APOPKA DEVELOPMENT REVIEW COMMITTEE MEETING AGENDA

July 12, 2023 9:00 AM

Apopka City Hall Council Chambers

ANNEXATION

1. Wekiva Springs (NW Apopka) - Annexation, 1st Submittal
2. Investment Alliance LLC - Annexation, 1st Submittal

FUTURE LAND USE AMENDMENT

1. Investment Alliance LLC - Future Land Use Amendment, 1st Submittal

REZONING

1. Investment Alliance LLC - Change of Zoning, 1st Submittal

SITE PLAN

CONSTRUCTION SITE PLAN

1. Apopka Multi-Family - Construction Site Plan, 1st Submittal
2. Mid-Florida South Logistics - Construction Site Plan, 1st Submittal

SUBDIVISION PLAN

CONSTRUCTION SITE PLAN

1. Ponkan Oak Manor - Construction Site Plan, 1st Submittal
2. Oak Pointe South – Revision to Construction Site Plan, 1st Submittal

DISCUSSION

LOCATION MAP
NOT TO SCALE

Parcel A:

A parcel of land lying in Sections 11 and 12, Township 20 South, Range 27 East, being more particularly described as follows:

Commence at the Southeast corner of the NE 1/4 of Section 11, Township 28 South, Range 27 East; thence along said East line of the NE 1/4, North 00 degrees 27 minutes 57 seconds West for a distance of 629.57 feet to the POINT OF BEGINNING; thence South 89 degrees 27 minutes 21 seconds West, for a distance of 38.26 feet; thence North 52 degrees 38 minutes 21 seconds West, for a distance of 56.97 feet to a point on the South line of Parcel 1, as described in O.R. Book 3168, Page 1277; thence along said Southerly line of Parcel 1, North 89 degrees 27 minutes 21 seconds East for a distance of 38.26 feet; thence leaving said line South 45 degrees 30 minutes 16 seconds East for a distance of 21.20 feet to a point 15.00 feet South of said Southerly line of Parcel 1, thence North 89 degrees 27 minutes 21 seconds East a distance of 30.00 feet to a point on the West line of the NW 1/4 of Section 12, Township 20 South, Range 27 East thence North 89 degrees 13 minutes 16 seconds East for a distance of 1,318.20 feet to a point on the Westerly Right-of-Way line of Effie Road, said line being 30.00 feet West of the East line of the South 1/2 of the SW 1/4 of the NW 1/4 of Section 12, Town-ship 20 South, Range 27 East, thence run parallel to said East line South 00 degrees 03 minutes 06 seconds East, for a distance of 20.00 feet; South 89 degrees 13 minutes 16 seconds West for a distance of 1,318.06 feet to the POINT OF BEGINNING.

Parcel B:

A parcel of land lying in Section 11, Township 20 South, Range 27 East, being more particularly described as follows:

Commence at the SE corner of the NE 1/4 of Section 11, Township 20 South, Range 27 East; thence along the East line of said NE 1/4 North 00 degrees 27 minutes 57 seconds West, for a distance of 629.57 feet; thence run South 89 degrees 27 minutes 21 seconds West, for a distance of 38.26 feet; thence run North 52 degrees 38 minutes 21 seconds West, for a distance of 56.97 feet to the POINT OF BEGINNING, said point being on the South line of Parcel 1, as described in O.R. Book 3168, Page 1277; thence along said South line South 89 degrees 27 minutes 21 seconds West, for a distance of 1248.73 feet to a point on the Westerly line of the North 1/2 of the SE 1/4 of the NE 1/4 of said Section 11; thence North 00 degrees 22 minutes 31 seconds West, along said West line for a distance of 663.44 feet to a point on the North line of Parcel 1 as described in O.R. Book 3168, Page 1277, thence along said North line North 89 degrees 19 minutes 23 seconds East, for a distance of 440.00 feet; thence leaving said line South 00 degrees 22 minutes 31 seconds East for a distance of 454.00 feet; thence run North 89 degrees 27 minutes 21 seconds East, for a distance of 210.00 feet; thence run South 00 degrees 22 minutes 31 seconds East for a distance of 190.46 feet; thence run North 89 degrees 27 minutes 21 seconds East, for distance of 616.96 feet; thence run South 45 degrees 30 minutes 16 seconds East, for a distance of 28.26 feet; thence run South 89 degrees 27 minutes 21 seconds West for a distance of 38.26 feet to the POINT OF BEGINNING.

AND

All of first party's right, title and interest in a non-exclusive, contiguous 18 foot easement for ingress and egress to Ondich Road, lying 9 feet on either side of a center line described as follows: From the SW corner of the North 1/2 of the SW 1/4 of the NE 1/4 of Section 11, Township 20 South, Range 28 East, run West on the South line of the North 1/2 of the SW 1/4 of the NE 1/4, 9 feet to the Point of Beginning, and run thence North 0 degrees 16 minutes 44 seconds West 1991.41 feet more or less to the North section line of Section 11, Township 20 South, Range 27 East, all in Orange County, Florida. This is identified as Parcel One on that certain Warranty Deed recorded in Official Records Book 3168, Page 1277, of the public records of Orange County, Florida.

Parcel C:

PARCEL ONE:

The North one-half of the Southeast Quarter of the Northeast Quarter of Section 11, Township 20 South, Range 27 East, Orange County, Florida,

AND

PARCEL TWO:

The North 15 feet of the South one-half of the Southwest quarter of the Northwest quarter of Section 12, Township 20 South, Range 27 East (subject to right of way for Effie Road over the East 30 feet thereof, and subject to an easement as established by Final Judgment in Civil Action #75-4645 in the Circuit Court of the Ninth Judicial Circuit in and for Orange County, Florida, dated October 10, 1975),

AND

From a Point of Beginning at the Southeast corner of Parcel One, run South along the East section line of Section 11, a distance of 15 feet, run thence West parallel to the South line of Parcel One a distance of 30 feet, run thence Northwest to a point on the South line of Parcel One 45 feet West of the Point of Beginning, and run thence East along the South line of said Parcel One, a distance of 45 feet to the Point of Beginning.

The above legal description was taken from that certain Warranty Deed recorded January 28, 1981, in Official Records Book 3168, Page 1277, of the public records of Orange County, Florida.

LESS THE FOLLOWING DESCRIBED PROPERTY:

A parcel of land lying in Section 11, Township 20 South, Range 27 East, being more particularly described as follows:

Commence at the SE corner of the NE 1/4 of Section 11, Township 20 South, Range 27 East; thence along the East line of said NE 1/4 North 00 degrees 27 minutes 57 seconds West, for a distance of 629.57 feet; thence run South 89 degrees 27 minutes 21 seconds West, for a distance of 38.26 feet; thence run North 52 degrees 38 minutes 21 seconds West, for a distance of 56.97 feet to the POINT OF BEGINNING, said point being on the South line of Parcel 1, as described in O.R. Book 3168, Page 1277; thence along said South line South 89 degrees 27 minutes 21 seconds West, for a distance of 1248.73 feet to a point on the Westerly line of the North 1/2 of the SE 1/4 of the NE 1/4 of said Section 11; thence North 00 degrees 22 minutes 31 seconds West, along said West line for a distance of 663.44 feet to a point on the North line of Parcel 1 as described in O.R. Book 3168, Page 1277, thence along said North line North 89 degrees 19 minutes 23 seconds East, for a distance of 440.00 feet; thence leaving said line South 00 degrees 22 minutes 31 seconds East for a distance of 454.00 feet; thence run North 89 degrees 27 minutes 21 seconds East, for a distance of 210.00 feet; thence run South 00 degrees 22 minutes 31 seconds East for a distance of 190.46 feet; thence run North 89 degrees 27 minutes 21 seconds East, for distance of 616.96 feet; thence run South 45 degrees 30 minutes 16 seconds East, for a distance of 28.26 feet; thence run South 89 degrees 27 minutes 21 seconds West for a distance of 38.26 feet to the POINT OF BEGINNING.

AND

All of Grantors right, title and interest in a non-exclusive, contiguous 18 foot easement for ingress and egress to Ondich Road, lying 9 feet on either side of a center line described as follows: From the SW corner of the North 1/2 of the SW 1/4 of the NE 1/4 of Section 11, Township 20 South, Range 28 East, run West on the South line of the North 1/2 of the SW 1/4 of the NE 1/4, 9 feet to the Point of Beginning, and run thence North 0 degrees 16 minutes 44 seconds West 1991.41 feet more or less to the North section line of Section 11, Township 20 South, Range 27 East, all in Orange County, Florida. This is identified as Parcel One on that certain Warranty Deed recorded in Official Records Book 3168, Page 1277, of the public records of Orange County, Florida.

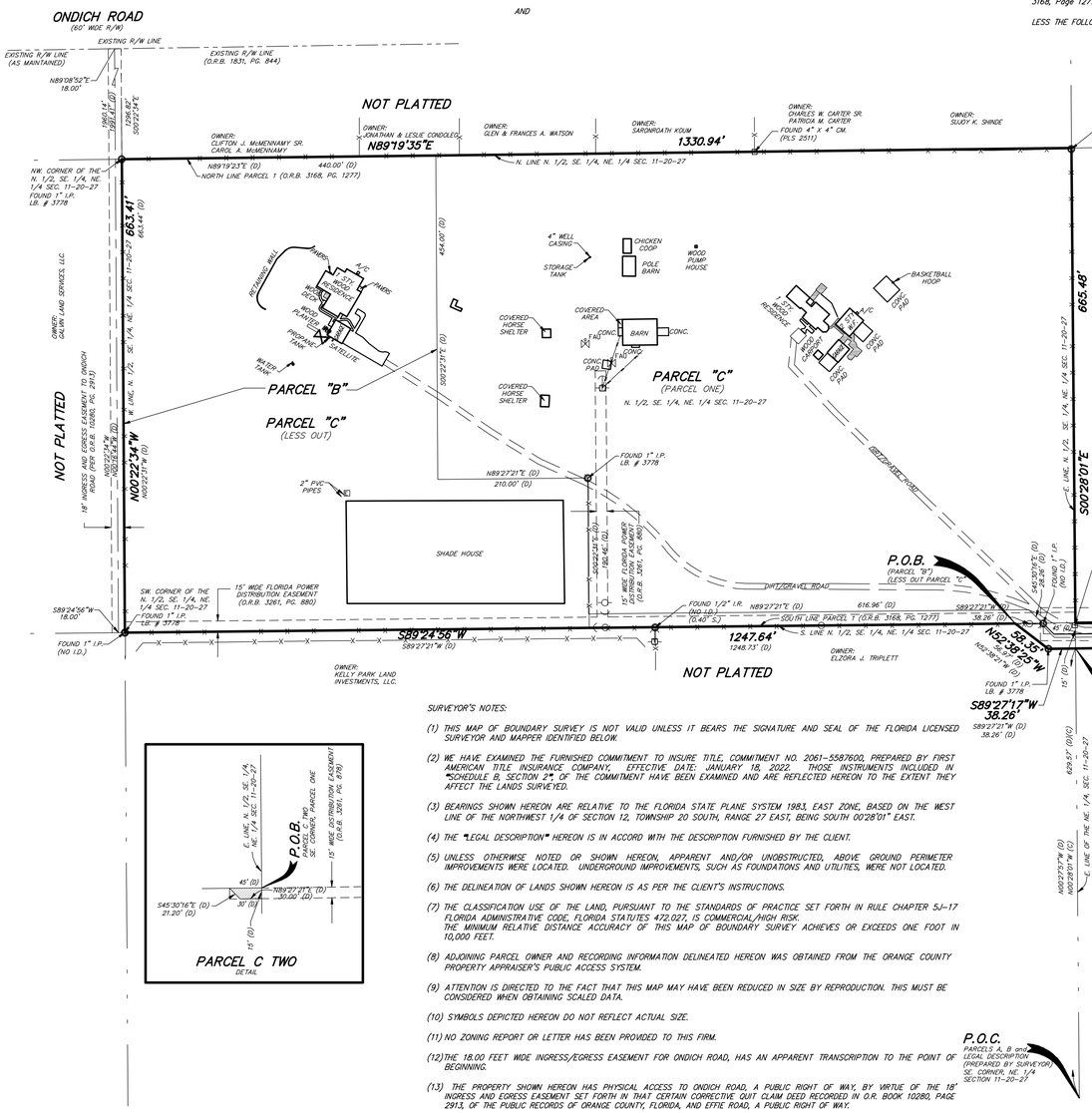
LEGAL DESCRIPTION (PREPARED BY SURVEYOR)

A TRACT OF LAND, LYING IN SECTIONS 11 AND 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, BEING DESCRIBED AS FOLLOWS:

COMMENCE AT THE SOUTHEAST CORNER OF THE NORTHEAST QUARTER OF SECTION 11, TOWNSHIP 20 SOUTH, RANGE 27 EAST FOR A POINT OF REFERENCE; THENCE RUN NORTH 00°28'01" WEST, ALONG THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 11, A DISTANCE OF 628.57 FEET TO THE POINT OF BEGINNING; THENCE RUN SOUTH 89°27'17" WEST, 38.26 FEET; THENCE RUN NORTH 52°38'25" WEST, 58.35 FEET TO A POINT LYING ON THE SOUTH LINE OF THE NORTH HALF OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11; THENCE RUN SOUTH 89°24'56" WEST, ALONG THE SOUTH LINE OF THE NORTH HALF OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11, A DISTANCE OF 1247.64 FEET TO THE SOUTHWEST CORNER OF THE NORTH HALF OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11; THENCE RUN NORTH 00°22'34" WEST, ALONG THE WEST LINE OF THE NORTH HALF OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11, A DISTANCE OF 663.41 FEET TO THE NORTHWEST CORNER OF THE NORTH HALF OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11; THENCE RUN NORTH 89°19'35" EAST, ALONG THE NORTH LINE OF THE NORTH HALF OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11, A DISTANCE OF 1330.94 FEET TO THE NORTHEAST CORNER OF THE NORTH HALF OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11; THENCE RUN SOUTH 00°28'01" EAST, ALONG THE EAST LINE OF THE NORTH HALF OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 11, A DISTANCE OF 665.48 FEET TO THE NORTHWEST CORNER OF THE SOUTH HALF OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 12; THENCE RUN NORTH 89°14'26" EAST, ALONG THE NORTH LINE OF THE SOUTH HALF OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 12, A DISTANCE OF 1318.31 FEET TO A POINT LYING ON THE WEST RIGHT-OF-WAY LINE OF EFFIE ROAD, SAID LINE BEING 30.00 FEET WEST OF PERPENDICULAR MEASURE THE EAST LINE OF THE SOUTH HALF OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 12; THENCE RUN SOUTH 00°03'03" EAST, PARALLEL TO SAID EAST LINE, ALONG THE WEST RIGHT-OF-WAY LINE OF EFFIE ROAD, 35.43 FEET; THENCE DEPARTING SAID WEST RIGHT-OF-WAY LINE, RUN SOUTH 89°13'12" WEST, 1318.06 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED TRACT OF LAND LIES IN ORANGE COUNTY, FLORIDA AND CONTAINS 21.439 ACRES MORE OR LESS.

TOGETHER WITH THAT CERTAIN NON-EXCLUSIVE CONTIGUOUS 18 FOOT EASEMENT FOR INGRESS AND EGRESS TO ONDICH ROAD, LYING 9 FEET ON EITHER SIDE OF A CENTER LINE DESCRIBED AS FOLLOWS: FROM THE SW CORNER OF THE NORTH 1/2 OF THE SW 1/4 OF THE NE 1/4 OF SECTION 11, TOWNSHIP 20 SOUTH, RANGE 28 EAST, RUN WEST ON THE SOUTH LINE OF THE NORTH 1/2 OF THE SW 1/4 OF THE NE 1/4, 9 FEET TO THE POINT OF BEGINNING, AND RUN THENCE NORTH 0 DEGREES 16 MINUTES 44 SECONDS WEST 1991.41 FEET MORE OR LESS TO THE NORTH SECTION LINE OF SECTION 11, TOWNSHIP 20 SOUTH, RANGE 27 EAST, ALL IN ORANGE COUNTY, FLORIDA. THIS IS IDENTIFIED AS PARCEL ONE ON THAT CERTAIN WARRANTY DEED RECORDED IN OFFICIAL RECORDS BOOK 3168, PAGE 1277, OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA.



PARCEL C TWO
DETAIL

SURVEYOR'S NOTES:

(1) THIS MAP OF BOUNDARY SURVEY IS NOT VALID UNLESS IT BEARS THE SIGNATURE AND SEAL OF THE FLORIDA LICENSED SURVEYOR AND MAPPER IDENTIFIED BELOW.

(2) WE HAVE EXAMINED THE FURNISHED COMMITMENT TO INSURE TITLE, COMMITMENT NO. 2061-5587600, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, EFFECTIVE DATE: JANUARY 18, 2022. THOSE INSTRUMENTS INCLUDED IN "SCHEDULE B, SECTION 2", OF THE COMMITMENT HAVE BEEN EXAMINED AND ARE REFLECTED HEREON TO THE EXTENT THEY AFFECT THE LANDS SURVEYED.

(3) BEARINGS SHOWN HEREON ARE RELATIVE TO THE FLORIDA STATE PLANE SYSTEM 1983, EAST ZONE, BASED ON THE WEST LINE OF THE NORTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, BEING SOUTH 00°28'01" EAST.

(4) THE "LEGAL DESCRIPTION" HEREON IS IN ACCORD WITH THE DESCRIPTION FURNISHED BY THE CLIENT.

(5) UNLESS OTHERWISE NOTED OR SHOWN HEREON, APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND PERIMETER IMPROVEMENTS WERE LOCATED. UNDERGROUND IMPROVEMENTS, SUCH AS FOUNDATIONS AND UTILITIES, WERE NOT LOCATED.

(6) THE DELINEATION OF LANDS SHOWN HEREON IS AS PER THE CLIENT'S INSTRUCTIONS.

(7) THE CLASSIFICATION USE OF THE LAND, PURSUANT TO THE STANDARDS OF PRACTICE SET FORTH IN RULE CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE, FLORIDA STATUTES 472.027, IS COMMERCIAL/HIGH RISK. THE MINIMUM RELATIVE DISTANCE ACCURACY OF THIS MAP OF BOUNDARY SURVEY ACHIEVES OR EXCEEDS ONE FOOT IN 10,000 FEET.

(8) ADJOINING PARCEL OWNER AND RECORDING INFORMATION DELINEATED HEREON WAS OBTAINED FROM THE ORANGE COUNTY PROPERTY APPRAISER'S PUBLIC ACCESS SYSTEM.

(9) ATTENTION IS DIRECTED TO THE FACT THAT THIS MAP MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

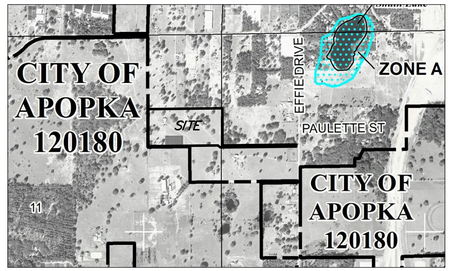
(10) SYMBOLS DEPICTED HEREON DO NOT REFLECT ACTUAL SIZE.

(11) NO ZONING REPORT OR LETTER HAS BEEN PROVIDED TO THIS FIRM.

(12) THE 18.00 FEET WIDE INGRESS/EGRESS EASEMENT FOR ONDICH ROAD, HAS AN APPARENT TRANSCRIPTION TO THE POINT OF BEGINNING.

(13) THE PROPERTY SHOWN HEREON HAS PHYSICAL ACCESS TO ONDICH ROAD, A PUBLIC RIGHT OF WAY, BY VIRTUE OF THE 18' INGRESS AND EGRESS EASEMENT SET FORTH IN THAT CERTAIN CORRECTIVE QUIT CLAIM DEED RECORDED IN O.R. BOOK 10280, PAGE 2913, OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA, AND EFFIE ROAD, A PUBLIC RIGHT OF WAY.

(14) THE LEGAL DESCRIPTION (PREPARED BY SURVEYOR), SHOWN HEREON DESCRIBES THE SAME PROPERTY AS DESCRIBED IN EXHIBIT A OF THE COMMITMENT.



FLOOD INSURANCE RATE MAP
FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12095C0050H
NOT TO SCALE

(15) THERE IS NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS AT THE TIME OF THIS SURVEY.

(16) THE LANDS SHOWN HEREON LIE IN ZONE "X", DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, PER FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12095C0050H, MAP REVISED: SEPTEMBER 24, 2021.

THE LIMITS OF SAID ZONES ARE GRAPHICALLY DEPICTED HEREON AS NEAR AS MAY BE SCALED FROM SAID MAP.

EXCEPTIONS
COMMITMENT NO. 2061-5587600

ITEM 9. INTENTIONALLY DELETED.

ITEM 10. INTENTIONALLY DELETED.

ITEM 11. Distribution Easement in favor of Florida Power Corporation, a Florida corporation, recorded in Official Records Book 3261, Page 878, of the public records of Orange County, Florida.
IS SHOWN HEREON AND DOES AFFECT THE SUBJECT PROPERTY.

ITEM 12. Distribution Easement in favor of Florida Power Corporation, a Florida corporation, recorded in Official Records Book 3261, Page 880, of the public records of Orange County, Florida.
IS SHOWN HEREON AND DOES AFFECT THE SUBJECT PROPERTY.

ITEM 13. INTENTIONALLY DELETED.

SCALE 1"=100'
100 0 100 200

LEGEND
- .....POWER POLE
- .....GUY ANCHOR
- .....IRRIGATION VALVE
- .....CLEAN OUT
- P.O.C. .....POINT OF COMMENCEMENT
- P.O.B. .....POINT OF BEGINNING
- FND. .....FOUND
- CM .....CONCRETE MONUMENT
- I.D. .....IDENTIFICATION
- (C) .....CALCULATED
- (D) .....DEED
- O.R.B. .....OFFICIAL RECORDS BOOK
- I.P. .....IRON PIPE
- I.R.C. .....IRON REBAR WITH CAP
- W.B.F. .....WOOD BOARD FENCE
- ALUM. .....ALUMINUM
- CONC. .....CONCRETE
- LB. .....LICENSED BUSINESS

ALTA/NSPS CERTIFICATION: (2021)
TO: Wekiva Land VPI, LLC, a Florida limited liability company; PM S-1 REO LLC, a Delaware limited liability company; First American Title Insurance Company; and Hill, Ward & Henderson, P.A.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6(a), 7(a), 8, 13, 16 AND 19 OF TABLE "A" THEREOF. THE FIELD WORK WAS COMPLETED ON NOVEMBER 10, 2021.

DAVID A. WHITE, P.S.M.
FLORIDA REGISTRATION NO. 6044
PEC - SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION L.B. 7808

Digitally signed by David A White
Date: 2023.05.15 10:15:14 -04'00'

DATE OF FIELD SURVEY: 11-18-2021

"ALTA/NSPS LAND TITLE SURVEY"

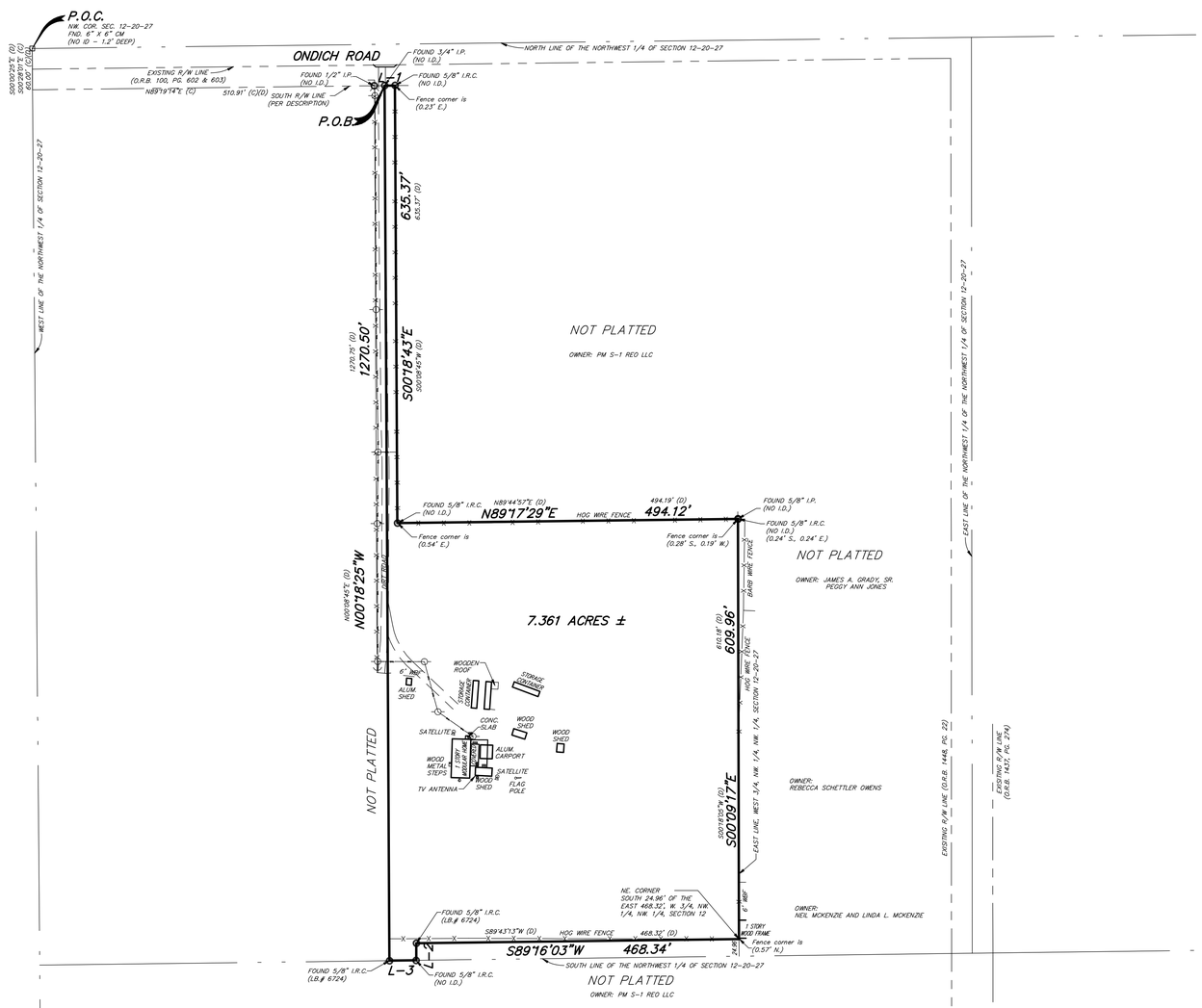
DATE	BY	REVISIONS

PEC | SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

MAP OF BOUNDARY SURVEY
LOCATED IN
SECTIONS 11 AND 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST
ORANGE COUNTY, FLORIDA

JOB NO.:	21-143
DATE:	11-29-2022
DRAWN BY:	D.A.W.
CHECKED BY:	D.A.W
F.B.	2415
PAGE(S)	9-23

G:\21-051 Morrison Groves Annexation Surveys\ANNEX-2\21-143-23-051 STARK PROPERTY.dwg May 11, 2023 - 1:54pm



LINE TABLE				
LINE	BEARING (C)	LENGTH	BEARING (D)	LENGTH (D)
L-1	N89°19'14"E	15.00'	N89°46'42"E	15.00'
L-2	S00°09'17"E	24.96'	S00°18'05"W	24.96'
L-3	S89°16'03"W	39.15'	S89°43'13"W	39.15'

LEGAL DESCRIPTION
(PER O.R.B. 10872, PAGE 7377)

From the Northwest corner of the Northwest quarter of Section 12, Township 20 South, Range 27 East, Orange County, Florida, run South 00°00'25" East along the west line of said Northwest quarter, a distance of 60.00 feet to a point on the South right of way line of Ondich Road; thence run North 89°46'42" East along said right of way line 510.91 feet to the point of beginning; thence continue North 89°46'42" East along said right of way line 15.00 feet; thence run south 00°08'45" West 635.37 feet; thence North 89°44'57" East 494.19 feet to a point on the East line of the West three quarters of the Northwest quarter of the Northwest quarter of Section 12; thence run South 00°18'05" West along said East line 610.18 feet to the Northeast corner of the South 24.96 feet of the East 468.32 feet of aforesaid West three quarters of the Northwest quarter of the Northwest quarter of Section 12; thence run South 89°43'13" West 468.32 feet; thence run South 00°18'05" West 24.96 feet to a point on the South line of aforesaid Northwest quarter of the Northwest quarter of Section 12; thence run South 89°43' 13" West along said line 39.14 feet; thence run North 00°08'45" East 1270.75 feet to the point of beginning.

SURVEYOR'S NOTES:

(1) THIS MAP OF BOUNDARY SURVEY IS NOT VALID UNLESS IT BEARS THE SIGNATURE AND SEAL OF THE FLORIDA LICENSED SURVEYOR AND MAPPER IDENTIFIED BELOW.

(2) NO ABSTRACT FOR RIGHTS-OF-WAY, EASEMENTS, OWNERSHIP OR OTHER INSTRUMENTS OF RECORD HAVE BEEN PROVIDED TO THIS FIRM.

(3) BEARINGS SHOWN HEREON ARE RELATIVE TO THE FLORIDA STATE PLANE SYSTEM 1983, EAST ZONE, BASED ON THE WEST LINE OF THE NORTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, BEING SOUTH 00°28'01" EAST.

(4) THE "LEGAL DESCRIPTION" HEREON IS IN ACCORD WITH THE DESCRIPTION FURNISHED BY THE CLIENT.

(5) UNLESS OTHERWISE NOTED OR SHOWN HEREON, APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND PERIMETER IMPROVEMENTS WERE LOCATED. UNDERGROUND IMPROVEMENTS, SUCH AS FOUNDATIONS AND UTILITIES, WERE NOT LOCATED.

(6) THIS SURVEY IS CERTIFIED TO:

(7) THE DELINEATION OF LANDS SHOWN HEREON IS AS PER THE CLIENT'S INSTRUCTIONS.

(8) THE CLASSIFICATION USE OF THE LAND, PURSUANT TO THE STANDARDS OF PRACTICE SET FORTH IN RULE CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE, FLORIDA STATUTES 472.027, IS COMMERCIAL/HIGH RISK.
THE MINIMUM RELATIVE DISTANCE ACCURACY OF THIS MAP OF BOUNDARY SURVEY ACHIEVES OR EXCEEDS ONE FOOT IN 10,000 FEET.

(9) ADJOINING PARCEL OWNER AND RECORDING INFORMATION DELINEATED HEREON WAS OBTAINED FROM THE ORANGE COUNTY PROPERTY APPRAISER'S PUBLIC ACCESS SYSTEM.

(10) ATTENTION IS DIRECTED TO THE FACT THAT THIS MAP MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

(11) SYMBOLS DEPICTED HEREON DO NOT REFLECT ACTUAL SIZE.

ALTA/NSPS CERTIFICATION: (2021)
TO:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6(a), 7(a), 8, 13, 16 AND 19 OF TABLE "A" THEREOF. THE FIELD WORK WAS COMPLETED ON NOVEMBER 10, 2021.

SCALE 1"=100'

100 0 100 200

LEGEND

-O- .....POWER POLE
) .....GUY ANCHOR
IM .....IRRIGATION VALVE
* .....CLEAN OUT
P.O.C. .....POINT OF COMMENCEMENT
P.O.B. .....POINT OF BEGINNING
FND. .....FOUND
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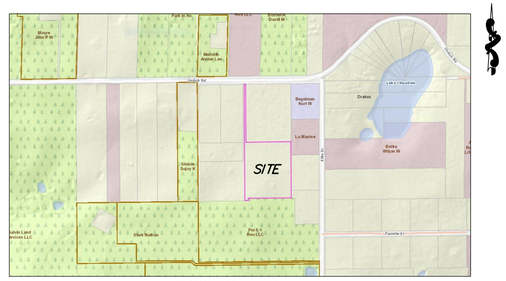
I.P. .....IRON PIPE
I.R.C. .....IRON REBAR WITH CAP
W.B.F. .....WOOD BOARD FENCE
ALUM. .....ALUMINUM
CONC. .....CONCRETE
LB. .....LICENSED BUSINESS



LOCATION MAP
NOT TO SCALE

DAVID A WHITE
STATE OF FLORIDA
4044

DAVID A. WHITE, P.S.M.
FLORIDA REGISTRATION NO. 4044
PEC - SURVEYING AND MAPPING, LLC.
CERTIFICATE OF AUTHORIZATION L.B. #7808

Digitally signed by David A White
Date: 2023.05.15 10:14:41 -04'00'

DAVID A. WHITE, P.S.M.
FLORIDA REGISTRATION NO. 4044
PEC - SURVEYING AND MAPPING, LLC.
CERTIFICATE OF AUTHORIZATION L.B. #7808
DATE OF FIELD SURVEY: 11-10-2021
DATE OF SIGNATURE: 11-22-2021

"ALTA/NSPS LAND TITLE SURVEY"

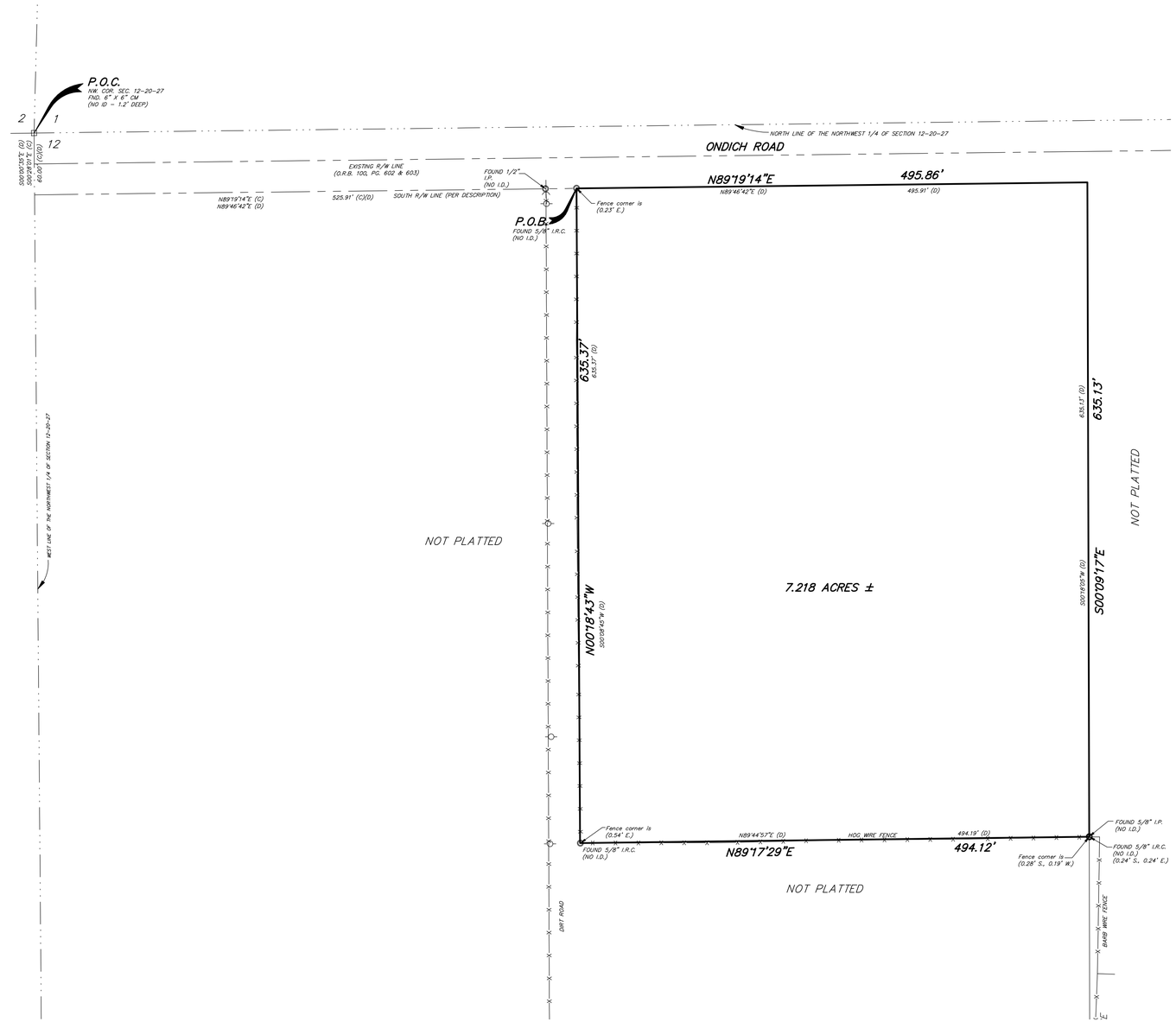
DATE	BY	REVISIONS

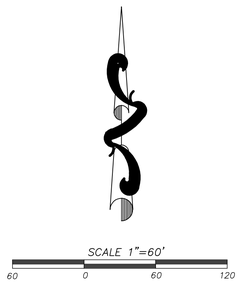
PEC | *SURVEYING AND MAPPING, LLC*
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

MAP OF BOUNDARY SURVEY
LOCATED IN
SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST
ORANGE COUNTY, FLORIDA

JOB NO.:	21-141
DATE:	11-22-2021
DRAWN BY:	J.L.M.
CHECKED BY:	D.A.W
F.B.	2415
PAGE(S)	2-8

G:\23-051 Morrison Groves Annexation Surveys\ANNEX-2\21-141-23-051 PEGGY BOUNDARY.dwg May 11, 2023 - 1:56pm





Parcel 11628 (Schutt):

From the Northwest corner of the Northwest 1/4 of Section 12, Township 20 South, Range 27 East, Orange County, Florida,run South 00 Degrees 00 Minutes 35 Seconds East along the West line of said Northwest 1/4 a distance of 60.00 feet to a point on the South right of way line of Ondich Road; thence run North 89 Degrees 46 Minutes 42 Seconds East along said right of way line 525.91 feet to the Point of Beginning; thence continue North 89 Degrees 46 Minutes 42 Seconds East along said right of way 495.91 feet to a point on the East line of the West 3/4 of the Northwest 1/4 of the Northwest 1/4 of Section 12, thence run South 00 Degrees 18 Minutes 05 Seconds West along said East line 635.13 feet; thence South 89 Degrees 44 Minutes 57 Seconds West 494.10 feet; thence North 00 Degrees 08 Minutes 45 Seconds East 635.37 feet to the Point of Beginning.

SURVEYOR'S NOTES:

(1) THIS MAP OF BOUNDARY SURVEY IS NOT VALID UNLESS IT BEARS THE SIGNATURE AND SEAL OF THE FLORIDA LICENSED SURVEYOR AND MAPPER IDENTIFIED BELOW.

(2) NO ABSTRACT FOR RIGHTS-OF-WAY, EASEMENTS, OWNERSHIP OR OTHER INSTRUMENTS OF RECORD HAVE BEEN PROVIDED TO THIS FIRM.

(3) BEARINGS SHOWN HEREON ARE ASSUMED RELATIVE TO THE WEST LINE OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, BEING SOUTH 00°28'01" EAST.

(4) THE "LEGAL DESCRIPTION" HEREON IS IN ACCORD WITH THE INSTRUMENT OF RECORD FURNISHED BY THE CLIENT.

(5) UNLESS OTHERWISE NOTED OR SHOWN HEREON, APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND PERIMETER IMPROVEMENTS WERE LOCATED. UNDERGROUND IMPROVEMENTS, SUCH AS FOUNDATIONS AND UTILITIES, WERE NOT LOCATED.

(6) INTERIOR IMPROVEMENTS WERE NOT LOCATED.

(7) THE LANDS SHOWN HEREON LIE IN ZONE "X", DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, PER FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12095C0050H, MAP REVISED: SEPTEMBER 24, 2021.

THE LIMITS OF SAID ZONES ARE GRAPHICALLY DEPICTED HEREON AS NEAR AS MAY BE SCALED FROM SAID MAP.

(8) THIS SURVEY IS CERTIFIED TO:

(9) THE DELINEATION OF LANDS SHOWN HEREON IS AS PER THE CLIENT'S INSTRUCTIONS.

(10)THE CLASSIFICATION USE OF THE LAND, PURSUANT TO THE STANDARDS OF PRACTICE SET FORTH IN RULE CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE, FLORIDA STATUTES 472.027, IS COMMERCIAL/HIGH RISK.
THE MINIMUM RELATIVE DISTANCE ACCURACY OF THIS MAP OF BOUNDARY SURVEY ACHIEVES OR EXCEEDS ONE FOOT IN 10,000 FEET.

(11)UNLESS OTHERWISE NOTED OR SHOWN HEREON, THERE ARE NO APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND ENCROACHMENTS. THE DISPOSITION OF ANY POTENTIAL ENCROACHING IMPROVEMENTS SHOWN IS BEYOND PROFESSIONAL PURVIEW AND SUBJECT TO LEGAL INTERPRETATION.

(12)ADJOINING PARCEL OWNER AND RECORDING INFORMATION DELINEATED HEREON WAS OBTAINED FROM THE ORANGE COUNTY PROPERTY APPRAISER'S PUBLIC ACCESS SYSTEM.

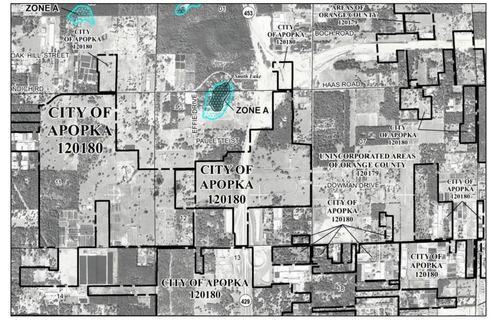
(13)THE SURVEYED LANDS MAY BE SUBJECT TO JURISDICTIONAL ENTITIES.

(14) ATTENTION IS DIRECTED TO THE FACT THAT THIS MAP MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

(15)SYMBOLS DEPICTED HEREON DO NOT REFLECT ACTUAL SIZE.

LEGEND

P.O.C.....POINT OF COMMENCEMENT
P.O.B.....POINT OF BEGINNING
R/W.....RIGHT-OF-WAY
P.B.....PLAT BOOK
PG.....PAGE
O.R.B.....OFFICIAL RECORDS BOOK
SEC.....SECTION



FLOOD INSURANCE RATE MAP
COMMUNITY PANEL NO. 12095C0050H

Digitally signed by David A White
Date: 2023.05.15 10:20:47 -04'00'

DAVID A. WHITE, P.S.M.
FLORIDA REGISTRATION NO. 4044
PEC - SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION L.B. #7808

DATE	BY	REVISIONS

PEC | **SURVEYING AND MAPPING, LLC**
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

MAP OF BOUNDARY SURVEY
LOCATED IN
SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST
ORANGE COUNTY, FLORIDA

SHEET 1

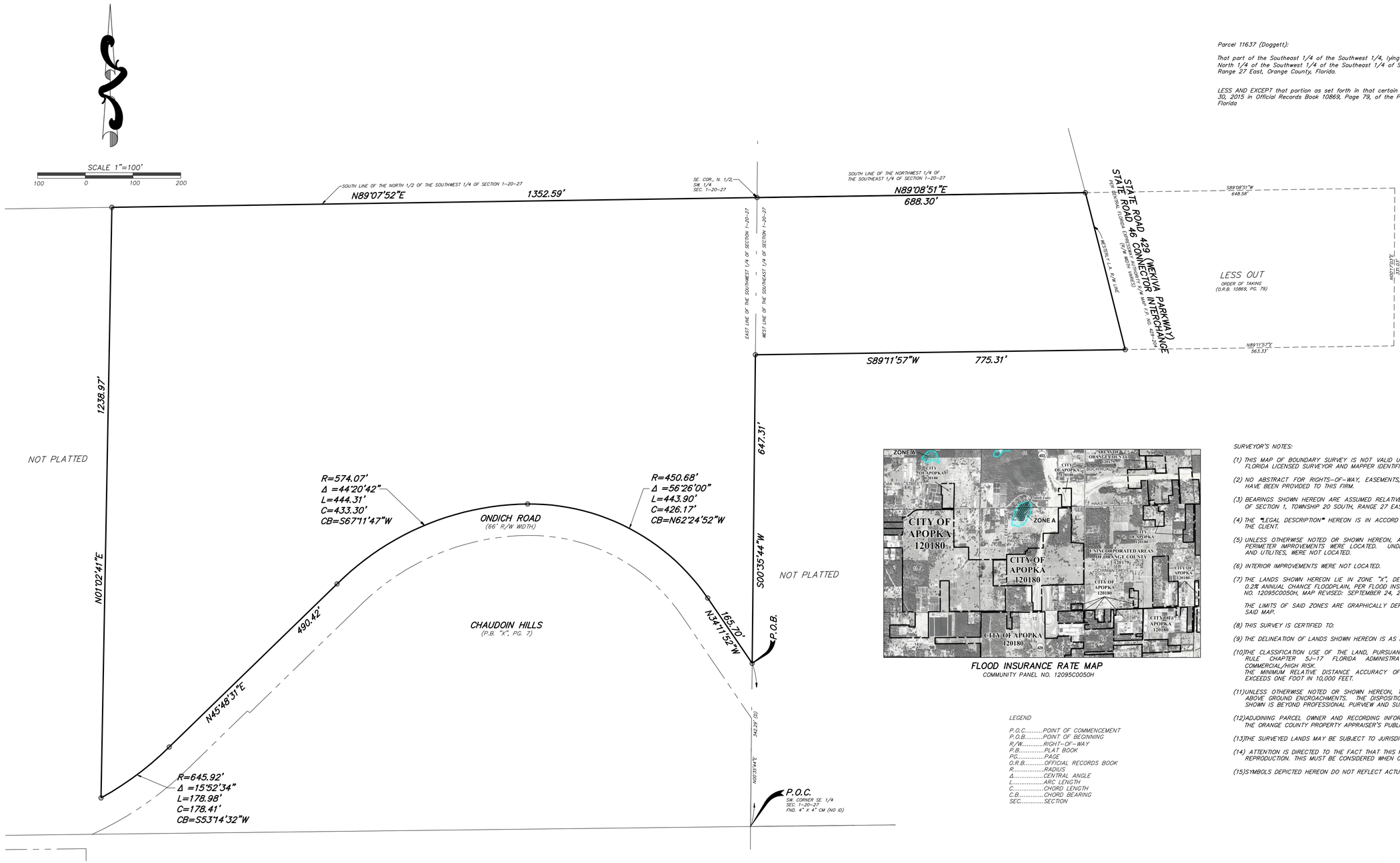
JOB NO.:	23-051
DATE:	5-4-2023
DRAWN BY:	J.L.M.
CHECKED BY:	D.A.W
F.B.	FIELD-BOOK
PAGE(S)	PAGES

G:\23-051 Morrison Groves Annexation Surveys\ANNEX-2\23-051 PARCEL 10.dwg May 11, 2023 - 1:42pm

Parcel 11637 (Doggett):

That part of the Southeast 1/4 of the Southwest 1/4, lying North of Ondich Road and the North 1/4 of the Southwest 1/4 of the Southeast 1/4 of Section1, Township 20 South, Range 27 East, Orange County, Florida.

LESS AND EXCEPT that portion as set forth in that certain Order of Taking recorded January 30, 2015 in Official Records Book 10869, Page 79, of the Public Records of Orange County, Florida



FLOOD INSURANCE RATE MAP
COMMUNITY PANEL NO. 12095C0050H

LEGEND

P.O.C.....POINT OF COMMENCEMENT
P.O.B.....POINT OF BEGINNING
R/W.....RIGHT-OF-WAY
P.B.....PLAT BOOK
PG.....PAGE
O.R.B.....OFFICIAL RECORDS BOOK
R.....RADIUS
Δ.....CENTRAL ANGLE
L.....ARC LENGTH
C.....CHORD LENGTH
C.B.....CHORD BEARING
SEC.....SECTION

SURVEYOR'S NOTES:

(1) THIS MAP OF BOUNDARY SURVEY IS NOT VALID UNLESS IT BEARS THE SIGNATURE AND SEAL OF THE FLORIDA LICENSED SURVEYOR AND MAPPER IDENTIFIED BELOW.

(2) NO ABSTRACT FOR RIGHTS-OF-WAY, EASEMENTS, OWNERSHIP OR OTHER INSTRUMENTS OF RECORD HAVE BEEN PROVIDED TO THIS FIRM.

(3) BEARINGS SHOWN HEREON ARE ASSUMED RELATIVE TO THE EAST LINE OF THE SOUTHWEST QUARTER OF SECTION 1, TOWNSHIP 20 SOUTH, RANGE 27 EAST, BEING NORTH 00°35'44" EAST.

(4) THE "LEGAL DESCRIPTION" HEREON IS IN ACCORD WITH THE INSTRUMENT OF RECORD FURNISHED BY THE CLIENT.

(5) UNLESS OTHERWISE NOTED OR SHOWN HEREON, APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND PERIMETER IMPROVEMENTS WERE LOCATED. UNDERGROUND IMPROVEMENTS, SUCH AS FOUNDATIONS AND UTILITIES, WERE NOT LOCATED.

(6) INTERIOR IMPROVEMENTS WERE NOT LOCATED.

(7) THE LANDS SHOWN HEREON LIE IN ZONE "X", DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, PER FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12095C0050H, MAP REVISED: SEPTEMBER 24, 2021.

THE LIMITS OF SAID ZONES ARE GRAPHICALLY DEPICTED HEREON AS NEAR AS MAY BE SCALED FROM SAID MAP.

(8) THIS SURVEY IS CERTIFIED TO:

(9) THE DELINEATION OF LANDS SHOWN HEREON IS AS PER THE CLIENT'S INSTRUCTIONS.

(10) THE CLASSIFICATION USE OF THE LAND, PURSUANT TO THE STANDARDS OF PRACTICE SET FORTH IN RULE CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE, FLORIDA STATUTES 472.027, IS COMMERCIAL/HIGH RISK.
THE MINIMUM RELATIVE DISTANCE ACCURACY OF THIS MAP OF BOUNDARY SURVEY ACHIEVES OR EXCEEDS ONE FOOT IN 10,000 FEET.

(11) UNLESS OTHERWISE NOTED OR SHOWN HEREON, THERE ARE NO APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND ENCROACHMENTS. THE DISPOSITION OF ANY POTENTIAL ENCROACHING IMPROVEMENTS SHOWN IS BEYOND PROFESSIONAL PURVIEW AND SUBJECT TO LEGAL INTERPRETATION.

(12) ADJOINING PARCEL OWNER AND RECORDING INFORMATION DELINEATED HEREON WAS OBTAINED FROM THE ORANGE COUNTY PROPERTY APPRAISER'S PUBLIC ACCESS SYSTEM.

(13) THE SURVEYED LANDS MAY BE SUBJECT TO JURISDICTIONAL ENTITIES.

(14) ATTENTION IS DIRECTED TO THE FACT THAT THIS MAP MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

(15) SYMBOLS DEPICTED HEREON DO NOT REFLECT ACTUAL SIZE.

DAVID A. WHITE, P.S.M.
FLORIDA REGISTRATION NO. 4044
PEC - SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION L.B. #7808

Digitally signed by David A White
Date: 2023.05.15 10:21:14 -04'00'

DATE	BY	REVISIONS

PEC | SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

MAP OF BOUNDARY SURVEY
LOCATED IN
SECTION 1, TOWNSHIP 20 SOUTH, RANGE 27 EAST
ORANGE COUNTY, FLORIDA

SHEET 1

JOB NO.:	23-051
DATE:	5-4-2023
DRAWN BY:	J.L.M.
CHECKED BY:	D.A.W
F.B.	FIELD-BOOK
PAGE(S)	PAGES

O:\23-051 Morrison Groves Annexation Surveys\ANNEX-3\23-051 PARCEL 12.dwg May 11, 2023 - 2:19pm

PARCEL 1:

LEGAL DESCRIPTION PER THE FURNISHED COMMITMENT TO INSURE TITLE, FILE NO. 2061-6082404, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, EFFECTIVE DATE: JUNE 10, 2022 @ 8:00 AM.

The land referred to herein below is situated in the County of Orange, State of Florida, and described as follows:

The NE ¼ of the NE ¼ of the SE ¼ of Section 2, Township 20 South, Range 27 East, together with non-exclusive easements for ingress and egress over the East 20 feet of the SE ¼ of the SE ¼ of said Section 2, as recorded in Official Records Book 3995, page 3632 and over the East 20 feet of the South ½ of the NE ¼ of the SE ¼, as recorded in Official Records Book 5142, page 3281, all of the Public Records of Orange County, Florida.

SCHEDULE B SECTION II EXCEPTIONS:

WE HAVE EXAMINED THE FURNISHED COMMITMENT TO INSURE TITLE, FILE NO. 2061-6082404, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, EFFECTIVE DATE: JUNE 10, 2022 @ 8:00 AM. INSTRUMENTS 9-13 INCLUDED IN "SCHEDULE B, SECTION 2", OF THE COMMITMENT HAVE BEEN EXAMINED AND ARE REFLECTED HEREON TO THE EXTENT THEY AFFECT THE LANDS SURVEYED.

9. Easement granted to Florida Power Corporation by instrument recorded in Book 3124, page 2784 (as to easement parcel).
   AFFECTS AS SHOWN HEREON.
10. Easement granted to Florida Power Corporation by instrument recorded in Book 3832, page 429.
    AFFECTS AS SHOWN HEREON.
11. Terms and conditions of the Grant Of Easement between Elmer G. Youngblood and David Shelley, and Tommy L. Shelley recorded in Book 3995, page 3632 (as to easement parcel).
    AFFECTS AS SHOWN HEREON.
12. Easement granted to Florida Power Corporation by instrument recorded in Book 4017, page 1833.
    AFFECTS, BASED ON FACILITIES, INTERIOR IMPROVEMENTS WERE NOT LOCATED.
13. Terms and conditions of the Grant Of Easement between Tommy L. Shelley And Elizabeth Shelley, His Wife and Charles P. Stallings And Kim L. Stallings recorded in Book 5142, page 3281 (as to easement parcel).
    AFFECTS AS SHOWN HEREON.

PARCEL 2:

LEGAL DESCRIPTION PER THE FURNISHED COMMITMENT TO INSURE TITLE, FILE NO. 2061-6081995, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, EFFECTIVE DATE: JUNE 13, 2022 @ 8:00 AM.

The land referred to herein below is situated in the County of Orange, State of Florida, and described as follows:

The Southeast ¼ of the Northeast ¼ of Section 2, Township 20 South, Range 27 East, Orange County, Florida.

SCHEDULE B SECTION II EXCEPTIONS:

WE HAVE EXAMINED THE FURNISHED COMMITMENT TO INSURE TITLE, FILE NO. 2061-6081995, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, EFFECTIVE DATE: JUNE 13, 2022. INSTRUMENTS INCLUDED IN "SCHEDULE B, SECTION 2", OF THE COMMITMENT HAVE BEEN EXAMINED AND ARE NOT SURVEY RELATED TO THE EXTENT THEY AFFECT THE LANDS SURVEYED.

PARCEL 3:

LEGAL DESCRIPTION PER THE FURNISHED COMMITMENT TO INSURE TITLE, FILE NO. 2061-6196294, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, EFFECTIVE DATE: SEPTEMBER 14, 2022 @ 8:00 AM.

The land referred to herein below is situated in the County of Orange, State of Florida, and described as follows:

The Northwest ¼ of the Northeast ¼ of the Southeast ¼ of Section 2, Township 20 South, Range 27 East, Orange County, Florida and the West ¾ of the South ½ of the Northeast ¼ of the Southeast ¼ of Section 2, Township 20 South, Range 27 East, Orange County, Florida, less the West ½ of the Southeast ¼ of the Northeast ¼ of the Southeast ¼ thereof. Together with an easement over the West 10 feet of the Southeast ¼ of the Southeast ¼ of Section 2, Township 20 South, Range 27 East, Orange County, Florida

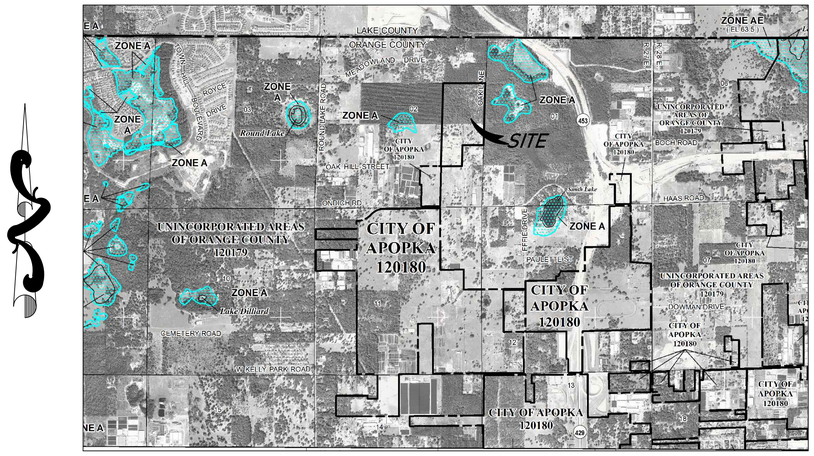
SCHEDULE B SECTION II EXCEPTIONS:

WE HAVE EXAMINED THE FURNISHED COMMITMENT TO INSURE TITLE, FILE NO. 2061-6196294, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, EFFECTIVE DATE: SEPTEMBER 14, 2022 @ 8:00 AM. INSTRUMENTS 9-12 INCLUDED IN "SCHEDULE B, SECTION 2", OF THE COMMITMENT HAVE BEEN EXAMINED AND ARE REFLECTED HEREON TO THE EXTENT THEY AFFECT THE LANDS SURVEYED.

9. Easement granted to Florida Power Corporation by instrument recorded in Book 3125, page 293.
   AFFECTS AS SHOWN HEREON.
10. Easement granted to Florida Power Corporation by instrument recorded in Book 3832, page 492.
    AFFECTS AS SHOWN HEREON.
11. Easement granted to Florida Power Corporation by instrument recorded in Book 6697, page 4517.
    AFFECTS, BASED ON FACILITIES, UNABLE TO PLOT.
12. Terms and conditions of any existing unrecorded lease(s), and all rights of lessee(s) and any parties claiming through the lessee(s) under the lease(s).
    NOT A SURVEY MATTER.

SURVEYOR'S NOTES:

(1) THIS MAP OF BOUNDARY SURVEY IS NOT VALID IF PRINTED, OR WITHOUT THE ORIGINAL SIGNATURE AND RAISED SEAL OF THE PROFESSIONAL SURVEYOR AND MAPPER SHOWN HEREON.
(2) BEARINGS SHOWN HEREON ARE BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM 1983, EAST ZONE, RELATIVE TO THE EAST LINE OF THE NORTHEAST 1/4 OF SECTION 2, TOWNSHIP 20 SOUTH, RANGE 27 EAST, BEING SOUTH 01°36'08" WEST.
(3) THE "LEGAL DESCRIPTION" HEREON IS IN ACCORD WITH THE INSTRUMENT OF RECORD FURNISHED BY THE CLIENT.
(4) THE LANDS SHOWN HEREON LIE IN ZONE "X" (UNSHADED), DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, PER FLOOD INSURANCE RATE MAP (FIRM) MAP NO. 12095C0050H, MAP REVISED: SEPTEMBER 24, 2021.
(5) THE DELINEATION OF LANDS SHOWN HEREON IS AS PER THE CLIENT'S INSTRUCTIONS.
(6) THE CLASSIFICATION USE OF THE LAND, PURSUANT TO THE STANDARDS OF PRACTICE SET FORTH IN RULE CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE, FLORIDA STATUTES 472.027, IS RESIDENTIAL. THE MINIMUM RELATIVE DISTANCE ACCURACY OF THIS MAP OF BOUNDARY SURVEY ACHIEVES OR EXCEEDS ONE FOOT IN 10,000 FEET.
(7) INTERIOR IMPROVEMENTS CONSISTING OF RESIDENCES AND ASSOCIATED OUT BUILDINGS NOT LOCATED. UNLESS OTHERWISE NOTED OR SHOWN HEREON, THERE ARE NO APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND ENCROACHMENTS.
(8) ADJOINING PARCEL OWNER AND RECORDING INFORMATION DELINEATED HEREON WAS OBTAINED FROM THE COUNTY PROPERTY APPRAISER'S PUBLIC ACCESS SYSTEM.
(9) NORTH-SOUTH AND EAST-WEST TIES TO RECOVERED MONUMENTATION NEAR VARIOUS LAND BOUNDARY CORNERS SHOWN HEREON ARE BY COORDINATE DIFFERENCE.
(10) ATTENTION IS DIRECTED TO THE FACT THAT THIS MAP MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.
(11) SYMBOLS DEPICTED HEREON DO NOT REFLECT ACTUAL SIZE.
(12) THE SUBJECT PARCELS HAVE ACCESS TO ONDICH ROAD THROUGH THE 20' INGRESS/EGRESS EASEMENT PER OFFICIAL RECORDS BOOK 3995, PAGE 3632.



FIRM MAP 12095C0050H
NOT TO SCALE

SHEET LAYOUT:
SHEET 1 ALTA INFORMATION AND SURVEYOR'S NOTES
SHEET 2 BOUNDARY SURVEY WITH AERIAL PHOTO AND LEGEND
SHEET 3 BOUNDARY AND EASEMENT INFORMATION

ALTA/NSPS CERTIFICATION: (2021)
TO: MORRISON GROVES
FIRST AMERICAN TITLE INSURANCE COMPANY
HILL WARD & HENDERSON, P.A.
WEKIVA LAND VPI, LLC, A FLORIDA LIMITED LIABILITY COMPANY
JOHN H. STEWART AND DAVID A. STEWART, INDIVIDUALLY AND AS CO-TRUSTEES UNDER THE GEORGE AND FLORENCE STEWART REVOCABLE TRUST DATED DECEMBER 19, 1986

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 13, AND 19 OF TABLE A THEREOF.

DAVID A. WHITE, P.S.M.
LICENSE NO. 4044
STATE OF FLORIDA

Digitally signed by David A White
Date: 2023.05.15 10:17:13 -04'00'

DAVID A. WHITE, P.S.M.
FLORIDA REGISTRATION NO. 4044
PEC - SURVEYING AND MAPPING, LLC.
CERTIFICATE OF AUTHORIZATION L.B. #7808
DATE OF FIELD SURVEY: 08-24-2022
DATE OF SIGNATURE: 09-06-2022

NOT VALID WITHOUT SHEETS 1 THROUGH 3

ALTA/NSPS LAND TITLE SURVEY

DATE	BY	REVISIONS
10-31-2022	R.J.G.	ADD CERTS
10-24-2022	R.J.G.	ADD PARCEL 3 TITLE INFORMATION
09-09-2022	R.J.G.	ADD CERTS & ADDRESS COMMENTS

PEC | SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

MAP OF BOUNDARY SURVEY
LOCATED IN
SECTION 2, TOWNSHIP 20 SOUTH, RANGE 27 EAST
CITY OF APOPKA, ORANGE COUNTY, FLORIDA

SHEET 1 OF 3

JOB NO.:	22-070
DATE:	09-01-2022
DRAWN BY:	R.J.G.
CHECKED BY:	D.A.W
F.B.	2448
PAGE(S)	20-21

G:\23-051 Morrison Groves Annexation Surveys\ANNEX-3\22-070-23-051 ALTA-C3D.dwg May 11, 2023 - 2:25pm

LEGEND

BWF..........BARBED WIRE FENCE
C.C.R.........CERTIFIED CORNER RECORD
CLF...........CHAIN LINK FENCE
C.M...........CONCRETE MONUMENT
COR...........CORNER
FND...........FOUND
ID.............IDENTIFICATION
I.P............IRON PIPE
I.R.C.........IRON ROD & CAP
LB............LICENSED BUSINESS
O.R.B........OFFICIAL RECORDS BOOK
PG............PAGE
RGE..........RANGE
RLS..........REGISTERED LAND SURVEYOR
R/W..........RIGHT-OF-WAY
SEC..........SECTION
TWP..........TOWNSHIP
(C)............CALCULATED
(M)...........MEASURED

GUY ANCHOR

WOOD POWER POLE

OHUL OVERHEAD UTILITY LINE

SCALE 1"=100'

100 0 100 200

NOT VALID WITHOUT SHEETS 1 THROUGH 3

DATE	BY	REVISIONS
10-31-2022	R.J.G.	ADD CERTS
10-24-2022	R.J.G.	ADD PARCEL 3 TITLE INFORMATION
09-09-2022	R.J.G.	ADD CERTS & ADDRESS COMMENTS

PEC SURVEYING AND MAPPING, LLC

CERTIFICATE OF AUTHORIZATION NUMBER LB 7808

2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967

WWW.PECONLINE.COM dw@peconline.com

MAP OF BOUNDARY SURVEY

LOCATED IN

SECTION 2, TOWNSHIP 20 SOUTH, RANGE 27 EAST

CITY OF APOPKA, ORANGE COUNTY, FLORIDA

SHEET 2 OF 3

JOB NO.:	22-070
DATE:	09-01-2022
DRAWN BY:	R.J.G.
CHECKED BY:	D.A.W
F.B.	2448
PAGE(S)	20-21

O:\23-051 Morrison Groves Annexation Surveys\ANNEX-3\22-070-23-051 ALTA-C3D.dwg May 11, 2023 - 2:43pm

OWNER: MOORE JOHN P W, ET AL

NOT PLATTED

OWNER: SEAWRIGHT BRADFORD SCOTT JR, ET AL

NOT PLATTED

N01°32'19"E
N01°36'06"E

1316.74'(M)
1314.98'(C)

FND. 5/8" I.R.C. ILLEGIBLE

OWNER: GERLERO PROPERTIES LLC

NOT PLATTED

N01°45'59"E
N01°39'16"E

1306.37'(M)
1305.39'(C)

FND. 4"X4" C.M. NO ID

OWNER: MICHAEL AND JACQUELINE BENITEZ REVOCABLE LIVING TRUST

8

THE HIGHLANDS NORTH II
PLAT BOOK 14, PAGE 45

SW. COR. GOVT LOT 1
SEC. 2-20-27
FND. 1-1/2" I.P. NO ID

NOT PLATTED

OWNER: LOZANO RENE

664.16'(M)
663.15'(C)

10' DISTRIBUTION EASEMENT (O.R.B. 3125, PG. 293)

10.00

10' DISTRIBUTION EASEMENT (O.R.B. 3832, PG. 492)

PARCEL 3: 19.971 ± ACRES

SW. 1/4, NE. 1/4, SE. 1/4 SEC. 2-20-27

NW. 1/4, NE. 1/4, SE. 1/4 SEC. 2-20-27

PARCEL 3
PARCEL ID: 02-20-27-0000-00-020
ADDRESS: 4267 ONDICH ROAD
APOPKA, FL 32712

PARCEL 2: 39.429 ± ACRES

PARCEL 2
PARCEL ID: 02-20-27-0000-00-011
ADDRESS: OAK LANE
APOPKA, FL 32712

1322.16'(C)
1321.58'(M)

NOT PLATTED

OWNER: SHAUN WOLFE CARSON IRREVOCABLE TRUST

S89°17'53"W
S89°16'33"W

20' DISTRIBUTION EASEMENT (O.R.B. 3832, PG. 492)

FND. 1/2" I.P. NO ID

FND. 4"X4" C.M. RLS 1916

S01°32'58"W
S01°29'19"W

656.53'(C)
657.41'(M)

TOTAL AREA: 69.367 ± ACRES

SE. 1/4, NE. 1/4 SEC. 2-20-27

S. LINE GOVT LOT 1 SECTION 2, TWP. 20 S., RGE. 27 E.

OWNER: RUTLEDGE STACEY, ET AL

NOT PLATTED

S89°58'29"E
S89°54'21"E

LESS THE WEST 1/2 OF SE 1/4 OF NE 1/4 OF SE 1/4

NOT PLATTED

NOT PLATTED

OWNER: STALLINGS EUELL E SR, ET AL

662.43'(M)
662.52'(C)

PARCEL 1
PARCEL ID: 02-20-27-0000-00-010
ADDRESS: 4255 ONDICH ROAD
APOPKA, FL 32712

20' DISTRIBUTION EASEMENT (O.R.B. 3832, PG. 429)

10' DISTRIBUTION EASEMENT (O.R.B. 4017, PG. 1833)

(VACANT LOT)

SE. 1/4, NE. 1/4, SE. 1/4 SEC. 2-20-27

NE. 1/4, NE. 1/4, SE. 1/4 SEC. 2-20-27

NOT PLATTED

S89°27'36"W
S89°23'24"W

PARCEL 1: 9.967 ± ACRES

OWNER: TATUM GLENN, ET AL

10' DISTRIBUTION EASEMENT (O.R.B. 3125, PG. 293)

20' INGRESS/EGRESS EASEMENT (O.R.B. 3995, PG. 3635)

10' DISTRIBUTION EASEMENT (O.R.B. 3124, PG. 2784)

20' INGRESS/EGRESS EASEMENT (O.R.B. 5142, PG. 3281)

FND. 5/8" I.R.C. LB 7064 WIT COR

20' DISTRIBUTION EASEMENT (O.R.B. 3832, PG. 429)

SW. COR., N. 1/2, SW. 1/4 SEC. 1-20-27

WEST LINE OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 1-20-27

S01°29'49"W
S01°31'32"W

655.57'(C)
656.47'(M)

NE. COR., SE. 1/4 SEC. 2-20-27 FND. 1-1/2" I.P. C.C.R. 47852

EAST LINE OF THE NORTHEAST 1/4 OF SECTION 2-20-27

S01°36'08"W

1292.55'(C&M)

SE. COR., GOV'T LOT 1 SEC. 2-20-27 SET 5/8" I.R.C. LB 7808

FND. 1-1/2" I.P. NO ID 15.37' N., 0.63' E.

NOT PLATTED

OWNER: HMF LLC

OWNER: CENTRAL FLORIDA EXPRESSWAY AUTHORITY

NOT PLATTED

OWNER: LEWIS THOMAS M

NOT PLATTED

SCALE 1"=100'

100 0 100 200

NOT VALID WITHOUT SHEETS 1 THROUGH 3

DATE	BY	REVISIONS
10-31-2022	R.J.G.	ADD CERTS
10-24-2022	R.J.G.	ADD PARCEL 3 TITLE INFORMATION
09-09-2022	R.J.G.	ADD CERTS & ADDRESS COMMENTS

PEC | SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

MAP OF BOUNDARY SURVEY

LOCATED IN

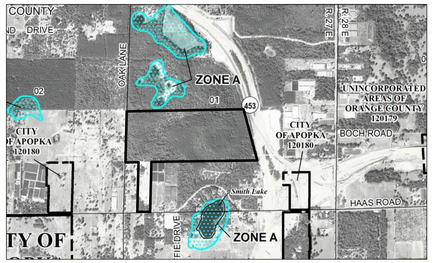
SECTION 2, TOWNSHIP 20 SOUTH, RANGE 27 EAST

CITY OF APOPKA, ORANGE COUNTY, FLORIDA

SHEET 3 OF 3

JOB NO.:	22-070
DATE:	09-01-2022
DRAWN BY:	R.J.G.
CHECKED BY:	D.A.W
F.B.	2448
PAGE(S)	20-21

G:\23-051 Morrison Groves Annexation Surveys\ANNEX-3\22-070-23-051 ALTA-C3D.dwg May 11, 2023 - 2:27pm



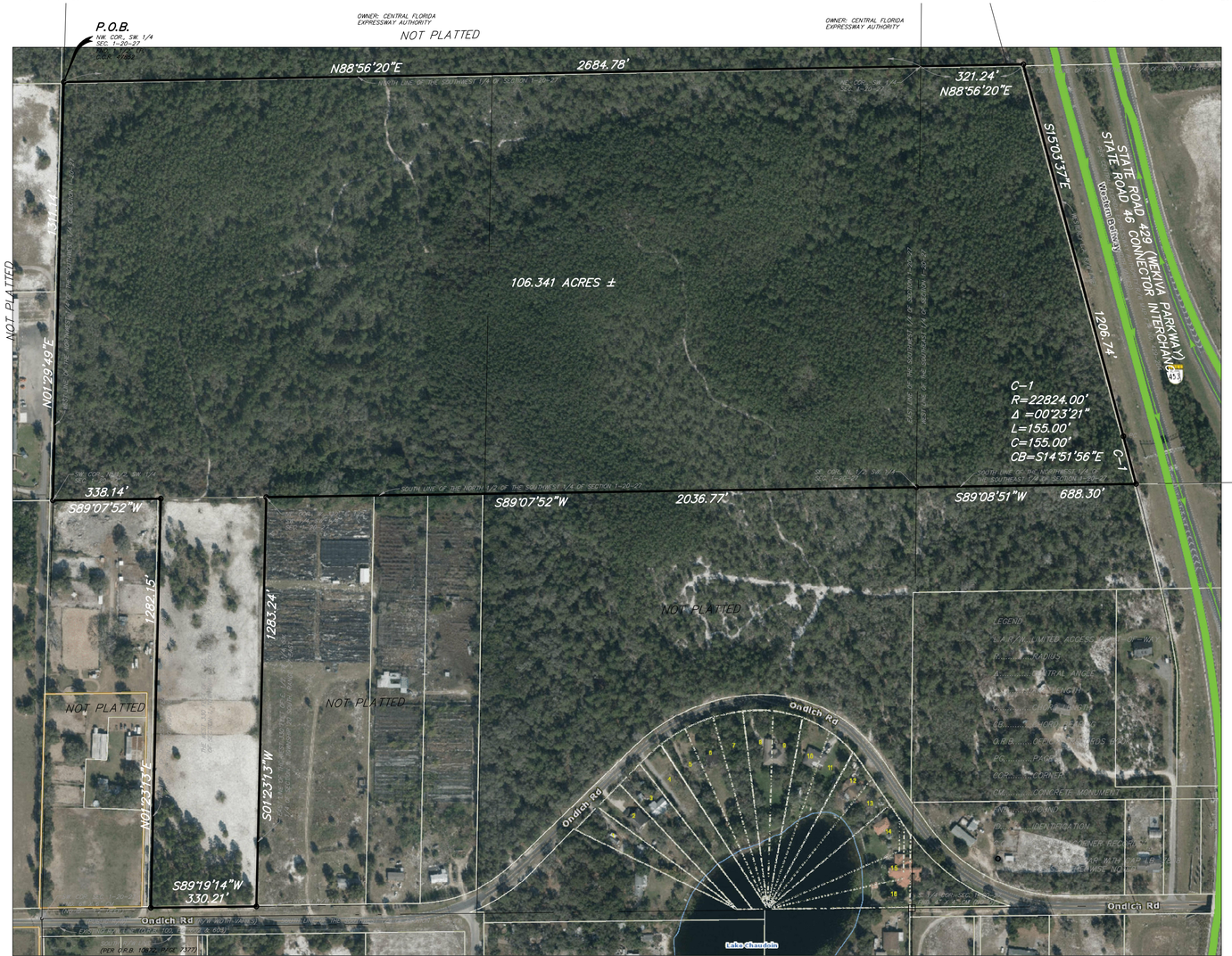
FLOOD INSURANCE RATE MAP
NOT TO SCALE

LEGAL DESCRIPTION (PREPARED BY SURVEYOR)

A TRACT OF LAND, LYING IN THE SOUTHWEST QUARTER OF SECTION 1, TOWNSHIP 20 SOUTH, RANGE 27 EAST BEING DESCRIBED AS FOLLOWS:

BEGIN AT THE NORTHWEST CORNER OF THE SOUTHWEST QUARTER OF SAID SECTION 1; THENCE RUN NORTH 88°56'20" EAST, ALONG THE NORTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 1, A DISTANCE OF 2684.78 FEET TO THE NORTHEAST CORNER OF THE SOUTHWEST QUARTER OF SAID SECTION 1; THENCE RUN NORTH 88°56'20" EAST, ALONG THE NORTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 1, A DISTANCE OF 321.24 FEET TO A POINT LYING ON THE WESTERLY LIMITED ACCESS RIGHT-OF-WAY LINE OF STATE ROAD 429 (WEKIVA PARKWAY), STATE ROAD 46 CONNECTOR INTERCHANGE, PER CENTRAL FLORIDA EXPRESSWAY AUTHORITY RIGHT-OF-WAY MAP F.P. NUMBER 429-204; THENCE DEPARTING SAID NORTH LINE, RUN SOUTH 15°03'37" EAST, ALONG SAID WESTERLY LIMITED ACCESS RIGHT-OF-WAY LINE, 1206.74 FEET TO THE POINT OF CURVATURE OF A CURVE, CONCAVE SOUTHWESTERLY; THENCE RUN SOUTHEASTERLY, ALONG SAID WESTERLY LIMITED ACCESS RIGHT-OF-WAY LINE AND SAID CURVE, HAVING A RADIUS OF 22824.00 FEET, A CENTRAL ANGLE OF 00°23'21" AN ARC LENGTH OF 155.00 FEET, A CHORD LENGTH OF 155.00 FEET AND A CHORD BEARING OF SOUTH 14°51'56" EAST TO A POINT LYING ON THE SOUTH LINE OF THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 1; THENCE DEPARTING SAID WESTERLY LIMITED ACCESS RIGHT-OF-WAY LINE, RUN NON-TANGENT TO SAID CURVE, SOUTH 89°08'51" WEST, ALONG THE SOUTH LINE OF THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 1, A DISTANCE OF 688.30 FEET TO THE SOUTHEAST CORNER OF THE NORTH HALF OF THE SOUTHWEST QUARTER OF SAID SECTION 1; THENCE RUN SOUTH 89°07'52" WEST, ALONG THE SOUTH LINE OF THE NORTH HALF OF THE SOUTHWEST QUARTER OF SAID SECTION 1, A DISTANCE OF 2036.77 FEET TO THE NORTHEAST CORNER OF THE WEST 330.00 FEET OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 1; THENCE DEPARTING SAID SOUTH LINE, RUN SOUTH 01°23'13" WEST, ALONG THE EAST LINE OF THE WEST 330.00 FEET OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 1, A DISTANCE OF 1283.24 FEET TO A POINT LYING ON THE NORTH RIGHT-OF-WAY LINE OF ONDICH ROAD; THENCE RUN SOUTH 89°19'14" WEST, ALONG SAID NORTH RIGHT-OF-WAY LINE, 330.21 FEET TO A POINT LYING ON THE WEST LINE OF THE WEST 330.00 FEET OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 1; THENCE DEPARTING SAID NORTH RIGHT-OF-WAY LINE, RUN NORTH 01°23'13" EAST, ALONG THE WEST LINE OF THE WEST 330.00 FEET OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 1, A DISTANCE OF 1282.15 FEET TO A POINT LYING ON AFORESAID SOUTH LINE OF THE NORTH HALF OF THE SOUTHWEST QUARTER OF SAID SECTION 1; THENCE RUN SOUTH 89°07'52" WEST, ALONG THE SOUTH LINE OF THE NORTH HALF OF THE SOUTHWEST QUARTER OF SAID SECTION 1, A DISTANCE OF 338.14 FEET TO THE SOUTHWEST CORNER OF THE NORTH HALF OF THE SOUTHWEST QUARTER OF SAID SECTION 1; THENCE RUN NORTH 01°29'49" EAST, ALONG THE WEST LINE OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 1, A DISTANCE OF 1311.14 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED TRACT OF LAND LIES IN ORANGE COUNTY, FLORIDA AND CONTAINS 106.341 ACRES MORE OR LESS.



SCALE 1"=200'
200 0 200 400

LOCATION MAP
NOT TO SCALE

LEGAL DESCRIPTION:

PARCEL 1:

THE WEST 330 FEET OF THE EAST 3/4 OF THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 1, TOWNSHIP 20 SOUTH, RANGE 27 EAST, ORANGE COUNTY, FLORIDA, LESS ROAD RIGHT-OF-WAY.

PARCEL 2:

THE NORTHWEST 1/4 OF THE SOUTHEAST 1/4 AND THE NORTH 1/2 OF THE SOUTHWEST 1/4 OF SECTION 1, TOWNSHIP 20 SOUTH, RANGE 27 EAST, ORANGE COUNTY, FLORIDA, LESS THAT CERTAIN PORTION TAKEN FOR RIGHT-OF-WAY BEING FURTHER DESCRIBED IN OFFICIAL RECORDS BOOK 10941, PAGE 4918, OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA.

SURVEYOR'S NOTES:

(1) THIS MAP OF BOUNDARY SURVEY IS NOT VALID UNLESS IT BEARS THE SIGNATURE AND SEAL OF THE FLORIDA LICENSED SURVEYOR AND MAPPER IDENTIFIED BELOW.

(2) BEARINGS SHOWN HEREON ARE RELATIVE TO THE FLORIDA STATE PLANE COORDINATE SYSTEM 1983 EAST ZONE, BASED ON THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 1, TOWNSHIP 20 SOUTH, RANGE 27 EAST, BEING SOUTH 89°19'14" WEST.

(3) THE "LEGAL DESCRIPTION" HEREON HAS BEEN PREPARED BY THE SURVEYOR AT THE CLIENT'S REQUEST.

(4) UNLESS OTHERWISE NOTED OR SHOWN HEREON, APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND IMPROVEMENTS WERE LOCATED. UNDERGROUND IMPROVEMENTS, SUCH AS FOUNDATIONS AND UTILITIES, WERE NOT LOCATED.

(5) THE LANDS SHOWN HEREON LIE IN ZONE "X", DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, PER FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12095C0050H, MAP REVISED: SEPTEMBER 24, 2021.

THE LIMITS OF SAID ZONES ARE GRAPHICALLY DEPICTED HEREON AS NEAR AS MAY BE SCALED FROM SAID MAP.

(6) THE DELINEATION OF LANDS SHOWN HEREON IS AS PER THE CLIENT'S INSTRUCTIONS.

(7) THE CLASSIFICATION USE OF THE LAND, PURSUANT TO THE STANDARDS OF PRACTICE SET FORTH IN RULE CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE, FLORIDA STATUTES 472.027, IS COMMERCIAL/HIGH RISK.
THE MINIMUM RELATIVE DISTANCE ACCURACY OF THIS MAP OF BOUNDARY SURVEY ACHIEVES OR EXCEEDS ONE FOOT IN 10,000 FEET.

(8) UNLESS OTHERWISE NOTED OR SHOWN HEREON, THERE ARE NO APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND ENCROACHMENTS. THE DISPOSITION OF ANY POTENTIAL ENCROACHING IMPROVEMENTS SHOWN IS BEYOND PROFESSIONAL PURVIEW AND SUBJECT TO LEGAL INTERPRETATION.

(9) THE SUBJECT PROPERTY IS OVERGROWN WITH VERY THICK UNDER BRUSH AND, AS SUCH, THE IMPROVEMENTS LOCATED ARE LIMITED TO THE EXTENT THE SURVEYOR BECAME AWARE OF THEM DURING "ON-SITE" FIELD VISITS ASSOCIATED WITH THIS SURVEY.

(10)THE SURVEYED LANDS MAY BE SUBJECT TO JURISDICTIONAL ENTITIES.

(11) SYMBOLS DEPICTED HEREON DO NOT REFLECT ACTUAL SIZE.

(12) THE PROPERTY SHOWN HEREON HAS PHYSICAL ACCESS TO ONDICH ROAD, A PUBLIC RIGHT-OF-WAY.

(13) WE HAVE EXAMINED THE FURNISHED COMMITMENT TO INSURE TITLE, COMMITMENT NO. 2061-5709200, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, EFFECTIVE DATE: NOVEMBER 12, 2021. THOSE INSTRUMENTS INCLUDED IN "SCHEDULE B-II", OF THE COMMITMENT HAVE BEEN EXAMINED AND ARE REFLECTED HEREON TO THE EXTENT THEY AFFECT THE LANDS SURVEYED.

ITEM 9. Easement granted to Florida Power Corporation by instrument recorded in Book 2234, page 208.
EASEMENT NOT PLOTTED HEREON; MAY AFFECT SUBJECT PROPERTY BUT UNABLE TO PLAT DUE TO POTENTIAL ERRORS IN DESCRIPTION.

(14) THE LEGAL DESCRIPTION SHOWN HEREON IS ONE AND THE SAME THAT THE LEGAL DESCRIPTION DESCRIBED IN EXHIBIT A TO THE TITLE COMMITMENT NO. 2061-5709200.

ALTA/NSPS CERTIFICATION: (2021)
TO: WEKIVA LAND VPI, LLC., HILL, WARD & HENDERSON, P.A. AND FIRST AMERICAN TITLE INSURANCE COMPANY.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS AND INCLUDES ITEMS 1, 2, 3, 4, 8, 11(a), 13, AND 19 OF TABLE A THEREOF.

Digitally signed by David A White
Date: 2023.05.15 10:15:49 -04'00'

DAVID A. WHITE, P.S.M.
FLORIDA REGISTRATION NO. 4044
PEC - SURVEYING AND MAPPING, LLC.
CERTIFICATE OF AUTHORIZATION L.B. #7808
DATE OF FIELD SURVEY: 04-20-2022
DATE OF SIGNATURE: 05-12-2022

ALTA/NSPS LAND TITLE SURVEY

DATE	BY	REVISIONS

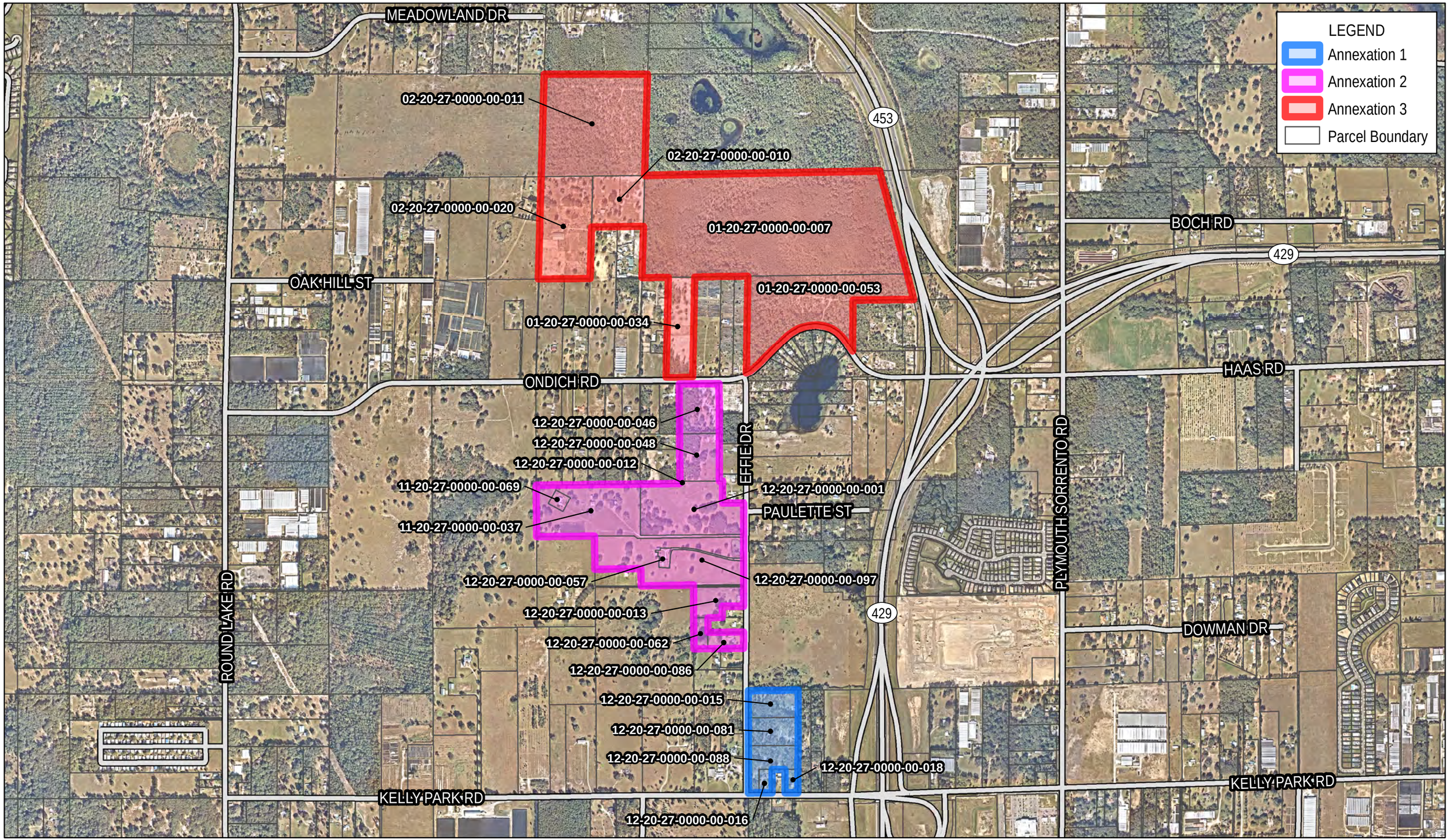
PEC | SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

MAP OF BOUNDARY SURVEY
LOCATED IN
SECTION 1, TOWNSHIP 20 SOUTH, RANGE 27 EAST
ORANGE COUNTY, FLORIDA

DAVID A. WHITE, P.S.M. FL. REG. NO. 4044

JOB NO.:	22-043
DATE:	4-21-2022
DRAWN BY:	J.L.M.
CHECKED BY:	D.A.W
F.B.	FIELD-BOOK
PAGE(S)	PAGES

O:\23-051 Morrison Groves Annexation Surveys\ANNEX-3\22-043-23-051 BOUNDARY SURVEY.dwg May 11, 2023 - 2:21pm



Northwest Apopka Annexation Map

City of Apopka, Florida

DRAFT
June 1, 2023

0 1,000 2,000 Feet

PARCEL ID: 12-20-27-0000-00-088

LEGAL DESCRIPTION (PER FIRST AMERICAN TITLE INSURANCE COMPANY, FILE NO.: 2061-6154286)

The land referred to herein below is situated in the County of ORANGE, State of Florida, and described as follows:

The West 1/2 of the Southeast 1/4 of Southwest 1/4 of Section 12, Township 20 South, Range 27 East, ORANGE County, Florida, LESS the North 699.17 feet, LESS the West 30.00 feet, for road right of way, LESS the South 30.00 feet, for road right of way, ALSO LESS the East 3/4's of the South 1/4 thereof.

WE HAVE EXAMINED THE FURNISHED COMMITMENT TO INSURE TITLE, FILE NO.: 2061-6154286, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, EFFECTIVE DATE: AUGUST 04, 2022. INSTRUMENT 9 INCLUDED IN "SCHEDULE B, SECTION 2", OF THE COMMITMENT HAVE BEEN EXAMINED AND ARE REFLECTED HEREON TO THE EXTENT THEY AFFECT THE LANDS SURVEYED.

(9) Right-of-Way Agreement to County of Orange recorded in Book 1448, Page 23.
AFFECTS, AS SHOWN HEREON.

PARCEL ID: 12-20-27-0000-00-015
PARCEL ID: 12-20-27-0000-00-081

LEGAL DESCRIPTION (PER FIRST AMERICAN TITLE INSURANCE COMPANY, FILE NO.: 2061-6135856)

The land referred to herein below is situated in the County of ORANGE, State of Florida, and described as follows:

Tract 1: The North 349.25 feet of the West 1/2 of the Southeast 1/4 of the Southwest 1/4 of Section 12, Township 20 South, Range 27 East, Orange County, Florida, less the West 30.00 feet thereof for road Right-of-Way.

Tract 2: The South 349.92 feet of the North 699.17 feet of the West 1/2 of the Southeast 1/4 of the Southwest 1/4 of Section 12, Township 20 South, Range 27 East, Orange County, Florida, less the West 30.00 feet thereof for road Right-of-Way.

WE HAVE EXAMINED THE FURNISHED COMMITMENT TO INSURE TITLE, FILE NO.: 2061-6135856, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, EFFECTIVE DATE: JULY 22, 2022. INSTRUMENTS 9-11 INCLUDED IN "SCHEDULE B, SECTION 2", OF THE COMMITMENT HAVE BEEN EXAMINED AND ARE REFLECTED HEREON TO THE EXTENT THEY AFFECT THE LANDS SURVEYED.

(9) Notice of Future Assessment from the Orange County Commissioners to Danny Merritt regarding Effie Drive recorded
04/04/1994 in Book 4721, Page 543. - as to Tract 2
AFFECTS, NOT A SURVEY MATTER.
(10)Distribution Easement granted to Florida Power Corporation recorded 10/26/1999 in Book 5867, Page 3133. - as to Tract 1
AFFECTS, BASED ON FACILITIES.
(11)Distribution Easement granted to Florida Power Corporation recorded 10/26/1994 in Book 4812, Page 3336. - as to Tract 2
AFFECTS, BASED ON FACILITIES.

PARCEL ID: 12-20-27-0000-00-018

LEGAL DESCRIPTION (PER FIRST AMERICAN TITLE INSURANCE COMPANY, FILE NO.: 2061-6107183)

The land referred to herein below is situated in the County of ORANGE, State of Florida, and described as follows:

The East 1/2 of the Southeast 1/4 of the Southwest 1/4 of the Southeast 1/4 of the Southwest 1/4 of Section 12, Township 20 South, Range 27 East, Orange County, Florida.

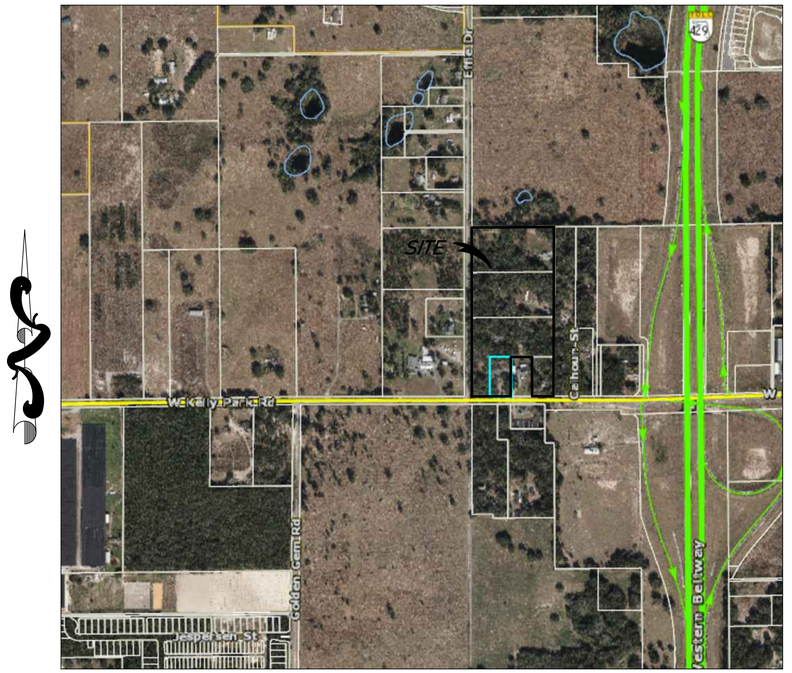
WE HAVE EXAMINED THE FURNISHED COMMITMENT TO INSURE TITLE, FILE NO.: 2061-6107183, PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, EFFECTIVE DATE: JUNE 29, 2022. INSTRUMENTS INCLUDED IN "SCHEDULE B, SECTION 2", OF THE COMMITMENT HAVE BEEN EXAMINED AND ARE NOT SURVEY RELATED.

PARCEL ID: 12-20-27-0000-00-016

LEGAL DESCRIPTION (PER OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY, COMMITMENT NO.: 132396.3)

THE EAST 1/2 OF THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, ORANGE COUNTY, FLORIDA, LESS THE EAST 15 FEET AND LESS ROAD RIGHT-OF-WAY ON THE SOUTH.

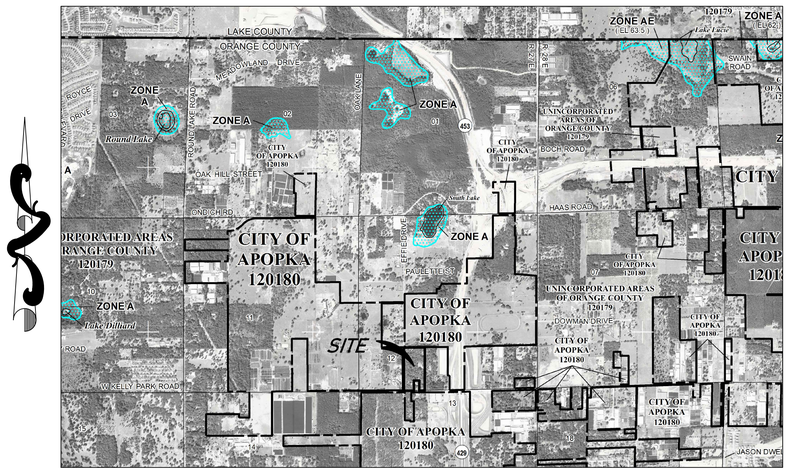
WE HAVE EXAMINED THE FURNISHED COMMITMENT TO INSURE TITLE, COMMITMENT NO.: 132396.3, PREPARED BY OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY, EFFECTIVE DATE: SEPTEMBER 12, 2022. INSTRUMENTS INCLUDED IN "SCHEDULE B, SECTION 2", OF THE COMMITMENT HAVE BEEN EXAMINED AND ARE NOT SURVEY RELATED.



VICINITY MAP
NOT TO SCALE

SHEET LAYOUT:

SHEET 1 ALTA INFORMATION, LEGAL DESCRIPTION PER DEEDS OF RECORD AND SURVEYOR'S NOTES
SHEET 2 BOUNDARY SURVEY AND LEGEND



FIRM MAP 12095C0050H
NOT TO SCALE

LEGAL DESCRIPTION (PER DEEDS OF RECORD)

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE COUNTY OF ORANGE, STATE OF FLORIDA, AND DESCRIBED AS FOLLOWS:

TRACT 1: THE NORTH 349.25 FEET OF THE WEST 1/2 OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, ORANGE COUNTY, FLORIDA, LESS THE WEST 30.00 FEET THEREOF FOR ROAD RIGHT-OF-WAY.

TRACT 2: THE SOUTH 349.92 FEET OF THE NORTH 699.17 FEET OF THE WEST 1/2 OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, ORANGE COUNTY, FLORIDA, LESS THE WEST 30.00 FEET THEREOF FOR ROAD RIGHT-OF-WAY.

TOGETHER WITH:

THE WEST 1/2 OF THE SOUTHEAST 1/4 OF SOUTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, ORANGE COUNTY, FLORIDA, LESS THE NORTH 699.17 FEET, LESS THE WEST 30.00 FEET, FOR ROAD RIGHT OF WAY, LESS THE SOUTH 30.00 FEET, FOR ROAD RIGHT OF WAY, ALSO LESS THE EAST 3/4'S OF THE SOUTH 1/4 THEREOF.

TOGETHER WITH:

THE EAST 1/2 OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, ORANGE COUNTY, FLORIDA.

TOGETHER WITH:

THE EAST 1/2 OF THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, LESS THE EAST 15 FEET AND LESS ROAD RIGHT-OF-WAY ON THE SOUTH, ORANGE COUNTY, FLORIDA.

THE ABOVE DESCRIBED TRACTS OF LAND LIE IN THE CITY OF APOPKA, ORANGE COUNTY, FLORIDA AND CONTAIN 17.922 ACRES MORE OR LESS

SURVEYOR'S NOTES:

(1) THIS MAP OF BOUNDARY SURVEY IS NOT VALID UNLESS IT BEARS THE SIGNATURE AND SEAL OF THE FLORIDA LICENSED SURVEYOR AND MAPPER IDENTIFIED BELOW.
(2) BEARINGS SHOWN HEREON ARE BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, NAD83 ZONE EAST, RELATIVE TO THE CALCULATED RIGHT-OF-WAY LINE OF EFFIE DRIVE, BEING NORTH 00°02'47" WEST.
(3) THE LEGAL DESCRIPTION HEREON IS IN ACCORD WITH THE INSTRUMENT OF RECORD FURNISHED BY THE CLIENT.
(4) UNLESS OTHERWISE NOTED OR SHOWN HEREON, APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND PERIMETER IMPROVEMENTS WERE NOT LOCATED. UNDERGROUND IMPROVEMENTS, SUCH AS FOUNDATIONS AND UTILITIES, WERE NOT LOCATED.
(5) THE LANDS SHOWN HEREON LIE IN ZONE "X", DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, PER FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER: 12095C0050H, MAP REVISED: SEPTEMBER 24, 2021.
(6) THE DELINEATION OF LANDS SHOWN HEREON IS AS PER THE CLIENT'S INSTRUCTIONS.
(7) THE CLASSIFICATION USE OF THE LAND, PURSUANT TO THE STANDARDS OF PRACTICE SET FORTH IN RULE CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE, FLORIDA STATUTES 472.027, IS RESIDENTIAL. THE MINIMUM RELATIVE DISTANCE ACCURACY OF THIS MAP OF BOUNDARY SURVEY ACHIEVES OR EXCEEDS ONE FOOT IN 10,000 FEET.
(8) ATTENTION IS DIRECTED TO THE FACT THAT THIS MAP MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.
(9) SYMBOLS DEPICTED HEREON DO NOT REFLECT ACTUAL SIZE.
(10) NO ZONING REPORT OR LETTER HAS BEEN PROVIDED TO THIS FIRM.

ALTA/NSPS CERTIFICATION: (2021)
TO: MORRISON GROVES
FIRST AMERICAN TITLE INSURANCE COMPANY
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY
HILL WARD & HENDERSON, P.A.
WEKIVA LAND VPI, LLC, A FLORIDA LIMITED LIABILITY COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS AND INCLUDES ITEMS 1, 2, 3, 4, 13, AND 19 OF TABLE A THEREOF.

DAVID A. WHITE, P.S.M.
FLORIDA REGISTRATION NO. 4044
PEC - SURVEYING AND MAPPING, LLC.
CERTIFICATE OF AUTHORIZATION L.B. #7808
DATE OF FIELD SURVEY: 10-06-2022
DATE OF SIGNATURE: 10-11-2022

Digitally signed by David A White
Date: 2023.05.15 10:18:29 -04'00'

NOT VALID WITHOUT SHEETS 1 THROUGH 2

ALTA/NSPS LAND TITLE SURVEY

DATE	BY	REVISIONS

PEC | SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

MAP OF BOUNDARY SURVEY
LOCATED IN
SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST
ORANGE COUNTY, FLORIDA

SHEET 1 OF 2

JOB NO.:	22-087-23-051
DATE:	10-07-2022
DRAWN BY:	R.J.G.
CHECKED BY:	D.A.W
F.B.	2452
PAGE(S)	13-22

C:\23-051 Morrison Groves Annexation Surveys\ANNEX-1\22-087-23-051 ANNEX-1-C3D.dwg May 11, 2023 - 1:16pm

LEGEND:

ID.....IDENTIFICATION
LB.....LICENSED BUSINESS
NO.....NUMBER
RLS.....REGISTERED LAND SURVEYOR
R/W.....RIGHT-OF-WAY
SEC.....SECTION-TOWNSHIP-RANGE
(C).....CALCULATED
(D).....DEED
(M).....MEASURED
CB .....CABLE TELEVISION BOX
E .....ELECTRIC WIRE PULL BOX
.....FIBER OPTIC MARKER
.....GUY ANCHOR
.....LIGHT POLE
MAIL BOX .....MAIL BOX
.....REFLECTOR
VLVS .....SEWER VALVE
T .....TELEPHONE BOX
.....TRAFFIC SIGN
WM .....WATER METER
W .....WATER VALVE
.....WOOD POWER POLE
.....WOOD POWER POLE WITH LIGHT
OHUL .....OVERHEAD UTILITY LINE
ST .....UNDERGROUND STORM PIPE

SCALE 1"=50'
50 0 50 100

SW CORNER OF THE SE 1/4 OF THE SW 1/4 SEC 12-20-27
30' R/W AGREEMENT ORB 1448, PAGE 23
30.00
SET 5/8" IRON ROD & CAP LB 7808
LANDSCAPE AREA
CONCRETE DRIVE
LANDSCAPE AREA
TOP OF BANK
EFFIE DRIVE
60' R/W(D)
ASPHALT ROADWAY
W LINE OF W 1/2, SE 1/4, SW 1/4 SEC 12-20-27
N0°02'47"W ~~1308.26'(C)~~
FOUND ROUND CONCRETE MONUMENT WITH DISK (ILLEGIBLE)
4" METAL POST WITH ROPE FENCE
TOP OF BANK
18" CORRUGATED METAL PIPE
ASPHALT DRIVE
349.92'(M)
30' R/W AGREEMENT ORB 1448, PAGE 23
FOUND ROUND CONCRETE MONUMENT WITH DISK (ILLEGIBLE)
4" METAL POST WITH ROPE FENCE
30' R/W AGREEMENT ORB 1448, PAGE 23
349.25'(M)
18" CORRUGATED METAL PIPE
TOP OF BANK
ASPHALT DRIVE
TOP OF BANK
FOUND 1/2" IRON ROD & CAP LB 2108
R/W LINE
4" BARBED WIRE FENCE
4" BARBED WIRE FENCE
4" BARBED WIRE FENCE

W 1/2 OF THE SW 1/4 OF THE SW 1/4 OF THE SE 1/4 OF THE SW 1/4 OF SEC 12-20-27

N0°0'20"E 304.77'(M)
W LINE EAST 1/2, SW 1/4, SW 1/4, SE 1/4, SW 1/4 SEC 12-20-27
FOUND 4"X4" CONCRETE MONUMENT RLS 2510
FOUND 4"X4" CONCRETE MONUMENT NO ID
N LINE SW 1/4, SE 1/4, SW 1/4 SEC 12-20-27
165.80'(M)
S89°48'43"W

PARCEL ID: 12-20-27-0000-00-016
ADDRESS: 3611 W KELLY PARK ROAD
APOPKA, FL 32712
AREA: 1.159 ± ACRES

PARCEL ID: 12-20-27-0000-00-088
ADDRESS: 5103 EFFIE DRIVE
APOPKA, FL 32712
AREA: 5.400 ± ACRES

NORTH 699.17' OF WEST 1/2, SE 1/4, SW 1/4 SEC 12-20-27

TRACT 2
PARCEL ID: 12-20-27-0000-00-081
ADDRESS: 5107 EFFIE DRIVE
APOPKA, FL 32712
AREA: 5.101 ± ACRES

TRACT 1
PARCEL ID: 12-20-27-0000-00-015
ADDRESS: 5173 EFFIE DRIVE
APOPKA, FL 32712
AREA: 5.101 ± ACRES

WEST KELLY PARK ROAD
AKA MARSHALL ASPHALT ROADWAY

S89°53'56"W 300.97(C)

CONCRETE DRIVE
OWNER:
SCHONBAK MARC A, ET AL
(INTERIOR IMPROVEMENTS WERE NOT LOCATED)

E 1/2 OF THE SW 1/4 OF THE SW 1/4 OF THE SE 1/4 OF THE SW 1/4 OF SEC 12-20-27

FOUND 1" IRON PIPE NO ID (0.23' S, 0.55' W)
FOUND 5/8" IRON ROD & CAP (ILLEGIBLE)
E LINE EAST 1/2, SW 1/4, SW 1/4, SE 1/4, SW 1/4 SEC 12-20-27
S0°04'22"W 305.02'(C)

CONCRETE DRIVE
OWNER:
LEHEUP JACK LIFE ESTATE, ET AL
NOT PLATTED

W 1/2 OF THE SE 1/4 OF THE SW 1/4 OF THE SE 1/4 OF THE SW 1/4 OF SEC 12-20-27

S89°48'43"W 165.80'(C)

N0°06'32"E 305.28'(C)
W LINE EAST 1/2, SE 1/4, SW 1/4, SE 1/4, SW 1/4 SEC 12-20-27
SET 5/8" IRON ROD & CAP LB 7808
FOUND 4"X4" CONCRETE MONUMENT NO ID (0.46' S, 0.06' W)

PARCEL ID: 12-20-27-0000-00-018
ADDRESS: 3595 W KELLY PARK ROAD
APOPKA, FL 32712
AREA: 1.161 ± ACRES

OWNER:
MAYO ROBERT A, ET AL
(INTERIOR IMPROVEMENTS WERE NOT LOCATED)

S89°53'56"W 165.53'(C)

E 1/2 OF THE SE 1/4 OF THE SW 1/4 OF THE SE 1/4 OF THE SW 1/4 OF SEC 12-20-27

ASPHALT DRIVE
4' WOOD FENCE
4' HOG WIRE FENCE
FOUND 4"X4" CONCRETE MONUMENT NO ID (0.62' S, 1.23' W)
30.00
SET 5/8" IRON ROD & CAP LB 7808 FENCE IS 0.8' E
R/W LINE

S LINE OF W 1/2, SE 1/4, SW 1/4 SEC 12-20-27

OWNER:
THOMAS LARRY, ET AL

N 1/2 OF THE S 1/2 OF THE WEST 1/2 OF THE SE 1/4 OF THE SW 1/4 SEC 12-20-27

TOTAL AREA: 17.922 ± ACRES

(INTERIOR IMPROVEMENTS WERE NOT LOCATED)

N89°33'13"E 634.33'(C)
N LINE OF S 1/2, W 1/2, SE 1/4, SW 1/4 SEC 12-20-27

OWNER:
MERRITT DANNY M
(INTERIOR IMPROVEMENTS WERE NOT LOCATED)

N 1/2 OF THE WEST 1/2 OF THE SE 1/4 OF THE SW 1/4 SEC 12-20-27

OWNER:
MERRITT DANNY M
(INTERIOR IMPROVEMENTS WERE NOT LOCATED)

N LINE OF W 1/2, SE 1/4, SW 1/4 SEC 12-20-27
N89°33'13"E 636.86'(C)

OWNER:
ORLANDO HEALTH INC
NOT PLATTED

349.92
349.25

FOUND ROUND CONCRETE MONUMENT WITH DISK (ILLEGIBLE) (1.05' S, 0.18' W)
10' DIRT/GRAVEL ROAD
349.92'(C)
10' DIRT/GRAVEL ROAD
349.25'(C)
FOUND 1-1/2" IRON PIPE NO ID (0.94' S, 0.08' E)
4' BARBED WIRE FENCE
4' HOG WIRE FENCE
4' HOG WIRE FENCE
GATE
4' HOG WIRE FENCE
SET 5/8" IRON ROD & CAP LB 7808 FENCE IS 0.2' N, 3.3' E

E LINE WEST 1/2, SE 1/4, SW 1/4 SEC 12-20-27
S0°09'38"W 1312.11'(C)

OWNER:
HAYES KAREN K
NOT PLATTED

NOT VALID WITHOUT SHEETS 1 THROUGH 2

ALTA/NSPS LAND TITLE SURVEY

DATE	BY	REVISIONS

PEC | SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

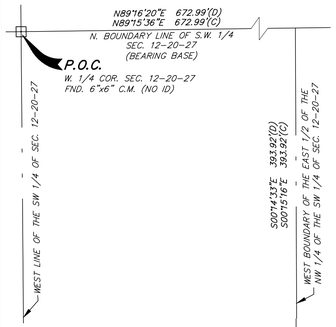
MAP OF BOUNDARY SURVEY

LOCATED IN
SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST
ORANGE COUNTY, FLORIDA

SHEET 2 OF 2

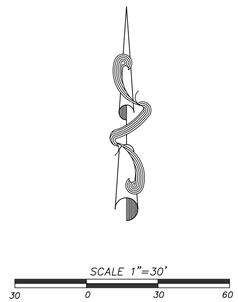
JOB NO.:	22-087-23-051
DATE:	10-07-2022
DRAWN BY:	R.J.G.
CHECKED BY:	D.A.W
F.B.	2452
PAGE(S)	13-22

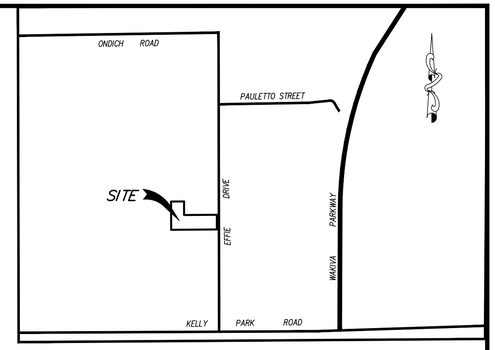
C:\23-051 Morrison Groves Annexation Surveys\ANNEX-1\22-087-23-051 ANNEX-1-C3D.dwg May 11, 2023 - 1:22pm



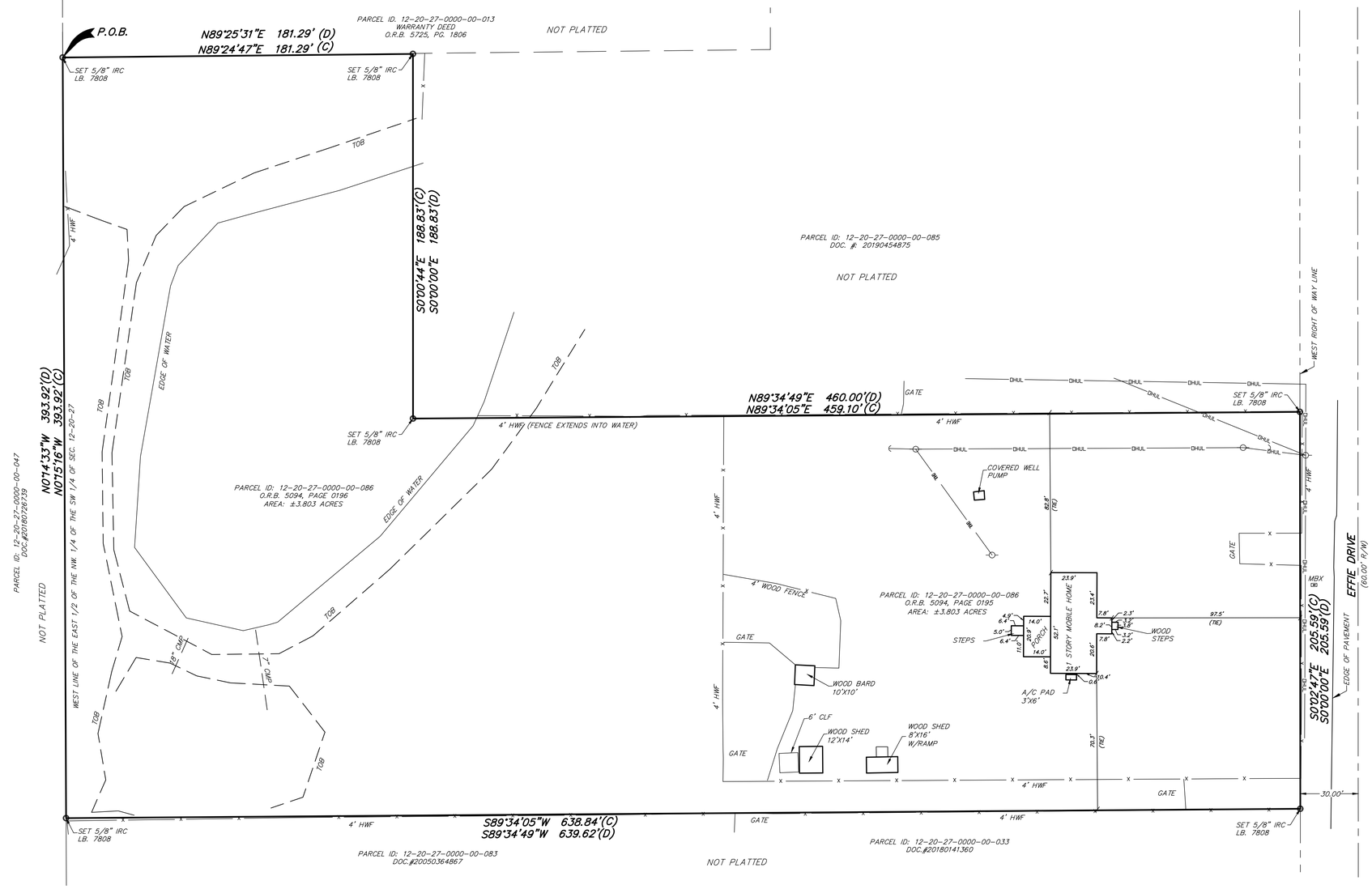
LEGEND

A/C	AIR CONDITIONER
CLF	CHAIN LINK FENCE
CM	CONCRETE MONUMENT
CMP	CORRIGATED METAL PIPE
DOC.	DOCUMENT
FND.	FOUND
ID	IDENTIFICATION
HWF	HOG WIRE FENCE
O.R.B.	OFFICIAL RECORD BOOK
P.O.B.	POINT OF BEGINNING
P.O.C.	POINT OF COMMENCEMENT
R/W	RIGHT-OF-WAY
TOB	TOP OF BANK
(C)	CALCULATED
(D)	DEED
▪	6"x6" CONCRETE MONUMENT
○	SET 5/8" IRON ROD AND CAP LB. 7808
MB	MAIL BOX (MBX)
○-	UTILITY POLE
DHUL	OVERHEAD UTILITY LINE





LOCATION MAP
NOT TO SCALE



LEGAL DESCRIPTION:

(PARCEL 12-20-27-0000-00-086)
A PORTION OF THE EAST 1/2 OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, ORANGE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE WEST 1/4 CORNER OF SAID SECTION 12, THENCE NORTH 89°16'20" EAST, ALONG THE NORTH BOUNDARY LINE OF THE SOUTHWEST 1/4 OF SAID SECTION 12, 672.99 FEET; THENCE SOUTH 00°14'33" EAST, ALONG THE WEST BOUNDARY LINE OF SAID EAST 1/2 OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4, 393.92 FEET TO THE POINT OF BEGINNING; THENCE NORTH 89°25'31" EAST, 181.29 FEET; THENCE SOUTH 00°00'00" EAST, 188.83 FEET; THENCE NORTH 89°34'49" EAST, 460.00 FEET TO THE WEST RIGHT OF WAY LINE OF EFFIE DRIVE; THENCE SOUTH 00°00'00" EAST, ALONG SAID WEST RIGHT OF WAY LINE, 205.59 FEET; THENCE DEPARTING SAID WEST RIGHT OF WAY LINE, RUN SOUTH 89°34'49" EAST, 639.62 FEET TO THE WEST BOUNDARY LINE OF SAID EAST 1/2 OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 12; THENCE NORTH 00°14'33" WEST, 393.92 FEET ALONG SAID WEST BOUNDARY LINE TO THE POINT OF BEGINNING.

CONTAINING APPROXIMATELY 3.803 ACRES MORE OR LESS.

SURVEYOR'S NOTES:

(1) THIS MAP OF BOUNDARY SURVEY IS NOT VALID UNLESS IT BEARS THE SIGNATURE AND SEAL OF THE FLORIDA LICENSED SURVEYOR AND MAPPER IDENTIFIED BELOW.

THIS LEGAL DESCRIPTION IS NOT VALID IF PRINTED, OR WITHOUT THE ORIGINAL SIGNATURE AND RAISED SEAL OF THE PROFESSIONAL SURVEYOR AND MAPPER SHOWN HEREON.

(2) NO ABSTRACT FOR RIGHTS-OF-WAY, EASEMENTS, OWNERSHIP OR OTHER INSTRUMENTS OF RECORD HAVE BEEN PROVIDED TO THIS FIRM.

(3) BEARINGS SHOWN HEREON ARE RELATIVE TO THE FLORIDA STATE PLANE SYSTEM 1983, EAST ZONE, BASED ON THE NORTH LINE OF THE SOUTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, BEING NORTH 89°15'36" EAST.

(4) UNLESS OTHERWISE NOTED OR SHOWN HEREON, APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND IMPROVEMENTS WERE LOCATED. UNDERGROUND IMPROVEMENTS, SUCH AS FOUNDATIONS AND UTILITIES, WERE NOT LOCATED.

(5) THE DELINEATION OF LANDS SHOWN HEREON IS AS PER THE CLIENT'S INSTRUCTIONS.

(6) ATTENTION IS DIRECTED TO THE FACT THAT THIS MAP MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

(7) SYMBOLS DEPICTED HEREON DO NOT REFLECT ACTUAL SIZE.

(8) THE LANDS SHOWN HEREON LIE IN ZONE X (UNSHADED), FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12095C0050H, DATED SEPTEMBER 24, 2021:

(9) THE ABOVE STATEMENT IS FOR INFORMATION ONLY AND WE ASSUME NO LIABILITY FOR THE CORRECTNESS OF THE CITED MAP(S). IN ADDITION, THE ABOVE STATEMENT DOES NOT REPRESENT THE SURVEYOR'S OPINION OF THE PROBABILITY OF FLOODING.

(10) ADJOINING PARCEL OWNER AND RECORDING INFORMATION DELINEATED HEREON WAS OBTAINED FROM THE ORANGE COUNTY PROPERTY APPRAISER'S PUBLIC ACCESS SYSTEM.

(11) THE CLASSIFICATION USE OF THE LAND, PURSUANT TO THE STANDARDS OF PRACTICE SET FORTH IN RULE CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE, FLORIDA STATUTES 472.027, IS COMMERCIAL/HIGH RISK.
THE MINIMUM RELATIVE DISTANCE ACCURACY OF THIS MAP OF BOUNDARY SURVEY ACHIEVES OR EXCEEDS ONE FOOT IN 10,000 FEET.

ALTA/NSPS CERTIFICATION: (2021)
TO:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS OF TABLE "A" THEREOF. THE FIELD WORK WAS COMPLETED ON MARCH 14, 2023.

Digitally signed by David A White
Date: 2023.05.15 10:19:41 -04'00'

DAVID A. WHITE, P.S.M.
FLORIDA REGISTRATION NO. 4044
PEC — SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NO.: LB 7808
DATE OF SIGNATURE:

DATE	BY	REVISIONS

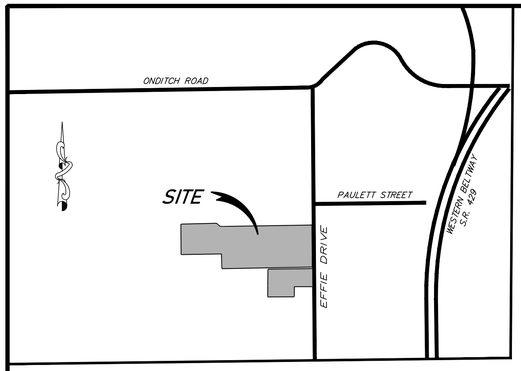
PEC | SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

ALTA/NSPS LAND TITLE SURVEY
MAP OF BOUNDARY SURVEY
LOCATED IN
SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST
ORANGE COUNTY, FLORIDA

SHEET 1 OF 1

JOB NO.:	23-030
DATE:	04-10-2023
DRAWN BY:	R.M.
CHECKED BY:	D.A.W
F.B.	2468
PAGE(S)	52-58

G:\23-051 Morrison Groves Annexation Surveys\ANNEX-2\23-030-23-051 BNDRY-C3D.dwg May 11, 2023 - 2:12pm

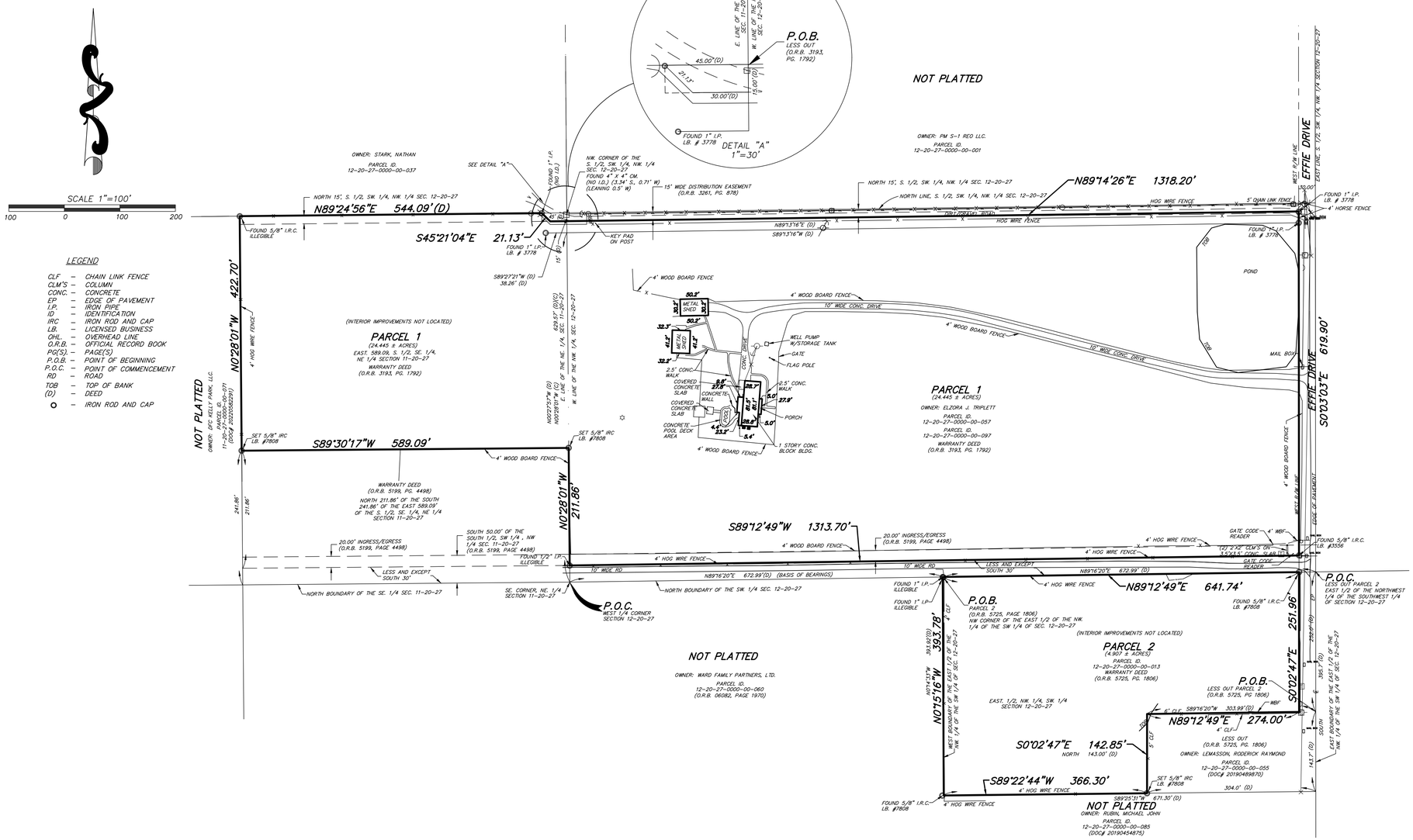


LOCATION MAP
NOT TO SCALE

SCALE 1"=100'
100 0 100 200

LEGEND

CLF	–	CHAIN LINK FENCE
CLM'S	–	COLUMN
CONC.	–	CONCRETE
EP	–	EDGE OF PAVEMENT
I.P.	–	IRON PIPE
ID	–	IDENTIFICATION
IRC	–	IRON ROD AND CAP
LB.	–	LICENSED BUSINESS
OHL	–	OVERHEAD LINE
O.R.B.	–	OFFICIAL RECORD BOOK
PG(S).	–	PAGE(S)
P.O.B.	–	POINT OF BEGINNING
P.O.C.	–	POINT OF COMMENCEMENT
RD	–	ROAD
TOB	–	TOP OF BANK
(D)	–	DEED
O	–	IRON ROD AND CAP



PARCEL 1
LEGAL DESCRIPTION:
(PER FIRST AMERICAN TITLE INSURANCE COMPANY'S TITLE COMMITMENT NO. 2061-6215648, EFFECTIVE DATE OCTOBER 4, 2022)

THE SOUTH 1/2 OF THE SOUTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTIONS 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST. LESS THE NORTH 15 FEET THEREOF, AND LESS THE SOUTH 30 FEET THEREOF AND SUBJECT TO RIGHT-OF-WAY OVER THE EAST 30 FEET THEREOF FOR EFFIE ROAD.

AND,

THE EAST 589.09 FEET OF THE SOUTH 1/2 OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTIONS 11, TOWNSHIP 20 SOUTH, RANGE 27 EAST, LESS AND EXCEPT THE SOUTH 30 FEET THEREOF, AND LESS AND EXCEPT FROM A POINT BEGINNING AT THE NORTHEAST CORNER THEREOF, RUN SOUTH ALONG THE EAST SECTION LINE A DISTANCE OF 15 FEET, RUN THENCE WEST PARALLEL TO THE NORTH LINE THEREOF A DISTANCE OF 30 FEET, RUN THENCE NORTHWEST TO A POINT ON THE NORTH LINE THEREOF, 45 FEET WEST OF THE POINT OF BEGINNING, AND RUN THENCE EAST ALONG THE NORTH LINE THEREOF A DISTANCE OF 45 FEET TO THE POINT OF BEGINNING.

LESS AND EXCEPT THAT PORTION CONVEYED BY WARRANTY DEED RECORDED IN BOOK 5199, PAGE 4498, OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA.

LEGAL DESCRIPTION: O.R.B. 5199/4498

THE NORTH 211.86 FEET OF THE SOUTH 241.86 FEET OF THE EAST 589.09 FEET OF THE SOUTH 1/2 OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SECTION 11, TOWNSHIP 20 SOUTH, RANGE 27 EAST IN ORANGE COUNTY, FLORIDA. TOGETHER WITH AN EASEMENT FOR INGRESS AND EGRESS AND UTILITIES OVER, UPON AND THROUGH THE FOLLOWING DESCRIBED PARCEL OF LAND: THE NORTH 20 FEET OF THE SOUTH 50 FEET OF THE SOUTH 1/2 OF THE SOUTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST IN ORANGE COUNTY, FLORIDA. LESS RIGHT-OF-WAY FOR EFFIE ROAD. SUBJECT TO ALL EASEMENTS, RIGHT-OF-WAY AND RESTRICTION OF RECORD, IF ANY.

PARCEL 2
LEGAL DESCRIPTION: (PER FIRST AMERICAN TITLE INSURANCE COMPANY'S TITLE COMMITMENT NO. 7223-6357962, EFFECTIVE DATE MARCH 8, 2023.)

A PORTION OF THE EAST 1/2 OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST; BEING MORE PARTICULARLY DESCRIBED AS COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 12, THENCE NORTH 89° 16'20" EAST ALONG THE NORTH BOUNDARY OF THE SOUTHWEST 1/4 OF SAID SECTION 12, 672.99 FEET TO THE NORTHWEST CORNER OF THE EAST 1/2 OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 AND TO THE POINT OF BEGINNING OF THE TRACT DESCRIBED HEREIN; THENCE CONTINUE NORTH 89° 16'20" EAST 672.99 FEET TO THE NORTHEAST CORNER OF THE EAST 1/2 OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SAID SECTION 12, THENCE SOUTH ALONG THE EAST BOUNDARY OF THE EAST 1/2 OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, AND ALONG THE CENTER LINE OF EFFIE DRIVE A DISTANCE OF 395.73 FEET; THENCE SOUTH 89° 25'31" WEST 671.30 FEET TO A POINT ON THE WEST BOUNDARY OF THE AFORESAID EAST 1/2 OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4; THENCE NORTH 00° 14'33" WEST ALONG SAID BOUNDARY 393.92 FEET TO THE POINT OF BEGINNING.

LESS: THE EAST 30 FEET FOR ROAD RIGHT-OF-WAY;

AND ALSO LESS:

A PORTION OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST; BEING MORE PARTICULARLY DESCRIBED AS COMMENCING AT THE NORTHEAST CORNER OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SAID SECTION 12, THENCE SOUTH ALONG THE EAST BOUNDARY OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SAID SECTION 12 AND ALONG THE CENTERLINE OF EFFIE DRIVE A DISTANCE OF 252.00 FEET TO THE POINT OF BEGINNING OF THE TRACT DESCRIBED HEREIN; THENCE CONTINUE SOUTH ALONG SAID LINE A DISTANCE OF 143.73 FEET, THENCE SOUTH 89° 25'31" WEST A DISTANCE OF 303.99 FEET, THENCE NORTH PARALLEL WITH THE SAID EAST BOUNDARY OF THE NORTHWEST 1/4 A DISTANCE OF 143.00 FEET, THENCE NORTH 89° 16'20" EAST PARALLEL WITH THE NORTH BOUNDARY OF THE SOUTHWEST 1/4 OF SECTION 12 A DISTANCE OF 303.99 FEET TO THE POINT OF BEGINNING, ORANGE COUNTY, FLORIDA.

SURVEYOR'S NOTES:

(1) THIS MAP OF BOUNDARY SURVEY IS NOT VALID UNLESS IT BEARS THE SIGNATURE AND SEAL OF THE FLORIDA LICENSED SURVEYOR AND MAPPER IDENTIFIED BELOW.

(2) NO ABSTRACT FOR RIGHTS-OF-WAY, EASEMENTS, OWNERSHIP OR OTHER INSTRUMENTS OF RECORD HAVE BEEN PROVIDED TO THIS FIRM.

(3) BEARINGS SHOWN HEREON ARE ASSUMED RELATIVE TO THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, BEING NORTH 89°16'20" EAST.

(4) THE "LEGAL DESCRIPTION" HEREON IS IN ACCORD WITH THE DESCRIPTION FURNISHED BY THE CLIENT.

(5) UNLESS OTHERWISE NOTED OR SHOWN HEREON, APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND PERIMETER IMPROVEMENTS WERE LOCATED. UNDERGROUND IMPROVEMENTS, SUCH AS FOUNDATIONS AND UTILITIES, WERE NOT LOCATED.

(7) THE LANDS SHOWN HEREON LIE IN ZONE "X", DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, PER FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER: 12095C0050H, MAP REVISED: SEPTEMBER 24, 2021.

(8) THE CLASSIFICATION USE OF THE LAND, PURSUANT TO THE STANDARDS OF PRACTICE SET FORTH IN RULE CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE, FLORIDA STATUTES 472.027, IS COMMERCIAL/HIGH RISK. THE MINIMUM RELATIVE DISTANCE ACCURACY OF THIS MAP OF BOUNDARY SURVEY ACHIEVES OR EXCEEDS ONE FOOT IN 10,000 FEET.

(9) ADJOINING PARCEL OWNER AND RECORDING INFORMATION DELINEATED HEREON WAS OBTAINED FROM THE ORANGE COUNTY PROPERTY APPRAISER'S PUBLIC ACCESS SYSTEM.

(10) ATTENTION IS DIRECTED TO THE FACT THAT THIS MAP MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

(11) SYMBOLS DEPICTED HEREON DO NOT REFLECT ACTUAL SIZE.

SURVEYOR'S NOTES RELATING TO TITLE EXCEPTIONS IN SCHEDULE BII OF FIRST AMERICAN TITLE INSURANCE COMPANY'S TITLE COMMITMENT NO. 7223-6357962, EFFECTIVE DATE MARCH 8, 2023.

9. RESERVATIONS UNTO THE STATE OF FLORIDA FOR OIL, GAS AND MINERALS AND 200 FOOT STATE ROAD RIGHT OF WAY AS CONTAINED IN DEED RECORDED IN DEED BOOK 678, PAGE 40. NOTE: THE RIGHT OF ENTRY AND EXPLORATION HAS BEEN RELEASED PURSUANT TO 5270.11, F.S.
AFFECTS SUBJECT PROPERTY, BUT IS BLANKET IN NATURE AND NOT PLOTTABLE.

10. EASEMENT GRANTED TO FLORIDA POWER CORPORATION BY INSTRUMENT RECORDED IN BOOK 1857, PAGE 974.
DOES NOT AFFECT SUBJECT PROPERTY, FALLS IN RIGHT OF WAY.

SURVEYOR'S NOTES RELATING TO TITLE EXCEPTIONS IN SCHEDULE BII OF FIRST AMERICAN TITLE INSURANCE COMPANY'S TITLE COMMITMENT NO. 2061-6215648, EFFECTIVE DATE OCTOBER 4, 2022..

9. EASEMENT GRANTED TO FLORIDA POWER CORPORATION, A FLORIDA CORPORATION BY INSTRUMENT RECORDED IN BOOK 3255, PAGE 1830.
AFFECTS SUBJECT PROPERTY, AS PLOTTED AND SHOWN HEREON.

10. EASEMENT FOR INGRESS, EGRESS AND UTILITIES GRANTED TO MICHAEL R. HULLINGER AND SHARON J. HULLINGER, HIS WIFE BY INSTRUMENT RECORDED IN BOOK 5199, PAGE 4498.
AFFECTS SUBJECT PROPERTY, AS PLOTTED AND SHOWN HEREON.

ALTA/NSPS CERTIFICATION: (2021)
TO: ELZORA J TRIPLETT, JEAN M. BATES; WEKIVA LAND VPI, LLC, A LIMITED FLORIDA LIABILITY COMPANY; FIRST AMERICAN TITLE INSURANCE COMPANY; HILL, WARD & HENDERSON, P.A.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS OF TABLE "A" THEREOF. THE FIELD WORK WAS COMPLETED ON APRIL 11, 2023.

DAVID A. WHITE, P.S.M. FLORIDA REGISTRATION NO. 4044 PEC - SURVEYING AND MAPPING, LLC CERTIFICATE OF AUTHORIZATION LB 7808

Digitally signed by David A White
Date: 2023.05.15 10:19:02 -04'00'

DAVID A. WHITE, P.S.M.
FLORIDA REGISTRATION NO. 4044
PEC - SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NO.: LB 7808
DATE OF SURVEY:

DATE	BY	REVISIONS
4-26-2023	RM	ADDED DETAILS (FIELD DATE: 4-11-2023) AND REVISED SURVEY PER TITLE COMMITMENTS

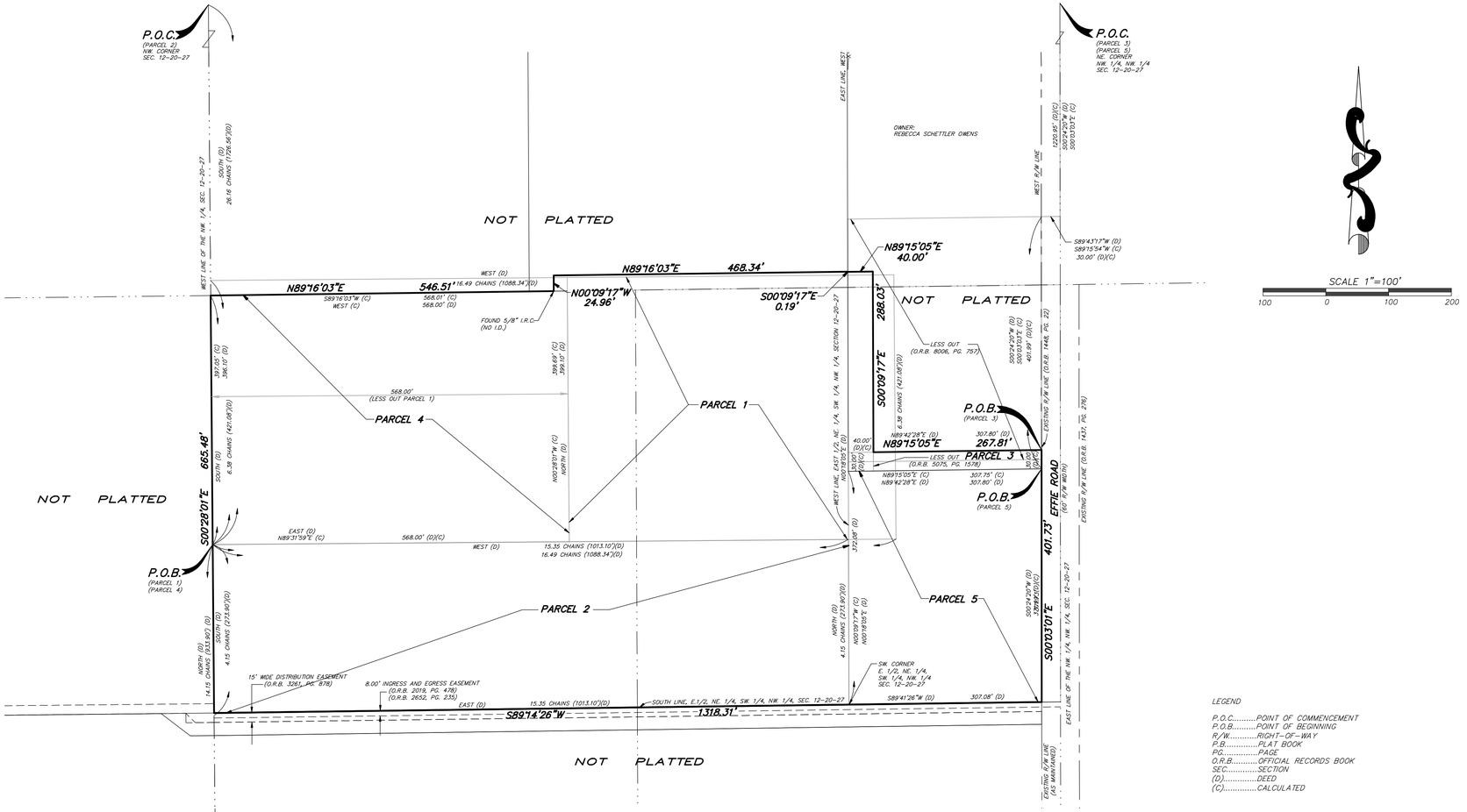
PEC | SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

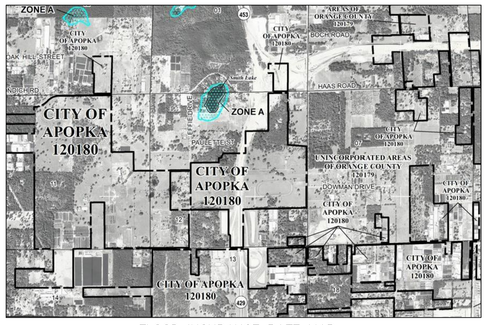
ALTA/NSPS LAND TITLE SURVEY
MAP OF BOUNDARY SURVEY
LOCATED IN
SECTION 11 AND 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST
ORANGE COUNTY, FLORIDA

(SHEET 1 OF 1)

JOB NO.:	22-115
DATE:	12-08-2022
DRAWN BY:	R.M.
CHECKED BY:	D.A.W
F.B.	2456
PAGE(S)	45-54

O:\23-051 Morrison Groves Annexation Surveys\ANNEX-2\22-115-23-051 TRIPLETT-ALTA C3D.dwg May 11, 2023 - 1:46pm





FLOOD INSURANCE RATE MAP
COMMUNITY PANEL NO. 12095C0050H

SCALE 1"=100'
100 0 100 200

LEGEND

P.O.C.....POINT OF COMMENCEMENT
P.O.B.....POINT OF BEGINNING
R/W.....RIGHT-OF-WAY
P.B.....PLAT BOOK
PG.....PAGE
O.R.B.....OFFICIAL RECORDS BOOK
SEC.....SECTION
(D).....DEED
(C).....CALCULATED

Parcel11626 (Johnson):

PARCEL NO. 1:

Beginning at a point 14.15 Chains North of Quarter Section Post on West boundary of Section12, Township 20 South, Range 27 East, running East 16.49 Chains, North 6.38 Chains, West 16.49 Chains, South 6.38 Chains, Less 568.00 feet on the West End, Orange County, Florida.

Less that portion as described in O.R. Book 8006, Page 757, of the public records of Orange County, Florida.

and

Less that portion of Parcel 3 and that portion of Parcel 5 as described in O.R. Book 5075, Page 1578, of the public records of Orange County, Florida.

PARCEL NO. 2:

Beginning 26.16 chains South of Northwest corner, run South 4.15 chains, East 15.35 chains, North 4.15 chains, West 15.35 chains, Section 12, Township 20 South, Range 27 East, Orange County, Florida.

Together with an easement for the purposes of ingress and egress and transporting grove care equipment and machinery, over the North 8.00 feet of land conveyed to Bill 3. Osborne by Warranty Deed from Nancy E. New, recorded January 5, 1971 in Official Records Book 2019, Page 478, of the Public Records of Orange County, Florida, said easement beginning on the East at Effie Road and running Westerly to the Section Line, in accordance with the Final Judgment dated October 10, 1975 and filed October 13, 1975 in Official Records Book 2652, Page 235, of the Public Records of Orange County, Florida, in Civil Action No. CI 754645, in the Circuit Court of the Ninth Judicial Court in and fo rOrange County, Florida, wherein Garrett I. Gilliam and Annie D. Gilliam, his wife, were plaintiffs and Billy J. Osborne and Harry Smith,et al, were defendants.

PARCEL NO. 3:

From the Northeast corner of the Northwest 1/4 of the Northwest 1/4 of Section 12, Township 20 South, Range 27 East, Orange County, Florida, run South 00° 24' 20" West, along the East line of said Northwest 1/4 of the Northwest 1/4 of Section 12 ,a distance of 1220.95 feet; thence South 89° 43' 17" West, 30.00 feet to a point on the West Right of Way line of Effie Road; thence run South 00° 24'20" West, along said Right of Way line 371.99 feet to the Point of Beginning; thence continue South 00° 24'20" West, along said Right of Way line 30.00 feet; thence run South 89° 42' 28" West, 307.80 feet more or less, to a point on the West line of the East 1/2 of the Northeast 1/4 of the Southwest 1/4 of the Northwest 1/4 of said Section 12; thence run North 00° 18' 05" East, along said West line 30.00 feet; thence North 89° 42' 28" East, 307.80 feet more or less to the Point of Beginning, LESS the Westerly 40.00 feet thereof.

PARCEL NO. 4:

From the quarter corner post on the West side of Section 12, Township 20 South, Range 27 East, run North along Section line 933.90 feet for a Point of Beginning; thence run East 568.00 feet, thence run North 396.10 feet, more or less to the North line of Southwest 1/4 of the Northwest 1/4 of said Section; thence run West along said forty line 568.00 feet to the Northwest corner of said Southwest 1/4 of the Northwest 1/4; thence run South along Section line 396.10 feet for the Point of Beginning.

PARCEL NO. 5:

From the Northeast corner of the Northwest 1/4 of the Northwest 1/4 of Section 12,Township 20 South, Range 27 East, Orange County, Florida, run South 00° 24' 20" West, along the East line of said Northwest 1/4 of the Northwest 1/4 of Section 12 ,a distance of 1220.95 feet; thence South 89° 43' 17" West, 30.00 feet to a point on the West Right of Way line of Effie Road; thence run South 00° 24'20" West, along said Right of Way line 401.99 feet to the Point of Beginning; thence continue South 00° 24'20" West, along said Right of Way line3 71.99 feet to a point on the South line of the East 1/2 of the Northeast 1/4 of the Southwest 1/4 of said Northwest 1/4 of Section 12; thence run South 89° 41'26" West, along said South line 307.10 feet to the Southwest corner of aforesaid East 1/2 of the Northeast 1/4 of the Southwest 1/4 of the Northwest 1/4 of Section 12; thence run North 00° 18'05" East along the West the of said East 1/2 of the Northeast1/4 of the Southwest 1/4 of the Northwest 1/4 of Section 12, a distance of 372.08 feet; thence North 89° 42'28" East 307.80 feet, more or less, to the Point of Beginning.

LESS portion of Parcel 3 as described in Official Records Book 5075, Page 1578, if any, of the Public Records of Orange County, Florida.

SURVEYOR'S NOTES:

(1) THIS MAP OF BOUNDARY SURVEY IS NOT VALID UNLESS IT BEARS THE SIGNATURE AND SEAL OF THE FLORIDA LICENSED SURVEYOR AND MAPPER IDENTIFIED BELOW.

(2) NO ABSTRACT FOR RIGHTS-OF-WAY, EASEMENTS, OWNERSHIP OR OTHER INSTRUMENTS OF RECORD HAVE BEEN PROVIDED TO THIS FIRM.

(3) BEARINGS SHOWN HEREON ARE ASSUMED RELATIVE TO THE WEST LINE OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST, BEING SOUTH 00°28'01" EAST.

(4) THE "LEGAL DESCRIPTION" HEREON IS IN ACCORD WITH THE INSTRUMENT OF RECORD FURNISHED BY THE CLIENT.

(5) UNLESS OTHERWISE NOTED OR SHOWN HEREON, APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND PERIMETER IMPROVEMENTS WERE LOCATED. UNDERGROUND IMPROVEMENTS, SUCH AS FOUNDATIONS AND UTILITIES, WERE NOT LOCATED.

(6) INTERIOR IMPROVEMENTS WERE NOT LOCATED.

(7) THE LANDS SHOWN HEREON LIE IN ZONE "X", DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, PER FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12095C0050H, MAP REVISED: SEPTEMBER 24, 2021.

THE LIMITS OF SAID ZONES ARE GRAPHICALLY DEPICTED HEREON AS NEAR AS MAY BE SCALED FROM SAID MAP.

(8) THIS SURVEY IS CERTIFIED TO:

(9) THE DELINEATION OF LANDS SHOWN HEREON IS AS PER THE CLIENT'S INSTRUCTIONS.

(10)THE CLASSIFICATION USE OF THE LAND, PURSUANT TO THE STANDARDS OF PRACTICE SET FORTH IN RULE CHAPTER 5J-17 FLORIDA ADMINISTRATIVE CODE, FLORIDA STATUTES 472.027, IS COMMERCIAL/HIGH RISK.
THE MINIMUM RELATIVE DISTANCE ACCURACY OF THIS MAP OF BOUNDARY SURVEY ACHIEVES OR EXCEEDS ONE FOOT IN 10,000 FEET.

(11)UNLESS OTHERWISE NOTED OR SHOWN HEREON, THERE ARE NO APPARENT AND/OR UNOBSTRUCTED, ABOVE GROUND ENCROACHMENTS. THE DISPOSITION OF ANY POTENTIAL ENCROACHING IMPROVEMENTS SHOWN IS BEYOND PROFESSIONAL PURVIEW AND SUBJECT TO LEGAL INTERPRETATION.

(12)ADJOINING PARCEL OWNER AND RECORDING INFORMATION DELINEATED HEREON WAS OBTAINED FROM THE ORANGE COUNTY PROPERTY APPRAISER'S PUBLIC ACCESS SYSTEM.

(13)THE SURVEYED LANDS MAY BE SUBJECT TO JURISDICTIONAL ENTITIES.

(14) ATTENTION IS DIRECTED TO THE FACT THAT THIS MAP MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

(15)SYMBOLS DEPICTED HEREON DO NOT REFLECT ACTUAL SIZE.

David A White
FLORIDA REGISTRATION NO. 4044
PEC - SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION LB 7808

Digitally signed by David A White
Date: 2023.05.15 10:20:11 -04'00'

DATE	BY	REVISIONS

PEC | SURVEYING AND MAPPING, LLC
CERTIFICATE OF AUTHORIZATION NUMBER LB 7808
2100 Alafaya Trail, Suite 203 • Oviedo, Florida 32765 • 407-542-4967
WWW.PECONLINE.COM dw@peconline.com

MAP OF BOUNDARY SURVEY
LOCATED IN
SECTION 12, TOWNSHIP 20 SOUTH, RANGE 27 EAST
ORANGE COUNTY, FLORIDA

SHEET 1

JOB NO.:	23-051
DATE:	5-4-2023
DRAWN BY:	J.L.M.
CHECKED BY:	D.A.W
F.B.	FIELD-BOOK
PAGE(S)	PAGES

C:\23-051 Morrison Groves Annexation Surveys\ANNEX-2\23-051 PARCEL 7.dwg May 11, 2023 - 1:43pm

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: PM S-1 REO, LLC					
Address	Street: 400 N Ashley Drive, Suite 700	City: Tampa		State: FL	ZIP: 33602
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		27-20-12-0000-00-046	
Subject Property Address: 3744 Ondich Road, Apopka, FL			
SIZE OF PROPERTY			
Acreage:	7.22 +/-	OR Square Feet:	
Existing Use:	Rural/Agriculture	Proposed Use:	Mixed Use

Rev. 10.13.22

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-046

Property Owner(s) Name(s): PM S-1 REO LLC

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

I (We), the undersigned owner(s) of the above described property, agree that in the event an application for a future land use and zoning amendment are not submitted within six (6) months from the effective date of the annexation ordinance, I/we do not object to the City of Apopka assigning a future land use designation and zoning comparable to that which was assigned by Orange County government to the same property.

CERTIFICATION AND SIGNATURE

By: Carm Pinckney
Owner(s) of Record (Signature)

C. Pinckney
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 25th day of MAY, 2023, by CHARLES M. PINCKNEY who is (personally known to me) or has produced _____ as Identification and who did / did not (circle one) take an oath.

Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

Rev. 10.13.22

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: PM S-1 REO, LLC					
Address	Street: 3314 Jean Cir	City: Tampa		State: FL	ZIP: 33629
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		27-20-12-0000-00-012	
Subject Property Address: Effie Dr, Apopka, FL 32712			
SIZE OF PROPERTY			
Acreage:	0.01 +/-	OR Square Feet:	
Existing Use:	Rural/Agriculture	Proposed Use:	Mixed Use

Rev. 10.13.22

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-012

Property Owner(s) Name(s): PM S-1 REO LLC

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

I (We), the undersigned owner(s) of the above described property, agree that in the event an application for a future land use and zoning amendment are not submitted within six (6) months from the effective date of the annexation ordinance, I/we do not object to the City of Apopka assigning a future land use designation and zoning comparable to that which was assigned by Orange County government to the same property.

CERTIFICATION AND SIGNATURE

By: C M Pinckney
Owner(s) of Record (Signature)

C. Pinckney
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 25th day of MAY, 2023, by CHARLES M. PINCKNEY who is (personally known to me) or has produced _____ as identification and (who did) / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

Rev. 10.13.22

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: Merritt Danny M					
Address	Street: 5173 Effie Dr	City: Apopka		State: FL	ZIP: 32712
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-081	
Subject Property Address: 5107 Effie Dr, Apopka, FL 32712			
SIZE OF PROPERTY			
Acreage:	5.10 +/-	OR Square Feet:	
Existing Use:	R	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-081

Property Owner(s) Name(s): Merritt Danny M

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

I (We), the undersigned owner(s) of the above described property, agree that in the event an application for a future land use and zoning amendment are not submitted within six (6) months from the effective date of the annexation ordinance, I/we do not object to the City of Apopka assigning a future land use designation and zoning comparable to that which was assigned by Orange County government to the same property.

CERTIFICATION AND SIGNATURE

By: Chas M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: Thomas Larry, Kohl Cathy L					
Address	Street: 5103 Effie Drive	City: Apopka		State: FL	ZIP: 32712
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-088	
Subject Property Address: Oak Ln Apopka, FL 32712			
SIZE OF PROPERTY			
Acreage:	5.40 +/-	OR Square Feet:	
Existing Use:	Rural/Agriculture, Single Fam	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-088

Property Owner(s) Name(s): Thomas Larry, Kohl Cathy L

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

I (We), the undersigned owner(s) of the above described property, agree that in the event an application for a future land use and zoning amendment are not submitted within six (6) months from the effective date of the annexation ordinance, I/we do not object to the City of Apopka assigning a future land use designation and zoning comparable to that which was assigned by Orange County government to the same property.

CERTIFICATION AND SIGNATURE

By: Chs M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: Pm S-1 Reo LLC					
Address	Street: 400 N Ashley Dr Ste 700	City: Tampa		State: FL	ZIP: 33602
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-018	
Subject Property Address: 3595 W Kelly Park Rd, Apopka, FL			
SIZE OF PROPERTY			
Acreage:	1.16 +/-	OR Square Feet:	
Existing Use:	Rural/Agriculture, Sigle Fam Class II	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-018

Property Owner(s) Name(s): Pm S-1 Reo LLC

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

I (We), the undersigned owner(s) of the above described property, agree that in the event an application for a future land use and zoning amendment are not submitted within six (6) months from the effective date of the annexation ordinance, I/we do not object to the City of Apopka assigning a future land use designation and zoning comparable to that which was assigned by Orange County government to the same property.

CERTIFICATION AND SIGNATURE

By: Charles M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

Notary Public (Signature)

ALEXANDER COHEN
Notary Public (Print Name)

My Commission Expires: 12/22/2023

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: Schonbak Kadja N					
Address	Street: 3611 W Kelly Park Rd	City: Apopka		State: FL	ZIP: 32712
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-016	
Subject Property Address: 3611 W Kelly Park Rd, Apopka, FL 32712			
SIZE OF PROPERTY			
Acreage:	1.16 +/-	OR Square Feet:	
Existing Use:	Rural/Agriculture	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-016

Property Owner(s) Name(s): Schonbak Kadja N

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

I (We), the undersigned owner(s) of the above described property, agree that in the event an application for a future land use and zoning amendment are not submitted within six (6) months from the effective date of the annexation ordinance, I/we do not object to the City of Apopka assigning a future land use designation and zoning comparable to that which was assigned by Orange County government to the same property.

CERTIFICATION AND SIGNATURE

By: Charles M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: Merritt Danny M					
Address	Street: 5173 Effie Dr	City: Apopka		State: FL	ZIP: 32712
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-015	
Subject Property Address: 5173 Effie Dr, Apopka, FL 32712			
SIZE OF PROPERTY			
Acreage:	5.10 +/-	OR Square Feet:	
Existing Use:	R, Single Fam	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-015

Property Owner(s) Name(s): Merritt Danny M

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

I (We), the undersigned owner(s) of the above described property, agree that in the event an application for a future land use and zoning amendment are not submitted within six (6) months from the effective date of the annexation ordinance, I/we do not object to the City of Apopka assigning a future land use designation and zoning comparable to that which was assigned by Orange County government to the same property.

CERTIFICATION AND SIGNATURE

By: Chas M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: Emmons, Beth Ann					
Address	Street: 5322 Effie Drive	City: Apopka		State: FL	ZIP: 32712
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-062	
Subject Property Address: Effie Drive, Apopka, FL 32712			
SIZE OF PROPERTY			
Acreage:	1.80 +/-	OR Square Feet:	
Existing Use:	R (Rural/Agriculture)	Proposed Use:	MU (Mixed Use)

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-062

Property Owner(s) Name(s): EMMONS, BETH ANN

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

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CERTIFICATION AND SIGNATURE

By: Charles M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: Emmons, Beth Ann					
Address	Street: 5322 Effie Drive	City: Apopka		State: FL	ZIP: 32712
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-086	
Subject Property Address: 5322 Effie Drive			
SIZE OF PROPERTY			
Acreage:	2.00 (+/-) +/-	OR Square Feet:	
Existing Use:	R (Rural/Agriculture)	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-086

Property Owner(s) Name(s): EMMONS, BETH ANN

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

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CERTIFICATION AND SIGNATURE

By: Charles M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	NONE REQUIRED
Owner of Record: Pm S-1 Reo LLC					
Address	Street: 3314 Jean Cir	City: Tampa		State: FL	ZIP: 33629
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-048	
Subject Property Address: 3800 Ondich Rd, Apopka, FL			
SIZE OF PROPERTY			
Acreage:	7.36 +/-	OR Square Feet:	
Existing Use:	Rural/Agriculture	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-048

Property Owner(s) Name(s): Pm S-1 Reo LLC

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

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CERTIFICATION AND SIGNATURE

By: _____
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: Triplett, Elzora					
Address	Street: 5522 Effie Drive	City: Apopka		State: FL	ZIP: 32712
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-097	
Subject Property Address: Effie Drive, Apopka, FL			
SIZE OF PROPERTY			
Acreage:	22.43 +/-	OR Square Feet:	
Existing Use:	Rural/Agriculture	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-097

Property Owner(s) Name(s): Triplett, Elzora J

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

I (We), the undersigned owner(s) of the above described property, agree that in the event an application for a future land use and zoning amendment are not submitted within six (6) months from the effective date of the annexation ordinance, I/we do not object to the City of Apopka assigning a future land use designation and zoning comparable to that which was assigned by Orange County government to the same property.

CERTIFICATION AND SIGNATURE

By: Charles M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: Triplett, Elzora					
Address	Street: 5522 Effie Drive	City: Apopka		State: FL	ZIP: 32712
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-057	
Subject Property Address: 5522 Effie Drive, Apopka, FL			
SIZE OF PROPERTY			
Acreage:	1.36 +/-	OR Square Feet:	
Existing Use:	R	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-057

Property Owner(s) Name(s): Triplett, Elzora

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

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CERTIFICATION AND SIGNATURE

By: Charles M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

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_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	NONE REQUIRED
Owner of Record: Pm S-1 Reo LLC					
Address	Street: 400 N Ashley Dr Ste 700	City: Tampa		State: FL	ZIP: 33602
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-001	
Subject Property Address: 5712 Effie Drive, Apopka, FL			
SIZE OF PROPERTY			
Acreage:	18.83 +/-	OR Square Feet:	
Existing Use:	Rural/Agriculture	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-001

Property Owner(s) Name(s): Pm S-1 Reo LLC

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

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CERTIFICATION AND SIGNATURE

By: Charles M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	**NONE REQUIRED**
Owner of Record: Pm S-1 Reo LLC					
Address	Street: 400 N Ashley Dr Ste 700	City: Tampa		State: FL	ZIP: 33602
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		11-20-27-0000-00-037	
Subject Property Address: 5600 Effie Drive, Apopka, FL			
SIZE OF PROPERTY			
Acreage:	20.44 +/-	OR Square Feet:	
Existing Use:	R (Rural/Agriculture)	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 11-20-27-0000-00-037

Property Owner(s) Name(s): Pm S-1 Reo LLC

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

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CERTIFICATION AND SIGNATURE

By: Charles M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	NONE REQUIRED
Owner of Record: Pm S-1 Reo LLC					
Address	Street: 400 N Ashley Dr Ste 700	City Tampa		State: FL	ZIP: 33602
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		11-20-27-0000-00-069	
Subject Property Address: 5580 Effie Drive, Apopka, FL 32712			
SIZE OF PROPERTY			
Acreage:	1.00 +/-	OR Square Feet:	
Existing Use:	R (Rural/Agriculture), Single Fam Class III	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 11-20-27-0000-00-069

Property Owner(s) Name(s): Pm S-1 Reo LLC

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

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CERTIFICATION AND SIGNATURE

By: Charles M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

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_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

CITY OF APOPKA
COMMUNITY DEVELOPMENT DEPARTMENT
120 E. MAIN STREET, 2nd Floor, APOPKA, FLORIDA 32703
407-703-1712 (Phone)

APPLICATION FOR ANNEXATION

(Future Land Use and Zoning Amendments Required with this Application)

Date Submitted:				Fee Paid:	NONE REQUIRED
Owner of Record: Bates, Jean M					
Address	Street: 5420 Effie Drive	City: Apopka		State: FL	ZIP: 32712
Phone:			E-Mail:		
Applicant: Melibe Thomas, Kimley-Horn and Associates Inc.					
Address	Street: 445 24th St Suite 200	City: Vero Beach		State: FL	Zip: 32960
Phone:	772-794-4055		E-Mail:	melibe.thomas@kimley-horn.com	

LEGAL DESCRIPTION OF PROPERTY TO BE ANNEXED - Parcel Number(s):		12-20-27-0000-00-013	
Subject Property Address: 5420 Effie Drive, Apopka, FL			
SIZE OF PROPERTY			
Acreage:	4.91 +/-	OR Square Feet:	
Existing Use:	R (Rural/Agriculture)	Proposed Use:	Mixed Use

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 12-20-27-0000-00-013

Property Owner(s) Name(s): Bates, Jean M

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

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CERTIFICATION AND SIGNATURE

By: Charles M Pinckney
Owner(s) of Record (Signature)

CHARLES M. PINCKNEY
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of MAY, 2023, by CHARLES M. PINCKNEY who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: 12/22/2023

ALEXANDER COHEN
Notary Public (Print Name)

Notary Public State of Florida
Alexander Irving Cohen
My Commission GG 941805
Expires 12/22/2023

Annexation Application Request

Prepared for

CITY OF APOPKA, FLORIDA

Project Name: Wekiva Springs Planned Development

Prepared By:
Kimley-Horn
445 24th Street, Ste 200
Vero Beach, FL 32960

June 12, 2023

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ANNEXATION APPLICATION PACKAGES 3

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Appendices

APPENDIX A - Annexation Map

Kimley»Horn

Introduction

This document intends to describe the Annexation packege of twenty-two (22) parcels, described below in this document, from Orange County into the City of Apopka. This document is not part of the required documentation for an annexation process per the City of Apopka, however, it will serve as a guide to ease the handling of the application. The application for this property assemblage is expected to be separated into three (3) packages but applied for concurrently. For the annexation process, the city requires annexation forms and surveys of the parcels to be annexed; per the city code, there is no apparent Fee for the annexation application. The Owner owns the parcels under the name of PM S-1 REO LLC and HMF LLC however, the rest of the parcels are under contract. The annexation package includes the signed Owner Authorization Forms that will enable us to apply in the parcel owners' name.

Annexation Application Packages

Package I

Package I will consist of the annexation from Orange County into the City of Apopka of five (5) parcels with parcel ID: **12-20-27-0000-00-081, 12-20-27-0000-00-015, 12-20-27-0000-00-088, 12-20-27-0000-00-016, and 12-20-27-0000-00-018.**

Package II

Package II will consist of the annexation from Orange County into the City of Apopka of eleven (11) parcels with parcel ID: **12-20-27-0000-00-062, 12-20-27-0000-00-086, 12-20-27-0000-00-013, 12-20-27-0000-00-097, 12-20-27-0000-00-057, 12-20-27-0000-00-001, 11-20-27-0000-00-037, 11-20-27-0000-00-069, 12-20-27-0000-00-048, 12-20-27-0000-00-046, and 12-20-27-0000-00-012.**

Package III

Package III will consist of the annexation from Orange County into the City of Apopka of six (6) parcels with parcel ID: **01-20-27-0000-00-034, 01-20-27-0000-00-007, 01-20-27-0000-00-053, 02-20-27-0000-00-010, 02-20-27-0000-00-020, and 02-20-27-0000-00-011.**

To facilitate the distribution of parcels and packages, please refer to the Annexation Map included with this letter in Appendix A and *Table 1*.

Table 1

List No.	Parcel Owner	Parcel ID	Record Address
1	Beth Emmons	12-20-27-0000-00-062	5322 Effie Dr, Apopka, FL 32712
2	Beth Emmons	12-20-27-0000-00-086	5323 Effie Dr, Apopka, FL 32712
3	Jean M. Bates	12-20-27-0000-00-013	5420 Effie Dr, Apopka, FL 32712
4	Elzora J Triplett	12-20-27-0000-00-097	5522 Effie Dr, Apopka, FL 32712
5	Elzora J Triplett	12-20-27-0000-00-057	5522 Effie Dr, Apopka, FL 32712
6	PM S-1 REO LLC	12-20-27-0000-00-001	5712 Effie Dr, Apopka, FL 32712
7	PM S-1 REO LLC	11-20-27-0000-00-037	5600 Effie Dr, Apopka, FL 32712
8	PM S-1 REO LLC	11-20-27-0000-00-069	5580 Effie Dr, Apopka, FL 32712
9	PM S-1 REO LLC	12-20-27-0000-00-048	3800 Ondich Rd, Apopka, FL 32712
10	PM S-1 REO LLC	12-20-27-0000-00-046	3744 Ondich Rd, Apopka, FL 32712
11	PM S-1 REO LLC	12-20-27-0000-00-012	Effie Dr.
12	HMF LLC	01-20-27-0000-00-034	3845 Ondich Rd, Apopka, FL 32712
13	HMF LLC	01-20-27-0000-00-007	Oak Ln, Apopka, FL 32712
14	PM S-1 REO LLC	01-20-27-0000-00-053	3658 Ondich Rd, Apopka, FL 32712
15	Charles P. and Kim Stallings	02-20-27-0000-00-010	4255 Ondich Rd, Apopka, FL 32712
16	Euell E Jr and Crystal Denise Stallings	02-20-27-0000-00-020	4267 Ondich Rd, Apopka, FL 32712
17	PM S-1 REO LLC	02-20-27-0000-00-011	Oak Ln, Apopka, FL 32712
18	Danny Merritt	12-20-27-0000-00-081	5107 Effie Dr, Apopka, FL 32712
19	Danny Merritt	12-20-27-0000-00-015	5173 Effie Dr, Apopka, FL 32712
20	Larry Thomas and Cathy L. Kohl	12-20-27-0000-00-088	5103 Effie Dr, Apopka, FL 32712-5113
21	Marc A. and Kadja N. Schonbak	12-20-27-0000-00-016	3611 W Kelly Park Rd, Apopka, FL 32712
22	PM S-1 REO LLC	12-20-27-0000-00-018	3595 W Kelly Park Rd, Apopka, FL 32712

PACKAGE I
PACKAGE II
PACKAGE III

Survey

The annexation package will contain digitally signed and sealed surveys of the parcels under each package of annexation. See *Table 2* to facilitate the correlation between the survey files naming convention and parcels. The surveys files have were named "Survey # [parcel last three numbers_...]"

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Table 2

List No.	Survey File Name	Parcel Number Included on Survey
1	Survey 2	12-20-27-0000-00-062
2	Survey 2	12-20-27-0000-00-086
3	Servey 3	12-20-27-0000-00-013
4	Survey 3	12-20-27-0000-00-097
5	Survey 3	12-20-27-0000-00-057
6	Survey 4	12-20-27-0000-00-001
7	Survey 5	11-20-27-0000-00-037
8	Survey 5	11-20-27-0000-00-069
9	Survey 6	12-20-27-0000-00-048
10	Survey 7	12-20-27-0000-00-046
11	Survey 4	12-20-27-0000-00-012
12	Survey 8	01-20-27-0000-00-034
13	Survey 8	01-20-27-0000-00-007
14	Survey 9	01-20-27-0000-00-053
15	Survey 10	02-20-27-0000-00-010
16	Survey 10	02-20-27-0000-00-020
17	Survey 10	02-20-27-0000-00-011
18	Survey 1	12-20-27-0000-00-081
19	Survey 1	12-20-27-0000-00-015
20	Survey 1	12-20-27-0000-00-088
21	Survey 1	12-20-27-0000-00-016
22	Survey 1	12-20-27-0000-00-018

PACKAGE I
PACKAGE II
PACKAGE III

Kimley»Horn

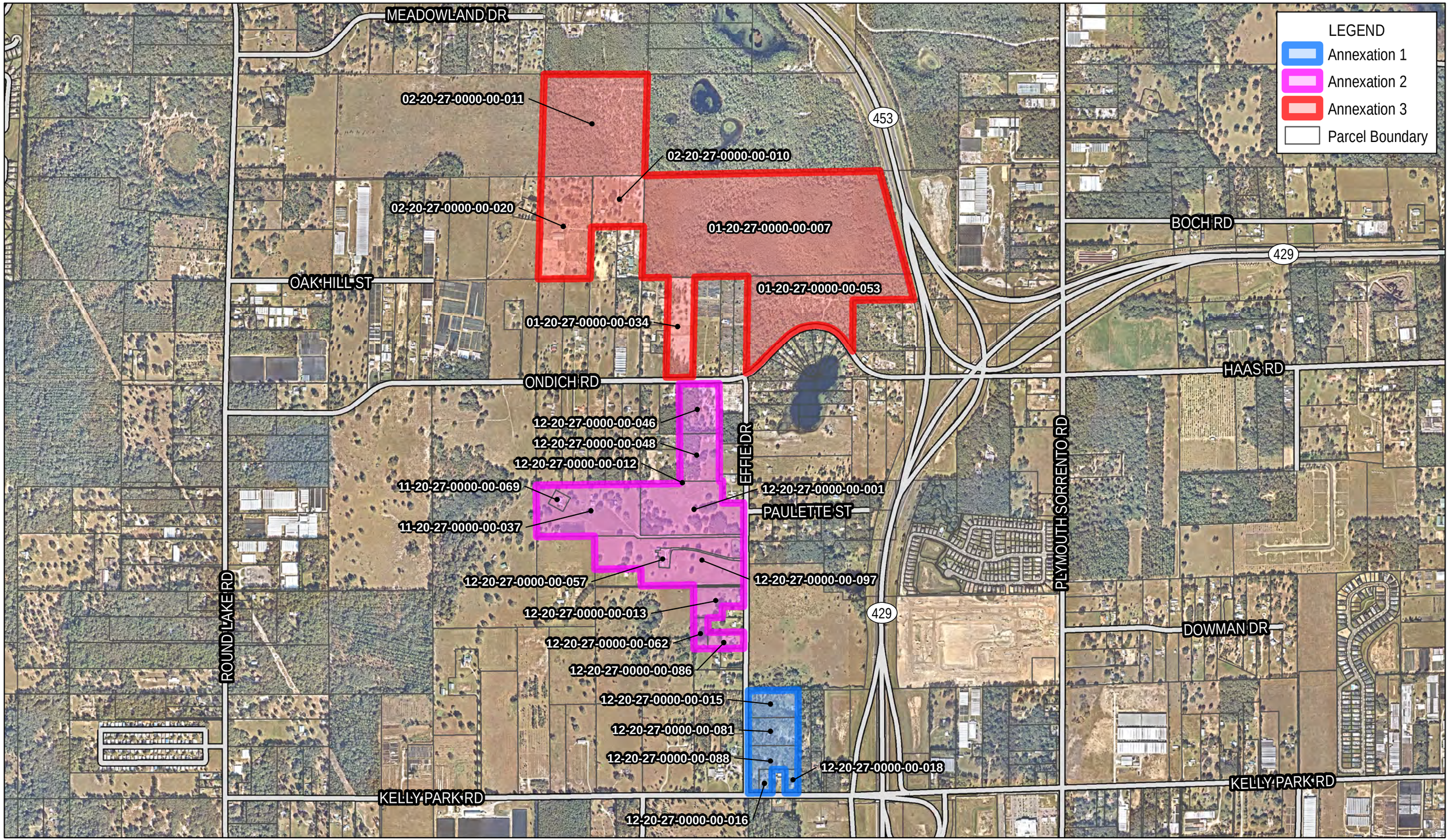
Should you have any questions or require additional information, please contact me at 772-794-4055 or melibe.thomas@kimley-horn.com or my associate Moises de Armas at 772-837-9486 or moises.dearmas@kimley-horn.com.

Sincerely,

Melibe S.Thomas, P.E.
KIMLEY-HORN AND ASSOCIATES, INC.

APPENDIX A

Annexation Map



Northwest Apopka Annexation Map

City of Apopka, Florida

DRAFT
June 1, 2023

0 1,000 2,000 Feet

NARRATIVE LETTER

The responses to zoning review standards are below:

1.- The proposal to re zone the land is consistent and fulfill the goals, objectives, and policies of the comprehensive plans and all other applicable Citi-adopted plans.

2.- The property is free from any conflict with any portion of this LDC.

3.- Even it is a rural area, there are many reasons to develop nice lots and convert this abandon place of obsolete greenhouse yard and improve with new houses to conform a good environment due a growing zone with many development projects nearby having this new highway 429 which connects all principal arteries and important points in Orlando Area.

4.-The proposed zoning is compatible within the location of KPI Neighborhood Design District with density of 2 du/ac doing through McGuire Road.

5.-The proposal consist in a logical and orderly development pattern with lots defined by 155' front x140' deep each one. In total 8 lots of ½ acre.

6.- The proposed rezoning and annexation to the City will increase the value of any property in the surrounding area.

7.- There is a street paved in excellent condition and the both Hass Rd and Macguire Road have 60' ROW.

8.- Fortunately we have a current CAD report from Orange County which shows not wetlands at all in whole property, and not affect the natural environment.
.

Note: This property has been pre-qualified for the requesting petition through the department of Planning of City Apopka where the Staff has determined the future land use designation to support Residential Low Suburban, permitting this proposal with the maximum density 2 dwelling/acre where has contiguity of 2 properties which are 2200 and 2400 located on Hass Rd, for facing East from our property.

ENVIRONMENTAL PROTECTION DIVISION
David D. Jones, P.E., CEP, Manager
3165 McCrory Place, Suite 200
Orlando, FL 32803
407-836-1400 ▪ Fax 407-836-1499
www.ocfl.net

May 12, 2023

Investments Alliance LLC
c/o Francisco Torregrosa
Sandy Bottom Environmental
Email: javie88@gmail.com

Subject: **Petition for Binding Determination of Exemption**
Subject Site Address: 2518 Haas Road, Apopka, FL
Parcel ID No.: 07-20-28-0000-00-025
Application No.: CAD-23-03-043
Orange County Commission District: 2

Dear Mr. Torregrosa:

On March 30, 2023, the Orange County Environmental Protection Division (EPD) received a Petition for a Binding Determination of Exemption from the requirements of Chapter 15, Article X of the Orange County Code for the above-referenced property.

Chapter 15, Article X, Section 15-380, "Exemption – Determination", states as follows:

a) This article does not apply to any lands, which meet one of the following criteria:

1. Any lands which have been issued a development permit by the County for conservation areas prior to the effective date of this article; or

2. Any lands which have received a development order of binding vested right determination which addressed modification or alteration to conservation areas and which was issued prior to the effective date of this Chapter pursuant to Chapter 380 Florida Statutes.

b) Any owner of lands, which are comprised of non-wetland areas or who believes that their lands are exempt under this section, may submit such lands for a Binding Determination of Exemption as provided in Sections 15-381 and 15-382.

Upon review of the petition and the materials and information submitted, EPD has determined that there are no wetlands or surface waters (conservation areas) on the subject property. Based upon the foregoing, EPD has determined that the property owned by Ambika Labban, subject to the request, is exempt from Article X; therefore, the petition for an exemption from Chapter 15, Article X is granted.

Please be advised that per Orange County Code, Chapter 15, Article VIII, Section 15-304 (a), no development, land clearing, or other tree cutting or tree removal shall be permitted without first obtaining a tree removal permit and/or building permit with concurrent tree removal approval, unless exempted per section 15-279(a)(9). Contact Orange County Zoning at 407-836-5807 or Zoning@ocfl.net for questions regarding tree and/or vegetation clearing within the designated uplands on this property.

Should you have any question(s) concerning this review, please contact Nicole Salvatico at Nicole.Salvatico@ocfl.net.

Sincerely,

Nicole Salvatico
Senior Environmental Specialist

NS/KGK/TMH/ERJ/DJ/gfdjr:

Enclosure: Aerial Photograph of Property

c: Investments Alliance LLC, 7512 Dr Phillips Blvd., Ste. 50746, Orlando, FL 32819
Florida Department of Environmental Protection, DEP_CD@dep.state.fl.us

Subject Site Address: 2518 Haas Road, Apopka, FL Parcel:
Parcel ID No.: 07-20-28-0000-00-025
Application No.: CAD-23-03-043

Boundary & Topographic Survey

Legal Description:

BEGIN AT THE NE CORNER OF NE 1/4 OF NW 1/4 OF SECTION 7, TOWNSHIP 20 SOUTH, RANGE 28 EAST, RUN THENCE SOUTH 1326.1 FEET, THENCE WEST 170 FEET, THENCE NORTH 1326.1 FEET, THENCE EAST 170 FEET TO THE POINT OF BEGINNING, CONTAINING 5 ACRES MORE OR LESS. LESS THE NORTH 30 FEET AND EAST 30 FEET FOR ROAD.

FLOOD DISCLAIMER:
BY PERFORMING A SEARCH WITH THE LOCAL GOVERNING MUNICIPALITY OR WWW.FEMA.GOV, THE PROPERTY APPEARS TO BE LOCATED IN ZONE X. THIS PROPERTY WAS FOUND IN ORANGE COUNTY. COMMUNITY NUMBER 120176, DATED 2021-09-24.

CERTIFIED TO:
INVESTMENTS ALLIANCE LLC

-Benchmark Information-

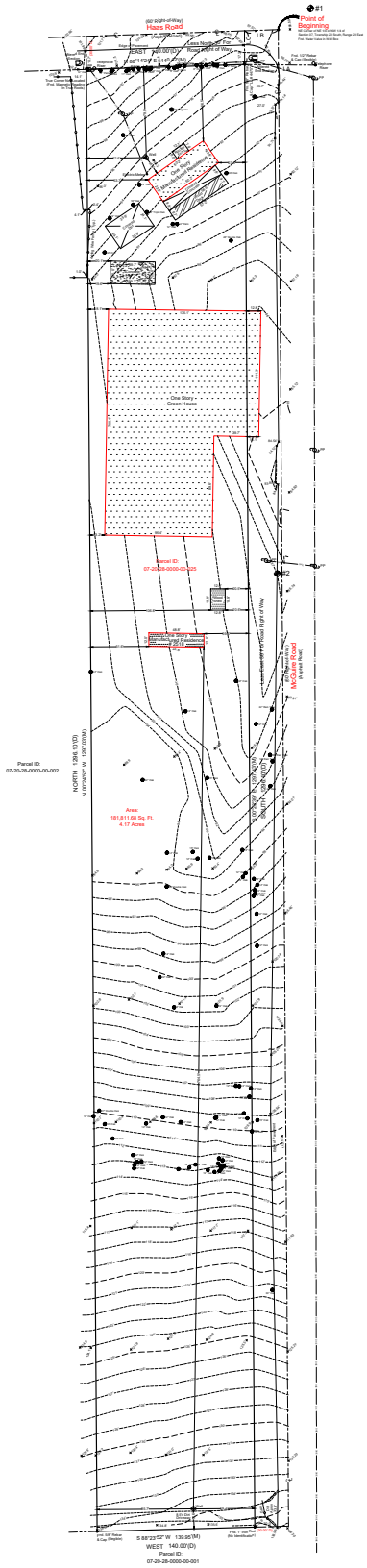
Florida Department of Transportation Datum

(Elevations are based upon North American Vertical Datum 1988)

-Site Benchmark Information-

#1
Fnd Rebar (No Identification).
Elevation: 95.77'

#2
Fnd. Nail & Disk (No Identification).
Elevation: 86.23'



LA
EAST 60.00'(D)
N 89°27'40" E 62.73'(M)

LB
30.00'(D)
N 87°35'07" E 30.04'(C)

LC
30.00'(D)
S 00°23'20" E 29.99'(C)

Tree Note:
Palm - Denotes Tree Type
(18") - Diameter of Tree measured at Chest Height

Bearings are based on GPS Observations
State Plane Coordinates Florida East Zone 0901 - NAD '83

Graphic Scale
0 25 50 100
Scale: 1"=50'

Field Date: 05/02/23 | Date Completed: 05/08/23
Drawn By: SP | File Number: IS-117631

-Legend-

C	- Calculated	PC	- Point of Curvature
CB	- Concrete Block	POC	- Point of Commencement
CM	- Concrete Monument	P.O.B.	- Point of Beginning
Conc.	- Concrete	PRM	- Permanent Reference Monument
Des.	- Description	PT	- Point of Tangency
DE	- Drainage Easement	R	- Radius
ELEV.	- Elevation	Rad.	- Radial
F.E.M.A.	- Federal Emergency Management Agency	R&C	- Rebar & Cap
FFE	- Finished Floor Elevation	Rec.	- Recovered
Fnd.	- Found	Ret.	- Retain
I.P.	- Iron Pipe	Ref.	- Refer To
L	- Length	Set	- Set ½" Rebar & Cap "LB 7623"
M	- Measured	Typ.	- Typical
N&D	- Nail & Disk	UE	- Utility Easement
O.R.B.	- Official Records Book	W	- Water
P.B.	- Plat Book	Δ	- Delta (Central Angle)
P.C.	- Point of Curvature	℄	- Chain Link Fence

-Notes-

- Survey is Based upon the Legal Description Supplied by Client. Abutting Properties Deeds have NOT been Researched for Gaps, Overlaps and/or Hiatus.
- Subject to any Easements and/or Restrictions of Record.
- Bearings are Assumed Relative to Assumed and Based upon the Line Bearings with a "(M)".
- Building Ties are NOT to be used to reconstruct Property Lines.
- Fence Ownership is NOT determined.
- Roof Overhangs, Underground Utilities and/or Footers have NOT been Located, Unless Otherwise Noted.
- Septic Tanks and/or Drain field locations are approximate and MUST be verified by appropriate Utility Location Companies.
- Sunshine One Call of Florida Ticket Number Required. Without Written Verification, Will Not Be at the User's Sole Risk and Without Liability to the Surveyor. Nothing Hereon shall be Construed to give any Rights or Benefits to Anyone Other than those Certified.
- Flood Zone Determination Shown Hereon is Given as a Courtesy, and is Subject to Final Approval by F.E.M.A. This Determination may be Subject to Errors and Omissions and Should not be Relied Upon. Reliance by NONE given to this Surveying Company at the time of this Endeavor. Ireland & Associates Surveying Inc. and the signing surveyor assume NO Liability for the Accuracy of the Determination.

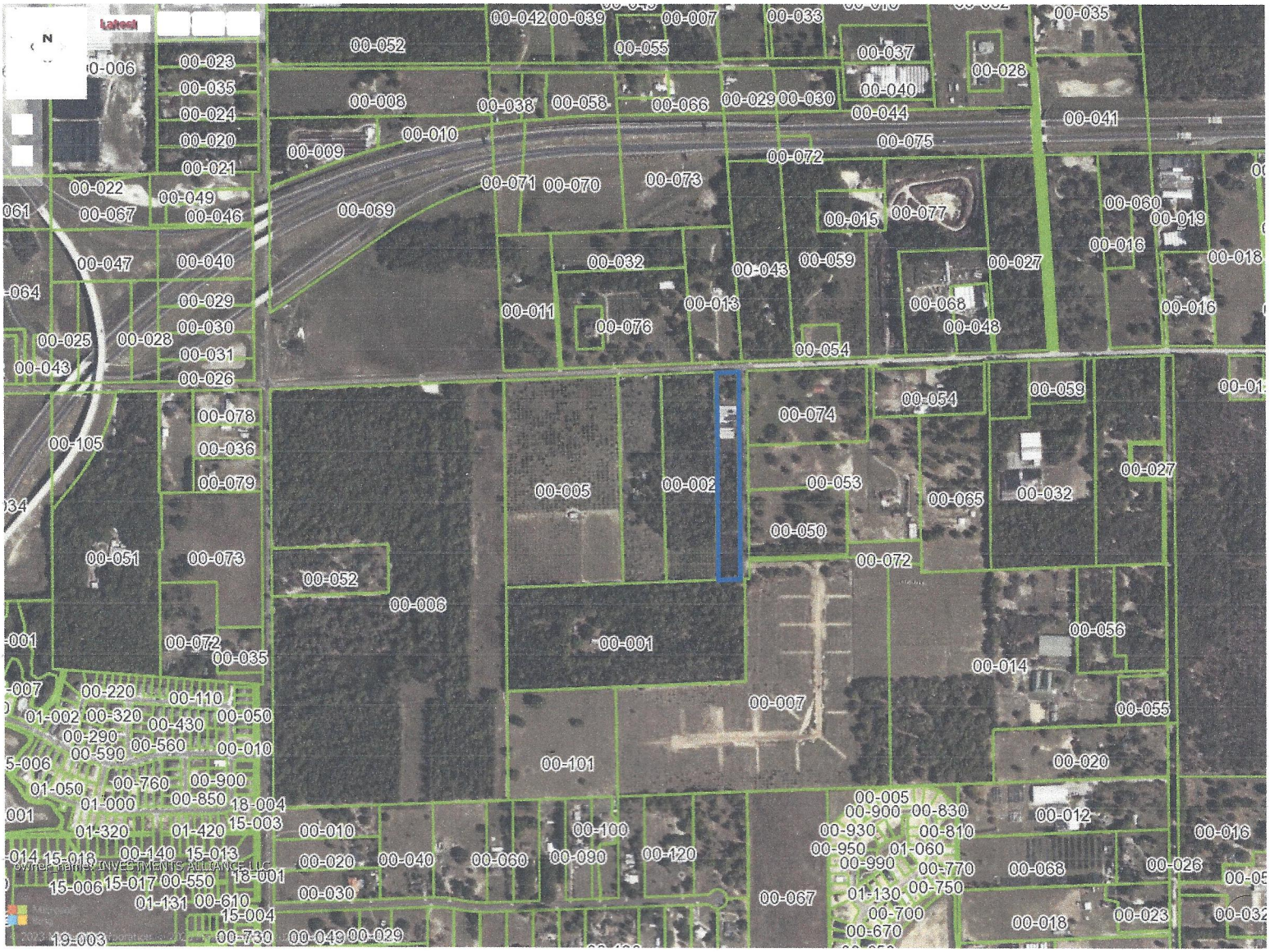
Revisions

I Hereby Certify that this Boundary Survey of the above Described Property is True and Correct to the Best of my Knowledge and Belief, Has been Made under my Direction on the Date Shown, Based upon Information Supplied to Me, and Meets the Minimum Technical Standards Set Forth by the Board of Surveying in the State of Florida in accordance with Chapter 5J-17.051, Florida Administrative Codes, Pursuant to Section 472.027, Florida Statutes.

Patrick R. Ireland, PSM 6937 LB 7623
This Survey is Not Valid without the Original Signature of Said Certified Parties.
This Survey NOT VALID unless Sealed and Embossed with Surveyor's Seal.

Ireland & Associates Surveying, Inc.
800 Currency Circle Suite 1020
Lake Mary, Florida 32746
www.irelandsurveying.com
Office:407.878.3366 Fax:407.320.8165

Google Maps
TO Mahaffey Tree & Timber Company
Eric Wolfe Arabians
Firewood
Eden Landscape Enterprises., Inc
Haas Rd
Pine Valley Nursery
Pretty Party Ponies
Bay Hill Nursery
Foliage Wy
Ondich Rd
Sandhill Preserve
Plymouth Sorrento Rd
McGuire Rd
ADM Homes
Wind Song Farms
Cool Change Heat & Air
Horseshoe Loop
Bridle Path by DR Horton
Palomino Pl
Smithers Oasis
Park Ridge St
Dowman Dr
Hilltop Nursery Inc
Google
429
437



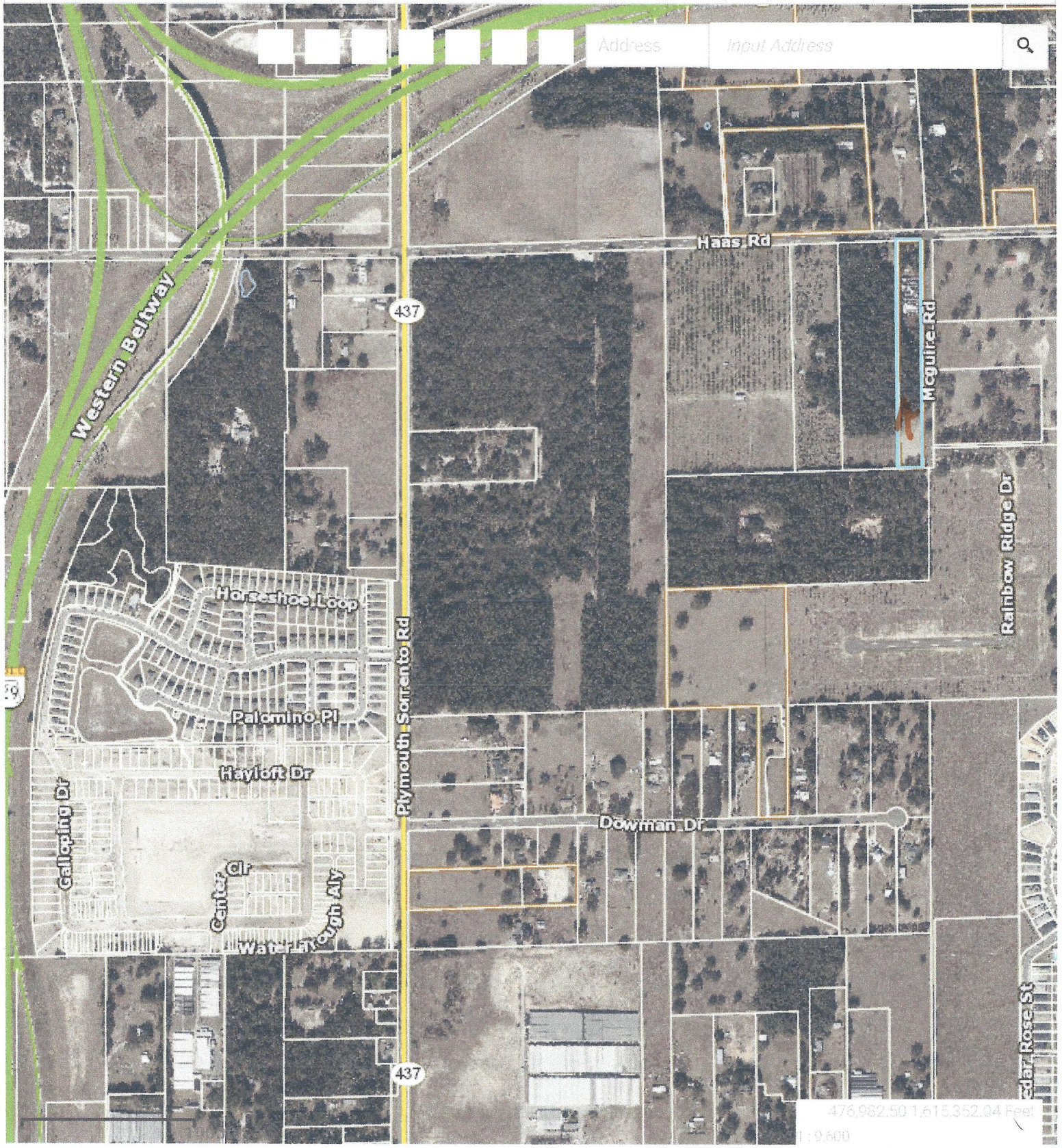
MAP LOCATION

Orange County Property Appraiser Florida

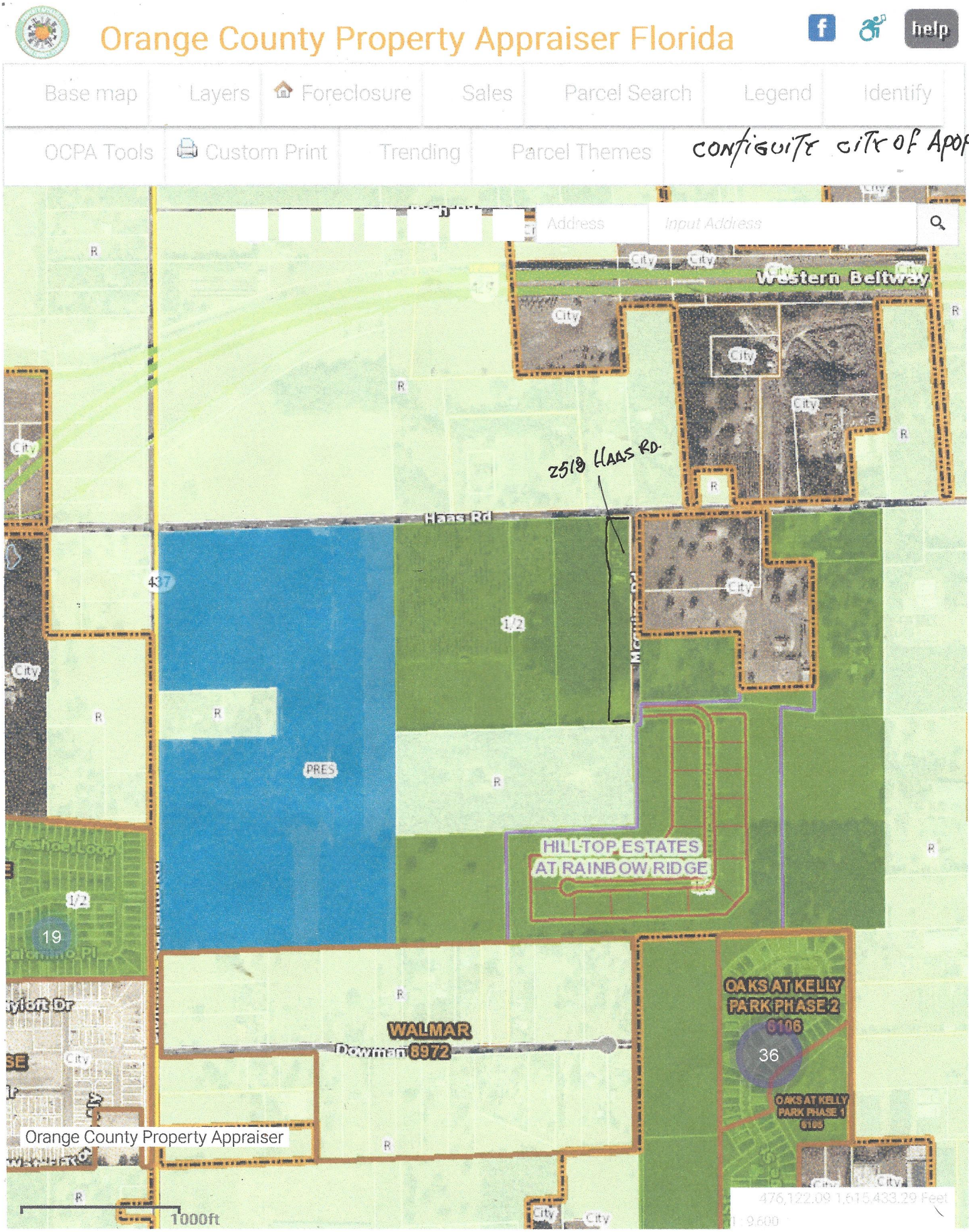
help

Base map | Layers | Foreclosure | Sales | Parcel Search | Legend | Identify

OCPA Tools | Custom Print | Trending | Parcel Themes



Orange County Property Appraiser Florida
help
Base map
Layers
Foreclosure
Sales
Parcel Search
Legend
Identify
OCPA Tools
Custom Print
Trending
Parcel Themes
NEIGHBORING
Address
Input Address
429
T
A-2
AG
A-1
2400
2200
2518 HAAS RD
P-D
Rainbow Ridge PD/LUP
HILLTOP ES
AT RAINB
Horseshoe Loop
BRIDLE
MU-N
0960
45
Palomino Pl
Hayloft Dr
WINDROSE
MU-N
R-CE
WALMAR
OAKS AT KELLY PARK PHASE 2
6106
36
MU-N
Orange County Property Appraiser
477,322.09 1,616,091.62 Feet
1:9,600


Orange County Property Appraiser Florida
help
Base map
Layers
Foreclosure
Sales
Parcel Search
Legend
Identify
OCPA Tools
Custom Print
Trending
Parcel Themes
configuite city of Apopka
Address
Input Address
Western Beltway
2518 HAAS RD.
Haas Rd
437
PRES
1/2
HILLTOP ESTATES AT RAINBOW RIDGE
WALMAR
Dowman 6972
OAKS AT KELLY PARK PHASE 2
6106
36
OAKS AT KELLY PARK PHASE 1
6105
19
Orange County Property Appraiser
1000ft
476,122.09 1,615,433.29 Feet

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INVESTMENTS ALLIANCE LLC

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(Elevations are based upon North American Vertical Datum 1988)

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Fnd Rebar (No Identification).
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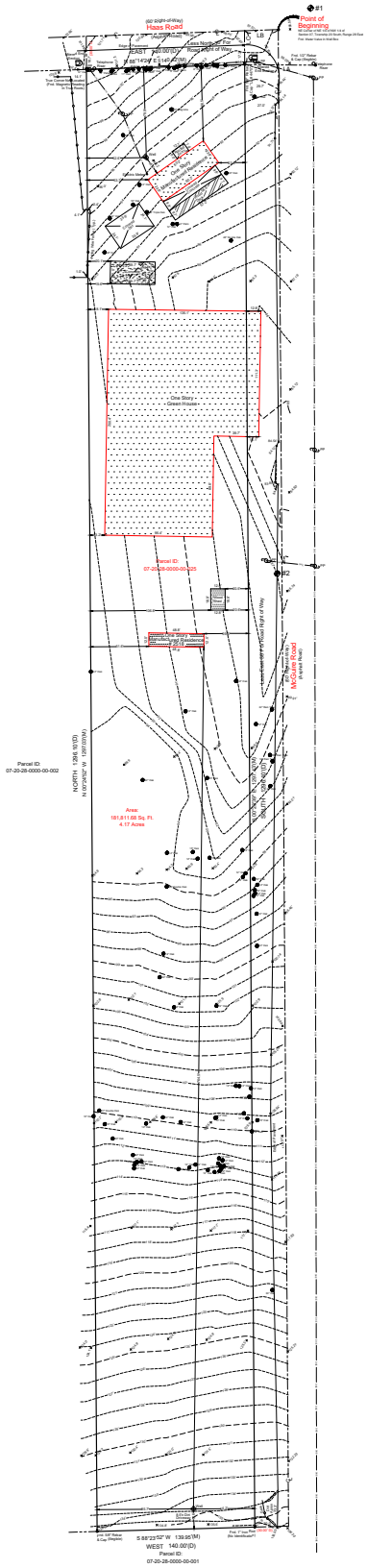

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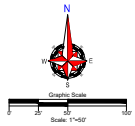

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(18") - Diameter of Tree measured at Chest Height

Field Date: 05/02/23 | Date Completed: 05/08/23
Drawn By: SP | File Number: IS-117631

-Legend-

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F.E.M.A.	- Federal Emergency Management Agency	R	- Radius
FFE	- Finished Floor Elevation	Rad.	- Radial
Fnd.	- Found	R&C	- Rebar & Cap
I.P.	- Iron Pipe	Rec.	- Recovered
L	- Length	Rad.	- Radial
M	- Measured	Set	- Set "5/8" Rebar & Cap "LB 7623"
N&D	- Nail & Disk	Typ.	- Typical
O.R.B.	- Official Records Book	UE	- Utility Easement
P	- Plat	Wit.	- Witness
P.B.	- Plat Book	Δ	- Delta (Central Angle)
PC	- Wood Fence	℄	- Chain Link Fence

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- Fence Ownership is NOT determined.
- Roof Overhangs, Underground Utilities and/or Footers have NOT been Located, Unless Noted Otherwise.
- Septic Tanks and/or Drain field locations are approximate and MUST be verified by appropriate Utility Location Companies.
- Use of this Survey for any Purpose Other than Intended, Without Written Verification, Will be at the User's Sole Risk and Without Liability to the Surveyor. Nothing Hereon shall be Construed to give any Rights or Benefits to Anyone Other than those Certified.
- Flood Zone Determination Shown Hereon is Given as a Courtesy, and is Subject to Final Approval by F.E.M.A. This Determination may be Subject to Errors, Omissions, Interpretation, and Change. Reliance by NOM given to this Surveying Company at the time of this Endeavor. Ireland & Associates Surveying Inc. and the signing surveyor assume NO Liability for the Accuracy of the Determination.

Revisions

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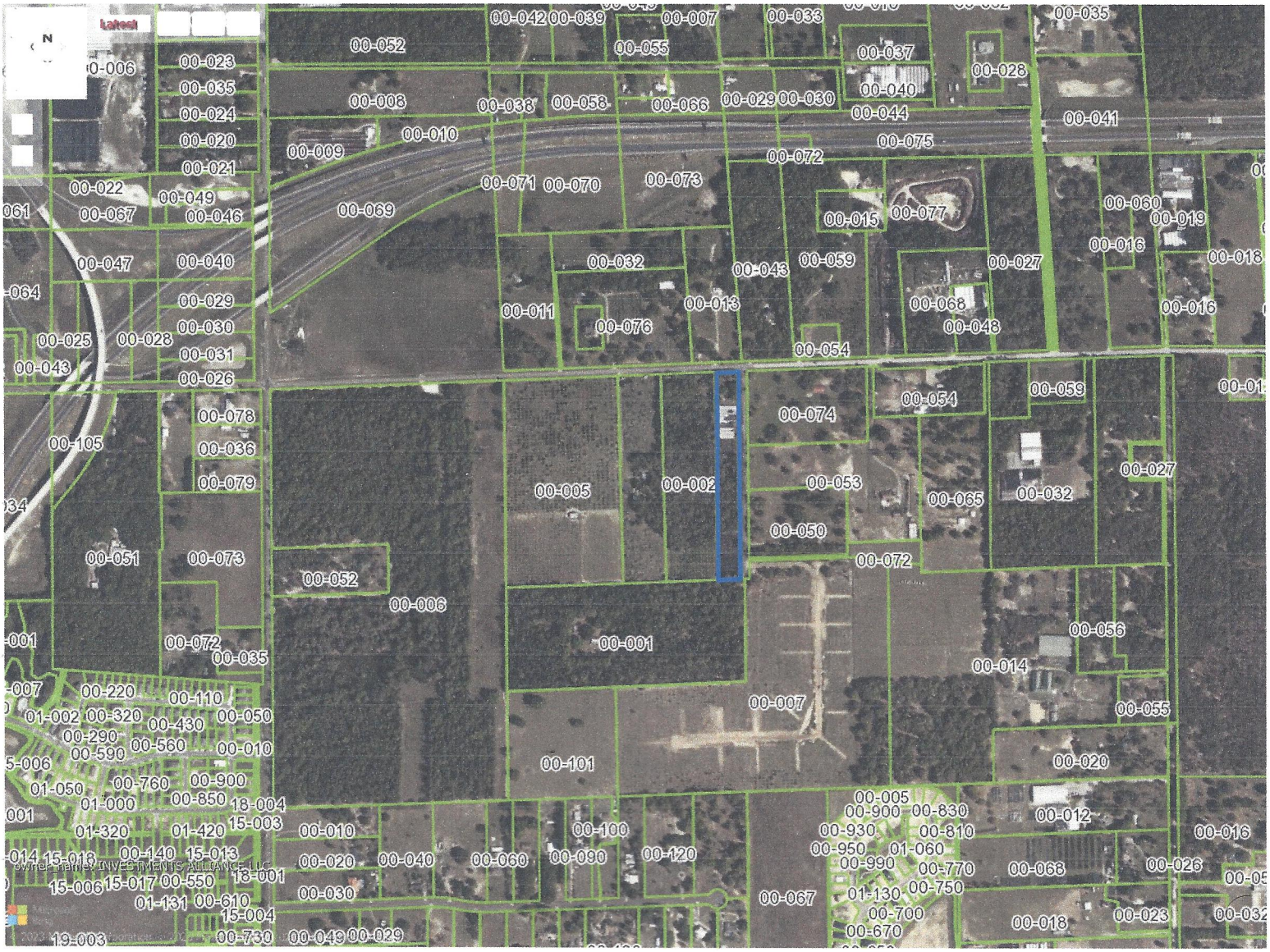
Patrick K. Ireland, Professional Surveyor & Mapper No. 6537 LB 7623
This Survey is Not Valid without the Original Signature of Said Certified Parties.
This Survey NOT VALID unless Sealed and Embossed with Surveyor's Seal.

