVEY		PROJECT NUMBER:
FOR		09-99
FLORIDA PUBLIC UTILITIES		DATE:
		10/17/09
		SCALE:
		1" = 60'
VOLUSIA COUNTY, FLORIDA		SHEET 1 OF 1