Ireland & Associates Surveying, Inc.
800 Currency Circle Suite 1020
Lake Mary, Florida 32746
www.irelandsurveying.com
Office:407.878.3366 Fax:407.320.8165

Google Maps
TO Mahaffey Tree & Timber Company
Eric Wolfe Arabians
Firewood
Eden Landscape Enterprises., Inc
Haas Rd
Pine Valley Nursery
Pretty Party Ponies
Bay Hill Nursery
Foliage Wy
Ondich Rd
Sandhill Preserve
Plymouth Sorrento Rd
McGuire Rd
ADM Homes
Wind Song Farms
Cool Change Heat & Air
Horseshoe Loop
Bridle Path by DR Horton
Palomino Pl
Smithers Oasis
Park Ridge St
Dowman Dr
Hilltop Nursery Inc
429
437
Google



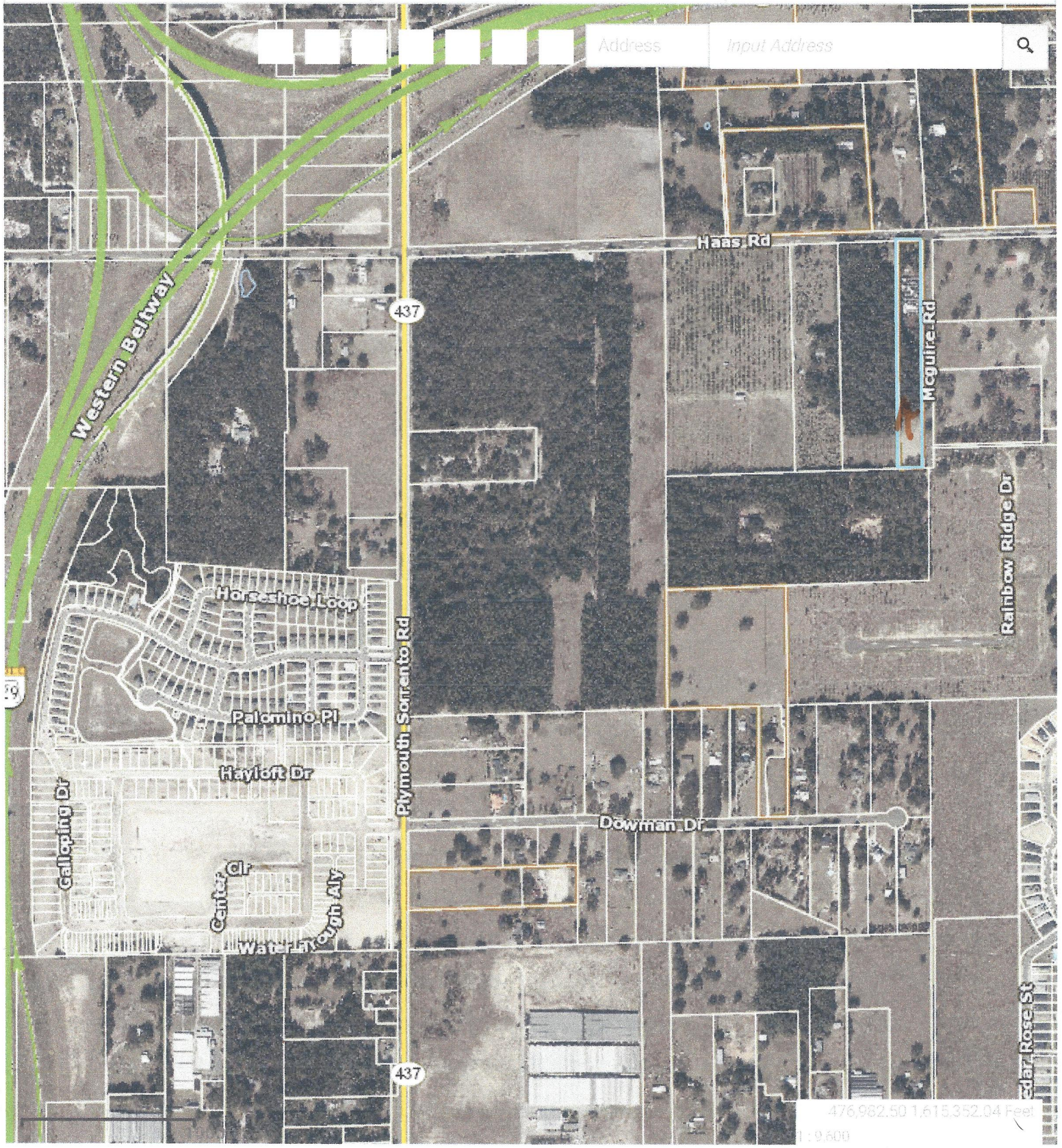
MAP LOCATION

Orange County Property Appraiser Florida

help

Base map | Layers | Foreclosure | Sales | Parcel Search | Legend | Identify

OCPA Tools | Custom Print | Trending | Parcel Themes



Orange County Property Appraiser Florida
help
Base map
Layers
Foreclosure
Sales
Parcel Search
Legend
Identify
OCPA Tools
Custom Print
Trending
Parcel Themes
NEIGHBORING
Address
Input Address
429
T
A-2
AG
A-1
2400
2200
2518 HAAS RD
P-D
Rainbow Ridge PD/LUP
HILLTOP ES
AT RAINB
Horseshoe Loop
BRIDLE
MU-N
0960
45
Palomino Pl
Hayloft Dr
WINDROSE
MU-N
R-CE
WALMAR
OAKS AT KELLY PARK PHASE 2
6106
36
MU-N
Orange County Property Appraiser
477,322.09 1,616,091.62 Feet
1:9,600

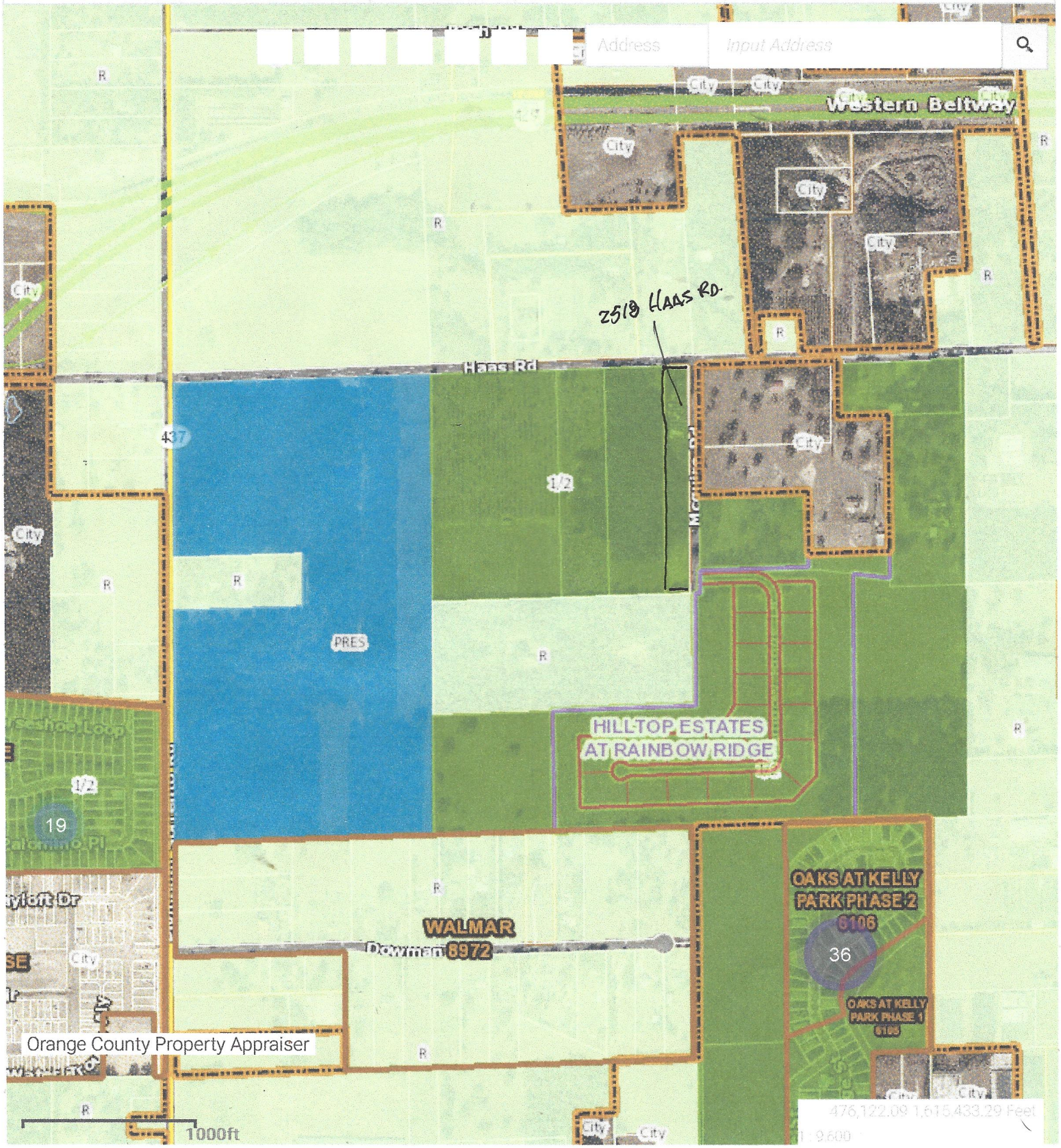
Orange County Property Appraiser Florida

help

Base map | Layers | Foreclosure | Sales | Parcel Search | Legend | Identify

OCPA Tools | Custom Print | Trending | Parcel Themes

CONTIGUITY CITY OF APOPKA



ENVIRONMENTAL PROTECTION DIVISION
David D. Jones, P.E., CEP, Manager
3165 McCrory Place, Suite 200
Orlando, FL 32803
407-836-1400 ▪ Fax 407-836-1499
www.ocfl.net

May 12, 2023

Investments Alliance LLC
c/o Francisco Torregrosa
Sandy Bottom Environmental
Email: javie88@gmail.com

Subject: **Petition for Binding Determination of Exemption**
Subject Site Address: 2518 Haas Road, Apopka, FL
Parcel ID No.: 07-20-28-0000-00-025
Application No.: CAD-23-03-043
Orange County Commission District: 2

Dear Mr. Torregrosa:

On March 30, 2023, the Orange County Environmental Protection Division (EPD) received a Petition for a Binding Determination of Exemption from the requirements of Chapter 15, Article X of the Orange County Code for the above-referenced property.

Chapter 15, Article X, Section 15-380, "Exemption – Determination", states as follows:

a) This article does not apply to any lands, which meet one of the following criteria:

1. Any lands which have been issued a development permit by the County for conservation areas prior to the effective date of this article; or

2. Any lands which have received a development order of binding vested right determination which addressed modification or alteration to conservation areas and which was issued prior to the effective date of this Chapter pursuant to Chapter 380 Florida Statutes.

b) Any owner of lands, which are comprised of non-wetland areas or who believes that their lands are exempt under this section, may submit such lands for a Binding Determination of Exemption as provided in Sections 15-381 and 15-382.

Upon review of the petition and the materials and information submitted, EPD has determined that there are no wetlands or surface waters (conservation areas) on the subject property. Based upon the foregoing, EPD has determined that the property owned by Ambika Labban, subject to the request, is exempt from Article X; therefore, the petition for an exemption from Chapter 15, Article X is granted.

Please be advised that per Orange County Code, Chapter 15, Article VIII, Section 15-304 (a), no development, land clearing, or other tree cutting or tree removal shall be permitted without first obtaining a tree removal permit and/or building permit with concurrent tree removal approval, unless exempted per section 15-279(a)(9). Contact Orange County Zoning at 407-836-5807 or Zoning@ocfl.net for questions regarding tree and/or vegetation clearing within the designated uplands on this property.

Should you have any question(s) concerning this review, please contact Nicole Salvatico at Nicole.Salvatico@ocfl.net.

Sincerely,

Nicole Salvatico
Senior Environmental Specialist

NS/KGK/TMH/ERJ/DJ/gfdjr:

Enclosure: Aerial Photograph of Property

c: Investments Alliance LLC, 7512 Dr Phillips Blvd., Ste. 50746, Orlando, FL 32819
Florida Department of Environmental Protection, DEP_CD@dep.state.fl.us

Subject Site Address: 2518 Haas Road, Apopka, FL Parcel:
Parcel ID No.: 07-20-28-0000-00-025
Application No.: CAD-23-03-043

U.S. Postal Service™
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Apopka, FL 32712

OFFICIAL USE

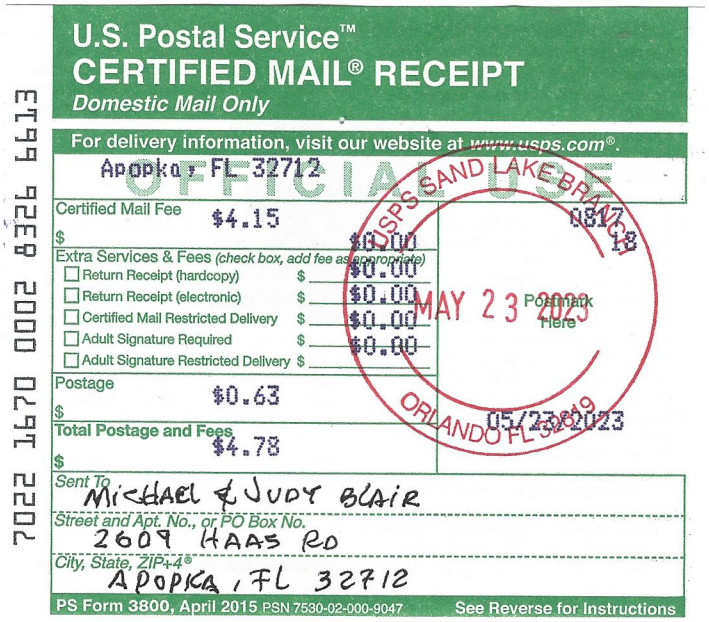
Certified Mail Fee $4.15
$ $0.00
Extra Services & Fees (check box, add fee as appropriate)
☐ Return Receipt (hardcopy) $ $0.00
☐ Return Receipt (electronic) $ $0.00
☐ Certified Mail Restricted Delivery $ $0.00
☐ Adult Signature Required $ $0.00
☐ Adult Signature Restricted Delivery $
Postage $0.63
$
Total Postage and Fees $4.78
$

USPS SAND LAKE BRANCH
MAY 23 2023
ORLANDO FL 328
0817 18
Postmark Here
05/23/2023

Sent To JOHN & VIRGINIA LAFRATE
Street and Apt. No., or PO Box No. 2200 HAAS RD
City, State, ZIP+4® APOPKA, FL 32712

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6606



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☐ Adult Signature Required $ $0.00
☐ Adult Signature Restricted Delivery $
Postage $0.63
$
Total Postage and Fees $4.78
$

USPS SAND LAKE BRANCH
MAY 23 2023
ORLANDO FL 32819
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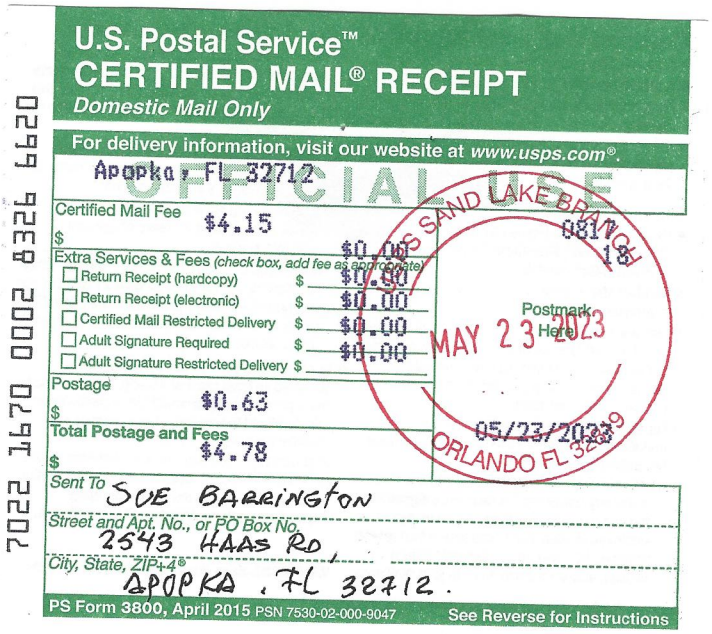
05/23/2023

Sent To MICHAEL & JUDY BLAIR
Street and Apt. No., or PO Box No. 2609 HAAS RD
City, State, ZIP+4® APOPKA, FL 32712

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6613



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☐ Return Receipt (electronic) $ $0.00
☐ Certified Mail Restricted Delivery $ $0.00
☐ Adult Signature Required $ $0.00
☐ Adult Signature Restricted Delivery $
Postage $0.63
$
Total Postage and Fees $4.78
$

USPS SAND LAKE BRANCH
MAY 23 2023
ORLANDO FL 32819
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Postmark Here
05/23/2023

Sent To SUE BARRINGTON
Street and Apt. No., or PO Box No. 2543 HAAS RD,
City, State, ZIP+4® APOPKA, FL 32712.

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6620

7022 1670 0002 8326 6637

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Longwood, FL 32779

OFFICIAL USE

Certified Mail Fee	$4.15
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH
0817 18
Postmark Here
MAY 23 2023
05/23/2023
ORLANDO FL 328

Sent To HENRY JAMES & SUSAN SCHAUBLE
Street and Apt. No., or PO Box No. 641 N LONGVIEW PL
City, State, ZIP+4® LONGWOOD, FL 32779

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6644

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Apopka, FL 32712

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Certified Mail Fee	$4.15
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH
0817 18
Postmark Here
MAY 23 2023
05/23/2023
ORLANDO FL 32819

Sent To CHARLES & ANNE NELSON
Street and Apt. No., or PO Box No. 2517 HAAS RD
City, State, ZIP+4® APOPKA, FL 32712

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6651

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Apopka, FL 32703

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Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH
0817 18
Postmark Here
MAY 23 2023
05/23/2023
ORLANDO FL 32819

Sent To HENRY William Jr.
Street and Apt. No., or PO Box No. 35 W LAUREL ST
City, State, ZIP+4® APOPKA, FL 32703

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
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Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH 0817 18
Postmark Here
MAY 23 2023
05/23/2023
ORLANDO FL 32819

Sent To HENRY William Jr.
Street and Apt. No., or PO Box No. 35 W LAUREL ST
City, State, ZIP+4® APOPKA, FL 32703

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6675

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Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
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Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH 0817 18
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MAY 23 2023
05/23/2023
ORLANDO FL 32819

Sent To HENRY William Jr.
Street and Apt. No., or PO Box No. 35 W. LAUREL ST.
City, State, ZIP+4® APOPKA, FL 32703

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Apopka, FL 32704

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Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
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Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH 0817 18
Postmark Here
MAY 23 2023
05/23/2023
ORLANDO FL 32819

Sent To GEORGE ARAB
Street and Apt. No., or PO Box No. P.O. BOX 4044
City, State, ZIP+4® APOPKA, FL 32704

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6699

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Apopka, FL 32712

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$	$0.00
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
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Postage	$0.63
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Total Postage and Fees	$4.78
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USPS SAND LAKE BRANCH
MAY 23 2023
ORLANDO FL 32819

0817
18

Postmark Here

05/23/2023

Sent To JOHN & VIRGINIA LAFRATE
Street and Apt. No., or PO Box No. 2300 HAAS RD.
City, State, ZIP+4® APOPKA, FL 32712

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6705

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Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
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Postage	$0.63
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Total Postage and Fees	$4.78
$	

USPS SAND LAKE BRANCH
MAY 23 2023
ORLANDO FL 32819

0817
18

Postmark Here

05/23/2023

Sent To JAMES HITT
Street and Apt. No., or PO Box No. 120 E MAIN ST
City, State, ZIP+4® APOPKA, FL 32703

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

Application for Special Exception **PROJECT NAME.** 2518 HAAS RD, APOPKA

AFFIDAVIT INSTRUCTIONS

The applicant is responsible for mailing a public hearing notice **via certified mail and posting the property** within 14 days of schedule Planning Commission meeting.

This Affidavit must be completed by the Applicant to verify the notice was mailed to the surrounding property owners (i.e. 300 foot list) and that the subject property was posted. The notice and poster are provided by the City after the request is filed

RETURN THE COMPLETED ORIGINAL AFFIDAVIT TO THE COMMUNITY DEVELOPMENT DEPARTMENT

NOTICE/POSTER AFFIDAVIT

OWNER AFFIDAVIT

STATE OF FLORIDA
COUNTY OF ORANGE
CITY OF APOPKA

BEFORE ME, the undersigned authority, this day personally appeared _____Rommel Fontana_____ who being by me first duly sworn, deposes and says:

1. That he/she is the owner or agent of the owner of said property in his/her effort to request:

X Annexation	**Special Exception**
X Rezoning	**Zoning Variance**
Future Land Use Change	**Other** _____

For that certain parcel of property as more particularly described in the Notice of Public Hearing attached hereto as Exhibit "A".

2. That notices were sent by certified mail return receipt to all property owners within 300 feet of the subject property on: 05/23/23 (Date)

A list of all property owners so notified, by certified mail return receipt requested, with their mailing addresses, return receipt card, and property identification is attached hereto as Exhibit "B".

3. That the subject property was **POSTED**, visible from a normally traveled public right of way: 05/23/23 (Date)

By: _____

Owner(s) of Record (Signature)

By: N/A

Agent or Owner(s) of Record (Signature)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this _____ day of

_____, 20 _____, by _____
Who is personally known to me or has produced _____
As identification and who did/did not (circle one) take an oath.

_____

Notary Public (Signature)

_____

Notary Public (Print Name)

My commission expires _____

SEE NOTARY ATTACHED

FL Acknowledgement Notary Certificate

Document Name: Application for Special Exception

STATE OF FLORIDA
COUNTY OF Orange
(County where notarization occurred)

On 6/9/2023 (date), before me, Francia M. Wah-Lung (Notary name), a notary public, personally appeared by physical presence, Rommel Juan F Fontana Lama (name(s) of signer(s)) who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the attached Application for Special Exception (name of document) instrument and acknowledged to me that that(he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or entity upon behalf of which the person(s) acted executed the instrument. I certify under PENALTY OF PERJURY under the laws of the State listed above that the foregoing paragraph is true and correct. WITNESS my hand and official seal.

Personally known _____ OR
Produced identification ✓ Type of identification produced: FL DL

(Signature of notary public)

My commission expires: Apr. 26, 2027

NOTARY PUBLIC
FRANCIA M. WAH-LUNG
Notary Public, State of Florida
Commission# HH 364338
My comm. expires April 26, 2027

Official Seal

Investments Alliance LLC
7512 Dr Phillips Blvd. suite 50746, Orlando FL 32819 (Ph) 321-750-9566; 407-309-7579

emails: fontalama@gmail.com rommelfontana@gmail.com

June 7, 2023
7:00 to 8:00 p.m.

Citizen Awareness & Participation Plan

1. Overview

A voluntarily community meeting was held regarding a proposed Annexation to the City of Apopka and Rezoning of the property to change the existing entitlement from Rural Agricultural to Residential Single Family Home for the mentioned property located between Hass Road and Mcguire Road and described as Tax Parcel ID 07-20-28-0000-00-025.

II. List of affected parties(with addresses) that were notified of the proposed project and invited to the Neighborhood Meeting.

Please see Appendix A

III. Number of Neighborhood Meeting Notices distributed.

Ten (10) notices were mailed to property owners within 300 feet of the subject property.

IV. A copy of the Neighborhood Meeting Notice

Please see Appendix B.

V. Neighborhood Meeting Notice distribution dated and method.

The notices were mailed via USPS certified return receipt on May 23,2023.

VI. The date and location of the Neighborhood Meeting.

Meeting was held on June 7, 2023 from 7:00 p.m. to 8:00 p.m. at 3080 W Kelly Park Rd, Apopka (Publix supermarket, 2nd Floor).

VII. The number of people that participated in the Neighborhood Meeting.

Two (2) members of the project team and three (3) people from the neighborhood within 300 feet and two (2) people out of range of neighborhood due they saw the sign on street.

VIII. A record of all phone calls and emails received, with a description of concerns, issues or problems discussed and contact information of caller.

a- Just one phone call received on Tuesday 6 of current made by Mr George Arab (ref South point) and told he gives the excuses for not attending the meeting due he had to leave out of town. Also He heard if the split went through were truth to build 15 houses , Our member clarified the comment was incorrect , and he asked if in the future we are willy to sell lots , he would get the last 2 lots close to his property , but our member said that was not in our plans to sell lots, but he said whatever decision just let me know.

b- In relation to the persons who assisted were interested to know what are the details of the project, size of the lots, quantity of houses. The major concern was how would it be conceived the drainage system, storm water and water supply, which our response was this will evaluate by the appropriate building department following the

requirements and specifications from the City of Apopka. In addition to this, they asked about the site plan, house plan design, in which our respond was Single Family Houses with range of (2500-3000) square foot of living area, but we considered that it was very early to discuss about this; Actually, we are trying to focus on the first phase: Annexation and Rezoning, the rest of points will remain for further submissions.

We spent most of time clarifying those details but once we conform the plans must submit to all pertinent department to review it.

In the conclusion, all of them are incorporated from Orange County and were agreed if it were them, they would like to keep the zone within unincorporated Orange County because they live in a huge land, and they said don't want to feel tight with too much people surrounding but recognized that the decision is not theirs because the property discussed is not belong to them; which our answer was they don't have to annex to city of Apopka, which means they can stay in Orange County living a big lot., knowing our project will not affect their property at all.

We clarified to them, the main topic is to inform that our property is going to annex to City and satisfy in base with our nearest neighbors (2200 and 2400 Haas Rd) that qualifies perfectly and be consistent in contiguity and this is a major reason and also mentioned to convert from abandoned and ruined property to nice houses and bring a good environment. Moreover, even the area is very low suburban, however the staff determined the maximum density may support 2 dwelling per acre and this is the maximum permitted under the City's comprehensive Plan, if annexed.

Also, one of the neighbors faced a project of single family houses in the back south side, where is being approve at Orange County, but this project has not contiguity and have to follow the requirements for Orange county.

APPENDIX A

1. George A Arab
   2490 Hass Rd
   P.O. box 4044
   Apopka, FL 32704

2. Henry William Jr.
   2526 Hass Rd
   35 W Laurel St
   Apopka, FL 32703

3. Michael and Judy Blair
   2609 Hass Rd
   Apopka, FL 32712

4. Sue Barrington
   2543 Hass Rd
   Apopka, FL 32712

5. Charles and Anne Nelson
   2517 Hass Rd
   Apopka, FL 32712

6. Henry, Susan & Carol Schauble Trust
   641 N Longview PL and/or **2400 Hass Rd**
   Longwood, FL 32779

7. John & Virginia Lafrate
   2200 Hass Rd
   Apopka, FL 32712

8. John & Virginia Lafrate
   2300 Hass Rd
   Apopka, FL 32712

9. Henry William Jr
   Parcel 07-20-28-000-00-072
   35 W Laurel St
   Apopka, FL 32703

10. Henry William Jr
    Rainbow Ridge Land LLC
    35 W Laurel St
    Apopka, FL 32

Investments Alliance LLC
7512 Dr Phillips Blvd. suite 50746, Orlando FL 32819 (Ph) 321-750-9566; 407-309-7579

emails: fontalama@gmail.com rommelfontana@gmail.com

VOLUNTARILY COMMUNITY MEETING NOTICE

May 23, 2023

Dear Resident:

You are invited to attend a Community Meeting hosted by Investments Alliance LLC, the new owner of the property 2518 HAAS ROAD, APOPKA FL 32717..

One application has been filed to the City of Apopka for an Annexation and Rezoning of the property to change the existing entitlement from Rural Agricultural to Residential Single-Family Homes for the property mentioned above and located in the corner of such Haas Rd and Macguire Rd.

This is identified as Orange County Parcel 07-20-28-0000-00-025 (See map for general depiction)

In our desire to inform you about the project on June 7, 2023 from 7:00 – 8:00 pm at The following convenient place:

PUBLIC SUPERMARKET (Dining area 2nd floor)
3800 W KELLY PARK RD.
APOPKA, FL 32712

This will be a great pleasure and would appreciate the opportunity to meet with you in person at that place.

Please RSVP to Yumiry Torres at fontalama@gmail.com or 407-923-0318 if you plan to attend.
Thank you

Owner/ Investments Alliance LLC

Investments Alliance LLC FLORIDA U.S.A.

Investments Alliance LLC
7512 Dr Phillips Blvd. suite 50746, Orlando FL 32819 (Ph) 321-750-9566; 407-309-7579

emails: fontalama@gmail.com rommelfontana@gmail.com

June 7, 2023
7:00 to 8:00 p.m.

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III. Number of Neighborhood Meeting Notices distributed.

Ten (10) notices were mailed to property owners within 300 feet of the subject property.

IV. A copy of the Neighborhood Meeting Notice

Please see Appendix B.

V. Neighborhood Meeting Notice distribution dated and method.

The notices were mailed via USPS certified return receipt on May 23,2023.

VI. The date and location of the Neighborhood Meeting.

Meeting was held on June 7, 2023 from 7:00 p.m. to 8:00 p.m. at 3080 W Kelly Park Rd, Apopka (Publix supermarket, 2nd Floor).

VII. The number of people that participated in the Neighborhood Meeting.

Two (2) members of the project team and three (3) people from the neighborhood within 300 feet and two (2) people out of range of neighborhood due they saw the sign on street.

VIII. A record of all phone calls and emails received, with a description of concerns, issues or problems discussed and contact information of caller.

a- Just one phone call received on Tuesday 6 of current made by Mr George Arab (ref South point) and told he gives the excuses for not attending the meeting due he had to leave out of town. Also He heard if the split went through were truth to build 15 houses , Our member clarified the comment was incorrect , and he asked if in the future we are willy to sell lots , he would get the last 2 lots close to his property , but our member said that was not in our plans to sell lots, but he said whatever decision just let me know.

b- In relation to the persons who assisted were interested to know what are the details of the project, size of the lots, quantity of houses. The major concern was how would it be conceived the drainage system, storm water and water supply, which our response was this will evaluate by the appropriate building department following the

requirements and specifications from the City of Apopka. In addition to this, they asked about the site plan, house plan design, in which our respond was Single Family Houses with range of (2500-3000) square foot of living area, but we considered that it was very early to discuss about this; Actually, we are trying to focus on the first phase: Annexation and Rezoning, the rest of points will remain for further submissions.

We spent most of time clarifying those details but once we conform the plans must submit to all pertinent department to review it.

In the conclusion, all of them are incorporated from Orange County and were agreed if it were them, they would like to keep the zone within unincorporated Orange County because they live in a huge land, and they said don't want to feel tight with too much people surrounding but recognized that the decision is not theirs because the property discussed is not belong to them; which our answer was they don't have to annex to city of Apopka, which means they can stay in Orange County living a big lot., knowing our project will not affect their property at all.

We clarified to them, the main topic is to inform that our property is going to annex to City and satisfy in base with our nearest neighbors (2200 and 2400 Haas Rd) that qualifies perfectly and be consistent in contiguity and this is a major reason and also mentioned to convert from abandoned and ruined property to nice houses and bring a good environment. Moreover, even the area is very low suburban, however the staff determined the maximum density may support 2 dwelling per acre and this is the maximum permitted under the City's comprehensive Plan, if annexed.

Also, one of the neighbors faced a project of single family houses in the back south side, where is being approve at Orange County, but this project has not contiguity and have to follow the requirements for Orange county.

APPENDIX A

1. George A Arab
   2490 Hass Rd
   P.O. box 4044
   Apopka, FL 32704

2. Henry William Jr.
   2526 Hass Rd
   35 W Laurel St
   Apopka, FL 32703

3. Michael and Judy Blair
   2609 Hass Rd
   Apopka, FL 32712

4. Sue Barrington
   2543 Hass Rd
   Apopka, FL 32712

5. Charles and Anne Nelson
   2517 Hass Rd
   Apopka, FL 32712

6. Henry, Susan & Carol Schauble Trust
   641 N Longview PL and/or **2400 Hass Rd**
   Longwood, FL 32779

7. John & Virginia Lafrate
   2200 Hass Rd
   Apopka, FL 32712

8. John & Virginia Lafrate
   2300 Hass Rd
   Apopka, FL 32712

9. Henry William Jr
   Parcel 07-20-28-000-00-072
   35 W Laurel St
   Apopka, FL 32703

10. Henry William Jr
    Rainbow Ridge Land LLC
    35 W Laurel St
    Apopka, FL 32

Investments Alliance LLC
7512 Dr Phillips Blvd. suite 50746, Orlando FL 32819 (Ph) 321-750-9566; 407-309-7579

emails: fontalama@gmail.com rommelfontana@gmail.com

VOLUNTARILY COMMUNITY MEETING NOTICE

May 23, 2023

Dear Resident:

You are invited to attend a Community Meeting hosted by Investments Alliance LLC, the new owner of the property 2518 HAAS ROAD, APOPKA FL 32717..

One application has been filed to the City of Apopka for an Annexation and Rezoning of the property to change the existing entitlement from Rural Agricultural to Residential Single-Family Homes for the property mentioned above and located in the corner of such Haas Rd and Macguire Rd.

This is identified as Orange County Parcel 07-20-28-0000-00-025 (See map for general depiction)

In our desire to inform you about the project on June 7, 2023 from 7:00 – 8:00 pm at The following convenient place:

PUBLIC SUPERMARKET (Dining area 2nd floor)
3800 W KELLY PARK RD.
APOPKA, FL 32712

This will be a great pleasure and would appreciate the opportunity to meet with you in person at that place.

Please RSVP to Yumiry Torres at fontalama@gmail.com or 407-923-0318 if you plan to attend.
Thank you

Owner/ Investments Alliance LLC

Investments Alliance LLC FLORIDA USA

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

Apopka, FL 32712

OFFICIAL USE

Certified Mail Fee $4.15
$ $0.00
Extra Services & Fees (check box, add fee as appropriate)
☐ Return Receipt (hardcopy) $ $0.00
☐ Return Receipt (electronic) $ $0.00
☐ Certified Mail Restricted Delivery $ $0.00
☐ Adult Signature Required $ $0.00
☐ Adult Signature Restricted Delivery $
Postage $0.63
$
Total Postage and Fees $4.78
$

USPS SAND LAKE BRANCH
MAY 23 2023
ORLANDO FL 328
0817 18
Postmark Here
05/23/2023

Sent To JOHN & VIRGINIA LAFRATE
Street and Apt. No., or PO Box No. 2200 HAAS RD
City, State, ZIP+4® APOPKA, FL 32712

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6606

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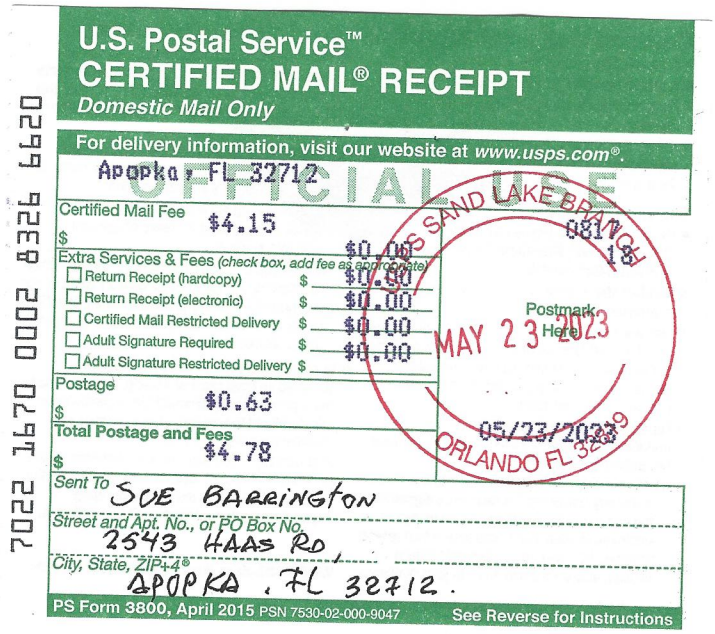
Extra Services & Fees (check box, add fee as appropriate)
☐ Return Receipt (hardcopy) $ $0.00
☐ Return Receipt (electronic) $ $0.00
☐ Certified Mail Restricted Delivery $ $0.00
☐ Adult Signature Required $ $0.00
☐ Adult Signature Restricted Delivery $
Postage $0.63
$
Total Postage and Fees $4.78
$

USPS SAND LAKE BRANCH
MAY 23 2023
ORLANDO FL 32819
0817 18
Postmark Here
05/23/2023

Sent To MICHAEL & JUDY BLAIR
Street and Apt. No., or PO Box No. 2609 HAAS RD
City, State, ZIP+4® APOPKA, FL 32712

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6613



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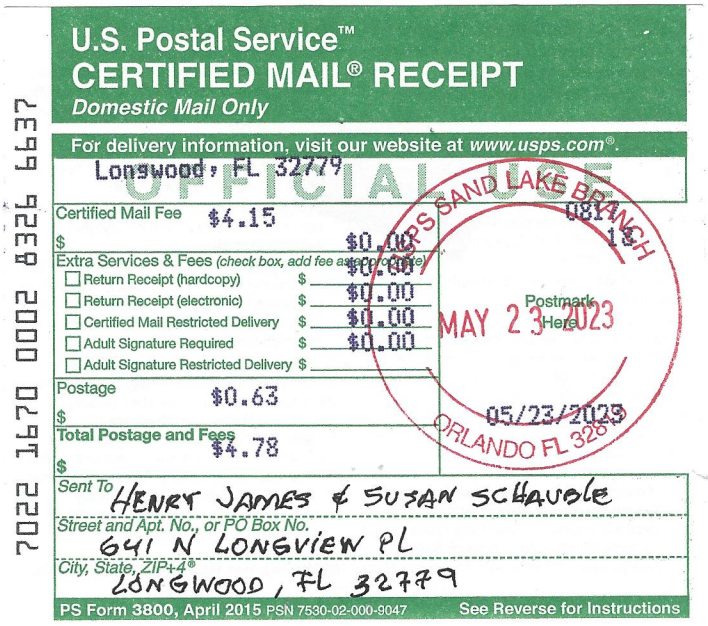
☐ Return Receipt (hardcopy) $ $0.00
☐ Return Receipt (electronic) $ $0.00
☐ Certified Mail Restricted Delivery $ $0.00
☐ Adult Signature Required $ $0.00
☐ Adult Signature Restricted Delivery $
Postage $0.63
$
Total Postage and Fees $4.78
$

USPS SAND LAKE BRANCH
MAY 23 2023
ORLANDO FL 32819
0817 18
Postmark Here
05/23/2023

Sent To SUE BARRINGTON
Street and Apt. No., or PO Box No. 2543 HAAS RD,
City, State, ZIP+4® APOPKA, FL 32712.

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6620



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Longwood, FL 32779

OFFICIAL USE

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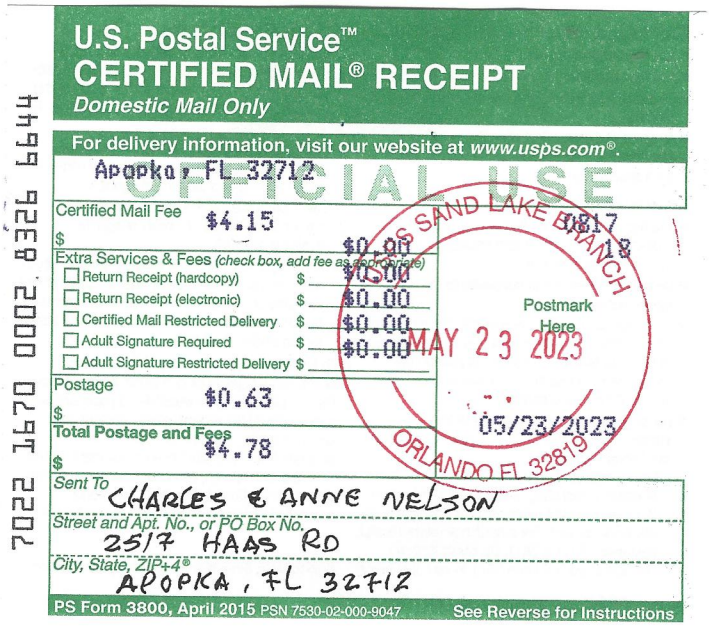
☐ Return Receipt (hardcopy)	$0.00
☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH
0817 18
Postmark Here
MAY 23 2023
05/23/2023
ORLANDO FL 328

Sent To HENRY JAMES & SUSAN SCHAUBLE
Street and Apt. No., or PO Box No. 641 N LONGVIEW PL
City, State, ZIP+4® LONGWOOD, FL 32779

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6637



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Apopka, FL 32712

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☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH
0817 18
Postmark Here
MAY 23 2023
05/23/2023
ORLANDO FL 32819

Sent To CHARLES & ANNE NELSON
Street and Apt. No., or PO Box No. 2517 HAAS RD
City, State, ZIP+4® APOPKA, FL 32712

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Apopka, FL 32703

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☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH
0817 18
Postmark Here
MAY 23 2023
05/23/2023
ORLANDO FL 32819

Sent To HENRY William Jr.
Street and Apt. No., or PO Box No. 35 W LAUREL ST
City, State, ZIP+4® APOPKA, FL 32703

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6651

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☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH 0817 18
Postmark Here
MAY 23 2023
05/23/2023
ORLANDO FL 32819

Sent To HENRY William Jr.
Street and Apt. No., or PO Box No. 35 W LAUREL ST
City, State, ZIP+4® APOPKA, FL 32703

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☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH 0817 18
Postmark Here
MAY 23 2023
05/23/2023
ORLANDO FL 32819

Sent To HENRY William Jr.
Street and Apt. No., or PO Box No. 35 W. LAUREL ST.
City, State, ZIP+4® APOPKA, FL 32703

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Extra Services & Fees (check box, add fee as appropriate)	
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☐ Return Receipt (electronic)	$0.00
☐ Certified Mail Restricted Delivery	$0.00
☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.63
Total Postage and Fees	$4.78

USPS SAND LAKE BRANCH 0817 18
Postmark Here
MAY 23 2023
05/23/2023
ORLANDO FL 32819

Sent To GEORGE ARAB
Street and Apt. No., or PO Box No. P.O. BOX 4044
City, State, ZIP+4® APOPKA, FL 32704

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Apopka, FL 32712

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$	$0.00
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.63
$	
Total Postage and Fees	$4.78
$	

USPS SAND LAKE BRANCH
MAY 23 2023
ORLANDO FL 32819

0817
18

Postmark Here

05/23/2023

Sent To JOHN & VIRGINIA LAFRATE
Street and Apt. No., or PO Box No. 2300 HAAS Rd.
City, State, ZIP+4® APOPKA, FL 32712

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

7022 1670 0002 8326 6705

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$	$0.00
Extra Services & Fees (check box, add fee as appropriate)	
☐ Return Receipt (hardcopy)	$ $0.00
☐ Return Receipt (electronic)	$ $0.00
☐ Certified Mail Restricted Delivery	$ $0.00
☐ Adult Signature Required	$ $0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.63
$	
Total Postage and Fees	$4.78
$	

USPS SAND LAKE BRANCH
MAY 23 2023
ORLANDO FL 32819

0817
18

Postmark Here

05/23/2023

Sent To JAMES HITT
Street and Apt. No., or PO Box No. 120 E MAIN ST
City, State, ZIP+4® APOPKA, FL 32703

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

Application for Special Exception **PROJECT NAME.** 2518 HAAS RD, APOPKA

AFFIDAVIT INSTRUCTIONS

The applicant is responsible for mailing a public hearing notice **via certified mail and posting the property** within 14 days of schedule Planning Commission meeting.

This Affidavit must be completed by the Applicant to verify the notice was mailed to the surrounding property owners (i.e. 300 foot list) and that the subject property was posted. The notice and poster are provided by the City after the request is filed

RETURN THE COMPLETED ORIGINAL AFFIDAVIT TO THE COMMUNITY DEVELOPMENT DEPARTMENT

NOTICE/POSTER AFFIDAVIT

OWNER AFFIDAVIT

STATE OF FLORIDA
COUNTY OF ORANGE
CITY OF APOPKA

BEFORE ME, the undersigned authority, this day personally appeared _____Rommel Fontana_____ who being by me first duly sworn, deposes and says:

1. That he/she is the owner or agent of the owner of said property in his/her effort to request:

X Annexation	**Special Exception**
X Rezoning	**Zoning Variance**
Future Land Use Change	**Other** _____

For that certain parcel of property as more particularly described in the Notice of Public Hearing attached hereto as Exhibit "A".

2. That notices were sent by certified mail return receipt to all property owners within 300 feet of the subject property on: 05/23/23 (Date)

A list of all property owners so notified, by certified mail return receipt requested, with their mailing addresses, return receipt card, and property identification is attached hereto as Exhibit "B".

3. That the subject property was **POSTED**, visible from a normally traveled public right of way: 05/23/23 (Date)

By: _____

Owner(s) of Record (Signature)

By: N/A

Agent or Owner(s) of Record (Signature)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this _____ day of

_____, 20 _____, by _____
Who is personally known to me or has produced _____
As identification and who did/did not (circle one) take an oath.

_____

Notary Public (Signature)

_____

Notary Public (Print Name)

My commission expires _____

SEE NOTARY ATTACHED

FL Acknowledgement Notary Certificate

Document Name: Application for Special Exception

STATE OF FLORIDA
COUNTY OF Orange
(County where notarization occurred)

On 6/9/2023 (date), before me, Francia M. Wah-Lung (Notary name), a notary public, personally appeared by physical presence, Rommel Juan F Fontan Lama (name(s) of signer(s)) who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the attached Application for Special Exception (name of document) instrument and acknowledged to me that that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or entity upon behalf of which the person(s) acted executed the instrument. I certify under PENALTY OF PERJURY under the laws of the State listed above that the foregoing paragraph is true and correct. WITNESS my hand and official seal.

Personally known _____ OR
Produced identification ✓ Type of identification produced: FL DL

(Signature of notary public)

My commission expires: Apr. 26, 2027

NOTARY PUBLIC
FRANCIA M. WAH-LUNG
Notary Public, State of Florida
Commission# HH 364338
My comm. expires April 26, 2027

Official Seal

ENVIRONMENTAL PROTECTION DIVISION
David D. Jones, P.E., CEP, Manager
3165 McCrory Place, Suite 200
Orlando, FL 32803
407-836-1400 ▪ Fax 407-836-1499
www.ocfl.net

May 12, 2023

Investments Alliance LLC
c/o Francisco Torregrosa
Sandy Bottom Environmental
Email: javie88@gmail.com

Subject: **Petition for Binding Determination of Exemption**
Subject Site Address: 2518 Haas Road, Apopka, FL
Parcel ID No.: 07-20-28-0000-00-025
Application No.: CAD-23-03-043
Orange County Commission District: 2

Dear Mr. Torregrosa:

On March 30, 2023, the Orange County Environmental Protection Division (EPD) received a Petition for a Binding Determination of Exemption from the requirements of Chapter 15, Article X of the Orange County Code for the above-referenced property.

Chapter 15, Article X, Section 15-380, "Exemption – Determination", states as follows:

a) This article does not apply to any lands, which meet one of the following criteria:

1. Any lands which have been issued a development permit by the County for conservation areas prior to the effective date of this article; or

2. Any lands which have received a development order of binding vested right determination which addressed modification or alteration to conservation areas and which was issued prior to the effective date of this Chapter pursuant to Chapter 380 Florida Statutes.

b) Any owner of lands, which are comprised of non-wetland areas or who believes that their lands are exempt under this section, may submit such lands for a Binding Determination of Exemption as provided in Sections 15-381 and 15-382.

Upon review of the petition and the materials and information submitted, EPD has determined that there are no wetlands or surface waters (conservation areas) on the subject property. Based upon the foregoing, EPD has determined that the property owned by Ambika Labban, subject to the request, is exempt from Article X; therefore, the petition for an exemption from Chapter 15, Article X is granted.

Please be advised that per Orange County Code, Chapter 15, Article VIII, Section 15-304 (a), no development, land clearing, or other tree cutting or tree removal shall be permitted without first obtaining a tree removal permit and/or building permit with concurrent tree removal approval, unless exempted per section 15-279(a)(9). Contact Orange County Zoning at 407-836-5807 or Zoning@ocfl.net for questions regarding tree and/or vegetation clearing within the designated uplands on this property.

Should you have any question(s) concerning this review, please contact Nicole Salvatico at Nicole.Salvatico@ocfl.net.

Sincerely,

Nicole Salvatico
Senior Environmental Specialist

NS/KGK/TMH/ERJ/DJ/gfdjr:

Enclosure: Aerial Photograph of Property

c: Investments Alliance LLC, 7512 Dr Phillips Blvd., Ste. 50746, Orlando, FL 32819
Florida Department of Environmental Protection, DEP_CD@dep.state.fl.us

Subject Site Address: 2518 Haas Road, Apopka, FL Parcel:
Parcel ID No.: 07-20-28-0000-00-025
Application No.: CAD-23-03-043

NARRATIVE LETTER

The responses to zoning review standards are below:

1.- The proposal to re zone the land is consistent and fulfill the goals, objectives, and policies of the comprehensive plans and all other applicable Citi-adopted plans.

2.- The property is free from any conflict with any portion of this LDC.

3.- Even it is a rural area, there are many reasons to develop nice lots and convert this abandon place of obsolete greenhouse yard and improve with new houses to conform a good environment due a growing zone with many development projects nearby having this new highway 429 which connects all principal arteries and important points in Orlando Area.

4.-The proposed zoning is compatible within the location of KPI Neighborhood Design District with density of 2 du/ac doing through McGuire Road.

5.-The proposal consist in a logical and orderly development pattern with lots defined by 155' front x140' deep each one. In total 8 lots of ½ acre.

6.- The proposed rezoning and annexation to the City will increase the value of any property in the surrounding area.

7.- There is a street paved in excellent condition and the both Hass Rd and Macguire Road have 60' ROW.

8.- Fortunately we have a current CAD report from Orange County which shows not wetlands at all in whole property, and not affect the natural environment.
.

Note: This property has been pre-qualified for the requesting petition through the department of Planning of City Apopka where the Staff has determined the future land use designation to support Residential Low Suburban, permitting this proposal with the maximum density 2 dwelling/acre where has contiguity of 2 properties which are 2200 and 2400 located on Hass Rd, for facing East from our property.

Boundary & Topographic Survey

Legal Description:

BEGIN AT THE NE CORNER OF NE 1/4 OF NW 1/4 OF SECTION 7, TOWNSHIP 20 SOUTH, RANGE 28 EAST, RUN THENCE SOUTH 1326.1 FEET, THENCE WEST 170 FEET, THENCE NORTH 1326.1 FEET, THENCE EAST 170 FEET TO THE POINT OF BEGINNING, CONTAINING 5 ACRES MORE OR LESS. LESS THE NORTH 30 FEET AND EAST 30 FEET FOR ROAD.

FLOOD DISCLAIMER:
BY PERFORMING A SEARCH WITH THE LOCAL GOVERNING MUNICIPALITY OR WWW.FEMA.GOV, THE PROPERTY APPEARS TO BE LOCATED IN ZONE X. THIS PROPERTY WAS FOUND IN ORANGE COUNTY. COMMUNITY NUMBER 120176. DATED 2021-09-24.

CERTIFIED TO:
INVESTMENTS ALLIANCE LLC

-Benchmark Information-

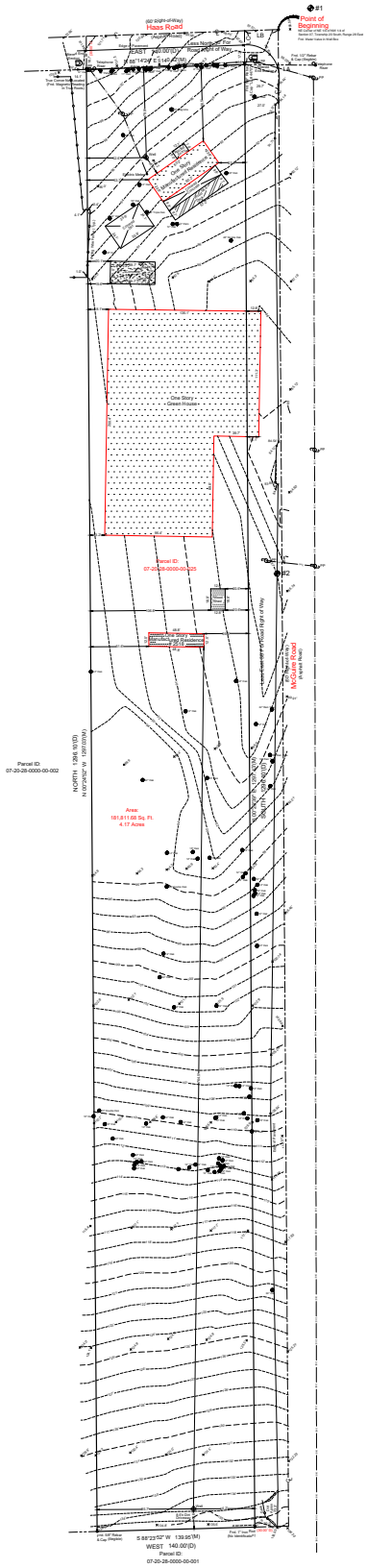
Florida Department of Transportation Datum

(Elevations are based upon North American Vertical Datum 1988)

-Site Benchmark Information-

#1
Fnd Rebar (No Identification).
Elevation: 95.77'

#2
Fnd. Nail & Disk (No Identification).
Elevation: 86.23'

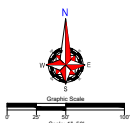


LA
EAST 60.00'(D)
N 89°27'40" E 62.73'(M)

LB
30.00'(D)
N 87°35'07" E 30.04'(C)

LC
30.00'(D)
S 00°23'20" E 29.99'(C)

Bearings are based on GPS Observations
State Plane Coordinates Florida East Zone 0901 - NAD '83



Scale: 1"=50'

Tree Note:
Palm - Denotes Tree Type
(18") - Diameter of Tree measured at Chest Height

Field Date: 05/02/23 | Date Completed: 05/08/23
Drawn By: SP | File Number: IS-117631

-Legend-

C	- Calculated	PC	- Point of Curvature
CB	- Concrete Block	POC	- Point of Commencement
CM	- Concrete Monument	P.O.B.	- Point of Beginning
Conc.	- Concrete	POL	- Point of Line
Des.	- Description	PR	- Power Pole
Ds.	- Drainage Easement	PRM	- Permanent Reference Monument
E	- Calculated	PT	- Point of Tangency
F.E.M.A.	- Federal Emergency Management Agency	R	- Radius
FFE	- Finished Floor Elevation	Rad.	- Radial
Fnd.	- Found	R&C	- Rebar & Cap
I.P.	- Iron Pipe	Rec.	- Recovered
L	- Measured	Ret.	- Retain
M	- Measured	Set	- Set "5/8" Rebar & Cap "LB 7623"
N&D	- Nail & Disk	Typ.	- Typical
O/H	- Overhead	UE	- Utility Easement
ORB	- Official Records Book	W	- Water Meter
P.B.	- Plat Book	Δ	- Delta (Central Angle)
P.C.	- Wood Fence	℄	- Chain Link Fence

-Notes-

- Survey is Based upon the Legal Description Supplied by Client. Abutting Properties Deeds have NOT been Researched for Gaps, Overlaps and/or Hiatus.
- Subject to any Easements and/or Restrictions of Record.
- Bearings, if Any, Are Assumed Relative to the Line Bearings with a "(M)".
- Building Ties are NOT to be used to reconstruct Property Lines.
- Fence Ownership is Not determined.
- Roof Overhangs, Underground Utilities and/or Footers have NOT been Located, Unless Otherwise Noted.
- Septic Tanks and/or Drain field locations are approximate and MUST be verified by appropriate Utility Location Companies.
- Use of this Survey for any purpose other than Intended, Without Written Verification, Will be at the User's Sole Risk and Without Liability to the Surveyor. Nothing Hereon shall be Construed to give any Rights or Benefits to Anyone other than those Certified.
- Flood Zone, Determination Shown Hereon is Given as a Courtesy, and is Subject to Final Approval by F.E.M.A. This Determination may be Subject to Errors, Omissions, Misinterpretation, and Change. Reliance by NONE given to this Surveying Company at the time of this Endeavor. Ireland & Associates Surveying Inc. and the signing surveyor assume NO Liability for the Accuracy of the Determination.

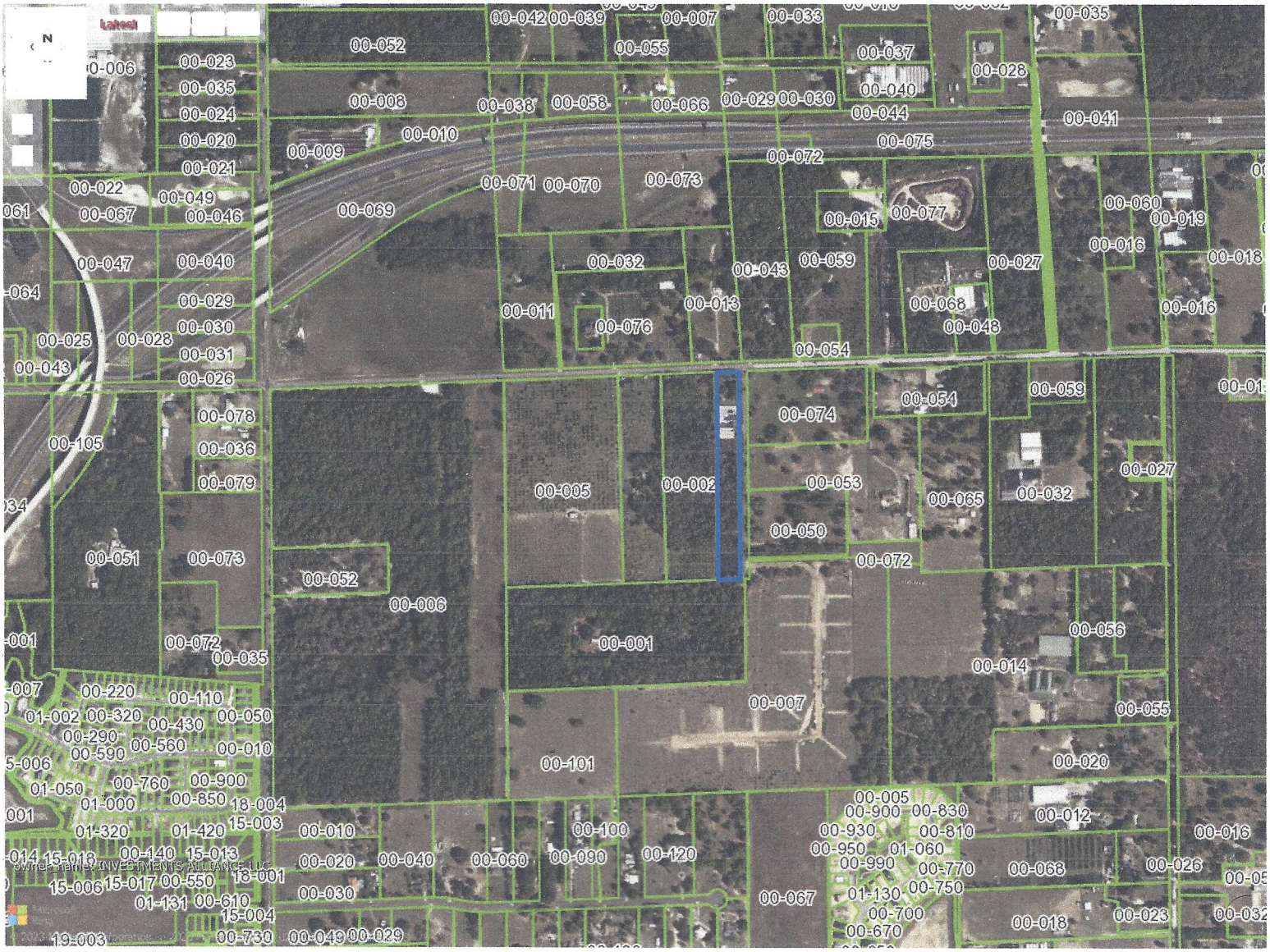
Revisions

I Hereby Certify that this Boundary Survey of the above Described Property is True and Correct to the Best of my Knowledge and Belief, Has been Made under my Direction on the Date Shown, Based on Information Furnished to Me. Further, I Certify that this Survey Meets the Minimum Technical Standards Set Forth by the Board of Professional Surveyors and Mappers in the State of Florida in accordance with Chapter 5J-17.051, Florida Administrative Codes, Pursuant to Section 472.027, Florida Statutes.

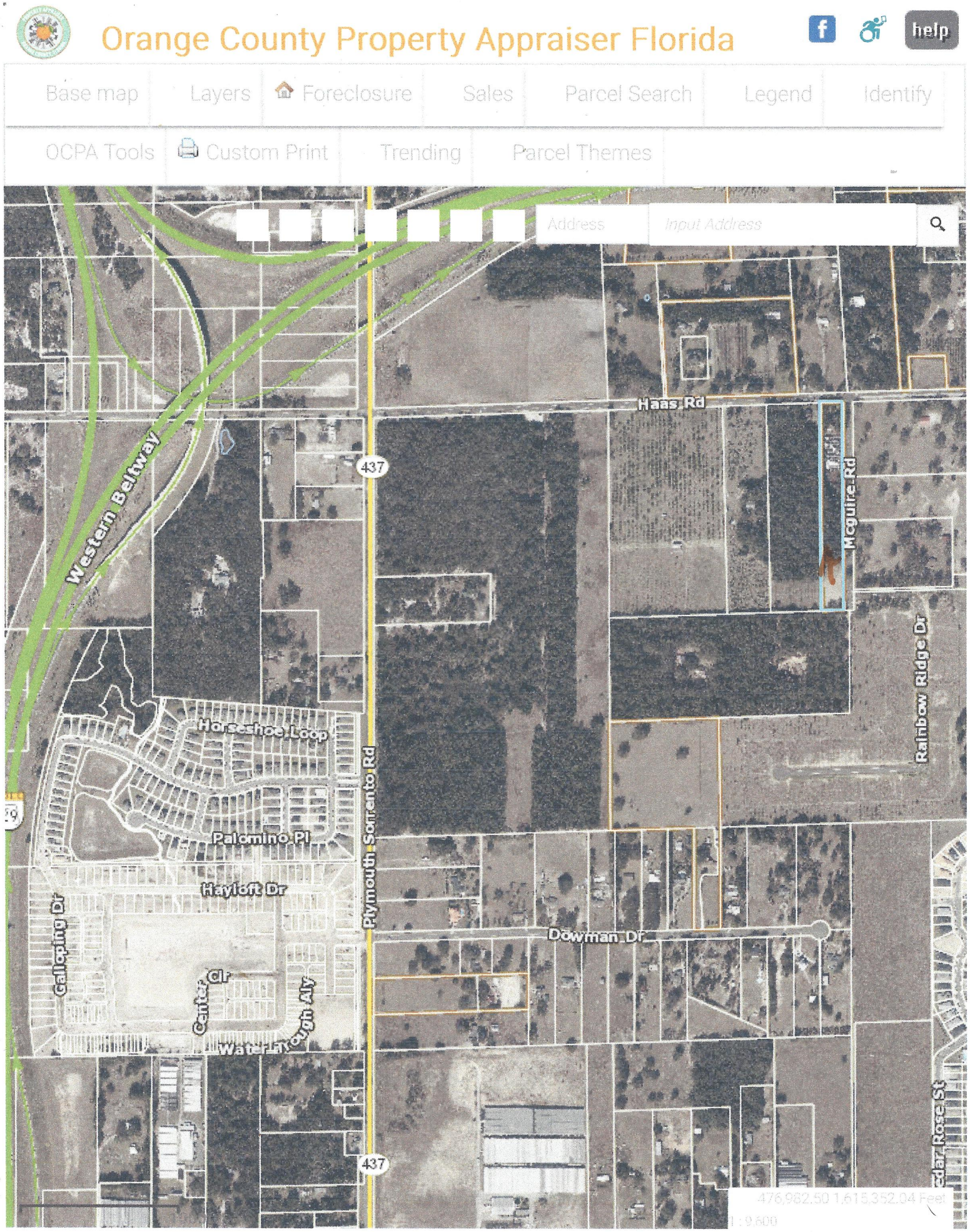
Patrick K. Ireland, PSM 6937 LB 7623
This Survey is Not Valid without the Original Signature of Said Certified Parties.
This Survey NOT VALID unless Sealed and Embossed with Surveyor's Seal.

Ireland & Associates Surveying, Inc.
800 Currency Circle Suite 1020
Lake Mary, Florida 32746
www.irelandsurveying.com
Office:407.878.3366 Fax:407.320.8165

Google Maps
429
Ondich Rd
Ondich Rd
Ondich Rd
Sandhill Preserve
Haas Rd
Haas Rd
Pine Valley Nursery
TO Mahaffey Tree & Timber Company
Eric Wolfe Arabians
Firewood
Eden Landscape Enterprises., Inc
Pretty Party Ponies
Bay Hill Nursery
McGuire Rd
Foliage Wy
Foliage Wy
Foliage Wy
Plymouth Sorrento Rd
Sandhill Preserve
ADM Homes
Wind Song Farms
Cool Change Heat & Air
Horseshoe Loop
Bridle Path by DR Horton
Palomino Pl
437
Smithers Oasis
Park Ridge St
Dowman Dr
Dowman Dr
Hilltop Nursery Inc
Google



MAP LOCATION


Orange County Property Appraiser Florida
help
Base map
Layers
Foreclosure
Sales
Parcel Search
Legend
Identify
OCPA Tools
Custom Print
Trending
Parcel Themes
Address
Input Address
Haas Rd
Western Beltway
437
Maguire Rd
Rainbow Ridge Dr
Horseshoe Loop
Palomino Pl
Hayloft Dr
Galloping Dr
Plymouth Sorrento Rd
Dowman Dr
Canter Cir
Water Trough Aly
Cedar Rose St
476,962.50 1,615,352.04 Feet

Orange County Property Appraiser Florida
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OCPA Tools
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2200
2518 HAAS RD
P-D
HILLTOP ES
AT RAINB
Rainbow
Ridge PD/LUP
Horseshoe Loop
BRIDLE
MU-N
0960
45
Palomino Pl
Hayloft Dr
R-CE
WALMAR
WINDROSE
MU-N
OAKS AT KELLY
PARK PHASE 2
6106
36
MU-N
Orange County Property Appraiser
477,322.09 1,616,091.62 Feet
1:9,600

Orange County Property Appraiser Florida
help
Base map
Layers
Foreclosure
Sales
Parcel Search
Legend
Identify
OCPA Tools
Custom Print
Trending
Parcel Themes
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Address
Input Address
Western Beltway
2518 HAAS RD.
Haas Rd
437
PRES
HILLTOP ESTATES AT RAINBOW RIDGE
WALMAR
Dowman 6972
OAKS AT KELLY PARK PHASE 2
6106
36
OAKS AT KELLY PARK PHASE 1
6105
19
Orange County Property Appraiser
1000ft
476,122.09 1,615,433.29 Feet

-- FOR OFFICIAL USE ONLY--	
DATE SUBMITTED:	6.12.23
FEE PAID: $	3200-
CHECK #:	CC
RECEIPT #:	300678

City of Apopka
Community Development Department
120 E. Main Street, 2nd Floor
Apopka, FL 32703
407-703-1712

APPLICATION FOR FUTURE LAND USE AND/OR ZONING AMENDMENT

RECEIVED
MAY 18 2023
PLANNING & ZONING

Check One	REQUEST	FEES
	Large Scale Future Land Use (FLU) Change (>50 acres)	$4,000
✓	Small Scale Future Land Use (FLU) Change (<50 acres)	$2,000
✓	Zoning Amendment	$1,200

Owner of Record:	INVESTMENTS ALLIANCE LLC					
Address:	7512 DR. PHILLIPS BLVD. SUITE 50746					
City:	ORLANDO			State: FL	Zip:	32819
Phone:	321-750-9566		E-Mail:	rfltcontractors@gmail.com		

Applicant:	ROMMEL FONTANA					
Address:	7097 CARRICKBEND LANE					
City:	ORLANDO			State: FL	Zip:	32819
Phone:	321-750-9566		E-Mail:	rommelfontana@gmail.com		

Subject Property Parcel I.D. #(s):	07-20-28-0000-00-025
Subject Property Address:	2518 HAAS ROAD, APOPKA, FL 32712
Subject Property Size (acres):	4.17 ACRES

ADJACENT PROPERTY:

Direction	*Jurisdiction Circle One*		*Future Land Use*	*Zoning*	*Present Use*
North	City	(County)	AGRICULTURE	A2	AGRICULTURE AND S.F.
East	(City)	County	SINGLE FAMILY	AG	AGRICULTURE AND S.F.
South	City	(County)	AGRICULTURE	A1	AGRICULTURE AND P.D.
West	City	(County)	AGRICULTURE	A1	AGRICULTURE

ANNEXATION AFFIDAVIT
CITY OF APOPKA

Parcel Identification No(s): 07-20-28-0000-00-025

Property Owner(s) Name(s): INVESTMENTS ALLIANCE LLC / ROMMEL FONTANA
YUMIRT TORRES / GENEROUS FONTANA

I (We), the undersigned owner(s) of the above described property, understand that after a property is annexed into the jurisdiction of the City of Apopka, a future land use designation and zoning category must be assigned to the property pursuant to Florida law and consistent with a joint planning agreement established between the City of Apopka and Orange County government. If an applicant for annexation fails to submit an application for a future land use designation and zoning category within six (6) months of the effective date of the applicable annexation ordinance, the City of Apopka may proceed with an administrative process to make such assignments to the property.

I (We), the undersigned owner(s) of the above described property, agree that in the event an application for a future land use and zoning amendment are not submitted within six (6) months from the effective date of the annexation ordinance, I/we do not object to the City of Apopka assigning a future land use designation and zoning comparable to that which was assigned by Orange County government to the same property.

CERTIFICATION AND SIGNATURE

By: _____
Owner(s) of Record (Signature)
ROMMEL FONTANA
(Print Name)

By: _____
Owner(s) of Record (Signature)
_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 16th day of May, 2023, by Rommel Fontana Iama who is personally known to me or has produced FL DL as identification and who did / did not (circle one) take an oath.

INDYA MCKNIGHT
Notary Public - State of Florida
Commission # HH 336591
My Comm. Expires Nov 29, 2026

_____
Notary Public (Signature)
Indya Mcknight
Notary Public (Print Name)

My Commission Expires: Nov 29, 2026

Existing Use:	AGRICULTURE		Proposed Use:	RESIDENTIAL SFH.	
FLU Amendment:	From:	RURAL	To:	RESIDENTIAL SFH.	
Zoning Amendment:	From:	RURAL	To:	RSF-1A	

Number of Persons Residing on the Subject Property:	NONE
Improvements Existing on Property:	ABANDON GREEN HOUSES AND OLD MANUF. HOUSE. HAS SEPTIC AND WELL PUMP
Additional Conditions Requested by Applicant:	2 DWELLING UNITS PER ACRE.

Circle either YES or NO if the following public improvement(s) are available either on or adjacent to the subject property:

Paved Street Meeting City Standards:		(Yes)		No	
Curb and Gutter:		Yes		(No)	
Stormwater Drainage:		Yes		(No)	
Water:		Yes		(No)	
Sewer:		Yes		(No)	
Street Lights:		Yes		(No)	
Underwriter Approved Fire Hydrant:		Yes		(No)	

Other:	HAAS ROAD AND MCGUIRE ROAD HAS PAVED STREET IN EXCELLENT CONDITIONS.

DOCUMENTS REQUIRED FOR SUBMITTAL (Electronic Submission on CD only)

- Signed, Notarized Authorized Agent Form (if property owner did not sign application)
- Signed & Sealed Boundary Survey
- Location Map/Aerial Photo
- Property Deed
- Documents confirming required Community Meeting
- Responses to zoning review standards below

1. ***Is consistent with and furthers the goals, objectives, and policies of the comprehensive plan and all other applicable City-adopted plans;***
2. ***Is not in conflict with any portion of this LDC;***
3. ***Addresses a demonstrated community need;***
4. ***Is compatible with existing and proposed uses surrounding the subject land, and is the appropriate zoning district for the land;***
5. ***Would result in a logical and orderly development pattern;***
6. ***Would not adversely affect the property values in the area;***
7. ***Would result in development that is adequately served by public facilities (roads, potable water, wastewater, solid waste, storm water, schools, parks, police, and fire and emergency medical facilities); and***
8. ***Would not result in significantly adverse impacts on the natural environment—including, but not limited to, water, air, noise, storm water management, wildlife, vegetation, wetlands, and the natural functioning of the environment; and***

CERTIFICATION AND SIGNATURE

By: _____
Owner(s) of Record (Signature)

ROMMEL FONTANA
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 11th day of May, 2023 by Rommel Fontana Lara who is personally known to me or has produced FL DL as Identification and who did / did not (circle one) take an oath.

INDYA MCKNIGHT
Notary Public - State of Florida
Commission # HH 336591
My Comm. Expires Nov 29, 2026

My Commission Expires: Nov 29, 2026

_____
Notary Public (Signature)

Indya Mcknight
Notary Public (Print Name)

FINAL CONSTRUCTION PLANS

for

APOPKA MULTI-FAMILY

CITY OF APOPKA, FLORIDA

PARCEL ID:
10-21-28-0198-32-580
10-21-28-0198-32-621
10-21-28-0198-32-170
10-21-28-0198-32-240
10-21-28-0198-32-270

DEVELOPER/OWNER:

URBAN COMFORT, LLC
1862 ARLINGTON CT
LONGWOOD, FL 32779
JACK SPEACKS
407-557-6208
JACK@ROIFUNDINGLLC.COM

ENGINEER / PLANNER:

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD SUITE 241.
ORLANDO, FL 32828
PHONE: 407-207-9088
FAX: 407-207-9089
CONTACT: DAVE SCHMITT, P.E.

SURVEYOR:
IRELAND & ASSOCIATES
1301 S INTERNATIONAL PARKWAY
SUITE 201
LAKE MARY, FL 32746
PHONE: 407-678-3366
CONTACT: JACK SPEAKS

LANDSCAPE ARCHITECT:
BORELLI & PARTNERS
720 VASSAR ST,
ORLANDO, FLORIDA 32804
CONTACT: CHRIS RICE

LEGAL DESCRIPTION:

REVISED PLAT BLK C APOPKA F/101 THE N1/2 OF LOTS 262 & 263 & W1/2 OF N1/2 OF LOT 264

Parcel 1: Lots 259, 260, and 261, and the North half of Lots 262 and 263, and the West half of the North half of Lot 264, Revised Plat of a Portion of Block "C" Apopka, Florida, according to the plat thereof as recorded in Plat Book F, Page 101, Public Records of Orange County, Florida.

Parcel 2: Lots 217, 218, 219, 220, 221, 222, and 223, Revised Plat of a Portion of Block "C" Apopka, Florida, according to the Plat thereof as recorded in Plat Book F, at Page 101, of the Public Records of Orange County, Florida.

Parcel 3: Lots 224, 225, and 226, and the North 1/2 of Lots 265 and 266 and the East 1/2 of the North 1/2 of Lot 264, Revised Plat of a Portion of Block "C" Apopka, Florida, according to the Plat thereof as recorded in Plat Book F, at Page 101, of the Public Records of Orange County, Florida.

Parcel 4: Lots 227, 228, 229, and 230,Revised Plat of a Portion of Block "C" Apopka, Florida, Plat Book "F", Page 101, of the Public Records of Orange County, Florida.

FLOOD DISCLAIMER:
BY PERFORMING A SEARCH WITH THE LOCAL GOVERNING MUNICIPALITY OR WWW.FEMA.GOV, THE PROPERTY APPEARS TO BE LOCATED IN ZONE X. THIS PROPERTY WAS FOUND IN CITY OF APOPKA, COMMUNITY NUMBER 120180, DATED 9/25/2009.

ELECTRIC SERVICE:
DUKE ENERGY
P.O. BOX 14042
ST. PETERSBURG, FL 33733
CONTACT: CHRISTINA POSHARD
PHONE: 407-464-1229

TELEPHONE / CABLE SERVICE:
CENTURYLINK
100 CENTURYLINK DRIVE
MONROE, LA 71203
CONTACT: HARY TOLEDO
PHONE: 833-283-4773

WATER & SEWER SERVICE:
CITY OF APOPKA
748 EAST CLEVELAND STREET
APOPKA, FL 32703
CONTACT: JORGE GARCIA
PHONE: 407-703-1731

GAS SERVICE:
LAKE APOPKA NATURAL GAS DISTRICT
38 NORTH LAKE PARK AVENUE
APOPKA, FL 32703
CONTACT: EVERETT HOLMES
PHONE: 407-410-7024

811 Know what's **below.** **Call** before you dig.
FL STATUE 553.851 (1979) REQUIRES MIN. OF 2 DAYS AND MAX. OF 5 DAYS NOTICE BEFORE YOU EXCAVATE.

PREPARED FOR:

URBAN COMFORT LLC

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

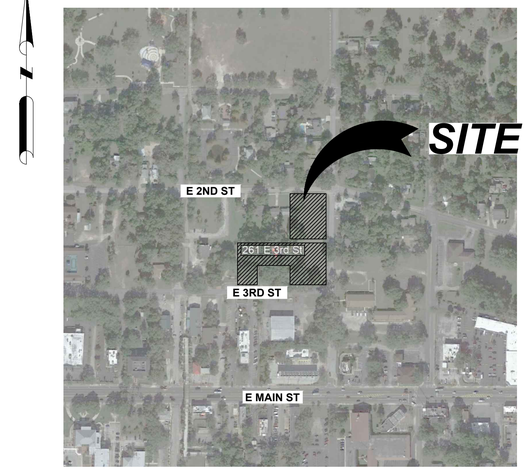
THIS IS TO CERTIFY THAT THE ROADWAY CONSTRUCTION PLANS AND SPECIFICATIONS AS CONTAINED HEREIN WERE DESIGNED TO APPLICABLE STANDARDS AS SET FORTH IN THE "MANUAL OF UNIFORM MINIMUM STANDARDS FOR DESIGN, CONSTRUCTION AND MAINTENANCE FOR STREETS AND HIGHWAYS" AS PREPARED BY FLORIDA DEPARTMENT OF TRANSPORTATION

TABLE OF CONTENTS

01	*COVER SHEET*
02	*GENERAL NOTES*
03	*EROSION CONTROL & DEMO PLAN*
04	*EROSION CONTROL DETAILS*
05	*SWPPP*
06	*OVERALL SITE PLAN*
07	*GEOMETRY PLAN*
08	*GRADING & DRAINAGE PLAN*
09	*DRY POND & WET POND PLAN*
10	*UTILITY PLAN*
11	*FIRE TRUCK ROUTING PLAN*
12	*UTILITY DETAILS-1*
13	*UTILITY DETAILS-2*
14	*PAVING & DRAINAGE DETAILS*
15	*SIGNAGE & STRIPING PLAN*

PLAN BY OTHERS

TOPOGRAPHIC SURVEY
LANDSCAPE PLANS
IRRIGATION PLANS



SITE LOCATION

SCALE: 1" = 300'

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL RD. SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

DAVE M. SCHMITT
FLORIDA REG. NUMBER 48274
Digitally signed by Dave M Schmitt
Date: 2023.06.20 16:57:19 -04'00'

DATE: MARCH 2023 | JOB NO.: UC-1 | SHEET: 01 OF 15

F:\UC1\CAD\Planset\Final\1 COVER SHEET.dwg, 4/24/2023 2:00:10 PM

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM WITH CITY OF APOPKA ENGINEERING STANDARDS AND F.D.O.T. STANDARDS FOR ROAD & BRIDGE CONSTRUCTION.

2. THE CONTRACTOR SHALL COMPLY WITH THE LATEST EDITION OF THE FDOT DESIGN STANDARDS FOR DESIGN, CONSTRUCTION, MAINTENANCE AND UTILITY OPERATIONS USING THE FOLLOWING, BUT NOT LIMITED TO, ITEMS:
   - F.D.O.T. INDEX 200 – STRUCTURE BOTTOMS TYPE J AND P
   - F.D.O.T. INDEX 201 – SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS
   - F.D.O.T. INDEX 210 – CURB INLET TOPS TYPE 1, 2, 3 & 4
   - F.D.O.T. INDEX 231 – DITCH BOTTOM INLET TYPE B
   - F.D.O.T. INDEX 232 – DITCH BOTTOM INLET TYPES C, D, E & H
   - F.D.O.T. INDEX 240 – SKIMMER FOR OUTLET CONTROL STRUCTURES
   - F.D.O.T. INDEX 272 – CROSS DRAIN MITERED END SECTION
   - F.D.O.T. INDEX 273 – SIDE DRAIN MITERED END SECTION
   - F.D.O.T. INDEX 6011 – C–I–P GRAVITY WALL

3. THE CONTRACTOR SHALL COMPLY WITH CITY OF APOPKA STANDARDS AND SPECIFICATIONS FOR STRIPPING, CLEARING, GRUBBING, GRADING, BACKFILLING, AND EMBANKMENT PREPARATION.

4. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ACQUIRE THE NECESSARY RIGHT–OF–WAY UTILIZATION PERMIT(S) AND PROVIDE FOR THE SAFETY OF LOCAL TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE ALL WORK WITHIN EXISTING ROAD RIGHT–OF–WAYS WITH THE CITY OF APOPKA TRAFFIC ENGINEER.

5. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE THAT ALL REQUIRED PERMITS ARE OBTAINED AND IN–HAND BEFORE BEGINNING CONSTRUCTION. COPIES OF ALL PERMITS SHALL BE PROVIDED TO CITY OF APOPKA.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL INSPECTION CRITERIA AND SCHEDULES, AND FOR SIGNING SAID INSPECTIONS.

7. THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER A PROJECT SCHEDULE (BAR GRAPH) AND UPDATE SAID SCHEDULE ON A MONTHLY BASIS.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION, AND FOR NOTIFYING THE VARIOUS UTILITY PROVIDERS TO MAKE THE NECESSARY ARRANGEMENTS FOR ANY RELOCATION, TEMPORARY DISRUPTION OF SERVICE, OR CLARIFICATION OF ACTIVITY REGARDING SAID UTILITY. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN CROSSING AN UNDERGROUND UTILITY, WHETHER SHOWN ON THESE PLANS OR FIELD LOCATED. ALL UTILITIES WHICH INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE RELOCATED BY THE RESPECTIVE UTILITY PROVIDERS AND THE CONTRACTOR SHALL COOPERATE WITH THE UTILITY PROVIDER DURING RELOCATION OPERATIONS. ANY DELAY OR INCONVENIENCE BY THE VARIOUS UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT AND NO EXTRA COMPENSATION WILL BE ALLOWED.

9. THE LOCATION OF ALL EXISTING UTILITIES, STORM DRAINAGE SYSTEMS AND TOPOGRAPHIC FEATURES SHOWN ON THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AND ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. SHOULD A DISCREPANCY ARISE BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS, WHICH WOULD APPRECIABLY AFFECT THE EXECUTION OF THESE PLANS, THE CONTRACTOR WILL HALT ALL CONSTRUCTION AND NOTIFY THE ENGINEER IMMEDIATELY.

10. THE CONTRACTOR SHALL CONTROL HIS OPERATIONS AND THOSE OF HIS SUBCONTRACTORS, AND ALL SUPPLIERS TO ASSURE THE LEAST INCONVENIENCE TO THE TRAVELING PUBLIC. THE CONTRACTOR SHALL MAINTAIN FREE AND UNOBSTRUCTED MOVEMENT OF VEHICULAR TRAFFIC AND SHALL LIMIT HIS OPERATIONS FOR THE SAFETY AND CONVENIENCE OF THE TRAVELING PUBLIC. UNDER ALL CIRCUMSTANCES, SAFETY SHALL BE THE MOST IMPORTANT CONSIDERATION.

11. PRIOR TO COMMENCING WORK THE CONTRACTOR SHALL FURNISH, ERECT AND MAINTAIN ALL BARRICADES, WARNING SIGNS, AND MARKINGS FOR HAZARDS, NECESSARY TO PROTECT THE PUBLIC AND THE WORK, AND THE CONTROL OF TRAFFIC IN REASONABLE CONFORMITY WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS OR AS DIRECTED BY THE CITY OF APOPKA TRAFFIC ENGINEER; SUCH AS TO EFFECTIVELY PREVENT ACCIDENTS IN ALL PLACES WHERE THE WORK CAUSES OBSTRUCTIONS TO THE NORMAL TRAFFIC OR CONSTITUTES IN ANY WAY A HAZARD TO THE PUBLIC.

12. ALL WORK AND ALL MATERIALS FURNISHED SHALL BE IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, GRADING SECTIONS, CROSS SECTIONS, DIMENSIONS, MATERIAL REQUIREMENTS, AND TESTING REQUIREMENTS THAT ARE SPECIFIED IN THE CONTRACT, PLANS OR SPECIFICATIONS.

13. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE POLICIES AND GUIDELINES ESTABLISHED BY THE CITY OF APOPKA FOR THE PRESERVATION OF ALL PUBLIC AND PRIVATE PROPERTY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE OR INJURY TO PROPERTY OF ANY CHARACTER, DURING THE EXECUTION OF THE WORK, RESULTING FROM ANY OMISSION, NEGLECT, OR MISCONDUCT IN HIS MANNER OR METHOD OF EXECUTING THE WORK, OR AT ANYTIME DUE TO DEFECTIVE WORK OR MATERIALS.

14. IN OTHER AREAS WHICH REQUIRE FILL MATERIAL; THE CONTRACTOR WILL STRIP OR OTHERWISE REMOVE ALL VEGETATION, BRUSH, HEAVY SODS, HEAVY GROWTH OF GRASS, DECAYED VEGETATIVE MATTER, RUBBISH, AND ANY OTHER DELETERIOUS MATERIAL BEFORE EMBANKMENT IS STARTED. IMMEDIATELY PRIOR TO THE PLACING OF FILL MATERIALS, THE ENTIRE AREAS UPON WHICH FILL IS TO BE PLACED, SHALL BE SCARIFIED IN A DIRECTION APPROXIMATELY PARALLEL TO THE AXIS OF FILL. THE SOILS ENGINEER SHALL APPROVE THE AREAS PRIOR TO PLACEMENT OF FILL.

15. ALL REINFORCED CONCRETE PIPE (RCP) SHALL BE MINIMUM CLASS III.

16. DURING CONSTRUCTION, NO DIRECT DISCHARGE OF WATER TO DOWNSTREAM RECEIVING WATERS WILL BE ALLOWED. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING WATER QUALITY, AND SHALL ROUTE DISCHARGE WATER IN SUCH A MANNER TO ADEQUATELY REMOVE SILT PRIOR TO RUNOFF FROM SITE.

17. THE CONTRACTOR SHALL PROVIDE THE ENGINEER 24 HOUR ADVANCE NOTIFICATION FOR THE FOLLOWING CONSTRUCTION AND OBSERVATION ACTIVITIES:
    1. STORM DRAINAGE LAMPING
    2. PRE–FINAL OBSERVATION
    3. FINAL OBSERVATION

18. THE ENGINEER RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO UNCOVER, RETEST AND/OR PERFORM ANY ACTION NECESSARY TO ENSURE THAT THE IMPROVEMENTS HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

19. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS CONTROLLING POLLUTION OF THE ENVIRONMENT.

20. THE CONTRACTOR SHALL SUBMIT AND RECEIVE APPROVAL OF THE EROSION CONTROL PLAN PRIOR TO THE PRE–CONSTRUCTION MEETING.

21. ANY FUEL STORAGE AREAS SHALL HAVE PRIOR OWNER'S APPROVAL AND APPROPRIATE MEASURES SHALL BE TAKEN TO INSURE PROTECTION OF GROUNDWATER AND SOIL RESOURCES.

22. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN A COPY OF THE GEOTECHNICAL ENGINEER'S REPORT FOR THIS PROJECT FROM ARCO NATIONAL CONSTRUCTION–KC, LLC. AND MEET THE GEOTECHNICAL ENGINEER'S REQUIREMENTS FOR SOIL PREPARATION ON THE SITE.

23. THE CONTRACTOR SHALL COORDINATE ALL BACKFILL OPERATIONS WITH THE RESIDENT SOILS ENGINEER.

24. THE CONTRACTOR SHALL INSURE THAT PROPER SOIL DENSITIES ARE ACHIEVED FOR PLACEMENT OF ALL HEADWALL/ENDWALL FOOTINGS, RETAINING WALLS, AND IN GENERAL, ANY FOOTING SUPPORT DESCRIBED ON THESE PLANS. IT WILL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE THAT SUFFICIENT SOILS TESTING HAS BEEN PERFORMED PRIOR TO CONSTRUCTION. ALL ORGANIC SOILS ENCOUNTERED IN BUILDING FOOTPRINT AREA ARE TO BE REMOVED AND REPLACED WITH SUITABLE FILL MATERIAL.

25. ALL FILL SHALL BE COMPACTED TO 95% MAX. DENSITY, AASHTO T–180.

26. COMPACT THE TOP 24 INCHES OF UTILITY TRENCHES WITHIN FUTURE ROADWAYS AREAS TO 98% OF THE MODIFIED PROCTOR DENSITY; WITHIN OTHER AREAS TO 95%.

27. ALL MITERED END SECTIONS SHOWN IN THESE PLANS ARE INCLUDED IN THE PIPE LENGTHS.

28. AREAS THAT ARE PART OF DRAINAGE CONVEYANCES AND SLOPES 3:1 OR STEEPER MUST BE SODDED FROM THE TOP OF BANK DOWN TO NORMAL WATER ELEVATION OR TWO (2) FEET PAST THE TOE OF SLOPE. SEE PLANS FOR SECTIONS AND DETAILS.

29. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL RETENTION AND DETENTION FACILITIES AND ALL LANDSCAPE BUFFERS, THROUGH THE DURATION OF THE PROJECT, AND UNTIL THE WORK IS ACCEPTED BY THE OWNER. ALL DISRUPTED AREAS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.

30. RECORD DRAWINGS: AS–BUILT MEASUREMENTS SHALL BE MADE BY A REGISTERED LAND SURVEYOR AND REVIEWED BY THE CONTRACTOR. AT THE END OF CONSTRUCTION, THE CONTRACTOR WILL PROVIDE ONE SET OF DRAWINGS SHOWING ALL CHANGES MARKED IN WATERPROOF RED WITH THE FOLLOWING CONTRACTOR CERTIFICATION EXECUTED ON EACH SHEET:

THE CONTRACTOR:

____

HEREBY CERTIFIES TO THE OWNER THAT IMPROVEMENTS COVERED BY THIS DRAWING AND ALL RELATED DETAILS HAVE BEEN CONSTRUCTED AS INDICATED OR AS MODIFIED BY THE NOTES AND GRAPHICS SHOWN. ABSENT A NOTE OR GRAPHIC TO THE CONTRARY, THE IMPROVEMENTS HAVE BEEN CONSTRUCTED MEETING INDUSTRY STANDARD TOLERANCES.

SIGNED:__________________________________DATE:____________
AUTHORIZED CONTRACTOR'S REPRESENTATIVE

31. THE ENGINEER OF RECORD SHALL CONDUCT THE NECESSARY INSPECTIONS OF THE CONSTRUCTION OF THOSE FACILITIES THAT WILL BECOME THE PROPERTY OF, OR COME UNDER THE OPERATION OF CITY OF APOPKA AND SHALL PROVIDE CITY OF APOPKA WITH A CERTIFICATION THAT THE CONSTRUCTION IS IN SUBSTANTIAL COMPLIANCE WITH CITY OF APOPKA STANDARDS. THE CITY OF APOPKA SHALL HAVE THE OPPORTUNITY, BUT NOT THE OBLIGATION, TO CONDUCT WHATEVER ADDITIONAL INSPECTIONS IT DEEMS NECESSARY. THE CITY OF APOPKA SHALL RECEIVE COPIES OF THE ENGINEER'S INSPECTION REPORTS, TEST RESULTS, COPIES OF THE ENGINEER'S CERTIFICATIONS OF COMPLETION TO ST. JOHNS RIVER WATER MANAGEMENT DISTRICT, PLUS THE AGENCY'S ACCEPTANCE/TRANSFER TO OPERATING PERMITS FOR THE STORMWATER MANAGEMENT SYSTEM.

32. THE ENGINEER SHALL SUBMIT SIGNED AND SEALED AS–BUILT PLANS TO CITY OF APOPKA IN ACCORDANCE WITH THE CITY OF APOPKA STANDARDS.

33. THE ENGINEER OF RECORD SHALL PROVIDE CITY OF APOPKA WITH A STATEMENT INDICATING THAT ALL CONDITIONS HAVE BEEN COMPLIED WITH REGARDING THE APPROVED PLANS, DEVELOPMENT ORDER AND/OR CONDITIONS OF APPROVAL.

34. CONTRACTOR SHALL SUBMIT TO FDEP AND CITY OF APOPKA A NOTICE OF INTENT (NOI), NOTICE OF TERMINATION (NOT) AND STORMWATER POLLUTION PREVENTION PLAN THAT MEETS NPDES PERMIT REQUIREMENTS.

35. ALL ELEVATIONS SHOWN HEREON ARE BASED ON NGVD 29 DATUM.

EROSION AND SEDIMENT CONTROL NOTES

1. CONTRACTOR TO ENSURE SILT FENCING, SEDIMENT BASINS, CONSTRUCTION ENTRANCE ARE INSTALLED ON SITE PRIOR TO ANY LAND DISTURBANCE, CLEARING AND MASS GRADING ACTIVITIES.

2. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY TRACKING ONTO THE PAVED SURFACE. CONTRACTOR SHALL PROVIDE A SITE ENTRANCE WITH SOIL TRACKING PREVENTION DEVICE PER Figure 4.3b FDOT ROADWAY & TRAFFIC DESIGN STANDARDS. LOCATION(S) IS SHOWN ON THE PLANS. IF CONTRACTOR RELOCATES ENTRANCE(S), THEN THEY NEED TO BE ADDED TO THE SWPPP IMMEDIATELY. IF SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD SURFACE THE ROAD SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO AN ONSITE SEDIMENT CONTROL DISPOSAL AREA.

3. THE SITE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER COMPLETION OF CONSTRUCTION AND ONLY WHEN AREAS HAVE BEEN STABILIZED.

4. ADDITIONAL ON–SITE EROSION PROTECTION, TO THAT SHOWN ON THESE PLANS, MUST BE PROVIDED TO ENSURE SILT OR DUST DOES NOT LEAVE THE PROJECT CONFINES DUE TO UNFORESEEN CONDITIONS OR ACCIDENTS.

5. SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN SYSTEM, DITCH, OR CHANNEL. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT–LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.

6. CONTRACTOR SHALL INSURE THAT ALL DRAINAGE STRUCTURES, PIPES, ETC. ARE CLEANED OUT, PLUGGED WHEN REQUIRED AND IN WORKING ORDER AT TIME OF ACCEPTANCE.

7. SILT FENCES, FILTER BARRIERS, ETC. SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

8. PERIODIC INSPECTION AND MAINTENANCE OF ALL SEDIMENT CONTROL STRUCTURES MUST BE PROVIDED TO ENSURE INTENDED PURPOSE IS ACCOMPLISHED. THE CONTRACTOR SHALL BE CONTINUALLY RESPONSIBLE FOR ALL SEDIMENT (WATER OR AIR BORN) LEAVING THE PROPERTY. SEDIMENT CONTROL MEASURES SHALL BE IN GOOD WORKING CONDITION AT THE END OF EACH WORKING DAY.

9. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.

10. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE– THIRD THE HEIGHT OF THE BARRIER.

11. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.

12. EROSION AND SEDIMENT CONTROL BARRIERS SHALL BE PLACED ADJACENT TO ALL WETLAND AREAS WHERE THERE IS POTENTIAL FOR DOWNSTREAM WATER QUALITY DEGRADATION.

ALL AREAS WHICH HAVE BEEN DISTURBED BY CONSTRUCTION SHALL, AT A MINIMUM, BE FERTILIZED AND SEEDED, PER CITY OF APOPKA LAND DEVELOPMENT CODE

13. AT A MINIMUM, ALL RETENTION/DETENTION BASINS SIDE SLOPES SHALL BE SOLID SODDED.. AN ALTERNATIVE LANDSCAPE PLAN THAT PROVIDES STABILIZATION OF THE SIDE SLOPE MAY BE CONSIDERED. ALL EXPOSED AREAS INCLUDING PUBLIC RIGHTS–OF–WAY WITH SLOPES STEEPER THAN 4:1 WILL BE SOLID SODDED, PER CITY OF APOPKA LAND DEVELOPMENT CODE

14. ANY DISCHARGE FROM DEWATERING ACTIVITY SHALL BE FILTERED AND CONVEYED TO THE OUTFALL IN A MANNER WHICH PREVENTS EROSION AND TRANSPORTATION OF SUSPENDED SOLIDS TO THE RECEIVING OUTFALL.

15. DEWATERING PUMPS SHALL NOT EXCEED THE CAPACITY OF THAT WHICH REQUIRES A CONSUMPTIVE USE PERMIT FROM THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT.

16. ALL DISTURBED AREAS TO BE STABILIZED THROUGH COMPACTION , VEGETATION AND/OR GRASS SOD. ALL FILL SLOPES 3:1 OR STEEPER TO RECEIVE STAKED SOLID GRASS SOD.

18. SOILS EXPOSED DURING SITE ALTERATION SHALL BE STABILIZED, AND RUNOFF AND SILTATION SHALL BE DIRECTED TO AREAS APPROVED IN THE EXCAVATION SITE PLAN OR OPERATING PERMIT IN SUCH A MANNER AS TO PREVENT OFF–SITE IMPACTS, PER CITY OF APOPKA LAND DEVELOPMENT.

19. ALL EROSION, AND SEDIMENT CONTROL TO REMAIN IN PLACE AFTER COMPLETION OF CONSTRUCTION AND REMOVED ONLY WHEN AREAS HAVE BEEN STABILIZED.

20. THESE PLANS INDICATE THE MINIMUM EROSION AND SEDIMENT MEASURES REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL APPLICABLE RULES, REGULATIONS AND WATER QUALITY GUIDELINES AND MAY NEED TO INSTALL ADDITIONAL CONTROLS.

21. THE CONTRACTOR SHALL BE REQUIRED TO RESPOND TO ALL WATER MANAGEMENT DISTRICT AND/OR FDEP INQUIRIES, RELATIVE TO COMPLIANCE OF EROSION AND SEDIMENTATION CONTROLS. THE COST OF THIS COMPLIANCE SHALL BE PART OF THE CONTRACT. COPIES OF ALL INQUIRES SHALL BE FORWARDED TO THE ENGINEER FOR REVIEW.

22. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE BEST EROSION AND SEDIMENT CONTROL PRACTICES AS OUTLINED IN THE PLANS SPECIFICATIONS PER ST. JOHNS RIVER WATER MANAGEMENT DISTRICT (SJRWMD) AND FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) SPECIFICATIONS AND CRITERIA.

23. CONTRACTOR TO REFER TO THE PROJECT SWPPP FOR ADDITIONAL INFORMATION ON EROSION CONTROL MEASURE.

24. SOILS EXPOSED DURING SITE ALTERATION SHALL BE STABILIZED, AND RUNOFF AND SILTATION SHALL BE DIRECTED TO AREAS APPROVED IN THE EXCAVATION SITE PLAN OR OPERATING PERMIT IN SUCH A MANNER AS TO PREVENT OFF–SITE IMPACTS.

25. PRIOR TO EXCAVATION, THE PERIMETER OF THE PERMITTED SOIL EXCAVATING SHALL BE ADEQUATELY STAKED TO DELINEATE THE EXCAVATION. THESE STAKES SHALL BE MAINTAINED THROUGHOUT THE DURATION OF EXCAVATION AND RECLAMATION. THE COUNTY ENGINEER MAY REQUIRE A LEGAL DESCRIPTION OF THE SOIL EXCAVATION WHEN NECESSARY FOR DETERMINING STAKING AND LOCATION OF THE LAND EXCAVATION.

26. ANNUAL PROGRESS REPORT: THE OPERATOR SHALL FILE ANNUALLY AN ANNUAL PROGRESS REPORT WITH THE CITY ENGINEER, WITH IN FORTY–FIVE (45) DAYS AFTER EACH ANNIVERSARY DATE OF THE SOIL EXCAVATION PERMIT APPROVAL. THIS REPORT SHALL INCLUDE THE FOLLOWING:
    1. IDENTIFICATION OF LANDS EXCAVATED DURING THE PRECEDING YEAR AND LANDS EXPECTED TO BE MINED DURING THE CURRENT YEAR.
    2. DISCUSSION OF THE RECLAMATION PROGRESS FOR EACH AREA WHERE RECLAMATION HAS BEEN COMPLETED IN THE LAST YEAR, OR WHERE RECLAMATION IS IN PROGRESS, A DISCUSSION OF RECLAMATION PLANNED FOR THE CURRENT YEAR,
    3. A SURVEY PERFORMED BY A LICENSED PROFESSIONAL SURVEYOR SHALL BE SUBMITTED SHOWING THE LIMITS OF THE EXCAVATION IN RELATION TO THE PROPERTY BOUNDARIES.
    4. A SUMMARY OF RESULTS OF THE PREVIOUS YEAR'S ENVIRONMENTAL MONITORING PROGRAM, IF REQUIRED IN THE OPERATING PERMIT, AND
    5. THE OPERATOR SHALL ALSO FURNISH COPIES OF ALL RELATED INSPECTION REPORTS NOT PREVIOUSLY FURNISHED WHICH ARE REQUIRED BY STATE OR FEDERAL REGULATORY AGENCIES.

2. CERTIFICATION BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER OR PROFESSIONAL GEOLOGIST FAMILIAR WITH THE OPERATOR'S EXCAVATION ACTIVITIES SHALL CERTIFY IN THE ANNUAL PROGRESS REPORT THAT THE PROJECT IS BEING DEVELOPED AND OPERATED IN STRICT ACCORDANCE WITH THE CONDITIONS SET FORTH IN THE APPROVED SITE PLAN AND PERMIT.

3. FAILURE TO FILE THE REQUIRED ANNUAL PROGRESS REPORT SHALL BE GROUNDS FOR SUSPENSION OF THE PERMIT. A ONETIME EXTENSION NOT TO EXCEED 90 DAYS MAY BE GRANTED BY THE COUNTY ENGINEER UPON REQUEST BY THE APPLICANT.

ANNUAL PROGRESS REPORT, CERTIFICATION, RECLAMATION APPROVAL

1. ANNUAL PROGRESS REPORT
   THE APPLICANT/OWNER SHALL FILE ANNUALLY AN ANNUAL PROGRESS REPORT WITH THE COUNTY MANAGER, WITHIN FORTY–FIVE (45) DAYS AFTER EACH ANNIVERSARY DATE OF THE SOIL EXCAVATION PERMIT APPROVAL. THIS REPORT SHALL INCLUDE THE FOLLOWING INFORMATION:
   - A. IDENTIFICATION OF LANDS EXCAVATED DURING THE PRECEDING YEAR AND LANDS EXPECTED TO BE MINED DURING THE CURRENT YEAR,
   - B. DISCUSSION OF THE RECLAMATION PROGRESS FOR EACH AREA WHERE RECLAMATION HAS BEEN COMPLETED IN THE LAST YEAR, OR WHERE RECLAMATION IS IN PROGRESS, A DISCUSSION OF RECLAMATION PLANNED FOR THE CURRENT YEAR,
   - C. A SURVEY PERFORMED BY A LICENSED PROFESSIONAL SURVEYOR SHALL BE SUBMITTED SHOWING THE LIMITS OF THE EXCAVATION IN RELATION TO THE PROPERTY BOUNDARIES.
   - D. A SUMMARY OF RESULTS OF THE PREVIOUS YEAR'S ENVIRONMENTAL MONITORING PROGRAM, IF REQUIRED IN THE OPERATING PERMIT, AND
   - E. THE APPLICANT/OWNER SHALL ALSO FURNISH COPIES OF ALL RELATED INSPECTION REPORTS NOT PREVIOUSLY FURNISHED WHICH ARE REQUIRED BY STATE OR FEDERAL REGULATORY AGENCIES.

2. CERTIFICATION
   FOR MEDIUM AND LARGE EXCAVATION PERMITS A FLORIDA REGISTERED PROFESSIONAL ENGINEER OR PROFESSIONAL GEOLOGIST FAMILIAR WITH THE OPERATOR'S EXCAVATION ACTIVITIES SHALL CERTIFY IN THE ANNUAL PROGRESS REPORT THAT THE PROJECT IS BEING DEVELOPED AND OPERATED IN STRICT ACCORDANCE WITH THE CONDITIONS SET FORTH IN THE APPROVED SITE PLAN AND PERMIT.

3. FAILURE TO FILE
   FAILURE TO FILE THE REQUIRED ANNUAL PROGRESS REPORT SHALL BE GROUNDS FOR SUSPENSION OF THE PERMIT. A ONETIME EXTENSION NOT TO EXCEED 90 DAYS MAY BE GRANTED BY THE COUNTY MANAGER UPON REQUEST BY THE APPLICANT.

4. RECLAMATION APPROVAL
   IF NECESSARY, APPROVAL OF RECLAIMED AREAS SHALL BE REQUESTED IN THE ANNUAL PROGRESS REPORT BY IDENTIFYING THE SPECIFIC RECLAMATION AREAS FOR WHICH APPROVAL IS SOUGHT. RECLAMATION OF DISTURBED LANDS SHALL BE DEEMED COMPLETED AFTER SHOWING THAT THE RECLAMATION AREAS HAVE BEEN RECLAIMED IN ACCORDANCE WITH THE APPROVED EXCAVATION SITE PLAN AND PERMIT.

5. FINANCIAL SECURITY FOR RECLAMATION PLAN
   THE SOIL EXCAVATION SITE OWNER SHALL PRESENT THE COUNTY WITH FINANCIAL SECURITY THAT THE RECLAMATION PLAN WILL BE COMPLETED AT THE TIME OF PERMIT APPROVAL. ACCEPTABLE FORMS OF THIS FINANCIAL SECURITY SHALL INCLUDE, BUT ARE NOT LIMITED TO, A LETTER OF CREDIT, SURETY BOND, OR CASH BOND THAT WILL BE HELD BY THE COUNTY UNTIL THE RECLAMATION PLAN IS COMPLETED FOR THE SOIL EXCAVATION. THE AMOUNT OF FINANCIAL SECURITY SHALL BE EQUAL TO 125% OF THE AMOUNT NECESSARY TO COMPLETE RECLAMATION OF THE ENTIRE EXCAVATION OR IF PHASED, THE TWO PHASES WITH THE GREATEST NUMBER OF ACRES AS CERTIFIED BY A LANDSCAPE ARCHITECT OR ENGINEER REGISTERED IN THE STATE OF FLORIDA. THE FINANCIAL SECURITY SHALL EXTEND A MINIMUM OF ONE YEAR BEYOND PERMIT EXPIRATION. THE OWNER SHALL POST THE ENTIRE FINANCIAL SECURITY PRIOR TO THE ISSUANCE OF A SOIL EXCAVATION PERMIT. PRIOR TO PERMIT ISSUANCE THE SOIL EXCAVATION SITE OWNER SHALL PROVIDE THE COUNTY MANAGER WITH AN IRREVOCABLE LICENSE TO ENTER THE SOIL EXCAVATION SITE TO COMPLETE THE NECESSARY RECLAMATION IN THE EVENT THE SOIL EXCAVATION OWNER FAILS TO DO SO.

6. RELEASE OF FINANCIAL SECURITY
   THE PERMITTEE SHALL NOTIFY THE COUNTY MANAGER IN WRITING TO REQUEST THE RELEASE OF FINANCIAL SECURITY. PRIOR TO THE RELEASE, THE FOLLOWING STEPS SHALL OCCUR:
   - A. THE COUNTY MANAGER SHALL COMPLETE A FINAL INSPECTION AND APPROVE RECLAMATION OF THE SITE,
   - B. THE PERMITTEE SHALL SUBMIT A SIGNED, SEALED AND DATED TOPOGRAPHIC SURVEY TO INDICATE TOTAL CUBIC YARDS OF MATERIAL EXCAVATED OR OTHER ACCEPTABLE CALCULATIONS OF THE CUBIC YARDS EXCAVATED, AND
   - C. THE PERMITTEE SHALL SUBMIT THE BALANCE OF PAYMENT IN FULL FOR THE TOTAL CUBIC YARDS OF MATERIAL EXCAVATED.
   - D. THE RELEASED FINANCIAL SECURITY SHALL BE RETURNED TO THE PERMITTEE WITHIN THIRTY (30) DAYS OF BCC APPROVAL.

7. WAIVER
   THE COUNTY MANAGER MAY WAIVE CERTAIN PROVISIONS AND CRITERIA WHICH WOULD IMPOSE UPON THE APPLICANT AN UNREASONABLE AND UNNECESSARY OR EXCEPTIONAL BURDEN. THE COUNTY MANAGER SHALL NOT RECOMMEND ANY WAIVER THAT WOULD ADVERSELY AFFECT ANY ADJOINING PROPERTY OR THE PUBLIC.

MISCELLANEOUS ENGINEER NOTIFICATIONS

PROVIDE EFFECTIVE TEMPORARY AND PERMANENT EROSIONS CONTROL FOLLOWING THE REQUIREMENTS OF THE LATEST EDITION OF THE STATE OF FLORIDA F.D.O.T. DESIGN STANDARDS FOR DESIGN, CONSTRUCTION, MAINTENANCE AND UTILITY OPERATIONS.

CONTROL FEATURES, METHODS AND CONDITIONS INCLUDED IN THIS CONTRACT INCLUDE THE FOLLOWING AS INDICATED BY AN 'X' IN THE BLANK:

1. __X__ COORDINATE CONSTRUCTION OF TEMPORARY EROSION CONTROL FEATURES WITH PERMANENT EROSION CONTROL FEATURES.
2. __X__ CONTROL OPERATIONS WHICH MAY RESULT IN WATER POLLUTION.
3. __X__ PROVIDE SCHEDULE FOR CLEARING AND GRUBBING, EARTHWORK OPERATIONS AND CONSTRUCTION OF PERMANENT EROSION CONTROL FEATURES AND PROPOSED USE OF TEMPORARY EROSION CONTROL FEATURES.
4. _____ LIMITATION OF EXPOSURE OF ERODIBLE EARTH WITHOUT TEMPORARY OR PERMANENT CONTROL FEATURES IS ____________ S.F.
5. __X__ TEMPORARY GRASSING
6. __X__ TEMPORARY SOD
7. __X__ TEMPORARY MULCHING
8. _____ SANDBAGGING
9. __X__ SLOPE DRAINS
10. _____ SEDIMENT BASINS
11. __X__ ARTIFICIAL COVERINGS
12. __X__ BERMS
13. __X__ BALED HAY OR STRAW
14. __X__ TEMPORARY SILT FENCES AND STAKED SILT BARRIERS
15. _____ FLOATING SILT BARRIERS
16. __X__ REMOVE TEMPORARY EROSION CONTROL FEATURES
17. __X__ MAINTAIN PERMANENT & TEMPORARY EROSION CONTROL FEATURES
18. __X__ THIS CONTRACT DESIGN HAS BEEN APPROVED BY THE OWNER AND REGULATORY AGENCIES HAVING AN INTEREST IN EROSION ABATEMENT. IN ITS FINAL FORM THE DESIGN MEETS OR EXCEEDS THE MINIMUM STANDARDS. ALL TEMPORARY EROSION CONTROL FEATURES REQUIRED DURING CONSTRUCTION SHALL BE CONSTRUCTED BY THE CONTRACTOR, AND THE COST THEREOF INCLUDED IN THE CONTRACT SUM AS A REGULAR OBLIGATION INCIDENTAL TO THE WORK.
19. __X__ EACH MITERED END SECTION CALLED FOR IN THE PLANS SHALL INCLUDE GEOWEB TYPE GW40 (8"), MINIMUM 8' x 8', FOR PERMANENT EROSION PROTECTION.

NOTE:
CONTRACTOR TO FOLLOW THE GUIDANCE OF THE REFERENCED GEOTECHNICAL ENGINEER INVESTIGATION REPORT OR INDICATE WHETHER ON –SITE GEOTECHNICAL ENGINEER SHALL DETERMINE DEPTH OF DEMUCKING AND/OR REMOVAL OF UNSUITABLE FILL.

MAINTENANCE OF TRAFFIC (MOT)

1. MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION AND REVISIONS) AND THE FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN STANDARDS (LATEST EDITION AND REVISIONS)

2. LOCAL RESIDENTIAL/BUSINESS ACCESS SHALL BE MAINTAINED AT ALL TIMES. CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE RESIDENTS/BUSINESSES AFFECTED BY CONSTRUCTION ACTIVITIES, ONE (1) WEEK IN ADVANCE OF THE START OF ANY PHASE OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE COPIES OF THE NOTIFICATION TO THE TRAFFIC CONTROL MANAGER PRIOR TO DISTRIBUTION.

3. THE CONTRACTOR SHALL NOTIFY THE ORANGE COUNTY SCHOOL BOARD, SAFETY MANAGER, ONE (1) WEEK IN ADVANCE OF THE START OF ANY PHASE OF CONSTRUCTION TO COORDINATE SCHOOL BUS RE–ROUTING.

4. ALL SIGNS AND TRAFFIC CONTROL DEVICES SHALL BE NEW OR LIKE NEW CONDITION. ALL SIGNS SHALL BE POST MOUNTED UNLESS OTHERWISE INDICATED.

5. DURING NON–WORKING HOURS, NO EQUIPMENT, VEHICLES OR MATERIAL SHALL BE PARKED OR STORED WITHIN THE CLEAR ZONE OF ROADWAY OPEN TO TRAFFIC.

6. EXISTING REGULATORY AND WARNING SIGNS ARE TO BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE NOTED.

7. PEDESTRIAN CONTROL SHALL BE MAINTAINED ON ONE SIDE OF THE ROAD AT ALL TIMES. IF UNABLE TO DO SO, THE CONTRACTOR SHALL PROVIDE TEMPORARY WALKWAYS, BOARDWALKS AND/OR TEMPORARY CONCRETE SIDEWALKS.

8. DELIVERY TRUCKS SHALL NOT BLOCK TRAFFIC.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING EACH EMPLOYEE SUPERVISING THE SELECTION AND PLACEMENT OF MAINTENANCE OF TRAFFIC (MOT) CONTROL DEVICES SHALL BE PROPERLY TRAINED BY ATTENDING AND SUCCESSFULLY COMPLETING A FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) APPROVED MOT COURSE. THE TRAINING SHALL BE AT A LEVEL APPLICABLE TO THE EMPLOYEE'S LEVEL OF INVOLVEMENT. COPIES OF CERTIFICATIONS SHALL BE PROVIDED TO THE CITY OF APOPKA TRANSPORTATION ENGINEERING DIVISION PRIOR TO IMPLEMENTING ANY PHASE OF MOT.

10. THE CONTRACTOR SHALL PROVIDE A TRAFFIC CONTROL SUPERVISOR (TCS) WHO IS RESPONSIBLE FOR INITIATING, INSTALLING AND MAINTAINING ALL TRAFFIC CONTROL DEVICES.

11. THE TCS SHALL BE AVAILABLE ON A 24–HOUR PER DAY BASIS, PARTICIPATE IN ALL CHANGES TO TRAFFIC CONTROL AND REVIEW THE PROJECT ON A DAY–TO–DAY BASIS.

12. THE TCS SHALL BE PRESENT DURING THE INITIAL SETUP OF THE TRAFFIC CONTROL PLAN AND ALL SUBSEQUENT PHASES OR CHANGES TO THE TRAFFIC CONTROL.

13. THE TCS SHALL IMMEDIATELY CORRECT ALL DEFICIENCIES.

14. THE CONTRACTOR SHALL ENSURE THE TCS BE AVAILABLE ON SITE WITHIN 45 MINUTES OF NOTIFICATION OF AN EMERGENCY SITUATION AND IS PREPARED TO RESPOND TO AND CORRECT THE TRAFFIC CONTROL OR PROVIDE ALTERNATE ARRANGEMENTS FOR CORRECTIVE ACTIONS.

15. THE TCS SHALL BE RESPONSIBLE FOR PERFORMING WEEKLY, DAYTIME AND NIGHTTIME INSPECTIONS OF ALL TRAFFIC CONTROL DEVICES, TRAFFIC FLOW, PEDESTRIAN, BICYCLIST MOVEMENT THROUGH THE WORK AREA AND BUSINESS ACCOMMODATIONS.

DEVELOPMENT AND OPERATIONS STANDARDS

1. POINT & NON–POINT SOURCE DISCHARGES
   POINT AND NON–POINT SOURCE DISCHARGES OF WATER OR LIQUID WASTE INTO WATERS OF THE STATE ARE PROHIBITED UNLESS APPROVED BY ALL APPLICABLE LOCAL, STATE AND FEDERAL AGENCIES.

2. GROUNDWATER
   - A. FLORIDAN & SURFICIAL AQUIFER WITHDRAWALS
     GROUNDWATER WITHDRAWALS SHALL NOT ADVERSELY IMPACT, DUE TO LOWERING OF POTENTIOMETRIC LEVELS, THE FLORIDAN OR SURFICIAL AQUIFER BEYOND THE BOUNDARIES OF THE EXCAVATION.
   - B. MONITORING
     IN ORDER TO ESTABLISH BASELINE CONDITIONS AND TO EVALUATE POTENTIAL IMPACTS, THE MONITORING OF GROUNDWATER SYSTEMS, SURFICIAL AND FLORIDAN, WILL BE EVALUATED ON A CASE–BY–CASE BASIS AND THE NEED FOR ON–SITE SAMPLING OR OBSERVATION WELLS SHALL BE SPECIFIED BY THE COUNTY MANAGER. WELLS ESTABLISHED FOR POTABLE WATER SUPPLY OR AS PART OF THE MINING OPERATION WILL BE CONSTRUCTED TO ENABLE SAMPLING OF THE AQUIFER FROM WHICH THE WATER IS DRAWN.
   - C. CONSIDERATIONS
     SOIL EXCAVATIONS SHALL BE STRICTLY SCRUTINIZED AND RESTRICTED CONSISTENT WITH THE CONSIDERATIONS DISCUSSED BELOW. A DETAILED SITE SPECIFIC HYDRO GEOLOGIC STUDY SHALL BE SUBMITTED THAT WOULD SHOW ANY POTENTIAL IMPACT OF THE EXCAVATION ON GROUNDWATER RESOURCES.
     - I. AREAS SUSCEPTIBLE TO GROUNDWATER CONTAMINATION WITH A DRASTIC INDEX OF GREATER THAN 179 OR WITHIN A QUARTER OF A MILE FROM A CLASS I AND CLASS II LANDFILL. A STUDY SHALL BE SUBMITTED EVALUATING THE SITE SPECIFIC SINKHOLE POTENTIAL AND GROUNDWATER CONTAMINATION ASSESSMENT OF THE PROPOSED SOIL EXCAVATION.

II. AREAS WHERE POTENTIAL SINKHOLE DEVELOPMENT IS LIKELY. EXCAVATION SHALL NOT BREACH THE SEMI–CONFINING LAYER BENEATH THE SURFICIAL AQUIFER. A MINIMUM THICKNESS OF THE SEMI–CONFINING UNIT MUST REMAIN BENEATH THE BASE OF THE EXCAVATION AT ALL TIMES, AS TO BE DETERMINED BY A REGISTERED PROFESSIONAL GEOTECHNICAL ENGINEER.

3. SURFACE WATER
   - A. WITHDRAWALS
     WATER SHALL NOT BE DRAWN FROM SURFACE WATER BODIES UNLESS SPECIFICALLY APPROVED IN THE PERMIT. SUCH USE SHALL ONLY BE PERMITTED AFTER A THOROUGH ANALYSIS OF STREAM FLOW AND SURFACE WATER CONDITIONS, AND SHALL BE LIMITED TO QUANTITIES NOT DETRIMENTAL TO DOWNSTREAM PROPERTY OWNERS OR THE ENVIRONMENT, GENERALLY.
   - B. STREAM RELOCATIONS
     IT SHALL BE THE GENERAL INTENT OF THIS CHAPTER NOT TO PERMIT THE RELOCATION OF NATURAL EXISTING STREAM CHANNELS ON OR OFF–SITE. UNDER SPECIAL CONDITIONS THE COUNTY MANAGER MAY APPROVE A RELOCATION WHICH THEN MUST BE DOCUMENTED IN THE PERMIT.
   - C. DISCHARGES
     INCREASES IN THE FLOW OF WATER COURSES LEAVING THE EXCAVATION SITE, SHALL NOT ADVERSELY AFFECT DOWNSTREAM PROPERTY OWNERS OR THE ENVIRONMENT GENERALLY.
   - D. MONITORING
     IN ORDER TO ESTABLISH BASELINE CONDITIONS AND TO EVALUATE POTENTIAL IMPACTS, THE MONITORING OF SURFACE WATER SYSTEMS WILL BE EVALUATED ON A CASE–BY–CASE BASIS, AND THE REQUIREMENTS AND DURATION OF ON–SITE MONITORING SHALL BE DETERMINED BY THE COUNTY MANAGER AND SHALL BE SPECIFIED IN THE PERMIT. MONITORING REPORTS SHALL BE SUBMITTED TO THE COUNTY MANAGER, AS SPECIFIED IN THE PERMIT.

4. DEWATERING
   DEWATERING OPERATIONS SHALL BE PLANNED AND CONTROLLED SO AS TO PROVIDE MINIMUM DRAW DOWN OF THE GROUNDWATER TABLE OUTSIDE THE ACTUAL MINING SITE. SHOULD THE COUNTY RECEIVE COMPLAINTS THAT THE DEWATERING OPERATION HAS RESULTED IN DETRIMENTAL OFF–SITE IMPACTS THE COUNTY MAY REQUIRE THE OPERATOR TO DEMONSTRATE BY MEANS OF A REPORT FROM A REGISTERED PROFESSIONAL GEOTECHNICAL ENGINEER, THAT SUCH IMPACTS HAVE NOT OCCURRED AS A RESULT OF THE DEWATERING OPERATION. ANY DEWATERING OPERATION WHICH, IN THE DETERMINATION OF THE COUNTY MANAGER, RESULTS IN DETRIMENTAL FLUCTUATIONS OF WATER LEVELS IN ADJACENT WATER BODIES, WETLAND AREAS OR WATER SUPPLY WELLS, SHALL BE TERMINATED UNTIL SUCH TIME AS A SATISFACTORY PLAN IS DEVELOPED, APPROVED BY THE COUNTY, AND IMPLEMENTED IN ORDER TO MAINTAIN NATURAL WATER LEVELS IN SUCH AREAS. A DEWATERING PERMIT MUST BE SUBMITTED IF REQUIRED FROM THE APPROPRIATE WATER MANAGEMENT DISTRICT.

5. OTHER RESOURCES
   - A. ARCHAEOLOGICAL AND HISTORICAL SITES, CEMETERIES AND BURIAL GROUNDS SHALL BE PRESERVED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS. THE STATE DIVISION OF ARCHIVES, HISTORY AND RECORDS MANAGEMENT MAY BE CONSULTED TO DETERMINE RESOURCES WHICH MAY BE LOCATED ON THE SITE.
   - B. MAXIMUM PRACTICABLE EFFORTS SHALL BE MADE TO PROTECT SPECIMEN TREES, HABITATS OF DESIGNATED SPECIES OF WILDLIFE, VEGETATION, WETLAND AREAS AND ENVIRONMENTALLY SIGNIFICANT AREAS. IN ACCORDANCE WITH OTHER PROVISIONS OF THIS ARTICLE AND THE COMPREHENSIVE PLAN, THESE AREAS SHALL BE DESIGNATED ON THE EXCAVATION SITE PLAN AND LEFT UNDISTURBED.
   - C. EXCAVATION ACTIVITY SHALL BE CONDUCTED SO AS TO CONTROL THE GENERATION AND OFF–SITE MIGRATION OF FUGITIVE DUSTS AND PARTICLES. ALL AREAS IN WHICH SUCH DUSTS OR PARTICLES MAY BE GENERATED SHALL BE KEPT WET, TREATED WITH CHEMICAL DUST DETERGENTS, OR CONTROLLED IN ANOTHER MANNER TO REDUCE THE POTENTIAL FOR THEIR OFF–SITE MIGRATION. ATMOSPHERIC DISCHARGES FROM PROCESSING AND DRYING EQUIPMENT SHALL COMPLY WITH ALL APPLICABLE STATE, FEDERAL AND LOCAL LAW. TO MINIMIZE DUST AND TO PREVENT THE DEPOSIT OF SOIL EXCAVATION MATERIAL ON PAVED ROADS, TRUCKS SHALL BE COVERED WITH THEIR TAILGATES LATCHED. DIRT ROAD SEGMENTS OF THE DESIGNATED HAUL ROUTE SHALL REQUIRE REGULAR WATERING, AS NECESSARY, TO MINIMIZE DUST GENERATED BY HAULING ACTIVITIES.
   - D. SOILS EXPOSED DURING SITE ALTERATION SHALL BE STABILIZED, AND RUNOFF AND SILTATION SHALL BE DIRECTED TO AREAS APPROVED IN THE EXCAVATION SITE PLAN OR OPERATING PERMIT IN SUCH A MANNER AS TO PREVENT OFF–SITE IMPACTS.
   - E. ACTIVITY, WITH THE EXCEPTION OF APPROVED PEAT AND MUCK MINING, SHALL NOT BE CONDUCTED WITHIN THE 100–YEAR FLOOD PLAIN OF WATERWAYS, LAKES OR STREAMS, IF SUCH EXCAVATION ACTIVITY WOULD HAVE AN ADVERSE EFFECT ON THE 100–YEAR FLOOD PLAIN. FLOOD PLAIN ELEVATIONS SHALL BE BASED UPON THE INFORMATION FROM THE U.S. GEOLOGICAL SURVEY AND IN CONFORMANCE WITH, APPLICABLE WITH WATER MANAGEMENT DISTRICTS OR THE FEDERAL EMERGENCY MANAGEMENT AGENCY. ALTERATIONS SHALL BE PERMITTED BY THE APPLICABLE WATER MANAGEMENT DISTRICT AND IN COMPLIANCE WITH OTHER PROVISIONS OF THIS ORDINANCE.
   - F. AN OPERATOR SHALL NOT DUMP, PILE OR PERMIT THE DUMPING, PILING, OR OTHERWISE PLACING OF ANY EARTH, OVERBURDEN, ROCKS, ORE, DEBRIS, OR OTHER SOLID WASTE UPON OR INTO ANY PUBLIC ROADWAYS, OR OTHER PUBLIC PROPERTY, OR WATER BODIES, OR UPON ANY ADJACENT PROPERTY EXCEPT AS SPECIFICALLY APPROVED IN THE PERMIT. THE OPERATOR SHALL NOT PLACE THESE MATERIALS IN SUCH WAY THAT NORMAL EROSION OR SLIDES, BROUGHT ABOUT BY NATURAL PHYSICAL CAUSES, WILL PERMIT SUCH MATERIALS TO MOVE ONTO PUBLIC ROADWAYS, OR OTHER PUBLIC PROPERTY, INTO WATER BODIES, OR UPON ANY ADJACENT PROPERTY.
   - G. ALL HAZARDOUS WASTE MATERIALS INTENDED TO BE STORED OR USED ON–SITE, INCLUDING PETROLEUM BASED PRODUCTS, SHALL BE REPORTED TO THE DEPARTMENT OF ENVIRONMENTAL PROTECTION PRIOR TO STORAGE. ALL HAZARDOUS WASTES GENERATED BY ACTIVITIES AT THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL LAW.
   - I. INCREASES TO AMBIENT NOISES, RESULTING FROM MINING OPERATIONS, SHALL NOT CAUSE A PUBLIC NUISANCE AS MEASURED AT THE PERMITTEE'S PROPERTY LINE AND IN ACCORDANCE WITH THE CRITERIA FOUND APPLICABLE TO CITY OF APOPKA RULES, REGULATIONS AND ORDINANCES. NOR SHALL EXCAVATION ACTIVITIES GENERATE NOISE IN EXCESS OF THAT ALLOWED BY LOCAL, STATE OR FEDERAL LAW.
   - H. BLASTING OR OTHER USE OF EXPLOSIVES SHALL NOT BE PERFORMED WITHOUT PROPER PERMITS FROM THE STATE FIRE MARSHALL AND SHALL BE FULLY OUTLINED IN THE EXCAVATION PERMIT. BLASTING SHALL BE CONDUCTED ONLY FROM MONDAY THROUGH SATURDAY AND DURING DAYLIGHT HOURS. SHOULD THE CITY RECEIVE COMPLAINTS FROM NEARBY RESIDENTS ABOUT NOISE OR VIBRATION FROM BLASTING, THE CITY MAY REQUIRE THE OPERATOR TO NOTIFY ADJACENT RESIDENTS PRIOR TO FUTURE BLASTING.
   - I. OPERATIONS SHALL BE PERFORMED IN A MANNER THAT WILL PREVENT VIBRATIONS OF THE SOIL FROM REACHING A MAGNITUDE SUFFICIENT TO CAUSE DAMAGE TO PERSONS OR PROPERTY OUTSIDE THE PERMITTED EXCAVATION SITE. SHOULD THE COUNTY RECEIVE COMPLAINTS FROM ADJACENT RESIDENTS OR LANDOWNERS, THE CITY MAY REQUIRE MEASUREMENT BY A BLAST MONITORING DEVICE AND A REPORT OF THE FINDINGS TO THE CITY DEMONSTRATING THAT THE BLAST HAS NOT AND WILL NOT CAUSE DAMAGE TO PERSONS OR PROPERTY OUTSIDE THE OPERATOR'S PROPERTY.
   - J. THE SOIL EXCAVATION SHALL COMPLY WITH THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) RECLAMATION REQUIREMENTS FOR SOLID RESOURCES OTHER THAN PHOSPHATE, LIMESTONE, HEAVY MINERALS, AND FULLER'S EARTH. PRIOR TO PERMIT ISSUANCE, THE APPLICANT MUST SHOW PROOF OF NOTIFICATION TO FDEP IN ACCORDANCE WITH FLORIDA STATUTES CHAPTER 378.

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Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

GENERAL NOTES

APOPKA MULTI-FAMILY

CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE: 1"=NONE'
SHEET: 02 OF 15

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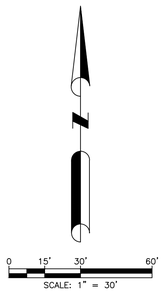
EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SILT FROM SITE IF NOT REUSABLE ON-SITE AND ASSURING PLAN ALIGNMENT AND GRADE IN ALL DITCHES AND SWALES AT COMPLETION OF CONSTRUCTION.
2. THE LANDSCAPER IS RESPONSIBLE FOR REMOVING THE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER COMPLETION OF CONSTRUCTION AND ONLY WHEN AREAS HAVE BEEN STABILIZED.
3. ADDITIONAL PROTECTION - ON-SITE PROTECTION IN ADDITION TO THE ABOVE MUST BE PROVIDED THAT WILL NOT PERMIT SILT TO LEAVE THE PROJECT CONFINES DUE TO UNSEEN CONDITIONS OR ACCIDENTS.
4. CONTRACTOR SHALL INSURE THAT ALL DRAINAGE STRUCTURES, PIPES, ETC. ARE CLEANED OUT AND WORKING PROPERLY AT TIME OF ACCEPTANCE.
5. SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
6. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
7. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE- THIRD THE HEIGHT OF THE BARRIER.
8. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.
9. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE BEST EROSION AND SEDIMENT CONTROL PRACTICES AS OUTLINED IN THE PLANS, SPECIFICATIONS AND ST. JOHNS RIVER WATER MANAGEMENT DISTRICT SPECIFICATIONS AND CRITERIA.
10. FOR ADDITIONAL INFORMATION ON SEDIMENT AND EROSION CONTROL REFER TO "THE FLORIDA DEVELOPMENT MANUAL - A GUIDE TO SOUND LAND AND WATER MANAGEMENT" FROM THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION (F.D.E.R.) CHAPTER 6.
11. EROSION AND SEDIMENT CONTROL BARRIERS SHALL BE PLACED ADJACENT TO ALL WETLAND AREAS WHERE THERE IS POTENTIAL FOR DOWNSTREAM WATER QUALITY DEGRADATION. SEE DETAIL SHEET FOR TYPICAL CONSTRUCTION.
12. ALL DISTURBED AREAS SHALL BE GRASSED, FERTILIZED, MULCHED AND MAINTAINED UNTIL A PERMANENT VEGETATIVE COVER IS ESTABLISHED.
13. SOD SHALL BE PLACED IN AREAS WHICH MAY REQUIRE IMMEDIATE EROSION PROTECTION TO ENSURE WATER QUALITY STANDARDS ARE MAINTAINED.
14. ANY DISCHARGE FROM DEWATERING ACTIVITY SHALL BE FILTERED AND CONVEYED TO THE OUTFALL IN A MANNER WHICH PREVENTS EROSION AND TRANSPORTATION OF SUSPENDED SOLIDS TO THE RECEIVING OUTFALL.
15. DEWATERING PUMPS SHALL NOT EXCEED THE CAPACITY OF THAT WHICH REQUIRES A CONSUMPTIVE USE PERMIT FROM THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT.
16. ALL DISTURBED AREAS TO BE STABILIZED THROUGH COMPACTION, SILT SCREENS AND GRASSING. ALL FILL SLOPES 3:1 OR STEEPER TO RECEIVE STAKED SOLID SOD.
17. ALL DEWATERING, EROSION, AND SEDIMENT CONTROL TO REMAIN IN PLACE AFTER COMPLETION OF CONSTRUCTION AND REMOVED ONLY WHEN AREAS HAVE STABILIZED.
18. THIS PLAN INDICATES THE MINIMUM EROSION AND SEDIMENT MEASURES REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL APPLICABLE RULES, REGULATIONS AND WATER QUALITY GUIDELINES AND MAY NEED TO INSTALL ADDITIONAL CONTROLS.
19. THE CONTRACTOR SHALL BE REQUIRED TO RESPOND TO ALL WATER MANAGEMENT DISTRICT INQUIRIES, RELATIVE TO COMPLIANCE OF SJRWMD FOR EROSION AND SEDIMENTATION CONTROL. THE COST OF THIS COMPLIANCE SHALL BE PART OF THE CONTRACT.

CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AS FOLLOWS:

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
2. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF ITS USE, IT SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT.
4. ANY SEDIMENT DEPOSITS LEFT IN PLACE AFTER THE SILT FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE FINISHED GRADE, PREPARED AND SEEDED.
5. CONTRACTOR TO PROVIDE WATER TRUCK ON-SITE IN LIEU OF DUST ABATEMENT FENCE.



SILT FENCE LEGEND

SINGLE - ROW SILT FENCE

DUST ABATEMENT FENCE

INLET PROTECTION

FDOT APPROVED TEMPORARY SILT FENCE PRE-ASSEMBLED IN 100' ROLLS UTILIZING 2"X 2" X 4' WOODEN POSTS @ 8' C/C MAX. w/3' OF WOVEN GEOTEXTILE MATERIAL MEETING THE REQUIREMENTS OF SEC. 985-4, SIMILAR & EQUAL TO THAT SUPPLIED BY FIFEPIPE CO. OF TAMPA FLA.

TYPICAL SINGLE ROW SILT FENCE DETAIL

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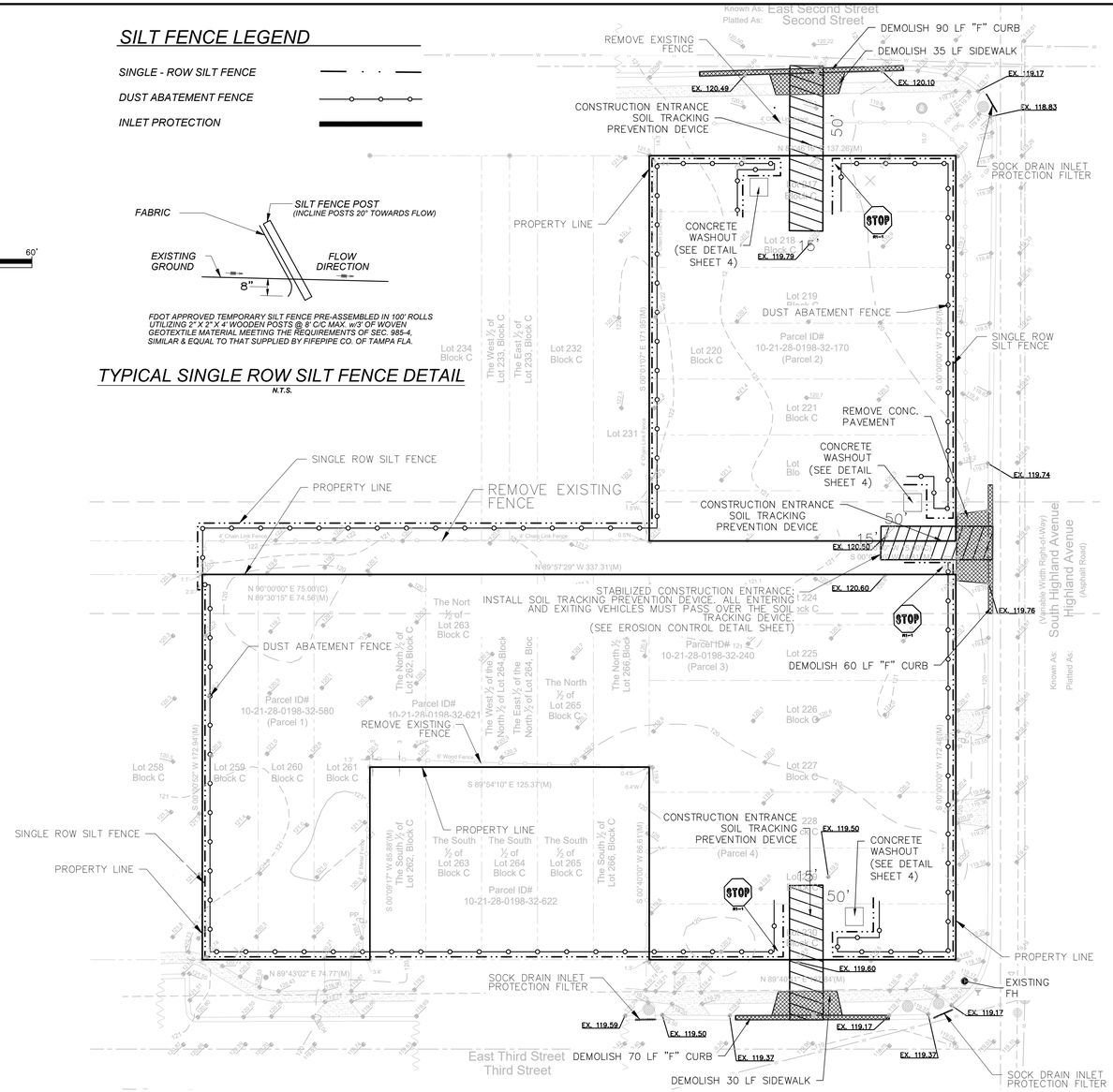

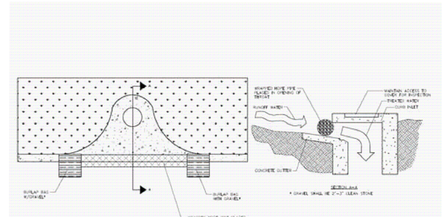

SOCK DRAIN INLET SEDIMENT FILTER

N.T.S.

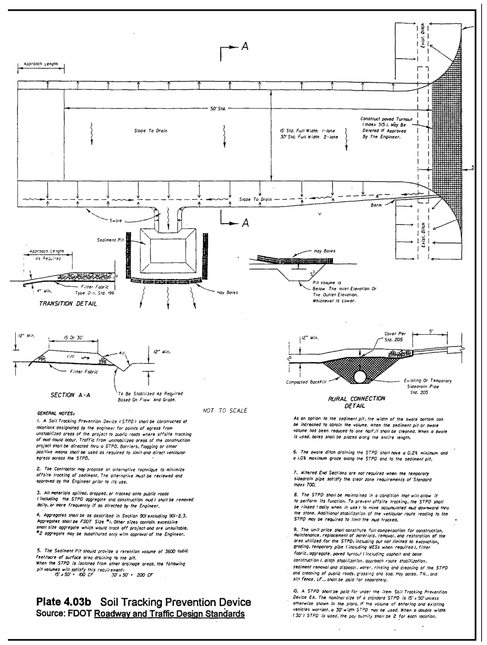

Plate 4.03b Soil Tracking Prevention Device
Source: FDOT Roadway and Traffic Design Standards

SOIL TRACKING PREVENTION DEVICE

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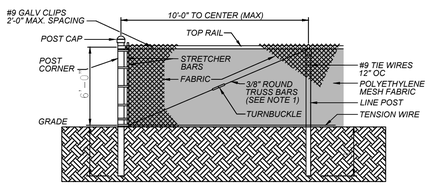

DUST ABATEMENT FENCE DETAIL

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Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

EROSION CONTROL & DEMO PLAN

APOPKA MULTI-FAMILY
CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE: 1"=30'
SHEET: 03 OF 15

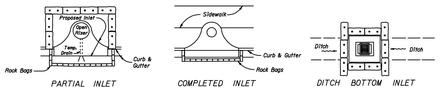
F:\UC1\CAD\Planset\Final\03 EROSION CONTROL & DEMO PLAN.dwg,6/19/2023 9:49:44 AM

STORM WATER POLLUTION PREVENTION PLAN

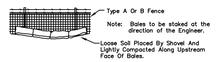
EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SILT FROM SITE IF NOT REUSABLE ON-SITE AND ASSURING PLAN ALIGNMENT AND GRADE IN ALL DITCHES AND SWALES AT COMPLETION OF CONSTRUCTION.
2. THE SITE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER COMPLETION OF CONSTRUCTION AND ONLY WHEN AREAS HAVE BEEN STABILIZED.
3. ADDITIONAL PROTECTION - ON-SITE PROTECTION IN ADDITION TO THE ABOVE MUST BE PROVIDED THAT WILL NOT PERMIT SILT TO LEAVE THE PROJECT CONFINES DUE TO UNSEEN CONDITIONS OR ACCIDENTS.
4. CONTRACTOR SHALL INSURE THAT ALL DRAINAGE STRUCTURES, PIPES, ETC. ARE CLEANED OUT AND WORKING PROPERLY AT TIME OF ACCEPTANCE.
5. WIRE MESH SHALL BE LAID OVER THE DROP INLET SO THAT THE WIRE EXTENDS A MINIMUM OF 1 FOOT BEYOND EACH SIDE OF THE INLET STRUCTURE. HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2-INCH OPENINGS SHALL BE USED. IF MORE THAN ONE STRIP OF MESH IS NECESSARY, THE STRIPS SHALL BE OVERLAPPED.
6. FDOT NO. 1 COARSE AGGREGATE SHALL BE PLACED OVER THE WIRE MESH AS INDICATED IN D-903. THE DEPTH OF STONE SHALL BE AT LEAST 12 INCHES OVER THE ENTIRE INLET OPENING. THE STONE SHALL EXTEND BEYOND THE INLET OPENING AT LEAST 18 INCHES ON ALL SIDES.
7. IF THE STONE FILTER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER ADEQUATELY PERFORMS ITS FUNCTION, THE STONES MUST BE PULLED AWAY FROM THE INLET, CLEANED AND REPLACED.
8. SYNTHETIC BALES SHALL BE EITHER WIRE-BOUND OR STRING-TIED WITH THE BINDINGS ORIENTED AROUND THE SIDES RATHER THAN OVER AND UNDER THE BALES.
9. SYNTHETIC BALES SHALL BE PLACED LENGTHWISE IN A SINGLE ROW SURROUNDING THE INLET, WITH THE ENDS OF ADJACENT BALES PRESSED TOGETHER.
10. THE FILTER BARRIER SHALL BE ENTRENCHED AND BACKFILLED. A TRENCH SHALL BE EXCAVATED TO A MINIMUM DEPTH OF 8 INCHES. AFTER THE SYNTHETIC BALES ARE STAKED, THE EXCAVATED SOIL SHALL BE BACKFILLED AND COMPACTED AGAINST THE FILTER BARRIER.
11. EACH SYNTHETIC BALE SHALL BE SECURELY ANCHORED AND HELD IN PLACE BY AT LEAST TWO STAKES OR REBAR DRIVEN THROUGH THE BALE.
12. CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED SYNTHETIC BALES, END RUNS AND UNDERCUTTING BENEATH BALES.
13. NECESSARY REPAIRS TO BARRIERS OR REPLACEMENT OF SYNTHETIC BALES SHALL BE ACCOMPLISHED PROMPTLY.
14. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SYNTHETIC BALE BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
15. SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
16. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
17. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-THIRD THE HEIGHT OF THE BARRIER.
18. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.
19. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
20. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/3 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
21. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE BEST EROSION AND SEDIMENT CONTROL PRACTICES AS OUTLINED IN THE PLANS, SPECIFICATIONS AND ST. JOHNS RIVER WATER MANAGEMENT DISTRICT SPECIFICATIONS AND CRITERIA.
22. FOR ADDITIONAL INFORMATION ON SEDIMENT AND EROSION CONTROL REFER TO "THE FLORIDA DEVELOPMENT MANUAL - A GUIDE TO SOUND LAND AND WATER MANAGEMENT" FROM THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (F.D.E.P.) CHAPTER 6.
23. EROSION AND SEDIMENT CONTROL BARRIERS SHALL BE PLACED ADJACENT TO ALL WETLAND AREAS WHERE THERE IS POTENTIAL FOR DOWNSTREAM WATER QUALITY DEGRADATION. SEE DETAIL SHEET FOR TYPICAL CONSTRUCTION.
24. ALL DISTURBED AREAS SHALL BE GRASSED, FERTILIZED, MULCHED AND MAINTAINED UNTIL A PERMANENT VEGETATIVE COVER IS ESTABLISHED.
25. SOD SHALL BE PLACED IN AREAS WHICH MAY REQUIRE IMMEDIATE EROSION PROTECTION TO ENSURE WATER QUALITY STANDARDS ARE MAINTAINED.
26. ANY DISCHARGE FROM DEWATERING ACTIVITY SHALL BE FILTERED AND CONVEYED TO THE OUTFALL IN A MANNER WHICH PREVENTS EROSION AND TRANSPORTATION OF SUSPENDED SOLIDS TO THE RECEIVING OUTFALL.
27. DEWATERING PUMPS SHALL NOT EXCEED THE CAPACITY OF THAT WHICH REQUIRES A CONSUMPTIVE USE PERMIT FROM THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT.
28. ALL DISTURBED AREAS TO BE STABILIZED THROUGH COMPACTION, SILT SCREENS, SYNTHETIC HAY BALES, AND GRASSING. ALL FILL SLOPES 3:1 OR STEEPER TO RECEIVE STAKED SOLID SOD.
29. ALL DEWATERING, EROSION, AND SEDIMENT CONTROL TO REMAIN IN PLACE AFTER COMPLETION OF CONSTRUCTION AND REMOVED ONLY WHEN AREAS HAVE STABILIZED.
30. THIS PLAN INDICATES THE MINIMUM EROSION AND SEDIMENT MEASURES REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL APPLICABLE RULES, REGULATIONS AND WATER QUALITY GUIDELINES AND MAY NEED TO INSTALL ADDITIONAL CONTROLS.
31. THE CONTRACTOR SHALL BE REQUIRED TO RESPOND TO ALL WATER MANAGEMENT DISTRICT INQUIRIES, RELATIVE TO COMPLIANCE OF SFWMD FOR EROSION AND SEDIMENTATION CONTROL. THE COST OF THIS COMPLIANCE SHALL BE PART OF THE CONTRACT.

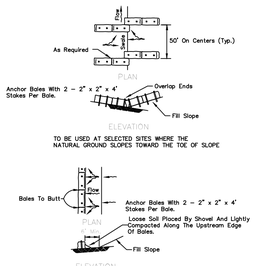
NOTE:
WHERE FDOT SPECS AND INDEXES ARE REFERENCED, PLEASE REFER TO THE 2018 FDOT ROADWAY & TRAFFIC DESIGN STANDARDS, AND 2018 FDOT STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION.



PROTECTION AROUND INLETS OR SIMILAR STRUCTURES



SYNTHETIC BALES BACKED BY FENCE



BARRIERS FOR FILL SLOPES

SYNTHETIC HAY BALE PLACEMENT

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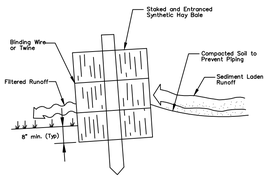

CROSS-SECTION OF A PROPERLY INSTALLED SYNTHETIC HAY BALE

STAKED SYNTHETIC HAY BALE

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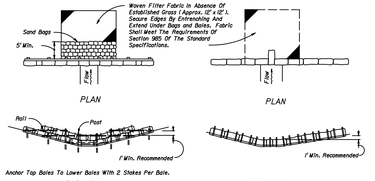

BARRIER FOR UNPAVED DITCHES

SYNTHETIC HAY BALE BARRIERS TYPE I & II

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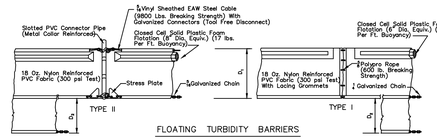


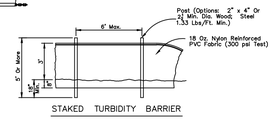
FLOATING TURBIDITY BARRIERS

NOTICE:
COMPONENTS OF TYPES I & TYPE II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.

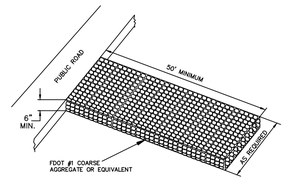
NOTES:
1. Turbidity barriers are to be used in all permanent bodies of water regardless of water depth.
2. Number and spacing of anchors dependent on current velocities.
3. Deployment of barrier around pile locations may vary to accommodate construction operations.
4. Navigation may require segmenting barrier during construction operations.
5. For additional information see Section 104 of the FDOT Standard Specifications.

TURBIDITY BARRIERS

N.T.S.

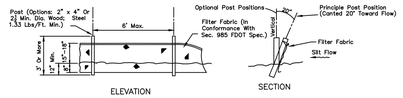


Note:
Turbidity barriers for flowing streams and tidal creeks may be either floating, or staked types or any combinations of types that will suit site conditions and meet erosion control and water quality requirements. The barrier type(s) will be at the Contractors option unless otherwise specified in the plans, however, payment will be under the contract lump sum price established in the bid proposal for Erosion and Sediment Control Posts in staked turbidity barriers to be installed in vertical position unless otherwise directed by the Engineer.

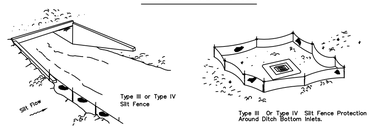


STABILIZED CONSTRUCTION ENTRANCE

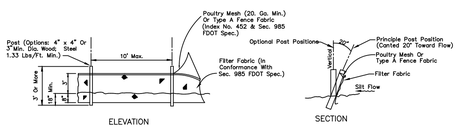
N.T.S.



TYPE III SILT FENCE

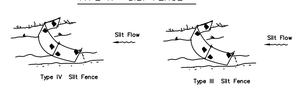


Do not deploy in a manner that silt fences will act as a dam across permanent flowing watercourses. Silt fences are to be used at upland locations and turbidity barriers used at permanent bodies of water.



Note: Silt Fence to be paid for under the contract lump sum price for Erosion and Sediment Control.

TYPE IV SILT FENCE



Note: Spacing for Type III & TYPE IV Fence to be in accordance with Chart 1, Sheet 1 of 3, FDOT Index No. 102 and ditch installations at drainage structures Sheet 2 of 3, FDOT Index No. 102.

SILT FENCE APPLICATIONS

SILT FENCE TYPE III & IV

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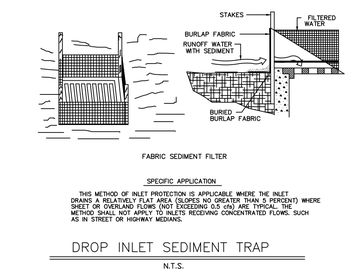


SYNTHETIC HAY BALE SEDIMENT FILTER

SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5 PERCENT) WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 0.5 cfs) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

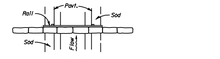
FABRIC SEDIMENT FILTER

SPECIFIC APPLICATION

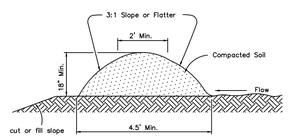
THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5 PERCENT) WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 0.5 cfs) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

DROP INLET SEDIMENT TRAP

N.T.S.



BARRIER FOR PAVED DITCH



DIVERSION DIKE

N.T.S.

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241.
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

EROSION CONTROL DETAILS
APOPKA MULTI-FAMILY
CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE: 1"=NONE'
SHEET: 04 OF 15

F:\UC1\CAD\Planset\Final\04 EROSION CONTROL DETAILS.dwg,4/4/2023 5:57:35 PM

STORM WATER POLLUTION PREVENTION PLAN

OWNER'S REQUIREMENTS

SITE DESCRIPTION

PROJECT NAME AND LOCATION:
APOPKA MULTI-FAMILY
APOPKA, FLORIDA

OWNER NAME AND ADDRESS:
URBAN COMFORT, LLC
1862 ARLINGTON CT
LONGWOOD, FL 32779
JACK SPEACKS
407-557-6208
JACK@ROIFUNDINGLLC.COM

DESCRIPTION:
THIS PROJECT INCLUDES THE CONSTRUCTION OF ROADWAY, UTILITY CONSTRUCTION, DRAINAGE SYSTEM CONSTRUCTION INCLUDING DRY POND, WET POND AND LANDSCAPING

SOIL DISTURBING ACTIVITIES WILL INCLUDE:
CLEARING AND GRUBBING; EARTHWORK, MASS GRADING;
STORM SEWER

RUNOFF CURVE NUMBERS:
1. PRE-CONSTRUCTION = SEE DRAINAGE CALCULATION NOTEBOOK
2. POST-CONSTRUCTION = SEE DRAINAGE CALCULATION NOTEBOOK

SOILS:
SEE SOIL BORING REPORT FOR SOILS DATA

SITE MAPS:
* SEE ATTACHED GRADING PLAN FOR PRE & POST DEVELOPMENT GRADES, AREAS OF SOILS, DISTURBANCE, LOCATION OF SURFACE WATERS, WETLANDS, PROTECTED AREAS, MAJOR STRUCTURAL AND NONSTRUCTURAL CONTROLS AND STORM WATER DISCHARGE POINTS.
* SEE ATTACHED EROSION & TURBIDITY CONTROL PLAN FOR LOCATION OF TEMPORARY STABILIZATION PRACTICES, AND TURBIDITY BARRIERS
* SEE GENERAL NOTES FOR REQUIREMENTS FOR TEMPORARY AND PERMANENT STABILIZATION.

SITE AREA:
1. TOTAL AREA OF SITE = 1.61 AC.

NAME OF RECEIVING WATERS:

PROPOSED DRY POND	PROPOSED WET POND
LATITUDE = N 28° 40' 28.89"	LATITUDE = N 28° 40' 28.24"
LONGITUDE = W 81° 30' 23.69"	LONGITUDE = W 81° 30' 22.40"

1. ANTICIPATED START DATE OF CONSTRUCTION: 06/2023
2. ANTICIPATED END DATE OF CONSTRUCTION: 06/2024

(CONSTRUCTION DATES ARE TO BE FILLED IN PRIOR TO COMMENCEMENT OF CONSTRUCTION)

CONTROLS

THIS PLAN UTILIZES BEST MANAGEMENT PRACTICES TO CONTROL EROSION AND TURBIDITY CAUSED BY STORM WATER RUN OFF. AN EROSION AND TURBIDITY PLAN HAS BEEN PREPARED TO INSTRUCT THE CONTRACTOR ON PLACEMENT OF THESE CONTROLS. IT IS THE CONTRACTORS RESPONSIBILITY TO INSTALL AND MAINTAIN THE CONTROLS PER PLAN AS WELL AS ENSURING THE PLAN IS PROVIDING THE PROPER PROTECTION AS REQUIRED BY FEDERAL, STATE AND LOCAL LAWS. REFER TO "CONTRACTORS RESPONSIBILITY" FOR A VERBAL DESCRIPTION OF THE CONTROLS THAT MAY BE IMPLEMENTED.

STORM WATER MANAGEMENT

STORM WATER DRAINAGE WILL BE PROVIDED BY (DESCRIPTION:) A SERIES OF PIPES AND INLETS CONVEYING RUNOFF TO THE EXISTING STORM WATER RETENTION POND FOR THE PROJECT. AREAS WHICH ARE NOT TO BE CONSTRUCTED ON, BUT WILL BE REGRADED SHALL BE STABILIZED IMMEDIATELY AFTER GRADING IS COMPLETE, WHEN CONSTRUCTION IS COMPLETE, A TOTAL OF 6.52 ACRES WILL HAVE BEEN REGRADED. THE SITE DISCHARGES TO A WET DETENTION SYSTEM. WHERE PRACTICAL, TEMPORARY SEDIMENT BASINS WILL BE USED TO INTERCEPT SEDIMENT BEFORE ENTERING THE PERMANENT DETENTION BASIN.

TIMING OF CONTROLS/MEASURES

REFER TO "CONTRACTORS REQUIREMENTS" FOR THE TIMING OF CONTROL/MEASURES.

CERTIFICATION OF COMPLIANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS

IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS RELATED TO STORM WATER MANAGEMENT AND EROSION AND TURBIDITY CONTROLS, THE FOLLOWING PERMITS HAVE BEEN OBTAINED (TO BE FILLED IN PRIOR TO COMMENCEMENT OF CONSTRUCTION).

F.D.E.P. DREDGE/FILL PERMIT # ____________

A.C.O.E. DREDGE/FILL PERMIT # ____________

S.J.R.W.M.D. M.S.S.W. PERMIT # ____________

N.P.D.E.S PERMIT # ____________

POLLUTION PREVENTION PLAN CERTIFICATION

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

SIGNED:______________________________
OWNER/OPERATOR

DATED:____________________

CONTRACTOR'S REQUIREMENTS

GENERAL

THE CONTRACTOR SHALL AT A MINIMUM IMPLEMENT THE CONTRACTOR'S REQUIREMENTS OUTLINED BELOW AND THOSE MEASURES SHOWN ON THE EROSION AND TURBIDITY CONTROL PLAN. IN ADDITION THE CONTRACTOR SHALL UNDERTAKE ADDITIONAL MEASURES REQUIRED TO BE IN COMPLIANCE WITH APPLICABLE PERMIT CONDITIONS AND STATE WATER QUALITY STANDARDS. DEPENDING ON THE NATURE OF MATERIALS AND METHODS OF CONSTRUCTION THE CONTRACTOR MAY BE REQUIRED TO ADD FLOCCULANTS TO THE RETENTION SYSTEM PRIOR TO PLACING THE SYSTEM INTO OPERATION.

SEQUENCE OF MAJOR ACTIVITIES:

THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE
2. INSTALL SILT FENCES AND HAY BALES AS REQUIRED
3. CLEAR AND GRUB FOR DIVERSION SWALES/DIKES AND SEDIMENT BASIN
4. CONSTRUCT SEDIMENTATION BASIN
5. CONTINUE CLEARING AND GRUBBING
6. STOCK PILE TOP SOIL IF REQUIRED
7. PERFORM PRELIMINARY GRADING ON SITE AS REQUIRED
8. STABILIZE DENUDED AREAS AND STOCKPILES AS SOON AS PRACTICABLE
9. INSTALL UTILITIES, STORM SEWER, CURBS & GUTTER.
10. APPLY BASE TO PROJECT
11. COMPLETE GRADING AND INSTALL PERMANENT SEEDING/SOD AND PLANTING
12. COMPLETE FINAL PAVING
13. REMOVE ACCUMULATED SEDIMENT FROM BASINS
14. WHEN ALL CONSTRUCTION ACTIVITY IS COMPLETE AND THE SITE IS STABILIZED, REMOVE ANY TEMPORARY DIVERSION SWALES/DIKES AND RESEED/SOD AS REQUIRED

TIMING OF CONTROLS/MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES, THE SILT FENCES AND HAY BALES, STABILIZED CONSTRUCTION ENTRANCE AND SEDIMENT BASIN WILL BE CONSTRUCTED PRIOR TO CLEARING OR GRADING OF ANY OTHER PORTIONS OF THE SITE. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICAL IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, THAT AREA WILL BE STABILIZED PERMANENTLY IN ACCORDANCE WITH THE PLANS. AFTER THE ENTIRE SITE IS STABILIZED, THE ACCUMULATED SEDIMENT WILL BE REMOVED FROM THE SEDIMENT TRAPS AND THE EARTH DIKE/SWALES WILL BE REGRADED/REMOVED AND STABILIZED IN ACCORDANCE WITH THE EROSION & TURBIDITY CONTROL PLAN.

CONTROLS

IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT THE EROSION AND TURBIDITY CONTROLS AS SHOWN ON THE EROSION AND TURBIDITY CONTROL PLAN. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THESE CONTROLS ARE PROPERLY INSTALLED , MAINTAINED AND FUNCTIONING PROPERLY TO PREVENT TURBID OR POLLUTED WATER FROM LEAVING THE PROJECT SITE. THE CONTRACTOR WILL ADJUST THE EROSION AND TURBIDITY CONTROLS SHOWN ON THE EROSION AND TURBIDITY CONTROL PLAN AND ADD ADDITIONAL CONTROL MEASURES, AS REQUIRED,TO ENSURE THE SITE MEETS ALL FEDERAL, STATE AND LOCAL EROSION AND TURBIDITY CONTROL REQUIREMENTS. THE FOLLOWING BEST MANAGEMENT PRACTICES WILL BE IMPLEMENTED BY THE CONTRACTOR AS REQUIRED BY THE EROSION AND TURBIDITY CONTROL PLAN AND AS REQUIRED TO MEET THE EROSION AND TURBIDITY REQUIREMENTS IMPOSED ON THE PROJECT SITE BY THE REGULATORY AGENCIES.

EROSION AND SEDIMENT CONTROLS
STABILIZATION PRACTICES

1. SYNTHETIC HAY BALE BARRIER: SYNTHETIC HAY BALE BARRIERS CAN BE USED BELOW DISTURBED AREAS SUBJECT TO SHEET AND RILL EROSION WITH THE FOLLOWING LIMITATIONS.
   A. WHERE THE MAXIMUM SLOPE BEHIND THE BARRIER IS 33 PERCENT.
   B. IN MINOR SWALES OR DITCH LINES WHERE THE MAXIMUM CONTRIBUTING DRAINAGE AREA IS NO GREATER THAN 2 ACRES.
   C. WHERE EFFECTIVENESS IS REQUIRED FOR LESS THAN 3 MONTHS.
   D. EVERY EFFORT SHOULD BE MADE TO LIMIT THE USE OF BALE BARRIERS CONSTRUCTED IN LIVE STREAMS OR IN SWALES WHERE THERE IS THE POSSIBILITY OF A WASHOUT. IF NECESSARY, MEASURES SHALL BE TAKEN TO PROPERLY ANCHOR BALES TO INSURE AGAINST WASHOUT.

2. FILTER FABRIC BARRIER: FILTER FABRIC BARRIERS CAN BE USED BELOW DISTURBED AREAS SUBJECT TO SHEET AND RILL EROSION WITH THE FOLLOWING LIMITATION:
   WHERE THE MAXIMUM SLOPE BEHIND THE BARRIER IS 33 PERCENT.

3. BRUSH BARRIER WITH FILTER FABRIC: BRUSH BARRIER MAY BE USED BELOW DISTURBED AREAS SUBJECT TO SHEET AND RILL EROSION WHERE ENOUGH RESIDUE MATERIAL IS AVAILABLE ON SITE.

4. LEVEL SPREADER: A LEVEL SPREADER MAY BE USED WHERE SEDIMENT-FREE STORM RUNOFF IS INTERCEPTED AND DIVERTED AWAY FROM THE GRADED AREAS ONTO UNDISTURBED STABILIZED AREAS. THIS PRACTICE APPLIES ONLY IN THOSE SITUATIONS WHERE THE SPREADER CAN BE CONSTRUCTED ON UNDISTURBED SOIL AND THE AREA BELOW THE LEVEL LIP IS STABILIZED. THE WATER SHOULD NOT BE ALLOWED TO RECONCENTRATE AFTER RELEASE.

CONTROLS CONT'D.

5. STOCKPILING MATERIAL: NO EXCAVATED MATERIAL SHALL BE STOCKPILED IN SUCH A MANNER AS TO DIRECT RUNOFF DIRECTLY OFF THE PROJECT SITE INTO ANY ADJACENT WATER BODY OR STORM WATER COLLECTION FACILITY.

6. EXPOSED AREA LIMITATION: THE SURFACE AREA OF OPEN, RAW ERODIBLE SOIL EXPOSED BY CLEARING AND GRUBBING OPERATIONS OR EXCAVATION AND FILLING OPERATIONS SHALL NOT EXCEED 10 ACRES. THIS REQUIREMENT MAY BE WAIVED FOR LARGE PROJECTS WITH AN EROSION CONTROL PLAN WHICH DEMONSTRATES THAT OPENING OF ADDITIONAL AREAS WILL NOT SIGNIFICANTLY AFFECT OFF-SITE DEPOSIT OF SEDIMENTS.

7. INLET PROTECTION: INLETS AND CATCH BASINS WHICH DISCHARGE DIRECTLY OFF-SITE SHALL BE PROTECTED FROM SEDIMENT-LADEN STORM RUNOFF UNTIL THE COMPLETION OF ALL CONSTRUCTION OPERATIONS THAT MAY CONTRIBUTE SEDIMENT TO THE INLET.

8. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE, BUT IN NO CASE MORE THAN 7 DAYS, IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED.

9. TEMPORARY SEEDING AND MULCHING: SLOPES STEEPER THAN 6:1 THAT FALL WITHIN THE CATEGORY ESTABLISHED IN PARAGRAPH 8 ABOVE SHALL ADDITIONALLY RECEIVE MULCHING OF APPROXIMATELY 2 INCHES LOOSE MEASURE OF MULCH MATERIAL CUT INTO THE SOIL OF THE SEEDED AREA ADEQUATE TO PREVENT MOVEMENT OF SEED AND MULCH.

10. TEMPORARY GRASSING: THE SEEDED OR SEEDED AND MULCHED AREA(S) SHALL BE ROLLED AND WATERED OR HYDROMULCHED OR OTHER SUITABLE METHODS IF REQUIRED TO ASSURE OPTIMUM GROWING CONDITIONS FOR THE ESTABLISHMENT OF A GOOD GRASS COVER. TEMPORARY GRASSING SHALL BE THE SAME MIX & AMOUNT REQUIRED FOR PERMANENT GRASSING IN THE CONTRACT SPECIFICATIONS.

11. TEMPORARY REGRASSING : IF, AFTER 14 DAYS FROM SEEDING, THE TEMPORARY GRASSED AREAS HAVE NOT ATTAINED A MINIMUM OF 85 PERCENT UNIFORM GOOD GRASS COVER, THE AREA WILL BE REWORKED AND ADDITIONAL SEED APPLIED SUFFICIENT TO ESTABLISH THE DESIRED VEGETATIVE COVER.

12. MAINTENANCE: ALL FEATURES OF THE PROJECT DESIGNED AND CONSTRUCTED TO PREVENT EROSION AND SEDIMENT SHALL BE MAINTAINED DURING THE LIFE OF THE CONSTRUCTION SO AS TO FUNCTION AS THEY WERE ORIGINALLY DESIGNED AND CONSTRUCTED.

13. PERMANENT EROSION CONTROL: THE EROSION CONTROL FACILITIES OF THE PROJECT SHOULD BE DESIGNED TO MINIMIZE THE IMPACT ON THE OFFSITE FACILITIES.

14. PERMANENT SEEDING: ALL AREAS WHICH HAVE BEEN DISTURBED BY CONSTRUCTION WILL, AS A MINIMUM, BE SEEDED. THE SEEDING MIX MUST PROVIDE BOTH LONG-TERM VEGETATION AND RAPID GROWTH SEASONAL VEGETATION. SLOPES STEEPER THAN 4:1 SHALL BE SEEDED AND MULCHED OR SODDED.

STRUCTURAL PRACTICES

1. TEMPORARY DIVERSION DIKE: TEMPORARY DIVERSION DIKES MAY BE USED TO DIVERT RUNOFF THROUGH A SEDIMENT-TRAPPING FACILITY.

2. TEMPORARY SEDIMENT TRAP: A SEDIMENT TRAP SHALL BE INSTALLED IN AN DRAINAGEWAY AT A STORM DRAIN INLET OR AT OTHER POINTS OF DISCHARGE FROM A DISTURBED AREA.
   THE FOLLOWING SEDIMENT TRAPS MAY BE CONSTRUCTED EITHER INDEPENDENTLY OR IN CONJUNCTION WITH A TEMPORARY DIVERSION DIKE:

   A. BLOCK & GRAVEL SEDIMENT FILTER - THIS PROTECTION IS APPLICABLE WHERE HEAVY FLOWS AND/OR WHERE AN OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE POUNDING AROUND THE STRUCTURE.

   B. GRAVEL SEDIMENT TRAP - THIS PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE POUNDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES & UNPROTECTED AREAS.

   C. DROP INLET SEDIMENT TRAP - THIS PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (S < 5%) AND WHERE SHEET OR OVERLAND FLOWS (Q < 0.5 CFS) ARE TYPICAL. THIS METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS SUCH AS IN STREET OR HIGHWAY MEDIANS.

3. OUTLET PROTECTION: APPLICABLE TO THE OUTLETS OF ALL PIPES AND PAVED CHANNEL SECTIONS WHERE THE FLOW COULD CAUSE EROSION & SEDIMENT PROBLEM TO THE RECEIVING WATER BODY. SILT FENCES & SYNTHETIC HAY BALES ARE TO BE INSTALLED IMMEDIATELY DOWNSTREAM OF THE DISCHARGING STRUCTURE AS SHOWN ON THE OUTLET PROTECTION DETAIL.

4. SEDIMENT BASIN: WILL BE CONSTRUCTED AT THE COMMON DRAINAGE LOCATIONS THAT SERVE AN AREA WITH 10 OR MORE DISTURBED ACRES AT ONE TIME, THE PROPOSED STORM WATER PONDS (OR TEMPORARY PONDS) WILL BE CONSTRUCTED FOR USE AS SEDIMENT BASINS. THESE SEDIMENT BASINS MUST PROVIDE A MINIMUM OF 3,600 CUBIC FEET OF STORAGE PER ACRE DRAINED UNTIL FINAL STABILIZATION OF THE SITE.

NOTE:

THE 3,600 CUBIC FEET OF STORAGE AREA PER ACRE DRAINED DOES NOT APPLY TO FLOWS FROM OFFSITE AREAS AND FLOWS FROM ONSITE AREAS THAT ARE EITHER UNDISTURBED OR HAVE UNDERGONE FINAL STABILIZATION WHERE SUCH FLOWS ARE DIVERTED AROUND BOTH THE DISTURBED AREA AND THE SEDIMENT BASIN. ANY TEMPORARY SEDIMENT BASINS CONSTRUCTED MUST BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR STRUCTURAL FILL. ALL SEDIMENT COLLECTED IN PERMANENT OR TEMPORARY SEDIMENT TRAPS MUST BE REMOVED UPON FINAL STABILIZATION.

OTHER CONTROLS

WASTE DISPOSAL

ALL WASTE MATERIALS EXCEPT LAND CLEARING DEBRIS SHALL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS. THE DUMPSTER WILL BE EMPTIED AS NEEDED AND THE TRASH WILL BE HAULED TO A STATE APPROVED LANDFILL. ALL PERSONNEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL. NOTICES STATING THESE PRACTICES WILL BE POSTED AT THE CONSTRUCTION SITE BY THE CONSTRUCTION SUPERINTENDENT, THE INDIVIDUAL WHO MANAGES THE DAY-TO-DAY SITE OPERATIONS, WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.

HAZARDOUS WASTE

ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES AND THE SITE SUPERINTENDENT, THE INDIVIDUAL WHO MANAGES DAY-TO-DAY SITE OPERATIONS,WILL BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED.

SANITARY WASTE

ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS AS NEEDED TO PREVENT POSSIBLE SPILLAGE. THE WASTE WILL BE COLLECTED AND DEPOSED OF IN ACCORDANCE WITH STATE AND LOCAL WASTE DISPOSAL REGULATIONS FOR SANITARY SEWER OR SEPTIC SYSTEMS.

OFFSITE VEHICLE TRACKING

A STABILIZED CONSTRUCTION ENTRANCE WILL BE PROVIDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS. THE PAVED STREET ADJACENT TO THE SITE ENTRANCE WILL BE SWEPT DAILY TO REMOVE ANY EXCESS MUD, DIRT OR ROCK TRACKED FROM THE SITE. DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE WILL BE COVERED WITH A TARPAULIN. OFFSITE VEHICLE TRACKING SHALL BE CONDUCTED DAILY OR MORE FREQUENTLY AS NEEDED.

INVENTORY FOR POLLUTION PREVENTION PLAN

THE MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ONSITE DURING CONSTRUCTION:

☐ Concrete	☐ Fertilizers	☐ Wood
☐ Asphalt	☐ Petroleum Based Products	☐ Masonry Blocks
☐ Tar	☐ Cleaning Solvents	☐ Roofing Materials
☐ Detergents	☐ Paints	☐ Metal Studs
☐ _____	☐ _____	☐ _____

SPILL PREVENTION

MATERIAL MANAGEMENT PRACTICES

THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF:

GOOD HOUSEKEEPING

THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ONSITE DURING THE CONSTRUCTION PROJECT:

* AN EFFORT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB.
* ALL MATERIALS STORED ONSITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
* PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL.
* SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
* WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
* MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
* THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE MATERIALS ONSITE RECEIVE PROPER USE AND DISPOSAL.

HAZARDOUS PRODUCTS

THESE PRACTICES ARE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS.

* PRODUCTS WILL BE KEPT IN ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.
* ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED; THEY CONTAIN IMPORTANT PRODUCT INFORMATION.
* IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURER'S OR LOCAL AND STATE RECOMMENDED METHODS FOR PROPER DISPOSAL WILL BE FOLLOWED.

SPILL PREVENTION CONT'D.

PRODUCT SPECIFIC PRACTICES
THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ONSITE:

PETROLEUM PRODUCTS

ALL ONSITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ONSITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

FERTILIZERS

FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORM WATER. STORAGE WILL BE IN A COVERED AREA. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

PAINTS

ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURERS' INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.

CONCRETE TRUCKS

WASHING OF VEHICLES SHOULD BE CONDUCTED USING PRACTICES THAT WILL PREVENT DIRECT, UNTREATED DISCHARGES OF WASTEWATER AND HAZARDOUS WASTES TO SURFACE AND GROUND WATERS. A DESIGNATED AREA MUST BE CREATED SPECIFICALLY FOR WASHING VEHICLES THAT WILL BE LAID WITH FILTER FABRIC, CRUSHED STONE (DOT GRAVEL #2 AND UP) AND COVERED WITH LINED BERM.

SPILL CONTROL PRACTICES

IN ADDITION TO THE GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTIONS OF THIS PLAN, THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:

MANUFACTURERS' RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED ON SITE AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.

MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ONSITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, LIQUID ABSORBENT (i.e. KITTY LITTER OR EQUAL), SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.

ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.

THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.

SPILL OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE OF THE SPILL. (800) 320-0519

THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING AND HOW TO CLEAN UP THE SPILL IF THERE IS ANOTHER ONE. A DESCRIPTION OF THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES WILL ALSO BE INCLUDED.

THE SITE SUPERINTENDENT RESPONSIBLE FOR THE DAY-TO-DAY SITE OPERATIONS, WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. HE/SHE WILL DESIGNATE AT LEAST ONE OTHER SITE PERSONNEL WHO WILL RECEIVE SPILL PREVENTION AND CLEANUP TRAINING. THESE INDIVIDUALS WILL EACH BECOME RESPONSIBLE FOR A PARTICULAR PHASE OF PREVENTION AND CLEANUP. THE NAMES OF RESPONSIBLE SPILL PERSONNEL WILL BE POSTED IN THE MATERIAL STORAGE AREA AND IF APPLICABLE, IN THE OFFICE TRAILER ONSITE.

MAINTENANCE/INSPECTION PROCEDURES

EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES

THE FOLLOWING ARE INSPECTION AND MAINTENANCE PRACTICES THAT WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS.

* NO MORE THAN 10 ACRES OF THE SITE WILL BE DENUDED AT ONE TIME WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
* ALL CONTROL MEASURES WILL BE INSPECTED BY THE SUPERINTENDENT, THE PERSON RESPONSIBLE FOR THE DAY TO DAY SITE OPERATION OR SOMEONE APPOINTED BY THE SUPERINTENDENT, AT LEAST ONCE A WEEK AND FOLLOWING ANY STORM EVENT OF 0.5 INCHES OR GREATER.
* ALL TURBIDITY CONTROL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF A REPAIR IS NECESSARY, IT WILL BE INITIATED WITHIN 24 HOURS OF A 0.5 INCH RAIN EVENT.
* BUILT UP SEDIMENT WILL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE FENCE.
* SILT FENCE WILL BE INSPECTED FOR DEPTH OF SEDIMENT, TEARS, TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS, AND TO SEE THAT THE FENCE POSTS ARE FIRMLY IN THE GROUND.
* DIVERSION DIKES/SWALES WILL BE INSPECTED AND ANY BREACHES PROMPTLY REPAIRED.

MAINT./INSP. PROCEDURES CONT'D.

* INSPECTIONS SHALL BE CONDUCTED AT A MINIMUM OF EVERY 7 DAYS OR WITHIN 24 HOURS OF A 0.5" RAIN EVENT.
* THE SEDIMENT BASINS WILL BE INSPECTED FOR THE DEPTH OF SEDIMENT, AND BUILT UP SEDIMENT WILL BE REMOVED WHEN IT REACHES 10 PERCENT OF THE DESIGN CAPACITY OR AT THE END OF THE JOB, WHICHEVER COMES FIRST.
* TEMPORARY AND PERMANENT SEEDING AND PLANTING WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
* A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. A COPY OF THE REPORT FORM TO BE COMPLETED BY THE INSPECTOR IS ATTACHED.
  THE REPORTS WILL BE KEPT ON SITE DURING CONSTRUCTION AND AVAILABLE UPON REQUEST TO THE OWNER, ENGINEER OR ANY FEDERAL, STATE OR LOCAL AGENCY APPROVING SEDIMENT AND AND EROSION PLANS, OR STORM WATER MANAGEMENT PLANS.
  THE REPORTS SHALL BE MADE AND RETAINED AS PART OF THE STORM WATER POLLUTION PREVENTION PLAN FOR AT LEAST THREE YEARS FROM THE DATE THAT THE SITE IS FINALLY STABILIZED AND THE NOTICE OF TERMINATION IS SUBMITTED THE REPORTS SHALL IDENTIFY ANY INCIDENTS OF NON-COMPLIANCE.
* THE SITE SUPERINTENDENT WILL SELECT UP TO THREE INDIVIDUALS WHO WILL BE RESPONSIBLE FOR INSPECTIONS, MAINTENANCE AND REPAIR ACTIVITIES, AND FILLING OUT THE INSPECTION AND MAINTENANCE REPORT.
* PERSONNEL SELECTED FOR INSPECTION AND MAINTENANCE RESPONSIBILITIES WILL RECEIVE TRAINING FROM THE SITE. SUPERINTENDENT. THEY WILL BE TRAINED IN ALL THE INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS USED ONSITE IN GOOD WORKING ORDER.

NON-STORM WATER DISCHARGES

IT IS EXPECTED THAT THE FOLLOWING NON-STORM WATER DISCHARGES WILL OCCUR FROM THE SITE DURING THE CONSTRUCTION PERIOD:

* WATER FROM WATER LINE FLUSHING
* PAVEMENT WASH WATERS (WHERE NO SPILLS OR LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE OCCURRED).
* UNCONTAMINATED GROUNDWATER (FROM DEWATERING EXCAVATION).

ALL NON-STORM WATER DISCHARGES WILL BE DIRECTED TO THE SEDIMENT BASIN PRIOR TO DISCHARGE.

CONTRACTOR'S CERTIFICATION

I CERTIFY UNDER PENALTY OF LAW THAT I UNDERSTAND, AND SHALL COMPLY WITH, THE TERMS AND CONDITIONS OF THE STATE OF FLORIDA GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES AND THIS STORMWATER POLLUTION PREVENTION PLAN PREPARED THEREUNDER.

RESPONSIBLE FOR/DUTIES	GENERAL CONTRACTOR	SUB-CONTRACTOR	SUB-CONTRACTOR	SUB-CONTRACTOR	SUB-CONTRACTOR	SUB-CONTRACTOR
BUSINESS NAME AND ADDRESS OF CONTRACTOR & ALL SUBS						
DATE						
SIGNATURE						

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241.
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

SWPPP
APOPKA MULTI-FAMILY
CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE:
SHEET: 05 OF 15

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NOTES

GENERAL:

PROJECT SHALL COMPLY WITH THE RESIDENTIAL DESIGN STANDARDS SET FORTH BY CITY OF APOPKA, FLORIDA.

LANDSCAPING & IRRIGATION:

ALL LANDSCAPING AND IRRIGATION SHALL MEET OR EXCEED THE REQUIREMENTS OF THE CITY OF APOPKA LAND DEVELOPMENT REGULATIONS.

SIGNAGE:

BILLBOARDS AND POLE SIGNS SHALL BE PROHIBITED. GROUND AND FASCIA SIGNS SHALL COMPLY WITH ALL CITY REGULATION.

EASEMENTS:

ANY EASEMENT SHOWN AS PROPOSED WILL BE RECORDED PRIOR TO ISSUING THE CERTIFICATE OF OCCUPANCY.

STORMWATER MANAGEMENT

OWNERSHIP AND MAINTENANCE OF STORM WATER SYSTEM SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER'S ASSOCIATION.
THE STORMWATER MANAGEMENT SYSTEM SHALL BE DESIGNED TO MEET CITY OF APOPKA CODES AND ST. JOHNS RIVER FLORIDA WATER MANAGEMENT DISTRICT REQUIREMENTS. BASED ON THE NATIONAL FLOOD INSURANCE PROGRAM FIRM MAP NO. 12095C0120H EFFECTIVE SEPTEMBER 24, 2021 PROPERTY IS WITHIN ZONE "X".

SANITARY LIFT STATION

OWNERSHIP AND MAINTENANCE OF THE SANITARY LIFT STATIONS SHALL BE THE RESPONSIBILITY OF CITY OF APOPKA UTILITY DEPARTMENT.

SOILS

SOIL SYMBOL	SOIL DESCRIPTION
19	HONTOON MUCK, FREQUENLY PONDED, 0 TO 1 PERCENT SLOPES
55	ZOLFO-URBAN LAND COMPLEX

PHASING

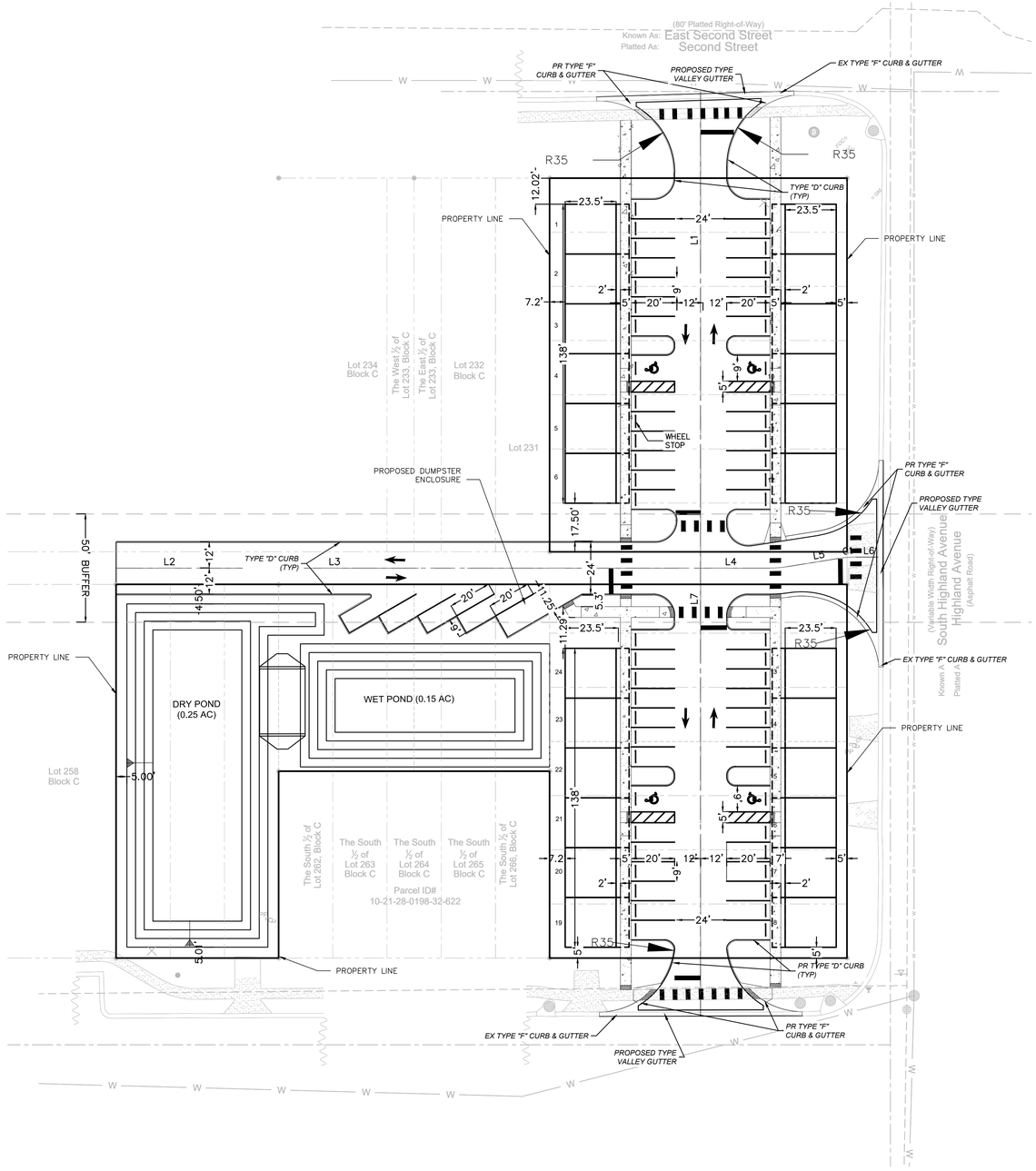
PROJECT WILL BE CONSTRUCTED IN ONE (1) PHASE.

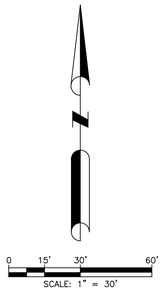
FIRE

FIRE DEPARTMENT ACCESS AND WATER SUPPLY SHALL COMPLY WITH NFPA 1, 7TH EDITION . AND FLORIDA FIRE PROTECTION CODE (FFPC) 7TH EDITION.

UTILITY NOTES:

1. THE SIZE, LOCATION AND POINTS OF CONNECTION FOR PROPOSED UTILITIES ARE SHOWN ON THESE PLANS.
2. FIRE HYDRANTS TO BE INSTALLED AS SHOWN ON THESE PLANS. CALCULATIONS SHALL MEET THE REQUIREMENTS OF ANNEX H & I OF NFPA 1, 2012 EDITION AND COORDINATED WITH CITY OF APOPKA FIRE AND RESCUE.
3. FIRE HYDRANTS SHALL MEET CITY OF APOPKA UTILITY STANDARDS.
4. THE DEVELOPER SHALL OBTAIN WATER, REUSE WATER, AND WASTEWATER SERVICE FROM CITY OF APOPKA WATER AUTHORITY.
5. DURING CONSTRUCTION, WHEN COMBUSTIBLES ARE BROUGHT ONTO THE SITE, ACCESS ROADS AND A SUITABLE TEMPORARY OR PERMANENT SUPPLY OF WATER ACCEPTABLE TO THE CITY OF APOPKA FIRE DEPARTMENT SHALL BE PROVIDED AND MAINTAINED. CH. 16, NFPA 1, 2012 EDITION (FFPC 2011 EDITION).
6. PRIOR TO CONSTRUCTION PLAN APPROVAL, HYDRAULIC CALCULATIONS SHALL BE SUBMITTED TO CITY OF APOPKA SHOWING THAT THE PROPOSED WATER AND WASTEWATER, SYSTEMS HAVE BEEN SIZED TO SUPPORT THIS PROJECT.





SETBACKS

PROPERTY SETBACK	5'
BUILDING HEIGHT:	2 STORIES

SITE DATA

EXISTING ZONING	MU-D
TOTAL PROPERTY	1.61 AC
BUFFER AREA	0.21 AC
DEVELOPABLE AREA	1.40 AC
23.5'X23' UNIT (FIRST FLOOR)	24 UNITS
REGULAR PARKING SPACES	56 SPACES
ADA PARKING SPACES	4 SPACES
TOTAL PARKING SPACES	60 SPACES

TOTAL PROJECT AREAS

OFF-SITE PERVIOUS AREA:	0.00 AC	
OFF-SITE IMPERVIOUS AREA:	0.22 AC	
TOTAL OFF-SITE AREA:	0.22 AC	
IMPERVIOUS AREA:	0.89 AC	55.28%
PERVIOUS AREA:	0.72AC	44.72%
TOTAL GROSS AREA:	1.61 AC	100.00%

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Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

OVERALL SITE PLAN

APOPKA MULTI-FAMILY
CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE: 1"=30'
SHEET: 06 OF 15

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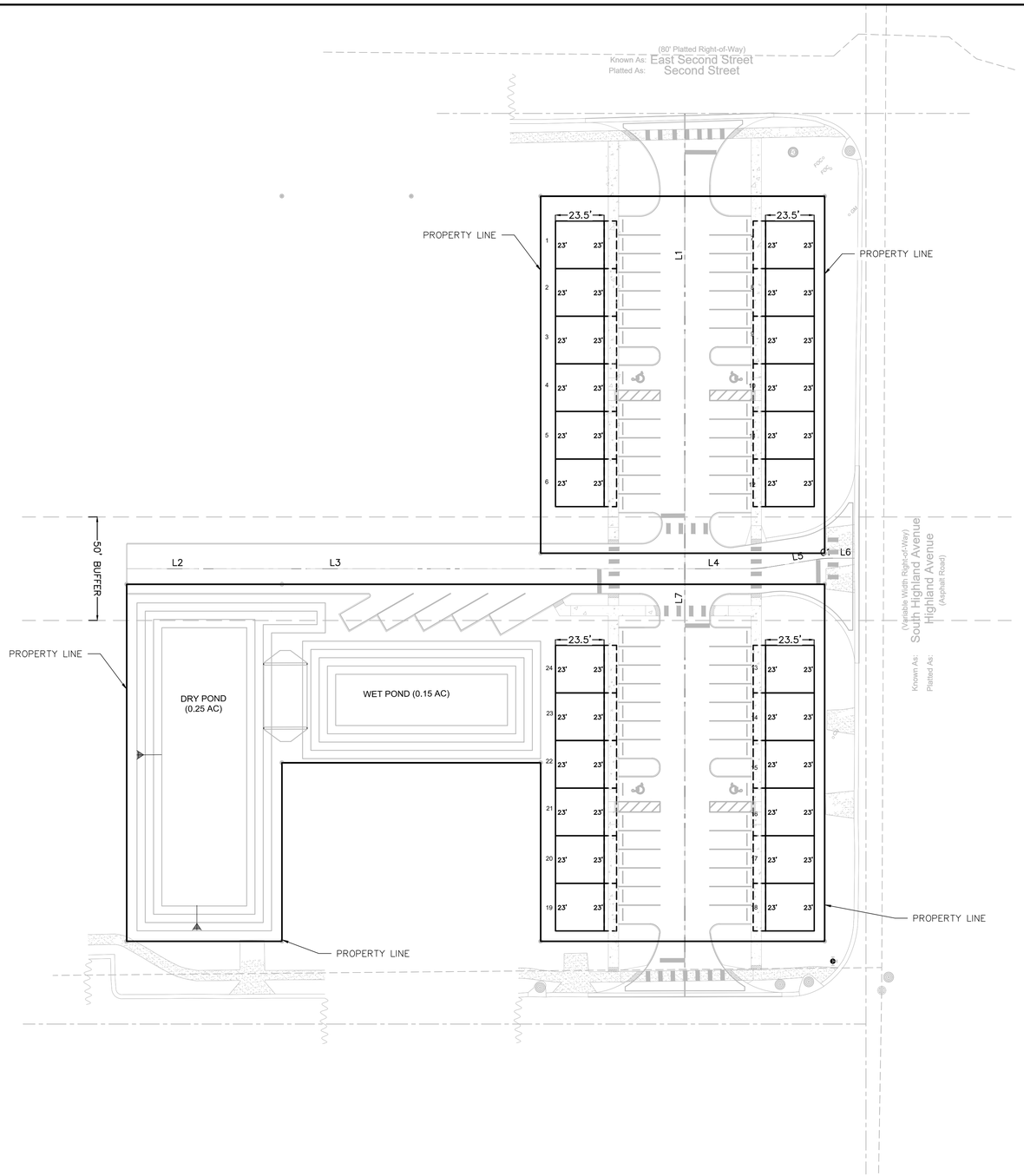

GEOMETRY TABLE		
Line #	Length	Direction
L1	426.96	N0° 00' 01.04"E
L2	301.44	N90° 00' 00.00"E
L3	301.44	N90° 00' 00.00"E
L4	301.44	N90° 00' 00.00"E
L5	24.29	N80° 54' 39.84"E
L6	10.40	N90° 00' 00.00"E
L7	426.96	N0° 00' 01.04"E

GEOMETRY TABLE					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	7.93	50.00	9.09	N85° 27' 20"E	7.92

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FLORIDA REG. NUMBER
48274

GEOMETRY PLAN

APOPKA MULTI-FAMILY
CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE: 1"=30'
SHEET: 07 OF 15

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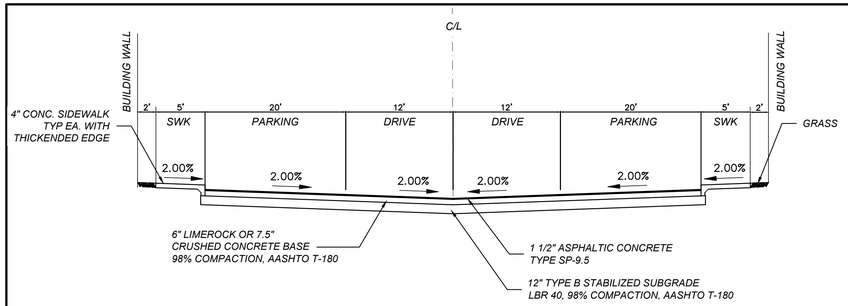
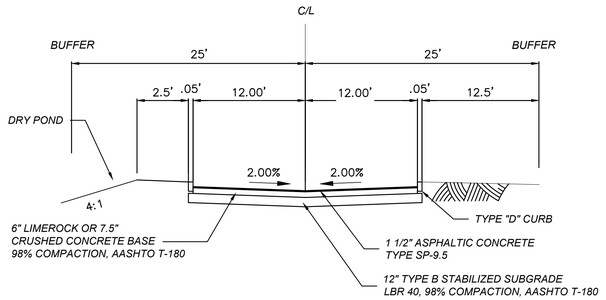


DRIVEWAY A SECTION A–A



DRIVEWAY B SECTION B–B

DRAINAGE STRUCTURE DATA

MES–1
TYPE "MES"
N: 1538821.35
E: 613334.47
INV EL. = 114.03

D–2
N:1538847.9674
E:613334.2896
TYPE "C" INLET
T.E. 120.60
INV. 114.08 (S)
INV. 114.08 (E)

D–3
N:1538847.9596
E:613471.8684
TYPE "C" INLET
T.E. 120.36
INV. 114.29 (W)
INV. 114.29 (E)

D–4
N:1538847.6599
E:613562.3422
TYPE "C" INLET
T.E. 119.68
INV. 114.43 (W)
INV. 114.43 (N)
INV. 114.43 (S)

D–5
N:1538751.9570
E:613562.4028
TYPE "C" INLET
T.E. 120.33
INV. 115.62 (N)

D–6
N:1538998.3252
E:613562.1041
TYPE "C" INLET
T.E. 120.54
INV. 115.83 (S)

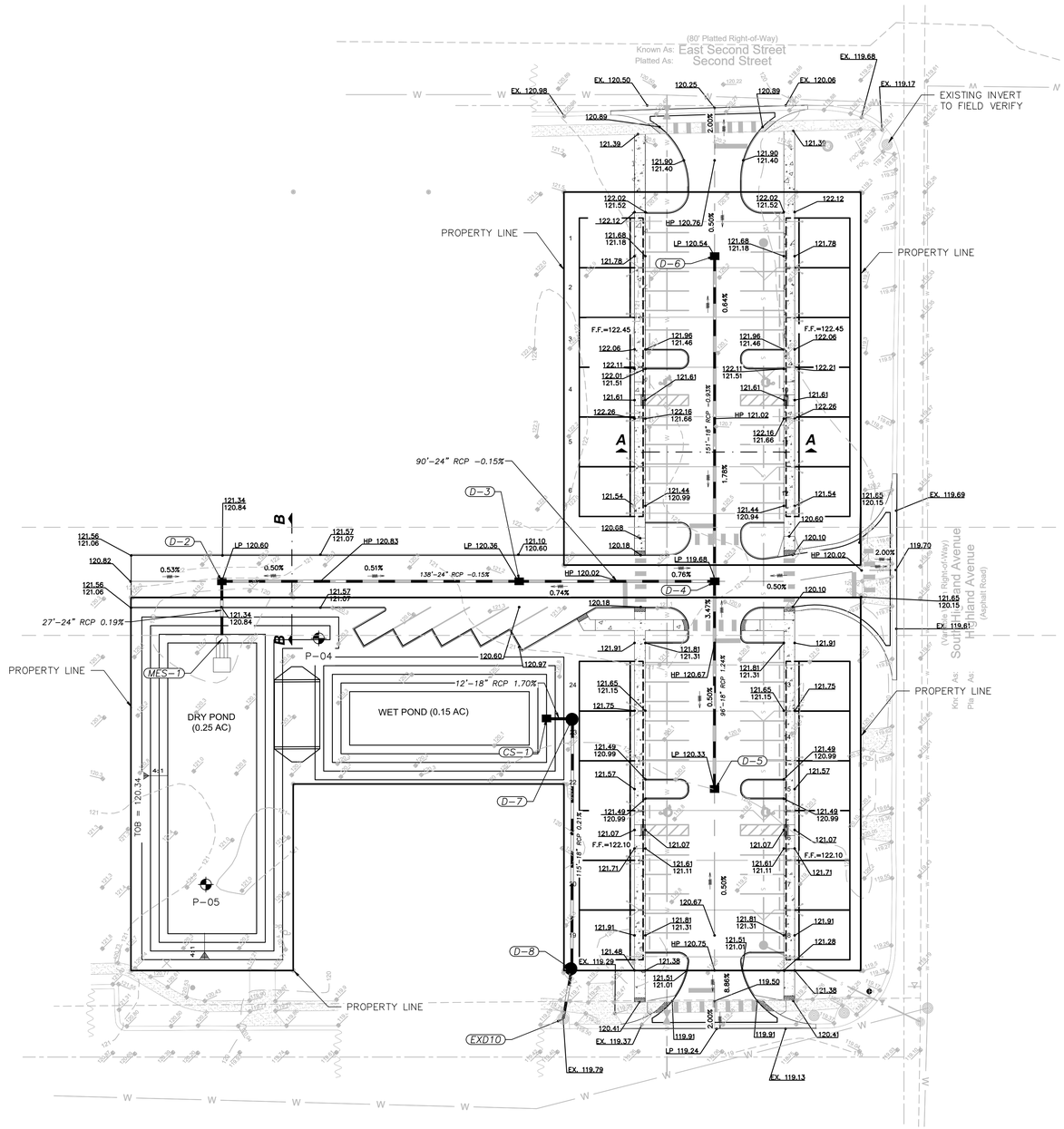
CS–1
N:1538784.6058
E:613484.3732
TYPE "D"
CONTROL STRUCTURE
T.E. 123.45
INV. 116.20 (E)

D–7
N:1538784.1056
E:613496.1114
TYPE "P7T" MANHOLE
T.E. 120.72
INV. 116.00 (W)
INV. 114.83 (S)

D–8
N:1538668.8173
E:613495.6497
TYPE "P7T" MANHOLE
T.E. 119.70
INV. 114.59 (N)
INV. 114.59 (S)

EXD10
N:1538645.5944
E:613492.2027
EX TYPE "P7T" MANHOLE
T.E. 119.79
INV. 114.54 (N)

TOP BE FIELD VERIFIER



APPROXIMATED STANDARD PENETRATION TEST BORING LOCATION ACCORDING TO GEOTECHNICAL EXPLORATION REPORT PERFORMED BY UNIVERSAL ENGINEERING SCIENCES, LLC. ORLANDO, FL - PROJECT Nº 0130.2300032.0000 - REPORT Nº 2003253 - 02/20/2023.

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REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

GRADING & DRAINAGE PLAN

APOPKA MULTI-FAMILY
CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE: 1"=30'
SHEET: 08 OF 15

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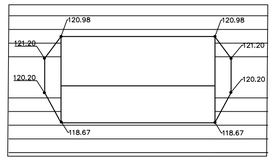
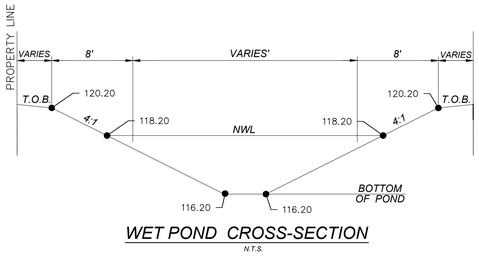


WEIR DETAIL

N.T.S.

WEIR INVERT: 115.16

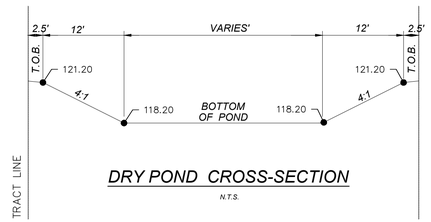


WET POND CROSS-SECTION

N.T.S.

WET POND DATA

TOP OF BANK EL.	120.20
NORMAL WATER LEVEL EL	118.20.
BOTTOM OF POND EL.	116.20
10YR./24HR. D.H.W. EL.	116.20
25YR./24HR. D.H.W. EL.	116.20
100 YR./24HR. D.H.W. EL.	118.40

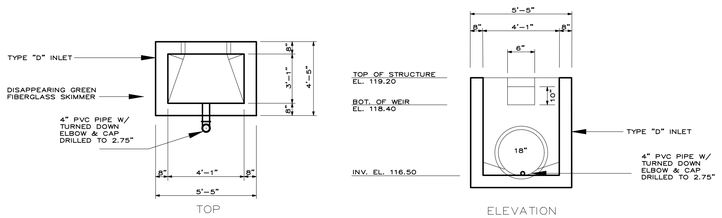


DRY POND CROSS-SECTION

N.T.S.

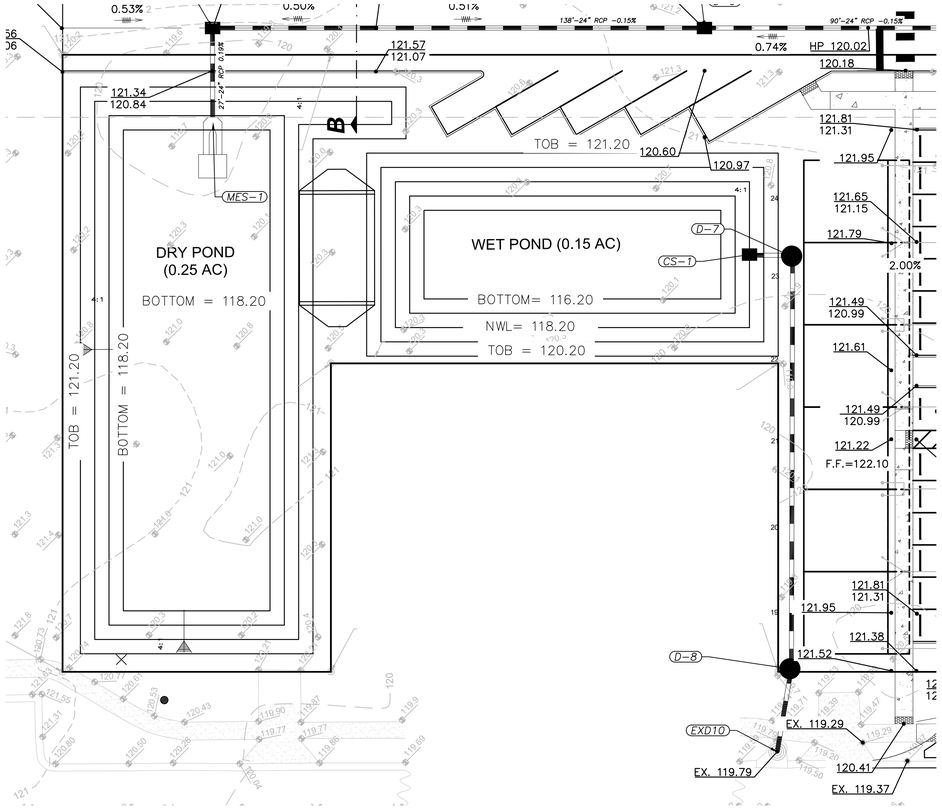
DRY POND DATA

TOP OF BANK EL.	121.20
BOTTOM OF POND EL.	118.20
10YR./24HR. D.H.W. EL.	119.89
25YR./24HR. D.H.W. EL.	121.08
100YR./24HR. D.H.W. EL.	121.22



CS-1 POND CONTROL STRUCTURE

N.T.S



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DRY POND & WET POND PLANS

APOPKA MULTI-FAMILY

CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
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DRAWN BY: JT
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SHEET: 09 OF 15

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LEGEND

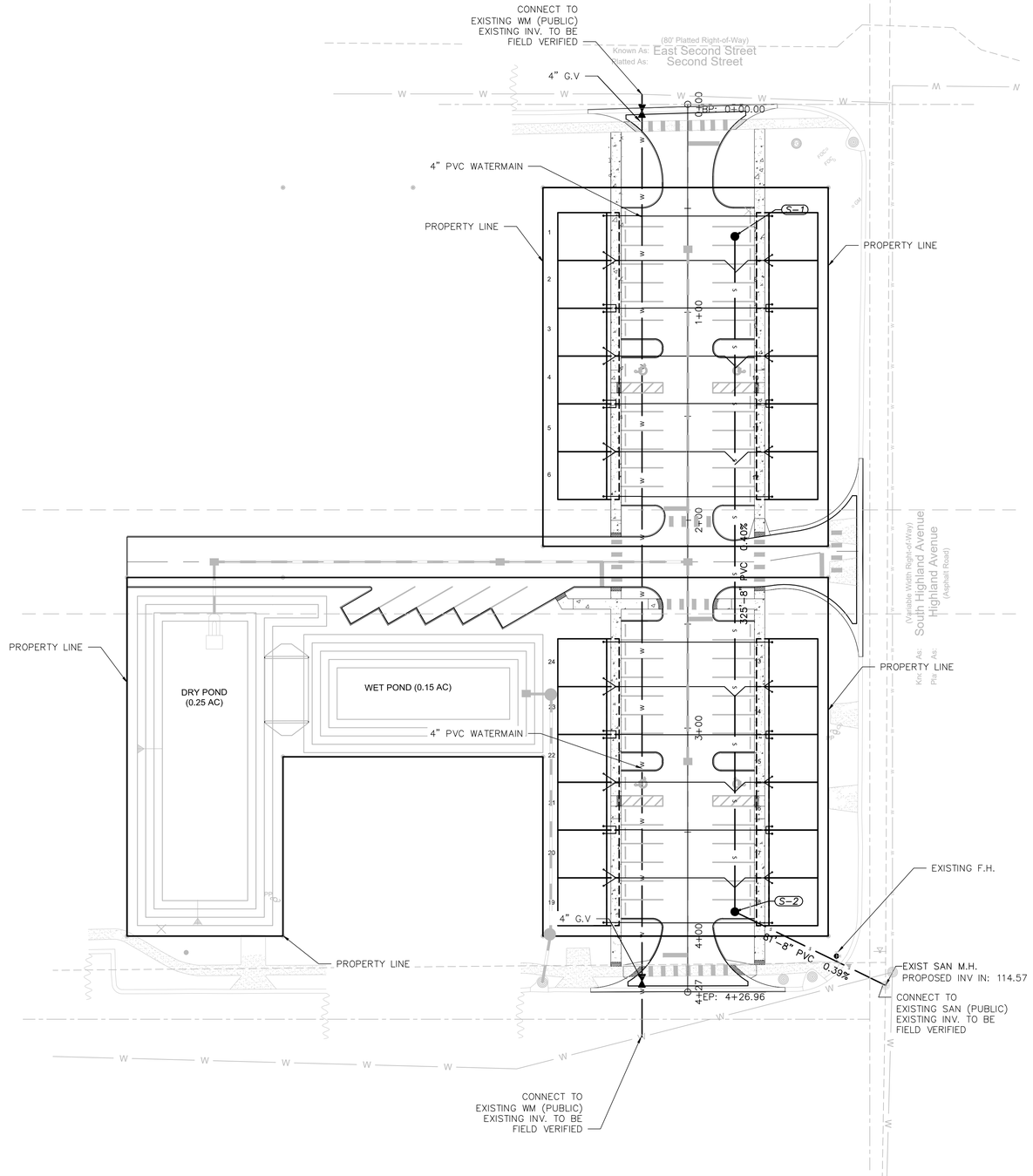
DESCRIPTION	PROPOSED
SANITARY SEWER SYSTEM	
WATER SYSTEM	
FIRE HYDRANT	
RECLAIM WATER SYSTEM	

SANITARY MH DATA

S-S-1
STD. SAN. MH
N: 1539004.62
E: 613584.63
TOP EL: 121.00
S INV EL: 116.20

S-S-2
STD. SAN. MH
N: 1538679.77
E: 613584.63
TOP EL: 118.41
N INV EL: 114.89
SE INV EL: 114.89

S-EXIST SAN M.H.
EXIST. SAN M.H.
N: 1538644.28
E: 613657.19
TOP EL: 119.13
NW INV EL: 114.57
TOP BE FIELD VERIFIER



F:\UC1\CAD\Planset\Final\10 UTILITY PLAN.dwg,6/20/2023 2:12:05 PM

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UTILITY PLAN

APOPKA MULTI-FAMILY
CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE: 1"=30'
SHEET: 10 OF 15

NOTES

1. *FIRE DEPARTMENT ACCESS AND WATER SUPPLY SHALL COMPLY WITH NFPA 1 (2021 EDITION) AND FFPC (7TH EDITION).*
2. *THE NUMBER AND PLACEMENT OF REQUIRED FIRE HYDRANTS SHALL BE IN ACCORDANCE WITH NFPA 1 (2021 EDITION) AND FFPC (7TH EDITION).*
3. *ALL ROADWAYS AND FIRE HYDRANTS SHALL BE IN PLACE BEFORE BUILDING CONSTRUCTION MAY BEGIN.*
4. *FIRE HYDRANTS SHALL BE MARKED WITH BLUE ROAD REFLECTOR.*
5. *BUILDING WILL BE REQUIRED TO HAVE AN AUTOMATIC FIRE SPRINKLER SYSTEM.*
6. *BUILDING MUST BE MONITORED BY AN AUTOMATIC FIRE ALARM SYSTEM.*
7. *A LOCK BOX MUST BE PROVIDED NEAR THE FRONT DOOR.*

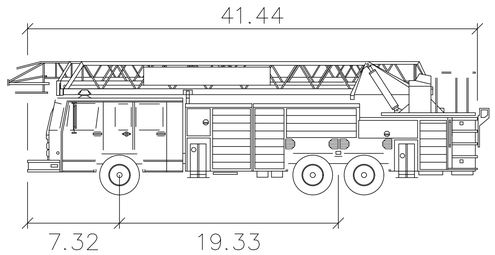
Fire Flow

Construction Type:

Type NFPA V (111), Protected Combustible

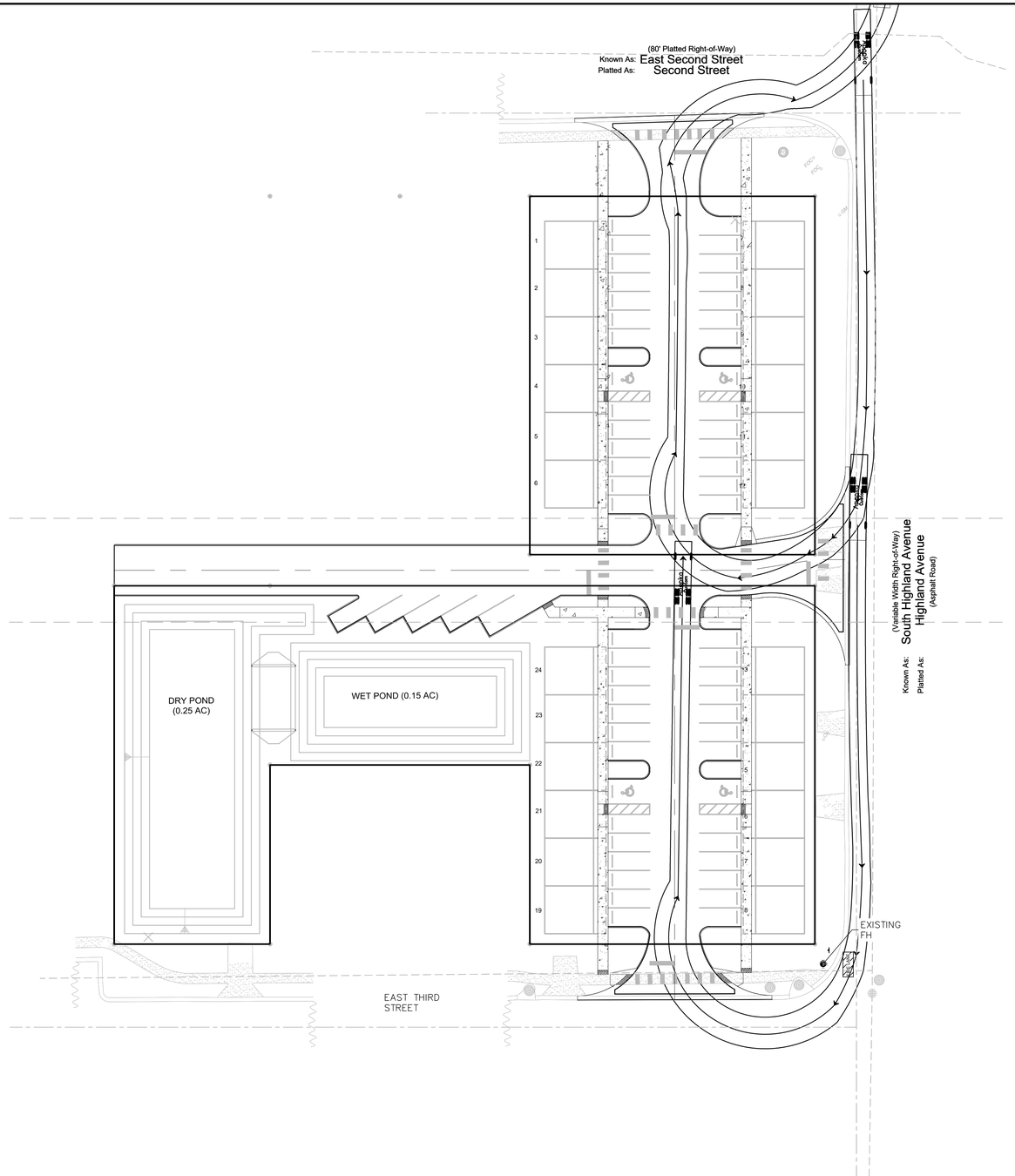
NODE	Area (sq. ft.)	Fire Flow * (gpm)	Flow Duration* (hours)	Sprinkler* Protected	Reduction*	Fire Flow* Required (gpm)
Lot 2 w/ Future Expansion	258,500	8000	4	Yes	75%	2000

(*) Based on Table H.5.1 Minimum Required Fire Flow and Flow durations for Building. Annex H Fire Flow Requirements for Buildings. NFPA 1
(*) Based on Table I-3 Number and distribution of fire Hydrants. Annex I Fire Hydrants Locations and Distribution. NFPA 1



APOPKA FIRE TRUCK

Width	: 8.00
Track	: 8.50
Lock to Lock Time	: 6.00
Steering Angle	: 45.0



DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241.
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

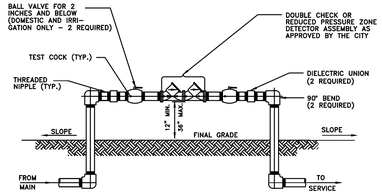
DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

FIRE TRUCK PLAN

APOPKA MULTI-FAMILY
CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE: 1"=30'
SHEET: 11 OF 15

F:\UC1\CAD\Planset\Final\11 FIRE TRUCK PLAN.dwg,6/20/2023 2:21:18 PM



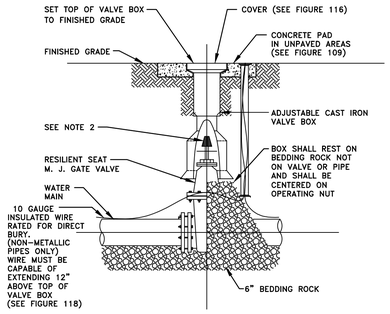
NOTES:

1. ALL PIPE FITTINGS, MATERIALS, LABOR, AND APPURTENANCES SHALL BE SUPPLIED BY THE CONTRACTOR.
2. ALL PIPE AND FITTINGS TWO (2) INCHES AND SMALLER SHALL BE THREADED SCHEDULE 40 GALVANIZED STEEL.

DOUBLE CHECK OR REDUCED PRESSURE ZONE DETECTOR ASSEMBLY

2 INCH AND BELOW ASSEMBLY

CITY OF APOPKA	JANUARY 2014	FIG. 500 A
DESIGN ENGINEERING DIVISION		

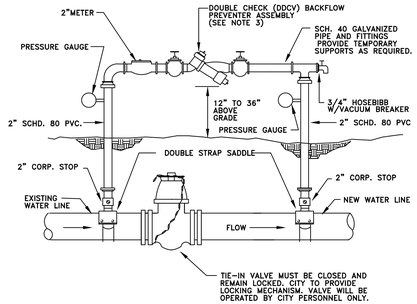


NOTES:

1. PVC EXTENSIONS MAY BE USED ON VALVE BOX INSTALLATION.
2. THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO WITHIN A 3 FEET BELOW FINISHED GRADE.

GATE VALVE AND BOX DETAIL

CITY OF APOPKA	JANUARY 2014	FIG. 400
DESIGN ENGINEERING DIVISION		

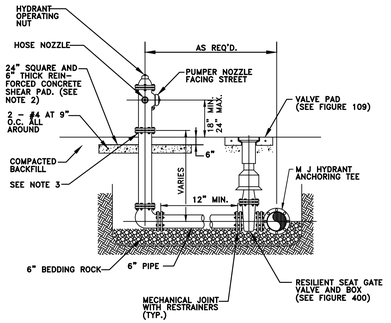


NOTE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MATERIALS, ASSEMBLY, AND THE INSTALLATION OF THE DEVICE.
2. SEE FIGURE 504C FOR PROCEDURES.
3. DDCV IS MINIMUM PROTECTION REQUIRED. A RPZ DEVICE MAY BE REQUIRED DEPENDING ON PROJECT. PROVIDE COPY OF LATEST CERTIFICATION TEST RESULTS.

TEMPORARY JUMPER CONNECTION

CITY OF APOPKA	JANUARY 2014	FIG. 504 A
DESIGN ENGINEERING DIVISION		

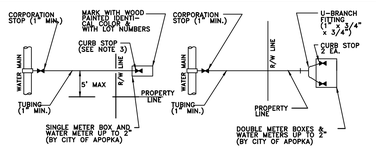


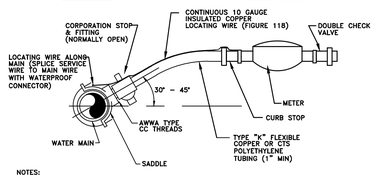
NOTES:

1. FIRE HYDRANT SHALL BE SUPPLIED WITHOUT A WEEP HOLE, OR WITH A PERMANENTLY PLUGGED WEEP HOLE.
2. THE SHEAR PAD SHALL BE RECESSED SIX (6) INCHES BELOW THE FINISHED GRADE AND THE RECESSED SECTION SODDED.
3. CLEARANCE BETWEEN BOTTOM OF BOLTS AND TOP OF SHEAR PAD SHALL BE A TWELVE (12) INCH MINIMUM.
4. FIRE HYDRANTS SHALL BE IDENTIFIED IN ACCORDANCE WITH THE CITY OF APOPKA UTILITIES DESIGN CONSTRUCTION STANDARDS MANUAL.

FIRE HYDRANT ASSEMBLY DETAIL

CITY OF APOPKA	JANUARY 2014	FIG. 402
DESIGN ENGINEERING DIVISION		





NOTES:

1. ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
2. NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
3. EACH SERVICE SHALL TERMINATE AT A CURB STOP(S) WHICH SHALL BE BURIED APPROXIMATELY 3" BELOW FINAL GRADE AND SHALL BE CLEARLY MARKED WITH A 2" x 2" x 18" STAKE WITH THE TOP PAINTED BLUE FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER, AND MARKED WITH THE NUMBER OF THE LOT(S) TO BE SERVED.
4. RECLAIMED WATER SERVICES SHALL USE PURPLE COLORED CTS POLYETHYLENE TUBING.
5. POTABLE WATER SERVICES SHALL USE BLUE COLORED CTS POLYETHYLENE TUBING.
6. ALL SERVICE UNDER EXISTING OR PROPOSED PAVEMENT SHALL BE INSTALLED IN A MINIMUM 2" PVC SLEEVE.

WATER SERVICE CONNECTION DETAIL

CITY OF APOPKA	JANUARY 2014	FIG. 405
DESIGN ENGINEERING DIVISION		

TEMPORARY JUMPER CONNECTION NOTES:

1. A temporary jumper connection is required at all connections between existing active water mains and proposed new water main improvements.
2. Figures 504 A and 504 B to be used for filling any new water main of any size from existing active water mains and for flushing of new mains up to 8 inches in diameter (2.5 FPS minimum velocity) and for pulling bacteriological samples from any new water main of any size. The jumper connection shall be maintained until after filling, flushing testing and disinfection of the new main has been successfully completed and cleared for use from the Florida Department of Environmental Protection (FDEP) and other pertinent agencies have been received. The jumper connection shall also be used to maintain a minimum pressure of 20 psi in the new mains after disinfection and until the FDEP clearance letter is obtained. Thrust blocking and/or restraints shall be provided temporarily, as required. Pipe and fittings used for connecting the new pipe to the existing pipe shall be disinfected prior to installation in accordance with AWWA C651, 2005 edition. The tapping sleeve and the exterior of the main to be tapped shall be disinfected by spraying or swabbing per section II of AWWA C651-05.
3. Flushing of 10 inches in diameter and larger water mains may be done through the tie-in valve under very controlled conditions. The following procedures shall be followed:
   A. The tie-in valves shall be operated and pressure tested in the presence of the City engineer to verify water tightness prior to tie-in. Valves which are not water tight shall be replaced with a new valve installed immediately adjacent to the leaking valve.
   B. The temporary jumper connection shall be constructed as detailed. The jumper connection shall be used to fill the new water main and for providing water for bacteriological sampling of the new main as required by the FDEP permit.
   * Flushing shall not be attempted during peak demand hours of the existing water mains.
   * All downstream valves in the system must be open prior to opening the tie-in valve.
   * Provide for and monitor the pressure in the tie-in point. The pressure in the existing main must not drop below 35 psi.
   * The tie-in valve shall be opened a few turns only, ensuring a pressure drop across the valve is greater than 10 psi.
   C. The tie-in valve shall be locked closed by the City personnel until flushing begins.
   D. The tie-in valve shall be opened only for flushing of the new main. The procedure shall be directed by the City and observed by the engineer.
   E. After flushing, the tie-in valve shall be closed and locked in the closed position by the City personnel.
4. The contractor shall provide documentation demonstrating that the double check backflow prevention device has been tested and is in good working order at the time of installation.
5. Except as required to flush lines of greater than 8 inches in diameter, the tie-in valve shall remain closed and shall be locked in the closed position by the City. The tie-in valve shall remain locked closed until the new system has been cleared for use by FDEP and all other pertinent agencies.
6. Upon receipt of clearance for use from FDEP and all other pertinent agencies, the contractor shall remove the temporary jumper connection. The corporation stops are to be closed and plugged with 2 inch brass plugs.
7. All installation and maintenance of the temporary jumper connection and associated backflow prevention device, fittings, valve, etc. shall be the responsibility of the contractor.

PROCEDURES FOR TEMPORARY JUMPER CONNECTION

CITY OF APOPKA	JANUARY 2014	FIG. 504 C
DESIGN ENGINEERING DIVISION		

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DAVE SCHMITT ENGINEERING, INC.
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ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

CONTRACTOR "AS-BUILTS"

I hereby state that these "As-Builts" were furnished to me by the contractor listed below, I, or an employee under my direct supervision have reviewed these "As-Builts" and believe them to be in compliance with my knowledge of what was actually constructed. This statement is based upon site observations of the construction.

Contractor_____ Engineer_____

Not valid without the signature and the original raised seal of a Florida Registered Engineer.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

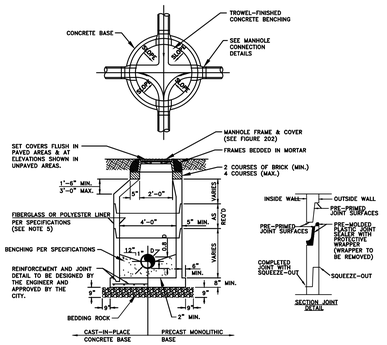
DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

UTILITY DETAILS-1

APOPKA MULTI-FAMILY

CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE: NONE
SHEET: 12 OF 15



FORCE MAIN MANHOLE LINER*

THICKNESS (INCHES)					
DIAMETER (INCHES)	HEIGHT (FEET) 3–6	7–12	13–17	MATERIAL	MANUFACTURER
48					
60					
72					

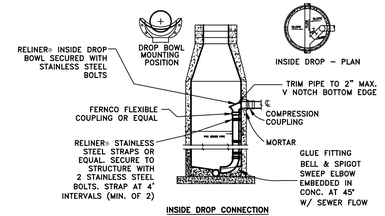
* TO BE COMPLETED BY THE ENGINEER

NOTES:

1. MANHOLE SHOWN IS FOR SEWER SIZE 8" THRU 24". SEE SECTION 20.4 OF THE MANUAL FOR MANHOLE DIAMETER FOR SEWERS LARGER THAN 24".
2. DROP CONNECTIONS ARE REQUIRED WHENEVER INVERT OF INFLUENT SEWER IS 24" OR MORE ABOVE THE INVERT OF THE MANHOLE. SEE MANHOLE CONNECTION DETAILS.
3. THE THICKNESS OF THE LINER SHALL BE 3/8" MINIMUM.
4. EACH BENCH WALL SHALL BE A MINIMUM OF 18 INCHES LONG FROM THE WALL OF THE MANHOLE TOWARD THE CENTER.
5. SANITARY SEWER MANHOLES MAY BE REQUIRED TO BE LINED IN ACCORDANCE WITH THE CITY OF APOPKA LIST OF APPROVED MATERIALS AND PRODUCTS AS DIRECTED BY THE CITY.

TYPICAL MANHOLE

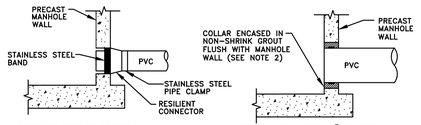
CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2015	FIG. 200



INSIDE DROP CONNECTION

NOTES:

1. ALL INSIDE DROP CONNECTIONS FOR SERVICES AND COLLECTOR SEWERS SHALL USE THE DROP BOWL AS PRODUCED BY:
   RELINER-DURAN, INC.
   53 MT. ARCHER RD,
   LYME, CT 06371
   (860)434-0277 FAX: (860)434-3195 OR EQUAL.
2. SECURE DROP PIPE TO MANHOLE WALL WITH RELINER-DURAN, INC STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS.
3. FORCE MAIN RECEIVING MANHOLES MAY BE REQUIRED TO BE LINED IN ACCORDANCE WITH THE CITY OF APOPKA LIST OF APPROVED MATERIALS AND PRODUCTS AS DIRECTED BY THE CITY.



STANDARD PRECAST MANHOLE PIPE CONNECTION

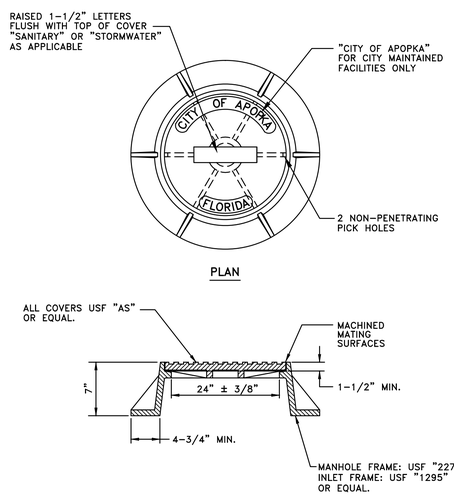
SPECIAL DETAIL FOR 24" DIAMETER PIPE AND LARGER

NOTES:

1. DROP PIPE AND FITTINGS SHALL BE OF EQUAL SIZE AND MATERIAL AS THE INFLUENT SEWER.
2. THE CITY MAY APPROVE ALTERNATE WATERTIGHT CONNECTION DETAILS FOR CONNECTION OF 24" DIAMETER PIPES AND LARGER.
3. AN INSIDE DROP CONNECTION SHALL BE REQUIRED FOR ALL INFLUENT WHICH HAVE AN INVERT 24" OR MORE ABOVE THE OUTFLOW PIPE INVERT.
4. CONCRETE TO BE MINIMUM OF 3000 PSI.

MANHOLE CONNECTION DETAILS

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2015	FIG. 201

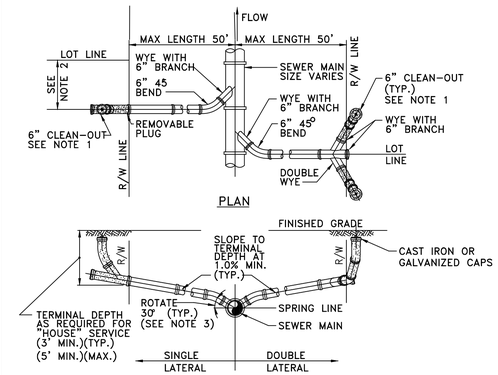


NOTES:

1. MANHOLE FRAME AND COVER ARE TO BE TRAFIC BEARING RATED H-20, CLASS 30 MEETING ASTM A 48.

STANDARD MANHOLE FRAME AND COVER

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 202

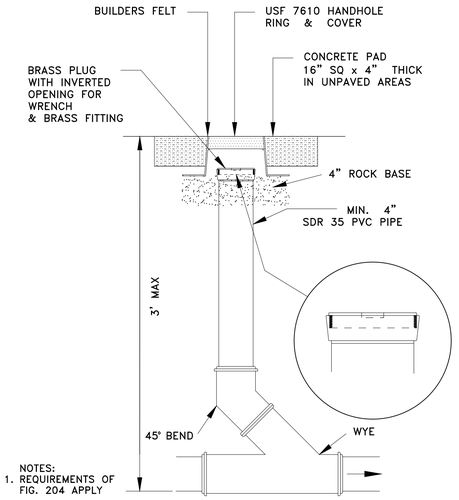


NOTES:

1. CLEAN-OUT (SHOWN SHADED) SHALL BE INSTALLED BY THE BUILDER IN ACCORDANCE WITH STANDARD PLUMBING CODE.
2. LOCATE SINGLE LATERAL AS CLOSE TO LOT LINE AS POSSIBLE.
3. INVERT OF SERVICE LATERAL SHALL NOT ENTER SEWER MAIN BELOW SPRING LINE.
4. RESIDENTIAL SERVICES SHALL BE 4 INCHES & NON-RESIDENTIAL SERVICES SHALL BE 6 INCHES IN DIAMETER AS A MINIMUM.
5. GALVANIZED, OR CAST IRON CLEAN-OUT CAP SHALL BE USED ON THE STUBOUT FOR EACH SERVICE.
6. LATERAL SHALL BE MARKED WITH AN "S" STAMPED OR CUT IN THE CURB.

SERVICE LATERAL DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 204



SANITARY SEWER SERVICE TRAFFIC RATED CLEAN-OUT DETAIL

NTS

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 205

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Contractor _____ Engineer _____

Not valid without the signature and the original raised seal of a Florida Registered Engineer.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

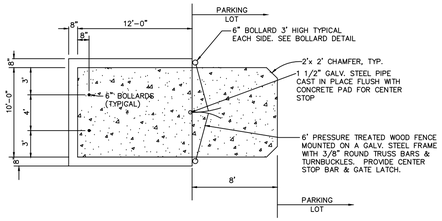
DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

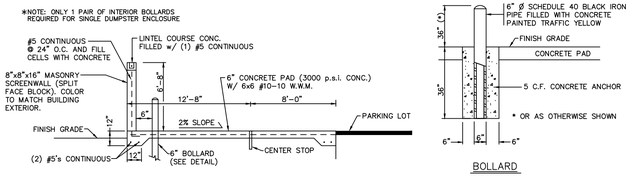
UTILITY DETAILS-2

APOPKA MULTI-FAMILY

CITY OF APOPKA, FLORIDA

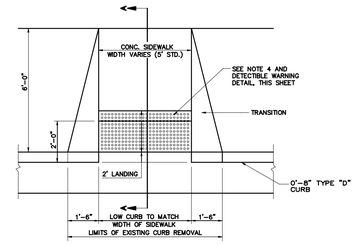
DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE: NONE
SHEET: 13 OF 15



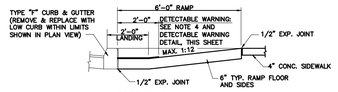


SINGLE DUMPSTER PAD & ENCLOSURE DETAIL

BOLLARD



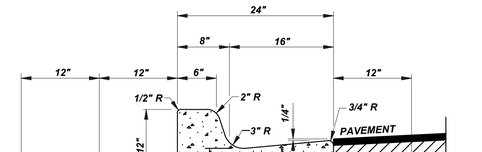
PLAN VIEW



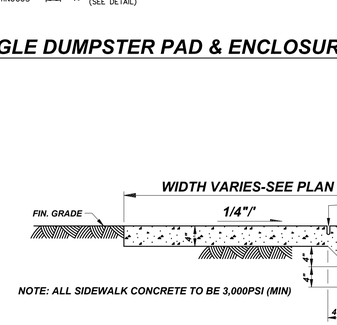
SECTION A–A

NOTES:
1. EXISTING CURB SHALL BE COMPLETELY REMOVED & REPLACED WITHIN LIMITS SHOWN.
2. LOW CURB & TRANSITION MAY BE FORMED AT THE TIME OF CURB CONSTRUCTION.
3. CONSTRUCT WITH CLASS A (3000 PSI) CONCRETE.
4. CONTRACTOR SHALL CONSTRUCT DETECTABLE "CAST IN PLACE" WARNING SURFACES PER THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDLINES (ADAAG) SECTION 4.29.2.
5. RAMPS SHALL COMPLY WITH FDOT INDEX 304.

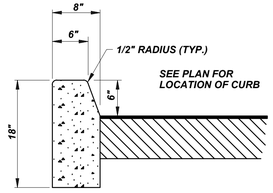
HANDICAP RAMP



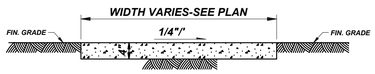
TYPE "F" CURB & GUTTER DETAIL



SIDEWALK ABUTTING PAVEMENT

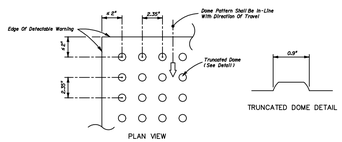


TYPE "D" CURB



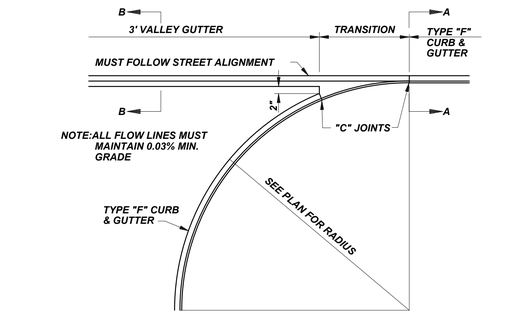
STANDARD CONCRETE SIDEWALK

NOTE: MINIMUM CLASS A (3000 PSI) CONCRETE TO BE USED.



ALL SIDEWALK CURB RAMPS SHALL HAVE "CAST IN PLACE" DETECTABLE WARNING SURFACES THAT EXTEND THE FULL WIDTH OF THE RAMP AND IN THE DIRECTION OF TRAVEL 24 INCHES (610 mm) FROM THE BACK OF CURB IN ACCORDANCE WITH F.D.O.T. INDEX 304.

CURB RAMP DETECTABLE WARNING DETAIL



SECTION B-B (3' VALLEY GUTTER)

SECTION A-A (TYPE "F" CURB & GUTTER)

3' VALLEY GUTTER & TRANSITION DETAIL

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DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241.
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

PAVING & GRADING DETAILS

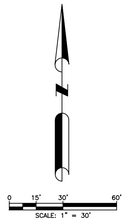
APOPKA MULTI-FAMILY
CITY OF APOPKA, FLORIDA

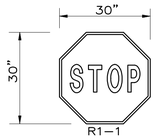
DATE:	MARCH 2023
PROJECT NO.:	UC-1
DRAWN BY:	JT
CHECKED BY:	DMS
SCALE:	NONE
SHEET:	14 OF 15

NOTES:

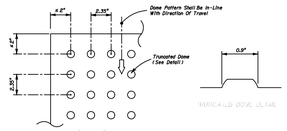
1. ALL PAVEMENT MARKINGS PLACED IN THE RIGHT-OF-WAY SHALL BE THERMOPLASTIC AND WILL BE INSTALLED IN ACCORDANCE WITH FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS PER INDEX 711-001.

2. FOR SIGN DETAILS, REFER TO THE "STANDARD HIGHWAY SIGNS" PUBLISHED BY THE U.S. DEPTARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, LATEST EDITION, THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) 2009 WITH REVISIONS 1 & 2, AND THE FDOT 2018 DESIGN STANDARDS BOOKLET.



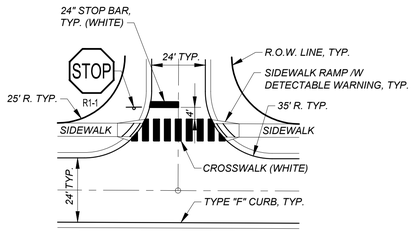


TYPICAL STOP SIGN



ALL SIDEWALK CURB RAMPS SHALL HAVE "CAST IN PLACE" DETECTABLE WARNING SURFACES THAT EXTEND THE FULL WIDTH OF THE RAMP AND IN THE DIRECTION OF TRAVEL 24 INCHES (610 mm) FROM THE BACK OF CURB IN ACCORDANCE WITH F.D.O.T. INDEX 522-002.

CURB RAMP DETECTABLE WARNING

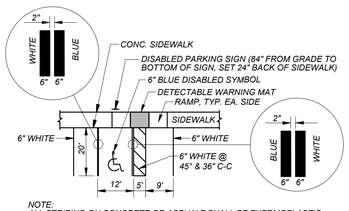


TYPICAL INTERSECTION SIGNING & STRIPING DETAIL

DISABLED PARKING SIGN

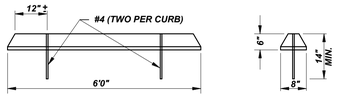
INTERNATIONAL DISABLED SYMBOL

NO PARKING FIRE LANE STRIPING DETAIL

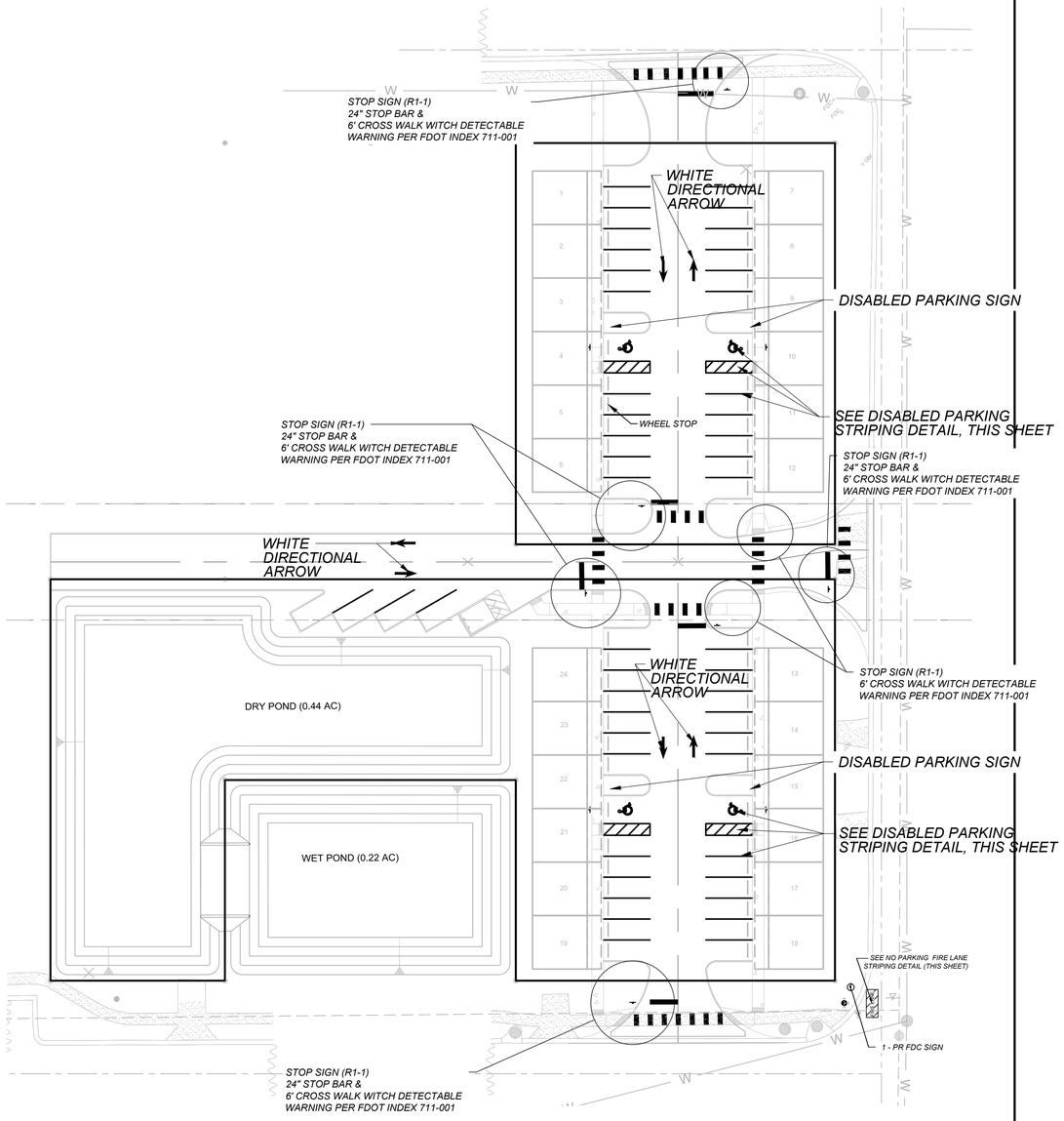


NOTE:
ALL STRIPING ON CONCRETE OR ASPHALT SHALL BE THERMOPLASTIC.

DISABLED PARKING & STRIPING DETAIL



CONCRETE WHEEL STOP



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DAVE SCHMITT ENGINEERING, INC.
12301 Lake Underhill Road Suite 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

SIGNAGE & STRIPING PLAN

APOPKA MULTI-FAMILY
CITY OF APOPKA, FLORIDA

DATE: MARCH 2023
PROJECT NO.: UC-1
DRAWN BY: JT
CHECKED BY: DMS
SCALE: 1"=30'
SHEET: 15 OF 15

Boundary Survey

Legal Description:

Parcel 1: Lots 259, 260, and 261, and the North half of Lots 262 and 263, and the West half of the North half of Lot 264, Revised Plat of a Portion of Block "C" Apopka, Florida, according to the plat thereof as recorded in Plat Book F, Page 101, Public Records of Orange County, Florida.

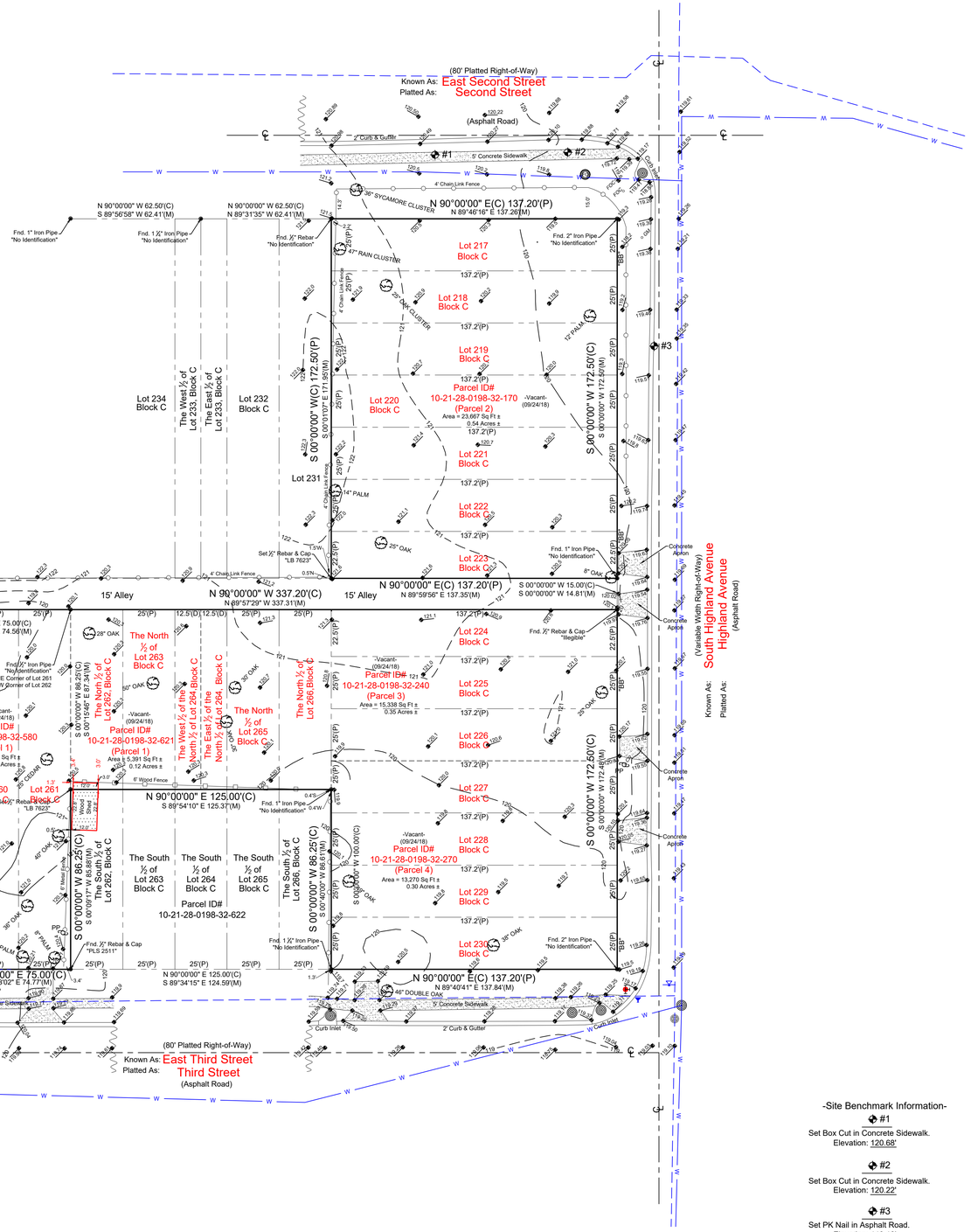
Parcel 2: Lots 217, 218, 219, 220, 221, 222, and 223, Revised Plat of a Portion of Block "C" Apopka, Florida, according to the Plat thereof as recorded in Plat Book F, at Page 101, of the Public Records of Orange County, Florida.

Parcel 3: Lots 224, 225, and 226, and the North 1/2 of Lots 265 and 266 and the East 1/2 of the North 1/2 of Lot 264, Revised Plat of a Portion of Block "C" Apopka, Florida, according to the Plat thereof as recorded in Plat Book F, at Page 101, of the Public Records of Orange County, Florida.

Parcel 4: Lots 227, 228, 229, and 230,Revised Plat of a Portion of Block "C" Apopka, Florida, Plat Book "F", Page 101, of the Public Records of Orange County, Florida.

Flood Disclaimer:
By performing a search with the local governing municipality or www.fema.gov, the property appears to be located in zone X.
This Property was found in City of Apopka, community number 120180, dated 9/25/2009.

CERTIFIED TO:
JACK SPEAKS



N

W E

S

Graphic Scale
0' 15' 30' 60'
Scale: 1"=30'

-Legend-

- ⊙ - BOLLARD
- C - Calculated
- ℄ - Centerline
- CB - Concrete Block
- CM - Concrete Monument
- Conc. - Concrete
- D - Description
- DE - Drainage Easement
- Esmt. - Easement
- F.E.M.A. - Federal Emergency Management Agency
- FFE - Finished Floor Elevation
- Fnd. - Found
- IP - Iron Pipe
- L - Length (Arc)
- M - Measured
- N&D - Nail & Disk
- N.R. - Non-Radial
- ORB - Official Records Book
- P - Plat
- P.B. - Plat Book
- -o- - Wood Fence
- PC - Point of Curvature
- Pg. - Page
- PI - Point of Intersection
- P.O.B. - Point of Beginning
- P.O.L. - Point on Line
- PP - Power Pole
- PRM - Permanent Reference Monument
- PT - Point of Tangency
- R - Radius
- Rad. - Radial
- R&C - Rebar & Cap
- R.D. - Roofed Dirt
- Rec. - Recovered
- Rfd. - Roofed
- Set - Set ½" Rebar & Cap "LB 7623"
- SP - Screened Porch
- Typ. - Typical
- UE - Utility Easement
- Δ - Delta (Central Angle)
- -X- - Chain Link Fence
- CB - Concrete Block
- UGP - Cable Riser
- GM - Gas Marker
- CWP - Crosswalk Post
- Curb Inlet
- DOT INLET
- DP - Dumpster Pad
- EB - ELECTRIC BOX
- EM - ELECTRIC METER
- Air Release Manhole
- Fiber Optic Manhole
- FDC - FIRE DEPARTMENT CONNECTION
- FOC - FIBER OPTIC CABLE
- FOCB - FIBER OPTIC CABLE BOX
- Fire Hydrant
- Guy Anchor
- HANDICAP PARKING
- HR - HANDICAP RAMP
- GM - Gas Meter
- GV - Gas Valve
- GT - Grease Trap
- Concrete Light Pole
- Mitered End Section
- SIGN
- PS - PARKING SPACES
- PP - Concrete Power Pole
- PP - Wood Power Pole
- Sanitary Manhole
- Sanitary Valve
- SB - Setback
- Storm Inlet
- SP - SIGNAL POLE
- Well
- Storm Manhole
- TB - TELEPHONE BOX
- TR - TELEPHONE RISER
- TLP - TRAFFIC LIGHT POLE
- TSB - TRAFFIC SIGNAL BOX
- TP - TRAFFIC PANEL
- Transformer
- Gas Valve
- Water Valve
- Water Meter
- SJ - STORM JUNCTION BOX

Tree Note:
Oak - Denotes Tree Type
(18") - Diameter of Tree measured at Chest Height

-Site Benchmark Information-

#1
Set Box Cut in Concrete Sidewalk.
Elevation: 120.68'

#2
Set Box Cut in Concrete Sidewalk.
Elevation: 120.22'

#3
Set PK Nail in Asphalt Road.
Elevation: 119.16'

-Benchmark Information-

Orange County Datum Elevation: 117.50'
Orange County Benchmark, Designation #L651023
(Elevations are based upon NAVD 88 Datum)

W - Storm Line

- - - - - - Sanitary Line

NOTE: APPROXIMATE LOCATION UNDERGROUND UTILITIES PER CITY OF APOPKA UTILITY MAP

Added Approximate Storm & Sanitary Lines - TCK
Revision: Added Trees - 09/06/22 - TCK

ALL BEARINGS SHOWN HEREON ARE ASSUMED

Field Date: 09/24/18	Date Completed: 09/27/18
Drawn By: DJC	File Number: IS-51458

-Legend-

C	- Calculated	PC	- Point of Curvature
℄	- Centerline	Pg.	- Page
CB	- Concrete Block	PI	- Point of Intersection
CM	- Concrete Monument	P.O.B.	- Point of Beginning
Conc.	- Concrete	P.O.L.	- Point on Line
D	- Description	PP	- Power Pole
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Esmt.	- Easement	PT	- Point of Tangency
F.E.M.A.	- Federal Emergency Management Agency	Rad.	- Radius
FFE	- Finished Floor Elevation	R&C	- Rebar & Cap
Fnd.	- Found	Rec.	- Recovered
IP	- Iron Pipe	Rfd.	- Roofed
L	- Length (Arc)	Set	- Set ½" Rebar & Cap "LB 7623"
M	- Measured	Typ.	- Typical
N&D	- Nail & Disk	UE	- Utility Easement
N.R.	- Non-Radial	Δ	- Delta (Central Angle)
ORB	- Official Records Book	-X-	- Chain Link Fence
P	- Plat	-o-	- Wood Fence
P.B.	- Plat Book		

-Notes-

- Survey is Based upon the Legal Description Supplied by Client.
- Abutting Properties Deeds have NOT been Researched for Gaps, Overlaps and/or Ratios.
- Subject to any Easements and/or Restrictions of Record.
- Bearing Basis shown hereon, is Assumed and Based upon the Line Denoted with a "BB".
- Building Ties are NOT to be used to reconstruct Property Lines.
- Fence Ownership is NOT determined.
- Roof Overhangs, Underground Utilities and/or Footers have NOT been located UNLESS otherwise noted.
- Septic Tanks and/or Drainfield locations are approximate and MUST be verified by appropriate Utility Location Companies.
- This Survey is Not Transferable to Additional Parties Without Written Verification, Will be at the User's Sole Risk and Without Liability to the Surveyor. Nothing Hereon shall be Construed to give ANY Rights or Benefits to Anyone Other than those Certified.
- Flood Zone Determination Shown Hereon is Given as a Courtesy, and is Subject to Final Approval by F.E.M.A. This Determination may be Affected by Flood Factors and/or other information NOT Field Known by Surveyor at the time of this Survey. Ireland & Associates Surveying Inc. and the signing surveyor assume NO Liability for the Accuracy of this Determination.

I hereby Certify that this Boundary Survey of the above Described Property is True and Correct to the Best of my Knowledge and Belief as recently Surveyed, under my Direction on the Date Shown. Based on Information furnished to Me as Noted and Conforms to the Standards of Practice for Land Surveying in the State of Florida in accordance with Chapter 5J-17.052 Florida Administrative Codes, Pursuant to Section 472.027 Florida Statutes.

FOR THE FIRM

Patrick K. Ireland PSM#6637 LB 7623
This Survey is intended SOLELY for the use of Said Certified Parties.
This Survey NOT VALID Unless Signed and Embossed with Surveyor's Seal.

Ireland & Associates Surveying, Inc.
800 Currency Circle Suite 1020
Lake Mary, Florida 32746
www.irelandsurveying.com
Office-407.678.3366 Fax-407.320.8165

City of Apopka
Community Development Department
120 E. Main Street, 2nd Floor, Apopka, Florida 32703
407-703-1712

–FOR OFFICIAL USE ONLY–	
DATE SUBMITTED:	6.23.23
FEE PAID: $	400.00, 600.00
CHECK #:	2078, 2682
RECEIPT #:	360691, 360694

RECEIVED
JUN 23 2023
PLANNING & ZONING

APPLICATION FOR MDP/CSP/PLAT/REPLAT

	APPLICATION TYPE	FEES
☐	Major Development Plan	$1,000
☑	Construction Site Plan/Revision to Approved Development Plan	$1,000
☐	Replat	$500 plus $15 per lot
☐	Plat	$500 plus $15 per lot
☐	Resubmittal (after 3 submittals)	$500

Project Name:	Apopka Multi-Family Project		
Engineer/Project Representative Information:			
Company Name:	Dave Schmitt Engineering, Inc.		
Engineer Name:	Dave Schmitt, P.E.		
Street Address:	12301 Lake Underhill rd. Ste 241		
City: Orlando		State: FL	Zip: 32828
Phone: 407-207-9088	Fax: 407-207-9089	E-mail: dsemailbox@dseorl.com	
Owner Information:			
Owner Name:	Jack Speaks- Urban Comfort, LLC.		
Street Address:	1862 Arlington Ct.		
City: Longwood		State: FL	Zip: 32779
Phone: 407-557-6208	Fax:	E-mail: jack@roifundingllc.com	
Property Information:			
Parcel I.D. #(s):	10-21-28-0198-32-170/580/240/270/621		
Address:	220/230/242 S Highland Ave, 261/ 221 E 3Rd. St.		
Future Land Use:	Residential	Zoning:	MU-D
Size (acres):	1.63 +/-	Number/Type of Units:	
Existing Use:		Proposed Use:	

DOCUMENTS REQUIRED FOR SUBMITTAL (if applicable) (Electronic submission or CD only)

- Signed, Notarized Authorized Agent Form (if property owner did not sign application)
- Signed & Sealed Boundary Survey
- Signed/Sealed Development Plans (2 sets)
- Signed/Sealed Landscaping Plan
- Color architectural elevations of proposed buildings (all four sides)
- Traffic Impact Analysis
- Concurrency Verification Letter
- Wetland/threatened/endangered species report
- Phase 1 Environmental report
- Habitat study for projects 10 acres or more in size
- Stormwater and Geotechnical Engineering reports
- Photometric plan
- Documents confirming required Community Meeting

CERTIFICATION AND SIGNATURE

By: _____
Owner(s) of Record (Signature)

Jack Speaks
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 21st day of June, 2023, by Jack Speaks who is personally known to me or has produced Florida Driver's License as identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires:
4/30/27

Steven M. Eisenberg
Notary Public (Print Name)

STEVEN M. EISENBERG
Notary Public, State Of Florida
Commission No. HH 351598
My Commission Expires: 4/30/2027

DAVE SCHMITT ENGINEERING INC.

Drainage Calculations

S. Highland Ave
Apopka, Florida

(DSE Job No.: UC-1)

Prepared By
Dave Schmitt Engineering, Inc.

Prepared For
Urban Comfort LLC

June 2023

State of Florida Board of Professional
Engineers Certification of Authorization #27471

Drainage Calculations

S. Highland Ave
Apopka, Florida

Prepared For
Urban Comfort LLC

Prepared By
Dave Schmitt Engineering, Inc.

Digitally signed by Dave M Schmitt
Date: 2023.06.20 16:57:40 -04'00'

Dave Schmitt, P.E
FL. Reg. #48274

June 2023

12301 Lake Underhill Road, Suite 241, Orlando, Florida 32828
Tel: (407) 207-9088
State of Florida Board of Professional Engineers
Certification of Authorization #27471

Drainage Calculations
S. Highland Ave
Apopka, Florida

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Basin Area Summary
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Time of Concentration Calculations

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Simulation Input Data
Basin Summary
Node Min Max

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Basin Curve Number Calculations
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Stage-Storage Calculations
Nutrient Calculations

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Geotechnical Report

SECTION 1

Drainage Summary

The subject site is located west of Highland Avenue, south of East 2nd street and north of East 3rd street. The Apopka Multi-Family project will construct 24 single family homes, a wet and dry pond for the stormwater system, and associated utilities.

Existing Conditions

The proposed site which consists of 5 parcels 10-21-28-0198-32-580, 10-21-28-0198-32-621, 10-21-28-0198-32-170, 10-21-28-0198-32-240, and 10-21-28-0198-32-270 has a total area of 1.61AC. The existing site are vacant lots with short grass and small brush coverage.

The soils encountered on the site area according to USDA/NRCS soil survey are 100% Zolfo-Urban land complex, Hydraulic Soil Group A.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Panel Number 12095C0120H, with an effective date of 24 September 2021, the subject property lies within Zone X, outside 500-year floodplain. Please refer to the FIRM Map located in Section 2.

Post Development Conditions

The Apopka Multi-Family project proposes 24 single family homes that will have associated parking, utilities, and stormwater treatment. The flow on the site will discharge to the onsite dry pond that will overflow into the onsite wet pond. The dry pond has met the requirements set forth by the City of Apopka and SJRWMD for water quality treatment. The wet pond will discharge into the city storm treatment facility.

Design Criteria

The project is situated within the regulatory boundaries of both the Saint John's River Water Management District (SJRWMD) and the City of Apopka. The design for the proposed stormwater management follows the criteria set forth by all entities.

City of Apopka:

- The post-development peak rate of discharge shall not exceed the pre- development peak rate of discharge for the 25-year/24-hour storm event. The 25-year/24-hour rainfall amount of 8.6 inches and the 100-year/24-hour rainfall amount of 11.8 inches is incorporated in the runoff calculations.
- All dry detention ponds shall be dry within 72 hours following the storm events.

SJRWMD:

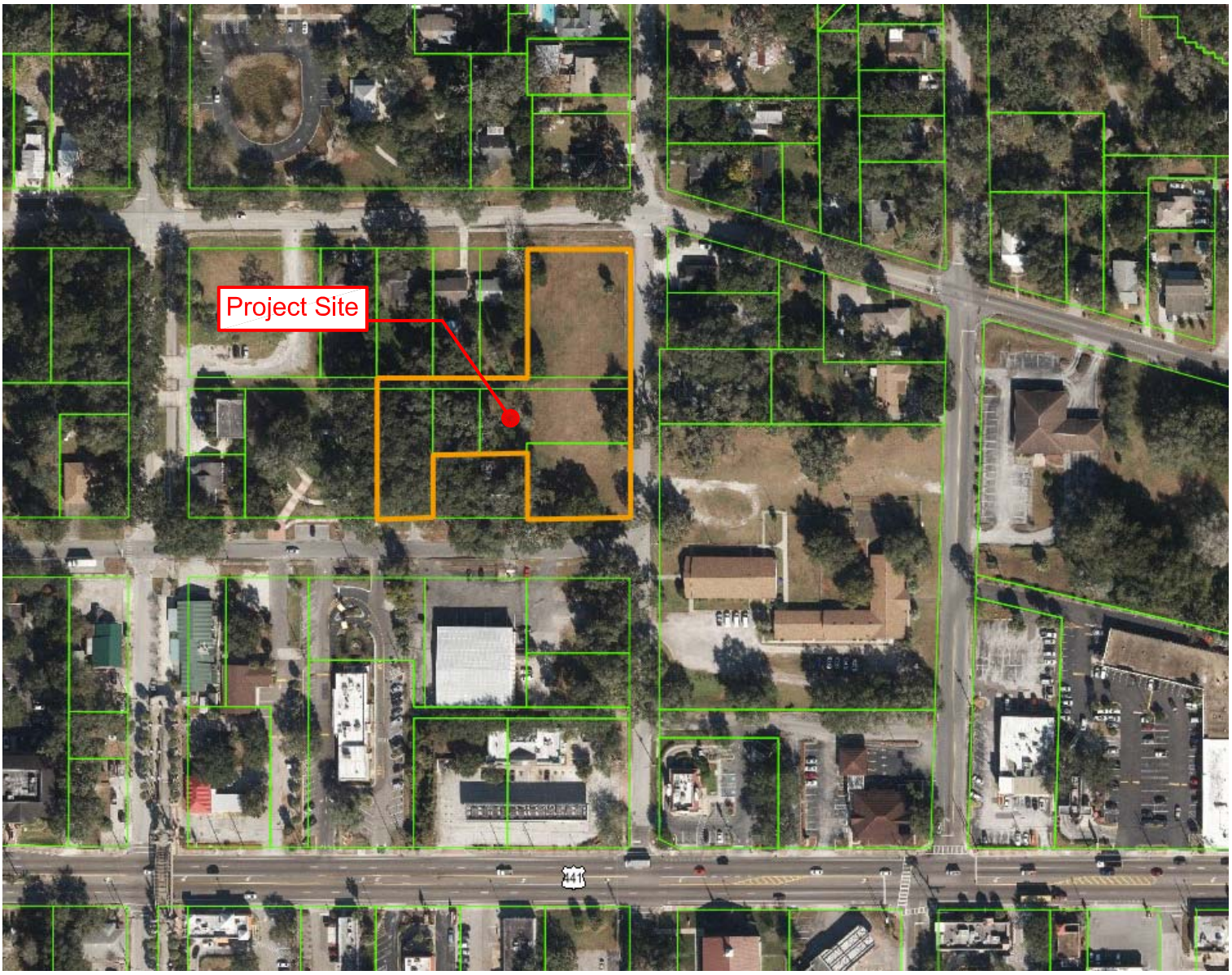
- The design storm event should be: 25-year/24 - Hour storm event.
- Provide Water Quality Treatment Volume (WQTV) should obey with that the dry detention volume run-off comes from the greater value of either the first 1 inch of rainfall over the entire catchment area or the first 2.5 inches of precipitation over the impervious section of the area.

HYDROLOGIC ANALYSIS

Hydrologic analyses were performed with Advanced ICPR by Streamline Technologies. Runoff hydrographs were developed, using the SJRWMD hydrograph methodology for the 25yr-24hr, mean annual and 100yr-24hr storm events and the FL-Mod hydrograph methodology for the 25yr-24hr, mean annual and 100yr-24hr storm events.

Four drainage basins are proposed for the pre-developed site, and one drainage basin is proposed in the post developed site. See the Pre-Development Basin Map in section 3 and the post development basin map in section 5.

SECTION 2



DAVE SCHMITT ENGINEERING INC.

UC-1 Apopka Tiny Homes

City of Apopka, FL

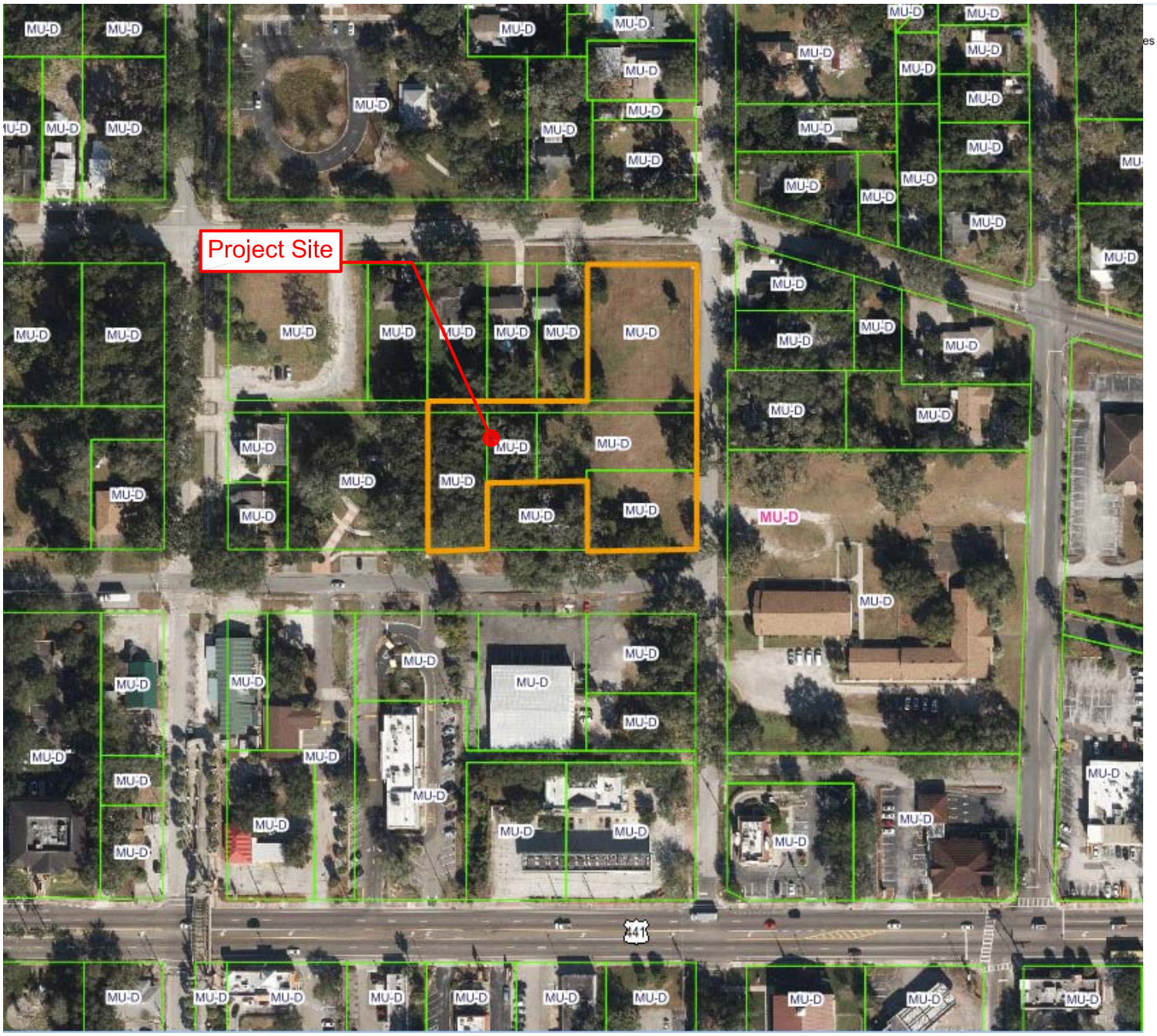
Aerial Map

DAVE SCHMITT ENGINEERING INC.

UC-1 Apopka Tiny Homes

City of Apopka, FL

Location Map

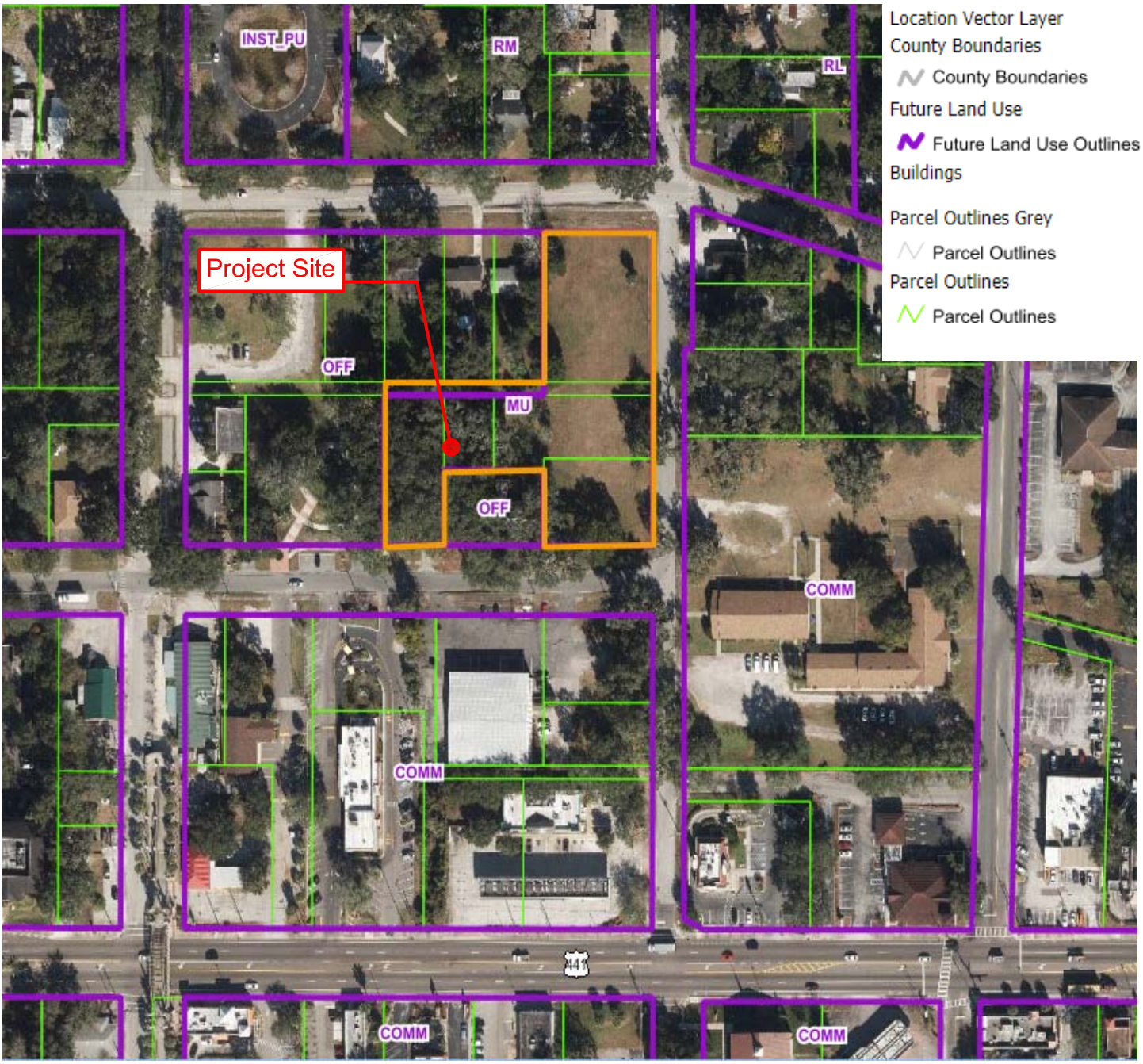


DAVE SCHMITT ENGINEERING INC.

UC-1 Apopka Tiny Homes

City of Apopka, FL

Zoning Map

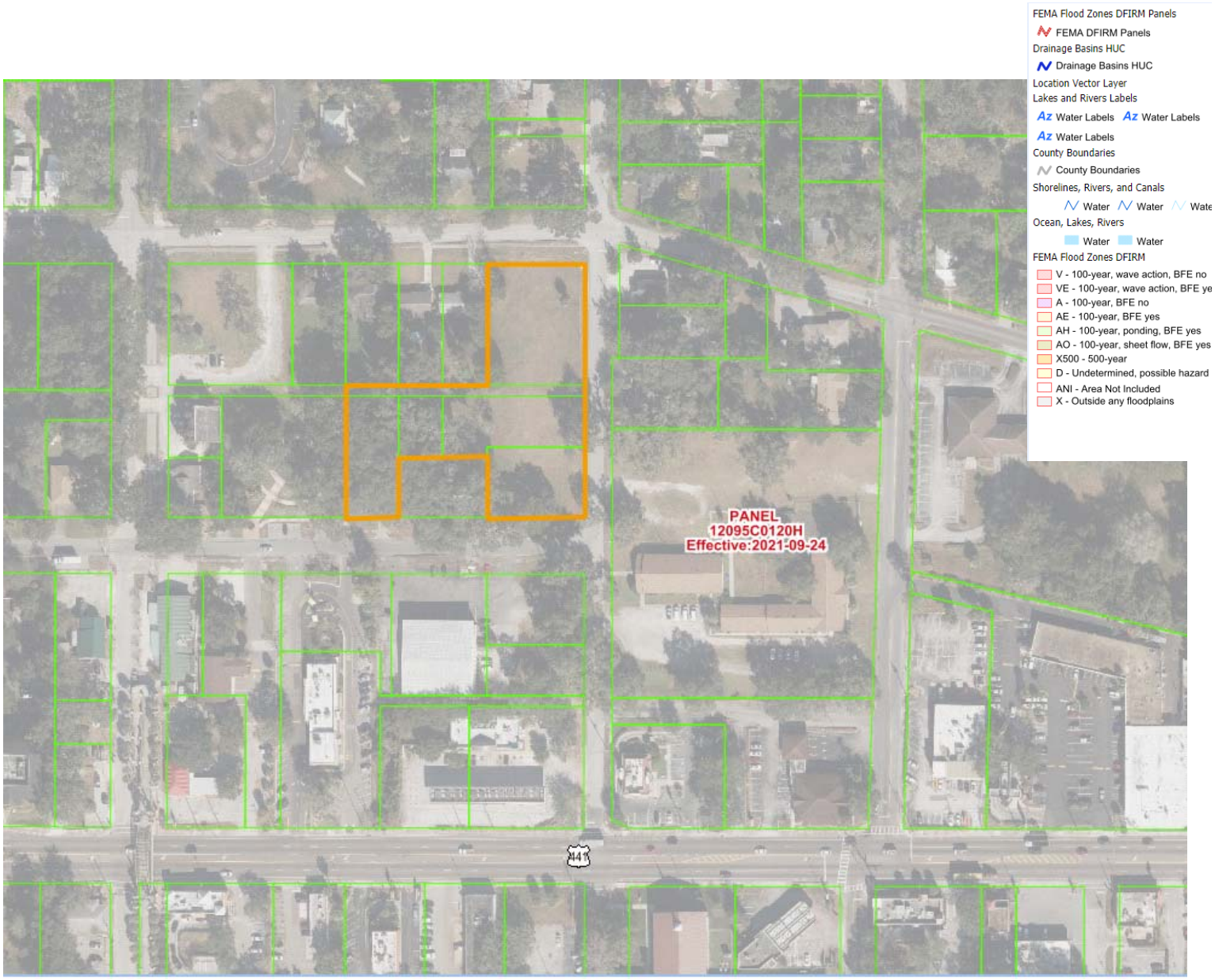


DAVE SCHMITT ENGINEERING INC.

UC-1 Apopka Tiny Homes

City of Apopka, FL

FLU Map

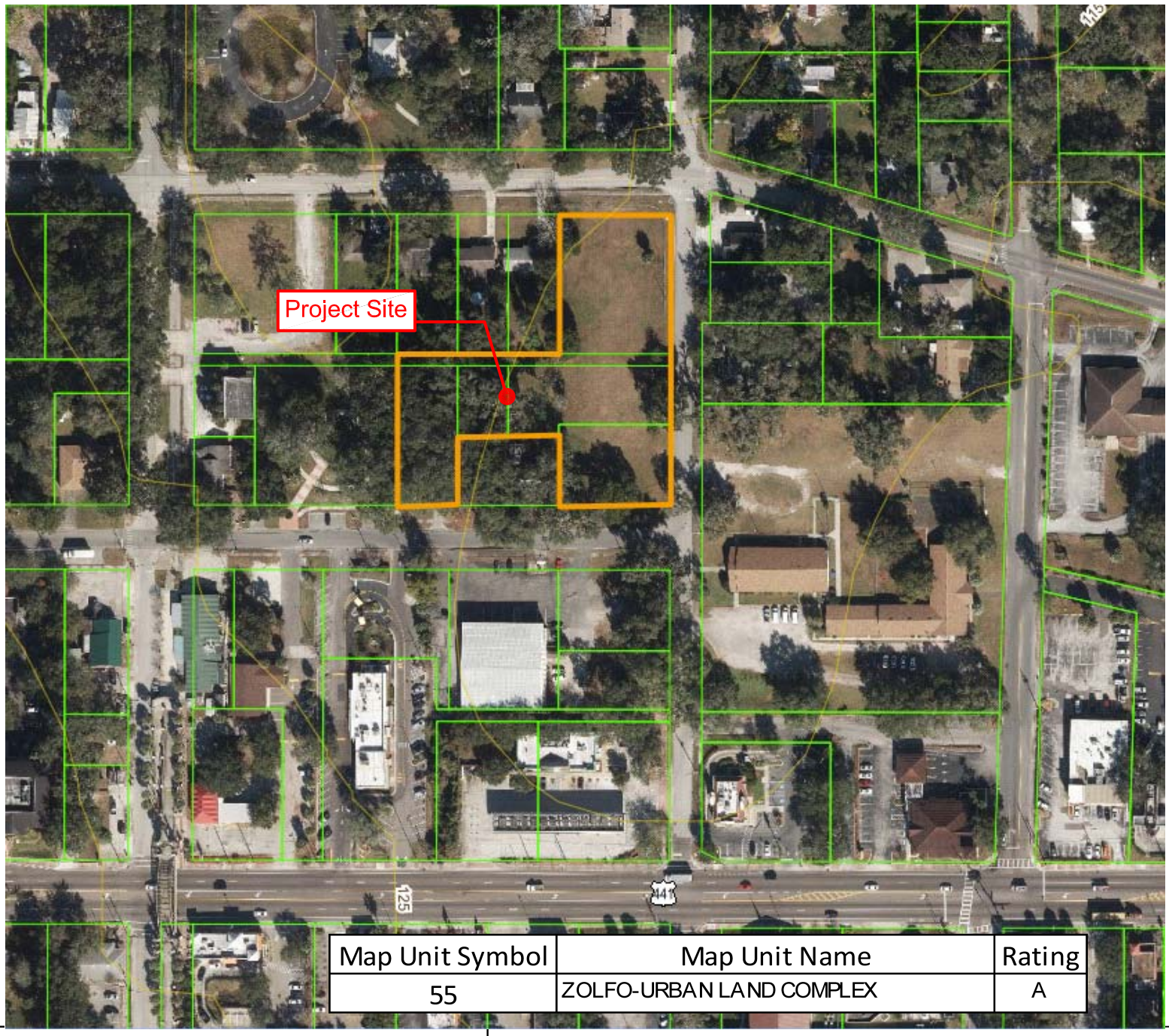


DAVE SCHMITT ENGINEERING INC.

UC-1 Apopka Tiny Homes

City of Apopka, FL

FEMA Map



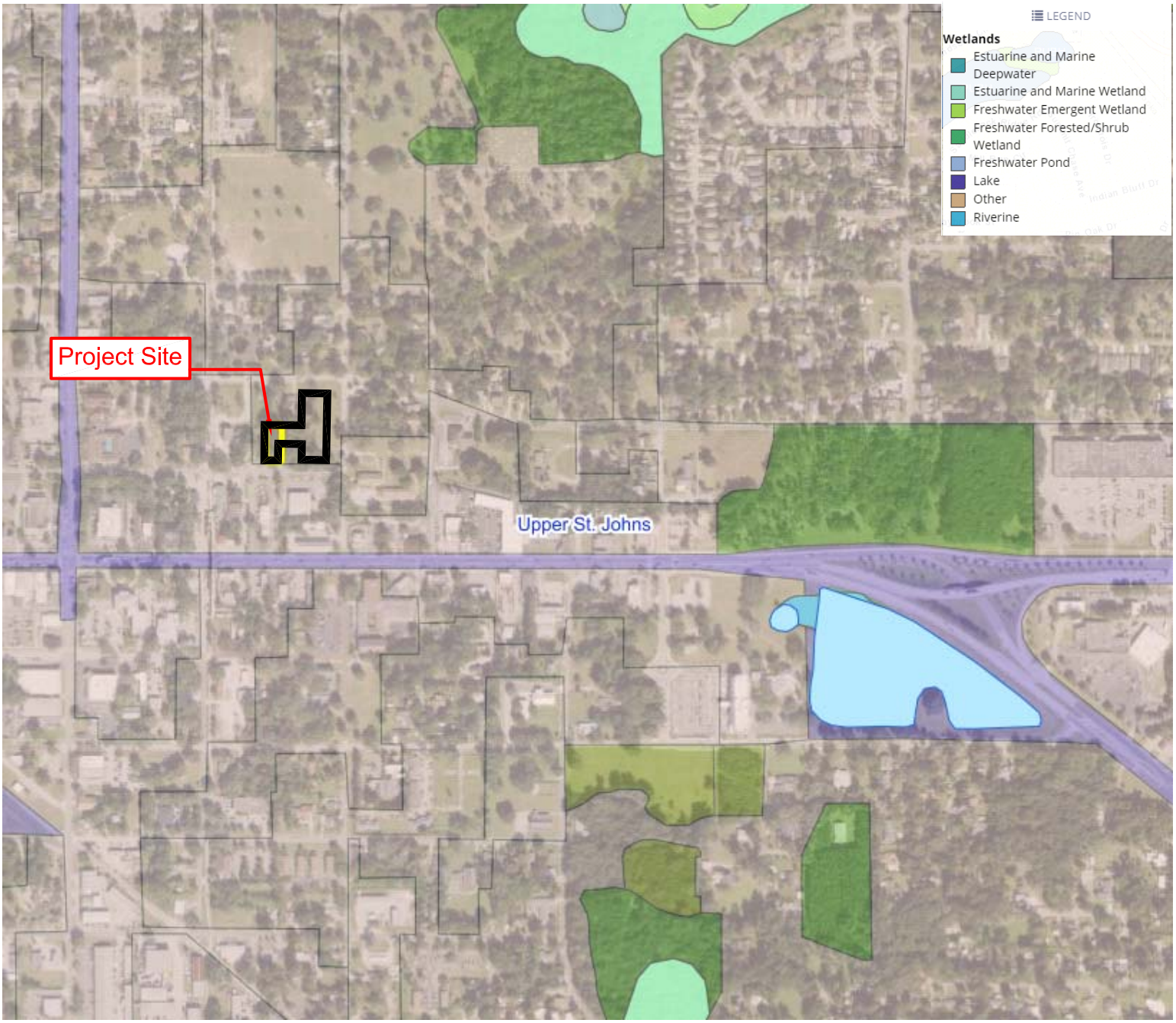
Map Unit Symbol	Map Unit Name	Rating
55	ZOLFO-URBAN LAND COMPLEX	A

DAVE SCHMITT ENGINEERING INC.

UC-1 Apopka Tiny Homes

City of Apopka, FL

Soils Map



DAVE SCHMITT ENGINEERING INC.

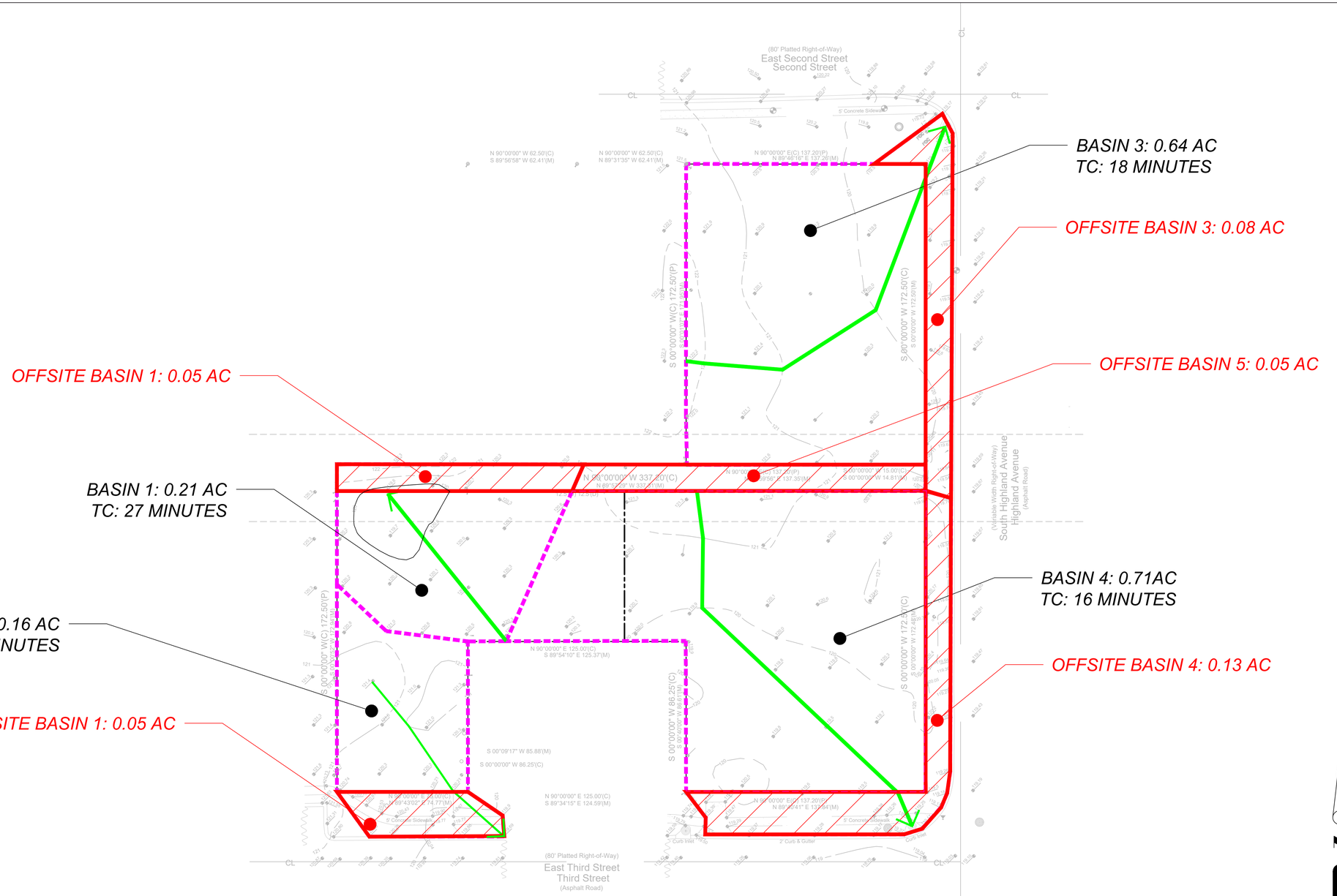
N

UC-1 Apopka Tiny Homes

City of Apopka, FL

Wetland Map

SECTION 3



F:\UC1\Drainage\Preliminary Eng\Pre\Pre-basin.dwg,6/16/2023 12:24:09 PM

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL RD. SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

CONTRACTOR "AS-BUILTS"

I hereby state that these "As-Builts" were furnished to me by the contractor listed below, I, or an employee under my direct supervision have reviewed these "As-Builts" and believe them to be in compliance with my knowledge of what was actually constructed. This statement is based upon site observations of the construction.

Contractor_____ Engineer_____

Not valid without the signature and the original raised seal of a Florida Registered Engineer.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

PRE-DEVELOPMENT BASIN

APOPKA MULTI-FAMILY HOMES

APOPKA, FL

DATE:	APRIL 2022
PROJECT NO.:	CH-3
DRAWN BY:	MP
CHECKED BY:	DMS
SCALE:	1" = 30'
SHEET:	1 OF 1

UC-1 Apopka Multi-Family Project
PRE-DEVELOPMENT - STORMWATER ANALYSIS
Basin Area, Curve Number, and Tc Summary

BASIN	AREA	CN	TC
#	(ac)		(min)
1	0.21	30	27
2	0.16	30	18
3	0.53	30	18
4	0.71	30	16
Total	1.61		
offsite 1	0.05		
offsite 2	0.05		
offsite 3	0.08		
offsite 4	0.13		
offsite 5	0.07		

UC-1 Apopka Multi-Family Project
PRE-DEVELOPMENT - STORMWATER ANALYSIS
Basin Area Summary

BASIN #	ON SITE AREA (ac)	OFFSITE AREA	TOTAL (ac.)
1	0.21	0.05	0.26
2	0.16	0.05	0.21
3	0.53	0.08	0.61
4	0.71	0.20	0.91
TOTAL	**1.61**	**0.38**	1.99

UC-1 Apopka Multi-Family Project
PRE-DEVELOPMENT - STORMWATER ANALYSIS
Curve Number Calculations

Basin ID : 1
Total Acres: 0.21

Name	ID#	Soil Class	Cover Type	CN	% Area	Area	Factor
Zolfo-Urban land complex	55	A	Grass	30	100.0%	0.2	6

100.0%	0.21	
	Composite CN:	**30**

Basin ID : 2
Total Acres: 0.16

Name	ID#	Soil Class	Cover Type	CN	% Area	Area	Factor
Zolfo-Urban land complex	55	A	Grass	30	100.0%	0.3	10

100.0%	0.32	
	Composite CN:	**30**

Basin ID : 3
Total Acres: 0.53

Name	ID#	Soil Class	Cover Type	CN	% Area	Area	Factor
Zolfo-Urban land complex	55	A	Grass	30	100.0%	0.3	10

100.0%	0.32	
	Composite CN:	**30**

Basin ID : 4
Total Acres: 0.71

Name	ID#	Soil Class	Cover Type	CN	% Area	Area	Factor
Zolfo-Urban land complex	55	A	Grass	30	100.0%	0.3	10

100.0%	0.32	
	Composite CN:	**30**

UC-1 Apopka Multi-Family Project
PRE-DEVELOPMENT - STORMWATER ANALYSIS
Time of Concentration Calculations

BASIN	SHEET FLOW SLOPE FT/FT	SHEET FLOW L FT	MAN n	SHEET FLOW Tt MIN	SHALLOW CON SLOPE FT/FT	SHALLOW CON FLOW L FT	P or U	Average Velocity V ft/s	SHALLOW CON FLOW Tt MIN	PIPE FLOW L FT	PIPE FLOW Tt MIN	TC MIN	
1	0.0030	100	0.400	26.6	0.0500	8	U	3.608	0.0	0	0.0	27	storage
2	0.0152	100	0.400	16.4	0.0065	17	U	1.298	0.2	0	0.0	18	
3	0.0200	100	0.400	15.1	0.0060	131	U	1.253	1.7	0	0.0	18	
4	0.0174	100	0.400	15.7	0.0055	186	U	1.201	2.6	0	0.0	16	

Kinematic Wave Equation (Sheet Flow), Shallow Conc. Flow & Pipe Flow (SCS TR-55):

t = 0.93*L^0.6*n^0.6/I^0.4*s^0.3 + L/60*V + L/60*V

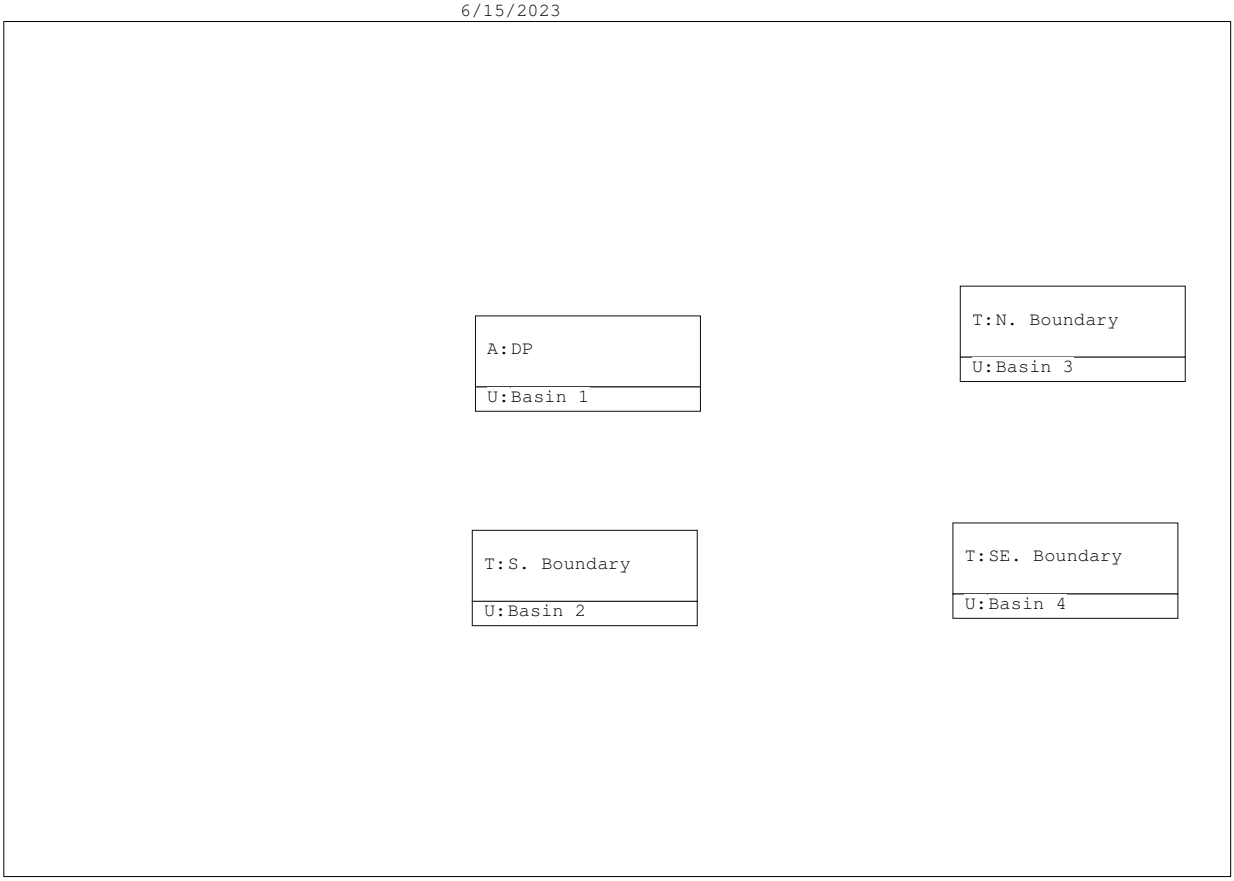
t = overland flow travel time (minutes)
L = overland flow length (ft.)
n = mannings roughness coefficient
I = rainfall intensity (4.50 in./hr.)
s = average slope (ft./ft.)
V =average velocity (ft/s)= 20.3282(s^0.5) (paved) or 16.1345(s^0.5) (unpaved)
60=conversion factor from seconds to minutes

SECTION 4

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



==========
==== Basins ====
==========

Name: Basin 1 Node: DP Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 27.00
Area(ac): 0.260 Time Shift(hrs): 0.00
Curve Number: 30.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: Basin 2 Node: S. Boundary Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 18.00
Area(ac): 0.210 Time Shift(hrs): 0.00
Curve Number: 30.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: Basin 3 Node: N. Boundary Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 18.00
Area(ac): 0.610 Time Shift(hrs): 0.00
Curve Number: 30.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: Basin 4 Node: SE. Boundary Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 16.00
Area(ac): 0.910 Time Shift(hrs): 0.00
Curve Number: 30.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========
==== Nodes ====
==========

Name: Base Flow(cfs): 0.000 Init Stage(ft): 0.000
Group: BASE Warn Stage(ft): 0.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: DP Base Flow(cfs): 0.000 Init Stage(ft): 119.000
Group: BASE Warn Stage(ft): 121.000
Type: Stage/Area

Stage(ft)	Area(ac)
119.000	0.0200
120.000	0.0400
121.000	0.0600

Name: N. Boundary Base Flow(cfs): 0.000 Init Stage(ft): 118.330
Group: BASE Warn Stage(ft): 118.830
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	118.330
12.00	118.830
24.00	118.330

Name: S. Boundary Base Flow(cfs): 0.000 Init Stage(ft): 119.770
Group: BASE Warn Stage(ft): 120.270
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	119.770
12.00	120.270
24.00	119.770

Name: SE. Boundary Base Flow(cfs): 0.000 Init Stage(ft): 119.170
Group: BASE Warn Stage(ft): 119.670
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	119.170
12.00	119.670
24.00	119.170

Weirs

Name: From Node:
Group: BASE To Node:
Flow: Both Count: 1
Type: Horizontal Geometry: Circular

Span(in): 0.00
Rise(in): 0.00
Invert(ft): 0.000
Control Elevation(ft): 0.000
TABLE
Bottom Clip(in): 0.000
Top Clip(in): 0.000
Weir Discharge Coef: 3.200
Orifice Discharge Coef: 0.600

Hydrology Simulations

Name: 100Y-24H
Filename: F:\UC1\Drainage\Ad ICPR\Pre\100Y-24H.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Flmod
Rainfall Amount(in): 9.80

Time(hrs)	Print Inc(min)
30.000	5.00

Name: 10Y-24H
Filename: F:\UC1\Drainage\Ad ICPR\Pre\10Y-24H.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Flmod
Rainfall Amount(in): 6.10

Time(hrs)	Print Inc(min)
30.000	5.00

Name: 25Y-24H
Filename: F:\UC1\Drainage\Ad ICPR\Pre\25Y-24H.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Flmod
Rainfall Amount(in): 7.60

Time(hrs)	Print Inc(min)
30.000	5.00

Name: MEAN
Filename: F:\UC1\Drainage\Ad ICPR\Pre\MEAN.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Flmod
Rainfall Amount(in): 4.20

Time(hrs)	Print Inc(min)
30.000	5.00

==========
==== Routing Simulations ==========
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Name: 100Y-24H Hydrology Sim: 100Y-24H
Filename: F:\UC1\Drainage\Ad ICPR\Pre\100Y-24H.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.50000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 72.00
Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
72.000	15.000

Group	Run
BASE	Yes

Name: 10Y-24H Hydrology Sim: 10Y-24H
Filename: F:\UC1\Drainage\Ad ICPR\Pre\10Y-24H.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.05000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
24.000	15.000

Group	Run
BASE	Yes

Name: 25Y-24H Hydrology Sim: 25Y-24H
Filename: F:\UC1\Drainage\Ad ICPR\Pre\25Y-24H.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.50000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00

Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
24.000	15.000

Group	Run
BASE	Yes

Name: MEAN Hydrology Sim: MEANFL
Filename: F:\UC1\Drainage\Ad ICPR\Pre\MEAN.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.50000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
24.000	15.000

Group	Run
BASE	Yes

Name:	Basin 1	Basin 2	Basin 3	Basin 4	Basin 1
Group:	BASE	BASE	BASE	BASE	BASE
Simulation:	100Y-24H	100Y-24H	100Y-24H	100Y-24H	10Y-24H
Node:	DP	S. Boundary	N. Boundary	SE. Boundary	DP
Type:	SCS	SCS	SCS	SCS	SCS
Unit Hydrograph:	Uh256	Uh256	Uh256	Uh256	Uh256
Peaking Factor:	256.0	256.0	256.0	256.0	256.0
Spec Time Inc(min):	3.60	2.40	2.40	2.13	3.60
Comp Time Inc(min):	3.60	2.40	2.40	2.13	3.60
Rain File:	Flmod	Flmod	Flmod	Flmod	Flmod
Rain Amount(in):	9.800	9.800	9.800	9.800	6.100
Duration(hrs):	24.00	24.00	24.00	24.00	24.00
Status:	Onsite	Onsite	Onsite	Onsite	Onsite
TC(min):	27.00	18.00	18.00	16.00	27.00
Time Shift(hrs):	0.00	0.00	0.00	0.00	0.00
Area(ac):	0.260	0.210	0.610	0.910	0.260
Vol of Unit Hyd(in):	1.000	1.000	1.000	1.000	1.000
Curve Num:	30.000	30.000	30.000	30.000	30.000
DCIA(%):	0.000	0.000	0.000	0.000	0.000
Time Max(hrs):	12.54	12.40	12.40	12.37	19.68
Flow Max(cfs):	0.054	0.054	0.156	0.248	0.002
Runoff Volume(in):	0.925	0.925	0.925	0.925	0.083
Runoff Volume(ft3):	873.353	705.400	2049.020	3056.734	78.260

Name:	Basin 2	Basin 3	Basin 4	Basin 1	Basin 2
Group:	BASE	BASE	BASE	BASE	BASE
Simulation:	10Y-24H	10Y-24H	10Y-24H	25Y-24H	25Y-24H
Node:	S. Boundary	N. Boundary	SE. Boundary	DP	S. Boundary
Type:	SCS	SCS	SCS	SCS	SCS
Unit Hydrograph:	Uh256	Uh256	Uh256	Uh256	Uh256
Peaking Factor:	256.0	256.0	256.0	256.0	256.0
Spec Time Inc(min):	2.40	2.40	2.13	3.60	2.40
Comp Time Inc(min):	2.40	2.40	2.13	3.60	2.40
Rain File:	Flmod	Flmod	Flmod	Flmod	Flmod
Rain Amount(in):	6.100	6.100	6.100	7.600	7.600
Duration(hrs):	24.00	24.00	24.00	24.00	24.00
Status:	Onsite	Onsite	Onsite	Onsite	Onsite
TC(min):	18.00	18.00	16.00	27.00	18.00
Time Shift(hrs):	0.00	0.00	0.00	0.00	0.00
Area(ac):	0.210	0.610	0.910	0.260	0.210
Vol of Unit Hyd(in):	1.000	1.000	1.000	1.000	1.000
Curve Num:	30.000	30.000	30.000	30.000	30.000
DCIA(%):	0.000	0.000	0.000	0.000	0.000
Time Max(hrs):	19.60	19.60	18.56	13.68	13.08
Flow Max(cfs):	0.002	0.005	0.008	0.010	0.009
Runoff Volume(in):	0.083	0.083	0.083	0.327	0.327
Runoff Volume(ft3):	63.210	183.611	273.911	309.059	249.625

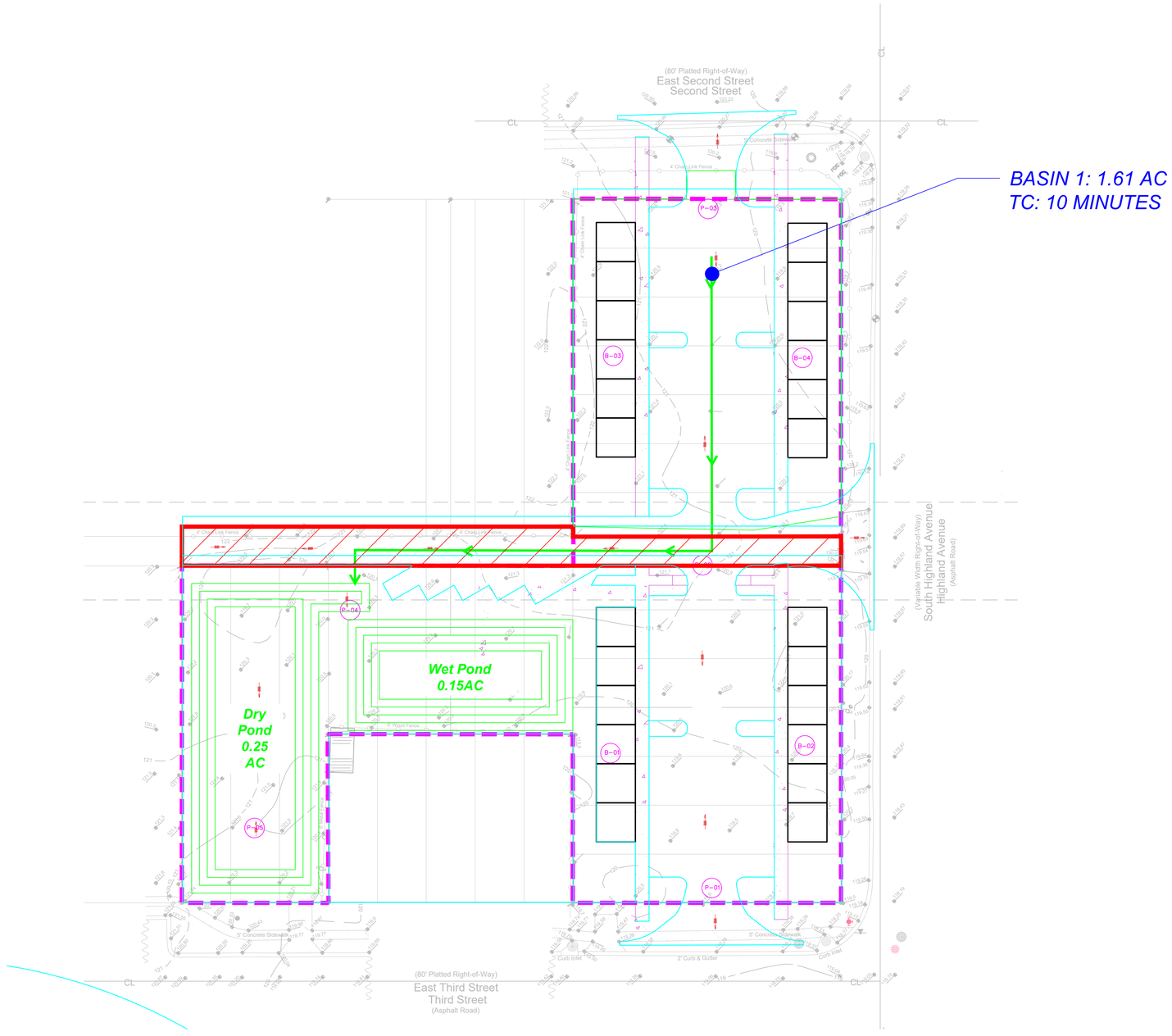
Name:	Basin 3	Basin 4	Basin 1	Basin 2	Basin 3
Group:	BASE	BASE	BASE	BASE	BASE
Simulation:	25Y-24H	25Y-24H	MEAN	MEAN	MEAN
Node:	N. Boundary	SE. Boundary	DP	S. Boundary	N. Boundary
Type:	SCS	SCS	SCS	SCS	SCS
Unit Hydrograph:	Uh256	Uh256	Uh256	Uh256	Uh256
Peaking Factor:	256.0	256.0	256.0	256.0	256.0
Spec Time Inc(min):	2.40	2.13	3.60	2.40	2.40
Comp Time Inc(min):	2.40	2.13	3.60	2.40	2.40
Rain File:	Flmod	Flmod	Flmod	Flmod	Flmod
Rain Amount(in):	7.600	7.600	4.200	4.200	4.200
Duration(hrs):	24.00	24.00	24.00	24.00	24.00
Status:	Onsite	Onsite	Onsite	Onsite	Onsite
TC(min):	18.00	16.00	27.00	18.00	18.00
Time Shift(hrs):	0.00	0.00	0.00	0.00	0.00
Area(ac):	0.610	0.910	0.260	0.210	0.610
Vol of Unit Hyd(in):	1.000	1.000	1.000	1.000	1.000
Curve Num:	30.000	30.000	30.000	30.000	30.000
DCIA(%):	0.000	0.000	0.000	0.000	0.000
Time Max(hrs):	13.08	13.05	0.00	0.00	0.00
Flow Max(cfs):	0.026	0.040	0.000	0.000	0.000
Runoff Volume(in):	0.327	0.327	0.000	0.000	0.000
Runoff Volume(ft3):	725.100	1081.707	0.000	0.000	0.000

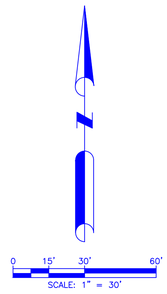
Name:	Basin 4
Group:	BASE
Simulation:	MEAN
Node:	SE. Boundary
Type:	SCS
Unit Hydrograph:	Uh256
Peaking Factor:	256.0
Spec Time Inc(min):	2.13
Comp Time Inc(min):	2.13
Rain File:	Flmod
Rain Amount(in):	4.200

```
        Duration(hrs): 24.00
               Status: Onsite
              TC(min): 16.00
     Time Shift(hrs): 0.00
            Area(ac): 0.910
  Vol of Unit Hyd(in): 1.000
           Curve Num: 30.000
             DCIA(%): 0.000
       Time Max(hrs): 0.00
       Flow Max(cfs): 0.000
    Runoff Volume(in): 0.000
   Runoff Volume(ft3): 0.000
```

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs
DP	BASE	100Y-24H	26.75	119.734	121.000	0.0003	1510	12.58	0.054	0.00
DP	BASE	10Y-24H	24.00	119.081	121.000	0.0000	942	19.67	0.002	0.00
DP	BASE	25Y-24H	24.00	119.297	121.000	0.0001	1130	13.67	0.010	0.00
DP	BASE	MEAN	0.00	119.000	121.000	0.0000	871	0.00	0.000	0.00
N. Boundary	BASE	100Y-24H	12.00	118.830	118.830	0.0001	0	12.42	0.156	0.00
N. Boundary	BASE	10Y-24H	12.00	118.830	118.830	0.0001	0	19.58	0.005	0.00
N. Boundary	BASE	25Y-24H	12.00	118.830	118.830	0.0001	0	13.08	0.026	0.00
N. Boundary	BASE	MEAN	12.00	118.830	118.830	0.0001	0	0.00	0.000	0.00
S. Boundary	BASE	100Y-24H	12.00	120.270	120.270	0.0001	0	12.42	0.054	0.00
S. Boundary	BASE	10Y-24H	12.00	120.270	120.270	0.0001	0	19.58	0.002	0.00
S. Boundary	BASE	25Y-24H	12.00	120.270	120.270	0.0001	0	13.08	0.009	0.00
S. Boundary	BASE	MEAN	12.00	120.270	120.270	0.0001	0	0.00	0.000	0.00
SE. Boundary	BASE	100Y-24H	12.00	119.670	119.670	0.0001	0	12.33	0.245	0.00
SE. Boundary	BASE	10Y-24H	12.00	119.670	119.670	0.0001	0	19.58	0.008	0.00
SE. Boundary	BASE	25Y-24H	12.00	119.670	119.670	0.0001	0	12.83	0.040	0.00
SE. Boundary	BASE	MEAN	12.00	119.670	119.670	0.0001	0	0.00	0.000	0.00

SECTION 5





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DAVE SCHMITT
ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241,
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

CONTRACTOR "AS-BUILTS"

I hereby state that these "As-Builts" were furnished to me by the contractor listed below, I, or an employee under my direct supervision have reviewed these "As-Builts" and believe them to be in compliance with my knowledge of what was actually constructed. This statement is based upon site observations of the construction.

Contractor_____ Engineer_____

Not valid without the signature and the original raised seal of a Florida Registered Engineer.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

POST-DEVELOPMENT BASIN

APOPKA MULTI-FAMILY HOMES

APOPKA, FL

DATE:	APRIL 2022
PROJECT NO.:	CH-3
DRAWN BY:	MP
CHECKED BY:	DMS
SCALE:	1" = 30'
SHEET:	1 OF 1

UC-1 APOPKA MULTI-FAMILY
POST-DEVELOPMENT STORMWATER ANALYSIS
Basin Area, Curve Number, and Tc Summary

Basin	Area (ac)	CN	Tc (min)
Basin 1	1.61	77	10
TOTAL	1.63		10
OFFSITE	0.16		

UC-1 Apopka Multi-Family Project
PRE-DEVELOPMENT - STORMWATER ANALYSIS
Curve Number Calculations

Basin ID : 1
Total Acres: 1.63

Name	ID#	Soil Class	Cover Type	CN	% Area	Area	Factor
Zolfo-Urban land complex	55	A	PAVEMENT	39	100.0%	1.6	64
					100.0%	1.63	
						Composite CN:	**39**

UC-1 APOPKA MULTI-FAMILY
POST-DEVELOPMENT STORMWATER ANALYSIS
Basin Impervious Area Calculations

Basin	Area (ac)	Lots	Building Pad (ac)	Roadway (ac)	Impervious (ac)	Impervious per Lot (ac)	Subtotal Impervious Area (ac)	NWL Pond Area (ac)	Total Impervious (ac)
Basin 1	1.77	**24**	**0.22**	**0.75**	**0.97**	0.04	0.97	**0.16**	1.13

UC-1 Apopka Multi-Family Project
PRE-DEVELOPMENT - STORMWATER ANALYSIS
Curve Number Calculations

Basin ID : 1
Total Acres: 1.61

Name	ID#	Soil Class	Cover Type	CN	% Area	Area	Factor
Zolfo-Urban land complex	55	A	PAVEMENT	30	100.0%	1.6	48
					100.0%	1.61	
						Composite CN:	**30**

UC-1 APOPKA MULTI-FAMILY
POST-DEVELOPMENT STORMWATER ANALYSIS
Basin Curve Number Calculations

	CN=98		CN=100						
Basin #	Impervious (ac)	Impervious (% of Total)	Pond (ac)	Pond (% of Total)	Pervious (ac)	Pervious (% of Total)	Pervious CN	Total (ac)	Composite CN
Basin 1	**0.97**	55%	**0.25**	14%	**0.55**	31%	**30**	**1.77**	**77**

UC-1 APOPKA MULTI-FAMILY
POST-DEVELOPMENT STORMWATER ANALYSIS
Time of Concentration Calculations

Basin	Sheet Flow Slope	Sheet Flow L	MAN	Sheet Flow	Shallow Slope	Shallow Flow L	P or U	Average Velocity	Shallow Flow	Pipe Flow L	Pipe Flow	TC
#	(FT/FT)	(FT)	(n)	(Tt MIN)	(FT/FT)	(FT)		(FT/S)	(Tt MIN)	(FT)	(Tt MIN)	(MIN)
1	0.0017	300	0.011	7.1	0.0408	50	P	3.25901	0.3	420	2.0	10

UC-1 APOPKA MULTI-FAMILY
POST-DEVELOPMENT STORMWATER ANALYSIS
Stage - Storage Calculations

DRY POND 1

ELEVATION (feet)	AREA (acres)	STORAGE (ac-ft)	CUM STORAGE (ac-ft)
118.20	0.13	0.00	0.00
119.20	0.16	0.14	0.14
120.20	0.20	0.18	0.18
121.20	0.25	0.22	0.40

Required Treatment Volume =	0.40	Ac-ft
Set Weir at or above =	121.18	feet
1/2 TV =	0.20	Ac-ft
Elevation at which 1/2 TV has recovered =	120.79	feet

WET POND 1

ELEVATION (feet)	AREA (acres)	STORAGE (ac-ft)	CUM STORAGE (ac-ft)	BORING P-01
116.20	0.04	0.00	0.00	
117.20	0.06	0.05	0.05	
118.20	0.09	0.08	0.13	
119.20	0.11	0.10	0.23	
120.20	0.14	0.12	0.35	

Required Treatment Volume =	0.30	Ac-ft
Set Weir at or above =	119.97	feet
1/2 TV =	0.15	Ac-ft
Elevation at which 1/2 TV has recovered =	118.55	feet

Basin 1 POST

Post-Development Nutrient Generation

Land Use	Area (ac)	Loading* (kg/ac-yr)	Total Loading (kg/yr)	Treatment	Req'd Retention Over Basin Area (in)	**Pollutant Removal Efficiency	Overflow Mass Loading (kg/yr)
Multi-Family Residential (max 65%)	1.22	1.082	1.320	Dry/Wet	3.00	99.00%	0.013
Pond	0.25	0.004	0.001	Dry	3.00	99.00%	0.000
Pond	0.14	0.004	0.001	Wet	4.00	99.00%	0.000
Total	1.61		1.321				0.013

*Table 11.7-3 (shown below)
**Table 11.7-24 Removal Efficiencies (shown below)

Pre-Basin 1 Total Loading	0.00	kg/yr	
Required Pollutant Removal Efficiency:	99.70%		
Required Stormwater Runoff Retention (ac-ft):	0.37		
Phosphorus Removal so Post < or = Pre (kg/yr)	0.013	<	0.023

Basin 1 PRE

Pre-Development Nutrient Generation

Land Use	Area (ac)	Loading* (kg/ac-yr)	Total Loading (kg/yr)	Treatment	Req'd Retention Over Basin Area (in)	**Pollutant Removal Efficiency	Overflow Mass Loading (kg/yr)
Open Land	1.00	0.004	0.004				0.004
Pasture	0.72	0.026	0.019				0.019
Total	**2.03**		**0.004**				**0.023**

Notes:
*Table 11.7-3 (attached)

Total Nutrient Loading: 0.004 **kg/yr**

TABLE 11.7-3

MEAN ANNUAL LOADINGS OF TOTAL PHOSPHORUS FOR LAND USE TYPES IN THE LAKE APOPKA HYDROLOGIC BASIN

LAND USE CATEGORY	MEAN ANNUAL TOTAL PHOSPHORUS LOAD (kg/ac-yr)			
	HSG A	HSG B	HSG C	HSG D
Low-Density Residential (max. 15% impervious)	0.069	0.135	0.215	0.284
Single-Family Residential (max. 25% impervious)	0.227	0.286	0.383	0.465
Single-Family Residential (max. 40% impervious)	0.250	0.333	0.446	0.536
Multi-Family Residential (max. 65% impervious)	1.082	1.156	1.257	1.336
Commercial (max. 80% impervious)	0.899	0.916	0.943	0.964
Highway – max. 50% impervious	0.710	0.756	0.817	0.871
Highway – max. 75% impervious	1.053	1.076	1.106	1.133
Agriculture – Pasture	0.026	0.118	0.239	0.347
Agriculture – Crops, Ornamentals, Nurseries	0.040	0.180	0.366	0.531
Agriculture – Groves	0.007	0.036	0.079	0.123
Open Land/Recreational/Fallow Groves and Cropland	0.004	0.017	0.035	0.051
Forests/Abandoned Tree Crops	0.004	0.021	0.045	0.070

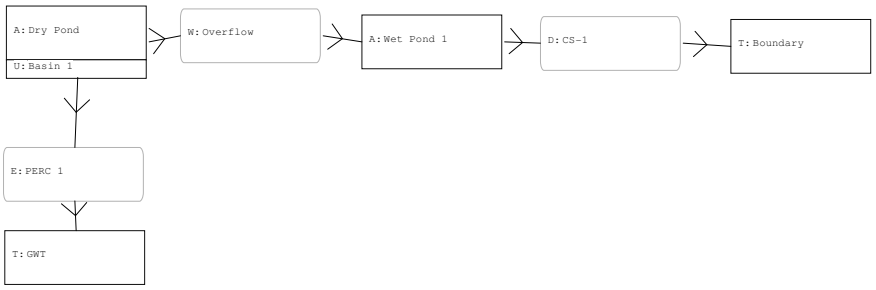
HSG = Hydrologic Soil Group

SECTION 6

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

Basins

Name: Basin 1 | Node: Dry Pond | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 | Peaking Factor: 256.0
Rainfall File: | Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 | Time of Conc(min): 10.00
Area(ac): 1.770 | Time Shift(hrs): 0.00
Curve Number: 77.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Nodes

Name: Boundary | Base Flow(cfs): 0.000 | Init Stage(ft): 116.200
Group: BASE | Warn Stage(ft): 116.200
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	116.200
12.00	116.200
24.00	116.200

Name: Dry Pond | Base Flow(cfs): 0.000 | Init Stage(ft): 118.200
Group: BASE | Warn Stage(ft): 121.700
Type: Stage/Area

Stage(ft)	Area(ac)
118.200	0.1300
119.200	0.1600
120.200	0.2000
121.700	0.2500

Name: GWT | Base Flow(cfs): 0.000 | Init Stage(ft): 116.200
Group: BASE | Warn Stage(ft): 116.200
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	116.200
12.00	116.200
24.00	116.200

Name: Wet Pond 1 | Base Flow(cfs): 0.000 | Init Stage(ft): 116.200
Group: BASE | Warn Stage(ft): 120.200
Type: Stage/Area

Stage(ft)	Area(ac)
116.200	0.0400
117.200	0.0600
118.200	0.0900
119.200	0.1100
120.200	0.1400

Drop Structures

Name: CS-1 | From Node: Wet Pond 1 | Length(ft): 65.00
Group: BASE | To Node: Boundary | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00

Friction Equation: Automatic
Solution Algorithm: Most Restrictive
Flow: Positive
Entrance Loss Coef: 0.500

```
   Invert(ft): 116.200        116.000                        Exit Loss Coef: 1.000
  Manning's N: 0.013000       0.013000                     Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                         Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                           Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



*** Weir 1 of 3 for Drop Structure CS-1 ***
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Horizontal                Top Clip(in): 0.000
                   Flow: Both                    Weir Disc Coef: 3.200
               Geometry: Rectangular           Orifice Disc Coef: 0.600

               Span(in): 37.00                       Invert(ft): 119.200
               Rise(in): 49.00                 Control Elev(ft): 119.200

*** Weir 2 of 3 for Drop Structure CS-1 ***
                                                                                TABLE
                  Count: 3                      Bottom Clip(in): 0.000
                   Type: Vertical: Mavis           Top Clip(in): 0.000
                   Flow: Both                    Weir Disc Coef: 3.200
               Geometry: Circular              Orifice Disc Coef: 0.600

               Span(in): 2.75                        Invert(ft): 116.500
               Rise(in): 2.75                  Control Elev(ft): 116.500

*** Weir 3 of 3 for Drop Structure CS-1 ***
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Vertical: Mavis           Top Clip(in): 0.000
                   Flow: Both                    Weir Disc Coef: 3.200
               Geometry: Rectangular           Orifice Disc Coef: 0.600

               Span(in): 6.00                        Invert(ft): 118.400
               Rise(in): 10.00                 Control Elev(ft): 118.400


=========================================================================================
==== Weirs ==============================================================================
=========================================================================================

         Name: Overflow            From Node: Dry Pond
        Group: BASE                  To Node: Wet Pond 1
         Flow: Both                    Count: 1
         Type: Horizontal           Geometry: Rectangular

                    Span(in): 400.00
                    Rise(in): 999.00
                  Invert(ft): 121.180
       Control Elevation(ft): 121.180
                                              TABLE
             Bottom Clip(in): 0.000
                Top Clip(in): 0.000
          Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600



=========================================================================================
==== Percolation Links ===================================================================
=========================================================================================

         Name: PERC 1              From Node: Dry Pond                 Flow: Both
        Group: BASE                  To Node: GWT                     Count: 1

         Surface Area Option: Use 1st Point in Stage/Area Table
   Vertical Flow Termination: Horizontal Flow Algorithm
       Aquifer Base Elev(ft): 106.700                       Perimeter 1(ft): 702.800
        Water Table Elev(ft): 116.200                       Perimeter 2(ft): 1103.000
  Ann Recharge Rate(in/year): 0.000                         Perimeter 3(ft): 2500.000
  Horiz Conductivity(ft/day): 7.500                     Distance 1 to 2(ft): 50.000
   Vert Conductivity(ft/day): 4.500                     Distance 2 to 3(ft): 450.000
     Effective Porosity(dec): 0.200                        Num Cells 1 to 2: 10
            Suction Head(in): 4.170                        Num Cells 2 to 3: 45
         Layer Thickness(ft): 1.800
```

```
================================================================================
==== Hydrology Simulations =====================================================
================================================================================

         Name: 100Y-24H
     Filename: F:\UC1\Drainage\Ad ICPR\Post\100Y-24H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 11.80

Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.00

--------------------------------------------------------------------------------
         Name: 10Y-24H
     Filename: F:\UC1\Drainage\Ad ICPR\Post\10Y-24H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 6.10

Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.00

--------------------------------------------------------------------------------
         Name: 25Y-24H
     Filename: F:\UC1\Drainage\Ad ICPR\Post\25Y-24H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 8.60

Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.00

--------------------------------------------------------------------------------
         Name: MEAN
     Filename: F:\UC1\Drainage\Ad ICPR\Post\MEAN.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 4.20

Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.00

================================================================================
==== Routing Simulations =======================================================
================================================================================

         Name: 100Y-24H            Hydrology Sim: 100Y-24H
     Filename: F:\UC1\Drainage\Ad ICPR\Post\100Y-24H.I32

      Execute: Yes         Restart: No           Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.50000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 72.00
     Min Calc Time(sec): 2.0000              Max Calc Time(sec): 5.0000
        Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
72.000          15.000

Group           Run
--------------- -----
BASE            Yes


--------------------------------------------------------------------------------
         Name: 10Y-24H             Hydrology Sim: 10Y-24H
     Filename: F:\UC1\Drainage\Ad ICPR\Post\10Y-24H.I32
```

```
     Execute: Yes         Restart: No           Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.05000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 24.00
    Min Calc Time(sec): 2.0000              Max Calc Time(sec): 5.0000
       Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.000

Group           Run
--------------- -----
BASE            Yes


-------------------------------------------------------------------------------------------------
         Name: 25Y-24H             Hydrology Sim: 25Y-24H
     Filename: F:\UC1\Drainage\Ad ICPR\Post\25Y-24H.I32

     Execute: Yes         Restart: No           Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.50000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 24.00
    Min Calc Time(sec): 2.0000              Max Calc Time(sec): 5.0000
       Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.000

Group           Run
--------------- -----
BASE            Yes


-------------------------------------------------------------------------------------------------
         Name: MEAN                Hydrology Sim: MEANFL
     Filename: F:\UC1\Drainage\Ad ICPR\Post\MEAN.I32

     Execute: Yes         Restart: No           Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.50000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 24.00
    Min Calc Time(sec): 2.0000              Max Calc Time(sec): 5.0000
       Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.000

Group           Run
--------------- -----
BASE            Yes
```

Name:	Basin 1	Basin 1	Basin 1	Basin 1
Group:	BASE	BASE	BASE	BASE
Simulation:	100Y-24H	10Y-24H	25Y-24H	MEAN
Node:	Dry Pond	Dry Pond	Dry Pond	Dry Pond
Type:	SCS	SCS	SCS	SCS
Unit Hydrograph:	Uh256	Uh256	Uh256	Uh256
Peaking Factor:	256.0	256.0	256.0	256.0
Spec Time Inc(min):	1.33	1.33	1.33	1.33
Comp Time Inc(min):	1.33	1.33	1.33	1.33
Rain File:	Flmod	Flmod	Flmod	Flmod
Rain Amount(in):	11.800	6.100	8.600	4.200
Duration(hrs):	24.00	24.00	24.00	24.00
Status:	Onsite	Onsite	Onsite	Onsite
TC(min):	10.00	10.00	10.00	10.00
Time Shift(hrs):	0.00	0.00	0.00	0.00
Area(ac):	1.770	1.770	1.770	1.770
Vol of Unit Hyd(in):	1.000	1.000	1.000	1.000
Curve Num:	77.000	77.000	77.000	77.000
DCIA(%):	0.000	0.000	0.000	0.000
Time Max(hrs):	12.04	12.04	12.04	12.04
Flow Max(cfs):	10.823	4.458	7.234	2.437
Runoff Volume(in):	8.841	3.565	5.825	1.969
Runoff Volume(ft3):	56806.752	22907.627	37429.358	12650.381

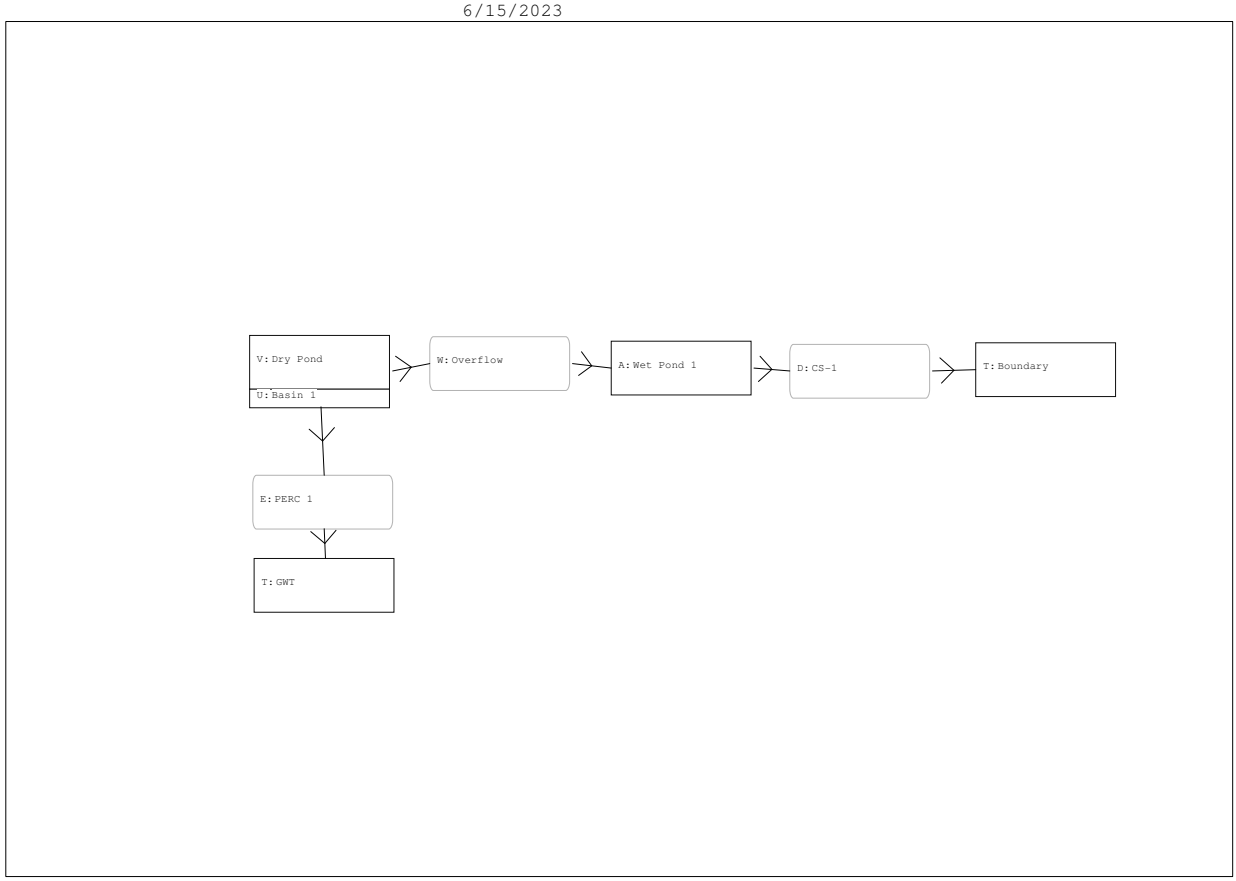
Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs
Boundary	BASE	100Y-24H	0.00	116.200	116.200	0.0000	0	13.50	0.781	0.00
Boundary	BASE	10Y-24H	0.00	116.200	116.200	0.0000	0	0.00	0.000	0.00
Boundary	BASE	25Y-24H	0.00	116.200	116.200	0.0000	0	0.00	0.000	0.00
Boundary	BASE	MEAN	0.00	116.200	116.200	0.0000	0	0.00	0.000	0.00
Dry Pond	BASE	100Y-24H	12.39	121.218	121.700	0.0058	10190	12.00	10.471	12.39
Dry Pond	BASE	10Y-24H	22.71	119.894	121.700	0.0030	8178	12.08	4.339	12.79
Dry Pond	BASE	25Y-24H	23.64	121.081	121.700	0.0046	9991	12.08	7.011	12.40
Dry Pond	BASE	MEAN	0.00	118.200	121.700	0.0000	5663	0.00	0.000	0.00
GWT	BASE	100Y-24H	0.00	116.200	116.200	0.0000	0	12.34	0.704	0.00
GWT	BASE	10Y-24H	0.00	116.200	116.200	0.0000	0	12.79	0.510	0.00
GWT	BASE	25Y-24H	0.00	116.200	116.200	0.0000	0	12.40	0.561	0.00
GWT	BASE	MEAN	0.00	116.200	116.200	0.0000	0	0.00	0.000	0.00
Wet Pond 1	BASE	100Y-24H	13.50	118.398	120.200	0.0137	4093	12.39	5.539	13.50
Wet Pond 1	BASE	10Y-24H	0.00	116.200	120.200	0.0000	1742	0.00	0.000	0.00
Wet Pond 1	BASE	25Y-24H	0.00	116.200	120.200	0.0000	1742	0.00	0.000	0.00
Wet Pond 1	BASE	MEAN	0.00	116.200	120.200	0.0000	1742	0.00	0.000	0.00

SECTION 7

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



Basins

Name: Basin 1 | Node: Dry Pond | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 | Peaking Factor: 256.0
Rainfall File: | Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 | Time of Conc(min): 10.00
Area(ac): 1.770 | Time Shift(hrs): 0.00
Curve Number: 77.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Nodes

Name: Boundary | Base Flow(cfs): 0.000 | Init Stage(ft): 116.200
Group: BASE | Warn Stage(ft): 116.200
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	116.200
12.00	116.200
24.00	116.200

Name: Dry Pond | Base Flow(cfs): 0.000 | Init Stage(ft): 120.950
Group: BASE | Warn Stage(ft): 121.200
Type: Stage/Volume

Stage(ft)	Volume(af)
118.200	0.2600
119.200	0.3200
120.200	0.3800
121.200	0.4400

Name: GWT | Base Flow(cfs): 0.000 | Init Stage(ft): 116.200
Group: BASE | Warn Stage(ft): 116.200
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	116.200
12.00	116.200
24.00	116.200

Name: Wet Pond 1 | Base Flow(cfs): 0.000 | Init Stage(ft): 118.860
Group: BASE | Warn Stage(ft): 120.200
Type: Stage/Area

Stage(ft)	Area(ac)
116.200	0.1000
117.200	0.1200
118.200	0.1500
119.200	0.1800
120.200	0.2200

Drop Structures

Name: CS-1 | From Node: Wet Pond 1 | Length(ft): 65.00
Group: BASE | To Node: Boundary | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00

Friction Equation: Automatic
Solution Algorithm: Most Restrictive
Flow: Positive
Entrance Loss Coef: 0.500

```
   Invert(ft): 116.200        116.200                        Exit Loss Coef: 1.000
  Manning's N: 0.013000       0.013000                     Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                         Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                           Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



*** Weir 1 of 3 for Drop Structure CS-1 ***
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Horizontal                Top Clip(in): 0.000
                   Flow: Both                    Weir Disc Coef: 3.200
               Geometry: Rectangular           Orifice Disc Coef: 0.600

               Span(in): 24.00                       Invert(ft): 119.700
               Rise(in): 37.00                 Control Elev(ft): 119.700

*** Weir 2 of 3 for Drop Structure CS-1 ***
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Horizontal                Top Clip(in): 0.000
                   Flow: Both                    Weir Disc Coef: 3.200
               Geometry: Rectangular           Orifice Disc Coef: 0.600

               Span(in): 12.00                       Invert(ft): 118.860
               Rise(in): 10.08                 Control Elev(ft): 118.860

*** Weir 3 of 3 for Drop Structure CS-1 ***
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Vertical: Mavis           Top Clip(in): 0.000
                   Flow: Both                    Weir Disc Coef: 3.200
               Geometry: Circular              Orifice Disc Coef: 0.600

               Span(in): 2.75                        Invert(ft): 116.200
               Rise(in): 2.75                  Control Elev(ft): 116.200


=========================================================================================
==== Weirs ==============================================================================
=========================================================================================

         Name: Overflow            From Node: Dry Pond
        Group: BASE                  To Node: Wet Pond 1
         Flow: Both                    Count: 1
         Type: Horizontal           Geometry: Rectangular

                    Span(in): 360.00
                    Rise(in): 999.00
                  Invert(ft): 120.950
       Control Elevation(ft): 120.950
                                                TABLE
             Bottom Clip(in): 0.000
                Top Clip(in): 0.000
          Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600



=========================================================================================
==== Percolation Links ===================================================================
=========================================================================================

         Name: PERC 1              From Node: Dry Pond                 Flow: Both
        Group: BASE                  To Node: GWT                     Count: 1

         Surface Area Option: Use 1st Point in Stage/Area Table
   Vertical Flow Termination: Horizontal Flow Algorithm
       Aquifer Base Elev(ft): 106.700                       Perimeter 1(ft): 702.800
        Water Table Elev(ft): 116.200                       Perimeter 2(ft): 1103.000
  Ann Recharge Rate(in/year): 0.000                         Perimeter 3(ft): 2500.000
  Horiz Conductivity(ft/day): 7.500                     Distance 1 to 2(ft): 50.000
   Vert Conductivity(ft/day): 4.500                     Distance 2 to 3(ft): 450.000
     Effective Porosity(dec): 0.200                        Num Cells 1 to 2: 10
            Suction Head(in): 4.170                        Num Cells 2 to 3: 45
         Layer Thickness(ft): 1.800
```

```
================================================================================
==== Routing Simulations ======================================================
================================================================================

         Name: Recovery            Hydrology Sim: 25Y-24H
     Filename: F:\UC1\Drainage\Ad ICPR\Recovery\Recovery.I32

      Execute: Yes         Restart: No           Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.50000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 72.00
     Min Calc Time(sec): 2.0000              Max Calc Time(sec): 5.0000
        Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
72.000          30.000

Group           Run
--------------- -----
BASE            Yes
```

Simulation	Node	Group	Time	Stage	Warning Stage	Surface Area	Base Flow	Onsite Runoff	Offsite Runoff	Boundary Inflows	F
			hrs	ft	ft	ft2	cfs	cfs	cfs	cfs	
Recovery	Dry Pond	BASE	0.00	120.950	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	0.50	120.561	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	1.00	120.361	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	1.50	120.170	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	2.00	119.988	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	2.50	119.815	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	3.00	119.649	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	3.50	119.491	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	4.00	119.341	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	4.50	119.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	5.00	119.092	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	5.50	119.003	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	6.00	118.927	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	6.50	118.859	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	7.00	118.798	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	7.50	118.743	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	8.00	118.691	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	8.50	118.644	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	9.00	118.599	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	9.50	118.558	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	10.00	118.519	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	10.50	118.482	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	11.00	118.447	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	11.50	118.414	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	12.00	118.382	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	12.50	118.352	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	13.00	118.323	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	13.50	118.296	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	14.00	118.270	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	14.50	118.244	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	15.00	118.220	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	15.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	16.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	16.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	17.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	17.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	18.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	18.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	19.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	19.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	20.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	20.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	21.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	21.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	22.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	22.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	23.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	23.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	24.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	24.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	25.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	25.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	26.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	26.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	27.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	27.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	28.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	28.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	29.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	29.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	30.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	30.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	31.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	31.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	32.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	32.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	33.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	33.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	34.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	34.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	35.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	35.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	36.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	36.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	37.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	37.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	38.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	38.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	39.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	39.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	40.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	40.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	41.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	

Simulation	Node	Group	Time	Stage	Warning Stage	Surface Area	Base Flow	Onsite Runoff	Offsite Runoff	Boundary Inflows	F
			hrs	ft	ft	ft2	cfs	cfs	cfs	cfs	
Recovery	Dry Pond	BASE	41.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	42.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	42.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	43.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	43.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	44.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	44.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	45.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	45.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	46.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	46.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	47.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	47.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	48.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	48.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	49.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	49.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	50.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	50.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	51.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	51.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	52.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	52.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	53.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	53.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	54.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	54.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	55.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	55.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	56.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	56.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	57.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	57.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	58.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	58.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	59.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	59.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	60.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	60.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	61.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	61.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	62.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	62.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	63.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	63.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	64.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	64.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	65.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	65.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	66.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	66.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	67.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	67.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	68.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	68.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	69.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	69.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	70.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	70.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	71.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	71.50	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	72.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Dry Pond	BASE	72.00	118.200	121.200	2614	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	0.00	118.860	120.200	7396	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	0.50	118.787	120.200	7301	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	1.00	118.714	120.200	7206	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	1.50	118.641	120.200	7111	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	2.00	118.569	120.200	7016	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	2.50	118.497	120.200	6922	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	3.00	118.425	120.200	6828	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	3.50	118.353	120.200	6734	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	4.00	118.282	120.200	6642	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	4.50	118.212	120.200	6549	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	5.00	118.141	120.200	6457	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	5.50	118.072	120.200	6366	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	6.00	118.003	120.200	6276	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	6.50	117.934	120.200	6187	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	7.00	117.866	120.200	6098	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	7.50	117.799	120.200	6010	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	8.00	117.732	120.200	5923	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	8.50	117.667	120.200	5837	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	9.00	117.602	120.200	5752	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	9.50	117.537	120.200	5668	0.000	0.000	0.000	0.000	

Simulation	Node	Group	Time	Stage	Warning Stage	Surface Area	Base Flow	Onsite Runoff	Offsite Runoff	Boundary Inflows	F
			hrs	ft	ft	ft2	cfs	cfs	cfs	cfs	
Recovery	Wet Pond 1	BASE	10.00	117.474	120.200	5585	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	10.50	117.412	120.200	5504	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	11.00	117.350	120.200	5424	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	11.50	117.290	120.200	5345	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	12.00	117.231	120.200	5268	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	12.50	117.174	120.200	5204	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	13.00	117.118	120.200	5156	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	13.50	117.063	120.200	5108	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	14.00	117.011	120.200	5062	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	14.50	116.960	120.200	5018	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	15.00	116.911	120.200	4975	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	15.50	116.864	120.200	4934	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	16.00	116.819	120.200	4895	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	16.50	116.775	120.200	4857	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	17.00	116.734	120.200	4821	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	17.50	116.695	120.200	4787	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	18.00	116.658	120.200	4755	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	18.50	116.623	120.200	4724	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	19.00	116.590	120.200	4696	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	19.50	116.559	120.200	4669	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	20.00	116.530	120.200	4644	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	20.50	116.504	120.200	4621	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	21.00	116.479	120.200	4599	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	21.50	116.457	120.200	4580	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	22.00	116.438	120.200	4563	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	22.50	116.421	120.200	4549	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	23.00	116.406	120.200	4536	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	23.50	116.392	120.200	4524	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	24.00	116.380	120.200	4513	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	24.50	116.369	120.200	4503	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	25.00	116.359	120.200	4494	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	25.50	116.350	120.200	4487	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	26.00	116.342	120.200	4480	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	26.50	116.335	120.200	4473	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	27.00	116.328	120.200	4468	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	27.50	116.322	120.200	4462	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	28.00	116.317	120.200	4458	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	28.50	116.312	120.200	4453	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	29.00	116.307	120.200	4449	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	29.50	116.303	120.200	4446	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	30.00	116.299	120.200	4442	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	30.50	116.296	120.200	4439	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	31.00	116.292	120.200	4436	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	31.50	116.289	120.200	4434	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	32.00	116.286	120.200	4431	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	32.50	116.284	120.200	4429	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	33.00	116.281	120.200	4427	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	33.50	116.279	120.200	4425	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	34.00	116.277	120.200	4423	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	34.50	116.275	120.200	4421	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	35.00	116.273	120.200	4420	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	35.50	116.271	120.200	4418	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	36.00	116.269	120.200	4416	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	36.50	116.268	120.200	4415	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	37.00	116.266	120.200	4414	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	37.50	116.265	120.200	4412	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	38.00	116.263	120.200	4411	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	38.50	116.262	120.200	4410	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	39.00	116.261	120.200	4409	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	39.50	116.259	120.200	4408	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	40.00	116.258	120.200	4407	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	40.50	116.257	120.200	4406	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	41.00	116.256	120.200	4405	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	41.50	116.255	120.200	4404	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	42.00	116.254	120.200	4403	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	42.50	116.253	120.200	4402	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	43.00	116.252	120.200	4402	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	43.50	116.251	120.200	4401	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	44.00	116.251	120.200	4400	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	44.50	116.250	120.200	4399	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	45.00	116.249	120.200	4399	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	45.50	116.248	120.200	4398	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	46.00	116.247	120.200	4397	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	46.50	116.247	120.200	4397	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	47.00	116.246	120.200	4396	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	47.50	116.245	120.200	4396	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	48.00	116.245	120.200	4395	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	48.50	116.244	120.200	4394	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	49.00	116.244	120.200	4394	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	49.50	116.243	120.200	4393	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	50.00	116.242	120.200	4393	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	50.50	116.242	120.200	4392	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	51.00	116.241	120.200	4392	0.000	0.000	0.000	0.000	

Simulation	Node	Group	Time	Stage	Warning Stage	Surface Area	Base Flow	Onsite Runoff	Offsite Runoff	Boundary Inflows	F
			hrs	ft	ft	ft2	cfs	cfs	cfs	cfs	
Recovery	Wet Pond 1	BASE	51.50	116.241	120.200	4392	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	52.00	116.240	120.200	4391	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	52.50	116.240	120.200	4391	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	53.00	116.239	120.200	4390	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	53.50	116.239	120.200	4390	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	54.00	116.238	120.200	4389	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	54.50	116.238	120.200	4389	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	55.00	116.238	120.200	4389	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	55.50	116.237	120.200	4388	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	56.00	116.237	120.200	4388	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	56.50	116.236	120.200	4388	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	57.00	116.236	120.200	4387	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	57.50	116.236	120.200	4387	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	58.00	116.235	120.200	4387	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	58.50	116.235	120.200	4386	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	59.00	116.235	120.200	4386	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	59.50	116.234	120.200	4386	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	60.00	116.234	120.200	4386	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	60.50	116.234	120.200	4385	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	61.00	116.233	120.200	4385	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	61.50	116.233	120.200	4385	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	62.00	116.233	120.200	4384	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	62.50	116.232	120.200	4384	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	63.00	116.232	120.200	4384	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	63.50	116.232	120.200	4384	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	64.00	116.232	120.200	4384	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	64.50	116.231	120.200	4383	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	65.00	116.231	120.200	4383	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	65.50	116.231	120.200	4383	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	66.00	116.231	120.200	4383	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	66.50	116.230	120.200	4382	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	67.00	116.230	120.200	4382	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	67.50	116.230	120.200	4382	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	68.00	116.230	120.200	4382	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	68.50	116.229	120.200	4382	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	69.00	116.229	120.200	4381	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	69.50	116.229	120.200	4381	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	70.00	116.229	120.200	4381	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	70.50	116.229	120.200	4381	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	71.00	116.228	120.200	4381	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	71.50	116.228	120.200	4380	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	72.00	116.228	120.200	4380	0.000	0.000	0.000	0.000	
Recovery	Wet Pond 1	BASE	72.00	116.228	120.200	4380	0.000	0.000	0.000	0.000	

SECTION 8

GEOTECHNICAL EXPLORATION

APOPKA MULTI-FAMILY DEVELOPMENT
APOPKA, ORANGE COUNTY, FLORIDA

UES PROJECT NO. 0130.2300032.0000
UES REPORT NO. 2003253

PREPARED FOR:

ELP Global, PLLC
7901 Kingspointe Parkway, STE 8
Orlando, Florida 32819

ATTN: Mr. Carlos Bonilla

PREPARED BY:

Universal Engineering Sciences, LLC
3532 Maggie Boulevard
Orlando, Florida 32811
(407) 423-0504

February 20, 2023

February 20, 2023

ELP Global, PLLC
7901 Kingspointe Parkway, STE 8
Orlando, Florida 32819

Attention: Mr. Carlos J Bonilla
carlos@elpglobal.com

Reference: **Geotechnical Exploration**
Apopka Multi-Family Development
Apopka, Orange County, Florida
UES Project No. 0130.2300032.0000
UES Report No. 2003253

Dear Mr. Bonilla:

Universal Engineering Sciences, LLC (UES) has completed a geotechnical exploration at the above referenced site in Orange County, Florida. The scope of our exploration was planned in conjunction with and authorized by you. This exploration was performed in accordance with UES proposal No. 2000377 dated January 27, 2023 and with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made.

The following report presents the results of our field exploration with a geotechnical engineering interpretation of those results with respect to the project characteristics as provided to us. We have included our estimates of the seasonal high groundwater level at the boring locations, and geotechnical recommendations for foundation design, pavement design, site preparation, and stormwater system design. *The site was found to be generally suitable for the proposed development following typical site preparation procedures presented in this report.*

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Respectfully Submitted,
UNIVERSAL ENGINEERING SCIENCES, LLC
Certificate of Authorization No. 549

Zachary W. Adams, P.E.
Senior Geotechnical Project Manager
FL P.E. Registration No. 82935

Ricardo C. Kiriakidis L., Ph.D., P.E.
Geotechnical Department Manager

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1.0 PROJECT DESCRIPTION

We understand that the proposed project will include the design and construction of a new multi-family residential development located in Orange County, Florida. The site is located at the southwest corner of South Highland Avenue and East Second Street in Apopka, Florida and is comprised of approximately 1.63 acres. We were provided with the conceptual site plan showing the proposed development. The site plan identified twenty-four (24) 400 square foot tiny home units, an underground exfiltration system, and associated paved parking and drive areas.

At this time, UES has been requested to perform a geotechnical exploration of the subject site for design purposes. We anticipate that minimal (i.e. less than 3 feet of) fill will be necessary to achieve finished grades in the proposed building and pavement areas.

Should any of the above information or assumptions made by UES be inconsistent with the planned development and construction, we request that you contact us immediately to allow us the opportunity to review the new information in conjunction with our report and revise or modify our engineering recommendations accordingly, as needed.

No site or project facilities/improvements, other than those described herein, should be designed using the soil information presented in this report. Moreover, UES will not be responsible for the performance of any site improvement so designed and constructed.

2.0 PURPOSE

The purposes of this exploration were:

- to explore and evaluate the subsurface conditions at the site with special attention to potential problems that may impact the proposed development,
- to provide our estimates of the seasonal high groundwater level at the boring locations and
- to provide geotechnical engineering recommendations for foundation design, pavement design, site preparation, and stormwater system design parameters.

This report presents an evaluation of site conditions on the basis of geotechnical procedures for site characterization. The recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards. We would be glad to provide you with a proposal for these services at your request.

Our exploration was not designed to specifically address the potential for surface expression of deep geological conditions, such as sinkhole development related to karst activity. This evaluation requires a more extensive range of field services than those performed in this study. We would be pleased to conduct an exploration to evaluate the probable effect of the regional geology upon the proposed construction, if you so desire.

3.0 SITE DESCRIPTION

The subject site is located within Section 10, Township 21 South, and Range 28 East in Orange County, Florida. More specifically, the subject site is located at the southwest corner of South Highland Avenue & East Second Street in Apopka, Florida, as shown in the attached Figure A-1. At the time of drilling, the site consisted of a sparsely vegetated, vacant parcel.

3.1 SOIL SURVEY

There is one (1) native soil type mapped within the general vicinity of the site according to the USDA NRCS Soil Survey of Orange County. A brief summary of the mapped surficial soil type(s) is presented in Table I below. *Please note that the native soil types and their associated engineering properties have likely been altered by past development in the vicinity of the site.*

TABLE I
SUMMARY OF PUBLISHED SOIL DATA [1]

Soil Symbol	Soil Type	Hydrologic Group	Drainage Characteristics	Depth of Published Seasonal High GWT (feet)[2]
55	Zolfo-Urban land complex	A	Somewhat poorly drained	2 to 3½

[1] Data obtained from the USDA NRCS Web Soil Survey online webpage, accessed on 2/15/2023

3.2 TOPOGRAPHY

According to information obtained from the United States Geologic Survey (USGS) "Apopka, Florida" quadrangle map, the predevelopment ground surface elevation across the site area ranges from approximately +125 to 130 feet National Geodetic Vertical Datum (NGVD). A copy of the portion of the USGS Map is included in Appendix A.

4.0 SCOPE OF SERVICES

The services conducted by UES during our geotechnical exploration were as follows:

- Drilled nine (9) Standard Penetration Test (SPT) borings within the proposed structure, pavement, and exfiltration areas to depths of 15 to 20 feet below existing grades.
- Secured samples of representative soils encountered in the soil borings for review, laboratory analysis and classification by a Geotechnical Engineer.
- Measured the existing site groundwater levels and provide an estimate of the seasonal high groundwater level at the boring locations.
- Conducted laboratory testing on selected soil samples obtained in the field to determine their engineering properties.
- Assessed the existing soil conditions with respect to the proposed construction.
- Prepared a report which documents the results of our exploration and analysis with geotechnical engineering recommendations.

5.0 FIELD EXPLORATION

The nine (9) SPT borings, designated B-01 through B-04 and P-01 through P-05, as shown on the attached Boring Location Plan in Appendix B, were performed in general accordance with the procedures of ASTM D 1586 "Standard Method for Penetration Test and Split-Barrel Sampling of Soils". SPT sampling was performed continuously within the top 10 feet to detect variations in the near surface soil profile and on approximate 5 feet centers thereafter.

The SPT soil borings were performed with a truck-mounted drilling rig. The borings were located using the provided site plan, measuring from existing on-site landmarks shown on an aerial photograph, and by using handheld GPS devices. No survey control was provided prior to performing our field work. Hence, the indicated test boring locations should be considered accurate to the degree of the methodologies used. The approximate boring locations are shown in Appendix B.

Ground surface elevations at the boring locations would be beneficial to help us to identify any anomalies in our measured and estimated seasonal high groundwater levels, as well as improve the usefulness the groundwater information during the civil engineering design of the site.

6.0 LABORATORY TESTING

The soil samples recovered from the test borings were returned to our laboratory and visually classified in general accordance with ASTM D 2487 “Standard Classification of Soils for Engineering Purposes” (Unified Soil Classification System). We selected representative soil samples from the borings for laboratory testing to aid in classifying the soils and to help to evaluate the general engineering characteristics of the site soils. The results of these tests are shown on the boring logs in Appendix B. A summary of the tests performed is shown in Table II.

TABLE II
LABORATORY METHODOLOGIES

Test Performed	Number Performed	Reference
Wash No. 200 Sieve Determination	4	ASTM D 1140 “Standard Test Methods for Amount of Material in Soils Finer than No. 200 (75-µm) Sieve”
Permeability Test	4	Using the D10 method obtained from a Full Gradation
Moisture Content	8	ASTM D 2216 “Laboratory Determination of Water (Moisture) Content of Soil by Mass”

7.0 SUBSURFACE CONDITIONS

7.1 GENERALIZED SOIL PROFILE

The results of our field exploration and laboratory analysis, together with pertinent information obtained from the SPT borings, such as soil profiles, penetration resistance and groundwater levels are shown on the boring logs included in Appendix B. The Key to Boring Logs, Soil Classification Chart is also included in Appendix B. The soil profiles were prepared from field logs after the recovered soil samples were examined by a Geotechnical Engineer. The stratification lines shown on the boring logs represent the approximate boundaries between soil types, and may not depict exact subsurface soil conditions. The actual soil boundaries may be more transitional than depicted. A generalized profile of the soils encountered at our boring locations is presented in Table III on the following page. For detailed soil profile, refer to the attached boring logs.

TABLE III
GENERALIZED SOIL PROFILE

Stratum No.	Typical Depth (feet, bls)		Soil Description	Typical Range of SPT "N" Values
	From	To		
1	Surface	4 to 18½	Very loose to medium dense fine SAND [SP] and fine SAND with silt [SP-SM]	2 to 17
2	4 to 18½	20*	Very loose to very dense silty/clayey fine SAND [SP-SM, SM, SC]	2 to 50+

* denotes maximum termination depth of the borings

7.2 NOTABLE FINDINGS – DENSE SOIL CONDITIONS

A notable finding during the exploration program was the periodic presence of dense to very dense soil conditions observed in borings B-03 and P-05 at depths ranging from approximately 4 to 20 feet below existing grades. The dense to very dense soils had SPT " N" values ranging up to 50+ blows per foot (bpf).

It has been our experience that soils with SPT " N" blow counts in excess of about 25 bpf may prove to be difficult to excavate through with smaller sized equipment. With SPT "N" blow counts exceeding 25 bpf over a portions of the site, difficult excavations should be expected on this site for the installation of underground utilities, stormwater pond excavations and may also be required for foundation excavations. The site contractor should select their equipment appropriately.

8.0 GROUNDWATER CONDITIONS

8.1 EXISTING GROUNDWATER LEVEL

We measured the water levels in the boreholes on February 13 & 14, 2023 during our drilling operations. Groundwater was encountered at depths ranging from approximately 4½ to 7 feet below existing grades at our boring locations at the time of our exploration. The encountered groundwater level at each boring is shown on the individual boring logs in Appendix B.

Fluctuations in groundwater levels should be anticipated throughout the year, primarily due to seasonal variations in rainfall, surface runoff, and other factors that may vary from the time the borings were conducted.

8.2 SEASONAL HIGH GROUNDWATER LEVEL

Based on historical data, the rainy season in Central Florida is between June and October of the year. In order to estimate the seasonal high water level at the boring locations, many factors are examined, including the following:

- Measured groundwater level
- Drainage characteristics of existing soil types
- Current & historical rainfall data
- Natural relief points (such as lakes, rivers, wetlands, etc.)
- Man-made drainage systems (ditches, canals, retention basins, etc.)
- On-site types of vegetation
- Review of available data (soil surveys, USGS maps, etc.)

- Redoximorphic features (mottling, stripping, etc.)

Based on the results of our field exploration and the factors listed above, we expect that the seasonal high groundwater table may form at depths ranging from approximately 2½ to 5 feet below the existing ground surface. The estimated seasonal high groundwater levels at the boring locations are shown on the attached SPT boring logs.

Please note, ground surface elevations at the boring locations would be beneficial to allow us to identify any anomalies in both our measured and estimated seasonal high groundwater levels, as well as improve the usefulness the groundwater information during the civil engineering design of the site.

It should be noted that the estimated seasonal high water levels provided should be considered accurate to about ½ foot +/- and do not provide any assurance that groundwater levels will not exceed these estimated levels during any given year in the future. Should the impediments to surface water drainage be present, or should rainfall intensity and duration, or total rainfall quantities, exceed the normally anticipated rainfall quantities, groundwater levels might exceed our seasonal high estimates. Further, it should be understood that changes in the surface hydrology and subsurface drainage from on-site and/or off-site improvements could have significant effects on the normal and seasonal high groundwater levels.

9.0 FOUNDATION DESIGN RECOMMENDATIONS

The following recommendations are made based upon a review of the attached soil test data, our understanding of the proposed construction, and experience with similar projects and subsurface conditions. The applicability of geotechnical recommendations is very dependent upon project characteristics such as improvement locations, and grade alterations. UES must review the final site and grading plans to validate all recommendations rendered herein.

Additionally, if subsurface conditions are encountered during construction, which were not encountered in the borings, report those conditions immediately to us for observation and recommendations.

9.1 STRUCTURAL AND GRADING INFORMATION

We understand that the proposed project will include the design and construction of a new multi-family residential development located in Orange County, Florida. We were provided with the conceptual site plan showing the proposed development. The site plan identified twenty-four (24) 400 square foot tiny home units, an underground exfiltration system, and associated paved parking and drive areas. We anticipate that minimal (i.e. less than 3 feet of) fill will be necessary to achieve finished grades in the proposed building and pavement areas.

Prior to finalizing any design, the structural/grading information outlined above should be confirmed by the project structural/civil engineer. This is crucial to our evaluation and estimates of settlements. If any of this information is incorrect or if you anticipate any changes, please inform UES immediately so that we may review and modify our recommendations as appropriate.

9.2 ANALYSIS

Based on the results of the soil borings, the near surface soils within the proposed building areas appear to be mostly very loose to medium dense fine SAND [SP, SP-SM] overlying very loose to very dense silty fine SAND [SP-SM, SM] to a depth of 20 feet below grade.

It is our opinion that the proposed structures can be supported on properly designed and constructed shallow foundation systems. Provided that the site preparation recommendations outlined in this report are followed, and any loose surficial soils are properly densified, the parameters outlined below may be used for foundation design.

9.3 BEARING PRESSURE

Provided our suggested site preparation procedures are followed, we recommend designing conventional, shallow footing or post-tensioned slab foundations for a **maximum allowable net soil bearing pressure of 3,000 pounds per square foot (psf)**. The allowable net bearing pressure is that pressure that may be transmitted to the soil in excess of the minimum surrounding overburden pressure.

The allowable bearing pressure should include dead load plus sustained live load. Per the Florida Building Code (FLBC), the foundations should be designed for the most unfavorable effects due to the combinations of loads specified in the FLBC.

9.4 FOUNDATION SIZE

For post-tensioned slab foundations, we recommend a minimum width of 12 inches of the turned down edge of the slab at the bottom, with a 45-degree chamfer to the slab. The minimum width recommended for an isolated column footing is 24 inches. For continuous wall or slab on grade foundations, the minimum footing width should comply with the current FLBC, but under no circumstances should be less than 12 inches. Even though the maximum allowable soil bearing pressure may not be achieved, these width recommendations should control the size of the foundations.

9.5 BEARING DEPTH

The base of all footings should be at least 12 inches below finished grade elevation in accordance with the FLBC. We recommend stormwater and surface water be diverted away from the building exterior, both during and after construction, to reduce the possibility of erosion beneath the exterior footings.

9.6 BEARING MATERIAL

The bearing level soils should exhibit a density of at least 95 percent of the maximum dry density as determined by ASTM D 1557 (Modified Proctor) to a depth of at least **2 feet below foundation** level as described in this report. In addition to compaction, the bearing soils must exhibit stability and be free of "pumping" conditions.

9.7 SETTLEMENT ESTIMATES

Post-construction settlement of the structures will be influenced by several interrelated factors, such as (1) subsurface stratification and strength/compressibility characteristics of the bearing soils to a depth of approximately twice the width of the footing; (2) footing size, bearing level, applied loads, and resulting bearing pressures beneath the foundation; (3) site preparation and earthwork construction techniques used by the contractor, and (4) external factors, including but not limited to vibration from offsite sources and groundwater fluctuations beyond those normally anticipated for the naturally-occurring site and soil conditions which are present.

Our settlement estimates for the structure are based upon adherence to our recommended site preparation procedures presented in this report. Any deviation from these recommendations could result in an increase in the estimated post-construction settlement of the structures.

Furthermore, should building loads change from those assumed by us, greater settlements may be expected.

Due to the sandy nature of the surficial soils, following the compaction operations we expect the majority of settlement to be elastic in nature and occur relatively quickly, on application of the loads, during and immediately following construction. Using the recommended maximum allowable bearing pressure, the assumed maximum structural loads, and the field and laboratory test data which we have correlated into the strength and compressibility characteristics of the subsurface soils, **we estimate the total post-construction vertical settlement of the proposed structures to be on the order of 1 inch or less.**

Differential settlement results from differences in applied bearing pressures and the variations in the compressibility characteristics of the subsurface soils. Assuming our site preparation recommendations are followed, **we anticipate post-construction differential settlement of less than ½ inch.**

9.8 FLOOR SLABS

Conventional floor slabs may be supported upon the compacted fill and should be structurally isolated from other foundation elements or adequately reinforced to prevent distress due to differential movements. For the slab design, we recommend using a subgrade modulus (k) of 100 pounds per cubic inch, which can be achieved by compacting the subgrade soils as recommended in this report. We recommend using a sheet vapor barrier (in accordance with Florida Building Code requirements) beneath the building slab-on-grade to help control moisture migration through the slab.

10.0 PAVEMENT RECOMMENDATIONS

10.1 GENERAL

We assume that the proposed parking and drive areas will consist of a combination of flexible asphaltic and rigid concrete pavement sections with typical light and some heavy duty traffic. Our recommendations for both pavement types are listed in the following sections. The following recommendations are based on the pavement areas being prepared as recommended in this report.

10.2 ASPHALTIC PAVEMENTS

10.2.1 Layer Components

At the time of this exploration, specific traffic loading information was not provided to us. We have assumed the following conditions for our recommended minimum pavement design.

- the subgrade soils are prepared as described in the Site Preparation section of this report
- a twenty (20) year design life
- terminal serviceability index (P_t) of 2.5
- reliability of 90 percent
- total equivalent 18-kip single axle loads (E_{18}SAL) up to 35,000 for light duty pavements - car and pickup truck traffic
- total equivalent 18-kip single axle loads (E_{18}SAL) up to 250,000 for heavy duty pavements – occasional heavy truck traffic (delivery, trash collection, service lanes, etc.)

We recommend using a three-layer pavement section for the proposed asphaltic parking/drive areas consisting of stabilized subgrade, base course, and surface course. Based on the results of our soil borings, the assumed traffic loading information and review of the 2020 FDOT Flexible Pavement Design Manual, our minimum recommended pavement component thicknesses are presented in Table IV below. Where applicable, the local municipality minimum standards should be followed when more stringent than the recommendations herein.

TABLE IV
MINIMUM ASPHALTIC PAVEMENT COMPONENT THICKNESSES

Service Level	Layer Component		
	Surface Course (inches)	Base Course (inches)	Stabilized Subgrade (inches)
Light Duty	1½	6	12
Heavy Duty	2½	8	12

10.2.2 Subgrade

We recommend that the stabilized subgrade materials immediately beneath the base course exhibit a minimum Limerock Bearing Ratio (LBR) of 40 as specified by Florida Department of Transportation (FDOT). The stabilized subgrade should be compacted to at least 98 percent of the Modified Proctor maximum dry density (ASTM D 1557) value.

Stabilized subgrade can be imported materials or a blend of on-site and imported materials. If a blend is proposed, we recommend that the contractor perform a mix design to find the optimum mix proportions.

Compaction testing of the subgrade should be performed to full depth at a frequency of at least one (1) test per 5,000 square feet.

10.2.3 Base Course

Based on the results of our exploration and our experience in the project area, limerock, soil-cement, and recycled crushed concrete are suitable base course materials for this project. However, local municipality standards may govern the use of recycled crushed concrete use as an alternative base course material. We recommend the civil engineer consult with the local municipalities prior to selecting the base course material for this project.

For a limerock base, the base course should be compacted to a minimum density of 98 percent of the Modified Proctor maximum dry density and exhibit a minimum LBR of 100. The limerock material should comply with the latest edition of the Florida Department of Transportation (FDOT) Road and Bridge Construction specifications.

For a soil-cement base, we recommend the contractor perform a soil-cement design with a minimum seven (7)-day strength of 300 pounds per square inch (psi) on the materials he intends to use. Place soil-cement in maximum 6-inch lifts uniform and compact in place to a minimum density of 95 percent of the maximum dry density according to specifications in ASTM D-558, “Moisture Density Relations of Soil Cement Mixtures”.

Place and finish the soil-cement according to Portland Cement Association requirements. Final review of the soil-cement base course should include manual "chaining" and/or "soundings"

seven days after placement. Shrinkage cracks will form in the soil-cement mixture and you should expect reflection cracking on the surface course.

Recycled Concrete Aggregate (RCA) may provide a cost-effective alternative material in lieu of limerock or soil cement base courses. Local availability, along with municipality standards, typically governs the use of crushed concrete use as an alternative base course material. The advantages of using crushed concrete as a pavement base course include its high strength (stronger than limerock), resistance to groundwater related distress, and lack of reflection cracking caused by thermal expansion and contraction.

If RCA base is used, the base course material should be sourced from an FDOT approved supplier. The base should be compacted to a minimum density of 98 percent of the Modified Proctor maximum dry density and exhibit a minimum LBR of 150. The base material should comply with the latest edition of the FDOT Road and Bridge Construction Specifications.

Compaction testing of the base course should be performed to full depth at a frequency of at least one (1) test per 5,000 square feet,

10.2.4 Surface Course

For the pavements, we recommend that the surfacing consist of FDOT SuperPave (SP) asphaltic concrete. The surface course should consist of FDOT SP-9.5 fine mix for light-duty areas and FDOT SP-12.5 topped with SP-9.5 fine mix for heavy duty areas. The asphalt concrete should be placed within the allowable lift thicknesses for fine Type SP mixes per the latest edition of FDOT, Standard Specifications for Road and Bridge Construction.

The asphaltic concrete should be compacted to an average field density of 93 percent of the laboratory maximum density determined from specific gravity (G_{mm}) methods, with an individual test tolerance of **+2 percent and -1.2% of the design G_{mm}**. Specific requirements for the SuperPave asphaltic concrete structural course are outlined in the latest edition of FDOT, Standard Specifications for Road and Bridge Construction.

Note: If the Designer (or Contract Documents) limits compaction to the static mode only or lifts are placed one-inch thick, then the average field density should be 92 percent, with an individual test tolerance of + 3 percent, and -1.2% of the design G_{mm}.

After placement and field compaction, the wearing surface should be cored to evaluate material thickness and density. Cores should be obtained at frequencies of at least one (1) core per 5,000 square feet of placed pavement, or a minimum of two (2) cores per day's production.

10.2.5 Effects of Groundwater

One of the most critical influences on the pavement performance in Central Florida is the relationship between the pavement base course and the seasonal high groundwater level. Sufficient separation will need to be maintained between the bottom of base course and the anticipated seasonal high groundwater level. We recommend that the seasonal high groundwater and the bottom of the base course be separated by at least 12 inches for RCA and soil-cement base courses, and at least 18 inches for a limerock base course.

The separation should be confirmed by reviewing the final site grading and paving plan. If the separation is not provided by grading, the installation of underdrains will be required.

10.2.6 Landscape Underdrains

In the event that landscape areas adjacent to the pavements include large mounds (>1 foot) of poorly draining organic topsoils or silty/clayey sands, we recommend that landscape drains be provided to protect the roadway against adverse effects from over-irrigation or excess rainfall. Poorly draining silty and clayey material causes the irrigation and rainwater to perch and migrate laterally into the pavement components, which eventually compromises the integrity of the pavement section.

10.3 CONCRETE "RIGID" PAVEMENTS

Concrete pavement is a rigid pavement that transfers much lighter wheel loads to the subgrade soils than a flexible asphalt pavement; therefore, requiring less subgrade preparation. Concrete pavement is recommended in truck court areas, under the dumpster areas, and 10 feet in front of the trash enclosures, at a minimum.

We recommend using the existing surficial sands or approved structural fill densified to at least 98 percent of Modified Proctor test maximum dry density (ASTM D 1557) without additional stabilization under concrete pavement, with the following stipulations:

1. Prior to placement of concrete, the subgrade soils should be prepared as recommended in The Site Preparation section of this report

2. The surface of the subgrade soils must be smooth, and any disturbances or wheel rutting corrected prior to placement of concrete.

3. The subgrade soils must be moistened prior to placement of concrete.

4. Concrete pavement thickness should be uniform throughout, with exception to the thickened edges (curb or footing).

5. The bottom of the pavement should be separated from the seasonal high groundwater level by at least 12 inches.

Based on the results of our exploration and review of the FDOT Rigid Pavement Design Manual, our recommended minimum concrete pavement design is shown in Table V below.

TABLE V
MINIMUM CONCRETE PAVEMENT THICKNESSES

Service Level	Minimum Pavement Thickness	Maximum Control Joint Spacing	Recommended Saw Cut Depth
Light Duty	6 inches	12 feet x 12 feet	2 inches
Heavy Duty	7 inches	14 feet x 14 feet	2⅓ inches

We recommend using concrete with a minimum 28-day compressive strength of at least 4,000 pounds per square inch. Layout of the Saw cut control joints should form square panels, and the depth of saw cut joints should be ⅓ of the concrete slab thickness.

We recommend allowing UES to review and comment on the final concrete pavement design, including section and joint details (type of joints, joint spacing, etc.), prior to the start of construction.

For further details on concrete pavement construction, please reference the "Guide to Jointing of Non-Reinforced Concrete Pavements" published by the Florida Concrete and Products Association, Inc., and "Building Quality Concrete Parking Areas", published by the Portland Cement Association.

Specimens to verify the compressive strength of the pavement concrete should be obtained for at least every 50 cubic yards, or at least once for each day's placement, whichever is greater.

11.0 SITE PREPARATION

We recommend normal, good practice site preparation procedures for the new construction areas. These procedures include: stripping/clearing of the site to remove existing vegetation, roots, topsoils, organics, pavement, structures, debris, utility lines, etc. Following stripping, the exposed subgrade soils should be proof-rolled, and all subgrade and subsequent fill/backfill soils should be properly densified. A more detailed description of this work is presented in this section.

1. Prior to construction, existing underground utility lines within the construction areas should be located. It should be noted that if underground pipes are not properly removed or plugged, they may serve as conduits for subsurface erosion which may lead to excessive settlement of overlying structures.

2. Perform any necessary remedial dewatering prior to any earthwork operations. Dewatering should be performed to a depth of at least **2 feet below the bottom of any excavations or compacted surface**.

3. Strip the proposed construction limits of existing vegetation, topsoil, roots, organic soils, debris and other deleterious materials within and 5 feet beyond the perimeter of the new construction areas. Expect clearing and grubbing to depths of 6 to 12 inches. We strongly recommend that the stripped/excavated surfaces be observed and probed by representatives of UES.

4. Proof-roll the exposed subsurface soils under the observation of UES, to locate any soft areas of unsuitable soils, and to increase the density of the shallow loose fine sand soils. If deemed necessary by UES, in areas that continue to "yield", remove any deleterious materials and replace with a clean, compacted sand backfill.

5. After approval of the stripped surface, within the building areas, compact the upper **2 feet of the exposed subgrade soils** (including the 5 feet margin) to at least 95 percent of the Modified Proctor test maximum dry density (ASTM D 1557).

6. Place fill/backfill as necessary. All fill should consist of clean sand with less than 10 percent soil fines and be free of organics, debris and other deleterious materials. Fill soils containing between 5 and 10 percent fines may require strict moisture control. Place fill in maximum 12-inch loose, uniform lifts and compact each lift at least 95 percent of the Modified Proctor maximum dry density.

7. Within the pavement areas, the upper 12 inches of subgrade beneath the base course or concrete slabs (sub-base) should be stabilized and compacted to at least 98 percent of the Modified Proctor maximum dry density.

8. Test the subgrade and each lift of fill for compaction at a frequency of not less than one test per 2,500 square feet in the building areas and 5,000 square feet of pavement areas, with a minimum of 4 tests in each area.

9. Prior to the placement of reinforcing steel and concrete, verify compaction within the footing trenches to a depth of 2 feet. We recommend testing every column footing and at least one test every 100 feet of wall footing, with a minimum of 4 tests per building. Re-compaction of the foundation excavation bearing level soils, if loosened by the excavation process, can typically be achieved by making several passes with a walk-behind vibratory sled or jumping jack.

Stability of the compacted soils is essential and independent of compaction and density control. If the near surface soils or the structural fill experience “pumping” conditions, terminate all earthwork activities in that area. Pumping conditions occur when there is too much water present in the soil-water matrix. Earthwork activities are actually attempting to compact the water and not the soil. The disturbed soils should be dried in place by scarification and aeration prior to any additional earthwork activities.

Vibrations produced during vibratory compaction operations at the site may be significantly noticeable within 100 feet and may cause distress to adjacent structures if not properly regulated. Provisions should be made to monitor these vibrations so that any necessary modifications in the compaction operations can be made in the field before potential damages occur. UES can provide vibration monitoring services to help document and evaluate the effects of the surface compaction operation on existing structures. It is recommended that large vibratory rollers remain a minimum of 50 feet from existing structures. Within this zone, the use of a static roller or small hand guided plate compactors is recommended.

12.0 STORMWATER MANAGEMENT DESIGN

We understand that this project will include an exfiltration system below the proposed pavement areas of the site. Four (4) soil borings, designated P-01 and P-03 through P-05, were performed within the proposed stormwater exfiltration footprint. Our recommended design parameters are shown in Table VI below.

TABLE VI
STORMWATER MANAGEMENT DESIGN PARAMETERS

Design Parameter	Estimated Values			
Relevant Boring Logs	P-01	P-03	P-04	P-05
Estimated Depth to Base of Surficial Aquifer (feet)	7*	13½*	15**	4*
Estimated Fillable Porosity of Surficial in-situ sands (percent)	20	20	20	20
Estimated Seasonal High Groundwater Level (feet)	4	4	2½	3½
Estimated Avg. Horizontal Saturated Hydraulic Conductivity of Surficial Aquifer (feet per day)	8	13	10	8
Estimated Vertical Unsaturated Hydraulic Conductivity of Surficial Aquifer (feet per day)	5	9	6	5

*Depth to base of surficial aquifer based on depth to hydraulically restrictive silty soil [SM].
**Depth to base of surficial aquifer based on termination depth of borings.

Please note that the depths presented in Table VI are referenced to the existing ground surface at the time of our exploration. The hydraulic conductivity values were based on results of laboratory testing. Appropriate factors of safety should be included in the design. UES can perform the drawdown/recovery analyses once the final system configurations and treatment volumes are established, if desired.

13.0 SUITABILITY OF EXCAVATED SOIL FOR USE AS FILL

The soils excavated from stormwater management areas are usually re-used as structural fill throughout the development. Table VII on the following page lists the suitability of materials for use as structural fill based on percent fines content.

TABLE VII
SUITABILITY OF EXCAVATED MATERIAL FOR USE AS FILL

Designation	USCS Soil Classification	% Fines Passing No. 200 Sieve	Suitability for Use as Structural Fill
Group A	SP	0-5	Favorable, freely draining, “clean” sands
Group B	SP-SC, SP-SM	5-12	Suitable, will require aeration and moisture control, may require underdrains
Group C	SM, SC, SC-SM	12-20	Poor, impedes infiltration, limit overall use, extremely sensitive to water, do not use in pavement or pond areas, will require underdrains if used.
Group D	SM, SC, SC-SM, CH, MH	>20	Very Poor, not recommended for structural fill, may be used as stabilizing material in pavement subgrade
Group E	PT, OL, SM-OL	Organic	Unsuitable, must be completely removed and replaced with Group A or B soils

Based on the results of our soil borings and laboratory testing program, the soils encountered within the proposed stormwater management areas generally consist of “Group A” and “Group B” soils overlying “Group C” and “Group D” soils to the boring termination depths of 15 feet below existing ground surface, as shown on the boring logs in Appendix B.

Clean sandy soils (Group A) with less than 5 percent soil fines are best suited for fill usage, since they are typically free-draining and require minimal moisture control during placement and compaction. The sands with silt and clay (Group B), with contents of 6 to 12 percent soil fines, will require some extra care during placement and compaction. These soils are less freely-draining and might require aeration and drying prior to usage, during use in the rainy season and when placed near the groundwater table. We recommend that imported fill material meet the Group A and Group B qualifications.

Soils classified as silty or clayey, Group C (greater than 12 percent fines, but less than or equal to 20 percent fines), may impede infiltration and cause a perched water condition, especially when compacted. Although not preferable, these soils may be used by contractors experienced with using these materials as fill. These materials require stringent moisture control during stockpiling, placement and compaction. They will also be problematic during compaction. These soils dry very slowly and will have to be compacted with no vibration (a sheep foot roller, for example) in smaller, 6 inch compacted lifts. A more common use for these materials is in construction of stabilized subgrade.

Soils classified as silty or clayey, Group D (greater than 20 percent fines), will impede infiltration and cause a perched water condition. We do not recommend using these soils as structural fill material as they will require stringent moisture control during stockpiling, placement and compaction. They will also be problematic during compaction. Group D soils also dry very slowly and will have to be compacted with no vibration (a sheep foot roller, for example) in smaller, 6 inch compacted lifts.

Soils containing organic materials, Group E, may not be used as structural fill. These materials may only be used in non-structural areas such as green areas or landscaping. We do not recommend that these materials are placed directly beneath sodded areas if they contain significant amounts of organic materials. Highly organic soils are typically poor drainage materials, and may cause ponding or wetness for some time following rain events if placed directly beneath sod.

14.0 DEWATERING AND EXCAVATION CONSIDERATIONS

Depending upon the time of year construction commences and the depth of excavation required, some dewatering **may be** required for the successful construction of this project. Where excavations will extend only a few feet below the groundwater table, a sump pump may be sufficient to control the groundwater table. Deeper excavations may require well points and/or sock drains to control the groundwater table. Regardless of the method(s) used, we recommend drawing down the water level at least 2 feet below the bottom of the excavation. The actual method(s) of dewatering should be determined by the contractor. The design and discharge of the dewatering system must be performed in accordance with applicable regulatory criteria (i.e. water management district, etc.) and compliance with such criteria is the sole responsibility of the contractor.

Excavations should be sloped as necessary to prevent slope failure and to allow backfilling. As a minimum, temporary excavations below 4-foot depth should be sloped in accordance with OSHA regulations. Where lateral confinement will not permit slopes to be laid back, the excavation should be shored in accordance with OSHA requirements. During excavation, excavated material should not be stockpiled at the top of the slope within a horizontal distance equal to the excavation depth. Provisions for maintaining workman safety within excavations is the sole responsibility of the contractor.

15.0 CONSTRUCTION RELATED SERVICES

We recommend the owner retain UES to provide inspection services during the site preparation procedures for confirmation of the adequacy of the earthwork operations. Field tests and observations include verification of foundation and pavement subgrades by monitoring earthwork operations and performing quality assurance tests of the placement of compacted structural fill courses.

The geotechnical engineering design does not end with the advertisement of the construction documents. The design is an on-going process throughout construction. Because of our familiarity with the site conditions and the intent of the engineering design, we are most qualified to address site problems or construction changes, which may arise during construction, in a timely and cost-effective manner.

16.0 LIMITATIONS

This report has been prepared for the exclusive use of ***ELP Global, PLLC*** and other designated members of their design/construction team associated with the proposed construction for the specific project discussed in this report. No other site or project facilities should be designed using the soil information contained in this report. As such, UES will not be responsible for the performance of any other site improvement designed using the data in this report.

This report should not be relied upon for final design recommendations or professional opinions by unauthorized third parties without the expressed written consent of UES. Unauthorized third parties that rely upon the information contained herein without the expressed written consent of UES assume all risk and liability for such reliance.

The recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated on the Boring Location Plan and from other information as referenced. This report does not reflect any variations which may occur between the boring locations. The nature and extent of such variations may not become evident until the course of construction. If variations become evident, it will then be necessary for a re-evaluation of the recommendations of this report after performing on-site observations during the construction period and noting the characteristics of the variations.

Borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, UES does not recommend relying on our boring information for estimation of material quantities unless our contracted services ***specifically*** include sufficient exploration for such purpose(s) and within the report we so state that the level of exploration provided should be sufficient to detect anomalous conditions or estimate such quantities. Therefore, UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.

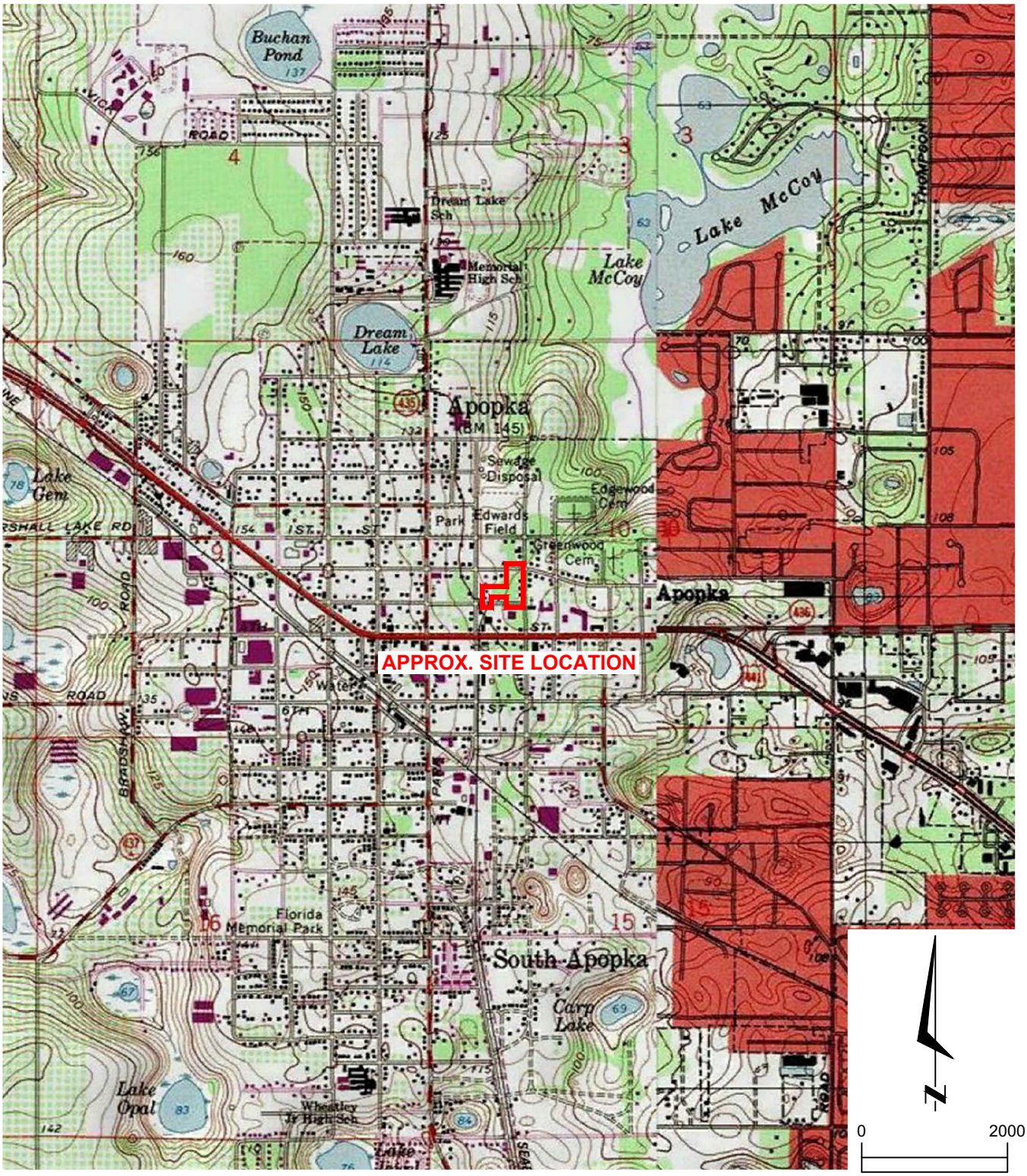
All users of this report are cautioned that there was no requirement for UES to attempt to locate any man-made buried objects or identify any other potentially hazardous conditions that may exist at the site during the course of this exploration. Therefore, no attempt was made by UES to locate or identify such concerns. UES cannot be responsible for any buried man-made objects or environmental hazards which may be subsequently encountered during construction that are not discussed within the text of this report. We can provide this service if requested.

During the early stages of most construction projects, geotechnical issues not addressed in this report may arise. Because of the natural limitations inherent in working with the subsurface, it is not possible for a geotechnical engineer to predict and address all possible problems. Geotechnical Business Council (GBC) publication, "Important Information About This Geotechnical Engineering Report" appears in Appendix, and will help explain the nature of geotechnical issues.

Further, we present documents in Appendix: Constraints and Restrictions, to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

* * * * * * * * * *

APPENDIX A



SOURCE: USGS QUADRANGLE MAP OF "APOPKA, FLORIDA".

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ENGINEERING SCIENCES

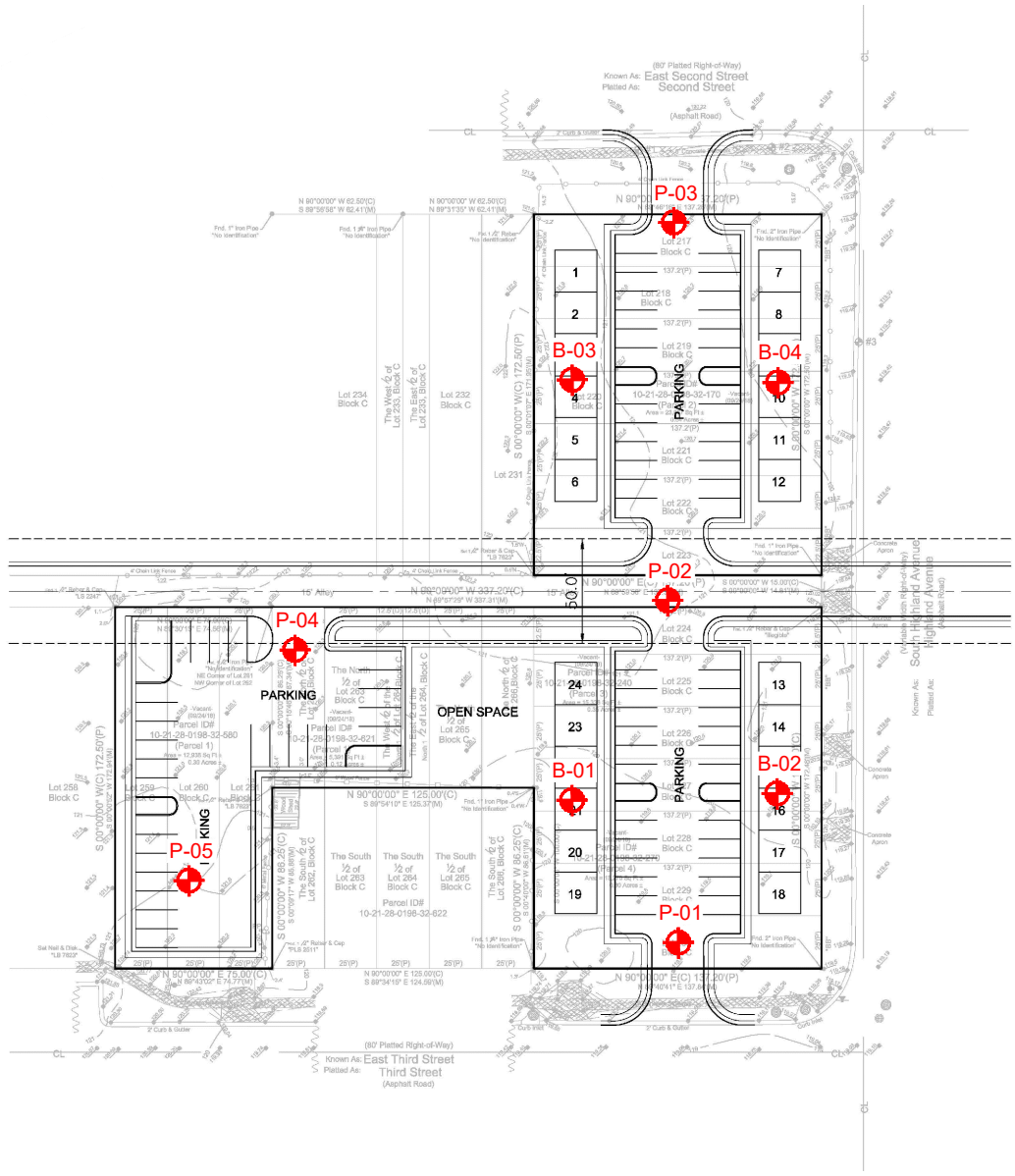
GEOTECHNICAL EXPLORATION
APOPKA MULTI-FAMILY DEVELOPMENT
ORANGE COUNTY, FLORIDA

SITE LOCATION MAP

DRAWN BY:	N.F.	DATE:	2 - 15 - 2023	CHECKED BY:	Z.W.A.	DATE:	2 - 17 - 2023
SCALE:	AS SHOWN	PROJECT NO:	0130.2300032.0000	REPORT NO:	2003253	PAGE NO:	A-1

23-0084-01

APPENDIX B



LEGEND

APPROX. STANDARD PENETRATION TEST BORING LOCATION (SPT) PERFORMED 2/13/2023 - 2/14/2023

0 150

SCALE (FT.)

N

THIS DRAWING CREATED USING PLAN PROVIDED BY CLIENT.

UNIVERSAL ENGINEERING SCIENCES

GEOTECHNICAL EXPLORATION
APOPKA MULTI-FAMILY DEVELOPMENT
ORANGE COUNTY, FLORIDA

BORING LOCATION PLAN

DRAWN BY:	N.F.	**DATE:**	2 - 15 - 2023	**CHECKED BY:**	Z.W.A.	**DATE:**	2 - 17 - 2023
SCALE:	AS SHOWN	**PROJECT NO:**	0130.2300032.0000	**REPORT NO:**	2003253	**PAGE NO:**	B-1

23-0084-01

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0130.2300032.0000
REPORT NO.:	2003253
PAGE:	B-2.1

PROJECT: GEOTECHNICAL EXPLORATION
APOPKA MULTI-FAMILY DEVELOPMENT
ORANGE COUNTY, FLORIDA

BORING I.D.: **B-01** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: ELP GLOBAL, PLLC

LOCATION: SEE BORING LOCATION PLAN

REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): 6.0
DATE OF READING: 2/13/2023
EST. SHGWT (ft): 4.0

DATE STARTED: 2/13/23
DATE FINISHED: 2/13/23
DRILLED BY: ORL - AI/MW
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Loose dark grey fine SAND [SP]						
		2-2-2	4									
						Very loose brown fine SAND with silt [SP-SM]						
		2-2-2	4	▽			6	7				
5		2-1-2	3									
				▼		Very loose grey brown silty fine SAND [SM]						
		1-1-1	2			-- brown						
		1-1-2	3			-- loose, dark brown						
10		2-3-5	8									
						-- medium dense						
15		8-7-10	17									
						Medium dense grey brown fine SAND with silt [SP-SM]						
20		9-11-13	24			BORING TERMINATED AT 20.0 FEET						

W-12639.GPJ

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0130.2300032.0000
REPORT NO.:	2003253
PAGE:	B-2.2

PROJECT: GEOTECHNICAL EXPLORATION
APOPKA MULTI-FAMILY DEVELOPMENT
ORANGE COUNTY, FLORIDA

BORING I.D.: **B-02** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: ELP GLOBAL, PLLC

LOCATION: SEE BORING LOCATION PLAN

REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): 6.5
DATE OF READING: 2/13/2023
EST. SHGWT (ft): 4.5

DATE STARTED: 2/13/23
DATE FINISHED: 2/13/23
DRILLED BY: ORL - AI/MW
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Loose grey brown fine SAND [SP]						
		3-4-4	8									
						-- brown						
		4-3-1	4									
				▽		-- very loose						
5		1-1-2	3									
						Loose brown fine SAND with silt [SP-SM]						
				▼		-- dark brown	11	24				
		3-2-3	5			Loose dark brown silty fine SAND [SM]						
		2-2-2	4									
10		3-5-4	9									
						Medium dense dark brown fine SAND with silt [SP-SM]						
15		7-6-10	16									
						-- grey brown						
20		8-8-13	21			BORING TERMINATED AT 20.0 FEET						

W-12639.GPJ

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0130.2300032.0000
REPORT NO.:	2003253
PAGE:	B-2.3

PROJECT: GEOTECHNICAL EXPLORATION
APOPKA MULTI-FAMILY DEVELOPMENT
ORANGE COUNTY, FLORIDA

BORING I.D.: **B-03** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: ELP GLOBAL, PLLC

LOCATION: SEE BORING LOCATION PLAN

REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): 5.0
DATE OF READING: 2/13/2023
EST. SHGWT (ft): 3.0

DATE STARTED: 2/13/23
DATE FINISHED: 2/13/23
DRILLED BY: ORL - AI/MW
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Loose grey fine SAND [SP]						
		3-2-2	4									
				▽		-- light brown						
		2-2-2	4									
						Loose light brown fine SAND with silt [SP-SM]						
5				▼			8	7				
		2-2-2	4									
						-- dark brown						
		3-3-4	7									
						Medium dense dark brown silty fine SAND [SM]						
		4-4-15	19									
						-- very dense						
10		50/6"	50/6"									
						Very dense red brown fine SAND with silt [SP-SM]						
15		26-50/5"	50/5"									
						Medium dense brown silty fine SAND [SM]						
20		13-11-17	28									
						BORING TERMINATED AT 20.0 FEET						

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UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0130.2300032.0000
REPORT NO.:	2003253
PAGE:	B-2.4

PROJECT: GEOTECHNICAL EXPLORATION
APOPKA MULTI-FAMILY DEVELOPMENT
ORANGE COUNTY, FLORIDA

BORING I.D.: **B-04** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: ELP GLOBAL, PLLC

LOCATION: SEE BORING LOCATION PLAN

REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): 7.0
DATE OF READING: 2/13/2023
EST. SHGWT (ft): 5.0

DATE STARTED: 2/13/23
DATE FINISHED: 2/13/23
DRILLED BY: ORL - AI/MW
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Loose grey fine SAND [SP]						
		2-2-2	4			-- grey brown						
		2-2-2	4			-- brown						
5				▽								
		2-2-2	4			Loose dark brown fine SAND with silt [SP-SM]						
		2-2-3	5	▼			8	7				
		3-2-3	5									
10		3-3-3	6									
						-- medium dense						
15		7-6-10	16									
						Medium dense light brown silty fine SAND [SM]						
20		8-11-13	25			BORING TERMINATED AT 20.0 FEET						

W-12639.GPJ

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0130.2300032.0000
REPORT NO.:	2003253
PAGE:	B-2.5

PROJECT: GEOTECHNICAL EXPLORATION
APOPKA MULTI-FAMILY DEVELOPMENT
ORANGE COUNTY, FLORIDA

BORING I.D.: **P-01** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: ELP GLOBAL, PLLC

LOCATION: SEE BORING LOCATION PLAN

REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): 6.0
DATE OF READING: 2/14/2023
EST. SHGWT (ft): 4.0

DATE STARTED: 2/14/23
DATE FINISHED: 2/14/23
DRILLED BY: ORL - AI/MW
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Loose grey fine SAND with silt [SP-SM]						
		2-2-2	4			-- very loose	9	5			8	
		2-1-1	2	▽		-- loose, mix brown						
5		1-2-2	4									
				▼		-- grey brown						
		2-2-6	8			Loose dark brown silty fine SAND [SM]						
		6-4-4	8									
10		4-2-3	5									
						-- medium dense						
15		7-10-11	21			BORING TERMINATED AT 15.0 FEET						
20												

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UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0130.2300032.0000
REPORT NO.:	2003253
PAGE:	B-2.6

PROJECT: GEOTECHNICAL EXPLORATION
APOPKA MULTI-FAMILY DEVELOPMENT
ORANGE COUNTY, FLORIDA

BORING I.D.: **P-02** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: ELP GLOBAL, PLLC

LOCATION: SEE BORING LOCATION PLAN

REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): 7.0
DATE OF READING: 2/13/2023
EST. SHGWT (ft): 5.0

DATE STARTED: 2/13/23
DATE FINISHED: 2/13/23
DRILLED BY: ORL - AI/MW
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Loose grey brown fine SAND [SP]						
		2-2-2	4			-- very loose, light brown						
		2-2-1	3			-- loose						
5				▽								
		1-2-2	4			Loose mix brown fine SAND with silt [SP-SM]						
		2-2-2	4	▼		-- very loose, brown						
		2-2-1	3									
10		1-1-2	3									
						Medium dense brown clayey fine SAND [SC]						
15		5-6-6	12			BORING TERMINATED AT 15.0 FEET						
20												

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UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0130.2300032.0000
REPORT NO.:	2003253
PAGE:	B-2.7

PROJECT: GEOTECHNICAL EXPLORATION
APOPKA MULTI-FAMILY DEVELOPMENT
ORANGE COUNTY, FLORIDA

BORING I.D.: **P-03** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: ELP GLOBAL, PLLC

LOCATION: SEE BORING LOCATION PLAN

REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): 6.0
DATE OF READING: 2/13/2023
EST. SHGWT (ft): 4.0

DATE STARTED: 2/13/23
DATE FINISHED: 2/13/23
DRILLED BY: ORL - AI/MW
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Loose grey brown fine SAND [SP]						
		3-3-3	6			-- very light grey						
		3-3-3	6	▽		Loose brown fine SAND with silt [SP-SM]						
5							6	3			13	
		3-2-3	5	▼								
		3-2-2	4									
		2-2-3	5			-- veyr loose, grey brown						
10		3-1-1	2									
						Loose dark brown silty fine SAND [SM]						
15		5-4-6	10			BORING TERMINATED AT 15.0 FEET						
20												

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UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0130.2300032.0000
REPORT NO.:	2003253
PAGE:	B-2.8

PROJECT: GEOTECHNICAL EXPLORATION
APOPKA MULTI-FAMILY DEVELOPMENT
ORANGE COUNTY, FLORIDA

BORING I.D.: **P-04** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: ELP GLOBAL, PLLC

LOCATION: SEE BORING LOCATION PLAN

REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): 4.5
DATE OF READING: 2/14/2023
EST. SHGWT (ft): 2.5

DATE STARTED: 2/14/23
DATE FINISHED: 2/14/23
DRILLED BY: ORL - AI/MW
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Loose dark grey fine SAND [SP]						
		2-2-2	4	▽								
						Loose brown fine SAND with silt [SP-SM]						
		2-2-4	6	▼			8	9			10	
5		3-2-3	5			-- dark brown						
		3-3-4	7									
		4-4-6	10			-- medium dense, grey brown						
10		7-6-6	12									
15		7-8-9	17			BORING TERMINATED AT 15.0 FEET						
20												

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UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0130.2300032.0000
REPORT NO.:	2003253
PAGE:	B-2.9

PROJECT: GEOTECHNICAL EXPLORATION
APOPKA MULTI-FAMILY DEVELOPMENT
ORANGE COUNTY, FLORIDA

BORING I.D.: **P-05** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: ELP GLOBAL, PLLC

LOCATION: SEE BORING LOCATION PLAN

REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): 5.5
DATE OF READING: 2/14/2023
EST. SHGWT (ft): 3.5

DATE STARTED: 2/14/23
DATE FINISHED: 2/14/23
DRILLED BY: ORL - AI/MW
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Medium dense brown fine SAND [SP]						
		6-6-6	12									
						Medium dense brown fine SAND with silt [SP-SM]						
		5-4-11	15	▽			9	11			8	
						Dense red brown silty fine SAND [SM]						
5		13-15-21	36	▼								
		17-18-25	43									
		21-20-26	46			-- medium dense						
10		11-9-9	18									
15		6-7-10	17			BORING TERMINATED AT 15.0 FEET						
20												

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UNIVERSAL
ENGINEERING SCIENCES

KEY TO BORING LOGS

SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION
N-Value	No. of Blows of a 140-lb. Weight Falling 30 Inches Required to Drive a Standard Spoon 1 Foot
WOR	Weight of Drill Rods
WOH	Weight of Drill Rods and Hammer
	Sample from Auger Cuttings
	Standard Penetration Test Sample
	Thin-wall Shelby Tube Sample (Undisturbed Sampler Used)
RQD	Rock Quality Designation
	Stabilized Groundwater Level
	Seasonal High Groundwater Level (also referred to as the W.S.W.T.)
NE	Not Encountered
GNE	Groundwater Not Encountered
BT	Boring Terminated
-200 (%)	Fines Content or % Passing No. 200 Sieve
MC (%)	Moisture Content
LL	Liquid Limit (Atterberg Limits Test)
PI	Plasticity Index (Atterberg Limits Test)
NP	Non-Plastic (Atterberg Limits Test)
K	Coefficient of Permeability
Org. Cont.	Organic Content
G.S. Elevation	Ground Surface Elevation

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% retained on the No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels and gravel-sand-silt mixtures
			GC	Clayey gravels and gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS 5% or less passing No. 200 sieve	SW**	Well-graded sands and gravelly sands, little or no fines
			SP**	Poorly graded sands and gravelly sands, little or no fines
		SANDS with 12% or more passing No. 200 sieve	SM**	Silty sands, sand-silt mixtures
			SC**	Clayey sands, sand-clay mixtures
FINE-GRAINED SIOLS 50% or more passes the No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diamicaceous fine sands or silts, elastic silts
			CH	Inorganic clays or clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
			PT	Peat, muck and other highly organic soils

*Based on the material passing the 3-inch (75 mm) sieve
** Use dual symbol (such as SP-SM and SP-SC) for soils with more than 5% but less than 12% passing the No. 200 sieve

RELATIVE DENSITY
(Sands and Gravels)
Very loose – Less than 4 Blow/Foot
Loose – 4 to 10 Blows/Foot
Medium Dense – 11 to 30 Blows/Foot
Dense – 31 to 50 Blows/Foot
Very Dense – More than 50 Blows/Foot

CONSISTENCY
(Silts and Clays)
Very Soft – Less than 2 Blows/Foot
Soft – 2 to 4 Blows/Foot
Firm – 5 to 8 Blows/Foot
Stiff – 9 to 15 Blows/Foot
Very Stiff – 16 to 30 Blows/Foot
Hard – More than 30 Blows/Foot

RELATIVE HARDNESS
(Limestone)
Soft – 100 Blows for more than 2 Inches
Hard – 100 Blows for less than 2 Inches

MODIFIERS

These modifiers Provide Our Estimate of the Amount of Minor Constituents (Silt or Clay Size Particles) in the Soil Sample
Trace – 5% or less
With Silt or With Clay – 6% to 11%
Silty or Clayey – 12% to 30%
Very Silty or Very Clayey – 31% to 50%

These Modifiers Provide Our Estimate of the Amount of Organic Components in the Soil Sample
Trace – Less than 3%
Few – 3% to 4%
Some – 5% to 8%
Many – Greater than 8%

These Modifiers Provide Our Estimate of the Amount of Other Components (Shell, Gravel, Etc.) in the Soil Sample
Trace – 5% or less
Few – 6% to 12%
Some – 13% to 30%
Many – 31% to 50%

APPENDIX C

UNIVERSAL
ENGINEERING SCIENCES

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
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CONSTRAINTS & RESTRICTIONS

The intent of this document is to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.

UNIVERSAL
ENGINEERING SCIENCES

FINAL CONSTRUCTION PLANS
for
MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

PARCEL ID
Parcel 1 12-21-27-0000-00-011
Parcel 2 12-21-27-0000-00-012
Parcel 3 12-21-27-0000-00-013
Parcel 4 12-21-27-0000-00-007
Parcel 5 12-21-27-0000-00-008

DEVELOPER:
BPG APOPKA PROPERTIES, LLC.
1540 GENESSEE STREET,
KANSAS CITY, MO. 64102
CONTACT: ERIC WYANCKO
PHONE: 913-333-9196
EMAIL: ERIC.WYANCKO@BLUESCOPEPROPERTIES.COM

ENGINEER:
DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD, SUITE 241
ORLANDO, FL 32828
CONTACT: DAVE SCHMITT, P.E.
PHONE: 407 207-9088
EMAIL: DSEMAILBOX@DSEORL.COM

SURVEYOR:
LEADING EDGE LAND SERVICES INCORPORATED
8802 EXCHANGE DRIVE
ORLANDO, FLORIDA. 32809
CONTACT: MIKE BAERHOLD
PHONE: 407 351-6730
EMAIL: MBAERHOLD@LEADINGEDGELS.COM

ENVIRONMENTAL:
BIO-TECH
3025 EAST SOUTH STREET,
ORLANDO, FL 32803
CONTACT: BILL KEENAN, DANIEL COUGH
PHONE: 407-894-5969,
EMAIL: DANNY@BIOTECHCONSULTING.COM

GEOTECHNICAL:
ANDREYEV ENGINEERING, INC.
4055 ST. JOHN'S PARKWAY
SANFORD, FL 32771
CONTACT: MARK JUNG
PHONE: 407 330-7763
EMAIL: MJUNG@ANDREYEVENGINEERING.COM

LANDSCAPING:
BORELLI + PARTNERS.
720 VASSAR STREET
ORLANDO, FL 32804
CONTACT: CHRIS RICE
PHONE: 407-218-1342
EMAIL: CRICE@BORRELLIARCHITECTS.COM

Legal Description:

A PARCEL OF LAND LOCATED IN SECTION 12, TOWNSHIP 21 SOUTH, RANGE 27 EAST, ORANGE COUNTY, FLORIDA, BEING ALL OF THE LANDS DESCRIBED IN OFFICIAL RECORDS BOOK 8062, PG. 1216, OFFICIAL RECORDS BOOK 10135, PAGE 9149, OFFICIAL RECORDS BOOK 9177, PAGE 2436, AND A PORTION OF THE LANDS DESCRIBED IN OFFICIAL RECORDS BOOK 4572, PAGE 90, ALL BEING OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGIN AT THE SOUTHEAST CORNER OF TRACT F, MID-FLORIDA LOGISTICS PARK, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK, 99, PAGES 34-43, OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA, ALSO BEING THE WESTERLY RIGHT-OF-WAY LINE OF STATE ROAD 429 (WESTERN BELTWAY) LIMITED ACCESS RIGHT-OF-WAY; THENCE ALONG SAID WESTERLY RIGHT-OF-WAY LINE OF STATE ROAD 429 (WESTERN BELTWAY) THE FOLLOWING NINE (9) COURSES: 1) S15°56'44"W, A DISTANCE OF 76.95 FEET; 2) S13°06'26"W, A DISTANCE OF 95.81 FEET; 3) S09°55'40"W, A DISTANCE OF 260.16 FEET; 4) S89°55'49"W, A DISTANCE OF 521.35 FEET; 5) S00°11'42"W, A DISTANCE OF 466.60 FEET; 6) N89°55'49"E, A DISTANCE OF 489.17 FEET; 7) S07°25'10"E, A DISTANCE OF 313.50 FEET; 8) S17°09'05"E, A DISTANCE OF 106.11 FEET; 9) SOUTH EASTERLY ALONG THE ARC OF A NON-TANGENT CURVE TO THE LEFT (SAID CURVE HAVING A RADIUS OF 5156.00 FEET, A CENTRAL ANGLE OF 07°30'56" AND A CHORD BEARING AND DISTANCE OF S08°24'37"E, 675.83 FEET) FOR AN ARC DISTANCE OF 676.31 FEET TO THE SOUTH LINE OF THE NORTHEAST 1/4 OF SECTION 12, TOWNSHIP 21 SOUTH, RANGE 27 EAST; THENCE DEPARTING SAID WESTERLY RIGHT-OF-WAY LINE OF STATE ROAD 429 (WESTERN BELTWAY), ALONG SAID SOUTH LINE OF THE NORTHEAST 1/4 OF SECTION 12, S89°50'36"W, A DISTANCE OF 1729.14 FEET; THENCE DEPARTING SAID SOUTH LINE OF THE NORTHEAST 1/4 OF SECTION 12, N00°25'23"E, A DISTANCE OF 657.98 FEET TO THE SOUTH LINE OF TRACT C OF SAID MID-FLORIDA LOGISTICS PARK; THENCE ALONG THE SOUTH LINE OF SAID TRACT C N89°53'17"E, A DISTANCE OF 81.30 FEET TO THE SOUTHEAST CORNER OF SAID TRACT C; THENCE DEPARTING SAID SOUTH LINE OF TRACT C, ALONG THE EAST LINE OF SAID TRACT C, N00°26'44"E, A DISTANCE OF 1316.95 FEET TO THE NORTHEASTERLY CORNER OF SAID TRACT C, ALSO BEING THE SOUTH LINE OF LOT 5 OF SAID MID-FLORIDA LOGISTICS PARK; THENCE DEPARTING SAID EAST LINE OF TRACT C, ALONG SAID SOUTH LINE OF LOT 5 N89°58'26"E, A DISTANCE OF 1583.60 FEET TO THE POINT OF BEGINNING.

CONTAINING 65.303 ACRES (2844610 SQUARE FEET) OF LAND, MORE OR LESS.

ALSO A CFX PARCEL LOCATED IN SECTION 12, TOWNSHIP 21 SOUTH, RANGE 27 EAST ORANGE COUNTY, FLORIDA.
CONTAINING 5.412 ACRES (235752 SQUARE FEET) OF LAND, MORE OR LESS.

WATER / SEWER SERVICE:
CITY OF APOPKA
748 EAST CLEVELAND STREET
APOPKA, FL 32703
CONTACT: JORGE GARCIA
PHONE: 407 703-1731

ELECTRIC SERVICE:
DUKE ENERGY
PO BOX 14042
ST. PETERSBURG, FL 33733
CONTACT: CHRISTINA POSHARD
PHONE: 407 464-1229

GAS SERVICE:
LAKE APOPKA NATURAL GAS DISTRICT
38 NORTH LAKE PARK AVENUE
APOPKA FL, 32703
CONTACT: EVERETT HOLMES
PHONE: 407 410-7024

TELEPHONE AND CABLE SERVICE:
CENTURYLINK
100 CENTURYLINK DRIVE
MONROE, LA 71203
CONTACT: HARY TOLEDO
PHONE: 833 283-4773

ARCO NATIONAL CONSTRUCTION

BlueScope Properties Group

PREPARED FOR:
BPG APOPKA PROPERTIES

Know what's below. Call before you dig.

REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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IRRIGATION PLANS
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SITE LOCATION
SCALE 1:2000

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD SUITE 241
ORLANDO, FLORIDA 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

Digitally signed by Dave M Schmitt
Date: 2023.06.19 15:33:55 -04'00'

DATE: APRIL 2023	JOB NO.: ANC-7	SHEET: 01 OF 33

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F:\ANC7\CAD\Planset\Final\02 GENERAL NOTES.dwg,5/1/2023 4:00:24 PM

1. ALL CONSTRUCTION SHALL CONFORM WITH CITY OF APOPKA ENGINEERING STANDARDS MANUAL, 2016 F.D.O.T. STANDARDS FOR ROAD & BRIDGE CONSTRUCTION, AND THE CONSTRUCTION OF ALL UTILITIES CONNECTING TO THE CITY OF APOPKA UTILITY SYSTEM SHALL BE IN CONFORMANCE WITH THE CITY OF APOPKA STANDARDS & CONSTRUCTION SPECIFICATIONS MANUAL APRIL 2011.

2. THE CONTRACTOR SHALL COORDINATE ALL WORK WITHIN EXISTING ROAD RIGHTS-OF-WAY WITH CITY OF APOPKA ENGINEER

3. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE THAT ALL REQUIRED PERMITS ARE OBTAINED AND IN-HAND BEFORE BEGINNING CONSTRUCTION.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL INSPECTION CRITERIA AND SCHEDULES, AND FOR SIGNING SAID INSPECTIONS.

5. NO DEFLECTION OR BENDING IS ALLOWED IN PVC PIPE THAT WILL BE OWNED AND MAINTAINED BY CITY OF APOPKA. ALIGNMENT CHANGE SHALL BE MADE ONLY WITH FITTINGS. LONG RADIUS CURVES, EITHER HORIZONTAL OR VERTICAL, MAY BE INSTALLED WITH STANDARD PIPE BY DEFLECTIONS AT THE JOINTS. MAXIMUM DEFLECTIONS AT PIPE JOINTS, FITTINGS AND LAYING RADIUS FOR THE VARIOUS PIPE LENGTHS SHALL NOT EXCEED 75 PERCENT OF THE PIPE MANUFACTURER'S RECOMMENDATION.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION, AND FOR NOTIFYING THE VARIOUS UTILITY PROVIDERS TO MAKE THE NECESSARY ARRANGEMENTS FOR ANY RELOCATION, TEMPORARY DISRUPTION OF SERVICE, OR CLARIFICATION OF ACTIVITY REGARDING SAID UTILITY. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN CROSSING AN UNDERGROUND UTILITY, WHETHER SHOWN ON THESE PLANS OR FIELD LOCATED. ALL UTILITIES WHICH INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE RELOCATED BY THE RESPECTIVE UTILITY PROVIDERS AND THE CONTRACTOR SHALL COOPERATE WITH THE UTILITY PROVIDER DURING RELOCATION OPERATIONS. ANY DELAY OR INCONVENIENCE BY THE VARIOUS UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT AND NO EXTRA COMPENSATION WILL BE ALLOWED.

7. THE LOCATION OF ALL EXISTING UTILITIES, STORM DRAINAGE SYSTEMS AND TOPOGRAPHIC FEATURES SHOWN ON THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AND ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. SHOULD A DISCREPANCY ARISE BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS, WHICH WOULD APPRECIABLY AFFECT THE EXECUTION OF THESE PLANS, THE CONTRACTOR WILL HALT ALL CONSTRUCTION AND NOTIFY THE ENGINEER IMMEDIATELY.

8. DUKE ENERGY WILL INSTALL, REGULATE AND MAINTAIN THE PROPOSED POWER DISTRIBUTION SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH DUKE ENERGY TO INSURE PROPER CONSTRUCTION PHASING, ELIMINATE CONFLICTS IN THE WORK, AND AVOID UNNECESSARY DELAYS.

9. THE LOCAL TELEPHONE COMPANY WILL INSTALL, REGULATE AND MAINTAIN THE PROPOSED COMMUNICATION DISTRIBUTION SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH SAID PROVIDER TO INSURE PROPER CONSTRUCTION PHASING, ELIMINATE CONFLICTS AND AVOID UNNECESSARY DELAYS.

10. ALL WORK AND MATERIALS FURNISHED SHALL BE IN REASONABLE CONFORMITY WITH THE LINES, GRADES, GRADING SECTIONS, CROSS SECTIONS, DIMENSIONS, MATERIAL REQUIREMENTS, AND TESTING REQUIREMENTS THAT ARE SPECIFIED IN THE CONTRACT, PLANS OR SPECIFICATIONS.

11. THE CONTRACTOR SHALL CONTROL HIS OPERATIONS AND THOSE OF HIS SUBCONTRACTORS, AND ALL SUPPLIERS TO ASSURE THE LEAST INCONVENIENCE TO THE TRAVELING PUBLIC. THE CONTRACTOR SHALL MAINTAIN FREE AND UNOBSTRUCTED MOVEMENT OF VEHICULAR TRAFFIC AND SHALL LIMIT HIS OPERATIONS FOR THE SAFETY AND CONVENIENCE OF THE TRAVELING PUBLIC. UNDER ALL CIRCUMSTANCES, SAFETY SHALL BE THE MOST IMPORTANT CONSIDERATION.

12. PRIOR TO COMMENCING WORK THE CONTRACTOR SHALL FURNISH, ERECT AND MAINTAIN ALL BARRICADES, WARNING SIGNS, AND MARKINGS FOR HAZARDS AND THE CONTROL OF TRAFFIC, IN REASONABLE CONFORMITY WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS OR AS DIRECTED BY CITY OF APOPKA TRAFFIC ENGINEER; SUCH AS TO EFFECTIVELY PREVENT ACCIDENTS IN ALL PLACES WHERE THE WORK CAUSES OBSTRUCTIONS TO THE NORMAL TRAFFIC OR CONSTITUTES IN ANY WAY A HAZARD TO THE PUBLIC.

13. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS CONTROLLING POLLUTION OF THE ENVIRONMENT.

14. THE CONTRACTOR SHALL COMPLY WITH ALL LOAD RESTRICTIONS IN THE HAULING OF MATERIALS IN PUBLIC ROADS BEYOND THE LIMITS OF THE WORK. A SPECIAL PERMIT WILL NOT RELIEVE THE CONTRACTOR OF LIABILITY FOR THE DAMAGE WHICH MAY RESULT FROM THE MOVING OF MATERIAL AND EQUIPMENT.

15. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE POLICIES AND GUIDELINES ESTABLISHED BY CITY OF APOPKA FOR THE PRESERVATION OF ALL PUBLIC AND PRIVATE PROPERTY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE OR INJURY TO PROPERTY OF ANY CHARACTER, DURING THE EXECUTION OF THE WORK, RESULTING FROM ANY OMISSION, NEGLECT, OR MISCONDUCT IN HIS MANNER OR METHOD OF EXECUTING THE WORK, OR AT ANYTIME DUE TO DEFECTIVE WORK OR MATERIALS.

16. THE CONTRACTOR SHALL INSURE THAT PROPER SOIL DENSITIES ARE ACHIEVED FOR PLACEMENT OF ALL HEADWALL/ENDWALL FOOTINGS, RETAINING WALLS, AND IN GENERAL, ANY FOOTING SUPPORT DESCRIBED ON THESE PLANS. IT WILL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE THAT SUFFICIENT SOILS TESTING HAS BEEN PERFORMED PRIOR TO CONSTRUCTION.

17. THE CONTRACTOR SHALL COMPLY WITH CITY OF APOPKA STANDARDS AND SPECIFICATIONS FOR STRIPPING, CLEARING, GRUBBING, GRADING, BACKFILLING, AND EMBANKMENT PREPARATION WITHIN ALL DESIGNED ROADWAY RIGHT-OF-WAY SECTIONS.

18. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN A COPY OF THE GEOTECHNICAL ENGINEER'S REPORT FOR THIS PROJECT FROM DAVE SCHMITT ENGINEERING. INC. AND MEET THE GEOTECHNICAL ENGINEER'S REQUIREMENTS FOR SOIL PREPARATION ON THE SITE.

19. AFTER THE ROADWAY HAS BEEN CONSTRUCTED TO SUBGRADE, IT SHALL BE PROOF-ROLLED TO ASSURE THAT PROPER COMPACTION HAS BEEN ATTAINED. THE PROOF-ROLLING AND COMPACTION OPERATIONS SHALL BE INSPECTED AND TESTED BY A FLORIDA LICENSED GEOTECHNICAL ENGINEER TO ASSURE THAT THE SPECIFIED COMPACTION IS MAINTAINED AND THAT ALL DELETERIOUS MATERIALS HAVE BEEN REMOVED.

20. COMPACT THE TOP 24 INCHES OF UTILITY TRENCHES WITHIN ROADWAYS TO 98% OF THE MODIFIED PROCTOR DENSITY; WITHIN OTHER AREAS TO 95%.

21. IN OTHER AREAS WHICH REQUIRE FILL MATERIAL THE CONTRACTOR WILL STRIP OR OTHERWISE REMOVE ALL VEGETATION SUCH AS BRUSH, HEAVY SODS, HEAVY GROWTH OF GRASS, DECAYED VEGETABLE MATTER, RUBBISH AND ANY OTHER DELETERIOUS MATERIAL BEFORE EMBANKMENT IS STARTED. IMMEDIATELY PRIOR TO THE PLACEMENT OF FILL MATERIALS, THE ENTIRE AREA UPON WHICH FILL IS TO PLACED, SHALL BE SCARIFIED IN A DIRECTION APPROXIMATELY PARALLEL TO THE AXIS OF FILL. THE GEOTECHNICAL ENGINEER SHALL APPROVE THE AREA PRIOR TO THE PLACEMENT OF FILL.

22. DURING CONSTRUCTION, NO DIRECT DISCHARGE OF WATER TO DOWNSTREAM RECEIVING WATERS WILL BE ALLOWED. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING WATER QUALITY, AND SHALL ROUTE DISCHARGE WATER IN SUCH A MANNER TO ADEQUATELY REMOVE SILT PRIOR TO RUNOFF FROM SITE.

23. RECORD DRAWINGS: AT THE END OF CONSTRUCTION, THE CONTRACTOR WILL PROVIDE ONE SET OF DRAWINGS SHOWING ALL CHANGES MARKED IN WATERPROOF RED WITH THE FOLLOWING CONTRACTOR CERTIFICATION EXECUTED ON EACH SHEET: THE CONTRACTOR: ____ HEREBY CERTIFIES TO THE OWNER THAT IMPROVEMENTS COVERED BY THIS DRAWING AND ALL RELATED DETAILS HAVE BEEN CONSTRUCTED AS INDICATED OR AS MODIFIED BY THE NOTES AND GRAPHICS SHOWN. ABSENT A NOTE OR GRAPHIC TO THE CONTRARY, THE IMPROVEMENTS HAVE BEEN CONSTRUCTED MEETING INDUSTRY STANDARD TOLERANCES.
SIGNED:________________________________DATE:_______________
AUTHORIZED CONTRACTOR'S REPRESENTATIVE

24. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.

25. ALL SIDEWALKS, RAMPS, AND CROSSWALKS WILL BE DESIGNED AND BUILT TO MEET ADA REQUIREMENTS.

26. MISCELLANEOUS ENGINEER NOTIFICATIONS

A. THE CONTRACTOR SHALL PROVIDE THE ENGINEER 24 HOUR ADVANCE NOTIFICATION FOR THE FOLLOWING CONSTRUCTION AND OBSERVATION ACTIVITIES.

a. SANITARY SEWER VIDEO INSPECTION.

b. CONNECTIONS TO EXISTING SYSTEMS

c. THRUST BLOCK POURS AND RESTRAINT CONNECTIONS

d. STORM DRAINAGE LAMPING

e. INLET TOP POURS (REINFORCING STEEL CHECK)

f. WATER & FORCE MAIN PRESSURE TESTS

g. BACTERIOLOGICAL SAMPLING

h. BASE OBSERVATION & SOUNDING

i. ASPHALT PLACEMENT

j. PRE-FINAL INSPECTION

k. FINAL INSPECTION

B. THE CONTRACTOR SHALL KEEP DAILY "AS-BUILT" DRAWINGS AND MAKE THEM READILY ACCESSIBLE.

C. THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER A PROJECT CONSTRUCTION SCHEDULE (BAR GRAPH) AND UPDATE SAID SCHEDULE ON A MONTHLY BASIS.

D. ALL FUEL STORAGE AREAS SHALL HAVE THE PROPERTY OWNER'S PRIOR APPROVAL AND APPROPRIATE MEASURES SHALL BE TAKEN TO INSURE PROTECTION OF GROUNDWATER AND SOIL RESOURCES.

E. THE CONTRACTOR SHALL COORDINATE ALL BACKFILL OPERATIONS WITH THE PROJECT GEOTECHNICAL ENGINEER AND SUBMIT TEST REPORTS TO THE ENGINEER PRIOR TO BEGINNING WORK ON THE NEXT ITEM OF WORK, I.E. SUBGRADE PRIOR TO CURB.

F. THE ENGINEER RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO UNCOVER, RETEST AND OR PERFORM ANY ACTION NECESSARY TO ENSURE THAT THE IMPROVEMENTS HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

WATER

26. THE FOLLOWING UTILITY PROVIDER IS LISTED FOR THE CONVENIENCE TO THE CONTRACTOR.

WATER:

CITY OF APOPKA UTILITIES
748 EAST CLEVELAND STREET
APOPKA, FLORIDA 32703

CITY OF APOPKA UTILITIES WILL MAINTAIN THE PROPOSED POTABLE WATER SYSTEM WITHIN THE RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND DOING ALL OF THE WORK IN ACCORDANCE WITH THE LATEST CITY OF APOPKA UTILITIES SPECIFICATIONS AND STANDARDS.

27. ALL WATER MAIN FITTINGS, VALVES, RESTRAINTS, COUPLINGS, PIPE, AND IN GENERAL ALL MATERIALS REQUIRED FOR INSTALLING THE WATER SUPPLY SYSTEM, THAT CONNECT TO THE OCPU SYSTEM SHALL CONFORM TO CITY OF APOPKA MANUAL OF STANDARDS AND SPECIFICATIONS FOR WASTEWATER AND WATER MAIN CONSTRUCTION.

28. LOCATING TAPE CAPABLE OF REGISTERING ON A METAL LOCATOR SHALL BE INSTALLED DIRECTLY ABOVE THE PIPE CENTERLINE AND BURIED TO A MINIMUM DEPTH OF SIX (6) INCHES AND MAXIMUM DEPTH OF TWELVE (12) INCHES FOR ALL PROPOSED PRESSURE SYSTEMS. THE TAPE SHALL BE LAID CONTINUOUSLY WITHOUT GAPS BETWEEN ENDS OVER ALL INSTALLED PIPING. THE TAPE SHALL HAVE THE WORD "CAUTION" AND THE LINE IDENTIFICATION; SUCH AS, "CAUTION, WATER LINE BURIED BELOW", PRINTED CONTINUOUSLY ALONG ITS LENGTH. THE TAPE SHALL BE COLOR CODED BLUE ACCORDING TO CITY OF APOPKA UTILITIES STANDARDS. FULL RANGE MARKERS SHALL ALSO BE USED.

29. WATER AND UTILITY CROSSINGS:

UTILITY SEPARATION-VERTICAL CLEARANCE

A. WHERE WATER MAINS CROSS A GRAVITY SANITARY SEWER OR STORM SEWER MAIN, A VERTICAL SEPARATION (OUTSIDE TO OUTSIDE) OF AT LEAST SIX INCHES, AND PREFERABLY TWELVE INCHES, ABOVE OR AT LEAST TWELVE INCHES BELOW MUST BE MAINTAINED. WHEREVER POSSIBLE, THE WATER MAIN SHALL BE LAID ABOVE THE OTHER PIPE.

B. WHERE WATER MAINS CROSS A SANITARY FORCE MAIN OR RECLAIMED WATER MAIN, A VERTICAL SEPARATION (OUTSIDE TO OUTSIDE) OF AT LEAST 12 INCHES MUST BE MAINTAINED. WHEREVER POSSIBLE, THE WATER MAIN SHALL BE LAID ABOVE THE OTHER PIPE.

C. ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ON THE OTHER PIPELINE SO THAT THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE JOINTS OF THE OTHER PIPE.

UTILITY SEPARATION-HORIZONTAL SEPARATION

D. WHEN WATER MAINS PARALLEL A GRAVITY SEWER MAIN, SANITARY FORCE MAIN, OR RECLAIMED WATER MAIN NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C., A SEPARATION (MEASURED OUTSIDE TO OUTSIDE) OF AT LEAST SIX FEET, AND PREFERABLY TEN FEET, MUST BE MAINTAINED. THE MINIMUM SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY SANITARY SEWERS SHALL BE THREE FEET WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SANITARY SEWER PIPE.

E. WHERE WATER MAINS PARALLEL A STORM SEWER PIPE OR RECLAIMED WATER MAIN REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C. A MINIMUM OF 3 FEET HORIZONTAL SEPARATION (MEASURED OUTSIDE TO OUTSIDE) MUST BE MAINTAINED.

F. NO WATER MAIN SHALL PASS THROUGH, OR COME INTO CONTACT WITH, ANY PART OF A SANITARY MANHOLE OR STORM SEWER INLET OR MANHOLE.

G. FIRE HYDRANTS WITH UNDERGROUND DRAINS SHALL BE LOCATED SO THAT THE DRAINS ARE AT LEAST THREE FEET FROM THE A STORM SEWER OR RECLAIMED WATER MAIN REGULATED BY PART III OF CHAPTER 62-610, F.A.C.; AND AT LEAST THREE FEET, AND PREFERABLY TEN FEET, FROM A GRAVITY SANITARY SEWER, SANITARY FORCE MAIN OR RECLAIMED WATER MAIN NOT REGULATED BY PART III OF CHAPTER 62-610, F.A.C.

H. THE WATER MAIN PIPE SHALL BE LAID SUCH THAT THE JOINTS ARE STAGGERED AS FAR AS POSSIBLE FROM THE JOINTS OF THE OTHER PIPE.

29. WHERE DUCTILE IRON PIPE IS REQUIRED FOR WATER MAINS, IT SHALL CONFORM TO ANSI/AWWA A21.51.A MINIMUM THICKNESS OF CLASS 50 PER ANSI/AWWA SHALL BE SUPPLIED. DIP PIPE MUST BE IN CONFORMANCE WITH AWWA C150 AND C151.

30. TESTING: THE CONTRACTOR TO TEST ALL WATER MAINS AS PER THE FOLLOWING: HYDROSTATIC TEST PER AWWA-C600 (OR M23) STANDARD, AND DISINFECTION OF WATER MAIN PER AWWA-C651.

31. WATER MAINS SHALL COMPLY WITH AWWA STANDARDS. ALL WATER MAINS WITHIN THE RIGHT-OF-WAY AND EASEMENTS SHALL BE OWNED AND MAINTAINED BY CITY OF APOPKA UTILITIES. ALL 4" DIAMETER THRU 12" DIAMETER PVC WATER MAINS SHALL BE AWWA C900-DR18. ALL WATER MAINS LESS THAN 4 INCHES IN DIAMETER SHALL BE IN ACCORDANCE WITH ASTM 2241 SDR21 CLASS 200. PIPE SIZES 16" THRU 36" SHALL BE IN ACCORDANCE WITH AWWA C-905.52 ALL WATER MAINS SHALL BEAR THE NSF LOGO INDICATING APPROVAL FOR DRINKING WATER AND SHALL BE COLOR CODED OR MARKED USING BLUE AS A PREDOMINANT COLOR TO DIFFERENTIATE DRINKING WATER FROM OTHER WATER LINES.

32. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 3 FEET OF COVER OVER ALL PROPOSED WATER, WASTEWATER AND RECLAIMED WATER LINES.

33. ALL FIRE HYDRANTS SHALL BE POSITIONED NO MORE THAN 5 FEET FROM THE CURB.

34. A BACKFLOW DEVICE (I.E. JUMPER CONNECTION) IS REQUIRED AT ALL ACTIVE WATER MAINS AND PROPOSED NEW WATER MAIN IMPROVEMENTS.

35. FIRE PROTECTION SHALL BE IN ACCORDANCE WITH SECTION 9.3.3 OF THE SUBDIVISION REGULATIONS AND ORDINANCE #81.19.

SEWER

36. THE FOLLOWING UTILITY PROVIDER IS LISTED FOR THE CONVENIENCE TO THE CONTRACTOR.

SEWER:

CITY OF APOPKA UTILITIES
748 EAST CLEVELAND STREET
APOPKA, FLORIDA 32703

37. UNDERGROUND GRAVITY SEWER PIPING WHICH IS NOT MANUFACTURED OF METAL OR CONCRETE PIPE SHALL BE COLOR CODED GREEN USING LIGHT STABLE COLORANTS. UNDERGROUND METAL PIPE SHALL BE COLOR CODED OR MARKED USING GREEN AS A PREDOMINANT COLOR.

38. ALL PROPOSED SANITARY LINES (EITHER GRAVITY OR PRESSURES SYSTEMS), FITTINGS, VALVES, RESTRAINTS, COUPLINGS, PIPES, AND IN GENERAL, THOSE MATERIALS REQUIRED FOR INSTALLING THE WASTEWATER DISPOSAL SYSTEM SHALL CONFORM TO CITY OF APOPKA UTILITIES WATER AND WASTEWATER DIVISION.

39. ALL GRAVITY SEWER LINES SHALL BE A MINIMUM OF 3' FROM THE CURB AT ALL LOCATIONS.

40. RECLAIMED WATER LINES, IF PROPOSED ON THESE PLANS, MAY BE EITHER PVC C900 DR25 OR DUCTILE IRON CLASS 200.

41. UNDERGROUND RECLAIMED WATER PIPING WHICH IS NOT MANUFACTURED OF METAL OR CONCRETE PIPE SHALL BE COLOR CODED PANTONE PURPLE 522C USING LIGHT STABLE COLORANTS. UNDERGROUND METAL AND CONCRETE PIPE SHALL BE COLOR CODED OR MARKED USING PURPLE AS A PREDOMINANT COLOR.

STORMWATER/EROSION CONTROL

42. THE STORMWATER SYSTEM FOR THIS PROJECT HAS BEEN DESIGNED IN ACCORDANCE WITH APPLICABLE RULES AND DESIGN STANDARDS OF THE WATER MANAGEMENT DISTRICT OR REGULATORY AGENCY WITH THE MOST STRINGENT DESIGN STANDARDS, AS REQUIRED BY THE SAINT JOHNS RIVER WATER MANAGEMENT DISTRICT AND CITY OF APOPKA, FLORIDA.

43. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL LANDSCAPE BUFFERS, RETENTION AND DETENTION FACILITIES UNTIL THE WORK HAS BEEN ACCEPTED BY THE OWNER. ALL DISRUPTED AREAS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.

44. ALL REINFORCED CONCRETE PIPE (R.C.P.) SHALL BE MINIMUM CLASS III. ALL HDPE WILL BE SMOOTH INTERIOR AND SHALL MEET OR EXCEED STANDARDS OF ASTMD 3350 CELL CLASSIFICATION 345464C.

45. ALL PRECAST DRAINAGE STRUCTURES TO HAVE STEEL ANGLE IRON FRAME. ALL STRUCTURES IN PAVED AREAS TO HAVE STEEL RECTILINEAR GRATES WITH H-20 LOADING.

46. THE CONTRACTOR SHALL PERFORM EROSION CONTROL MEASURES IN ACCORDANCE WITH CITY OF APOPKA STANDARDS, DETAILS CONTAINED IN THE PLANS, THE FOLLOWING NOTES, AND AS DIRECTED BY THE ENGINEER.

A. TEMPORARY EROSION CONTROL

a. STOCKPILING MATERIAL: NO EXCAVATING MATERIAL SHALL BE STOCKPILED IN SUCH A MANNER AS TO DIRECT RUNOFF DIRECTLY OFF THE PROJECT SITE OR INTO ANY ADJACENT WATERBODY OR STORMWATER COLLECTION FACILITY.

b. INLET PROTECTION: INLETS AND CATCH BASINS SHALL BE PROTECTED FROM SEDIMENT-LADEN STORM RUNOFF DIRECTLY OFF THE PROJECT SITE OR INTO ANY ADJACENT WATERBODY OR STORMWATER COLLECTION FACILITY.

c. TEMPORARY SEEDING: AREAS OPENED BY CONSTRUCTION OPERATIONS AND THAT ARE NOT ANTICIPA- TED TO BE DRESSED AND RECEIVE FINAL GRASSING TREATMENT WITHIN THIRTY DAYS SHALL BE SEEDED WITH A QUICK GROWING GRASS SPECIES WHICH WILL PROVIDE AN EARLY COVER DURING THE SEASON IN WHICH IT IS PLANTED, AND WILL NOT LATER COMPETE WITH THE PERMANENT GRASSING. THE RATE OF SEEDING SHALL BE 30 POUNDS PER ACRE.

d. TEMPORARY SEEDING AND MULCHING: SLOPES STEEPER THAN 6:1 THAT FALL WITHIN THE CATEGORY ESTABLISHED IN NOTE C ABOVE SHALL ADDITIONALLY RECEIVE MULCHING OF APPROXIMATELY 2 INCHES LOOSE MEASURE OF MULCH MATERIAL CUT INTO THE SOIL OF THE SEEDED AREA TO A DEPTH OF 4 INCHES.

e. TEMPORARY GRASSING: THE SEEDED OR THE SEEDED AND MULCHED AREA(S) SHALL BE ROLLED AND WATERED AS REQUIRED TO ASSURE OPTIMUM GROWING CONDITIONS FOR THE ESTABLISHMENT OF A GOOD GRASS COVER.

f. TEMPORARY REGRASSING: IF, AFTER FOURTEEN DAYS, THE TEMPORARY GRASSED AREAS HAVE NOT ATTAINED A MINIMUM OF 75% GOOD GRASS COVER, THE AREA WILL BE REWORKED AND ADDITIONAL SEED APPLIED SUFFICIENT TO ESTABLISH THE DESIRED VEGETATION COVER.

g. THE CONTRACTOR SHALL PLACE HAY BALES AROUND ALL EXISTING AND NEWLY CONSTRUCTED INLETS TO CONTROL EROSION DURING CONSTRUCTION.

h. MAINTENANCE: ALL FEATURES OF THE PROJECT DESIGNED AND CONSTRUCTED TO PREVENT EROSION AND SEDIMENT SHALL BE MAINTAINED DURING THE LIFE OF THE CONSTRUCTION SO AS TO FUNCTION AS THEY WERE ORIGINALLY DESIGNED AND CONSTRUCTED.

B. PERMANENT EROSION CONTROL

THE EROSION CONTROL FACILITIES FOR THE PROJECT SHALL BE DESIGNED TO MINIMIZE THE IMPACT ON OFF-SITE FACILITIES. ALL STORMWATER DISCHARGE FROM THE PROJECT LIMITS SHALL BE ROUTED THROUGH DETENTION BASINS TO TRAP SUSPENDED SEDIMENTS AND DISCHARGE FACILITIES FROM THESE BASINS SHALL BE PROVIDED WITH A SKIMMER DEVICE TO TRAP FLOATABLE DEBRIS.

a. PERMANENT SEEDING: ALL AREAS WHICH HAVE BEEN DISTURBED BY THE CONSTRUCTION WILL, AS A MINIMUM, BE FERTILIZED AND SEEDED. THE FERTILIZER SHALL BE OF 12-8-8 PROPORTIONS AND SHALL BE UNIFORMLY SPREAD AT A RATE OF 400-500 POUNDS PER ACRE AND MIXED WITH THE SOIL TO A UNIFORM DEPTH OF FOUR INCHES. INCLUDED WITH THE FERTILIZING OPERATION, WILL BE THE APPLICATION OF AMENDMENTS, IF NECESSARY, SUCH AS DOMOMITIC LIMESTONE OR ALUMINUM SULFATE TO CORRECT THE PH FACTOR TO WITHIN THE LIMITS OF 6.0-7.0. THE GRASS SEED SHALL BE UNIFORMLY SPREAD AT THE RATE OF 100 POUNDS PER ACRE WHILE THE SOIL IS MOIST. THE GRASS SEED MIXTURE SHALL BE OF 20 PARTS BERMUDA AND 80 PARTS BAHIA, WITH THE ADDITION OF 30 PARTS RYE IN THE WINTER SEASON.

b. PERMANENT SEEDING AND MULCHING: IN ADDITION TO THE MINIMUM REQUIREMENTS OF NOTE 1. ABOVE, SLOPES OF 6:1 TO 4:1 INCLUSIVE WILL BE MULCHED WITH A UNIFORM THICKNESS OF APPROXIMATELY TWO INCHES, LOOSE MEASURE, OF MULCH MATERIAL INCORPORATED INTO THE SOIL BY MIXING TO A DEPTH OF FOUR INCHES.

c. PERMANENT SODDING: ALL RETENTION/DETENTION BASINS SHALL BE SODDED WITHIN THEIR LIMITS. ALL EXPOSED AREAS WITHIN PUBLIC RIGHT-OF-WAYS WILL BE SOLID SODDED. OTHER AREAS WITH SLOPES STEEPER THAN 4:1 WILL BE SODDED.

d. STRIP SODDING: STRIP SOD SHALL BE PLACED ADJACENT TO ALL CURBS, WALKS AND PAVEMENTS.

e. REGRASSING: ALL GRASSED AREAS WILL BE MAINTAINED TO ASSURE A GOOD STAND AND SUFFICIENT GROUND COVER TO MINIMIZE EROSION. IF, AFTER 60 DAYS AN ADEQUATE GROUND COVER HAS NOT BEEN ESTABLISHED, THE AREA WILL BE REGRASSED.

f. ADDITIONAL FERTILIZATION: GRASSED AREAS NOT ACCEPTED WITHIN 90 DAYS OF THEIR COMPLETION SHALL BE FERTILIZED AT AN APPLICATION RATE OF 250 POUNDS PER ACRE.

47. ALL PUBLIC STORM DRAINAGE PIPES MUST BE WRAPPED AT THE JOINT WITH FILTER FABRIC.

48. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL RETENTION AND DETENTION FACILITIES AND ALL LANDSCAPE BUFFERS, THROUGH THE DURATION OF THE PROJECT, AND UNTIL THE WORK IS ACCEPTED BY THE OWNER. ALL DISRUPTED AREAS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.

49. ROADWAY AND DRAINAGE DESIGN PER CURRENT CITY OF APOPKA AND FLORIDA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS.

50. UTILITY (SEWER AND WATER) DESIGN PER CURRENT CITY OF APOPKA UTILITIES STANDARDS AND SPECIFICATIONS.

51. THE CONTRACTOR SHALL SUBMIT A MAINTENANCE OF TRAFFIC PLAN TO CITY OF APOPKA AND OBTAIN PLAN APPROVAL PRIOR TO CONSTRUCTION.

52. AIR RELEASE VALVES SHALL BE REQUIRED AT ALL HIGH POINTS ON PROPOSED FORCEMAINS, RECLAIMED WATER MAINS AND POTABLE WATER MAINS.

53. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN EXCAVATING IN PROXIMITY OF WATER MAINS, WASTEWATER FORCE MAINS, GRAVITY MAINS AND RECLAIMED WATER MAINS. MAIN LOCATIONS SHOWN ON PLANS ARE NOT EXACT OR GUARANTEED. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING UTILITY LOCATIONS.

54. THE UTILITIES DISPATCH OPERATOR SHALL BE NOTIFIED BY THE CONTRACTOR FOR PIPE EMERGENCIES.

55. UTILITIES ENGINEERING AND CONSTRUCTION DIVISION: 407-703-1731.

56. ALL EXISTING WATER, FORCE, GRAVITY AND RECLAIMED WATER MAINS AND OTHER FACILITIES WITHIN THE LIMITS OF THE PROJECT SHALL BE SUPPORTED AND PROTECTED AGAINST DAMAGE DURING CONSTRUCTION.

57. CONTRACTOR SHALL ADJUST VALVE BOXES, AIR RELEASE VALVES, FIRE HYDRANTS, MANHOLE COVERS, ETC IN CONFLICT WITH ROADWAY.

58. THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE, SHALL IMMEDIATELY REPAIR ALL DAMAGES TO UTILITIES' MAINS AND FACILITIES. IF THE REPAIR IS NOT MADE IN A TIMELY MANNER, AS DETERMINED BY UTILITIES, UTILITIES MAY PERFORM REQUIRED REPAIRS AND CLEANUP. THE CONTRACTOR WILL BE CHARGED FOR ALL EXPENSES ASSOCIATED WITH THE REPAIR.

59. UTILITIES CONSTRUCTION DIVISION SHALL BE NOTIFIED AT LEAST SEVEN (7) DAYS PRIOR TO ANY CONSTRUCTION ACTIVITY WITHIN PROXIMITY OF ANY UTILITIES.

60. ONLY UTILITIES SHALL OPERATE WATER, WASTEWATER, AND RECLAIMED WATER VALVES. COORDINATE VALVE OPERATION WITH APPROPRIATE UTILITIES INSPECTOR.

61. THE CONTRACTOR SHALL COORDINATE ALL PUMP STATION OPERATION AND SHUT DOWN CONTROL WITH A UTILITIES INSPECTOR. THE CONTRACTOR SHALL PROVIDE FOR BYPASSING AND/OR HAULING OF WASTEWATER DURING THE INTERRUPTION OF FLOWS AND CONNECTIONS WITH EXISTING WASTEWATER SYSTEMS.

62. ALL NEW VALVES BEING INSTALLED SHALL REMAIN CLOSED DURING CONSTRUCTION. KEEP VALVES ON ALL WET TAPS CLOSED UNTIL CLEARED BY FDEP. DO NOT CONNECT ANY PROPOSED WATER MAIN TO ANY EXISTING WATER MAIN UNLESS CLEARED BY FDEP AND UTILITIES.

63. THE UTILITY IMPROVEMENTS AND ADJUSTMENTS SHOWN ON THESE PLANS ARE INTENDED TO MAINTAIN THE INTEGRITY OF THE CITY OF APOPKA WATER, WASTEWATER AND RECLAIMED WATER SYSTEMS. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MANUAL. THE PLANS DO NOT INCLUDE WORK PERFORMED ON OR FOR UTILITY SYSTEMS OWNED BY OTHERS UNLESS STATED OTHERWISE ON THE PLANS.

64. ALL EXISTING AND NEW CITY OF APOPKA UTILITIES VALVES, VALVE BOXES, AND MANHOLES SHALL BE PROTECTED AND ADJUSTED TO FINISHED GRADE AS SHOWN ON THE DRAWINGS. ALL EXISTING ABOVE GROUND VALVES TO BE RELOCATED, AS REQUIRED.

65. MAKE TEMPORARY CONNECTIONS TO AN EXISTING POTABLE WATER SOURCE; FLUSH OUT NEW WATER MAIN WITH POTABLE WATER (USE "JUMPER" ASSEMBLY WITH BACKFLOW PREVENTER TO MAKE TEMPORARY CONNECTIONS TO AN EXISTING WATER SOURCE).

66. PRESSURE PIPE LENGTHS DO NOT INCLUDE BENDS, AIR RELEASE VALVES OR FIRE HYDRANT ASSEMBLIES.

67. THE CONTRACTOR IS RESPONSIBLE FOR MEETING THE REQUIREMENTS OF EPA AND FDEP AS IT RELATES TO THE NPDES NOTES INCLUDING THE POLLUTION DISCHARGE CONTROL.

68. AN EROSION CONTROL PLAN WILL BE APPROVED BY THE CITY ENGINEER PRIOR TO THE PRE-CONSTRUCTION CONFERENCE.

69. THE CONTRACTOR SHALL NOTIFY THE CITY OF APOPKA PUBLIC UTILITIES CONSTRUCTION DEPARTMENT 48 HOURS PRIOR TO ANY UTILITIES CONSTRUCTION.

70. ALL EXISTING UTILITIES HAVE BEEN FIELD VERIFIED AT ALL POINTS OF CONNECTION TO AND AT ALL AREAS OF CONFLICT WITH O.C.U. MAINS.

71. THE CONTRACTOR SHALL MAINTAIN A MINIMUM OF 3 FEET OF COVER OVER ALL PROPOSED WATER, WASTEWATER AND RECLAIMED WATER LINES. REFER TO THE FOLLOWING SECTIONS FROM THE 2011 O.C.U. MANUAL: SECTION 2210, PART 4, A - WATER MAINS SECTION 2310, PART 5, B - GRAVITY MAINS SECTION 2311, PART 4, A - FORCE MAINS SECTION 2510, PART 6, A - RECLAIMED WATER MAINS.

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

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ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241.
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

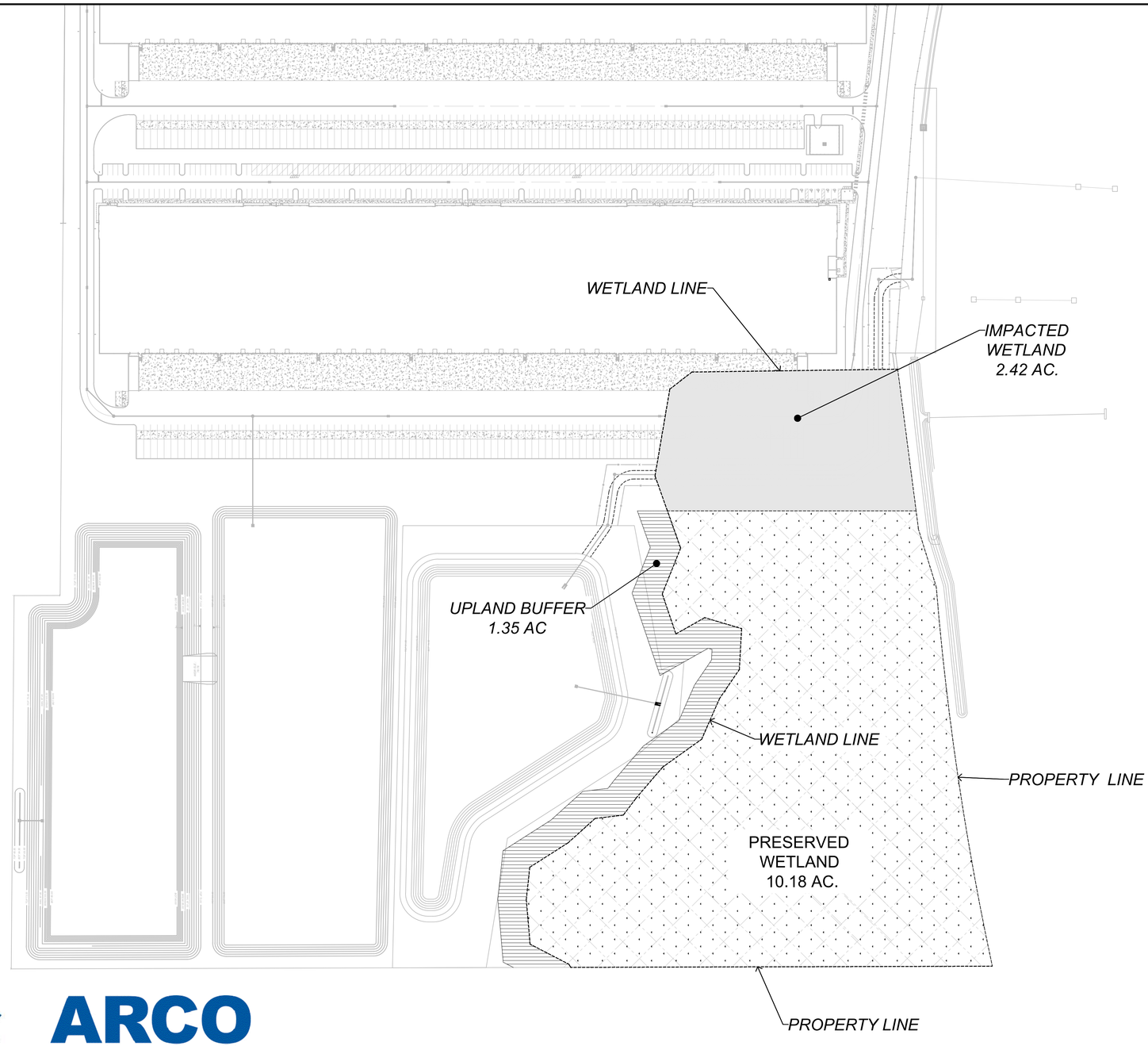
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

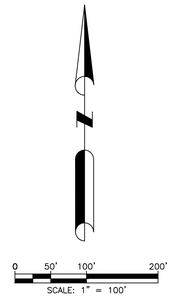
DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

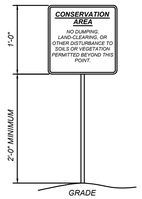
GENERAL NOTES

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: N/S
SHEET: 02 OF 33







CONSERVATION AREA SIGN DETAIL
NOT TO SCALE

NOTES:

1. **MINIMUM AVERAGE 50' BUFFER HAS BEEN PROVIDED ON ALL PRESERVED WETLANDS.**
2. **CONSERVATION AREA SIGNS TO BE PLACED AT EVERY 50' ALONG THE UPLAND BUFFER LIMITS.**

LEGEND

DESCRIPTION	AREA
WETLAND PRESERVATION AREA	10.18 AC.
UPLAND BUFFER AREA	1.35 AC.
WETLAND IMPACT	2.42 AC.

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Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

ENVIRONMENTAL CONSIDERATION PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023	
PROJECT NO.: ANC-7	
DRAWN BY: DM	
CHECKED BY: DMS	
SCALE: 1"=100'	
SHEET: 03 OF 33	

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1. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SILT FROM SITE IF NOT REUSABLE ON-SITE AND ASSURING PLAN ALIGNMENT AND GRADE IN ALL DITCHES AND SWALES AT COMPLETION OF CONSTRUCTION.

2. THE SITE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER COMPLETION OF CONSTRUCTION AND ONLY WHEN AREAS HAVE BEEN STABILIZED.

3. ADDITIONAL PROTECTION - ON-SITE PROTECTION IN ADDITION TO THE ABOVE MUST BE PROVIDED THAT WILL NOT PERMIT SILT TO LEAVE THE PROJECT CONFINES DUE TO UNSEEN CONDITIONS OR ACCIDENTS.

4. CONTRACTOR SHALL INSURE THAT ALL DRAINAGE STRUCTURES, PIPES, ETC. ARE CLEANED OUT AND WORKING PROPERLY AT TIME OF ACCEPTANCE.

5. SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

6. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.

7. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE- THIRD THE HEIGHT OF THE BARRIER.

8. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.

9. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE BEST EROSION AND SEDIMENT CONTROL PRACTICES AS OUTLINED IN THE PLANS, SPECIFICATIONS AND ST. JOHNS RIVER WATER MANAGEMENT DISTRICT SPECIFICATIONS AND CRITERIA.

10. FOR ADDITIONAL INFORMATION ON SEDIMENT AND EROSION CONTROL REFER TO "THE FLORIDA DEVELOPMENT MANUAL - A GUIDE TO SOUND LAND AND WATER MANAGEMENT" FROM THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION (F.D.E.R.) CHAPTER 6.

1. EROSION AND SEDIMENT CONTROL BARRIERS SHALL BE PLACED ADJACENT TO ALL WETLAND AREAS WHERE THERE IS POTENTIAL FOR DOWNSTREAM WATER QUALITY DEGRADATION. SEE DETAIL SHEET FOR TYPICAL CONSTRUCTION.

2. ALL DISTURBED AREAS SHALL BE GRASSED, FERTILIZED, MULCHED AND MAINTAINED UNTIL A PERMANENT VEGETATIVE COVER IS ESTABLISHED.

3. SOD SHALL BE PLACED IN AREAS WHICH MAY REQUIRE IMMEDIATE EROSION PROTECTION TO ENSURE WATER QUALITY STANDARDS ARE MAINTAINED.

4. ANY DISCHARGE FROM DEWATERING ACTIVITY SHALL BE FILTERED AND CONVEYED TO THE OUTFALL IN A MANNER WHICH PREVENTS EROSION AND TRANSPORTATION OF SUSPENDED SOLIDS TO THE RECEIVING OUTFALL.

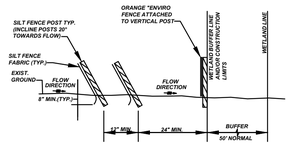
5. DEWATERING PUMPS SHALL NOT EXCEED THE CAPACITY OF THAT WHICH REQUIRES A CONSUMPTIVE USE PERMIT FROM THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT.

6. ALL DISTURBED AREAS TO BE STABILIZED THROUGH COMPACTION, SILT SCREENS AND GRASSING. ALL FILL SLOPES 3:1 OR STEEPER TO RECEIVE STAKED SOLID SOD.

7. ALL DEWATERING, EROSION, AND SEDIMENT CONTROL TO REMAIN IN PLACE AFTER COMPLETION OF CONSTRUCTION AND REMOVED ONLY WHEN AREAS HAVE STABILIZED.

8. THIS PLAN INDICATES THE MINIMUM EROSION AND SEDIMENT MEASURES REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL APPLICABLE RULES, REGULATIONS AND WATER QUALITY GUIDELINES AND MAY NEED TO INSTALL ADDITIONAL CONTROLS.

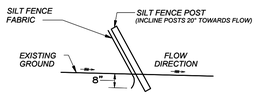
9. THE CONTRACTOR SHALL BE REQUIRED TO RESPOND TO ALL WATER MANAGEMENT DISTRICT INQUIRIES RELATIVE TO COMPLIANCE OF SJRWMD FOR EROSION AND SEDIMENTATION CONTROL. THE COST OF THIS COMPLIANCE SHALL BE PART OF THE CONTRACT.



FDOT APPROVED TEMPORARY SILT FENCE PRE-ASSEMBLED IN 100' ROLLS UTILIZING 2" X 2" X 4' WOODEN POSTS @ 8' C/C MAX. w/3' OF WOVEN GEOTEXTILE MATERIAL MEETING THE REQUIREMENTS OF SEC. 985-4. SIMILAR & EQUAL TO THAT SUPPLIED BY FIFEPIPE CO. OF TAMPA FLA.

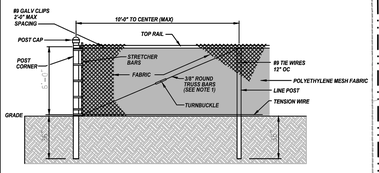
TYPICAL DOUBLE SILT FENCE DETAIL

N.T.S.

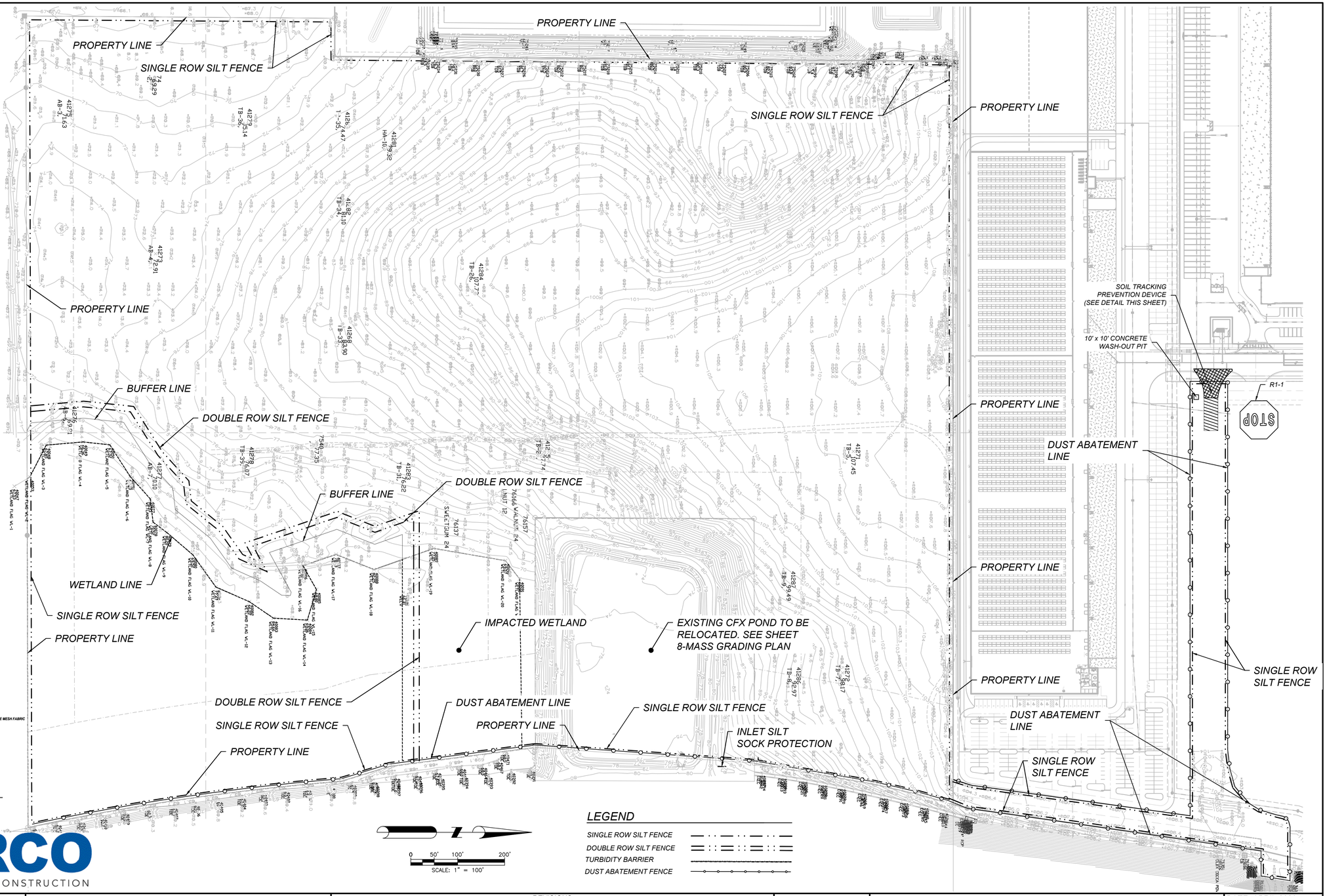


FDOT APPROVED TEMPORARY SILT FENCE PRE-ASSEMBLED IN 100' ROLLS UTILIZING 2" X 2" X 4' WOODEN POSTS @ 8' C/C MAX. w/3' OF WOVEN GEOTEXTILE MATERIAL MEETING THE REQUIREMENTS OF SEC. 985-4. SIMILAR & EQUAL TO THAT SUPPLIED BY FIFEPIPE CO. OF TAMPA FLA.

TYPICAL SINGLE ROW SILT FENCE DETAIL



DUST ABATEMENT FENCE DETAIL



LEGEND

- SINGLE ROW SILT FENCE
- DOUBLE ROW SILT FENCE
- TURBIDITY BARRIER
- DUST ABATEMENT FENCE

BlueScope Properties Group

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Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

EROSION CONTROL & DEMO PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1"=100'
SHEET: 04 OF 33

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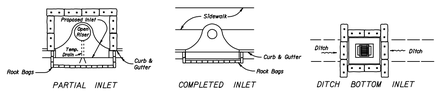
EROSION AND SEDIMENT CONTROL NOTES

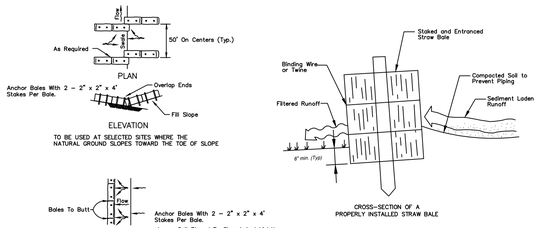
1. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SILT FROM SITE IF NOT REUSABLE ON-SITE AND ASSURING PLAN ALIGNMENT AND GRADE IN ALL DITCHES AND SWALES AT COMPLETION OF CONSTRUCTION.
2. THE SITE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER COMPLETION OF CONSTRUCTION AND ONLY WHEN AREAS HAVE BEEN STABILIZED.
3. ADDITIONAL PROTECTION - ON-SITE PROTECTION IN ADDITION TO THE ABOVE MUST BE PROVIDED THAT WILL NOT PERMIT SILT TO LEAVE THE PROJECT CONFINES DUE TO UNSEEN CONDITIONS OR ACCIDENTS.
4. CONTRACTOR SHALL INSURE THAT ALL DRAINAGE STRUCTURES, PIPES, ETC. ARE CLEANED OUT AND WORKING PROPERLY AT TIME OF ACCEPTANCE.
5. WIRE MESH SHALL BE LAID OVER THE DROP INLET SO THAT THE WIRE EXTENDS A MINIMUM OF 1 FOOT BEYOND EACH SIDE OF THE INLET STRUCTURE. HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2-INCH OPENINGS SHALL BE USED. IF MORE THAN ONE STRIP OF MESH IS NECESSARY, THE STRIPS SHALL BE OVERLAPPED.
6. FDOT NO. 1 COARSE AGGREGATE SHALL BE PLACED OVER THE WIRE MESH AS INDICATED IN D-903. THE DEPTH OF STONE SHALL BE AT LEAST 12 INCHES OVER THE ENTIRE INLET OPENING. THE STONE SHALL EXTEND BEYOND THE INLET OPENING AT LEAST 18 INCHES ON ALL SIDES.
7. IF THE STONE FILTER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER ADEQUATELY PERFORMS ITS FUNCTION, THE STONES MUST BE PULLED AWAY FROM THE INLET, CLEANED AND REPLACED.
8. BALES SHALL BE EITHER WIRE-BOUND OR STRING-TIED WITH THE BINDINGS ORIENTED AROUND THE SIDES RATHER THAN OVER AND UNDER THE BALES.
9. BALES SHALL BE PLACED LENGTHWISE IN A SINGLE ROW SURROUNDING THE INLET, WITH THE ENDS OF ADJACENT BALES PRESSED TOGETHER.
10. THE FILTER BARRIER SHALL BE ENTRENCHED AND BACKFILLED. A TRENCH SHALL BE EXCAVATED TO A MINIMUM DEPTH OF 8 INCHES. AFTER THE BALES ARE STAKED, THE EXCAVATED SOIL SHALL BE BACKFILLED AND COMPACTED AGAINST THE FILTER BARRIER.
11. EACH BALE SHALL BE SECURELY ANCHORED AND HELD IN PLACE BY AT LEAST TWO STAKES OR REBARS DRIVEN THROUGH THE BALE.
12. LOOSE STRAW SHOULD BE WEDGED BETWEEN BALES TO PREVENT WATER FROM ENTERING BETWEEN BALES.
13. STRAW BALE BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
14. CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED BALES, END RUNS AND UNDERCUTTING BENEATH BALES.
15. NECESSARY REPAIRS TO BARRIERS OR REPLACEMENT OF BALES SHALL BE ACCOMPLISHED PROMPTLY.
16. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE STRAW BALE BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
17. SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
18. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
19. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-THIRD THE HEIGHT OF THE BARRIER.
20. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.
21. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
22. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/3 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
23. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE BEST EROSION AND SEDIMENT CONTROL PRACTICES AS OUTLINED IN THE PLANS. SPECIFICATIONS AND SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT SPECIFICATIONS AND CRITERIA.
24. FOR ADDITIONAL INFORMATION ON SEDIMENT AND EROSION CONTROL REFER TO "THE FLORIDA DEVELOPMENT MANUAL - A GUIDE TO SOUND LAND AND WATER MANAGEMENT" FROM THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION (F.D.E.R.) CHAPTER 6.
25. EROSION AND SEDIMENT CONTROL BARRIERS SHALL BE PLACED ADJACENT TO ALL WETLAND AREAS WHERE THERE IS POTENTIAL FOR DOWNSTREAM WATER QUALITY DEGRADATION. SEE DETAIL SHEET FOR TYPICAL CONSTRUCTION.
26. ALL DISTURBED AREAS SHALL BE GRASSED, FERTILIZED, MULCHED AND MAINTAINED UNTIL A PERMANENT VEGETATIVE COVER IS ESTABLISHED.
27. SOD SHALL BE PLACED IN AREAS WHICH MAY REQUIRE IMMEDIATE EROSION PROTECTION TO ENSURE WATER QUALITY STANDARDS ARE MAINTAINED.
28. ANY DISCHARGE FROM DEWATERING ACTIVITY SHALL BE FILTERED AND CONVEYED TO THE OUTFALL IN A MANNER WHICH PREVENTS EROSION AND TRANSPORTATION OF SUSPENDED SOLIDS TO THE RECEIVING OUTFALL.
29. DEWATERING PUMPS SHALL NOT EXCEED THE CAPACITY OF THAT WHICH REQUIRES A CONSUMPTIVE USE PERMIT FROM THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT.
30. ALL DISTURBED AREAS TO BE STABILIZED THROUGH COMPACTION, SILT SCREENS, HAY BALES, AND GRASSING. ALL FILL SLOPES 3:1 OR STEEPER TO RECEIVE STAKED SOLID SOD.
31. ALL DEWATERING, EROSION, AND SEDIMENT CONTROL TO REMAIN IN PLACE AFTER COMPLETION OF CONSTRUCTION AND REMOVED ONLY WHEN AREAS HAVE STABILIZED.
32. THIS PLAN INDICATES THE MINIMUM EROSION AND SEDIMENT MEASURES REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL APPLICABLE RULES, REGULATIONS AND WATER QUALITY GUIDELINES AND MAY NEED TO INSTALL ADDITIONAL CONTROLS.
33. THE CONTRACTOR SHALL BE REQUIRED TO RESPOND TO ALL WATER MANAGEMENT DISTRICT INQUIRIES, RELATIVE TO COMPLIANCE OF SWFWMD FOR EROSION AND SEDIMENTATION CONTROL. THE COST OF THIS COMPLIANCE SHALL BE PART OF THE CONTRACT.

NOTE:
WHERE FDOT SPECS AND INDEX ARE REFERENCED, PLEASE REFER TO FDOT ROADWAY & TRAFFIC DESIGN STANDARDS, AND FDOT STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION.



PARTIAL INLET — COMPLETED INLET — DITCH BOTTOM INLET

PROTECTION AROUND INLETS OR SIMILAR STRUCTURES

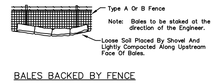


BARRIERS FOR FILL SLOPES

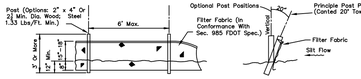
HAY BALE PLACEMENT

N.T.S.

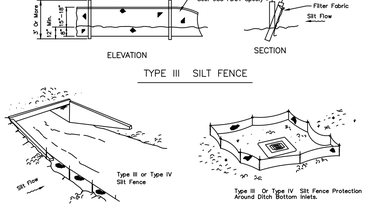
STAKED SYNTHETIC HAY BALE

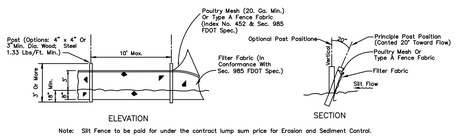


BALES BACKED BY FENCE



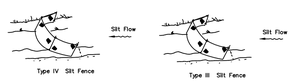
TYPE III SILT FENCE





Note: Silt Fence to be paid for under the contract lump sum price for Erosion and Sediment Control.

TYPE IV SILT FENCE

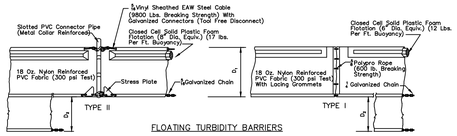


Note: Spacing for Type III & TYPE IV Fence to be in accordance with Chart 1, Sheet 1 of 3, FDOT Index No. 102 and ditch installations at drainage structures Sheet 2 of 3, FDOT Index No. 102.

SILT FENCE APPLICATIONS

SILT FENCE TYPE III & IV

N.T.S.

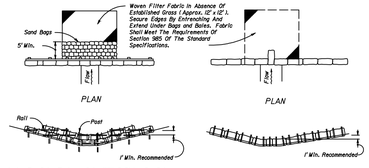


FLOATING TURBIDITY BARRIERS

NOTES:
1. Turbidity barriers are to be used in all permanent bodies of water regardless of water depth.
2. Number and spacing of anchors dependent on current velocities.
3. Deployment of barrier around pile locations may vary to accommodate construction operations.
4. Navigation may require segmenting barrier during construction operations.
5. For additional information see Section 104 of the FDOT Standard Specifications.

TURBIDITY BARRIERS

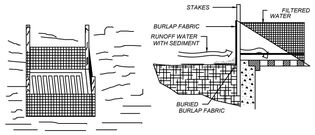
N.T.S.



BARRIER FOR UNPAVED DITCHES

SYNTHETIC HAY BALE BARRIERS TYPE I & II

N.T.S.



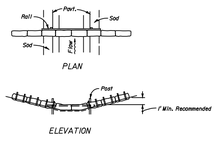
FABRIC SEDIMENT FILTER

SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5 PERCENT) WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 0.5 cfs) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS. SUCH AS IN STREET OR HIGHWAY MEDIANS.

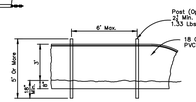
DROP INLET SEDIMENT TRAP

N.T.S.

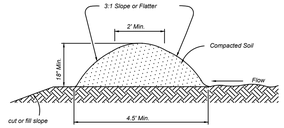


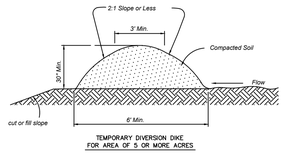
BARRIER FOR PAVED DITCH

NOTICE:
COMPONENTS OF TYPES I & TYPE II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.



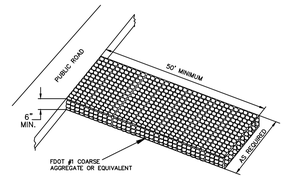
Note:
Turbidity barriers for flowing streams and tidal creeks may be either floating, or staked types or any combinations of types that will suit site conditions and meet erosion control and water quality requirements. The barrier type(s) will be at the Contractors option unless otherwise specified in the plans, however, payment will be under the contract lump sum price established in the bid proposal for Erosion and Sediment Control Posts in staked turbidity barriers to be installed in vertical position unless otherwise directed by the Engineer.





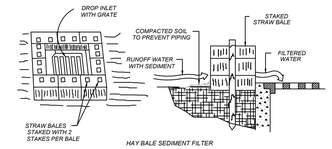
DIVERSION DIKE

N.T.S.



STABILIZED CONSTRUCTION ENTRANCE

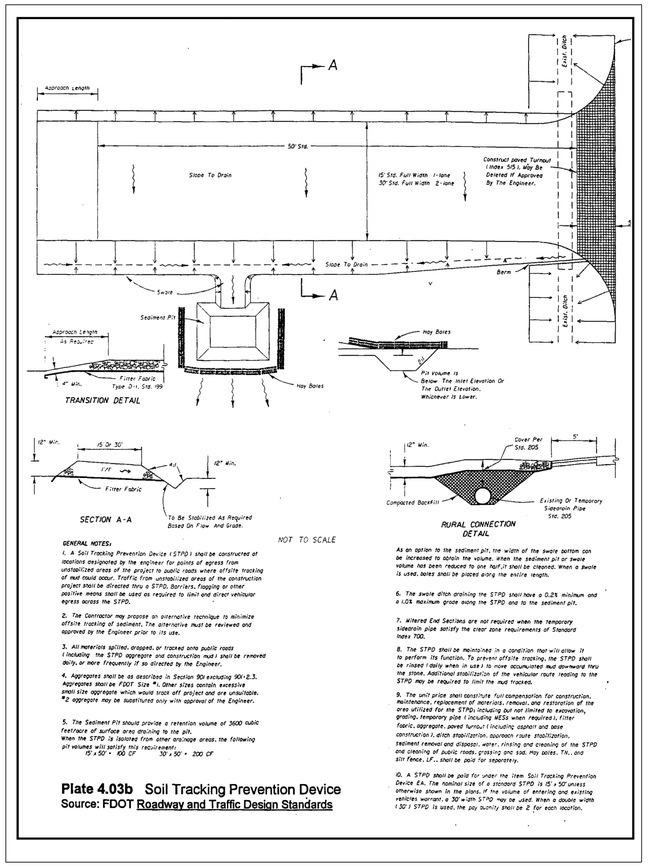
N.T.S.



HAY BALE SEDIMENT FILTER

SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5 PERCENT) WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 0.5 cfs) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.



GENERAL NOTES:

1. A Soil Tracking Prevention Device (STPD) shall be constructed at locations designated by the engineer for points of egress from unstabilized areas of the project to public roads where offsite tracking of mud could occur. Traffic from unstabilized areas of the construction project shall be directed thru a STPD. Barriers, flagging or other positive means shall be used as required to limit and direct vehicular egress across the STPD.

2. The Contractor may propose an alternative technique to minimize offsite tracking of sediment. The alternative must be reviewed and approved by the Engineer prior to its use.

3. All materials spilled, dropped, or tracked onto public roads (including the STPD aggregate and construction mud) shall be removed daily, or more frequently if so directed by the Engineer.

4. Aggregates shall be as described in Section 901 excluding 901-2.3. Aggregates shall be FDOT Size #1. Other sizes contain excessive small size aggregate which would track off project and are unsuitable. #2 aggregate may be substituted only with approval of the Engineer.

5. The Sediment Pit should provide a retention volume of 3600 cubic feet/acre of surface area draining to the pit. When the STPD is isolated from other drainage areas, the following pit volumes will satisfy this requirement.
15' x 50' - 600 CF
30' x 50' - 200 CF

6. The swale ditch draining the STPD shall have a 0.2% minimum and a 1.0% maximum grade along the STPD and to the sediment pit.

7. Mitered End Sections are not required when the temporary sidedrain pipe satisfy the clear zone requirements of Standard Index 700.

8. The STPD shall be maintained in a condition that will allow it to perform its function. To prevent offsite tracking, the STPD shall be shaped daily when in use (to move accumulated mud downward thru the stone. Additional stabilization of the vehicular route leading to the STPD may be required to limit the mud tracked.

9. The unit price shall constitute full compensation for construction, maintenance, replacement of materials, removal, and restoration of the area utilized for the STPD including but not limited to excavation, grading, temporary pipe (including MESs when required), filter fabric, aggregate, paved turnout (including asphalt and base construction), ditch stabilization, approach route stabilization, sediment removal and disposal, water, rinsing and cleaning of the STPD and cleaning of public roads, grassing and sod. Hay bales, TN., and silt fence, LF., shall be paid for separately.

10. A STPD shall be paid for under the item Soil Tracking Prevention Device EA. The nominal size of a standard STPD is 15' x 50' unless otherwise shown in the plans. If the volume of entering and existing vehicles warrant, a 30'-width STPD may be used. When a double width (30') STPD is used, the pay quantity shall be 2 for each location.

Plate 4.03b Soil Tracking Prevention Device
Source: FDOT Roadway and Traffic Design Standards

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

F:\ANC7\CAD\Planset\Final\05 EROSION CONTROL DETAILS.dwg,5/1/2023 3:09:52 PM

DAVE SCHMITT ENGINEERING, INC.
12301 Lake Underhill Road Suite 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

EROSION CONTROL DETAILS

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: NONE
SHEET: 05 OF 33

STORM WATER POLLUTION PREVENTION PLAN

OWNER'S REQUIREMENTS

SITE DESCRIPTION

PROJECT NAME AND LOCATION:
MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

OWNER NAME AND ADDRESS:
DEVELOPER:
BPG APOPKA PROPERTIES, LLC.
1540 GENESSEE STREET,
KANSAS CITY, MO. 64102
CONTACT: ERIC WYANCKO
PHONE: 913-333-9196
EMAIL: ERIC.WYANCKO@BLUESCOPEPROPERTIES.COM

DESCRIPTION:
CONSTRUCTION OF 2 INDUSTRIAL WAREHOUSE FACILITY AND AFFILIATED INFRASTRUCTURE

SOIL DISTURBING ACTIVITIES WILL INCLUDE:
CLEARING, GRUBBING, EARTHWORK, GRADING, DRAINAGE SYSTEM, UTILITY SYSTEMS, PAVING AND PREPARATION FOR FINAL PLANTING AND SEEDING.

RUNOFF CURVE NUMBERS:
1. PRE-CONSTRUCTION = SEE DRAINAGE CALCULATION NOTEBOOK
2. POST-CONSTRUCTION = SEE DRAINAGE CALCULATION NOTEBOOK

SOILS:
SEE SOIL BORING REPORT FOR SOILS DATA

SITE MAPS:
* SEE ATTACHED GRADING PLAN FOR PRE & POST DEVELOPMENT GRADES, AREAS OF SOILS, DISTURBANCE, LOCATION OF SURFACE WATERS, WETLANDS, PROTECTED AREAS, MAJOR STRUCTURAL AND NONSTRUCTURAL CONTROLS AND STORM WATER DISCHARGE POINTS.
* SEE ATTACHED EROSION & TURBIDITY CONTROL PLAN FOR LOCATION OF TEMPORARY STABILIZATION PRACTICES, AND TURBIDITY BARRIERS
* SEE GENERAL NOTES FOR REQUIREMENTS FOR TEMPORARY AND PERMANENT STABILIZATION.

SITE AREA:
1. TOTAL AREA OF SITE = 71.53 AC.

NAME OF RECEIVING WATERS:
WET POND
LATITUDE: 28°40'39.586"N
LONGITUDE: 81°33'52.758"W
DRY POND
LATITUDE: 28°40'39.745"N
LONGITUDE: 81°33'50.414"W
CFX POND
LATITUDE: 28°40'39.745"N
LONGITUDE: 81°33'47.199"W

1. ANTICIPATED START DATE OF CONSTRUCTION: 07/2023
2. ANTICIPATED END DATE OF CONSTRUCTION: 07/2024

(CONSTRUCTION DATES ARE TO BE FILLED IN PRIOR TO COMMENCEMENT OF CONSTRUCTION)

CONTROLS

THIS PLAN UTILIZES BEST MANAGEMENT PRACTICES TO CONTROL EROSION AND TURBIDITY CAUSED BY STORM WATER RUN OFF. AN EROSION AND TURBIDITY PLAN HAS BEEN PREPARED TO INSTRUCT THE CONTRACTOR ON PLACEMENT OF THESE CONTROLS. IT IS THE CONTRACTORS RESPONSIBILITY TO INSTALL AND MAINTAIN THE CONTROLS PER PLAN AS WELL AS ENSURING THE PLAN IS PROVIDING THE PROPER PROTECTION AS REQUIRED BY FEDERAL, STATE AND LOCAL LAWS. REFER TO "CONTRACTORS RESPONSIBILITY" FOR A VERBAL DESCRIPTION OF THE CONTROLS THAT MAY BE IMPLEMENTED.

STORM WATER MANAGEMENT
STORM WATER DRAINAGE WILL BE PROVIDED BY (DESCRIPTION:) A SERIES OF PIPES AND INLETS CONVEYING RUNOFF TO THE EXISTING STORM WATER RETENTION POND FOR THE PROJECT. AREAS WHICH ARE NOT TO BE CONSTRUCTED ON, BUT WILL BE REGRADED SHALL BE STABILIZED IMMEDIATELY AFTER GRADING IS COMPLETE, WHEN CONSTRUCTION IS COMPLETE, A TOTAL OF 31.99 ACRES WILL HAVE BEEN REGRADED. THE SITE DISCHARGES TO A WET DETENTION SYSTEM. WHERE PRACTICAL, TEMPORARY SEDIMENT BASINS WILL BE USED TO INTERCEPT SEDIMENT BEFORE ENTERING THE PERMANENT DETENTION BASIN.

TIMING OF CONTROLS/MEASURES

REFER TO "CONTRACTORS REQUIREMENTS" FOR THE TIMING OF CONTROL/MEASURES.

CERTIFICATION OF COMPLIANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS

IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS RELATED TO STORM WATER MANAGEMENT AND EROSION AND TURBIDITY CONTROLS, THE FOLLOWING PERMITS HAVE BEEN OBTAINED (TO BE FILLED IN PRIOR TO COMMENCEMENT OF CONSTRUCTION).

F.D.E.P. DREDGE/FILL PERMIT # ____________
A.C.O.E. DREDGE/FILL PERMIT # ____________
S.F.W.M.D. M.S.S.W. PERMIT # ____________
N.P.D.E.S PERMIT # ____________

POLLUTION PREVENTION PLAN CERTIFICATION

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR

GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

SIGNED:____________________
OWNER/OPERATOR

DATED: ____________

CONTRACTOR'S REQUIREMENTS

GENERAL

THE CONTRACTOR SHALL AT A MINIMUM IMPLEMENT THE CONTRACTOR'S REQUIREMENTS OUTLINED BELOW AND THOSE MEASURES SHOWN ON THE EROSION AND TURBIDITY CONTROL PLAN. IN ADDITION THE CONTRACTOR SHALL UNDERTAKE ADDITIONAL MEASURES REQUIRED TO BE IN COMPLIANCE WITH APPLICABLE PERMIT CONDITIONS AND STATE WATER QUALITY STANDARDS. DEPENDING ON THE NATURE OF MATERIALS AND METHODS OF CONSTRUCTION THE CONTRACTOR MAY BE REQUIRED TO ADD FLOCCULANTS TO THE RETENTION SYSTEM PRIOR TO PLACING THE SYSTEM INTO OPERATION.

SEQUENCE OF MAJOR ACTIVITIES:

THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE
2. INSTALL SILT FENCES AND HAY BALES AS REQUIRED
3. CLEAR AND GRUB FOR DIVERSION SWALES/DIKES AND SEDIMENT BASIN
4. CONSTRUCT SEDIMENTATION BASIN
5. CONTINUE CLEARING AND GRUBBING
6. STOCK PILE TOP SOIL IF REQUIRED
7. PERFORM PRELIMINARY GRADING ON SITE AS REQUIRED
8. STABILIZE DENUDED AREAS AND STOCKPILES AS SOON AS PRACTICABLE
9. INSTALL UTILITIES, STORM SEWER, CURBS & GUTTER.
10. APPLY BASE TO PROJECT
11. COMPLETE GRADING AND INSTALL PERMANENT SEEDING/SOD AND PLANTING
12. COMPLETE FINAL PAVING
13. REMOVE ACCUMULATED SEDIMENT FROM BASINS
14. WHEN ALL CONSTRUCTION ACTIVITY IS COMPLETE AND THE SITE IS STABILIZED, REMOVE ANY TEMPORARY DIVERSION SWALES/DIKES AND RESEED/SOD AS REQUIRED

TIMING OF CONTROLS/MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES, THE SILT FENCES AND HAY BALES, STABILIZED CONSTRUCTION ENTRANCE AND SEDIMENT BASIN WILL BE CONSTRUCTED PRIOR TO CLEARING OR GRADING OF ANY OTHER PORTIONS OF THE SITE. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICAL IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, THAT AREA WILL BE STABILIZED PERMANENTLY IN ACCORDANCE WITH THE PLANS. AFTER THE ENTIRE SITE IS STABILIZED, THE ACCUMULATED SEDIMENT WILL BE REMOVED FROM THE SEDIMENT TRAPS AND THE EARTH DIKE/SWALES WILL BE REGRADED/REMOVED AND STABILIZED IN ACCORDANCE WITH THE EROSION & TURBIDITY CONTROL PLAN.

CONTROLS

IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT THE EROSION AND TURBIDITY CONTROLS AS SHOWN ON THE EROSION AND TURBIDITY CONTROL PLAN. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THESE CONTROLS ARE PROPERLY INSTALLED , MAINTAINED AND FUNCTIONING PROPERLY TO PREVENT TURBID OR POLLUTED WATER FROM LEAVING THE PROJECT SITE. THE CONTRACTOR WILL ADJUST THE EROSION AND TURBIDITY CONTROLS SHOWN ON THE EROSION AND TURBIDITY CONTROL PLAN AND ADD ADDITIONAL CONTROL MEASURES, AS REQUIRED,TO ENSURE THE SITE MEETS ALL FEDERAL, STATE AND LOCAL EROSION AND TURBIDITY CONTROL REQUIREMENTS. THE FOLLOWING BEST MANAGEMENT PRACTICES WILL BE IMPLEMENTED BY THE CONTRACTOR AS REQUIRED BY THE EROSION AND TURBIDITY CONTROL PLAN AND AS REQUIRED TO MEET THE EROSION AND TURBIDITY REQUIREMENTS IMPOSED ON THE PROJECT SITE BY THE REGULATORY AGENCIES.

EROSION AND SEDIMENT CONTROLS
STABILIZATION PRACTICES

1. SYNTHETIC HAY BALE BARRIER: SYNTHETIC HAY BALE BARRIERS CAN BE USED BELOW DISTURBED AREAS SUBJECT TO SHEET AND RILL EROSION WITH THE FOLLOWING LIMITATIONS.
   A. WHERE THE MAXIMUM SLOPE BEHIND THE BARRIER IS 33 PERCENT.
   B. IN MINOR SWALES OR DITCH LINES WHERE THE MAXIMUM CONTRIBUTING DRAINAGE AREA IS NO GREATER THAN 2 ACRES.
   C. WHERE EFFECTIVENESS IS REQUIRED FOR LESS THAN 3 MONTHS.
   D. EVERY EFFORT SHOULD BE MADE TO LIMIT THE USE OF BALE BARRIERS CONSTRUCTED IN LIVE STREAMS OR IN SWALES WHERE THERE IS THE POSSIBILITY OF A WASHOUT. IF NECESSARY, MEASURES SHALL BE TAKEN TO PROPERLY ANCHOR BALES TO INSURE AGAINST WASHOUT.
2. FILTER FABRIC BARRIER: FILTER FABRIC BARRIERS CAN BE USED BELOW DISTURBED AREAS SUBJECT TO SHEET AND RILL EROSION WITH THE FOLLOWING LIMITATION:
   WHERE THE MAXIMUM SLOPE BEHIND THE BARRIER IS 33 PERCENT.
3. BRUSH BARRIER WITH FILTER FABRIC: BRUSH BARRIER MAY BE USED BELOW DISTURBED AREAS SUBJECT TO SHEET AND RILL EROSION WHERE

   ENOUGH RESIDUE MATERIAL IS AVAILABLE ON SITE.
4. LEVEL SPREADER: A LEVEL SPREADER MAY BE USED WHERE SEDIMENT-FREE STORM RUNOFF IS INTERCEPTED AND DIVERTED AWAY FROM THE GRADED AREAS ONTO UNDISTURBED STABILIZED AREAS. THIS PRACTICE APPLIES ONLY IN THOSE SITUATIONS WHERE THE SPREADER CAN BE CONSTRUCTED ON UNDISTURBED SOIL AND THE AREA BELOW THE LEVEL LIP IS STABILIZED. THE WATER SHOULD NOT BE ALLOWED TO RECONCENTRATE AFTER RELEASE.

CONTROLS CONT'D.

5. STOCKPILING MATERIAL: NO EXCAVATED MATERIAL SHALL BE STOCKPILED IN SUCH A MANNER AS TO DIRECT RUNOFF DIRECTLY OFF THE PROJECT SITE INTO ANY ADJACENT WATER BODY OR STORM WATER COLLECTION FACILITY.
6. EXPOSED AREA LIMITATION: THE SURFACE AREA OF OPEN, RAW ERODIBLE SOIL EXPOSED BY CLEARING AND GRUBBING OPERATIONS OR EXCAVATION AND FILLING OPERATIONS SHALL NOT EXCEED 10 ACRES. THIS REQUIREMENT MAY BE WAIVED FOR LARGE PROJECTS WITH AN EROSION CONTROL PLAN WHICH DEMONSTRATES THAT OPENING OF ADDITIONAL AREAS WILL NOT SIGNIFICANTLY AFFECT OFF-SITE DEPOSIT OF SEDIMENTS.
7. INLET PROTECTION: INLETS AND CATCH BASINS WHICH DISCHARGE DIRECTLY OFF-SITE SHALL BE PROTECTED FROM SEDIMENT-LADEN STORM RUNOFF UNTIL THE COMPLETION OF ALL CONSTRUCTION OPERATIONS THAT MAY CONTRIBUTE SEDIMENT TO THE INLET.
8. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE, BUT IN NO CASE MORE THAN 7 DAYS, IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED.
9. TEMPORARY SEEDING AND MULCHING: SLOPES STEEPER THAN 6:1 THAT FALL WITHIN THE CATEGORY ESTABLISHED IN PARAGRAPH 8 ABOVE SHALL ADDITIONALLY RECEIVE MULCHING OF APPROXIMATELY 2 INCHES LOOSE MEASURE OF MULCH MATERIAL CUT INTO THE SOIL OF THE SEEDED AREA ADEQUATE TO PREVENT MOVEMENT OF SEED AND MULCH.
10. TEMPORARY GRASSING: THE SEEDED OR SEEDED AND MULCHED AREA(S) SHALL BE ROLLED AND WATERED OR HYDROMULCHED OR OTHER SUITABLE METHODS IF REQUIRED TO ASSURE OPTIMUM GROWING CONDITIONS FOR THE ESTABLISHMENT OF A GOOD GRASS COVER. TEMPORARY GRASSING SHALL BE THE SAME MIX & AMOUNT REQUIRED FOR PERMANENT GRASSING IN THE CONTRACT SPECIFICATIONS.
11. TEMPORARY REGRASSING : IF, AFTER 14 DAYS FROM SEEDING, THE TEMPORARY GRASSED AREAS HAVE NOT ATTAINED A MINIMUM OF 85 PERCENT UNIFORM GOOD GRASS COVER, THE AREA WILL BE REWORKED AND ADDITIONAL SEED APPLIED SUFFICIENT TO ESTABLISH THE DESIRED VEGETATIVE COVER.
12. MAINTENANCE: ALL FEATURES OF THE PROJECT DESIGNED AND CONSTRUCTED TO PREVENT EROSION AND SEDIMENT SHALL BE MAINTAINED DURING THE LIFE OF THE CONSTRUCTION SO AS TO FUNCTION AS THEY WERE ORIGINALLY DESIGNED AND CONSTRUCTED.
13. PERMANENT EROSION CONTROL: THE EROSION CONTROL FACILITIES OF THE PROJECT SHOULD BE DESIGNED TO MINIMIZE THE IMPACT ON THE OFFSITE FACILITIES.
14. PERMANENT SEEDING: ALL AREAS WHICH HAVE BEEN DISTURBED BY CONSTRUCTION WILL, AS A MINIMUM, BE SEEDED. THE SEEDING MIX MUST PROVIDE BOTH LONG-TERM VEGETATION AND RAPID GROWTH SEASONAL VEGETATION. SLOPES STEEPER THAN 4:1 SHALL BE SEEDED AND MULCHED OR SODDED.

STRUCTURAL PRACTICES

1. TEMPORARY DIVERSION DIKE: TEMPORARY DIVERSION DIKES MAY BE USED TO DIVERT RUNOFF THROUGH A SEDIMENT-TRAPPING FACILITY.
2. TEMPORARY SEDIMENT TRAP: A SEDIMENT TRAP SHALL BE INSTALLED IN AN DRAINAGEWAY AT A STORM DRAIN INLET OR AT OTHER POINTS OF DISCHARGE FROM A DISTURBED AREA.
   THE FOLLOWING SEDIMENT TRAPS MAY BE CONSTRUCTED EITHER INDEPENDENTLY OR IN CONJUNCTION WITH A TEMPORARY DIVERSION DIKE:
   A. BLOCK & GRAVEL SEDIMENT FILTER - THIS PROTECTION IS APPLICABLE WHERE HEAVY FLOWS AND/OR WHERE AN OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE POUNDING AROUND THE STRUCTURE.
   B. GRAVEL SEDIMENT TRAP - THIS PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE POUNDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES & UNPROTECTED AREAS.
   C. DROP INLET SEDIMENT TRAP - THIS PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (S < 5%) AND WHERE SHEET OR OVERLAND FLOWS (Q < 0.5 CFS) ARE TYPICAL. THIS METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS SUCH AS IN STREET OR HIGHWAY MEDIANS.
3. OUTLET PROTECTION: APPLICABLE TO THE OUTLETS OF ALL PIPES AND PAVED CHANNEL SECTIONS WHERE THE FLOW COULD CAUSE EROSION & SEDIMENT PROBLEM TO THE RECEIVING WATER BODY. SILT FENCES & SYNTHETIC HAY BALES ARE TO BE INSTALLED IMMEDIATELY DOWNSTREAM OF THE DISCHARGING STRUCTURE AS SHOWN ON THE OUTLET PROTECTION DETAIL.
4. SEDIMENT BASIN: WILL BE CONSTRUCTED AT THE COMMON DRAINAGE LOCATIONS THAT SERVE AN AREA WITH 10 OR MORE DISTURBED ACRES AT ONE TIME, THE PROPOSED STORM WATER PONDS (OR TEMPORARY PONDS) WILL BE CONSTRUCTED FOR USE AS SEDIMENT BASINS. THESE SEDIMENT BASINS MUST PROVIDE A MINIMUM OF 3,600 CUBIC FEET OF STORAGE PER ACRE DRAINED UNTIL FINAL STABILIZATION OF THE SITE.

NOTE:
THE 3,600 CUBIC FEET OF STORAGE AREA PER ACRE DRAINED DOES NOT APPLY TO FLOWS FROM OFFSITE AREAS AND FLOWS FROM ONSITE AREAS

THAT ARE EITHER UNDISTURBED OR HAVE UNDERGONE FINAL STABILIZATION WHERE SUCH FLOWS ARE DIVERTED AROUND BOTH THE DISTURBED AREA AND THE SEDIMENT BASIN. ANY TEMPORARY SEDIMENT BASINS CONSTRUCTED MUST BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS FOR STRUCTURAL FILL. ALL SEDIMENT COLLECTED IN PERMANENT OR TEMPORARY SEDIMENT TRAPS MUST BE REMOVED UPON FINAL STABILIZATION.

OTHER CONTROLS

WASTE DISPOSAL

ALL WASTE MATERIALS EXCEPT LAND CLEARING DEBRIS SHALL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS. THE DUMPSTER WILL BE EMPTIED AS NEEDED AND THE TRASH WILL BE HAULED TO A STATE APPROVED LANDFILL. ALL PERSONNEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL. NOTICES STATING THESE PRACTICES WILL BE POSTED AT THE CONSTRUCTION SITE BY THE CONSTRUCTION SUPERINTENDENT, THE INDIVIDUAL WHO MANAGES THE DAY-TO-DAY SITE OPERATIONS, WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.

HAZARDOUS WASTE

ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES AND THE SITE SUPERINTENDENT, THE INDIVIDUAL WHO MANAGES DAY-TO-DAY SITE OPERATIONS,WILL BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED.

SANITARY WASTE

ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS AS NEEDED TO PREVENT POSSIBLE SPILLAGE. THE WASTE WILL BE COLLECTED AND DEPOSED OF IN ACCORDANCE WITH STATE AND LOCAL WASTE DISPOSAL REGULATIONS FOR SANITARY SEWER OR SEPTIC SYSTEMS.

OFFSITE VEHICLE TRACKING

A STABILIZED CONSTRUCTION ENTRANCE WILL BE PROVIDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS. THE PAVED STREET ADJACENT TO THE SITE ENTRANCE WILL BE SWEPT DAILY TO REMOVE ANY EXCESS MUD, DIRT OR ROCK TRACKED FROM THE SITE. DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE WILL BE COVERED WITH A TARPAULIN. OFFSITE VEHICLE TRACKING SHALL BE CONDUCTED DAILY OR MORE FREQUENTLY AS NEEDED.

INVENTORY FOR POLLUTION PREVENTION PLAN

THE MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ONSITE DURING CONSTRUCTION:

☐ Concrete	☐ Fertilizers	☐ Wood
☐ Asphalt	☐ Petroleum Based Products	☐ Masonry Blocks
☐ Tar	☐ Cleaning Solvents	☐ Roofing Materials
☐ Detergents	☐ Paints	☐ Metal Studs
☐ ______	☐ ______	☐ ______

SPILL PREVENTION

MATERIAL MANAGEMENT PRACTICES
THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF:

GOOD HOUSEKEEPING
THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ONSITE DURING THE CONSTRUCTION PROJECT:

* AN EFFORT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB.
* ALL MATERIALS STORED ONSITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
* PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL.
* SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
* WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
* MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
* THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE MATERIALS ONSITE RECEIVE PROPER USE AND DISPOSAL.

HAZARDOUS PRODUCTS
THESE PRACTICES ARE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS.

* PRODUCTS WILL BE KEPT IN ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.
* ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED; THEY CONTAIN IMPORTANT PRODUCT INFORMATION.
* IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURER'S OR LOCAL AND STATE RECOMMENDED METHODS FOR PROPER DISPOSAL WILL BE FOLLOWED.

SPILL PREVENTION CONT'D.

PRODUCT SPECIFIC PRACTICES
THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ONSITE:

PETROLEUM PRODUCTS
ALL ONSITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ONSITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

FERTILIZERS
FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORM WATER. STORAGE WILL BE IN A COVERED AREA. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

PAINTS
ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURERS' INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.

CONCRETE TRUCKS
WASHING OF VEHICLES SHOULD BE CONDUCTED USING PRACTICES THAT WILL PREVENT DIRECT, UNTREATED DISCHARGES OF WASTEWATER AND HAZARDOUS WASTES TO SURFACE AND GROUND WATERS. A DESIGNATED AREA MUST BE CREATED SPECIFICALLY FOR WASHING VEHICLES THAT WILL BE LAID WITH FILTER FABRIC, CRUSHED STONE (DOT GRAVEL #2 AND UP) AND COVERED WITH LINED BERM.

SPILL CONTROL PRACTICES
IN ADDITION TO THE GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTIONS OF THIS PLAN, THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:

MANUFACTURERS' RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED ON SITE AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.

MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ONSITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, LIQUID ABSORBENT (i.e. KITTY LITTER OR EQUAL), SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.

ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.

THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.

SPILL OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE OF THE SPILL. (800) 320-0519

THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING AND HOW TO CLEAN UP THE SPILL IF THERE IS ANOTHER ONE. A DESCRIPTION OF THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES WILL ALSO BE INCLUDED.

THE SITE SUPERINTENDENT RESPONSIBLE FOR THE DAY-TO-DAY SITE OPERATIONS, WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. HE/SHE WILL DESIGNATE AT LEAST ONE OTHER SITE PERSONNEL WHO WILL RECEIVE SPILL PREVENTION AND CLEANUP TRAINING. THESE INDIVIDUALS WILL EACH BECOME RESPONSIBLE FOR A PARTICULAR PHASE OF PREVENTION AND CLEANUP. THE NAMES OF RESPONSIBLE SPILL PERSONNEL WILL BE POSTED IN THE MATERIAL STORAGE AREA AND IF APPLICABLE, IN THE OFFICE TRAILER ONSITE.

MAINTENANCE/INSPECTION PROCEDURES

EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES

THE FOLLOWING ARE INSPECTION AND MAINTENANCE PRACTICES THAT WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS.

* NO MORE THAN 10 ACRES OF THE SITE WILL BE DENUDED AT ONE TIME WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.
* ALL CONTROL MEASURES WILL BE INSPECTED BY THE SUPERINTENDENT, THE PERSON RESPONSIBLE FOR THE DAY TO DAY SITE OPERATION OR SOMEONE APPOINTED BY THE SUPERINTENDENT, AT LEAST ONCE A WEEK AND FOLLOWING ANY STORM EVENT OF 0.5 INCHES OR GREATER.
* ALL TURBIDITY CONTROL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF A REPAIR IS NECESSARY, IT WILL BE INITIATED WITHIN 24 HOURS OF A 0.5 INCH RAIN EVENT.
* BUILT UP SEDIMENT WILL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE FENCE.
* SILT FENCE WILL BE INSPECTED FOR DEPTH OF SEDIMENT, TEARS, TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS, AND TO SEE THAT THE FENCE POSTS ARE FIRMLY IN THE GROUND.
* DIVERSION DIKES/SWALES WILL BE INSPECTED AND ANY BREACHES PROMPTLY REPAIRED.

MAINT./INSP. PROCEDURES CONT'D.

* INSPECTIONS SHALL BE CONDUCTED AT A MINIMUM OF EVERY 7 DAYS OR WITHIN 24 HOURS OF A 0.5" RAIN EVENT.
* THE SEDIMENT BASINS WILL BE INSPECTED FOR THE DEPTH OF SEDIMENT, AND BUILT UP SEDIMENT WILL BE REMOVED WHEN IT REACHES 10 PERCENT OF THE DESIGN CAPACITY OR AT THE END OF THE JOB, WHICHEVER COMES FIRST.
* TEMPORARY AND PERMANENT SEEDING AND PLANTING WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
* A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. A COPY OF THE REPORT FORM TO BE COMPLETED BY THE INSPECTOR IS ATTACHED.
  THE REPORTS WILL BE KEPT ON SITE DURING CONSTRUCTION AND AVAILABLE UPON REQUEST TO THE OWNER, ENGINEER OR ANY FEDERAL, STATE OR LOCAL AGENCY APPROVING SEDIMENT AND AND EROSION PLANS, OR STORM WATER MANAGEMENT PLANS.
  THE REPORTS SHALL BE MADE AND RETAINED AS PART OF THE STORM WATER POLLUTION PREVENTION PLAN FOR AT LEAST THREE YEARS FROM THE DATE THAT THE SITE IS FINALLY STABILIZED AND THE NOTICE OF TERMINATION IS SUBMITTED THE REPORTS SHALL IDENTIFY ANY INCIDENTS OF NON-COMPLIANCE.
* THE SITE SUPERINTENDENT WILL SELECT UP TO THREE INDIVIDUALS WHO WILL BE RESPONSIBLE FOR INSPECTIONS, MAINTENANCE AND REPAIR ACTIVITIES, AND FILLING OUT THE INSPECTION AND MAINTENANCE REPORT.
* PERSONNEL SELECTED FOR INSPECTION AND MAINTENANCE RESPONSIBILITIES WILL RECEIVE TRAINING FROM THE SITE. SUPERINTENDENT. THEY WILL BE TRAINED IN ALL THE INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS USED ONSITE IN GOOD WORKING ORDER.

NON-STORM WATER DISCHARGES

IT IS EXPECTED THAT THE FOLLOWING NON-STORM WATER DISCHARGES WILL OCCUR FROM THE SITE DURING THE CONSTRUCTION PERIOD:

* WATER FROM WATER LINE FLUSHING
* PAVEMENT WASH WATERS (WHERE NO SPILLS OR LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE OCCURRED).
* UNCONTAMINATED GROUNDWATER (FROM DEWATERING EXCAVATION).

ALL NON-STORM WATER DISCHARGES WILL BE DIRECTED TO THE SEDIMENT BASIN PRIOR TO DISCHARGE.

CONTRACTOR'S CERTIFICATION

I CERTIFY UNDER PENALTY OF LAW THAT I UNDERSTAND, AND SHALL COMPLY WITH, THE TERMS AND CONDITIONS OF THE STATE OF FLORIDA GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES AND THIS STORMWATER POLLUTION PREVENTION PLAN PREPARED THEREUNDER.

RESPONSIBLE FOR/DUTIES	GENERAL CONTRACTOR	SUB-CONTRACTOR	SUB-CONTRACTOR	SUB-CONTRACTOR	SUB-CONTRACTOR	SUB-CONTRACTOR
BUSINESS NAME AND ADDRESS OF CONTRACTOR & ALL SUBS						
DATE						
SIGNATURE						

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

SWPPP
MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: N/S
SHEET: 06 OF 33

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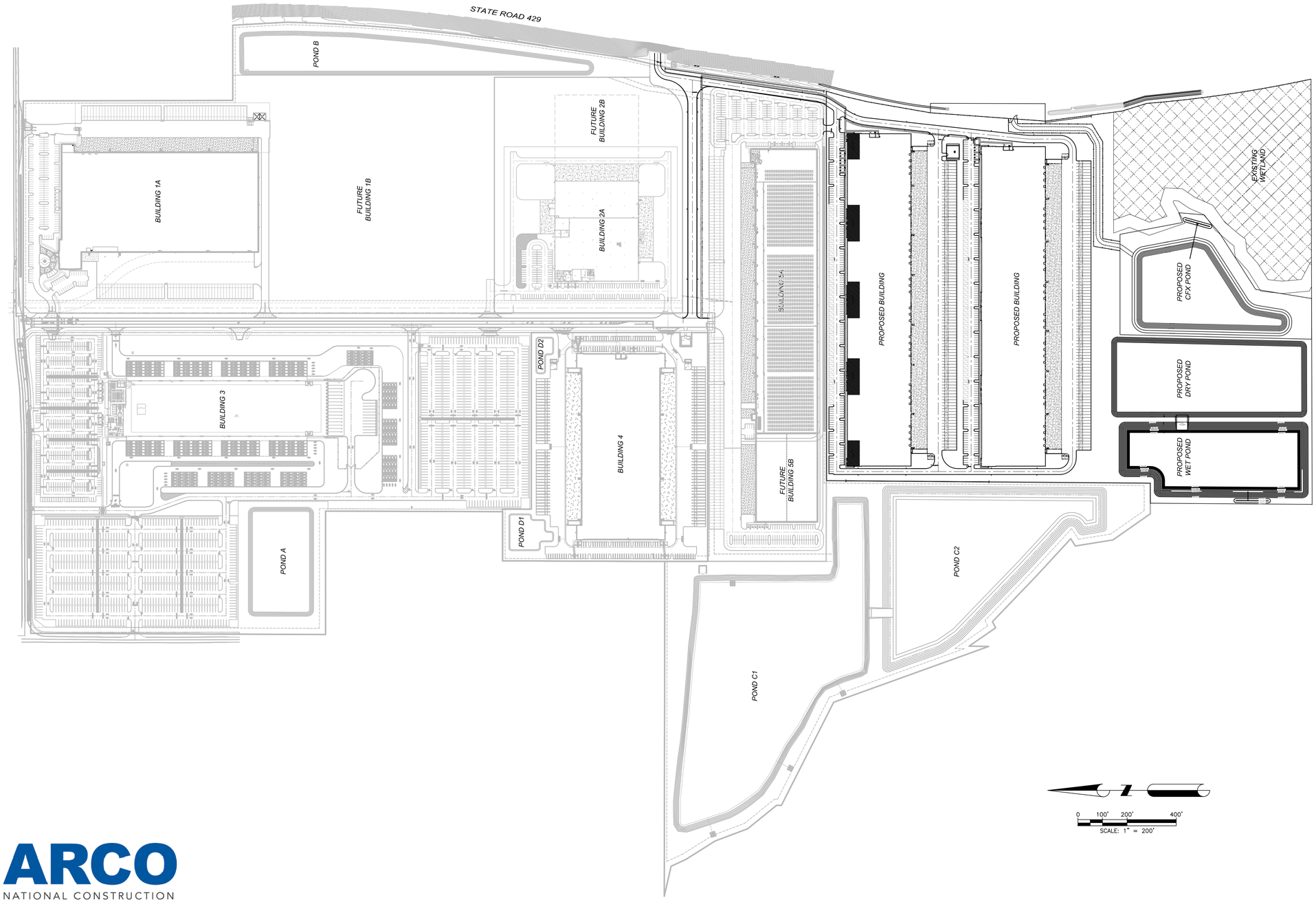

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

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12301 LAKE UNDERHILL ROAD
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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
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MASTER SITE PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 200'
SHEET: 07 OF 33

NOTES

GENERAL:

PROJECT SHALL COMPLY WITH THE LIGHT INDUSTRIAL USE DESIGN STANDARDS SET FORTH IN CITY OF APOPKA LAND DEVELOPMENT CODE.

LANDSCAPING:

ALL LANDSCAPING SHALL MEET OR EXCEED THE REQUIREMENTS OF CITY OF APOPKA LAND DEVELOPMENT CODE.

SITE LIGHTING:

ALL SITE LIGHTING SHALL MEET OR EXCEED THE REQUIREMENTS OF CITY OF APOPKA LAND DEVELOPMENT CODE.

SIGNAGE:

POLE SIGNS, BILLBOARDS AND ALL OTHER SIGNAGE SHALL COMPLY WITH THE CITY OF APOPKA LAND DEVELOPMENT CODE.

EASEMENTS:

ANY EASEMENT SHOWN AS PROPOSED WILL BE RECORDED PRIOR TO ISSUING THE CERTIFICATE OF OCCUPANCY.

UTILITY PROVIDERS

WATER:	CITY OF APOPKA
WASTEWATER:	CITY OF APOPKA
ELECTRIC:	DUKE ENERGY

PHASING

PROJECT WILL BE CONSTRUCTED IN 2 PHASES.

SOILS

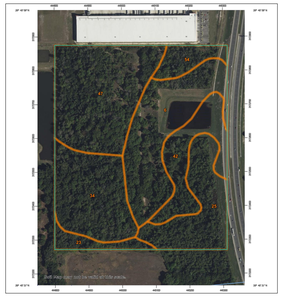
SOIL SYMBOL	SOIL DESCRIPTION
6	CANDLER-APOPKA FINE SANDS, 5 TO 12 PERCENT SLOPES
23	MALABAR FINE SAND, 0 TO 5 PERCENT SLOPES
25	OKEELANTA MUCK, 0 TO 5 PERCENT SLOPES
34	POMELO FINE SAND, 0 TO 5 PERCENT SLOPES
42	SANIBEL MUCK, 0 TO 5 PERCENT SLOPES
47	TAVARES-MILLHOPPER FINE SANDS, 0 TO 5 PERCENT SLOPES
54	ZOLFO FINE SAND, 0 TO 2 PERCENT SLOPES

VEGETATION

GENERALIZED VEGETATION BASED UPON THE FLORIDA LAND USE, COVER AND FORMS CLASSIFICATION SYSTEM (FLUCFCS) OR THE NATURAL COMMUNITY TYPES AS DEVELOPED BY THE FLORIDA NATURAL AREAS INVENTORY.

STORMWATER MANAGEMENT

STORMWATER FOR THE PROPERTY WILL BE HANDLED BY ON-SITE POND AS REQUIRED BY CITY OF APOPKA AND THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT. BASED ON THE NATIONAL FLOOD INSUANCE PROGRAM FIRM MAP NO. 12095C0125H EFFECTIVE SEPTEMBER 24, 2021 THE DESCRIBED PROPERTY IS WITHIN ZONE "X" AND ZONE "AE" WITH BASE FLOOD ELEVATION HAS BEEN ESTABLISHED.



TRAFFIC ANALYSIS

PER 11TH EDITION ITE TRIP GENERATION MANUAL - LAND USE WAREHOUSE (150) - 1,364 ADT 151 PM PEAK HOUR TRIP. (27 % IN AND 73% OUT)

BUILDING DATA

BUILDING FOOTPRINT AREA:	691,016 S.F.
MAX. BUILDING HEIGHT:	45 FT.
MAX. FLOOR AREA RATIO:	0.40 FAR

YARD SETBACKS

REQUIRED:

FRONT:	10 FT.
SIDES:	10FT (30 Ft when adjacent to a residential use or District)
REAR:	10 FT (30 Ft when adjacent to a residential use or District)

SITE DATA

TOTAL GROSS AREA:	71.3 AC.	
EXISTING ZONING:	I-L	
ADJACENT ZONING:		
NORTH:	PUD	
EAST:	A-1	
SOUTH	CONSERVATION	
WEST	PUD	
FLU	INDUSTRIAL	
REQUIRED OPEN-SPACE	3.6 AC.	5%
PROPOSED OPEN-SPACE:	10.02 AC.	14.17%
PERVIOUS AREA:	33.77 AC.	47.75%
IMPERVIOUS AREA:	36.94 AC.	52.25%
TOTAL GROSS AREA:	70.71 AC.	100.00%

BOTTOM OF DRY POND AREA:	4.559 AC.
BOTTOM OF CFX POND AREA:	2.523 AC.
LIFT STATION TRACT AREA:	0.0764 AC.
IMPERVIOUS WETLAND AREA:	10.130 AC.

PARKING CALC'S

PARKING REQUIREMENT:
2 PS / 1,000 SF OF OFFICES + 1 PS / 600 SF UP TO 3,000 SF, THEN 1/ ADDITIONAL 3,000 SF
(ADA) 8 PARKING REQUIRED FOR (301-400 PS)

FOR 352,268 SF OF BUILDING # 1
10% OFFICES = 35,226 SF @ 2PS/1000 SF = 72 SPACES
DISTRIBUTION= 317,041 SF @ 1PS/600 UP TO 3,000 SF, AND THEN 1/ADDITIONAL 3,000 SF = 110 SPACES.

TOTAL SPACES REQUIRED = 110 SPACES + 72 SPACES
=182 SPACES / BUILDING

FOR 338,748 OF BUILDING # 2
10% OFFICES = 33,875 SF @ 2PS/1000 SF = 68 SPACES
DISTRIBUTION= 304,873 SF @ 1PS/600 UP TO 3,000 SF, AND THEN 1/ADDITIONAL 3,000 SF = 106 SPACES.

TOTAL SPACES REQUIRED = 106 SPACES + 68 SPACES
= 174 SPACES / BUILDING

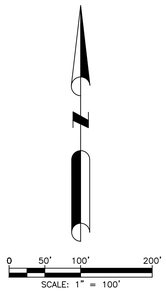
TOTAL SPACES REQUIRED = 182 PS + 174 PS = 356 SPACES
TOTAL ADA SPACES REQUIRED = 8 SPACES

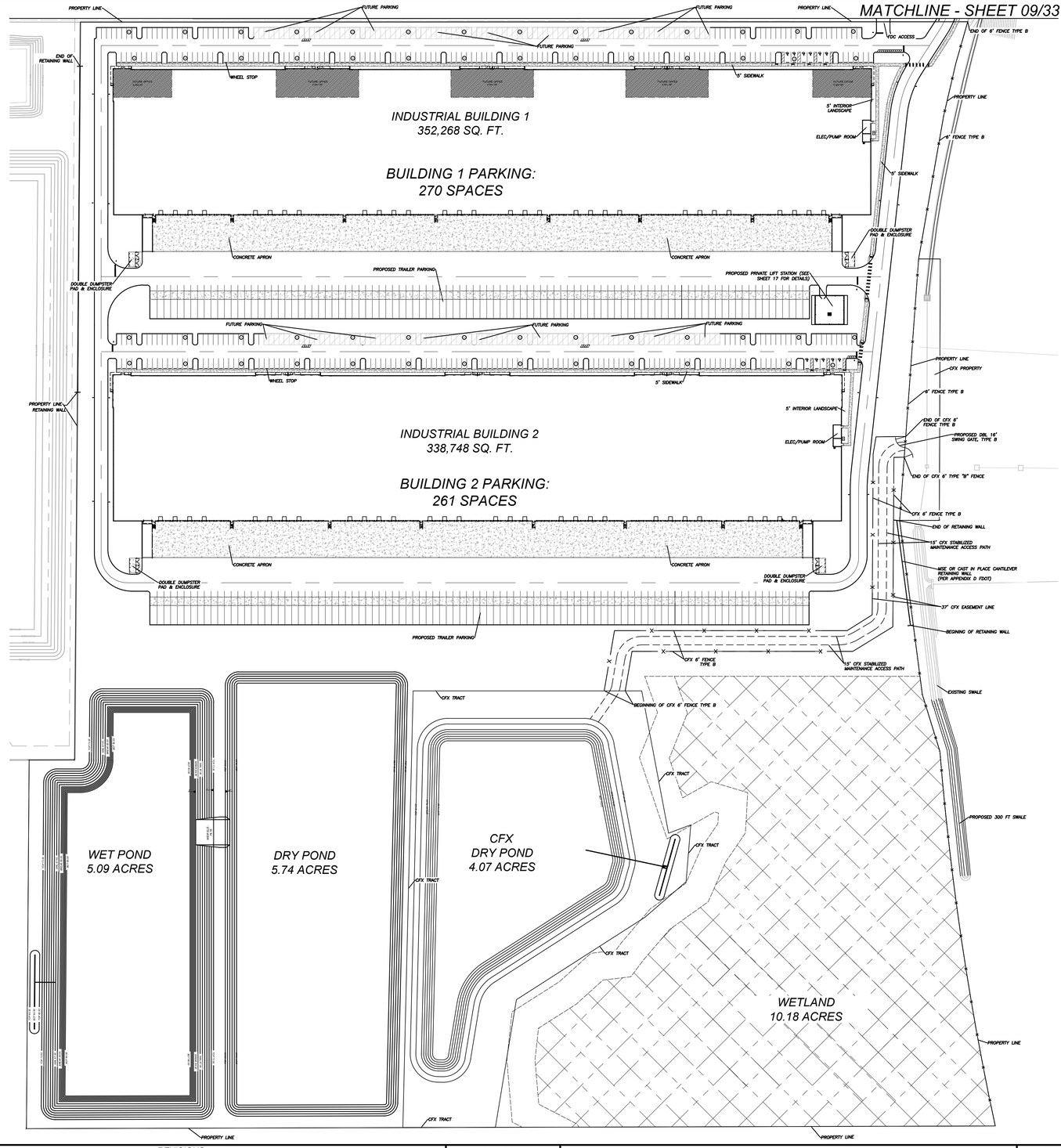
PARKING REQUIRED:

REGULAR SPACES	= 356 SPACES
HANDICAP SPACES	= 8 SPACES
TOTAL PARKING REQUIRED	= 364 SPACES

PARKING PROVIDED:

REGULAR SPACES	= 356 SPACES
FUTURE PARKING SPACES	= 164 SPACES
TRAILER PARKING SPACES	= 196 SPACES
HANDICAP SPACES	= 11 SPACES
TOTAL PARKING PROVIDED	= 727 SPACES





BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

OVERALL SITE PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 100'
SHEET: 08 OF 33

F:\ANC7\CAD\Planset\Final\08 -09 OVERALL PLAN.dwg,6/6/2023 2:03:12 PM

NOTES
GENERAL:

PROJECT SHALL COMPLY WITH THE LIGHT INDUSTRIAL USE DESIGN STANDARDS SET FORTH IN CITY OF APOPKA LAND DEVELOPMENT CODE.

LANDSCAPING:

ALL LANDSCAPING SHALL MEET OR EXCEED THE REQUIREMENTS OF CITY OF APOPKA LAND DEVELOPMENT CODE.

SITE LIGHTING:

ALL SITE LIGHTING SHALL MEET OR EXCEED THE REQUIREMENTS OF CITY OF APOPKA LAND DEVELOPMENT CODE.

SIGNAGE:

POLE SIGNS, BILLBOARDS AND ALL OTHER SIGNAGE SHALL COMPLY WITH THE CITY OF APOPKA LAND DEVELOPMENT CODE.

EASEMENTS:

ANY EASEMENT SHOWN AS PROPOSED WILL BE RECORDED PRIOR TO ISSUING THE CERTIFICATE OF OCCUPANCY.

UTILITY PROVIDERS

WATER:	CITY OF APOPKA
WASTEWATER:	CITY OF APOPKA
ELECTRIC:	DUKE ENERGY

PHASING
PROJECT WILL BE CONSTRUCTED IN 2 PHASES.

SOILS

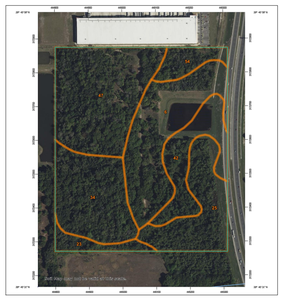
SOIL SYMBOL	SOIL DESCRIPTION
6	CANDLER-APOPKA FINE SANDS, 5 TO 12 PERCENT SLOPES
23	MALABAR FINE SAND, 0 TO 5 PERCENT SLOPES
25	OKEELANTA MUCK, 0 TO 5 PERCENT SLOPES
34	POMELO FINE SAND, 0 TO 5 PERCENT SLOPES
42	SANIBEL MUCK, 0 TO 5 PERCENT SLOPES
47	TAVARES-MILLHOPPER FINE SANDS, 0 TO 5 PERCENT SLOPES
54	ZOLFO FINE SAND, 0 TO 2 PERCENT SLOPES

VEGETATION

GENERALIZED VEGETATION BASED UPON THE FLORIDA LAND USE, COVER AND FORMS CLASSIFICATION SYSTEM (FLUCFCS) OR THE NATURAL COMMUNITY TYPES AS DEVELOPED BY THE FLORIDA NATURAL AREAS INVENTORY.

STORMWATER MANAGEMENT

STORMWATER FOR THE PROPERTY WILL BE HANDLED BY ON-SITE POND AS REQUIRED BY CITY OF APOPKA AND THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT. BASED ON THE NATIONAL FLOOD INSUANCE PROGRAM FIRM MAP NO. 12095C0125H EFFECTIVE SEPTEMBER 24, 2021 THE DESCRIBED PROPERTY IS WITHIN ZONE "X" AND ZONE "AE" WITH BASE FLOOD ELEVATION HAS BEEN ESTABLISHED.



TRAFFIC ANALYSIS

PER 11TH EDITION ITE TRIP GENERATION MANUAL - LAND USE WAREHOUSE (150) - 1,364 ADT 151 PM PEAK HOUR TRIP. (27 % IN AND 73% OUT)

BUILDING DATA

BUILDING FOOTPRINT AREA:	691,016 S.F.
MAX. BUILDING HEIGHT:	45 FT.
MAX. FLOOR AREA RATIO:	0.40 FAR

YARD SETBACKS

REQUIRED:

FRONT:	10 FT.
SIDES:	10FT (30 Ft when adjacent to a residential use or District)
REAR:	10 FT (30 Ft when adjacent to a residential use or District)

SITE DATA

TOTAL GROSS AREA:	71.3 AC.	
EXISTING ZONING:	I-L	
ADJACENT ZONING:		
NORTH:	PUD	
EAST:	A-1	
SOUTH	CONSERVATION	
WEST	PUD	
FLU	INDUSTRIAL	
REQUIRED OPEN-SPACE	3.6 AC.	5%
PROPOSED OPEN-SPACE:	10.02 AC.	14.17%
PERVIOUS AREA:	33.77 AC.	47.75%
IMPERVIOUS AREA:	36.94 AC.	52.25%
TOTAL GROSS AREA:	70.71 AC.	100.00%

BOTTOM OF DRY POND AREA:	4.559 AC.
BOTTOM OF CFX POND AREA:	2.523 AC.
LIFT STATION TRACT AREA:	0.0764 AC.
IMPERVIOUS WETLAND AREA:	10.130 AC.

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PARKING REQUIREMENT:
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FOR 338,748 OF BUILDING # 2
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PARKING REQUIRED:

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TOTAL PARKING REQUIRED	= 364 SPACES

PARKING PROVIDED:

REGULAR SPACES	= 356 SPACES
FUTURE PARKING SPACES	= 164 SPACES
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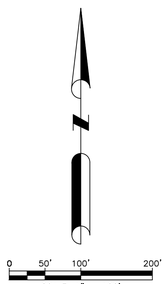

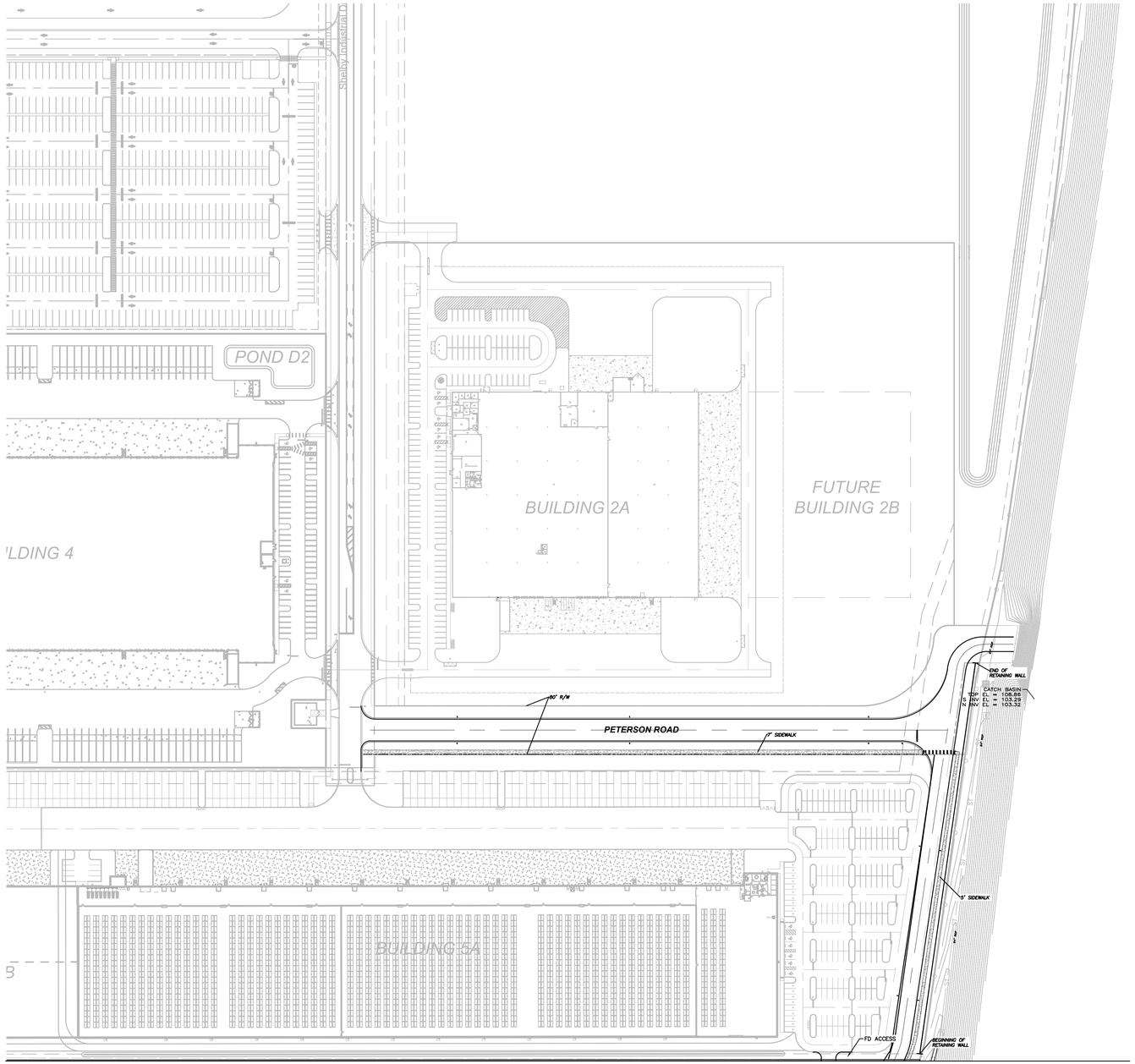

MATCHLINE - SHEET 08/33

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

OVERALL OFFSITE PLAN
MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 100'
SHEET: 09 OF 33

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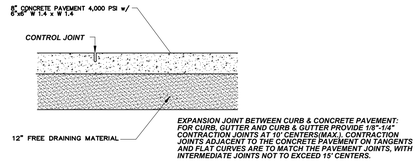
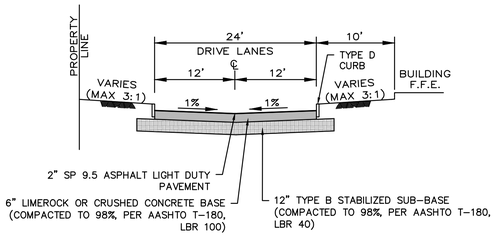


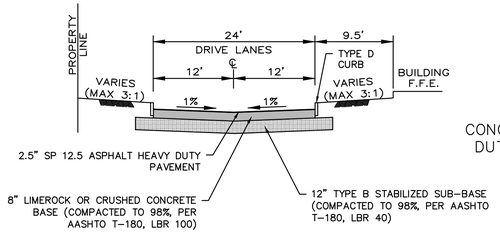
TYPICAL CONCRETE PAVEMENT SECTION

LEGEND

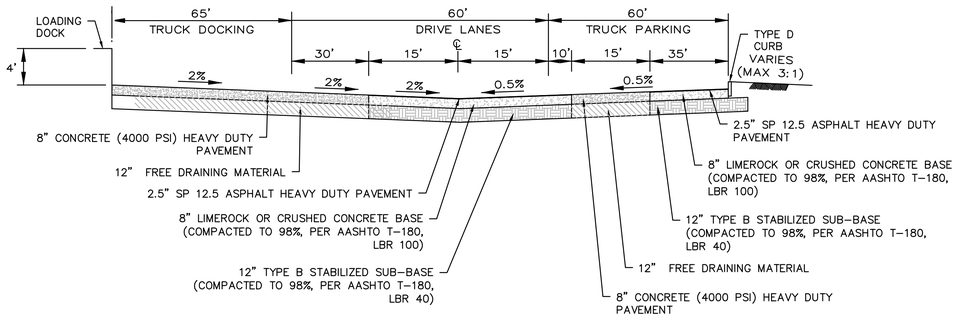
DESCRIPTION	*PROPOSED*
CONCRETE HEAVY DUTY PAVEMENT	
ASPHALT HEAVY DUTY PAVEMENT	
ASPHALT LIGHT DUTY PAVEMENT	
CFX ACCESS ROAD	
ASPHALT HEAVY DUTY PAVEMENT (PETERSON ROAD)	



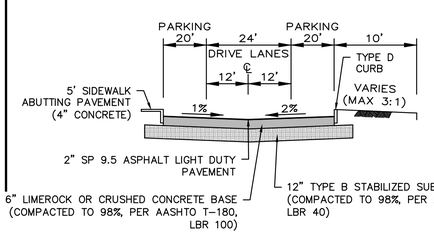
ROADWAY SECTION A-A



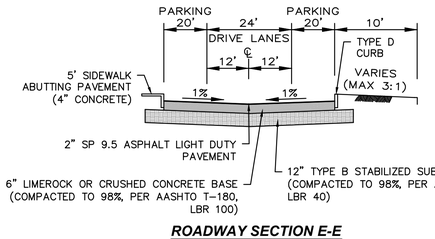
ROADWAY SECTION B-B



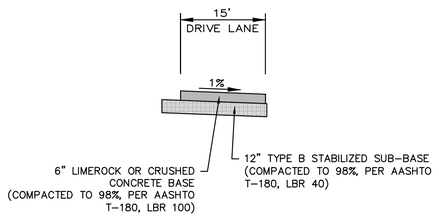
ROADWAY SECTION C-C



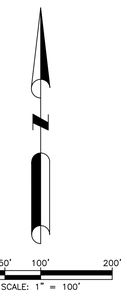
ROADWAY SECTION D-D

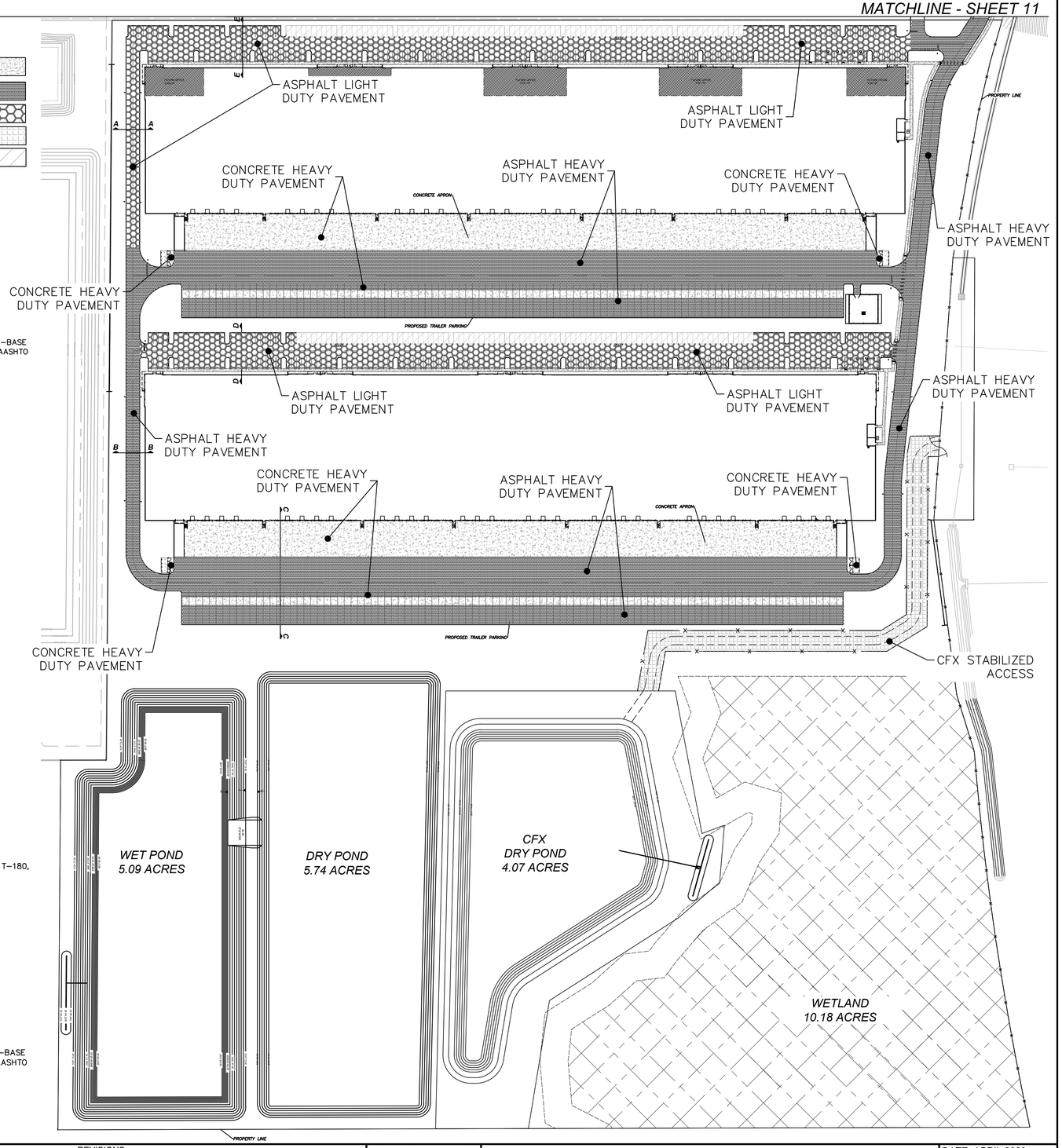


ROADWAY SECTION E-E



CFX ACCESS SECTION





BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

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DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

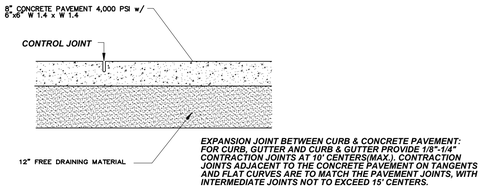
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

PAVING PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

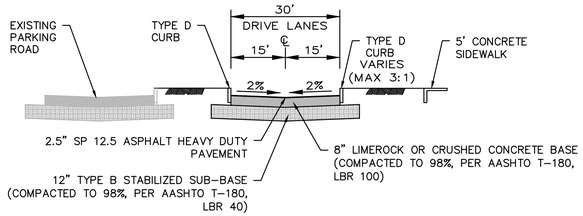
DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 100'
SHEET: 10 OF 33



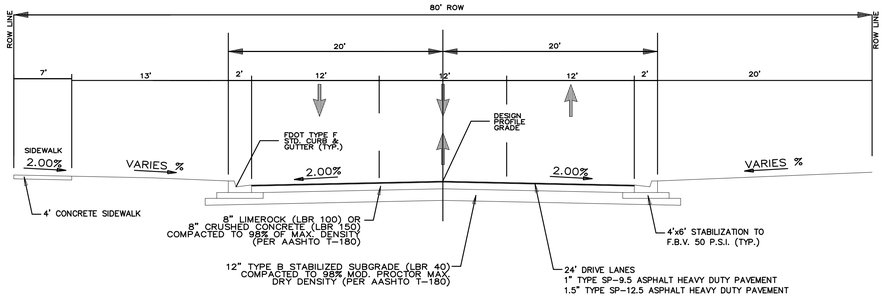
TYPICAL CONCRETE PAVEMENT SECTION

LEGEND

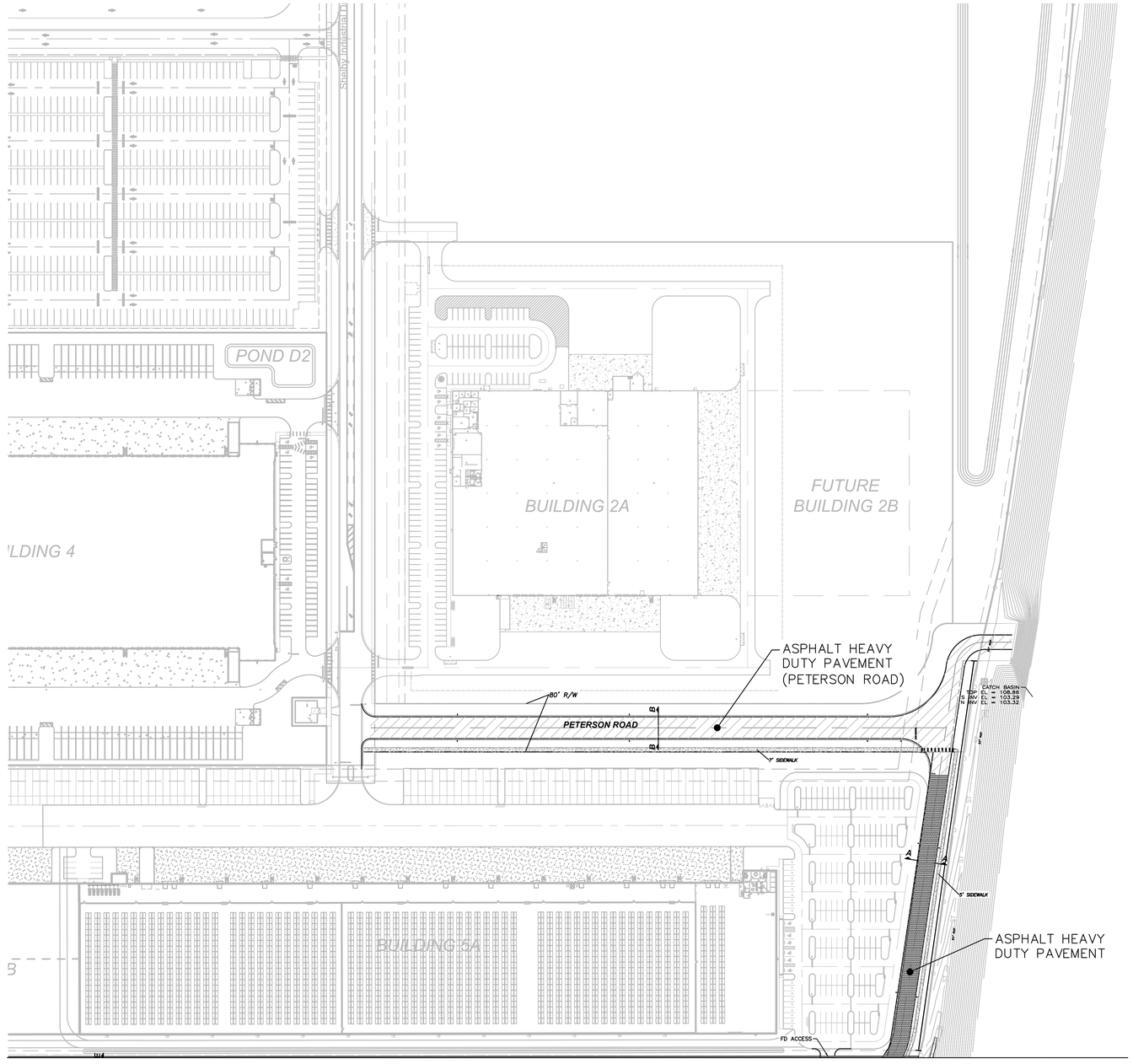
DESCRIPTION	PROPOSED
CONCRETE HEAVY DUTY PAVEMENT	
ASPHALT HEAVY DUTY PAVEMENT	
ASPHALT LIGHT DUTY PAVEMENT	
ASPHALT HEAVY DUTY PAVEMENT (PETERSON ROAD)	



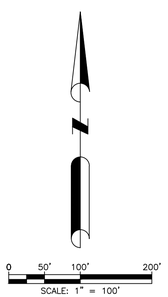
ROADWAY SECTION A-A



ROADWAY SECTION B-B (PETERSON ROAD)



MATCHLINE - SHEET 10



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REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

OFFSITE PAVING PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 100'
SHEET: 11 OF 33

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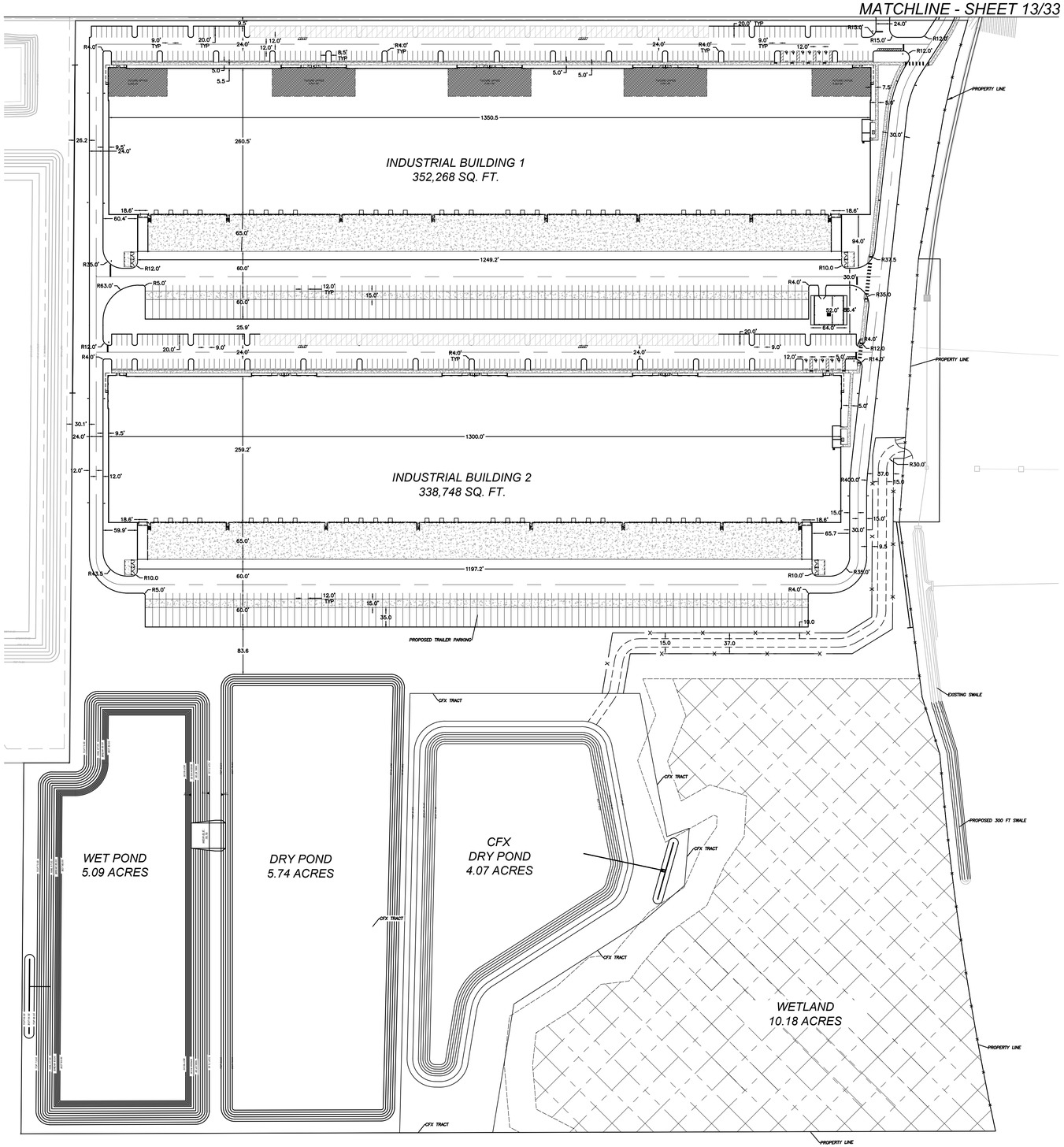
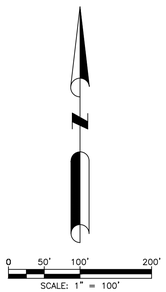
MATCHLINE - SHEET 13/33





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DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

DIMENSION PLAN-1

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 100'
SHEET: 12 OF 33

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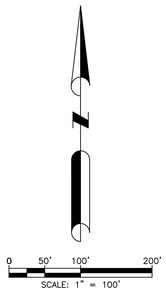

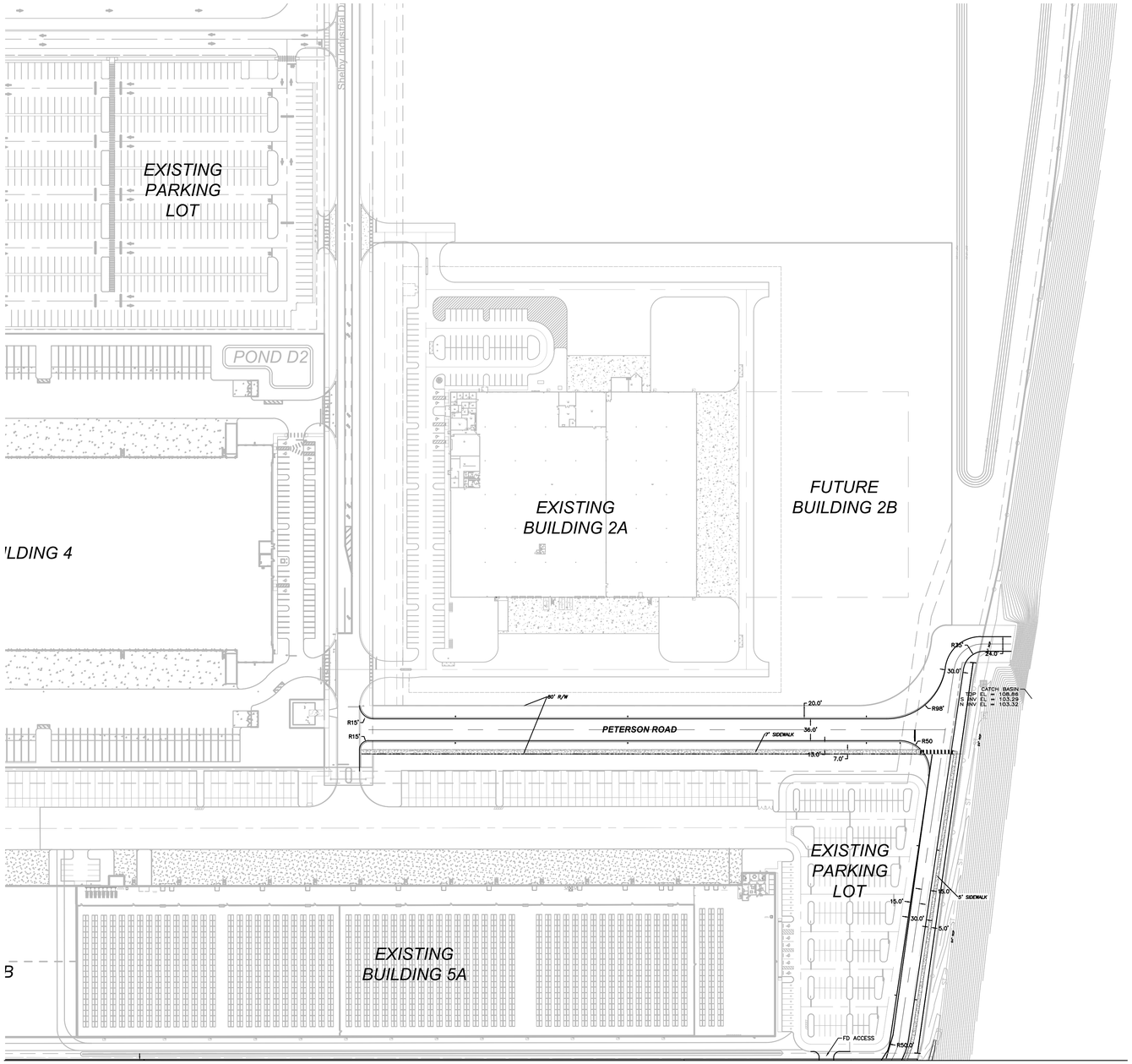

MATCHLINE - SHEET 12/33

BlueScope Properties Group

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DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

DIMENSION PLAN-2

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 100'
SHEET: 13 OF 33

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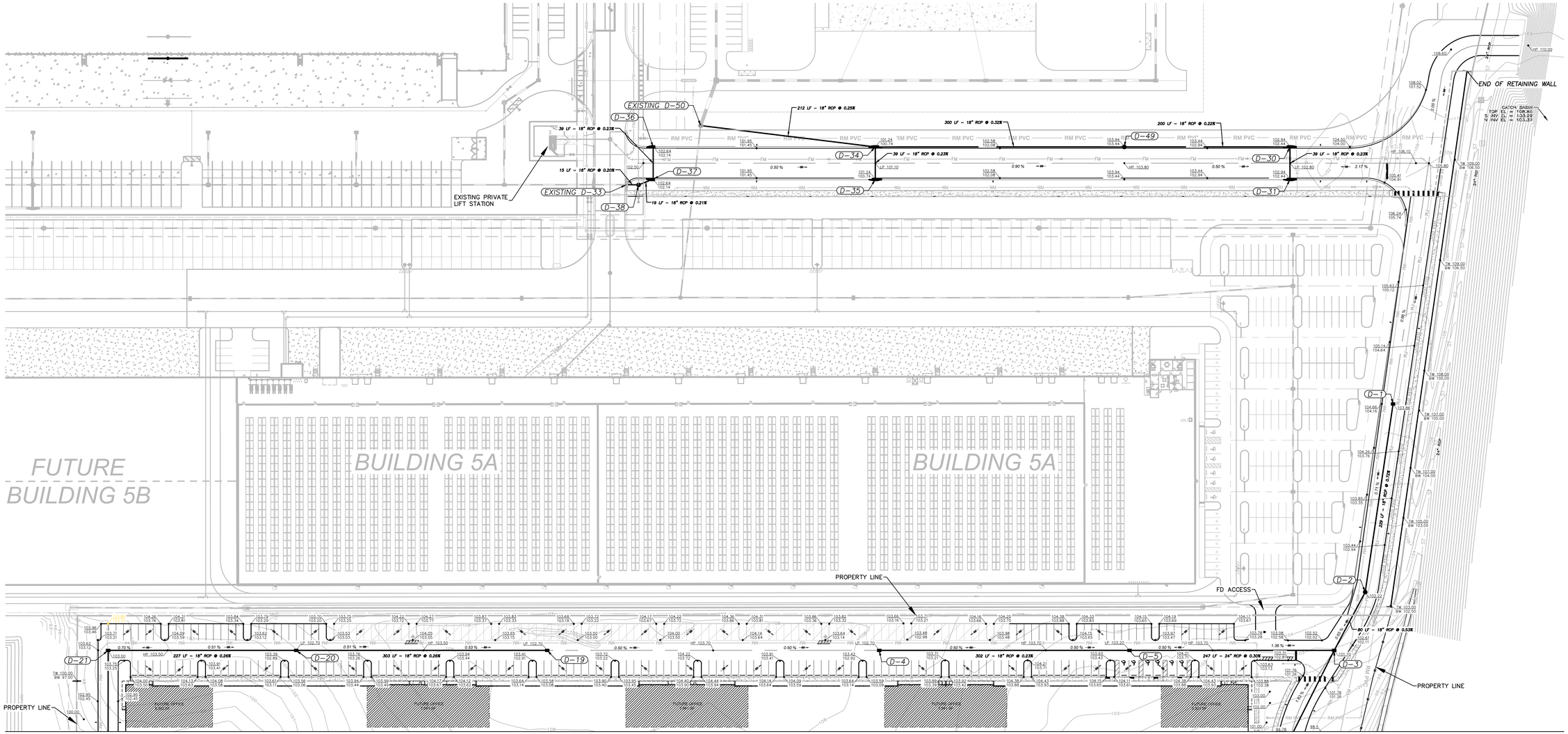

MATCHLINE - SHEET 15/33

DRAINAGE STRUCTURE DATA

D-1
TYPE "C" INLET
N: 1581304.74
E: 476629.76
TOP EL: 103.86
S INV EL: 99.15

D-2
DRAINAGE MANHOLE
N: 1581077.95
E: 476596.15
TOP EL: 102.22
N INV EL: 97.51
SW INV EL: 97.41

D-3
TYPE "C" INLET
N: 1581007.73
E: 476558.78
TOP EL: 101.70
NE INV EL: 96.99
W INV EL: 96.45
SW INV EL: 95.90

D-4
TYPE "C" INLET
N: 1581007.73
E: 476010.22
TOP EL: 102.70
E INV EL: 97.99

D-5
TYPE "C" INLET
N: 1581007.53
E: 476311.94
TOP EL: 103.20
W INV EL: 97.30
E INV EL: 97.20

D-19
TYPE "C" INLET
N: 1581007.73
E: 475609.77
TOP EL: 102.70
W INV EL: 97.99

D-20
TYPE "C" INLET
N: 1581007.73
E: 475307.02
TOP EL: 102.70
E INV EL: 97.20
W INV EL: 97.10

D-21
TYPE "C" INLET
N: 1581007.53
E: 475080.29
TOP EL: 103.00
E INV EL: 96.50
S INV EL: 96.40

D-30
TYPE "P5" INLET
N: 1581614.52
E: 476505.49
TOP EL: 102.94
S INV EL: 98.14
W INV EL: 98.04

D-31
TYPE "P5" INLET
N: 1581575.35
E: 476505.49
TOP EL: 102.94
N INV EL: 98.23

D-34
TYPE "P5" INLET
N: 1581614.52
E: 476005.36
TOP EL: 101.24
S INV EL: 96.44
E INV EL: 96.53
W INV EL: 96.34

D-35
TYPE "P5" INLET
N: 1581575.35
E: 476005.36
TOP EL: 101.24
N INV EL: 96.53

D-36
TYPE "P5" INLET
N: 1581614.19
E: 475737.61
TOP EL: 102.69
S INV EL: 98.15

D-37
TYPE "P5" INLET
N: 1581575.69
E: 475737.61
TOP EL: 102.69
W INV EL: 98.06
N INV EL: 98.06

D-38
DRAINAGE MANHOLE
N: 1581568.73
E: 475720.00
TOP EL: 102.70
E INV EL: 98.02
W INV EL: 98.02

D-49
DRAINAGE MANHOLE
N: 1581614.52
E: 476305.72
TOP EL: 103.44
E INV EL: 97.60
W INV EL: 97.50

EXISTING D-33
DRAINAGE MANHOLE
N: 1581568.96
E: 475705.19
TOP EL: 102.80
E INV EL: 97.99

EXISTING D-50
DRAINAGE MANHOLE
N: 1581640.27
E: 475794.82
TOP EL: 100.34
E INV EL: 95.80

LEGEND

DESCRIPTION	PROPOSED
SANITARY SEWER SYSTEM	
STORM SEWER SYSTEM	
WATER SYSTEM	
FIRE HYDRANT	
CONTOUR	
DIRECTION OF SURFACE FLOW	

NOTE: ALL STORM WATER PIPE JOINTS AND BOX INLETS SHALL BE WRAPPED WITH FDOT APPROVED FILTER FABRIC PER FDOT INDEX 430-001.

0 30' 60' 120'
SCALE: 1" = 60'

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

GRADING & DRAINAGE PLAN - 1

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023	
PROJECT NO.: ANC-7	
DRAWN BY: DM	
CHECKED BY: DMS	
SCALE: 1" = 60'	
SHEET: 14 OF 33	

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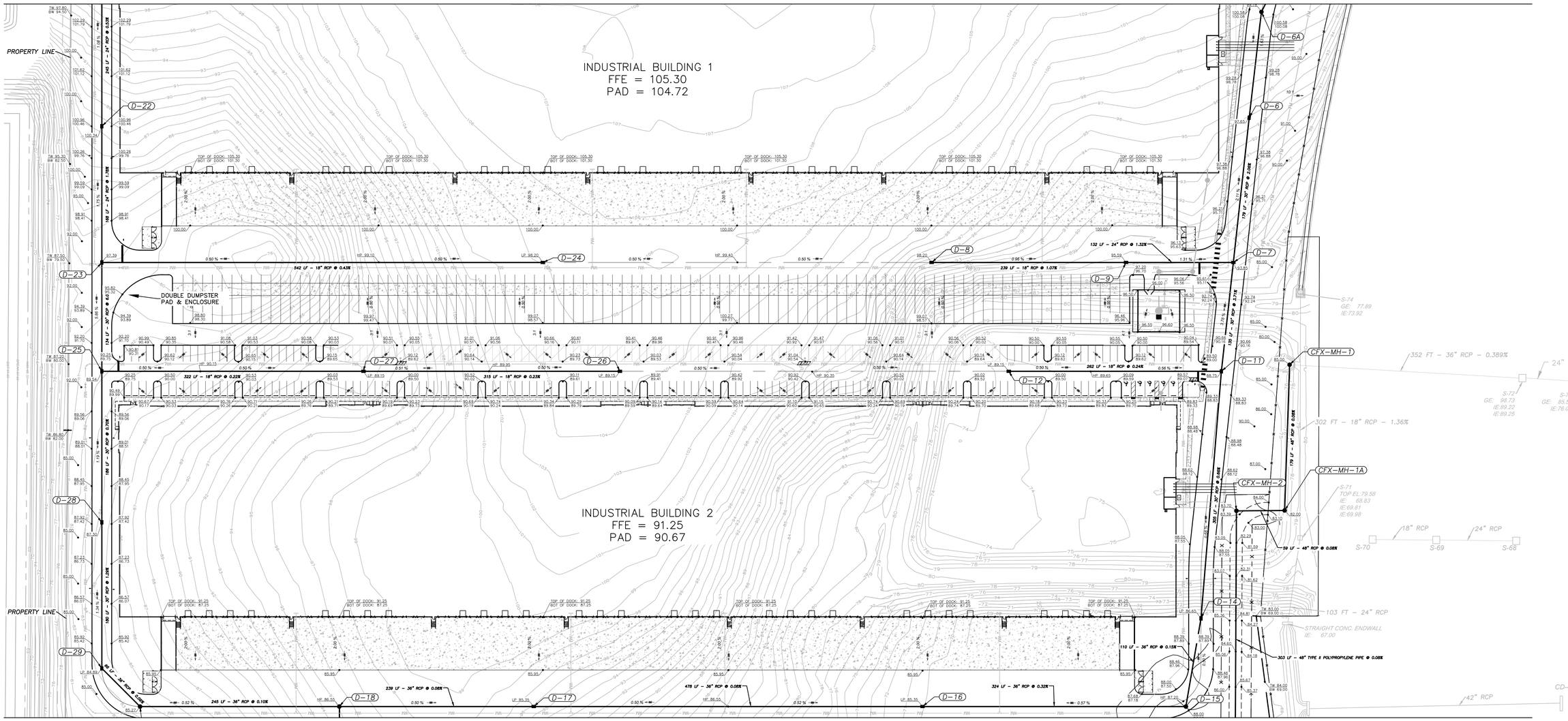
MATCHLINE - SHEET 14/33



MATCHLINE - SHEET 16/33

DRAINAGE STRUCTURE DATA

D–6
TYPE "D" INLET
N: 1580773.34
E: 476491.42
TOP EL: 97.65
N INV EL: 91.85
S INV EL: 91.75

D–7
TYPE "D" INLET
N: 1580595.23
E: 476471.93
TOP EL: 93.85
N INV EL: 88.05
W INV EL: 88.60
S INV EL: 87.95

D–8
TYPE "C" INLET
N: 1580595.23
E: 476100.85
TOP EL: 98.20
E INV EL: 93.45

D–9
TYPE "C" INLET
N: 1580595.23
E: 476339.94
TOP EL: 95.59
W INV EL: 90.88
E INV EL: 90.34

D–11
TYPE "D" INLET
N: 1580461.33
E: 476457.28
TOP EL: 88.75
N INV EL: 82.95
W INV EL: 83.80
S INV EL: 82.85

D–12
TYPE "C" INLET
N: 1580461.33
E: 476195.72
TOP EL: 89.15
E INV EL: 84.44

D–14
TYPE "D" INLET
N: 1580157.28
E: 476432.15
TOP EL: 86.65
N INV EL: 80.85
S INV EL: 80.32

D–15
TYPE "C" INLET
N: 1580048.83
E: 476413.58
TOP EL: 87.35
N INV EL: 80.15
W INV EL: 80.05

D–16
TYPE "D" INLET
N: 1580048.83
E: 476089.68
TOP EL: 85.35
E INV EL: 79.02
W INV EL: 78.92

D–17
TYPE "D" INLET
N: 1580048.83
E: 475611.46
TOP EL: 85.35
E INV EL: 78.55
W INV EL: 78.45

D–18
DRAINAGE MANHOLE
N: 1580048.83
E: 475372.35
TOP EL: 86.55
E INV EL: 78.27
S INV EL: 78.05
W INV EL: 78.15

D–22
TYPE "C" INLET
N: 1580762.85
E: 475080.29
TOP EL: 100.34
N INV EL: 95.09
S INV EL: 94.99

D–23
TYPE "D" INLET
N: 1580595.23
E: 475080.29
TOP EL: 97.39
N INV EL: 92.00
E INV EL: 91.15
S INV EL: 91.40

D–24
TYPE "C" INLET
N: 1580595.23
E: 475622.64
TOP EL: 98.20
W INV EL: 93.50

D–25
TYPE "D" INLET
N: 1580461.33
E: 475080.29
TOP EL: 89.54
N INV EL: 83.25
E INV EL: 82.90
S INV EL: 82.80

D–26
TYPE "C" INLET
N: 1580461.33
E: 475717.50
TOP EL: 89.15
W INV EL: 84.44

D–27
TYPE "C" INLET
N: 1580461.33
E: 475402.12
TOP EL: 89.15
E INV EL: 83.70
W INV EL: 83.60

D–28
TYPE "D" INLET
N: 1580275.50
E: 475080.29
TOP EL: 87.30
N INV EL: 81.50
S INV EL: 81.40

D–29
TYPE "D" INLET
N: 1580095.83
E: 475080.29
TOP EL: 84.89
N INV EL: 79.09
SE INV EL: 78.56

CFX–MH–1
DRAINAGE MANHOLE
N: 1580469.41
E: 476541.11
TOP EL: 85.00
S INV EL: 74.41

CFX–MH–1A
DRAINAGE MANHOLE
N: 1580290.11
E: 476535.00
TOP EL: 82.00
N INV EL: 74.26
W INV EL: 74.26

CFX–MH–2
DRAINAGE MANHOLE
N: 1580289.70
E: 476475.75
TOP EL: 83.70
E INV EL: 74.21
S INV EL: 74.21

LEGEND

DESCRIPTION	PROPOSED
SANITARY SEWER SYSTEM	
STORM SEWER SYSTEM	
WATER SYSTEM	
FIRE HYDRANT	
CONTOUR	
DIRECTION OF SURFACE FLOW	

NOTE: ALL STORM WATER PIPE JOINTS AND BOX INLETS SHALL BE WRAPPED WITH FDOT APPROVED FILTER FABRIC PER FDOT INDEX 430-001.

0 30' 60' 120'
SCALE: 1" = 60'

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

GRADING & DRAINAGE PLAN - 2

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE:	APRIL 2023
PROJECT NO.:	ANC-7
DRAWN BY:	DM
CHECKED BY:	DMS
SCALE:	1" = 60'
SHEET:	15 OF 33

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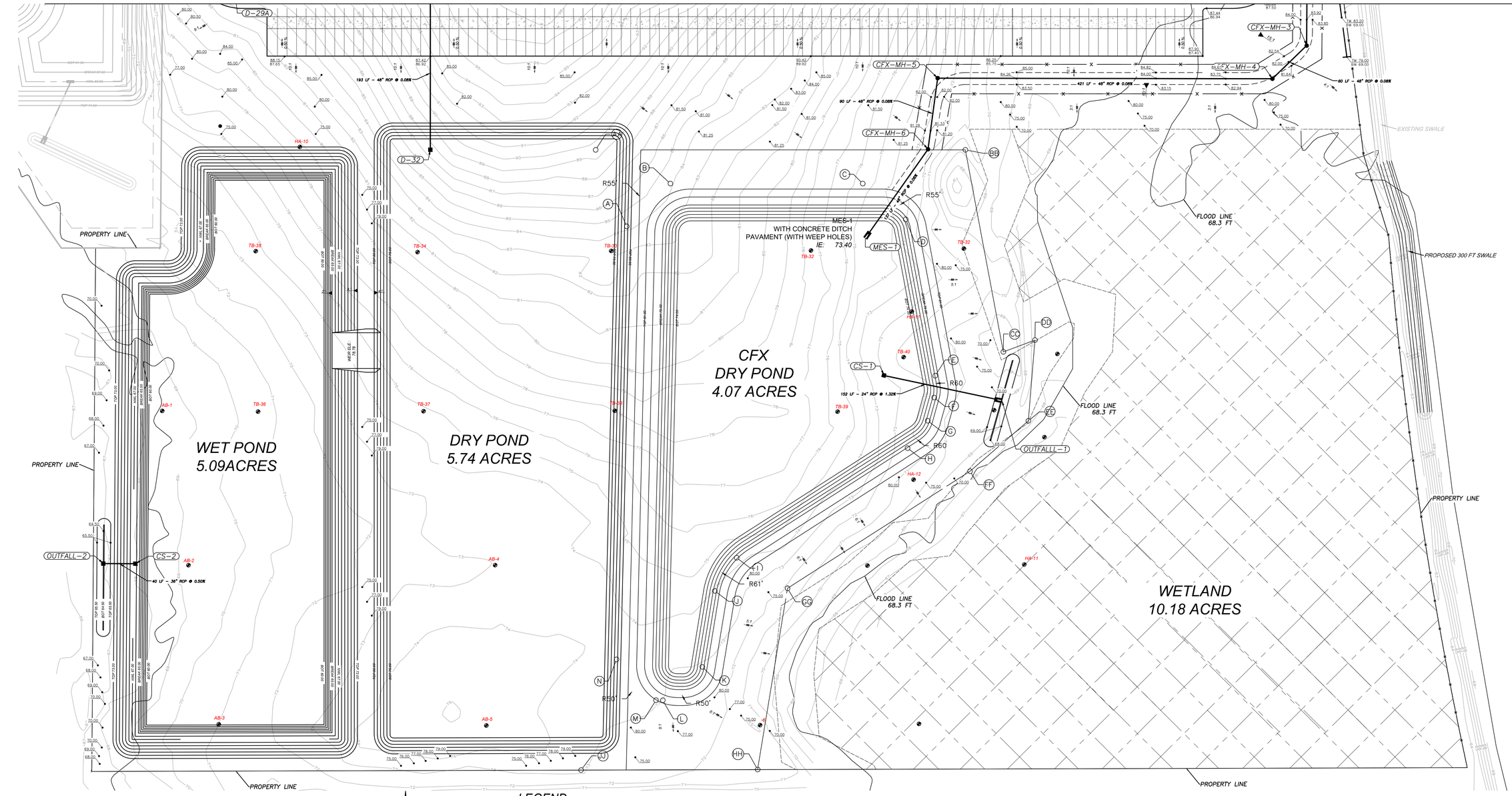
MATCHLINE - SHEET 15/33



LEGEND

DESCRIPTION	PROPOSED
SANITARY SEWER SYSTEM	
STORM SEWER SYSTEM	
WATER SYSTEM	
FIRE HYDRANT	
CONTOUR	
DIRECTION OF SURFACE FLOW	

NOTE: ALL STORM WATER PIPE JOINTS AND BOX INLETS SHALL BE WRAPPED WITH FDOT APPROVED FILTER FABRIC PER FDOT INDEX 430-001.

0 30' 60' 120'
SCALE: 1" = 60'

DRAINAGE STRUCTURE DATA

CFX-MH-3	CFX-MH-4	CFX-MH-5	CFX-MH-6	CS-1
DRAINAGE MANHOLE	DRAINAGE MANHOLE	DRAINAGE MANHOLE	DRAINAGE MANHOLE	CONTROL STRUCTURE
N: 1579986.93	N: 1579945.24	N: 1579946.03	N: 1579856.67	TYPE "D"
E: 476474.27	E: 476431.09	E: 476010.22	E: 475998.18	N: 1579572.48
TOP EL: 81.90	TOP EL: 82.00	TOP EL: 84.20	TOP EL: 81.10	E: 475942.69
N INV EL: 73.96	NE INV EL: 73.91	E INV EL: 73.57	N INV EL: 73.50	TOP EL: 80.00
SW INV EL: 73.96	W INV EL: 73.91	S INV EL: 73.57	SW INV EL: 73.50	E INV EL: 70.00

MES-1	OUTFALL-1	CS-2	D-32	OUTFALL-2
MES	MES	CONTROL STRUCTURE	TYPE MODIFIED "C" BOX	TYPE MODIFIED "C" BOX
N: 1579744.85	N: 1579540.75	TYPE "C"	BUBBLE UP INLET	BUBBLE UP INLET
E: 475919.33	E: 476091.06	N: 1579335.70	N: 1579856.04	N: 1579335.99
INV EL. = 73.39	INV EL. = 68.00	E: 475001.63	E: 475372.51	E: 474961.31
		TOP EL: 72.50	TOP EL: 85.25	TOP EL: 71.47
		W INV EL: 65.50	N INV EL: 77.90	E INV EL: 65.30

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
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ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

GRADING & DRAINAGE PLAN - 3

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 60'
SHEET: 16 OF 33

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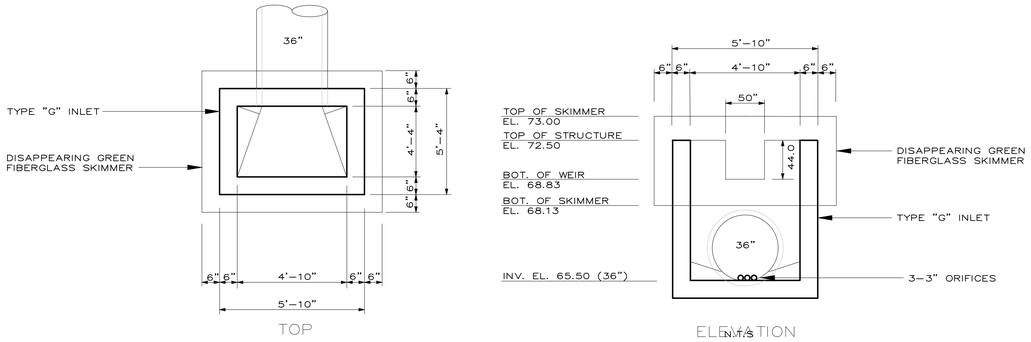
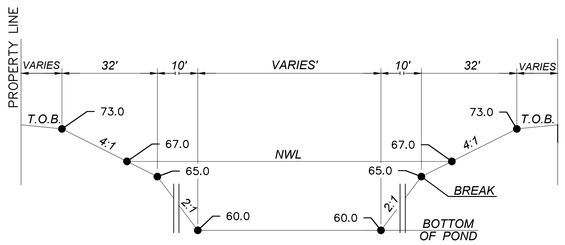


CS-2 POND CONTROL STRUCTURE

N.T.S

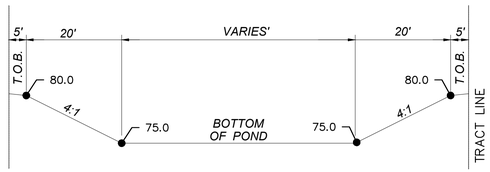


TYPICAL WET POND CROSS-SECTION

N.T.S

WET POND DATA

TOP OF BANK EL.	73.0
NORMAL WATER LEVEL EL.	67.0
BOTTOM OF POND EL.	60.0
MEAN/24HR. D.H.W. EL.	67.0
10YR./24 HR. D.H.W. EL.	68.58
25 YR./24 HR. D.H.W. EL.	69.25
100YR./24 HR. D.H.W. EL.	69.85

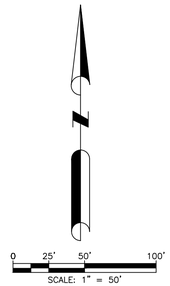


TYPICAL DRY POND CROSS-SECTION

N.T.S.

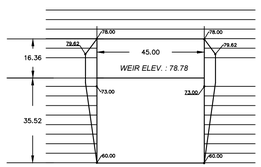
DRY POND DATA

TOP OF BANK EL.	80.00
BOTTOM OF POND EL.	75.00
MEAN/24HR. D.H.W. EL.	77.69
10YR./24 HR. D.H.W. EL.	78.87
25 YR./24 HR. D.H.W. EL.	78.96
100YR./24 HR. D.H.W. EL.	79.12



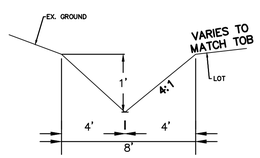
DRAINAGE STRUCTURE DATA

D-32	CS-2	OUTFALL-2
TYPE MODIFIED "C" BOX BUBBLE UP INLET	CONTROL STRUCTURE TYPE "G"	TYPE MODIFIED "C" BOX BUBBLE UP INLET
N: 1579856.04	N: 1579335.70	N: 1579335.99
E: 475372.51	E: 475001.63	E: 474961.31
TOP EL: 85.25	TOP EL: 72.50	TOP EL: 71.47
N INV EL: 77.90	W INV EL: 65.50	E INV EL: 65.30



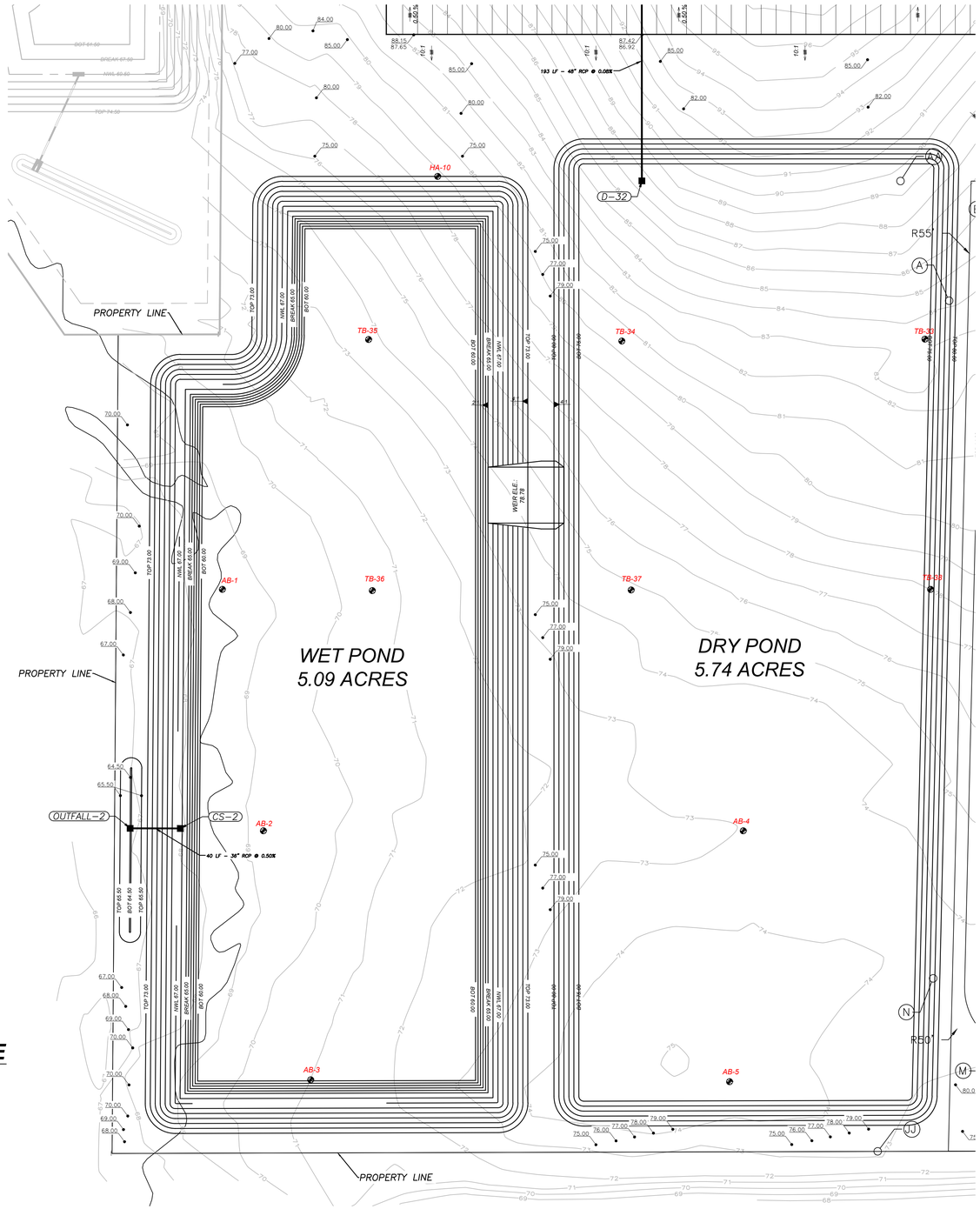
WEIR DETAIL

ESCALE 1: 30



TYPICAL SPREADER SWALE CROSS SECTION

N.T.S



BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

DSE
DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

POND PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 60'
SHEET: 17 OF 33

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PROPOSE CFX POND GEOMETRY POINTS

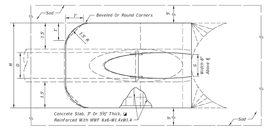
POND POINTS	NORTHING, EASTING	POND POINTS	NORTHING, EASTING
A	475644.63/1579752.98	J	475755.41/1579294.70
B	475699.62/1579806.69	K	475739.69/1579199.19
C	475941.35/1579806.69	L	475690.35/1579157.32
D	475995.40/1579761.86	M	475681.42/1579157.39
E	476032.41/1579565.23	N	475631.86/1579208.56
F	476031.24/1579538.01		
G	476023.03/1579508.58		
H	475997.64/1579474.21		
I	475782.84/1579336.40		

PROPOSE CFX TRACT GEOMETRY POINTS

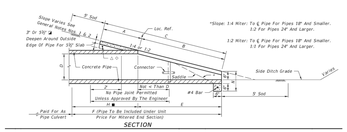
TRACT POINTS	NORTHING, EASTING
AA	475637.05/1579855.86
BB	476045.02/1579855.86
CC	476092.81/1579601.97
DD	476132.59/1579616.70
EE	476124.28/1579515.25
FF	476050.94/1579451.94
GG	475821.42/1579304.68
HH	475783.90/1579076.84
JJ	475618.75/1579076.39

POND DATA

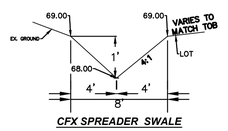
TOP OF BANK EL.	81.00
BOTTOM OF POND EL.	75.00
MEAN/24HR. D.H.W. EL.	76.38
10YR./24HR. D.H.W. EL.	77.89
25YR./24HR. D.H.W. EL.	78.31
100YR./24HR. D.H.W. EL.	79.11



TOP-VIEW SINGLE PIPE



SECTION



CFX SPREADER SWALE

CROSS SECTION

N.T.S

MES-1 CFX POND MITERED END SECTION

N.T.S

DRAINAGE STRUCTURE DATA

D-11
TYPE "D" INLET
N: 1580461.33
E: 476457.28
TOP EL: 88.75
N INV EL: 82.95
W INV EL: 83.80
S INV EL: 82.85

D-12
TYPE "C" INLET
N: 1580461.33
E: 476195.72
TOP EL: 89.15
E INV EL: 84.44

D-14
TYPE "D" INLET
N: 1580157.28
E: 476432.15
TOP EL: 86.65
N INV EL: 80.85
S INV EL: 80.32

D-15
TYPE "C" INLET
N: 1580048.83
E: 476413.58
TOP EL: 87.35
N INV EL: 80.15
W INV EL: 80.05

D-16
TYPE "D" INLET
N: 1580048.83
E: 476089.68
TOP EL: 85.35
E INV EL: 79.02
W INV EL: 78.92

D-17
TYPE "D" INLET
N: 1580048.83
E: 475611.46
TOP EL: 85.35
E INV EL: 78.55
W INV EL: 78.45

CFX-MH-1
DRAINAGE MANHOLE
N: 1580469.41
E: 476541.11
TOP EL: 85.00
S INV EL: 74.41

CFX-MH-1A
DRAINAGE MANHOLE
N: 1580290.11
E: 476535.00
TOP EL: 82.00
N INV EL: 74.26
W INV EL: 74.26

CFX-MH-2
DRAINAGE MANHOLE
N: 1580289.70
E: 476475.75
TOP EL: 83.70
E INV EL: 74.21
S INV EL: 74.21

CFX-MH-3
DRAINAGE MANHOLE
N: 1579986.93
E: 476474.27
TOP EL: 81.90
N INV EL: 73.96
SW INV EL: 73.96

CFX-MH-4
DRAINAGE MANHOLE
N: 1579945.24
E: 476431.09
TOP EL: 82.00
NE INV EL: 73.91
W INV EL: 73.91

CFX-MH-5
DRAINAGE MANHOLE
N: 1579946.03
E: 476010.22
TOP EL: 84.20
E INV EL: 73.57
S INV EL: 73.57

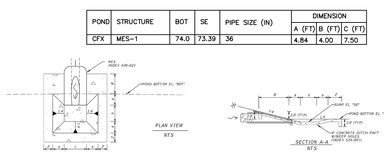
CFX-MH-6
DRAINAGE MANHOLE
N: 1579856.67
E: 475998.18
TOP EL: 81.10
N INV EL: 73.50
SW INV EL: 73.50

MES-1
MES
N: 1579744.85
E: 475919.33
INV EL. = 73.39

CS-1
CONTROL STRUCTURE
TYPE "D"
N: 1579572.48
E: 475942.89
TOP EL: 80.00
E INV EL: 70.00

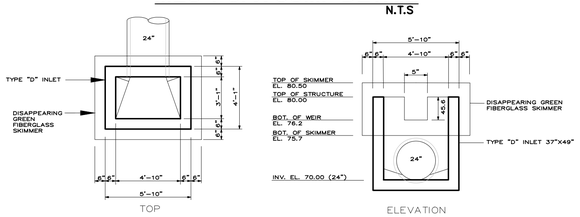
OUTFALLL-1
MES
N: 1579540.75
E: 476091.06
INV EL. = 68.00

POND	STRUCTURE	BOT	SE	PIPE SIZE (IN)	DIMENSION		
					A (FT)	B (FT)	C (FT)
CFX	MES-1	74.0	73.39	36	4.84	4.00	7.50



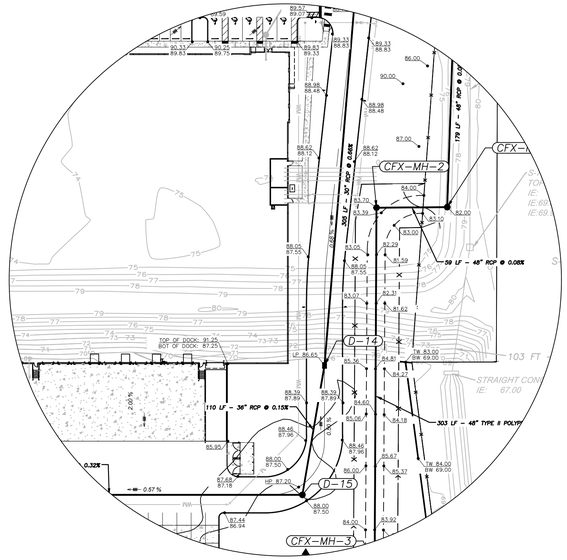
MES-1 CFX SUMP DETAIL

N.T.S



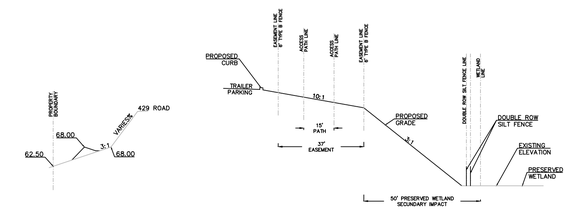
CS-1 CFX POND CONTROL STRUCTURE

N.T.S



DETAIL A (CFX ACCESS ENTRANCE)

N.T.S



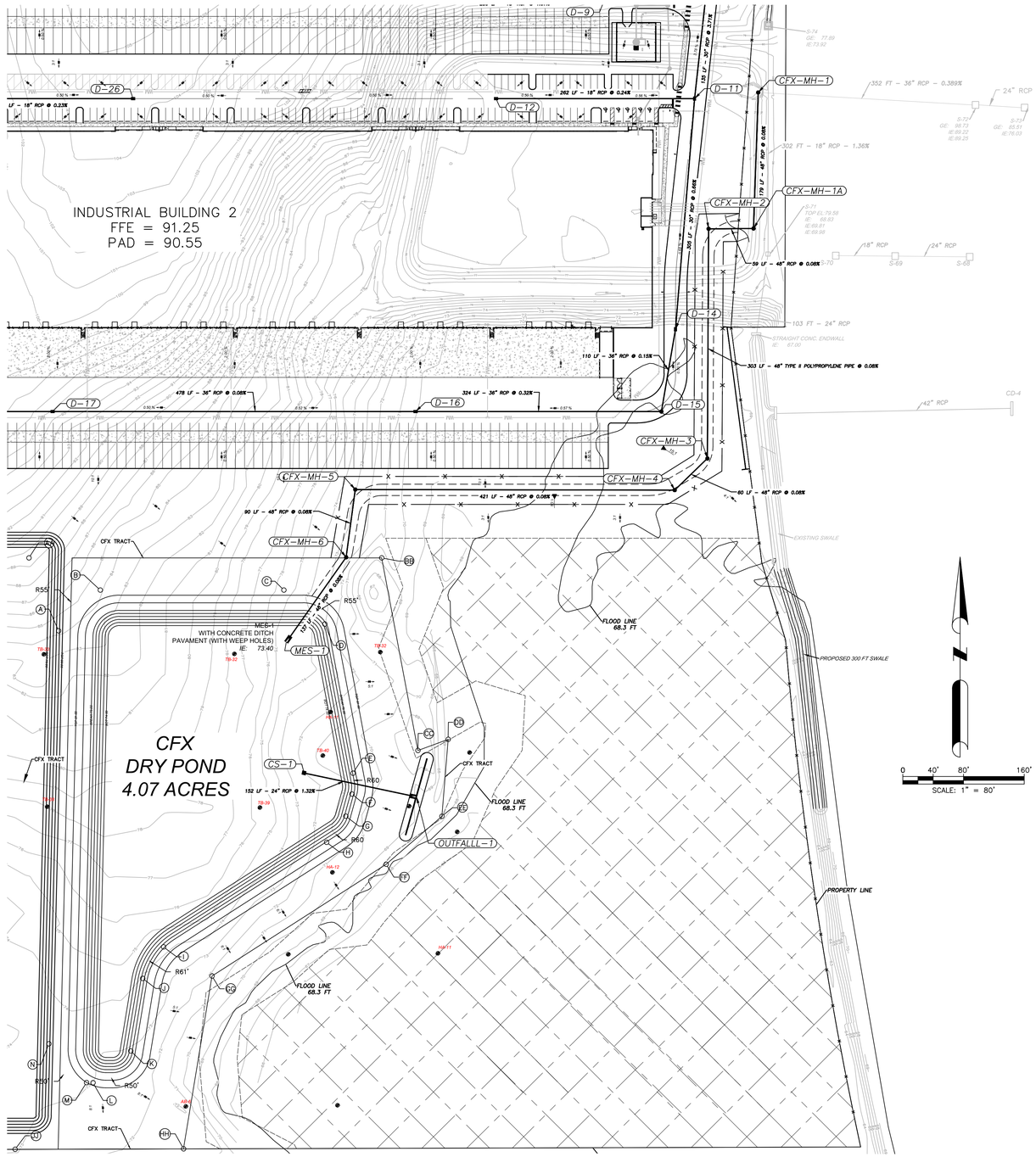
TYPICAL CFX PROPOSED POND CROSS-SECTION

N.T.S

CROSS-SECTION A-A

CROSS-SECTION B-B

N.T.S



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ARCO NATIONAL CONSTRUCTION

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

CFX POND PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 80'
SHEET: 18 OF 33

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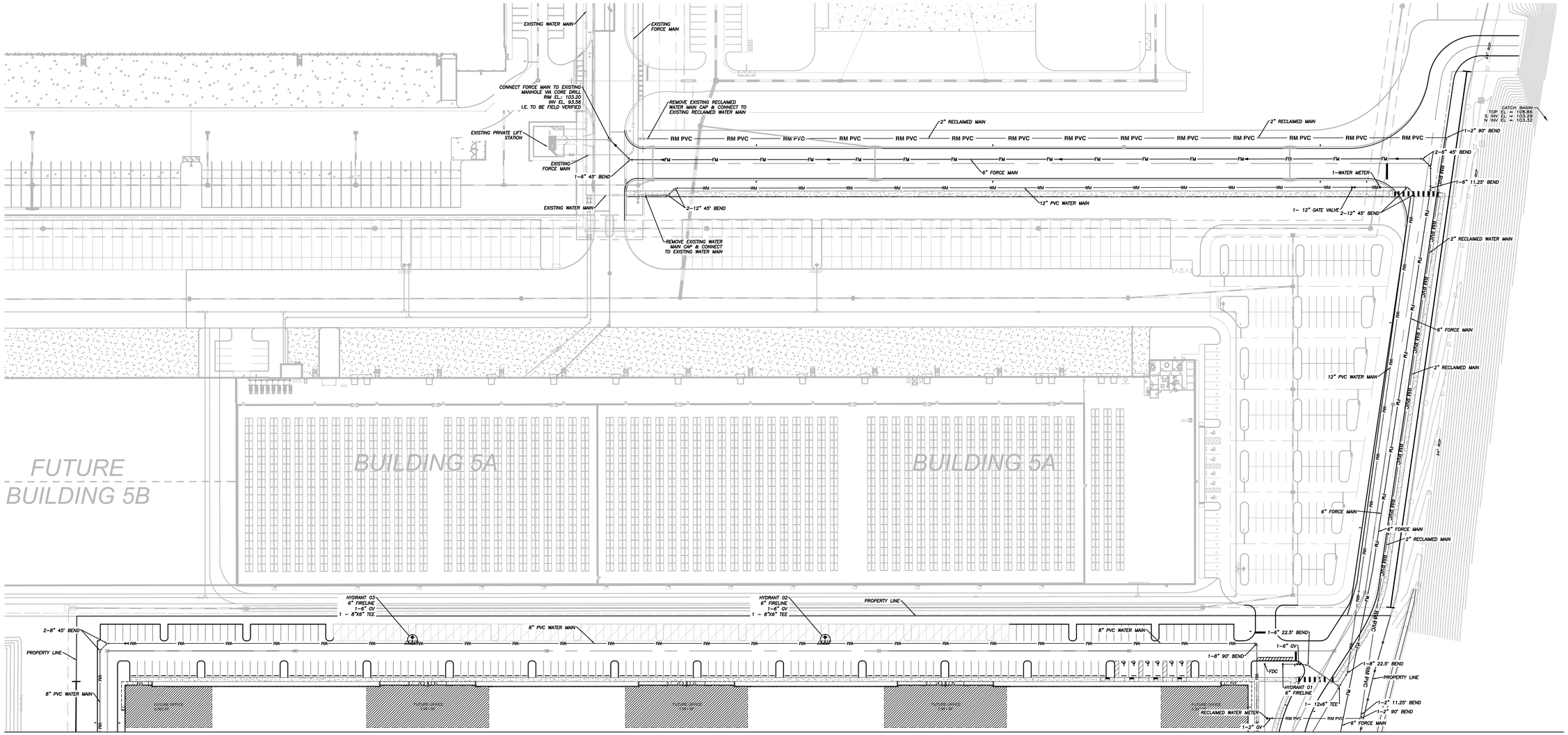

MATCHLINE - SHEET 20/33

NOTE:

IF SPECIFYING HP STORM SPECIFICALLY

ADS HP STORM PROFILE WALL POLYPROPYLENE 12- THROUGH 60-INCH PIPE SHALL MEET ASTM F2881 OR AASHTO M330. MANUFACTURER OF PROLYPROPYLENE PIPE MUST MEET THE REQUIREMENTS OF FDOT SECTION 948-7.2 (CLASS II 100Yr DSL) AND LISTED ON THE FDOT APPROVED PRODUCERS LIST FOR CLASS II CORRUGATED POLYPROPYLENE PIPE 12"-60".

IF SPECIFYING RCP AND ALLOWING HP STORM

ADS HP STORM PROFILE WALL PROLYPROPYLENE IS AN APPROVED EQUAL TO CLASS III RCP. ADS HP STORM PROFILE WALL PROLYPROPYLENE 12- THROUGH 60- INCH PIPE SHALL MEET ASTM F2881 OR AASHTO M330. MANUFACTURER OF PROLYPROPYLENE PIPE MUST MEET THE REQUIREMENTS OF FDOT SECTION 948-7.2 (CLASS II 100Yr DSL) AND LISTED ON THE FDOT APPROVED PRODUCERS LIST FOR CLASS II CORRUGATED PROLYPROPYLENE PIPE 12"-60".

IF NOT SPECIFYING A PIPE TYPE SPECIFICALLY AND ALLOWING BOTH RCP AND HP Storm

ALL STORM PIPE TO BE ADS HP STORM OR RCP CLASS III

- ADS HP STORM PROFILE PROLYPROPYLENE 12- THROUGH 60-INCH PIPE SHALL MEET ASTM F2881 OR AASHTO M330. MANUFACTURER OF PROLYPROPYLENE PIPE MUST MEET THE REQUIREMENTS OF FDOT SECTION 948-7.2 (CLASS II 100Yr DSL) AND LISTED ON THE FDOT APPROVED PRODUCERS LIST FOR CLASS II CORRUGATED PROLYPROPYLENE PIPE 12"-60".
- INSERT YOUR STANDARD SPEC NOTE FOR RCP.

POST INSTALLATION INSPECTION NOTE

- ALL STORM PIPE TO BE POST INSTALLATION INSPECTED PER FDOT SECTION 430-4.8 (PIPE INSPECTION).
- ADDITIONAL INFORMATION ON PIPE INSPECTION, EVALUATION & REPAIR CAN BE FOUND IN THE FDOT CONSTRUCTION PRODUCTS ADMINISTRATION MANUAL UNDER SECTION 8.13.

LEGEND

DESCRIPTION	PROPOSED
SANITARY SEWER SYSTEM	
STORM SEWER SYSTEM	
WATER SYSTEM	
FIRE HYDRANT	
RECLAIMED WATER SYSTEM	

0 30' 60' 120'
SCALE: 1" = 60'

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12301 LAKE UNDERHILL ROAD
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407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

UTILITY PLAN - 1

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 60'
SHEET: 19 OF 33

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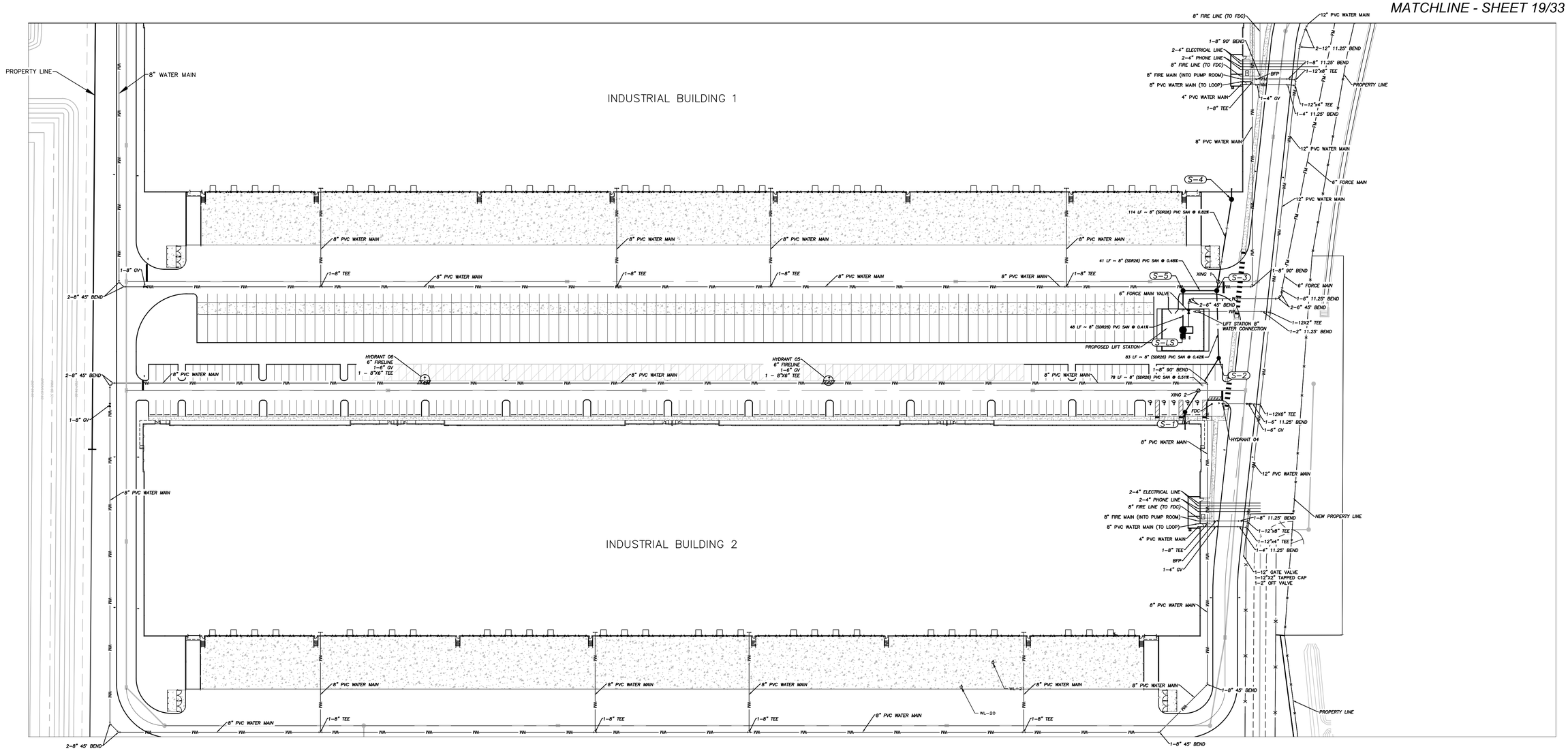
MATCHLINE - SHEET 19/33



LEGEND

DESCRIPTION	PROPOSED
SANITARY SEWER SYSTEM	
STORM SEWER SYSTEM	
WATER SYSTEM	
FIRE HYDRANT	
RECLAIMED WATER SYSTEM	

0 30' 60' 120'

SCALE: 1" = 60'

NOTE:

IF SPECIFYING HP STORM SPECIFICALLY

ADS HP STORM PROFILE WALL POLYPROPYLENE 12- THROUGH 60-INCH PIPE SHALL MEET ASTM F2881 OR AASHTO M330. MANUFACTURER OF PROLYPROPYLENE PIPE MUST MEET THE REQUIREMENTS OF FDOT SECTION 948-7.2 (CLASS II 100Yr DSL) AND LISTED ON THE FDOT APPROVED PRODUCERS LIST FOR CLASS II CORRUGATED POLYPROPYLENE PIPE 12"-60".

IF SPECIFYING RCP AND ALLOWING HP STORM

ADS HP STORM PROFILE WALL PROLYPROPYLENE IS AN APPROVED EQUAL TO CLASS III RCP. ADS HP STORM PROFILE WALL PROLYPROPYLENE 12- THROUGH 60- INCH PIPE SHALL MEET ASTM F2881 OR AASHTO M330. MANUFACTURER OF PROLYPROPYLENE PIPE MUST MEET THE REQUIREMENTS OF FDOT SECTION 948-7.2 (CLASS II 100Yr DSL) AND LISTED ON THE FDOT APPROVED PRODUCERS LIST FOR CLASS II CORRUGATED PROLYPROPYLENE PIPE 12"-60".

IF NOT SPECIFYING A PIPE TYPE SPECIFICALLY AND ALLOWING BOTH RCP AND HP Storm

ALL STORM PIPE TO BE ADS HP STORM OR RCP CLASS III

- ADS HP STORM PROFILE PROLYPROPYLENE 12- THROUGH 60-INCH PIPE SHALL MEET ASTM F2881 OR AASHTO M330. MANUFACTURER OF PROLYPROPYLENE PIPE MUST MEET THE REQUIREMENTS OF FDOT SECTION 948-7.2 (CLASS II 100Yr DSL) AND LISTED ON THE FDOT APPROVED PRODUCERS LIST FOR CLASS II CORRUGATED PROLYPROPYLENE PIPE 12"-60".
- INSERT YOUR STANDARD SPEC NOTE FOR RCP.

POST INSTALLATION INSPECTION NOTE

- ALL STORM PIPE TO BE POST INSTALLATION INSPECTED PER FDOT SECTION 430-4.8 (PIPE INSPECTION).
- ADDITIONAL INFORMATION ON PIPE INSPECTION, EVALUATION & REPAIR CAN BE FOUND IN THE FDOT CONSTRUCTION PRODUCTS ADMINISTRATION MANUAL UNDER SECTION 8.13.

SANITARY STRUCTURE DATA

S-1
SANITARY MANHOLE
N: 1580434.65
E: 476383.00
TOP EL: 89.50
NE INV EL: 81.25

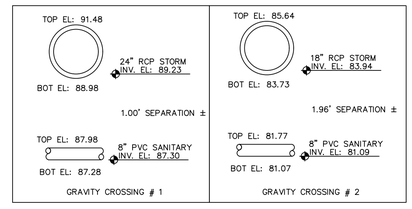
S-2
SANITARY MANHOLE
N: 1580501.09
E: 476424.43
TOP EL: 96.50
SW INV EL: 80.85
N INV EL: 80.75

S-3
SANITARY MANHOLE
N: 1580584.05
E: 476421.90
TOP EL: 97.22
W INV EL: 80.30
N INV EL: 86.53
S INV EL: 80.40

S-4
SANITARY MANHOLE
N: 1580696.46
E: 476440.13
TOP EL: 97.82
S INV EL: 94.30

S-5
SANITARY MANHOLE
N: 1580583.98
E: 476380.47
TOP EL: 97.22
E INV EL: 80.10
S INV EL: 80.00

S-LS
LIFT STATION
N: 1580535.60
E: 476380.30
TOP EL: 83.32
N INV EL: 79.80



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ARCO NATIONAL CONSTRUCTION

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ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

UTILITY PLAN - 2

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE:	APRIL 2023
PROJECT NO.:	ANC-7
DRAWN BY:	DM
CHECKED BY:	DMS
SCALE:	1" = 60'
SHEET:	20 OF 33

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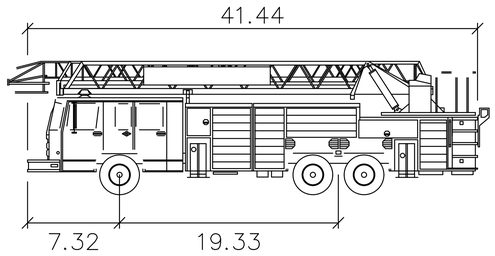
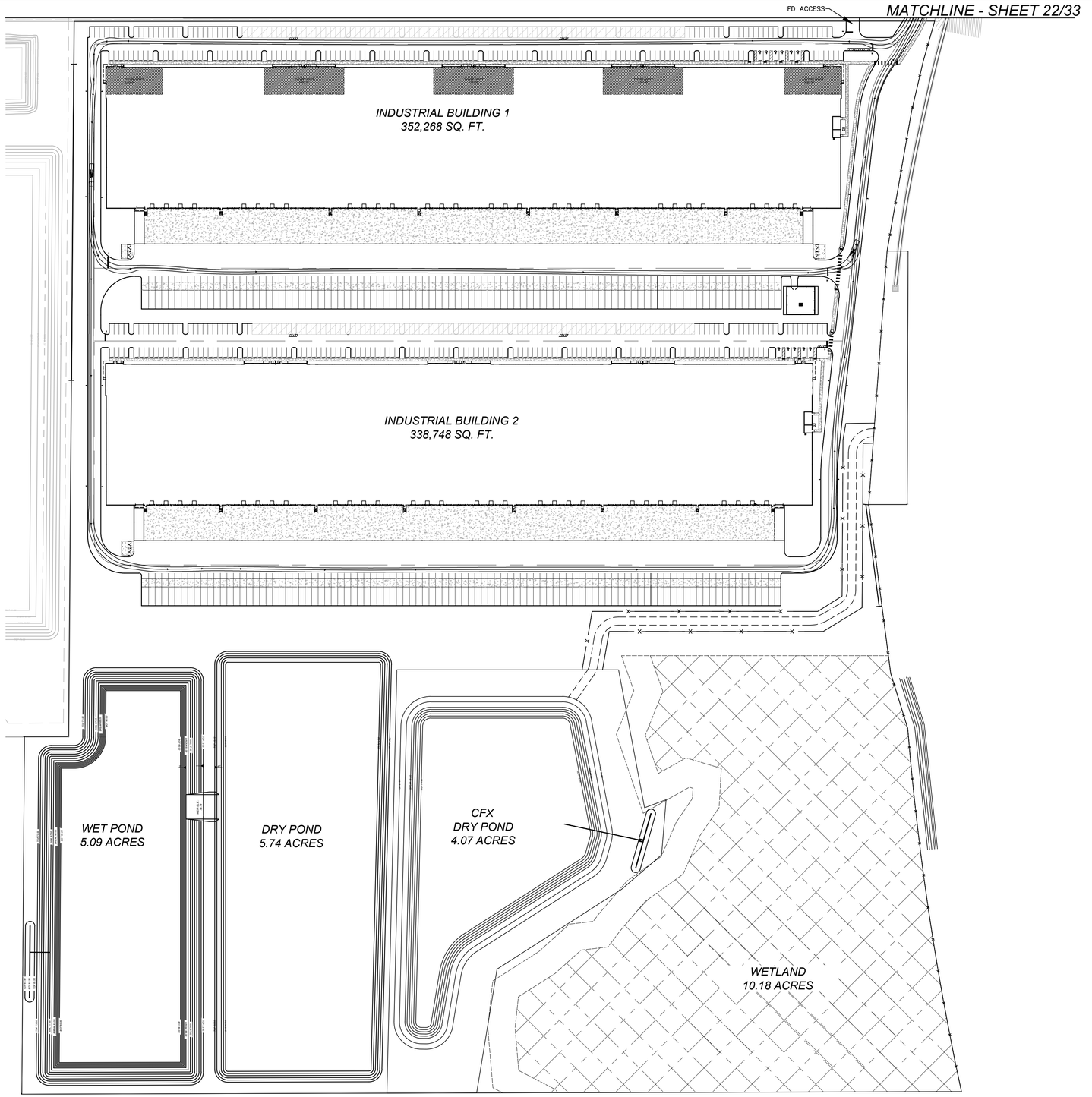
NOTES

1. FIRE DEPARTMENT ACCESS AND WATER SUPPLY SHALL COMPLY WITH NFPA 1 (2021 EDITION) AND FFPC (7TH EDITION).
2. THE NUMBER AND PLACEMENT OF REQUIRED FIRE HYDRANTS SHALL BE IN ACCORDANCE WITH NFPA 1 (2021 EDITION) AND FFPC (7TH EDITION).
3. ALL ROADWAYS AND FIRE HYDRANTS SHALL BE IN PLACE BEFORE BUILDING CONSTRUCTION MAY BEGIN.
4. FIRE HYDRANTS SHALL BE MARKED WITH BLUE ROAD REFLECTOR.
5. BUILDING WILL BE REQUIRED TO HAVE AN AUTOMATIC FIRE SPRINKLER SYSTEM.
6. BUILDING MUST BE MONITORED BY AN AUTOMATIC FIRE ALARM SYSTEM.
7. A LOCK BOX MUST BE PROVIDED NEAR THE FRONT DOOR.



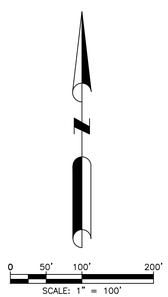
APOPKA FIRE TRUCK

Width	: 8.00
Track	: 8.50
Lock to Lock Time	: 6.00
Steering Angle	: 45.0



BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION



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Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

FIRE TRUCK ROUTING PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023	
PROJECT NO.: ANC-7	
DRAWN BY: DM	
CHECKED BY: DMS	
SCALE: 1" = 100'	
SHEET: 21 OF 33	

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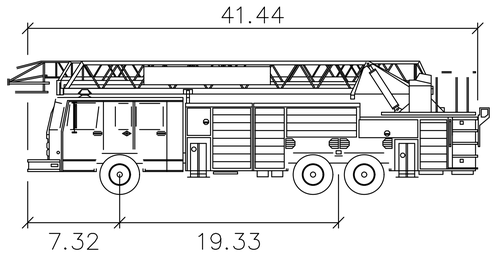
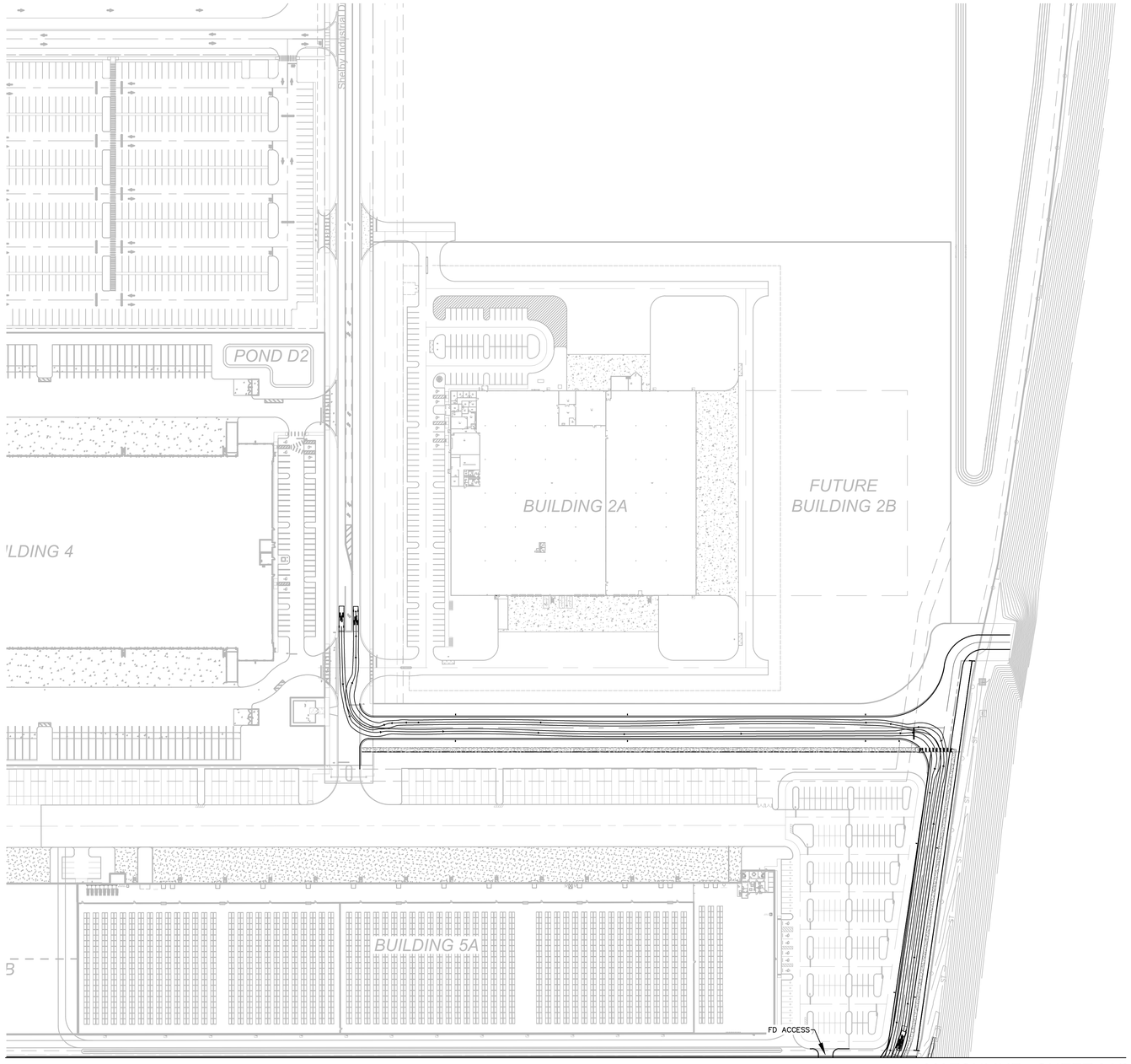
NOTES

1. ***FIRE DEPARTMENT ACCESS AND WATER SUPPLY SHALL COMPLY WITH NFPA 1 (2021 EDITION) AND FFPC (7TH EDITION).***
2. ***THE NUMBER AND PLACEMENT OF REQUIRED FIRE HYDRANTS SHALL BE IN ACCORDANCE WITH NFPA 1 (2021 EDITION) AND FFPC (7TH EDITION).***
3. ***ALL ROADWAYS AND FIRE HYDRANTS SHALL BE IN PLACE BEFORE BUILDING CONSTRUCTION MAY BEGIN.***
4. ***FIRE HYDRANTS SHALL BE MARKED WITH BLUE ROAD REFLECTOR.***
5. ***BUILDING WILL BE REQUIRED TO HAVE AN AUTOMATIC FIRE SPRINKLER SYSTEM.***
6. ***BUILDING MUST BE MONITORED BY AN AUTOMATIC FIRE ALARM SYSTEM.***
7. ***A LOCK BOX MUST BE PROVIDED NEAR THE FRONT DOOR.***

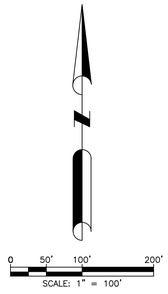


APOPKA FIRE TRUCK

Width	: 8.00
Track	: 8.50
Lock to Lock Time	: 6.00
Steering Angle	: 45.0



MATCHLINE - SHEET 21/33



BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

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SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

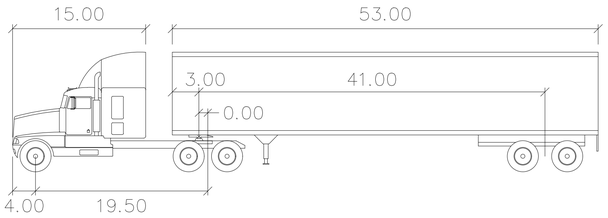
DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

OFFSITE FIRE TRUCK ROUTING PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

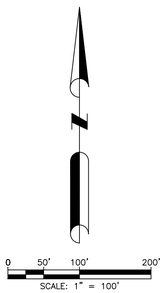
DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 100'
SHEET: 22 OF 33

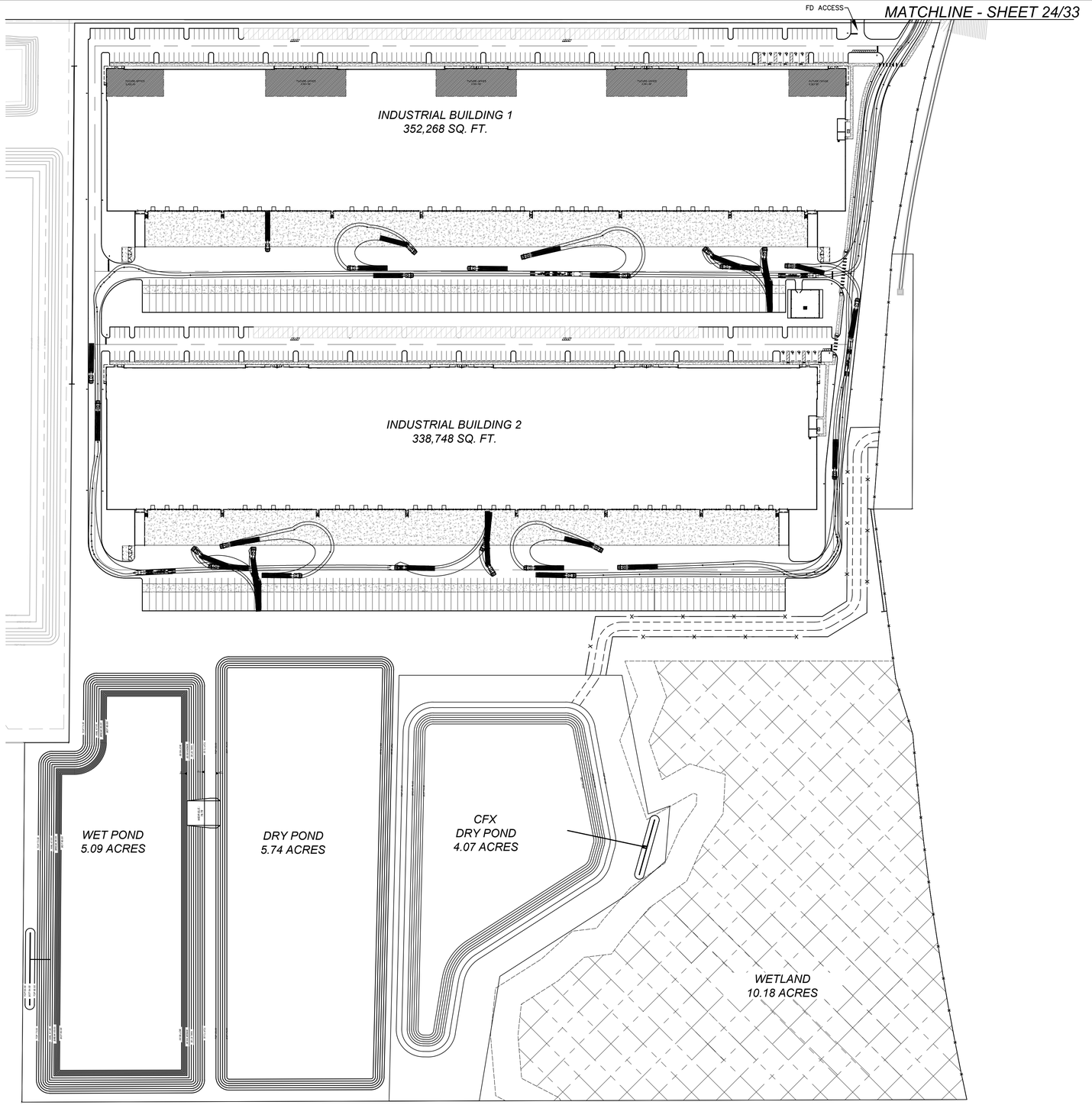
F:\ANC7\CAD\Planset\Final\21-22 FIRE TRUCK ROUTING PLAN.dwg,6/6/2023 7:37:02 PM



WB–62FL

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		





BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

LARGE TRUCK ROUTING PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023	
PROJECT NO.: ANC-7	
DRAWN BY: DM	
CHECKED BY: DMS	
SCALE: 1" = 100'	
SHEET: 23 OF 33	

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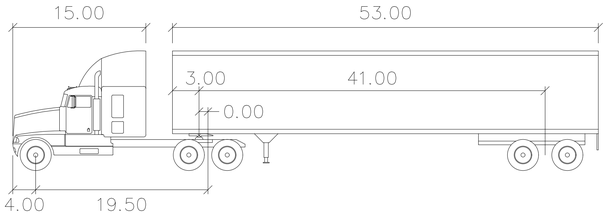
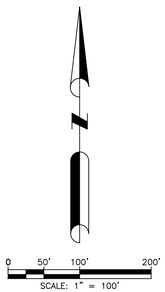
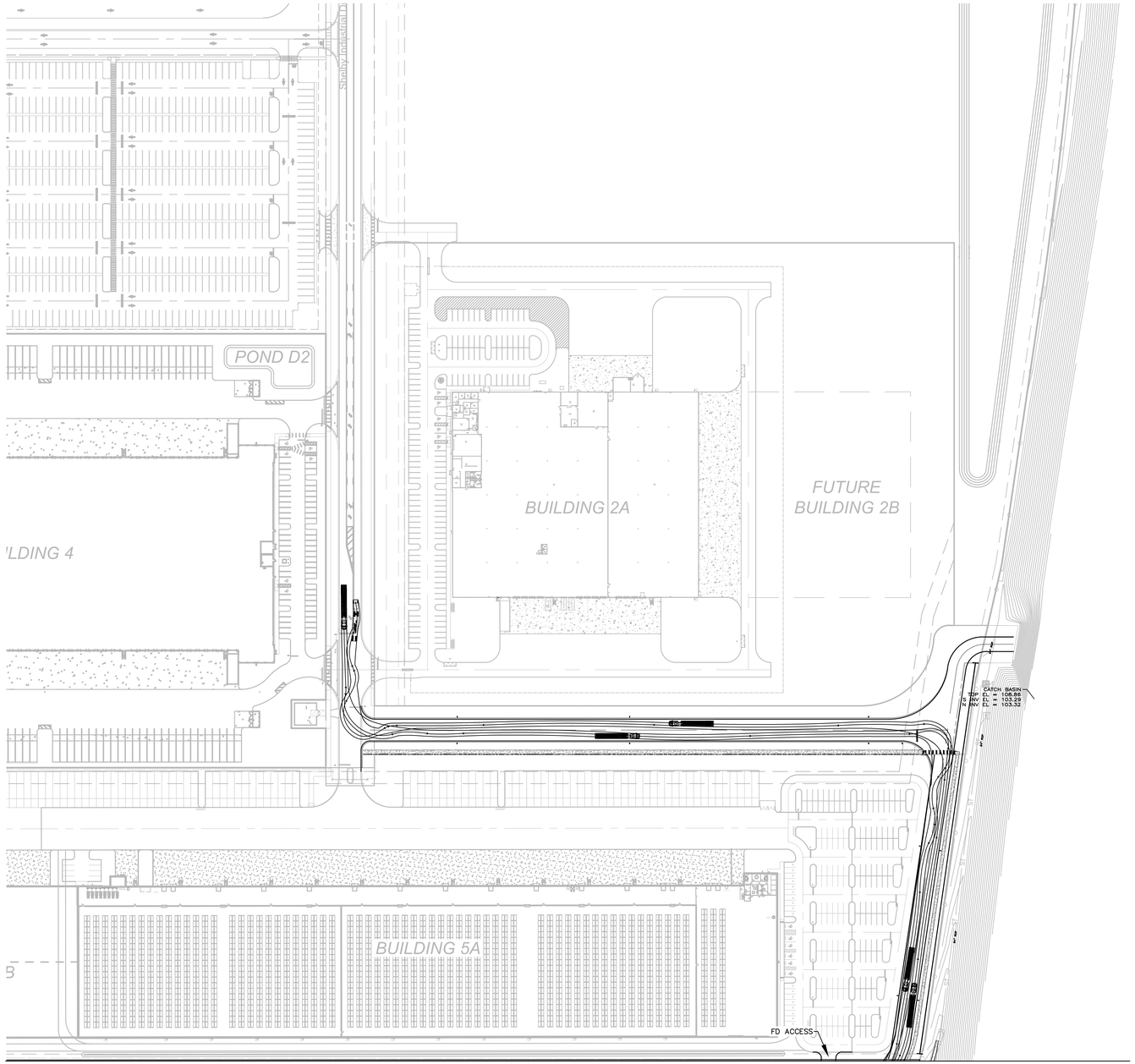


WB–62FL

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		





MATCHLINE - SHEET 23/33

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

OFFSITE LARGE TRUCK ROUTING PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023	
PROJECT NO.: ANC-7	
DRAWN BY: DM	
CHECKED BY: DMS	
SCALE: 1" = 100'	
SHEET: 24 OF 33	

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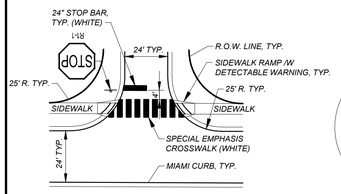
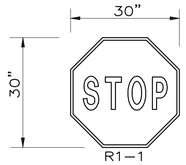
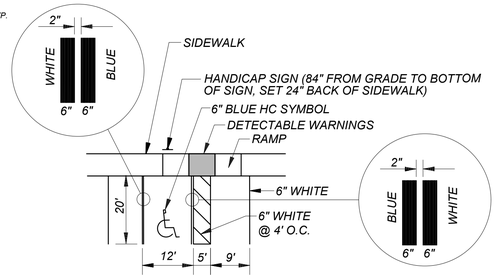


TYPICAL INTERSECTION SIGNING & STRIPING DETAIL



TYPICAL STOP SIGN

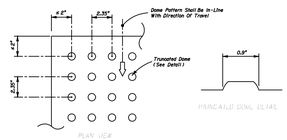


NOTE:
ALL STRIPING SHALL BE THERMOPLASTIC.

TYPICAL HANDICAP PARKING STRIPING PLAN

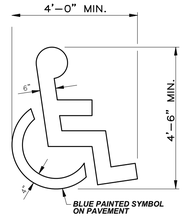
NO PARKING ON STREET SIGN DETAIL
NTS

TYPICAL SPEED LIMIT SIGN

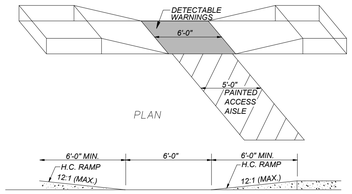


ALL SIDEWALK CURB RAMPS SHALL HAVE "CAST IN PLACE" DETECTABLE WARNING SURFACES THAT EXTEND THE FULL WIDTH OF THE RAMP AND IN THE DIRECTION OF TRAVEL 24 INCHES (610 mm) FROM THE BACK OF CURB IN ACCORDANCE WITH F.D.O.T. INDEX 522-002.

CURB RAMP DETECTABLE WARNING



INTERNATIONAL HANDICAP SYMBOL



HANDICAP RAMP DETAIL

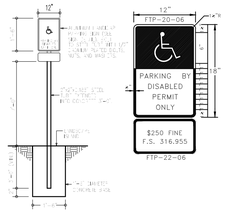
FIRE LANE SIGN
NTS

1. SIGNS SHALL BE TWELVE (12) INCHES WIDE BY EIGHTEEN (18) INCHES IN HEIGHT, WHITE WITH TWO-INCH HIGH RED LETTERS NOT LESS THAN ONE-HALF INCH WIDE TO READ "NO PARKING FIRE LANE BY ORDER OF THE FIRE DEPARTMENT".
2. SIGNS SHALL BE FREESTANDING, DOUBLE FACED, SPACED NOT GREATER THAN 60 FEET APART.
3. SIGNS SHALL BE MOUNTED ON METAL POSTS, NOT LESS THAN TWO (2) INCHES IN SIZE WITH BOTTOM OF SIGN NOT LESS THAN SEVEN (7) FEET FROM GRADE TO BOTTOM OF SIGN.
4. WHERE A CURB IS PROVIDED, FOUR (4) INCHES OF CURB TOP AND FACE TO BE TRAFFIC YELLOW (F.D.O.T. TRAFFIC RATED PAVEMENT PAINT). STRIPES FOUR (4) INCHES WIDE EXTENDING OUTWARD TO A WIDTH OF FOUR (4) FEET FROM CURB WITH TWO (2) FEET BETWEEN EACH STRIPE. STRIPING TO BE TRAFFIC YELLOW F.D.O.T. TRAFFIC RATED PAVEMENT PAINT.
5. LETTERS NOT LESS THAN EIGHTEEN (18) INCHES IN HEIGHT AND NOT LESS THAN FOUR INCHES IN WIDTH WITHIN THE STRIPING. LETTERING TO READ "NO PARKING – FIRE LANE". LETTERING TO BE TRAFFIC YELLOW F.D.O.T. TRAFFIC RATED PAVEMENT PAINT.
6. SIGNS AND PAINTING ARE TO BE MAINTAINED BY THE RESPONSIBLE PARTY OF THE PROPERTY.

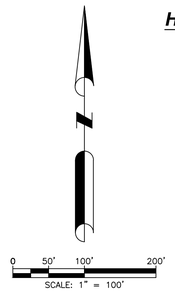
FIRE LANE STRIPING

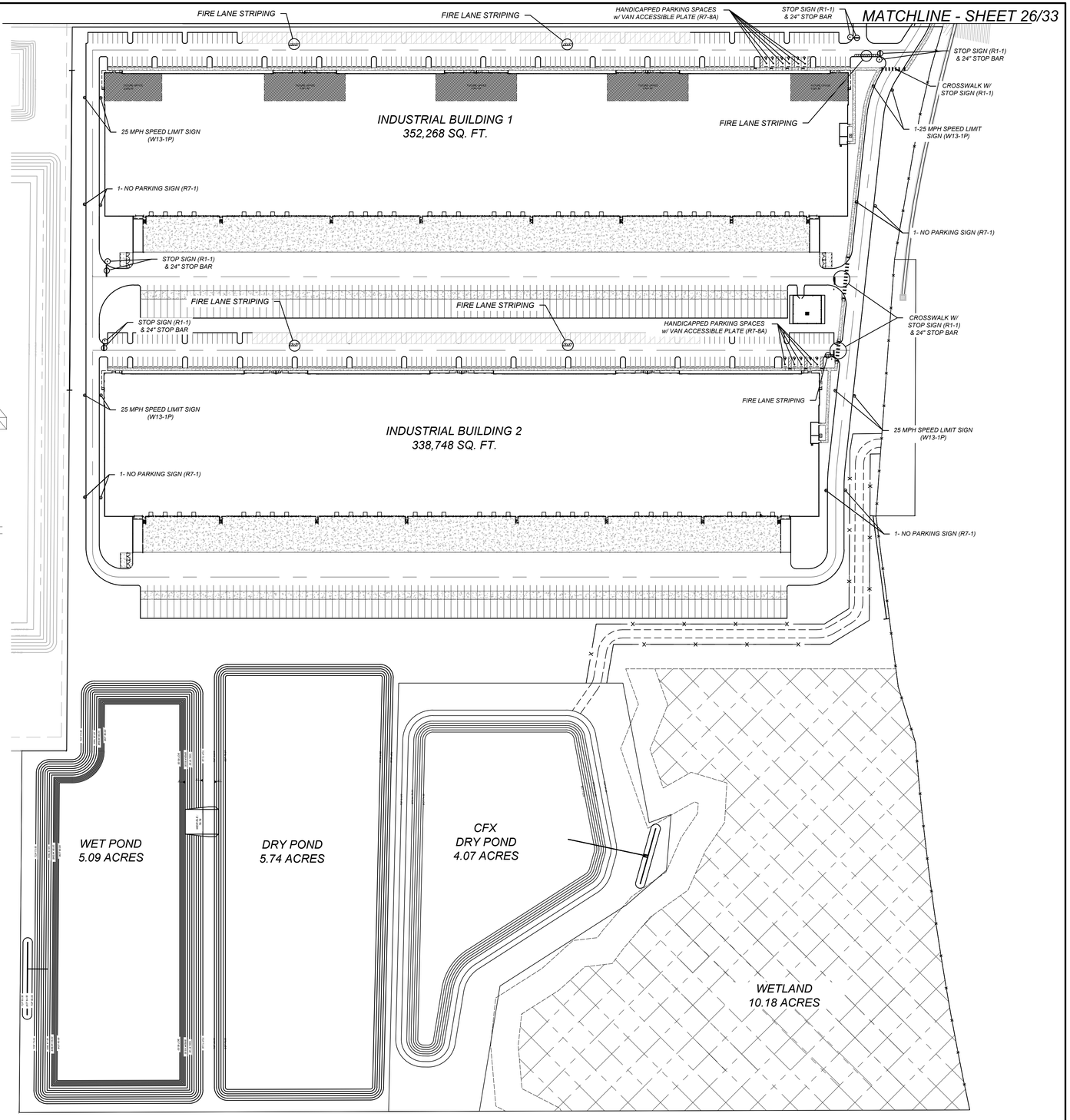
NOTE:
A BLUE REFLECTIVE PAVEMENT MARKER (RPM) SHALL BE PLACED IN THE CENTER OF THE TRAVELED LANE OPPOSITE EACH FIRE HYDRANT. ALL RPM'S SHALL BE CLASS B PER FDOT INDEX 17352.

"VAN ACCESSABLE" PLATE



HANDICAP SIGN





BlueScope Properties Group

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Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

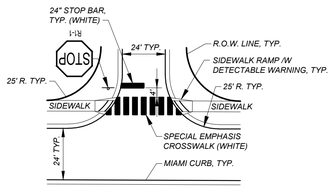
DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

SIGNING & STRIPING PLAN

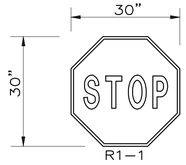
MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 100'
SHEET: 25 OF 33

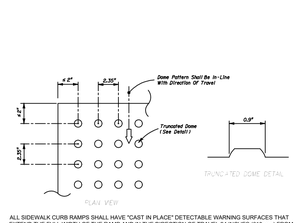
F:\ANC7\CAD\Planset\Final\25-26 SIGNING & STRIPING PLAN.dwg,6/7/2023 10:05:08 AM



TYPICAL INTERSECTION SIGNING & STRIPING DETAIL

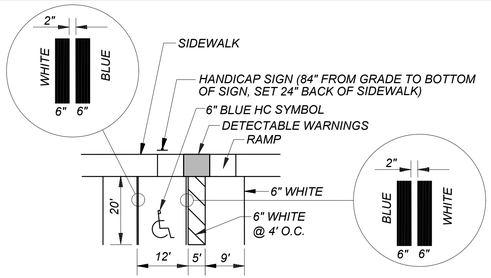


TYPICAL STOP SIGN



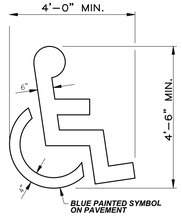
ALL SIDEWALK CURB RAMPS SHALL HAVE "CAST IN PLACE" DETECTABLE WARNING SURFACES THAT EXTEND THE FULL WIDTH OF THE RAMP AND IN THE DIRECTION OF TRAVEL 24 INCHES (610 mm) FROM THE BACK OF CURB IN ACCORDANCE WITH F.D.O.T. INDEX 522-002.

CURB RAMP DETECTABLE WARNING

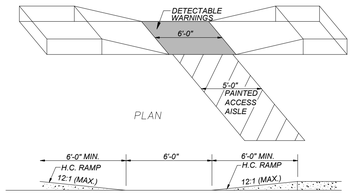


NOTE:
ALL STRIPING SHALL BE THERMOPLASTIC.

TYPICAL HANDICAP PARKING STRIPING PLAN



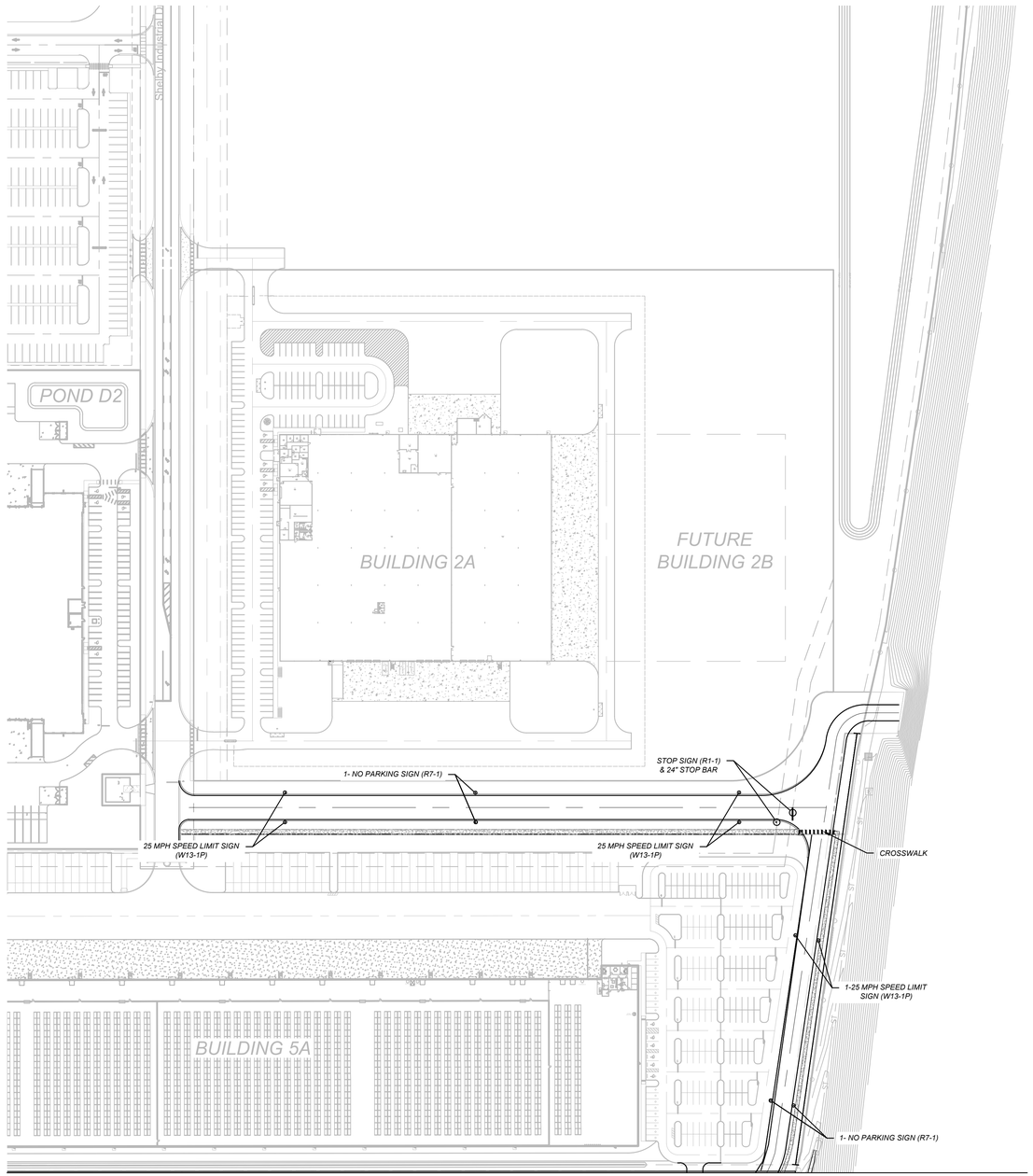
INTERNATIONAL HANDICAP SYMBOL



HANDICAP RAMP DETAIL

NO PARKING ON STREET SIGN DETAIL
NTS

TYPICAL SPEED LIMIT SIGN



MATCHLINE - SHEET 25/33

FIRE LANE SIGN
NTS

1. SIGNS SHALL BE TWELVE (12) INCHES WIDE BY EIGHTEEN (18) INCHES IN HEIGHT. WHITE WITH TWO-INCH HIGH RED LETTERS NOT LESS THAN ONE-HALF INCH WIDE TO READ "NO PARKING FIRE LANE BY ORDER OF THE FIRE DEPARTMENT".
2. SIGNS SHALL BE FREESTANDING, DOUBLE FACED, SPACED NOT GREATER THAN 60 FEET APART.
3. SIGNS SHALL BE MOUNTED ON METAL POSTS, NOT LESS THAN TWO (2) INCHES IN SIZE WITH BOTTOM OF SIGN NOT LESS THAN SEVEN (7) FEET FROM GRADE TO BOTTOM OF SIGN.
4. WHERE A CURB IS PROVIDED, FOUR (4) INCHES OF CURB TOP AND FACE TO BE TRAFFIC YELLOW (F.D.O.T. TRAFFIC RATED PAVEMENT PAINT). STRIPES FOUR (4) INCHES WIDE EXTENDING OUTWARD TO A WIDTH OF FOUR (4) FEET FROM CURB WITH TWO (2) FEET BETWEEN EACH STRIPE. STRIPING TO BE TRAFFIC YELLOW F.D.O.T. TRAFFIC RATED PAVEMENT PAINT.
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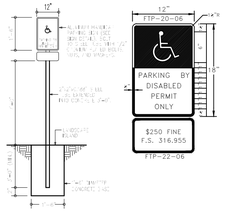
6. SIGNS AND PAINTING ARE TO BE MAINTAINED BY THE RESPONSIBLE PARTY OF THE PROPERTY.

FIRE LANE STRIPING

NOTE:
A BLUE REFLECTIVE PAVEMENT MARKER (RPM) SHALL BE PLACED IN THE CENTER OF THE TRAVELED LANE OPPOSITE EACH FIRE HYDRANT. ALL RPM'S SHALL BE CLASS B PER FDOT INDEX 17352.

"VAN ACCESSABLE" PLATE



HANDICAP SIGN

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Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

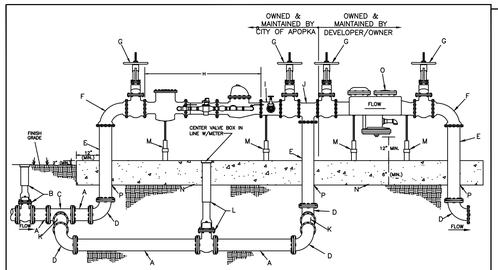
DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

OFFSITE SIGNING & STRIPING PLAN

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: 1" = 100'
SHEET: 26 OF 33

F:\ANC7\CAD\Planset\Final\25-26 SIGNING & STRIPING PLAN.dwg,6/6/2023 1:56:35 PM



MATERIAL LIST

A	DUCTILE IRON PIPE (VARIOUS LENGTHS)
B	M.J. GATE VALVE W/VALVE BOX (SLIDE STYLE) MEGALUG JOINT RESTRAINTS
C	M.J. TEE MEGALUG JOINT RESTRAINTS
D	M.J. ELL MEGALUG JOINT RESTRAINTS
E	DUCTILE IRON FLANGED PIPE
F	FLANGED ELL (LONG RADIUS)
G	FLANGED O.S. & Y. VALVE
H	DUAL RANGE METER
I	(SIZE") x 4" FLANGED TEE 4" x 2" TAPPED FLANGE 2" x 2 1/2" BRASS NIPPLE 2" GATE SCREW VALVE 2" GALVANIZED PLUG
J	FLANGED TEE
K	(SIZE") x 30" D.I. PIPE STUB M.J. GATE VALVE W/VALVE BOX (SLIDE STYLE) & "VALVE NUT LOCKING CAP" MEGALUG JOINT RESTRAINTS (VALVE NUT LOCKING CAP PROVIDED BY OUC)
M	ADJUSTABLE BRACE (AS NEEDED)
N	3000 PSI CONC. W/6X6 WWF (6" WIDE x 6" THICK MINIMUM) BY DEVELOPER
O	CITY OF APOPKA APPROVED REDUCED PRESSURE BACKFLOW PREVENTER
Q	ALL FLANGES, PIPES, VALVES AND APPURTENSES SHALL HAVE 316 S.S. HARDWARE

NOTES:

1. THE METER ASSEMBLY TO BE INSTALLED ON PRIVATE PROPERTY.
2. PROVIDE A MINIMUM 10 FT. EASEMENT ON EACH SIDE OF THE METER ASSEMBLY TO THE CITY OF APOPKA FOR OPERATION AND MAINTENANCE OF THE METER ASSEMBLY.
3. DEVELOPER INSTALL: OWNER/DEVELOPER WILL BE RESPONSIBLE FOR THE INSTALLATION OF THIS FIRE LINE MASTER METER ASSEMBLY UNDER THE INSPECTION OF CITY OF APOPKA PERSONNEL.
4. THE BACKFLOW PREVENTION DEVICE TO BE FURNISHED,INSTALLED AND MAINTAINED BY THE OWNER/DEVELOPER.THE BACKFLOW PREVENTION DEVICE WILL BE TESTED BY CERTIFIED BACKFLOW PREVENTION DEVICE TESTER AFTER INSTALLATION. A COPY OF THE TEST RESULTS WILL BE PROVIDED TO THE CITY OF APOPKA PUBLIC SERVICES DEPARTMENT.THE BACKFLOW PREVENTION DEVICE WILL NEED TO BE AN AMERICAN WATER WORKS ASSOCIATION (AWWA) APPROVED DEVICE.
5. THE METER ASSEMBLY WILL BE OWNED AND MAINTAINED BY THE CITY OF APOPKA.BOTH METERS WITHIN THE MASTER ASSEMBLY WILL NEED TO BE COMPATIBLE WITH THE CITY'S AUTOMATIC METER READING (AMR) SYSTEM. THE CITY'S AMR SYSTEM IS MANUFACTURED BY SENSUS METERING SYSTEMS,INC.

CONSTRUCTION NOTES:

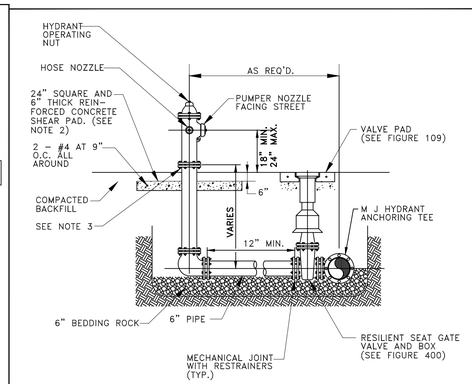
6. PIPE, FITTINGS AND VALVE SIZES DETERMINED BY LARGE METER SIZE.

4"X1.5" DRM W/4" BY-PASS
6"X2" DRM W/6" BY-PASS
8"X2" DRM W/8" BY-PASS
10"X2" DRM W/10" BY-PASS

MINIMUM SERVICE VALVE SIZE DETERMINED BY LARGE METER SIZE.

FIRE LINE MASTER METER ASSEMBLY W/ BY-PASS (TYPICAL)

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 500 C

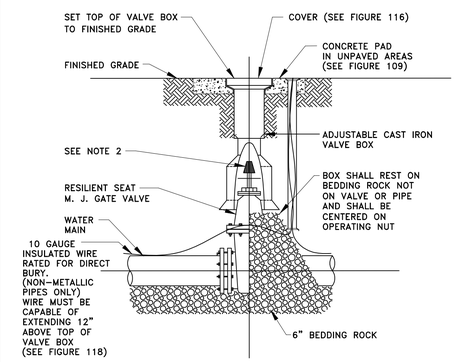


NOTES:

1. FIRE HYDRANT SHALL BE SUPPLIED WITHOUT A WEEP HOLE, OR WITH A PERMANENTLY PLUGGED WEEP HOLE.
2. THE SHEAR PAD SHALL BE RECESSED SIX (6) INCHES BELOW THE FINISHED GRADE AND THE RECESSED SECTION SODDED.
3. CLEARANCE BETWEEN BOTTOM OF BOLTS AND TOP OF SHEAR PAD SHALL BE A TWELVE (12) INCH MINIMUM.
4. FIRE HYDRANTS SHALL BE IDENTIFIED IN ACCORDANCE WITH THE CITY OF APOPKA UTILITIES DESIGN CONSTRUCTION STANDARDS MANUAL.

FIRE HYDRANT ASSEMBLY DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 402

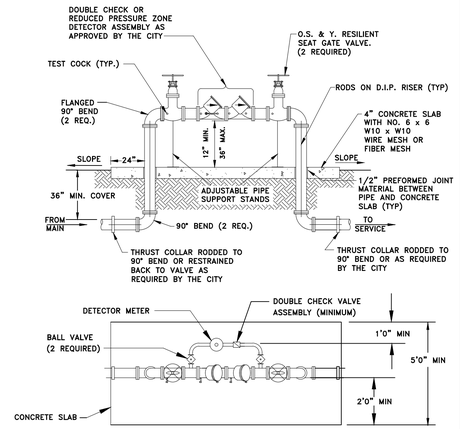


NOTES:

1. PVC EXTENSIONS MAY BE USED ON VALVE BOX INSTALLATION.
2. THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO WITHIN A 3 FEET BELOW FINISHED GRADE.

GATE VALVE AND BOX DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 400

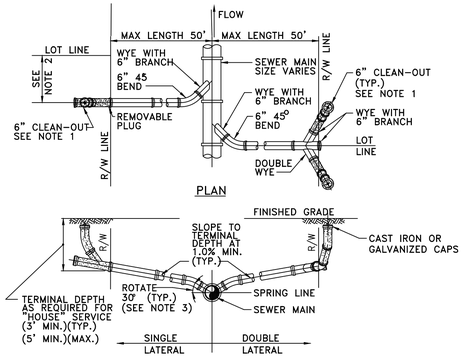


NOTES:
1. BYPASS METER MUST MEET AWWA STANDARD C700 OR C701.
2. METER MUST MEET AWWA STANDARD C707 AND TRANSMITTER MUST BE COMPATIBLE WITH THE CITY'S AMR SYSTEM.
3. ALL PIPE FITTINGS, MATERIALS, LABOR, AND APPURTENANCES SHALL BE SUPPLIED BY THE CONTRACTOR.
4. ALL PIPE AND FITTINGS TWO (2) INCHES AND SMALLER SHALL BE THREADED SCHEDULE 40 GALVANIZED STEEL, OR BRASS.

ABOVE GROUND DEVICE WITH DETECTOR BY-PASS

2 INCH AND ABOVE ASSEMBLY

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 500 B

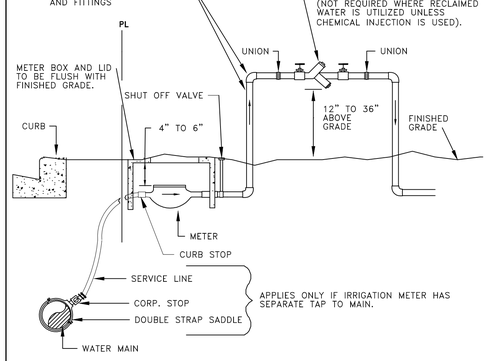


PROFILE

NOTES:
1. CLEAN-OUT (SHOWN SHADED) SHALL BE INSTALLED BY THE BUILDER IN ACCORDANCE WITH STANDARD PLUMBING CODE.
2. LOCATE SINGLE LATERAL AS CLOSE TO LOT LINE AS POSSIBLE.
3. INVERT OF SERVICE LATERAL SHALL NOT ENTER SEWER MAIN BELOW SPRING LINE.
4. RESIDENTIAL SERVICES SHALL BE 4 INCHES & NON-RESIDENTIAL SERVICES SHALL BE 6 INCHES IN DIAMETER AS A MINIMUM.
5. GALVANIZED, OR CAST IRON CLEAN-OUT CAP SHALL BE USED ON THE STUBOUT FOR EACH SERVICE.
6. LATERAL SHALL BE MARKED WITH AN "S" STAMPED OR CUT IN THE CURB.

SERVICE LATERAL DETAIL

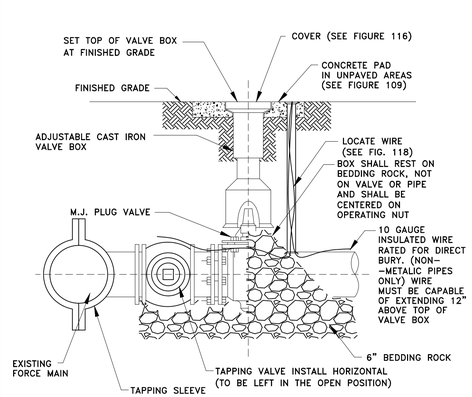
CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 204



NOTES:
1. A POSITIVE DIELECTRIC CONNECTION SHALL BE MADE BETWEEN ALL GALVANIZED AND BRASS COMPONENTS.
2. METER SHALL BE INSTALLED JUST INSIDE THE ROW LINE OR PROPERTY LINE AND IN NO CASE SHALL IT BE INSTALLED IN THE SIDEWALK OR OTHER PAVED AREAS.
3. DOUBLE CHECK VALVES MAY BE USED AS LONG AS THEIR ARE NO CHEMICALS OR A WELL ON SITE.
4. A PVB DEVICE SHALL BE 12-INCHES MINIMUM ABOVE HIGHEST OUTLET OR SPRAYHEAD
5. ALL BACKFLOW PREVENTION DEVICES ARE TO BE AWWA APPROVED.

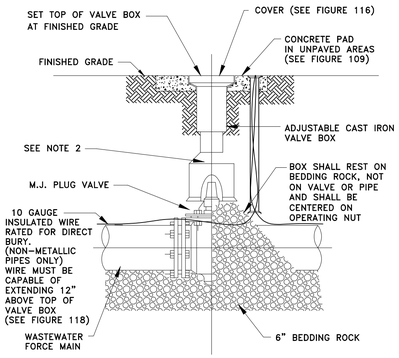
IRRIGATION METER AND DOUBLE CHECK VALVE OR REDUCED PRESSURE BACKFLOW PREVENTER

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 502



FORCE MAIN WET TAP TIE-IN DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 206



NOTES:

1. PVC EXTENSIONS MAY BE USED ON VALVE BOX INSTALLATION.
2. THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO WITHIN 3 FEET BELOW FINISHED GRADE.

PLUG VALVE AND BOX DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 400 A

BlueScope Properties Group

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REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

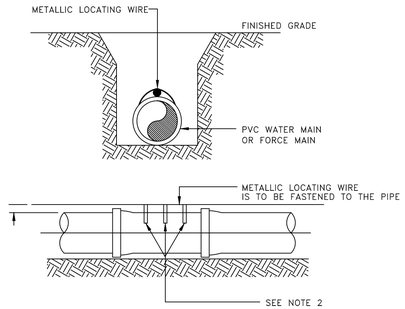
DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

UTILITY DETAILS - 1

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: NONE
SHEET: 27 OF 33

F:\ANC7\CAD\Planset\Final\27-29 UTILITY DETAILS.dwg,6/6/2023 7:06:04 PM

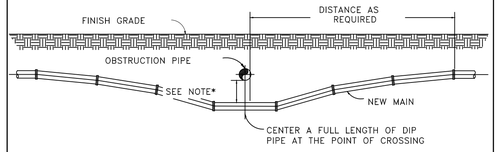


NOTES:

1. PVC PIPE SHALL REQUIRE INSULATED METALLIC LOCATING WIRE (10 AWG–SOLID CCS REINFORCED TRACER WIRE–INSULATED 30 MIL HDPE – 30 VOLT MFG. BY COPPERHEAD INDUSTRIES, LLC OR EQUAL) CAPABLE OF DETECTION BY A CABLE LOCATOR.
2. SHALL BE BURIED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND ATTACHED WITH DUCT TAPE OR NYLON STRAPS AT 3 LOCATIONS PER JOINT. LOCATING WIRE SHALL TERMINATE AT THE TEST STATION BOX AS SHOWN IN FIG. 109.
3. BE CAPABLE OF EXTENDING 12" ABOVE TOP OF TEST STATION BOX IN SUCH A MANNER SO AS NOT TO INTERFERE WITH VALVE OPERATION.
4. SPLICES SHOULD BE MADE USING STANDARDS AND PRODUCTS DESIGNED FOR DIRECT BURIAL CONDUCTORS.
5. WIRE INSULATION SHALL BE COLOR CODED FOR THE TYPE OF PIPE BEING INSTALLED.

PVC PIPE LOCATING WIRE DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 118



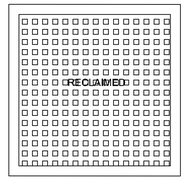
NOTES:

1. 18" MINIMUM CLEARANCE FOR WATER, SEWER AND RECLAIMED WATER MAIN CROSSINGS
2. 12" MINIMUM CLEARANCE REQUIRED FOR OTHER TYPE UTILITY CROSSINGS.
3. SEE ENCASEMENT DETAIL IF MINIMUM CLEARANCE CANNOT BE OBTAINED.

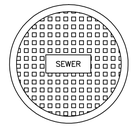
* CONSTRUCT UNIFORM PIPE DEFLECTION NOT TO EXCEED 75% OF MANUFACTURER RECOMMENDED MAXIMUM DEFLECTION PER PIPE JOINT

UTILITY CROSSING PIPE DEFLECTION DETAIL

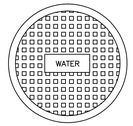
CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 117



RECLAIMED WATER



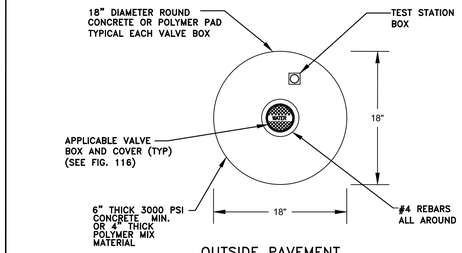
SEWER



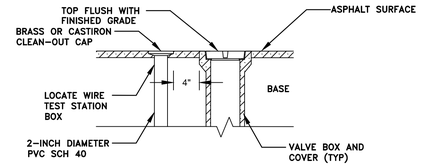
POTABLE WATER

TYPICAL VALVE BOX COVER DETAILS

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 116



OUTSIDE PAVEMENT

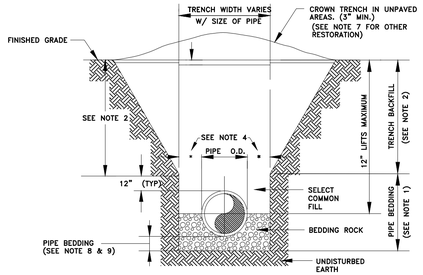


INSIDE PAVEMENT

VALVE IDENTIFICATION TAG
TO BE INSTALLED BY CITY
& PAID FOR BY DEVELOPER

VALVE BOX

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 109

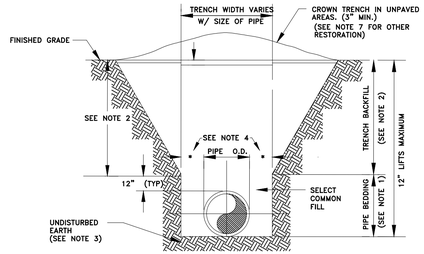


NOTES:

1. PIPE BEDDING: SELECT COMMON FILL COMPACTED TO 98% UNDER PAVEMENT OF THE MAXIMUM DENSITY AS PER AASHTO T–180.
2. TRENCH BACKFILL: COMMON FILL COMPACTED TO 98% UNDER PAVEMENT OF THE MAXIMUM DENSITY AS PER AASHTO T–180.
3. USE OF TYPE A BEDDING TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE CITY.
4. (*): 15" MAX. FOR PIPE DIAMETER LESS THAN 24", AND 24" MAX. FOR PIPE DIAMETER 24" AND LARGER.
5. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
6. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
7. GRAVITY SEWERS SHALL UTILIZE TYPE A BEDDING IF REQUIRED BY THE CITY. BEDDING DEPTH SHALL BE 4" MINIMUM FOR PIPE DIAMETER LESS THAN 15" AND 6" MINIMUM FOR PIPE DIAMETER 16" AND LARGER.
8. DEPTH FOR REMOVAL OF UNSUITABLE MATERIAL SHALL GOVERN DEPTH OF BEDDING ROCK BELOW THE PIPE. THE CITY SHALL DETERMINE IN THE FIELD IF REMOVAL OF UNSUITABLE MATERIAL IS REQUIRED TO REACH A SUITABLE FOUNDATION.
9. ALL UNPAVED DISTURBED AREAS SHALL BE SODDED TO MATCH ADJACENT DOMINATE GRASS SPECIES.
10. FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF THE GOVERNING AGENCIES. SURFACE RESTORATION WITHIN CITY RIGHT–OF–WAY, SHALL COMPLY WITH REQUIREMENTS OF RIGHT–OF–WAY UTILIZATION REGULATIONS.

TYPE "A" BEDDING AND OPEN-CUT DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 101

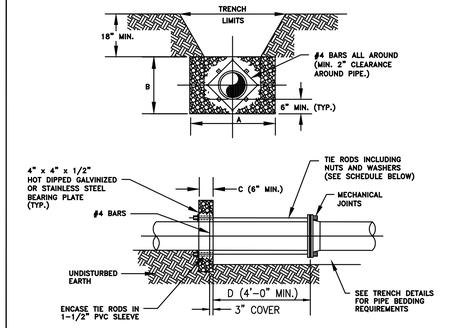


NOTES:

1. PIPE BEDDING: SELECT COMMON FILL COMPACTED TO 98% UNDER PAVEMENT OF THE MAXIMUM DENSITY AS PER AASHTO T–180.
2. TRENCH BACKFILL: COMMON FILL COMPACTED TO 98% UNDER PAVEMENT OF THE MAXIMUM DENSITY AS TO AASHTO T–180.
3. PIPE BEDDING UTILIZING SELECT COMMON FILL OR BEDDING ROCK IN ACCORDANCE WITH TYPE A BEDDING AND TRENCHING DETAIL MAY BE REQUIRED AS DIRECTED BY THE CITY.
4. (*): 15" MAX. FOR PIPE DIAMETERS LESS THAN 24", AND 24" FOR PIPE DIAMETER 24" AND LARGER.
5. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
6. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
7. FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF GOVERNING AGENCIES.
8. SURFACE RESTORATION WITHIN CITY RIGHT–OF–WAY, SHALL COMPLY WITH REQUIREMENTS OF RIGHT–OF–WAY UTILIZATION REGULATIONS.
9. ALL UNPAVED DISTURBED AREAS SHALL BE SODDED TO MATCH ADJACENT DOMINATE GRASS SPECIES.

TYPE "B" BEDDING AND OPEN-CUT DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 100



NOTES:

1. ADDITIONAL REINFORCEMENTS SHALL BE AS SPECIFIED BY THE ENGINEER.
2. MINIMUM COMPRESSIVE STRENGTH FOR CONCRETE SHALL BE 2500 P.S.I.
3. BEDDING, BACKFILL AND COMPACTION SHALL BE AS SPECIFIED ELSEWHERE IN THE STANDARD DRAWINGS.
4. ALL FORM BOARDS SHALL BE REMOVED PRIOR TO BACKFILL.
5. NO ALLOWANCE SHALL BE MADE FOR FRICTION BETWEEN THE PIPE WALL AND THE THRUST COLLAR.
6. DESIGN PRESSURE: 150 P.S.I.

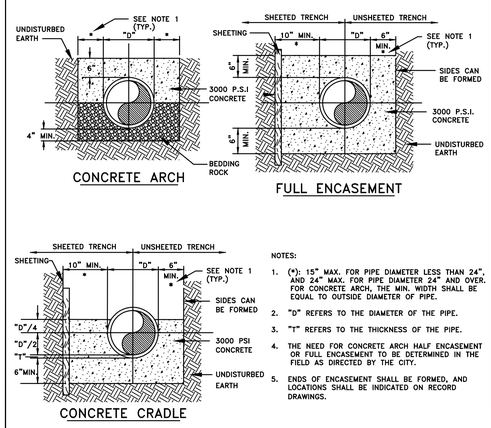
SCHEDULE OF DIMENSIONS AND MATERIALS *

PIPE SIZE (INCHES)	DIMENSIONS (FT.) A	B	C	D	TIE RODS REQ'D DIA.	NO.
6	2.0	2.0	1.0		3/4	2
8	2.5	2.5	1.0		3/4	2
10	3.5	3.0	1.0		3/4	4
12	5.0	3.0	1.0		3/4	4
16	6.0	4.0	1.5		3/4	4
20	8.0	5.0	1.5		3/4	6
24	9.0	6.0	1.5		3/4	8

NOTE: THRUST BLOCK AREAS TO BE COMPUTED ON BASIS OF 2,000 LBS. PER SQ. FT. SOIL RESTRAINT BEARING (1,500 MIN) SEE NOTE 5
* TO BE COMPLETED BY ENGINEER.

WATER MAIN THRUST COLLAR DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 107



CONCRETE ARCH

FULL ENCASEMENT

CONCRETE CRADLE

NOTES:

1. (*): 15" MAX. FOR PIPE DIAMETER LESS THAN 24", AND 24" MAX. FOR PIPE DIAMETER 24" AND OVER. FOR CONCRETE ARCH, THE MIN. WIDTH SHALL BE EQUAL TO OUTSIDE DIAMETER OF PIPE.
2. "D" REFERS TO THE DIAMETER OF THE PIPE.
3. "T" REFERS TO THE THICKNESS OF THE PIPE.
4. THE NEED FOR CONCRETE ARCH HALF ENCASEMENT OR FULL ENCASEMENT TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE CITY.
5. ENDS OF ENCASEMENT SHALL BE FORMED, AND LOCATIONS SHALL BE INDICATED ON RECORD DRAWINGS.

CONCRETE ARCH AND ENCASEMENT DETAILS

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 102

BlueScope Properties Group

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Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

UTILITY DETAILS - 2

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: NONE
SHEET: 28 OF 33

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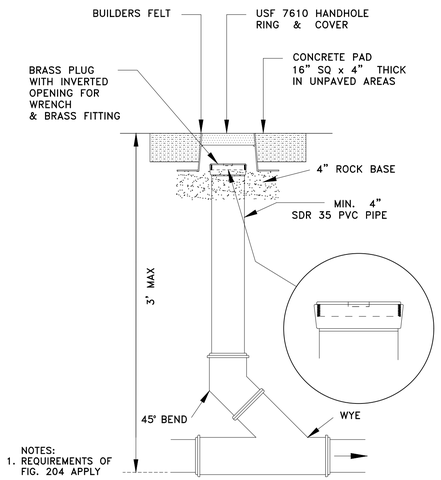
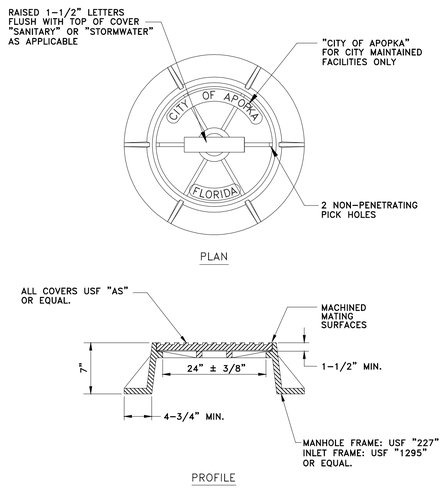


NOTES:
1. REQUIREMENTS OF FIG. 204 APPLY

SANITARY SEWER SERVICE TRAFFIC RATED CLEAN-OUT DETAIL

NTS

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 205



NOTES:
1. MANHOLE FRAME AND COVER ARE TO BE TRAFIC BEARING RATED H-20, CLASS 30 MEETING ASTM A 48.

STANDARD MANHOLE FRAME AND COVER

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 202

MINIMUM LENGTH (FT) TO BE RESTRAINED ON EACH SIDE OF FITTING(S). *

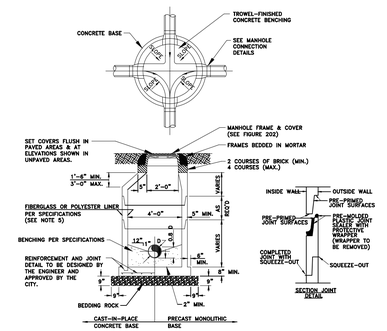
	PIPE SIZE										
	6"	8"	10"	12"	16"	18"	20"	24"	30"	36"	48"
90° BEND	33	43	51	60							
45° BEND	14	18	22	25							
22-1/2° BEND	7	9	11	12							
11-1/4° BEND	4	5	6	6							
TEE**	1	7	24	44							
REDUCER (ONE SIZE SMALLER)		41	39	40							
DEAD END	74	96	115	136							

* ONLY RESTRAIN BRANCH PIPE FOR TEES. ONLY RESTRAIN LARGER PIPE FOR REDUCERS
** LENGTH ALONG RUN ASSUMED TO BE 18'

NOTES:
1. FITTINGS SHALL BE DUCTILE IRON RESTRAINED JOINT TYPE. FM FITTINGS TO BE LINED WITH PROTECTO 401.
2. INSTALL FULL LENGTHS OF PIPE WITH TOTAL LENGTH CONTAINING ONLY RESTRAINED JOINTS EQUAL TO OR GREATER THAN LENGTH SHOWN IN TABLE.
3. WHERE TWO OR MORE FITTINGS ARE TOGETHER, USE FITTING WHICH YIELDS GREATEST LENGTH OF RESTRAINED PIPE.
4. IN LINE VALVES AND THROUGH RUN OF TEES OUTSIDE LIMITS OF RESTRAINED JOINTS FROM OTHER FITTINGS NEED NOT BE RESTRAINED UNLESS OTHERWISE INDICATED.
5. LENGTHS SHOWN IN THE TABLE HAVE BEEN CALCULATED IN ACCORDANCE WITH THE PROCEDURE OUTLINED IN "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" AS PUBLISHED BY DIPRA, FOR PVC WITH THE FOLLOWING ASSUMPTIONS:
   TYPE OF PIPE: PVC
   WORKING PRESSURE: 150 P.S.I.** ** FM = 100 P.S.I. / WM OR RWM = 150 P.S.I.
   SOIL DESIGNATION: SM(SAND SILT)
   LAYING CONDITIONS: S
6. FOR PIPE ENCASED IN POLYETHYLENE INCREASE THE GIVEN VALUE BY A FACTOR OF 1.5.
7. VALUES NOT LISTED IN THE TABLE TO BE COMPLETED BY THE ENGINEER.

RESTRAINED PIPE TABLE (PVC)

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 105



FORCE MAIN MANHOLE LINER*

DIAMETER (INCHES)	THICKNESS (INCHES) HEIGHT (FEET) 3-6	7-12	13-17	MATERIAL	MANUFACTURER
48					
60					
72					

* TO BE COMPLETED BY THE ENGINEER

NOTES:
1. MANHOLE SHOWN IS FOR SEWER SIZE 8" THRU 24". SEE SECTION 20.4 OF THE MANUAL FOR MANHOLE DIAMETER FOR SEWERS LARGER THAN 24".
2. DROP CONNECTIONS ARE REQUIRED WHENEVER INVERT OF INFLUENT SEWER IS 24" OR MORE ABOVE THE INVERT OF THE MANHOLE. SEE MANHOLE CONNECTION DETAILS.
3. THE THICKNESS OF THE LINER SHALL BE 3/8" MINIMUM.
4. EACH BENCH WALL SHALL BE A MINIMUM OF 18 INCHES LONG FROM THE WALL OF THE MANHOLE TOWARD THE CENTER.
5. SANITARY SEWER MANHOLES MAY BE REQUIRED TO BE LINED IN ACCORDANCE WITH THE CITY OF APOPKA LIST OF APPROVED MATERIALS AND PRODUCTS AS DIRECTED BY THE CITY.

TYPICAL MANHOLE

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2015	FIG. 200

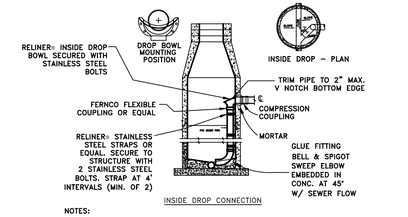
MINIMUM PRESSURE RATING

PSI	DI FITTINGS ≤24"	DI FITTINGS >24"	PIPE MATERIAL* PVC	PIPE MATERIAL* DI	PIPE MATERIAL* HDPE	GATE VALVE** ≤12"	GATE VALVE** >12"	FORCEMAIN* PVC	FORCEMAIN* HDPE
100								●	●
150			●		●		●		
200						●			
250		●		●					
350	●								

* PVC SHALL HAVE A MAXIMUM DIMENSION RATIO (DR) OF 18 AND HDPE SHALL BE MAX DR11. FORCEMAIN: PVC SHALL BE MAX DR18 UNLESS DESIGN REQUIRES OTHERWISE AND HDPE SHALL BE MAX DR17.
** BUTTERFLY VALVES SHALL BE CLASS 150B

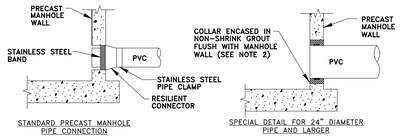
PIPE AND APPURTENANCES PRESSURE RATING

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JAUARY 2014	FIG. 110



INSIDE DROP CONNECTION

NOTES:
1. ALL INSIDE DROP CONNECTIONS FOR SERVICES AND COLLECTOR SEWERS SHALL USE THE DROP BOWL AS PRODUCED BY:
   RELINER-DURAN, INC.
   53 MT. ARCHER RD,
   LYME, CT 06371
   (860)434-0277 FAX: (860)434-3195 OR EQUAL.
2. SECURE DROP PIPE TO MANHOLE WALL WITH RELINER-DURAN, INC STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS.
3. FORCE MAIN RECEIVING MANHOLES MAY BE REQUIRED TO BE LINED IN ACCORDANCE WITH THE CITY OF APOPKA LIST OF APPROVED MATERIALS AND PRODUCTS AS DIRECTED BY THE CITY.



NOTES:
1. DROP PIPE AND FITTINGS SHALL BE OF EQUAL SIZE AND MATERIAL AS THE INFLUENT SEWER.
2. THE CITY MAY APPROVE ALTERNATE WATERTIGHT CONNECTION DETAILS FOR CONNECTION OF 24" DIAMETER PIPES AND LARGER.
3. AN INSIDE DROP CONNECTION SHALL BE REQUIRED FOR ALL INFLUENT WHICH HAVE AN INVERT 24" OR MORE ABOVE THE OUTFLOW PIPE INVERT.
4. CONCRETE TO BE MINIMUM OF 3000 PSI.

MANHOLE CONNECTION DETAILS

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2015	FIG. 201

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

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Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

UTILITY DETAILS - 3

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: NONE
SHEET: 29 OF 33

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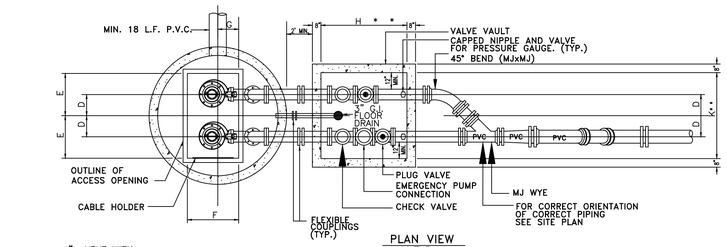
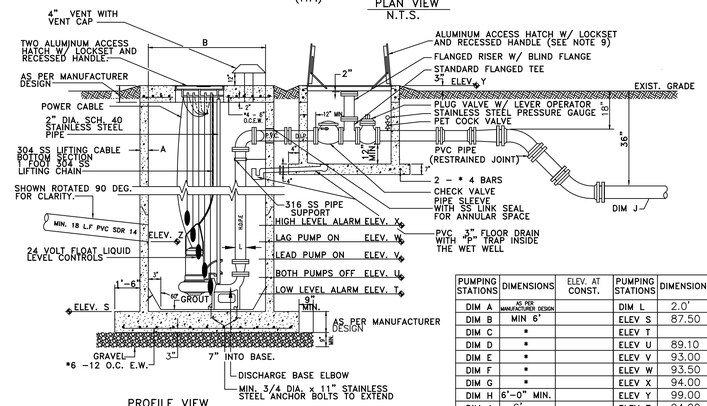


PLAN VIEW
N.T.S.



PROFILE VIEW
N.T.S.

PUMPING STATIONS	DIMENSIONS	ELEV. AT CONST.	PUMPING STATIONS	DIMENSIONS	ELEV. AT CONST.
DIM A	AS PER MANUFACTURER DESIGN		DIM L	2.0'	
DIM B	MIN 6'		ELEV S	87.50	
DIM C	*		ELEV T		
DIM D	*		ELEV U	89.10	
DIM E	*		ELEV V	93.00	
DIM F	*		ELEV W	93.50	
DIM G	*		ELEV X	94.00	
DIM H	6'-0" MIN.		ELEV Y	99.00	
DIM J	6'		ELEV Z	94.00	
DIM K					

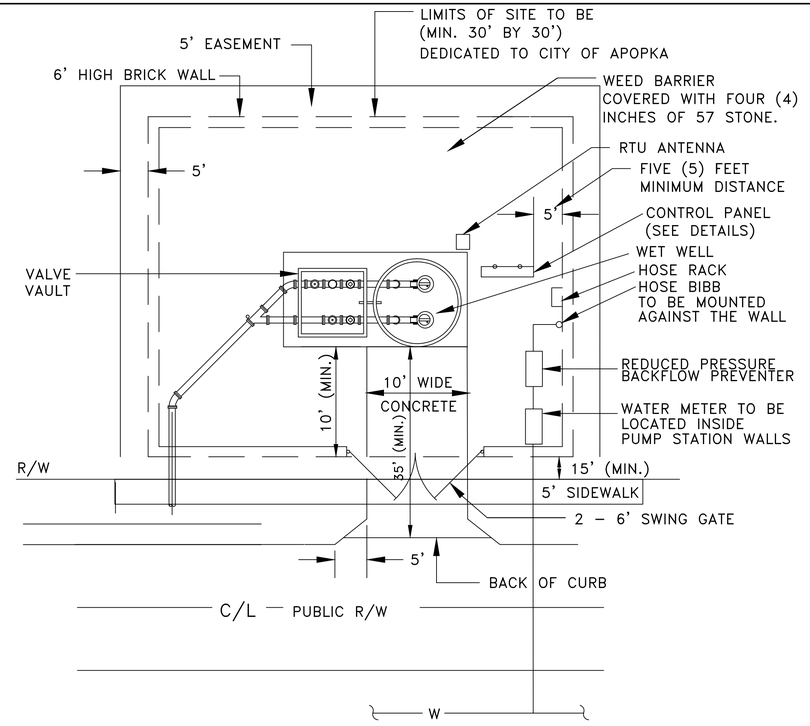
* PER PUMP MANUFACTURERS REQUIREMENT

GENERAL NOTES:

1. VALVE VAULT AND WET WELL LIDS SHALL BE COATED WITH 1 COAT OF TNEMEC SERIES 66, COLOR EN03, (2-3 MILS), FOLLOWED BY TOP COAT OF TNEMEC SERIES 73, COLOR EN05, (2-3 MILS) OR EQUAL.
2.A THE WET WELL SHALL BE CONSTRUCTED OF FIBERGLASS REINFORCED POLYESTER (RFP) AND MANUFACTURED FROM COMMERCIAL GRADE POLYESTER RESIN OR VINYL ESTER RESIN, WITH FIBERGLASS REINFORCEMENTS. THE WET WELL SHALL BE A ONE PIECE UNIT AND MANUFACTURED BY L.F. MANUFACTURE, INC. OR EQUAL.
2.B IN LIEU OF RFP THE WET WELL MAY BE CONSTRUCTED OF PRECAST CONCRETE HAVING A MINIMUM WALL THICKNESS OF 8 INCHES. THE INTERIOR WALLS SHALL BE LINED USING A HIGH DENSITY POLYETHYLENE PRODUCT AS MANUFACTURED BY AGRU SURE GRIP, OR EQUAL.
3. PIPING IN THE WET WELL TO BE HDPE WITH FUSED 45 DEGREES FITTINGS FROM WET WELL TO VALVE VAULT.
4. INTERIOR OF THE VALVE VAULT AND PIPING IN THE VALVE VAULT WITH ConSeal CS-55 (OR EQUAL), TWO COATS, 4 MILS EACH. PIPING SHALL BE COATED AFTER INSTALLATION.
5. VALVE VAULT SHALL BE SIZED TO PERMIT EASY REMOVAL OF CHECK VALVE SPINDLES WITH MINIMUM CLEARANCES AS SHOWN FOR 6" DIAMETER PIPE AND SMALLER. CLEARANCES SHALL INCREASE AS REQUIRED FOR LARGER PIPE SIZES.
6. VALVE VAULT SHALL HAVE SEALED FLOOR AND DRAIN.
7. ALL LOCATIONS WHERE PIPES ENTER OR LEAVE THE WET WELL OR VALVE VAULT SHALL BE MADE WATERTIGHT WITH WALL SLEEVE AND STAINLESS STEEL LINK SEAL.
8. THERE SHALL BE NO VALVES OR ELECTRICAL JUNCTION BOXES IN WET WELL.
9. WET WELL AND VALVE VAULT COVERS SHALL BE ALUMINUM WITH 316 S.S. HARDWARE LOCK BRACKET. SIZE AS REQUIRED BY PUMP MANUFACTURER AND APPROVED BY THE CITY.
10. FLEXIBLE COUPLING SHALL BE SLEEVE TYPE, EPOXY COATED.
11. PUMPS SHALL BE: NP3085 MT 3
MANUFACTURER: FLYGT; MODEL: ADAPTIVE 463; DIA: _____; SPEED: _____; DISCHARGE SIZE: 3 IN.;
VOLTAGE: 460; HZ.: _____; PHASE: 3; H.P.: _____; MIN. SOLID SIZE: _____ IN.
12. OPERATING CONDITIONS SHALL BE 220 GPM AT 150.48 FEET TDH.
13. ALL HARDWARE IN WET WELL AND VALVE BOX TO BE 316 STAINLESS STEEL.
14. "P" TRAP TO BE INSTALLED IN WET WELL.
15. ALL PUBLIC LIFT STATIONS SHALL BE EQUIPPED WITH SCADA SYSTEM.THE DEVELOPER SHALL PAY THE CITY COST OF THE UNIT.THE CITY WILL BE RESPONSIBLE FOR INSTALLATION.
16. ALL LIFT STATIONS SHALL BE FENCED WITH DECORATIVE STONE OR BRICK OR AS DIRECTED BY THE CITY.
17. ALL LIFT STATIONS SHALL HAVE A 10 FEET WIDE CONCRETE ACCESS DRIVEWAY, 35' LONG FROM EDGE OF WET WELL TO BACK OF CURB.
18. ENGINEER SHALL PROVIDE A SCALED (1" = 20' MIN.) SITE SPECIFIC DETAIL.

PUMP STATION DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 301



NOTES:

1. DRIVEWAY AND APRON SHALL BE SIX (6) INCH THICK, 3000 P.S.I. CONCRETE. WITH No.6X6 WIRE MESH OR FIBER MESH.
2. POWER TO THE PUMP STATION SHALL BE THROUGH UNDERGROUND CONDUIT FROM SUPPLY SOURCE IN RIGHT-OF-WAY.
3. GATE TO BE DECORATIVE BLACK POWDER COATED ALUMINUM W/PICKET SPACING = OR < 4"
4. WALLS ARE TO BE BRICK OR DECORATIVE STONE.
5. WET WELL LID MUST OPEN TOWARD CONTROL PANEL (HINGE SIDE TOWARD PANEL).
6. LIFT STATION WALL TO BE PLACED AT LEAST 15FT. BEHIND THE R/W LINE.

PUMP STATION TYPICAL SITE PLAN

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 300

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

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ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

LIFT STATION PLAN - 1
MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: NONE
SHEET: 30 OF 33

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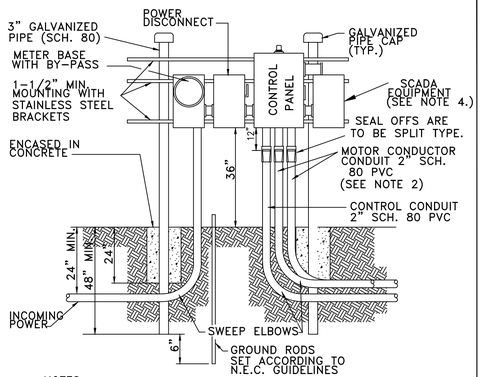
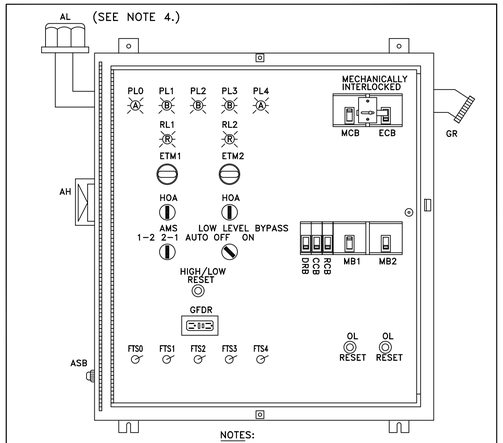


NOTES:
1. DRAWING IS SHOWN FOR 230 VOLT POWER SUPPLY. THE LOCATION OF METER AND MAIN POWER DISCONNECT SHALL BE REVERSED FOR 480 VOLT SUPPLY.
2. WHEN TWO (2) SEPARATE CONDUCTOR-TYPE MOTORS ARE USED, CONDUIT SHALL BE INCREASED TO THREE (3) INCH.
3. POWER SUPPLY SHALL BE UNDERGROUND TO THE PUMP STATION AND SHALL BE THREE (3) PHASE FROM A THREE (3) PHASE SOURCE ONLY.
4. STUB OUT UNISTRUT LONG ENOUGH TO ACCOMODATE A 24"x24" SCADA EQUIPMENT CABINET. CITY TO INSTALL SCADA EQUIPMENT CABINET.

DUPLEX PUMP STATION CONTROL PANEL INSTALLATION DETAIL

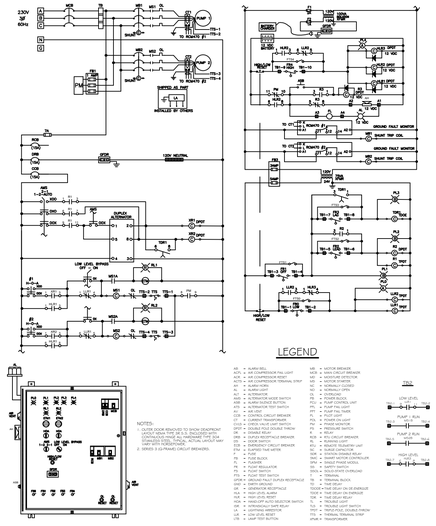
CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 302



NOTES:
1. OUTER DOOR REMOVED TO SHOW DEADFRONT LAYOUT NEMA TYPE 3R 304 S.S. ENCL. WITH CONTINUOUS HINGE ALL HARDWARE STAINLESS STEEL TYPICAL, ACTUAL LAYOUT MAY VARY WITH HORSEPOWER
2. SERIES 3 (Q-FRAME) CIRCUIT BREAKERS
3. GENERATOR OUTLET FOR 230V - PYLE NATIONAL MODEL JRE4100/460V - CROUSE HINDS MODEL AR 2042.
4. THE HEIGHT OF THE ALARM LIGHT WILL NEED TO BE MADE VISIBLE FROM OUTSIDE THE LIFT STATION.

DUPLEX PUMP STATION CONTROL PANEL FRONT LAYOUT

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 303



LEGEND

DUPLEX PUMP CONTROL PANEL GENERAL LAYOUT & SCHEMATIC
(230V-3PH)
WITHOUT GENERATOR RECEPTACLE

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 305 B

AB	- ALARM BELL	MB	- MOTOR BREAKER
ACFL	- AIR COMPRESSOR FAIL LIGHT	MCB	- MAIN CIRCUIT BREAKER
ACR	- AIR COMPRESSOR RESET	MD	- MOISTURE DETECTOR
ACTS	- AIR COMPRESSOR TERMINAL STRIP	MS	- MOTOR STARTER
AH	- ALARM HORN	NC	- NORMALLY CLOSED
AL	- ALARM LIGHT	NO	- NORMALLY OPEN
ALT	- ALTERNATOR	OL	- OVERLOAD
AMS	- ALTERNATOR MODE SWITCH	PB	- POWER BLOCK
ASB	- ALARM SILENCE BUTTON	PCU	- PUMP CONTROL UNIT
ATS	- ALTERNATOR TEST SWITCH	PFL	- PUMP FAIL LIGHT
AV	- AIR VENT	PFT	- PUMP FAIL TIMER
CCB	- CONTROL CIRCUIT BREAKER	PL	- PILOT LIGHT
CT	- CURRENT TRANSFORMER	POL	- POWER ON LIGHT
CVLS	- CHECK VALVE LIMIT SWITCH	PM	- PHASE MONITOR
DPDT	- DOUBLE-POLE, DOUBLE-THROW	PS	- PRESSURE SWITCH
DR	- DISABLE RELAY	R	- RELAY
DRB	- DUPLEX RECEPTACLE BREAKER	RCB	- RTU CIRCUIT BREAKER
DS	- DOOR SWITCH	RL	- RUNNING LIGHT
ECB	- EMERGENCY CIRCUIT BREAKER	RTU	- REMOTE TELEMETRY UNIT
ETM	- ELAPSED TIME METER	SC	- SURGE CAPACITOR
F	- FUSE	SDR	- STATION DISABLE RELAY
FB	- FUSE BLOCK	SMC	- SMART MOTOR CONTROLLER
FL	- FLASHER	SPM	- SINGLE PHASE MODULE
FR	- FLOAT REGULATOR	SS	- SAFETY SWITCH
FS	- FLOW SWITCH	SSOL	- SOLID-STATE OVERLOAD
FTS	- FLOAT TEST SWITCH	T	- TERMINAL
GFDR	- GROUND FAULT DUPLEX RECEPTACLE	TB	- TERMINAL BLOCK
GND	- EARTH GROUND	TD	- TIME DELAY
GR	- GENERATOR RECEPTACLE	TDODE	- TIME DELAY ON DE-ENERGIZE
HLA	- HIGH LEVEL ALARM	TDOE	- TIME DELAY ON ENERGIZE
HLR	- HIGH LEVEL RESET	TDR	- TIME DELAY RELAY
HOA	- HAND-OFF-AUTO SELECTOR SWITCH	TL	- TROUBLE LIGHT
ISR	- INTRINSICALLY SAFE RELAY	TLS	- TROUBLE LIGHT SWITCH
LA	- LIGHTNING ARRESTOR	TPDT	- TRIPLE-POLE, DOUBLE-THROW
LLR	- LOW LEVEL RESET	TTS	- THERMAL TERMINAL STRIP
LTB	- LAMP TEST BUTTON	XFMR	- TRANSFORMER

COMPONENT LEGEND

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 306

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

DAVE SCHMITT ENGINEERING, INC.
12301 Lake Underhill Road Suite 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

LIFT STATION PLAN - 2

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: NONE
SHEET: 31 OF 33

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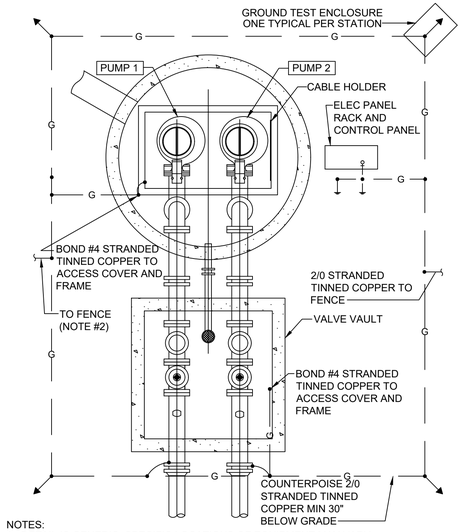
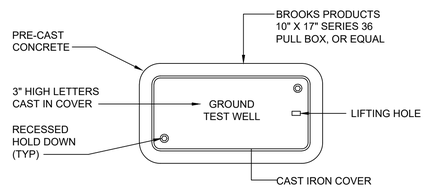
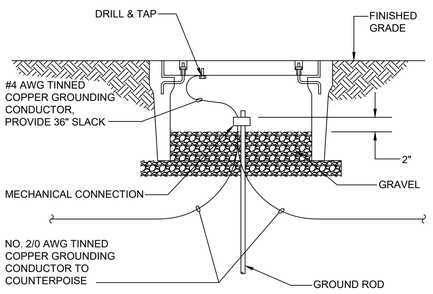


NOTES:
1. DETAIL IS GENERIC. SPECIFIC LOCATIONS OF EQUIPMENT MAY VARY.
2. TIE TO FENCE, MINIMUM 2 LOCATIONS. NOT REQUIRED WHERE PVC COATED OR BLOCK FENCE IS INSTALLED.
3. PROVIDE EXOTHERMIC WELDS UNLESS NOTED OTHERWISE.

PUMP STATION GROUNDING (TYPICAL)

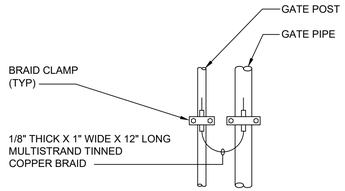
CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 307

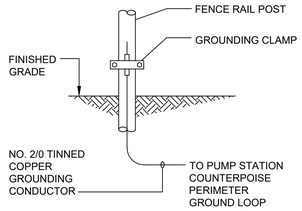




GROUND TEST WELL

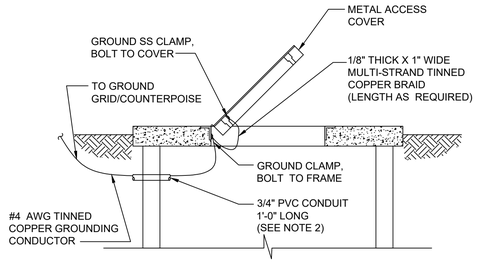
CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 307 B





FENCE POST GROUNDING (TYPICAL)

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 307 A



NOTES:
1. ON COVERS WITH MULTIPLE DOORS, PROVIDE BRAID FROM FRAME TO DOOR ON EACH DOOR. PROVIDE WATERPROOF CAULKING WHERE GROUND CABLE AND CONDUIT PENETRATES WETWELL TO PREVENT INTRUSION OF GROUNDWATER AND ESCAPE OF VAPORS FROM WETWELL.
2. INSTALL GROUND WIRE SO THAT IT WILL NOT CROSS CLEAR OPENING OR PREVENT OR IMPEDE NORMAL METHOD OF REMOVING FLOATS OR PUMPS.

COVER AND DOOR GROUNDING

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 307 C

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

DAVE SCHMITT
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12301 Lake Underhill Road Suite 241
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407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER
48274

LIFT STATION PLAN - 3

MID-FLORIDA SOUTH LOGISTICS PARK

APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.: ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: NONE
SHEET: 32 OF 33

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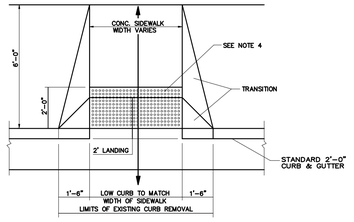
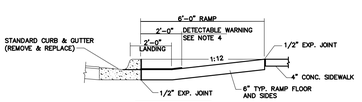
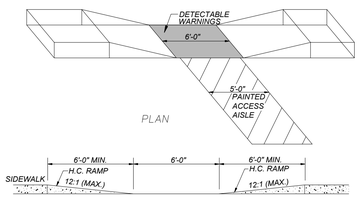




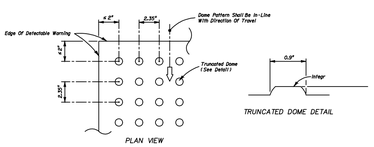
SECTION A–A

NOTES:
1. ENTIRE EXISTING CURB SHALL BE REMOVED & REPLACED WITHIN LIMITS SHOWN.
2. LOW CURB & TRANSITION MAY BE FORMED AT THE TIME OF CURB CONSTRUCTION.
3. CONSTRUCT WITH CLASS A (3000 PSI) CONCRETE.
4. CONTRACTOR TO VERIFY WITH LOCAL AGENCY THE REQUIREMENT OF DETECTABLE "CAST IN PLACE" WARNING SURFACES PER THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDLINES (ADAAG) SECTION 4.29.2.

HANDICAP RAMP

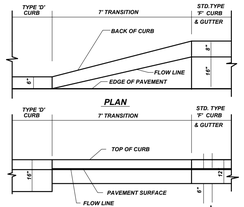


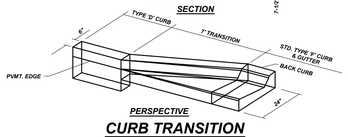
HANDICAP RAMP DETAIL



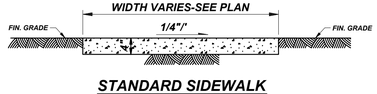
ALL SIDEWALK CURB RAMPS SHALL HAVE "CAST IN PLACE" DETECTABLE WARNING SURFACES THAT EXTEND THE FULL WIDTH OF THE RAMP AND IN THE DIRECTION OF TRAVEL 24 INCHES (610 mm) FROM THE BACK OF CURB IN ACCORDANCE WITH F.D.O.T. INDEX 304.

CURB RAMP DETECTABLE WARNING



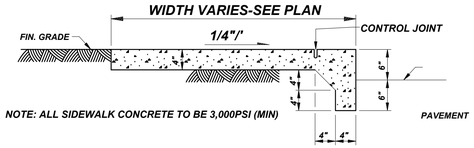


CURB TRANSITION TYPE 'F' TO TYPE 'D' CURB

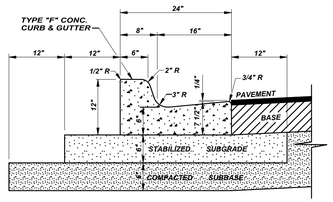


STANDARD SIDEWALK

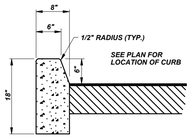
NOTE: MINIMUM 3000 PSI CONCRETE TO BE USED.



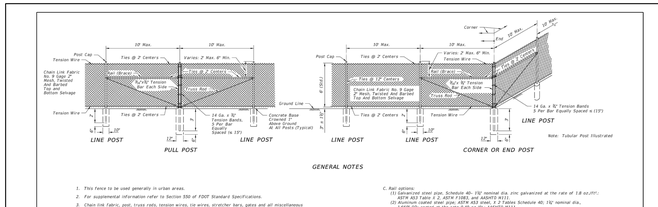
SIDEWALK ABUTTING PAVEMENT

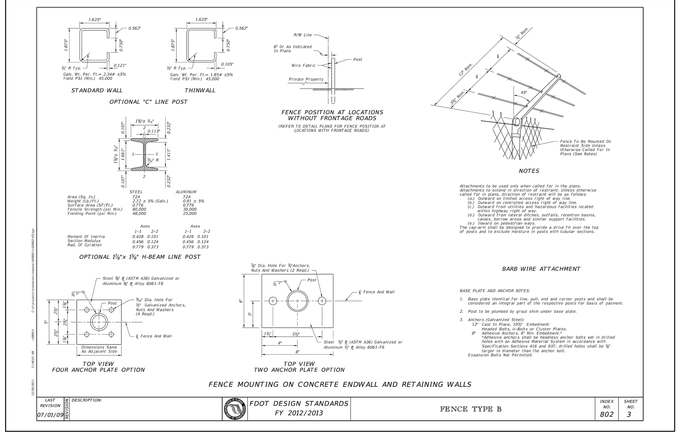


TYPE "F" CURB & GUTTER



TYPE "D" CURB





GENERAL NOTES CONTINUED

5. Unless a specific material is called for in the plans the Contractor may elect to use either a single strand of wire or a prefabricated fabric of the following commonly concerned options listed in note A. Combinations of optional materials are restricted as follows:
(a) Only one fabric optional material will be permitted between/corner and/or end post assemblies.
(b) Only one optional material will be permitted between adjacent line post assemblies.
(c) Pull post assemblies shall be optional materials identical to either the fenced optional material between any set of corner and/or end post assemblies or the fenced optional material between any set of corner and/or end post assemblies.

6. Concrete for bases shall be Class NS concrete as specified in Section 347 of the Standard Specifications or a packaged, dry material bearing the requirements of a concrete under ASTM C-387, Materials for Packaged, Dry Combined Concrete Delivered to the Work.

7. Line post shall be 8'-0" long (Standard). Line post are to be set in concrete as described above or by the following methods:
(a) Driven in holes with special details and/or as specifically described in the contract plans and specifications.
(b) In accordance with ASTM F567 Subsections 5.4 through 5.16 as approved by the Engineer.
(c) Post mounted on concrete surface or solid rock shall be mounted in accordance with the base plate detail "Fence Mounting On Concrete Endwalls And Retaining Wall", Sheet 3, or, by embedment in holes drilled in the concrete or rock.

End, pull and corner post assemblies shall be in concrete as detailed above for all soil conditions other than solid rock. Post within assemblies that are located on concrete structures or solid rock shall be set by base plate or by embedment as prescribed under (c) above for line post.

Line and assembly post set in concrete bases shall be set an additional 3" in depth for each 1' of fence height greater than 6'.

8. Pull post shall be used at breaks in vertical grades of 15° or more, or at approximately 250' centers on tangent horizontal alignment. Post be reduced to the Engineer on curves where the curve is greater than 5°.

9. Corner post are to be installed at all horizontal breaks in fence at 15° or more and as required at vertical breaks over 15° as determined by the Engineer.

10. When fence has an installed top of fabric height less than 6' knuckled top and bottom selvages shall be used. Twisted and barbed selvages may be used when fence height is 6' or greater.

11. Unless sliding gates or special gates are called for in the plans, all gates shall be chain link swing gates meeting the material requirements described and as approved by the Engineer. Payment shall include the gate, hardware, concrete and reinforcement for gate posts. Payment for concrete and reinforcement for gate posts at the opening. Gates shall be paid for under the contract unit price for Fence Gates, Ea.

12. For construction purposes corner post assemblies shall consist of one corner post, two braces, two truss rods, and all necessary fittings and hardware as detailed. End post assemblies shall consist of one end post, one brace, one truss rod and all necessary fittings and hardware as detailed.

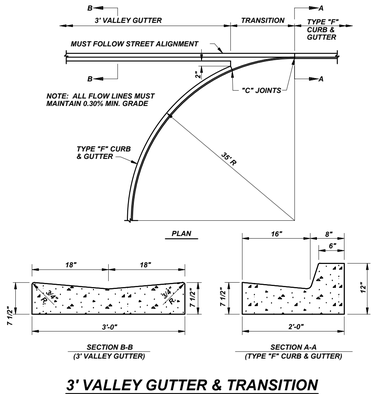
13. All post, tension wires, chain link fabric, truss RS concrete, and all miscellaneous fittings and hardware to be included in the cost for Fencing, LF.

TYPE IV VINYL COATED FABRIC						
AASHTO M181 Table 4 Redefined As Follows						
Specified Diameter Of Uncoated Core Wire		Minimum Weight Of Zinc Coating		PVC Thickness Range		
				#181 Class A (Extruded Or Extruded And Bonded Coating)		#181 Class B (Bonded Coating)
in.	mm	g/sqm	oz./ft²	in.	mm	mm
0.148	3.77	9	0.30	.82	0.015 TO 0.025	0.38 TO 0.64	0.006 TO 0.010	0.15 TO 0.25

DESIGN NOTE

This Index details fencing that is constructed with chain link fabric (4 Inominal) in accordance with Section 550 of the Standard Specifications.
For fencing of different height or installation details, the fence shall be fully detailed in the Contract plans.

LAST REVISION: 07/01/05 | DESCRIPTION:
FDOT DESIGN STANDARDS FY 2012/2013 | FENCE TYPE B | INDEX NO. 802 | SHEET NO. 2



3' VALLEY GUTTER & TRANSITION

F.D.O.T. DESIGN STANDARDS INDICES

CONTRACTOR SHALL COMPLY WITH THE 2018-19 F.D.O.T. BOOKLET FOR "DESIGN STANDARDS FOR DESIGN, CONSTRUCTION, MAINTENANCE AND UTILITY OPERATIONS ON THE STATE HIGHWAY SYSTEM"
F.D.O.T. INDEX 425-001 - SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS
F.D.O.T. INDEX 425-010 - STRUCTURE BOTTOMS TYPE J AND P
F.D.O.T. INDEX 425-020 - CURB INLET TOPS TYPES 1, 2, 3 & 4
F.D.O.T. INDEX 425-052 - DITCH BOTTOM INLET TYPES C, D, E & H
F.D.O.T. INDEX 430-021 - CROSS DRAIN MITERED END SECTION SINGLE AND MULTIPLE ROUND CONCRETE PIPE
F.D.O.T. INDEX 520-001 - CURB & GUTTER
F.D.O.T. INDEX 522-002 - DETECTABLE WARNINGS & SIDEWALK CURB RAMPS
F.D.O.T. INDEX 711-001 - PAVEMENT MARKINGS

BlueScope Properties Group

ARCO NATIONAL CONSTRUCTION

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DAVE M. SCHMITT
FLORIDA REG. NUMBER 48274

PAVING GRADING & DRAINAGE DETAILS

MID-FLORIDA SOUTH LOGISTICS PARK
APOPKA, FLORIDA

DATE: APRIL 2023
PROJECT NO.:ANC-7
DRAWN BY: DM
CHECKED BY: DMS
SCALE: NONE
SHEET: 33 OF 33

F:\ANC7\CAD\Planset\Final\33 PAVING GRADING & DRAINAGE DETAILS.dwg,6/6/2023 1:55:08 PM

City of Apopka
Community Development Department
120 E. Main Street, Apopka, Florida 32703
407-703-1712

-- FOR OFFICIAL USE ONLY--	
DATE SUBMITTED:	
FEE PAID:	$
CHECK #:	
RECEIPT #:	

APPLICATION FOR DEVELOPMENT PLAN OR SITE PLAN

REQUEST

Check Applicable Request

	Major Development Plan (MDP)	X	**Construction Site Plan (CSP)**
	Revision to MDP/PDP		**Revision to MDP/CSP**
	Unplatted Residential		**Plat**

Project Name: Mid-Florida South Logistics Park			
Engineer/Project Representative Information:			
Company Name: Dave Schmitt Engineering, Inc			
Engineer Name: Dave Schmitt P.E.			
Street Address: 12301 Lake Underhill Rd Suite 241			
City: Olando	State: FL	Zip: 32828	
Phone: 407-207-9088	Fax:	E-mail: dsemailbox@dseorlcom	
Owner Information:			
Owner Name: BPG Mid Florida South 1, LLC			
Street Address: 1540 Genessee St.			
City: Kansas City	State: MO	Zip: 64102	
Phone: 913-333-9196	Fax:	E-mail:eric.wyancko@bluescopeproperties.com	

Property Information:	
Parcel I.D. #(s): 272112000000007/008/011/012/013	Future Land Use: Industrial
Address: Peterson Rd, Apopka FL, 32703	Zoning: I-L
Size (acres): 70.71	Gross Floor Area: 691,016 S.F
SFR[(1)] Units: N/A	Multiple Family Units:

[(1)]SFR: Single Family Residence

Items required for Development Plan Review Submittal:

1. Pre-application meeting with Community Development staff to determine submittal information requirements. Contact the Planning Division at 407-703-1712 to schedule this meeting.
2. Application fee: Refer to fee schedule. Non-refundable.
3. Typed, completed site plan review application.
4. Completed application for a Concurrency Verification Letter.
5. Two (2) complete sets of plans (24x36), one 11x17 set and a CD with the submittal requirements as described in the Submittal Checklist. Plans shall be signed and sealed by an Engineer. Plans in the CD shall be digitally signed and sealed.
6. Property owner's notarized authorization.
7. All revisions shall be highlighted.
8. Refer to the Land Development Code for development plan information requirements.

Fee Schedule:

1.	Major Development Plan (MDP) (up to 3 submittals)	$500.00
2.	Minor Development Plan (CSP) - Minor	$250.00
3.	Construction Site Plan	$400.00
4.	Plat	$400 plus $15/lot
5.	Construction Site Plan - Unplatted Residential (3 submittals plus unit fee)	$200.00
	a. Per residential unit fee	$15.00
6.	Revision to an approved Development Plan (each submittal)	$100.00

Plans requiring resubmittal and are not submitted within sixty (60) days shall be considered expired.

CERTIFICATION AND SIGNATURE

	Please acknowledge by INITIALING next to each statement.		
1.	Application is hereby made for review and approval of the above named project.	**Initial:**	EW
2.	I/we am/are the owner(s) of the property or an authorized legal representative of the owner(s).	**Initial:**	EW
3.	I/we understand that further approvals, modifications to the plans, or certain conditions of approval may be required before final approval is granted.	**Initial:**	EW
4.	I/we understand that abutting or adjacent property owners may be notified of my application and may express their opinions regarding the proposed project by public hearing.	**Initial:**	EW
5.	I/we have read the Land Development Code requirements and procedures. If my/our submittal is not complete, I/we understand it will **not** be reviewed.	**Initial:**	EW
6.	I/we understand that Development plans and plats or replats are subject to the City's Land Development Code, Development Design Guidelines, and policies of the City's Comprehensive Plan, and that all development or property affected by this application must be consistent before approval can be granted.	**Initial:**	EW
7.	I/we understand that all personal financial commitments regarding the sale or development of this project or property are, or will be, made independent of the approval process and the schedules of the City of Apopka, Florida.	**Initial:**	EW
8.	I/we understand that all plan approvals will become null and void after twelve (12) months if no further project activity occurs.	**Initial:**	EW
9.	I/we understand that all application fees are not refundable.	**Initial:**	EW
10.	I/we understand that approval of this plan does not permit any waiver of the City's Codes unless a waiver is specifically requested in writing and approved.	**Initial:**	EW
11.	I/we understand if the project requires a TRAFFIC STUDY it may delay the scheduled Development Plan approval date.	**Initial:**	EW
12.	I/we, the undersigned, have read the above information and have full understanding of the same.	**Initial:**	EW
13.	I/we, the undersigned owner(s) for the subdivision of the above described property in the City of Apopka, Florida, do hereby agree to Indemnify and Hold Harmless the City of Apopka, Florida, its elected officials, officers, agents, and assigns for any and all damages, attorney fees and costs incurred by said City in any instance in which the City must expend funds and/or defend its decisions regarding the granting of the above referenced application.	**Initial:**	EW

JACQUELINE J. JORDAN
Notary Public-Notary Seal
STATE OF MISSOURI
Commissioned for Clay County
My Commission Expires: Jan. 7, 2026
ID. #14564543

By: Eric Wyancko
Owner(s) of Record (Signature)

By: _____
Owner(s) of Record (Signature)

STATE OF ~~FLORIDA~~ Missouri
COUNTY OF ~~ORANGE~~ Jackson

The foregoing instrument was acknowledged before me on this 16 day of June, 2023, by _____ who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

_____
Notary Public (Signature)

My Commission Expires: January 7, 2026

Jacqueline J. Jordan
Notary Public (Print Name)

Rev. 03.12.2021

Bio-Tech Consulting Inc.
Environmental and Permitting Services

info@bio-techconsulting.com
www.bio-techconsulting.com

May 20, 2022

Matthew Roth
BlueScope Properties Group
1540 Genessee St.
Kansas City, Missouri 64102

Proj: Apopka Assemblage - Orange County, Florida
Section 12, Township 21 South, Range 27 East
(BTC File #1381-01)
Re: Environmental Assessment Report

Dear Mr. Roth:

During March and May of 2022, Bio-Tech Consulting, Inc. (BTC) conducted an environmental assessment of the 65.28-acre Apopka Assemblage property. This site is located north of Lust Road and west of State Road 414 within Section 12, Township 21 South, Range 27 East, in Orange County, Florida (Figures 1, 2 & 3). This environmental assessment included the following elements:

- Review of soil types mapped within the site boundaries;
- Evaluation of land use types/vegetative communities present;
- Field review for occurrence of protected flora and fauna; and
- Review for any potential developmental constraints.

SOILS

According to the Soil Survey of Orange County, Florida, prepared by the U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), seven (7) soil types exist within the project site (Figure 4). These soil types include the following:

Orlando: Main Office
3025 East South Street
Orlando, FL 32803

Vero Beach Office
4445 N A1A
Suite 221
Vero Beach, FL 32963

Jacksonville Office
1157 Beach Boulevard
Jacksonville Beach, FL 32250

Tampa Office
6011 Benjamin Road
Suite 101 B
Tampa, FL 33634

Key West Office
1107 Key Plaza
Suite 259
Key West, FL 33040

Aquatic & Land
Management Operations
3825 Rouse Road
Orlando, FL 32817

407.894.5969
877.894.5969
407.894.5970 fax

- **Candler-Apopka fine sands, 5 to 12 percent slopes (#6)**
- **Malabar fine sand (#23)**
- **Okeelanta muck (#25)**
- **Pomello fine sand, 0 to 5 percent slopes (#34)**
- **Sanibel muck (#42)**
- **Tavares - Millhopper fine sands, 0 to 5 percent slopes (#47)**
- **Zolfo fine sand, 0 to 2 percent slopes (#54)**

Candler-Apopka fine sands, 5 to 12 percent slopes (#6) are sloping and strongly sloping, excessively drained and well drained soils found on the uplands. The surface layer of Candler soil consists of very dark grayish brown fine sand about 6 inches thick. The surface layer of Apopka soil consists of dark grayish brown fine sand about 5 inches thick. The seasonal high water table is at a depth of more than 72 inches in Apopka soil and at a depth of more than 80 inches in Candler soil. The permeability of Candler soil is rapid in the surface and subsurface layers and rapid to moderately rapid in the subsoil. The permeability of Apopka soil is rapid in the surface and subsurface layers and moderate in the subsoil.

Malabar fine sand (#23) is a nearly level, poorly drained soil found in low, narrow to broad sloughs and poorly defined drainageways. This soil typically has a surface layer of black fine sand about 3 inches thick and a subsurface layer, to a depth of about 18 inches that is grayish brown fine sand. In most years, a seasonal high-water table is within 10 inches of the surface for 2 to 6 months and between depths of 10 and 40 inches for most of the year. The permeability is rapid in the surface and subsurface layers and in the upper part of the subsoil, slow to very slow in the loamy part of the subsoil, moderate in the lower part of the subsoil, and low in the substratum.

Okeelanta muck (#25) is a nearly level, very poorly drained soil found in freshwater swamps and in drained areas north of Lake Apopka. Typically, the upper part of the surface layer of this soil is black muck about 9 inches thick. Under natural conditions, this soil is ponded for 6 to 9 months or more each year. In most years, a seasonal high-water table for this soil type is at or near the surface. In most areas, the soil in this map unit is artificially drained by tile drains and surface ditches. Permeability of this soil type is rapid in the organic layers, and is moderately rapid to moderately slow in the underlying material.

Pomello fine sand, 0 to 5 percent slopes (#34) is a nearly level to gently sloping, moderately well drained soil found on low ridges and knolls on the flatwoods. The surface layer of this soil type generally consists of gray fine sand about 3 inches thick. In most years, the seasonal high-water table for this soil type is at a depth of 24 to 40 inches for 1 to 4 months and recedes to a depth of 40 to 60 inches during dry periods. Permeability of this soil type is very rapid in the surface and subsurface layers, moderately rapid in the subsoil, and rapid in the substratum.

Sanibel muck (#42) is a nearly level, very poorly drained soil found in depressions, freshwater swamps and marshes and in poorly defined drainageways. Typically, the surface layer of this soil type consists of black muck about 11 inches thick. In most years undrained areas mapped with this soil type are ponded for 6 to 9 months or more except during extended dry periods. Permeability of this soil type is rapid throughout.

Tavares - Millhopper fine sands, 0 to 5 percent slopes (#47) are nearly level to gently sloping, moderately well drained soils found on low ridges and knolls on the uplands and on the flatwoods. Typically, the surface layer of Tavares and Millhopper soils is dark grayish brown fine sand about 6 inches thick. The seasonal high-water table for Tavares soil is at a depth of 40 to 72 inches for more than 6 months, and recedes to a depth of more than 80 inches during extended dry periods. The seasonal high-water table for Millhopper soil is at a depth of 40 to 60 inches for 1 to 4 months, and recedes to a depth of 60 to 72 inches for 2 to 4 months. Permeability of Tavares soil is very rapid. Permeability of Millhopper soil is rapid in the surface and subsurface layers and is moderately rapid or moderate in the subsoil.

Zolfo fine sand, 0 to 2 percent slopes (#54) is a nearly level, somewhat poorly drained soil found on broad, slightly higher positions adjacent to the flatwoods. The surface layer of this soil type generally consists of dark grayish brown fine sand about 5 inches thick. The seasonal high-water table for this soil type is at a depth of 24 to 40 inches for 2 to 6 months. It is at a depth of 10 to 24 inches during periods of heavy rain. It recedes to a depth of about 60 inches during extended dry periods. Permeability of this soil type is rapid in the surface and subsurface layers and is moderate in the subsoil.

The Florida Association of Environmental Soil Scientists (FAESS) considers the main components of **Malabar fine sand (#23), Okeelanta muck (#25), and Sanibel muck (#42) t**o be hydric. This information can be found in the Hydric Soils of Florida Handbook, Third Edition, March 2000.

LAND USE TYPES/VEGETATIVE COMMUNITIES

The Apopka Assemblage property currently supports two (2) land use types/vegetative communities. These land use types/vegetative communities were identified utilizing the Florida Land Use, Cover and Forms Classification System, Level III (FLUCFCS, FDOT, January 2004) (Figure 5). The on-site upland land use type/vegetative community is classified as Live Oak (427). The on-site wetland land use types/vegetative community is classified as Mixed Wetland Hardwoods (617). The following provides a brief description of the land use types/vegetative communities.

Uplands:

427 Live Oak

The uplands on site are most consistent with the Live Oak (427) FLUCFCS classification. Vegetative species identified within this community type includes live oak (*Quercus virginiana*), laurel oak (*Quercus laurifolia*), southern magnolia (*Magnolia grandiflora*), Carolina cherry laurel (*Prunus caroliniana*), Brazilian pepper (*Schinus terebinthifolia*), long leaf pine (*Pinus palustris*), slash pine (*Pinus elliottii*), pignut hickory (*Carya glabra*), cabbage palm (*Sabal Palmetto*), tuberous sword fern (*Nephrolepis cordifolia*), Japanese climbing fern (*Lygodium japonicum*), beggar ticks (*Bidens alba*), blackberry (*Rubus pensilvanicus*), greenbrier (*Simlax* spp.), and muscadine grapevine (*Vitis rotundifoli*).

Wetlands:

617 Mixed Wetland Hardwoods

The southeast portion of the subject site contains a wetland community type that is most consistent with the Mixed Wetland Hardwoods (617) FLUCFCS classification. Vegetative species identified within this community type included Carolina willow (*Salix caroliniana*), elderberry (*Sambucus nigra*), loblolly bay (*Gordonia lasianthus*), sweetbay magnolia (*Magnolia virginiana*), Chinese tallowtree (*Sapium sebiferum*), caesarweed (*Urena lobata*), Brazillian pepper (*Schinus terebinthifolius*), Virginia chain fern (*Woodwardia virginica*), fetterbush (*Lyonia lucida*), soft rush *(Juncus effusus)*, blue maidencane (*Amphicarpum muhlenbergianum*), nutrush (Scleria spp.), greenbriar (*Smilax* spp.), spikerush (*Eleocharis sp.*), blackberry (*Rubus cuneifolius*),), maidencane *(Panicum hemitomon)*, coinwort (*Centella asiatica*), pennywort (*Hydrocotyle umbellata*), and Peruvian primrosewillow (*Ludwigia peruviana*).

PROTECTED SPECIES

Using methodologies outlined in the Florida's Fragile Wildlife (Wood, 2001); Measuring and Monitoring Biological Diversity Standard Methods for Mammals (Wilson, et al., 1996); and Florida Fish and Wildlife Conservation Commission's (FFWCC) Gopher Tortoise Permitting Guidelines (July 2020); an assessment for "listed" floral and faunal species was conducted at the site in May of 2022. This assessment included both direct observations and indirect evidence, such as tracks, burrows, tree markings and birdcalls that indicated the presence of species observed. It should be noted that this survey should not be considered a formal survey and that it is recommended that a formal wildlife survey as applicable be conducted prior to site work commencement. The assessment focused on species that are "listed" by the FFWCC's Official

Lists - Florida's Endangered and Threatened Species (June 2021) that have the potential to occur in Orange County (Table 1).

Reptiles and Amphibians
brown anole (*Norops sagrei*)
Cuban tree frog (*Osteopilus septentrionalis*)
eastern racer (*Coluber constrictor*)
Florida Red-bellied Turtle (*Pseudemys nelsoni*)
gopher tortoise *(Gopherus polyphemus)*
green anole (*Anolis carolinensis*)
southern leopard frog (*Rana utricularia*)

Birds
American Crow (*Corvus brachyrhynchos*)
Black Vulture (*Coragyps atratus*)
Northern Cardinal (*Cardinalis cardinalis*)
Northern Mockingbird (*Mimus polyglottos*)
Pileated Woodpecker (*Dryocopus pileatus*)
Red-shouldered Hawk (*Buteo platypterus*)

Mammals
eastern gray squirrel (*Sciurus carolinensis*)
northern raccoon (*Procyon lotor*)
Virginia opossum (*Didelphis virginiana*)

One of the above species, the gopher tortoise, is identified in the FFWCC's Official Lists - Florida's Endangered and Threatened Species (June 2021). The following provides a brief description of this & other wildlife species as they relate to the development of the subject site.

Bald Eagle (Haliaeetus leucocephalus)
State protected by F.A.C. 68A-16.002 and federally protected by both the Migratory Bird Treaty Act (1918) and the Bald and Golden Eagle Protection Act (1940)

In August of 2007, the U.S. Fish and Wildlife Service (USFWS) removed the Bald Eagle from the list of federally endangered and threatened species. Additionally, the Bald Eagle was removed from FFWCC's imperiled species list in April of 2008. Although the Bald Eagle is no longer protected under the Endangered Species Act, it is still protected under the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act and FFWCC's Bald Eagle rule (Florida Administrative Code 68A-16.002 Bald Eagle (*Haliaeetus leuchocephalus*).

In May of 2007, the USFWS issued the National Bald Eagle Management Guidelines. In April of 2008, the FFWCC adopted a new Bald Eagle Management Plan that was written to closely follow the federal guidelines. In November of 2017, the FFWCC issued "A Species Action Plan for the Bald Eagle" in response to the sunset of the 2008 Bald Eagle Management Plan. Under the USFWS's management plans, buffer zones are recommended based on the nature and magnitude of the project or activity. The recommended protective buffer zone is 660 feet or less from the nest tree, depending on what activities or structures are already near the nest. As provided within the above referenced Species Action Plan, the USFWS is the regulating body responsible for issuing permits for Bald Eagles. In 2017, the need to obtain a State permit (FFWCC) for the take of Bald Eagles or their nests in Florida was eliminated following revisions to Rule 68A-16.002, F.A.C.. A USFWS Bald Eagle "Non-Purposeful Take Permit" is not needed for any activity occurring outside of the 660-foot buffer zone. No activities are permitted within 330 feet of a nest without a USFWS permit.

In addition to the on-site evaluation for listed species, BTC conducted a review of FFWCC's database and Audubon's Eagle Watch program database for recorded Bald Eagle nests within the surrounding 660 feet of the site. This review revealed that there are no Bald Eagle nests through the 2020-2021 nesting season, within 660 feet of the project site's boundaries. Thus, no developmental constraints are expected with respect to Bald Eagles.

Gopher Tortoise (*Gopherus polyphemus*)
State Listed as "Threatened" by FFWCC

Currently the gopher tortoise (*Gopherus polyphemus*) is classified as a "Category 2 Candidate Species" by the U.S. Fish and Wildlife Service (USFWS), and as of September 2007 is now classified as "Threatened" by FFWCC, and as "Threatened" by FCREPA. The basis of the "Threatened" classification by the FFWCC for the gopher tortoise is due to habitat loss and destruction of burrows. Gopher tortoises are commonly found in areas with well-drained soils associated with the pine flatwoods, pastures and abandoned citrus groves. Several other protected species known to occur in Orange County have a possibility of occurring in this area, as they are gopher tortoise commensal species. These species include the eastern indigo snake (*Drymarchon corais couperi*), Florida mouse (*Podomys floridanus*) and the gopher frog (*Rana capito*). However, none of these species were observed during the survey conducted.

The subject property was surveyed for the existence of gopher tortoises through the use of pedestrian transects. The survey covered approximately 50% of the suitable habitat present within the subject property boundaries. Two (2) active/inactive gopher tortoise burrows were observed and recorded using GPS technology (Figure 9).

The FFWCC provides three (3) options for developers that have gopher tortoises on their property. These options include: 1) avoidance (i.e., 25-foot buffer around burrow), 2) preservation of habitat, and 3) off-site relocation. As such, resolution of the gopher tortoise issue will need to be permitted through FFWCC prior to any construction activities. It is the opinion of BTC that prior to commencement within any phase of development a 100% gopher tortoise survey should be conducted.

***Wood Stork* (*Mycteria americana*)**
Federally Listed as "Threatened" by USFWS

The subject site is shown to be located within a Wood Stork Nesting Colony Core Foraging Area. Wood Storks typically nest colonially in medium to tall trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water (Ogden 1991; Rodgers et al. 1996). The Wood Stork (*Mycteria americana*) is listed as "Threatened" by the USFWS. Wood storks are large, long-legged wading birds, about 45 inches tall, with a wingspan of 60 to 65 inches. Their plumage is white except for black primaries and secondaries and a short black tail. The head and neck are largely unfeathered and dark gray in color. The bill is black, thick at the base, and slightly decurved. Wood Storks are birds of freshwater and estuarine wetlands, primarily nesting in cypress or mangrove swamps.

Successful breeding sites are those that have limited human disturbance and low exposure to land-based predators. Because of their specialized feeding behavior, Wood Storks forage most effectively in shallow-water areas with highly concentrated prey. Typical foraging sites for the Wood Stork include freshwater marshes, depressions in cypress heads, swamp sloughs, managed impoundments, stock ponds, shallow-seasonally flooded roadside or agricultural ditches and narrow tidal creeks or shallow tidal pools. Good foraging conditions are characterized by water that is relatively calm, open, and having water depths between 5 and 15 inches (5 and 38 cm). The USFWS identified core foraging area (CFA) around all known Wood Stork nesting colonies that is important for reproductive success. In Central Florida, CFAs include suitable foraging habitat (SFH) within a 15-mile radius of the nest colony. The USFWS believes loss of suitable foraging wetlands within these CFAs may reduce foraging opportunities for the Wood Stork.

Based on our review of available databases, there is no record of a Wood Stork rookery on the project site or within close proximity. The USFWS and the U.S. Army Corps of Engineers require that any impacts to on-site ditches and/or wetlands, which would eliminate a portion of the Wood Stork foraging habitat, be either mitigated through the purchase of mitigation credits or recreated elsewhere on-site so that there would be no net loss of Wood Stork foraging habitat. No Wood Storks were observed within the subject site during the wildlife survey conducted by BTC; however, mitigation for Wood Stork habitat may be required if ditches or wetlands are impacted.

USFWS CONSULTATION AREAS

The USFWS has established "consultation areas" for certain listed species. Generally, these consultation areas only become an issue if USFWS consultation is required, which is usually associated with Section 404 permitting through FDEP and Section 10 permitting through the USACE. The reader should be aware that species presence and need for additional review are often determined to be unnecessary early in the permit review process due to lack of appropriate habitat or other conditions. However, the USFWS makes the final determination.

Consultation areas are typically very regional in size, often spanning multiple counties where the species in question is known to exist. Consultation areas by themselves do not indicate the presence of a listed species. They only indicate an area where there is a potential for a listed species to occur and that additional review might be necessary to confirm or rule-out the presence of the species. The additional review typically includes the application of species-specific criteria to rule-out or confirm the presence of the species in question. Such criteria might consist of a simple review for critical habitat types. In other cases, the review might include the need for species-specific surveys using established methodologies that have been approved by the USFWS.

The following paragraphs include a list of the USFWS Consultation Areas associated with the subject site. Also included, is a brief description of the respective species habitat and potential for additional review:

Everglade Snail Kite (Rostrhamus sociabilis)
Federally Listed as "Endangered" by USFWS

The subject site falls within the USFWS Consultation Area for the Everglade Snail Kite. Currently the Snail Kite is listed as "Endangered" by the USFWS. Snail Kites are similar in size to Red-shouldered Hawks. All Snail Kites have deep red eyes and a white rump patch. Males are slate gray, and females and juveniles vary in amounts of white, light brown, and dark brown, but the females always have white on their chin. Kites vocalize mainly during courtship and nesting. They may occur in nearly all of the wetlands of central and southern Florida. They regularly occur in lake shallows along the shores and islands of many major lakes, including Lakes Okeechobee, Kissimmee, Tohopekaliga (Toho) and East Toho. They also regularly occur in the expansive marshes of southern Florida such as Water Conservation Areas 1, 2, and 3, Everglades National Park, the upper St. John's River marshes and Grassy Waters Preserve.

Although a portion of the project site contains a wetland/surface water community, no Everglade Snail Kites were observed within the site during the survey conducted by BTC. As no suitable habitat exists within the limits of the site, it is not anticipated that a formal survey would be

required by the USFWS or another agency. No further action is required with respect to the Everglade Snail Kite.

Sand Skink (Neoseps reynoldsi)
Federally Listed as "Threatened" by USFWS

The subject site falls within the Sand Skink Consultation Area for the United States Fish and Wildlife Service (USFWS). The sand skink is listed as "Threatened" by the USFWS. The sand skink exists in areas vegetated with sand pine *(Pinus clausa)* - rosemary *(Ceratiola ericoides)* scrub or a long leaf pine *(Pinus palustris)* - turkey oak *(Quercus laevis)* association. Habitat destruction is the primary threat to this species' survival. Citrus groves, residential, commercial and recreational facilities have depleted the xeric upland habitat of the sand skink. All properties within the limits of this consultation area that are located at elevations greater than 80' and contain suitable (moderate-to-well drained) soils are believed by USFWS to be areas of potential sand skink habitat.

The results of the pedestrian survey in May of 2022 showed no evidence (i.e. sinusoidal tracks) that indicate the presence of the Florida sand skink. The site contains suitable soils (Candler and Tavares) and the site is situated above the 80-foot sea level requirement.

Due to the site meeting the elevation and soil requirement and falling within the consultation area, a formal survey may be required by the USFWS or another agency to determine if Sand Skinks utilize any portions of the site.

Formal surveys need to be conducted between March 1 and May 15, in which 2' x 2' boards will be placed in the open sandy areas at a density of approximately 40 boards per acre and checked once per week for four (4) consecutive weeks. The main objective of the survey is to determine whether sand skinks inhabit the subject site.

Florida Scrub Jay (Aphelocoma coerulescens)
Federally Listed as "Threatened" by USFWS

Currently the Florida Scrub-Jay is listed as threatened by the USFWS. Florida Scrub-jays are largely restricted to scattered, often small and isolated patches of sand pine scrub, xeric oak, scrubby flatwoods, and scrubby coastal stands in peninsular Florida (Woolfenden 1978a, Fitzpatrick et al. 1991). They avoid wetlands and forests, including canopied sand pine stands. Optimal Scrub-jay habitat is dominated by shrubby scrub, live oaks, myrtle oaks, or scrub oaks from 1 to 3 m (3 to 10 ft.) tall, covering 50% to 90 % of the area; bare ground or sparse vegetation less than 15 cm (6 in) tall covering 10% to 50% of the area; and scattered trees with no more than 20% canopy cover (Fitzpatrick et al. 1991).

No Florida Scrub-Jays were observed within the site during the survey conducted by BTC. As no suitable habitat exists within the limits of the site, it is not anticipated that a formal survey would be required by the USFWS or another agency. No further action is required with respect to the Florida Scrub-Jay.

ENVIRONMENTAL CONSTRAINTS

The extent of the on-site wetlands/surface waters were delineated by BTC in accordance with local, state and federal guidelines (Figure 6). The flag locations will need to be reviewed and approved by the various regulatory agencies during the permitting process. Permitting through the Orange County Environmental Protection Division (OCEPD), the St. Johns River Water Management District (SJRWMD), and the Florida Department of Environmental Protection (FDEP) would be required to develop the project site. The site is located in the Southern Ocklawaha River basin.

Orange County Environmental Protection Division (OCEPD)

A Conservation Area Determination (CAD) will be required from the (OCEPD) to determine the extent of all wetlands and surface waters that exist within the property. Any impacts to on-site wetlands will require a Conservation Area Impact (CAI) permit from the OCEPD and mitigation for the impacts will likely be required. Any impacts to Class I systems will need to be approved by the Board of County Commissioners (BCC). Impacts to the site's wetland/surface water communities would be permittable by the OCEPD as long as the mitigation offered is sufficient to offset the functional losses incurred via the proposed impacts.

Category I, II and III Wetlands: Orange County categorizes wetlands (Category I, II, and III) based on the size of the wetland and/or surface water area. Class I wetlands are identified as those wetlands that are greater than forty (40) acres or systems that are or hydrologically connected to a named waterbody. Class II wetlands are those systems greater than 5 acres and less than 40 acres that are not named waterbodies. The final category is Class III wetlands which are those systems that are less than 5 acres and are not a named waterbody. Category I impacts are allowed for public infrastructure or where no other practical alternatives exist. Maximizing protection and preservation of Category I wetlands is the principal consideration in determining the amount of wetlands allowed to be altered. Category II wetland impacts are allowed for public infrastructure or where no other practical alternatives exist or for enhanced neighborhood connectivity. Category III wetlands are presumed to be allowed unless determined by OCEPD to be contrary to public interest.

St. Johns River Water Management District

The Environmental Resource Permit program regulates activities involving the alteration of surface water flows. An ERP will be required through the SJRWMD for all wetland and/or other surface water impacts (both direct and secondary) in association with any development activity. Impacts to the project's wetland and other surface water communities would be permittable by SJRWMD as long as the issues of elimination and reduction of wetland impacts have been addressed and as long as the mitigation offered is sufficient to offset the functional losses incurred via the proposed impacts. Coordination with the Division of Historical Resources (DHR) and the FFWCC will be necessary as part of the ERP process.

Florida Department of Environmental Protection

In December of 2020, the FDEP "assumed" federal permitting authority for all wetland and surface water resources under Section 404 of the Clean Water Act (CWA). For those project's whose wetland and surface water resources are associated with tidal waters or traditional navigable waters, under Section 10 of the Rivers and Harbors Act, the US Army Corps of Engineers (USACE) will "retain" federal permitting authority. These "retained" resources also include wetlands and/or other surface waters that fall within the 300' guideline established from the ordinary high water mark or mean high tide line of the retained waters

With respect to the subject project, it is anticipated that the on-site wetlands and/or other surface waters would not fall under the regulatory authority of the USACE, as these resources are not Section 10 waters. Therefore, the federal permitting authority would be assumed by the FDEP under Section 404. Currently, FDEP considers all wetland and/or surface water resources to be federally jurisdictional unless the applicant provides documentation proving otherwise. As a result, BTC recommends that a WOTUS (Water of the United States) Determination be prepared and submitted to FDEP providing supporting documentation to shows these resources to be non-jurisdictional under the recently issued Navigable Waters Protection Rule (NWPR). If FDEP concurs with BTC's position that these wetlands and/or other surface waters are non-jurisdictional per WOTUS, no federal permitting will be required and a "No Permit Required" letter can be requested from FDEP. If, however, FDEP disagrees with BTC's position and claims federal jurisdiction, then federal permitting through FDEP will be required. As with the ERP permitting, it is anticipated that all impacts to the project's wetland/surface water communities would be permittable by the FDEP as long as the issues of elimination and reduction of impacts have been addressed and as long as the mitigation offered is sufficient to offset the functional losses incurred via the proposed impacts. Coordination with the USFWS will be necessary as part of the permitting process through FDEP.

The environmental limitations described in this document are based on observations and technical information available on the date of the on-site evaluation. This report is for general planning

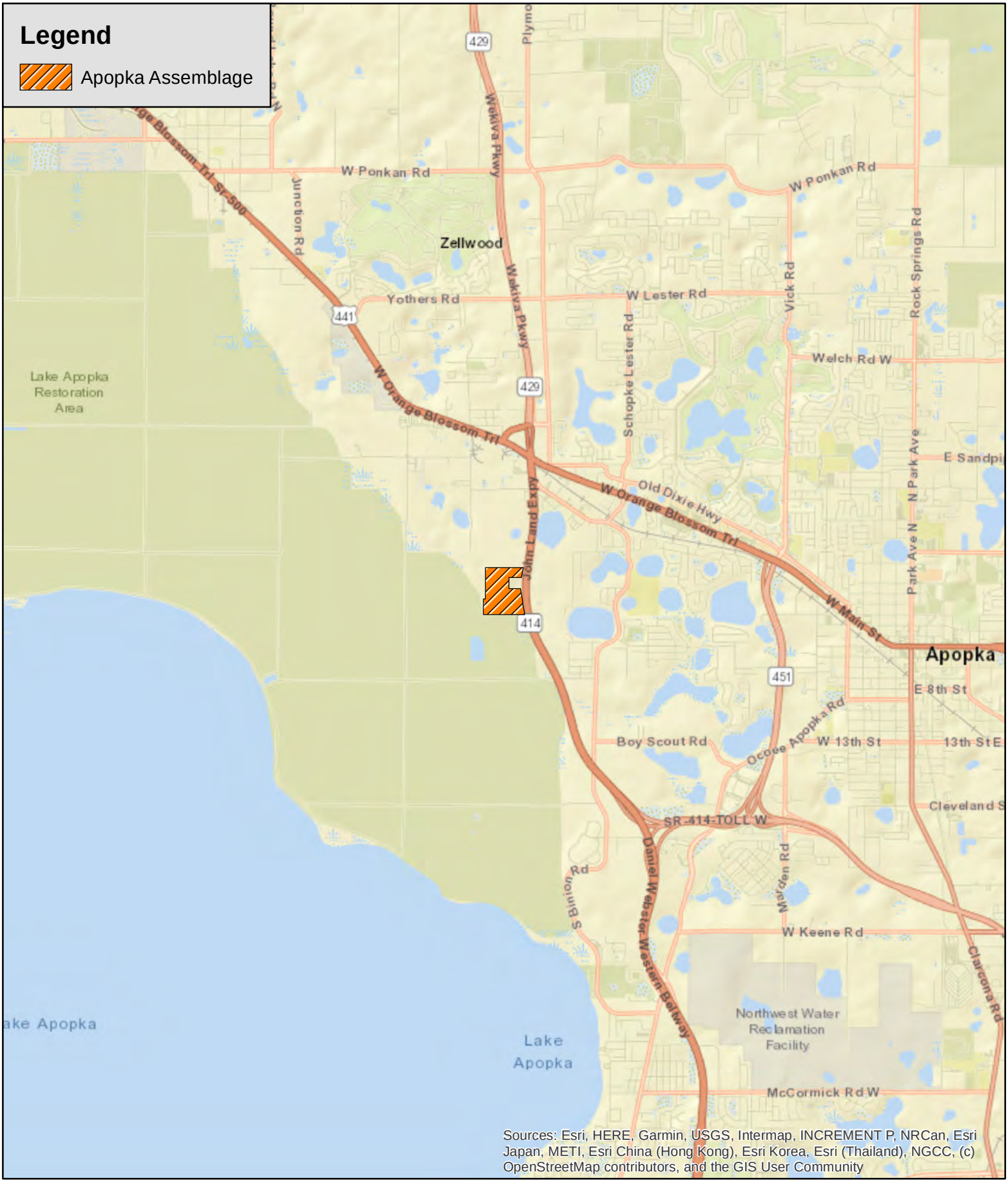
purposes only. The limits of any on-site wetlands/surface waters can only be determined and verified through field delineation and/or on-site review by the pertinent regulatory agencies. The wildlife surveys conducted within the subject property boundaries do not preclude the potential for any listed species, as noted in the attached wildlife Table, currently or in the future. Should you have any questions or require any additional information, please do not hesitate to contact our office at (407) 894-5969. Thank you.

Regards,

Kate Groninger

Kate Groninger
Project Manager

Attachments



Bio-Tech Consulting Inc.
Environmental and Permitting Services
3025 E. South Street Orlando, FL 32803
Ph: 407-894-5969 Fax: 407-894-5970
www.bio-techconsulting.com

Apopka Assemblage
Orange County, Florida
Figure 1
Location Map

N
W E
S

1
Miles

Project #:1381-01
Produced By:KLG
Date: 2/25/2022

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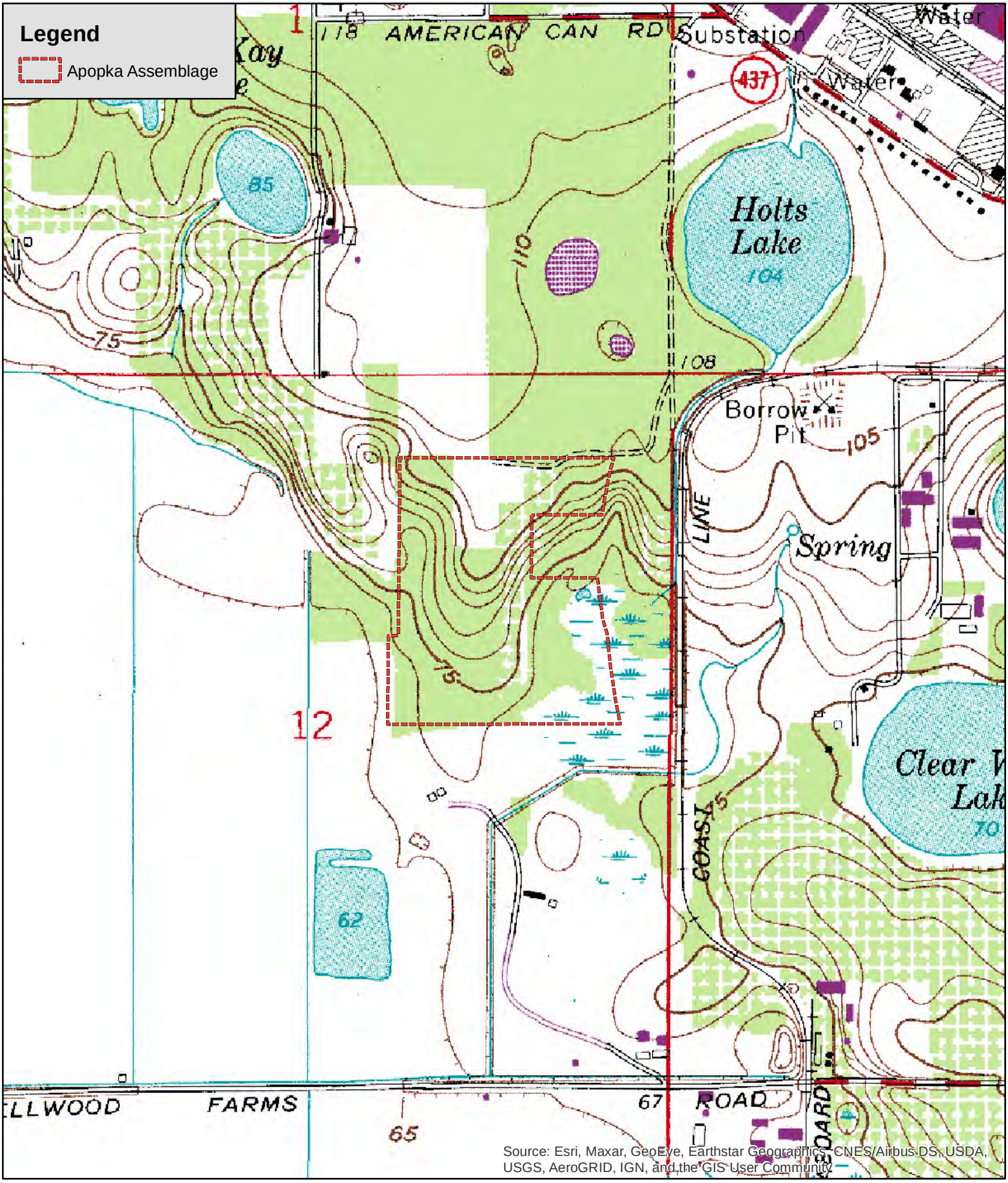
Apopka Assemblage
Orange County, Florida
Figure 2
2019 Aerial Map

N
W E
S

500
Feet

Project #:1381-01
Produced By:KLG
Date: 2/25/2022



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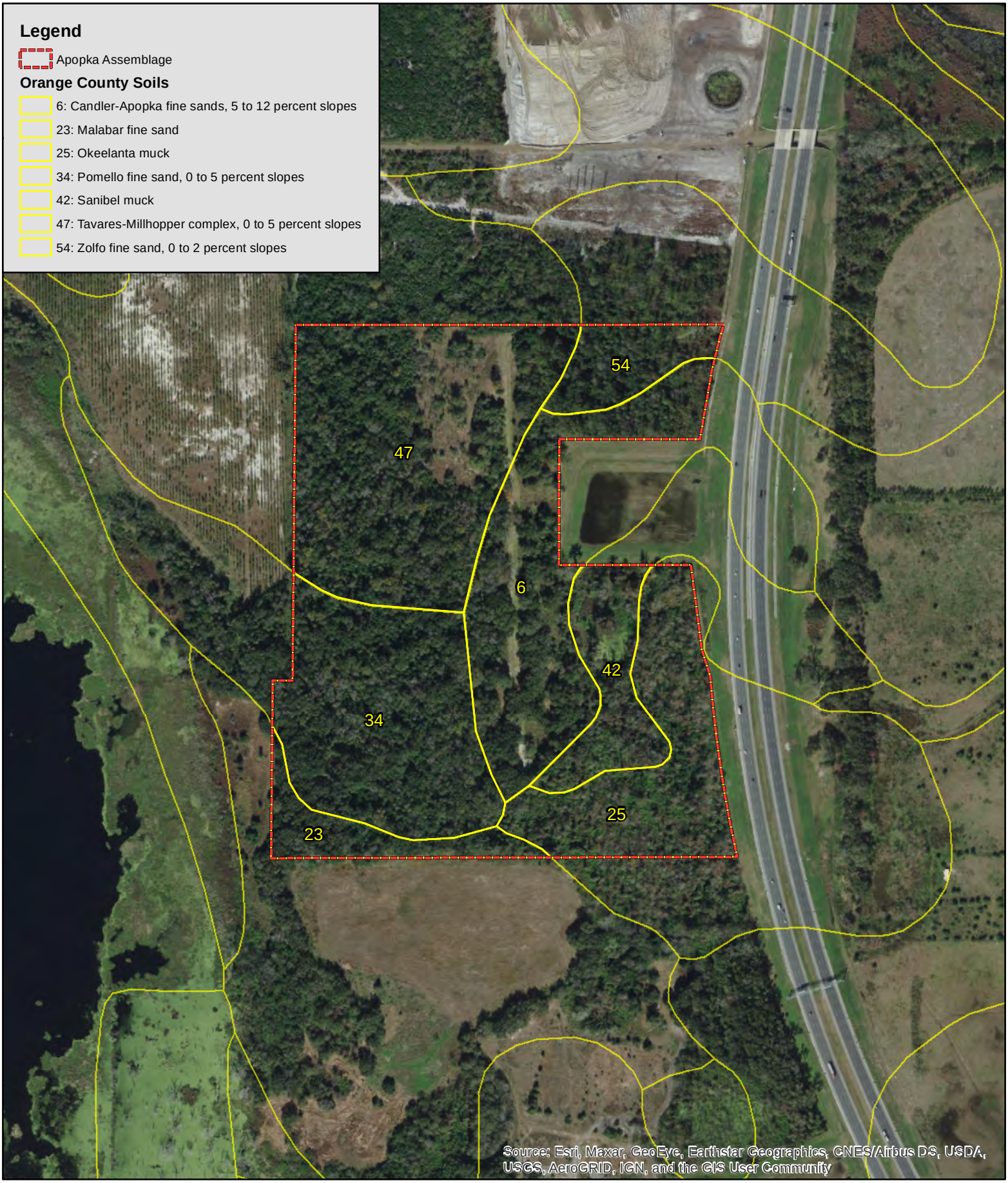
Apopka Assemblage
Orange County, Florida
Figure 3
USGS Topographic Map

N
W E
S

1,000 Feet

Project #:1381-01
Produced By:KLG
Date: 2/25/2022



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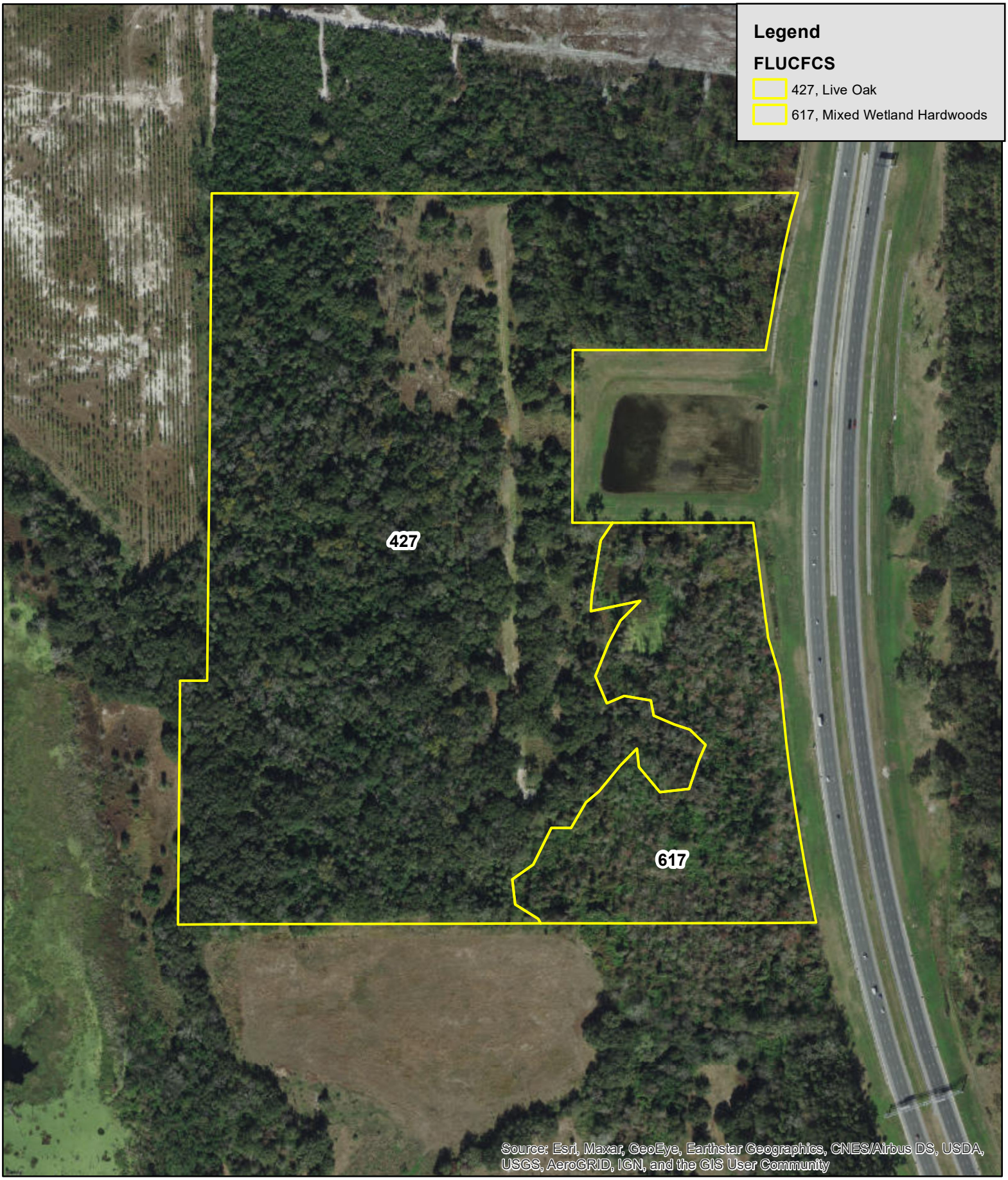
Apopka Assemblage
Orange County, Florida
Figure 4
SSURGO Soils Map

N
W E
S

500
Feet

Project #:138-101
Produced By:KLG
Date: 2/25/2022



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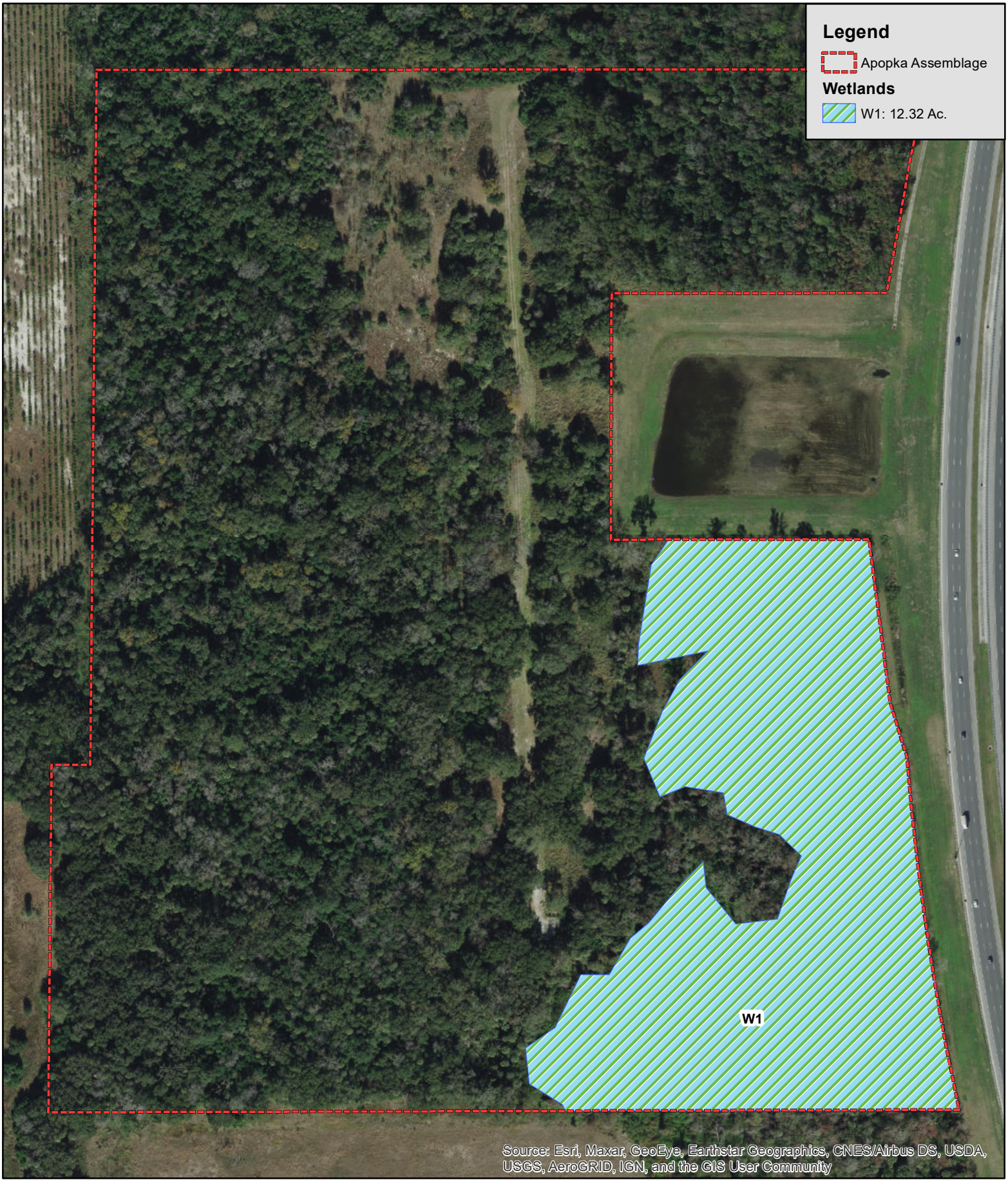
Apopka Assemblage
Orange County, Florida
Figure 5
FLUCFCS Map

N
W E
S

370
Feet

Project #:1381-01
Produced By:KLG
Date: 5/16/2022



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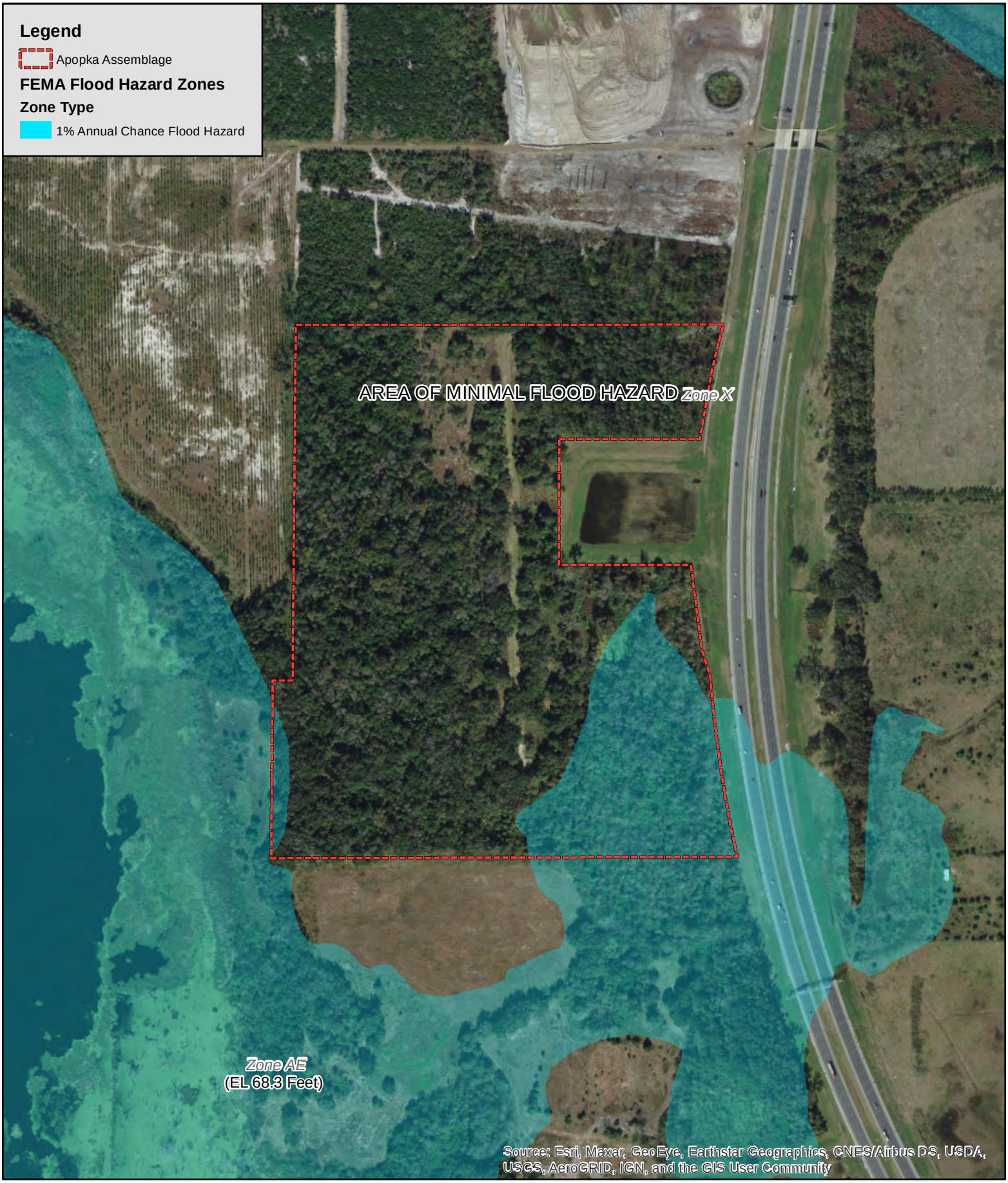
Apopka Assemblage
Orange County, Florida
Figure 6
Approximate Wetland Boundaries

N
W E
S

260
Feet

Project #:1381-01
Produced By:KLG
Date: 5/16/2022



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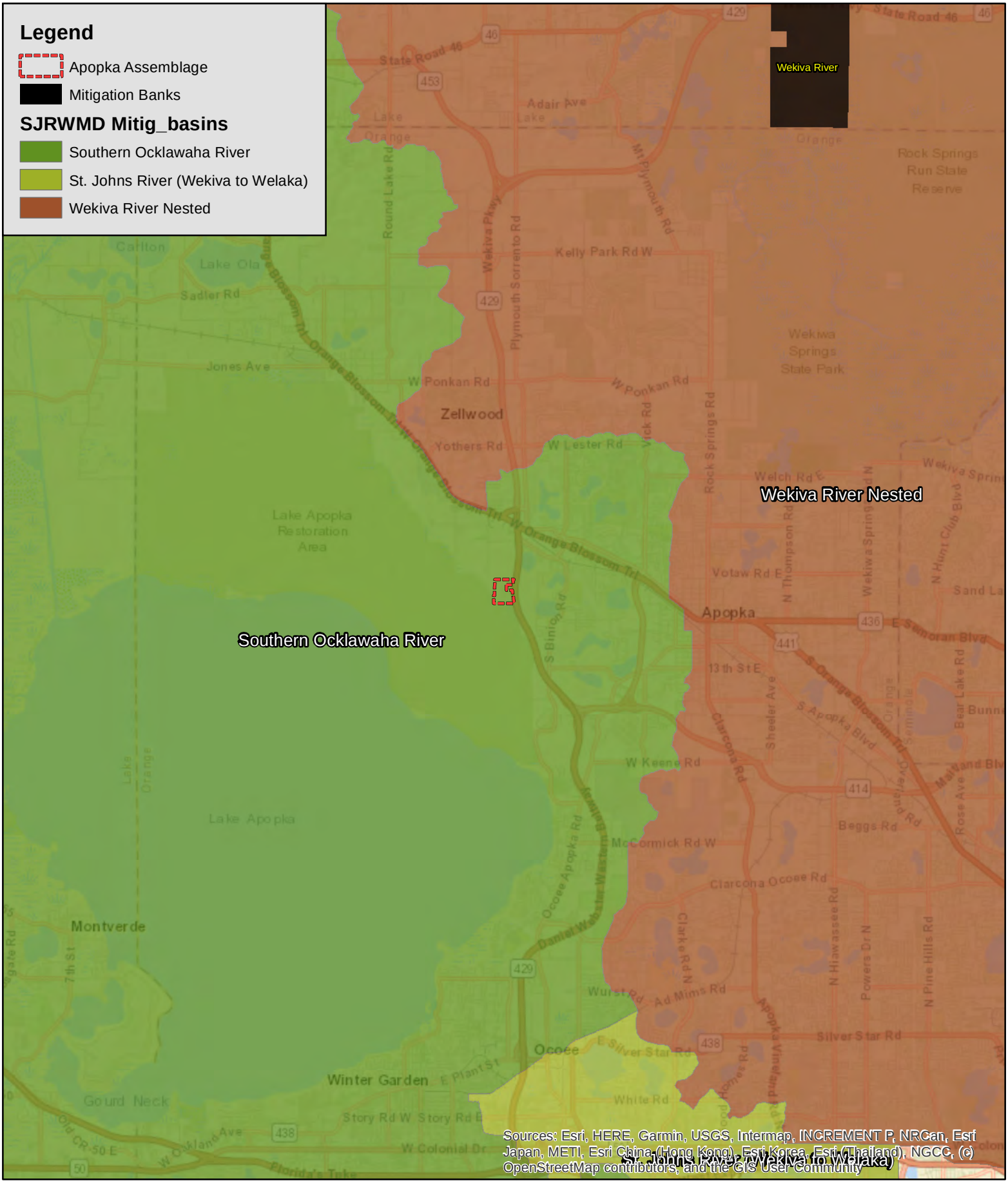
Apopka Assemblage
Orange County, Florida
Figure 7
FEMA Flood Hazard Zones

N
W E
S

500
Feet

Project #:1381-01
Produced By:KLG
Date: 2/25/2022



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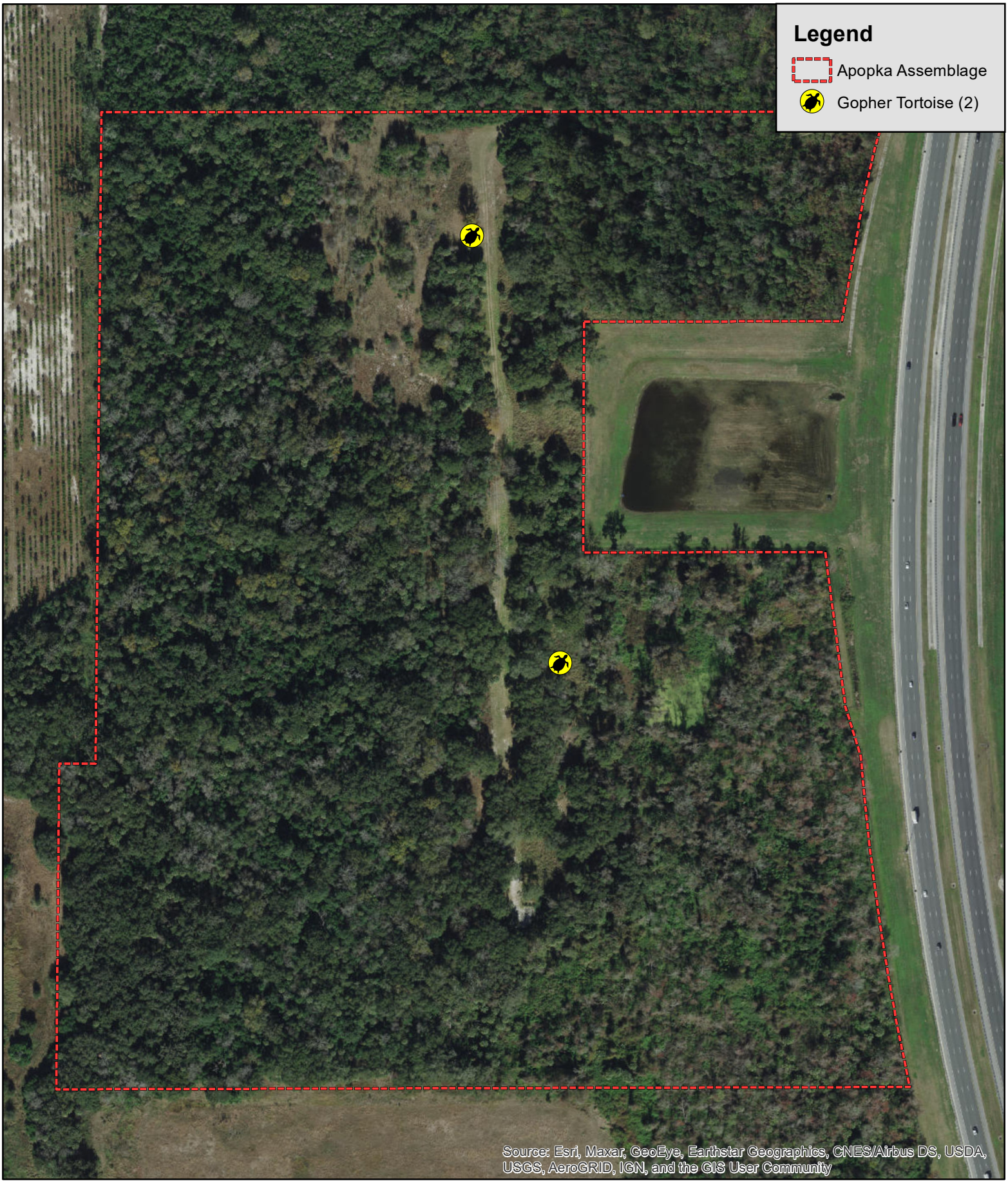
Apopka Assemblage
Orange County, Florida
Figure 8
SJRWMD Mitigation Basins

N
W E
S

2
Miles

Project #:1381-01
Produced By:KLG
Date: 2/25/2022



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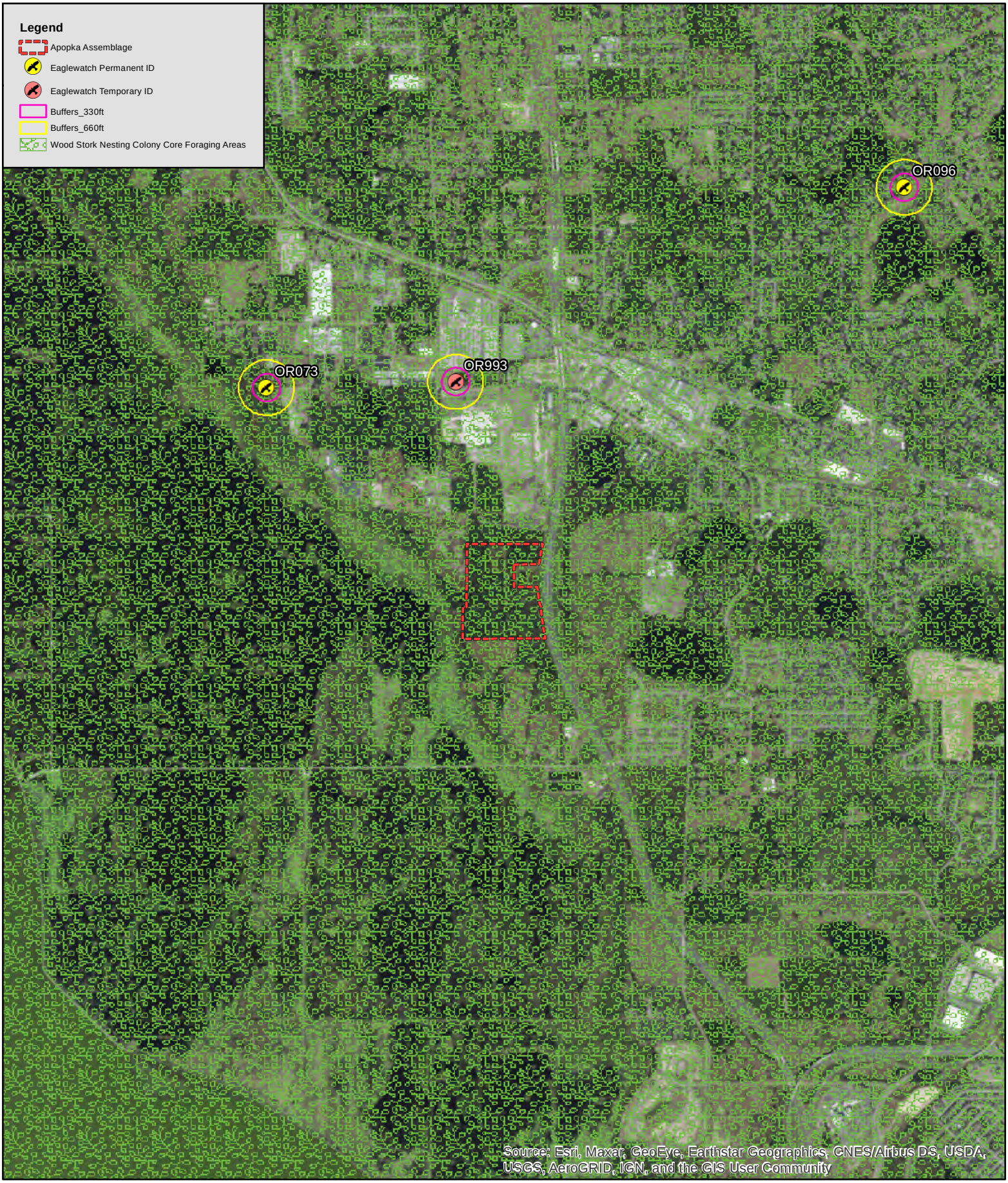
Apopka Assemblage
Orange County, Florida
Figure 9
Wildlife Proximity

N
W E
S

275
Feet

Project #:1381-01
Produced By:KLG
Date: 5/16/2022



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Apopka Assemblage
Orange County, Florida
Figure 10
Wildlife Proximity

N
W E
S

0.5
Miles

Project #:1381-01
Produced By:KLG
Date: 2/25/2022

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Apopka Assemblage
Orange County, Florida
Figure 11
USFWS Consultation Areas

N
W E
S

500
Feet

Project #:1381-01
Produced By:KLG
Date: 2/25/2022

Table 1:	Potentially Occuring Listed Wildlife and Plant Species in Orange County, Florida		
Scientific Name	**Common Name**	**Federal Status**	**State Status**
REPTILES			
Alligator mississippiensis	American alligator	SAT	FT(S/A)
Drymarchon corais couperi	eastern indigo snake	LT	FT
Gopherus polyphemus	gopher tortoise	C	ST
Lampropeltis extenuata	short-tailed snake	N	ST
Pituophis melanoleucus mugitus	Florida pine snake	N	ST
Plestiodon reynoldsi	sand skink	LT	FT
BIRDS			
Aphelocoma coerulescens	Florida scrub-jay	LT	FT
Athene cunicularia floridana	Florida burrowing owl	N	ST
Polyborus plancus audubonii	Crested Caracara	LT	FT
Egretta caerulea	little blue heron	N	ST
Egretta tricolor	tricolored heron	N	ST
Falco sparverius paulus	southeastern American kestrel	N	ST
Grus canadensis pratensis	Florida sandhill crane	N	ST
Haliaeetus leucocephalus	bald eagle	N	**
Mycteria americana	wood stork	LT	FT
Pandion haliaetus	osprey	N	SSC*
Picoides borealis	red-cockaded woodpecker	LE	FE
Platalea ajaja	roseate spoonbill	N	ST
Sterna antillarum	least tern	N	ST
MAMMALS			
Sciurus niger shermani	Sherman's fox squirrel	N	SSC
VASCULAR PLANTS			
Bonamia grandiflora	Florida bonamia	LT	E
Calopogon multiflorus	Many-flowered Grass-pink	N	T
Centrosema arenicola	Sand Butterfly Pea	N	E
Chionanthus pygmaeus	Pygmy Fringe Tree	LE	E
Centrosema arenicola	sand butterfly pea	N	N
Coelorachis tuberculosa	piedmont jointgrass	N	N
Deeringothamnus pulchellus	beautiful pawpaw	LE	E
Eriogonum longifolium var *gnaphalifolium*	scrub buckwheat	LT	E
Helianthus debilis ssp *tardiflorus*	beach sunflower	N	N
Ilex opaca var arenicola	scrub holly	N	N
Illicium parviflorum	star anise	N	E
Lechea cernua	nodding pinweed	N	T
Lupinus aridorum	scrub lupine	LE	E
Matelea floridana	Florida spiny-pod	N	E
Monotropa hypopithys	pinesap	N	E
Najas filifolia	Narrowleaf Naiad	N	T
Nemastylis floridana	Celestial Lily	N	E
Nolina atopocarpa	Florida beargrass	N	T
Nolina brittoniana	Britton's beargrass	LE	E
Ophioglossum palmatum	hand fern	N	E
Panicum abscissum	cutthroat grass	N	E
Paronychia chartacea ssp *chartacea*	paper-like nailwort	LT	E
Persea humilis	scrub bay	N	N
Pecluma plumula	Plume Polypody	N	E
Polygonella myriophylla	Small's jointweed	LE	E
Prunus geniculata	scrub plum	LE	E
Pteroglossaspis ecristata	Giant Orchid	N	T
Stylisma abdita	scrub stylisma	N	E
Warea amplexifolia	clasping warea	LE	E
Zephyranthes simpsonii	redmargin lily	N	T

FEDERAL LEGAL STATUS

LE-Endangered: species in danger of extinction throughout all or a significant portion of its range.
LT-Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
SAT-Endangered due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
C-Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
XN-Non-essential experimental population.
N-Not currently listed, nor currently being considered for listing as Endangered or Threatened.

STATE LEGAL STATUS - ANIMALS

FE- Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service
FT- Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service
FXN- Federal listed as an experimental population in Florida
FT(S/A)- Federal Threatened due to similarity of appearance
ST- State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
SSC-Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* for Pandion haliaetus (Osprey) indicates that this status applies in Monroe county only.)
N-Not currently listed, nor currently being considered for listing.

*** State protected by F.A.C. 68A-16.002 and federally protected by both the Migratory Bird Treaty Act (1918) and the Bald and Golden Eagle Protection Act (1940)*

STATE LEGAL STATUS - PLANTS

E-Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.
T-Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.
N-Not currently listed, nor currently being considered for listing.

Andreyev Engineering, Inc.

SANFORD OFFICE
4055 St. John's Parkway
Sanford, Florida 32771
407-330-7763

▼ Groundwater ▼ Environmental ▼ Geotechnical ▼ Construction Materials Testing

May 23, 2022
GPGT-22-043

To: **ARCO National Construction**
900 North Rock Hill Road
St. Louis, Missouri 63119

Attention: **Mr. Trenton Squires**

Subject: **Preliminary Geotechnical Investigation, Proposed Site Improvements, MFLP South, Apopka, Orange County, Florida**

Dear Mr. Squires:

As requested, Andreyev Engineering, Inc. (AEI) has completed a preliminary geotechnical investigation for the above referenced project location. We understand that the subject site improvements will include three proposed commercial warehouse buildings, with paved parking/drive areas. Stormwater runoff from the proposed site improvements will be routed to one proposed on-site stormwater retention area.

This report presents the results of our geotechnical investigation along with an evaluation of the soil and groundwater conditions encountered. In addition, it provides preliminary geotechnical engineering recommendations for site preparation, foundation design, pavement section design, and evaluation of the stormwater retention system.

SITE LOCATION AND DESCRIPTION

The subject site is located in Section 12, Township 21 South, and Range 27 East, in Apopka, Orange County, Florida. We have included the U.S.G.S. Topographic Map, which depicts the location of the site, on the attached **Figure 1**. In addition, the Natural Resources Conservation Service (NRCS) Soil Map, which depicts the location and general soil types of the subject site and is presented on the attached **Figure 2**. Please note that some areas of the site were not accessible and could not be evaluated at this time due to the onsite existing wetland and pond areas.

PURPOSE AND SCOPE OF SERVICES

The purpose of this preliminary study was to explore subsurface soil and groundwater conditions at this site for foundation support of the proposed warehouse buildings on shallow foundations and provide recommendations for site preparation, foundation design, pavement section design, and evaluation of the stormwater retention system.

The boring locations were surveyed and staked by representatives of Leading Edge Land Services prior to performing drilling activities.

The scope of this investigation included:

- Drilled forty (40) Standard Penetration Test (SPT) borings, designated as TB-1 through TB-26, TB-30 through TB-41, and TB-43 and TB-44, to a depth of 20 to 25 feet below ground surface, within, or adjacent to, the proposed building foundation areas, for preliminary foundation evaluation. The locations of proposed SPT borings TB-27, TB-28, TB-29, and TB-42, were not cleared and accessible to small track drilling equipment and were not performed at the time of this investigation.

- Drilled seven (7) machine auger borings, designated as AB-1 through AB-7, to a depth of 20 feet below ground surface within the proposed stormwater retention areas. The locations of proposed machine auger borings AB-8, AB-9, and AB-10, were not cleared and accessible to small track drilling equipment and were not performed at the time of this investigation.

- Collected four (4) undisturbed permeability tube samples from the proposed retention area and conducted laboratory permeability testing on the undisturbed permeability tube samples to assess soil hydraulic conductivity.

- Drilled nine (9) manual auger borings, designated as HA-1 through HA-6, and HA-8 through HA-10, to a depth of 7 feet below ground surface, within the proposed paved parking/drive areas. The location of proposed manual auger boring HA-7 was not accessible to drilling personnel and equipment and was not performed at the time of this investigation.

Samples were recovered from the borings and returned to AEI's laboratory for visual classification and stratification. Soil strata were classified according to the Unified Soil Classification System (USCS). Approximate boring locations are shown on **Figure 3**, results of the Standard Penetration Test (SPT) borings and auger borings, in profile form, are presented on **Figures 4 through 9**. On the profiles, horizontal lines designating the interface between differing materials represent approximate boundaries. The actual transition between layers is typically gradual.

NATURAL RESOURCES CONSERVATION SERVICE SOIL SURVEY

The publication titled "Soil Survey of Orange County, Florida" published by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) was reviewed. For your reference, we have included a portion of the NRCS Soil Map which depicts the location of the subject site on the attached **Figure 2**.

Seven (7) soil map units were identified to exist at this project location and are presented as follows:

Soil Map Unit 6: ***Candler – Apopka Fine Sands, 5 to 12% Slopes***

Brief Description: "The soils in this map unit are sloping and strongly sloping and excessively drained and well drained. These soils are on the uplands. They occur in a regular repeating pattern. Candler soil is sloping and excessively drained. It is on summits and lower side slopes. Apopka soil is strongly sloping and well drained. It is on the upper side slopes. Typically, the surface layer of Candler soil is dark grayish brown sand about 6 inches thick. Typically, the surface layer of Apopka soil is dark grayish brown sand about 5 inches thick. A seasonal high water table is at a depth of more than 72 inches in Apopka soil and is at a depth of more than 80 inches in Candler soil. The permeability of Candler soil is rapid in the surface and subsurface layers and is rapid to moderately rapid in the subsoil. The permeability of Apopka soil is rapid in the surface and subsurface layers and is moderate in the subsoil."

Soil Map Unit 23: ***Malabar Fine Sand***

Brief Description: "This soil is nearly level and poorly drained. It is in low, narrow to broad sloughs and poorly defined drainageways. The slopes are smooth to concave and range from 0 to 2 percent. In most years, a seasonal high water table is within 10 inches of the surface for 2 to 6 months and between depths of 10 and 40 inches for most of the year. In most areas this Malabar soil has been left in natural vegetation. In some areas, it has been drained and is used for cultivated crops or improved pasture or for homesite and urban development. This soil has severe limitations for building site development, sanitary facilities, and recreational uses. Water control measures should be used and fill material is needed to minimize the excessive wetness limitation."

Soil Map Unit 25: ***Okeelanta Muck***

Brief Description: "This soil is nearly level and very poorly drained. It is in freshwater swamps and in drained areas north of Lake Apopka. Large ditches and canals equipped with water control structures dissect the map unit in most places. Undrained areas are ponded for 6 to 9 months or more each year. The slopes are smooth and less than 1 percent. Typically, the upper part of the surface layer is black muck about 9 inches thick. The lower part, to a depth of about 25 inches, is dark brown muck. The upper part of the underlying material, to a depth of about 62 inches, is light gray fine sand, that has dark gray mottles. The lower part to a depth of 80 inches or more is grayish brown loamy sand. Under natural conditions, the water table is ponded for 6 to 9 months or more each year. In most years, a seasonal high water table is at or near the surface. In drained areas, the water table is controlled at a depth of 10 to 36 inches, or according to the need of the crop."

Soil Map Unit 34: ***Pomello Fine Sand, 0 to 5% Slopes***

Brief Description: "This soil is a nearly level to gently sloping, moderately well drained sandy soil. In most years the seasonal high water table is at a depth of 24 to 40 inches for 1 month to 4 months and recedes to a depth of 40 to 60 inches during dry periods. In most areas, this Pomello soil is used for native range, or it has been left in natural vegetation. In a few areas, this soil is used for citrus crops, cultivated crops, or improved pasture or for homesite and urban development."

Soil Map Unit 42: ***Sanibel Muck***

Brief Description: "This soil is nearly level and very poorly drained. These soils are in depressions, freshwater swamps and marshes, and in poorly defined drainage ways. Undrained areas are ponded for 6 to 9 months or more each year. The slopes are concave and less that 1 percent. Typically, this soil has an organic surface layer of black muck about 11 inches thick. Below that layer, to a depth of about 15 inches, is black fine sand. In most years undrained areas of this soil are ponded for 6 to 9 months or more except during extended dry periods. The water table fluctuates between depths of about 10 inches and the surface for 2 to 6 months. This soil has severe limitations for building site development, sanitary facilities, and recreational uses because of ponding and excess humus. Water control measures should be used to minimize the excessive wetness limitation. Orgainic material should be removed and backfilled with a soil material suitable for urban development."

Soil Map Unit 47: ***Tavares – Millhopper Fine Sands, 0 to 5% Slopes***

Brief Description: "The soils in this map unit are nearly level to gently sloping and moderately well drained. A seasonal high water table in Tavares soil is at a depth of 40 to 72 inches for more than 6 months and recedes to a depth of more than 80 inches during extended dry periods. A seasonal high water table in Millhopper soil is at a depth of 40 to 60 inches for 1 to 4 months and recedes to a depth of 60 to 72 inches for 2 to 4 months. In most areas, the soils in this map unit are used for citrus crops or improved pasture or for home site and urban development."

Soil Map Unit 54: ***Apopka Zolfo Fine Sand***

Brief Description: "This soil is nearly level and somewhat poorly drained. It is in broad, slightly higher positions adjacent to the flatwoods. The slopes are smooth to convex and range from 0 to 2 percent. Typically, the soil has a surface layer of dark grayish brown fine sand about 5 inches thick. The upper part of the subsurface layer, to a depth of about 23 inches, is grayish brown fine sand. The middle part, to a depth of about 38 inches, is light brownish gray fine sand that has common brownish yellow mottles. The lower part, to a depth of about 55 inches, is very pale brown fine sand that has common brownish yellow mottles. The upper part of the subsoil, to a depth of about 71 inches, is brown fine sand. The lower part to a depth of 80 inches or more is dark brown fine sand. In most years, a seasonal high water table is at a depth of 24 to 40 inches for 2 to 6 months. It is at a depth of 10 to 24 inches during periods of heavy rains. It recedes to a depth of about 60 inches during extended dry periods. The permeability is rapid in the surface and subsurface layer, and it is moderate in the subsoil. The available water capacity is low in the surface and subsurface layers and is medium in the subsoil. This soil has severe limitations for sanitary facilities, most building site development, and recreational uses. It has moderate limitations for dwellings without basements, small commercial buildings, and local roads and streets. Water control measures should be used to minimize the excessive wetness limitation. Septic tank absorption fields may need to be enlarged because of wetness. The rapid permeability of this soil can cause ground water pollution in areas of septic tank absorption fields."

SOIL AND GROUNDWATER CONDITIONS

Soil Conditions

The soil types encountered at the boring locations are presented in the form of soil profiles on the attached **Figures 4 through 9**. The stratification presented is based on visual examination of the recovered soil samples and the interpretation of the field logs by a geotechnical engineer.

In general, the borings encountered the following soil Strata:

- Dark Gray to Dark Brown to Dark Grayish Brown to Dark Reddish Brown Fine Sand (Stratum 1)
- Gray to Brown to Grayish Brown to Brownish Gray to Yellowish Brown Fine Sand (Stratum 2)
- Light Gray to Light Brown to Light Grayish Brown to Light Yellowish Brown Fine Sand (Stratum 3)
- Gray to Grayish Brown to Dark Gray Clayey Fine Sand to Sandy Clay (Stratum 4)
- Light Brown to Gray to Grayish Brown to Dark Grayish Brown to Dark Reddish Brown Slightly Silty to Silty Fine Sand (Stratum 5)
- Light Gray to Gray to Grayish Brown Clay (Stratum 6)
- Dark Brown to Black Slightly Organic Fine Sand (Stratum 7)

A. With Pieces of Clayey Fine Sand

B. With Cemented Pieces – Hardpan Type

C. Organically Stained

Standard Penetration Test (SPT) borings measure soil density using a split spoon sampler advanced by a 140-pound hammer dropped repeatedly a distance of 30 inches. The N-value, which is shown next to the corresponding depths of the boring profile, is the number of blows by the hammer required to advance the split spoon sampler one (1) foot. Split spoon sampling was conducted continuously in the upper 10 feet and at 5-foot intervals thereafter. Also included, adjacent to the SPT borings, are the blow counts or “N” values. The “N” values have been empirically correlated with various soil properties and are considered to be indicative of the relative density of cohesionless soils and the consistency of cohesive material. Upon completion of drilling, the SPT boreholes were backfilled with additional bentonite and soil materials.

Correlation of the SPT-N values with relative density, unconfined compressive strength and consistency are provided in the following table:

Coarse-Grained Soils		Fine Grained Soils		
Penetration Resistance N (blows/ft)	Relative Density of Sand	Penetration Resistance N (blows/ft)	Unconfined Compressive Strength of Clay (tons/ft^2)	Consistency of Clay
0-4	Very Loose	<2	<0.25	Very Soft
4-10	Loose	2-4	0.25-0.50	Soft
10-30	Medium-Dense	4-8	0.50-1.00	Medium
30-50	Dense	8-15	1.00-2.00	Stiff
>50	Very Dense	15-30	2.00-4.00	Very Stiff
		>30	>4.00	Hard

Please refer to **Figures 3 through 9** for boring locations, strata depths, and encountered soil conditions. The stratification lines represent the approximate boundaries between soil types. The actual transition may be gradual. Minor variations not considered important to our engineering evaluations may have been abbreviated or omitted for clarity.

Groundwater Conditions

At the time of drilling SPT borings TB-7, TB-30, TB-31, TB-35, TB-37, TB-38, TB-40, and TB-41, groundwater was encountered ranging between depths of 5.0 to 9.0 feet. Groundwater was not measured below a depth of 10 feet at the remaining SPT borings, due to the drilling method mud rotary, which uses a thick bentonite drilling slurry to maintain an open borehole. After allowing for stabilization, groundwater was measured at depths of 3.5 to 13.8 feet at machine auger borings AB-1 through AB-7. At HA-1 through HA-6 and at HA-8, HA-9, and HA-10, groundwater was not encountered between the ground surface and the termination depth of drilling of 7 feet.

Based on the encountered subsurface conditions, our local experience, NRCS soil survey, and antecedent rainfall conditions, the normal seasonal high groundwater level is estimated to exist about 3 to 4 feet above measured levels at TB-7, TB-30, TB-31, TB-35, TB-37, TB-39, TB-40, TB-41, and at AB-1 through AB-7. At TB-1. TB-3, TB-4, TB-5, TB-6, TB-8 through TB-13, TB-16, TB-17, TB-18, TB-19 through TB-26, TB-33, TB-34, TB-36, TB-38, HA-4, HA-5, HA-6, and HA-9, the normal seasonal high groundwater table is estimated to exist in a temporary perched condition, during periods of heavy or extended rainfall, slightly above the Stratum 4 clayey fine sand to sandy clay soils, Type A soils with pieces of clayey fine sand, and Type B soils with cemented pieces – hardpan. At TB-2, TB-14, TB-15, TB-32, TB-43, and TB-44 the normal seasonal high groundwater table is estimated to exist at a depth of about 7 to 8 feet below the existing ground surface. The normal seasonal high groundwater table is estimated to exist at depths of about 5 to 7 feet at HA-1, HA-2, HA-3, HA-8, and HA-10.

Organic Content Test Results

The results of the laboratory classification tests selected for moisture content and organic content for the Stratum 1 Type C organically stained fine sand and Stratum 7 organic fine sand are presented as follows:

TB-40		**TB-44**	
Sample Depth:	1.0 feet	Sample Depth:	9.0 feet
Classification:	Organic Fine Sand	Classification:	Fine Sand (Organic Stained)
Moisture Content:	14.3%	Moisture Content:	9.5%
Percent of Fines:	13.7%	Percent of Fines:	1.5%

Typically, organic content values of 4% to 5% are indicative of organic material that is susceptible to decomposition related settlement that can cause differential settlement related damage of supported structures. The results of the laboratory classification tests for moisture content and organic content are shown adjacent to the tested depth and corresponding soil profile on **Figure 8**.

Laboratory Test Results - Percent of Fines Passing a U.S #200 Sieve

The results of the laboratory classification tests selected for moisture content and percent of fines passing a U.S. #200 Sieve are shown adjacent to the corresponding soil profile and depth on **Figures 5, 7, 8, and 9** are also presented as follows:

TB-12		**TB-15**	
Sample Depth:	2.0 feet	Sample Depth:	5.0 feet
Classification:	C. F. S. to S.C.*	Classification:	F.S. to S.S.F.S.**
Moisture Content:	16.7%	Moisture Content:	2.0%
Percent of Fines:	47.6%	Percent of Fines:	3.2%

TB-31		**TB-31**	
Sample Depth:	9.0 feet	Sample Depth:	14.5 feet
Classification:	F.S. to S.S.F.S.**	Classification:	S.S. to S. F. S.***
Moisture Content:	20.9%	Moisture Content:	14.3%
Percent of Fines:	5.2%	Percent of Fines:	19.9%

AB-2		**AB-3**	
Sample Depth:	8.5 feet	Sample Depth:	7.5 Feet
Classification:	S.S. to S. F. S.***	Classification:	S.S. to S. F. S.***
Moisture Content:	2.8%	Moisture Content:	13.2%
Percent of Fines:	11.4%	Percent of Fines:	17.1%

AB-4		**AB-5**	
Sample Depth:	2.5 feet	Sample Depth:	10.5 Feet
Classification:	Fine Sand	Classification:	S.S. to S. F. S.***
Moisture Content:	2.4%	Moisture Content:	10.3%
Percent of Fines:	4.5%	Percent of Fines:	18.3%

AB-7		**AB-7**	
Sample Depth:	9.0 feet	Sample Depth:	13.5 Feet
Classification:	S.S. to S. F. S.***	Classification:	C. F. S. to S.C.*
Moisture Content:	21.9%	Moisture Content:	17.8%
Percent of Fines:	9.8%	Percent of Fines:	28.9%

HA-5

Sample Depth:	4.5 feet
Classification:	Fine Sand with Pieces of Clayey Fine Sand
Moisture Content:	10.5%
Percent of Fines:	24.6%

* Clayey Fine Sand to Sandy Clay
* * Fine Sand to Slightly Silty Fine Sand
* * * Slightly Silty to Silty Fine Sand

PRELIMINARY EVALUATIONS AND RECOMMENDATIONS

General

Based on the results of this preliminary investigation and our evaluation of the encountered subsurface conditions, the primary design concern at this site is the near surface poorly permeable Strata 4 and 5, clayey fine sand to sandy clay and silty fine sand, including the Type A soils with pieces of clayey fine sand, and Type B soils with cemented pieces – hardpan, and their associated perched groundwater condition. Compaction difficulties and controlling moisture content near optimum are common with Strata 4, 5, Type A and Type B soil sub-types. Dependent on planned site grades, a minimum two-foot separation should be maintained between the bottom of building slabs, bottom of footing elevations, bottom of the pavement base, and the top of any encountered Stratum 4 clayey fine sand to sandy clay soils to limit overlying structures from exposure to increased levels of differential settlement. Use of vibratory compaction equipment will be limited at the northern portion of this site due to the adjacent existing warehouse building and associated structures. A secondary concern would be the surficial Stratum 7 organic fine sand that was encountered at TB-40, however; this appears to be an isolated pocket and the organic material can be properly removed during site preparation efforts. It is critical that site preparation and soil densification procedures are thorough to ensure consistent and uniform support conditions for the proposed site improvements.

In addition, once sufficient clearing has been performed to obtain drill rig access, AEI recommends that additional geotechnical investigations, of building, roadway, and pond areas, be performed in the existing pond and the heavily wooded southeast portion of the subject property, to verify the possible presence or absence of Okeelanta Muck and Sanibel Muck, as illustrated on the attached **Figure 2** NRCS Soil Survey Map, that may extend into proposed building areas.

Conventional pavement section design and construction using flexible or semi flexible pavement sections will also be possible at this site, provided that a two-foot separation is maintained between the pavement base course and the estimated normal seasonal high groundwater table levels and also the top of any encountered poorly permeable Strata 4 and 5, clayey fine sand to sandy clay, silty fine sand, Type A sub-soils with pieces of clayey fine sand, and Type B sub-soils with cemented pieces – hardpan, and their associated perched groundwater condition. Depending on final site grades, roadway underdrains may also be necessary to control perched groundwater conditions from affecting long term performance of the roadways and parking areas.

Dependent of planned site grades, the proposed stormwater retention pond area, located in the vicinity of AB-1 through AB-7, appears suitable for wet stormwater retention/detention pond design as planned.

More specific recommendations for the building areas, paved parking/drive areas, and stormwater retention pond area are provided below.

Site Preparation

The building area and parking/drive areas, plus a minimum margin of 5 feet beyond their outer lines, should be cleared and stripped to remove all surface vegetation, roots, topsoil, Stratum 7 organic fine sand, or any other encountered deleterious materials. A two-foot separation should be maintained between the bottom of building slabs, bottom of footing elevations, bottom of the pavement base and the top of any Stratum 4 clayey fine sand to sandy clay in order to limit differential settlement to the proposed overlying structures. As noted, use of vibratory compaction equipment will be limited at the northern portion of this site due to the adjacent existing warehouse building and associated structures. The exposed foundation subgrade soils for the building areas should be proof rolled and compacted to a minimum of 95% of the soil's modified Proctor maximum dry density as determined by ASTM Specification D-1557 before any fill material is placed. Compaction should be completed to a depth of 2 feet below exposed subgrade. The exposed subgrade within pavement areas should be proof rolled and compacted to a minimum of 95% of the soil's modified Proctor maximum dry density to a depth of 2 feet as well. All fill required to bring the site to final grade should be inorganic, non-plastic, granular soil (clean sands) with less than 10% passing a U.S #200 sieve. In structural areas, the fill should be placed in level lifts not to exceed 12 inches loose and should be compacted to a minimum of 95% of the soil's modified Proctor maximum dry density as determined by ASTM Specification D-1557. In-place density tests should be performed on each lift by an experienced engineering technician working under the direction of a registered geotechnical engineer to verify that the recommended degree of compaction has been achieved. We suggest a minimum testing frequency of one (1) test per lift per 2,500 square feet of area within structural limits and one (1) test per lift per 10,000 square feet in pavement areas. This fill should extend a minimum of 5 feet beyond building lines to prevent possible erosion or undermining of footing bearing soils. Further, fill slopes should not exceed 2 horizontal to 1 vertical (2H: 1V). All fill placed in utility line trenches and adjacent to footings beneath slabs on grade should also be properly placed and compacted to the specifications stated above. However, in these restricted working areas, compaction should be accomplished with lightweight, hand-guided compaction equipment and lift thicknesses should be limited to a maximum of 4 inches loose thickness.

Foundation Design

Once the existing subgrade and new fill soils in the proposed structural support areas have been prepared in accordance with the preceding recommendations, the proposed buildings can be constructed on a system of conventional shallow spread or strip footings bearing at minimum depths below the finished floor elevations. A two-foot separation should be maintained between the bottom of footing elevations and the top of any Stratum 4 clayey fine sand to sandy clay soils to limit overlying supported structures from exposure to excessive differential settlement. Footings, which bear in densified existing soils or in new structural fill, may be designed based on a maximum allowable bearing pressure of 2,500 pounds per square foot. Minimum footing dimensions of 18 inches for strip footings and 24 inches for column footings should be used even though the maximum allowable bearing pressures may not be fully developed in all cases. Footings should bear at least 18 inches below finished exterior grades. For monolithic slab or post tension slab construction, footings should bear at least 12 inches below finished exterior grades. Footing subgrade soils should be approved by the geotechnical engineer prior to placement of concrete and steel. As a minimum acceptance criterium, the footing subgrade soils should be compacted to a minimum density of 95% of the soils modified Proctor maximum dry density for a depth of 24 inches.

Paved Areas

In general, the compacted subsurface soils will be suitable for support of a flexible (limerock) or semi-flexible (soil-cement or crushed concrete) type pavement base after subgrade preparation. The use of one system over another is normally governed by the depth to the encountered and/or seasonal high groundwater table. Soil cement is typically used in areas where the wet season groundwater table levels are within 12 inches of the proposed bottom of the pavement subbase. As previously discussed, a two-foot separation should be maintained between the bottom of the pavement base course and the estimated normal seasonal high groundwater table levels and also the top of any encountered poorly permeable Strata 4 and 5, clayey fine sand to sandy clay, silty fine sand, Type A soils with pieces of clayey fine sand, and Type B soils with cemented pieces – hardpan to prevent perched groundwater from adversely affecting the pavement section. Any paved areas which cannot meet minimum separation requirements from the seasonal high groundwater table level and/or the top of the poorly permeable Strata 4 and 5, clayey fine sand to sandy clay, silty fine sand, Type A soils with pieces of clayey fine sand, and Type B soils with cemented pieces – hardpan may require underdrains. As a possible pavement design alternative, AEI also presents recommendations for a rigid pavement section.

Typical flexible and semi-flexible pavement sections are as follows:

Limerock Base

1-1/2” to 2-1/2” asphaltic concrete wearing surface

8” to 10" limerock base course, quality of limerock to be in accordance with current Florida Department of Transportation specifications and compacted to a minimum density equivalent to 98 percent of the modified Proctor maximum density (AASHTO T-180).

12” stabilized subbase with minimum Limerock Bearing Ratio (LBR) of 40 percent. The subbase should be compacted to a minimum density equivalent to 98 percent of the modified Proctor maximum density (AASHTO T-180). The subgrade material, below the

subbase, shall be compacted to minimum density of 98% of the modified Proctor maximum density of the soil.

Soil-Cement Base

1-1/2" to 2-1/2" asphaltic concrete wearing surface

8" to 10" soil-cement base designed and constructed in accordance with current Portland Cement Association recommended methods.

12" subgrade consisting of free draining natural fine sand or fine sand fill with less than 7 percent passing a U.S. #200 sieve. Subgrade to be compacted to a minimum density of 98 percent of the modified Proctor maximum density (AASHTO T-180).

Crushed Concrete Base

1-1/2" to 2-1/2" asphaltic concrete wearing surface

8" to 10" crushed concrete base with the quality of crushed concrete to be in accordance with current Florida Department of Transportation specifications and should have a minimum Limerock Bearing Ratio (LBR) of 150 and be compacted to at least 98 percent of the Modified proctor maximum dry density per ASTM D-1557.

12" stabilized subbase with minimum Limerock Bearing Ratio (LBR) of 40 percent. The subbase should be compacted to a minimum density equivalent to 98 percent of the modified Proctor maximum density per ASTM D-1557. The subgrade material, below the subbase, shall be compacted to minimum density of 98% of the modified Proctor maximum density of the soil per ASTM D-1557.

Type of Development	ADT (average daily traffic)	Base Thickness	Wearing Surface Thickness
Commercial Warehouse Facility	< 1,500	8"	1 ½"
	>1,500	10"	2 ½"

The pavement section should be designed based on expected traffic including truck loads. Traffic should not be allowed on the subgrade prior to placement of the base to avoid rutting. The final pavement thickness design should be checked by the project civil engineer using data contained in this report and anticipated traffic conditions.

As a possible pavement section design alternative, AEI presents recommendations for a rigid pavement section as follows:

Rigid Pavement

6" reinforced concrete wearing surface: Designed to withstand the design traffic loads and jointed to reduce the chances for crack development. The concrete should have a minimum unconfined compressive strength of 3,000 psi.

12" subgrade: consisting of free draining natural fine sand or fine sand fill. Subgrade to be compacted to a minimum density equivalent to 98 percent of the modified Proctor maximum density (AASHTO T-180).

Retention Pond Area

Based on the results of the borings and permeability tests and dependent on planned site grades, the proposed stormwater retention area, located in the vicinity of AB-1 through AB-7, appears suitable for wet stormwater retention/detention as planned.

For wet stormwater retention/detention pond system design the following normal seasonal high groundwater table levels and normal seasonal low groundwater table levels may be used:

Boring Location	Normal Seasonal High Groundwater Level (ft bls)*	Normal Seasonal Low Groundwater Level (ft bls)*
AB-1	2.5	6.5
AB-2	4.0	8.0
AB-3	5.5	9.5
AB-4	4.5	8.5
AB-5	10.5	14.5
AB-6	3.5	6.5
AB-7	0.5	4.5
AB-1 through AB-7 (averaged values)	4.4	8.3

*- feet below land surface

For more detailed recommendations for soils excavated from the stormwater retention/detention pond area, please reference the fill suitability section presented in the following section of this geotechnical report.

Fill Suitability

Based on the results of this geotechnical investigation and to evaluate soils planned to be excavated from the stormwater retention/detention pond areas during construction, AEI presents the following evaluations and recommendations for fill material preparation and fill placement.

Strata 1, 2, and 3 fine sand to slightly silty fine sand will be suitable for use as general fill with minimal soil preparation efforts provided root content is minimal. If the Strata 1, 2, and 3 fine sand to slightly silty fine sand exists at or below the existing site's groundwater table level, the fine sand soils will need to be properly dried, in order to control the soil's moisture content near the laboratory modified Proctor test result for optimum moisture content, prior to fill placement and compaction.

Excavated Stratum 5 silty fine sand and Type B sub-soils may also be used as general fill material, however; additional soil preparation efforts should be anticipated. Due to the higher percent of fines content of this soil, this soil type will exhibit a high level of moisture retention characteristics. Additional soil preparation efforts, in order to properly dry the silty fine sand and Type B soils to maintain the moisture content near optimum, will be needed prior to fill placement and compaction.

The classifications of excavated soil types with limitations for use as general fill, includes the encountered Strata 4, 6, 7, and Type A soils - clayey fine sand to sandy clay, clay, organic fine sand, and fine sand mixed with pieces of clayey fine sand. The Strata 4, 6, and Type A clayey fine sand to sandy clay, clay, and fine sand mixed with pieces of clayey fine sand soils should not be used for direct foundation support or placed in near-surface areas, due to their moisture retention properties, difficulties with compaction, and drainage issues associated with higher surface runoff volumes, from these poorly permeable soils, when compacted. The Stratum 7 organic fine sand will oxidize and decompose over time, exposing overlying supported structures to increased levels of differential settlement, and should not be used as general fill material. The Strata 4, 6, and Type A soils, consisting of clayey fine sand to sandy clay, clay, and fine sand mixed with pieces of clayey fine sand can also expose overlying supported structures to increased levels of differential settlement, so their use should also be minimized in settlement sensitive project areas.

Excavations

Any and all excavations should be constructed in accordance with applicable local, state and federal regulation including those outlined by the Occupational Safety and Health Administration (OSHA). It is the contractor's sole responsibility for designing and constructing safe and stable excavations. Excavations should be sloped, benched or braced as required to maintain stability of the excavation sides and bottoms. Excavations should take into account loads resulting from equipment, fill stockpiles and existing construction. Any shoring need to maintain a safe excavation should be designed by a professional engineer registered in the State of Florida in accordance with local, state and federal guidelines.

LIMITATIONS

This report has been prepared for the exclusive use of ARCO National Construction, Inc., and their designers, based on our understanding of the project as stated in this report and should be considered preliminary in nature. The geotechnical recommendations provided here-in are based on the concept plans provided and our experience with similar projects and subsurface conditions. Any modifications in design concepts from the description stated in this report should be made known to AEI for possible modification of recommendations presented in this report. This exploration was performed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made as to the professional advice presented herein. Statements regarding all geotechnical recommendations are for use by the designers and are not intended for use by potential contractors. The geotechnical exploration and recommendations submitted herein are based on the data obtained from the soil borings presented on **Figures 4 through 9**. The report does not reflect any variations which may occur adjacent to, between, or away from the borings. The nature and extent of the variations between the borings may not become evident until during construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations presented in this report. An on-site visit may be required by a geotechnical engineer to note the characteristics of

the variations during the construction period. This preliminary geotechnical study investigated the soil conditions within the proposed building areas, to the drilled depth of 20 to 25 feet below ground surface and was not intended to investigate deeper soil conditions with regards to the presence or absence of Karst activity.

CLOSURE

AEI appreciates the opportunity to participate in this project, and we trust that the information herein is sufficient for your immediate needs. If you have any questions or comments concerning the contents of this report, please do not hesitate to contact the undersigned.

Sincerely,

ANDREYEV ENGINEERING, INC.

Mark L. Jung
Senior Project Manager

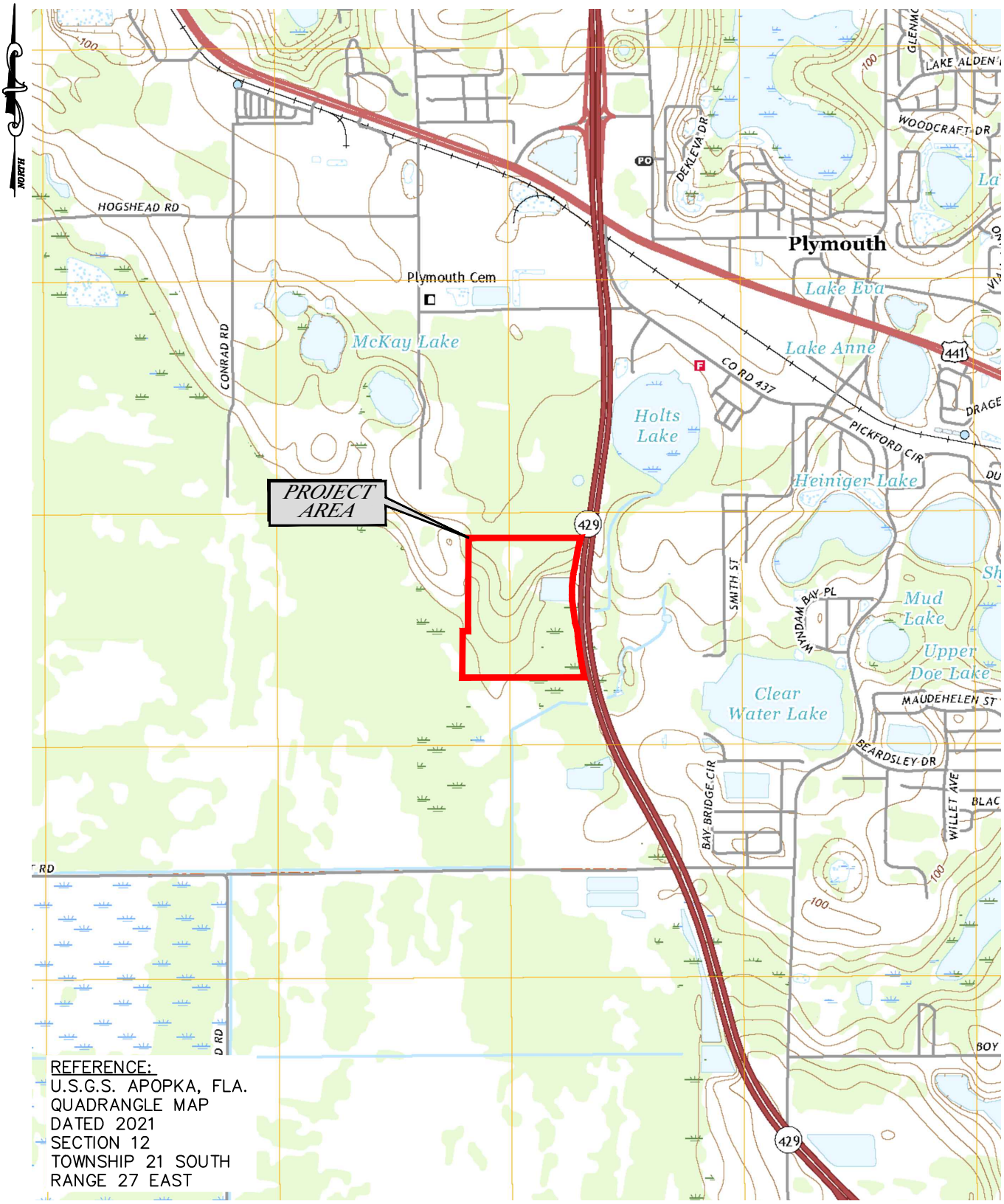
This item has been digitally signed and sealed by Ray Jones, P.E. on 5/23/22.

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

RAYMOND W. JONES LICENSE NO. 58079 STATE OF FLORIDA PROFESSIONAL ENGINEER

Raymond W. Jones, P.E.
Vice President
Florida Registration No.58079

FIGURES



REFERENCE:
U.S.G.S. APOPKA, FLA.
QUADRANGLE MAP
DATED 2021
SECTION 12
TOWNSHIP 21 SOUTH
RANGE 27 EAST

0 1000 2000 4000

GRAPHIC SCALE: 1"=2000'

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

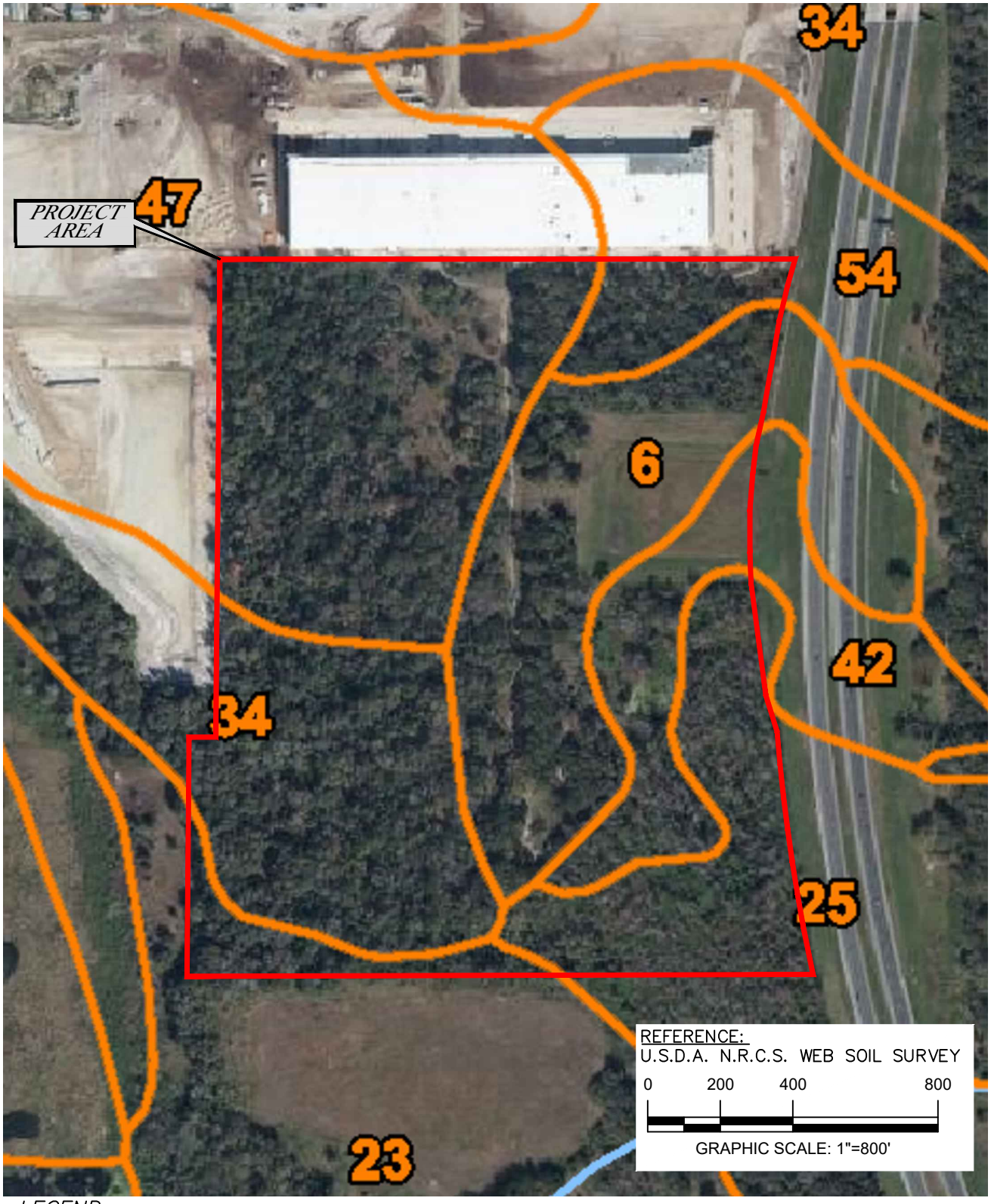
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

U.S.G.S. TOPOGRAPHIC MAP

FIGURE 1

APPROXIMATE SCALE:	DATE: 05/13/22	ENGINEER: RJ
1"=2000'	PN: GPGT-22-043	DRAWN BY: DLS



LEGEND:

6	CANDLER–APOPKA FINE SANDS, 5 TO 12% SLOPES
23	MALABAR FINE SAND
25	OKEELANTA MUCK
34	POMELLO FINE SAND, 0 TO 5% SLOPES
42	SANIBEL MUCK
47	TAVARES–MILLHOPPER FINE SANDS, 0 TO 5% SLOPES
54	ZOLFO FINE SAND, 0 TO 2% SLOPES

Andreyev Engineering, Inc.

APPROXIMATE SCALE: 1"=400'	DATE: 05/13/22	ENGINEER: RJ
	PN: GPGT–22–043	DRAWN BY: DLS

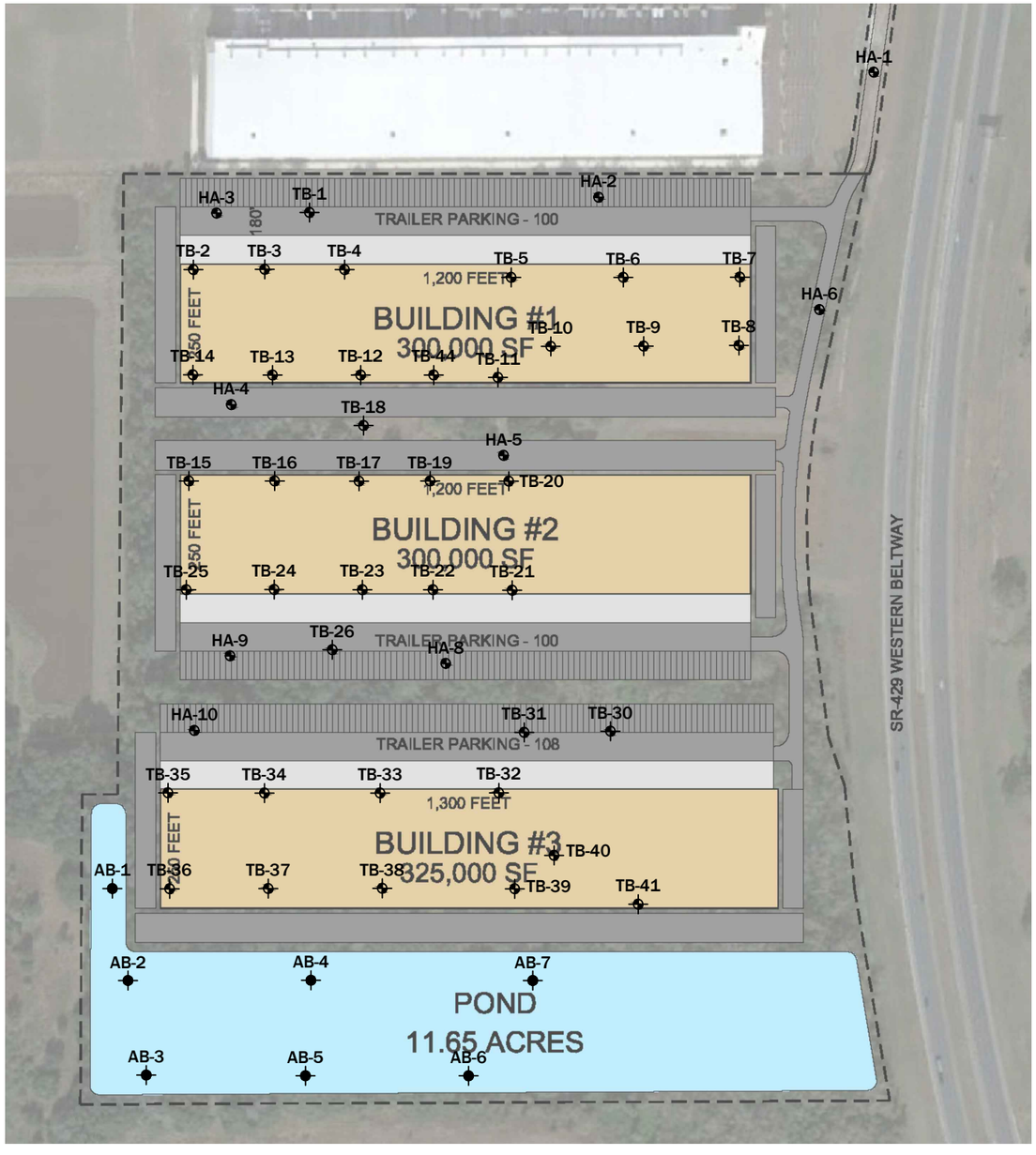
PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

N.R.C.S. SOIL SURVEY MAP

FIGURE 2



LEGEND:

- APPROXIMATE LOCATION OF SPT BORING
- APPROXIMATE LOCATION OF MACHINE AUGER BORING
- APPROXIMATE LOCATION OF HAND AUGER BORING

0 150 300 600

GRAPHIC SCALE: 1"=300'

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

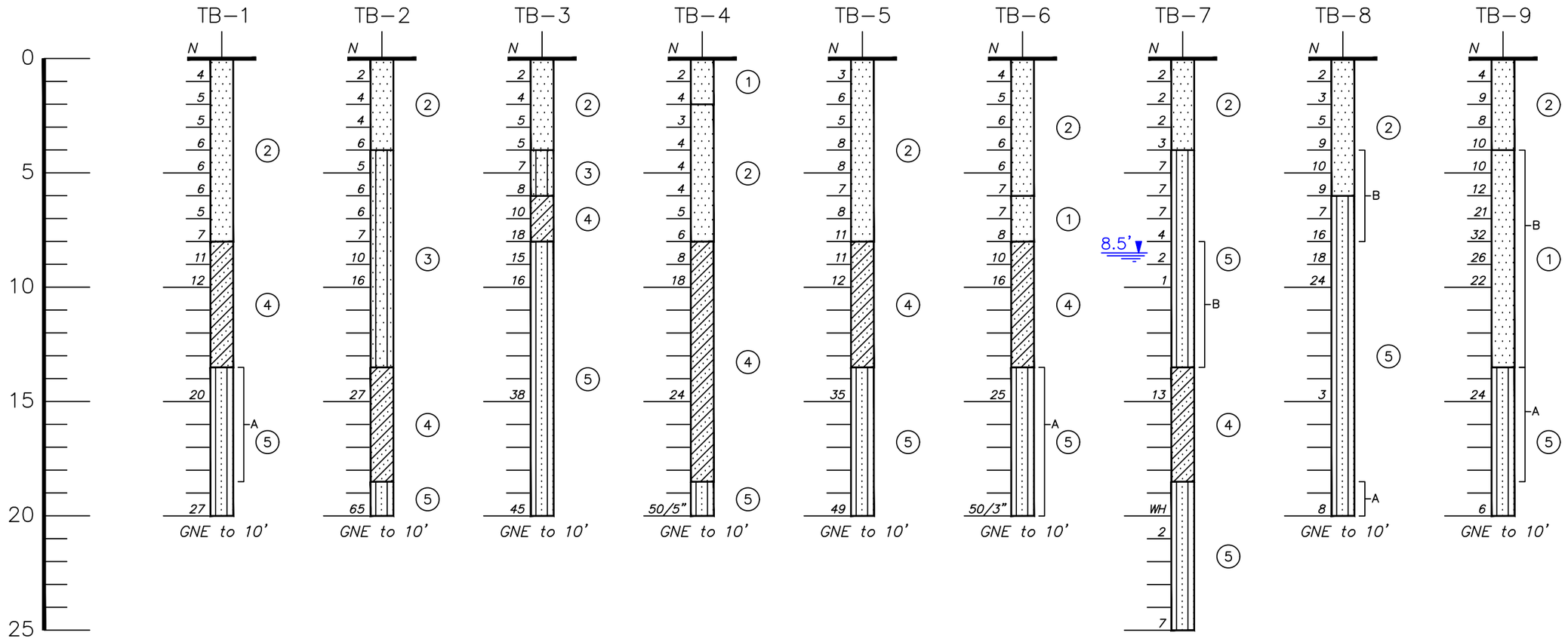
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

BORING LOCATION PLAN

APPROXIMATE SCALE:	DATE: 05/13/22	ENGINEER: RJ
1"=300'	PN: GPGT-22-043	DRAWN BY: DLS

FIGURE 3



LEGEND:

1. DARK GRAY TO DARK BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN FINE SAND (SP)
2. GRAY TO BROWN TO GRAYISH BROWN TO BROWNISH GRAY TO YELLOWISH BROWN FINE SAND (SP)
3. LIGHT GRAY TO LIGHT BROWN TO LIGHT GRAYISH BROWN TO LIGHT YELLOWISH BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP–SM)
4. GRAY TO GRAYISH BROWN TO DARK GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
5. LIGHT BROWN TO GRAY TO GRAYISH BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
6. LIGHT GRAY TO GRAY TO GRAYISH BROWN CLAY (CH)
7. DARK BROWN TO BLACK ORGANIC FINE SAND (SP)(PT)

A WITH PIECES OF CLAYEY FINE SAND

B WITH CEMENTED PIECES–HARDPAN TYPE

C ORGANICALLY STAINED

(SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL

1.0' DEPTH TO GROUNDWATER

GNE GROUNDWATER NOT ENCOUNTERED

N STANDARD PENETRATION RESISTANCE, IN BLOWS PER FOOT

WH BORING ADVANCED UNDER STATIC WEIGHT OF DRILL HAMMER & ROD

50/1" 50 HAMMER BLOWS TO ADVANCE SAMPLING TOOL ONE INCH

W MOISTURE CONTENT, IN PERCENT

–200 PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE

OC ORGANIC CONTENT, IN PERCENT

Kv VERTICAL COEFFICIENT OF PERMEABILITY, IN FEET PER DAY

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

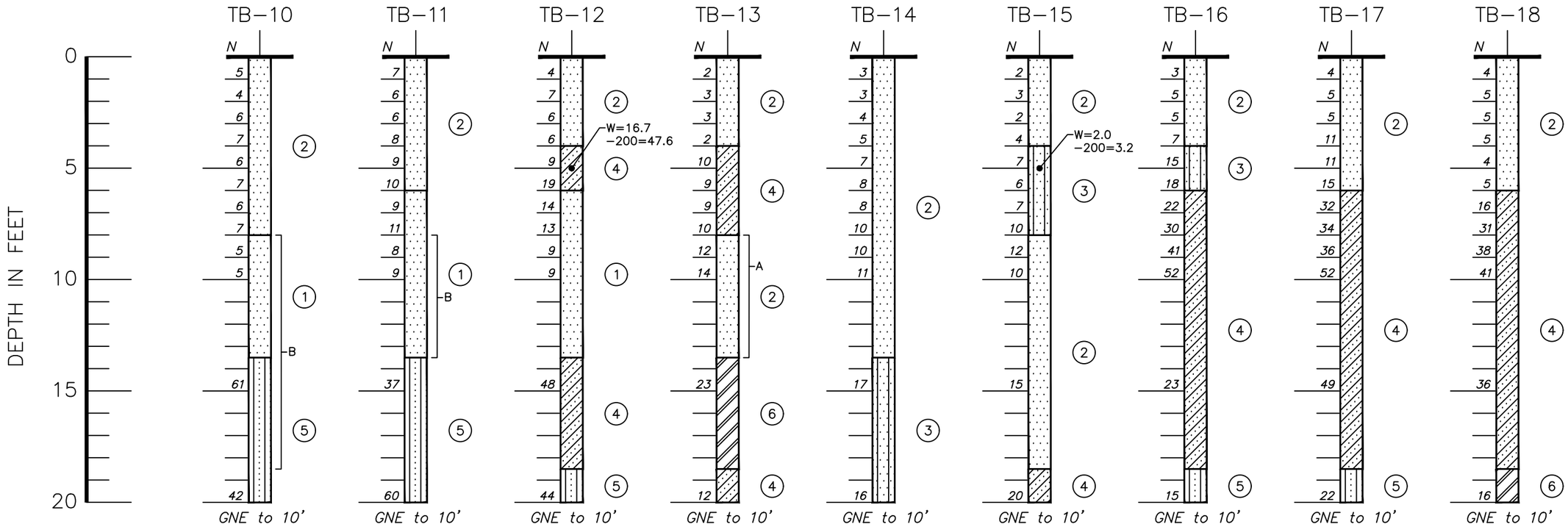
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

FIGURE 4



LEGEND:

1. DARK GRAY TO DARK BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN FINE SAND (SP)
2. GRAY TO BROWN TO GRAYISH BROWN TO BROWNISH GRAY TO YELLOWISH BROWN FINE SAND (SP)
3. LIGHT GRAY TO LIGHT BROWN TO LIGHT GRAYISH BROWN TO LIGHT YELLOWISH BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP–SM)
4. GRAY TO GRAYISH BROWN TO DARK GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
5. LIGHT BROWN TO GRAY TO GRAYISH BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
6. LIGHT GRAY TO GRAY TO GRAYISH BROWN CLAY (CH)
7. DARK BROWN TO BLACK ORGANIC FINE SAND (SP)(PT)

A WITH PIECES OF CLAYEY FINE SAND

B WITH CEMENTED PIECES–HARDPAN TYPE

C ORGANICALLY STAINED

(SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL

1.0' DEPTH TO GROUNDWATER

GNE GROUNDWATER NOT ENCOUNTERED

N STANDARD PENETRATION RESISTANCE, IN BLOWS PER FOOT

WH BORING ADVANCED UNDER STATIC WEIGHT OF DRILL HAMMER & ROD

50/1" 50 HAMMER BLOWS TO ADVANCE SAMPLING TOOL ONE INCH

W MOISTURE CONTENT, IN PERCENT

–200 PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE

OC ORGANIC CONTENT, IN PERCENT

Kv VERTICAL COEFFICIENT OF PERMEABILITY, IN FEET PER DAY

Andreyev Engineering, Inc.

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

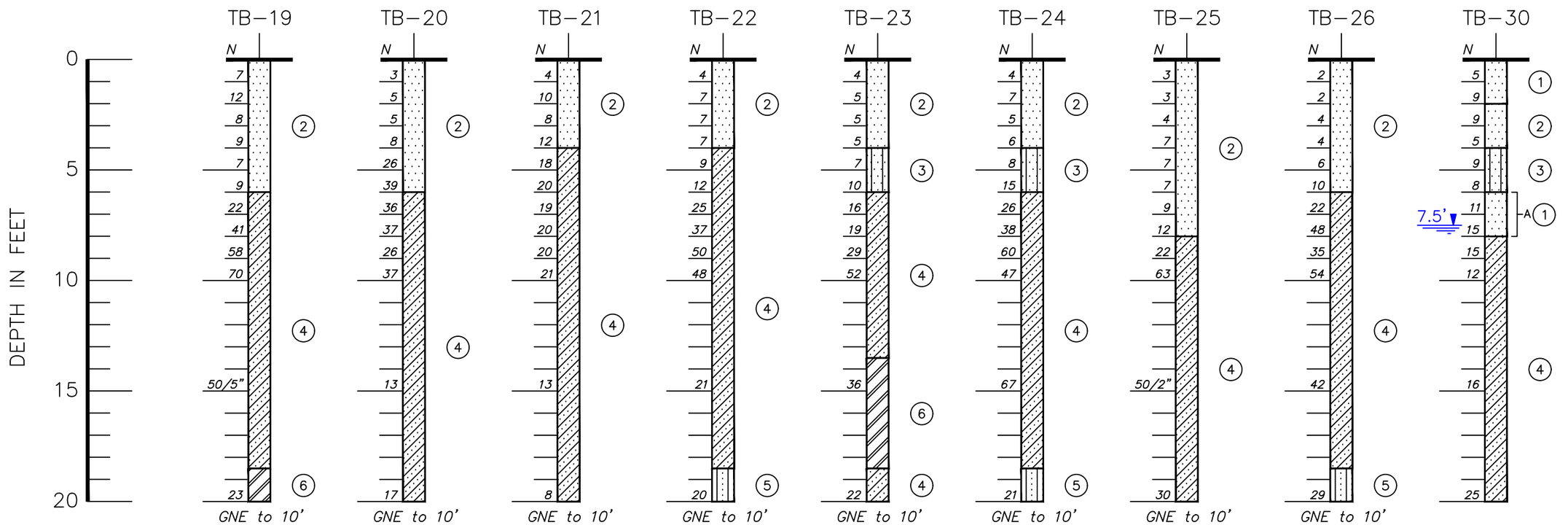
PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

FIGURE 5



LEGEND:

- ① DARK GRAY TO DARK BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN FINE SAND (SP)
- ② GRAY TO BROWN TO GRAYISH BROWN TO BROWNISH GRAY TO YELLOWISH BROWN FINE SAND (SP)
- ③ LIGHT GRAY TO LIGHT BROWN TO LIGHT GRAYISH BROWN TO LIGHT YELLOWISH BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP–SM)
- ④ GRAY TO GRAYISH BROWN TO DARK GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
- ⑤ LIGHT BROWN TO GRAY TO GRAYISH BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
- ⑥ LIGHT GRAY TO GRAY TO GRAYISH BROWN CLAY (CH)
- ⑦ DARK BROWN TO BLACK ORGANIC FINE SAND (SP)(PT)
- A WITH PIECES OF CLAYEY FINE SAND
- B WITH CEMENTED PIECES–HARDPAN TYPE
- C ORGANICALLY STAINED
- *(SP)* UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL
- 1.0' DEPTH TO GROUNDWATER
- *GNE* GROUNDWATER NOT ENCOUNTERED

- *N* STANDARD PENETRATION RESISTANCE, IN BLOWS PER FOOT
- *WH* BORING ADVANCED UNDER STATIC WEIGHT OF DRILL HAMMER & ROD
- *50/1"* 50 HAMMER BLOWS TO ADVANCE SAMPLING TOOL ONE INCH
- *W* MOISTURE CONTENT, IN PERCENT
- *–200* PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE
- *OC* ORGANIC CONTENT, IN PERCENT
- *Kv* VERTICAL COEFFICIENT OF PERMEABILITY, IN FEET PER DAY

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

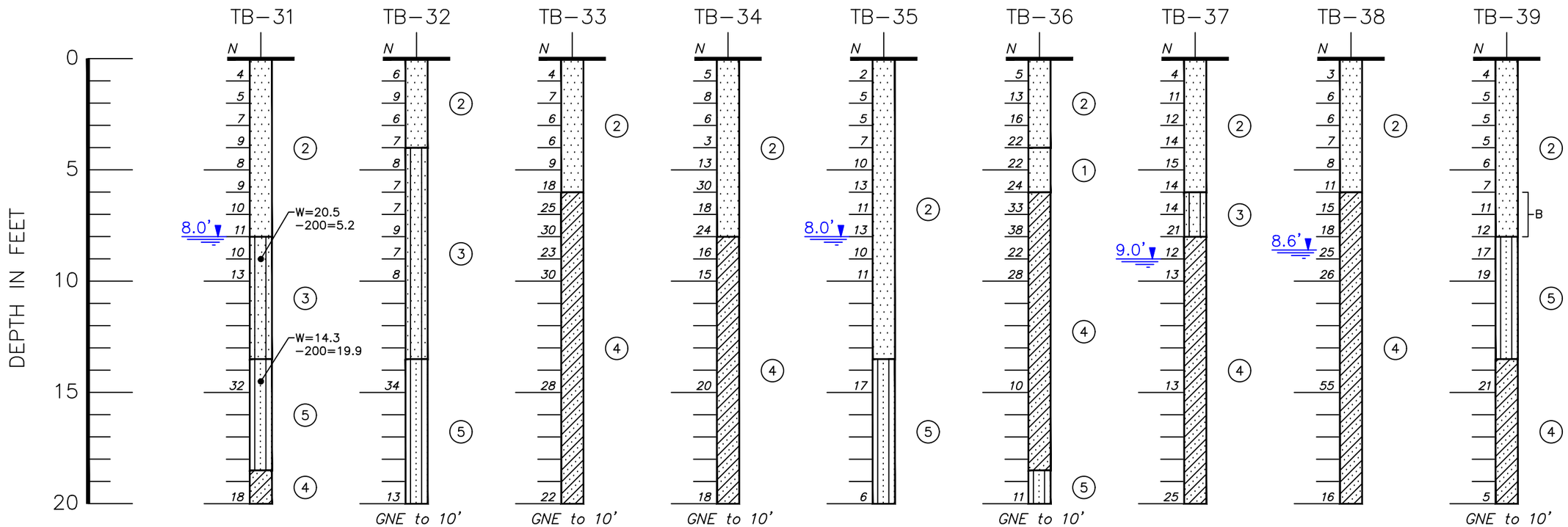
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

FIGURE 6



LEGEND:

1. DARK GRAY TO DARK BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN FINE SAND (SP)
2. GRAY TO BROWN TO GRAYISH BROWN TO BROWNISH GRAY TO YELLOWISH BROWN FINE SAND (SP)
3. LIGHT GRAY TO LIGHT BROWN TO LIGHT GRAYISH BROWN TO LIGHT YELLOWISH BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP–SM)
4. GRAY TO GRAYISH BROWN TO DARK GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
5. LIGHT BROWN TO GRAY TO GRAYISH BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
6. LIGHT GRAY TO GRAY TO GRAYISH BROWN CLAY (CH)
7. DARK BROWN TO BLACK ORGANIC FINE SAND (SP)(PT)

A WITH PIECES OF CLAYEY FINE SAND

B WITH CEMENTED PIECES–HARDPAN TYPE

C ORGANICALLY STAINED

(SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL

1.0' DEPTH TO GROUNDWATER

GNE GROUNDWATER NOT ENCOUNTERED

N STANDARD PENETRATION RESISTANCE, IN BLOWS PER FOOT

WH BORING ADVANCED UNDER STATIC WEIGHT OF DRILL HAMMER & ROD

50/1" 50 HAMMER BLOWS TO ADVANCE SAMPLING TOOL ONE INCH

W MOISTURE CONTENT, IN PERCENT

–200 PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE

OC ORGANIC CONTENT, IN PERCENT

Kv VERTICAL COEFFICIENT OF PERMEABILITY, IN FEET PER DAY

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

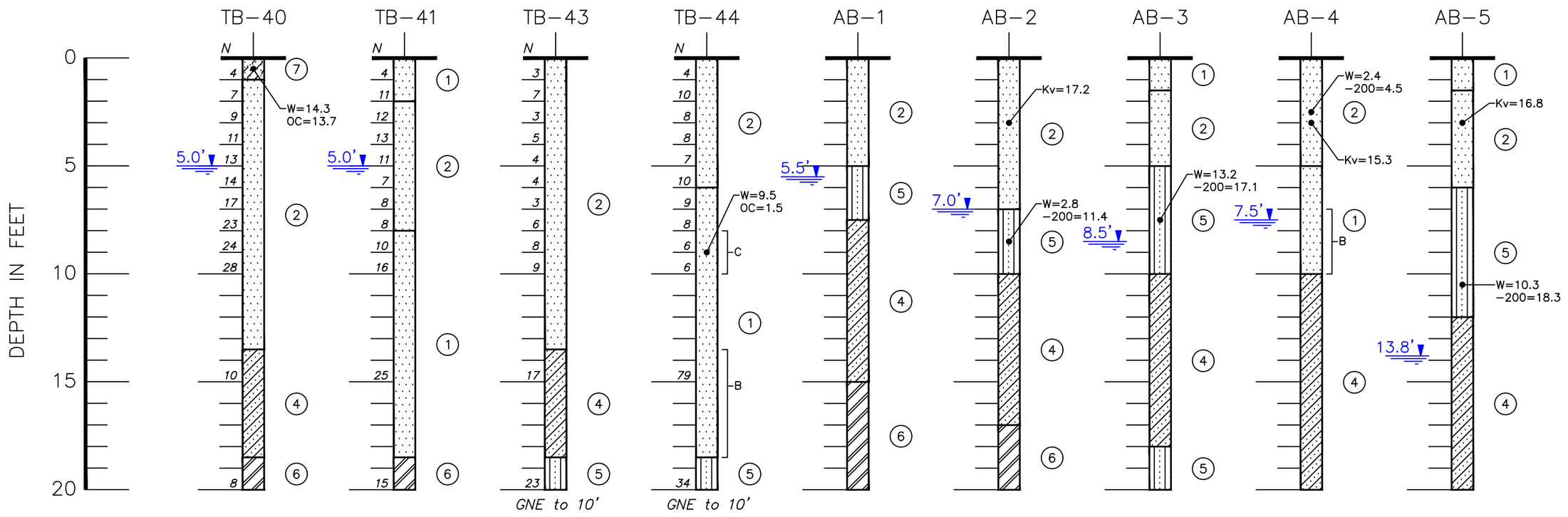
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

FIGURE 7



LEGEND:

1. DARK GRAY TO DARK BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN FINE SAND (SP)
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4. GRAY TO GRAYISH BROWN TO DARK GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
5. LIGHT BROWN TO GRAY TO GRAYISH BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
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Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

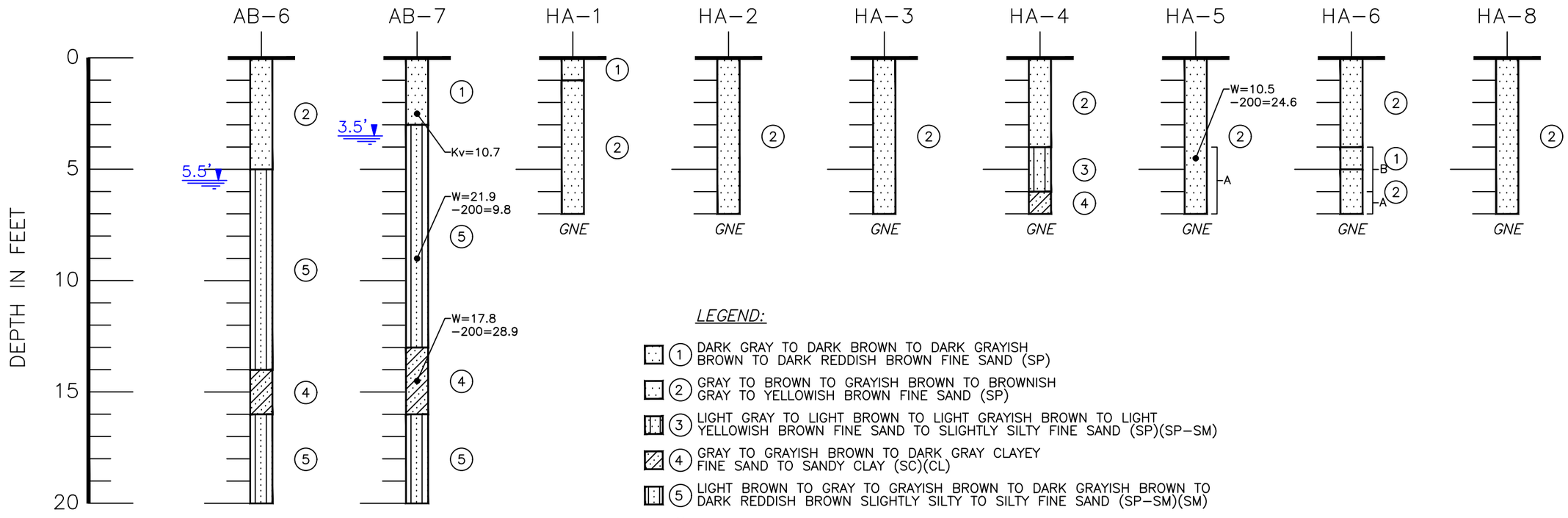
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

FIGURE 8



LEGEND:

1. DARK GRAY TO DARK BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN FINE SAND (SP)
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Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

FIGURE 9

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

DAVE SCHMITT ENGINEERING INC.

Drainage Calculations

Mid-Florida Logistics Park South
City of Apopka, Florida

(DSE Job No.: ANC-7)

Prepared By
Dave Schmitt Engineering, Inc.

Prepared For
-Blue Scope Properties Group, LLC
-Arco National Construction

City of Apopka
SJRWMD

March 2023

Revised April 2023

State of Florida Board of Professional
Engineers Certification of Authorization #27471

Drainage Calculations

Mid-Florida Logistics Park South
City of Apopka, Florida

Prepared For
-Blue Scope Properties Group, LLC
-Arco National Construction

Prepared By

Dave Schmitt Engineering, Inc.

DAVE SCHMITT LICENSE No. 48274 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally signed by
Dave M Schmitt
Date: 2023.06.19
15:32:31 -04'00'

Dave Schmitt, P.E
Fl. Reg. #48274

City of Apopka
SJRWMD

March 2023

Revised April 2023

12301 Lake Underhill Road, Suite 241, Orlando, Florida 32828 (407) 207-9088 State of Florida Board of Professional Engineers Certification of Authorization #27471

Drainage Calculations
Mid-Florida Logistics Park South
City of Apopka, Florida

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SECTION 1

Summary

Mid-Florida logistic park South is an industrial development on a 71 acres-site. The subject site is located west of FL-429 and south of General Electric Rd in Apopka, Orange County, Florida. Section: 12, Township: 21S, Range:27E as shown on location and aerial map in section 2The project site consists of the following parcel ID numbers:

12-21-27-0000-00-011, 12-21-27-0000-00-012, 12-21-27-0000-00-013, 12-21-27-0000-00-007 and 12-21-27-0000-00-008.

Parcel 12-21-27-0000-00-008 (6 acres) is used by CFX for pond Pond201-C. Arco and BlueScope would like to relocate the pond South so that the parcel could be used for building 1 as shown on the civil plans. CFX requested to provide the same parcel area of 6.0 ac and same pond volume. The calculations demonstrate that the relocated pond will function well.

The parcel is currently being annexed to the City of Apopka and will be transferred the new owners with an easement granted to CFX to maintain the existing/proposed structures and pipes. CFX was previously permitted by DEP and a pre-app was held on 02/08/23 to discuss the process and permitting of the new relocated pond.

Existing Conditions

The project site has a high point of elevation 109.3 ft at the North that currently drains to the Southwest of the site and then offsite towards Lake Apopka.

The soils encountered on the site area according to SCS/NSDA soil survey are Candler Apopka Fine Sands 6 (A), Molabar Fine Sand 23 (A/D), Okeelanta Muck 25 (A/D), Pomello Fine Sand 34 (A), Sanibel Muck 42 (A/D), Tavares-Millhopper Fine Sand 47 (A) and Zolfo Fine Sand 54 (A). Please refer to the soils map located in section 2.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Map (FIRM), Panel numbers 12095C0125H and 12095C0120H effective date 2021-09-24 part of the property falls within zone AE with a base flood elevation of 68.3 feet NAVD and the rest of the areas are within zone X, with no risk of flooding. The flood plain falls in the wetland where no development is proposed.

For existing CFX pond, the soils encountered according to SCS/NSDA soil survey are Candler Apopka Fine Sands 6 (A) and Sanibel Muck 42 (A/D). CFX Pond201-C is currently receiving runoff from Basin 201-C with 25.59 ac, CN of 86 and TC of 36 min through a 36” RCP pipe into the MES structure at elevation of 74.71 ft. **(Approved CFX drainage calculations Refer to Appendix C- Post Development Hydrology/Routings: page 3 of 32).** The pond is controlled with a type D (37” x 49”) control structure OF-C. The top of the control structure is set at 1 ft below the top of the pond at elevation 80 ft. The weir 5” x 45.6” is set at the treatment elevation of 76.2 ft. The weir discharges through a 24” RCP pipe into a manhole S-71 and then to a spreader swale into the wetland to the South. **(Refer to approved CFX drainage calculations Appendix C- Post Development Hydrology/Routings: page 10 of 32).** CFX is currently reviewing our calculations and providing comments to address. The warehouse site development will be permitted with SJRWMD and the CFX pond relocation will be permitted by FDEP.

Post Development Conditions

The Mid-Florida Logistic Park South Project Consists of a mass grading for future development of two warehouse buildings with the required infrastructure. The stormwater of the project will be managed by a dry and a wet pond that ultimately will outfall towards Lake Apopka. The runoff from will be collected by the storm sewer system and conveyed to the proposed dry and wet pond. Weirs and control structures located in the stormwater pond will control the peak rate of discharge which must not exceed the pre development peak rate of discharge.

The Geotechnical Engineering Report was performed by Andreyev Engineering, Inc. The groundwater levels were determined and provided in 2 separate reports.

Design Criteria

The project falls within the jurisdictions of the St. Johns River Water Management District (SJRWMD), Orange County and The City of Apopka. The design of the proposed stormwater management system for the proposed site is in accordance with standards and criteria set forth by all jurisdictions.

Attenuation

SJRWMD / The City of Apopka:

All development must be designed, constructed and maintained to meet but not limited to the following minimum performance standards:
Retention volume shall be provided so that the post-development peak rate of discharge shall not exceed the pre-development peak rate of discharge for the mean annual storm (2.3 yr / 24 hr) and 25 yr / 24hr design storm event, having a rainfall depth of 8.5 inches. Also, the Lake Apopka nutrient treatment required removal.

Water Quality

SJRWMD / The City of Apopka:

Provided Water Quality Treatment Volume (WQTV) – Wet detention volume run-off from the greater of either the first 1 inch of rainfall over the entire drainage area or 2.5 inches of rainfall over the impervious area. the first 3 inches of rainfall over the impervious area (per the Wekiva basin requirement), whichever is greater.

Additionally, the water quality volume is also determined by the greater of the nutrient loading analysis (specifically phosphorus) or Wekiva basin requirement of 3 inches over the impervious for the required retention volume when a dry retention/ wet detention treatment is proposed.

A dry retention pond captures the first flush of stormwater runoff. The residence time calculations for the wet detention ponds ignore the volume that is captured and infiltrated by the dry retention pretreatment. Average daily rainfall for the wet season is used to determine the residence time.

The recovery orifices were sized such that no more than one half of the treatment volume is discharged in the first 24 hours. The dry retention recovery through percolation of the pretreatment volume as determined by the phosphorous loading analysis is no greater than 12 days.

Hydrologic Analysis

Hydrologic analyses were performed with Advanced ICPR by Streamline Technologies. Runoff hydrographs were developed, using the FL-mod Hydrograph Methodology, for the appropriate storm events.

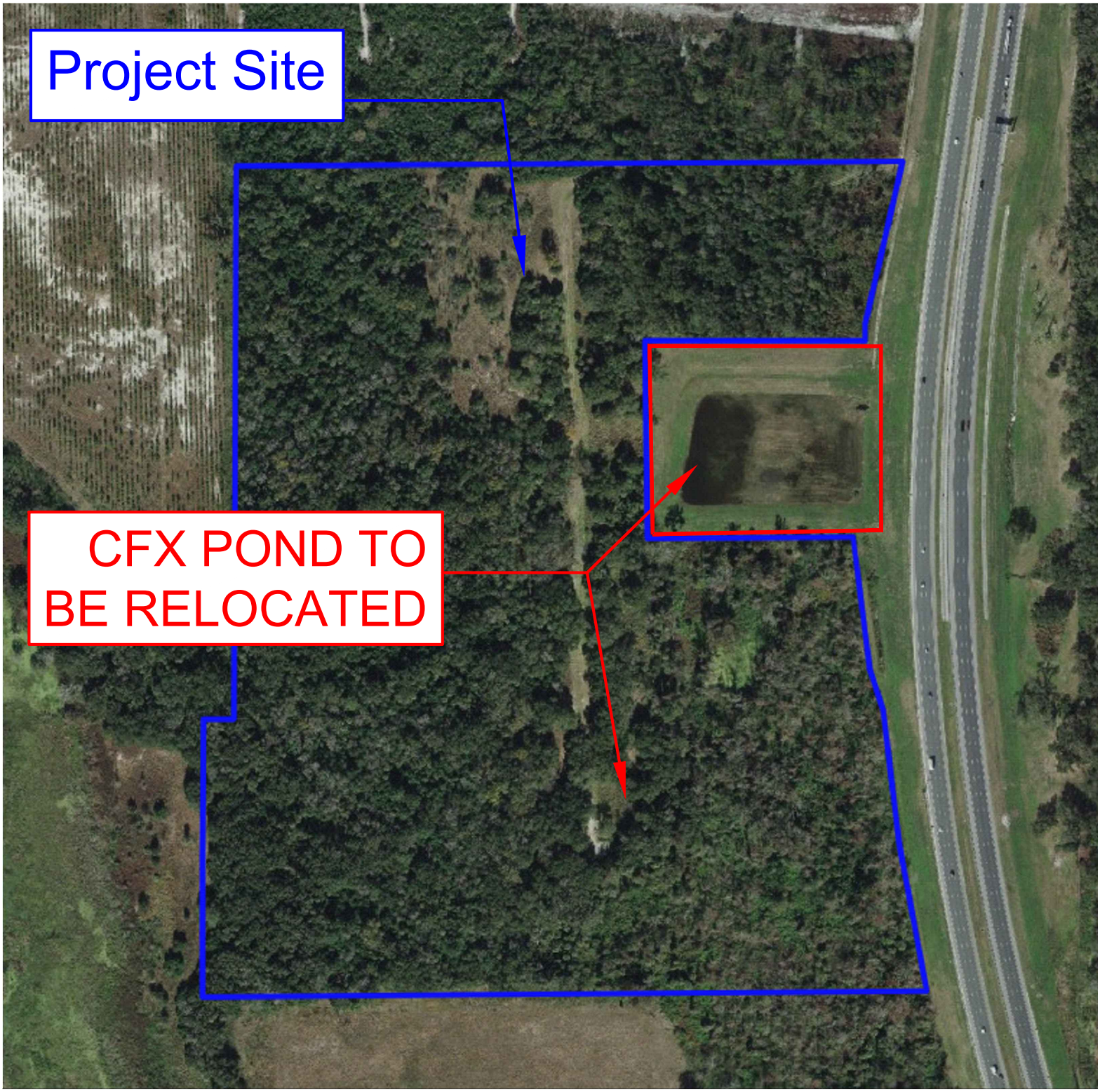
Drainage basins were defined by a combination of topographical survey, Orange County Aerial Maps, and field reconnaissance. See attached Pre and Post Development Basin Map.

The CN values were obtained from the Soil Conservation Service Technical Release 55 (SCS TR-55), June 1986, using a general hydrologic classification of the soils encountered in accordance with the USDA Soil Conservation Service.

The time of concentration values were developed from the information and methodologies outlined in the SCS TR-55.

A recovery analysis was performed using ICPR. For this analysis a separate ICPR routing was used which set the initial stage for each stormwater pond at the water quality treatment weir elevation. A 3-day routing was selected to determine the estimated recovery time for each of the ponds.

SECTION 2



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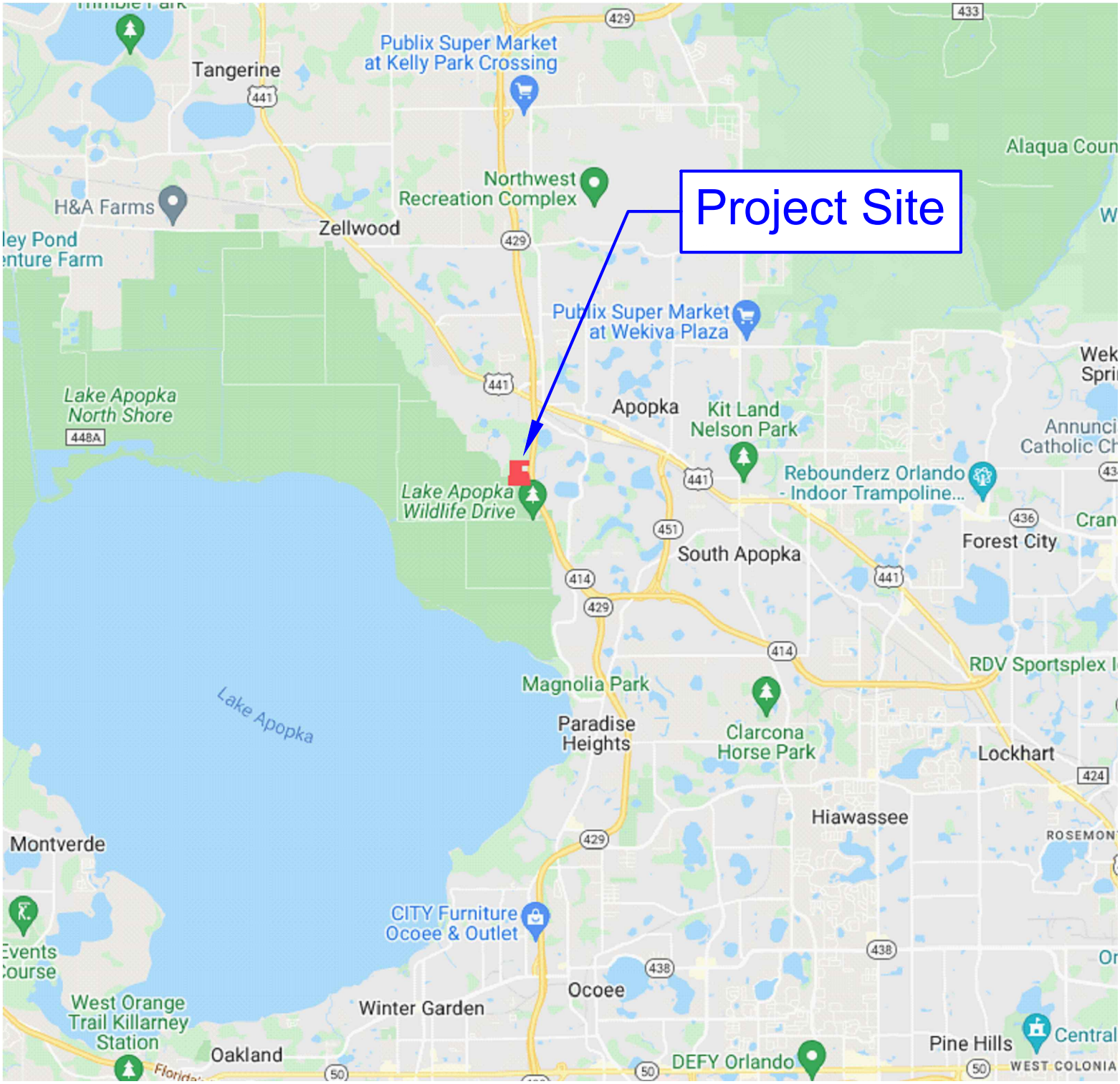
N

Mid-Florida Logistics Park South

City of Apopka, FL

Aerial Map



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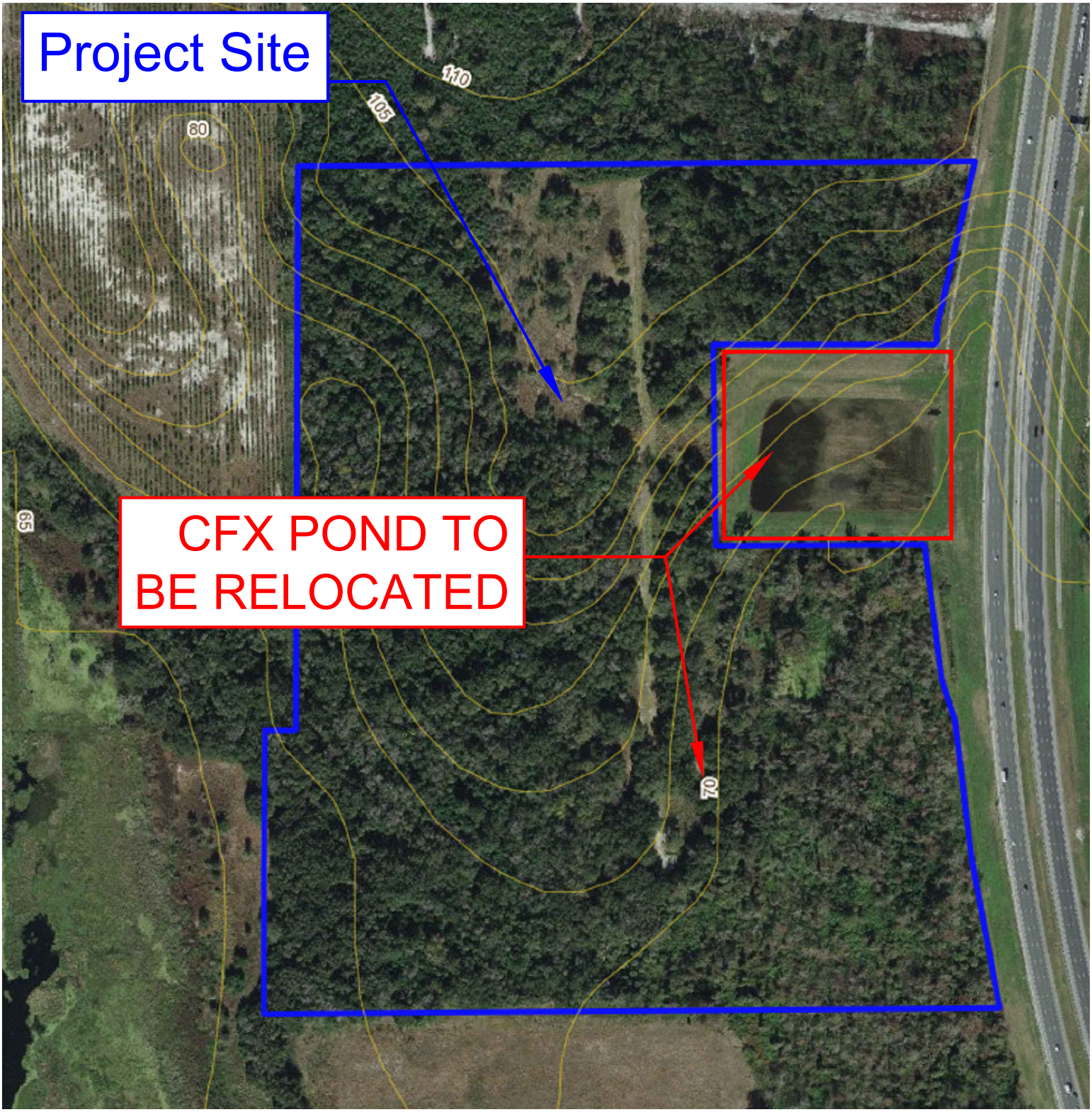
Mid-Florida Logistics Park South

City of Apopka, FL

Location Map



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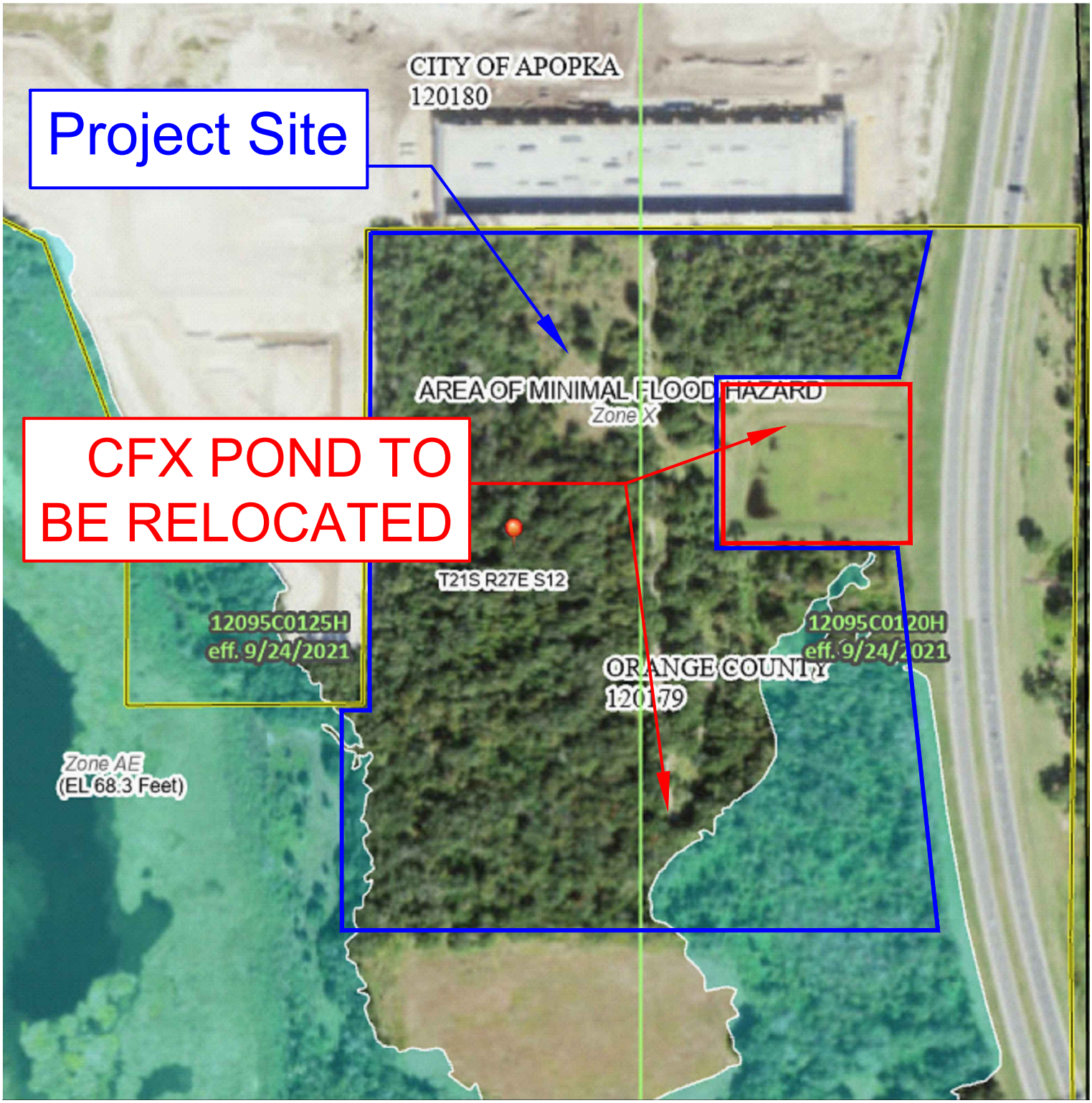
Mid-Florida Logistics Park

South

City of Apopka, FL

Contour Map



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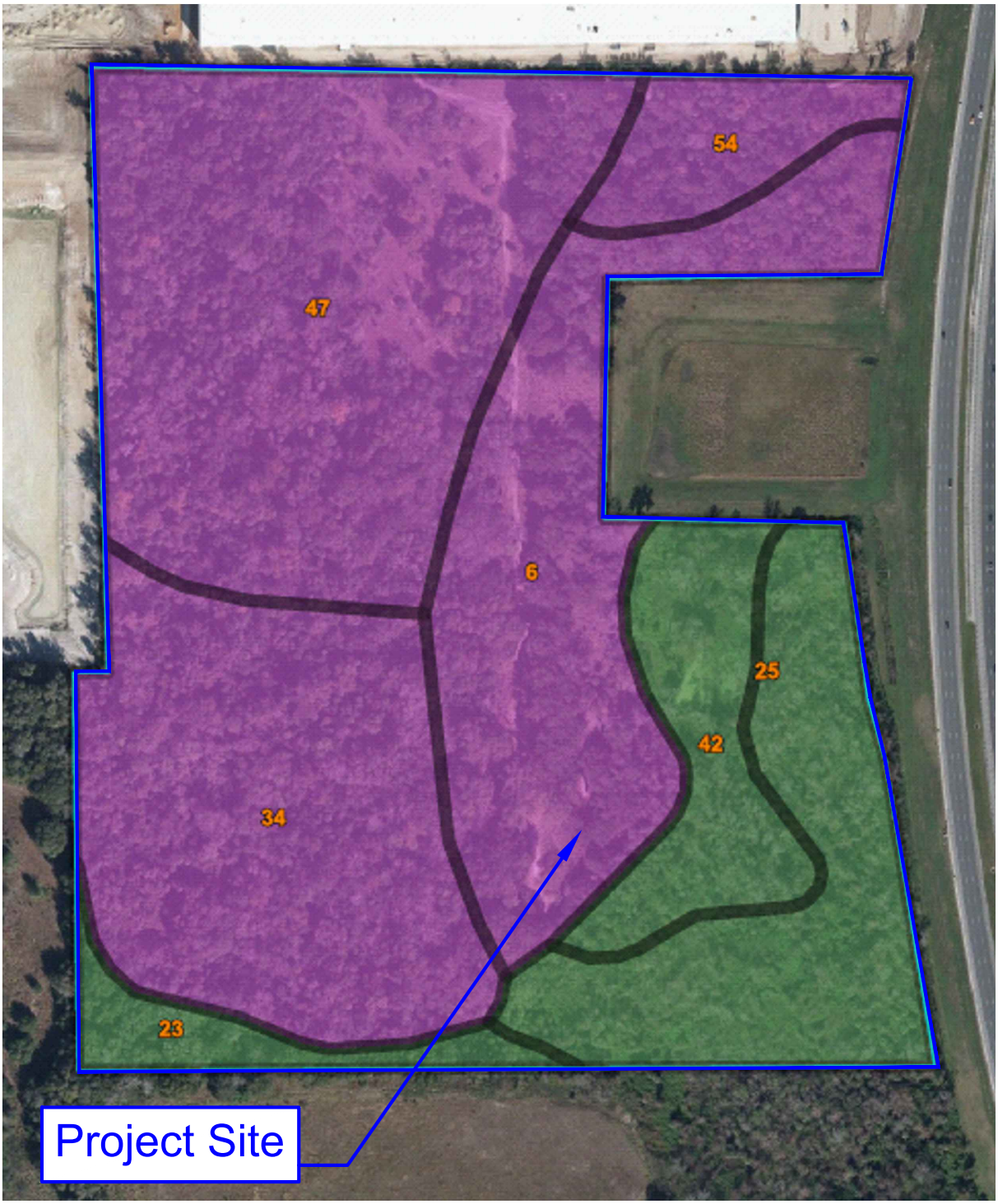
Mid-Florida Logistics Park South

City of Apopka, FL

FEMA Map



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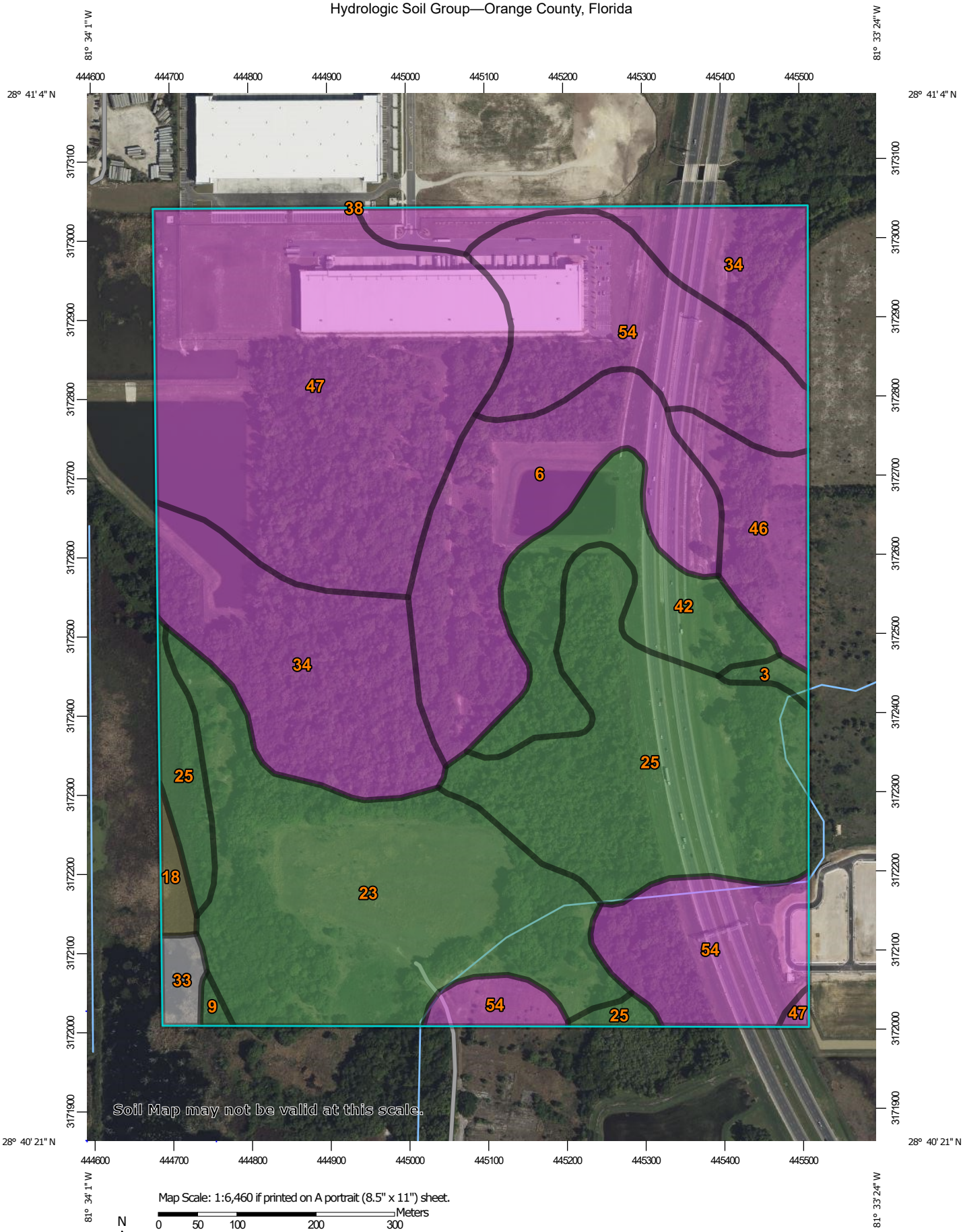
Mid-Florida Logistics Park South

City of Apopka, FL

Soils Map



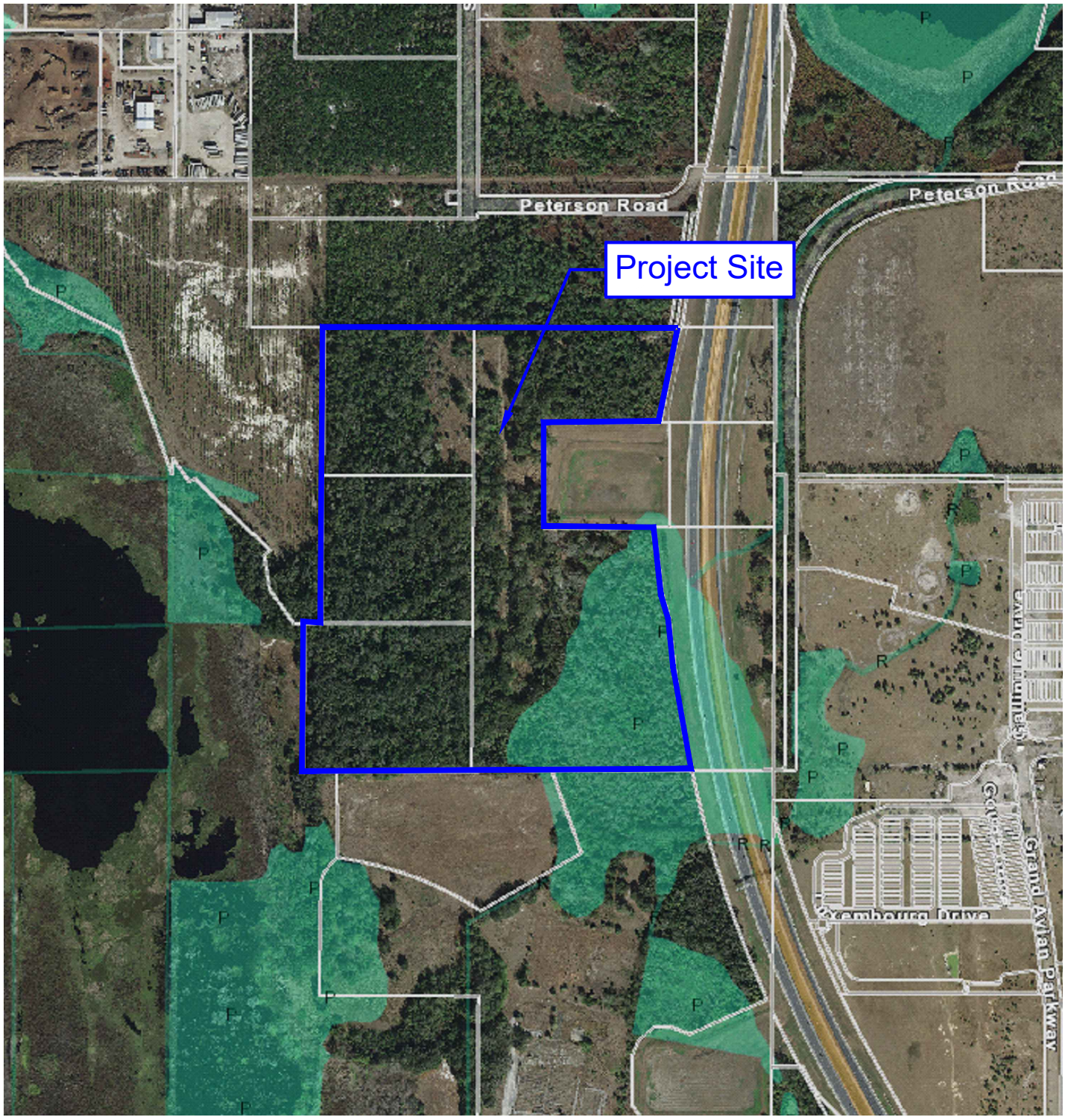
Map Scale: 1:6,460 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84



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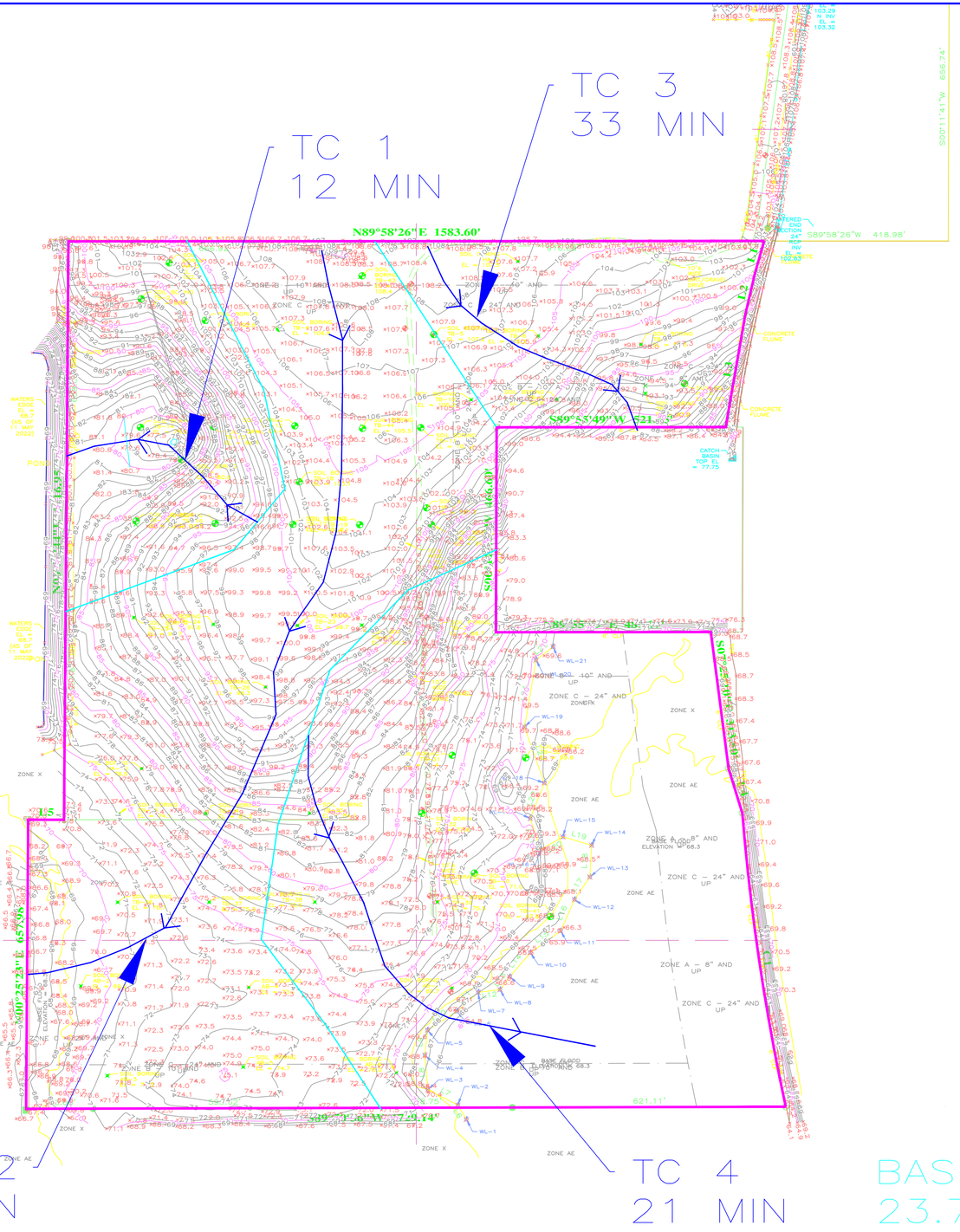
N

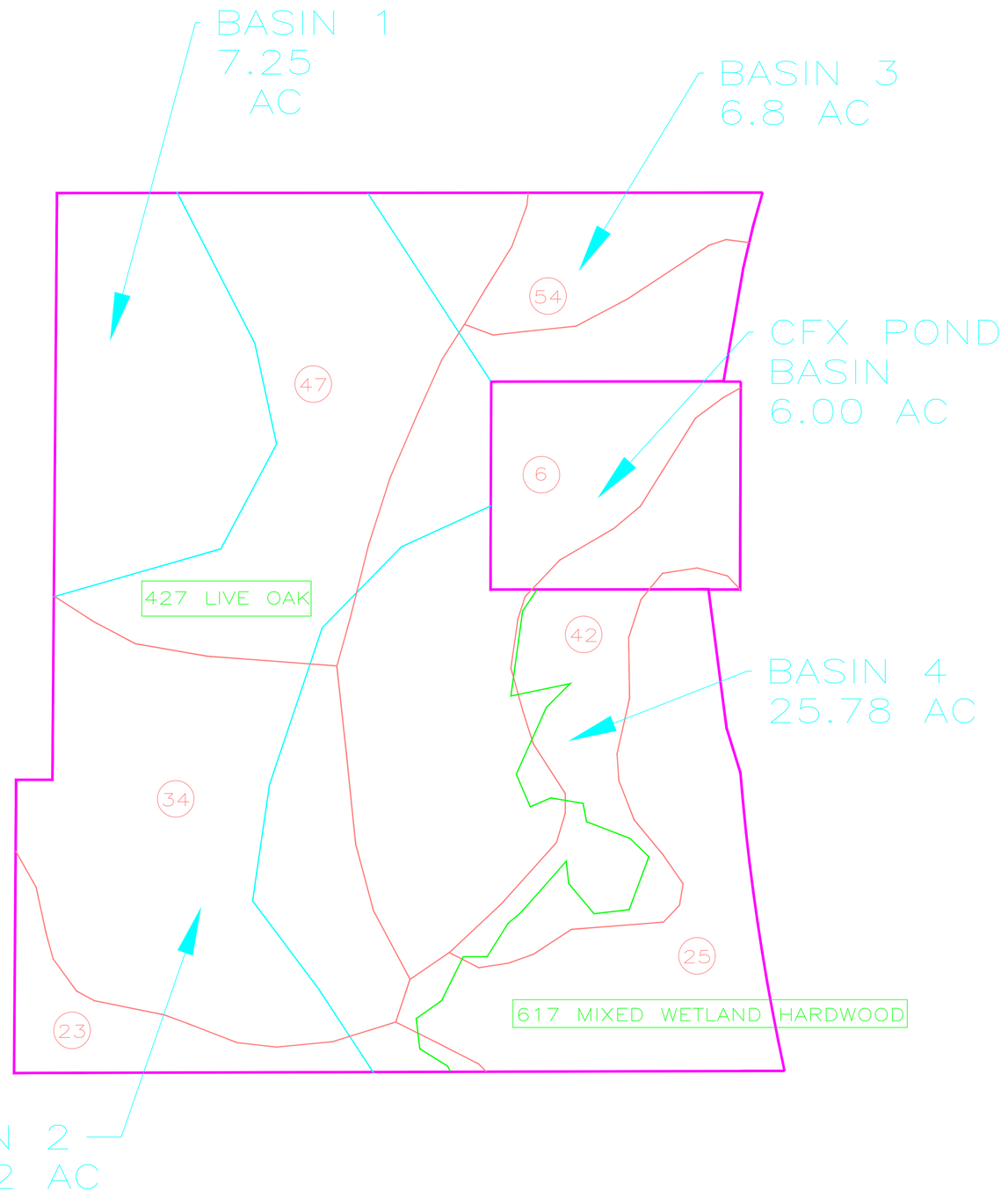
Mid-Florida Logistics Park South

City of Apopka, FL

Wetland Map

SECTION 3





F:\ANC7\Drainage\Drainage Calcs\Pre\PRE DEVELOPMENT BASIN MAP.dwg,9/29/2022 2:41:16 PM

DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

CONTRACTOR "AS-BUILTS"

I hereby state that these "As-Builts" were furnished to me by the contractor listed below. I, or an employee under my direct supervision have reviewed these "As-Builts" and believe them to be in compliance with my knowledge of what was actually constructed. This statement is based upon site observations of the construction.

Contractor _____ Engineer _____
Not valid without the signature and the original raised seal of a Florida Registered Engineer.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

PRE BASIN AND TC MAP

MID FLORIDA SOUTH LOGISTICS

Orange County, FL

DATE: SEPTEMBER 2022
PROJECT NO.: ANC-7
DRAWN BY: MACK
CHECKED BY: DSE
SCALE: N/A 1:150
SHEET: 01 OF 01

Mid-Florida Logistics Park South
PRE-DEVELOPMENT STORMWATER ANALYSIS
Basin Area, Curve Number, and Tc Summary

BASIN ID	AREA (ac)	CN	TC (min)
1	7.25	36	12
2	23.72	41	34
3	6.50	36	33
4	27.83	59	21
CFX	6.00		
Total	**71.30**		

Mid-Florida Logistics Park South
PRE-DEVELOPMENT STORMWATER ANALYSIS
Time of Concentration Calculations

BASIN	SHEET FLOW SLOPE ft/ft	SHEET FLOW LENGTH ft	MAN n	SHEET FLOW TIME min	SHALLOW CONC FLOW SLOPE ft/ft	SHALLOW CONC FLOW LENGTH ft	P or U	AVG. VEL. V ft/s	SHALLOW CON FLOW TIME min	PIPE FLOW LENGTH ft	PIPE FLOW min	TC min
1	0.0650	100	0.400	11.3	0.0833	186	U	4.658	0.7	0	0.0	12
2	0.0150	100	0.400	20.3	0.0221	1900	U	2.399	13.2	0	0.0	34
3	0.0060	100	0.400	29.3	0.0349	581	U	3.016	3.2	0	0.0	33
4	0.0380	100	0.400	14.0	0.0233	995	U	2.464	6.7	0	0.0	21

Kinematic Wave Equation (Sheet Flow), Shallow Conc. Flow & Pipe Flow (SCS TR-55):

t = 0.93*L^0.6*n^0.6/I^0.4*s^0.3 + L/60*V + L/60*V

t = overland flow travel time (minutes), L = overland flow length (ft.), n = manning's roughness coefficient
I = rainfall intensity (4.50 in/hr), s = average slope (ft/ft), V = average velocity (ft/s) = 20.3282(s^0.5) (paved) or 16.1345(s^0.5) (unpaved)
60=conversion factor from seconds to minutes

Mid-Florida Logistics Park South
PRE-DEVELOPMENT STORMWATER ANALYSIS
Basin Curve Number Calculations

Basin ID : 1
Total Acres: 7.25

Name	ID#	Soil Class	Cover Type	CN	% Area	Area	Factor
Tavares-Millhopper fine sands, 0 to 5 percent slopes	47	A	Woods	36	100.0%	7.25	261
					100.0%	7.3	
						Composite CN:	**36**

Basin ID : 2
Total Acres: 23.72

Name	ID#	Soil Class	Cover Type	CN	% Area	Area	Factor
Tavares-Millhopper fine sands, 0 to 5 percent slopes	47	A	Woods	36	42.6%	10.10	364
Candler-Apopka fine sands, 5 to 12 percent slopes	6	A	Woods	36	8.2%	1.95	70
Pomello fine sand, 0 to 5 percent slopes	34	A	Woods	36	45.3%	10.74	387
Malabar fine sand	23	A/D	Woods	79	11.4%	2.70	213
					107.5%	25.5	
						Composite CN:	**41**

Basin ID : 3
Total Acres: 6.50

Name	ID#	Soil Class	Cover Type	CN	% Area	Area	Factor
Tavares-Millhopper fine sands, 0 to 5 percent slopes	47	A	Woods	36	20.0%	1.30	47
Zolfo fine sand, 0 to 2 percent slopes	54	A	Woods	36	43.2%	2.81	101
Candler-Apopka fine sands, 5 to 12 percent slopes	6	A	Woods	36	36.8%	2.39	86
					100.0%	6.5	
						Composite CN:	**36**

Basin ID : 4
Total Acres: 27.83

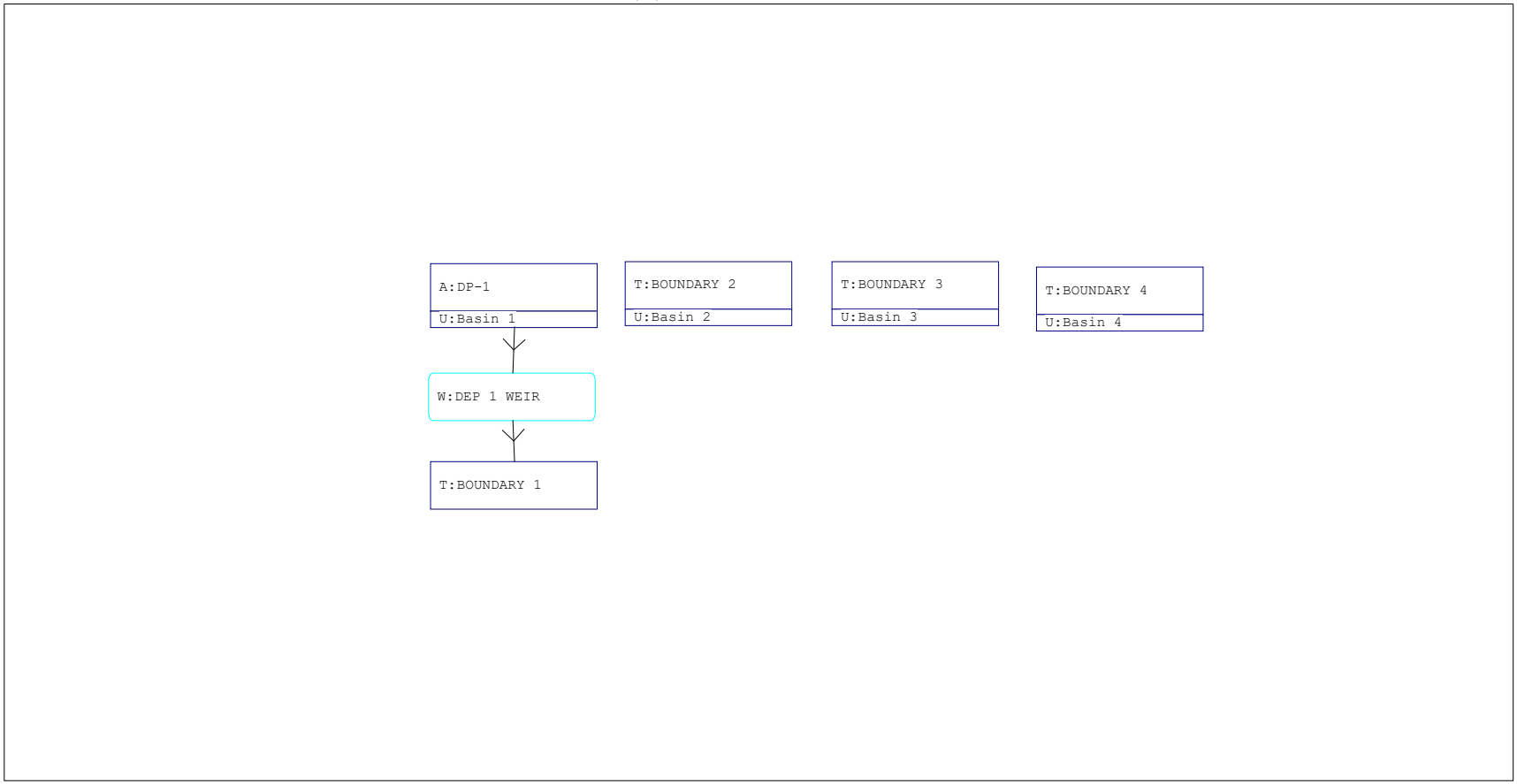
Name	ID#	Soil Class	Cover Type	CN	% Area	Area	Factor
Pomello fine sand, 0 to 5 percent slopes	34	A	Woods	36	13.2%	3.68	132
Tavares-Millhopper fine sands, 0 to 5 percent slopes	47	A	Woods	36	1.7%	0.47	17
Candler-Apopka fine sands, 5 to 12 percent slopes	6	A	Woods	36	30.5%	8.50	306
Sanibel muck	42	A/D	Woods	79	18.5%	5.14	406
Malabar fine sand	23	A/D	Woods	79	2.6%	0.72	57
Okeelanta muck	25	A/D	Woods	79	33.5%	9.31	735
					100.0%	27.8	
						Composite CN:	**59**

SECTION 4

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



F:\ANC7\Drainage\Ad ICPR\Pre\ANC-7 PRE.ICP

Basins

Name: Basin 1 | Node: DP-1 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph CN

Unit Hydrograph:	Uh323	Peaking Factor:	323.0
Rainfall File:		Storm Duration(hrs):	0.00
Rainfall Amount(in):	0.000	Time of Conc(min):	12.00
Area(ac):	7.250	Time Shift(hrs):	0.00
Curve Number:	36.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: Basin 2 | Node: BOUNDARY 2 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph CN

Unit Hydrograph:	Uh323	Peaking Factor:	323.0
Rainfall File:		Storm Duration(hrs):	0.00
Rainfall Amount(in):	0.000	Time of Conc(min):	34.00
Area(ac):	23.720	Time Shift(hrs):	0.00
Curve Number:	41.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: Basin 3 | Node: BOUNDARY 3 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph CN

Unit Hydrograph:	Uh323	Peaking Factor:	323.0
Rainfall File:		Storm Duration(hrs):	0.00
Rainfall Amount(in):	0.000	Time of Conc(min):	33.00
Area(ac):	6.500	Time Shift(hrs):	0.00
Curve Number:	36.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: Basin 4 | Node: BOUNDARY 4 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph CN

Unit Hydrograph:	Uh323	Peaking Factor:	323.0
Rainfall File:		Storm Duration(hrs):	0.00
Rainfall Amount(in):	0.000	Time of Conc(min):	21.00
Area(ac):	27.830	Time Shift(hrs):	0.00
Curve Number:	59.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Nodes

Name: BOUNDARY 1 | Base Flow(cfs): 0.000 | Init Stage(ft): 77.000
Group: BASE | Warn Stage(ft): 78.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	77.000
12.00	78.000
24.00	77.500

Name: BOUNDARY 2 | Base Flow(cfs): 0.000 | Init Stage(ft): 66.000
Group: BASE | Warn Stage(ft): 66.800
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	66.000
12.00	66.800
24.00	66.500

Name: BOUNDARY 3 Base Flow(cfs): 0.000 Init Stage(ft): 87.000
Group: BASE Warn Stage(ft): 88.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	87.000
12.00	88.000
24.00	87.500

Name: BOUNDARY 4 Base Flow(cfs): 0.000 Init Stage(ft): 64.000
Group: BASE Warn Stage(ft): 65.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	64.000
12.00	65.000
24.00	64.500

Name: DP-1 Base Flow(cfs): 0.000 Init Stage(ft): 75.300
Group: BASE Warn Stage(ft): 110.000
Type: Stage/Area

Stage(ft)	Area(ac)
75.300	0.0030
76.000	0.0120
77.000	0.0520
78.000	0.1250
79.000	0.2400
110.000	0.4200

Weirs

Name: DEP 1 WEIR From Node: DP-1
Group: BASE To Node: BOUNDARY 1
Flow: Both Count: 1
Type: Vertical: Mavis Geometry: Rectangular

Span(in): 114.00
Rise(in): 999.00
Invert(ft): 80.000
Control Elevation(ft): 80.000
TABLE
Bottom Clip(in): 0.000
Top Clip(in): 0.000
Weir Discharge Coef: 3.200
Orifice Discharge Coef: 0.600

Hydrology Simulations

Name: 100Y24H
Filename: F:\ANC7\Drainage\Ad ICPR\Pre\100Y24H.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsi-24
Rainfall Amount(in): 11.50

Time(hrs)	Print Inc(min)
24.000	15.00

Name: 10Y24H
Filename: F:\ANC7\Drainage\Ad ICPR\Pre\10Y24H.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsi-24
Rainfall Amount(in): 7.50

```
Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.00

------------------------------------------------------------------------------------------------------
         Name: 25Y24H
     Filename: F:\ANC7\Drainage\Ad ICPR\Pre\25Y24H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Scsi-24
    Rainfall Amount(in): 8.60

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.00

------------------------------------------------------------------------------------------------------
         Name: MEANFL
     Filename: F:\ANC7\Drainage\Ad ICPR\Pre\MEANFL.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Scsi-24
    Rainfall Amount(in): 4.40

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.00

==============================================================================================
==== Routing Simulations ======================================================================
==============================================================================================

         Name: 100Y24H             Hydrology Sim: 100Y24H
     Filename: F:\ANC7\Drainage\Ad ICPR\Pre\100Y24H.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.05000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 24.00
     Min Calc Time(sec): 2.0000              Max Calc Time(sec): 5.0000
        Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.000

Group           Run
--------------- -----
BASE            Yes


------------------------------------------------------------------------------------------------------
         Name: 10Y24H              Hydrology Sim: 10Y24H
     Filename: F:\ANC7\Drainage\Ad ICPR\Pre\10Y24H.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.05000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 24.00
     Min Calc Time(sec): 2.0000              Max Calc Time(sec): 5.0000
        Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.000

Group           Run
--------------- -----
BASE            Yes


------------------------------------------------------------------------------------------------------
         Name: 25Y24H              Hydrology Sim: 25Y24H
     Filename: F:\ANC7\Drainage\Ad ICPR\Pre\25Y24H.I32
```

```
      Execute: Yes         Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.05000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 24.00
     Min Calc Time(sec): 2.0000              Max Calc Time(sec): 5.0000
        Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.000

Group           Run
--------------- -----
BASE            Yes


-------------------------------------------------------------------------------------------------------
         Name: MEANFL              Hydrology Sim: MEANFL
     Filename: F:\ANC7\Drainage\Ad ICPR\Pre\MEANFL.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.05000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 24.00
     Min Calc Time(sec): 2.0000              Max Calc Time(sec): 5.0000
        Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.000

Group           Run
--------------- -----
BASE            Yes
```

Name:	Basin 1	Basin 2	Basin 3	Basin 4	Basin 1
Group:	BASE	BASE	BASE	BASE	BASE
Simulation:	100Y24H	100Y24H	100Y24H	100Y24H	10Y24H
Node:	DP-1	BOUNDARY 2	BOUNDARY 3	BOUNDARY 4	DP-1
Type:	SCS	SCS	SCS	SCS	SCS
Unit Hydrograph:	Uh323	Uh323	Uh323	Uh323	Uh323
Peaking Factor:	323.0	323.0	323.0	323.0	323.0
Spec Time Inc(min):	1.60	4.53	4.40	2.80	1.60
Comp Time Inc(min):	1.60	4.53	4.40	2.80	1.60
Rain File:	Scsi-24	Scsi-24	Scsi-24	Scsi-24	Scsi-24
Rain Amount(in):	11.500	11.500	11.500	11.500	7.500
Duration(hrs):	24.00	24.00	24.00	24.00	24.00
Status:	Onsite	Onsite	Onsite	Onsite	Onsite
TC(min):	12.00	34.00	33.00	21.00	12.00
Time Shift(hrs):	0.00	0.00	0.00	0.00	0.00
Area(ac):	7.250	23.720	6.500	27.830	7.250
Vol of Unit Hyd(in):	1.001	1.000	1.000	1.000	1.001
Curve Num:	36.000	41.000	36.000	59.000	36.000
DCIA(%):	0.000	0.000	0.000	0.000	0.000
Time Max(hrs):	10.08	10.28	10.34	10.13	11.04
Flow Max(cfs):	4.852	15.435	2.565	57.618	0.493
Runoff Volume(in):	2.455	3.226	2.453	5.992	0.717
Runoff Volume(ft3):	64601.248	277793.578	57873.355	605353.392	18857.564

Name:	Basin 2	Basin 3	Basin 4	Basin 1	Basin 2
Group:	BASE	BASE	BASE	BASE	BASE
Simulation:	10Y24H	10Y24H	10Y24H	25Y24H	25Y24H
Node:	BOUNDARY 2	BOUNDARY 3	BOUNDARY 4	DP-1	BOUNDARY 2
Type:	SCS	SCS	SCS	SCS	SCS
Unit Hydrograph:	Uh323	Uh323	Uh323	Uh323	Uh323
Peaking Factor:	323.0	323.0	323.0	323.0	323.0
Spec Time Inc(min):	4.53	4.40	2.80	1.60	4.53
Comp Time Inc(min):	4.53	4.40	2.80	1.60	4.53
Rain File:	Scsi-24	Scsi-24	Scsi-24	Scsi-24	Scsi-24
Rain Amount(in):	7.500	7.500	7.500	8.600	8.600
Duration(hrs):	24.00	24.00	24.00	24.00	24.00
Status:	Onsite	Onsite	Onsite	Onsite	Onsite
TC(min):	34.00	33.00	21.00	12.00	34.00
Time Shift(hrs):	0.00	0.00	0.00	0.00	0.00
Area(ac):	23.720	6.500	27.830	7.250	23.720
Vol of Unit Hyd(in):	1.000	1.000	1.000	1.001	1.000
Curve Num:	41.000	36.000	59.000	36.000	41.000
DCIA(%):	0.000	0.000	0.000	0.000	0.000
Time Max(hrs):	10.73	12.25	10.13	10.56	10.65
Flow Max(cfs):	3.100	0.388	24.710	1.087	5.496
Runoff Volume(in):	1.122	0.716	2.859	1.115	1.625
Runoff Volume(ft3):	96572.689	16888.228	288810.434	29355.445	139945.126

Name:	Basin 3	Basin 4	Basin 1	Basin 2	Basin 3
Group:	BASE	BASE	BASE	BASE	BASE
Simulation:	25Y24H	25Y24H	MEANFL	MEANFL	MEANFL
Node:	BOUNDARY 3	BOUNDARY 4	DP-1	BOUNDARY 2	BOUNDARY 3
Type:	SCS	SCS	SCS	SCS	SCS
Unit Hydrograph:	Uh323	Uh323	Uh323	Uh323	Uh323
Peaking Factor:	323.0	323.0	323.0	323.0	323.0
Spec Time Inc(min):	4.40	2.80	1.60	4.53	4.40
Comp Time Inc(min):	4.40	2.80	1.60	4.53	4.40
Rain File:	Scsi-24	Scsi-24	Scsi-24	Scsi-24	Scsi-24
Rain Amount(in):	8.600	8.600	4.400	4.400	4.400
Duration(hrs):	24.00	24.00	24.00	24.00	24.00
Status:	Onsite	Onsite	Onsite	Onsite	Onsite
TC(min):	33.00	21.00	12.00	34.00	33.00
Time Shift(hrs):	0.00	0.00	0.00	0.00	0.00
Area(ac):	6.500	27.830	7.250	23.720	6.500
Vol of Unit Hyd(in):	1.000	1.000	1.001	1.000	1.000
Curve Num:	36.000	59.000	36.000	41.000	36.000
DCIA(%):	0.000	0.000	0.000	0.000	0.000
Time Max(hrs):	11.15	10.13	23.52	23.50	23.61
Flow Max(cfs):	0.754	33.205	0.048	0.331	0.042
Runoff Volume(in):	1.114	3.672	0.038	0.145	0.038
Runoff Volume(ft3):	26293.340	370924.336	1008.094	12485.331	900.888

Name:	Basin 4
Group:	BASE
Simulation:	MEANFL
Node:	BOUNDARY 4
Type:	SCS
Unit Hydrograph:	Uh323
Peaking Factor:	323.0
Spec Time Inc(min):	2.80
Comp Time Inc(min):	2.80
Rain File:	Scsi-24
Rain Amount(in):	4.400

Duration(hrs):	24.00
Status:	Onsite
TC(min):	21.00
Time Shift(hrs):	0.00
Area(ac):	27.830
Vol of Unit Hyd(in):	1.000
Curve Num:	59.000
DCIA(%):	0.000
Time Max(hrs):	10.17
Flow Max(cfs):	5.031
Runoff Volume(in):	0.910
Runoff Volume(ft3):	91901.242

ANC-7 MID-FLORIDA LOGISTICS SOUTH
PRE-DEVELOPMENT NODE MIN MAX
3/2/2023

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
BOUNDARY 1	BASE	100Y24H	12.00	78.000	78.000	0.0001	0	13.56	1.297	0.00	0.000
BOUNDARY 2	BASE	100Y24H	12.00	66.800	66.800	0.0001	0	10.25	15.237	0.00	0.000
BOUNDARY 3	BASE	100Y24H	12.00	88.000	88.000	0.0001	0	10.50	2.530	0.00	0.000
BOUNDARY 4	BASE	100Y24H	12.00	65.000	65.000	0.0001	0	10.00	52.508	0.00	0.000
DP-1	BASE	100Y24H	13.56	80.122	110.000	0.0071	10738	10.00	4.244	13.56	1.297
BOUNDARY 1	BASE	10Y24H	12.00	78.000	78.000	0.0001	0	0.00	0.000	0.00	0.000
BOUNDARY 2	BASE	10Y24H	12.00	66.800	66.800	0.0001	0	10.75	3.100	0.00	0.000
BOUNDARY 3	BASE	10Y24H	12.00	88.000	88.000	0.0001	0	12.25	0.388	0.00	0.000
BOUNDARY 4	BASE	10Y24H	12.00	65.000	65.000	0.0001	0	10.25	22.282	0.00	0.000
DP-1	BASE	10Y24H	24.00	79.490	110.000	0.0031	10578	11.00	0.490	0.00	0.000
BOUNDARY 1	BASE	25Y24H	12.00	78.000	78.000	0.0001	0	23.18	0.443	0.00	0.000
BOUNDARY 2	BASE	25Y24H	12.00	66.800	66.800	0.0001	0	10.75	5.448	0.00	0.000
BOUNDARY 3	BASE	25Y24H	12.00	88.000	88.000	0.0001	0	11.00	0.749	0.00	0.000
BOUNDARY 4	BASE	25Y24H	12.00	65.000	65.000	0.0001	0	10.25	29.695	0.00	0.000
DP-1	BASE	25Y24H	23.18	80.060	110.000	0.0054	10722	10.50	1.061	23.18	0.443
BOUNDARY 1	BASE	MEANFL	12.00	78.000	78.000	0.0001	0	0.00	0.000	0.00	0.000
BOUNDARY 2	BASE	MEANFL	12.00	66.800	66.800	0.0001	0	23.50	0.331	0.00	0.000
BOUNDARY 3	BASE	MEANFL	12.00	88.000	88.000	0.0001	0	23.50	0.042	0.00	0.000
BOUNDARY 4	BASE	MEANFL	12.00	65.000	65.000	0.0001	0	10.25	4.835	0.00	0.000
DP-1	BASE	MEANFL	24.00	76.669	110.000	0.0003	1688	23.50	0.048	0.00	0.000

SECTION 5

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Peak Stage and Discharge Summary Table

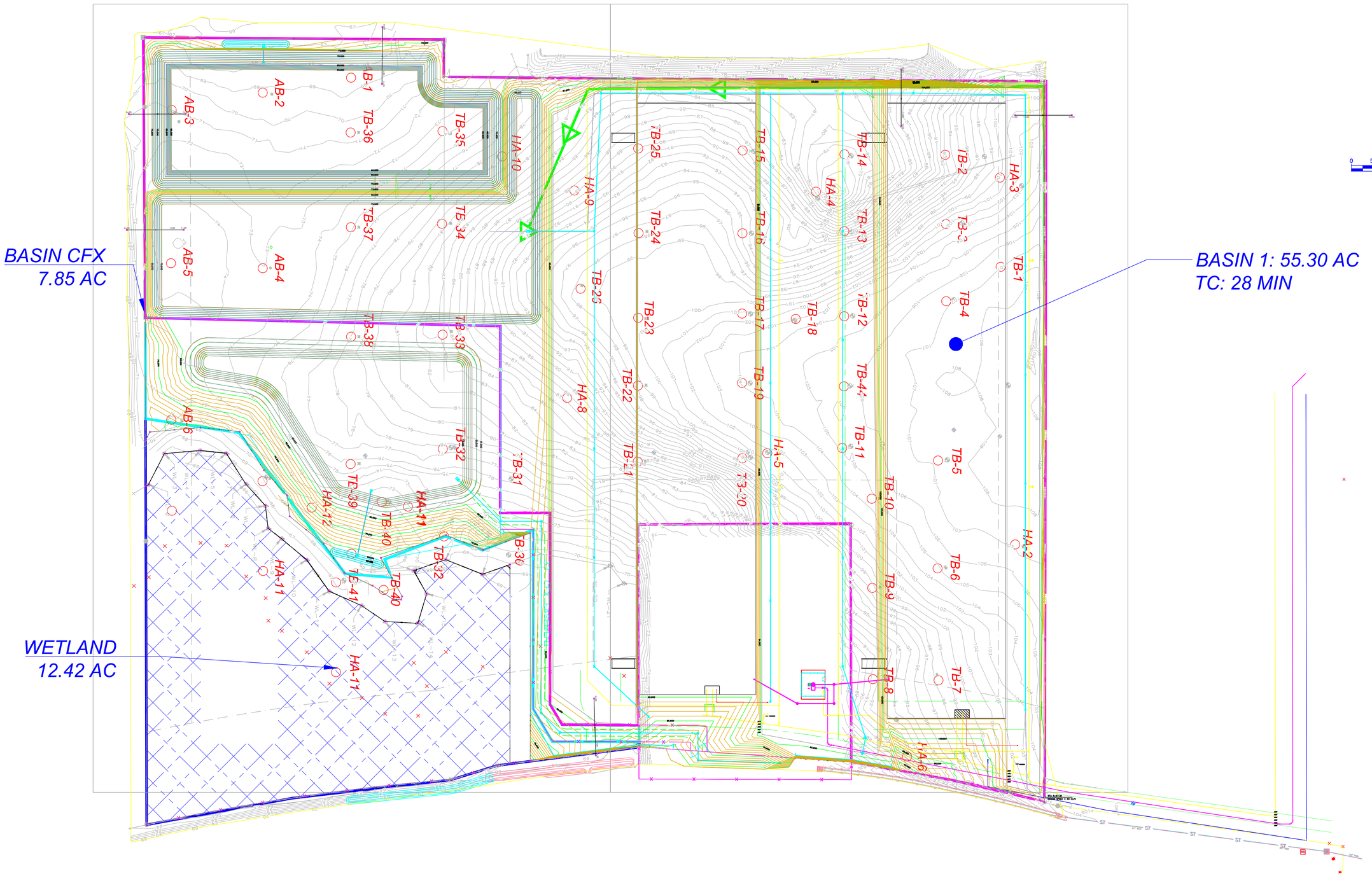
Routing Software used: ICPR3

Storm Frequency	Precipitation (in.)
Mean Annual-24 hr	4.50
10 yr - 24 hr	7.50
25 yr - 24 hr	8.50
100 yr - 24 hr	10.60

	Peak Post Stages	Peak Post Stages
Storm Frequency	Dry Pond	Wet Pond
Bottom/Control	75.00	67.00
Mean Annual - 24 hr	75.54	67.00
10 yr - 24 hr	77.15	67.00
25 yr - 24 hr	77.76	67.00
100 yr - 24 hr	78.81	67.31
TOB	80.00	73.00

Pre vs. Post Development Discharge

Storm Frequency	Pre-development (cfs)	Post-development (cfs)
Mean Annual - 24hr	0.00	0.00
10 yr - 24 hr	0.00	0.00
25 yr - 24 hr	0.44	0.00
100 yr - 24 hr	1.30	0.30



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DAVE SCHMITT ENGINEERING, INC.
12301 LAKE UNDERHILL ROAD
SUITE 241
ORLANDO, FL 32828
407-207-9088 FAX 407-207-9089
Certification of Authorization #27471

CONTRACTOR "AS-BUILTS"

I hereby state that these "As-Builts" were furnished to me by the contractor listed below. I, or an employee under my direct supervision have reviewed these "As-Builts" and believe them to be in compliance with my knowledge of what was actually constructed. This statement is based upon site observations of the construction.

Contractor_____ Engineer_____
Not valid without the signature and the original raised seal of a Florida Registered Engineer.

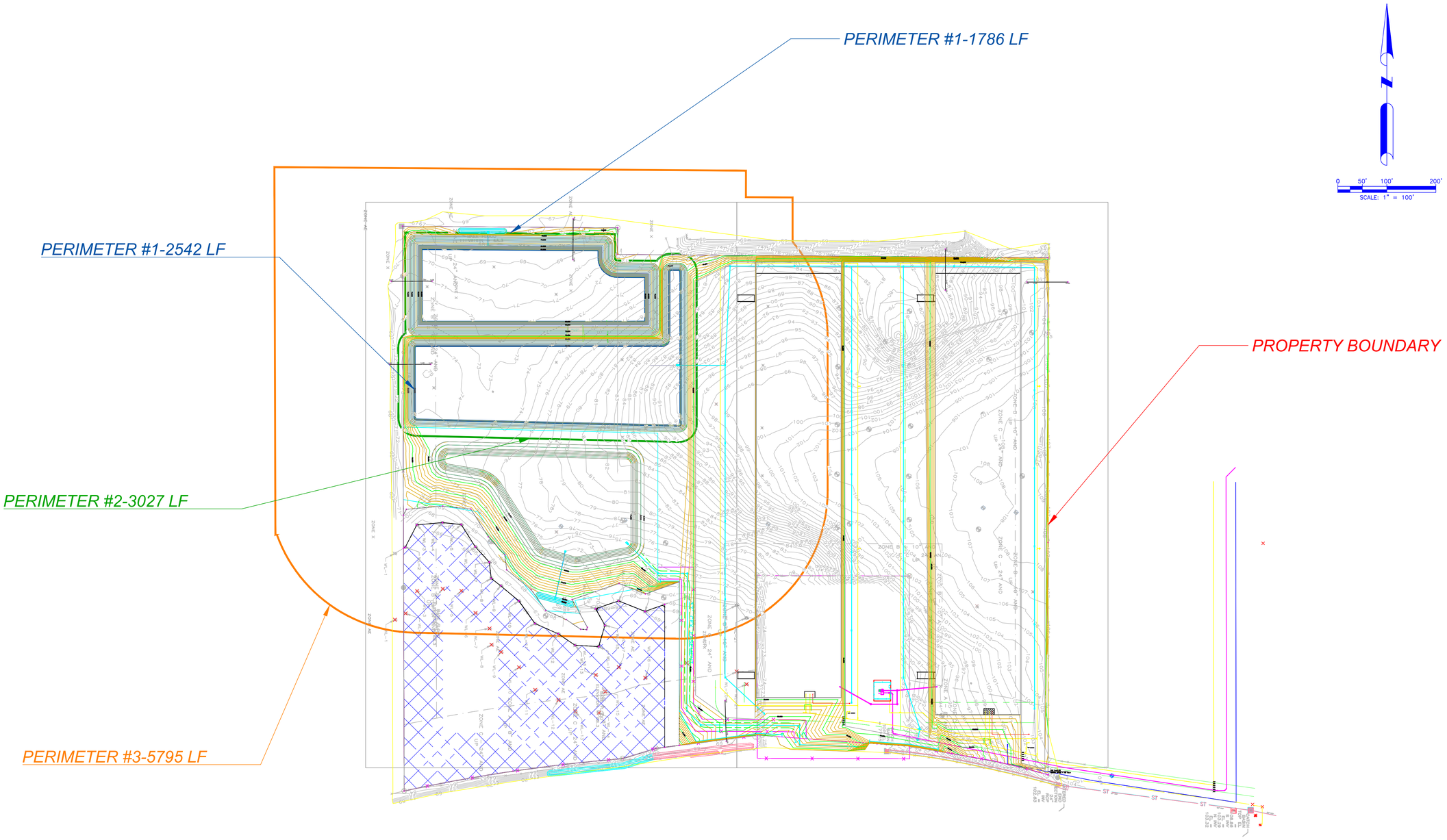
REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

POST DEVELOPMENT BASIN MAP

MID FLORIDA LOGISTICS SOUTH
CITY OF APOPKA, FL

DATE: MARCH 2023
PROJECT NO.: ANC-7
DRAWN BY: MACK
CHECKED BY: DSE
SCALE: 1"=100'
SHEET: 01 OF 01



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Contractor_____ Engineer_____
Not valid without the signature and the original raised seal of a Florida Registered Engineer.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

PERCOLATION RINK EXHIBIT

MID FLORIDA LOGISTICS SOUTH
CITY OF APOPKA, FL

DATE: MARCH 2023
PROJECT NO.: ANC-7
DRAWN BY: MACK
CHECKED BY: DSE
SCALE: 1"=150'
SHEET: 01 OF 01

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Basin Area, Curve Number, and Tc Summary

BASIN #	AREA (ac)	CN	TC (min)
BASIN 1	45.20	93	28
CFX Tract	7.85		
Wetland	12.41		
TOTAL	**65.46**		

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Basin Impervious Area Calculations

		Pavement	Buildings	Pond			
Basin #	Basin Area (ac.)	Imperv. Area		Sub-Total Impervious (ac.)	NWL DRY Pond (ac.)	Total Impervious (ac.)	% Impervious
BASIN 1	45.20	31.81		31.81	4.54	36.34	80%

Basin 1 exluding CFX pond which is provided in section 9

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Basin Curve Number Calculations

Basin #	CN=98 Non-DCIA Impervious (ac)	Non-DCIA Impervious (% of Total)	CN=100 Pond (ac)	Pond (% of Total)	Pervious (ac)	Pervious (% of Total)	Pervious CN	Total (ac)	Non DCIA Composite CN
BASIN 1	**36.34**	65.7%	**4.54**	8%	**14.42**	26%	**43.0**	**55.30**	**84**

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Time of Concentration Calculations

BASIN	SHEET SLOPE FT/FT	SHEET FLOW L FT	MAN n	SHEET FLOW Tt MIN	SHALLOW CON SLOPE FT/FT	SHALLOW CON FLOW L FT	P or U	AVG. VEL. V FT/S	SHALLOW CON FLOW Tt MIN	PIPE FLOW L FT	PIPE FLOW Tt MIN	TC MIN
BASIN 1	0.0120	49	0.150	5.7	0.0120	171	P	2.227	1.3	2814	21.1	28

Kinematic Wave Equation (Sheet Flow), Shallow Conc. Flow & Pipe Flow (SCS TR-55):

t = 0.93*L^0.6*n^0.6/I^0.4*s^0.3 + L/60*V + L/60*V

t = overland flow travel time (minutes), L = overland flow length (ft.), n = mannings roughness coefficient
I = rainfall intensity (4.50 in/hr), s = average slope (ft/ft), V = average velocity (ft/s) = 20.3282(s^0.5) (paved) or 16.1345(s^0.5) (unpaved)
60=conversion factor from seconds to minutes

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Water Quality Calculations

Wekiva basin requires a Treatment Volume of 3 inches over the new impervious area.

					Water Quality		Wekiva W.Q.	Nutrient W.Q.				
Basin	Basin Area	Impervious Area	Dry Pond	Wet Pond	1 in x area	2.5 in x imp	3 in x imp	Phosphorus Runoff Required 4" x area	Water Quality Required in Dry	Water Quality Provided in Dry	Water Quality Required in Wet	Water Quality Provided in Wet
#	(ac)	(ac)	#	#	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)
BASIN 1	55.30	36.34	P1	P2	4.61	7.57	9.09	18.43	18.43	18.46	7.57	7.57

Note:
* The greater of Nutrient loading or Wekiva basin runoff is treated in dry retention ponds
** Water Quality Volume is treated in wet detention pond.
** 99% Removal Efficiency Required --> 4" over the area

Basin: 1
Drains to: ON-SITE DRY POND & WET POND

Pre-Development Nutrient Generation

Land Use	Area ac.	Loading g./ac-y	Total Loading kg./yr.	Treatment	Req'd Retention Over Basin Area	**Pollutant Removal Efficiency	Outflow Mass Loading (kg./yr.)
Open Land - Type A	52.30	0.004	0.209				0.209
Open Land - Type D	3.00	0.051	0.153				0.153
Total	55.30		0.36				0.362

* Table 11.7-3 (attached)

Post-Development Nutrient Generation

Land Use	Area ac.	Loading g./ac-y	Total Loading kg./yr.	Treatment	Req'd Retention Over Basin Area	**Pollutant Removal Efficiency	Outflow Mass Loading (kg./yr.)
Commercial Max 80% - Type A	43.40	0.899	39.017	Dry / wet	0.75	99.00%	0.390
Pond - Type A	8.90	0.040	0.356	Dry / wet	0.75	99.00%	0.004
Pond - Type D	3.00	0.051	0.153	Dry / wet	1.25	99.00%	0.002
Total	55.30		39.53		9.70	AC-FT	##### ####

* Table 11.7-3 (attached)

TABLE 11.7-3

MEAN ANNUAL LOADINGS OF TOTAL PHOSPHORUS FOR LAND USE TYPES IN THE LAKE APOPKA HYDROLOGIC BASIN

LAND USE CATEGORY	MEAN ANNUAL TOTAL PHOSPHORUS LOAD (kg/ac-yr)			
	HSG A	HSG B	HSG C	HSG D
Low-Density Residential (max. 15% impervious)	0.069	0.135	0.215	0.284
Single-Family Residential (max. 25% impervious)	0.227	0.286	0.383	0.465
Single-Family Residential (max. 40% impervious)	0.250	0.333	0.446	0.536
Multi-Family Residential (max. 65% impervious)	1.082	1.156	1.257	1.336
Commercial (max. 80% impervious)	0.899	0.916	0.943	0.964
Highway – max. 50% impervious Highway – max. 75% impervious	0.710 1.053	0.756 1.076	0.817 1.106	0.871 1.133
Agriculture – Pasture	0.026	0.118	0.239	0.347
Agriculture – Crops, Ornamentals, Nurseries	0.040	0.180	0.366	0.531
Agriculture – Groves	0.007	0.036	0.079	0.123
Open Land/Recreational/Fallow Groves and Cropland	0.004	0.017	0.035	0.051
Forests/Abandoned Tree Crops	0.004	0.021	0.045	0.070

HSG = Hydrologic Soil Group

Table 11.7-22
Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Commercial (max. 80% impervious) for Hydrologic Soil Group A

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	41	73	77	79
0.50	65	84	86	87
0.75	76	89	91	91
1.00	83	92	93	94
1.25	88	95	95	96
1.50	91	96	96	97
1.75	93	97	97	97
2.00	94	97	98	98
2.25	95	98	98	98
2.50	96	98	98	99
2.75	97	98	99	99
3.00	97	99	99	99
3.25	97	99	99	99
3.50	98	99	99	99
3.75	98	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Table 11.7-25
Removal Efficiencies for Total Phosphorus Using Various Treatment Options in Commercial (max. 80% impervious) for Hydrologic Soil Group D

Retention Depth (inches)	Annual Total P Removal (%)			
	Dry Retention[1]	Retention / Wet Detention[2]		
		t_d=7 days	t_d=14 days	t_d=21 days
0.25	39	72	76	78
0.50	61	82	85	86
0.75	73	87	89	90
1.00	79	90	92	93
1.25	84	93	94	94
1.50	88	94	95	96
1.75	90	96	96	97
2.00	92	96	97	97
2.25	94	97	98	98
2.50	94	97	98	98
2.75	95	98	98	98
3.00	96	98	98	99
3.25	97	98	99	99
3.50	97	99	99	99
3.75	97	99	99	99
4.00	98	99	99	99

1. Dry retention alone.
2. Dry retention followed by wet detention with various residence times.

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Stage - Storage Calculations

Pond 1 (Dry)

ELEVATION (feet)	AREA (acres)	AVG AREA (acres)	DEPTH (feet)	STORAGE (ac-ft)	CUM STORAGE (ac-ft)
75.00	4.54				0.00
		4.63	1.00	4.63	
76.00	4.72				4.63
		4.82	1.00	4.82	
77.00	4.91				9.45
		5.01	1.00	5.01	
78.00	5.10				14.45
		5.20	1.00	5.20	
79.00	5.30				19.65
		5.40	1.00	5.40	
80.00	5.50				25.05

Required Treatment Volume =	18.43	Ac-ft
Set Weir at or above =	78.77	feet
Weir Set at =	78.78	feet
Provided Treatment Volume =	18.46	Ac-ft

POND 2 (Wet)

ELEVATION (feet)	AREA (acres)	AVG AREA (acres)	DEPTH (feet)	STORAGE (ac-ft)	CUM STORAGE (ac-ft)
67.00	3.98				0.00
		4.05	1.00	4.05	
68.00	4.12				4.05
		4.24	1.00	4.24	
69.00	4.35				8.29
		4.44	1.00	4.44	
70.00	4.53				12.73
		4.63	1.00	4.63	
71.00	4.72				17.35
		4.81	1.00	4.81	
72.00	4..9				22.16
		5.00	1.00	5.00	
73.00	5.10				27.16

Required Treatment Volume =	7.57	
Set Weir at or above (h1) =	68.83	feet
1/2 TV =	3.79	Ac-ft
Elevation at which 1/2 TV has recovered (h2) =	67.93	feet
Weir Set at =	68.83	feet
Provided Treatment Volume =	7.57	Ac-ft

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Permanent Pool Calculations

POND	WET		
BASIN AREA	55.30	ACRES	
IMPERVIOUS AREA	55.30	ACRES	
AVG RAINFALL	31	INCHES (JUNE-OCTOBER)	
WET SEASON	153	DAYS	
C - FACTOR	0.687		

ELEV (FEET)	AREA (ACRES)	AVG. AREA (ACRES)	INC. DEPTH (FEET)	INC. STORAGE (AC-FT)	CUM. STORAGE (AC-FT)
61.00	3.21	-	-	-	0.00
65.00	3.64	3.43	4.00	13.70	13.70
67.00	3.98	3.81	2.00	7.62	21.32

PERMANENT POOL AVAIL.= 21.32 AC-FT

AVERAGE DAILY RUNOFF VOLUME (USING 153 DAY RAINFALL PERIOD) =
(TOTAL AREA*C)(31"/153 DAYS)(1'/12") =
= 0.64 AC-FT

POND INFLOW =	0	CFD =	0.0000	AC-FT/DAY	
SEEPAGE INFLOW =	0	CFD =	0.0000	AC-FT/DAY	(POND INFLOW)
SEEPAGE INFLOW =	0	CFD =	0.0000	AC-FT/DAY	(UNDERDRAIN INFLOW)
TOTAL INFLOW =	0.64	AC-FT			

$$\text{RESIDENCE TIME} = \frac{\text{PERMANENT VOLUME AVAILABLE}}{\text{AVERAGE DAILY RUNOFF VOLUME}} = 33.2 \text{ DAYS}$$

RESIDENCE TIME = 33.2 > 14.0 DAYS O.K.

****
RESIDENCE TIME >= 21.0 DAYS,
NO LITTORAL ZONE REQUIRED
****

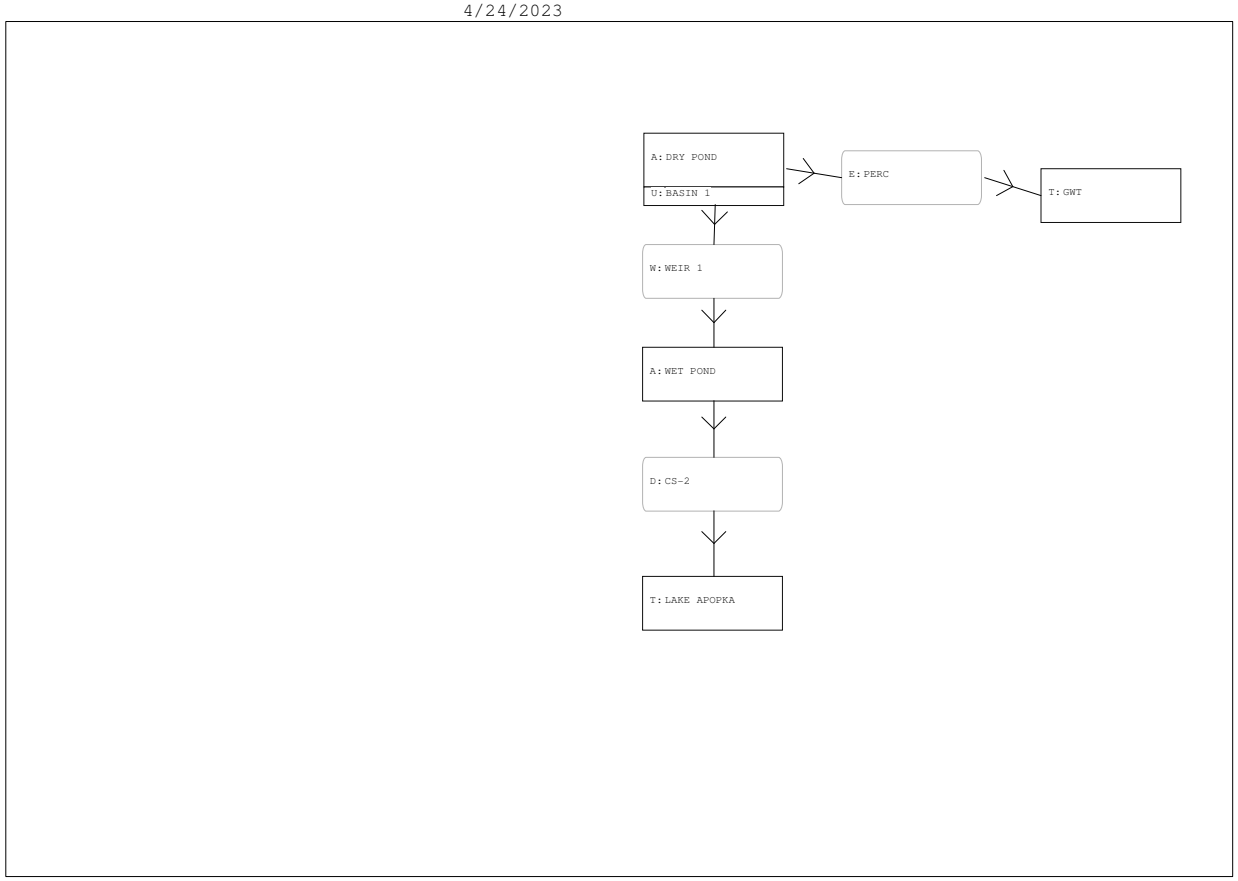
Mean Depth 5.36 feet

SECTION 6

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



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Basins

Name: BASIN 1 Node: DRY POND Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 28.00
Area(ac): 45.200 Time Shift(hrs): 0.00
Curve Number: 93.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Nodes

Name: DRY POND Base Flow(cfs): 0.000 Init Stage(ft): 75.000
Group: BASE Warn Stage(ft): 80.000
Type: Stage/Area

Stage(ft)	Area(ac)
75.000	4.5500
76.000	4.7900
77.000	5.0300
78.000	5.2700
79.000	5.5100
80.000	5.7600

Name: GWT Base Flow(cfs): 0.000 Init Stage(ft): 63.400
Group: BASE Warn Stage(ft): 63.400
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	63.400
30.00	63.400

Name: LAKE APOPKA Base Flow(cfs): 0.000 Init Stage(ft): 65.000
Group: BASE Warn Stage(ft): 65.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	65.000
12.00	65.000
24.00	65.000

Name: WET POND Base Flow(cfs): 0.000 Init Stage(ft): 67.000
Group: BASE Warn Stage(ft): 73.000
Type: Stage/Area

Stage(ft)	Area(ac)
67.000	3.9900
68.000	4.1700
69.000	4.3500
70.000	4.5300
71.000	4.7200
72.000	4.9100
73.000	5.1000

Drop Structures

Name: CS-2 From Node: WET POND Length(ft): 40.00
Group: BASE To Node: LAKE APOPKA Count: 1

UPSTREAM DOWNSTREAM Friction Equation: Automatic

Name:	BASIN 1	BASIN 1	BASIN 1	BASIN 1
Group:	BASE	BASE	BASE	BASE
Simulation:	100Y-24H	10Y-24H	25Y-24H	MEANFL
Node:	DRY POND	DRY POND	DRY POND	DRY POND
Type:	SCS	SCS	SCS	SCS
Unit Hydrograph:	Uh323	Uh323	Uh323	Uh323
Peaking Factor:	323.0	323.0	323.0	323.0
Spec Time Inc(min):	3.73	3.73	3.73	3.73
Comp Time Inc(min):	3.73	3.73	3.73	3.73
Rain File:	Scsii-24	Scsii-24	Scsii-24	Scsii-24
Rain Amount(in):	10.600	7.500	8.500	4.500
Duration(hrs):	24.00	24.00	24.00	24.00
Status:	Onsite	Onsite	Onsite	Onsite
TC(min):	28.00	28.00	28.00	28.00
Time Shift(hrs):	0.00	0.00	0.00	0.00
Area(ac):	45.200	45.200	45.200	45.200
Vol of Unit Hyd(in):	1.001	1.001	1.001	1.001
Curve Num:	93.000	93.000	93.000	93.000
DCIA(%):	0.000	0.000	0.000	0.000
Time Max(hrs):	12.20	12.20	12.20	12.20
Flow Max(cfs):	261.247	181.825	207.525	103.996
Runoff Volume(in):	9.748	6.667	7.659	3.708
Runoff Volume(ft3):	1599347.579	1093860.314	1256684.257	608355.146

ANC-7 MID-FLORIDA LOGISTIC PARK SOUTH
POST DEVELOPMENT-NODE MIN MAX
4/27/2023

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs
DRY POND	BASE	100Y-24H	19.86	78.803	80.000	0.0049	237955	12.25	249.240	12.83
DRY POND	BASE	10Y-24H	24.00	77.147	80.000	0.0032	220646	12.25	173.573	13.32
DRY POND	BASE	25Y-24H	24.00	77.762	80.000	0.0038	227072	12.25	198.056	13.25
DRY POND	BASE	MEANFL	12.89	75.537	80.000	0.0015	203817	12.25	99.438	12.89
LAKE APOPKA	BASE	100Y-24H	0.00	65.000	65.000	0.0000	0	24.00	0.309	0.00
LAKE APOPKA	BASE	10Y-24H	0.00	65.000	65.000	0.0000	0	0.00	0.000	0.00
LAKE APOPKA	BASE	25Y-24H	0.00	65.000	65.000	0.0000	0	0.00	0.000	0.00
LAKE APOPKA	BASE	MEANFL	0.00	65.000	65.000	0.0000	0	0.00	0.000	0.00
WET POND	BASE	100Y-24H	24.00	67.315	73.000	0.0001	176274	19.86	4.003	24.00
WET POND	BASE	10Y-24H	0.00	67.000	73.000	0.0000	173804	0.00	0.000	0.00
WET POND	BASE	25Y-24H	0.00	67.000	73.000	0.0000	173804	0.00	0.000	0.00
WET POND	BASE	MEANFL	0.00	67.000	73.000	0.0000	173804	0.00	0.000	0.00

Geometry:	Circular	Circular	Solution Algorithm: Most Restrictive
Span(in):	36.00	36.00	Flow: Both
Rise(in):	36.00	36.00	Entrance Loss Coef: 0.000
Invert(ft):	65.500	65.500	Exit Loss Coef: 1.000
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 3 for Drop Structure CS-2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	58.00	Invert(ft):	72.000
Rise(in):	52.00	Control Elev(ft):	72.000

*** Weir 2 of 3 for Drop Structure CS-2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	50.00	Invert(ft):	69.000
Rise(in):	42.00	Control Elev(ft):	69.000

*** Weir 3 of 3 for Drop Structure CS-2 ***

TABLE

Count:	3	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Circular	Orifice Disc Coef:	0.600
Span(in):	3.00	Invert(ft):	67.000
Rise(in):	3.00	Control Elev(ft):	67.000

==========
==== Weirs ==========
==========

Name:	WEIR 1	From Node:	DRY POND
Group:	BASE	To Node:	WET POND
Flow:	Both	Count:	1
Type:	Horizontal	Geometry:	Trapezoidal
Bottom Width(ft):	45.00		
Left Side Slope(h/v):	3.00		
Right Side Slope(h/v):	3.00		
Invert(ft):	78.780		
Control Elevation(ft):	78.780		
Struct Opening Dim(ft):	50.00		

TABLE

Bottom Clip(ft):	0.000
Top Clip(ft):	0.000
Weir Discharge Coef:	3.200
Orifice Discharge Coef:	0.600

==========
==== Percolation Links ==========
==========

Name:	PERC	From Node:	DRY POND	Flow:	Both
Group:	BASE	To Node:	GWT	Count:	1
Surface Area Option:	Vary based on Stage/Area Table				
Vertical Flow Termination:	Horizontal Flow Algorithm				
Aquifer Base Elev(ft):	62.900	Perimeter 1(ft):	2542.000		
Water Table Elev(ft):	66.400	Perimeter 2(ft):	3027.000		
Ann Recharge Rate(in/year):	0.000	Perimeter 3(ft):	5795.000		
Horiz Conductivity(ft/day):	25.000	Distance 1 to 2(ft):	50.000		
Vert Conductivity(ft/day):	17.200	Distance 2 to 3(ft):	450.000		
Effective Porosity(dec):	0.250	Num Cells 1 to 2:	10		
Suction Head(in):	4.170	Num Cells 2 to 3:	45		

Layer Thickness(ft): 8.600

==========
==== Hydrology Simulations ==========
==========

Name: 100Y-24H
Filename: F:\ANC7\Drainage\Ad ICPR\WMD REV_1\Post\100Y-24H.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsii-24
Rainfall Amount(in): 10.60

Time(hrs)	Print Inc(min)
24.000	15.00

Name: 10Y-24H
Filename: F:\ANC7\Drainage\Ad ICPR\WMD REV_1\Post\10Y-24H.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsii-24
Rainfall Amount(in): 7.50

Time(hrs)	Print Inc(min)
24.000	15.00

Name: 25Y-24H
Filename: F:\ANC7\Drainage\Ad ICPR\WMD REV_1\Post\25Y-24H.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsii-24
Rainfall Amount(in): 8.50

Time(hrs)	Print Inc(min)
24.000	15.00

Name: MEANFL
Filename: F:\ANC7\Drainage\Ad ICPR\WMD REV_1\Post\MEANFL.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsii-24
Rainfall Amount(in): 4.50

Time(hrs)	Print Inc(min)
24.000	15.00

==========
==== Routing Simulations ==========
==========

Name: 100Y-24H Hydrology Sim: 100Y-24H
Filename: F:\ANC7\Drainage\Ad ICPR\WMD REV_1\Post\100Y-24H.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.50000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
24.000	15.000

Group	Run
BASE	Yes

Name: 10Y-24H Hydrology Sim: 10Y-24H
Filename: F:\ANC7\Drainage\Ad ICPR\WMD REV_1\Post\10Y-24H.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.50000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
24.000	15.000

Group	Run
BASE	Yes

Name: 25Y-24H Hydrology Sim: 25Y-24H
Filename: F:\ANC7\Drainage\Ad ICPR\WMD REV_1\Post\25Y-24H.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.50000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
24.000	15.000

Group	Run
BASE	Yes

Name: MEANFL Hydrology Sim: MEANFL
Filename: F:\ANC7\Drainage\Ad ICPR\WMD REV_1\Post\MEANFL.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.50000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
30.000	15.000

Group	Run
BASE	Yes

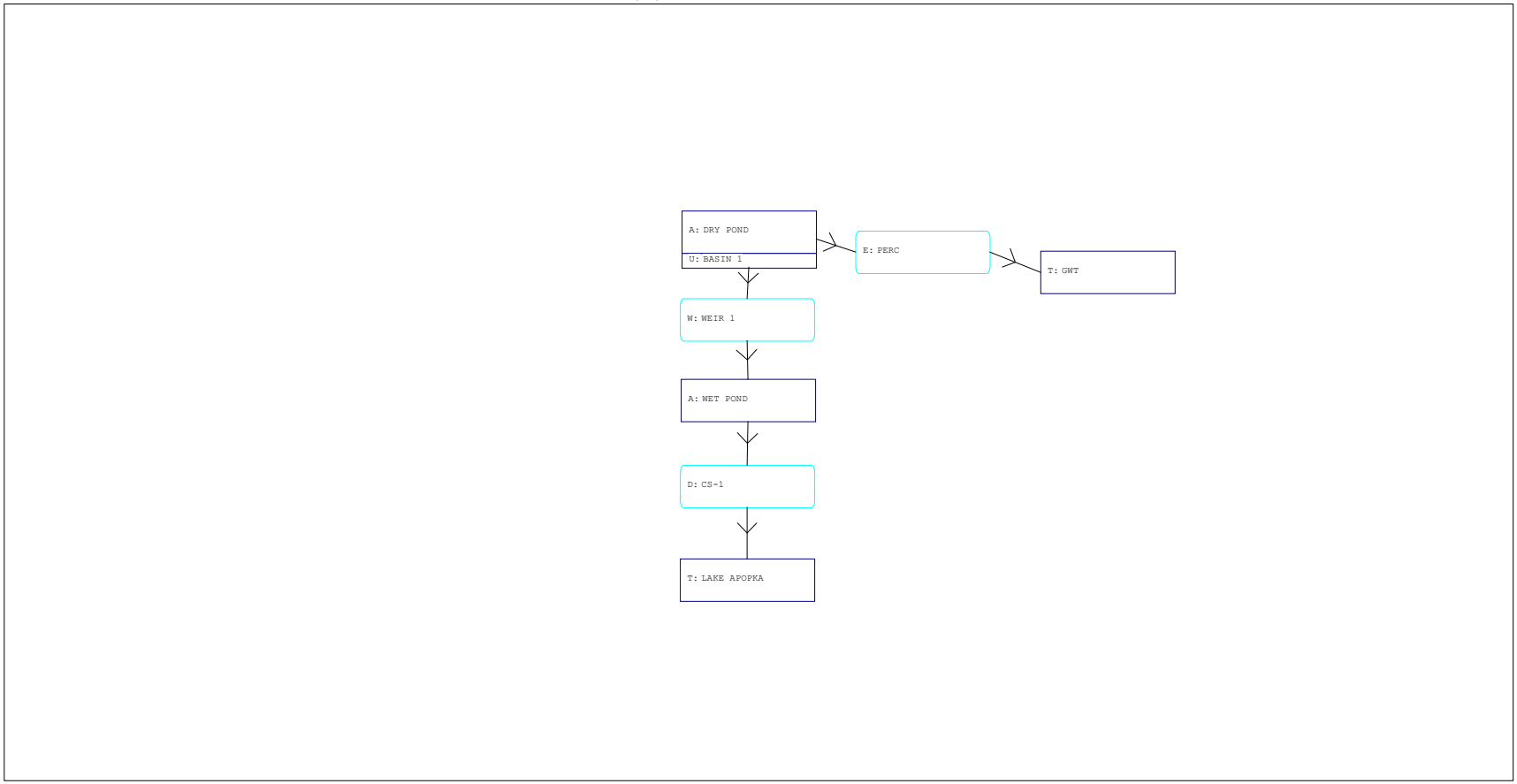
SECTION 7

ANC-7 MID-FLORIDA LOGISTIC PARK SOUTH
RECOVERY NETWORK
3/2/2023

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



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Basins

Name: BASIN 1 Node: DRY POND Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 28.00
Area(ac): 45.200 Time Shift(hrs): 0.00
Curve Number: 93.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Nodes

Name: DRY POND Base Flow(cfs): 0.000 Init Stage(ft): 78.780
Group: BASE Warn Stage(ft): 80.000
Type: Stage/Area

Stage(ft)	Area(ac)
75.000	4.5400
76.000	4.7200
77.000	4.9100
78.000	5.1000
79.000	5.3000
80.000	5.5000

Name: GWT Base Flow(cfs): 0.000 Init Stage(ft): 63.400
Group: BASE Warn Stage(ft): 63.400
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	63.400
30.00	63.400

Name: LAKE APOPKA Base Flow(cfs): 0.000 Init Stage(ft): 65.000
Group: BASE Warn Stage(ft): 65.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	65.000
12.00	65.000
24.00	65.000

Name: WET POND Base Flow(cfs): 0.000 Init Stage(ft): 69.000
Group: BASE Warn Stage(ft): 73.000
Type: Stage/Area

Stage(ft)	Area(ac)
67.000	3.9800
68.000	4.1200
69.000	4.3500
70.000	4.5300
71.000	4.7200
72.000	4.9000
73.000	5.1000

Drop Structures

Name: CS-2 From Node: WET POND Length(ft): 40.00
Group: BASE To Node: LAKE APOPKA Count: 1

UPSTREAM DOWNSTREAM Friction Equation: Automatic

Geometry:	Circular	Circular	Solution Algorithm: Most Restrictive
Span(in):	36.00	36.00	Flow: Both
Rise(in):	36.00	36.00	Entrance Loss Coef: 0.000
Invert(ft):	65.500	65.500	Exit Loss Coef: 1.000
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 3 for Drop Structure CS-2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	58.00	Invert(ft):	72.000
Rise(in):	52.00	Control Elev(ft):	72.000

*** Weir 2 of 3 for Drop Structure CS-2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	50.00	Invert(ft):	69.000
Rise(in):	42.00	Control Elev(ft):	69.000

*** Weir 3 of 3 for Drop Structure CS-2 ***

TABLE

Count:	3	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Circular	Orifice Disc Coef:	0.600
Span(in):	3.00	Invert(ft):	67.000
Rise(in):	3.00	Control Elev(ft):	67.000

==========
==== Weirs ==========
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Name:	WEIR 1	From Node:	DRY POND
Group:	BASE	To Node:	WET POND
Flow:	Both	Count:	1
Type:	Horizontal	Geometry:	Trapezoidal
Bottom Width(ft):	45.00		
Left Side Slope(h/v):	3.00		
Right Side Slope(h/v):	3.00		
Invert(ft):	78.780		
Control Elevation(ft):	78.780		
Struct Opening Dim(ft):	50.00		

TABLE

Bottom Clip(ft):	0.000
Top Clip(ft):	0.000
Weir Discharge Coef:	3.200
Orifice Discharge Coef:	0.600

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==== Percolation Links ==========
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Name:	PERC	From Node:	DRY POND	Flow:	Both
Group:	BASE	To Node:	GWT	Count:	1
Surface Area Option:	Vary based on Stage/Area Table				
Vertical Flow Termination:	Horizontal Flow Algorithm				
Aquifer Base Elev(ft):	62.900	Perimeter 1(ft):	2542.000		
Water Table Elev(ft):	66.400	Perimeter 2(ft):	3027.000		
Ann Recharge Rate(in/year):	0.000	Perimeter 3(ft):	5795.000		
Horiz Conductivity(ft/day):	25.000	Distance 1 to 2(ft):	50.000		
Vert Conductivity(ft/day):	17.200	Distance 2 to 3(ft):	450.000		
Effective Porosity(dec):	0.250	Num Cells 1 to 2:	10		
Suction Head(in):	4.170	Num Cells 2 to 3:	45		

Layer Thickness(ft): 8.600

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==== Routing Simulations ==========
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Name: Recovery Hydrology Sim: 25Y-24H
Filename: F:\ANC7\Drainage\Ad ICPR\WMD REV_1\Recovery\Recovery.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.50000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 72.00
Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
72.000	30.000

Group	Run
BASE	Yes

Simulation	Node	Group	Time	Stage	Warning Stage	Surface Area	Total Inflow	Total Outflow	Total Vol In	Total Vol Out
			hrs	ft	ft	ft2	cfs	cfs	af	af
Recovery	DRY POND	BASE	0.00	78.780	80.000	228951	0.000	0.000	0.00	0.00
Recovery	DRY POND	BASE	0.50	78.422	80.000	225830	0.000	44.957	0.00	0.93
Recovery	DRY POND	BASE	1.00	78.063	80.000	222708	0.000	44.335	0.00	2.77
Recovery	DRY POND	BASE	1.50	77.705	80.000	219715	0.000	43.739	0.00	4.59
Recovery	DRY POND	BASE	2.00	77.347	80.000	216749	0.000	43.149	0.00	6.39
Recovery	DRY POND	BASE	2.50	76.988	80.000	213783	0.000	42.559	0.00	8.16
Recovery	DRY POND	BASE	3.00	76.644	80.000	210933	0.000	27.011	0.00	9.60
Recovery	DRY POND	BASE	3.50	76.519	80.000	209895	0.000	9.339	0.00	10.35
Recovery	DRY POND	BASE	4.00	76.452	80.000	209347	0.000	6.555	0.00	10.68
Recovery	DRY POND	BASE	4.50	76.402	80.000	208929	0.000	5.307	0.00	10.92
Recovery	DRY POND	BASE	5.00	76.359	80.000	208579	0.000	4.564	0.00	11.13
Recovery	DRY POND	BASE	5.50	76.322	80.000	208271	0.000	4.057	0.00	11.30
Recovery	DRY POND	BASE	6.00	76.289	80.000	207995	0.000	3.684	0.00	11.46
Recovery	DRY POND	BASE	6.50	76.258	80.000	207742	0.000	3.394	0.00	11.61
Recovery	DRY POND	BASE	7.00	76.230	80.000	207507	0.000	3.161	0.00	11.75
Recovery	DRY POND	BASE	7.50	76.203	80.000	207287	0.000	2.969	0.00	11.87
Recovery	DRY POND	BASE	8.00	76.178	80.000	207079	0.000	2.806	0.00	11.99
Recovery	DRY POND	BASE	8.50	76.155	80.000	206883	0.000	2.666	0.00	12.10
Recovery	DRY POND	BASE	9.00	76.132	80.000	206695	0.000	2.544	0.00	12.21
Recovery	DRY POND	BASE	9.50	76.110	80.000	206516	0.000	2.437	0.00	12.32
Recovery	DRY POND	BASE	10.00	76.089	80.000	206343	0.000	2.341	0.00	12.41
Recovery	DRY POND	BASE	10.50	76.069	80.000	206177	0.000	2.255	0.00	12.51
Recovery	DRY POND	BASE	11.00	76.050	80.000	206017	0.000	2.178	0.00	12.60
Recovery	DRY POND	BASE	11.50	76.031	80.000	205862	0.000	2.107	0.00	12.69
Recovery	DRY POND	BASE	12.00	76.013	80.000	205712	0.000	2.043	0.00	12.78
Recovery	DRY POND	BASE	12.50	75.996	80.000	205568	0.000	1.983	0.00	12.86
Recovery	DRY POND	BASE	13.00	75.978	80.000	205434	0.000	1.928	0.00	12.94
Recovery	DRY POND	BASE	13.50	75.962	80.000	205303	0.000	1.878	0.00	13.02
Recovery	DRY POND	BASE	14.00	75.945	80.000	205176	0.000	1.830	0.00	13.09
Recovery	DRY POND	BASE	14.50	75.930	80.000	205051	0.000	1.786	0.00	13.17
Recovery	DRY POND	BASE	15.00	75.914	80.000	204930	0.000	1.745	0.00	13.24
Recovery	DRY POND	BASE	15.50	75.899	80.000	204811	0.000	1.706	0.00	13.31
Recovery	DRY POND	BASE	16.00	75.884	80.000	204694	0.000	1.669	0.00	13.38
Recovery	DRY POND	BASE	16.50	75.870	80.000	204581	0.000	1.634	0.00	13.45
Recovery	DRY POND	BASE	17.00	75.855	80.000	204469	0.000	1.602	0.00	13.52
Recovery	DRY POND	BASE	17.50	75.841	80.000	204359	0.000	1.571	0.00	13.58
Recovery	DRY POND	BASE	18.00	75.828	80.000	204252	0.000	1.541	0.00	13.65
Recovery	DRY POND	BASE	18.50	75.814	80.000	204146	0.000	1.513	0.00	13.71
Recovery	DRY POND	BASE	19.00	75.801	80.000	204043	0.000	1.487	0.00	13.77
Recovery	DRY POND	BASE	19.50	75.788	80.000	203941	0.000	1.461	0.00	13.83
Recovery	DRY POND	BASE	20.00	75.775	80.000	203840	0.000	1.437	0.00	13.89
Recovery	DRY POND	BASE	20.50	75.763	80.000	203742	0.000	1.413	0.00	13.95
Recovery	DRY POND	BASE	21.00	75.750	80.000	203645	0.000	1.391	0.00	14.01
Recovery	DRY POND	BASE	21.50	75.738	80.000	203549	0.000	1.370	0.00	14.07
Recovery	DRY POND	BASE	22.00	75.726	80.000	203455	0.000	1.349	0.00	14.12
Recovery	DRY POND	BASE	22.50	75.714	80.000	203362	0.000	1.329	0.00	14.18
Recovery	DRY POND	BASE	23.00	75.702	80.000	203270	0.000	1.310	0.00	14.23
Recovery	DRY POND	BASE	23.50	75.691	80.000	203180	0.000	1.292	0.00	14.29
Recovery	DRY POND	BASE	24.00	75.680	80.000	203091	0.000	1.274	0.00	14.34
Recovery	DRY POND	BASE	24.50	75.668	80.000	203003	0.000	1.257	0.00	14.39
Recovery	DRY POND	BASE	25.00	75.657	80.000	202916	0.000	1.241	0.00	14.44
Recovery	DRY POND	BASE	25.50	75.646	80.000	202830	0.000	1.225	0.00	14.50
Recovery	DRY POND	BASE	26.00	75.636	80.000	202745	0.000	1.209	0.00	14.55
Recovery	DRY POND	BASE	26.50	75.625	80.000	202662	0.000	1.194	0.00	14.60
Recovery	DRY POND	BASE	27.00	75.614	80.000	202579	0.000	1.180	0.00	14.64
Recovery	DRY POND	BASE	27.50	75.604	80.000	202497	0.000	1.166	0.00	14.69
Recovery	DRY POND	BASE	28.00	75.594	80.000	202416	0.000	1.152	0.00	14.74
Recovery	DRY POND	BASE	28.50	75.583	80.000	202337	0.000	1.139	0.00	14.79
Recovery	DRY POND	BASE	29.00	75.573	80.000	202258	0.000	1.126	0.00	14.83
Recovery	DRY POND	BASE	29.50	75.563	80.000	202179	0.000	1.113	0.00	14.88
Recovery	DRY POND	BASE	30.00	75.553	80.000	202102	0.000	1.101	0.00	14.93
Recovery	DRY POND	BASE	30.50	75.544	80.000	202026	0.000	1.089	0.00	14.97
Recovery	DRY POND	BASE	31.00	75.534	80.000	201950	0.000	1.077	0.00	15.02
Recovery	DRY POND	BASE	31.50	75.525	80.000	201875	0.000	1.066	0.00	15.06
Recovery	DRY POND	BASE	32.00	75.515	80.000	201801	0.000	1.055	0.00	15.10
Recovery	DRY POND	BASE	32.50	75.506	80.000	201728	0.000	1.044	0.00	15.15
Recovery	DRY POND	BASE	33.00	75.496	80.000	201655	0.000	1.033	0.00	15.19
Recovery	DRY POND	BASE	33.50	75.487	80.000	201583	0.000	1.023	0.00	15.23
Recovery	DRY POND	BASE	34.00	75.478	80.000	201512	0.000	1.013	0.00	15.28
Recovery	DRY POND	BASE	34.50	75.469	80.000	201441	0.000	1.003	0.00	15.32
Recovery	DRY POND	BASE	35.00	75.460	80.000	201371	0.000	0.993	0.00	15.36
Recovery	DRY POND	BASE	35.50	75.451	80.000	201302	0.000	0.984	0.00	15.40
Recovery	DRY POND	BASE	36.00	75.443	80.000	201233	0.000	0.974	0.00	15.44
Recovery	DRY POND	BASE	36.50	75.434	80.000	201165	0.000	0.965	0.00	15.48
Recovery	DRY POND	BASE	37.00	75.425	80.000	201098	0.000	0.956	0.00	15.52
Recovery	DRY POND	BASE	37.50	75.417	80.000	201031	0.000	0.947	0.00	15.56
Recovery	DRY POND	BASE	38.00	75.408	80.000	200965	0.000	0.939	0.00	15.60
Recovery	DRY POND	BASE	38.50	75.400	80.000	200899	0.000	0.930	0.00	15.64
Recovery	DRY POND	BASE	39.00	75.392	80.000	200834	0.000	0.922	0.00	15.67
Recovery	DRY POND	BASE	39.50	75.384	80.000	200769	0.000	0.914	0.00	15.71
Recovery	DRY POND	BASE	40.00	75.375	80.000	200705	0.000	0.906	0.00	15.75
Recovery	DRY POND	BASE	40.50	75.367	80.000	200642	0.000	0.898	0.00	15.79
Recovery	DRY POND	BASE	41.00	75.359	80.000	200579	0.000	0.890	0.00	15.82

Simulation	Node	Group	Time	Stage	Warning Stage	Surface Area	Total Inflow	Total Outflow	Total Vol In	Total Vol Out
			hrs	ft	ft	ft2	cfs	cfs	af	af
Recovery	DRY POND	BASE	41.50	75.351	80.000	200517	0.000	0.883	0.00	15.86
Recovery	DRY POND	BASE	42.00	75.343	80.000	200455	0.000	0.875	0.00	15.90
Recovery	DRY POND	BASE	42.50	75.336	80.000	200393	0.000	0.868	0.00	15.93
Recovery	DRY POND	BASE	43.00	75.328	80.000	200333	0.000	0.861	0.00	15.97
Recovery	DRY POND	BASE	43.50	75.320	80.000	200272	0.000	0.854	0.00	16.00
Recovery	DRY POND	BASE	44.00	75.312	80.000	200212	0.000	0.847	0.00	16.04
Recovery	DRY POND	BASE	44.50	75.305	80.000	200153	0.000	0.840	0.00	16.07
Recovery	DRY POND	BASE	45.00	75.297	80.000	200094	0.000	0.833	0.00	16.11
Recovery	DRY POND	BASE	45.50	75.290	80.000	200035	0.000	0.827	0.00	16.14
Recovery	DRY POND	BASE	46.00	75.282	80.000	199977	0.000	0.820	0.00	16.18
Recovery	DRY POND	BASE	46.50	75.275	80.000	199919	0.000	0.814	0.00	16.21
Recovery	DRY POND	BASE	47.00	75.268	80.000	199862	0.000	0.807	0.00	16.24
Recovery	DRY POND	BASE	47.50	75.261	80.000	199805	0.000	0.801	0.00	16.28
Recovery	DRY POND	BASE	48.00	75.253	80.000	199749	0.000	0.795	0.00	16.31
Recovery	DRY POND	BASE	48.50	75.246	80.000	199693	0.000	0.789	0.00	16.34
Recovery	DRY POND	BASE	49.00	75.239	80.000	199637	0.000	0.783	0.00	16.38
Recovery	DRY POND	BASE	49.50	75.232	80.000	199582	0.000	0.777	0.00	16.41
Recovery	DRY POND	BASE	50.00	75.225	80.000	199527	0.000	0.772	0.00	16.44
Recovery	DRY POND	BASE	50.50	75.218	80.000	199473	0.000	0.766	0.00	16.47
Recovery	DRY POND	BASE	51.00	75.211	80.000	199419	0.000	0.760	0.00	16.50
Recovery	DRY POND	BASE	51.50	75.204	80.000	199365	0.000	0.755	0.00	16.54
Recovery	DRY POND	BASE	52.00	75.198	80.000	199312	0.000	0.749	0.00	16.57
Recovery	DRY POND	BASE	52.50	75.191	80.000	199259	0.000	0.744	0.00	16.60
Recovery	DRY POND	BASE	53.00	75.184	80.000	199207	0.000	0.739	0.00	16.63
Recovery	DRY POND	BASE	53.50	75.178	80.000	199155	0.000	0.734	0.00	16.66
Recovery	DRY POND	BASE	54.00	75.171	80.000	199103	0.000	0.728	0.00	16.69
Recovery	DRY POND	BASE	54.50	75.164	80.000	199051	0.000	0.723	0.00	16.72
Recovery	DRY POND	BASE	55.00	75.158	80.000	199000	0.000	0.718	0.00	16.75
Recovery	DRY POND	BASE	55.50	75.151	80.000	198949	0.000	0.713	0.00	16.78
Recovery	DRY POND	BASE	56.00	75.145	80.000	198899	0.000	0.709	0.00	16.81
Recovery	DRY POND	BASE	56.50	75.139	80.000	198849	0.000	0.704	0.00	16.84
Recovery	DRY POND	BASE	57.00	75.132	80.000	198799	0.000	0.699	0.00	16.87
Recovery	DRY POND	BASE	57.50	75.126	80.000	198750	0.000	0.695	0.00	16.89
Recovery	DRY POND	BASE	58.00	75.120	80.000	198700	0.000	0.690	0.00	16.92
Recovery	DRY POND	BASE	58.50	75.113	80.000	198652	0.000	0.685	0.00	16.95
Recovery	DRY POND	BASE	59.00	75.107	80.000	198603	0.000	0.681	0.00	16.98
Recovery	DRY POND	BASE	59.50	75.101	80.000	198555	0.000	0.677	0.00	17.01
Recovery	DRY POND	BASE	60.00	75.095	80.000	198507	0.000	0.672	0.00	17.04
Recovery	DRY POND	BASE	60.50	75.089	80.000	198459	0.000	0.668	0.00	17.06
Recovery	DRY POND	BASE	61.00	75.083	80.000	198412	0.000	0.664	0.00	17.09
Recovery	DRY POND	BASE	61.50	75.077	80.000	198365	0.000	0.659	0.00	17.12
Recovery	DRY POND	BASE	62.00	75.071	80.000	198318	0.000	0.655	0.00	17.15
Recovery	DRY POND	BASE	62.50	75.065	80.000	198272	0.000	0.651	0.00	17.17
Recovery	DRY POND	BASE	63.00	75.059	80.000	198225	0.000	0.647	0.00	17.20
Recovery	DRY POND	BASE	63.50	75.053	80.000	198179	0.000	0.643	0.00	17.23
Recovery	DRY POND	BASE	64.00	75.047	80.000	198134	0.000	0.639	0.00	17.25
Recovery	DRY POND	BASE	64.50	75.042	80.000	198088	0.000	0.636	0.00	17.28
Recovery	DRY POND	BASE	65.00	75.036	80.000	198043	0.000	0.632	0.00	17.30
Recovery	DRY POND	BASE	65.50	75.030	80.000	197998	0.000	0.628	0.00	17.33
Recovery	DRY POND	BASE	66.00	75.024	80.000	197954	0.000	0.624	0.00	17.36
Recovery	DRY POND	BASE	66.50	75.019	80.000	197909	0.000	0.621	0.00	17.38
Recovery	DRY POND	BASE	67.00	75.013	80.000	197865	0.000	0.617	0.00	17.41
Recovery	DRY POND	BASE	67.50	75.008	80.000	197821	0.000	0.613	0.00	17.43
Recovery	DRY POND	BASE	68.00	75.002	80.000	197778	0.000	0.610	0.00	17.46
Recovery	DRY POND	BASE	68.50	75.000	80.000	197762	0.000	0.000	0.00	17.47
Recovery	DRY POND	BASE	69.00	75.000	80.000	197762	0.000	0.000	0.00	17.47
Recovery	DRY POND	BASE	69.50	75.000	80.000	197762	0.000	0.000	0.00	17.47
Recovery	DRY POND	BASE	70.00	75.000	80.000	197762	0.000	0.000	0.00	17.47
Recovery	DRY POND	BASE	70.50	75.000	80.000	197762	0.000	0.000	0.00	17.47
Recovery	DRY POND	BASE	71.00	75.000	80.000	197762	0.000	0.000	0.00	17.47
Recovery	DRY POND	BASE	71.50	75.000	80.000	197762	0.000	0.000	0.00	17.47
Recovery	DRY POND	BASE	72.00	75.000	80.000	197762	0.000	0.000	0.00	17.47
Recovery	DRY POND	BASE	72.00	75.000	80.000	197762	0.000	0.000	0.00	17.47
Recovery	WET POND	BASE	0.00	69.000	73.000	189486	0.000	0.970	0.00	0.00
Recovery	WET POND	BASE	0.50	68.991	73.000	189394	0.000	0.968	0.00	0.04
Recovery	WET POND	BASE	1.00	68.982	73.000	189302	0.000	0.966	0.00	0.08
Recovery	WET POND	BASE	1.50	68.972	73.000	189210	0.000	0.963	0.00	0.12
Recovery	WET POND	BASE	2.00	68.963	73.000	189118	0.000	0.961	0.00	0.16
Recovery	WET POND	BASE	2.50	68.954	73.000	189026	0.000	0.958	0.00	0.20
Recovery	WET POND	BASE	3.00	68.945	73.000	188935	0.000	0.956	0.00	0.24
Recovery	WET POND	BASE	3.50	68.936	73.000	188844	0.000	0.954	0.00	0.28
Recovery	WET POND	BASE	4.00	68.927	73.000	188753	0.000	0.951	0.00	0.32
Recovery	WET POND	BASE	4.50	68.918	73.000	188662	0.000	0.949	0.00	0.36
Recovery	WET POND	BASE	5.00	68.909	73.000	188572	0.000	0.946	0.00	0.40
Recovery	WET POND	BASE	5.50	68.900	73.000	188481	0.000	0.944	0.00	0.44
Recovery	WET POND	BASE	6.00	68.891	73.000	188391	0.000	0.942	0.00	0.47
Recovery	WET POND	BASE	6.50	68.882	73.000	188301	0.000	0.939	0.00	0.51
Recovery	WET POND	BASE	7.00	68.873	73.000	188211	0.000	0.937	0.00	0.55
Recovery	WET POND	BASE	7.50	68.864	73.000	188121	0.000	0.934	0.00	0.59
Recovery	WET POND	BASE	8.00	68.855	73.000	188032	0.000	0.932	0.00	0.63
Recovery	WET POND	BASE	8.50	68.846	73.000	187943	0.000	0.930	0.00	0.67
Recovery	WET POND	BASE	9.00	68.837	73.000	187853	0.000	0.927	0.00	0.71

Simulation	Node	Group	Time	Stage	Warning Stage	Surface Area	Total Inflow	Total Outflow	Total Vol In	Total Vol Out
			hrs	ft	ft	ft2	cfs	cfs	af	af
Recovery	WET POND	BASE	9.50	68.828	73.000	187765	0.000	0.925	0.00	0.74
Recovery	WET POND	BASE	10.00	68.819	73.000	187676	0.000	0.922	0.00	0.78
Recovery	WET POND	BASE	10.50	68.810	73.000	187587	0.000	0.920	0.00	0.82
Recovery	WET POND	BASE	11.00	68.802	73.000	187499	0.000	0.918	0.00	0.86
Recovery	WET POND	BASE	11.50	68.793	73.000	187411	0.000	0.915	0.00	0.90
Recovery	WET POND	BASE	12.00	68.784	73.000	187323	0.000	0.913	0.00	0.93
Recovery	WET POND	BASE	12.50	68.775	73.000	187235	0.000	0.910	0.00	0.97
Recovery	WET POND	BASE	13.00	68.767	73.000	187147	0.000	0.908	0.00	1.01
Recovery	WET POND	BASE	13.50	68.758	73.000	187060	0.000	0.906	0.00	1.05
Recovery	WET POND	BASE	14.00	68.749	73.000	186973	0.000	0.903	0.00	1.08
Recovery	WET POND	BASE	14.50	68.740	73.000	186886	0.000	0.901	0.00	1.12
Recovery	WET POND	BASE	15.00	68.732	73.000	186799	0.000	0.898	0.00	1.16
Recovery	WET POND	BASE	15.50	68.723	73.000	186712	0.000	0.896	0.00	1.20
Recovery	WET POND	BASE	16.00	68.715	73.000	186626	0.000	0.893	0.00	1.23
Recovery	WET POND	BASE	16.50	68.706	73.000	186540	0.000	0.891	0.00	1.27
Recovery	WET POND	BASE	17.00	68.697	73.000	186454	0.000	0.889	0.00	1.31
Recovery	WET POND	BASE	17.50	68.689	73.000	186368	0.000	0.886	0.00	1.34
Recovery	WET POND	BASE	18.00	68.680	73.000	186282	0.000	0.884	0.00	1.38
Recovery	WET POND	BASE	18.50	68.672	73.000	186197	0.000	0.881	0.00	1.42
Recovery	WET POND	BASE	19.00	68.663	73.000	186112	0.000	0.879	0.00	1.45
Recovery	WET POND	BASE	19.50	68.655	73.000	186026	0.000	0.876	0.00	1.49
Recovery	WET POND	BASE	20.00	68.646	73.000	185942	0.000	0.874	0.00	1.52
Recovery	WET POND	BASE	20.50	68.638	73.000	185857	0.000	0.872	0.00	1.56
Recovery	WET POND	BASE	21.00	68.629	73.000	185772	0.000	0.869	0.00	1.60
Recovery	WET POND	BASE	21.50	68.621	73.000	185688	0.000	0.867	0.00	1.63
Recovery	WET POND	BASE	22.00	68.613	73.000	185604	0.000	0.864	0.00	1.67
Recovery	WET POND	BASE	22.50	68.604	73.000	185520	0.000	0.862	0.00	1.70
Recovery	WET POND	BASE	23.00	68.596	73.000	185437	0.000	0.859	0.00	1.74
Recovery	WET POND	BASE	23.50	68.587	73.000	185353	0.000	0.857	0.00	1.77
Recovery	WET POND	BASE	24.00	68.579	73.000	185270	0.000	0.855	0.00	1.81
Recovery	WET POND	BASE	24.50	68.571	73.000	185187	0.000	0.852	0.00	1.85
Recovery	WET POND	BASE	25.00	68.563	73.000	185104	0.000	0.850	0.00	1.88
Recovery	WET POND	BASE	25.50	68.554	73.000	185021	0.000	0.847	0.00	1.92
Recovery	WET POND	BASE	26.00	68.546	73.000	184939	0.000	0.845	0.00	1.95
Recovery	WET POND	BASE	26.50	68.538	73.000	184856	0.000	0.842	0.00	1.99
Recovery	WET POND	BASE	27.00	68.530	73.000	184774	0.000	0.840	0.00	2.02
Recovery	WET POND	BASE	27.50	68.522	73.000	184692	0.000	0.837	0.00	2.05
Recovery	WET POND	BASE	28.00	68.513	73.000	184611	0.000	0.835	0.00	2.09
Recovery	WET POND	BASE	28.50	68.505	73.000	184529	0.000	0.833	0.00	2.12
Recovery	WET POND	BASE	29.00	68.497	73.000	184448	0.000	0.830	0.00	2.16
Recovery	WET POND	BASE	29.50	68.489	73.000	184367	0.000	0.828	0.00	2.19
Recovery	WET POND	BASE	30.00	68.481	73.000	184286	0.000	0.825	0.00	2.23
Recovery	WET POND	BASE	30.50	68.473	73.000	184206	0.000	0.823	0.00	2.26
Recovery	WET POND	BASE	31.00	68.465	73.000	184125	0.000	0.820	0.00	2.29
Recovery	WET POND	BASE	31.50	68.457	73.000	184045	0.000	0.818	0.00	2.33
Recovery	WET POND	BASE	32.00	68.449	73.000	183965	0.000	0.815	0.00	2.36
Recovery	WET POND	BASE	32.50	68.441	73.000	183885	0.000	0.813	0.00	2.40
Recovery	WET POND	BASE	33.00	68.433	73.000	183805	0.000	0.810	0.00	2.43
Recovery	WET POND	BASE	33.50	68.425	73.000	183726	0.000	0.808	0.00	2.46
Recovery	WET POND	BASE	34.00	68.417	73.000	183647	0.000	0.806	0.00	2.50
Recovery	WET POND	BASE	34.50	68.409	73.000	183568	0.000	0.803	0.00	2.53
Recovery	WET POND	BASE	35.00	68.401	73.000	183489	0.000	0.801	0.00	2.56
Recovery	WET POND	BASE	35.50	68.394	73.000	183410	0.000	0.798	0.00	2.60
Recovery	WET POND	BASE	36.00	68.386	73.000	183332	0.000	0.796	0.00	2.63
Recovery	WET POND	BASE	36.50	68.378	73.000	183254	0.000	0.793	0.00	2.66
Recovery	WET POND	BASE	37.00	68.370	73.000	183176	0.000	0.791	0.00	2.69
Recovery	WET POND	BASE	37.50	68.362	73.000	183098	0.000	0.788	0.00	2.73
Recovery	WET POND	BASE	38.00	68.355	73.000	183021	0.000	0.786	0.00	2.76
Recovery	WET POND	BASE	38.50	68.347	73.000	182943	0.000	0.783	0.00	2.79
Recovery	WET POND	BASE	39.00	68.339	73.000	182866	0.000	0.781	0.00	2.82
Recovery	WET POND	BASE	39.50	68.332	73.000	182789	0.000	0.778	0.00	2.86
Recovery	WET POND	BASE	40.00	68.324	73.000	182713	0.000	0.776	0.00	2.89
Recovery	WET POND	BASE	40.50	68.316	73.000	182636	0.000	0.773	0.00	2.92
Recovery	WET POND	BASE	41.00	68.309	73.000	182560	0.000	0.771	0.00	2.95
Recovery	WET POND	BASE	41.50	68.301	73.000	182484	0.000	0.768	0.00	2.98
Recovery	WET POND	BASE	42.00	68.294	73.000	182408	0.000	0.766	0.00	3.02
Recovery	WET POND	BASE	42.50	68.286	73.000	182332	0.000	0.764	0.00	3.05
Recovery	WET POND	BASE	43.00	68.278	73.000	182257	0.000	0.761	0.00	3.08
Recovery	WET POND	BASE	43.50	68.271	73.000	182182	0.000	0.759	0.00	3.11
Recovery	WET POND	BASE	44.00	68.263	73.000	182107	0.000	0.756	0.00	3.14
Recovery	WET POND	BASE	44.50	68.256	73.000	182032	0.000	0.754	0.00	3.17
Recovery	WET POND	BASE	45.00	68.249	73.000	181957	0.000	0.751	0.00	3.20
Recovery	WET POND	BASE	45.50	68.241	73.000	181883	0.000	0.749	0.00	3.23
Recovery	WET POND	BASE	46.00	68.234	73.000	181809	0.000	0.746	0.00	3.27
Recovery	WET POND	BASE	46.50	68.226	73.000	181735	0.000	0.744	0.00	3.30
Recovery	WET POND	BASE	47.00	68.219	73.000	181661	0.000	0.741	0.00	3.33
Recovery	WET POND	BASE	47.50	68.212	73.000	181588	0.000	0.739	0.00	3.36
Recovery	WET POND	BASE	48.00	68.204	73.000	181515	0.000	0.736	0.00	3.39
Recovery	WET POND	BASE	48.50	68.197	73.000	181442	0.000	0.734	0.00	3.42
Recovery	WET POND	BASE	49.00	68.190	73.000	181369	0.000	0.731	0.00	3.45
Recovery	WET POND	BASE	49.50	68.183	73.000	181296	0.000	0.729	0.00	3.48
Recovery	WET POND	BASE	50.00	68.175	73.000	181224	0.000	0.726	0.00	3.51
Recovery	WET POND	BASE	50.50	68.168	73.000	181152	0.000	0.724	0.00	3.54

Simulation	Node	Group	Time	Stage	Warning Stage	Surface Area	Total Inflow	Total Outflow	Total Vol In	Total Vol Out
			hrs	ft	ft	ft2	cfs	cfs	af	af
Recovery	WET POND	BASE	51.00	68.161	73.000	181080	0.000	0.721	0.00	3.57
Recovery	WET POND	BASE	51.50	68.154	73.000	181008	0.000	0.719	0.00	3.60
Recovery	WET POND	BASE	52.00	68.147	73.000	180937	0.000	0.716	0.00	3.63
Recovery	WET POND	BASE	52.50	68.140	73.000	180865	0.000	0.714	0.00	3.66
Recovery	WET POND	BASE	53.00	68.132	73.000	180794	0.000	0.711	0.00	3.69
Recovery	WET POND	BASE	53.50	68.125	73.000	180723	0.000	0.709	0.00	3.72
Recovery	WET POND	BASE	54.00	68.118	73.000	180653	0.000	0.706	0.00	3.75
Recovery	WET POND	BASE	54.50	68.111	73.000	180582	0.000	0.704	0.00	3.77
Recovery	WET POND	BASE	55.00	68.104	73.000	180512	0.000	0.701	0.00	3.80
Recovery	WET POND	BASE	55.50	68.097	73.000	180442	0.000	0.699	0.00	3.83
Recovery	WET POND	BASE	56.00	68.090	73.000	180373	0.000	0.696	0.00	3.86
Recovery	WET POND	BASE	56.50	68.083	73.000	180303	0.000	0.694	0.00	3.89
Recovery	WET POND	BASE	57.00	68.077	73.000	180234	0.000	0.691	0.00	3.92
Recovery	WET POND	BASE	57.50	68.070	73.000	180165	0.000	0.689	0.00	3.95
Recovery	WET POND	BASE	58.00	68.063	73.000	180096	0.000	0.686	0.00	3.98
Recovery	WET POND	BASE	58.50	68.056	73.000	180027	0.000	0.684	0.00	4.00
Recovery	WET POND	BASE	59.00	68.049	73.000	179959	0.000	0.681	0.00	4.03
Recovery	WET POND	BASE	59.50	68.042	73.000	179891	0.000	0.679	0.00	4.06
Recovery	WET POND	BASE	60.00	68.035	73.000	179823	0.000	0.676	0.00	4.09
Recovery	WET POND	BASE	60.50	68.029	73.000	179755	0.000	0.674	0.00	4.12
Recovery	WET POND	BASE	61.00	68.022	73.000	179688	0.000	0.671	0.00	4.14
Recovery	WET POND	BASE	61.50	68.015	73.000	179620	0.000	0.669	0.00	4.17
Recovery	WET POND	BASE	62.00	68.009	73.000	179553	0.000	0.666	0.00	4.20
Recovery	WET POND	BASE	62.50	68.002	73.000	179487	0.000	0.664	0.00	4.23
Recovery	WET POND	BASE	63.00	67.995	73.000	179438	0.000	0.661	0.00	4.25
Recovery	WET POND	BASE	63.50	67.989	73.000	179398	0.000	0.659	0.00	4.28
Recovery	WET POND	BASE	64.00	67.982	73.000	179358	0.000	0.656	0.00	4.31
Recovery	WET POND	BASE	64.50	67.976	73.000	179318	0.000	0.654	0.00	4.34
Recovery	WET POND	BASE	65.00	67.969	73.000	179278	0.000	0.651	0.00	4.36
Recovery	WET POND	BASE	65.50	67.962	73.000	179238	0.000	0.648	0.00	4.39
Recovery	WET POND	BASE	66.00	67.956	73.000	179198	0.000	0.646	0.00	4.42
Recovery	WET POND	BASE	66.50	67.949	73.000	179159	0.000	0.643	0.00	4.44
Recovery	WET POND	BASE	67.00	67.943	73.000	179120	0.000	0.641	0.00	4.47
Recovery	WET POND	BASE	67.50	67.937	73.000	179080	0.000	0.638	0.00	4.50
Recovery	WET POND	BASE	68.00	67.930	73.000	179041	0.000	0.636	0.00	4.52
Recovery	WET POND	BASE	68.50	67.924	73.000	179002	0.000	0.633	0.00	4.55
Recovery	WET POND	BASE	69.00	67.917	73.000	178964	0.000	0.631	0.00	4.57
Recovery	WET POND	BASE	69.50	67.911	73.000	178925	0.000	0.628	0.00	4.60
Recovery	WET POND	BASE	70.00	67.905	73.000	178887	0.000	0.626	0.00	4.63
Recovery	WET POND	BASE	70.50	67.899	73.000	178848	0.000	0.623	0.00	4.65
Recovery	WET POND	BASE	71.00	67.892	73.000	178810	0.000	0.621	0.00	4.68
Recovery	WET POND	BASE	71.50	67.886	73.000	178772	0.000	0.618	0.00	4.70
Recovery	WET POND	BASE	72.00	67.880	73.000	178734	0.000	0.616	0.00	4.73
Recovery	WET POND	BASE	72.00	67.880	73.000	178734	0.000	0.616	0.00	4.73

SECTION 8

Andreyev Engineering, Inc.

SANFORD OFFICE
4055 St. John's Parkway
Sanford, Florida 32771
407-330-7763

▼ Groundwater ▼ Environmental ▼ Geotechnical ▼ Construction Materials Testing

May 23, 2022
GPGT-22-043

To: **ARCO National Construction**
900 North Rock Hill Road
St. Louis, Missouri 63119

Attention: **Mr. Trenton Squires**

Subject: **Preliminary Geotechnical Investigation, Proposed Site Improvements, MFLP South, Apopka, Orange County, Florida**

Dear Mr. Squires:

As requested, Andreyev Engineering, Inc. (AEI) has completed a preliminary geotechnical investigation for the above referenced project location. We understand that the subject site improvements will include three proposed commercial warehouse buildings, with paved parking/drive areas. Stormwater runoff from the proposed site improvements will be routed to one proposed on-site stormwater retention area.

This report presents the results of our geotechnical investigation along with an evaluation of the soil and groundwater conditions encountered. In addition, it provides preliminary geotechnical engineering recommendations for site preparation, foundation design, pavement section design, and evaluation of the stormwater retention system.

SITE LOCATION AND DESCRIPTION

The subject site is located in Section 12, Township 21 South, and Range 27 East, in Apopka, Orange County, Florida. We have included the U.S.G.S. Topographic Map, which depicts the location of the site, on the attached **Figure 1**. In addition, the Natural Resources Conservation Service (NRCS) Soil Map, which depicts the location and general soil types of the subject site and is presented on the attached **Figure 2**. Please note that some areas of the site were not accessible and could not be evaluated at this time due to the onsite existing wetland and pond areas.

PURPOSE AND SCOPE OF SERVICES

The purpose of this preliminary study was to explore subsurface soil and groundwater conditions at this site for foundation support of the proposed warehouse buildings on shallow foundations and provide recommendations for site preparation, foundation design, pavement section design, and evaluation of the stormwater retention system.

The boring locations were surveyed and staked by representatives of Leading Edge Land Services prior to performing drilling activities.

The scope of this investigation included:

- Drilled forty (40) Standard Penetration Test (SPT) borings, designated as TB-1 through TB-26, TB-30 through TB-41, and TB-43 and TB-44, to a depth of 20 to 25 feet below ground surface, within, or adjacent to, the proposed building foundation areas, for preliminary foundation evaluation. The locations of proposed SPT borings TB-27, TB-28, TB-29, and TB-42, were not cleared and accessible to small track drilling equipment and were not performed at the time of this investigation.

- Drilled seven (7) machine auger borings, designated as AB-1 through AB-7, to a depth of 20 feet below ground surface within the proposed stormwater retention areas. The locations of proposed machine auger borings AB-8, AB-9, and AB-10, were not cleared and accessible to small track drilling equipment and were not performed at the time of this investigation.

- Collected four (4) undisturbed permeability tube samples from the proposed retention area and conducted laboratory permeability testing on the undisturbed permeability tube samples to assess soil hydraulic conductivity.

- Drilled nine (9) manual auger borings, designated as HA-1 through HA-6, and HA-8 through HA-10, to a depth of 7 feet below ground surface, within the proposed paved parking/drive areas. The location of proposed manual auger boring HA-7 was not accessible to drilling personnel and equipment and was not performed at the time of this investigation.

Samples were recovered from the borings and returned to AEI's laboratory for visual classification and stratification. Soil strata were classified according to the Unified Soil Classification System (USCS). Approximate boring locations are shown on **Figure 3**, results of the Standard Penetration Test (SPT) borings and auger borings, in profile form, are presented on **Figures 4 through 9**. On the profiles, horizontal lines designating the interface between differing materials represent approximate boundaries. The actual transition between layers is typically gradual.

NATURAL RESOURCES CONSERVATION SERVICE SOIL SURVEY

The publication titled "Soil Survey of Orange County, Florida" published by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) was reviewed. For your reference, we have included a portion of the NRCS Soil Map which depicts the location of the subject site on the attached **Figure 2**.

Seven (7) soil map units were identified to exist at this project location and are presented as follows:

Soil Map Unit 6: ***Candler – Apopka Fine Sands, 5 to 12% Slopes***

Brief Description: "The soils in this map unit are sloping and strongly sloping and excessively drained and well drained. These soils are on the uplands. They occur in a regular repeating pattern. Candler soil is sloping and excessively drained. It is on summits and lower side slopes. Apopka soil is strongly sloping and well drained. It is on the upper side slopes. Typically, the surface layer of Candler soil is dark grayish brown sand about 6 inches thick. Typically, the surface layer of Apopka soil is dark grayish brown sand about 5 inches thick. A seasonal high water table is at a depth of more than 72 inches in Apopka soil and is at a depth of more than 80 inches in Candler soil. The permeability of Candler soil is rapid in the surface and subsurface layers and is rapid to moderately rapid in the subsoil. The permeability of Apopka soil is rapid in the surface and subsurface layers and is moderate in the subsoil."

Soil Map Unit 23: ***Malabar Fine Sand***

Brief Description: "This soil is nearly level and poorly drained. It is in low, narrow to broad sloughs and poorly defined drainageways. The slopes are smooth to concave and range from 0 to 2 percent. In most years, a seasonal high water table is within 10 inches of the surface for 2 to 6 months and between depths of 10 and 40 inches for most of the year. In most areas this Malabar soil has been left in natural vegetation. In some areas, it has been drained and is used for cultivated crops or improved pasture or for homesite and urban development. This soil has severe limitations for building site development, sanitary facilities, and recreational uses. Water control measures should be used and fill material is needed to minimize the excessive wetness limitation."

Soil Map Unit 25: ***Okeelanta Muck***

Brief Description: "This soil is nearly level and very poorly drained. It is in freshwater swamps and in drained areas north of Lake Apopka. Large ditches and canals equipped with water control structures dissect the map unit in most places. Undrained areas are ponded for 6 to 9 months or more each year. The slopes are smooth and less than 1 percent. Typically, the upper part of the surface layer is black muck about 9 inches thick. The lower part, to a depth of about 25 inches, is dark brown muck. The upper part of the underlying material, to a depth of about 62 inches, is light gray fine sand, that has dark gray mottles. The lower part to a depth of 80 inches or more is grayish brown loamy sand. Under natural conditions, the water table is ponded for 6 to 9 months or more each year. In most years, a seasonal high water table is at or near the surface. In drained areas, the water table is controlled at a depth of 10 to 36 inches, or according to the need of the crop."

Soil Map Unit 34: ***Pomello Fine Sand, 0 to 5% Slopes***

Brief Description: "This soil is a nearly level to gently sloping, moderately well drained sandy soil. In most years the seasonal high water table is at a depth of 24 to 40 inches for 1 month to 4 months and recedes to a depth of 40 to 60 inches during dry periods. In most areas, this Pomello soil is used for native range, or it has been left in natural vegetation. In a few areas, this soil is used for citrus crops, cultivated crops, or improved pasture or for homesite and urban development."

Soil Map Unit 42: ***Sanibel Muck***

Brief Description: "This soil is nearly level and very poorly drained. These soils are in depressions, freshwater swamps and marshes, and in poorly defined drainage ways. Undrained areas are ponded for 6 to 9 months or more each year. The slopes are concave and less that 1 percent. Typically, this soil has an organic surface layer of black muck about 11 inches thick. Below that layer, to a depth of about 15 inches, is black fine sand. In most years undrained areas of this soil are ponded for 6 to 9 months or more except during extended dry periods. The water table fluctuates between depths of about 10 inches and the surface for 2 to 6 months. This soil has severe limitations for building site development, sanitary facilities, and recreational uses because of ponding and excess humus. Water control measures should be used to minimize the excessive wetness limitation. Orgainic material should be removed and backfilled with a soil material suitable for urban development."

Soil Map Unit 47: ***Tavares – Millhopper Fine Sands, 0 to 5% Slopes***

Brief Description: "The soils in this map unit are nearly level to gently sloping and moderately well drained. A seasonal high water table in Tavares soil is at a depth of 40 to 72 inches for more than 6 months and recedes to a depth of more than 80 inches during extended dry periods. A seasonal high water table in Millhopper soil is at a depth of 40 to 60 inches for 1 to 4 months and recedes to a depth of 60 to 72 inches for 2 to 4 months. In most areas, the soils in this map unit are used for citrus crops or improved pasture or for home site and urban development."

Soil Map Unit 54: ***Apopka Zolfo Fine Sand***

Brief Description: "This soil is nearly level and somewhat poorly drained. It is in broad, slightly higher positions adjacent to the flatwoods. The slopes are smooth to convex and range from 0 to 2 percent. Typically, the soil has a surface layer of dark grayish brown fine sand about 5 inches thick. The upper part of the subsurface layer, to a depth of about 23 inches, is grayish brown fine sand. The middle part, to a depth of about 38 inches, is light brownish gray fine sand that has common brownish yellow mottles. The lower part, to a depth of about 55 inches, is very pale brown fine sand that has common brownish yellow mottles. The upper part of the subsoil, to a depth of about 71 inches, is brown fine sand. The lower part to a depth of 80 inches or more is dark brown fine sand. In most years, a seasonal high water table is at a depth of 24 to 40 inches for 2 to 6 months. It is at a depth of 10 to 24 inches during periods of heavy rains. It recedes to a depth of about 60 inches during extended dry periods. The permeability is rapid in the surface and subsurface layer, and it is moderate in the subsoil. The available water capacity is low in the surface and subsurface layers and is medium in the subsoil. This soil has severe limitations for sanitary facilities, most building site development, and recreational uses. It has moderate limitations for dwellings without basements, small commercial buildings, and local roads and streets. Water control measures should be used to minimize the excessive wetness limitation. Septic tank absorption fields may need to be enlarged because of wetness. The rapid permeability of this soil can cause ground water pollution in areas of septic tank absorption fields."

SOIL AND GROUNDWATER CONDITIONS

Soil Conditions

The soil types encountered at the boring locations are presented in the form of soil profiles on the attached **Figures 4 through 9**. The stratification presented is based on visual examination of the recovered soil samples and the interpretation of the field logs by a geotechnical engineer.

In general, the borings encountered the following soil Strata:

- Dark Gray to Dark Brown to Dark Grayish Brown to Dark Reddish Brown Fine Sand (Stratum 1)
- Gray to Brown to Grayish Brown to Brownish Gray to Yellowish Brown Fine Sand (Stratum 2)
- Light Gray to Light Brown to Light Grayish Brown to Light Yellowish Brown Fine Sand (Stratum 3)
- Gray to Grayish Brown to Dark Gray Clayey Fine Sand to Sandy Clay (Stratum 4)
- Light Brown to Gray to Grayish Brown to Dark Grayish Brown to Dark Reddish Brown Slightly Silty to Silty Fine Sand (Stratum 5)
- Light Gray to Gray to Grayish Brown Clay (Stratum 6)
- Dark Brown to Black Slightly Organic Fine Sand (Stratum 7)

A. With Pieces of Clayey Fine Sand

B. With Cemented Pieces – Hardpan Type

C. Organically Stained

Standard Penetration Test (SPT) borings measure soil density using a split spoon sampler advanced by a 140-pound hammer dropped repeatedly a distance of 30 inches. The N-value, which is shown next to the corresponding depths of the boring profile, is the number of blows by the hammer required to advance the split spoon sampler one (1) foot. Split spoon sampling was conducted continuously in the upper 10 feet and at 5-foot intervals thereafter. Also included, adjacent to the SPT borings, are the blow counts or “N” values. The “N” values have been empirically correlated with various soil properties and are considered to be indicative of the relative density of cohesionless soils and the consistency of cohesive material. Upon completion of drilling, the SPT boreholes were backfilled with additional bentonite and soil materials.

Correlation of the SPT-N values with relative density, unconfined compressive strength and consistency are provided in the following table:

Coarse-Grained Soils		Fine Grained Soils		
Penetration Resistance N (blows/ft)	Relative Density of Sand	Penetration Resistance N (blows/ft)	Unconfined Compressive Strength of Clay (tons/ft^2)	Consistency of Clay
0-4	Very Loose	<2	<0.25	Very Soft
4-10	Loose	2-4	0.25-0.50	Soft
10-30	Medium-Dense	4-8	0.50-1.00	Medium
30-50	Dense	8-15	1.00-2.00	Stiff
>50	Very Dense	15-30	2.00-4.00	Very Stiff
		>30	>4.00	Hard

Please refer to **Figures 3 through 9** for boring locations, strata depths, and encountered soil conditions. The stratification lines represent the approximate boundaries between soil types. The actual transition may be gradual. Minor variations not considered important to our engineering evaluations may have been abbreviated or omitted for clarity.

Groundwater Conditions

At the time of drilling SPT borings TB-7, TB-30, TB-31, TB-35, TB-37, TB-38, TB-40, and TB-41, groundwater was encountered ranging between depths of 5.0 to 9.0 feet. Groundwater was not measured below a depth of 10 feet at the remaining SPT borings, due to the drilling method mud rotary, which uses a thick bentonite drilling slurry to maintain an open borehole. After allowing for stabilization, groundwater was measured at depths of 3.5 to 13.8 feet at machine auger borings AB-1 through AB-7. At HA-1 through HA-6 and at HA-8, HA-9, and HA-10, groundwater was not encountered between the ground surface and the termination depth of drilling of 7 feet.

Based on the encountered subsurface conditions, our local experience, NRCS soil survey, and antecedent rainfall conditions, the normal seasonal high groundwater level is estimated to exist about 3 to 4 feet above measured levels at TB-7, TB-30, TB-31, TB-35, TB-37, TB-39, TB-40, TB-41, and at AB-1 through AB-7. At TB-1. TB-3, TB-4, TB-5, TB-6, TB-8 through TB-13, TB-16, TB-17, TB-18, TB-19 through TB-26, TB-33, TB-34, TB-36, TB-38, HA-4, HA-5, HA-6, and HA-9, the normal seasonal high groundwater table is estimated to exist in a temporary perched condition, during periods of heavy or extended rainfall, slightly above the Stratum 4 clayey fine sand to sandy clay soils, Type A soils with pieces of clayey fine sand, and Type B soils with cemented pieces – hardpan. At TB-2, TB-14, TB-15, TB-32, TB-43, and TB-44 the normal seasonal high groundwater table is estimated to exist at a depth of about 7 to 8 feet below the existing ground surface. The normal seasonal high groundwater table is estimated to exist at depths of about 5 to 7 feet at HA-1, HA-2, HA-3, HA-8, and HA-10.

Organic Content Test Results

The results of the laboratory classification tests selected for moisture content and organic content for the Stratum 1 Type C organically stained fine sand and Stratum 7 organic fine sand are presented as follows:

TB-40		**TB-44**	
Sample Depth:	1.0 feet	Sample Depth:	9.0 feet
Classification:	Organic Fine Sand	Classification:	Fine Sand (Organic Stained)
Moisture Content:	14.3%	Moisture Content:	9.5%
Percent of Fines:	13.7%	Percent of Fines:	1.5%

Typically, organic content values of 4% to 5% are indicative of organic material that is susceptible to decomposition related settlement that can cause differential settlement related damage of supported structures. The results of the laboratory classification tests for moisture content and organic content are shown adjacent to the tested depth and corresponding soil profile on **Figure 8**.

Laboratory Test Results - Percent of Fines Passing a U.S #200 Sieve

The results of the laboratory classification tests selected for moisture content and percent of fines passing a U.S. #200 Sieve are shown adjacent to the corresponding soil profile and depth on **Figures 5, 7, 8, and 9** are also presented as follows:

TB-12		**TB-15**	
Sample Depth:	2.0 feet	Sample Depth:	5.0 feet
Classification:	C. F. S. to S.C.*	Classification:	F.S. to S.S.F.S.**
Moisture Content:	16.7%	Moisture Content:	2.0%
Percent of Fines:	47.6%	Percent of Fines:	3.2%

TB-31		**TB-31**	
Sample Depth:	9.0 feet	Sample Depth:	14.5 feet
Classification:	F.S. to S.S.F.S.**	Classification:	S.S. to S. F. S.***
Moisture Content:	20.9%	Moisture Content:	14.3%
Percent of Fines:	5.2%	Percent of Fines:	19.9%

AB-2		**AB-3**	
Sample Depth:	8.5 feet	Sample Depth:	7.5 Feet
Classification:	S.S. to S. F. S.***	Classification:	S.S. to S. F. S.***
Moisture Content:	2.8%	Moisture Content:	13.2%
Percent of Fines:	11.4%	Percent of Fines:	17.1%

AB-4		**AB-5**	
Sample Depth:	2.5 feet	Sample Depth:	10.5 Feet
Classification:	Fine Sand	Classification:	S.S. to S. F. S.***
Moisture Content:	2.4%	Moisture Content:	10.3%
Percent of Fines:	4.5%	Percent of Fines:	18.3%

AB-7		**AB-7**	
Sample Depth:	9.0 feet	Sample Depth:	13.5 Feet
Classification:	S.S. to S. F. S.***	Classification:	C. F. S. to S.C.*
Moisture Content:	21.9%	Moisture Content:	17.8%
Percent of Fines:	9.8%	Percent of Fines:	28.9%

HA-5

Sample Depth:	4.5 feet
Classification:	Fine Sand with Pieces of Clayey Fine Sand
Moisture Content:	10.5%
Percent of Fines:	24.6%

* Clayey Fine Sand to Sandy Clay
* * Fine Sand to Slightly Silty Fine Sand
* * * Slightly Silty to Silty Fine Sand

PRELIMINARY EVALUATIONS AND RECOMMENDATIONS

General

Based on the results of this preliminary investigation and our evaluation of the encountered subsurface conditions, the primary design concern at this site is the near surface poorly permeable Strata 4 and 5, clayey fine sand to sandy clay and silty fine sand, including the Type A soils with pieces of clayey fine sand, and Type B soils with cemented pieces – hardpan, and their associated perched groundwater condition. Compaction difficulties and controlling moisture content near optimum are common with Strata 4, 5, Type A and Type B soil sub-types. Dependent on planned site grades, a minimum two-foot separation should be maintained between the bottom of building slabs, bottom of footing elevations, bottom of the pavement base, and the top of any encountered Stratum 4 clayey fine sand to sandy clay soils to limit overlying structures from exposure to increased levels of differential settlement. Use of vibratory compaction equipment will be limited at the northern portion of this site due to the adjacent existing warehouse building and associated structures. A secondary concern would be the surficial Stratum 7 organic fine sand that was encountered at TB-40, however; this appears to be an isolated pocket and the organic material can be properly removed during site preparation efforts. It is critical that site preparation and soil densification procedures are thorough to ensure consistent and uniform support conditions for the proposed site improvements.

In addition, once sufficient clearing has been performed to obtain drill rig access, AEI recommends that additional geotechnical investigations, of building, roadway, and pond areas, be performed in the existing pond and the heavily wooded southeast portion of the subject property, to verify the possible presence or absence of Okeelanta Muck and Sanibel Muck, as illustrated on the attached **Figure 2** NRCS Soil Survey Map, that may extend into proposed building areas.

Conventional pavement section design and construction using flexible or semi flexible pavement sections will also be possible at this site, provided that a two-foot separation is maintained between the pavement base course and the estimated normal seasonal high groundwater table levels and also the top of any encountered poorly permeable Strata 4 and 5, clayey fine sand to sandy clay, silty fine sand, Type A sub-soils with pieces of clayey fine sand, and Type B sub-soils with cemented pieces – hardpan, and their associated perched groundwater condition. Depending on final site grades, roadway underdrains may also be necessary to control perched groundwater conditions from affecting long term performance of the roadways and parking areas.

Dependent of planned site grades, the proposed stormwater retention pond area, located in the vicinity of AB-1 through AB-7, appears suitable for wet stormwater retention/detention pond design as planned.

More specific recommendations for the building areas, paved parking/drive areas, and stormwater retention pond area are provided below.

Site Preparation

The building area and parking/drive areas, plus a minimum margin of 5 feet beyond their outer lines, should be cleared and stripped to remove all surface vegetation, roots, topsoil, Stratum 7 organic fine sand, or any other encountered deleterious materials. A two-foot separation should be maintained between the bottom of building slabs, bottom of footing elevations, bottom of the pavement base and the top of any Stratum 4 clayey fine sand to sandy clay in order to limit differential settlement to the proposed overlying structures. As noted, use of vibratory compaction equipment will be limited at the northern portion of this site due to the adjacent existing warehouse building and associated structures. The exposed foundation subgrade soils for the building areas should be proof rolled and compacted to a minimum of 95% of the soil's modified Proctor maximum dry density as determined by ASTM Specification D-1557 before any fill material is placed. Compaction should be completed to a depth of 2 feet below exposed subgrade. The exposed subgrade within pavement areas should be proof rolled and compacted to a minimum of 95% of the soil's modified Proctor maximum dry density to a depth of 2 feet as well. All fill required to bring the site to final grade should be inorganic, non-plastic, granular soil (clean sands) with less than 10% passing a U.S #200 sieve. In structural areas, the fill should be placed in level lifts not to exceed 12 inches loose and should be compacted to a minimum of 95% of the soil's modified Proctor maximum dry density as determined by ASTM Specification D-1557. In-place density tests should be performed on each lift by an experienced engineering technician working under the direction of a registered geotechnical engineer to verify that the recommended degree of compaction has been achieved. We suggest a minimum testing frequency of one (1) test per lift per 2,500 square feet of area within structural limits and one (1) test per lift per 10,000 square feet in pavement areas. This fill should extend a minimum of 5 feet beyond building lines to prevent possible erosion or undermining of footing bearing soils. Further, fill slopes should not exceed 2 horizontal to 1 vertical (2H: 1V). All fill placed in utility line trenches and adjacent to footings beneath slabs on grade should also be properly placed and compacted to the specifications stated above. However, in these restricted working areas, compaction should be accomplished with lightweight, hand-guided compaction equipment and lift thicknesses should be limited to a maximum of 4 inches loose thickness.

Foundation Design

Once the existing subgrade and new fill soils in the proposed structural support areas have been prepared in accordance with the preceding recommendations, the proposed buildings can be constructed on a system of conventional shallow spread or strip footings bearing at minimum depths below the finished floor elevations. A two-foot separation should be maintained between the bottom of footing elevations and the top of any Stratum 4 clayey fine sand to sandy clay soils to limit overlying supported structures from exposure to excessive differential settlement. Footings, which bear in densified existing soils or in new structural fill, may be designed based on a maximum allowable bearing pressure of 2,500 pounds per square foot. Minimum footing dimensions of 18 inches for strip footings and 24 inches for column footings should be used even though the maximum allowable bearing pressures may not be fully developed in all cases. Footings should bear at least 18 inches below finished exterior grades. For monolithic slab or post tension slab construction, footings should bear at least 12 inches below finished exterior grades. Footing subgrade soils should be approved by the geotechnical engineer prior to placement of concrete and steel. As a minimum acceptance criterium, the footing subgrade soils should be compacted to a minimum density of 95% of the soils modified Proctor maximum dry density for a depth of 24 inches.

Paved Areas

In general, the compacted subsurface soils will be suitable for support of a flexible (limerock) or semi-flexible (soil-cement or crushed concrete) type pavement base after subgrade preparation. The use of one system over another is normally governed by the depth to the encountered and/or seasonal high groundwater table. Soil cement is typically used in areas where the wet season groundwater table levels are within 12 inches of the proposed bottom of the pavement subbase. As previously discussed, a two-foot separation should be maintained between the bottom of the pavement base course and the estimated normal seasonal high groundwater table levels and also the top of any encountered poorly permeable Strata 4 and 5, clayey fine sand to sandy clay, silty fine sand, Type A soils with pieces of clayey fine sand, and Type B soils with cemented pieces – hardpan to prevent perched groundwater from adversely affecting the pavement section. Any paved areas which cannot meet minimum separation requirements from the seasonal high groundwater table level and/or the top of the poorly permeable Strata 4 and 5, clayey fine sand to sandy clay, silty fine sand, Type A soils with pieces of clayey fine sand, and Type B soils with cemented pieces – hardpan may require underdrains. As a possible pavement design alternative, AEI also presents recommendations for a rigid pavement section.

Typical flexible and semi-flexible pavement sections are as follows:

Limerock Base

1-1/2” to 2-1/2” asphaltic concrete wearing surface

8” to 10" limerock base course, quality of limerock to be in accordance with current Florida Department of Transportation specifications and compacted to a minimum density equivalent to 98 percent of the modified Proctor maximum density (AASHTO T-180).

12” stabilized subbase with minimum Limerock Bearing Ratio (LBR) of 40 percent. The subbase should be compacted to a minimum density equivalent to 98 percent of the modified Proctor maximum density (AASHTO T-180). The subgrade material, below the

subbase, shall be compacted to minimum density of 98% of the modified Proctor maximum density of the soil.

Soil-Cement Base

1-1/2" to 2-1/2" asphaltic concrete wearing surface

8" to 10" soil-cement base designed and constructed in accordance with current Portland Cement Association recommended methods.

12" subgrade consisting of free draining natural fine sand or fine sand fill with less than 7 percent passing a U.S. #200 sieve. Subgrade to be compacted to a minimum density of 98 percent of the modified Proctor maximum density (AASHTO T-180).

Crushed Concrete Base

1-1/2" to 2-1/2" asphaltic concrete wearing surface

8" to 10" crushed concrete base with the quality of crushed concrete to be in accordance with current Florida Department of Transportation specifications and should have a minimum Limerock Bearing Ratio (LBR) of 150 and be compacted to at least 98 percent of the Modified proctor maximum dry density per ASTM D-1557.

12" stabilized subbase with minimum Limerock Bearing Ratio (LBR) of 40 percent. The subbase should be compacted to a minimum density equivalent to 98 percent of the modified Proctor maximum density per ASTM D-1557. The subgrade material, below the subbase, shall be compacted to minimum density of 98% of the modified Proctor maximum density of the soil per ASTM D-1557.

Type of Development	ADT (average daily traffic)	Base Thickness	Wearing Surface Thickness
Commercial Warehouse Facility	< 1,500	8"	1 ½"
	>1,500	10"	2 ½"

The pavement section should be designed based on expected traffic including truck loads. Traffic should not be allowed on the subgrade prior to placement of the base to avoid rutting. The final pavement thickness design should be checked by the project civil engineer using data contained in this report and anticipated traffic conditions.

As a possible pavement section design alternative, AEI presents recommendations for a rigid pavement section as follows:

Rigid Pavement

6" reinforced concrete wearing surface: Designed to withstand the design traffic loads and jointed to reduce the chances for crack development. The concrete should have a minimum unconfined compressive strength of 3,000 psi.

12" subgrade: consisting of free draining natural fine sand or fine sand fill. Subgrade to be compacted to a minimum density equivalent to 98 percent of the modified Proctor maximum density (AASHTO T-180).

Retention Pond Area

Based on the results of the borings and permeability tests and dependent on planned site grades, the proposed stormwater retention area, located in the vicinity of AB-1 through AB-7, appears suitable for wet stormwater retention/detention as planned.

For wet stormwater retention/detention pond system design the following normal seasonal high groundwater table levels and normal seasonal low groundwater table levels may be used:

Boring Location	Normal Seasonal High Groundwater Level (ft bls)*	Normal Seasonal Low Groundwater Level (ft bls)*
AB-1	2.5	6.5
AB-2	4.0	8.0
AB-3	5.5	9.5
AB-4	4.5	8.5
AB-5	10.5	14.5
AB-6	3.5	6.5
AB-7	0.5	4.5
AB-1 through AB-7 (averaged values)	4.4	8.3

*- feet below land surface

For more detailed recommendations for soils excavated from the stormwater retention/detention pond area, please reference the fill suitability section presented in the following section of this geotechnical report.

Fill Suitability

Based on the results of this geotechnical investigation and to evaluate soils planned to be excavated from the stormwater retention/detention pond areas during construction, AEI presents the following evaluations and recommendations for fill material preparation and fill placement.

Strata 1, 2, and 3 fine sand to slightly silty fine sand will be suitable for use as general fill with minimal soil preparation efforts provided root content is minimal. If the Strata 1, 2, and 3 fine sand to slightly silty fine sand exists at or below the existing site's groundwater table level, the fine sand soils will need to be properly dried, in order to control the soil's moisture content near the laboratory modified Proctor test result for optimum moisture content, prior to fill placement and compaction.

Excavated Stratum 5 silty fine sand and Type B sub-soils may also be used as general fill material, however; additional soil preparation efforts should be anticipated. Due to the higher percent of fines content of this soil, this soil type will exhibit a high level of moisture retention characteristics. Additional soil preparation efforts, in order to properly dry the silty fine sand and Type B soils to maintain the moisture content near optimum, will be needed prior to fill placement and compaction.

The classifications of excavated soil types with limitations for use as general fill, includes the encountered Strata 4, 6, 7, and Type A soils - clayey fine sand to sandy clay, clay, organic fine sand, and fine sand mixed with pieces of clayey fine sand. The Strata 4, 6, and Type A clayey fine sand to sandy clay, clay, and fine sand mixed with pieces of clayey fine sand soils should not be used for direct foundation support or placed in near-surface areas, due to their moisture retention properties, difficulties with compaction, and drainage issues associated with higher surface runoff volumes, from these poorly permeable soils, when compacted. The Stratum 7 organic fine sand will oxidize and decompose over time, exposing overlying supported structures to increased levels of differential settlement, and should not be used as general fill material. The Strata 4, 6, and Type A soils, consisting of clayey fine sand to sandy clay, clay, and fine sand mixed with pieces of clayey fine sand can also expose overlying supported structures to increased levels of differential settlement, so their use should also be minimized in settlement sensitive project areas.

Excavations

Any and all excavations should be constructed in accordance with applicable local, state and federal regulation including those outlined by the Occupational Safety and Health Administration (OSHA). It is the contractor's sole responsibility for designing and constructing safe and stable excavations. Excavations should be sloped, benched or braced as required to maintain stability of the excavation sides and bottoms. Excavations should take into account loads resulting from equipment, fill stockpiles and existing construction. Any shoring need to maintain a safe excavation should be designed by a professional engineer registered in the State of Florida in accordance with local, state and federal guidelines.

LIMITATIONS

This report has been prepared for the exclusive use of ARCO National Construction, Inc., and their designers, based on our understanding of the project as stated in this report and should be considered preliminary in nature. The geotechnical recommendations provided here-in are based on the concept plans provided and our experience with similar projects and subsurface conditions. Any modifications in design concepts from the description stated in this report should be made known to AEI for possible modification of recommendations presented in this report. This exploration was performed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made as to the professional advice presented herein. Statements regarding all geotechnical recommendations are for use by the designers and are not intended for use by potential contractors. The geotechnical exploration and recommendations submitted herein are based on the data obtained from the soil borings presented on **Figures 4 through 9**. The report does not reflect any variations which may occur adjacent to, between, or away from the borings. The nature and extent of the variations between the borings may not become evident until during construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations presented in this report. An on-site visit may be required by a geotechnical engineer to note the characteristics of

the variations during the construction period. This preliminary geotechnical study investigated the soil conditions within the proposed building areas, to the drilled depth of 20 to 25 feet below ground surface and was not intended to investigate deeper soil conditions with regards to the presence or absence of Karst activity.

CLOSURE

AEI appreciates the opportunity to participate in this project, and we trust that the information herein is sufficient for your immediate needs. If you have any questions or comments concerning the contents of this report, please do not hesitate to contact the undersigned.

Sincerely,

ANDREYEV ENGINEERING, INC.

Mark L. Jung
Senior Project Manager

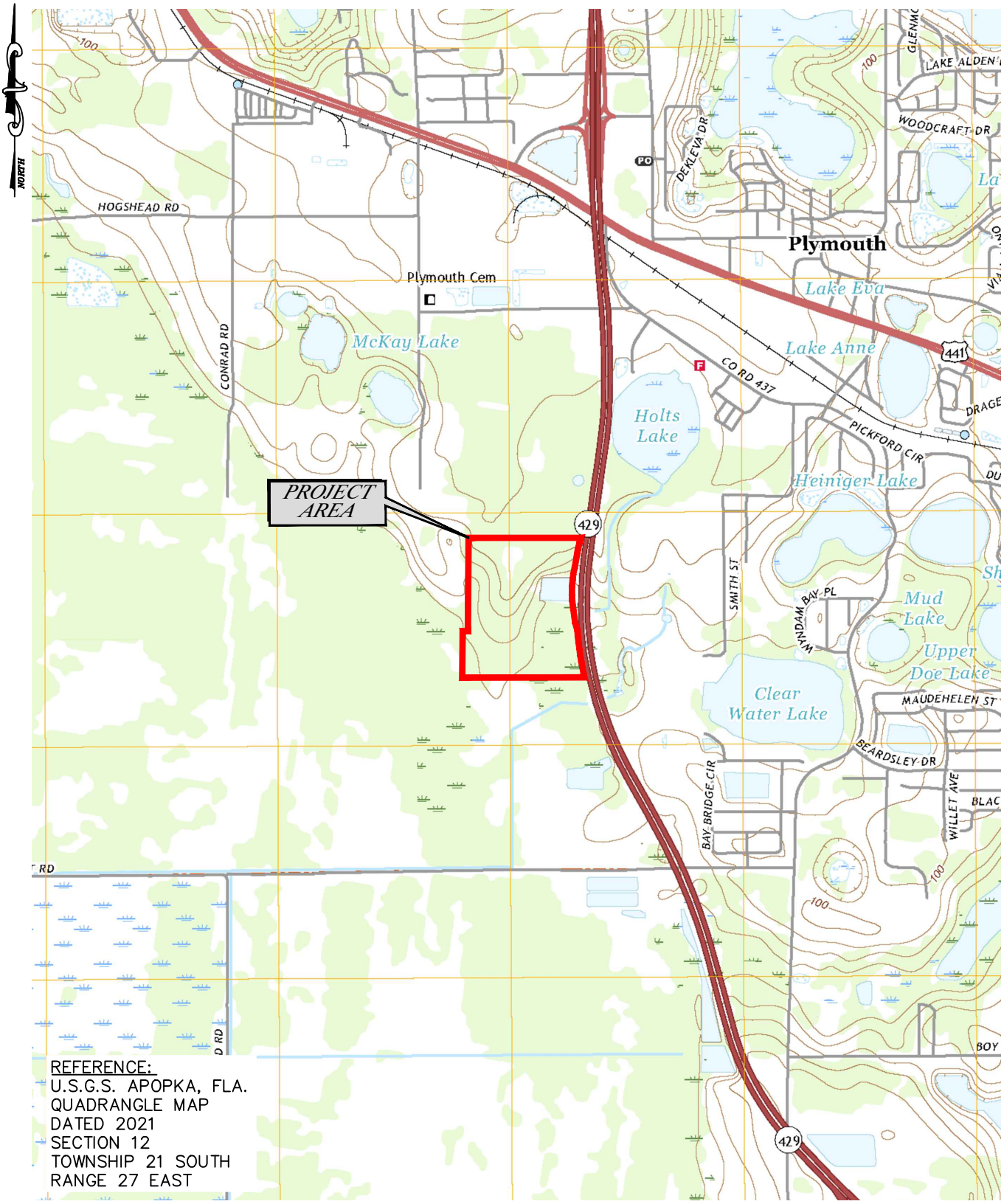
This item has been digitally signed and sealed by Ray Jones, P.E. on 5/23/22.

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

RAYMOND W. JONES LICENSE NO. 58079 STATE OF FLORIDA PROFESSIONAL ENGINEER

Raymond W. Jones, P.E.
Vice President
Florida Registration No.58079

FIGURES



REFERENCE:
U.S.G.S. APOPKA, FLA.
QUADRANGLE MAP
DATED 2021
SECTION 12
TOWNSHIP 21 SOUTH
RANGE 27 EAST

0 1000 2000 4000

GRAPHIC SCALE: 1"=2000'

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

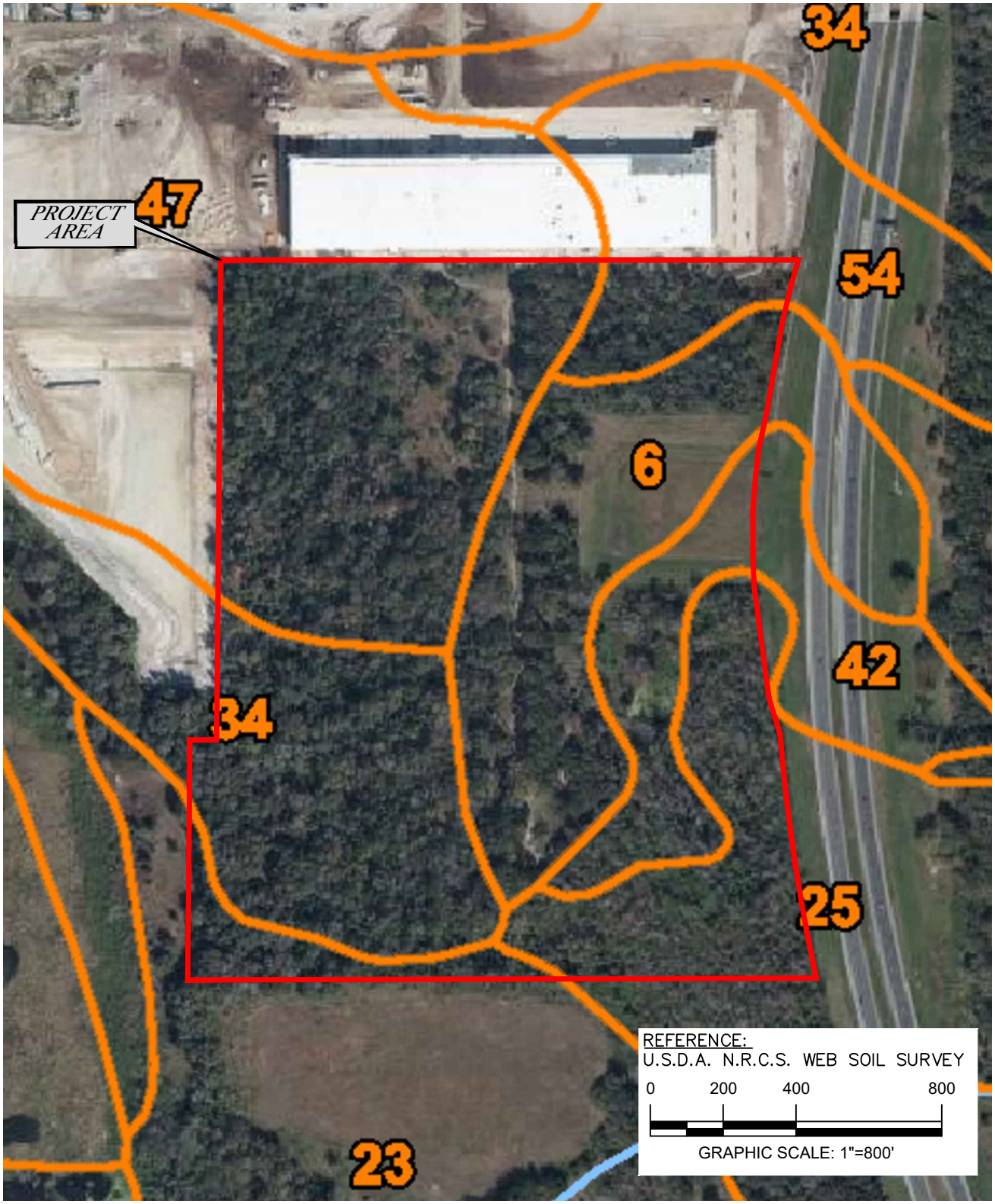
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

APPROXIMATE SCALE:	DATE: 05/13/22	ENGINEER: RJ
1"=2000'	PN: GPGT-22-043	DRAWN BY: DLS

U.S.G.S. TOPOGRAPHIC MAP

FIGURE 1



LEGEND:

6	CANDLER–APOPKA FINE SANDS, 5 TO 12% SLOPES
23	MALABAR FINE SAND
25	OKEELANTA MUCK
34	POMELLO FINE SAND, 0 TO 5% SLOPES
42	SANIBEL MUCK
47	TAVARES–MILLHOPPER FINE SANDS, 0 TO 5% SLOPES
54	ZOLFO FINE SAND, 0 TO 2% SLOPES

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

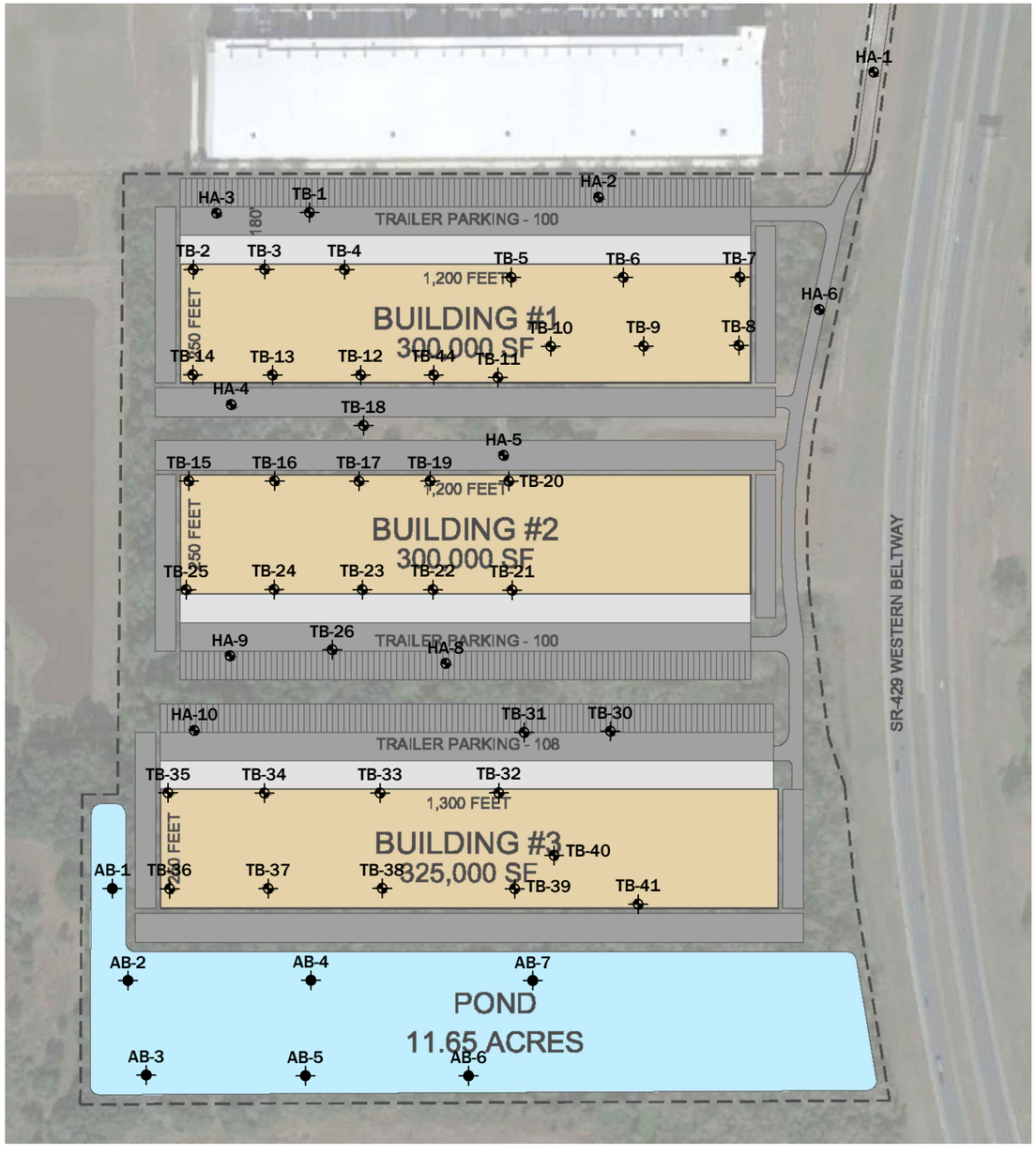
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

N.R.C.S. SOIL SURVEY MAP

FIGURE 2

APPROXIMATE SCALE:	DATE: 05/13/22	ENGINEER: RJ
1"=400'	PN: GPGT–22–043	DRAWN BY: DLS



NORTH

LEGEND:

- APPROXIMATE LOCATION OF SPT BORING
- APPROXIMATE LOCATION OF MACHINE AUGER BORING
- APPROXIMATE LOCATION OF HAND AUGER BORING

0 150 300 600

GRAPHIC SCALE: 1"=300'

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

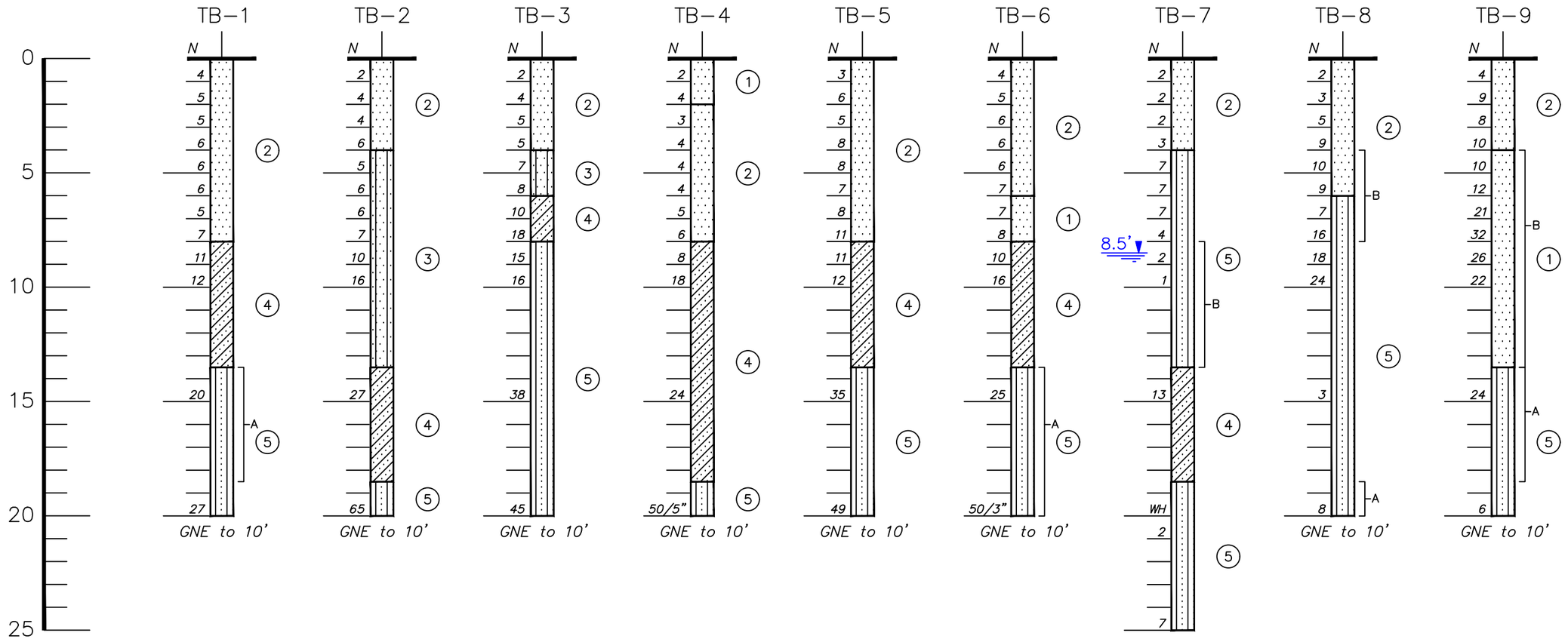
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

BORING LOCATION PLAN

FIGURE 3

APPROXIMATE SCALE:	DATE: 05/13/22	ENGINEER: RJ
1"=300'	PN: GPGT-22-043	DRAWN BY: DLS



LEGEND:

1. DARK GRAY TO DARK BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN FINE SAND (SP)
2. GRAY TO BROWN TO GRAYISH BROWN TO BROWNISH GRAY TO YELLOWISH BROWN FINE SAND (SP)
3. LIGHT GRAY TO LIGHT BROWN TO LIGHT GRAYISH BROWN TO LIGHT YELLOWISH BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP–SM)
4. GRAY TO GRAYISH BROWN TO DARK GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
5. LIGHT BROWN TO GRAY TO GRAYISH BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
6. LIGHT GRAY TO GRAY TO GRAYISH BROWN CLAY (CH)
7. DARK BROWN TO BLACK ORGANIC FINE SAND (SP)(PT)

A WITH PIECES OF CLAYEY FINE SAND

B WITH CEMENTED PIECES–HARDPAN TYPE

C ORGANICALLY STAINED

(SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL

1.0' DEPTH TO GROUNDWATER

GNE GROUNDWATER NOT ENCOUNTERED

N STANDARD PENETRATION RESISTANCE, IN BLOWS PER FOOT

WH BORING ADVANCED UNDER STATIC WEIGHT OF DRILL HAMMER & ROD

50/1" 50 HAMMER BLOWS TO ADVANCE SAMPLING TOOL ONE INCH

W MOISTURE CONTENT, IN PERCENT

–200 PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE

OC ORGANIC CONTENT, IN PERCENT

Kv VERTICAL COEFFICIENT OF PERMEABILITY, IN FEET PER DAY

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

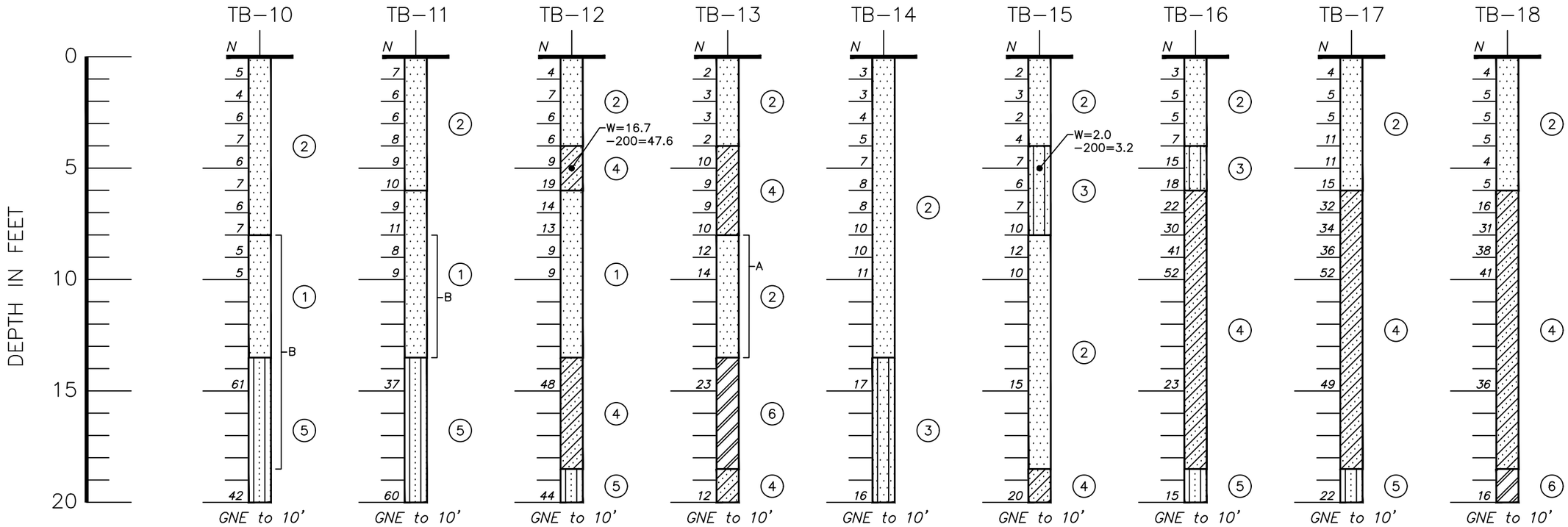
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

FIGURE 4



LEGEND:

1. DARK GRAY TO DARK BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN FINE SAND (SP)
2. GRAY TO BROWN TO GRAYISH BROWN TO BROWNISH GRAY TO YELLOWISH BROWN FINE SAND (SP)
3. LIGHT GRAY TO LIGHT BROWN TO LIGHT GRAYISH BROWN TO LIGHT YELLOWISH BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP–SM)
4. GRAY TO GRAYISH BROWN TO DARK GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
5. LIGHT BROWN TO GRAY TO GRAYISH BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
6. LIGHT GRAY TO GRAY TO GRAYISH BROWN CLAY (CH)
7. DARK BROWN TO BLACK ORGANIC FINE SAND (SP)(PT)

A WITH PIECES OF CLAYEY FINE SAND

B WITH CEMENTED PIECES–HARDPAN TYPE

C ORGANICALLY STAINED

(SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL

1.0' DEPTH TO GROUNDWATER

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50/1" 50 HAMMER BLOWS TO ADVANCE SAMPLING TOOL ONE INCH

W MOISTURE CONTENT, IN PERCENT

–200 PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE

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Kv VERTICAL COEFFICIENT OF PERMEABILITY, IN FEET PER DAY

Andreyev Engineering, Inc.

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

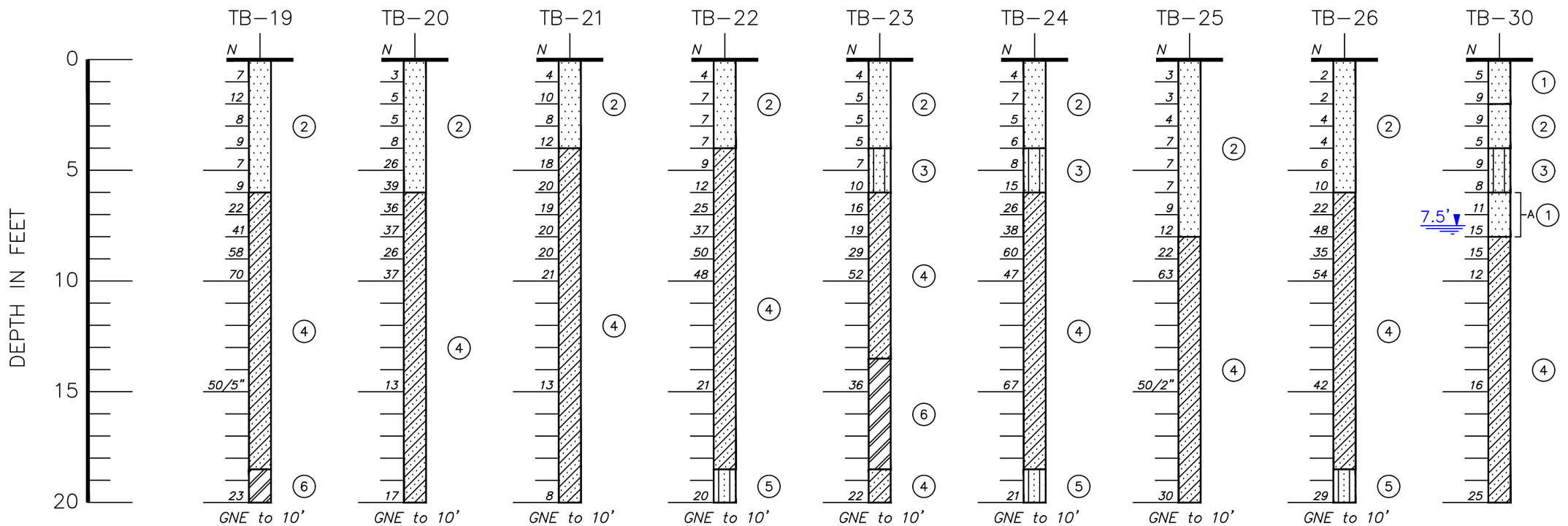
PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

FIGURE 5



LEGEND:

- (1) DARK GRAY TO DARK BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN FINE SAND (SP)
- (2) GRAY TO BROWN TO GRAYISH BROWN TO BROWNISH GRAY TO YELLOWISH BROWN FINE SAND (SP)
- (3) LIGHT GRAY TO LIGHT BROWN TO LIGHT GRAYISH BROWN TO LIGHT YELLOWISH BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP–SM)
- (4) GRAY TO GRAYISH BROWN TO DARK GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
- (5) LIGHT BROWN TO GRAY TO GRAYISH BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
- (6) LIGHT GRAY TO GRAY TO GRAYISH BROWN CLAY (CH)
- (7) DARK BROWN TO BLACK ORGANIC FINE SAND (SP)(PT)
- A WITH PIECES OF CLAYEY FINE SAND
- B WITH CEMENTED PIECES–HARDPAN TYPE
- C ORGANICALLY STAINED
- *(SP)* UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL
- 1.0' DEPTH TO GROUNDWATER
- *GNE* GROUNDWATER NOT ENCOUNTERED

- *N* STANDARD PENETRATION RESISTANCE, IN BLOWS PER FOOT
- *WH* BORING ADVANCED UNDER STATIC WEIGHT OF DRILL HAMMER & ROD
- *50/1"* 50 HAMMER BLOWS TO ADVANCE SAMPLING TOOL ONE INCH
- *W* MOISTURE CONTENT, IN PERCENT
- *–200* PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE
- *OC* ORGANIC CONTENT, IN PERCENT
- *Kv* VERTICAL COEFFICIENT OF PERMEABILITY, IN FEET PER DAY

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

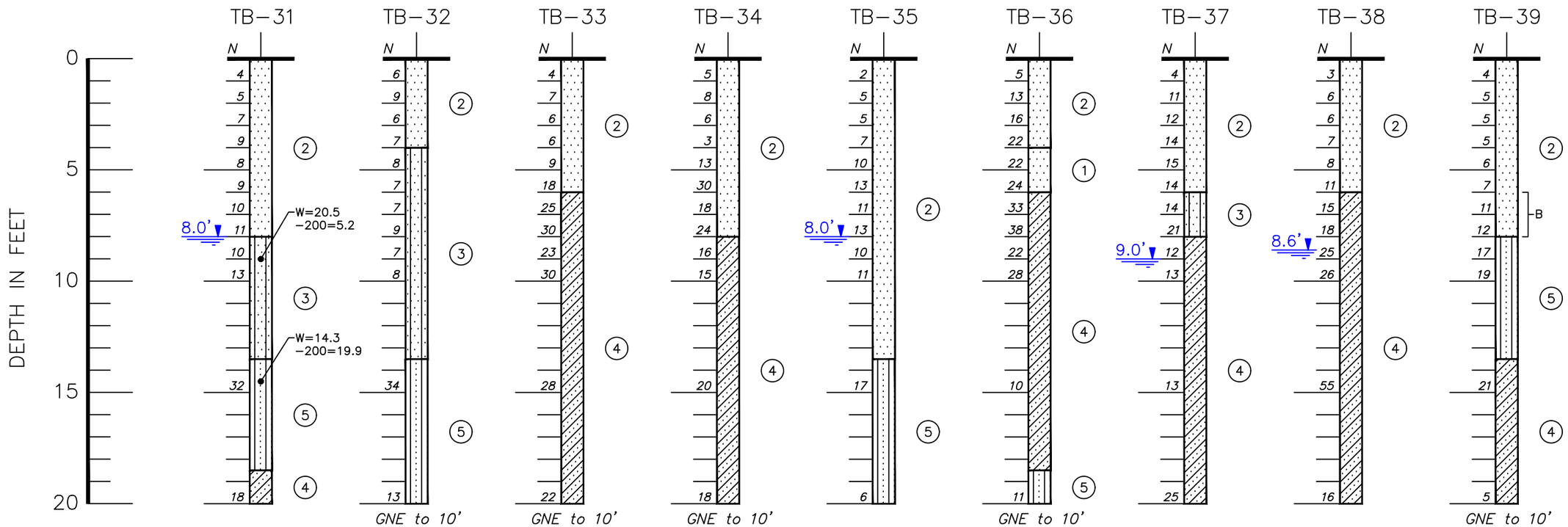
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

FIGURE 6



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–200 PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE

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Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

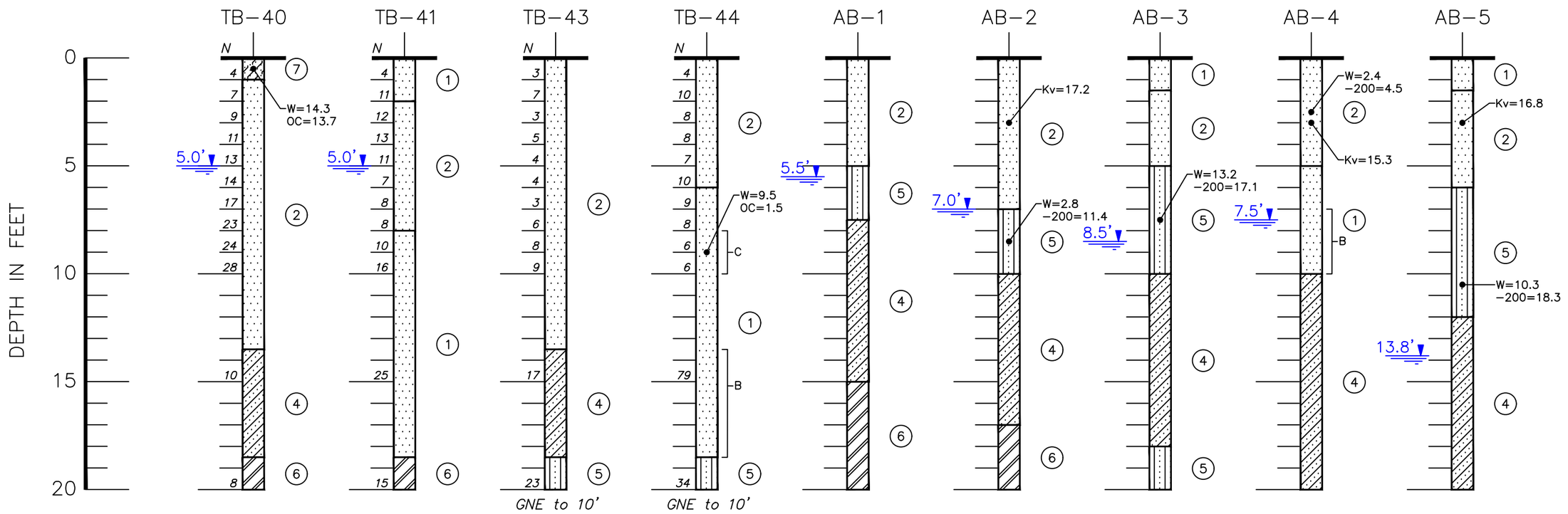
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

FIGURE 7



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Andreyev Engineering, Inc.

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

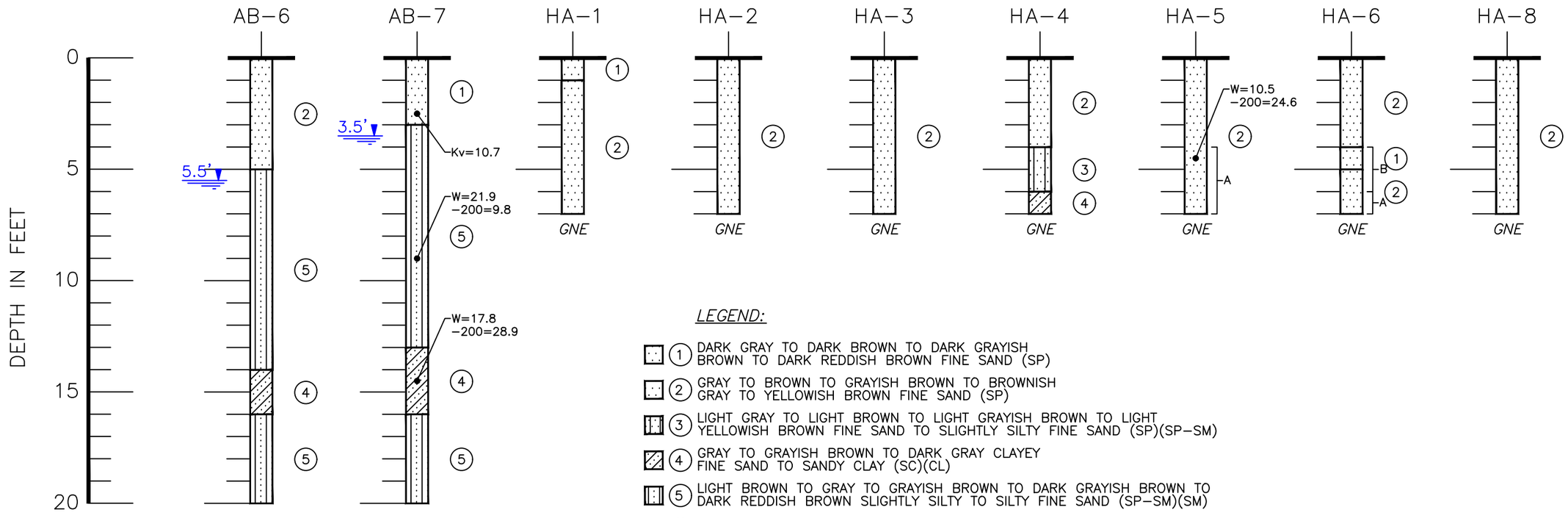
PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS

MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

FIGURE 8



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Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED SITE IMPROVEMENTS
MFLP SOUTH
APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

APPROXIMATE SCALE:	DATE: 05/19/22	ENGINEER: RJ
1"=5'	PN: GPGT–22–043	DRAWN BY: DLS

FIGURE 9

SECTION 9

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Basin Area, Curve Number, and Tc Summary

BASIN	AREA	CN	TC
#	(ac)		(min)
Basin 201-C	25.59	86	42
TOTAL	**25.59**		

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Basin Impervious Area Calculations

Basin #	Basin Area (ac.)	Imperv. Area	Total Impervious (ac.)	% Impervious
Basin 201-C	**25.59**	17.50	17.50	68.39%

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Basin Curve Number Calculations

Basin #	CN=98 Non-DCIA Impervious (ac)	Non-DCIA Impervious (% of Total)	CN=100 Pond (ac)	Pond (% of Total)	Pervious (ac)	Pervious (% of Total)	Pervious CN	Total (ac)	Non DCIA Composite CN
Basin 201-C	**Impervious Area approved by CFX and shown in Appendix C**								**86**

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Time of Concentration Calculations

BASIN	SHEET SLOPE FT/FT	SHEET FLOW L FT	MAN n	SHEET FLOW Tt MIN	SHALLOW CON SLOPE FT/FT	SHALLOW CON FLOW L FT	P or U	AVG. VEL. V FT/S	SHALLOW CON FLOW Tt MIN	PIPE FLOW L FT	PIPE FLOW Tt MIN	TC MIN	PROPOSED TC MIN
Basin 201-C					Approved by CFX							36	42

Kinematic Wave Equation (Sheet Flow), Shallow Conc. Flow & Pipe Flow (SCS TR-55):

t = 0.93*L^0.6*n^0.6/I^0.4*s^0.3 + L/60*V + L/60*V

t = overland flow travel time (minutes), L = overland flow length (ft.), n = mannings roughness coefficient
I = rainfall intensity (4.50 in/hr), s = average slope (ft/ft), V = average velocity (ft/s) = 20.3282(s^0.5) (paved) or 16.1345(s^0.5) (unpaved)
60=conversion factor from seconds to minutes

For an additional 1180 LF of pipe to new CFX pond, the TC will be increased by 6 min to 42 min.

Pipe Flow L	Pipe Flow	TC
(FT)	(Tt MIN)	(MIN)
1180	5.62	6

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Water Quality Calculations

				Water Quality		Nutrient W.Q		
Basin	Basin Area	Impervious Area	Dry Pond	0.5 in x area	1.25 in x imp	Phosphorus Runoff Required 1.25" x area	Water Quality Required in Dry	Water Quality Provided in Dry
#	(ac)	(ac)	#	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)
Basin 201-C	25.59	17.50	P1	1.07	1.82	2.67	2.67	5.84

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
Stage - Storage Calculations

POND 201-C

ELEVATION (feet)	AREA (acres)	AVG AREA (acres)	DEPTH (feet)	STORAGE (ac-ft)	CUM STORAGE (ac-ft)
74.00	2.49				0.00
		2.56	1.00	2.56	
75.00	2.64				2.56
		2.71	1.00	2.71	
76.00	2.78				5.27
		2.86	1.00	2.86	
77.00	2.93				8.13
		3.01	1.00	3.01	
78.00	3.08				11.13
		3.16	1.00	3.16	
79.00	3.23				14.29
		3.43	1.00	3.43	
80.00	3.63				17.72
		3.83	1.00	3.83	
81.00	4.04				21.56

Required Treatment Volume =	2.67	Ac-ft
Elevation of Treatment Volume =	75.04	feet
Weir Set at =	76.20	feet
Provided Treatment Volume =	5.84	Ac-ft

Mid-Florida Logistics South Park
POST-DEVELOPMENT STORMWATER ANALYSIS
SHGWT & Aquifer Elevations

Pond No.	Boring Number	Ground Elevation	Average Depth to SHWT	Bottom of Aquifer Elevation NGVD29
POND 201-C	TB-32	77.6	69.7	62.7
	TB-39	75.5		
	TB-40	71		
	HA-11	79.8		
	HA-12	77.1		

Note:
The information heron was provided by Andreyev Engineering, Inc.

Spreader Swale Analyses and Conveyance Pipe

SPREADER SWALE ANALYSIS

Rate	6.6	Cubic Foot Per Second
Cross Seciton Area of Pipe	1017	Inch Squared
Cross Seciton Area of Pipe	7.06	Foot Squared
Velocity in Pipe	0.93	Foot/Second

MANNING'S EQUATION FOR PIPE FLOW

Project: Mid-Florida Logistics South Location: City of Apopka

By: Mack Date: 3/2/2023

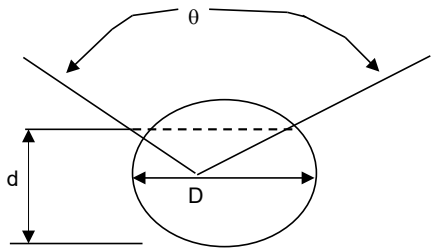
Chk. By: DSE Date: 3/2/2023

mdo version 12.8.00

Clear Data Entry Cells

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$



INPUT

D=	48	inches
d=	18	inches
n=	0.013	mannings coeff
θ=	180.0	degrees
S=	0.008	slope in/in

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
6.28	6.28	1.00	10.22	64.24

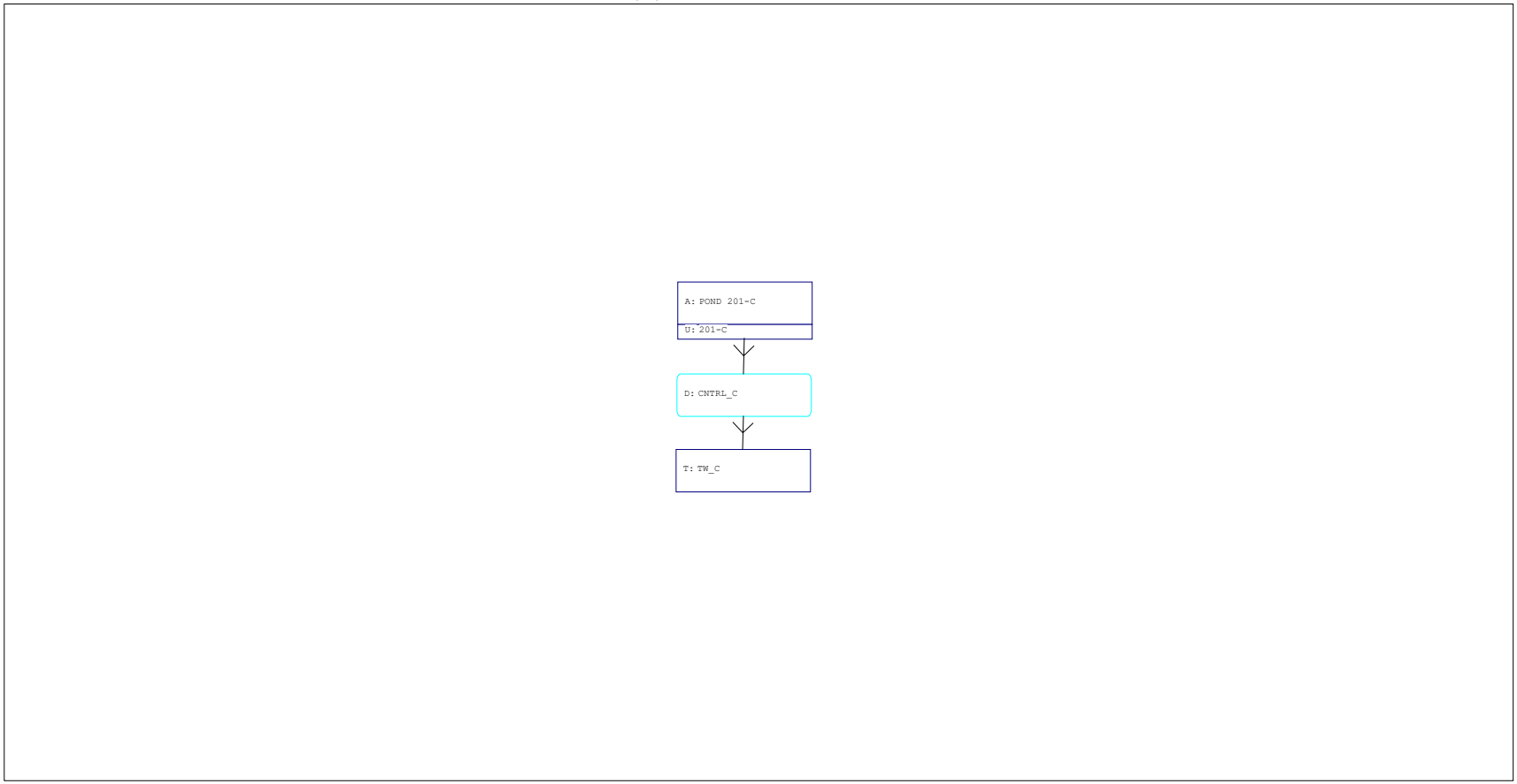
Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013

Created by: Mike O'Shea

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



F:\ANC7\Drainage\Ad ICPR\CFX POND\2023-3-02\POST\ANC-7 CFX POST.ICP

Basins

Name: 201-C | Node: POND 201-C | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 | Peaking Factor: 323.0
Rainfall File: | Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 | Time of Conc(min): 42.00
Area(ac): 25.590 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Nodes

Name: POND 201-C | Base Flow(cfs): 0.000 | Init Stage(ft): 74.000
Group: BASE | Warn Stage(ft): 81.000
Type: Stage/Area

Stage(ft)	Area(ac)
74.000	2.4900
75.000	2.6400
76.000	2.7800
77.000	2.9300
78.000	3.0800
79.000	3.3200
80.000	3.6300
81.000	4.0400

Name: TW_C | Base Flow(cfs): 0.000 | Init Stage(ft): 69.000
Group: BASE | Warn Stage(ft): 69.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	69.000
30.00	69.000

Drop Structures

Name: CNTRL_C | From Node: POND 201-C | Length(ft): 103.00
Group: BASE | To Node: TW_C | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	70.000	69.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.300
Exit Loss Coef: 0.300
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure CNTRL_C ***

TABLE

Count: 1 | Bottom Clip(in): 0.000
Type: Horizontal | Top Clip(in): 0.000
Flow: Both | Weir Disc Coef: 3.200
Geometry: Rectangular | Orifice Disc Coef: 0.600

Span(in): 37.00 | Invert(ft): 80.000
Rise(in): 49.00 | Control Elev(ft): 80.000

*** Weir 2 of 2 for Drop Structure CNTRL_C ***

TABLE

```
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Vertical: Mavis          Top Clip(in): 0.000
                   Flow: Both                   Weir Disc Coef: 3.200
               Geometry: Rectangular          Orifice Disc Coef: 0.600

               Span(in): 5.00                       Invert(ft): 76.200
               Rise(in): 45.60                Control Elev(ft): 76.200


================================================================================
==== Hydrology Simulations =====================================================
================================================================================

         Name: 100Y-24H
     Filename: F:\ANC7\Drainage\Ad ICPR\CFX POND\2023-3-02\POST\100Y-24H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Orange
    Rainfall Amount(in): 10.50

Time(hrs)       Print Inc(min)
--------------- ---------------
12.000          5.00
30.000          5.00

--------------------------------------------------------------------------------------------------------
         Name: 10Y-24H
     Filename: F:\ANC7\Drainage\Ad ICPR\CFX POND\2023-3-02\POST\10Y-24H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Orange
    Rainfall Amount(in): 7.68

Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.00

--------------------------------------------------------------------------------------------------------
         Name: 25Y-24H
     Filename: F:\ANC7\Drainage\Ad ICPR\CFX POND\2023-3-02\POST\25Y-24H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Orange
    Rainfall Amount(in): 8.60

Time(hrs)       Print Inc(min)
--------------- ---------------
12.000          5.00
30.000          5.00

--------------------------------------------------------------------------------------------------------
         Name: MEANFL
     Filename: F:\ANC7\Drainage\Ad ICPR\CFX POND\2023-3-02\POST\MEANFL.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Orange
    Rainfall Amount(in): 4.50

Time(hrs)       Print Inc(min)
--------------- ---------------
12.000          5.00
30.000          5.00

================================================================================
==== Routing Simulations =======================================================
================================================================================

         Name: 100Y-24H           Hydrology Sim: 100Y-24H
     Filename: F:\ANC7\Drainage\Ad ICPR\CFX POND\2023-3-02\POST\100Y-24H.I32

      Execute: Yes         Restart: No           Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                   Delta Z Factor: 0.50000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                   End Time(hrs): 24.00
     Min Calc Time(sec): 2.0000              Max Calc Time(sec): 5.0000
        Boundary Stages:                        Boundary Flows:


Time(hrs)       Print Inc(min)
```

24.000	15.000

Group	Run
BASE	Yes

Name: 10Y-24H Hydrology Sim: 10Y-24H
Filename: F:\ANC7\Drainage\Ad ICPR\CFX POND\2023-3-02\POST\10Y-24H.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.50000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
24.000	15.000

Group	Run
BASE	Yes

Name: 25Y-24H Hydrology Sim: 25Y-24H
Filename: F:\ANC7\Drainage\Ad ICPR\CFX POND\2023-3-02\POST\25Y-24H.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.50000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
24.000	15.000

Group	Run
BASE	Yes

Name: MEANFL Hydrology Sim: MEANFL
Filename: F:\ANC7\Drainage\Ad ICPR\CFX POND\2023-3-02\POST\MEANFL.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.50000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 2.0000 Max Calc Time(sec): 5.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
30.000	15.000

Group	Run
BASE	Yes

Name:	201-C	201-C	201-C	201-C
Group:	BASE	BASE	BASE	BASE
Simulation:	100Y-24H	10Y-24H	25Y-24H	MEANFL
Node:	POND 201-C	POND 201-C	POND 201-C	POND 201-C
Type:	SCS	SCS	SCS	SCS
Unit Hydrograph:	Uh323	Uh323	Uh323	Uh323
Peaking Factor:	323.0	323.0	323.0	323.0
Spec Time Inc(min):	5.60	5.60	5.60	5.60
Comp Time Inc(min):	5.00	5.00	5.00	5.00
Rain File:	Orange	Orange	Orange	Orange
Rain Amount(in):	10.500	7.680	8.600	4.500
Duration(hrs):	24.00	24.00	24.00	24.00
Status:	Onsite	Onsite	Onsite	Onsite
TC(min):	42.00	42.00	42.00	42.00
Time Shift(hrs):	0.00	0.00	0.00	0.00
Area(ac):	25.590	25.590	25.590	25.590
Vol of Unit Hyd(in):	1.001	1.001	1.001	1.001
Curve Num:	86.000	86.000	86.000	86.000
DCIA(%):	0.000	0.000	0.000	0.000
Time Max(hrs):	9.17	9.17	9.17	9.25
Flow Max(cfs):	47.106	32.794	37.477	16.649
Runoff Volume(in):	8.760	6.014	6.906	3.000
Runoff Volume(ft3):	813755.544	558663.434	641475.572	278632.806

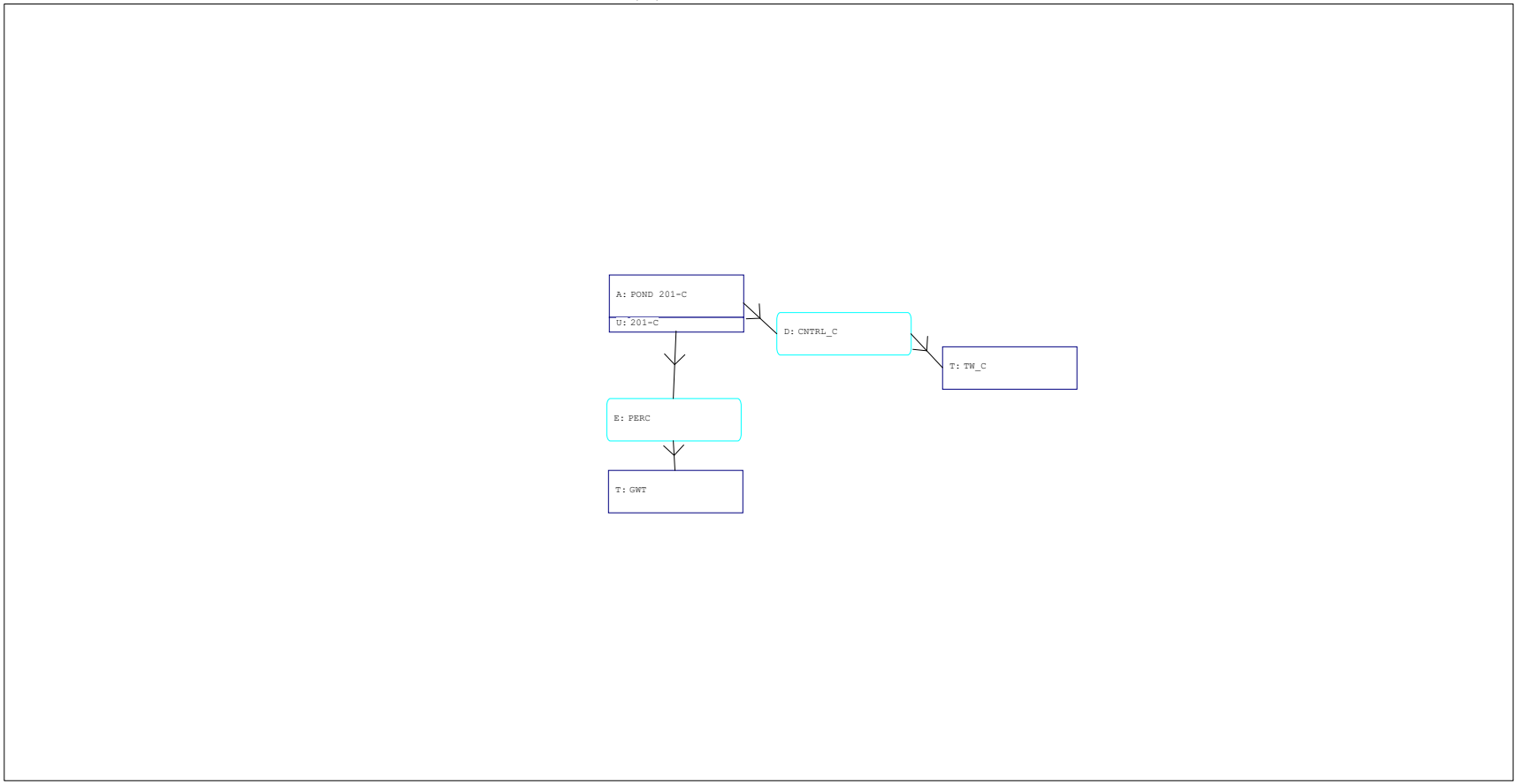
MID-FLORIDA LOGISTIC PARK SOUTH - CFX
POST-DEVELOPMENT - NODE MIN MAX
3/2/2023

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
POND 201-C	BASE	100Y-24H	14.53	79.114	81.000	0.0019	146162	9.17	47.105	14.53	6.633
POND 201-C	BASE	10Y-24H	15.39	77.897	81.000	0.0014	133489	9.17	32.794	15.39	2.947
POND 201-C	BASE	25Y-24H	15.00	78.312	81.000	0.0015	137426	9.17	37.477	15.00	4.092
POND 201-C	BASE	MEANFL	24.00	76.379	81.000	0.0007	123573	9.25	16.648	24.00	0.101

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

Basins

Name: 201-C | Node: POND 201-C | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 | Peaking Factor: 323.0
Rainfall File: | Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 | Time of Conc(min): 42.00
Area(ac): 25.590 | Time Shift(hrs): 0.00
Curve Number: 86.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Nodes

Name: GWT | Base Flow(cfs): 0.000 | Init Stage(ft): 69.700
Group: BASE | Warn Stage(ft): 69.700
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	69.700
30.00	69.700

Name: POND 201-C | Base Flow(cfs): 0.000 | Init Stage(ft): 75.040
Group: BASE | Warn Stage(ft): 81.000
Type: Stage/Area

Stage(ft)	Area(ac)
74.000	2.4900
75.000	2.6400
76.000	2.7800
77.000	2.9300
78.000	3.0800
79.000	3.3200
80.000	3.6300
81.000	4.0400

Name: TW_C | Base Flow(cfs): 0.000 | Init Stage(ft): 69.000
Group: BASE | Warn Stage(ft): 69.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	69.000
30.00	69.000

Drop Structures

Name: CNTRL_C | From Node: POND 201-C | Length(ft): 103.00
Group: BASE | To Node: TW_C | Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	70.000	69.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.300
Exit Loss Coef: 0.300
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure CNTRL_C ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	37.00	Invert(ft):	80.000
Rise(in):	49.00	Control Elev(ft):	80.000

*** Weir 2 of 2 for Drop Structure CNTRL_C ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	5.00	Invert(ft):	76.200
Rise(in):	45.60	Control Elev(ft):	76.200

Percolation Links

Name:	PERC	From Node:	POND 201-C
Flow:	Both		
Group:	BASE	To Node:	GWT
Count:	1		

Surface Area Option: Vary based on Stage/Area Table
Vertical Flow Termination: Horizontal Flow Algorithm

Aquifer Base Elev(ft):	62.700	Perimeter 1(ft):	1595.000
Water Table Elev(ft):	69.700	Perimeter 2(ft):	1966.000
Ann Recharge Rate(in/year):	0.000	Perimeter 3(ft):	1966.000
Horiz Conductivity(ft/day):	14.950	Distance 1 to 2(ft):	50.000
Vert Conductivity(ft/day):	5.700	Distance 2 to 3(ft):	450.000
Effective Porosity(dec):	0.250	Num Cells 1 to 2:	10
Suction Head(in):	4.170	Num Cells 2 to 3:	45
Layer Thickness(ft):	4.300		

Exfiltration Trenches

Name:		From Node:	
Flow:	Both		
Group:	BASE	To Node:	
Count:	1		
Aquifer Base Elev(ft):	0.000	Trench Bot Elev(ft):	0.000
Water Table Elev(ft):	0.000	Trench Width(ft):	0.000
Ann Recharge Rate(in/year):	0.000	Trench Length(ft):	0.000
Horiz Conductivity(ft/day):	0.000	Trench Height(ft):	0.000
Vert Conductivity(ft/day):	0.000	Gravel Porosity(dec):	0.000
Effective Porosity(dec):	0.000	Pipe Diameter(in):	0.000
Suction Head(in):	0.000	Pipe Invert Elev(ft):	0.000
		End Treatment:	Exclude
		Cell Spacing(ft):	0.000
		Num Cells:	0

Routing Simulations

Name:	Recovery	Hydrology Sim:	25Y-24H
Filename:	F:\ANC7\Drainage\Ad ICPR\CFX POND\RECOVERY\Recovery.I32		
Execute:	Yes	Restart:	No
Patch:	No		
Alternative:	No		
Max Delta Z(ft):	1.00	Delta Z Factor:	0.50000
Time Step Optimizer:	10.000		
Start Time(hrs):	0.000	End Time(hrs):	72.00
Min Calc Time(sec):	2.0000	Max Calc Time(sec):	5.0000
Boundary Stages:		Boundary Flows:	

Time(hrs)	Print Inc(min)
72.000	30.000

Group Run

BASE	Yes

MID-FLORIDA LOGISTIC PARK SOUTH - CFX
RECOVERY - NODE TIME SERIES
3/2/2023

Simulation	Node	Group	Time	Stage	Warning Stage	Surface Area	Total Inflow	Total Outflow	Total Vol In	Total Vol Out
			hrs	ft	ft	ft2	cfs	cfs	af	af
Recovery	POND 201-C	BASE	0.00	75.040	81.000	115242	0.000	0.000	0.00	0.00
Recovery	POND 201-C	BASE	0.50	74.921	81.000	114484	0.000	7.553	0.00	0.16
Recovery	POND 201-C	BASE	1.00	74.803	81.000	113708	0.000	7.502	0.00	0.47
Recovery	POND 201-C	BASE	1.50	74.684	81.000	112932	0.000	7.450	0.00	0.78
Recovery	POND 201-C	BASE	2.00	74.565	81.000	112156	0.000	7.399	0.00	1.08
Recovery	POND 201-C	BASE	2.50	74.446	81.000	111380	0.000	7.348	0.00	1.39
Recovery	POND 201-C	BASE	3.00	74.328	81.000	110604	0.000	7.297	0.00	1.69
Recovery	POND 201-C	BASE	3.50	74.209	81.000	109828	0.000	7.246	0.00	1.99
Recovery	POND 201-C	BASE	4.00	74.090	81.000	109053	0.000	7.194	0.00	2.29
Recovery	POND 201-C	BASE	4.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	5.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	5.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	6.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	6.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	7.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	7.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	8.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	8.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	9.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	9.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	10.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	10.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	11.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	11.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	12.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	12.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	13.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	13.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	14.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	14.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	15.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	15.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	16.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	16.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	17.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	17.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	18.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	18.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	19.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	19.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	20.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	20.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	21.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	21.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	22.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	22.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	23.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	23.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	24.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	24.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	25.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	25.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	26.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	26.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	27.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	27.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	28.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	28.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	29.00	74.000	81.000	108464	0.000	0.000	0.00	2.44

Simulation	Node	Group	Time	Stage	Warning Stage	Surface Area	Total Inflow	Total Outflow	Total Vol In	Total Vol Out
			hrs	ft	ft	ft2	cfs	cfs	af	af
Recovery	POND 201-C	BASE	29.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	30.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	30.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	31.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	31.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	32.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	32.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	33.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	33.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	34.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	34.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	35.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	35.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	36.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	36.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	37.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	37.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	38.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	38.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	39.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	39.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	40.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	40.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	41.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	41.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	42.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	42.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	43.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	43.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	44.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	44.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	45.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	45.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	46.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	46.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	47.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	47.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	48.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	48.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	49.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	49.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	50.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	50.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	51.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	51.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	52.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	52.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	53.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	53.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	54.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	54.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	55.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	55.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	56.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	56.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	57.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	57.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	58.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	58.50	74.000	81.000	108464	0.000	0.000	0.00	2.44

Simulation	Node	Group	Time	Stage	Warning Stage	Surface Area	Total Inflow	Total Outflow	Total Vol In	Total Vol Out
			hrs	ft	ft	ft2	cfs	cfs	af	af
Recovery	POND 201-C	BASE	59.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	59.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	60.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	60.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	61.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	61.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	62.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	62.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	63.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	63.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	64.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	64.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	65.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	65.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	66.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	66.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	67.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	67.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	68.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	68.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	69.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	69.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	70.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	70.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	71.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	71.50	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	72.00	74.000	81.000	108464	0.000	0.000	0.00	2.44
Recovery	POND 201-C	BASE	72.00	74.000	81.000	108464	0.000	0.000	0.00	2.44

Andreyev Engineering, Inc.

SANFORD OFFICE
4055 St. John's Parkway
Sanford, Florida 32771
407-330-7763

▼ Groundwater ▼ Environmental ▼ Geotechnical ▼ Construction Materials Testing

December 5, 2022
GPGT-22-043

To: **ARCO National Construction**
5015 Northwest Canal Street, Suite 110
Riverside, Missouri 64150

Attention: **Mr. Steven Brewer**
Business Development Manager

Subject: **Preliminary Geotechnical Investigation, Proposed CFX Stormwater Retention Area, MFLP South, Apopka, Orange County, Florida**

Dear Mr. Brewer:

As requested, Andreyev Engineering, Inc. (AEI) has completed a preliminary geotechnical investigation for a proposed 4.07 acre site within the MFLP project area that is proposed for construction of a new stormwater retention area. As you are aware, previous investigations have been completed at the site, and these investigation results have been reviewed along with additional testing to provide preliminary geotechnical engineering recommendations to assist stormwater retention system planning and design.

SITE LOCATION AND DESCRIPTION

The subject site is located in Section 12, Township 21 South, and Range 27 East, in Apopka, Orange County, Florida. We have included the U.S.G.S. Topographic Map, which depicts the location of the site, on the attached **Figure 1**. In addition, the Natural Resources Conservation Service (NRCS) Soil Map, which depicts the location and general soil types of the subject site and is presented on the attached **Figure 2**.

PURPOSE AND SCOPE OF SERVICES

The purpose of this geotechnical study was to explore subsurface soil and groundwater conditions at this site to assist with stormwater retention system design for the newly proposed CFX stormwater retention area. This evaluation includes four previously performed Standard Penetration Test (SPT) borings, designated as TB-32, TB-39, TB-40, and TB-41, two previously performed machine auger borings AB-6 and AB-7, and recently performed HA-11 and HA-12.

The scope of this preliminary investigation and evaluation included:

- Previously drilled four (4) Standard Penetration Test (SPT) borings, designated as TB-32, TB-39, TB-40, and TB-41, to a depth of 20 to 25 feet below ground surface, within and adjacent to the newly proposed CFX stormwater retention area.

- Previously drilled two (2) machine auger borings, designated as AB-6 and AB-7, to a depth of 20 feet below ground surface within and adjacent to the proposed CFX stormwater retention area.

- Drilled two (2) manual auger borings, designated as HA-11 and HA-12, to a depth of 7 feet below ground surface, within the proposed CFX stormwater retention area.

- Collected two (2) undisturbed permeability tube samples from the newly proposed CFX stormwater retention area and conducted laboratory permeability testing on the undisturbed permeability tube samples to assess soil hydraulic conductivity.

Samples were recovered from the borings and returned to AEI's laboratory for visual classification and stratification. Soil strata were classified according to the Unified Soil Classification System (USCS). Approximate boring locations are shown on **Figure 3**, results of the Standard Penetration Test (SPT) borings and auger borings, in profile form, are presented on **Figure 4**. On the profiles, horizontal lines designating the interface between differing materials represent approximate boundaries. The actual transition between layers is typically gradual.

NATURAL RESOURCES CONSERVATION SERVICE SOIL SURVEY

The publication titled "Soil Survey of Orange County, Florida" published by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) was reviewed. For your reference, we have included a portion of the NRCS Soil Map which depicts the location of the subject site on the attached **Figure 2**.

Five (5) soil map units were identified to exist within and in the immediate vicinity of this project location and are presented as follows:

Soil Map Unit 6: ***Candler – Apopka Fine Sands, 5 to 12% Slopes***

Brief Description: "The soils in this map unit are sloping and strongly sloping and excessively drained and well drained. These soils are on the uplands. They occur in a regular repeating pattern. Candler soil is sloping and excessively drained. It is on summits and lower side slopes. Apopka soil is strongly sloping and well drained. It is on the upper side slopes. Typically, the surface layer of Candler soil is dark grayish brown sand about 6 inches thick. Typically, the surface layer of Apopka soil is dark grayish brown sand about 5 inches thick. **A seasonal high water table is at a depth of more than 72 inches in Apopka soil and is at a depth of more than 80 inches in Candler soil.** The permeability of Candler soil is rapid in the surface and subsurface layers and is rapid to moderately rapid in the subsoil. The permeability of Apopka soil is rapid in the surface and subsurface layers and is moderate in the subsoil."

Soil Map Unit 23: ***Malabar Fine Sand***

Brief Description: "This soil is nearly level and poorly drained. It is in low, narrow to broad sloughs and poorly defined drainageways. The slopes are smooth to concave and range from 0 to 2 percent. **In most years, a seasonal high water table is within 10 inches of the surface for 2 to 6 months and between depths of 10 and 40 inches for most of the year.** In most areas this Malabar soil has been left in natural vegetation. In some areas, it has been drained and is used for cultivated crops or improved pasture or for homesite and urban development. This soil has severe limitations for building site development, sanitary facilities, and recreational uses. Water control measures should be used and fill material is needed to minimize the excessive wetness limitation."

Soil Map Unit 25: ***Okeelanta Muck***

Brief Description: "This soil is nearly level and very poorly drained. It is in freshwater swamps and in drained areas north of Lake Apopka. Large ditches and canals equipped with water control structures dissect the map unit in most places. Undrained areas are ponded for 6 to 9 months or more each year. The slopes are smooth and less than 1 percent. Typically, the upper part of the surface layer is black muck about 9 inches thick. The lower part, to a depth of about 25 inches, is dark brown muck. The upper part of the underlying material, to a depth of about 62 inches, is light gray fine sand, that has dark gray mottles. The lower part to a depth of 80 inches or more is grayish brown loamy sand. **Under natural conditions, the water table is ponded for 6 to 9 months or more each year. In most years, a seasonal high water table is at or near the surface.** In drained areas, the water table is controlled at a depth of 10 to 36 inches, or according to the need of the crop."

Soil Map Unit 34: ***Pomello Fine Sand, 0 to 5% Slopes***

Brief Description: "This soil is a nearly level to gently sloping, moderately well drained sandy soil. **In most years the seasonal high water table is at a depth of 24 to 40 inches for 1 month to 4 months and recedes to a depth of 40 to 60 inches during dry periods.** In most areas, this Pomello soil is used for native range, or it has been left in natural vegetation. In a few areas, this soil is used for citrus crops, cultivated crops, or improved pasture or for homesite and urban development."

Soil Map Unit 42: ***Sanibel Muck***

Brief Description: "This soil is nearly level and very poorly drained. These soils are in depressions, freshwater swamps and marshes, and in poorly defined drainage ways. Undrained areas are ponded for 6 to 9 months or more each year. The slopes are concave and less that 1 percent. Typically, this soil has an organic surface layer of black muck about 11 inches thick. Below that layer, to a depth of about 15 inches, is black fine sand. In most years undrained areas of this soil are ponded for 6 to 9 months or more except during extended dry periods. **The water table fluctuates between depths of about 10 inches and the surface for 2 to 6 months.** This soil has severe limitations for building site development, sanitary facilities, and recreational uses because of ponding and excess humus. Water control measures should be used to minimize the excessive wetness limitation. Orgainic material should be removed and backfilled with a soil material suitable for urban development."

SOIL AND GROUNDWATER CONDITIONS

Soil Conditions

The soil types encountered at the boring locations are presented in the form of soil profiles on the attached **Figure 4**. The stratification presented is based on visual examination of the recovered soil samples and the interpretation of the field logs by a geotechnical engineer.

In general, the borings encountered the following soil Strata:

- Dark Gray to Dark Brown to Dark Grayish Brown to Dark Reddish Brown Fine Sand (Stratum 1)
- Gray to Brown to Grayish Brown to Reddish Brown to Brownish Gray to Yellowish Brown Fine Sand to Slightly Silty Fine Sand (Stratum 2)
- Light Gray to Light Brown to Light Grayish Brown to Light Yellowish Brown Fine Sand (Stratum 3)
- Gray to Grayish Brown to Dark Gray Clayey Fine Sand to Sandy Clay (Stratum 4)
- Light Brown to Gray to Grayish Brown to Dark Gray to Dark Grayish Brown to Dark Reddish Brown Slightly Silty to Silty Fine Sand (Stratum 5)
- Light Gray to Gray to Grayish Brown Clay (Stratum 6)
- Dark Brown to Dark Grayish Brown to Black Organic Fine Sand (Stratum 7)

Variations in the above Strata were further noted by:

A. With Pieces of Clayey Fine Sand

B. With Cemented Pieces – Hardpan Type

C. Organically Stained

Standard Penetration Test (SPT) borings measure soil density using a split spoon sampler advanced by a 140-pound hammer dropped repeatedly a distance of 30 inches. The N-value, which is shown next to the corresponding depths of the boring profile, is the number of blows by the hammer required to advance the split spoon sampler one (1) foot. Split spoon sampling was conducted continuously in the upper 10 feet and at 5-foot intervals thereafter. Also included, adjacent to the SPT borings, are the blow counts or “N” values. The “N” values have been empirically correlated with various soil properties and are considered to be indicative of the relative density of cohesionless soils and the consistency of cohesive material. Upon completion of drilling, the SPT boreholes were backfilled with additional bentonite and soil materials.

Correlation of the SPT-N values with relative density, unconfined compressive strength and consistency are provided in the following table:

Coarse-Grained Soils		Fine Grained Soils		
Penetration Resistance N (blows/ft)	Relative Density of Sand	Penetration Resistance N (blows/ft)	Unconfined Compressive Strength of Clay (tons/ft^2)	Consistency of Clay
0-4	Very Loose	<2	<0.25	Very Soft
4-10	Loose	2-4	0.25-0.50	Soft
10-30	Medium-Dense	4-8	0.50-1.00	Medium
30-50	Dense	8-15	1.00-2.00	Stiff
>50	Very Dense	15-30	2.00-4.00	Very Stiff
		>30	>4.00	Hard

Please refer to **Figures 3 and 4** for boring locations, strata depths, and encountered soil conditions. The stratification lines represent the approximate boundaries between soil types. The actual transition may be gradual. Minor variations not considered important to our engineering evaluations may have been abbreviated or omitted for clarity.

Groundwater Conditions

Attempts were made to reopen several previous boreholes on December 1, 2022, to assess groundwater conditions. However, some locations were no longer identified by stakes and the exact location could not be identified at some locations. After opening boreholes and allowing for stabilization, groundwater was measured at depths of 4.2 and 4.0 feet at TB-40 and TB-41, respectively. At the time of our initial study in April of 2022, groundwater was not measured below a depth of 10 feet at TB-32 and TB-39, due to the drilling method mud rotary, which uses a thick bentonite drilling slurry to maintain an open borehole. Also, at the time of our initial study, groundwater was measured at depths 3.5 and 5.5 feet at AB-6 and AB-7. At recently performed manual auger borings HA-11 and HA-12, groundwater was not encountered between the ground surface and the termination depth of drilling of 7 feet.

Based on the encountered subsurface conditions, our local experience, NRCS soil survey, and antecedent rainfall conditions, the normal seasonal high groundwater level is estimated to exist about 1 to 2 feet above measured levels at TB-40, TB-41, AB-6, and AB-7. At TB-32 and TB-39, the normal seasonal high groundwater table is estimated to exist at a depth of about 8 feet below the existing ground surface. At HA-11 and HA-12, the normal seasonal high groundwater table is estimated to exist at or slightly above the termination depth of drilling of 7 feet.

Organic Content Test Results

The results of the laboratory classification test selected for moisture content and organic content for the Stratum 7 organic fine sand are presented as follows:

TB-40

Sample Depth:	1.0 feet
Classification:	Organic Fine Sand
Moisture Content:	14.3%
Organic Content:	13.7%

Typically, organic content values of 4% to 5% are indicative of organic material that is susceptible to decomposition related settlement that can cause differential settlement related damage of supported structures. The results of the laboratory classification tests for moisture content and organic content are shown adjacent to the tested depth and corresponding soil profile on **Figure 4**.

Laboratory Test Results - Percent of Fines Passing a U.S #200 Sieve

The results of the laboratory classification tests selected for moisture content and percent of fines passing a U.S. #200 Sieve are shown adjacent to the corresponding soil profile and depth on **Figure 4** and are also presented as follows:

AB-7

Sample Depth:	9.0 feet
Classification:	S.S. to S. F. S.*
Moisture Content:	21.9%
Percent of Fines:	9.8%

AB-7

Sample Depth:	13.5 Feet
Classification:	C. F. S. to S.C.**
Moisture Content:	17.8%
Percent of Fines:	28.9%

* Slightly Silty to Silty Fine Sand
** Clayey Fine Sand to Sandy Clay

PRELIMINARY EVALUATIONS AND RECOMMENDATIONS

General

Dependent on planned site grades, the proposed CFX stormwater retention area, located in the vicinity of TB-32, TB-39, TB-40, HA-11, and HA-12 appears suitable for dry stormwater retention. The on-site Strata 1, 2, and 3 sandy soils, excavated from the proposed stormwater retention area, should be suitable for general fill purposes.

More specific recommendations for the stormwater retention pond area are provided below.

Proposed Stormwater Retention Area

Based on the results of the stormwater retention area borings and dependent of planned site grades, the stormwater retention pond area located in the vicinity of TB-32, TB-39, TB-40, HA-11, and HA-12 appears suitable for dry stormwater retention system design.

On-site Strata 1, 2, and 3 sandy soils, excavated from the proposed CFX retention pond area, should be suitable for general fill purposes.

For analysis and design purposes the following aquifer characteristics should be used. These aquifer characteristics were determined from the results of the field and laboratory investigations, adjusting for depth and soil variability:

Boring Location (averaged values)	Avg. Depth to Bottom of Aquifer *	Avg. Unsat. Vertical Hydraulic Conductivity (ft/day)	Avg. Horizontal Hydraulic Conductivity (ft/day)	Avg. Depth to Seasonal High Groundwater Level *	Soil Storage Coefficient
TB-32, TB-39, TB-40, HA-11, and HA-12**	13.5	11.4	29.9	6.4	0.25

* Feet below existing ground surface
** This assumes confirmation that the pond bottom elevation will be set to provide adequate separation between the pond bottom and the estimated normal seasonal high groundwater table level.

The permeability rates of the Strata 3, 4, 5, 6, and 7 soils were estimated based on our visual and tactile classification and experience with similar soil types. Factors of safety have not been applied to the above weighted average permeability values. For the purpose of recovery analysis in accordance with water management district rules, a factor of safety of 2 should be applied to the unsaturated vertical permeability to account for long-term performance and siltation of the pond bottom.

The following formulas were used in the calculation of both the weighted average horizontal and weighted average vertical permeabilities:

$$\text{Weighted Average Vertical Permeability} = \frac{\sum L}{\frac{L_1}{Kv_1} + \frac{L_2}{Kv_2} + \frac{L_3}{Kv_3} + \ldots\ldots\ldots \frac{L_n}{Kv_n}}$$

$$\text{Weighted Average Horizontal Permeability} = \frac{Kh_1.L_1 + Kh_2.L_2 + Kh_3.L_3 + \ldots.Kh_n.L_n}{\sum L}$$

TB-32 and TB-39 (averaged values):

Unsaturated Vertical Hydraulic Conductivity
Kv unsat = 8.0ft / (6.0 ft/21.3 ft/day + 2.0 ft/25.0 ft/day) X 2/3 = 14.7 ft/day

Horizontal Hydraulic Conductivity
Kh = ((6.0 ft. x 21.3 ft/day + 4.5 ft. x 25.0 ft/day + 3.0 ft. x 5.5 ft/day) / 13.5 ft) X 1.5 = 28.5 ft/day

TB-40:

Unsaturated Vertical Hydraulic Conductivity
Kv unsat = 3.0 ft / (1.0 ft/3.5 ft/day + 2.0 ft/21.3 ft/day) X 2/3 = 5.3 ft/day

Horizontal Hydraulic Conductivity
Kh = ((1.0 ft. x 3.5 ft/day + 12.5 ft. x 21.3 ft/day) / 13.5 ft) X 1.5 = 29.9 ft/day

HA-1 and HA-2 (averaged values):

Unsaturated Vertical Hydraulic Conductivity
Kv unsat = 6.5 ft / (6.5 ft/21.3 ft/day) X 2/3 = 14.3 ft/day

Horizontal Hydraulic Conductivity
Kh = ((7.0 ft. x 21.3 ft/day) / 7.0 ft) X 1.5 = 31.9 ft/day

Fill Suitability

Based on the results of this geotechnical investigation and to evaluate soils planned to be excavated from the proposed CFX stormwater retention pond area during construction, AEI presents the following evaluations and recommendations for fill material preparation and fill placement.

Strata 1, 2, and 3 fine sand to slightly silty fine sand will be suitable for use as general fill with minimal soil preparation efforts provided root content is minimal. If the Strata 1, 2, and 3 fine sand to slightly silty fine sand exists at or below the existing site's groundwater table level, the fine sand soils will need to be properly dried, in order to control the soil's moisture content near the laboratory modified Proctor test result for optimum moisture content, prior to fill placement and compaction.

Excavated Stratum 5 slightly silty to silty fine sand and Type B sub-soils may also be used as general fill material, however; additional soil preparation efforts should be anticipated. Due to the higher percent of fines content of this soil, this soil type will exhibit a high level of moisture retention characteristics. Additional soil preparation efforts, in order to properly dry the silty fine sand and Type B soils to maintain the moisture content near optimum, will be needed prior to fill placement and compaction.

The classifications of excavated soil types with limitations for use as general fill, includes the encountered Strata 4, 6, 7, and Type A soils - clayey fine sand to sandy clay, clay, organic fine sand, silty clay, and fine sand mixed with pieces of clayey fine sand. The Strata 4, 6, and Type A clayey fine sand to sandy clay, clay, and fine sand mixed with pieces of clayey fine sand soils should not be used for direct foundation support or placed in near-surface areas, due to their moisture retention properties, difficulties with compaction, and drainage issues associated with higher surface runoff volumes, from these poorly permeable soils, when compacted. The Stratum 7 organic fine sand will oxidize and decompose over time, exposing overlying supported structures to increased levels of differential settlement, and should not be used as general fill material. The Strata 4, 6, and Type A soils, consisting of clayey fine sand to sandy clay, clay, and fine sand mixed with pieces of clayey fine sand can also expose overlying supported structures to increased levels of differential settlement, so their use should also be minimized in settlement sensitive project areas.

Excavations

Any and all excavations should be constructed in accordance with applicable local, state and federal regulation including those outlined by the Occupational Safety and Health Administration (OSHA). It is the contractor's sole responsibility for designing and constructing safe and stable excavations. Excavations should be sloped, benched or braced as required to maintain stability of the excavation sides and bottoms. Excavations should take into account loads resulting from equipment, fill stockpiles and existing construction. Any shoring need to maintain a safe excavation should be designed by a professional engineer registered in the State of Florida in accordance with local, state and federal guidelines.

LIMITATIONS

This report has been prepared for the exclusive use of ARCO National Construction, Inc., and their designers, based on our understanding of the project as stated in this report and should be considered preliminary in nature. The geotechnical recommendations provided here-in are based on the concept plans provided and our experience with similar projects and subsurface conditions. Any modifications in design concepts from the description stated in this report should be made known to AEI for possible modification of recommendations presented in this report. This exploration was performed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made as to the professional advice presented herein. Statements regarding all geotechnical recommendations are for use by the designers and are not intended for use by potential contractors. The geotechnical exploration and recommendations submitted herein are based on the data obtained from the soil borings presented on **Figure 4**. The report does not reflect any variations which may occur adjacent to, between, or away from the borings. The nature and extent of the variations between the borings may not become evident until during construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations presented in this report. An on-site visit may be required by a geotechnical engineer to note the characteristics of the variations during the construction period. AEI recommends that additional geotechnical investigations be performed at this site in order to provide a design level report once design plans have been finalized and this site has been cleared. This preliminary geotechnical study investigated the soil conditions to the drilled depths of 7 to 25 feet below ground surface and was not intended to investigate deeper soil conditions with regards to the presence or absence of Karst activity.

CLOSURE

AEI appreciates the opportunity to participate in this project, and we trust that the information herein is sufficient for your immediate needs. If you have any questions or comments concerning the contents of this report, please do not hesitate to contact the undersigned.

Sincerely,

ANDREYEV ENGINEERING, INC.

Mark L. Jung
Senior Project Manager

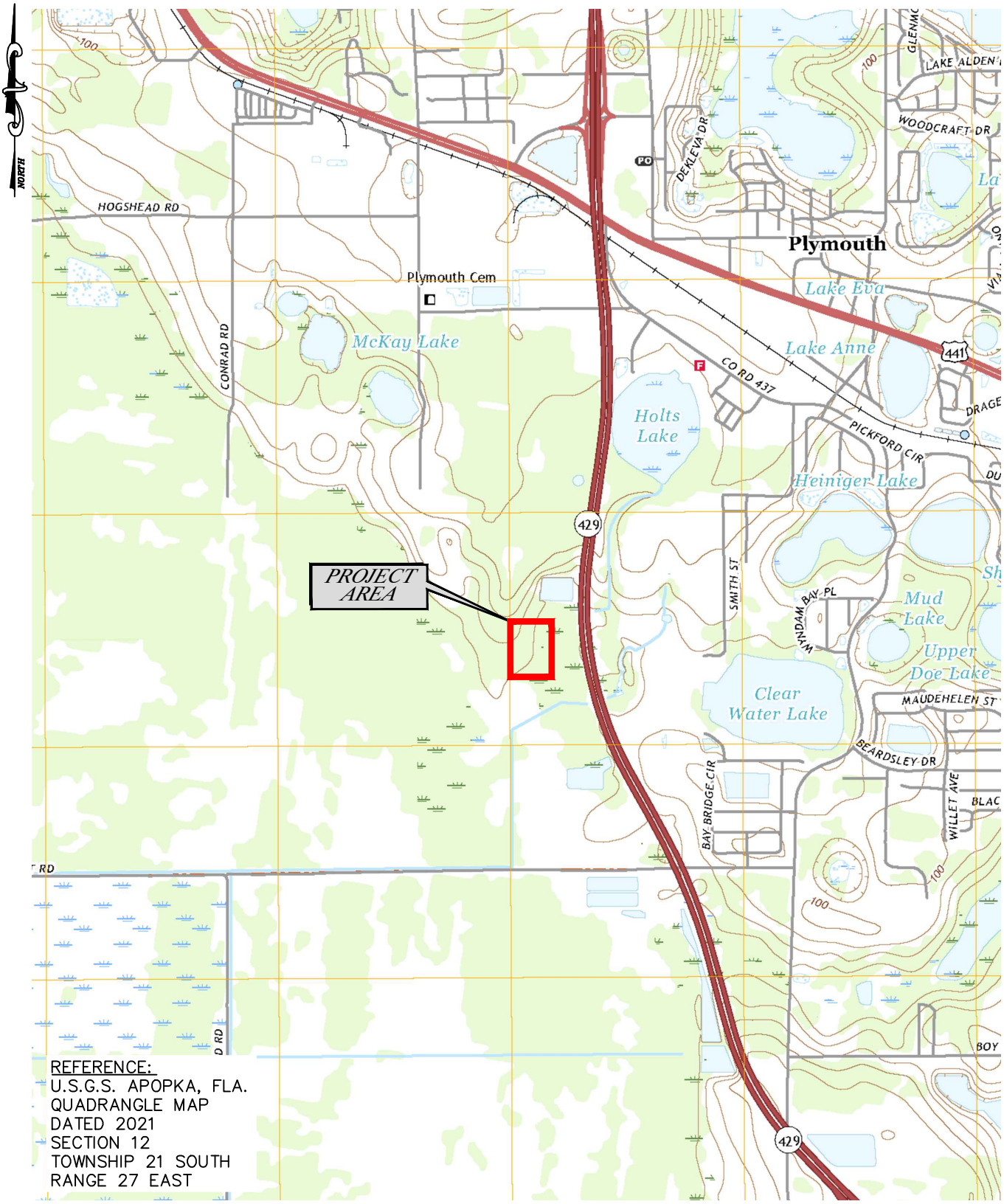
This item has been digitally signed and sealed by Ray Jones, P.E. on 12/6/22.

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

RAYMOND W. JONES LICENSE NO. 58079 STATE OF FLORIDA PROFESSIONAL ENGINEER

Raymond W. Jones, P.E.
Vice President
Florida Registration No.58079

FIGURES



Andreyev Engineering, Inc.

APPROXIMATE SCALE: 1"=2000'	DATE: 12/05/22	ENGINEER: RJ
	PN: GPGT-22-043	DRAWN BY: DLS

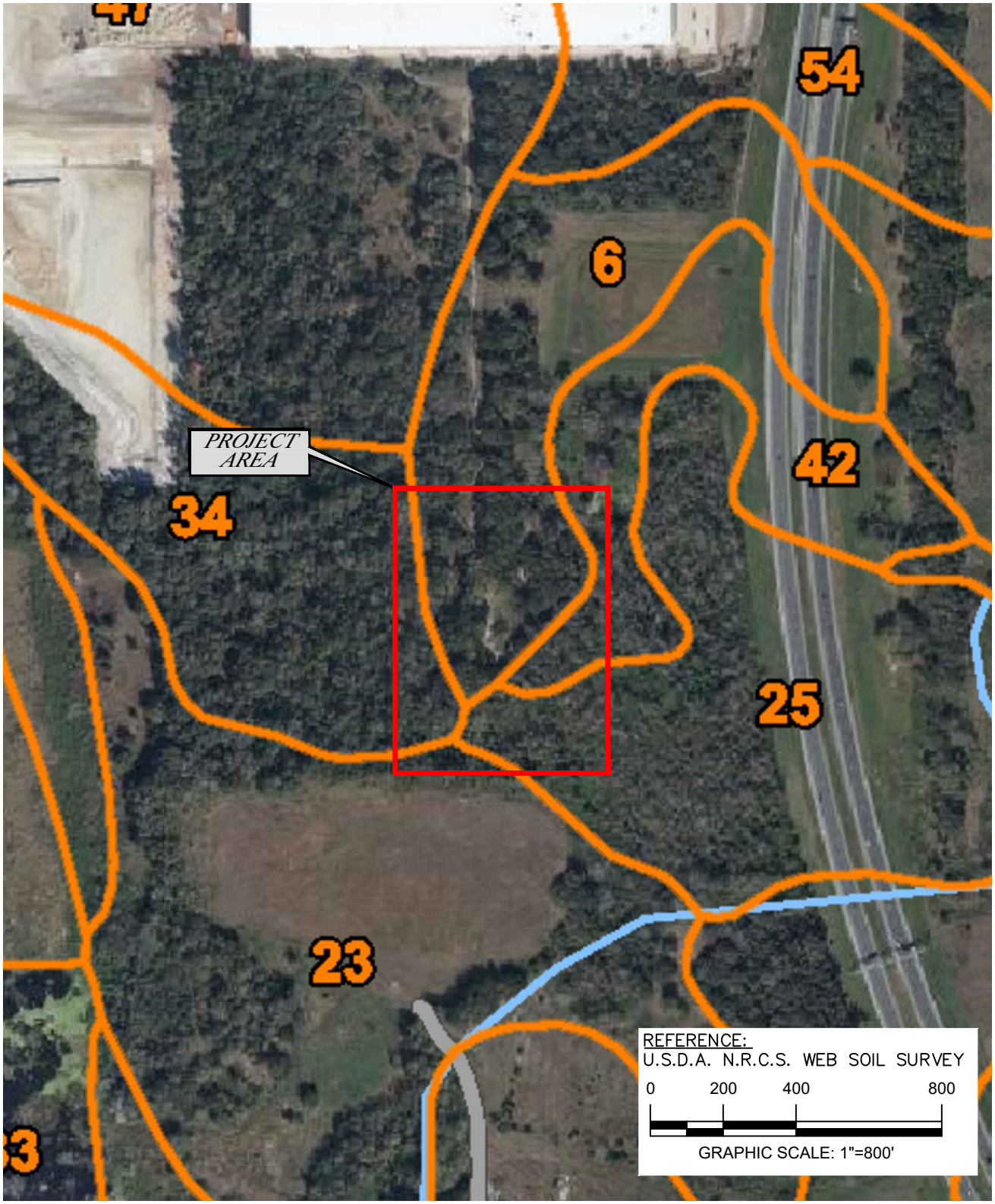
PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED CFX STORMWATER RETENTION AREA

MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

U.S.G.S. TOPOGRAPHIC MAP

FIGURE 1



LEGEND:

6	CANDLER–APOPKA FINE SANDS, 5 TO 12% SLOPES
23	MALABAR FINE SAND
25	OKEELANTA MUCK
34	POMELLO FINE SAND, 0 TO 5% SLOPES
42	SANIBEL MUCK

Andreyev Engineering, Inc.

APPROXIMATE SCALE: 1"=400'	DATE: 12/05/22	ENGINEER: RJ
	PN: GPGT–22–043	DRAWN BY: DLS

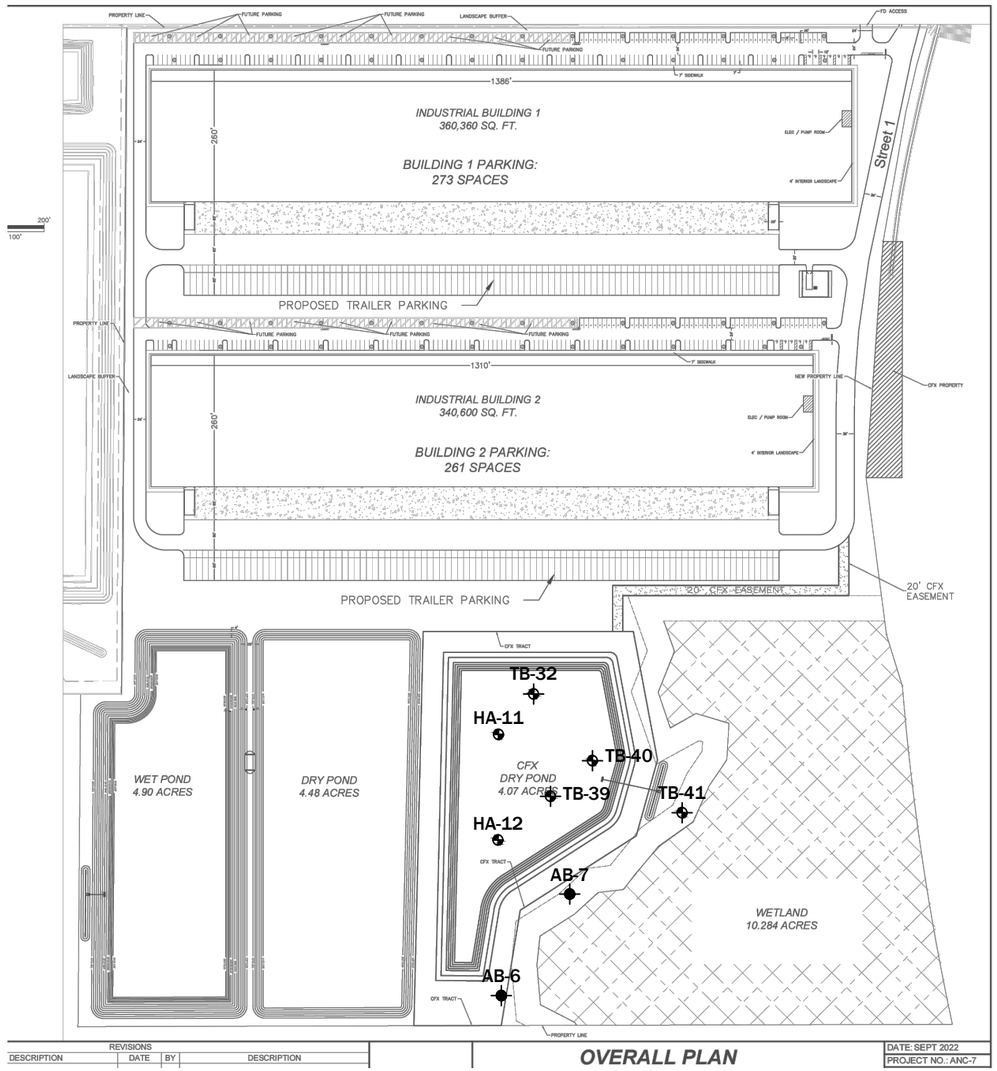
PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED CFX STORMWATER RETENTION AREA

MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

N.R.C.S. SOIL SURVEY MAP

FIGURE 2



REVISIONS

DESCRIPTION	DATE	BY	DESCRIPTION

OVERALL PLAN

DATE: SEPT 2022
PROJECT NO.: ANC-7

NORTH

LEGEND:

- APPROXIMATE LOCATION OF SPT BORING
- APPROXIMATE LOCATION OF MACHINE AUGER BORING
- APPROXIMATE LOCATION OF HAND AUGER BORING

0 150 300 600

GRAPHIC SCALE: 1"=300'

Andreyev Engineering, Inc.

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED CFX STORMWATER RETENTION AREA

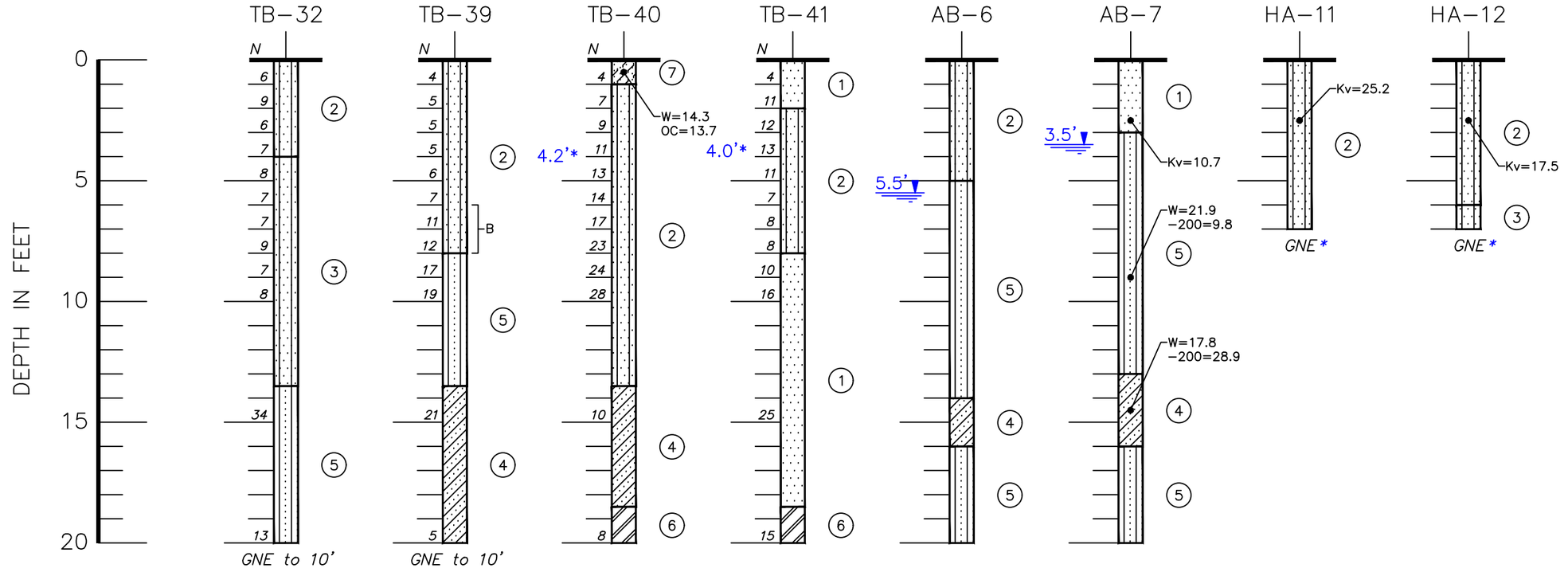
MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

BORING LOCATION PLAN

FIGURE 3

APPROXIMATE SCALE:	DATE: 12/05/22	ENGINEER: RJ
1"=300'	PN: GPGT-22-043	DRAWN BY: DLS



LEGEND:

1. DARK GRAY TO DARK BROWN TO DARK GRAYISH BROWN TO DARK REDDISH BROWN FINE SAND (SP)
2. GRAY TO BROWN TO GRAYISH BROWN TO REDDISH BROWN TO BROWNISH GRAY TO YELLOWISH BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP–SM)
3. LIGHT GRAY TO LIGHT BROWN TO LIGHT GRAYISH BROWN TO LIGHT YELLOWISH BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP–SM)
4. GRAY TO GRAYISH BROWN TO DARK GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
5. LIGHT BROWN TO GRAY TO GRAYISH BROWN TO DARK GRAY TO DARK GRAYISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
6. LIGHT GRAY TO GRAY TO GRAYISH BROWN CLAY (CH)
7. DARK BROWN TO TO DARK GRAYISH BROWN TO BLACK ORGANIC FINE SAND (SP)(PT)
8. LIGHT BROWN TO LIGHT GRAYISH BROWN SILTY CLAY (SM)(CL)

A WITH PIECES OF CLAYEY FINE SAND

B WITH CEMENTED PIECES–HARDPAN TYPE

C ORGANICALLY STAINED

N STANDARD PENETRATION RESISTANCE, IN BLOWS PER FOOT

W MOISTURE CONTENT, IN PERCENT

–200 PERCENT OF FINES PASSING THE U.S. No. 200 SIEVE

OC ORGANIC CONTENT, IN PERCENT

Kv VERTICAL COEFFICIENT OF PERMEABILITY, IN FEET PER DAY

(SP) UNIFIED SOIL CLASSIFICATION SYSTEM GROUP SYMBOL

1.0' DEPTH TO GROUNDWATER, APRIL 1, 2022

1.0'* DEPTH TO GROUNDWATER, DECEMBER 1, 2022

GNE GROUNDWATER NOT ENCOUNTERED

Andreyev Engineering, Inc.

APPROXIMATE SCALE: 1"=5'

DATE: 12/05/22 | ENGINEER: RJ

PN: GPGT–22–043 | DRAWN BY: DLS

PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED CFX STORMWATER RETENTION AREA

MFLP SOUTH

APOPKA, ORANGE COUNTY, FL

SOIL PROFILES

FIGURE 4

SECTION 10

NOTES:

ALL BOTTOM PROFILE ELEVATIONS AND CROSS SECTION ELEVATIONS FOR TREATMENT/ATTENUATION SWALES SHALL BE CONSTRUCTED TO WITHIN 0.1FT +/- OF THE VALUES SHOWN ON THE PLANS. ALSO, DITCH-BLOCK TOP ELEVATIONS AND/OR ANY LONGITUDINAL BERMS ADJACENT TO TREATMENT/ATTENUATION SWALES SHALL ALSO BE CONSTRUCTED WITHIN THIS EARTHWORK TOLERANCE.

POND CONTROL POINTS

ID	STATION, OFFSET	RADIUS
1	641+96.49, 209.38 LT	19.0'
2	644+04.55, 213.44 LT	19.0'
3	643+86.69, 559.59 LT	32.0'
4	642+68.57, 697.59 LT	86.0'
5	641+89.74, 609.41 LT	19.0'

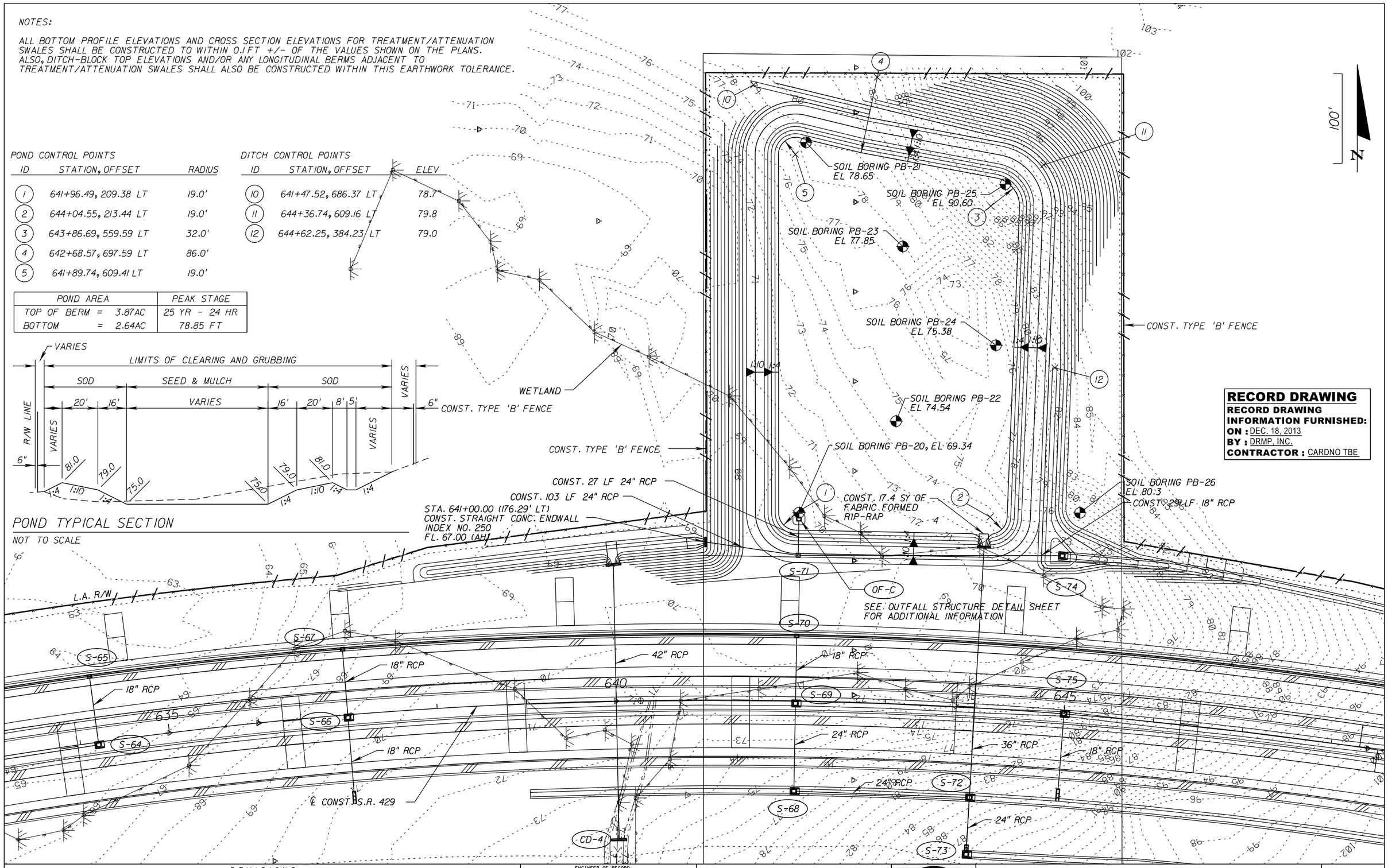
DITCH CONTROL POINTS

ID	STATION, OFFSET	ELEV
10	641+47.52, 686.37 LT	78.7
11	644+36.74, 609.16 LT	79.8
12	644+62.25, 384.23 LT	79.0

POND AREA	PEAK STAGE
TOP OF BERM = 3.87AC	25 YR - 24 HR
BOTTOM = 2.64AC	78.85 FT

POND TYPICAL SECTION

NOT TO SCALE



RECORD DRAWING
RECORD DRAWING INFORMATION FURNISHED:
ON : DEC. 18, 2013
BY : DRMP, INC.
CONTRACTOR : CARDNO TBE

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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DONALD W. BROWN, PE LICENSE NO. 59272

OOCEA PROJ. NO.
429-201

EXPRESSWAY AUTHORITY

POND 201-C DETAIL

SHEET NO. 287

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S.R. 429/414
MAITLAND BLVD. EXTENSION
CONTRACT 429-201

STORMWATER MANAGEMENT

AND

DRAINAGE DESIGN CRITERIA REPORT

PREPARED FOR

EXPRESSWAY AUTHORITY

ORLANDO ORANGE COUNTY EXPRESSWAY AUTHORITY

PREPARED BY

DRMP
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941 LAKE BALDWIN LANE
ORLANDO, FLORIDA 32814

APRIL 2011

S.R. 429/414
MAITLAND BLVD. EXTENSION
CONTRACT 429-201

STORMWATER MANAGEMENT

AND

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APRIL 2011

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Introduction

The project is located within Sections 6, 7, and 18, Township 21 South, Range 28 East and Sections 1, 12, and 13, Township 21 South, Range 27 East within Orange County (see Location Map Figure 1). Proposed is approximately 3 miles of new 6 lane expressway facility included in the overall Maitland Boulevard Extension project. This project includes an interchange with US 441 and allowances for future extension of SR 429 north of the interchange. The drainage design allows for widening to an 8-lane facility.

Note: This project datum is based on the NAVD '88 that is approximately 0.912 feet below the equivalent NGVD '29 elevation (i.e. 95.00 NAVD '88 = 95.912 NGVD '29).

General Design Considerations

The intent of the stormwater management plan is to meet the OOCEA design standards for the SR 429 Expressway by providing criteria and guidance for safe, economical designs for roadway drainage and minimizing impacts to adjacent properties while providing a design that is easily and economically maintained. The design criteria are OOCEA criteria and from the Florida Department of Transportation (FDOT) Drainage Manual (DM), Standards of General Reference (GR) criteria shown in Volumes 2A, 2B and 3 of the 1992 Drainage Manual, and are referenced as such.

Stormwater Permitting Criteria

The project alignment is located entirely within Orange County, Florida and within the regulatory boundaries of the Saint Johns River Water Management District (SJRWMD). The majority of the project is located within the Pumping Station 3 sub-basin to the Lake Apopka Outlet Basin, with portions south of Lust Road in the Lake Fuller Outlet Basin and the interchange portion of the project north of US 441 lying within an unnamed landlocked basin. There is a special basin criteria developed by the SJRWMD that require additional analysis based on phosphorous loadings to Lake Apopka. The portion of this project laying south of US 441 drains to the muck farm areas located on the northwest side of the lake and is required to meet the special criteria for no increase of phosphorous loading from the proposed development. The Lake Fuller Outlet Basin is connected to the Pumping Station 3 sub-basin by two existing culverts under the old railroad grade separating the basins and is also required to meet the phosphorous loading criteria.

The Department of Environmental Protection is responsible for permitting the overall SR 429/Maitland Blvd. Extension project as a modification to ERP 48-0125086-001-EI, the permit for the original SR 429. Permitting criteria for this project is based on SJRWMD and Orange County rules.

1 inch equals 1,000 feet

Begin Project

End Project

Legend
Basinline
Stations

DRMP
ENGINEERS · SURVEYORS · PLANNERS · SCIENTISTS
Dyer, Riddle, Mills, & Precourt, Inc,
December 2005

Location Map

SR 429/414 Maitland Extension
Orlando Orange County Expressway Authority

Data Source:
USDA NRCS Soils Survey
Orange County, Florida

Figure 1

N

1 inch = 1,001 feet

550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710

Begin Project

End Project

Legend

NRCS Soils

Hydrologic Soils Group

- A
- B/D
- C
- D
- Undescribed
- Water
- baseline500_dgn_Polyline
- baseline500_dgn_Annotation

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Dyer, Riddle, Mills, & Precourt, Inc,
December 2005

Soils Map

SR 429/414 Maitland Extension
Orlando Orange County Expressway Authority

Data Source:
USDA NRCS Soils Survey
Orange County, Florida

Figure 2

Design Storm Criteria

Systems discharging with flow paths to Lake Apopka the must meet the peak discharge requirements for the following 24-hour duration design storm events:

25-year 24-hour return period open drainage basins (Orange County Distribution)

Systems within landlocked basins with no discharge must meet the retention requirements for the following 24-hour duration design storm events:

100-year 24-hour return period landlocked drainage basins (Orange County Distribution)

Floodplain Storage Criteria

No net encroachment into the floodplain, between the average wet season water table and that encompassed by the 100-year event, which will adversely affect the existing rights of others, will be allowed within the Lake Fuller Outlet Basin. (See Flood Plain Compensation Area 1)

No net encroachment into the floodplain, between the normal regulated level of Lake Apopka and the peak stage encompassed by the 10-year event, which will adversely affect the existing rights of others, will be allowed within the Pumping Station 3 Basin. Pumping Station 3 discharges to Lake Apopka. (See Flood Plain Compensation Area 2)

Stormwater Management Criteria

A. Stormwater management facilities shall be designed in accordance with all applicable criteria, rules and standards of the FDOT and the governing water management district. (DM, Sec. 5.2).

   In general, stormwater management facilities should be designed to provide the necessary quantity, rate, and quality control based on the presumption that for the existing discharge all necessary quantity, rate, and quality control of stormwater from upper property has occurred prior to reaching the right of way. Consistent with this presumption, the most economically feasible of the following shall be provided: (DM, Sec. 5.3.1.1).

   1. Separation of offsite discharges from the Authority's stormwater management facilities; or (DM, Sec. 5.3.1.1).

   2. When separation of offsite discharges is not feasible, consideration shall be given to joint use, and/or, regional treatment facilities in cooperation with local, regional and/or private organizations. (DM, Sec. 5.3.1.1).

   3. If wet detention facilities are used, the design of a 21-day residence time (permanent pool) is preferred, in lieu of the 14-day residence time with littoral shelf.

4. Facilities designed to be dry, or using underdrains or exfiltration, shall require the appropriate geotechnical analysis. This analysis shall be certified by the project Geotechnical Engineer.

B. Additional Stormwater Management Facility standards design features or policies for detention and retention pond design are as follows:

1. Minimum Depth - Wet detention facilities shall have a minimum water depth of 6 ft. in order to minimize the growth of cattails, or other undesirable vegetation that increase maintenance costs. The 6-ft. should be measured between the pond bottom and the control or normal water elevation.

2. Maintenance Berms - Ponds shall be designed to provide a minimum 20-ft. horizontal clearance between the top edge of the normal pool elevation and the right of way line. At least 15 ft. adjacent to the pond shall be level or have a maximum slope of 1:8. The berm area shall be sodded. (DM, Sec. 5.3.4.2.1).

3. Corners - Facility corners shall be rounded to provide an appropriate turning radius for maintenance equipment. (DM, Sec. 5.3.4.2.2).

4. Freeboard - Except where a permanent containment feature is provided (i.e. concrete), one foot of freeboard is required above the maximum design stage whenever that elevation is higher than one foot below finished ground to compensate for grading irregularities. (DM, Sec. 5.3.4.2.3).

The maximum design stage is defined as the peak stage for the design storm event(s) as required by the water management district having permitting jurisdiction.

1. Fencing - Ponds having side slopes steeper than 1:4 shall be provided a protective barrier (e.g. wall, fence, etc.) to prevent unauthorized entry. Refer to Appendix D (Part 2 - Protective treatment) [DM Vol. I] for other considerations. Appendix D is a guideline and not a standard. Gates for maintenance equipment access shall be placed at appropriate locations. (DM, Sec. 5.3.4.2.4). Some ponds may not be fenced at the owners discretion.

2. Access and Easements - When pond areas are not accessible directly from the proposed roadway right of way, an access easement shall be provided. (DM, Sec. 5.3.4.2.5).

Stormwater management facilities should be accessible from the proposed roadway, whenever possible. Plans should be checked to ensure accessibility over ditches or other obstructions.

1. Skimmers/Baffles - All basin outlet structures shall be designed to skim floating debris, oil and grease. Skimmers/baffles shall be fiberglass, rather than aluminum to minimize theft.

2. Sod - All side slopes shall be sodded. The side slopes of wet ponds shall be sodded to the normal water or control level. The side slopes of dry facilities shall be sodded down to the toe of slope at the facility bottom. The dry facility bottom shall be seeded and mulched, or left bare.

3. Clearance to Roadway - Horizontal clearance from the edge of travel lane to the 24-hour standing water surface (depth greater than 3 feet) of a stormwater management facility or canal shall be 60 feet. The subject water feature must parallel the roadway for a distance greater than or equal to 1000 feet. The facility shall comply with Canal Hazard Standards, if applicable. (PPM, Sec. 4.2.1).

Pavement Drainage

A. Spread Standards - Roadway and Bridge (DM, Sections 3.9 and 4.9).

Typical Section Condition	Design Speed (mph)	Spread Criteria*
Parking Lane or Full Width Shoulders	All	No encroachment
All Other	Design Speed ≤ 45	Keep ½ lane clear
	45 < Design Speed ≤ 55	Keep 8' of lane clear
	Design Speed > 55	No encroachment

* The criteria in this column applies to travel, turn or auxiliary lanes adjacent to barrier wall or curb, in normal or super elevated sections.

B. Shoulder Gutter

1. Shoulder gutter is required on embankment higher than 20 ft. (standard slopes are 2:1). (PPM Vol. I Sec. 4.3.1).

2. Shoulder gutter limits should match guardrail limits at a minimum.

3. Shoulder gutter is preferred on interchange and grade separation embankments higher than 5 ft. with slopes steeper than 1:6 to minimize erosion.

4. Shoulder gutter is also required at bridge ends where concentrated flow from the bridge deck would otherwise run down the fill slope. (GR Vol. 2B, Sec. 12.2.6).

5. Minimum longitudinal gutter grade is 0.3 percent. (DM, Sec. 3.8.1).

6. Shoulder gutter is not required adjacent to barrier walls, unless justified.

C. Inlet Spacing

1. The maximum shoulder gutter design conveyance should be K = 28 adjacent to guardrail, and K = 12.7 with no guardrail.

2. The maximum shoulder gutter design conveyance approaching a terminal gutter inlet should be K = 15 in order to intercept 100% of the design storm flow.

3. Consideration should be given to the placement of two gutter inlets at the down gradient shoulder gutter terminus in order to provide 100% interception, unless 100% interception by one inlet is demonstrated by appropriate calculation.

4. Inlets spacing shall meet spread criteria (DM, Sec. 3.7). In most cases, the 10-year frequency storm will govern inlet spacing.

5. Where applicable, inlet spacing shall be designed to accommodate the additional runoff from future widening.

6. Gutter inlet(s) should be placed at the down gradient end of all shoulder gutter, in lieu of concrete spillways or flumes to reduce the potential for erosion.

D. Base Clearance to the Design High Water (DHW)*

Interstate, Expressway & Rural type Section Multi-Lane	3 ft.
Ramps	2 ft.
Ramp Terminals at Crossroads	1 ft.
Rural Two-Lane (ADT>1500 vpd)	2 ft.
All Other Facilities including urban	1 ft.

Note: Guidance on determination of DHW is contained in Chapter 6, Volume 2A of the Drainage Manual. (PPM Vol. I, Chap. 2).

DHW is generally defined as the standing water elevation for a period of 24 hours or more. In most cases, the DHW will be the higher of the seasonal high groundwater elevation, or the 24-hour water level for the 25-year return frequency event associated with stormwater management facilities which are adjacent to the roadway, or which have a hydraulic connection to a surface water adjacent to the roadway, such as a ditch or similar drainage facility.

Storm Drain Design

A. Design Frequency

1. The design storm frequency for storm drains should be consistent with the frequency selected for other components of the drainage system. (GR Vol. 2B, Sec. 12.4.1).

2. Interstate facilities 10 year (DM, Sec. 3.3)

3. General design 3 year (DM, Sec. 3.3)

4. A 50-year recurrence interval on Interstate highways sag vertical curves, which have no outlet other than a storm drain system. (DM Sec. 3.3).

B. Runoff Computations

Rational Method is required for performing hydrologic calculations for storm drains. (DM, Sec. 3.5.1).

C. Storm Sewer Slope

The minimum pipe slope shall be that which will produce a velocity of 2.5 feet per second when the storm drain is flowing full, unless otherwise approved by the District Drainage Engineer. (DM, SEC. 3.6.1)

D. Maximum Pipe Runs without Access Structures (DM, Sec. 3.0.1)

Pipe Size	Distance
15"	100'
18"	300'
24" – 36"	400'
≥ 42"	500'

E. Maximum Hydraulic Grade Line

1. Design tailwater elevations shall be based upon the greater of the crown elevation of the pipe at the outlet, or the stormwater management facility stage occurring at peak inflow due to the storm drain design event. Refer to DM, Sec. 3.4 "Design Tailwater" for additional tailwater standards. (DM, Sec. 3.4).

2. If minor energy losses are not considered in the storm drain design, the elevation of the hydraulic gradient shall be at least 1.0 foot below the gutter elevation. (DM, Sec. 3.6.2).

3. Maximum physical slope approximately 10 to 15 percent. (GR Vol. 2A, Sec. 10.3.3).

4. Maximum hydraulic gradient should be that which will produce a velocity of approximately 10 ft./sec.

5. When outlet velocity exceeds 6 ft./sec, the need for special channel lining and/or energy dissipation shall be considered. (DM, Sec. 3.6.3).

F. Clearances

1. Minimum pipe cover in accordance with Standard Index 205. (DM, Sec. 3.10.2).

G. Utilities

1. Criteria and standards are contained in the PPM, Chapter 5 and DM, Sec. 3.10.2.3.

H. Minimum Tc = 10 minutes. (DM, Sec. 3.5.1).

I. Energy Dissipater

1. The Energy Dissipater structure, Index No. 264, should not be used as an end treatment unless supporting calculations justify use.

Cross Drain Design

A. Design Frequency (DM, Sec. 4.3)

1. Mainline Interstate 50 years minimum (Check offsite impacts for 100-year)

2. High use or Essential 50 years minimum (Projected ADT (20 year) > 1500 or required for emergency access or evacuation)

3. Other facilities 25 years standard (Projected ADT (20 year) <1500 and not required for emergency access or evacuation)

4. Temporary Detours, Interstate & High Use/Essential 10 year's standard other 5 year's standard

5. Roadside Ditch Culverts 10 years standard

B. Hydrologic Analysis

Hydrologic Analysis shall be consistent with analysis as described in DM, Chap. 4.

1. Gauged drainage area Frequency analysis of observed (gauge) data
2. Drainage area < 600 acres Rational Method
3. Drainage area > 600 acres Rational or local regression equation

Note: Flood routing analysis to size cross drains will only be permitted with written approval from the District Drainage Engineer after submittal of documentation demonstrating the need for such an analysis.

C. Minimum Size (DM, Sec. 4.10.4.1)

Culvert Type	Minimum Size
Cross Drain	18"*
Median Drain	15"**
Side Drain	15"**
Box Culvert	3 x 3 precast;4 x 4 cast in place
Gutter Drain	15"***

* Some locations require 24-in. minimum for wildlife crossings.

** Some locations require 18-in. minimum. Verify project specific requirements with the District Drainage Engineer.

*** When debris control is not provided by grates, use 18 in. minimum.

D. Vertical Roadway Clearance to Water Elevations

1. The headwater for design frequency conditions shall be kept at or below the travel lanes. (DM, Sec. 4.4.3).
2. The limiting relationships between shoulder/pavement elevations vs. water elevations are discussed in the FDOT Drainage Manual. (PPM, Sec. 2.6).

Open Channel Design

A. Minimum ditch configurations shall be established as part of the project typical sections package approved by the District Design Engineer. The need for increased width shall be established in the drainage calculations.

B. Where possible, the minimum ditch bottom elevation should be one foot above the estimated seasonal high groundwater elevation, or if applicable, at the same elevation of the overflow weir of a stormwater management facility, to allow for maintenance.

C. Use Manning's "n" values in accordance with Tables 2.1 and 2.2 (DM Vol. 1, Sec. 2.4.1). Ditch bottoms designed at or near the seasonal high groundwater level should consider the use of higher "n" values to account for increased vegetation growth occurring between extended maintenance periods.

D. Although freeboard is not specified for open channels, DM Section 2.2 states "Open Channels shall be designed to convey, without damage, stormwater flow which standard design frequencies [as noted below]...Pre-development stages for all frequencies up to and including the 100-year event must not be exceeded unless flood rights are obtained." Also, if a channel is hydraulically connected to or part of the stormwater management facility, then a one foot freeboard is required above the maximum design stage whenever that elevation is higher than one foot below finished ground to compensate for grading irregularities.

E. Design Frequencies (DM, Sec. 2.2)

Type Channel	Frequency
Roadside, Median, and Interceptor ditches or swales	10-year
Outfall ditches and Canals	25-year
Temporary roadside and median ditches or swales	2-year
Temporary Outfalls and Canals	5-year

F. Maximum velocity in accordance with Tables 2.3 and 2.4. (DM, Sec. 2.4.3).

G. For ditches where positive flow conditions are required, a minimum physical slope of 0.0005 ft/ft shall be used. (DM, Sec. 2.4.2).

Orange County Roadway Hydraulic Design Criteria (OC Regulations Division 3)

Sec. 34-266. Roadway drainage design.

(a) *General.* Good pavement drainage design consists of the proper selection of grades, cross slopes, curb types, inlet location, etc., to remove the design storm rainfall from the pavement in a cost-effective manner while preserving the safety, traffic capacity and integrity of the highway and street system. These factors are generally considered to be satisfied, provided that excessive spreads of the water are removed from the vehicular traveled way and that siltation at pavement low points is not allowed to occur.

(b) *Criteria for the use of underdrains.* All streets shall be designed to provide a minimum clearance of one (1) foot between the bottom of the base and the estimated wet-season water table or the artificial water table induced by an underdrain system.

(1) The planned use of underdrain systems to provide minimum separation between the high water table and the bottom of the base on subdivisions proposed for development utilizing on-site sewage disposal systems (OSDS) shall be prohibited except under the following circumstances:

a. Lots within the area proposed for underdrains shall be a minimum of one-half (1/2) acre.
b. The minimum distance between the roadway underdrain and the closest edge of a drain field shall be not less than seventy-five (75) feet.
c. The total length of roadway requiring an underdrain shall be not more than twenty-five (25) percent of the total length of all roadways within the overall project.
d. All of the requirements for use of underdrains on projects with central sewer, as delineated below, are met.

(2) Subdivisions proposed for development on central sewer may use underdrain systems to control the estimated wet-season water table and provide the minimum clearances with the following requirements and limitations:
a. The use of a limerock base in conjunction with underdrains is prohibited.
b. The underdrains shall be designed so that they flow no more than six (6) months in an average rainfall year.
c. The underdrain trench bottom shall not be placed below the seasonal low water table elevation.
d. The distance between the bottom of the underdrain trench and the bottom of the roadway base shall not be less than two (2) feet.
e. The bottom of the base course shall not be placed more than two (2) feet below the estimated wet-season water table elevation.
f. The geotechnical engineer shall provide the following design certification: "This is to certify that the underdrain design for _____ road, extending from station _____ to station _____, has been designed such that the separation between the bottom of the base and the artificially induced wet season water table is no less than one (1) foot for the entire width of pavement."
g. The installation shall be inspected by the project geotechnical engineer who shall then certify that the underdrain installation has been constructed according to the approved plans.
h. The stormwater facilities shall be designed to accommodate expected flow contributed by the underdrain system.
i. Prior to the issuance of "approval for maintenance" by the county, the geotechnical engineer shall certify that the underdrain system is functioning as designed.

(c) *Swales.* Swale drainage will be permitted only when the estimated wet-season water table is a minimum of two (2) feet below the invert of the swale and only in single-family subdivisions with the minimum lot width equal to one hundred (100) feet.

(d) *Curbs and gutters.* All roadway drainage not considered suitable for swale and/or ditch type drainage shall be designed as one (1) of the following:
(1) Miami curb and gutter section
(2) Standard curb and gutter section

(e) *Design storm frequency.* The design storm frequency to be utilized for the design of pavement drainage shall set the hydraulic gradient line at six (6) inches below gutter for a ten-year frequency storm.

(f) *Runoff determination.* The peak rates of runoff for which the pavement drainage system must be designed shall be determined by the rational method. The time of concentration, individual drainage areas and rainfall intensity amounts shall be submitted as part of the drainage plans. A separate Rational Runoff Coefficient (C) shall be determined for the specific contributing area to each inlet/catch basin within the proposed storm sewer system. A composite C value shall be computed for each contributing area based on an individual C value of 0.9 for the estimated impervious portion of the actual area and an individual C value of 0.2 for the remaining pervious (grassed) portion of the actual area.

(g) *Stormwater spread into traveled lane.* Inlets shall be located at all low points, intersections and along continuous grades to prevent the spread of water from exceeding tolerable limits. The acceptable tolerable limits for roadways with projected volumes in excess of an ADT of three thousand five hundred (3,500) vpd is defined as approximately one-half (1/2) the traveled lane width. Acceptable tolerable limits for roadways with projected volumes less than three thousand five hundred (3,500) ADT are defined as a maximum of one (1) inch above the crown of the road.

(h) *Maximum inlet interception rates.* Florida Department of Transportation (FDOT) Types 1 and 3 (single) inlets shall be located such that a maximum of 4.1 and 1.9 cfs, respectively, shall be intercepted during the ten-year frequency storm. (Types 2 and 4--nine (9) and 6.5 cfs, respectively, maximum.) Bypass flow is limited to a maximum of one (1) cfs. Off-site flows from impervious areas of more than one-half (0.5) acre shall be intercepted prior to the right-of-way line. No part of an inlet structure shall be located within a curb radius or in front of the access to the retention pond.

(i) *Inlet types.* The curb inlet types to be used shall be the latest version of the FDOT inlet types 1, 2, 3, 4, 7 and 8. Ditch bottom inlets shall be FDOT inlet types C, D, E and H. All ditch bottom inlets located within the right-of-way shall have traffic-bearing grates.

(j) *Low point inlets.* All inlets at low points (sumps) shall be designed to intercept one hundred (100) percent of the design flow without exceeding the allowable spread of water onto the traveled lanes as defined above. On roadways with greater than an ADT of three thousand five hundred (3,500) vpd, in order to prevent siltation and to provide for a safety factor against clogging of a single inlet in a sump location, multiple inlets are required at all sump locations. (Ord. No. 94-4, § 1(Exh. A), 2-8-94; Ord. No. 2000-14, § 1, 6-27-00)

Sec. 34-267. Storm sewer design.

(a) *Design discharges.* Storm sewer system design is to be based upon a ten-year frequency event and shall be designed to handle the flows from the contributory area within the proposed subdivision. The system shall be analyzed a second time to insure that any off-site flows can also be accommodated. This second analysis shall consider the relative timing of the on-site and off-site flows in determining the adequacy of the designed system.

(b) *Minimum pipe size.* The minimum size of pipe to be used in storm sewer systems is fifteen (15) inches. Designs shall be based upon six-inch increments in sizes above eighteen (18) inches.

(c) *Pipe grade.* All storm sewers shall be designed and constructed to produce a minimum velocity of two and one-half (2.5) feet per second (fps) when flowing full. No storm

sewer system or portion thereof will be designed to produce velocities in excess of twenty (20) fps for reinforced concrete pipe or ten (10) fps for metal pipe, and these maximums shall only be used when these outlet ends have sufficient erosion protection and/or energy dissipators.

(d) *Maximum lengths of pipe.* The following maximum runs of pipe shall be used when spacing access structures of any type.

(e) *Design tailwater.* All storm sewer systems shall be designed taking into consideration the tailwater of the receiving facility. In the case where the detention pond is the receiving facility, the design tailwater level can be estimated from the information generated by routing through the pond the hydrograph resulting from a ten-year frequency storm of duration equal to that used in designing the pond. The design tailwater level can be assumed to be the ten-year pond level corresponding to the time at which peak inflow occurs from the storm sewer into the pond. In lieu of the above-detailed analysis, a simpler design tailwater estimate can be obtained by averaging the established 25-year design high water elevation for the pond and the pond bottom elevation for "dry bottom" ponds or the normal water elevation for "wet bottom" ponds.

(f) *Hydraulic gradient line computations.* The hydraulic gradient line for the storm sewer system shall be computed taking into consideration the design tailwater on the system and the energy losses associated with entrance into and exit from the system, friction through the system, and turbulence in the individual manholes/catch-basins/junction boxes within the system. The energy losses associated with the turbulence in the individual manholes are minor for an open channel or gravity storm sewer system and can typically be overcome by adjusting (increasing) the upstream pipe invert elevations in a manhole by a small amount. However, the energy losses associated with the turbulence in the individual manholes can be significant for a pressure or surcharged storm sewer system and must be accounted for in establishing a reasonable hydraulic gradient line.

(g) *Allowable materials.* Allowable materials for storm sewers shall be in accordance with the county road construction specifications.

(h) *Separation.* The stormwater collection system shall be separate from the retention outfall system.

(i) *Hydraulic grade exceptions.* Acceptable hydraulic grade lines that do not meet minimum scouring velocities of two and one-half (2.5) fps. It is recognized that sites characterized by flat topography may not be able to satisfy this requirement for minimum velocity. Therefore, for the portions of the storm sewer system which do not meet the minimum required pipe velocity, the reach (pipe) hydraulic slope resulting from the upstream HGL elevation set at the roadway crown, or profile grade line (PGL), elevation, and the downstream HGL elevation set at the backwater elevation for the 10-year design storm event will be utilized to determine the maximum attainable pipe velocity. This scenario is utilized, on a pipe by pipe basis, assuming a storm sewer segment has become silted, whereupon the roadway has flooded at the upstream inlet up to the roadway crown, or profile grade line (PGL), elevation. If, under this scenario, a pipe velocity is determined to be equal to, or greater than the Orange County minimum pipe velocity, then it is assumed that the minimum scouring velocity of two and one-half (2.5) fps is attained.
(Ord. No. 94-4, § 1(Exh. A), 2-8-94; Ord. No. 2000-14, § 1, 6-27-00)

Sec. 34-268. Culvert design.

(a) *Minimum pipe size.* The minimum size of pipes to be used for culvert installations under roadways shall be eighteen (18) inches. The minimum size of pipes to be used for driveway crossings shall be fifteen (15) inches. Mitered end sections shall be provided on all pipe.

(b) *Maximum pipe grade.* The maximum slope allowable shall be a slope that produces ten (10) fps velocity within the culvert barrel. Erosion protection and/or energy dissipators may be required to properly control entrance and outlet velocities.

(c) *Maximum lengths of culverts.* The maximum length of culvert conveyance structure without access shall be as allowed in section 34-267(d).

(d) *Design tailwater.* All culvert installations shall be designed taking into consideration the tailwater of the receiving facility.

(e) *Allowable headwater.* The allowable headwater of a culvert installation should be set by the designer for an economical installation. When endwalls are used, the headwater should not exceed the top of the endwall at the entrance. If the top of the endwall is inundated, special protection of the roadway embankment and/or ditch slope may be necessary for erosion protection.

Existing Conditions

The proposed alignment is located entirely within Orange County, Florida and within the regulatory boundaries of the SJRWMD. The project lies within three major drainage basin areas in the vicinity of Lake Apopka. Two of the basins, the Lake Apopka Outlet and the Lake Fuller Outlet, are open and the third is landlocked. The majority of the project area is in undeveloped land areas with only the northern end of the project encountering developed areas.

The project begins east of Binion Road in the Pumping Station 3 sub-basin to Lake Apopka. The existing land is planted with citrus trees and the stormwater runoff flows to the muck farm areas of Lake Apopka. Basin 201-A1 (Sta. 555+00 to Sta. 560+00) sheet flows to the Binion Road swales where it flows south and ultimately discharges to the muck farms adjacent to Lake Apopka. The soils in this area are included in Hydrologic Soils Group A. Basin 201-A2 (Sta. 560+00 to Sta. 572+15) lies between Binion Road and the Lake Fuller Outlet basin divide. The runoff from this basin sheets flows west to the muck farm area. Basin 201-A3 (Sta. 572+15 to Sta. 598+30) is within the Lake Fuller Outlet basin. The terrain in this area changes from densely wooded to wetlands ('AA', 'BB' and 'O') in the low lying section. This basin has drainage outlets to the east under Binion Road and to the west under the old railroad grade to the muck farms. The soils through this section are mostly Hydrologic Soils Group A except for the wetland areas which are Group B/D. FEMA has designated the low lying areas Zone AE and established a 100-year flood elevation of 70 (NGVD). The alignment leaves the Lake Fuller Outlet Basin near the Lust Road crossing and reenters the Pumping Station 3 sub-basin. Basin 201-A4 (Sta. 598+30 to Sta. 601+10) lies south of Lust Road and flows to a culvert that outfalls into the large ditch on the north side of Lust. Basin 201-A5 (Sta. 601+10 to Sta. 602+60) is on the north side of Lust Road and contributes runoff to a nearby wetland ('R'). The predevelopment peak discharge was determined using the entire Basin A area with the understanding that the culverts under the railroad grade allow all of the

runoff to contribute to muck farm area. The greatest time of concentration (A3) for all sub-basins was used for the whole basin.

The alignment passes through the eastern side of a wetland (R) area just north of Lust Road that drains to a large ditch running west along the north side of Lust Road to the muck farm area. Basin 201-B1 (Sta. 602+60 to Sta. 612+25) is within the drainage basin for the wetland. In Basin 201-B2 (Sta. 612+25 to Sta. 642+00) the alignment crosses an open field of Group A and Group C soils before encountering more wooded and swampy terrain within the SJRWMD Lake Apopka Restoration Area. FEMA designated portions of this area Zone AE and established a 100-year flood elevation of 69 (NGVD). The wetlands (S) in this area accept runoff from the open fields to the east through a culvert connecting a pond in the field to the wetlands. A large ditch beginning at the outlet structure from Holt's Lake also terminates in these wetlands as well as overland flow from the surrounding area. The wetlands discharge in ditches through the Restoration Area to the ditch on the north side of Lust Road. The predevelopment peak discharge rate for Basin 201-B was determined using only the area contributing the wetland system that receives the post-development pond discharge (Basin 201-B2).

North of the wetland areas the land becomes less densely wooded as the alignment crosses the Peterson Road alignment and passes to the west of Holt's Lake. The soils in this area are included in Groups A and C. Basin 201-C1 (Sta. 642+00 to Sta. 658+95) is included in the drainage area for the wetland system (S & T) in the restoration area. Basin 201-C2 (Sta. 658+95 to Sta. 664+15) flows to depression area west of the alignment and Basin 201-C3 (Sta. 664+15 to Sta. 692+23) flows to Holt's Lake. North of the lake the alignment crosses General Electric Road and is located within developed land until it reaches US 441. A section of US 441 is drained by a paved ditch and pipe system that outfalls to Holt's Lake through Basin 201-C3. Basin 201-C4 (Sta. 664+15 to Sta. 687+85) and Basin 201-C5 (Sta. 668+75 to Sta. 692+23) flow west through commercial properties. Only Basin 201-C1 areas were used in determining the predevelopment peak discharge rate for Basin 201-C because proposed Pond 201-C outfalls to the wetland system.

A private stormwater treatment faciltiy located on the north side of Holt's Lake which serves the Superior Commerce Park (M) is impacted by the proposed improvements. The existing treatment facility (Pond D) is a wet detention system.

Basin 201-E (Sta. 692+23 through the interchange area) includes Sub-basins 201-E1, 201-E2 and 201-E3 (See drainage map for locations). The Land use in these Sub-Basins includes residential development, commercial development, rural and wooded undeveloped areas. The soils in these basins include Tavares fine sand and Tavares- Millhopper fine sand which are type A soils. Sub-basins 201-E1, 201-E2 and 201-E3 are land locked. According to FEMA, Basin 201-E is located in Zone X.

Basin 201-E1, approximately 41.35 acres, is located north of US 441 and West of TI Smith Road. The storm water runoff from this basin drains into a natural depression located east of the basin. Basin 201-E2, approximately 23.00 acre, is located north of US 441, east of Basin E1 and west of Plymouth-Sorrento Road. Some sites in this basin have their own retention pond. However,

according to SJRWMD contour maps and recent survey, this basin does not have a natural depression.

The overflow from Basin 201-E1 flows east into Basin 201-E2. Historically, and according to SJRWMD contour maps and recent survey, the runoff from Basin 201-E2, after percolating thru the soils will drain east into Lake Standish, a land locked lake. However, Plymouth-Sorrento Road does not have a culvert to convey the runoff from Basin 201-E2 into Lake Standish. In addition, within the past ten years, the site east of Plymouth-Sorrento Road was developed and Plymouth Landing Subdivision was constructed. Currently, the runoff generated from lower storm events percolates through the soils. However, during higher storm events, it is expected that the runoff from Basin 201-E2 will sheet flow east overtopping Plymouth-Sorrento Avenue at elevation 120.1 across Plymouth Landing Subdivision into Lake Standish.

FEMA does not show flood levels for these Basins. Thus, estimated 100yr flood elevations for these basins were established utilizing Interconnected Pond Routing Program ICPR3.2. These Basins are considered landlocked.

A review of Plymouth Landing Subdivision's permit application to SJRWMD revealed that the drainage computations for Plymouth Landing did not account for Basin 201-E2 runoff into its system, nor a bypass system was created to direct the overflow from the offsite runoff away from the subdivision into Lake Standish. However, since Lake Standish is a landlocked lake, Basins 201-E1 and 201-E2 are considered landlocked. Therefore, landlocked criteria will apply in developing any site in these basins.

Basin 201-E3, approximately 5.23 acre, is located west of Basin E1, east of Kitt Road. The storm water runoff from this basin drains into a ditch and a shallow depression located east of Kitt Road. The basin is landlocked. Estimated 100yr flood elevation was also established in this report for this site.

The 100 yr flood elevations for Basins 201-E1, 201-E2 and 201-E3 that was established in this report, are approximate. They were determined solely for this report and for the purpose of comparing flood levels in the proposed pond, versus flood levels in these Basins. This comparison is necessary to ensure that there is no adverse impact on the existing structures within these Basins as a result of the proposed improvements. These 100 yr flood elevations, under no circumstance should be used for any other purpose.

Table 1 – Existing Hydrologic Information (Open Basins)

Basin	Area (acres)	CN	T_c (min.)	25-Year Q_{pre} (cfs)	Outfall Description
201-A	32.45	53	45	20.25	Muck farm ditches and wetlands
201-A1	4.44				
201-A2	12.19				
201-A3	14.21				
201-A4	1.03				
201-A5	0.58				
201-B	21.10				
201-B1	3.75				
201-B2	17.35	69	33	19.33	Wetland system in restoration area
201-C	25.59				
201-C1	13.94	54	108	6.82	Wetland system in restoration area
201-C2	1.81				
201-C3	8.37				
201-C4	0.78				
201-C5	0.69				

Note: Basins A, B and C were analyzed as predevelopment areas within the footprint of the area collected in the post development storm sewer system to determine the allowable discharge rate from the treatment ponds.

Table 2 – Existing Hydrologic Information (Landlocked Basins)

Basin	Area (acres)	CN	T_c (min.)	100-Yr 24-hr Peak Stage (ac-ft)	25-Yr 96-hr V_{pre} (ac-ft)	Outfall Description
201-E1	41.35	46	76	122.72	14.78	Depression area w/ spillover to Lake Standish
201-E2	23.00	49	110	121.68	9.04	Lake Standish
201-E3	5.23	36	49	122.49	1.14	Ditch

Note: Basin E areas represent true predevelopment basins used to establish runoff volumes within a landlocked basin.

Proposed Conditions

The proposed stormwater management system will be designed to minimize right-of-way requirements while achieving a level of treatment and attenuation that will be favorably reviewed by the appropriate agencies. In addition, the stormwater system will be set up to ensure that offsite properties will not be adversely impacted. The proposed system for this project is divided into four major basins for analysis purposes. Dry retention systems were necessary to provide the required phosphorous removal efficiencies to meet the requirements of the Lake Apopka Drainage Basin. The required water quality volume for the proposed system is based on SJRWMD criteria for online retention facilities. See post development hydrology in appendix C for separate basin requirements. The stormwater treatment facilities and conveyance systems are designed to accommodate the additional impervious area for future mainline widening (proposed as an additional inside lane in both directions).

Basin 201-A

The first basin (Basin 201-A; Sta. 555+00 to Sta. 602+60) will be directed to Pond 201-A using a combination of roadside swales and closed storm sewer systems. Pond 201-A is a dry retention facility designed to infiltrate the required treatment volume and control discharges to remain below predevelopment levels. The control structure discharges to the floodplain compensation area located north of the pond site. The pond bottom elevation of 71(NAVD) allows for pond recovery and positive outfall based on future SJRWMD plans to flood the muck farm area to approximate normal water elevation 68(NAVD).

The proposed 6-lane roadway (future 8-lane) is in a deep cut section as it leaves Project 429-200 and Basin 201-A begins to allow for the roadway to go below CR 437 (Binion Road). Swales are provided at the top of slope to intercept offsite flows and protect the cut slopes. Roadside and median swales convey runoff through this area to inlets near the pond. The pond location is also located in a cut section. North of the pond the runoff is collected in open swales until the roadway section transitions from cut to fill. The combination of a closed storm sewer system and open swales directs flows back to the pond site. The roadway leaves the cut section near station 581+00 and enters a fill section where runoff is collected in shoulder gutter for the remainder of the basin. Floodplain encroachment begins near station 585+00 and continues to near station 595+00. Within this area wetlands ('O', 'BB' and 'AA') are impacted and a crossdrain is required to maintain hydraulic connections to the proposed floodplain compensation area and the existing culverts to the muck farm area. The roadway goes into a high fill section to cross over Lust Road and Basin 201-A ends at the profile high point on the north side of the bridge.

Basin 201-B

Basin 201-B (Sta. 602+60 to Sta. 642+00) runoff is directed to Pond 201-B, located approximately mid-basin, using a closed storm sewer system running north to the pond and combination of open swales and closed storm sewer system flowing back to the pond from the northern basin limit. Pond 201-B is a dry retention facility and the bottom is set at elevation 71(NAVD) to allow for recovery and positive outfall based on anticipated future conditions. The existing ground at this

pond site is generally elevation 70 (NAVD) or lower so the fill is required to raise the site to the proposed bottom elevation. The control structure discharges to a spreader swale that overflows to a wetland ('S') north of the pond site. The wetland is part of a system that drains through ditches to the muck farm area.

The proposed roadway is in a high fill section north of Lust Road at the beginning of Basin 201-B and runoff is collected in shoulder gutter or median ditch bottom inlets. The roadway continues to be in fill throughout the basin as it traverses wetlands ('R', 'S' and 'T') and floodplains. In the last approximately 1000' of the basin runoff is collected in inlets and directed to a swale on the east side of the roadway. The swale drains into the storm sewer system directed to the pond. Three cross drains are located within the basin to allow offsite flows to pass from east to west and into the wetlands system. The proposed 6-lane (future 8-lane) section runs throughout the basin.

Basin 201-C

The next proposed basin (Basin 201-C; Sta. 642+00 to Sta. 692+20) continues until the roadway crosses US 441. Basin 201-C runoff is directed to Pond 201-C at the southern end of the basin in a combination of open swale and closed storm sewer systems. Pond 201-C is a dry retention facility designed to infiltrate the required treatment volume and control the peak discharge to the wetlands system. The pond bottom is elevation 75(NAVD). The pond site is located on the west side of the proposed roadway and requires excavation on the northwest corner due to the elevation changes in the existing ground surface. Some wetlands ('T') are impacted in southeast corner of the pond site. A ditch is proposed on the north and west sides of the site to intercept offsite sheet flow and direct it around the pond to the wetlands. Some off the offsite flow is collected in an inlet and joins the pond control structure discharge in a pipe system which outfalls to as spreader swale along the west side of the toe of slope for the roadway. The swale helps to directs flows into the wetland system.

At the beginning of Basin 201-C runoff is collected in a swale in the same manor as the end of Basin 201-B. As the roadway profile rises to cross the Peterson Road alignment runoff is collected in shoulder gutter on both sides. The shoulder gutter inlets and pipe system discharges to the roadside swale flowing south. The roadside swale drains to a toe of slope ditch conveying runoff from the basin area north of the Peterson Road alignment and crosses into Pond 201-C. North of the Peterson Road bridge runoff is collected in shoulder gutter on both sides of the roadway until the wall begins for Holt's Lake (wetland 'L') on the east side where stormwater drains to barrier wall inlets. The proposed alignment impacts an existing treatment facility (wetland 'M') for Superior Commerce Park in this area. At the General Electric bridge the viaduct roadway section begins bridging to the plug south of the railroad adjacent to US 441. Viaduct runoff flows along the bridge shoulder until it is collected in scupper inlets. The scupper inlets drain into pipes mounted under the bridge deck to inlets south of the bridge approach slab. All of the collection system north of the Peterson Road bridge is piped under the Peterson Road alignment and discharges to the ditch located at the toe of slope.

An offsite system is constructed along the west side of the roadway south of General Electric Road to replace an existing ditch filled in by the proposed roadway. This system ties into existing pipes located under the railroad and lies below the viaduct north of General Electric Road. The system

crosses under the alignment near station 670+00 and discharges through an existing 48" pipe into Holt's Lake. This system includes runoff from US 441 roadway.

Basin 201-E

Basin 201-E begins at the profile high point (Sta. 692+20) in the plug section between the viaduct and the US 441 bridge and continues north to approximate station 716+00. It includes all of the areas impacted by the proposed interchange as well as offsite areas that drain to the proposed roadway improvements. The runoff from onsite areas, designed for the 8-lane section, is conveyed via curb and gutter and storm sewer system into a retention pond located north of US 441 between the proposed Connector Road and the mainline ramps. Offsite runoff from north of the Connector Road is also conveyed to the pond. Future construction in this area due to a proposed northern extension of SR429 is accounted for in the pond and storm sewer system design. The pond is designed to handle the total the total runoff generated from 25yr-96 hr event.

Some of the offsite areas that drain into the pond are located in the City of Apopka and some are located in Orange County. The sites that are located in the City of Apopka will be developed based on the City of Apopka and SJRWMD criteria. The City of Apopka and SJRWMD require the retention of the volumetric difference of post minus pre runoff generated from 25yr- 96 hr storm event for Land locked basins. Therefore, based on this requirement, the design high in the pond will be governed by the 25yr-96 hr storm event rather than the 100yr-24hr storm event.

In addition, the runoff from 5.58 acre from Basin D is also conveyed into the retention pond. This includes:

1. The areas located North of US 441, south of Basin E1 and west of TI Smith Road,
2. SR 429 Bridge over US 441,
3. Improvements to US 441.

Areas that could not be conveyed to the retention pond have been compensated for by conveying runoff from other areas within the same Basin. These areas are:

1. 0.66 acre of pervious area within the SR 441 right of way, west of Kitt Road, will be paved. This is compensated for by conveying the runoff from 0.77 acre of existing and proposed SR 441 Pavement, located west of Kitt Road, into the pond. This results in a reduction of the total area and impervious area contributing runoff to the US 441 outfall under the railroad at sta. 838+50.
2. 0.16 acre of Improvement to Plymouth Sorrento Road in Basin 201-E2, south of Connector Road, is compensated for by conveying the runoff from a total of 5.88 acre of offsite areas within the same basin. This area consists of 5.70 acre of offsite area located northwest corner of Sorrento Road and Connector Road Intersection, and 0.18 acre of existing pavement from Plymouth Sorrento Road, north of Connector Road.

Table 3 – Proposed Hydrologic/Hydraulic Information

Basin	Area (acres)	CN	T_c (min.)	Peak Stage 25-year	Q_{pre-25} (cfs)	$Q_{post-25}$ (cfs)
201-A	32.45	73	19	73.91	20.25	9.75
201-B	21.10	92	22	72.98	19.33	13.04
201-C	25.59	86	36	79.03	6.82	6.34
				Peak Stage 25 yr-96 hr	**V_{pre} 25-96 (ac-ft)**	**V_{post} 25-96 (ac-ft)**
201-E	60.7	63	76	114.99	19.84	33.74

Table 4 – Water Quality Volumes

Basin	0.5" of Runoff from Basin (ac-ft)	1.25" of Runoff from Impervious Area (ac-ft)	Additional 0.5" from Basin for Online Treatment (ac-ft)	Requirement for Phosphorous Removal (ac-ft)	Water Quality Volume Required (ac-ft)	Water Quality Volume Provided (ac-ft)
201-A	1.35	1.86	1.35	**3.38**	3.38	3.42
201-B	0.88	**1.54**	**0.88**	2.25	2.42	2.97
201-C	1.07	**1.82**	**1.07**	2.67	2.89	2.99
201-E	**5.06**	4.04	N/A	N/A	5.06	5.06

Flood Plain Impacts

There are four areas of impact to flood plains designated with 100-year flood elevations by FEMA within the project limits. Impacts were calculated using roadway cross sections to quantify fill and cut areas between the normal water level and the 100-year flood elevation. The end-area method was then used to determine impacted volumes in each area.

In Basin 201-A the impacts begin at approximate station 585+00 and continue to station 595+00. FEMA had assigned this area a 100-year flood elevation of 70(NGVD) which is equivalent to approximately 69.09(NAVD) in this area. The normal water level of 64(NAVD) for this area was determined by field observations supported by comparing wetland delineation lines with existing ground contours. Floodplain Compensation Area 1 was designed to provide flood storage equal to the volume displaced by the roadway fill.

Within Basin 201-B the flood plain associated with Lake Apopka is impacted in two locations. The normal water level and flood stages in this area are effected by pumping operations in the muck farms. SJRWMD's criteria requires no net impact to the flood plain of the 10-year event in this basin. The normal regulated water level of 67.5 NGVD (66.59 NAVD) for Lake Apopka is used as

the starting elevation for the flood plain impacts. The 10-year flood elevation of the lake was provided by SJRWMD as 68.4 NGVD (67.49 NAVD). The volume of flood plain storage lost to fill between these elevations was calculated using the roadway cross sections. Flood plain Compensation Area 2 volumes were calculated by stage-storage to identify the required area. The proposed site is within the planned Lake Apopka Restoration area.

In Basin 201-C all impacts are confined to the Holt's Lake flood plain. The use of retaining walls along the east side of the roadway helped to minimize flood plain encroachment. The FEMA 100-year flood elevation of 106(NGVD) or 105.09(NAVD) was established using a ADICPR model (obtained from FEMA) and the flood elevation from the 100year-96hour storm event. Due to lack of supporting information provided by FEMA with the model it was necessary to create an existing condition model for the Holt's Lake basin using an updated version of ICPR3.2. The updated model established a 100year-96hour flood elevation of 105.2(NAVD) which is approximately 0.1' higher than the FEMA model. This model was then modified for post development conditions to accurately reflect the changes to the overall system proposed by the OOCEA project. The area contributing runoff to Holt's Lake was reduced due to the roadway runoff being directed to Ponds 201-C and 201-E and the storage available in Holt's Lake was reduced to reflect the minor impacts of the proposed roadway construction. The post development 100year-96hour peak stage in the lake is 105.1(NAVD). The roadway improvements do not adversely affect the 100-year flood stage; therefore, no additional flood plain compensation is proposed in this basin.

See Appendix D for supporting calculations.

Cross Drains

There are four culverts (crossdrains) proposed along the alignment. All of these culverts serve offsite areas.

CD-1 (Sta. 587+00)

This proposed 36" RCP is necessary to maintain the drainage connection between the Lake Fuller Outlet Basin and the Lake Apopka Basin as well as to connect Flood Plain Compensation Area 1 to the wetlands located on the east side of the alignment. The proposed roadway fill separates the existing pair of culverts (one 24" RCP and one 18" cmp) located through the railroad grade that connect the wetlands to a ditch in the muck farm area. This area can also drain east through a 36" culvert under CR 437 (Binion Road). The proposed culvert is designed with a flat slope at invert elevation 64.0(NAVD) to allow for flows in both directions.

CD-2 (Sta. 605+00)

A proposed Type B ditch bottom inlet located on the east side of the alignment drains under a high fill section of roadway north of Lust Road through a proposed 30" RCP. The inlet is necessary to reduce the slope of the culvert and control discharge velocities at the outlet. Runoff from 24.7 acres is collected in a ditch along the east toe of slope and discharges into the remaining wetland

area on the west side. The proposed system was analyzed using the rational method to determine peak flows from a 50-year storm event. The hydraulic grade line for the pipe does not rise above the inlet grate elevation and therefore provides adequate protection to the adjacent offsite properties.

CD-3 (Sta. 627+20)

This proposed double 42" RCP crossing will serve 116.3 acres located to the east of the proposed alignment. This culvert is located to allow discharge from an existing pond on the Binion Estates property and runoff from other contributing areas to flow to an existing ditch located within the wetlands west of the alignment. The existing conditions (peak stage, peak discharge rate, etc...) for the existing pond are modeled in the hydrologic/hydraulic model used for the Holt's Lake analysis. The proposed culvert is included in the post development model for design purposes. The proposed culvert conveys the peak flows without overtopping the banks of the upstream ditch or raising the stage in the existing pond.

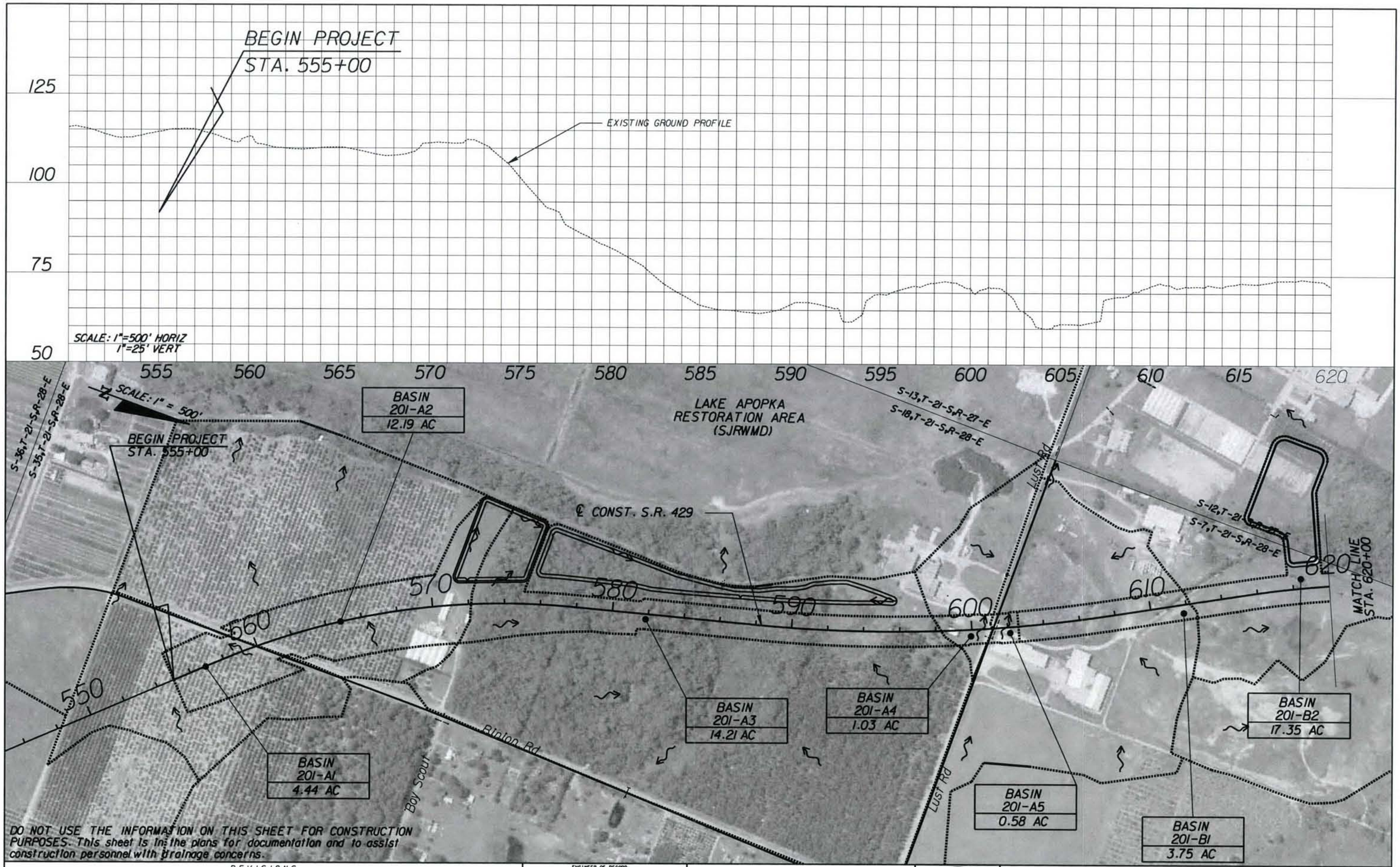
CD-4 (Sta. 640+00)

This crossing will replace an existing ditch that crosses the alignment. The proposed 42" RCP will convey flows from the Holt's Lake outfall ditch to the wetlands west of the alignment. A spreader swale along the west toe of slope will help protect the wetlands and distribute the flows over a larger area. The hydrologic/hydraulic model developed for the flood plain analysis of Holt's Lake includes the existing ditch with the wetland as a tailwater condition. The proposed pipe is included in the post development model to ensure the culvert has no adverse affect on upstream conditions. The 50-year storm event is used for design purposes.

Table 5 – Cross Drain Summary

Cross Drain	Size (in)	Upstream Invert (ft-NAVD)	Downstream Invert (ft-NAVD)	Design Stage (ft-NAVD)	Design Q (cfs)	Velocity (ft/s)	Remarks
CD-1	36	64.0	64.0	N/A	N/A	N/A	Equalizer Pipe
CD-2	30	69.0 - Grate 60.0 - Pipe	58.0	61.55	25.31	7.90	Fabric Formed Rip Rap
CD-3	42(2)	63.5	63.0	66.33	55.26	3.31	
CD-4	42	72.0	67.0	75.0	41.85	4.77	

Appendix A – Drainage Maps and Pond Details



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REVISIONS					
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ENGINEERS · SURVEYORS · PLANNERS · SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
1505 E. COLONIAL DRIVE
ORLANDO, FLORIDA 32803
(407) 896-0594 CERT. OF AUTH. NO. 2648
DONALD W BROWN, PE LICENSE NO. 59272

OOCEA PROJ. NO.

429-201

EXPRESSWAY AUTHORITY

PREDEVELOPMENT DRAINAGE MAP

SHEET NO.

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130
105
80
55
620 625 630 635 640 645 650 655 660 665 670 675 680 685
EXISTING GROUND PROFILE
SCALE: 1"=500' HORIZ
1"=25' VERT
BASIN 201-B2 17.35 AC
BASIN 201-C1 13.94 AC
BASIN 201-C2 1.81 AC
BASIN 201-C3 8.37 AC
BASIN 201-C4 0.78 AC
S-12,T-21-S,R-27-E
S-7,T-21-S,R-28-E
S-6,T-21-S,R-28-E
MATCH LINE STA. 620+00
MATCH LINE STA. 685+00
℄ CONST. S.R. 429
Peterson Rd
SUPERIOR COMMERCE PARK
West Orange Ave
HOLTS LAKE
NWL = 103.25
100-YR = 105.20
SCALE: 1" = 500'
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PREDEVELOPMENT DRAINAGE MAP

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END PROJECT
STA. 703+35

150
125
100
75

EXISTING GROUND PROFILE

SCALE: 1"=500' HORIZ
1"=25' VERT

685 690 695 700 705 710 715 720 725 730 735 740 745 750

SCALE: 1" = 500'

BASIN 201-E3 5.23 AC

BASIN 201-C4 0.78 AC

BASIN 201-C5 0.69 AC

BASIN 201-E1 41.35 AC

BASIN 201-E2 23.00 AC

Kitt Ave.

US 441

General Electric Rd

MATCH LINE STA. 685+00

690 700 710 720 730 740 750

S-6,T-21-S,R-28-E

S-36,T-20-S,R-27-E

S-31,T-20-S,R-28-E

TI Smith Rd

END PROJECT
STA. 703+35

West Orange Ave

Plymouth Sorrento Rd

℄ CONST. S.R. 429

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OOCEA PROJ. NO.

429-201

EXPRESSWAY AUTHORITY

PREDEVELOPMENT DRAINAGE MAP

SHEET NO.

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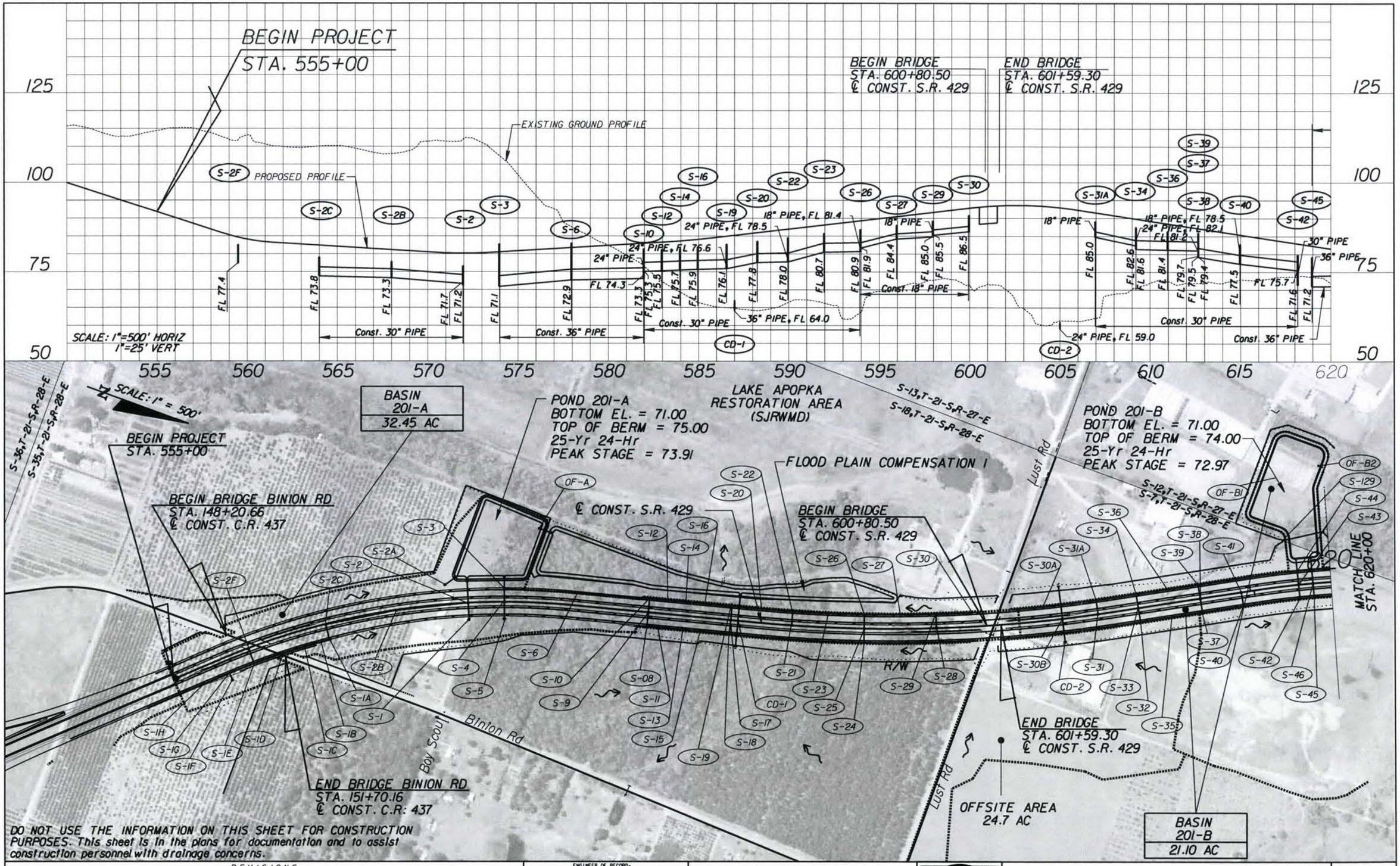

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DRAINAGE MAP

SHEET NO. 5

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BEGIN BRIDGE
STA. 656+53.65
℄ CONST. S.R. 429

END BRIDGE
STA. 657+24.41
℄ CONST. S.R. 429

PROPOSED PROFILE

EXISTING GROUND PROFILE

BEGIN BRIDGE
STA. 682+68.49
℄ CONST. S.R. 429

SCALE: 1"=500' HORIZ
1"=25' VERT

FLOOD PLAIN COMPENSATION 2

BASIN
201-B
21.10 AC

POND 201-C
BOTTOM EL. = 75.00
TOP OF BERM = 81.00
25-Yr 24-Hr
PEAK STAGE = 79.03

BEGIN BRIDGE
STA. 656+53.65
℄ CONST. S.R. 429

BASIN
201-C
25.59 AC

MATCH LINE
STA. 620+00

MATCH LINE
STA. 685+00

℄ CONST. S.R. 429

195.8 AC

3.6 AC

OFFSITE AREA
116.3 AC

S-12,T-21-S,R-27-E

S-7,T-21-S,R-28-E

Peterson Rd

HOLTS
LAKE
NWL = 103.25
100Yr = 105.20

West Orange Ave

END BRIDGE
STA. 657+24.41
℄ CONST. S.R. 429

BEGIN BRIDGE
STA. 682+68.49
℄ CONST. S.R. 429

SCALE: 1" = 500'

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OOCEA PROJ. NO.
429-201

EXPRESSWAY AUTHORITY

DRAINAGE MAP

SHEET NO. 6

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END BRIDGE
STA. 691+50.12
℄ CONST. S.R. 429

PROPOSED PROFILE

END PROJECT
STA. 703+35

S-201 S-207 S-206 S-211 S-200 S-204 S-213 S-215

Const. 18" PIPE

FL 146.0 FL 145.8 FL 145.0 FL 144.3 FL 144.0 FL 143.0 FL 139.0

FL 131.3 FL 129.3 FL 127.6 FL 124.0

Const. 18" PIPE

Const. 18"-PIPE

FUTURE BRIDGES

S-127 S-126 S-125 S-124 S-128

48" PIPE

FL 113.7 FL 113.9 FL 114.1 FL 114.4 FL 111.8 FL 110.0

EXISTING GROUND PROFILE

END BRIDGE
STA. 697+35.34
℄ CONST. S.R. 429

BEGIN BRIDGE
STA. 693+18.94
℄ CONST. S.R. 429

Const. 48" PIPE

S-123

150 125 100 75

685 690 695 700 705 710 715 720 725 730 735 740 745 750

SCALE: 1"=500' HORIZ
1"=25' VERT

BEGIN BRIDGE
STA. 693+18.94
℄ CONST. S.R. 429

END BRIDGE
STA. 691+50.12
℄ CONST. S.R. 429

BASIN
201-C
25.59 AC

END BRIDGE
STA. 697+35.34
℄ CONST. S.R. 429

S-290 S-291 S-292 S-293 S-296 S-297 S-298 S-299 S-300 S-294 S-295 S-310 S-301 S-302 S-311 S-312 S-303 S-314 S-318 S-304 S-319 S-305 S-306 S-307 S-308 S-309 S-320D S-320 S-320A S-209 S-205 S-218A S-313 S-203 S-214 S-210A S-212A S-324 S-325A S-323 S-202 S-210 S-325 S-327 S-328A S-218 S-328 S-329 S-330 S-331 S-334 S-204 S-206 S-213 S-215 S-333 S-207 S-212 S-332 S-333A S-208 S-211 S-335A S-201 S-333A S-335B S-336 S-128 S-335 S-336A S-200

POND 201-E
BOTTOM EL = 110.00
TOP OF BERM = 121.00
25-Yr 96-Hr
PEAK STAGE = 114.99

SCALE: 1" = 500'

Kitt Ave.

BASIN
201-E
60.7 AC

28.5 AC
From Offsite

T.L. Smith Rd.

General Electric Rd

MATCH LINE
STA. 685+00

S-1,T-21-S,R-27-E
S-6,T-21-S,R-28-E

S-36,T-20-S,R-27-E
S-31,T-20-S,R-28-E

West Orange Ave

S-123 S-124 S-125 S-126 S-127

℄ CONST. S.R. 429
Plymouth Sorrento Rd.

END PROJECT
STA. 703+35

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OOCEA PROJ. NO.
429-201

EXPRESSWAY AUTHORITY

DRAINAGE MAP

SHEET NO. 7

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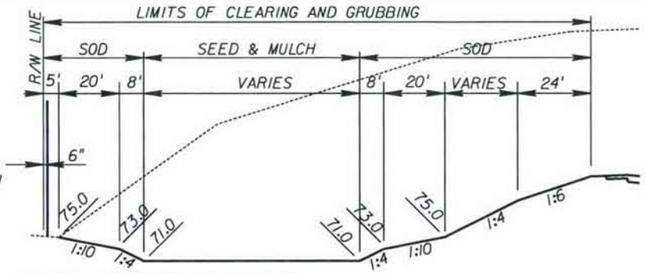
CONTROL POINTS

ID	STATION, OFFSET	RADIUS
1	571+58.39, 157.89 LT	7.0'
2	574+98.92, 156.84 LT	7.0'
3	575+85.85, 440.11 LT	7.0'
4	573+14.07, 564.98 LT	7.0'
5	576+03.48, 187.86 LT	15.0'
6	576+62.91, 397.11 LT	15.0'

ID	STATION, OFFSET	RADIUS
7	580+96.34, 96.75 LT	70.0'
8	582+03.77, 182.77 LT	30.0'
9	583+43.21, 274.83 LT	50.0'

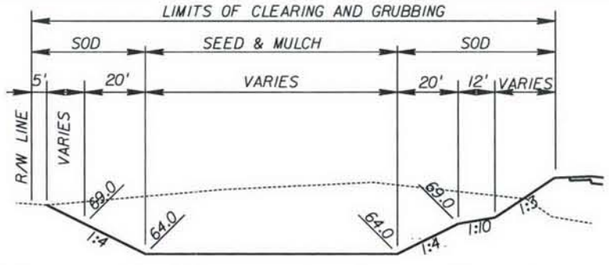
CONST. TYPE 'B' FENCE
SEE PLAN FOR LOCATION

POND AREA	PEAK STAGE
TOP OF BERM = 4.03AC	25 YR - 24 HR
BOTTOM = 3.03AC	73.91 FT



POND TYPICAL SECTION

NOT TO SCALE



FLOOD PLAIN COMPENSATION I TYPICAL SECTION

NOT TO SCALE

100'

N

572+16.01
653.53 LT

CONST. TYPE 'B' FENCE

CONST. 73 LF 24" RCP

576+28.58
470.13 LT

LA R/W

OF-A

SEE OUTFALL STRUCTURE DETAIL SHEET FOR ADDITIONAL INFORMATION

STA. 576+38.21 (394.79' LT)
CONST. STRAIGHT CONC. ENDWALL
INDEX NO. 250
FL 64.00 (LT)

SOIL BORING PB-7
EL 86.18

SOIL BORING PB-2
EL 93.45

A
FOR SECTION A-A
SEE FLOOD PLAIN
COMPENSATION I
DETAIL SHEET

FLOOD PLAIN COMPENSATION I

SOIL BORING PB-11, EL 75.66

SOIL BORING PB-8
EL 79.00

SOIL BORING PB-13, EL 75.68

SOIL BORING PB-10
EL 78.23

582+00.00
129.61 LT

581+00.00
144.52 LT

575+86.00
152.70 LT

575+41.24
173.41 LT

SOIL BORING PB-1
EL 103.17

SOIL BORING PB-4
EL 101.54

SOIL BORING PB-5
EL 107.15

SOIL BORING PB-3
EL 108.61

POND 201-A

36" RCP

CONST. TYPE 'B' FENCE

575+59.85
139.80 LT

SOIL BORING PB-12
EL 82.09

SOIL BORING PB-9, EL 88.68

SOIL BORING PB-5, EL 93.82

30" RCP

SOIL BORING

SOIL BORING PB-14, 79.93

36" RCP

24" RCP

18" RCP

CURVE CL429-2

570+27.10
187.50 LT

30" RCP

24" RCP

℄ CONST. S.R. 429

STA. 571+43.27 (148.04 LT.)
CONST. STRAIGHT CONCRETE ENDWALL
INDEX NO. 250
FL 71.0 (RT.)

30" RCP

S-14

30" RCP

S-12

24" RCP

S-10

S-9

S-6

S-8

S-13

S-11

18" RCP

S-3

S-4

S-2A

S-2

S-5

S-1

MATCHLINE 584+00

NOTE:

ALL BOTTOM PROFILE ELEVATIONS AND CROSS SECTION ELEVATIONS FOR TREATMENT/ATTENUATION SWALES SHALL BE CONSTRUCTED TO WITHIN 0.1 FT +/- OF THE VALUES SHOWN ON THE PLANS. ALSO, DITCH-BLOCK TOP ELEVATIONS AND/OR ANY LONGITUDINAL BERMS ADJACENT TO TREATMENT/ATTENUATION SWALES SHALL ALSO BE CONSTRUCTED WITHIN THIS EARTHWORK TOLERANCE.

REVISIONS

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(407) 896-0594 CERT. OF AUTH. NO. 2648
DONALD W. BROWN, PE LICENSE NO. 59272

OOCEA PROJ. NO.

429-201

EXPRESSWAY AUTHORITY

POND 201-A AND FLOOD PLAIN COMPENSATION I DETAIL

SHEET NO.

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CONTROL POINTS

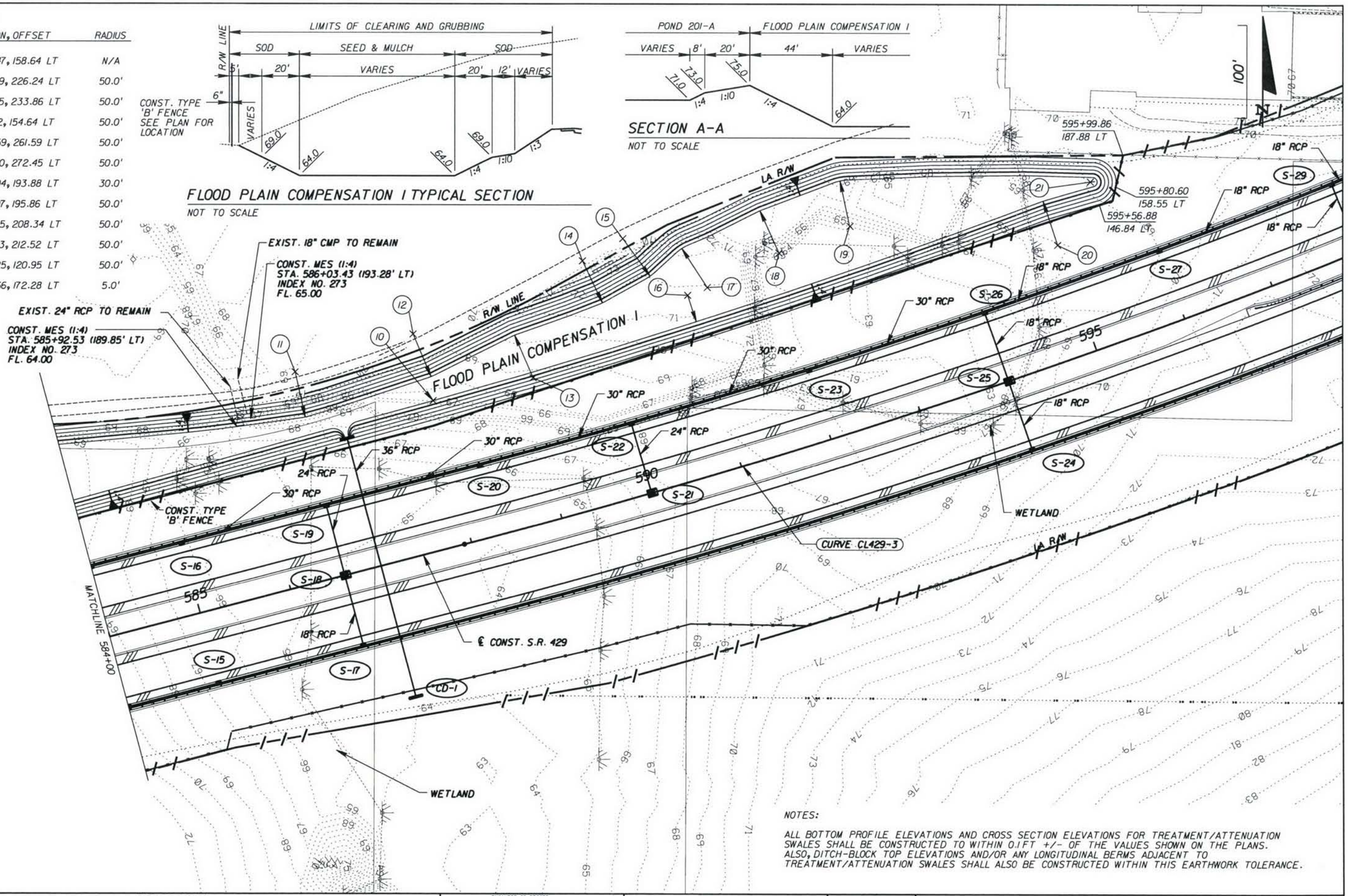
ID	STATION, OFFSET	RADIUS
10	587+99.47, 158.64 LT	N/A
11	586+64.69, 226.24 LT	50.0'
12	587+97.05, 233.86 LT	50.0'
13	589+11.12, 154.64 LT	50.0'
14	589+98.59, 261.59 LT	50.0'
15	590+48.70, 272.45 LT	50.0'
16	590+99.04, 193.88 LT	30.0'
17	591+22.07, 195.86 LT	50.0'
18	592+08.25, 208.34 LT	50.0'
19	592+91.03, 212.52 LT	50.0'
20	594+99.25, 120.95 LT	50.0'
21	595+58.66, 172.28 LT	5.0'

FLOOD PLAIN COMPENSATION I TYPICAL SECTION

NOT TO SCALE

SECTION A-A

NOT TO SCALE



NOTES:

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OOCEA PROJ. NO.

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EXPRESSWAY AUTHORITY

FLOOD PLAIN COMPENSATION 1 DETAIL

SHEET NO.

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NOTES:

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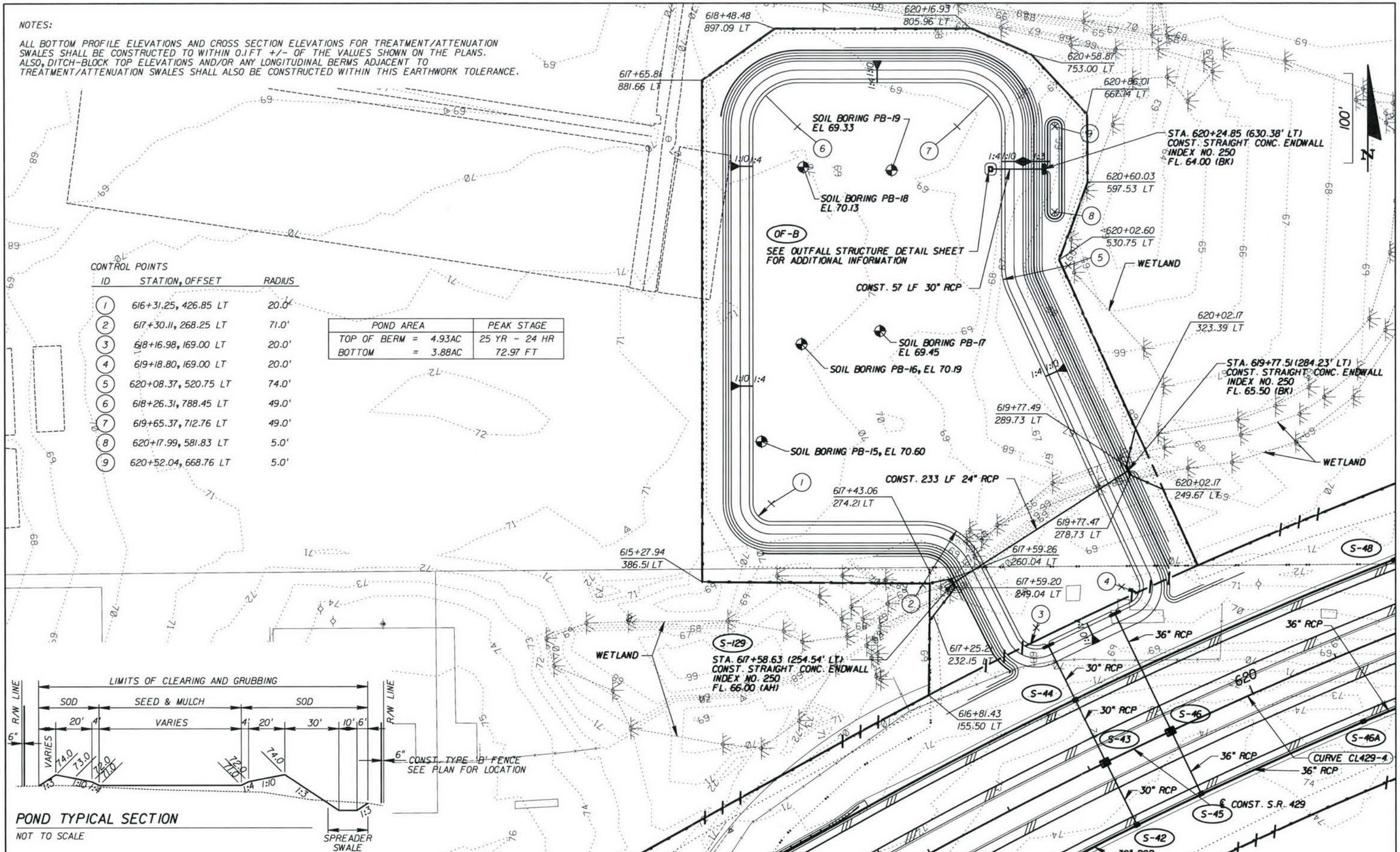
CONTROL POINTS

ID	STATION, OFFSET	RADIUS
1	616+31.25, 426.85 LT	20.0'
2	617+30.11, 268.25 LT	71.0'
3	618+16.98, 169.00 LT	20.0'
4	619+18.80, 169.00 LT	20.0'
5	620+08.37, 520.75 LT	74.0'
6	618+26.31, 788.45 LT	49.0'
7	619+65.37, 712.76 LT	49.0'
8	620+17.99, 581.83 LT	5.0'
9	620+52.04, 668.76 LT	5.0'

POND AREA	PEAK STAGE
TOP OF BERM = 4.93AC	25 YR - 24 HR
BOTTOM = 3.88AC	72.97 FT



POND TYPICAL SECTION

NOT TO SCALE

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OOCEA PROJ. NO.

429-201

EXPRESSWAY AUTHORITY

POND 201-B DETAIL

SHEET NO.

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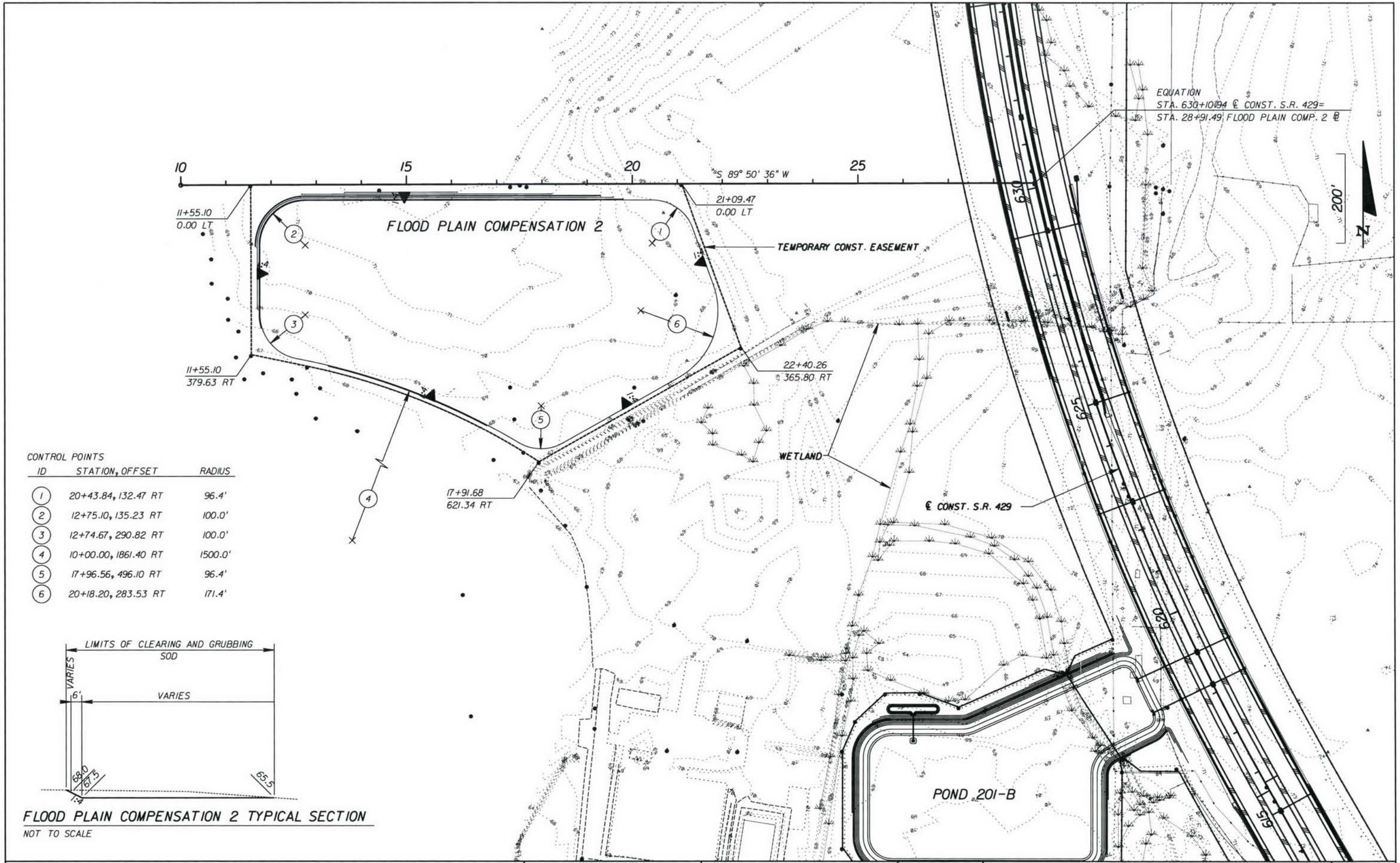

CONTROL POINTS

ID	STATION, OFFSET	RADIUS
1	20+43.84, 132.47 RT	96.4'
2	12+75.10, 135.23 RT	100.0'
3	12+74.67, 290.82 RT	100.0'
4	10+00.00, 1861.40 RT	1500.0'
5	17+96.56, 496.10 RT	96.4'
6	20+18.20, 283.53 RT	171.4'

FLOOD PLAIN COMPENSATION 2 TYPICAL SECTION

NOT TO SCALE

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DONALD W. BROWN, PE LICENSE NO. 59272

OOCEA PROJ. NO.

429-201

EXPRESSWAY AUTHORITY

FLOOD PLAIN COMPENSATION 2 DETAIL

SHEET NO.

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NOTES:

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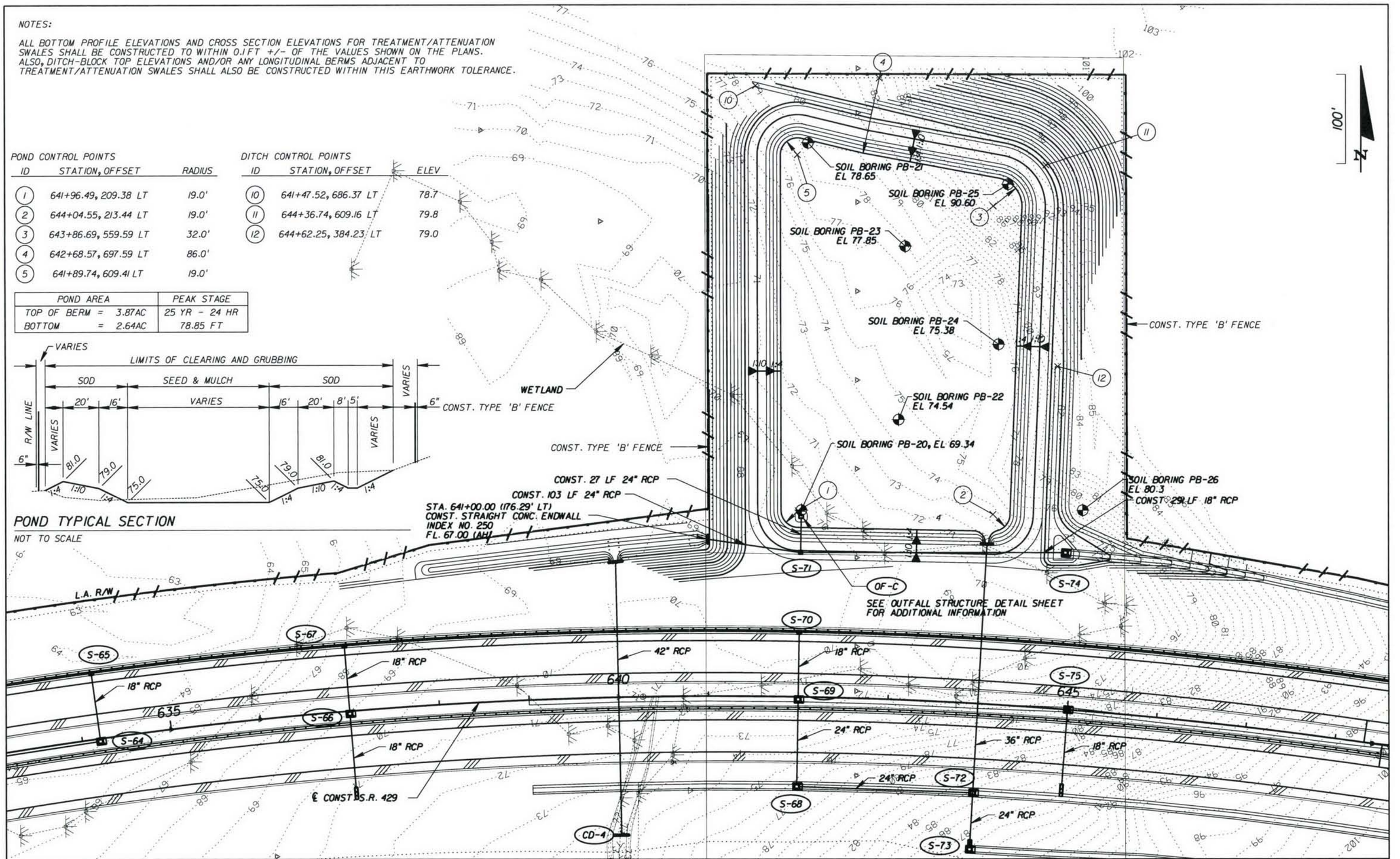
POND CONTROL POINTS

ID	STATION, OFFSET	RADIUS
1	641+96.49, 209.38 LT	19.0'
2	644+04.55, 213.44 LT	19.0'
3	643+86.69, 559.59 LT	32.0'
4	642+68.57, 697.59 LT	86.0'
5	641+89.74, 609.41 LT	19.0'

DITCH CONTROL POINTS

ID	STATION, OFFSET	ELEV
10	641+47.52, 686.37 LT	78.7
11	644+36.74, 609.16 LT	79.8
12	644+62.25, 384.23 LT	79.0

POND AREA	PEAK STAGE
TOP OF BERM = 3.87AC	25 YR - 24 HR
BOTTOM = 2.64AC	78.85 FT



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
DRMP
ENGINEERS · SURVEYORS · PLANNERS · SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
941 LAKE BALDWIN LANE
ORLANDO, FLORIDA 32814
(407) 896-0594 CERT. OF AUTH. NO. 2648
DONALD W. BROWN, PE LICENSE NO. 59272

OOCEA PROJ. NO.
429-201

EXPRESSWAY AUTHORITY

POND 201-C DETAIL

SHEET NO.

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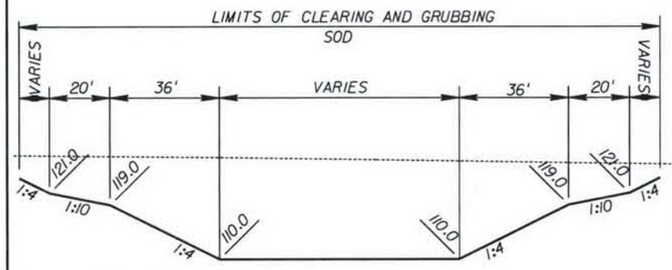
CONTROL POINTS

ID	STATION, OFFSET	RADIUS
1	701+14.55, 290.71 LT	44.0'
2	706+98.47, 4784.80 RT	5056.0'
3	706+88.79, 315.19 LT	44.0'
4	701+38.38, 469.40 LT	559.0'
5	704+40.35, 877.68 LT	44.0'
6	663+79.59, 2689.53 LT	4025.8'

NOTES:

ALL BOTTOM PROFILE ELEVATIONS AND CROSS SECTION ELEVATIONS FOR TREATMENT/ATTENUATION SWALES SHALL BE CONSTRUCTED TO WITHIN 0.1FT +/- OF THE VALUES SHOWN ON THE PLANS. ALSO, DITCH-BLOCK TOP ELEVATIONS AND/OR ANY LONGITUDINAL BERMS ADJACENT TO TREATMENT/ATTENUATION SWALES SHALL ALSO BE CONSTRUCTED WITHIN THIS EARTHWORK TOLERANCE.



POND TYPICAL SECTION

NOT TO SCALE

POND AREA	PEAK STAGE
TOP OF BERM = 9.3AC	25 YR - 96 HR
BOTTOM = 6.3AC	114.99 FT

SOIL BORING PB-34 EL 125.20
SOIL BORING PB-41 EL 124.60
SOIL BORING PB-33 EL 125.00
SOIL BORING PB-37 EL 124.10
SOIL BORING PB-43 EL 124.10
SOIL BORING PB-45 EL 123.00
SOIL BORING PB-40 EL 123.60
SOIL BORING PB-35 EL 125.00
SOIL BORING PB-30 EL 125.30
SOIL BORING PB-42 EL 122.66
SOIL BORING PB-46, EL 119.10
SOIL BORING PB-38 EL 123.90
SOIL BORING PB-28 EL 125.10
SOIL BORING PB-31 EL 125.00
SOIL BORING PB-29 EL 125.47
SOIL BORING PB-27 EL 123.7
SOIL BORING PB-39 EL 123.57
SOIL BORING PB-32 EL 124.40
SOIL BORING PB-44 EL 123.36

24" BCCMP
18" RCP
18" BCCMP
30" RCP
30" BCCMP
24" RCP
36" RCP
CONST. 46 LF OF 18" RCP

S-319
S-320
S-320D
S-218A
S-218
S-214
S-212A
S-212
S-210A
S-210
S-209
S-205
S-202
S-203
S-325A
S-325

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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OOCEA PROJ. NO.
429-201

EXPRESSWAY AUTHORITY

POND 201-E DETAIL

SHEET NO.

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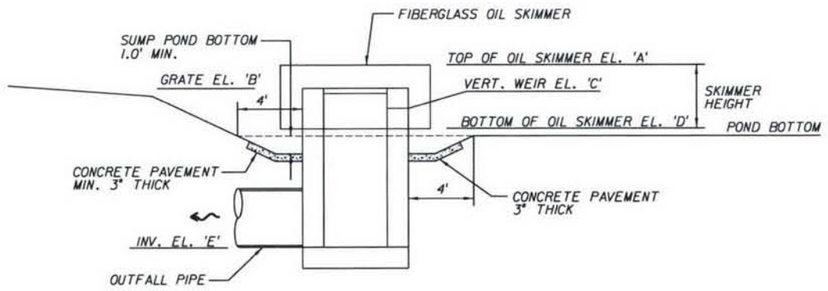
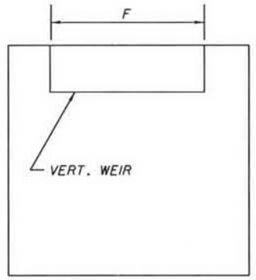


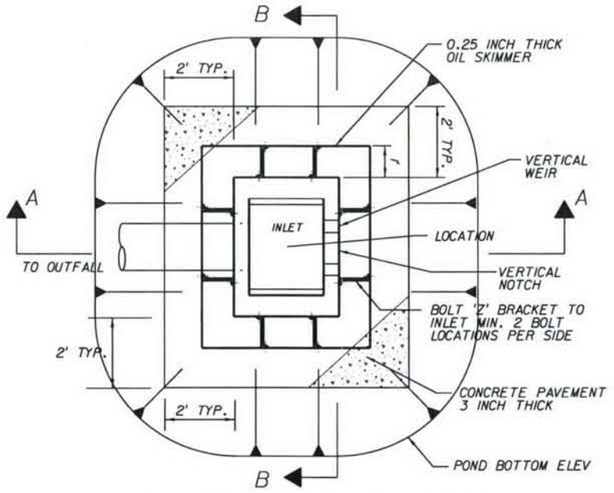
DBI (TYPE D) SECTION A-A DETAIL

N.T.S.



SECTION B-B

N.T.S.



DBI (TYPE D) PLAN VIEW DETAIL

N.T.S.

NOTE:
THE COST OF THE SKIMMER, DITCH PAVEMENT, SKIMMER ATTACHMENT METHOD, AND WEIRS ARE TO BE INCLUDED IN THE COST ON THE STRUCTURE

STRUCT NO.	INLET TYPE	PIPE SIZE	PIPE LENGTH	LOCATION	A	B	C	D	E	F (IN)	REMARKS
OF-A	D-SPECIAL	24"	73 LF	575+75.00 (417.00 LT)	74.50	74.00	72.10	71.60	65.00	15"	
OF-B	D-SPECIAL	30"	57 LF	619+78.00 (654.00 LT)	73.50	73.00	71.75	71.25	65.00	(2)-18"	
OF-C	D-SPECIAL	24"	103 LF	642+00.00 (203.00 LT)	80.50	80.00	76.20	75.70	70.00	5"	TO S-71

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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OOCEA PROJ. NO.

429-201

EXPRESSWAY AUTHORITY

OUTFALL STRUCTURE DETAIL

SHEET NO.

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Appendix B – Predevelopment Hydrology/Routings

Hydrology

Basin 201-A

Description: Total basin area

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product
Meadows	Good	A	6.18	30	185.4
Meadows	Good	D	1.54	78	120.1
Woods	Good	A	7.96	25	199.0
Woods	Good	D	3.08	77	237.2
Highway			0.88	98	86.2
Industrial	Good	A	0.99	81	80.2
Crop	Good	A	11.29	67	756.4
Pond			0.52	100	52.0
		Total =	32.44		1716.5
				Weighted CN =	**53**

Time of Concentration

a) SHEET FLOW

Length (ft)=	300		
n=	0.45		
US elevation=	113		
DS elevation=	102		
Slope (ft/ft)=	0.037		
Intensity (2yr-24-hour)=	4.75		
Time of conc. (hr)=	0.610	**SUBTOTAL =**	**0.610**

b) CONCENTRATED FLOW

Length (ft)=	1300		
US elevation	102		
DS elevation	65		
Slope (ft/ft)=	0.028		
Paved or unpaved =	unpaved		
Velocity (ft/s)=	2.72		
Time of conc. (hr)=	0.133	**SUBTOTAL =**	**0.133**

c) CHANNEL FLOW

Length (ft)=			
Velocity (ft/s)=	1.50	(assumed)	
Time of conc. (hr)=	0.00	**SUBTOTAL =**	**0.000**

TOTAL Tc (hr) =	**0.743**
TOTAL Tc (min) =	**45**

```
          Basin Name: 201-A
          Group Name: BASE
          Simulation: 25yr-24hr
           Node Name: TW
          Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh323
        Peaking Fator: 323.0
 Spec Time Inc (min): 6.00
 Comp Time Inc (min): 6.00
        Rainfall File: Orange
Rainfall Amount (in): 8.600
Storm Duration (hrs): 24.00
              Status: Onsite
  Time of Conc (min): 45.00
    Time Shift (hrs): 0.00
           Area (ac): 32.450
Vol of Unit Hyd (in): 1.001
         Curve Number: 53.000
             DCIA (%): 0.000

       Time Max (hrs): 10.10
       Flow Max (cfs): 20.251
  Runoff Volume (in): 2.970
 Runoff Volume (ft3): 349905.258
```

Basin 201-B

Description: Total Basin area

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product
Meadows	Good	A	4.48	30	134.3
Woods	Good	D	6.08	77	468.4
Woods	Good	C	2.43	70	170.0
Woods	Good	A	0.27	25	6.7
Meadows	Good	D	2.16	78	168.5
Industrial	Good	C	3.53	91	321.0
Industrial	Good	A	0.06	81	4.8
Meadows	Good	C	2.09	71	148.6
		Total =	21.10		1422.4
				Weighted CN =	**67**

Basin 201-B2

Description: Basin B area contributing stormwater runoff to the SJRWMD wetland system

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product
Meadows	Good	A	2.95	30	88.5
Woods	Good	D	6.08	77	468.4
Woods	Good	C	2.43	70	170.0
Woods	Good	A	0.27	25	6.7
Meadows	Good	D		78	0.0
Industrial	Good	C	3.53	91	321.0
Industrial	Good	A		81	0.0
Meadows	Good	C	2.09	71	148.6
		Total =	17.35		1203.2
				Weighted CN =	**69**

Time of Concentration

a) SHEET FLOW

Length (ft)=	300		
n=	0.13		
US elevation=	73.3		
DS elevation=	71.2		
Slope (ft/ft)=	0.007		
Intensity (2yr-24-hour)	4.75		
Time of conc. (hr)=	0.438	**SUBTOTAL =**	**0.438**

b) CONCENTRATED FLOW

Length (ft)=	650		
US elevation	71.2		
DS elevation	65		
Slope (ft/ft)=	0.010		
Paved or unpaved =	unpaved		
Velocity (ft/s)=	1.58		
Time of conc. (hr)=	0.115	**SUBTOTAL =**	**0.115**

c) CHANNEL FLOW

Length (ft)=			
Velocity (ft/s)=	1.50	(assumed)	
Time of conc. (hr)=	0.00	**SUBTOTAL =**	**0.000**
		TOTAL Tc (hr) =	**0.553**
		TOTAL Tc (min) =	**33**

```
          Basin Name: 201-B2
          Group Name: BASE
          Simulation: 25yr-24hr
           Node Name: TW
          Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh323
        Peaking Fator: 323.0
 Spec Time Inc (min): 4.40
 Comp Time Inc (min): 4.40
        Rainfall File: Orange
Rainfall Amount (in): 8.600
Storm Duration (hrs): 24.00
              Status: Onsite
  Time of Conc (min): 33.00
    Time Shift (hrs): 0.00
           Area (ac): 17.350
Vol of Unit Hyd (in): 1.000
        Curve Number: 69.000
            DCIA (%): 0.000

      Time Max (hrs): 9.17
      Flow Max (cfs): 19.326
  Runoff Volume (in): 4.866
 Runoff Volume (ft3): 306449.067
```

Basin 201-C

Description: Total Basin area

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product
Commercial	Good	A	3.04	89	270.6
Meadows	Good	A	5.09	30	152.8
Woods	Good	D	2.28	77	175.2
Woods	Good	C	10.79	70	755.0
Woods	Good	A	4.19	25	104.8
Highway			0.20	98	19.6
		Total =	25.59		1478.0
				Weighted CN =	**58**

Basin 201-C1

Description: Basin C area contributing stormwater runoff to the SJRWMD wetland system

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product
Meadows	Good	A	1.30	30	39.1
Woods	Good	D	2.28	77	175.2
Woods	Good	C	6.17	70	432.1
Woods	Good	A	4.19	25	104.8
		Total =	13.94		751.2
				Weighted CN =	**54**

Time of Concentration

a) SHEET FLOW

Length (ft)=	300		
n=	0.4		
US elevation=	109.2		
DS elevation=	108.5		
Slope (ft/ft)=	0.002		
Intensity (2yr-24-hour)	4.75		
Time of conc. (hr)=	1.671	**SUBTOTAL =**	**1.671**

b) CONCENTRATED FLOW

Length (ft)=	1254		
US elevation	108.5		
DS elevation	69		
Slope (ft/ft)=	0.031		
Paved or unpaved =	unpaved		
Velocity (ft/s)=	2.86		
Time of conc. (hr)=	0.122	**SUBTOTAL =**	**0.122**

c) CHANNEL FLOW

Length (ft)=			
Velocity (ft/s)=	1.50	(assumed)	
Time of conc. (hr)=	0.00	**SUBTOTAL =**	**0.000**
		TOTAL Tc (hr) =	**1.792**
		TOTAL Tc (min) =	**108**

```
          Basin Name: 201-C1
          Group Name: BASE
          Simulation: 25yr-24hr
           Node Name: TW
          Basin Type: SCS Unit Hydrograph

     Unit Hydrograph: Uh323
       Peaking Fator: 323.0
 Spec Time Inc (min): 14.40
 Comp Time Inc (min): 14.40
       Rainfall File: Orange
Rainfall Amount (in): 8.600
Storm Duration (hrs): 24.00
              Status: Onsite
  Time of Conc (min): 108.00
    Time Shift (hrs): 0.00
           Area (ac): 13.940
Vol of Unit Hyd (in): 1.000
        Curve Number: 54.000
            DCIA (%): 0.000

      Time Max (hrs): 10.56
      Flow Max (cfs): 6.815
  Runoff Volume (in): 3.087
 Runoff Volume (ft3): 156188.744
```

BASIN 201-E1

Description: Land Locked Basin located North of US 441, west of and including TI Smith Road.
100-yr Flood Elevation = 122.72

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product
Existing Open Space	Fair	A	0.00	49	0.0
Residential 1/4 acre		A	4.14	61	252.5
Residential 1 acre		A	1.26	51	64.3
Existing Buildings (Impervious)		A	0.45	98	44.1
Existing Paved Roads		A	1.94	83	161.0
Existing Unpaved Roads		A	3.41	72	245.5
Commercial		A	3.75	89	333.8
Wood Grass Combination	Good	A	8.44	32	270.1
Wood	Good	A	17.96	30	538.8
		Total =	41.35		1910.07
				Weighted CN =	**46**

Time of Concentration

a)	**SHEET FLOW**			
	Length (ft)=	300		
	n=	0.4		
	US elevation=	147.5		
	DS elevation=	143		
	Slope (ft/ft)=	0.015		
	Intensity (2yr-24-hour)	2.3		
	Time of conc. (hr)=	1.141	**SUBTOTAL =**	**1.141**
b)	**CONCENTRATED FLOW**			
	Length (ft)=	300		
	US elevation	143		
	DS elevation	132		
	Slope (ft/ft)=	0.037		
	Paved or unpaved =	unpaved		
	Velocity (ft/s)=	3.09		
	Time of conc. (hr)=	0.027	**SUBTOTAL =**	**0.027**
b)	**CONCENTRATED FLOW**			
	Length (ft)=	510		
	US elevation	132		
	DS elevation	126		
	Slope (ft/ft)=	0.012		
	Paved or unpaved =	unpaved		
	Velocity (ft/s)=	1.75		
	Time of conc. (hr)=	0.081	**SUBTOTAL =**	**0.081**
b)	**CONCENTRATED FLOW**			
	Length (ft)=	200		
	US elevation	126		
	DS elevation	120		
	Slope (ft/ft)=	0.030		
	Paved or unpaved =	unpaved		
	Velocity (ft/s)=	2.79		

Time of conc. (hr)=	0.020	**SUBTOTAL =**	**0.020**
		TOTAL Tc (hr) =	**1.268**
		TOTAL Tc (min) =	**76**

Stage Storage-Depression E1

	Stage (NGVD) (FT)	Area (Ac)	Incremental Storage (Ac-Ft)	Cumulative Storage (Ac-Ft)
Top of bank	122.59	6.36	2.22	4.30
	122.09	2.53	0.37	2.08
	121.89	1.19	0.77	1.70
	121.09	0.73	0.62	0.94
	120.09	0.50	0.32	0.32
Bottom	119.09	0.14		

Water Quantity Volumes

25yr-96hr storm

CN =	46	
Area =	41.35	acre
P =	11.86	inches

Soil Storage (S) = 1000/CN-10

Runoff (R) = (P - 0.2 x S)^2/(P + 0.8 x S)

Runoff Volume (Vr) = R x AREA / 12

S	11.65	
R	4.29	inches
Vr	14.78	acre-ft

```
          Basin Name: 201-E1
          Group Name: BASE
          Simulation: 100YR-24HR
           Node Name: 201-E1
          Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh323
        Peaking Fator: 323.0
 Spec Time Inc (min): 10.13
 Comp Time Inc (min): 10.13
        Rainfall File: Orange
 Rainfall Amount (in): 10.600
 Storm Duration (hrs): 24.00
               Status: Onsite
   Time of Conc (min): 76.00
     Time Shift (hrs): 0.00
            Area (ac): 41.350
 Vol of Unit Hyd (in): 1.001
          Curve Number: 46.000
              DCIA (%): 0.000

       Time Max (hrs): 10.30
       Flow Max (cfs): 25.475
  Runoff Volume (in): 3.408
 Runoff Volume (ft3): 511485.454
```

BASIN 201-E2

Description: Land Locked Basin located North of US 441, east of TI Smith Road.
100-yr Flood Elevation = 121.68

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product
Existing Open Space	Fair	A	0.76	49	37.2
Residential 1 acre		A	5.62	51	286.6
Existing Paved Roads		A	1.10	83	91.3
Existing Unpaved Roads		A	0.59	72	42.5
Commercial		A	3.57	89	317.7
Wood Grass Combination	Good	A	3.88	32	124.2
Wood	Good	A	7.48	30	224.4
		Total =	23.00		1123.9
				Weighted CN =	**49**

Time of Concentration

a)	**SHEET FLOW**			
	Length (ft)=	300		
	n=	0.4		
	US elevation=	128.5		
	DS elevation=	125.5		
	Slope (ft/ft)=	0.010		
	Intensity (2yr-24-hour)	1.75		
	Time of conc. (hr)=	1.538	**SUBTOTAL =**	**1.538**
b)	**CONCENTRATED FLOW**			
	Length (ft)=	300		
	US elevation	125.5		
	DS elevation	123		
	Slope (ft/ft)=	0.008		
	Paved or unpaved =	unpaved		
	Velocity (ft/s)=	1.47		
	Time of conc. (hr)=	0.057	**SUBTOTAL =**	**0.057**
c)	**CONCENTRATED FLOW**			
	Length (ft)=	510		
	US elevation	123		
	DS elevation	122		
	Slope (ft/ft)=	0.002		
	Paved or unpaved =	unpaved		
	Velocity (ft/s)=	0.71		
	Time of conc. (hr)=	0.198	**SUBTOTAL =**	**0.198**
d)	**CONCENTRATED FLOW**			
	Length (ft)=	200		
	US elevation	122		
	DS elevation	121		
	Slope (ft/ft)=	0.005		
	Paved or unpaved =	unpaved		
	Velocity (ft/s)=	1.14		
	Time of conc. (hr)=	0.049	**SUBTOTAL =**	**0.049**

TOTAL Tc (hr) =	1.841
TOTAL Tc (min) =	110

Stage Storage-Depression E2

	Stage (NGVD) (FT)	Area (Ac)	Incremental Storage (Ac-Ft)	Cumulative Storage (Ac-Ft)
Top of bank	124.00	12.01	8.92	13.53
	123.00	5.83	4.00	4.61
	122.00	2.18	0.57	0.61
	121.50	0.10	0.04	0.04
Bottom	121.00	0.05		

Water Quantity Volumes

25yr-96hr storm

CN =	49	
Area =	23.00	acre
P =	11.86	inches

Soil Storage (S) = 1000/CN-10

Runoff (R) = (P - 0.2 x S)^2/(P + 0.8 x S)

Runoff Volum (Vr) = R x AREA / 12

S	10.46	
R	4.72	inches
Vr	9.04	acre-ft

```
          Basin Name: 201-E2
          Group Name: BASE
          Simulation: 100YR-24HR
           Node Name: 201-E2
          Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh323
        Peaking Fator: 323.0
  Spec Time Inc (min): 14.67
  Comp Time Inc (min): 14.67
        Rainfall File: Orange
Rainfall Amount (in): 10.600
Storm Duration (hrs): 24.00
              Status: Onsite
  Time of Conc (min): 110.00
    Time Shift (hrs): 0.00
            Area (ac): 23.000
Vol of Unit Hyd (in): 1.000
        Curve Number: 49.000
            DCIA (%): 0.000

       Time Max (hrs): 10.76
       Flow Max (cfs): 13.897
  Runoff Volume (in): 3.835
 Runoff Volume (ft3): 320176.267
```

BASIN 201-E3

Description: Land Locked Basin located North of US 441
100-yr Flood Elevation = 122.49

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product
Existing Open Space	Fair	A	0.03	49	1.5
Residential 1/4 acre		A	0.42	61	25.6
Existing Paved Roads		A	0.32	83	26.6
Wood	Good	A	4.46	30	133.8
		Total =	5.23		187.5
				Weighted CN =	**36**

Time of Concentration

a)	**SHEET FLOW**			
	Length (ft)=	300		
	n=	0.4		
	US elevation=	132		
	DS elevation=	126		
	Slope (ft/ft)=	0.020		
	Intensity (2yr-24-hour)	4.20		
	Time of conc. (hr)=	0.752	**SUBTOTAL =**	**0.752**
b)	**CONCENTRATED FLOW**			
	Length (ft)=	210		
	US elevation	126		
	DS elevation	122		
	Slope (ft/ft)=	0.019		
	Paved or unpaved =	unpaved		
	Velocity (ft/s)=	2.23		
	Time of conc. (hr)=	0.026	**SUBTOTAL =**	**0.026**
b)	**CONCENTRATED FLOW**			
	Length (ft)=	160		
	US elevation	122		
	DS elevation	121		
	Slope (ft/ft)=	0.006		
	Paved or unpaved =	unpaved		
	Velocity (ft/s)=	1.28		
	Time of conc. (hr)=	0.035	**SUBTOTAL =**	**0.035**
b)	**CONCENTRATED FLOW**			
	Length (ft)=	70		
	US elevation	121		
	DS elevation	118		
	Slope (ft/ft)=	0.043		
	Paved or unpaved =	unpaved		
	Velocity (ft/s)=	3.34		
	Time of conc. (hr)=	0.006	**SUBTOTAL =**	**0.006**
			TOTAL Tc (hr) =	**0.819**
			TOTAL Tc (min) =	**49**

Stage Storage-Depression E3

	Stage (NGVD) (FT)	Area (Ac)	Incremental Storage (Ac-Ft)	Cumulative Storage (Ac-Ft)
Top of bank	123.0	3.30	1.81	2.15
	122.0	0.33	0.19	0.34
	121.0	0.06	0.06	0.15
	120.0	0.05	0.05	0.09
	119.0	0.05	0.04	0.04
Bottom	118.0	0.04		

Water Quantity Volumes

25yr-96hr storm

CN =	36	
Area =	5.22	acre
P =	11.86	inches

Soil Storage (S) =	1000/CN-10
Runoff (R) =	(P - 0.2 x S)^2/(P + 0.8 x S)
Runoff Volume (Vr) =	R x AREA / 12

S	17.89	
R	2.62	inches
Vr	1.14	acre-ft

```
          Basin Name: 201-E3
          Group Name: BASE
          Simulation: 100YR-24HR
           Node Name: 201-E3
          Basin Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh323
        Peaking Fator: 323.0
 Spec Time Inc (min): 6.53
 Comp Time Inc (min): 6.53
        Rainfall File: Orange
Rainfall Amount (in): 10.600
Storm Duration (hrs): 24.00
              Status: Onsite
  Time of Conc (min): 49.00
    Time Shift (hrs): 0.00
           Area (ac): 5.230
Vol of Unit Hyd (in): 1.000
        Curve Number: 36.000
            DCIA (%): 0.000

      Time Max (hrs): 10.24
      Flow Max (cfs): 2.104
  Runoff Volume (in): 2.000
 Runoff Volume (ft3): 37961.969
```

Routings

```
==========================================================================================
==== Basins ==============================================================================
==========================================================================================

        Name: 201-E1                    Node: 201-E1                Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh323                    Peaking Factor: 323.0
        Rainfall File: Orange             Storm Duration(hrs): 24.00
    Rainfall Amount(in): 10.600             Time of Conc(min): 76.00
              Area(ac): 41.350                Time Shift(hrs): 0.00
         Curve Number: 46.00              Max Allowable Q(cfs): 999999.000
              DCIA(%): 0.00

------------------------------------------------------------------------------------------

        Name: 201-E2                    Node: 201-E2                Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh323                    Peaking Factor: 323.0
        Rainfall File: Orange             Storm Duration(hrs): 24.00
    Rainfall Amount(in): 10.600             Time of Conc(min): 110.00
              Area(ac): 23.000                Time Shift(hrs): 0.00
         Curve Number: 49.00              Max Allowable Q(cfs): 999999.000
              DCIA(%): 0.00

------------------------------------------------------------------------------------------

        Name: 201-E3                    Node: 201-E3                Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

      Unit Hydrograph: Uh323                    Peaking Factor: 323.0
        Rainfall File: orange             Storm Duration(hrs): 24.00
    Rainfall Amount(in): 10.600             Time of Conc(min): 49.00
              Area(ac): 5.230                 Time Shift(hrs): 0.00
         Curve Number: 36.00              Max Allowable Q(cfs): 999999.000
              DCIA(%): 0.00

==========================================================================================
==== Nodes ===============================================================================
==========================================================================================

      Name: 201-E1              Base Flow(cfs): 0.000         Init Stage(ft): 119.100
     Group: BASE                                             Warn Stage(ft): 122.600
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
        119.100          0.1400
        120.100          0.5000
        121.100          0.7300
        121.900          1.1900
        122.100          2.5300
        122.600          6.3600

------------------------------------------------------------------------------------------
      Name: 201-E2              Base Flow(cfs): 0.000         Init Stage(ft): 120.080
     Group: BASE                                             Warn Stage(ft): 124.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
        120.080          0.0500
        121.500          0.1000
        122.000          2.1800
        123.000          5.8300
        124.000         12.0100

------------------------------------------------------------------------------------------
      Name: 201-E3              Base Flow(cfs): 0.000         Init Stage(ft): 118.000
     Group: BASE                                             Warn Stage(ft): 123.000
      Type: Stage/Area
```

Stage(ft)	Area(ac)
118.000	0.0400
119.000	0.0500
120.000	0.0500
121.000	0.0600
122.000	0.3300
123.000	3.3000

Name: PLYMOUTH Base Flow(cfs): 0.000 Init Stage(ft): 0.000
Group: BASE Warn Stage(ft): 0.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	110.000
96.00	110.000

Cross Sections

Name: CR E-1TO E-2 Group: BASE
Encroachment: No

Station(ft)	Elevation(ft)	Manning's N
0.000	125.500	0.400000
45.000	126.000	0.400000
180.000	126.000	0.400000
250.000	125.000	0.400000
330.000	124.000	0.400000
425.000	123.000	0.400000
475.000	122.500	0.400000
790.000	123.000	0.400000
815.000	124.000	0.400000
845.000	125.000	0.400000
885.000	125.000	0.400000
920.000	124.000	0.400000
955.000	123.000	0.400000
1120.000	123.000	0.400000
1125.000	123.000	0.400000
1200.000	124.000	0.400000
1320.000	125.000	0.400000

Name: CR E2 PLY Group: BASE
Encroachment: No

Station(ft)	Elevation(ft)	Manning's N
0.000	124.540	0.013000
103.000	124.080	0.013000
190.000	123.650	0.013000
288.000	122.910	0.013000
385.000	122.180	0.013000
478.000	121.510	0.013000
569.000	121.540	0.013000
658.000	121.570	0.013000
748.000	121.870	0.013000
838.000	121.770	0.013000
933.000	122.070	0.013000
1033.000	122.780	0.013000
1130.000	123.800	0.013000
1198.000	124.270	0.013000
1253.000	124.280	0.103000

Weirs

Name: WEIR E1 E2 From Node: 201-E1
Group: BASE To Node: 201-E2
Flow: Both Count: 1
Type: Vertical: Mavis Geometry: Irregular

```
                    XSec: CR E-1TO E-2
                Invert(ft): 122.500
     Control Elevation(ft): 122.500
    Struct Opening Dim(ft): 9999.00
                                          TABLE
           Bottom Clip(ft): 0.000
              Top Clip(ft): 0.000
        Weir Discharge Coef: 2.800
    Orifice Discharge Coef: 0.600

------------------------------------------------------------------------------------------

      Name: WEIR E2 PLYMOUT     From Node: 201-E2
     Group: BASE                  To Node: PLYMOUTH
      Flow: Both                    Count: 1
      Type: Vertical: Paved      Geometry: Irregular

                    XSec: CR E2 PLY
                Invert(ft): 121.510
     Control Elevation(ft): 121.510
    Struct Opening Dim(ft): 9999.00
                                          TABLE
           Bottom Clip(ft): 0.000
              Top Clip(ft): 0.000
        Weir Discharge Coef: 2.800
    Orifice Discharge Coef: 0.600

==========================================================================================
==== Breaches ============================================================================
==========================================================================================

      Name:                       From Node:                        Count: 1
     Group: BASE                    To Node:                         Flow: Both

     Bottom Width(ft): 0.00          Water Surface Elev(ft): 0.000
  Left Side Slope(h/v): 0.00           Breach Duration(hrs): 0.00
 Right Side Slope(h/v): 0.00                     Power Coef: 0.00
Bottom Breach Elev(ft): 0.000          Weir Discharge Coef: 0.000
   Top Breach Elev(ft): 0.000

==========================================================================================
==== Hydrology Simulations ===============================================================
==========================================================================================

       Name: 100YR-24HR
   Filename: W:\_SR429_201\drainage\analyt\100yr-24hr.R32

    Override Defaults: Yes
  Storm Duration(hrs): 24.00
        Rainfall File: Orange
  Rainfall Amount(in): 10.60

Time(hrs)       Print Inc(min)
--------------- ---------------
8.000           60.00
18.000          5.00
24.000          60.00

==========================================================================================
==== Routing Simulations =================================================================
==========================================================================================

       Name: 100YR-24HR          Hydrology Sim: 100YR-24HR
   Filename: W:\_SR429_201\drainage\analyt\100yr-24hr.I32

    Execute: Yes         Restart: No           Patch: No
Alternative: No

      Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
  Time Step Optimizer: 10.000
      Start Time(hrs): 0.000                    End Time(hrs): 30.00
   Min Calc Time(sec): 0.5000               Max Calc Time(sec): 60.0000
     Boundary Stages:                          Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.000

Group           Run
--------------- -----
BASE            Yes
```

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
201-E1	BASE	100YR-24HR	12.04	122.718	122.600	0.0042	316328	10.33	25.462	12.04	17.988
201-E2	BASE	100YR-24HR	11.91	121.680	124.000	0.0050	36931	11.89	29.726	11.91	29.709
201-E3	BASE	100YR-24HR	24.01	122.492	123.000	0.0050	78010	10.25	2.101	0.00	0.000
PLYMOUTH	BASE	100YR-24HR	0.00	110.000	0.000	110.0000	0	11.91	29.709	0.00	0.000

Appendix C – Post Development Hydrology/Routings

S.R.429 Design
Proposed Conditions

Basin 201-A

Sta. 555+00 to 602+60

Description: Proposed Roadway from Begin Project to Lust Road

Weighted CN

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product
Proposed Roadway			14.11	98	1383.0
Future Widening			3.78	98	370.2
Open Space	Good	A	10.52	39	410.3
Open Space	Good	D	0.36	78	28.1
Pond-Open Space	Good	D	1.28	78	99.8
Pond-Open Space	Good	A	2.40	39	93.6
		Total =	32.45		2385.0
				Weighted CN =	**73**
	% Impervious Area	**55.13%**			

Time of Concentration

Tc (min) = 19 (see storm tabs for system S-3)

Water Quality Volumes

Use the greater of:		
First one half inch of runoff =	1.35	ac-ft
1.25 in. of runoff from impervious area =	1.86	ac-ft
Add one half inch of runoff for online retention =	1.35	
Required Water Quality Volume (Chapter 40C-42) =	3.22	ac-ft
Phosphorous Removal (1.25 in. - See Appendix F) =	3.38	ac-ft
Required Water Quality Elevation in pond =	72.09	
Proposed Weir Elevation =	72.10	
Water Quality Volume Provided =	3.42	ac-ft

Stage Storage-Pond 201-A

	Stage (NGVD) (FT)	Area (Ac)	Incremental Storage (Ac-Ft)	Cumulative Storage (Ac-Ft)
Top of bank	75.00	4.03	3.85	13.67
	74.00	3.66	3.48	9.82
	73.00	3.31	3.24	6.34
	72.00	3.17	3.10	3.10
	71.00	3.03	0.00	0.00

Basin 201-B

Sta. 602+80 to 642+00

Description: Proposed Roadway from Lust Road to Basin C

Weighted CN

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product
Proposed Roadway			11.68	98	1144.3
Future Widening			3.11	98	304.9
Open Space	Good	A	0.16	39	6.4
Open Space	Good	D	1.01	80	81.0
Pond Surface			0.77	100	76.9
Pond B Berm	Good	C	4.30	74	318.2
Pond B Berm	Good	D	0.07	80	5.2
		Total =	21.10		1936.8
				Weighted CN =	**92**

% Impervious Area **70.09%**

Time of Concentration

Tc (min) = 22 (see storm tabs for system S-45)

Water Quality Volumes

Use the greater of:		
First one half inch of runoff =	0.88	ac-ft
1.25 in. of runoff from impervious area =	1.54	ac-ft
Add one half inch of runoff for online retention =	0.88	
Water Quality Volume (Chapter 40C-42) =	2.42	ac-ft
Phosphorous Removal (1.50 in. - See Appendix F) =	2.25	ac-ft
Required Water Quality Elevation in pond =	71.61	
Proposed Weir Elevation =	71.75	
Water Quality Volume Provided =	2.97	ac-ft

Stage Storage-Pond 201-B

	Stage (NGVD) (FT)	Area (Ac)	Incremental Storage (Ac-Ft)	Cumulative Storage (Ac-Ft)
Top of bank	74.00	4.93	4.71	12.94
	73.00	4.48	4.27	8.23
	72.00	4.05	3.96	3.96
Bottom	71.00	3.88	0.00	0.00

Basin 201-C

Sta. 642+00 to 692+20

Description: Proposed Roadway from US 441 to Basin B

Weighted CN

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product
Proposed Roadway			14.99	98	1469.3
Future Widening			2.51	98	246.2
Open Space	Good	A	1.63	39	63.6
Open Space	Good	C	2.16	74	159.9
Pond Berm	Good	A	2.09	39	81.4
Pond Berm	Good	D	2.21	80	176.8
		Total =	25.59		2197.2
				Weighted CN =	**86**

% Impervious Area **68.39%**

Tc (min) = 36 (see storm tabs system S-73)

Water Quality Volumes

Use the greater of:		
First one half inch of runoff =	1.07	ac-ft
1.25 in. of runoff from impervious area =	1.82	ac-ft
Add one half inch of runoff for online retention =	1.07	
Water Quality Volume (Chapter 40C-42) =	2.89	ac-ft
Phosphorous Removal (1.25 in. of runoff) = (See Appendix F)	2.67	ac-ft
Required Water Quality Elevation in pond =	76.12	
Proposed Weir Elevation =	76.20	
Water Quality Volume Provided =	2.99	ac-ft

Stage Storage-Pond C- Dry

	Stage (NGVD) (FT)	Area (Ac)	Incremental Storage (Ac-Ft)	Cumulative Storage (Ac-Ft)
Top of bank	81.00	3.69	3.51	17.67
	80.00	3.34	3.17	14.16
	79.00	3.00	2.94	10.99
	78.00	2.87	2.81	8.05
	77.00	2.75	2.68	5.24
	76.00	2.62	2.56	2.56
Bottom	75.00	2.50	0.00	0.00

Basin 201-E (excluding US 441)

Description: Land Locked Basin within Apopka Basin, located North of US 441west of and including TI Smith Road.
100-yr Flood Elevation = 114.80

Land Use	Hydrologic Condition	Soil Class	Area (Acres)	CN	Product	% Impervious	Area Impervious
Existing Open Space	Fair	A	0.1	49	4.9	0%	0.0
Open Space Expressway (future)	Good	A	5.8	39	226.2	0%	0.0
Residential 1/4 acre (38% imp.)		A	3.0	61	183.0	38%	1.1
Residential 1 acre (20% imp.)		A	0.7	51	35.7	20%	0.1
Existing Buildings (Impervious)		A	0.5	98	49.0	100%	0.5
Expressway Imp. Areas(future)		A	18.1	98	1773.8	100%	18.1
US 441 Existing Impervious		A	0.5	98	49.0	100%	0.5
Existing Paved Roads		A	1.7	83	141.1	100%	1.7
Existing Unpaved Roads (89% imp.)		A	2.7	72	194.4	89%	2.4
Commercial (85% imp.)		A	3.8	89	338.2	85%	3.2
Wood Grass Combination	Good	A	5.0	32	160.0	0%	0.0
Wood	Good	A	10.3	30	309.0	0%	0.0
Pond open space	Good	A	8.5	39	331.5	0%	0.0
		Total =	60.7		3795.8		27.7
				Weighted CN =	**63**		

% Impervious Area **45.7%**

Time of Concentration

a) SHEET FLOW			
Length (ft)=	300		
n=	0.4		
US elevation=	147.5		
DS elevation=	143		
Slope (ft/ft)=	0.015		
Intensity (2yr-24-hour)	2.3		
Time of conc. (hr)=	1.141	**SUBTOTAL =**	**1.141**
b) CONCENTRATED FLOW			
Length (ft)=	300		
US elevation	143		
DS elevation	132		
Slope (ft/ft)=	0.037		
Paved or unpaved =	unpaved		
Velocity (ft/s)=	3.09		
Time of conc. (hr)=	0.027	**SUBTOTAL =**	**0.027**
c) CONCENTRATED FLOW			
Length (ft)=	510		
US elevation	132		
DS elevation	126		
Slope (ft/ft)=	0.012		
Paved or unpaved =	unpaved		
Velocity (ft/s)=	1.75		
Time of conc. (hr)=	0.081	**SUBTOTAL =**	**0.081**
d) CONCENTRATED FLOW			
Length (ft)=	200		
US elevation	126		
DS elevation	120		
Slope (ft/ft)=	0.030		
Paved or unpaved =	unpaved		
Velocity (ft/s)=	2.79		
Time of conc. (hr)=	0.020	**SUBTOTAL =**	**0.020**
		TOTAL Tc (hr) =	**1.268**
		TOTAL Tc (min) =	**76**

Water Quality Volumes

Use the greater of:

First one inch of runoff =	5.06	ac-ft
1.75 in. of runoff from impervious areas =	4.04	ac-ft

INCLUDES ADDITIONAL 0.5" OF RUNOFF FOR ONLINE TREATMENT

Water Quality Elevation in pond = 110.80 ft

Stage Storage-Pond E

	Stage (NGVD) (FT)	Area (Ac)	Incremental Storage (Ac-Ft)	Cumulative Storage (Ac-Ft)
Top of bank	121	9.28	8.99	82.08
	120	8.70	8.42	73.09
	119	8.14	8.04	64.66
	118	7.93	7.82	56.63
	117	7.71	7.60	48.81
	116	7.49	7.39	41.21
	115	7.28	7.18	33.82
	114	7.07	6.97	26.65
	113	6.86	6.76	19.68
	112	6.66	6.56	12.92
	111	6.46	6.36	6.36
Bottom	110	6.26		

Water Quantity Volumes

CN =	63	
Area =	60.70	acre
Soil Storage: S	1000/CN-10	
Runoff: R	(P - 0.2 x S)^2/(P + 0.8 x S)	
Runoff Volume: Vr	R x AREA / 12	

Storm	P	S	R	Vr	Stage
	inches	inches	inches	acre-ft	ft
25yr-96hr	11.68	5.99	6.67	33.74	114.99
100yr-24hr	10.60	5.99	5.74	29.05	114.33
10yr-24hr	7.68	5.99	3.37	17.04	112.61

Design high water elevation 114.99 ft

Land Locked Basin Criteria by SJRWMD : Store the volumetric difference of post - pre runoff for 25yr-96hr storm event

Pre runoff volume :	19.84	acre-ft			
Post runoff volume :	33.74	acre-ft			
difference :	13.90	acre-ft			
post- pre runoff Volume :	13.90	ac-ft			
stage in pond =	112.07	ft			
100yr volume =	29.05	ac-ft >	13.90	ac-ft	**OK**

Water level after 14 days from PONDS 3.2 =			112.03	ft	
Runoff volume remaining after 14 days =			13.02	ac-ft	
Runoff volume for 25yr-96hr storm event =			33.74	ac-ft	
Total volume for routing of second 25yr-96hr storm event =			46.75	ac-ft	Inlet Elevation for S-302
Stage within pond E after routing second 25yr-96hr storm event =	116.37	ft <	119.31	ft	**OK**

Drawdown Calculations

SJRWMD Requirement:

1. Total Pollution Abatement volume must percolate within 72 hours following a storm event

Pollution Abatement Volume =	5.06	acre-ft	220341	cf
Elevation =	110.80	ft		
Recovery Time =	2.40	hrs		

The treatment volume recovers in less than 72 hrs OK

2. The volumetric difference of post - pre runoff for 25yr-96hr storm should be perculated within 14 days

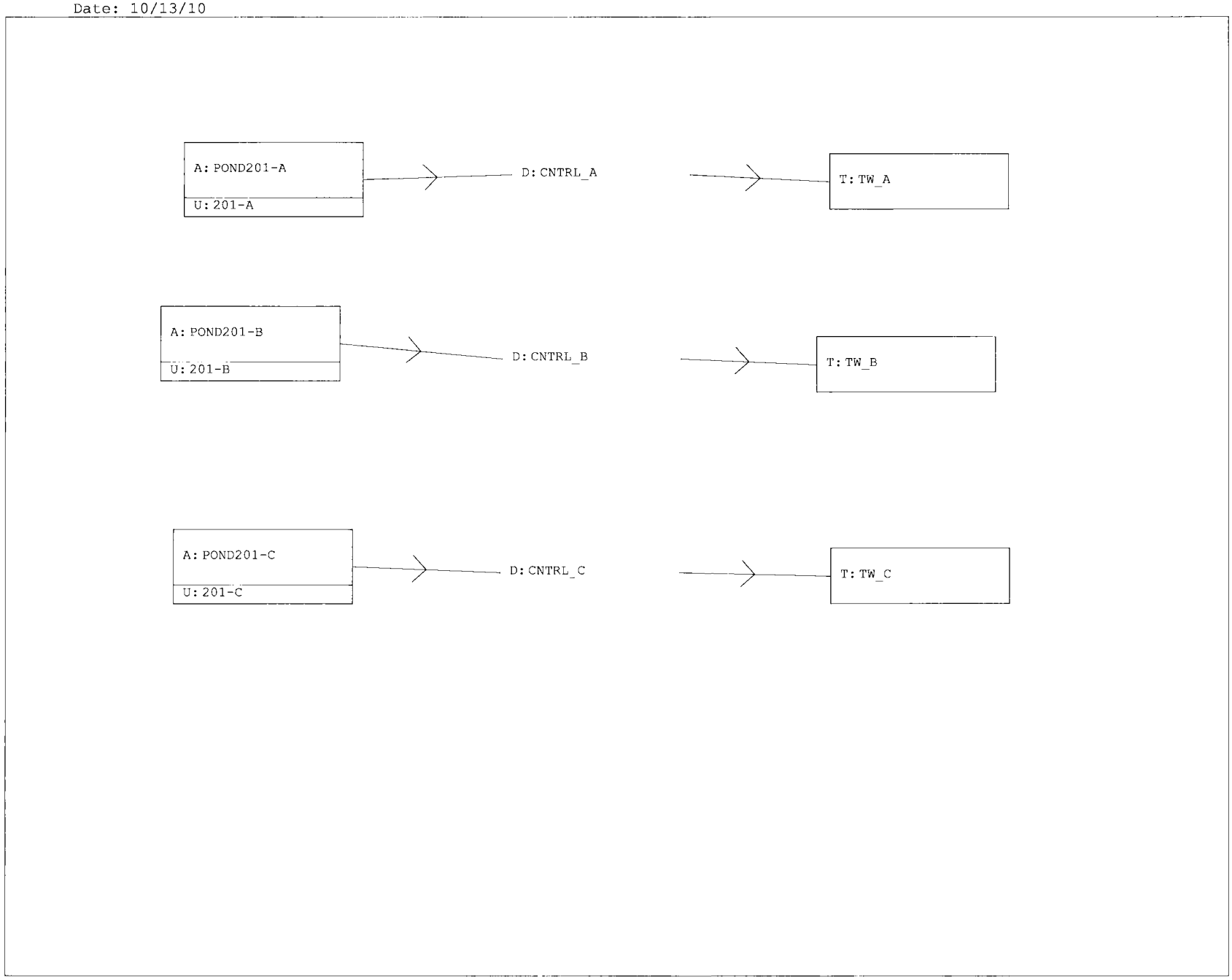
Volume to be recovered	13.90	ac ft	605526	cf	
Water level after 14 days=	111.73	ft	equivilent to	10.83	ac-ft
Total 100 yr runoff =	29.05	ac-ft			
Volume remained after 14 days =	10.83	ac-ft			
	18.22	ac-ft >	13.90	ac-ft	OK

Post Development Treatment Pond Routings
Nodal Diagram
By: Gene McClendon Date: 10/13/10

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



==========
==== Basins ====
==========

Name: 201-A Node: POND201-A Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Orange Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.600 Time of Conc(min): 19.00
Area(ac): 32.450 Time Shift(hrs): 0.00
Curve Number: 73.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: 201-B Node: POND201-B Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Orange Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.600 Time of Conc(min): 22.00
Area(ac): 21.100 Time Shift(hrs): 0.00
Curve Number: 92.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: 201-C Node: POND201-C Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Orange Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.600 Time of Conc(min): 36.00
Area(ac): 25.590 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========
==== Nodes ====
==========

Name: POND201-A Base Flow(cfs): 0.000 Init Stage(ft): 71.000
Group: BASE Warn Stage(ft): 74.000
Type: Stage/Area

Stage(ft)	Area(ac)
71.000	3.0300
72.000	3.1700
73.000	3.3100
74.000	3.6600
75.000	4.0300

Name: POND201-B Base Flow(cfs): 0.000 Init Stage(ft): 71.000
Group: BASE Warn Stage(ft): 73.000
Type: Stage/Area

Stage(ft)	Area(ac)
71.000	3.8800
72.000	4.0500
73.000	4.4800
74.000	4.9300

Name: POND201-C Base Flow(cfs): 0.000 Init Stage(ft): 75.000
Group: BASE Warn Stage(ft): 80.000
Type: Stage/Area

Stage(ft)	Area(ac)
75.000	2.5000
76.000	2.6200
77.000	2.7500
78.000	2.8700
79.000	3.0000
80.000	3.3400
81.000	3.6900

Name: TW_A Base Flow(cfs): 0.000 Init Stage(ft): 64.000
Group: BASE Warn Stage(ft): 68.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	68.100
24.00	68.100

Name: TW_B Base Flow(cfs): 0.000 Init Stage(ft): 68.100
Group: BASE Warn Stage(ft): 69.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	68.100
30.00	68.100

Name: TW_C Base Flow(cfs): 0.000 Init Stage(ft): 69.000
Group: BASE Warn Stage(ft): 75.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	69.000
30.00	69.000

Pipes

Name: From Node: Length(ft): 0.00
Group: BASE To Node: Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.00
Exit Loss Coef: 0.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dn
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	0.00	0.00
Rise(in):	0.00	0.00
Invert(ft):	0.000	0.000
Manning's N:	0.000000	0.000000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:

Circular Concrete: Square edge w/ headwall

==========
==== Drop Structures ==========
==========

Name:	CNTRL A	From Node:	POND201-A	Length(ft):	73.00
Group:	BASE	To Node:	TW_A	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	24.00	24.00	Solution Algorithm:	Automatic
Rise(in):	24.00	24.00	Flow:	Both
Invert(ft):	65.000	64.000	Entrance Loss Coef:	0.300
Manning's N:	0.012000	0.012000	Exit Loss Coef:	0.300
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure CNTRL A ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	15.00	Invert(ft):	72.100
Rise(in):	24.00	Control Elev(ft):	72.100

*** Weir 2 of 2 for Drop Structure CNTRL A ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	37.00	Invert(ft):	74.000
Rise(in):	49.00	Control Elev(ft):	74.000

Name:	CNTRL B	From Node:	POND201-B	Length(ft):	57.00
Group:	BASE	To Node:	TW_B	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	30.00	30.00	Solution Algorithm:	Automatic
Rise(in):	30.00	30.00	Flow:	Both
Invert(ft):	65.000	64.000	Entrance Loss Coef:	0.300
Manning's N:	0.012000	0.012000	Exit Loss Coef:	0.300
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure CNTRL B ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200

```
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 36.00                      Invert(ft): 71.750
              Rise(in): 15.00               Control Elev(ft): 71.750

*** Weir 2 of 2 for Drop Structure CNTRL B ***
                                                                    TABLE
                 Count: 1                     Bottom Clip(in): 0.000
                  Type: Horizontal               Top Clip(in): 0.000
                  Flow: Both                  Weir Disc Coef: 3.200
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 37.00                      Invert(ft): 73.000
              Rise(in): 49.00               Control Elev(ft): 73.000


-------------------------------------------------------------------------------------------------
        Name: CNTRL_C            From Node: POND201-C          Length(ft): 103.00
       Group: BASE                 To Node: TW_C                  Count: 1

              UPSTREAM       DOWNSTREAM              Friction Equation: Average Conveyance
    Geometry: Circular       Circular              Solution Algorithm: Automatic
    Span(in): 24.00          24.00                            Flow: Both
    Rise(in): 24.00          24.00                 Entrance Loss Coef: 0.300
  Invert(ft): 70.000         69.000                    Exit Loss Coef: 0.300
 Manning's N: 0.012000       0.012000                Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                    Inlet Ctrl Spec: Use dn
Bot Clip(in): 0.000          0.000                      Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


*** Weir 1 of 2 for Drop Structure CNTRL C ***
                                                                    TABLE
                 Count: 1                     Bottom Clip(in): 0.000
                  Type: Vertical: Mavis          Top Clip(in): 0.000
                  Flow: Both                  Weir Disc Coef: 3.200
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 5.00                       Invert(ft): 76.200
              Rise(in): 45.60               Control Elev(ft): 76.200

*** Weir 2 of 2 for Drop Structure CNTRL_C ***
                                                                    TABLE
                 Count: 1                     Bottom Clip(in): 0.000
                  Type: Horizontal               Top Clip(in): 0.000
                  Flow: Both                  Weir Disc Coef: 3.200
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 37.00                      Invert(ft): 80.000
              Rise(in): 49.00               Control Elev(ft): 80.000


===============================================================================================
==== Weirs ====================================================================================
===============================================================================================

         Name:                    From Node:
        Group: BASE                 To Node:
         Flow: Both                    Count: 1
         Type: Horizontal         Geometry: Circular

                    Span(in): 0.00
                    Rise(in): 0.00
                  Invert(ft): 0.000
       Control Elevation(ft): 0.000
                                                TABLE
              Bottom Clip(in): 0.000
                 Top Clip(in): 0.000
          Weir Discharge Coef: 3.200
```

Orifice Discharge Coef: 0.600

==== Bridges ====

Name: From Node: Flow: Both
Group: BASE To Node: Run WSPRO: No

XSEC TYPE	NAME	INV(ft)	STAT(ft)	SKEW(deg)	EXPAN	CONTRAC
Exit		0.000	0.00	0.000	0.500	0.000
Full Valley		0.000	0.00	0.000	0.500	0.000
Approach		0.000	0.00	0.000	0.500	0.000
Roadway		0.000	0.00	0.000		

Road Surface Material: Paved
Road Embankment Top Width(ft): 0.00
Road Unsubmerged Weir Q Coef: 0.000

RATING CURVE CONTROL

TW(ft)	QMin(cfs)	QMax(cfs)	QInc(cfs)
0.000	0.000	0.000	0.000

==== Breaches ====

Name: From Node: Count: 1
Group: BASE To Node: Flow: Both

Bottom Width(ft): 0.00 Water Surface Elev(ft): 0.000
Left Side Slope(h/v): 0.00 Breach Duration(hrs): 0.00
Right Side Slope(h/v): 0.00 Power Coef: 0.00
Bottom Breach Elev(ft): 0.000 Weir Discharge Coef: 0.000
Top Breach Elev(ft): 0.000

==== Hydrology Simulations ====

Name: 100yr-24hr
Filename: W:_SR429_201\drainage\analyt\100yr-24hrpost.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Orange
Rainfall Amount(in): 10.50

Time(hrs)	Print Inc(min)
12.000	5.00
30.000	5.00

Name: 10yr-24hr
Filename: U:_SR429_201\drainage\analyt\10yr-24hr.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Orange
Rainfall Amount(in): 7.68

Time(hrs)	Print Inc(min)
30.000	5.00

Name: 25yr-24hr
Filename: W:_SR429_201\drainage\analyt\25yr-24hrpost.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Orange
Rainfall Amount(in): 8.60

Time(hrs)	Print Inc(min)
12.000	5.00
30.000	5.00

==========
==== Routing Simulations ==========
==========

Name: 100yr-24hr Hydrology Sim: 100yr-24hr
Filename: W:_SR429_201\drainage\analyt\100yr-24hrpost.I32

Execute: No Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 30.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
30.000	15.000

Group	Run
BASE	Yes

Name: 10yr-24hr Hydrology Sim: 10yr-24hr
Filename: U:_SR429_201\drainage\analyt\10yr-24hr.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 30.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
999.000	15.000

Group	Run
BASE	Yes

Name: 2524open Hydrology Sim: 25yr-24hr
Filename: W:_SR429_201\drainage\analyt\25yr-24hrpost.I32

Execute: No Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 30.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000

Boundary Stages: open Boundary Flows:

Time(hrs)	Print Inc(min)
30.000	5.000

Group	Run
BASE	Yes

Name: 25yr-24hr Hydrology Sim: 25yr-24hr
Filename: W:_SR429_201\drainage\analyt\25yr-24hrpost.I32

Execute: No Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 30.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
30.000	5.000

Group	Run
BASE	Yes

==== Boundary Conditions ====

Name: open Node: TW_A Type: Stage

Time(hrs)	Stage(ft)
0.000	64.000
30.000	64.000

Name: open Node: TW_B Type: Stage

Time(hrs)	Stage(ft)
0.000	64.000
30.000	64.000

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
POND201-A	BASE	10yr-24hr	13.45	73.609	74.000	0.0046	153475	9.08	36.343	13.45	7.418
POND201-B	BASE	10yr-24hr	11.30	72.816	73.000	0.0043	191696	9.00	31.755	11.30	10.561
POND201-C	BASE	10yr-24hr	14.38	78.622	80.000	0.0050	128540	9.16	33.771	14.38	5.026
POND201-A	BASE	25yr-24hr	13.23	73.912	74.000	0.0047	158085	9.08	42.672	13.23	9.755
POND201-B	BASE	25yr-24hr	11.20	72.976	73.000	0.0043	194706	9.00	35.807	11.20	13.038
POND201-C	BASE	25yr-24hr	14.24	79.026	80.000	0.0050	131070	9.17	38.546	14.24	6.335

7.1 Standard Embankment Construction (Cont'd)

Table 5
Embankment Soil Utilization

Stratum No.	AASHTO Classification	Embankment Soil Utilization (FDOT Index 505)
1	A-3	Select (S)
2	A-2-4. A-4	Select (S)
3	A-6, A-2-6	Plastic (P)
4	A-7-6	High Plastic (HP)
5	A-8	Muck (M)
6	N/A	N/A

7.2 Pond Design Recommendations

The table below provides our recommended unconfined aquifer parameters for design and analysis of the proposed ponds. These recommendations are based on the borings and the field permeability test results performed at the pond locations.

Table 6
Recommended Aquifer Parameters

Pond Location	Estimated Seasonal High Groundwater Elevation (ft NAVD88)	Horizontal Permeability (ft per day)	Vertical Infiltration Rate (ft per day)	Fillable Porosity	Aquifer Bottom Elevation (ft NAVD88)
Pond A (South of Lust Rd)	<+68.0	10.0	10.0	0.25	+60
Pond E (North of US 441)	+89.9	10.0	10.0	0.25	+80
Pond C	+72.0	3.0	3.0	0.25	+40
Pond B	+69.3	5.0	5.0	0.25	+40

We understand that DRMP will use this information to analyze volume recovery for the ponds.

8.0 USE OF THIS REPORT

GEC has prepared this report for the exclusive use of our client, DRMP, and the OOCEA, and for specific application to our client's project. GEC will not be held responsible for any other party's interpretation or use of this report's subsurface data or engineering analysis without our written authorization.

Pond Recovery

The pond infiltration analysis was performed using PONDS Version 3.2. The required treatment volumes were introduced as slug loads and recovery time was calculated from the time of introduction. Please review ***Routings*** section for pond discharge calculations.

Project Data

Project Name:	SR 429-201 (Pond A)
Simulation Description:	Water Quality Volume Recovery
Project Number:	04-0330.000
Engineer :	Gene McClendon
Supervising Engineer:	Don Brown
Date:	01-10-2006

Aquifer Data

Base Of Aquifer Elevation, [B] (ft datum):	61.00
Water Table Elevation, [WT] (ft datum):	68.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day):	10.00
Fillable Porosity, [n] (%):	25.00
Unsaturated Vertical Infiltration Rate, [Iv] (ft/day):	10.0
Maximum Area For Unsaturated Infiltration, [Av] (ft^2):	138695.0

Geometry Data

Equivalent Pond Length, [L] (ft):	427.0
Equivalent Pond Width, [W] (ft):	325.0

Ground water mound is expected to intersect the pond bottom

Stage vs Area Data

Stage (ft datum)	Area (ft^2)
71.00	132092.8
72.00	138012.7
73.00	144033.0
74.00	159523.8
75.00	175642.9

Scenario Input Data

Scenario 1 :: 147233 ft³ slug load

Hydrograph Type: Slug Load
Modflow Routing: Routed with infiltration

Treatment Volume (ft³) 147233

Initial ground water level (ft datum) default, 68.00

Time After Storm Event (days)	Time After Storm Event (days)
0.100	2.000
0.250	2.500
0.500	3.000
1.000	4.000
1.500	

Detailed Results :: *Scenario 1 :: 147233 ft³ slug load*

Elapsed Time (hours)	Inflow Rate (ft³/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft³/s)	Overflow Discharge (ft³/s)	Cumulative Inflow Volume (ft³)	Cumulative Infiltration Volume (ft³)	Cumulative Discharge Volume (ft³)	Flow Type
0.000	24538.8300	0.0000	68.000	0.00000	0.00000	0.0	0.0	0.0	N.A.
0.002	24538.8300	0.0000	72.087	15.28693	0.00000	147233.0	91.7	0.0	U/P
2.400	0.0000	0.0000	71.263	7.95429	0.00000	147233.0	112296.0	0.0	U/S
6.000	0.0000	0.0000	71.225	0.33504	0.00000	147233.0	117311.8	0.0	S
12.000	0.0000	0.0000	71.185	0.22183	0.00000	147233.0	122677.4	0.0	S
24.000	0.0000	0.0000	71.130	0.15033	0.00000	147233.0	129963.9	0.0	S
36.000	0.0000	0.0000	71.087	0.12137	0.00000	147233.0	135665.9	0.0	S
48.000	0.0000	0.0000	71.051	0.10373	0.00000	147233.0	140450.3	0.0	S
60.000	0.0000	0.0000	71.020	0.07850	0.00000	147233.0	144628.0	0.0	S
72.000	0.0000	0.0000	70.971	0.04020	0.00000	147233.0	147233.0	0.0	S
96.000	0.0000	0.0000	70.814	----	-----	147233.0	147233.0	0.0	N.A.

Project Data

Project Name:	SR 429-201 (Pond B)
Simulation Description:	Water Quality Volume Recovery
Project Number:	04-0330.000
Engineer :	Gene McClendon
Supervising Engineer:	Don Brown
Date:	01-10-2006

Aquifer Data

Base Of Aquifer Elevation, [B] (ft datum):	40.00
Water Table Elevation, [WT] (ft datum):	69.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day):	5.00
Fillable Porosity, [n] (%):	25.00
Unsaturated Vertical Infiltration Rate, [Iv] (ft/day):	5.0
Maximum Area For Unsaturated Infiltration, [Av] (ft^2):	174553.0

Geometry Data

Equivalent Pond Length, [L] (ft):	605.0
Equivalent Pond Width, [W] (ft):	285.0

Ground water mound is expected to intersect the pond bottom

Stage vs Area Data

Stage (ft datum)	Area (ft^2)
71.00	169010.7
72.00	176400.6
73.00	195315.3

Scenario Input Data

Scenario 1 :: 129529 ft³ slug load

Hydrograph Type: Slug Load
Modflow Routing: Routed with infiltration

Treatment Volume (ft³) 129529

Initial ground water level (ft datum) default, 69.00

Time After Storm Event (days)	Time After Storm Event (days)
0.100	2.000
0.250	2.500
0.500	3.000
1.000	4.000
1.500	

Detailed Results :: *Scenario 1 :: 129529 ft³ slug load*

Elapsed Time (hours)	Inflow Rate (ft³/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft³/s)	Overflow Discharge (ft³/s)	Cumulative Inflow Volume (ft³)	Cumulative Infiltration Volume (ft³)	Cumulative Discharge Volume (ft³)	Flow Type
0.000	21588.1700	0.0000	69.000	0.00000	0.00000	0.0	0.0	0.0	N.A.
0.002	21588.1700	0.0000	71.754	9.78086	0.00000	129529.0	58.7	0.0	U/P
2.400	0.0000	0.0000	71.254	6.33394	0.00000	129529.0	86403.1	0.0	U/P
6.000	0.0000	0.0000	71.191	0.63616	0.00000	129529.0	97163.2	0.0	U/S
12.000	0.0000	0.0000	71.151	0.27178	0.00000	129529.0	103916.7	0.0	S
24.000	0.0000	0.0000	71.103	0.16664	0.00000	129529.0	112125.1	0.0	S
36.000	0.0000	0.0000	71.066	0.13071	0.00000	129529.0	118314.3	0.0	S
48.000	0.0000	0.0000	71.036	0.11015	0.00000	129529.0	123418.5	0.0	S
60.000	0.0000	0.0000	71.010	0.07072	0.00000	129529.0	127831.6	0.0	S
72.000	0.0000	0.0000	70.954	0.02619	0.00000	129529.0	129529.0	0.0	S
96.000	0.0000	0.0000	70.828	----	----	129529.0	129529.0	0.0	N.A.

Project Data

Project Name:	SR 429-201 (Pond C)
Simulation Description:	Water Quality Volume Recovery
Project Number:	04-0330.000
Engineer :	Gene McClendon
Supervising Engineer:	Don Brown
Date:	01-10-2006

Aquifer Data

Base Of Aquifer Elevation, [B] (ft datum):	40.00
Water Table Elevation, [WT] (ft datum):	72.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day):	3.00
Fillable Porosity, [n] (%):	25.00
Unsaturated Vertical Infiltration Rate, [Iv] (ft/day):	3.0
Maximum Area For Unsaturated Infiltration, [Av] (ft^2):	115259.0

Geometry Data

Equivalent Pond Length, [L] (ft):	415.0
Equivalent Pond Width, [W] (ft):	270.0

Ground water mound is expected to intersect the pond bottom

Stage vs Area Data

Stage (ft datum)	Area (ft^2)
75.00	108801.6
76.00	114157.2
77.00	119613.3
78.00	125170.0
79.00	130827.2
80.00	145410.1
81.00	160621.2

Scenario Input Data

Scenario 1 :: 125888 ft³ slug load

Hydrograph Type: Slug Load
Modflow Routing: Routed with infiltration

Treatment Volume (ft³) 125888

Initial ground water level (ft datum) default, 72.00

Time After Storm Event (days)	Time After Storm Event (days)
0.100	2.000
0.250	2.500
0.500	3.000
1.000	4.000
1.500	

Detailed Results :: *Scenario 1 :: 125888 ft³ slug load*

Elapsed Time (hours)	Inflow Rate (ft³/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft³/s)	Overflow Discharge (ft³/s)	Cumulative Inflow Volume (ft³)	Cumulative Infiltration Volume (ft³)	Cumulative Discharge Volume (ft³)	Flow Type
0.000	20981.3300	0.0000	72.000	0.00000	0.00000	0.0	0.0	0.0	N.A.
0.002	20981.3300	0.0000	76.126	3.77796	0.00000	125888.0	22.7	0.0	U/P
2.400	0.0000	0.0000	75.826	3.93261	0.00000	125888.0	34217.9	0.0	U/P
6.000	0.0000	0.0000	75.376	2.67733	0.00000	125888.0	84641.4	0.0	U/P
12.000	0.0000	0.0000	75.248	0.50827	0.00000	125888.0	98790.4	0.0	U/S
24.000	0.0000	0.0000	75.163	0.18186	0.00000	125888.0	108066.7	0.0	S
36.000	0.0000	0.0000	75.104	0.13407	0.00000	125888.0	114503.0	0.0	S
48.000	0.0000	0.0000	75.057	0.11032	0.00000	125888.0	119650.7	0.0	S
60.000	0.0000	0.0000	75.017	0.07219	0.00000	125888.0	124034.5	0.0	S
72.000	0.0000	0.0000	74.936	0.02860	0.00000	125888.0	125888.0	0.0	S
96.000	0.0000	0.0000	74.746	---	---	125888.0	125888.0	0.0	N.A.

Project Data

Project Name:	SR 429 Pond E
Simulation Description:	SR 429-201
Project Number:	04-0330.000
Engineer :	Donald Brown
Supervising Engineer:	Gene McClendon
Date:	10-12-2010

Aquifer Data

Base Of Aquifer Elevation, [B] (ft datum):	100.00
Water Table Elevation, [WT] (ft datum):	103.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day):	10.00
Fillable Porosity, [n] (%):	25.00
Unsaturated Vertical Infiltration Rate, [Iv] (ft/day):	10.0
Maximum Area For Unsaturated Infiltration, [Av] (ft^2):	272571.0

Geometry Data

Equivalent Pond Length, [L] (ft):	648.0
Equivalent Pond Width, [W] (ft):	438.0

Ground water mound is expected to intersect the pond bottom

Stage vs Area Data

Stage (ft datum)	Area (ft^2)
110.00	272571.0
111.00	281293.0
112.00	290106.0
113.00	299008.0
114.00	308033.0
115.00	317183.0
116.00	326434.0
117.00	335785.0
118.00	345237.0
119.00	354789.0
120.00	379110.0
121.00	404059.0

Scenario Input Data

Scenario 1 :: 220341 ft³ slug load - Treatment Volume

Hydrograph Type: Slug Load
Modflow Routing: Routed with infiltration

Treatment Volume (ft³) 220341

Initial ground water level (ft datum) default, 103.00

Time After Storm Event (days)	Time After Storm Event (days)
0.042	2.000
0.100	3.000
0.250	
0.500	
1.000	

Scenario 2 :: 605526 ft³ slug load - 25yr-96hr Pre-Post Retention Volume

Hydrograph Type: Slug Load
Modflow Routing: Routed with infiltration

Treatment Volume (ft³) 605526

Initial ground water level (ft datum) default, 103.00

Time After Storm Event (days)	Time After Storm Event (days)	Time After Storm Event (days)	Time After Storm Event (days)
0.042	2.000	7.000	12.000
0.100	3.000	8.000	13.000
0.250	4.000	9.000	14.000
0.500	5.000	10.000	
1.000	6.000	11.000	

Scenario 3 :: 1469556 ft³ slug load - 25yr-96hr Total Retention Volume

Hydrograph Type: Slug Load
Modflow Routing: Routed with infiltration

Treatment Volume (ft³) 1469556

Initial ground water level (ft datum) default, 103.00

Time After Storm Event (days)	Time After Storm Event (days)	Time After Storm Event (days)	Time After Storm Event (days)
0.042	2.000	7.000	12.000
0.100	3.000	8.000	13.000
0.250	4.000	9.000	14.000
0.500	5.000	10.000	
1.000	6.000	11.000	

Scenario Input Data (cont'd.)

Scenario 4 :: 1265275 ft³ slug load - 100yr-24hr Total Retention Volume

Hydrograph Type: Slug Load
Modflow Routing: Routed with infiltration

Treatment Volume (ft³) 1265275

Initial ground water level (ft datum) default, 103.00

Time After Storm Event (days)	Time After Storm Event (days)	Time After Storm Event (days)	Time After Storm Event (days)
0.042	2.000	7.000	12.000
0.100	3.000	8.000	13.000
0.250	4.000	9.000	14.000
0.500	5.000	10.000	
1.000	6.000	11.000	

Detailed Results :: *Scenario 1 :: 220341 ft³ slug load - Treatment Volume*

Elapsed Time (hours)	Inflow Rate (ft³/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft³/s)	Overflow Discharge (ft³/s)	Cumulative Inflow Volume (ft³)	Cumulative Infiltration Volume (ft³)	Cumulative Discharge Volume (ft³)	Flow Type
0.000	36723.5000	0.0000	103.000	0.00000	0.00000	0.0	0.0	0.0	N.A.
0.002	36723.5000	0.0000	110.798	31.54757	0.00000	220341.0	189.3	0.0	U/P
1.000	0.0000	0.0000	110.389	18.41449	0.00000	220341.0	113580.3	0.0	U/P
2.400	0.0000	0.0000	----	----	----	220341.0	220341.0	0.0	dry
6.000	0.0000	0.0000	----	----	----	220341.0	220341.0	0.0	dry
12.000	0.0000	0.0000	----	----	----	220341.0	220341.0	0.0	dry
24.000	0.0000	0.0000	----	----	----	220341.0	220341.0	0.0	dry
48.000	0.0000	0.0000	----	----	----	220341.0	220341.0	0.0	dry
72.000	0.0000	0.0000	----	----	----	220341.0	220341.0	0.0	dry

Detailed Results :: *Scenario 2 :: 605526 ft³ slug load - 25yr-96hr Pre-Post Retention Volume*

Elapsed Time (hours)	Inflow Rate (ft³/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft³/s)	Overflow Discharge (ft³/s)	Cumulative Inflow Volume (ft³)	Cumulative Infiltration Volume (ft³)	Cumulative Discharge Volume (ft³)	Flow Type
0.000	100921.0000	0.0000	103.000	0.00000	0.00000	0.0	0.0	0.0	N.A.
0.002	100921.0000	0.0000	112.147	31.54757	0.00000	605526.0	189.3	0.0	U/P
1.000	0.0000	0.0000	111.755	31.54757	0.00000	605526.0	113580.3	0.0	U/P
2.400	0.0000	0.0000	111.199	27.71895	0.00000	605526.0	272571.0	0.0	U/P
6.000	0.0000	0.0000	110.370	11.51307	0.00000	605526.0	504209.7	0.0	U/S
12.000	0.0000	0.0000	110.298	0.79365	0.00000	605526.0	523922.0	0.0	S
24.000	0.0000	0.0000	110.211	0.49246	0.00000	605526.0	547929.3	0.0	S
48.000	0.0000	0.0000	110.095	0.32389	0.00000	605526.0	579545.9	0.0	S
72.000	0.0000	0.0000	110.006	0.15035	0.00000	605526.0	603898.3	0.0	S
96.000	0.0000	0.0000	109.765	0.00942	0.00000	605526.0	605526.0	0.0	S
120.000	0.0000	0.0000	109.555	0.00000	0.00000	605526.0	605526.0	0.0	S
144.000	0.0000	0.0000	109.376	0.00000	0.00000	605526.0	605526.0	0.0	S
168.000	0.0000	0.0000	109.220	0.00000	0.00000	605526.0	605526.0	0.0	S
192.000	0.0000	0.0000	109.081	0.00000	0.00000	605526.0	605526.0	0.0	S
216.000	0.0000	0.0000	108.956	0.00000	0.00000	605526.0	605526.0	0.0	S
240.000	0.0000	0.0000	108.842	0.00000	0.00000	605526.0	605526.0	0.0	S
264.000	0.0000	0.0000	108.737	0.00000	0.00000	605526.0	605526.0	0.0	S
288.000	0.0000	0.0000	108.640	0.00000	0.00000	605526.0	605526.0	0.0	S
312.000	0.0000	0.0000	108.550	0.00000	0.00000	605526.0	605526.0	0.0	S
336.000	0.0000	0.0000	108.465	----	----	605526.0	605526.0	0.0	N.A.

Detailed Results :: *Scenario 3 :: 1469556 ft³ slug load - 25yr-96hr Total Retention Volume*

Elapsed Time (hours)	Inflow Rate (ft³/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft³/s)	Overflow Discharge (ft³/s)	Cumulative Inflow Volume (ft³)	Cumulative Infiltration Volume (ft³)	Cumulative Discharge Volume (ft³)	Flow Type
0.000	244926.0000	0.0000	103.000	0.00000	0.00000	0.0	0.0	0.0	N.A.
0.002	244926.0000	0.0000	114.988	31.54757	0.00000	1469556.0	189.3	0.0	U/P
1.000	0.0000	0.0000	114.628	31.54757	0.00000	1469556.0	113580.3	0.0	U/P
2.400	0.0000	0.0000	114.118	28.05286	0.00000	1469556.0	272571.0	0.0	U/P
6.000	0.0000	0.0000	113.309	12.44855	0.00000	1469556.0	519665.7	0.0	U/S
12.000	0.0000	0.0000	113.207	1.23485	0.00000	1469556.0	550328.1	0.0	S
24.000	0.0000	0.0000	113.082	0.76699	0.00000	1469556.0	587714.8	0.0	S
48.000	0.0000	0.0000	112.918	0.50456	0.00000	1469556.0	636972.1	0.0	S
72.000	0.0000	0.0000	112.790	0.40192	0.00000	1469556.0	674902.8	0.0	S
96.000	0.0000	0.0000	112.684	0.34068	0.00000	1469556.0	706423.5	0.0	S
120.000	0.0000	0.0000	112.592	0.29937	0.00000	1469556.0	733772.3	0.0	S
144.000	0.0000	0.0000	112.509	0.26924	0.00000	1469556.0	758154.7	0.0	S
168.000	0.0000	0.0000	112.434	0.24607	0.00000	1469556.0	780297.6	0.0	S
192.000	0.0000	0.0000	112.364	0.22755	0.00000	1469556.0	800675.9	0.0	S
216.000	0.0000	0.0000	112.300	0.21232	0.00000	1469556.0	819618.6	0.0	S
240.000	0.0000	0.0000	112.239	0.19950	0.00000	1469556.0	837364.2	0.0	S
264.000	0.0000	0.0000	112.182	0.18852	0.00000	1469556.0	854092.1	0.0	S
288.000	0.0000	0.0000	112.127	0.17899	0.00000	1469556.0	869941.1	0.0	S
312.000	0.0000	0.0000	112.075	0.17060	0.00000	1469556.0	885021.3	0.0	S
336.000	0.0000	0.0000	112.026	----	----	1469556.0	899421.4	0.0	N.A.

Detailed Results :: *Scenario 4 :: 1265275 ft³ slug load - 100yr-24hr Total Retention Volume*

Elapsed Time (hours)	Inflow Rate (ft³/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft³/s)	Overflow Discharge (ft³/s)	Cumulative Inflow Volume (ft³)	Cumulative Infiltration Volume (ft³)	Cumulative Discharge Volume (ft³)	Flow Type
0.000	210879.2000	0.0000	103.000	0.00000	0.00000	0.0	0.0	0.0	N.A.
0.002	210879.2000	0.0000	114.337	31.54757	0.00000	1265275.0	189.3	0.0	U/P
1.000	0.0000	0.0000	113.971	31.54757	0.00000	1265275.0	113580.3	0.0	U/P
2.400	0.0000	0.0000	113.450	27.97246	0.00000	1265275.0	272571.0	0.0	U/P
6.000	0.0000	0.0000	112.637	12.22341	0.00000	1265275.0	515944.3	0.0	U/S
12.000	0.0000	0.0000	112.542	1.12883	0.00000	1265275.0	543975.8	0.0	S
24.000	0.0000	0.0000	112.426	0.70097	0.00000	1265275.0	578145.5	0.0	S
48.000	0.0000	0.0000	112.273	0.46108	0.00000	1265275.0	623158.2	0.0	S
72.000	0.0000	0.0000	112.154	0.36729	0.00000	1265275.0	657820.4	0.0	S
96.000	0.0000	0.0000	112.055	0.31134	0.00000	1265275.0	686626.3	0.0	S
120.000	0.0000	0.0000	111.969	0.27360	0.00000	1265275.0	711620.4	0.0	S
144.000	0.0000	0.0000	111.892	0.24607	0.00000	1265275.0	733904.1	0.0	S
168.000	0.0000	0.0000	111.822	0.22490	0.00000	1265275.0	754141.5	0.0	S
192.000	0.0000	0.0000	111.757	0.20798	0.00000	1265275.0	772766.6	0.0	S
216.000	0.0000	0.0000	111.697	0.19406	0.00000	1265275.0	790080.1	0.0	S
240.000	0.0000	0.0000	111.641	0.18235	0.00000	1265275.0	806300.1	0.0	S
264.000	0.0000	0.0000	111.587	0.17233	0.00000	1265275.0	821590.4	0.0	S
288.000	0.0000	0.0000	111.537	0.16362	0.00000	1265275.0	836077.9	0.0	S
312.000	0.0000	0.0000	111.489	0.15596	0.00000	1265275.0	849863.2	0.0	S
336.000	0.0000	0.0000	111.442	---	---	1265275.0	863027.4	0.0	N.A.

Appendix D – Flood Plain Compensation

JOINS PANEL 0110

ZONE X

APPROXIMATE SCALE
1000 0 1000 FEET

ZONE AE (EL 105)

HOLTS LAKE

W ORANGE AV

KING ST

RM 120-1

ZONE X

ZONE A

CSX TRANSPORTATION

RM 120-3

OLD DIXIE HY

ERROL PLACE CR

W ORANGE BLOSSOM TL

LAKE DOE BV

N BINION RD

RM 120-2

GEINIGER LAKE

ZONE AE (EL 72)

SHEPPARD LAKE

ZONE AE (EL 72)

S BINION RD

COUNTRY CT

COUNTRY LANDING BV

COUNTRY MANSION CT

COUNTRY VILLA CT

ZONE AE (EL 87)

LAKE

COUNTRY TERRACE LN

COUNTRY CHALET CT

MARSHALL LAKE DR

DOE BV

LAKE

ZONE A

MUD LAKE

UPPER LAKE DOE

ZONE AE (EL 71)

MARSHALL LAKE

ZONE AE

LOWER LAKE DOE

ZONE A

LAKE GEM

RM 120-4

MARSHALL LAKE RD

RM 120-5

TRANSPORTATION

CSX

CLEAR WATER LAKE

ZONE A

ZONE AE

Orange County
Unincorporated Areas
120179

City of Apopka
120180

RM 120-6

LAKE WITHERINGTON

ZONE AE

Orange County
Unincorporated Areas
120179

JOHNS RD

LUST RD

UNNAMED LAKE

ZONE AE

ZONE X

Orange County
Unincorporated Areas
120179

City of Apopka
120180

POND

ZONE AE

RM 120-8

Tributary to Apopka

POND B

POND A

CITY OF APOPKA
ORANGE COUNTY

UNNAMED LAKE 12

LAKE FULLER

ZONE AE

OLD BOY SCOUT RD

RM 120-10

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

ORANGE COUNTY,
FLORIDA
AND INCORPORATED AREAS

PANEL 120 OF 700

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
APOPKA, CITY OF	120180	0120	E
ORANGE COUNTY	120179	0120	E

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
12095C0120 E

EFFECTIVE DATE:
DECEMBER 6, 2000

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Basin 201-A Impacts

100-year Flood Elevation **69.09** (NAVD)
Normal Water Level **64.0** (NAVD)

Station	Excavation	Fill	Cross Section Area Sq Ft	Volume Acres-ft
575+00	0	0	0	
				-0.55
576+00	477	0	-477	
				-1.96
577+00	1234	0	-1234	
				-2.65
578+00	1077	0	-1077	
				-2.33
579+00	950	0	-950	
				-2.04
580+00	830	0	-830	
				-1.76
581+00	700	0	-700	
				-1.54
582+00	642	0	-642	
				-1.31
583+00	500	0	-500	
				-0.99
584+00	375	8	-367	
				0.24
585+00	140	716	576	
				1.88
586+00	96	1157	1061	
				2.42
587+00	99	1143	1044	
				2.37
588+00	166	1182	1017	
				1.92
589+00	318	976	658	
				0.88
590+00	401	513	112	
				-0.08
591+00	486	305	-181	
				0.64
592+00	263	1006	742	
				1.81
593+00	248	1083	835	
				1.74
594+00	243	929	685	
				0.61
595+00	223	67	-156	
				-0.18
596+00	0	0	0	
			Total	-0.33

Basin 201-B Impacts

10-year Flood Elevation **67.49** (NAVD)
Normal Water Level **66.59** (NAVD)

Station	Excavation	Fill	Cross Section Area Sq Ft	Volume Acres-ft
601+00	0	0	0	
				0.14
602+00	0	120	120	
				0.34
603+00	0	173	173	
				0.47
604+00	0	238	238	
				0.57
605+00	0	257	257	
				0.60
606+00	1	270	269	
				0.54
607+00	0	205	205	
				0.24
608+00	0	0	0	
			Total	2.90

Station	Excavation	Fill	Cross Section Area Sq Ft	Volume Acres-ft
625+00	0	0	0	
				-0.02
626+00	15	0	-15	
				0.19
627+00	0	179	179	
				0.48
628+00	0	235	235	
				0.54
629+00	0	236	236	
				0.56
630+00	0	256	256	
				0.59
631+00	0	257	257	
				0.59
632+00	1	259	258	
				0.58
633+00	6	255	249	
				0.56
634+00	3	243	240	
				0.47
635+00	0	172	172	
				0.34
636+00	0	121	121	
				0.17
637+00	0	28	28	

					0.03
638+00	3	0	-3		
				Total	5.08
				Grand Total for Basin 201-B	7.98

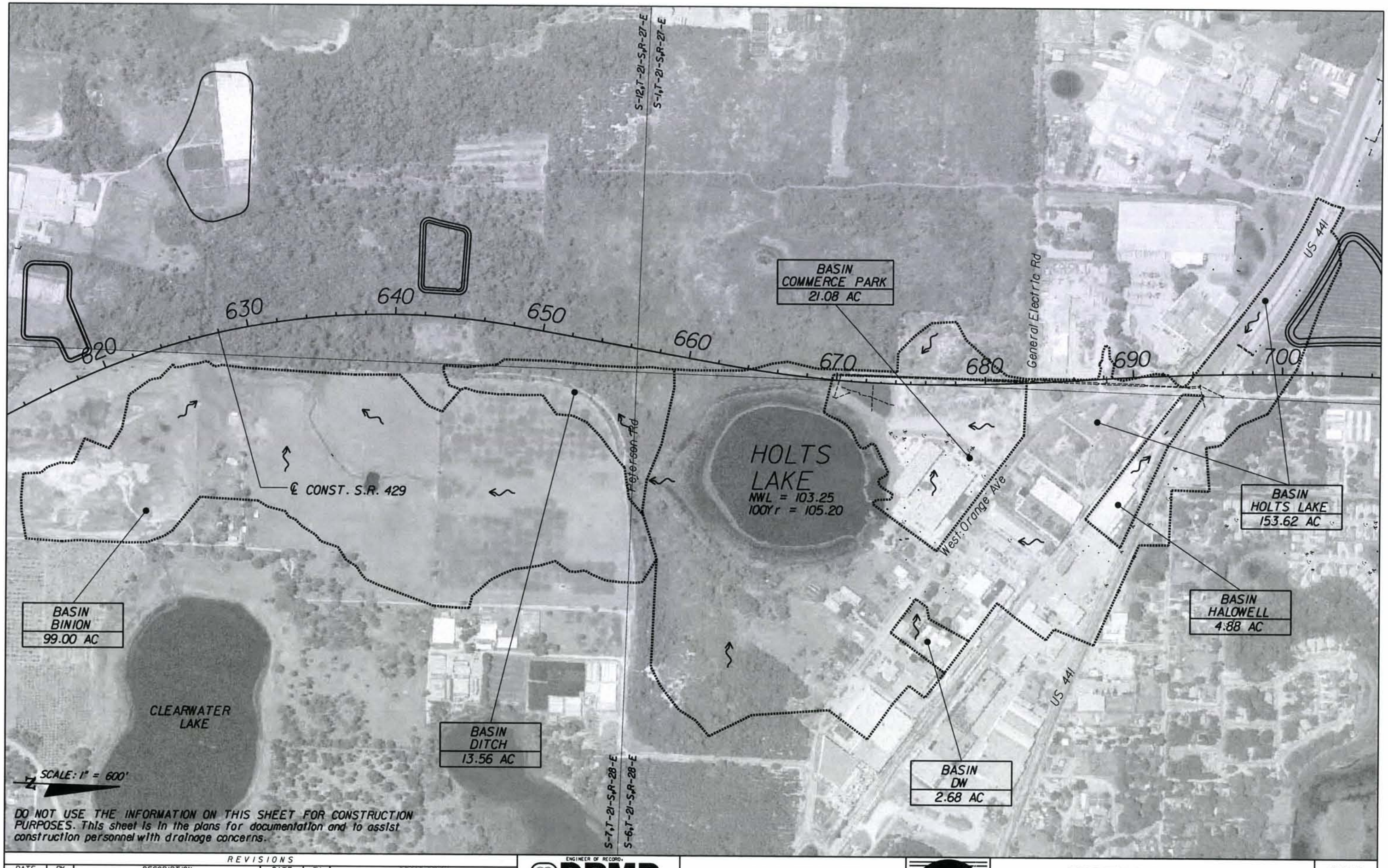
Stage Storage-Flood Plain Compensation Area 2

	Stage (NGVD) (FT)	Area (Ac)	Incremental Storage (Ac-Ft)	Cumulative Storage (Ac-Ft)
Top of bank	68.40	9.02	8.02	8.02
	67.50	8.81	0.00	0.00

Basin 201-C Impacts (Holt's Lake)

100-year Flood Elevation	**105.2**	(NAVD)
Normal Water Level	**103.25**	(NAVD)

Station	Excavation	Fill	Cross Section Area Sq Ft	Volume Acres-ft
665+00	0	0	0	
				0.02
666+00	0	22	22	
				0.07
667+00	0	41	41	
				0.09
668+00	0	36	36	
				0.06
669+00	0	13	13	
				0.02
670+00	0	0	0	
			Total	0.26



DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES. This sheet is in the plans for documentation and to assist construction personnel with drainage concerns.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD.
DRMP
ENGINEERS · SURVEYORS · PLANNERS · SCIENTISTS
DYER, RIDDLE, MILLS & PRECOURT, INC.
1505 E. COLONIAL DRIVE
ORLANDO, FLORIDA 32803
(407) 896-0594 CERT. OF AUTH. NO. 2648
DONALD W. BROWN, PE LICENSE NO. 59212

OOCEA PROJ. NO.
429-201

EXPRESSWAY AUTHORITY

HOLTS LAKE BASIN PREDEVELOPMENT DRAINAGE MAP

SHEET NO.

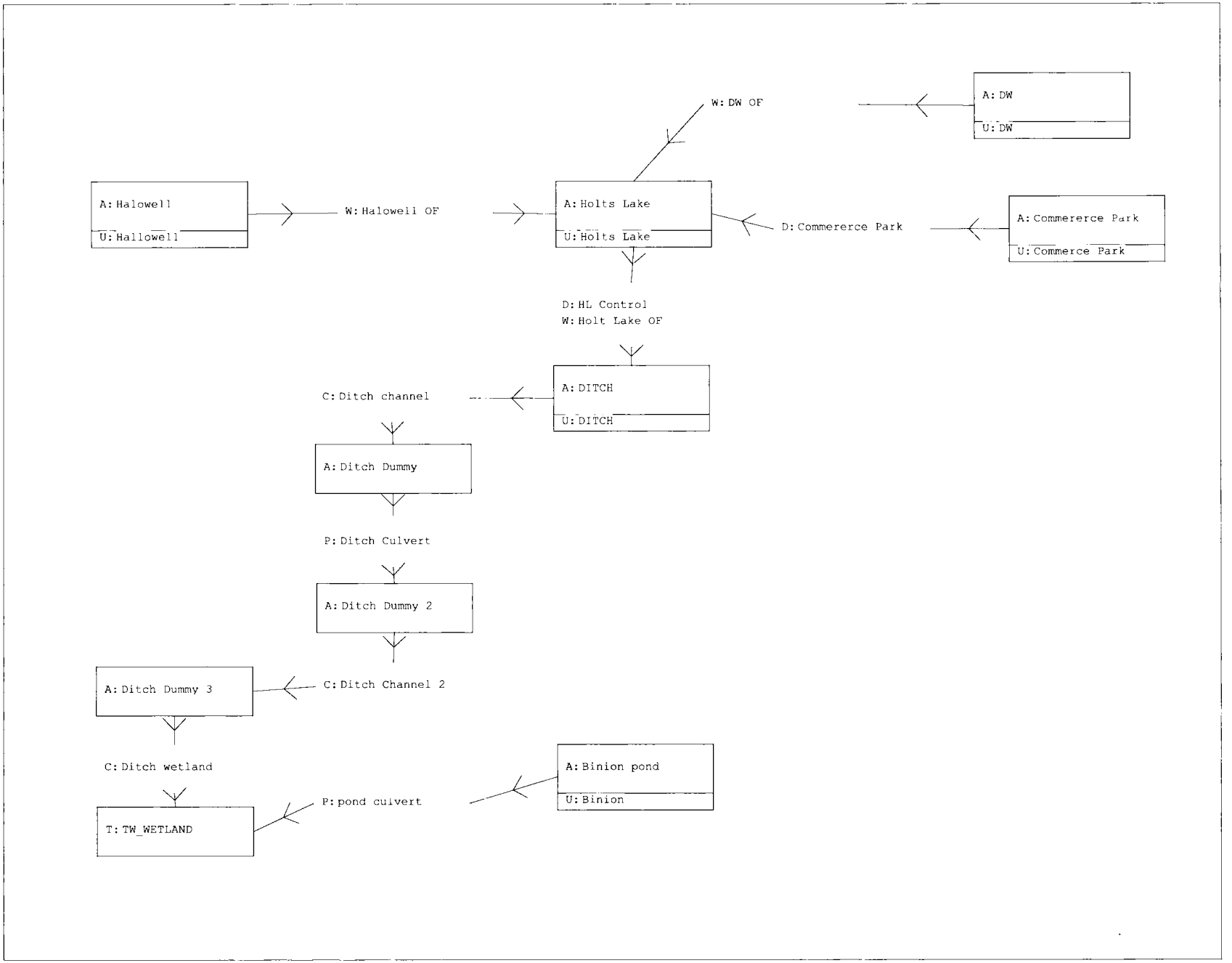
10/14/2010 11:53:15 AM U:_SR429_201\drainage\design\dreprd_holt's lake_pre.dgn

Node Diagram
Existing Conditions
Holt's Lake Basin

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



Existing Conditions Hydrologic/Hydraulic Routings

```
================================================================================
==== Basins ====================================================================
================================================================================

        Name: Binion                    Node: Binion pond           Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Orange             Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                Time of Conc(min): 78.00
              Area(ac): 96.750                  Time Shift(hrs): 0.00
          Curve Number: 54.00               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


--------------------------------------------------------------------------------
-------
        Name: Commerce Park             Node: Commererce Park       Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Orange             Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                Time of Conc(min): 30.50
              Area(ac): 21.081                  Time Shift(hrs): 0.00
          Curve Number: 78.32               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


--------------------------------------------------------------------------------
-------
        Name: DITCH                     Node: DITCH                 Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Orange             Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                Time of Conc(min): 129.00
              Area(ac): 13.560                  Time Shift(hrs): 0.00
          Curve Number: 69.00               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


--------------------------------------------------------------------------------
-------
        Name: DW                        Node: DW                    Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Orange             Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                Time of Conc(min): 66.00
              Area(ac): 2.680                   Time Shift(hrs): 0.00
          Curve Number: 89.00               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


--------------------------------------------------------------------------------
-------
        Name: Hallowell                 Node: Halowell              Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Orange             Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                Time of Conc(min): 70.00
              Area(ac): 4.880                   Time Shift(hrs): 0.00
          Curve Number: 81.00               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


--------------------------------------------------------------------------------
-------
        Name: Holts Lake                Node: Holts Lake            Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Orange             Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                Time of Conc(min): 112.00
              Area(ac): 153.620                 Time Shift(hrs): 0.00
```

Curve Number: 70.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========
==== Nodes ====
==========

Name: Binion pond Base Flow(cfs): 0.000 Init Stage(ft): 64.000
Group: BASE Warn Stage(ft): 67.000
Type: Stage/Area

Stage(ft)	Area(ac)
63.088	0.8600
64.088	1.0200
65.088	1.1800
66.088	1.6500

Name: Commererce Park Base Flow(cfs): 0.000 Init Stage(ft): 104.000
Group: BASE Warn Stage(ft): 109.000
Type: Stage/Area

Stage(ft)	Area(ac)
100.000	0.7200
101.000	0.8500
102.000	0.9500
103.000	1.1100
104.000	1.2500
105.000	1.3800
106.000	1.5100

Name: DITCH Base Flow(cfs): 0.000 Init Stage(ft): 99.821
Group: BASE Warn Stage(ft): 0.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Ditch Dummy Base Flow(cfs): 0.000 Init Stage(ft): 0.000
Group: BASE Warn Stage(ft): 0.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Ditch Dummy 2 Base Flow(cfs): 0.000 Init Stage(ft): 79.440
Group: BASE Warn Stage(ft): 0.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Ditch Dummy 3 Base Flow(cfs): 0.000 Init Stage(ft): 70.410
Group: BASE Warn Stage(ft): 0.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: DW Base Flow(cfs): 0.000 Init Stage(ft): 114.000
Group: BASE Warn Stage(ft): 118.000
Type: Stage/Area

Stage(ft)	Area(ac)
114.000	0.0100
115.000	0.0500
116.000	0.0800
117.000	0.1000
118.000	0.1300

Name: Halowell Base Flow(cfs): 0.000 Init Stage(ft): 113.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
113.000	0.0020
114.000	0.0300
115.000	0.0800
116.000	0.1200
117.000	0.1600
118.000	0.2000
119.000	0.2400
120.000	0.3000
121.000	0.4900

Name: Holts Lake Base Flow(cfs): 0.000 Init Stage(ft): 103.250
Group: BASE Warn Stage(ft): 106.000
Type: Stage/Area

Stage(ft)	Area(ac)
102.000	31.8100
103.000	33.0000
104.000	34.2200
105.000	37.1200

Name: TW_WETLAND Base Flow(cfs): 0.000 Init Stage(ft): 64.000
Group: BASE Warn Stage(ft): 67.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	66.100
30.00	66.100
100.00	66.100

==========
==== Cross Sections ====
==========

Name: Holts Lake CS Group: BASE
Encroachment: No

Station(ft)	Elevation(ft)	Manning's N
1840.000	107.088	0.022000
1900.000	104.888	0.022000
2000.000	104.478	0.022000
2100.000	107.188	0.022000
2167.000	106.188	0.022000
2300.000	108.088	0.022000

==========
==== Pipes ====
==========

Name: Ditch Culvert From Node: Ditch Dummy Length(ft): 17.00
Group: BASE To Node: Ditch Dummy 2 Count: 1
Friction Equation: Average
Conveyance
UPSTREAM DOWNSTREAM Solution Algorithm: Automatic
Geometry: Circular Circular Flow: Both

Span(in):	42.00	42.00	Entrance Loss Coef: 0.50
Rise(in):	42.00	42.00	Exit Loss Coef: 1.00
Invert(ft):	79.710	79.440	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: pond culvert From Node: Binion pond Length(ft): 75.00
Group: BASE To Node: TW_WETLAND Count: 1
Friction Equation: Average

Conveyance

	UPSTREAM	DOWNSTREAM	
Geometry:	Circular	Circular	Solution Algorithm: Automatic
Span(in):	30.00	30.00	Flow: Both
Rise(in):	30.00	30.00	Entrance Loss Coef: 0.50
Invert(ft):	61.190	61.770	Exit Loss Coef: 1.00
Manning's N:	0.012000	0.012000	Bend Loss Coef: 0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec: Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
			Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

==========
==== Channels ==========
==========

Name: Ditch channel From Node: DITCH Length(ft): 624.00
Group: BASE To Node: Ditch Dummy Count: 1

	UPSTREAM	DOWNSTREAM	
Conveyance			Friction Equation: Average
Geometry:	Trapezoidal	Trapezoidal	Solution Algorithm: Automatic
Invert(ft):	99.000	79.710	Flow: Both
TClpInitZ(ft):	9999.000	9999.000	Contraction Coef: 0.000
Manning's N:	0.028000	0.028000	Expansion Coef: 0.000
Top Clip(ft):	0.000	0.000	Entrance Loss Coef: 0.000
Bot Clip(ft):	0.000	0.000	Exit Loss Coef: 0.000
Main XSec:			Outlet Ctrl Spec: Use dc or tw
AuxElev1(ft):			Inlet Ctrl Spec: Use dn
Aux XSec1:			Stabilizer Option: None
AuxElev2(ft):			
Aux XSec2:			
Top Width(ft):			
Depth(ft):			
Bot Width(ft):	10.000	10.000	
LtSdSlp(h/v):	2.00	2.00	
RtSdSlp(h/v):	2.00	2.00	

Name: Ditch Channel 2 From Node: Ditch Dummy 2 Length(ft): 620.00
Group: BASE To Node: Ditch Dummy 3 Count: 1

	UPSTREAM	DOWNSTREAM	
Conveyance			Friction Equation: Average
Geometry:	Trapezoidal	Trapezoidal	Solution Algorithm: Automatic
Invert(ft):	79.440	70.410	Flow: Both
TClpInitZ(ft):	9999.000	9999.000	Contraction Coef: 0.000
Manning's N:	0.028000	0.028000	Expansion Coef: 0.000
Top Clip(ft):	0.000	0.000	Entrance Loss Coef: 0.000
Bot Clip(ft):	0.000	0.000	Exit Loss Coef: 0.000
Main XSec:			Outlet Ctrl Spec: Use dc or tw

```
  AuxElev1(ft):                                          Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 10.000         10.000
  LtSdSlp(h/v): 2.00           2.00
  RtSdSlp(h/v): 2.00           2.00


-----------------------------------------------------------------------------------------
-------
          Name: Ditch wetland       From Node: Ditch Dummy 3      Length(ft): 500.00
         Group: BASE                  To Node: TW_WETLAND              Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average
Conveyance
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 70.410         66.000                                  Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                    Contraction Coef: 0.000
   Manning's N: 0.100000       0.100000                      Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                     Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                         Exit Loss Coef: 0.000
     Main XSec:                                            Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                             Inlet Ctrl Spec: Use dn
     Aux XSec1:                                          Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 100.000        100.000
  LtSdSlp(h/v): 10.00          10.00
  RtSdSlp(h/v): 0.00           0.00

Flow through wetland from ditch termination to tailwater elevation

=====================================================================================
==== Drop Structures ===============================================================
=====================================================================================

         Name: Commererce Park     From Node: Commererce Park    Length(ft): 64.00
        Group: BASE                  To Node: Holts Lake              Count: 1

               UPSTREAM       DOWNSTREAM                 Friction Equation: Average
Conveyance
     Geometry: Circular       Circular                  Solution Algorithm: Automatic
     Span(in): 24.00          24.00                                  Flow: Both
     Rise(in): 24.00          24.00                     Entrance Loss Coef: 0.500
   Invert(ft): 100.000        99.400                        Exit Loss Coef: 1.000
  Manning's N: 0.012000       0.012000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                        Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                          Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


*** Weir 1 of 2 for Drop Structure Commererce Park ***
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Horizontal                Top Clip(in): 0.000
                   Flow: Both                    Weir Disc Coef: 3.200
               Geometry: Rectangular           Orifice Disc Coef: 0.600

               Span(in): 37.00                       Invert(ft): 104.170
               Rise(in): 49.00                 Control Elev(ft): 0.000

*** Weir 2 of 2 for Drop Structure Commererce Park ***
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Vertical: Mavis           Top Clip(in): 0.000
                   Flow: Both                    Weir Disc Coef: 3.200
               Geometry: Rectangular           Orifice Disc Coef: 0.600

               Span(in): 0.00                        Invert(ft): 103.500
               Rise(in): 0.00                  Control Elev(ft): 0.000
```

```
-------------------------------------------------------------------------------------------
-------
        Name: HL Control          From Node: Holts Lake        Length(ft): 20.20
       Group: BASE                  To Node: DITCH                  Count: 1

              UPSTREAM       DOWNSTREAM                 Friction Equation: Average
Conveyance
     Geometry: Circular       Circular                  Solution Algorithm: Automatic
     Span(in): 42.00          42.00                                 Flow: Both
     Rise(in): 42.00          42.00                    Entrance Loss Coef: 0.200
   Invert(ft): 99.995         99.821                       Exit Loss Coef: 1.000
  Manning's N: 0.012000       0.012000                   Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                       Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                         Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end w/ headwall


*** Weir 1 of 1 for Drop Structure HL Control ***
                                                                                TABLE
                 Count: 1                       Bottom Clip(in): 0.000
                  Type: Vertical: Mavis            Top Clip(in): 0.000
                  Flow: Both                     Weir Disc Coef: 3.200
              Geometry: Rectangular           Orifice Disc Coef: 0.600

              Span(in): 60.00                        Invert(ft): 103.250
              Rise(in): 999999.00              Control Elev(ft): 103.250


=====================================================================================
==== Weirs ==========================================================================
=====================================================================================

        Name: DW OF               From Node: DW
       Group: BASE                  To Node: Holts Lake
        Flow: Both                    Count: 1
        Type: Vertical: Mavis      Geometry: Trapezoidal

           Bottom Width(ft): 365.00
       Left Side Slope(h/v): 10.00
      Right Side Slope(h/v): 10.00
                 Invert(ft): 118.000
      Control Elevation(ft): 118.000
     Struct Opening Dim(ft): 9999.00
                                                TABLE
            Bottom Clip(ft): 0.000
               Top Clip(ft): 0.000
        Weir Discharge Coef: 3.200
     Orifice Discharge Coef: 0.600


-------------------------------------------------------------------------------------------
-------
        Name: Halowell OF         From Node: Halowell
       Group: BASE                  To Node: Holts Lake
        Flow: Both                    Count: 1
        Type: Vertical: Mavis      Geometry: Trapezoidal

           Bottom Width(ft): 360.00
       Left Side Slope(h/v): 10.00
      Right Side Slope(h/v): 10.00
                 Invert(ft): 121.000
      Control Elevation(ft): 121.000
     Struct Opening Dim(ft): 999.00
                                                TABLE
            Bottom Clip(ft): 0.000
               Top Clip(ft): 0.000
        Weir Discharge Coef: 3.200
     Orifice Discharge Coef: 0.600


-------------------------------------------------------------------------------------------
-------
        Name: Holt Lake OF        From Node: Holts Lake
       Group: BASE                  To Node: DITCH
        Flow: Both                    Count: 1
        Type: Vertical: Mavis      Geometry: Irregular
```

```
                  XSec: Holts Lake CS
               Invert(ft): 104.478
     Control Elevation(ft): 104.478
    Struct Opening Dim(ft): 999.00
                                          TABLE
          Bottom Clip(ft): 0.000
             Top Clip(ft): 0.000
       Weir Discharge Coef: 2.600
    Orifice Discharge Coef: 0.600


================================================================================================
==== Hydrology Simulations ====================================================================
================================================================================================

        Name: 100yr-24hr
    Filename: W:\_SR429_201\DRAINAGE\ANALYT\100yr-24hr.R32

     Override Defaults: Yes
   Storm Duration(hrs): 24.00
         Rainfall File: Orange
   Rainfall Amount(in): 10.50

Time(hrs)       Print Inc(min)
--------------- ---------------
12.000          5.00
30.000          5.00

------------------------------------------------------------------------------------------------
-------
        Name: 100yr-96hr
    Filename: W:\_SR429_201\DRAINAGE\ANALYT\100yr-96hr.R32

     Override Defaults: Yes
   Storm Duration(hrs): 96.00
         Rainfall File: Sjrwmd96
   Rainfall Amount(in): 15.00

Time(hrs)       Print Inc(min)
--------------- ---------------
12.000          5.00
100.000         5.00

------------------------------------------------------------------------------------------------
-------
        Name: 25yr-24hr
    Filename: W:\_SR429_201\drainage\analyt\25yr-24hr.R32

     Override Defaults: Yes
   Storm Duration(hrs): 24.00
         Rainfall File: Orange
   Rainfall Amount(in): 8.60

Time(hrs)       Print Inc(min)
--------------- ---------------
12.000          5.00
30.000          5.00

------------------------------------------------------------------------------------------------
-------
        Name: 50yr-24hr
    Filename: W:\_SR429_201\DRAINAGE\ANALYT\50yr-24hr.R32

     Override Defaults: Yes
   Storm Duration(hrs): 24.00
         Rainfall File: Orange
   Rainfall Amount(in): 9.50

Time(hrs)       Print Inc(min)
--------------- ---------------
12.000          5.00
30.000          5.00

================================================================================================
==== Routing Simulations ======================================================================
================================================================================================

        Name: 100yr-24hr          Hydrology Sim: 100yr-24hr
    Filename: W:\_SR429_201\drainage\analyt\100yr-24hr.I32

     Execute: Yes         Restart: No            Patch: No
 Alternative: No
```

```
       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 30.00
     Min Calc Time(sec): 0.5000               Max Calc Time(sec): 60.0000
       Boundary Stages: 100yr-24hr              Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.000

Group           Run
--------------- -----
BASE            Yes

-------------------------------------------------------------------------------------------------
-------
        Name: 100yr-96hr          Hydrology Sim: 100yr-96hr
    Filename: W:\_SR429_201\DRAINAGE\ANALYT\100yr-96hr.I32

     Execute: Yes         Restart: No            Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 100.00
     Min Calc Time(sec): 0.5000               Max Calc Time(sec): 60.0000
       Boundary Stages: 100yr-96hr              Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
100.000         5.000

Group           Run
--------------- -----
BASE            Yes

-------------------------------------------------------------------------------------------------
-------
        Name: 25yr-24hr           Hydrology Sim: 25yr-24hr
    Filename: W:\_SR429_201\drainage\analyt\25yr-24hr.I32

     Execute: Yes         Restart: No            Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 30.00
     Min Calc Time(sec): 0.5000               Max Calc Time(sec): 60.0000
       Boundary Stages: 25yr-24hr               Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.000

Group           Run
--------------- -----
BASE            Yes

-------------------------------------------------------------------------------------------------
-------
        Name: 50yr-24hr           Hydrology Sim: 50yr-24hr
    Filename: W:\_SR429_201\DRAINAGE\ANALYT\50yr-24hr.I32

     Execute: Yes         Restart: No            Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 30.00
     Min Calc Time(sec): 0.5000               Max Calc Time(sec): 60.0000
       Boundary Stages: 50yr-24hr               Boundary Flows:
```

Time(hrs)	Print Inc(min)
30.000	5.000

Group	Run
BASE	Yes

==========
==== Boundary Conditions ====
==========

Name: 100yr-24hr Node: TW Type: Stage

Time(hrs)	Stage(ft)
0.000	68.100
30.000	68.100

Name: 100yr-96hr Node: TW Type: Stage

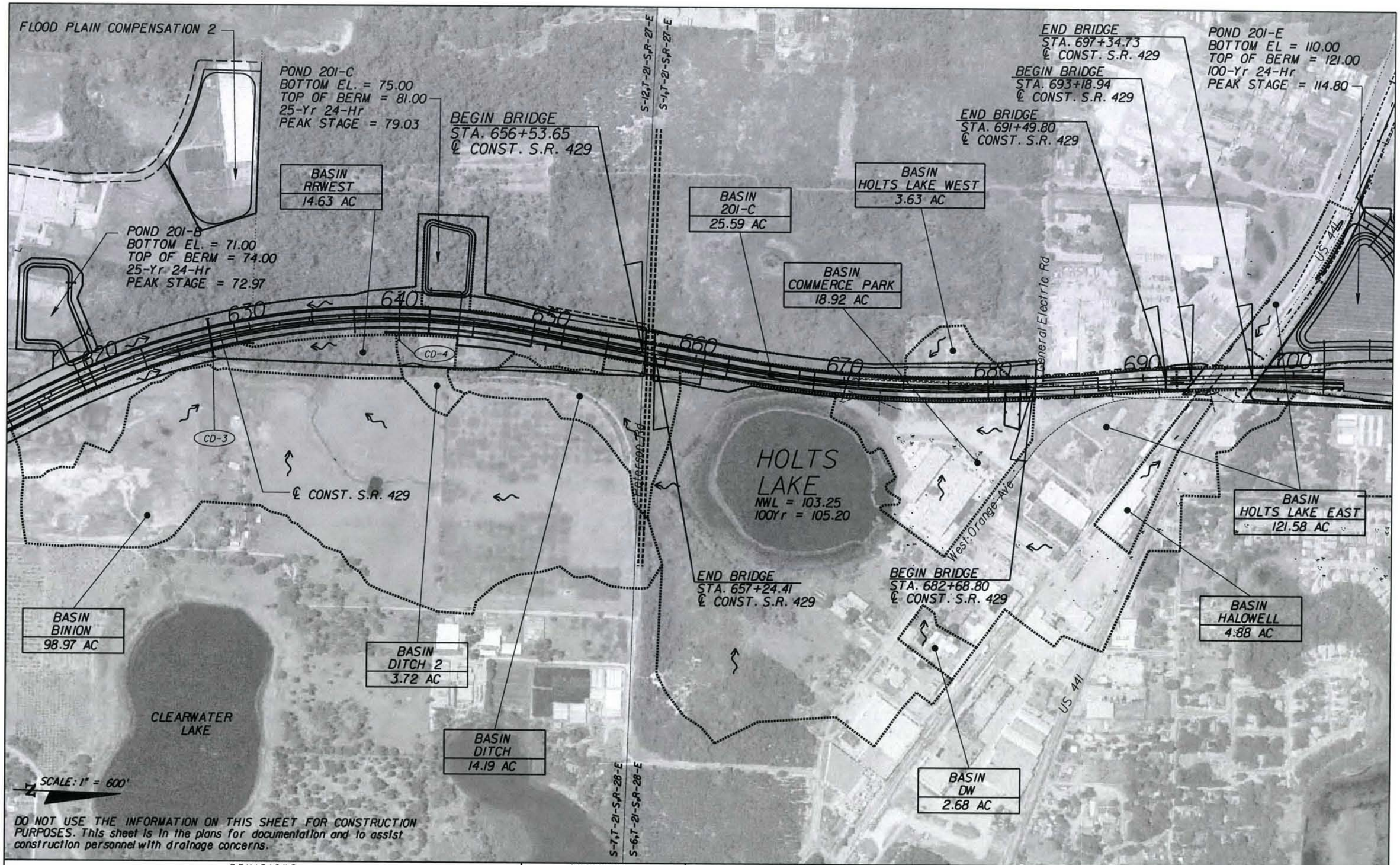
Time(hrs)	Stage(ft)
0.000	68.100
100.000	68.100

Name: 50yr-24hr Node: TW Type: Stage

Time(hrs)	Stage(ft)
0.000	68.100
30.000	68.100

Existing Conditions – 100-year Flood Plain elevation

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
Holts Lake	BASE	100yr-96hr	63.08	105.204	106.000	0.0013	1642723	61.00	328.431	63.08	161.767



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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429-201

EXPRESSWAY AUTHORITY

HOLT'S LAKE BASIN POST DEVELOPMENT DRAINAGE MAP

SHEET NO.

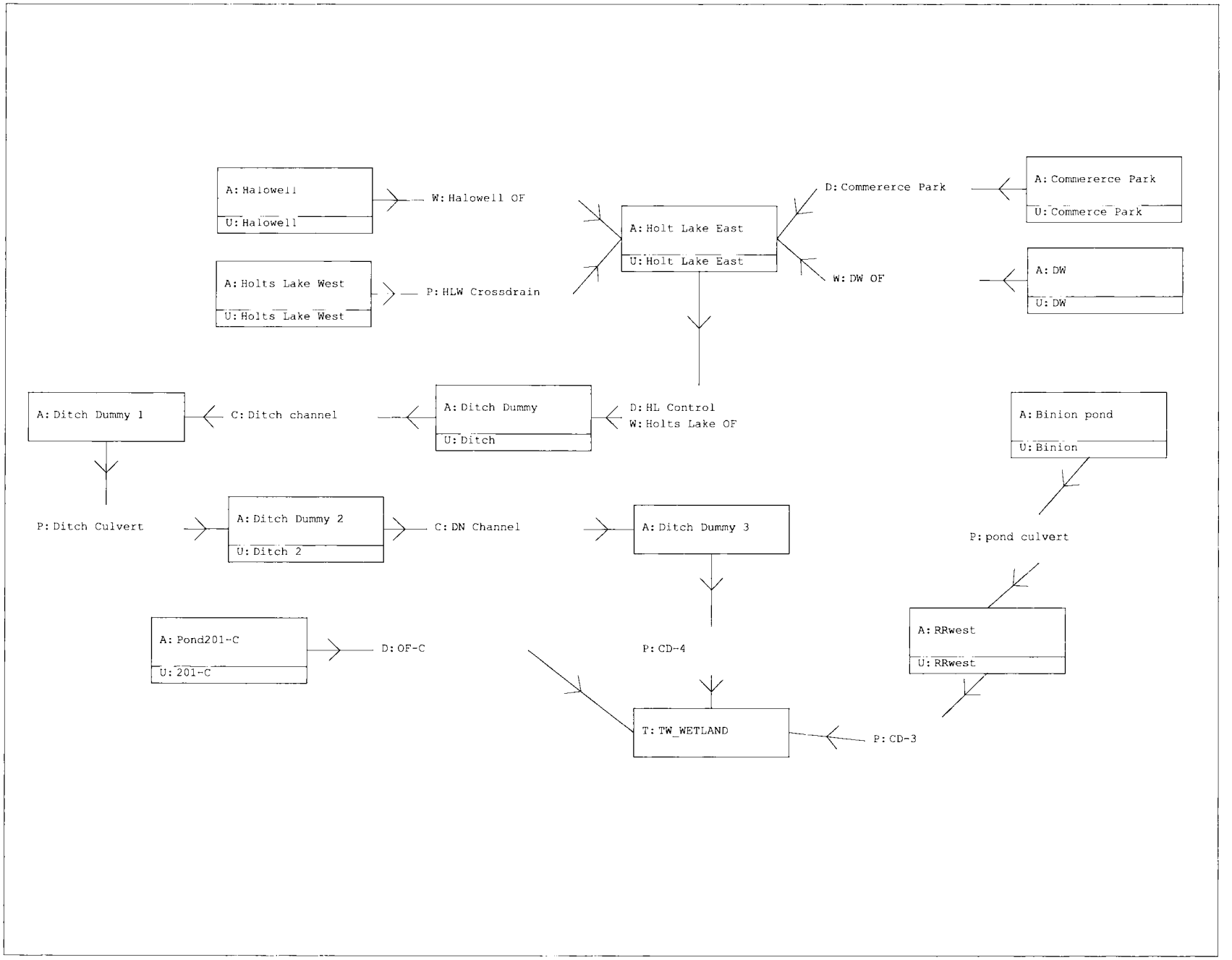
10/14/2010 11:51:55 AM U:_SR429_201\drainage\design\drsprd_holt's lake.dgn

Node Diagram
Post Development
Holt's Lake Basin

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



Post Development Hydrologic/Hydraulic Routings

```
==========================================================================================
==== Basins ==============================================================================
==========================================================================================

        Name: 201-C                    Node: Pond201-C              Status: Onsite
       Group: BASE                     Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                  Peaking Factor: 323.0
         Rainfall File: Orange          Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.600            Time of Conc(min): 36.00
               Area(ac): 25.590              Time Shift(hrs): 0.00
         Curve Number: 86.00          Max Allowable Q(cfs): 999999.000
              DCIA(%): 0.00


------------------------------------------------------------------------------------------
-------
        Name: Binion                   Node: Binion pond            Status: Onsite
       Group: BASE                     Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                  Peaking Factor: 323.0
         Rainfall File: Orange          Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.600            Time of Conc(min): 78.00
               Area(ac): 98.970              Time Shift(hrs): 0.00
         Curve Number: 53.00          Max Allowable Q(cfs): 999999.000
              DCIA(%): 0.00


------------------------------------------------------------------------------------------
-------
        Name: Commerce Park            Node: Commererce Park        Status: Onsite
       Group: BASE                     Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                  Peaking Factor: 323.0
         Rainfall File: Orange          Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.600            Time of Conc(min): 30.50
               Area(ac): 18.920              Time Shift(hrs): 0.00
         Curve Number: 69.00          Max Allowable Q(cfs): 999999.000
              DCIA(%): 0.00


------------------------------------------------------------------------------------------
-------
        Name: Ditch                    Node: Ditch Dummy            Status: Onsite
       Group: BASE                     Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                  Peaking Factor: 323.0
         Rainfall File: Orange          Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.600            Time of Conc(min): 51.00
               Area(ac): 14.190              Time Shift(hrs): 0.00
         Curve Number: 69.00          Max Allowable Q(cfs): 999999.000
              DCIA(%): 0.00


------------------------------------------------------------------------------------------
-------
        Name: Ditch 2                  Node: Ditch Dummy 2          Status: Onsite
       Group: BASE                     Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                  Peaking Factor: 323.0
         Rainfall File: Orange          Storm Duration(hrs): 8.60
    Rainfall Amount(in): 24.000           Time of Conc(min): 23.00
               Area(ac): 3.720               Time Shift(hrs): 0.00
         Curve Number: 29.00          Max Allowable Q(cfs): 999999.000
              DCIA(%): 0.00


------------------------------------------------------------------------------------------
-------
        Name: DW                       Node: DW                     Status: Onsite
       Group: BASE                     Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                  Peaking Factor: 323.0
         Rainfall File: Orange          Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.600            Time of Conc(min): 5.00
               Area(ac): 2.680               Time Shift(hrs): 0.00
```

```
          Curve Number: 89.00              Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


-------------------------------------------------------------------------------------------
-------
        Name: Halowell                  Node: Halowell                Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Orange              Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                 Time of Conc(min): 42.00
              Area(ac): 4.880                   Time Shift(hrs): 0.00
          Curve Number: 81.00              Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


-------------------------------------------------------------------------------------------
-------
        Name: Holt Lake East            Node: Holt Lake East          Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Orange              Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                 Time of Conc(min): 69.00
              Area(ac): 121.580                 Time Shift(hrs): 0.00
          Curve Number: 71.00              Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


-------------------------------------------------------------------------------------------
-------
        Name: Holts Lake West           Node: Holts Lake West         Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Orange              Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                 Time of Conc(min): 41.00
              Area(ac): 3.630                   Time Shift(hrs): 0.00
          Curve Number: 30.00              Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


-------------------------------------------------------------------------------------------
-------
        Name: RRwest                    Node: RRwest                  Status: Onsite
       Group: BASE                      Type: SCS Unit Hydrograph

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Orange              Storm Duration(hrs): 24.00
   Rainfall Amount(in): 8.600                 Time of Conc(min): 53.00
              Area(ac): 14.630                  Time Shift(hrs): 0.00
          Curve Number: 53.00              Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00

Includes area east alignment and west of railroad grade and some Binion property

=========================================================================================
==== Nodes ==============================================================================
=========================================================================================

     Name: Binion pond         Base Flow(cfs): 0.000          Init Stage(ft): 64.000
    Group: BASE                                              Warn Stage(ft): 67.000
     Type: Stage/Area


     Stage(ft)        Area(ac)
-------------- ---------------
        64.000          0.8600
        65.000          1.0200
        66.000          1.1800
        67.000          1.6500

-------------------------------------------------------------------------------------------
     Name: Commererce Park     Base Flow(cfs): 0.000          Init Stage(ft): 104.000
    Group: BASE                                              Warn Stage(ft): 105.000
     Type: Stage/Area
```

Stage(ft)	Area(ac)
100.000	0.7200
101.000	0.8500
102.000	0.9500
103.000	1.1100
104.000	1.2500
105.000	1.3800
106.000	1.5100

Name: Ditch Dummy Base Flow(cfs): 0.000 Init Stage(ft): 0.000
Group: BASE Warn Stage(ft): 0.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Ditch Dummy 1 Base Flow(cfs): 0.000 Init Stage(ft): 0.000
Group: BASE Warn Stage(ft): 0.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Ditch Dummy 2 Base Flow(cfs): 0.000 Init Stage(ft): 0.000
Group: BASE Warn Stage(ft): 0.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Ditch Dummy 3 Base Flow(cfs): 0.000 Init Stage(ft): 0.000
Group: BASE Warn Stage(ft): 0.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: DW Base Flow(cfs): 0.000 Init Stage(ft): 114.000
Group: BASE Warn Stage(ft): 118.000
Type: Stage/Area

Stage(ft)	Area(ac)
114.000	0.0100
115.000	0.0500
116.000	0.0800
117.000	0.1000
118.000	0.1300

Name: Halowell Base Flow(cfs): 0.000 Init Stage(ft): 113.000
Group: BASE Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
113.000	0.0020
114.000	0.0300
115.000	0.0800
116.000	0.1200
117.000	0.1600
118.000	0.2000
119.000	0.2400
120.000	0.3000
121.000	0.4900

Name: Holt Lake East Base Flow(cfs): 0.000 Init Stage(ft): 103.250
Group: BASE Warn Stage(ft): 106.000
Type: Stage/Area

Stage(ft)	Area(ac)
102.000	31.7000
103.000	32.8800
104.000	34.0900
105.000	36.1900

Name: Holts Lake West Base Flow(cfs): 0.000 Init Stage(ft): 0.000
Group: BASE Warn Stage(ft): 0.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: Pond201-C Base Flow(cfs): 0.000 Init Stage(ft): 75.000
Group: BASE Warn Stage(ft): 80.000
Type: Stage/Area

Stage(ft)	Area(ac)
75.000	2.5000
76.000	2.6200
77.000	2.7500
78.000	2.8700
79.000	3.0000
80.000	3.3400
81.000	3.6900

Name: RRwest Base Flow(cfs): 0.000 Init Stage(ft): 66.100
Group: BASE Warn Stage(ft): 68.000
Type: Stage/Area

Offsite ditch and depression at end of pond culvert.

Stage(ft)	Area(ac)
61.770	0.0000
63.000	0.0100
64.000	0.0300
65.000	0.0400
66.000	0.9200
67.000	1.1000

Name: TW_WETLAND Base Flow(cfs): 0.000 Init Stage(ft): 64.000
Group: BASE Warn Stage(ft): 67.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	66.100
30.00	66.100
100.00	66.100

==========

==== Cross Sections ====

==========

Name: Holts Lake CS Group: BASE
Encroachment: No

Station(ft)	Elevation(ft)	Manning's N
1840.000	107.088	0.022000
1900.000	104.888	0.022000

2000.000	104.478	0.022000
2100.000	107.188	0.022000
2167.000	106.188	0.022000
2300.000	108.088	0.022000

==========
==== Pipes ==========
==========

Name: CD-3 From Node: RRwest Length(ft): 260.00
Group: BASE To Node: TW_WETLAND Count: 2
Friction Equation: Average

Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	42.00	42.00	Flow:	Both
Rise(in):	42.00	42.00	Entrance Loss Coef:	0.30
Invert(ft):	63.500	63.000	Exit Loss Coef:	0.30
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: CD-4 From Node: Ditch Dummy 3 Length(ft): 309.00
Group: BASE To Node: TW_WETLAND Count: 1
Friction Equation: Average

Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	42.00	42.00	Flow:	Both
Rise(in):	42.00	42.00	Entrance Loss Coef:	0.30
Invert(ft):	72.000	67.000	Exit Loss Coef:	0.30
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: Ditch Culvert From Node: Ditch Dummy 1 Length(ft): 17.00
Group: BASE To Node: Ditch Dummy 2 Count: 1
Friction Equation: Average

Conveyance

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	42.00	42.00	Flow:	Both
Rise(in):	42.00	42.00	Entrance Loss Coef:	0.30
Invert(ft):	79.710	79.440	Exit Loss Coef:	0.30
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

```
        Name: HLW Crossdrain      From Node: Holts Lake West    Length(ft): 247.00
       Group: BASE                  To Node: Holt Lake East          Count: 1
                                                 Friction Equation: Average
Conveyance
              UPSTREAM       DOWNSTREAM          Solution Algorithm: Automatic
    Geometry: Circular       Circular                         Flow: Both
    Span(in): 48.00          48.00               Entrance Loss Coef: 0.30
    Rise(in): 48.00          48.00                   Exit Loss Coef: 0.30
  Invert(ft): 100.500        97.770                  Bend Loss Coef: 0.00
 Manning's N: 0.012000       0.012000             Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                 Inlet Ctrl Spec: Use dn
Bot Clip(in): 0.000          0.000                Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


--------------------------------------------------------------------------------
-------
        Name: pond culvert        From Node: Binion pond       Length(ft): 35.00
       Group: BASE                  To Node: RRwest                Count: 1
                                                 Friction Equation: Average
Conveyance
              UPSTREAM       DOWNSTREAM          Solution Algorithm: Automatic
    Geometry: Circular       Circular                         Flow: Both
    Span(in): 30.00          30.00               Entrance Loss Coef: 0.30
    Rise(in): 30.00          30.00                   Exit Loss Coef: 0.30
  Invert(ft): 61.770         61.190                  Bend Loss Coef: 0.00
 Manning's N: 0.012000       0.012000             Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                 Inlet Ctrl Spec: Use dn
Bot Clip(in): 0.000          0.000                Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


================================================================================
==== Channels ==================================================================
================================================================================

         Name: Ditch channel      From Node: Ditch Dummy       Length(ft): 624.00
        Group: BASE                 To Node: Ditch Dummy 1          Count: 1

               UPSTREAM       DOWNSTREAM          Friction Equation: Average
Conveyance
     Geometry: Trapezoidal     Trapezoidal         Solution Algorithm: Automatic
   Invert(ft): 99.000          79.710                           Flow: Both
TClpInitZ(ft): 9999.000        9999.000          Contraction Coef: 0.000
  Manning's N: 0.028000        0.028000            Expansion Coef: 0.000
 Top Clip(ft): 0.000           0.000             Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000           0.000                 Exit Loss Coef: 0.000
    Main XSec:                                   Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                    Inlet Ctrl Spec: Use dn
    Aux XSec1:                                  Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 10.000          10.000
 LtSdSlp(h/v): 2.00            2.00
 RtSdSlp(h/v): 2.00            2.00


--------------------------------------------------------------------------------
-------
         Name: DN Channel         From Node: Ditch Dummy 2     Length(ft): 500.00
        Group: BASE                 To Node: Ditch Dummy 3          Count: 1

               UPSTREAM       DOWNSTREAM          Friction Equation: Average
Conveyance
     Geometry: Trapezoidal     Trapezoidal         Solution Algorithm: Automatic
```

Invert(ft):	79.440	72.000	Flow:	Both
TClpInitZ(ft):	9999.000	9999.000	Contraction Coef:	0.000
Manning's N:	0.028000	0.028000	Expansion Coef:	0.000
Top Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Bot Clip(ft):	0.000	0.000	Exit Loss Coef:	0.000
Main XSec:			Outlet Ctrl Spec:	Use dc or tw
AuxElev1(ft):			Inlet Ctrl Spec:	Use dn
Aux XSec1:			Stabilizer Option:	None
AuxElev2(ft):				
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	10.000	10.000		
LtSdSlp(h/v):	2.00	2.00		
RtSdSlp(h/v):	2.00	2.00		

==========

==== Drop Structures ==========

==========

Name:	Commererce Park	From Node:	Commererce Park	Length(ft):	64.00
Group:	BASE	To Node:	Holt Lake East	Count:	1

	UPSTREAM	DOWNSTREAM		
Conveyance			Friction Equation:	Average
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	24.00	24.00	Flow:	Both
Rise(in):	24.00	24.00	Entrance Loss Coef:	0.300
Invert(ft):	100.000	99.400	Exit Loss Coef:	0.300
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure Commererce Park ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	37.00	Invert(ft):	104.170
Rise(in):	49.00	Control Elev(ft):	0.000

*** Weir 2 of 2 for Drop Structure Commererce Park ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	0.00	Invert(ft):	103.500
Rise(in):	0.00	Control Elev(ft):	0.000

Name:	HL Control	From Node:	Holt Lake East	Length(ft):	20.20
Group:	BASE	To Node:	Ditch Dummy	Count:	1

	UPSTREAM	DOWNSTREAM		
Conveyance			Friction Equation:	Average
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	42.00	42.00	Flow:	Both
Rise(in):	42.00	42.00	Entrance Loss Coef:	0.300
Invert(ft):	99.995	99.821	Exit Loss Coef:	0.300
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end w/ headwall

```
*** Weir 1 of 1 for Drop Structure HL Control ***
                                                                                TABLE
                 Count: 1                        Bottom Clip(in): 0.000
                  Type: Vertical: Mavis             Top Clip(in): 0.000
                  Flow: Both                      Weir Disc Coef: 3.200
              Geometry: Rectangular             Orifice Disc Coef: 0.600

              Span(in): 60.00                         Invert(ft): 103.250
              Rise(in): 999999.00                Control Elev(ft): 103.250


-----------------------------------------------------------------------------------------
-------
        Name: OF-C                 From Node: Pond201-C          Length(ft): 140.00
       Group: BASE                   To Node: TW_WETLAND               Count: 1

              UPSTREAM       DOWNSTREAM                  Friction Equation: Average
Conveyance
    Geometry: Circular       Circular                   Solution Algorithm: Automatic
    Span(in): 24.00          24.00                                  Flow: Both
    Rise(in): 24.00          24.00                     Entrance Loss Coef: 0.300
  Invert(ft): 70.000         67.000                        Exit Loss Coef: 0.300
 Manning's N: 0.012000       0.012000                    Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                        Inlet Ctrl Spec: Use dn
Bot Clip(in): 0.000          0.000                          Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


*** Weir 1 of 2 for Drop Structure OF-C ***
                                                                                TABLE
                 Count: 1                        Bottom Clip(in): 0.000
                  Type: Vertical: Mavis             Top Clip(in): 0.000
                  Flow: Both                      Weir Disc Coef: 3.200
              Geometry: Rectangular             Orifice Disc Coef: 0.600

              Span(in): 5.00                          Invert(ft): 76.200
              Rise(in): 45.60                    Control Elev(ft): 76.200

*** Weir 2 of 2 for Drop Structure OF-C ***
                                                                                TABLE
                 Count: 1                        Bottom Clip(in): 0.000
                  Type: Horizontal                  Top Clip(in): 0.000
                  Flow: Both                      Weir Disc Coef: 3.200
              Geometry: Rectangular             Orifice Disc Coef: 0.600

              Span(in): 37.00                         Invert(ft): 80.000
              Rise(in): 49.00                    Control Elev(ft): 80.000


=========================================================================================
==== Weirs ==============================================================================
=========================================================================================

        Name: DW OF                From Node: DW
       Group: BASE                   To Node: Holt Lake East
        Flow: Both                     Count: 1
        Type: Vertical: Mavis       Geometry: Trapezoidal

           Bottom Width(ft): 365.00
       Left Side Slope(h/v): 10.00
      Right Side Slope(h/v): 10.00
                 Invert(ft): 118.000
      Control Elevation(ft): 118.000
     Struct Opening Dim(ft): 9999.00
                                                TABLE
            Bottom Clip(ft): 0.000
               Top Clip(ft): 0.000
        Weir Discharge Coef: 3.200
     Orifice Discharge Coef: 0.600


-----------------------------------------------------------------------------------------
-------
        Name: Halowell OF          From Node: Halowell
```

```
        Group: BASE                  To Node: Holt Lake East
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 360.00
          Left Side Slope(h/v): 10.00
         Right Side Slope(h/v): 10.00
                   Invert(ft): 121.000
        Control Elevation(ft): 121.000
      Struct Opening Dim(ft): 9999.00
                                        TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------
-------
         Name: Holts Lake OF       From Node: Holt Lake East
        Group: BASE                  To Node: Ditch Dummy
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Irregular

                        XSec: Holts Lake CS
                   Invert(ft): 104.478
        Control Elevation(ft): 104.478
      Struct Opening Dim(ft): 9999.00
                                        TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600


============================================================================================
==== Breaches ==============================================================================
============================================================================================

         Name:                       From Node:                          Count: 1
        Group: BASE                    To Node:                           Flow: Both

       Bottom Width(ft): 0.00            Water Surface Elev(ft): 0.000
    Left Side Slope(h/v): 0.00             Breach Duration(hrs): 0.00
   Right Side Slope(h/v): 0.00                       Power Coef: 0.00
  Bottom Breach Elev(ft): 0.000            Weir Discharge Coef: 0.000
     Top Breach Elev(ft): 0.000


============================================================================================
==== Hydrology Simulations =================================================================
============================================================================================

         Name: 100yr-24hr
     Filename: W:\_SR429_201\drainage\analyt\100yr-24hr.R32

       Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Orange
    Rainfall Amount(in): 10.50

Time(hrs)       Print Inc(min)
--------------- ---------------
12.000          5.00
30.000          5.00

--------------------------------------------------------------------------------------------
-------
         Name: 100yr-96hr
     Filename: W:\_SR429_201\drainage\analyt\100yr-96hrpost.R32

       Override Defaults: Yes
    Storm Duration(hrs): 96.00
          Rainfall File: Sjrwmd96
    Rainfall Amount(in): 15.00

Time(hrs)       Print Inc(min)
--------------- ---------------
96.000          5.00
```

```
--------------------------------------------------------------------------------------------------------
-------
         Name: 25yr-24hr
     Filename: W:\_SR429_201\drainage\analyt\25yr-24hr.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Orange
    Rainfall Amount(in): 8.60

Time(hrs)       Print Inc(min)
--------------- ---------------
12.000          5.00
30.000          5.00

--------------------------------------------------------------------------------------------------------
-------
         Name: 50yr-24hr
     Filename: W:\_SR429_201\DRAINAGE\ANALYT\50yr-24hr.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Orange
    Rainfall Amount(in): 9.50

Time(hrs)       Print Inc(min)
--------------- ---------------
12.000          5.00
30.000          5.00

========================================================================================================
==== Routing Simulations ===============================================================================
========================================================================================================

         Name: 100yr-24hr          Hydrology Sim: 100yr-24hr
     Filename: W:\_SR429_201\drainage\analyt\100yr-24hrpost.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                     Delta Z Factor: 0.00500
   Time Step Optimizer: 10.000
      Start Time(hrs): 0.000                      End Time(hrs): 24.00
    Min Calc Time(sec): 0.5000               Max Calc Time(sec): 60.0000
      Boundary Stages:                          Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.000

Group           Run
--------------- -----
BASE            Yes


--------------------------------------------------------------------------------------------------------
-------
         Name: 100yr-96hr          Hydrology Sim: 100yr-96hr
     Filename: W:\_SR429_201\drainage\analyt\100yr-96hrpost.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                     Delta Z Factor: 0.00500
   Time Step Optimizer: 10.000
      Start Time(hrs): 0.000                      End Time(hrs): 100.00
    Min Calc Time(sec): 0.5000               Max Calc Time(sec): 60.0000
      Boundary Stages:                          Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
100.000         15.000

Group           Run
--------------- -----
BASE            Yes


--------------------------------------------------------------------------------------------------------
-------
```

```
        Name: 25yr-24hr           Hydrology Sim: 25yr-24hr
    Filename: W:\_SR429_201\drainage\analyt\25yr-24hrpost.I32

     Execute: Yes         Restart: No            Patch: No
 Alternative: No

      Max Delta Z(ft): 1.00                     Delta Z Factor: 0.00500
  Time Step Optimizer: 10.000
      Start Time(hrs): 0.000                     End Time(hrs): 30.00
   Min Calc Time(sec): 0.5000             Max Calc Time(sec): 60.0000
     Boundary Stages: 25yr-24hr               Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.000

Group           Run
--------------- -----
BASE            Yes

-------------------------------------------------------------------------------------------------
-------
        Name: 50yr-24hr           Hydrology Sim: 50yr-24hr
    Filename: W:\_SR429_201\drainage\analyt\50yr-24hrpost.I32

     Execute: Yes         Restart: No            Patch: No
 Alternative: No

      Max Delta Z(ft): 1.00                     Delta Z Factor: 0.00500
  Time Step Optimizer: 10.000
      Start Time(hrs): 0.000                     End Time(hrs): 24.00
   Min Calc Time(sec): 0.5000             Max Calc Time(sec): 60.0000
     Boundary Stages:                         Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          15.000

Group           Run
--------------- -----
BASE            Yes

=================================================================================================
==== Boundary Conditions ========================================================================
=================================================================================================

     Name: 25yr-24hr            Node: TW                  Type: Stage

     Time(hrs)       Stage(ft)
--------------- ---------------
         0.000          61.000
        30.000          61.000
```

Post Development- 100-year Flood Plain elevation

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
Holt Lake East	BASE	100yr-96hr	62.52	105.077	106.000	0.0004	1583549	60.51	362.888	62.52	135.073

Appendix E – Culverts

STORM SEWER HYDRAULICS

System: **CD-2**

PROJECT			
Number:	OOCEA PROJECT #201	Organization:	DRMP, INC.
Description:	SR 429 / SR 414 MAITLANI	Designed by:	D. Flynn
County:	ORANGE	Checked by:	D. Brown

CONDITIONS					
Outfall Tailwater El:	60.50	Storm Event - IDF Curve		Runoff Coeff. (default)		
Exit Loss at Outfall:	0.00	Zone	Frequency	Area 1	Area 2	Area 3
Storm Sewer Control El	60.50	7	50	0.95	0.20	0.00

HGL method: Standard FDOT (Jump HGL to pipe crown).

FROM Station / Type	TO Offset / Brls	Len	Drainage Areas Area (A)	Runoff Coeff (C)	C*A (CA)	Lcl CA JpStrm Tot CA	Tc (min)	Travel Time (min)	Inten. (in/hr)	Total CA (ac)	Flow (cfs) Qb / Qfd / Qdw	S-Qb / S-Qfd / S-Qdw	CIA / TOTAL	Inlet Elevations Inlet / Clear.	HGL / Min HGL / Jnc Loss	Pipe Elevations HGL / Crown Line / Flow Line		Fall (ft)	Pipe Height / Width (in)	HGL (%) / FL (%)	Flow Type	Velocity Actual / Physical (fps)	Capacity (cfs)	Mann'g 'N'
CD-2	**CD2**		0.00	0.95	0.00	4.93					0.00	0.00		69.00	61.55	61.55	60.50	1.05	30.00	0.3375	Partial	7.90		
605+00.00		129.50	24.65	0.20	4.93	0.00	40.00	0.00	5.13	4.93	0.00	0.00	25.31		0.00	62.50	60.50				sub		35.67	0.0120
DBI-B	1	311.90	0.00	0.00	0.00	4.93					0.00	0.00	**25.31**	7.45	0.00	60.00	58.00	2.00	30.00	0.6443		7.27		

Units: ENGLISH

Automated Storm sewer Analysis & Design (ASAD), copyright 1992-2007, Hiteshew Engineering Systems, Inc. Ph: (352) 383-4191
Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

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Existing Conditions (CD-3 and CD-4)

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
Ditch Dummy 3	BASE	100yr-24hr	14.38	71.482	0.000	0.0009	31917	14.32	95.096	14.38	95.071
Holts Lake	BASE	100yr-24hr	14.30	104.981	106.000	0.0020	1614503	10.25	198.667	14.30	88.028
TW_WETLAND	BASE	100yr-24hr	0.00	66.100	67.000	2.1000	19255	14.17	141.595	0.00	0.000
Ditch Dummy 3	BASE	50yr-24hr	14.92	71.294	0.000	0.0009	31260	14.85	67.719	14.92	67.697
Holts Lake	BASE	50yr-24hr	14.91	104.877	106.000	0.0026	1601355	10.46	172.873	14.91	62.318
TW_WETLAND	BASE	50yr-24hr	0.00	66.100	67.000	2.1000	19255	14.56	105.547	0.00	0.000

See Appendix D for Node Diagram and Input Data

Proposed Conditions (CD-3 and CD-4)

CD-3: RRWest - TW_WETLAND
CD-4: Ditch Dummy 3 - TW_WETLAND

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
Binion pond	BASE	100yr-24hr	11.93	69.428	67.000	0.0018	121592	10.25	77.706	11.98	54.675
Ditch Dummy 3	BASE	100yr-24hr	13.77	75.416	0.000	-72.0000	3770	13.88	64.603	14.14	122.997
Holt Lake East	BASE	100yr-24hr	13.96	104.836	106.000	0.0001	1561443	9.67	184.886	13.96	59.328
Pond201-C	BASE	100yr-24hr	13.81	79.804	80.000	0.0005	142591	9.17	48.356	13.81	9.123
RRwest	BASE	100yr-24hr	11.42	66.399	68.000	-0.0009	43867	11.32	62.820	11.42	62.762
TW_WETLAND	BASE	100yr-24hr	0.00	66.100	67.000	2.1000	660	12.38	192.473	0.00	0.000
Binion pond	BASE	50yr-24hr	11.79	68.683	67.000	0.0018	106337	10.33	64.319	11.83	48.171
Ditch Dummy 3	BASE	50yr-24hr	14.45	75.000	0.000	-72.0000	3779	14.39	41.865	14.42	41.854
Holt Lake East	BASE	50yr-24hr	14.65	104.716	106.000	0.0001	1550507	9.91	160.869	14.65	38.314
Pond201-C	BASE	50yr-24hr	14.10	79.404	80.000	0.0004	136658	9.17	43.202	14.10	7.645
RRwest	BASE	50yr-24hr	11.39	66.330	68.000	-0.0009	43348	11.30	55.299	11.39	55.259
TW_WETLAND	BASE	50yr-24hr	0.00	66.100	67.000	2.1000	660	13.52	94.825	0.00	0.000

See Appendix D for Node Diagram and Input Data

Appendix F – Phosphorous Loading

APPENDIX F – PHOSPHOROUS LOADING

Basin 201-A (Predevelopment)				
Land Use	Soil Type	Area (ac)	Mean Annual Total Phoshorus Load (kg/ac-yr)	Phosphorus Loading (kg/yr)
Open Land	A	5.33	0.004	0.021
Open Land	D	1.47	0.051	0.075
Agriculture-Groves	A	11.34	0.040	0.453
Forest	A	7.88	0.004	0.032
Forest	B/D	3.64	0.070	0.255
Highway (max 75% imp.)	A	0.55	1.053	0.579
Highway (max 75% imp.)	D	0.13	1.133	0.151
Commercial (max 80% imp.)	A	1.22	0.889	1.082
Low-Density Residential	A	0.88	0.069	0.061
Totals		32.45		2.709

Basin 201-A (Post Development)				
Land Use	Soil Type	Area (ac)	Mean Annual Total Phoshorus Load (kg/ac-yr)	Phosphorus Loading (kg/yr)
Highway (max 75% imp.)	A	14.40	1.053	15.161
Highway (max 75% imp.)	B/D	3.60	1.133	4.074
Open Land	A	12.80	0.004	0.051
Open Land	B/D	1.66	0.051	0.084
Totals		32.45		19.370

Required Removal Efficiency	**86.01%**

Required Retention Depth for Dry Retention	**1.25 in.**

Retention Depth Provided	**1.26 in.**

Removal Efficiency Provided	**88%**	**>**	**86.01%**	**OK**

See SJRWMD MSSW Handbook Table 11.7-30

Basin 201-B (Predevelopment)				
Land Use	Soil Type	Area (ac)	Mean Annual Total Phoshorus Load (kg/ac-yr)	Phosphorus Loading (kg/yr)
Open Land	A	4.48	0.004	0.018
Open Land	C	4.74	0.035	0.166
Open Land	D	2.23	0.051	0.113
Agriculture-Groves	A	0.00	0.040	0.000
Forest	A	0.27	0.004	0.001
Forest	C	1.38	0.045	0.062
Forest	B/D	6.02	0.070	0.421
Commercial (max 80% imp.)	A	0.06	0.889	0.053
Commercial (max 80% imp.)	C	1.93	0.943	1.820
Totals		21.10		2.655

Basin 201-B (Post Development)				
Land Use	Soil Type	Area (ac)	Mean Annual Total Phoshorus Load (kg/ac-yr)	Phosphorus Loading (kg/yr)
Highway (max 75% imp.)	A	4.63	1.053	4.877
Highway (max 75% imp.)	C	2.98	1.106	3.300
Highway (max 75% imp.)	B/D	7.17	1.133	8.123
Open Land	A	0.17	0.004	0.001
Open Land	C	5.07	0.035	0.177
Open Land	B/D	1.07	0.051	0.055
Totals		21.10		16.533

Required Removal Efficiency	**83.94%**

Required Retention Depth for Dry Retention	**1.50 in.**

Retention Depth Provided	**1.69 in.**

Removal Efficiency Provided	**88%**	**>**	**83.94%**	**OK**

See SJRWMD MSSW Handbook Table 11.7-32

Basin 201-C (Predevelopment)				
Land Use	Soil Type	Area (ac)	Mean Annual Total Phoshorus Load (kg/ac-yr)	Phosphorus Loading (kg/yr)
Open Land	A	5.10	0.004	0.020
Agriculture-Groves	A		0.040	0.000
Forest	A	4.19	0.004	0.017
Forest	C	10.79	0.045	0.485
Forest	B/D	2.28	0.070	0.159
Highway (max 50% imp.)	A	0.20	0.710	0.142
Commercial (max 80% imp.)	A	3.04	0.889	2.703
Totals		25.59		3.527

Basin 201-C (Post Development)				
Land Use	Soil Type	Area (ac)	Mean Annual Total Phoshorus Load (kg/ac-yr)	Phosphorus Loading (kg/yr)
Highway (max 75% imp.)	A	8.82	1.053	9.282
Highway (max 75% imp.)	C	8.66	1.106	9.574
Highway (max 75% imp.)	B/D	0.07	1.133	0.082
Open Land	A	3.72	0.004	0.015
Open Land	C	2.13	0.035	0.074
Open Land	B/D	2.20	0.051	0.112
Totals		25.59		19.140

Required Removal Efficiency	**81.57%**

Required Retention Depth for Dry Retention	**1.25 in.**

Retention Depth Provided	**1.40 in.**

Removal Efficiency Provided	**84%**	**>**	**81.57%**	**OK**

See SJRWMD MSSW Handbook Table 11.7-33

Phosphorous Loading For Areas Draining to Lake Apopka		
Basin	Predevlopment Loading (kg/yr)	Post Development Loading (kg/yr)
Basin 201-A Basin 201-B Basin 201-C	2.709 2.655 3.527	2.324 1.984 3.062
Project Total	8.891	7.371

Total Phosphorous Loading Reduction for Project Areas Draining to Lake Apopka	**1.52 kg/yr**

Appendix G – Pavement Drainage and Storm Tabs

Spread Calculations

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PAVEMENT DRAINAGE/INLET CALCULATIONS

Southbound Lanes

Equations:														
	Q = CIA								Shoulder Gutter 10-yr Intensity 7.4 in/hr					
	Long Slope = DPGL / Station Length								All Other Gutters Intensity 4.0 in/hr					
	Allowable Q = (28 * Long Slope0.5)													
	Terminal Allowable Q = (15 * Long Slope0.5)													
	Spread = [(0.016*Q)/(0.56*Cross Slope1.67*Long Slope0.5)]0.375													
	Terminal Inlet (TI) is the terminal point in a series of shoulder inlets, where the inlet placement ceases.													
	Low Point (LP) is point in the Roadway Profile where there will be bi-directional flow													
	Transition Break (TB) is a point where the superelevation equals zero.													
Calcs:														
Notes:	Areas account for future lane to the inside.													
	Bypass flow for inlet type scupper is equal to half of the upstream scupper total flow. (Assumes 50% grate eff.)													
	(Calculated interception capacities for R-3951 scupper inlets are 78-80%. Use of 50% allows for some grate clogging)													
Struct. No.	Station ID	Side	Area (acres) 0.20	Area (acres) 0.950	Calculated Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Allowable Flow (cfs)	Inlet Type	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Terminal Inlet (TI), Low Point (LP), or Transition Break (TB)
	572+01.47													LP
	581+09													TB
S-10	582+00.	LT		0.133	0.94		0.94	1.34	S	0.060	0.23%			
S-12	583+41	LT BK		0.209	1.47		1.47	1.70	S	0.060	0.37%			LP
S-12	583+41	LT AH		0.087	0.61		0.61	1.15	S	0.060	0.17%			LP
S-14	584+00	LT		0.150	1.05		1.05	1.77	S	0.060	0.40%			
S-16	585+00	LT		0.240	1.69		1.69	1.96	S	0.060	0.49%			
S-19	586+60	LT		0.250	1.76		1.76	2.15	S	0.060	0.59%			
S-20	588+30	LT		0.250	1.76		1.76	2.15	S	0.060	0.59%			
S-22	590+00	LT		0.300	2.11		2.11	2.15	S	0.060	0.59%			
S-23	592+00	LT		0.300	2.11		2.11	2.15	S	0.060	0.59%			
S-26	594+00	LT		0.300	2.11		2.11	2.15	S	0.060	0.59%			
S-27	596+00	LT		0.300	2.11		2.11	2.15	S	0.060	0.59%			
S-29	598+00	LT		0.300	2.11		2.11	2.15	S	0.060	0.59%			

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Southbound Lanes

Struct. No.	Station ID	Side	Area (acres) 0.20	Area (acres) 0.950	Calculated Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Allowable Flow (cfs)	Inlet Type	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Terminal Inlet (TI), Low Point (LP), or Transition Break (TB)
S-30	600+00	LT		0.410	1.56		1.56		BW218	0.060	0.59%	4.75	12	
	602+60.23													HP
S-30A	604+00.	LT		0.210	1.48		1.48	1.53	S	0.060	0.30%			
S-31A	607+00	LT		0.300	2.11		2.11	2.46	S	0.060	0.77%			
S-34	609+25	LT		0.330	2.32		2.32	2.46	S	0.060	0.77%			
S-36	611+00.	LT		0.260	1.83		1.83	2.46	S	0.060	0.77%			
S-39	612+70.	LT		0.250	1.76		1.76	2.46	S	0.060	0.77%			
	612+95.													TB
S-44	618+20.	LT		0.200	1.41		1.41	2.46	S	0.027	0.77%			
S-48	622+00.	LT		0.140	0.98		0.98	1.53	S	0.027	0.30%			
S-52	622+65.17	LT (BK)		0.020	0.14		0.14	0.63	S	0.027	0.05%			LP
S-52	622+65.17	LT (AH)		0.033	0.23		0.23	0.63	S	0.027	0.05%			LP
S-52A	623+60	LT		0.195	1.37		1.37	1.53	S	0.027	0.30%			
S-61	629+00	LT		0.190	1.34		1.34	1.53	S	0.027	0.30%			
S-65	634+20	LT		0.100	0.70		0.70	1.53	S	0.027	0.30%			
S-67	637+00	LT		0.180	1.27		1.27	3.65	S	0.027	1.70%			
S-70	642+00	LT		0.370	2.60		2.60	4.85	S	0.027	3.00%			
S-77	649+00.	LT		0.076	0.53		0.53	4.38	S	0.047	2.45%			
S-81	651+00.	LT		0.430	3.02		3.02	3.91	S	0.060	1.95%			TB
S-84	654+00.	LT		0.220	1.55		1.55	3.08	S	0.060	1.21%			
S-84A	655+50.	LT		0.390	2.74		2.74	2.57	S	0.060	0.84%			
S-87	658+00	LT		0.133	0.93		0.93	1.31	S	0.060	0.22%			
	658+89.8													HP
S-92	660+58	LT		0.250	1.76		1.76	1.77	S	0.060	0.40%			
S-95	662+20	LT		0.240	1.69		1.69	3.07	S	0.060	1.20%			
S-97	665+00	LT		0.410	2.88		2.88	3.22	S	0.060	1.32%			
S-99	667+00	LT		0.300	2.11		2.11	2.20	S	0.060	0.62%			
S-102	667+80	LT		0.118	0.83		0.83	0.89	S	0.060	0.10%			
S-103	668+01.41	LT (BK)		0.030	0.21		0.21	0.63	S	0.060	0.05%			LP

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Southbound Lanes

Struct. No.	Station ID	Side	Area (acres) 0.20	Area (acres) 0.950	Calculated Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Allowable Flow (cfs)	Inlet Type	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Terminal Inlet (TI), Low Point (LP), or Transition Break (TB)
S-103	668+01.41	LT (AH)		0.035	0.25		0.25	0.63	S	0.060	0.05%			LP
S-104	668+20	LT		0.125	0.88		0.88	0.89	S	0.060	0.10%			
S-104A	669+05	LT		0.287	2.02		2.02	2.05	S	0.060	0.53%			
S-108	671+00	LT		0.440	3.09		3.09	3.54	S	0.060	1.60%			
S-110	674+00	LT		0.440	3.09		3.09	4.15	S	0.060	2.20%			
S-113	677+00	LT		0.391	2.75		2.75	3.81	S	0.060	1.85%			
S-117	679+40	LT		0.377	2.65		2.65	3.49	S	0.060	1.55%			
S-120	682+20	LT		0.276	1.05	0.54	1.59		BWI	0.060	1.20%	4.18	10	
SCUP-2	683+88.24	LT		0.130	0.49	0.59	1.08		scupper	0.020	1.01%	7.45	10	
SCUP-4	684+69.23	LT		0.130	0.49	0.68	1.17		scupper	0.020	0.91%	7.82	10	
SCUP-6	685+50.25	LT		0.190	0.72	0.64	1.36		scupper	0.020	0.81%	8.44	10	
SCUP-8	686+62.71	LT		0.140	0.53	0.74	1.27		scupper	0.020	0.68%	8.53	10	
SCUP-10	687+43.76	LT		0.200	0.76	0.72	1.48		scupper	0.020	0.58%	9.29	10	
SCUP-12	688+56.06	LT		0.200	0.76	0.67	1.43		scupper	0.020	0.44%	9.66	10	
SCUP-14	689+59.9	LT		0.200	0.76	0.59	1.35		scupper	0.020	0.32%	10.05	10	
SCUP-16	690+63.28	LT		0.310	1.18		1.18		scupper	0.020	0.19%	10.49	10	
	692+23.09													HP
	696+75.	LT		0.879	3.34		3.34		scupper	0.030	0.55%	9.88	10	
S-202	698+50	LT		0.341	1.29	1.67	2.97		BW218	0.060	0.56%	6.10	10	
S-203	699+35	LT		0.122	0.46		0.46		BW218	0.060	0.56%	3.04	10	
S-205	700+60.	LT		0.201	1.41		1.41	2.96	S	0.060	1.12%			
S-210	702+00.	LT		0.136	0.95		0.95	4.02	S	0.060	2.06%			
S-212	705+00.	LT		0.286	2.01		2.01	5.42	S	0.060	3.74%			
S-214	2707+08.	LT		0.247	1.74		1.74	3.65	S	0.060	1.70%			
S-218	2708+09.72	LT(BK)		0.075	0.53		0.53	1.14	S	0.060	0.57%			LP
S-218	2708+09.72	LT(AH)	0.10	0.098	0.84		0.84	1.03	S	0.060	0.47%			LP
S-218A	2708+80.	LT	0.02	0.223	1.59		1.59	3.17	S	0.060	1.28%			

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Northbound Lanes

Equations:															
	Q = CIA								Shoulder Gutter 10-yr Intensity 7.4 in/hr						
	Long Slope = DPGL / Station Length								All Other Gutters Intensity 4.0 in/hr						
	Allowable Q = (28 * Long Slope0.5)														
	Terminal Allowable Q = (15 * Long Slope0.5)														
	Spread = [(0.016*Q)/(0.56*Cross Slope1.67*Long Slope0.5)]0.375														
	Terminal Inlet (TI) is the terminal point in a series of shoulder inlets, where the inlet placement ceases.														
	Low Point (LP) is point in the Roadway Profile where there will be bi-directional flow														
	Transition Break (TB) is a point where the superelevation equals zero.														
Calcs:															
Notes:	Areas account for future lane to the inside.														
	Bypass flow for inlet type scupper is equal to half of the upstream scupper total flow. (Assumes 50% grate eff.)														
	(Interception capacities for R-3951 scupper inlets are 78-80%. Use of 50% allows for some grate clogging)														

Struct. No.	Station ID	Side	Area (acres) 0.20	Area (acres) 0.950	Calculated Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Allowable Flow (cfs)	Inlet Type	Inlet Capacity (cfs)	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Terminal Inlet (TI), Low Point (LP), or Transition Break (TB)
S-1H	556+50.	RT	0.01	0.246	1.74		1.74	1.92	S	3.0	0.060	1.63%			
S-1G	558+00.	RT	0.03	0.246	1.77		1.77	1.92	S	3.0	0.060	1.63%			
S-1E	559+50.	RT	0.05	0.249	1.82		1.82	3.07	S	3.0	0.060	1.20%			
S-1D	561+25.	RT	0.29	0.152	1.50		1.50	1.73	S	3.0	0.060	0.38%			
S-1C	562+50.	RT	0.03	0.200	1.45		1.45	1.56	S	3.0	0.060	0.31%			
S-1B	563+50.	RT	0.14	0.164	1.36		1.36	1.56	S	3.0	0.060	0.31%			
S-1A	564+00.	RT	0.13	0.081	0.76		0.76	0.84	S	3.0	0.060	0.31%			TI
	572+01.47						0.00								LP
S-8	582+00.	RT		0.110	0.77		0.77	0.82	S	3.0	0.060	0.30%			TI
S-11	582+60.	RT		0.210	1.48		1.48	1.54	S	3.0	0.060	0.30%			TI
S-13	584+00	RT		0.150	1.05		1.05	1.54	S	3.0	0.060	0.30%			
S-15	585+00	RT		0.210	1.48		1.48	2.42	S	3.0	0.060	0.75%			
	586+42.	RT			0.00		0.00								TB
S-17	586+60	RT		0.280	1.97		1.97	2.96	S	3.0	0.060	1.12%			
S-24	594+00	RT		0.210	1.48		1.48	2.15	S	3.0	0.060	0.59%			

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Northbound Lanes

Struct. No.	Station ID	Side	Area (acres) 0.20	Area (acres) 0.950	Calculated Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Allowable Flow (cfs)	Inlet Type	Inlet Capacity (cfs)	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Inlet (TI), Low Point (LP), or Transition Break (TB)
	602+60.23				0.00		0.00								HP
S-32	609+25	RT		0.250	1.76		1.76	2.46	S	3.0	0.060	0.77%			
S-35	611+00	RT		0.270	1.90		1.90	2.46	S	3.0	0.060	0.77%			
S-37	612+70.	RT		0.250	1.76		1.76	2.46	S	3.0	0.060	0.77%			
S-40	615+00	RT		0.340	2.39		2.39	2.46	S	3.0	0.060	0.77%			
S-42	618+20	RT		0.470	3.30		3.30	2.46	S	3.0	0.060	0.77%			
S-45	619+00	RT		0.170	1.20		1.20	2.46	S	3.0	0.060	0.77%			
S-46A	621+00	RT		0.290	2.04		2.04	2.26	S	3.0	0.060	0.65%			
S-47	622+00	RT		0.150	1.05		1.05	1.53	S	3.0	0.060	0.30%			
S-49	622+45	RT		0.080	0.56		0.56	0.89	S	3.0	0.060	0.10%			
S-50	622+65.17	RT (BK)		0.040	0.28		0.28	0.63	S	3.0	0.060	0.05%			LP
S-50	622+65.17	RT (AH)		0.040	0.28		0.28	0.63	S	3.0	0.060	0.05%			LP
S-53	622+85	RT		0.110	0.77		0.77	0.89	S	3.0	0.060	0.10%			
S-54	623+60	RT		0.200	1.41		1.41	1.54	S	3.0	0.060	0.30%			
S-55	625+00	RT		0.200	1.41		1.41	1.54	S	3.0	0.060	0.30%			
S-57	626+40	RT		0.200	1.41		1.41	1.54	S	3.0	0.060	0.30%			
S-58	627+80	RT		0.170	1.20		1.20	1.54	S	3.0	0.060	0.30%			
S-59	629+00	RT		0.130	0.91		0.91	1.54	S	3.0	0.060	0.30%			
	629+90														
	649+92														
S-78	650+00.	RT		0.150	1.05		1.05	2.20	S	3.0	0.060	2.15%			TI
S-79	651+00.	RT		0.440	3.09		3.09	3.86	S	3.0	0.060	1.90%			
S-82	654+00.	RT		0.220	1.55		1.55	3.07	S	3.0	0.060	1.20%			
S-82A	655+50.	RT		0.390	2.74		2.74	2.57	S	3.0	0.060	0.84%			
S-86	658+00	RT		0.133	0.94		0.94	1.31	S	3.0	0.060	0.22%			
	658+89.8						0.00								HP
S-90	660+58	RT		0.250	1.76		1.76	1.77	S	3.0	0.060	0.40%			
S-93	662+20	RT		0.080	0.56		0.56	1.77	S	3.0	0.060	0.40%			
S-100	668+01.41	RT (BK)		0.206	0.78		0.78		BW218		0.043	0.05%	7.17	10	LP
S-100	668+01.41	RT (AH)		0.399	1.51		1.51		BW218		0.043	0.05%	9.19	10	LP
S-115	679+64.90	RT		0.370	1.41		1.41		BW218		0.060	1.50%	3.83	10	

SR 429-201
MAITLAND AVENUE EXTENSION
PAVEMENT DRAINAGE/INLET CALCULATIONS

Northbound Lanes

Struct. No.	Station ID	Side	Area (acres) 0.20	Area (acres) 0.950	Calculated Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Allowable Flow (cfs)	Inlet Type	Inlet Capacity (cfs)	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Inlet (TI), Low Point (LP), or Transition Break (TB)
S-118	682+20	RT		0.240	0.91		0.91		BW218		0.060	1.20%	3.40	10	
SCUP-1	683+76.51	RT		0.140	0.53	0.15	0.69		scupper		0.020	1.02%	6.26	10	
SCUP-3	684+56.82	RT		0.140	0.53	0.17	0.70		scupper		0.020	0.93%	6.43	10	
SCUP-5	685+32.16	RT		0.180	0.68	0.16	0.84		scupper		0.020	0.84%	7.02	10	
SCUP-7	686+48.76	RT		0.140	0.53	0.17	0.70		scupper		0.020	0.69%	6.80	10	
SCUP-9	687+29.45	RT		0.180	0.68	0.16	0.85		scupper		0.020	0.60%	7.50	10	
SCUP-11	688+41.57	RT		0.170	0.65	0.16	0.80		scupper		0.020	0.46%	7.72	10	
SCUP-13	689+45.96	RT		0.170	0.65	0.15	0.79		scupper		0.020	0.34%	8.14	10	
SCUP-15	690+50.3	RT		0.290	1.10		1.10		scupper		0.020	0.21%	10.08	10	
	692+23.09						0.00								HP
S-200	697+35	RT		0.876	3.33		3.33		BW218		0.060	0.56%	6.37	10	
S-201	697+93	RT		0.048	0.18		0.18		BW218		0.060	0.56%	2.14	10	
S-204	700+00.	RT		0.272	0.40		0.40		BW218		0.060	0.32%	3.20	10	
S-207	702+00.	RT		0.460	0.68		0.68		BW218		0.060	0.81%	3.28	10	
S-215	707+93.68	RT		0.607	0.90		0.90		BW218		0.060	4.04%	2.69	10	
S-329	3909+20.	RT	0.01	0.065	0.17		0.17	2.21	P-5		0.019	2.18%	3.30	7.5	

SR 429-201
MAITLAND AVENUE EXTENSION
PAVEMENT DRAINAGE/INLET CALCULATIONS

CONNECTOR ROAD

Equations:													
	Q = CIA		I = 4.0 in/hr									Prepared by:	RDF
	Spread = [(0.016*Q)/(0.56*Cross Slope1.67*Long Slope0.5)]0.375											Checked by:	DWB
	Low Point (LP) is point in the Roadway Profile where there will be bi-directional flow												
	Transition Break (TB) is a point where the superelevation equals zero.												
Calcs:													
Struct. No.	Station ID	Side	Area (acres) 0.200	Area (acres) 0.950	Calculated Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Inlet Type	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Remarks
S-309	51+58.51	LT		0.055	0.21		0.21	P-5	0.007	1.300%	7.41	7.5	
S-310	51+57.45	RT		0.083	0.31		0.31	P-7	0.009	0.550%	8.66	7.5	
S-311	52+00.	LT		0.120	0.45		0.45	P-7	0.018	0.550%	6.44	7.5	
S-313	52+00.	RT-BK		0.082	0.31		0.31	P-6	0.030	0.330%	4.48	7.5	
S-313	52+00.	RT-AH	0.029	0.232	0.91		0.91	P-6	0.030	0.650%	5.87	7.5	
S-314	53+00.	LT		0.143	0.54		0.54	P-7	0.020	0.650%	6.25	7.5	
S-318	54+50.	LT		0.201	0.76		0.76	P-5	0.020	0.650%	7.09	7.5	
S-319	54+50.	RT	0.117	0.266	1.10		1.10	P-5	0.030	0.650%	6.32	7.5	
S-320	57+50.	LT		0.216	0.82		0.82	P-5	0.020	0.650%	7.29	7.5	
S-321	57+50.	RT	0.090	0.350	1.40		1.40	P-5	0.030	0.650%	6.91	7.5	
S-324	62+90	LT		0.134	0.51		0.51	P-5	0.020	1.000%	5.62	7.5	
S-325 A	62+90	RT	0.062	0.084	0.37		0.37	P-5	0.020	1.000%	4.98	9.5	
S-325	63+39	RT	0.042	0.141	0.57		0.57	J-5	0.011	0.750%	9.01	9.5	
S-328A	64+27.16	RT		0.156	0.59		0.59	P-5	0.020	1.000%	5.96	9.5	
S-328	64+69	RT-BK		0.137	0.52		0.52		0.017	2.214%	5.41	9.5	
LP	64+69			0.265			0.00	J-6					
S-328	64+69	RT-AH		0.128	0.49		0.49		0.014	0.600%	7.61	9.5	
S-331	66+10	RT	0.032	0.168	0.66		0.66	P-5	0.020	0.998%	6.21	9.5	
S-334	67+00	RT		0.132	0.50		0.50	P-7	0.020	0.998%	5.59	6	
S-333	68+14	RT		0.101	0.38		0.38	P-7	0.020	0.998%	5.06	6	
S-333A	69+40	LT		0.098	0.37		0.37	P-5	0.019	0.998%	5.17	7.5	
S-335A	69+40	RT	0.019	0.084	0.33		0.33	J-5	0.020	0.988%	4.81	9.5	
S-332	68+14	RT		0.146	0.55		0.55	J-5	0.020	0.998%	5.81	9.5	
S-335	71+49.5	RT	0.015	0.047	0.19		0.19	P-5	0.020	0.988%	3.90	9.5	

SR 429-201
MAITLAND AVENUE EXTENSION
PAVEMENT DRAINAGE/INLET CALCULATIONS

CONNECTOR ROAD

Struct. No.	Station ID	Side	Area (acres) 0.200	Area (acres) 0.950	Calculated Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Inlet Type	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Remarks
S-335B	71+00	RT	0.048	0.104	0.43		0.43	P-5	0.020	0.988%	5.31	7.5	
S-333B	71+00	LT	0.008	0.111	0.43		0.43	P-6	0.020	0.998%	5.27	7.5	
S-336	71+49.5	LT-BK	0.005	0.043	0.17		0.17	J-6	0.014	0.633%	5.05	7.5	
LP	71+49.5			0.182									
S-336	71+49.5	LT-AH	0.005	0.139	0.53		0.53	J-6	0.014	0.222%	9.48	7.5	

SR 429-201
MAITLAND AVENUE EXTENSION
PAVEMENT DRAINAGE / INLET CALCULATIONS Spread Calculations

S.R. 500 (U.S. 441) MEDIAN

Equations:

Q = CIA I= 4.0 in/hr

Spread = [(0.016*Q)/(0.56*Cross Slope1.67*Long Slope0.5)]0.375

Prepared by: RDF

Checked by: DWB

Low Point (LP) is point in the Roadway Profile where there will be bi-directional flow

Transition Break (TB) is a point where the superelevation equals zero.

Calcs:

Struct. No.	Station ID	Side	Inlet Type	Area (acres) 0.20	Area (acres) 0.95	Calc Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Remarks	Intercepted Flow (cfs)	Bypass Flow (cfs)	Bypass from Structure No.
Southbound																
	830+40															
S-307A	831+00.00	LT	Type 7		**0.090**	0.34	0.00	0.34	0.020	1.83%	4.32	4.5		0.00	0.00	-
	831+25.00				0.030	0.11	0.00	0.11	0.030	1.80%	2.22	4.5		0.11	0.00	-
	831+50.00				0.059	0.22	0.00	0.22	0.030	1.56%	2.95	4.5		0.22	0.00	-
	831+75.00				0.089	0.34	0.00	0.34	0.030	1.56%	3.44	4.5		0.34	0.00	-
	832+00.00				0.118	0.45	0.00	0.45	0.030	1.48%	3.87	4.5		0.45	0.00	-
S-305	832+25.00	LT	Type 7		**0.148**	0.56	0.00	0.56	0.030	1.52%	4.18	4.5		0.56	0.00	-
	832+50.00				0.071	0.27	0.00	0.27	0.030	1.24%	3.30	4.5		0.27	0.00	-
	832+75.00				0.100	0.38	0.00	0.38	0.030	1.24%	3.76	4.5		0.38	0.00	-
S-303A	833+00.00	LT	Type 7		**0.118**	0.45	0.00	0.45	0.030	1.04%	4.13	4.5		0.45	0.00	-
	833+25.00				0.089	0.34	0.00	0.34	0.030	1.00%	3.74	4.5		0.34	0.00	-
	833+50.00				0.118	0.45	0.00	0.45	0.030	0.96%	4.19	4.5		0.45	0.00	-
	833+75.00				0.089	0.34	0.00	0.34	0.030	1.08%	3.68	4.5		0.34	0.00	S-305
S-302	834+00.00	LT	Type 7		**0.118**	0.45	0.00	0.45	0.030	1.08%	4.10	4.5		0.45	0.00	-
	834+25.00				0.059	0.22	0.00	0.22	0.030	1.04%	3.19	4.5		0.22	0.00	-
	834+50.00				0.089	0.34	0.00	0.34	0.030	1.04%	3.71	4.5		0.34	0.00	-
	834+75.00				0.118	0.45	0.00	0.45	0.030	1.04%	4.13	4.5		0.45	0.00	-
S-299	835+00.00	LT	Type 7		0.118	0.45	0.00	0.45	0.030	1.04%	4.13	4.5		0.45	0.00	S-302
	835+25.00				0.030	0.11	0.00	0.11	0.028	0.70%	2.76	4.5		0.11	0.00	-
	835+50.00				0.059	0.22	0.00	0.22	0.029	0.70%	3.51	4.5		0.22	0.00	-
	835+75.00				0.089	0.34	0.00	0.34	0.028	0.70%	4.17	4.5		0.34	0.00	-
S-298	835+90.00	LT	Type 7		0.106	0.40	0.00	0.40	0.028	0.70%	4.47	4.5		0.40	0.00	-
	836+00.00				0.012	0.04	0.00	0.04	0.028	0.70%	1.96	4.5		0.04	0.00	S-299
	836+25.00				0.041	0.16	0.00	0.16	0.022	0.39%	4.07	4.5		0.16	0.00	-
S-297A	836+35.00	LT	Type 7		0.053	0.20	0.00	0.20	0.022	0.39%	4.47	4.5		0.20	0.00	-
	836+50.00				0.018	0.07	0.00	0.07	0.021	0.39%	3.05	4.5		0.07	0.00	-

SR 429-201
MAITLAND AVENUE EXTENSION
PAVEMENT DRAINAGE / INLET CALCULATIONS Spread Calculations

S.R. 500 (U.S. 441) MEDIAN

Struct. No.	Station ID	Side	Inlet Type	Area (acres) 0.20	Area (acres) 0.95	Calc Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Remarks	Intercepted Flow (cfs)	Bypass Flow (cfs)	Bypass from Structure No.
S-297	836+75.00	LT	Type 7		0.047	0.18	0.00	0.18	0.021	0.39%	4.40	4.5		0.18	0.00	S-298
	837+00.00				0.030	0.11	0.00	0.11	0.020	0.39%	3.81	4.5		0.11	0.00	-
	837+25.00				0.059	0.22	0.00	0.22	0.023	0.39%	4.49	4.5		0.22	0.00	-
S-296	837+40.00	LT	Type 7		0.077	0.29	0.00	0.29	0.030	0.39%	4.23	4.5		0.29	0.00	S-297
	837+50.00				0.035	0.13	0.00	0.13	0.026	0.39%	3.46	4.5		0.13	0.00	-
	837+75.00				0.065	0.25	0.00	0.25	0.025	0.39%	4.47	4.5		0.25	0.00	-
S-295	838+00.00	LT	Type 7		0.071	0.27	0.00	0.27	0.037	0.39%	3.60	4.5	LP	0.27	0.00	S-296
S-295	838+00.00	LT	Type 7		0.024	0.09	0.00	0.09	0.037	0.29%	2.52	4.5	LP	0.09	0.00	S-294
S-294	838+20.00	LT	Type 7		0.037	0.14	0.00	0.14	0.030	0.29%	3.40	4.5		0.14	0.00	S-293
	838+25.00				0.006	0.02	0.00	0.02	0.030	0.26%	1.74	4.5		0.02	0.00	S-293
S-293	838+51.50	LT	Type 7		0.057	0.22	0.00	0.22	0.028	0.32%	4.10	4.5	CONN TO EX	0.22	0.00	S-292
	838+75.00				0.023	0.09	0.00	0.09	0.026	0.30%	3.07	4.5		0.09	0.00	-
S-292	839+00.00	LT	Type 7		0.056	0.21	0.00	0.21	0.025	0.30%	4.42	4.5		0.21	0.00	-
	839+25.00				0.020	0.08	0.00	0.08	0.025	0.30%	3.03	4.5		0.08	0.00	-
S-290	839+47.50	LT	Type 7		0.065	0.25	0.00	0.25	0.030	0.30%	4.18	4.5		0.25	0.00	-
	839+50				0.002	0.01	0.00	0.01	0.029	0.30%	1.21	4.5		0.01	0.00	-

SR 429-201
MAITLAND AVENUE EXTENSION
PAVEMENT DRAINAGE / INLET CALCULATIONS Spread Calculations

S.R. 500 (U.S. 441) MEDIAN

Struct. No.	Station ID	Side	Inlet Type	Area (acres) 0.20	Area (acres) 0.95	Calc Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Remarks	Intercepted Flow (cfs)	Bypass Flow (cfs)	Bypass from Structure No.
Northbound																
	830+40.00															
S-308	830+50.00				**0.015**	0.06	0.00	0.06	0.031	1.23%	1.83	4.5		0.06	0.00	-
	830+75.00				0.014	0.05	0.00	0.05	0.031	1.23%	1.78	4.5		0.05	0.00	-
	831+00.00				0.030	0.11	0.00	0.11	0.039	1.08%	2.07	4.5		0.11	0.00	-
S-307	831+25.00	RT	Type 7		**0.045**	0.17	0.00	0.17	0.020	1.38%	3.51	4.5		0.17	0.00	
	831+50.00				0.015	0.06	0.00	0.06	0.020	0.62%	2.71	4.5		0.06	0.00	-
	831+75.00				0.030	0.11	0.00	0.11	0.020	0.80%	3.35	4.5		0.11	0.00	-
S-306	832+00.00	RT	Type 7		**0.045**	0.17	0.00	0.17	0.024	1.58%	3.05	4.5		0.17	0.00	S-307
	832+25.00				0.015	0.06	0.00	0.06	0.020	1.70%	2.24	4.5		0.06	0.00	-
	832+50.00				0.030	0.11	0.00	0.11	0.020	2.00%	2.82	4.5		0.11	0.00	-
S-304	832+75.00	RT	Type 7		**0.045**	0.17	0.00	0.17	0.020	0.48%	4.29	4.5		0.17	0.00	S-306
	833+00.00				0.014	0.05	0.00	0.05	0.016	0.40%	3.35	4.5		0.05	0.00	-
	833+25.00				0.027	0.10	0.00	0.10	0.016	1.24%	3.45	4.5		0.10	0.00	-
S-303	833+55.00	RT	type 7		**0.048**	0.18	0.00	0.18	0.016	1.03%	4.42	4.5		0.18	0.00	S-304
	833+75.00				0.008	0.03	0.00	0.03	0.017	1.25%	2.05	4.5		0.03	0.00	-
	834+00.00				0.017	0.06	0.00	0.06	0.018	0.30%	3.43	4.5	934+09.79	0.06	0.00	-
S-301	834+10.00	RT	type 7		0.031	0.12	0.00	0.12	0.018	0.30%	4.33	4.5		0.12	0.00	S-303
	834+25.00				0.005	0.02	0.00	0.02	0.018	0.30%	2.15	4.5		0.02	0.00	-
S-300	834+50.00	RT	Type 7		0.013	0.05	0.00	0.05	0.018	0.30%	3.11	4.5		0.05	0.00	S-301
	834+75.00				0.008	0.03	0.00	0.03	0.020	0.30%	2.47	4.5	TB	0.03	0.00	-
	835+00.00				0.016	0.06	0.00	0.06	0.020	0.30%	3.20	4.5		0.00	0.00	-
	835+25.00				0.025	0.09	0.00	0.09	0.020	0.30%	3.73	4.5		0.00	0.00	-
	835+50.00				0.033	0.12	0.00	0.12	0.020	0.30%	4.15	4.5		0.00	0.00	-
S-298A	835+70.00	RT	Type 7		0.039	0.15	0.00	0.15	0.020	0.30%	4.45	4.5		0.00	0.00	-
	836+00.00				0.010	0.04	0.00	0.04	0.020	0.30%	2.64	4.5		0.00	0.00	-
	836+25.00				0.018	0.07	0.00	0.07	0.020	0.30%	3.32	4.5		0.00	0.00	-
	836+50.00				0.026	0.10	0.00	0.10	0.020	0.30%	3.82	4.5		0.00	0.00	-
	836+75.00				0.034	0.13	0.00	0.13	0.020	0.30%	4.23	4.5		0.00	0.00	-
S-296A	836+90.00	RT	Type 7		0.039	0.15	0.00	0.15	0.020	0.30%	4.45	4.5		0.00	0.00	-
S-295A	837+90.21	RT	Type 7		0.033	0.12	0.00	0.12	0.020	0.30%	4.16	4.5	BK	0.00	0.00	-
	837+90.21												LP			

SR 429-201
MAITLAND AVENUE EXTENSION
PAVEMENT DRAINAGE / INLET CALCULATIONS Spread Calculations

S.R. 500 (U.S. 441) MEDIAN

Struct. No.	Station ID	Side	Inlet Type	Area (acres) 0.20	Area (acres) 0.95	Calc Flow (cfs)	Previous Bypass Flow (cfs)	Total Flow (cfs)	Cross Slope (ft/ft)	Long Slope %	Calculated Spread (ft)	Allowable Spread (ft)	Remarks	Intercepted Flow (cfs)	Bypass Flow (cfs)	Bypass from Structure No.
S-295A	837+90.21	RT	Type 7		0.039	0.15	0.00	0.15	0.020	0.30%	4.45	4.5	AH	0.00	0.00	-
S-291	839+10.00	RT	Type 7		0.013	0.05	0.00	0.05	0.020	0.30%	2.95	4.5		0.00	0.00	-
NOTES:																
	Bold values w/in the area calculation are for compensation of additional pavement (0.66 ac.).											0.673	**Bold values** total			

Stormtabs

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-2A** Designed by **Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **Brown** Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	HYDRAULIC GRADE FLOWLINE LOWER (ft.)	HYDRAULIC GRADE FLOWLINE FALL (ft.)	# B R L S	PIPE SIZE (in.) / HGL RISE / SPAN	SLOPE % / HGL PHYS / MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL429			S-2A			0.35	0.35	0.33										76.35	73.61	2.74		18.00	3.611	11.29		ZONE: 7
				DBI-B	76.00	3.18	3.18	0.64	47.70	0.00	3.72	0.97	0.00	**3.60**	0.00	80.61	**4.26**	77.50	72.50		1		6.579		29.48	FREQ. (Yrs): 10
570+80.18	108.88	Lt.	OF-2A			0.00	0.00	0.00					0.00					76.00	71.00	5.00		18.00	0.150	16.68		MANNINGS n: 0.0120
																										TAILW EL (ft): 73.61

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

Automated Storm sewer Analysis & Design (ASAD), copyright 1992-2007, Hiteshew Engineering Systems, Inc. Ph: (352) 383-4191
Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-3** Designed by **Flynn** Date: 3/17/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **Brown** Date: 3/17/2011

LOCATION OF UPPER END ALIGNMENT NAME STATION DIST SD	STR. NO. UPPER LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 C= 0.20 C= 0.00 INC	 TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	 LOWER (ft.)	 FALL (ft.)	# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 FREQ. (Yrs): 10 MANNINGS n: 0.0120 TAILW EL (ft): 73.00
CL429	S-3			0.00	11.17	0.00										74.56	74.00	0.56		36.00	0.852	9.44		
574+00.00 73.00 Lt.	2	MH-8J	66.26	0.00	3.12	0.00	18.17	0.00	5.94	11.23	0.00	**66.71**	0.00	82.94	**8.38**	74.10	74.00		1		0.151		28.62	
				0.00	0.00	0.00					0.00					71.10	71.00	0.10		36.00	0.059	4.05		
CL429	S-4			2.05	3.16	1.95										74.77	74.56	0.20		30.00	0.265	4.66		
574+00.00 2.59 Rt.	S-3	DBI-B	75.59	1.99	3.12	0.40	15.59	0.27	6.31	3.63	0.00	**22.89**	0.00	77.02	**2.25**	73.70	73.60		1		0.132		16.61	
				0.00	0.00	0.00					0.00					71.20	71.10	0.10		30.00	0.076	3.38		
CL429	S-5			1.11	1.11	1.05										74.87	74.77	0.10		24.00	0.112	2.61		
574+00.00 94.50 Rt.	S-4	DBI-B	91.91	1.13	1.13	0.23	15.00	0.59	6.41	1.28	0.00	**8.20**	0.00	75.32	**0.45**	73.40	73.20		1		0.218		11.62	
				0.00	0.00	0.00					0.00					71.40	71.20	0.20		24.00	0.102	3.70		
CL429	S-6			0.00	8.01	0.00										76.23	74.56	1.67		36.00	0.410	6.54		
578+00 73.00 Lt.	S-3	MH-8J	406.68	0.00	0.00	0.00	17.14	1.04	6.08	7.61	0.00	**46.26**	0.00	83.13	**6.90**	75.90	74.10		1		0.443		48.37	
				0.00	0.00	0.00					0.00					72.90	71.10	1.80		36.00	0.059	6.84		
CL429	S-8			0.11	0.68	0.10										78.05	78.02	0.03		24.00	0.033	1.41		
582+00.00 78.12 Rt.	S-9	GUT-S	78.12	0.00	0.00	0.00	12.47	0.65	6.86	0.65	0.00	**4.43**	0.00	80.85	**2.80**	76.70	76.50		1		0.256		12.62	
				0.00	0.00	0.00					0.00					74.70	74.50	0.20		24.00	0.102	4.02		
CL429	S-9			0.45	1.13	0.43										78.02	77.95	0.07		24.00	0.087	2.30		
582+00.00 0.00 Rt.	S-10	DBI-B	78.12	0.00	0.00	0.00	13.12	0.57	6.74	1.07	0.00	**7.23**	0.00	79.26	**1.24**	76.50	76.30		1		0.256		12.62	
				0.00	0.00	0.00					0.00					74.50	74.30	0.20		24.00	0.102	4.02		
CL429	S-10			0.13	8.01	0.13										77.95	76.23	1.72		36.00	0.430	6.70		
582+00 78.12 Lt.	S-6	GUT-S	400.03	0.00	0.00	0.00	16.14	0.99	6.23	7.61	0.00	**47.38**	0.00	81.56	**3.61**	76.30	75.90		1		0.100		22.96	
				0.00	0.00	0.00					0.00					73.30	72.90	0.40		36.00	0.059	3.25		
CL429	S-11			0.21	0.57	0.20										78.11	78.05	0.07		18.00	0.110	2.13		
582+60.00 78.12 Rt.	S-8	GUT-S	60.00	0.00	0.00	0.00	12.00	0.47	6.96	0.54	0.00	**3.77**	0.00	81.03	**2.92**	78.50	76.70		1		3.000		20.13	
				0.00	0.00	0.00					0.00					77.00	75.20	1.80		18.00	0.150	11.39		
CL429	S-12			0.30	6.75	0.28										79.10	77.95	1.15		30.00	0.818	8.19		
583+41 78.12 Lt.	S-10	GUT-S	141.00	0.00	0.00	0.00	15.86	0.29	6.27	6.41	0.00	**40.19**	0.00	81.25	**2.15**	78.00	77.80		1		0.142		16.89	
				0.00	0.00	0.00					0.00					75.50	75.30	0.20		30.00	0.076	3.44		
CL429	S-13			0.15	0.36	0.14										78.57	78.50	0.07		18.00	0.047	1.40		
584+00 78.12 Rt.	S-11	GUT-S	140.00	0.00	0.00	0.00	10.83	1.17	7.21	0.34	0.00	**2.47**	0.00	81.50	**2.93**	79.00	78.50		1		0.357		6.86	
				0.00	0.00	0.00					0.00					77.50	77.00	0.50		18.00	0.150	3.88		
CL429	S-14			0.15	6.45	0.14										79.55	79.10	0.44		30.00	0.752	7.85		
584+00.00 78.12 Lt.	S-12	GUT-S	59.00	0.00	0.00	0.00	15.73	0.13	6.29	6.13	0.00	**38.54**	0.00	81.50	**1.95**	78.20	78.00		1		0.339		26.44	
				0.00	0.00	0.00					0.00					75.70	75.50	0.20		30.00	0.076	5.39		
CL429	S-15			0.21	0.21	0.20										79.02	79.00	0.02		18.00	0.017	0.84		
585+00.00 78.12 Rt.	S-13	GUT-S	100.00	0.00	0.00	0.00	10.00	0.83	7.41	0.20	0.00	**1.48**	0.00	82.40	**3.38**	79.80	79.00		1		0.800		10.31	
				0.00	0.00	0.00					0.00					78.30	77.50	0.80		18.00	0.150	5.83		
CL429	S-16			0.24	6.30	0.23										80.27	79.55	0.73		30.00	0.726	7.71		
585+00.00 78.12 Lt.	S-14	GUT-S	100.00	0.00	0.00	0.00	15.52	0.22	6.32	5.99	0.00	**37.85**	0.00	81.95	**1.68**	78.40	78.20		1		0.200		20.13	
				0.00	0.00	0.00					0.00					75.90	75.70	0.20		30.00	0.076	4.10		
CL429	S-17			0.28	0.28	0.27										81.45	81.43	0.02		18.00	0.030	1.12		
586+60.00 78.12 Rt.	S-18	GUT-S	78.12	0.00	0.00	0.00	10.00	0.65	7.41	0.27	0.00	**1.97**	0.00	84.14	**2.69**	78.50	78.30		1		0.256		5.86	
				0.00	0.00	0.00					0.00					77.00	76.80	0.20		18.00	0.150	3.32		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-3** Designed by **Flynn** Date: 3/17/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **Brown** Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 INC	AREAS (Ac) C= 0.95 TOTAL	AREAS (Ac) C= 0.20	AREAS (Ac) C= 0.00	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	HYDRAULIC GRADE FLOWLINE LOWER (ft.)	HYDRAULIC GRADE FLOWLINE FALL (ft.)	# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL429			S-18			0.69	0.97	0.66												81.43	81.37	0.06		24.00	0.074	2.13		ZONE: 7
				DBI-B	78.12	0.00	0.00	0.00												78.80	78.60		1		0.256		12.62	FREQ. (Yrs): 10
586+60.00	0.00	Rt.	S-19			0.00	0.00	0.00							0.00					76.80	76.60	0.20		24.00	0.102	4.02		MANNINGS n: 0.0120
CL429			S-19			0.25	6.06	0.24												81.37	80.27	1.09		30.00	0.683	7.48		TAILW EL (ft): 73.00
				GUT-S	160.00	0.00	0.00	0.00			15.16	0.36	6.38	5.76	0.00	**36.74**	0.00	82.84	**1.47**	78.60	78.40		1		0.125		15.83	
586+60	78.12	Lt.	S-16			0.00	0.00	0.00							0.00					76.10	75.90	0.20		30.00	0.076	3.23		
CL429			S-20			0.25	4.84	0.24												82.13	81.37	0.76		30.00	0.447	6.05		
				GUT-S	169.63	0.00	0.00	0.00			14.69	0.47	6.46	4.60	0.00	**29.69**	0.00	83.69	**1.56**	80.30	78.60		1		1.002		44.81	
588+30.00	78.12	Lt.	S-19			0.00	0.00	0.00							0.00					77.80	76.10	1.70		30.00	0.076	9.13		
CL429			S-21			0.81	0.81	0.77												82.86	82.82	0.04		24.00	0.054	1.81		
				DBI-B	78.12	0.00	0.00	0.00			10.00	0.65	7.41	0.77	0.00	**5.70**	0.00	83.77	**0.91**	80.70	80.50		1		0.256		12.62	
590+00.00	0.00	Rt.	S-22			0.00	0.00	0.00							0.00					78.70	78.50	0.20		24.00	0.102	4.02		
CL429			S-22			0.30	4.59	0.29												82.82	82.13	0.69		30.00	0.412	5.81		
				GUT-S	168.34	0.00	0.00	0.00			14.21	0.48	6.54	4.36	0.00	**28.52**	0.00	84.68	**1.86**	80.50	80.30		1		0.119		15.43	
590+00	78.12	Lt.	S-20			0.00	0.00	0.00							0.00					78.00	77.80	0.20		30.00	0.076	3.14		
CL429			S-23			0.30	3.48	0.29												83.31	82.82	0.49		30.00	0.246	4.49		
				GUT-S	198.04	0.00	0.00	0.00			13.47	0.73	6.67	3.31	0.00	**22.05**	0.00	85.86	**2.55**	83.20	80.50		1		1.363		52.21	
592+00.00	78.12	Lt.	S-22			0.00	0.00	0.00							0.00					80.70	78.00	2.70		30.00	0.076	10.64		
CL429			S-24			0.21	0.21	0.20												84.04	84.03	0.01		18.00	0.017	0.84		
				GUT-S	78.12	0.00	0.00	0.00			10.00	0.65	7.41	0.20	0.00	**1.48**	0.00	89.83	**5.79**	83.30	83.10		1		0.256		5.86	
594+00.00	78.12	Rt.	S-25			0.00	0.00	0.00							0.00					81.80	81.60	0.20		18.00	0.150	3.32		
CL429			S-25			0.81	1.02	0.77												84.03	83.73	0.30		18.00	0.381	3.98		
				DBI-B	78.12	0.00	0.00	0.00			10.65	0.33	7.25	0.97	0.00	**7.03**	0.00	86.12	**2.09**	83.10	82.90		1		0.256		5.86	
594+00.00	0.00	Rt.	S-26			0.00	0.00	0.00							0.00					81.60	81.40	0.20		18.00	0.150	3.32		
CL429			S-26			0.30	3.18	0.29												83.73	83.31	0.43		30.00	0.215	4.20		
				GUT-S	198.04	0.00	0.00	0.00			12.69	0.79	6.82	3.02	0.00	**20.60**	0.00	87.03	**3.30**	83.40	83.20		1		0.101		14.21	
594+00	78.12	Lt.	S-23			0.00	0.00	0.00							0.00					80.90	80.70	0.20		30.00	0.076	2.90		
CL429			S-27			0.30	1.86	0.29												86.02	83.73	2.28		18.00	1.153	6.91		
				GUT-S	198.04	0.00	0.00	0.00			12.21	0.48	6.91	1.77	0.00	**12.22**	0.00	88.22	**2.20**	85.90	83.40		1		1.262		12.87	
596+00	78.12	Lt.	S-26			0.00	0.00	0.00							0.00					84.40	81.90	2.50		18.00	0.150	7.28		
CL429			S-28			0.85	0.85	0.81												87.89	87.68	0.22		18.00	0.276	3.39		
				DBI-B	78.12	0.00	0.00	0.00			10.00	0.38	7.41	0.81	0.00	**5.98**	0.00	89.77	**1.88**	86.70	86.50		1		0.256		5.86	
598+00.00	0.00	Rt.	S-29			0.00	0.00	0.00							0.00					85.20	85.00	0.20		18.00	0.150	3.32		
CL429			S-29			0.30	1.56	0.29												87.68	86.02	1.66		18.00	0.838	5.90		
				GUT-S	198.04	0.00	0.00	0.00			11.65	0.56	7.03	1.48	0.00	**10.42**	0.00	89.39	**1.71**	86.50	85.90		1		0.303		6.30	
598+00.00	78.12	Lt.	S-27			0.00	0.00	0.00							0.00					85.00	84.40	0.60		18.00	0.150	3.57		
CL429			S-30			0.41	0.41	0.39												87.80	87.68	0.13		18.00	0.064	1.63		
				BW 218	198.04	0.00	0.00	0.00			10.00	1.65	7.41	0.39	0.00	**2.89**	0.00	91.06	**3.26**	88.00	87.00		1		0.505		8.14	
600+00	78.00	Lt.	S-29			0.00	0.00	0.00							0.00					86.50	85.50	1.00		18.00	0.150	4.61		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **CD-2** Designed by **D. Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: . Checked by: **D. Brown** Date: 3/16/2011

LOCATION OF UPPER END			STR. NO.	TYPE OF STR.	LEN.	AREAS (Ac) C= 0.95		SUB-TOTAL (C*A)	TIME OF CONC	TIME OF FLOW	INTEN	TOTAL (C*A)	BASE FLOW	TOTAL FLOW	MINOR LOSS	INLET ELEV.	HGL CLEAR	HYDRAULIC GRADE CROWN			# B	PIPE SIZE	SLOPE %	ACTUAL VEL.	FULL FLOW	NOTES & REMARKS ZONE: 7
						C= 0.20							SUMM					FLOWLINE			R	(in.)	HGL	PHYS.	CAP.	FREQ. (Yrs): 50
ALIGNMENT NAME			UPPER			C= 0.00							BASE					UPPER	LOWER	FALL	L	RISE	PHYS	VEL.		MANNINGS n: 0.0120
STATION	DIST	SD	LOWER		(ft.)	INC	TOTAL		(min)	(min)	(in/hr)		(cfs)	(cfs)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	S	SPAN	MIN.	(fps)	(cfs)	TAILW EL (ft): 60.50
CL429			**CD-2**			0.00	0.00	0.00										61.55	60.50	1.05		30.00	0.338	7.90		
				DBI-B	311.90	24.65	24.65	4.93	40.00	0.00	5.13	4.93	0.00	**25.31**	0.00	69.00	**7.45**	62.50	60.50		1		0.641		35.67	
605+00.00	129.50	Rt.	CD2			0.00	0.00	0.00					0.00					60.00	58.00	2.00		30.00	0.076	7.27		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-44** Designed by **D. Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND E)** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BRL S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % HGL PHYS / PHYS. MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 73.00
CL429			**S-30A**			0.21	0.56	0.20										87.06	86.50	0.56		18.00	0.188	4.31		
				GUT-S	297.05	0.00	0.00	0.00	10.65	1.15	7.25	0.53	0.00	**3.87**	0.00	91.11	**4.05**	87.80	86.50		1		0.438		7.56	
604+00.00	78.12	Lt.	S-31A			0.00	0.00	0.00					0.00					86.30	85.00	1.30		18.00	0.150	4.28		
CL429			**S-30B**			0.35	0.35	0.33										87.84	87.80	0.04		18.00	0.047	1.40		
				DBI-B	78.12	0.00	0.00	0.00	10.00	0.65	7.41	0.33	0.00	**2.47**	0.00	91.16	**3.32**	88.00	87.80		1		0.256		5.86	
604+00.00	0.00	Rt.	S-30A			0.00	0.00	0.00					0.00					86.50	86.30	0.20		18.00	0.150	3.32		
CL429			**S-31**			0.61	0.61	0.58										86.61	86.50	0.11		18.00	0.141	2.41		
				DBI-B	78.13	0.00	0.00	0.00	10.00	0.54	7.41	0.58	0.00	**4.27**	0.00	88.35	**1.74**	86.60	86.50		1		0.128		4.14	
607+00.00	0.00	Rt.	S-31A			0.00	0.00	0.00					0.00					85.10	85.00	0.10		18.00	0.150	2.35		
CL429			**S-31A**			0.30	1.47	0.29										86.03	84.21	1.83		18.00	0.816	7.51		
				GUT-S	224.08	0.00	0.00	0.00	11.80	0.50	7.00	1.39	0.00	**9.75**	0.00	89.26	**3.23**	86.50	84.10		1		1.071		11.84	
607+00.00	78.13	Lt.	S-34			0.00	0.00	0.00					0.00					85.00	82.60	2.40		18.00	0.150	6.70		
CL429			**S-32**			0.25	0.25	0.24										84.25	84.24	0.02		18.00	0.024	1.00		
				GUT-S	78.12	0.00	0.00	0.00	10.00	0.65	7.41	0.24	0.00	**1.76**	0.00	89.00	**4.75**	84.30	84.20		1		0.128		4.15	
609+25	78.12	Rt.	S-33			0.00	0.00	0.00					0.00					82.80	82.70	0.10		18.00	0.150	2.35		
CL429			**S-33**			0.45	0.70	0.43										84.24	84.21	0.03		24.00	0.039	1.54		
				DBI-B	78.12	0.00	0.00	0.00	10.65	0.65	7.25	0.67	0.00	**4.84**	0.00	86.32	**2.08**	84.20	84.10		1		0.128		8.93	
609+25.00	0.00	Rt.	S-34			0.00	0.00	0.00					0.00					82.20	82.10	0.10		24.00	0.102	2.84		
CL429			**S-34**			0.33	2.50	0.31										84.21	83.97	0.24		30.00	0.136	3.34		
				GUT-S	175.00	0.00	0.00	0.00	12.30	0.87	6.90	2.38	0.00	**16.38**	0.00	87.70	**3.49**	84.10	83.90		1		0.114		15.13	
609+25.00	78.12	Lt.	S-36			0.00	0.00	0.00					0.00					81.60	81.40	0.20		30.00	0.076	3.08		
CL429			**S-35**			0.27	0.27	0.26										83.92	82.40	1.52		24.00	0.894	5.85		
				GUT-S	170.00	0.00	0.00	0.00	10.00	0.48	7.41	0.26	0.00	**1.90**	0.00	86.73	**2.81**	85.60	82.40		1		1.882		33.87	
611+00.00	78.00	Rt.	S-37			0.00	0.00	0.00					0.00					83.60	80.40	3.20		24.00	0.102	10.78		
CL429			**S-36**			0.26	2.76	0.25										83.97	83.70	0.27		30.00	0.158	3.59		
				GUT-S	170.00	0.00	0.00	0.00	13.17	0.79	6.73	2.62	0.00	**17.64**	0.00	86.53	**2.56**	83.90	83.70		1		0.118		15.35	
611+00.00	78.12	Lt.	S-39			0.00	0.00	0.00					0.00					81.40	81.20	0.20		30.00	0.076	3.13		
CL429			**S-37**			0.25	3.87	0.24										80.77	80.00	0.77		30.00	0.336	8.61		
				GUT-S	230.00	0.00	0.00	0.00	14.61	0.44	6.47	3.68	0.00	**23.79**	0.00	85.04	**4.27**	81.90	80.00		1		0.826		40.61	
612+70.00	78.12	Rt.	S-40			0.00	0.00	0.00					0.00					79.40	77.50	1.90		30.00	0.076	8.27		
CL429			**S-38**			0.34	3.35	0.32										82.07	81.90	0.17		30.00	0.218	4.23		
				DBI-B	78.12	0.00	0.00	0.00	14.30	0.31	6.52	3.18	0.00	**20.76**	0.00	83.61	**1.54**	82.00	81.90		1		0.128		16.19	
612+70.00	0.00	Rt.	S-37			0.00	0.00	0.00					0.00					79.50	79.40	0.10		30.00	0.076	3.30		
CL429			**S-39**			0.25	3.01	0.24										82.21	82.07	0.14		30.00	0.180	3.84		
				GUT-S	78.12	0.00	0.00	0.00	13.96	0.34	6.58	2.86	0.00	**18.83**	0.00	86.11	**3.90**	82.20	82.00		1		0.256		22.89	
612+70	78.12	Lt.	S-38			0.00	0.00	0.00					0.00					79.70	79.50	0.20		30.00	0.076	4.66		
CL429			**S-40**			0.34	4.65	0.32										79.25	77.45	1.80		30.00	0.570	7.70		
				GUT-S	315.95	0.00	0.00	0.00	15.05	0.68	6.40	4.42	0.00	**28.26**	0.00	82.91	**3.66**	80.00	78.20		1		0.570		33.67	
615+00.00	78.12	Rt.	S-42			0.00	0.00	0.00					0.00					77.50	75.70	1.80		30.00	0.076	6.86		
CL429			**S-41**			0.44	0.44	0.42										79.57	79.47	0.10		18.00	0.128	2.58		
				DBI-B	78.12	0.00	0.00	0.00	10.00	0.51	7.41	0.42	0.00	**3.10**	0.00	82.15	**2.58**	80.10	80.00		1		0.128		4.15	
615+00.00	0.00	Rt.	S-40			0.00	0.00	0.00					0.00					78.60	78.50	0.10		18.00	0.150	2.35		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

Automated Storm sewer Analysis & Design (ASAD), copyright 1992-2007, Hiteshew Engineering Systems, Inc. Ph: (352) 383-4191
Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-44** Designed by **D. Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND E)** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/16/2011

LOCATION OF UPPER END			STR. NO.	TYPE OF STR.	LEN.	AREAS (Ac)		SUB-TOTAL (C*A)	TIME OF CONC	TIME OF FLOW	INTEN	TOTAL (C*A)	BASE FLOW	TOTAL FLOW	MINOR LOSS	INLET ELEV.	HGL CLEAR	HYDRAULIC GRADE			# B	PIPE SIZE	SLOPE %	ACTUAL VEL.	FULL FLOW	NOTES & REMARKS
						C= 0.95												CROWN			R	(in.)	HGL	PHYS.	CAP.	ZONE: 7
ALIGNMENT NAME			UPPER			C= 0.20				SECT.			SUMM					FLOWLINE			L	RISE	PHYS	VEL.		FREQ. (Yrs): 10
STATION	DIST	SD	LOWER		(ft.)	INC	TOTAL		(min)	(min)	(in/hr)		BASE (cfs)	(cfs)	(ft.)	(ft.)	(ft.)	UPPER (ft.)	LOWER (ft.)	FALL (ft.)	S	SPAN	MIN.	(fps)	(cfs)	MANNINGS n: 0.0120
CL429			S-42			0.47	5.12	0.45										74.75	74.39	0.37		30.00	0.474	6.23		
				GUT-S	77.66	0.00	0.00	0.00	15.74	0.21	6.29	4.86	0.00	**30.59**	0.00	79.94	**5.19**	74.10	73.90		1		0.258		22.96	TAILW EL (ft): 73.00
618+20.00	77.66	Rt.	S-43			0.00	0.00	0.00					0.00					71.60	71.40	0.20		30.00	0.076	4.68		
CL429			S-43			0.64	5.76	0.61										74.39	73.93	0.46		30.00	0.594	6.98		
				DBI-B	77.52	0.00	0.00	0.00	15.94	0.19	6.26	5.47	0.00	**34.24**	0.00	80.02	**5.63**	73.90	73.70		1		0.258		22.98	
618+20.00	0.00	Rt.	S-44			0.00	0.00	0.00					0.00					71.40	71.20	0.20		30.00	0.076	4.68		
CL429			S-44			0.20	5.96	0.19										73.93	73.50	0.43		30.00	0.630	7.18		
				GUT-S	67.48	0.00	0.00	0.00	16.13	0.00	6.23	5.66	0.00	**35.27**	0.00	84.34	**10.41**	73.70	73.50		1		0.296		24.42	
618+20.00	77.52	Lt.	30A			0.00	0.00	0.00					0.00					71.20	71.00	0.20		30.00	0.076	4.97		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id **OOCEA PROJECT #201** County: **ORANGE** Network: **S-46** Designed by **D. Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND E>** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	FLOWLINE LOWER (ft.)	FALL (ft.)	# BR L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % HGL PHYS / MIN.	ACTUAL VEL. PHYS. / VEL.	FULL FLOW CAP. (cfs)	NOTES & REMARKS
																										ZONE: 7
																										FREQ. (Yrs): 10
																										MANNINGS n: 0.0120
CL429			S-45			0.17	8.36	0.16										74.86	74.57	0.29		36.00	0.382	6.31		
				GUT-S	77.31	0.00	1.13	0.00	22.14	0.20	5.46	8.17	0.00	**44.63**	0.00	79.34	**4.48**	74.20	74.10		1		0.129		26.46	
619+00.00	77.31	Rt.	S-46			0.00	0.00	0.00					0.00					71.20	71.10	0.10		36.00	0.059	3.74		TAILW EL (ft): 73.00
CL429			S-46			0.16	8.52	0.15										74.57	74.00	0.57		36.00	0.393	6.41		
				DBI-B	145.00	0.00	1.13	0.00	22.34	0.00	5.44	8.32	0.00	**45.28**	0.00	79.48	**4.91**	74.10	74.00		1		0.069		19.07	
619+00.00	0.00	Rt.	45			0.00	0.00	0.00					0.00					71.10	71.00	0.10		36.00	0.059	2.70		
CL429			S-46A			0.29	8.19	0.28										75.60	74.86	0.74		36.00	0.374	6.25		
				GUT-S	196.90	0.00	1.13	0.00	21.61	0.52	5.52	8.01	0.00	**44.21**	0.00	77.84	**2.24**	74.30	74.20		1		0.051		16.39	
621+00.00	77.12	Rt.	S-45			0.00	0.00	0.00					0.00					71.30	71.20	0.10		36.00	0.059	2.32		
CL429			S-47			0.15	7.90	0.14										75.95	75.60	0.35		36.00	0.353	6.07		
				GUT-S	98.46	0.00	1.13	0.00	21.34	0.27	5.55	7.73	0.00	**42.92**	0.00	77.43	**1.48**	74.40	74.30		1		0.102		23.33	
622+00.00	76.92	Rt.	S-46A			0.00	0.00	0.00					0.00					71.40	71.30	0.10		36.00	0.059	3.30		
CL429			S-48			0.14	0.14	0.13										78.40	78.20	0.20		18.00	0.302	2.62		
				GUT-S	66.17	0.00	0.00	0.00	10.00	0.42	7.41	0.13	0.00	**0.99**	0.00	81.82	**3.42**	79.50	79.30		1		0.302		6.38	
622+00.00	76.65	Lt.	S-52			0.00	0.00	0.00					0.00					78.00	77.80	0.20		18.00	0.150	3.61		
CL429			S-49			0.08	7.75	0.08										76.10	75.95	0.15		36.00	0.342	5.98		
				GUT-S	44.31	0.00	1.13	0.00	21.22	0.12	5.56	7.59	0.00	**42.24**	0.00	77.35	**1.25**	74.50	74.40		1		0.226		35.34	
622+45.00	76.84	Rt.	S-47			0.00	0.00	0.00					0.00					71.50	71.40	0.10		36.00	0.059	5.00		
CL429			S-50			0.08	7.67	0.08										76.17	76.10	0.07		36.00	0.336	5.92		
				GUT-S	19.86	0.00	1.13	0.00	21.16	0.06	5.57	7.52	0.00	**41.86**	0.00	77.36	**1.19**	74.60	74.50		1		0.504		54.84	
622+65.17	76.80	Rt.	S-49			0.00	0.00	0.00					0.00					71.60	71.50	0.10		36.00	0.059	7.76		
CL429			S-51			1.18	1.56	1.12										76.83	76.17	0.66		18.00	0.861	5.97		
				DBI-B	76.80	0.00	0.00	0.00	11.28	0.21	7.11	1.48	0.00	**10.56**	0.00	77.60	**0.77**	74.00	73.80		1		0.260		5.91	
622+65.17	0.00	Rt.	S-50			0.00	0.00	0.00					0.00					72.50	72.30	0.20		18.00	0.150	3.35		
CL429			S-52			0.05	0.38	0.05										76.87	76.83	0.04		18.00	0.054	1.49		
				GUT-S	76.50	0.00	0.00	0.00	10.65	0.64	7.25	0.36	0.00	**2.64**	0.00	81.75	**4.88**	74.70	74.50		1		0.261		5.93	
622+65.17	76.50	Lt.	S-51			0.00	0.00	0.00					0.00					73.20	73.00	0.20		18.00	0.150	3.35		
CL429			S-52A			0.19	0.19	0.18										78.52	78.32	0.20		18.00	0.207	2.49		
				GUT-S	96.45	0.00	0.00	0.00	10.00	0.65	7.41	0.18	0.00	**1.34**	0.00	81.90	**3.38**	79.50	79.30		1		0.207		5.25	
623+60.17	76.29	Lt.	S-52			0.00	0.00	0.00					0.00					78.00	77.80	0.20		18.00	0.150	2.97		
CL429			S-53			0.11	6.03	0.10										76.21	76.17	0.04		36.00	0.211	4.70		
				GUT-S	19.53	0.00	1.13	0.00	21.09	0.07	5.58	5.95	0.00	**33.21**	0.00	77.35	**1.14**	74.70	74.60		1		0.512		55.38	
622+85.00	76.76	Rt.	S-50			0.00	0.00	0.00					0.00					71.70	71.60	0.10		36.00	0.059	7.83		
CL429			S-54			0.20	5.92	0.19										76.36	76.21	0.15		36.00	0.206	4.64		
				GUT-S	74.02	0.00	1.13	0.00	20.83	0.27	5.61	5.85	0.00	**32.81**	0.00	77.51	**1.15**	74.80	74.70		1		0.135		27.02	
623+60.17	76.60	Rt.	S-53			0.00	0.00	0.00					0.00					71.80	71.70	0.10		36.00	0.059	3.82		
CL429			S-55			0.20	5.72	0.19										76.63	76.36	0.27		36.00	0.197	4.54		
				GUT-S	137.69	0.00	1.13	0.00	20.32	0.51	5.67	5.66	0.00	**32.08**	0.00	77.93	**1.30**	74.90	74.80		1		0.073		19.65	
625+00.00	76.33	Rt.	S-54			0.00	0.00	0.00					0.00					71.90	71.80	0.10		36.00	0.059	2.78		
CL429			S-56			0.77	0.77	0.73										76.81	76.63	0.17		18.00	0.227	3.07		
				DBI-B	76.33	0.00	0.00	0.00	10.00	0.41	7.41	0.73	0.00	**5.42**	0.00	79.31	**2.50**	75.20	75.00		1		0.262		5.93	
625+00.00	0.00	Rt.	S-55			0.00	0.00	0.00					0.00					73.70	73.50	0.20		18.00	0.150	3.36		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-46** Designed by **D. Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	FLOWLINE LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS / MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL429			S-57			0.20	4.75	0.19										76.83	76.63	0.20		36.00	0.142	3.85		ZONE: 7
				GUT-S	137.94	0.00	1.13	0.00	19.72	0.60	5.74	4.74	0.00	**27.20**	0.00	78.35	**1.52**	75.00	74.90		1		0.072		19.63	FREQ. (Yrs): 10
626+40.08	76.03	Rt.	S-55			0.00	0.00	0.00					0.00					72.00	71.90	0.10		36.00	0.059	2.78		MANNINGS n: 0.0120
CL429			S-58			0.17	4.55	0.16										77.01	76.83	0.18		36.00	0.134	3.74		
				GUT-S	137.95	0.00	1.13	0.00	19.11	0.61	5.82	4.55	0.00	**26.45**	0.00	78.78	**1.77**	75.10	75.00		1		0.072		19.63	
627+80.16	75.74	Rt.	S-57			0.00	0.00	0.00					0.00					72.10	72.00	0.10		36.00	0.059	2.78		TAILW EL (ft): 73.00
CL429			S-59			0.13	4.38	0.12										77.16	77.01	0.15		36.00	0.128	3.65		
				GUT-S	118.03	0.00	1.13	0.00	18.57	0.54	5.89	4.39	0.00	**25.82**	0.00	79.15	**1.99**	75.20	75.10		1		0.085		21.26	
629+00.00	75.48	Rt.	S-58			0.00	0.00	0.00					0.00					72.20	72.10	0.10		36.00	0.059	3.01		
CL429			S-60			0.53	1.96	0.50										77.36	77.16	0.20		24.00	0.261	3.98		
				DBI-B	75.48	0.00	0.00	0.00	13.19	0.32	6.72	1.86	0.00	**12.52**	0.00	80.62	**3.26**	74.90	74.70		1		0.265		12.85	
629+00.00	0.00	Rt.	S-59			0.00	0.00	0.00					0.00					72.90	72.70	0.20		24.00	0.102	4.09		
CL429			S-61			0.19	0.19	0.18										77.68	77.48	0.20		18.00	0.266	2.74		
				GUT-S	75.08	0.00	0.00	0.00	10.00	0.46	7.41	0.18	0.00	**1.34**	0.00	83.53	**5.85**	78.70	78.50		1		0.266		5.98	
629+00.00	75.08	Lt.	S-60			0.00	0.00	0.00					0.00					77.20	77.00	0.20		18.00	0.150	3.39		
CL429			S-62			2.29	2.29	2.18										77.27	77.16	0.10		30.00	0.104	2.92		incl 1.03 ac from S-66
				DBI-B	99.75	1.13	1.13	0.23	18.00	0.57	5.96	2.40	0.00	**14.32**	0.00	77.50	**0.23**	74.90	74.70		1		0.201		20.18	
630+00.00	92.28	Rt.	S-59			0.00	0.00	0.00					0.00					72.40	72.20	0.20		30.00	0.076	4.11		
CL429			S-63			0.55	1.24	0.52										79.83	78.50	1.33		18.00	0.511	4.60		
				DBI-B	259.91	0.00	0.00	0.00	12.25	0.94	6.91	1.18	0.00	**8.14**	0.00	81.13	**1.30**	79.00	78.50		1		0.192		5.02	
631+60	3.07	Rt.	S-60			0.00	0.00	0.00					0.00					77.50	77.00	0.50		18.00	0.150	2.84		
CL429			S-64			0.59	0.69	0.56										80.28	79.83	0.45		18.00	0.175	2.69		
				DBI-B	259.81	0.00	0.00	0.00	10.64	1.61	7.26	0.66	0.00	**4.76**	0.00	81.98	**1.70**	79.80	79.00		1		0.308		6.35	
634+20	3.06	Rt.	S-63			0.00	0.00	0.00					0.00					78.30	77.50	0.80		18.00	0.150	3.59		
CL429			S-65			0.10	0.10	0.10										80.29	80.28	0.00		18.00	0.004	0.40		
				GUT-S	77.01	0.00	0.00	0.00	10.00	0.64	7.41	0.09	0.00	**0.70**	0.00	85.11	**4.82**	80.00	79.80		1		0.260		5.91	
634+20.00	73.95	Lt.	S-64			0.00	0.00	0.00					0.00					78.50	78.30	0.20		18.00	0.150	3.34		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-66** Designed by **Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **Brown** Date: 3/16/2011

LOCATION OF UPPER END			STR. NO.	TYPE OF STR.	LEN.	AREAS (Ac) C= 0.95 C= 0.20 C= 0.00		SUB-TOTAL (C*A)	TIME OF CONC	TIME OF FLOW SECT.	INTEN	TOTAL (C*A)	BASE FLOW SUMM BASE	TOTAL FLOW	MINOR LOSS	INLET ELEV.	HGL CLEAR	HYDRAULIC GRADE CROWN FLOWLINE			# B R L S	PIPE SIZE	SLOPE % HGL	ACTUAL VEL. PHYS. VEL.	FULL FLOW CAP.	NOTES & REMARKS
ALIGNMENT NAME			UPPER															UPPER	LOWER	FALL		(in.)	PHYS			ZONE: 6
STATION	DIST	SD	LOWER		(ft.)	INC	TOTAL		(min)	(min)	(in/hr)		(cfs)	(cfs)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)		RISE	MIN.	(fps)	(cfs)	FREQ. (Yrs): 10
																										MANNINGS n: 0.0120
CL429			~~S-66~~			1.03	1.22	0.98										81.44	80.95	0.49		18.00	0.553	4.79		TAILW EL (ft): 80.95
				DBI-B	88.01	0.00	0.00	0.00	10.64	0.00	7.30	1.16	0.00	**8.46**	0.00	84.59	**3.15**	81.50	80.95		1		0.625		9.07	
637+00	3.04	Rt.	39C			0.00	0.00	0.00					0.00					80.00	79.45	0.55		18.00	0.150	5.13		
CL429			~~S-67~~			0.19	0.19	0.18										81.51	81.50	0.01		18.00	0.014	0.76		
				GUT-S	76.39	0.00	0.00	0.00	10.00	0.64	7.47	0.18	0.00	**1.35**	0.00	87.65	**6.14**	81.70	81.50		1		0.262		5.93	
637+00.00	73.35	Lt.	S-66			0.00	0.00	0.00					0.00					80.20	80.00	0.20		18.00	0.150	3.36		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id **OOCEA PROJECT #201** County: **ORANGE** Network: **S-71** Designed by **D. Flynn** Date: 3/17/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: . Checked by: **D. Brown** Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	FLOWLINE LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS / MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL429			OF-C			0.00	0.00	0.00										70.32	70.12	0.20		24.00	0.497	3.11		ZONE: 7
				DBI-D	40.25	0.00	0.00	0.00	10.00	0.22	7.41	0.00	1.00	**1.00**	0.00	80.00	**9.68**	72.00	71.80		1		0.497		18.20	FREQ. (Yrs): 10
641+99.97	202.63	Lt.	S-71			0.00	0.00	0.00					1.00					70.00	69.80	0.20		24.00	0.102	5.79		MANNINGS n: 0.0120
CL429			S-71			0.00	0.00	0.00										69.93	69.00	0.93		24.00	0.890	10.91		J Bottom 4'x4'
				MH-8J	104.32	0.00	24.77	0.00	45.46	0.00	3.82	4.95	0.00	**19.94**	0.00	80.20	**10.27**	70.80	69.00		1		1.726		32.59	TAILW EL (ft): 68.50
642+00.00	162.38	Lt.	56			0.00	0.00	0.00					1.00					68.80	67.00	1.80		24.00	0.102	10.37		
CL429			S-74			0.00	0.00	0.00										79.55	71.30	8.25		18.00	2.800	10.78		
				DBI-B	294.65	24.77	24.77	4.95	45.00	0.46	3.84	4.95	0.00	**19.04**	0.00	77.85	**-1.70**	75.50	71.30		1		1.425		13.68	
644+84.69	176.63	Lt.	S-71			0.00	0.00	0.00					0.00					74.00	69.80	4.20		18.00	0.150	7.74		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-72** Designed by **D. Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL.(ft): 87.60
CL429			**S-68**			0.22	1.95	0.21										91.91	91.30	0.61		24.00	0.309	4.34		
				DBI-B	195.97	0.18	0.18	0.04	10.81	0.75	7.22	1.89	0.00	**13.63**	0.00	92.77	**0.86**	91.50	91.30		1		0.102		7.89	
642+00.00	100.75	Rt.	S-72			0.00	0.00	0.00					0.00					89.50	89.30	0.20		24.00	0.102	2.51		
CL429			**S-69**			1.36	1.73	1.29										92.14	91.91	0.24		24.00	0.241	3.83		
				DBI-B	97.76	0.00	0.00	0.00	10.38	0.43	7.32	1.64	0.00	**12.02**	0.00	98.02	**5.88**	91.70	91.50		1		0.205		11.26	
642+00.00	2.99	Rt.	S-68			0.00	0.00	0.00					0.00					89.70	89.50	0.20		24.00	0.102	3.58		
CL429			**S-70**			0.37	0.37	0.35										95.29	95.09	0.20		18.00	0.265	3.27		
				GUT-S	75.33	0.00	0.00	0.00	10.00	0.38	7.41	0.35	0.00	**2.60**	0.00	100.96	**5.67**	96.10	95.90		1		0.265		5.97	
642+00.00	72.34	Lt.	S-69			0.00	0.00	0.00					0.00					94.60	94.40	0.20		18.00	0.150	3.38		
CL429			**S-72**			5.25	7.20	4.99										90.51	87.60	2.91		24.00	5.527	22.61		incl ac (0.95) from S-76
				DBI-B	52.67	0.75	0.93	0.15	15.02	0.00	6.40	7.03	0.00	**44.99**	0.00	98.77	**8.26**	91.30	87.60		1		7.025		65.90	(3.58) & S-75 (0.69)
644+00.00	100.29	Rt.	4			0.00	0.00	0.00					0.00					89.30	85.60	3.70		24.00	0.102	20.98		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-73** Designed by **D Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/16/2011

LOCATION OF UPPER END			STR. NO.	TYPE OF STR.	LEN.	AREAS (Ac) C= 0.95 C= 0.20 C= 0.00		SUB-TOTAL (C*A)	TIME OF CONC	TIME OF FLOW SECT.	INTEN	TOTAL (C*A)	BASE FLOW SUMM BASE	TOTAL FLOW	MINOR LOSS	INLET ELEV.	HGL CLEAR	HYDRAULIC GRADE CROWN FLOWLINE			# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL.	FULL FLOW CAP.	NOTES & REMARKS ZONE: 7 FREQ. (Yrs): 10 MANNINGS n: 0.0120 TAILW EL (ft): 77.00
ALIGNMENT NAME			UPPER																							
STATION	DIST	SD	LOWER		(ft.)	INC	TOTAL		(min)	(min)	(in/hr)		(cfs)	(cfs)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)						
CL429			S-73			17.51	17.51	16.63										81.65	78.00	3.65		36.00	1.082	10.63		
				DBI-B	336.91	3.95	3.95	0.79	36.32	0.00	4.31	17.42	0.00	**75.17**	0.00	85.60	**3.95**	79.00	78.00		1		0.297		39.45	
644+00.00	163.79	Rt.	4A			0.00	0.00	0.00					0.00					76.00	75.00	1.00		36.00	0.059	5.58		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-75** Designed by **D. Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: . Checked by: **D. Brown** Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	HYDRAULIC GRADE FLOWLINE LOWER (ft.)	HYDRAULIC GRADE FLOWLINE FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. / MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL429			S-75			0.69	0.69	0.66										103.08	102.88	0.20		18.00	0.239	3.58		ZONE: 7
				DBI-B	83.73	0.00	0.00	0.00	10.00	0.00	7.41	0.66	0.00	4.86	0.00	107.37	**4.29**	103.50	103.30		1		0.239		5.61	FREQ. (Yrs): 10
645+00.00	0.00	Rt.	75			0.00	0.00	0.00					0.00					102.00	101.80	0.20		18.00	0.150	3.18		MANNINGS n: 0.0120
																										TAILW EL (ft): 101.60

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-76** Designed by **D. Flynn** Date: 3/17/2011
Description: **SR 429 / SR 414 MAITLAND E)** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION / DIST / SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % HGL PHYS / PHYS. VEL.	ACTUAL VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL429	**S-76**			0.57	3.40	0.54										116.28	115.63	0.65		24.00	0.806	7.01		ZONE: 7
		DBI-B	80.17	0.00	0.00	0.00	12.68	0.00	6.82	3.23	0.00	**22.01**	0.00	118.55	**2.27**	115.80	115.60		1		0.249		12.36	FREQ. (Yrs): 10
649+00.00 0.00 Rt.	5			0.00	0.00	0.00					0.00					113.80	113.60	0.20		24.00	0.102	3.93		MANNINGS n: 0.0120
CL429	**S-77**			0.08	0.08	0.07										116.90	116.90	0.00		18.00	0.002	0.30		TAILW EL (ft): 115.63
		GUT-S	71.13	0.00	0.00	0.00	10.00	0.59	7.41	0.07	0.00	**0.53**	0.00	120.20	**3.30**	117.10	116.90		1		0.281		6.15	
649+00.00 71.13 Lt.	S-76			0.00	0.00	0.00					0.00					115.60	115.40	0.20		18.00	0.150	3.48		
CL429	**S-79**			0.44	0.44	0.42										120.03	119.93	0.10		18.00	0.141	2.68		
		GUT-S	71.13	0.00	0.00	0.00	10.00	0.44	7.41	0.42	0.00	**3.10**	0.00	122.21	**2.18**	120.60	120.50		1		0.141		4.35	
651+00.00 71.13 Rt.	S-80			0.00	0.00	0.00					0.00					119.10	119.00	0.10		18.00	0.150	2.46		
CL429	**S-80**			0.53	2.75	0.50										117.98	116.90	1.08		24.00	0.542	5.74		
		DBI-B	200.00	0.00	0.00	0.00	12.25	0.42	6.91	2.61	0.00	**18.04**	0.00	122.68	**4.70**	118.50	116.90		1		0.800		22.09	
651+00.00 0.00 Rt.	S-76			0.00	0.00	0.00					0.00					116.50	114.90	1.60		24.00	0.102	7.03		
CL429	**S-81**			0.43	0.43	0.41										120.75	119.45	1.30		18.00	1.828	6.89		
		GUT-S	71.13	0.00	0.00	0.00	10.00	0.17	7.41	0.41	0.00	**3.03**	0.00	123.44	**2.69**	121.80	120.50		1		1.828		15.69	
651+00.00 71.13 Lt.	S-80			0.00	0.00	0.00					0.00					120.30	119.00	1.30		18.00	0.150	8.88		
CL429	**S-82**			0.22	0.61	0.21										124.96	124.86	0.10		18.00	0.141	2.81		
		GUT-S	71.12	0.00	0.00	0.00	11.25	0.42	7.12	0.58	0.00	**4.12**	0.00	126.95	**1.99**	125.30	125.20		1		0.141		4.35	
654+00.00 71.12 Rt.	S-83			0.00	0.00	0.00					0.00					123.80	123.70	0.10		18.00	0.150	2.46		
CL429	**S-82A**			0.39	0.39	0.37										125.39	125.30	0.09		18.00	0.058	1.55		
		GUT-S	150.00	0.00	0.00	0.00	10.00	1.25	7.41	0.37	0.00	**2.75**	0.00	128.53	**3.14**	125.50	125.30		1		0.133		4.19	
655+50 71.12 Rt.	S-82			0.00	0.00	0.00					0.00					124.00	123.80	0.20		18.00	0.150	2.37		
CL429	**S-83**			0.13	1.35	0.12										124.56	119.86	4.70		18.00	1.567	8.58		
		DBI-B	300.00	0.00	0.00	0.00	11.67	0.58	7.03	1.28	0.00	**9.01**	0.00	127.30	**2.74**	125.20	120.50		1		1.567		14.32	
654+00.00 0.00 Rt.	S-80			0.00	0.00	0.00					0.00					123.70	119.00	4.70		18.00	0.150	8.10		
CL429	**S-84**			0.22	0.61	0.21										124.96	124.86	0.10		18.00	0.141	2.81		
		GUT-S	71.12	0.00	0.00	0.00	11.25	0.42	7.12	0.58	0.00	4.12	0.00	126.95	**1.99**	125.30	125.20		1		0.141		4.35	
654+00.00 71.12 Lt.	S-83			0.00	0.00	0.00					0.00					123.80	123.70	0.10		18.00	0.150	2.46		
CL429	**S-84A**			0.39	0.39	0.37										125.39	125.30	0.09		18.00	0.058	1.55		
		GUT-S	150.00	0.00	0.00	0.00	10.00	1.25	7.41	0.37	0.00	**2.75**	0.00	128.57	**3.18**	125.50	125.30		1		0.133		4.19	
655+50 71.12 Lt.	S-84			0.00	0.00	0.00					0.00					124.00	123.80	0.20		18.00	0.150	2.37		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id **OOCEA PROJECT #201** County: **ORANGE** Network: **S-78** Designed by **D. Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/16/2011

LOCATION OF UPPER END			STR. NO.	TYPE OF STR.	LEN.	AREAS (Ac)		SUB-TOTAL (C*A)	TIME OF CONC	TIME OF FLOW SECT.	INTEN	TOTAL (C*A)	BASE FLOW SUMM BASE	TOTAL FLOW	MINOR LOSS	INLET ELEV.	HGL CLEAR	HYDRAULIC GRADE CROWN / FLOWLINE			# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL.	FULL FLOW CAP.	NOTES & REMARKS
						C= 0.95																			ZONE: 7
						C= 0.20																			FREQ. (Yrs): 10
ALIGNMENT NAME			UPPER			C= 0.00																			MANNINGS n: 0.0120
STATION	DIST	SD	LOWER		(ft.)	INC	TOTAL		(min)	(min)	(in/hr)		(cfs)	(cfs)	(ft.)	(ft.)	(ft.)	UPPER (ft.)	LOWER (ft.)	FALL (ft.)					TAILW EL (ft): 117.00
CL429			S-78			0.15	0.15	0.14										117.00	117.00	0.00		18.00	0.009	0.60		
				GUT-S	24.70	0.00	0.00	0.00	10.00	0.00	7.41	0.14	0.00	**1.06**	0.00	120.13	**3.13**	117.20	117.00		1		0.810		10.51	
650+00.00	71.13	Rt.	78			0.00	0.00	0.00					0.00					115.70	115.50	0.20		18.00	0.150	5.95		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-78A** Designed by **FLYNN** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **BROWN** Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 104.00
CL429			**S-78A**			0.00	0.00	0.00										104.50	104.50	0.00		24.00	0.009	0.75		
				MH-8	9.21	0.00	2.94	0.00	41.65	0.00	4.01	0.59	0.00	**2.36**	0.00	107.00	**2.50**	104.60	104.50		1		1.086		27.91	
650+00	124.00	Lt.	OF-78A			0.00	0.00	0.00					0.00					102.60	102.50	0.10		24.00	0.102	6.88		
CL429			**S-81A**			0.00	0.00	0.00										104.63	104.60	0.03		24.00	0.010	0.78		
				MH-8	300.02	0.00	2.94	0.00	39.15	2.50	4.15	0.59	0.00	**2.44**	0.00	110.00	**5.37**	104.90	104.60		1		0.100		7.79	
653+00	127.00	Lt.	S-78A			0.00	0.00	0.00					0.00					102.90	102.60	0.30		24.00	0.102	2.48		
CL429			**S-85A**			0.00	0.00	0.00										104.93	104.90	0.03		24.00	0.011	0.81		
				DBI-D	300.70	0.09	2.94	0.02	36.64	2.51	4.29	0.59	0.00	**2.53**	0.00	108.70	**3.77**	105.20	104.90		1		0.100		7.78	
656+00	147.50	Lt.	S-81A			0.00	0.00	0.00					0.00					103.20	102.90	0.30		24.00	0.102	2.48		
CL429			**S-87A**			0.00	0.00	0.00										105.22	105.20	0.02		24.00	0.011	0.80		
				DBI-D	200.02	0.51	2.86	0.10	34.98	1.67	4.40	0.57	0.00	**2.52**	0.00	108.70	**3.48**	105.40	105.20		1		0.100		7.81	
658+00	144.50	Lt.	S-85A			0.00	0.00	0.00					0.00					103.40	103.20	0.20		24.00	0.102	2.49		
CL429			**S-92A**			0.00	0.00	0.00										105.33	105.22	0.11		18.00	0.036	1.21		
				DBI-D	300.01	0.33	2.35	0.07	32.48	2.50	4.57	0.47	0.00	**2.15**	0.00	109.10	**3.77**	105.60	105.10		1		0.167		4.67	
661+00	141.80	Lt.	S-87A			0.00	0.00	0.00					0.00					104.10	103.60	0.50		18.00	0.150	2.64		
CL429			**S-95A**			0.00	0.00	0.00										105.68	105.60	0.08		18.00	0.028	1.09		
				DBI-D	297.07	2.02	2.02	0.40	30.00	2.48	4.75	0.40	0.00	**1.92**	0.00	107.10	**1.42**	106.10	105.60		1		0.168		4.69	
664+00	139.30	Lt.	S-92A			0.00	0.00	0.00					0.00					104.60	104.10	0.50		18.00	0.150	2.66		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-85** Designed by **D. Flynn** Date: 3/17/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION DIST SD	STR. NO. UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	HYDRAULIC GRADE FLOWLINE LOWER (ft.)	HYDRAULIC GRADE FLOWLINE FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % HGL PHYS / MIN.	ACTUAL VEL. PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 101.70
CL429	**S-85**			0.00	12.48	0.00										104.07	103.70	0.37		48.00	0.184	5.31		4'x6'
		MH-8J	201.20	0.00	0.00	0.00	20.63	0.00	5.63	11.86	0.00	**66.77**	0.00	108.53	**4.46**	104.00	103.70		1		0.149		60.47	
656+00.00 142.00 Rt.	6			0.00	0.00	0.00					0.00					100.00	99.70	0.30		48.00	0.041	4.81		
CL429	**S-86**			0.13	0.27	0.13										126.51	126.31	0.20		18.00	0.078	1.86		
		GUT-S	258.00	0.00	0.00	0.00	11.19	2.15	7.13	0.25	0.00	**1.80**	0.00	130.05	**3.54**	127.20	127.00		1		0.078		3.18	
658+00 71.12 Rt.	S-90			0.00	0.00	0.00					0.00					125.70	125.50	0.20		18.00	0.150	1.80		
CL429	**S-87**			0.13	0.13	0.13										127.21	127.20	0.01		18.00	0.007	0.53		
		GUT-S	142.24	0.00	0.00	0.00	10.00	1.19	7.41	0.13	0.00	**0.94**	0.00	129.85	**2.64**	127.40	127.20		1		0.141		4.31	
658+00 71.12 Lt.	S-86			0.00	0.00	0.00					0.00					125.90	125.70	0.20		18.00	0.150	2.44		
CL429	**S-88**			0.00	12.48	0.00										105.79	104.90	0.89		48.00	0.195	5.47		6'x6'
		MH-8J	458.00	0.00	0.00	0.00	19.23	1.39	5.80	11.86	0.00	**68.77**	0.00	108.85	**3.06**	107.00	104.90		1		0.459		105.95	
660+58 142.00 Rt.	S-85			0.00	0.00	0.00					0.00					103.00	100.90	2.10		48.00	0.041	8.43		
CL429	**S-89**			0.00	12.48	0.00										107.06	107.00	0.06		48.00	0.196	5.48		4'x6'
		MH-7J	29.63	0.00	0.00	0.00	19.14	0.09	5.81	11.86	0.00	**68.91**	0.00	119.00	**11.94**	108.40	107.00		1		4.725		371.00	
660+58.00 112.37 Rt.	S-88			0.00	0.00	0.00					0.00					104.40	103.00	1.40		48.00	0.041	29.52		
CL429	**S-90**			0.25	12.48	0.24										116.85	113.65	3.20		48.00	7.759	26.16		
		GUT-S	41.24	0.00	0.00	0.00	19.12	0.03	5.82	11.86	0.00	**68.94**	0.00	130.63	**13.78**	119.80	116.60		1		7.759		454.64	
660+58.00 71.13 Rt.	S-89			0.00	0.00	0.00					0.00					115.80	112.60	3.20		48.00	0.041	36.18		
CL429	**S-91**			0.35	11.96	0.33										118.68	118.48	0.20		48.00	0.280	7.42		
		DBI-B	71.54	0.00	0.00	0.00	18.95	0.16	5.84	11.37	0.00	**66.33**	0.00	129.95	**11.27**	120.00	119.80		1		0.280		83.91	
660+58 0.41 Lt.	S-90			0.00	0.00	0.00					0.00					116.00	115.80	0.20		48.00	0.041	6.68		
CL429	**S-92**			0.25	0.25	0.24										125.75	125.55	0.20		18.00	0.283	3.01		
		GUT-S	70.72	0.00	0.00	0.00	10.00	0.39	7.41	0.24	0.00	**1.76**	0.00	129.56	**3.81**	126.70	126.50		1		0.283		6.17	
660+58 71.13 Lt.	S-91			0.00	0.00	0.00					0.00					125.20	125.00	0.20		18.00	0.150	3.49		
CL429	**S-93**			0.08	0.08	0.08										124.90	124.70	0.20		18.00	0.281	2.19		
		GUT-S	71.12	0.00	0.00	0.00	10.00	0.54	7.41	0.08	0.00	**0.56**	0.00	130.52	**5.62**	126.10	125.90		1		0.281		6.15	
662+20 71.12 Rt.	S-94			0.00	0.00	0.00					0.00					124.60	124.40	0.20		18.00	0.150	3.48		
CL429	**S-94**			0.25	11.36	0.24										120.27	120.00	0.27		48.00	0.168	5.07		
		DBI-B	162.00	0.00	0.00	0.00	18.42	0.53	5.90	10.80	0.00	**63.75**	0.00	129.07	**8.80**	120.20	120.00		1		0.123		55.19	
662+20 0.00 Rt.	S-91			0.00	0.00	0.00					0.00					116.20	116.00	0.20		48.00	0.041	4.39		
CL429	**S-95**			0.24	0.24	0.23										125.14	124.94	0.20		18.00	0.281	2.98		
		GUT-S	71.12	0.00	0.00	0.00	10.00	0.40	7.41	0.23	0.00	**1.69**	0.00	128.45	**3.31**	126.10	125.90		1		0.281		6.15	
662+20.00 71.12 Lt.	S-94			0.00	0.00	0.00					0.00					124.60	124.40	0.20		18.00	0.150	3.48		
CL429	**S-96**			0.48	10.79	0.46										120.71	120.27	0.44		48.00	0.158	4.92		
		DBI-B	279.99	0.00	0.00	0.00	17.47	0.95	6.03	10.25	0.00	**61.87**	0.00	125.96	**5.25**	120.40	120.20		1		0.071		41.82	
665+00 0.00 Rt.	S-94			0.00	0.00	0.00					0.00					116.40	116.20	0.20		48.00	0.041	3.33		
CL429	**S-97**			0.41	0.41	0.39										121.05	121.00	0.05		18.00	0.064	1.63		
		GUT-S	71.13	0.00	0.00	0.00	10.00	0.59	7.41	0.39	0.00	**2.89**	0.00	125.22	**4.17**	121.30	121.00		1		0.422		7.54	
665+00 71.13 Lt.	S-96			0.00	0.00	0.00					0.00					119.80	119.50	0.30		18.00	0.150	4.27		
CL429	**S-98**			0.58	9.90	0.55										120.99	120.71	0.28		48.00	0.138	4.59		
		DBI-B	199.99	0.00	0.00	0.00	16.75	0.73	6.14	9.41	0.00	**57.74**	0.00	123.93	**2.94**	120.60	120.40		1		0.100		49.58	
667+00.00 0.00 Rt.	S-96			0.00	0.00	0.00					0.00					116.60	116.40	0.20		48.00	0.041	3.95		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-85** Designed by **D. Flynn** Date: 3/17/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION DIST SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	FLOWLINE LOWER (ft.)	FLOWLINE FALL (ft.)	# BR LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % HGL / PHYS / MIN.	ACTUAL VEL. PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
																								ZONE: 7
																								FREQ. (Yrs): 10
																								MANNINGS n: 0.0120
CL429	S-99			0.30	0.30	0.29										121.01	120.99	0.02		18.00	0.034	1.20		TAILW EL (ft): 101.70
		GUT-S	71.12	0.00	0.00	0.00	10.00	0.59	7.41	0.28	0.00	**2.11**	0.00	123.19	**2.18**	120.80	120.60		1		0.281		6.15	
667+00.00 71.12 Lt.	S-98			0.00	0.00	0.00					0.00					119.30	119.10	0.20		18.00	0.150	3.48		
CL429	S-100			0.61	0.61	0.58										121.21	121.11	0.11		18.00	0.142	2.43		
		BW 218	75.10	0.00	0.00	0.00	10.00	0.52	7.41	0.58	0.00	**4.29**	0.00	125.92	**4.71**	121.00	120.80		1		0.266		5.99	
668+01.41 73.00 Rt.	S-101			0.00	0.00	0.00					0.00					119.50	119.30	0.20		18.00	0.150	3.39		
CL429	S-101			0.68	9.02	0.65										121.11	120.99	0.12		48.00	0.116	4.23		
		DBI-B	101.42	0.00	0.00	0.00	16.35	0.40	6.20	8.57	0.00	**53.11**	0.00	123.66	**2.55**	120.80	120.60		1		0.197		70.15	
668+01.41 2.10 Lt.	S-98			0.00	0.00	0.00					0.00					116.80	116.60	0.20		48.00	0.041	5.58		
CL429	S-102			0.12	0.12	0.11										121.13	121.13	0.00		24.00	0.001	0.26		
		GUT-S	21.22	0.00	0.00	0.00	10.00	0.18	7.41	0.11	0.00	**0.83**	0.00	122.94	**1.81**	121.10	121.00		1		0.471		17.91	
667+80 71.13 Lt.	S-103			0.00	0.00	0.00					0.00					119.10	119.00	0.10		24.00	0.102	5.70		
CL429	S-103			0.07	0.60	0.07										121.13	121.11	0.02		24.00	0.028	1.31		
		GUT-S	69.03	0.00	0.00	0.00	10.86	0.58	7.21	0.57	0.00	**4.11**	0.00	122.93	**1.80**	120.50	120.30		1		0.290		13.46	
668+01.41 71.13 Lt.	S-101			0.00	0.00	0.00					0.00					118.50	118.30	0.20		24.00	0.102	4.29		
CL429	S-104			0.13	0.41	0.12										121.13	121.13	0.00		24.00	0.013	0.90		
		GUT-S	18.42	0.00	0.00	0.00	10.70	0.15	7.24	0.39	0.00	**2.83**	0.00	122.93	**1.80**	121.10	121.00		1		0.543		19.42	
668+20 71.13 Lt.	S-103			0.00	0.00	0.00					0.00					119.10	119.00	0.10		24.00	0.102	6.18		
CL429	S-104A			0.29	0.29	0.27										121.14	121.13	0.01		24.00	0.007	0.64		
		GUT-S	84.24	0.00	0.00	0.00	10.00	0.70	7.41	0.27	0.00	**2.02**	0.00	123.19	**2.05**	121.10	121.00		1		0.119		8.57	
669+05 71.13 Lt.	S-104			0.00	0.00	0.00					0.00					119.10	119.00	0.10		24.00	0.102	2.73		
CL429	S-107			0.51	7.13	0.48										122.16	121.11	1.05		36.00	0.352	6.06		
		DBI-B	298.54	0.00	0.00	0.00	15.53	0.82	6.32	6.78	0.00	**42.85**	0.00	125.97	**3.81**	122.00	120.80		1		0.402		46.04	
671+00.00 0.00 Rt.	S-101			0.00	0.00	0.00					0.00					119.00	117.80	1.20		36.00	0.059	6.51		
CL429	S-108			0.44	0.44	0.42										122.45	122.25	0.20		18.00	0.281	3.50		
		GUT-S	71.13	0.00	0.00	0.00	10.00	0.34	7.41	0.42	0.00	**3.10**	0.00	125.22	**2.77**	123.20	123.00		1		0.281		6.15	
671+00.00 71.13 Lt.	S-107			0.00	0.00	0.00					0.00					121.70	121.50	0.20		18.00	0.150	3.48		
CL429	S-109			0.51	6.18	0.48										124.63	123.10	1.53		36.00	0.510	10.39		
		DBI-B	299.98	0.00	0.00	0.00	15.05	0.48	6.40	5.87	0.00	**37.59**	0.00	132.46	**7.83**	126.10	123.10		1		1.000		72.62	
674+00 0.00 Rt.	S-107			0.00	0.00	0.00					0.00					123.10	120.10	3.00		36.00	0.059	10.27		
CL429	S-110			0.44	0.44	0.42										128.35	128.15	0.20		18.00	0.281	3.50		
		GUT-S	71.13	0.00	0.00	0.00	10.00	0.34	7.41	0.42	0.00	**3.10**	0.00	131.51	**3.16**	129.10	128.90		1		0.281		6.15	
674+00.00 71.13 Lt.	S-109			0.00	0.00	0.00					0.00					127.60	127.40	0.20		18.00	0.150	3.48		
CL429	S-112			0.51	5.23	0.48										130.85	127.45	3.40		36.00	1.133	10.46		
		DBI-B	299.98	0.00	0.00	0.00	14.57	0.48	6.48	4.97	0.00	**32.21**	0.00	138.53	**7.68**	132.50	129.10		1		1.133		77.31	
677+00 0.00 Rt.	S-109			0.00	0.00	0.00					0.00					129.50	126.10	3.40		36.00	0.059	10.94		
CL429	S-113			0.39	0.39	0.37										134.40	134.20	0.20		18.00	0.281	3.39		
		GUT-S	71.13	0.00	0.00	0.00	10.00	0.35	7.41	0.37	0.00	**2.75**	0.00	137.57	**3.17**	135.20	135.00		1		0.281		6.15	
677+00.00 71.13 Lt.	S-112			0.00	0.00	0.00					0.00					133.70	133.50	0.20		18.00	0.150	3.48		
CL429	S-115			0.36	0.36	0.34										138.98	138.78	0.20		18.00	0.270	3.27		
		BW 218	74.04	0.00	0.00	0.00	10.00	0.38	7.41	0.34	0.00	**2.53**	0.00	143.39	**4.41**	139.80	139.60		1		0.270		6.04	
679+64.90 73.00 Rt.	S-116			0.00	0.00	0.00					0.00					138.30	138.10	0.20		18.00	0.150	3.42		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-85** Designed by **D. Flynn** Date: 3/17/2011
Description: **SR 429 / SR 414 MAITLAND E)** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION DIST SD	STR. NO. UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	FLOWLINE LOWER (ft.)	FLOWLINE FALL (ft.)	# B R L S	PIPE SIZE (in.) RISE / SPAN	SLOPE % HGL PHYS / MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 101.70
CL429	S-116			0.16	4.33	0.15										138.72	135.50	3.22		24.00	1.217	8.60		
679+64.90 1.04 Lt.	S-112	DBI-B	264.89	0.00	0.00	0.00	14.06	0.51	6.57	4.12	0.00	**27.03**	0.00	142.64	**3.92**	137.80	135.50		1		0.868		22.97	
				0.00	0.00	0.00					0.00					135.80	133.50	2.30		24.00	0.102	7.31		
CL429	S-117			0.38	0.38	0.36										138.98	138.78	0.20		18.00	0.285	3.38		
679+64.90 71.13 Lt.	S-116	GUT-S	70.09	0.00	0.00	0.00	10.00	0.35	7.41	0.36	0.00	**2.65**	0.00	142.19	**3.21**	139.80	139.60		1		0.285		6.20	
				0.00	0.00	0.00					0.00					138.30	138.10	0.20		18.00	0.150	3.51		
CL429	S-118			0.24	1.66	0.23										142.75	142.55	0.20		24.00	0.281	4.71		J-Bottom 8' x 3'-8"
682+20 71.51 Rt.	S-119	BW 218	71.06	0.00	0.00	0.00	13.09	0.25	6.74	1.58	0.00	**10.63**	0.00	146.39	**3.64**	143.40	143.20		1		0.281		13.29	
				0.00	0.00	0.00					0.00					141.40	141.20	0.20		24.00	0.102	4.23		
CL429	S-119			0.00	3.44	0.00										141.82	139.80	2.02		24.00	0.791	6.94		
682+20 0.45 Rt.	S-116	DBI-B	255.10	0.00	0.00	0.00	13.44	0.61	6.68	3.26	0.00	**21.79**	0.00	147.04	**5.22**	141.00	139.80		1		0.470		16.91	
				0.00	0.00	0.00					0.00					139.00	137.80	1.20		24.00	0.102	5.38		
CL429	S-120			0.28	1.78	0.26										143.35	143.20	0.15		24.00	0.215	3.62		J-Bottom 8' x 3'-8"
682+20 71.00 Lt.	S-119	BW 218	71.45	0.00	0.00	0.00	13.11	0.33	6.74	1.69	0.00	**11.37**	0.00	146.40	**3.05**	143.30	143.20		1		0.140		9.37	
				0.00	0.00	0.00					0.00					141.30	141.20	0.10		24.00	0.102	2.98		
CL429	SCUP-1			0.14	1.42	0.13										146.39	143.09	3.30		18.00	2.100	9.65		
683+76.51 71.00 Rt.	S-118	SCUPER	157.17	0.00	0.00	0.00	12.82	0.27	6.79	1.35	0.00	**9.17**	0.00	148.61	**2.22**	147.10	143.80		1		2.100		16.63	
				0.00	0.00	0.00					0.00					145.60	142.30	3.30		18.00	0.150	9.41		
CL429	SCUP-2			0.13	1.50	0.12										146.53	143.80	2.73		18.00	1.629	9.66		
683+88.24 71.00 Lt.	S-120	SCUPER	167.54	0.00	0.00	0.00	12.82	0.29	6.79	1.42	0.00	**9.68**	0.00	148.73	**2.20**	147.20	143.80		1		2.029		16.34	
				0.00	0.00	0.00					0.00					145.70	142.30	3.40		18.00	0.150	9.25		
CL429	SCUP-3			0.14	1.28	0.13										147.34	146.54	0.80		18.00	0.992	7.11		
684+56.82 71.00 Rt.	SCUP-1	SCUPER	80.65	0.00	0.00	0.00	12.63	0.19	6.83	1.22	0.00	**8.31**	0.00	149.40	**2.06**	147.90	147.10		1		0.992		11.51	
				0.00	0.00	0.00					0.00					146.40	145.60	0.80		18.00	0.150	6.52		
CL429	SCUP-4			0.13	1.37	0.12										147.96	147.03	0.92		16.00	1.145	6.37		
684+69.23 71.00 Lt.	SCUP-2	SCUPER	80.65	0.00	0.00	0.00	12.61	0.21	6.83	1.30	0.00	**8.89**	0.00	149.51	**1.55**	147.83	147.03		1		0.992		8.41	
				0.00	0.00	0.00					0.00					146.50	145.70	0.80		16.00	0.175	6.02		
CL429	SCUP-5			0.18	1.14	0.17										148.25	147.90	0.35		18.00	0.431	4.23		
685+37.16 71.00 Rt.	SCUP-3	SCUPER	80.68	0.00	0.00	0.00	12.31	0.32	6.89	1.08	0.00	**7.47**	0.00	150.10	**1.85**	148.60	147.90		1		0.868		10.77	
				0.00	0.00	0.00					0.00					147.10	146.40	0.70		18.00	0.150	6.09		
CL429	SCUP-6			0.19	1.24	0.18										148.72	147.96	0.77		16.00	0.951	5.81		
685+50.25 71.00 Lt.	SCUP-4	SCUPER	80.68	0.00	0.00	0.00	12.38	0.23	6.88	1.18	0.00	**8.10**	0.00	150.21	**1.49**	148.53	147.83		1		0.868		7.86	
				0.00	0.00	0.00					0.00					147.20	146.50	0.70		16.00	0.175	5.63		
CL429	SCUP-7			0.14	0.96	0.13										149.09	148.43	0.66		16.00	0.586	4.56		
686+48.70 71.00 Rt.	SCUP-5	SCUPER	112.00	0.00	0.00	0.00	11.90	0.41	6.98	0.91	0.00	**6.36**	0.00	150.95	**1.86**	149.33	148.43		1		0.804		7.53	
				0.00	0.00	0.00					0.00					148.00	147.10	0.90		16.00	0.175	5.40		
CL429	SCUP-8			0.14	1.05	0.13										149.51	148.72	0.78		16.00	0.697	4.97		
686+62.71 71.39 Lt.	SCUP-6	SCUPER	112.05	0.00	0.00	0.00	12.01	0.38	6.96	1.00	0.00	**6.94**	0.00	151.03	**1.52**	149.33	148.53		1		0.714		7.10	
				0.00	0.00	0.00					0.00					148.00	147.20	0.80		16.00	0.175	5.09		
CL429	SCUP-10			0.20	0.91	0.19										149.94	149.51	0.43		16.00	0.533	4.35		
687+43.76 74.52 Lt.	SCUP-8	SCUPER	81.11	0.00	0.00	0.00	11.70	0.31	7.02	0.86	0.00	**6.07**	0.00	151.49	**1.55**	149.73	149.33		1		0.493		5.93	
				0.00	0.00	0.00					0.00					148.40	148.00	0.40		16.00	0.175	4.25		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id **OOCEA PROJECT #201** County: **ORANGE** Network: **S-85** Designed by **D. Flynn** Date: 3/17/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 101.70
CL429			SCUP-9			0.19	0.82	0.18										149.69	149.33	0.35		16.00	0.437	3.93		
				SCUPER	80.75	0.00	0.00	0.00	11.56	0.34	7.05	0.78	0.00	**5.49**	0.00	151.47	**1.78**	149.83	149.33		1		0.619		6.64	
687+29.45	71.00	Rt.	SCUP-7			0.00	0.00	0.00					0.00					148.50	148.00	0.50		16.00	0.175	4.76		
CL429			SCUP-11			0.17	0.63	0.16										150.29	149.69	0.61		14.00	0.541	4.00		
				SCUPER	112.03	0.00	0.00	0.00	11.10	0.47	7.15	0.60	0.00	**4.28**	0.00	152.06	**1.77**	150.17	149.67		1		0.446		3.93	
688+41.57	71.00	Rt.	SCUP-9			0.00	0.00	0.00					0.00					149.00	148.50	0.50		14.00	0.210	3.68		
CL429			SCUP-12			0.20	0.71	0.19										150.32	149.94	0.38		16.00	0.336	3.45		
				SCUPER	112.55	0.00	0.00	0.00	11.15	0.54	7.14	0.67	0.00	**4.82**	0.00	151.97	**1.65**	150.23	149.73		1		0.444		5.60	
688+56.06	78.90	Lt.	SCUP-10			0.00	0.00	0.00					0.00					148.90	148.40	0.50		16.00	0.175	4.01		
CL429			SCUP-13			0.17	0.46	0.16										150.99	150.29	0.70		12.00	0.675	4.04		
				SCUPER	103.95	0.00	0.00	0.00	10.67	0.43	7.25	0.44	0.00	**3.17**	0.00	152.48	**1.49**	150.50	150.00		1		0.481		2.71	
689+45.96	71.00	Rt.	SCUP-11			0.00	0.00	0.00					0.00					149.50	149.00	0.50		12.00	0.257	3.45		
CL429			SCUP-14			0.20	0.51	0.19										150.70	150.32	0.38		14.00	0.365	3.29		
				SCUPER	104.41	0.00	0.00	0.00	10.62	0.53	7.26	0.48	0.00	**3.52**	0.00	152.28	**1.58**	150.37	150.07		1		0.287		3.16	
689+59.90	83.00	Lt.	SCUP-12			0.00	0.00	0.00					0.00					149.20	148.90	0.30		14.00	0.210	2.95		
CL429			SCUP-15			0.29	0.29	0.28										151.28	150.99	0.29		12.00	0.280	2.60		
				SCUPER	103.90	0.00	0.00	0.00	10.00	0.67	7.41	0.28	0.00	**2.04**	0.00	152.76	**1.48**	150.70	150.50		1		0.192		1.71	
690+50.3	71.00	Rt.	SCUP-13			0.00	0.00	0.00					0.00					149.70	149.50	0.20		12.00	0.257	2.18		
CL429			SCUP-16			0.31	0.31	0.29										151.03	150.70	0.33		12.00	0.320	2.78		
				SCUPER	103.88	0.00	0.00	0.00	10.00	0.62	7.41	0.29	0.00	**2.18**	0.00	152.55	**1.52**	150.50	150.20		1		0.289		2.10	
690+63.28	83.00	Lt.	SCUP-14			0.00	0.00	0.00					0.00					149.50	149.20	0.30		12.00	0.257	2.67		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **OOCEA PROJECT #201** County: **ORANGE** Network: **S-105** Designed by **D. Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS / ZONE: 7 / FREQ. (Yrs): 25 / MANNINGS n: 0.0120 / TAILW EL (ft): 104.50
CL429			EX-128			15.94	15.94	15.14										116.87	116.40	0.47		30.00	0.608	7.06		exist. dual 30" pipe
				EWSCN	77.01	4.33	4.33	0.87	46.29	0.18	4.33	16.01	0.00	**69.32**	0.00	114.18	**-2.69**	116.68	116.40		2		0.364		54.48	
693+71.15	81.02	Rt.	S-128			0.00	0.00	0.00					0.00					114.18	113.90	0.28		30.00	0.076	5.55		
CL429			S-105			0.00	16.95	0.00										104.53	104.50	0.03		48.00	0.214	5.72		6'x4' bottom
				MH-8J	14.56	0.00	10.46	0.00	54.33	0.00	3.95	18.20	0.00	**71.93**	0.00	105.60	**1.07**	102.15	101.77		1		2.610		276.23	
670+01.76	85.00	Rt.	20			0.00	0.00	0.00					0.00					98.15	97.77	0.38		48.00	0.041	21.98		
CL429			S-105A			0.00	0.00	0.00										104.53	104.53	0.00		18.00	0.001	0.20		
				DBI-B	99.28	0.21	0.21	0.04	10.00	0.83	8.26	0.04	0.00	**0.35**	0.00	104.80	**0.27**	102.50	102.30		1		0.201		5.21	
671+00.00	84.12	Rt.	S-105			0.00	0.00	0.00					0.00					101.00	100.80	0.20		18.00	0.150	2.95		
CL429			S-106			0.00	16.95	0.00										104.78	104.53	0.25		54.00	0.115	4.55		6'x6' bottom
				MH-8J	214.64	0.00	10.25	0.00	53.54	0.79	3.99	18.15	0.00	**72.38**	0.00	109.56	**4.78**	105.50	102.65		1		1.328		248.39	
670+46.64	124.92	Lt.	S-105			0.00	0.00	0.00					0.00					101.00	98.15	2.85		54.00	0.035	15.62		
CL429			S-106.1			0.00	16.95	0.00										106.53	106.20	0.33		48.00	0.218	5.79		6'x4' bottom
				MH-8J	152.02	0.00	10.25	0.00	53.10	0.44	4.01	18.15	0.00	**72.73**	0.00	111.60	**5.07**	107.90	106.20		1		1.118		167.34	
672+01.07	125.00	Lt.	S-106			0.00	0.00	0.00					0.00					103.90	102.20	1.70		48.00	0.041	13.32		
CL429			S-111			0.00	16.95	0.00										108.38	107.90	0.48		48.00	0.221	5.83		6'x4' bottom
				DBI-BJ	215.93	3.60	10.25	0.72	52.49	0.62	4.03	18.15	0.00	**73.22**	0.00	111.95	**3.57**	108.20	107.90		1		0.139		58.62	
674+20.05	141.00	Lt.	S-106.1			0.00	0.00	0.00					0.00					104.20	103.90	0.30		48.00	0.041	4.66		
CL429			S-111.1			0.00	16.95	0.00										109.15	108.38	0.77		48.00	0.209	5.66		6'x4' bottom
				MH-8J	367.23	0.00	6.65	0.00	51.41	1.08	4.08	17.43	0.00	**71.16**	0.00	117.50	**8.35**	110.20	108.20		1		0.545		115.55	
677+93.94	145.04	Lt.	S-111			0.00	0.00	0.00					0.00					106.20	104.20	2.00		48.00	0.041	9.20		
CL429			S-114			0.00	16.95	0.00										110.63	110.20	0.43		48.00	0.212	5.70		6'x4' bottom
				MH-8J	204.49	0.00	6.65	0.00	50.81	0.60	4.11	17.43	0.00	**71.64**	0.00	121.50	**10.87**	110.30	110.20		1		0.049		34.84	
680+00.14	141.62	Lt.	S-111.1			0.00	0.00	0.00					0.00					106.30	106.20	0.10		48.00	0.041	2.77		
CL429			S-121			0.31	16.95	0.29										111.76	111.50	0.26		48.00	0.218	5.79		6'x6' bottom
				DBI-FJ	116.84	1.47	6.65	0.29	49.49	0.34	4.17	17.43	0.00	**72.72**	0.00	116.60	**4.84**	112.00	111.50		1		0.428		103.36	
683+34.27	43.25	Lt.	S-122			0.00	0.00	0.00					0.00					108.00	107.50	0.50		48.00	0.041	8.23		
CL429			S-122			0.00	16.95	0.00										111.37	110.63	0.73		48.00	0.217	5.76		6'x6' bottom
				MH-8J	338.38	0.00	6.65	0.00	49.83	0.98	4.16	17.43	0.00	**72.44**	0.00	116.51	**5.14**	110.50	110.30		1		0.059		38.11	
683+41.06	159.89	Lt.	S-114			0.00	0.00	0.00					0.00					106.50	106.30	0.20		48.00	0.041	3.03		
CL429			S-123			0.43	16.64	0.41										112.76	112.00	0.76		48.00	0.209	5.66		6'x6' bottom
				DBI-FJ	364.94	0.66	5.18	0.13	48.42	1.07	4.22	16.84	0.00	**71.14**	0.00	118.65	**5.89**	112.50	112.00		1		0.137		57.76	
687+00	41.96	Lt.	S-121			0.00	0.00	0.00					0.00					108.50	108.00	0.50		48.00	0.041	4.60		
CL429			S-124			0.00	16.21	0.00										112.93	112.76	0.17		48.00	0.197	5.50		6'x6' bottom
				MH-8J	84.68	0.00	4.52	0.00	48.16	0.26	4.24	16.30	0.00	**69.06**	0.00	118.93	**6.00**	112.80	112.50		1		0.354		94.60	
687+00	42.72	Rt.	S-123			0.00	0.00	0.00					0.00					108.80	108.50	0.30		48.00	0.041	7.53		
CL429			S-125			0.27	16.21	0.26										113.17	112.93	0.24		48.00	0.199	5.52		6'x4' bottom
				DBI-FJ	120.00	0.19	4.52	0.04	47.80	0.36	4.25	16.30	0.00	**69.35**	0.00	117.50	**4.33**	113.00	112.80		1		0.167		64.48	
688+20	43.43	Rt.	S-124			0.00	0.00	0.00					0.00					109.00	108.80	0.20		48.00	0.041	5.13		
CL429			S-126			0.00	15.94	0.00										113.56	113.17	0.39		48.00	0.194	5.46		6'x4' bottom
				MH-8J	202.43	0.00	4.33	0.00	47.18	0.62	4.28	16.01	0.00	**68.59**	0.00	119.70	**6.14**	113.30	113.00		1		0.148		60.43	
690+22.95	43.54	Rt.	S-125			0.00	0.00	0.00					0.00					109.30	109.00	0.30		48.00	0.041	4.81		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id. **OOCEA PROJECT #201** County: **ORANGE** Network: **S-105** Designed by **D. Flynn** Date: 3/16/2011
Description: **SR 429 / SR 414 MAITLAND EX** Organization **DRMP, INC.** State Road: **.** Checked by: **D. Brown** Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	HYDRAULIC GRADE FLOWLINE LOWER (ft.)	HYDRAULIC GRADE FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / MIN.	ACTUAL VEL. / PHYS. VEL. / (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 25 / MANNINGS n: 0.0120 / TAILW EL (ft): 104.50
CL429			S-127			0.00	15.94	0.00										113.99	113.80	0.19		48.00	0.196	5.48		12'x4' bottom
				MH-7J	98.06	0.00	4.33	0.00	46.88	0.30	4.30	16.01	0.00	**68.84**	0.00	120.41	**6.42**	114.00	113.80		1		0.204		72.14	
691+20.59	55.28	Rt.	S-126			0.00	0.00	0.00					0.00					110.00	109.80	0.20		48.00	0.041	5.74		
CL429			S-128			0.00	15.94	0.00										115.05	114.00	1.05		30.00	0.606	7.05		14'x4' bottom
				MH-7J	173.87	0.00	4.33	0.00	46.47	0.41	4.32	16.01	0.00	**69.17**	0.00	120.34	**5.29**	114.50	114.00		2		0.288		48.36	
692+94.25	72.63	Rt.	S-127			0.00	0.00	0.00					0.00					112.00	111.50	0.50		30.00	0.076	4.93		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id:
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-210A**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 3/17/2011
Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.50 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % HGL PHYS / PHYS VEL. / MIN.	ACTUAL VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 113.32
CL429			**F-539**			0.43	0.43	0.41										146.15	146.10	0.05		18.00	0.071	1.71		
				BW 218	66.94	0.00	0.00	0.00	10.00	0.56	7.41	0.41	0.00	**3.03**	0.00	149.68	**3.53**	146.50	146.10		1		0.598		9.00	
703+37	66.94	Rt.	F-550			0.00	0.00	0.00					0.00					145.00	144.60	0.40		18.00	0.150	5.09		
CL429			**F-546**			0.42	0.42	0.40										146.60	146.56	0.04		18.00	0.068	1.67		
				BW 218	60.24	0.00	0.00	0.00	10.00	0.50	7.41	0.40	0.00	**2.96**	0.00	150.95	**4.35**	147.50	146.43		1		1.776		15.56	
705+00	60.24	Lt.	F-551			0.00	0.00	0.00					0.00					146.00	144.93	1.07		18.00	0.150	8.80		
CL429			**F-547**			0.43	0.43	0.41										149.45	148.36	1.09		18.00	1.809	6.89		
				BW 218	60.24	0.00	0.00	0.00	10.00	0.15	7.41	0.41	0.00	**3.03**	0.00	152.92	**3.48**	150.50	149.41		1		1.809		15.70	
708+00	60.24	Lt.	F-552			0.00	0.00	0.00					0.00					149.00	147.91	1.09		18.00	0.150	8.89		
CL429			**F-550**			0.19	3.10	0.18										145.30	144.31	0.99		24.00	0.726	6.65		
				DBI-E	137.00	0.00	0.00	0.00	11.34	0.34	7.10	2.94	0.00	**20.88**	0.00	147.57	**2.27**	145.00	143.70		1		0.949		24.18	
703+37	0.00	Rt.	S-208			0.00	0.00	0.00					0.00					143.00	141.70	1.30		24.00	0.102	7.70		
CL429			**F-551**			0.35	2.48	0.33										146.56	145.78	0.78		24.00	0.480	5.40		
				DBI-E	163.00	0.00	0.00	0.00	10.84	0.50	7.21	2.35	0.00	**16.97**	0.00	148.64	**2.08**	146.39	145.78		1		0.374		15.13	
705+00	0.00	Rt.	F-550			0.00	0.00	0.00					0.00					144.39	143.78	0.61		24.00	0.102	4.82		
CL429			**F-552**			0.43	1.29	0.41										148.20	146.56	1.64		24.00	0.546	7.22		
				DBI-E	300.00	0.00	0.00	0.00	10.15	0.69	7.37	1.23	0.00	**9.04**	0.00	150.61	**2.41**	149.36	146.39		1		0.990		24.51	
708+00	0.00	Rt.	F-551			0.00	0.00	0.00					0.00					147.36	144.39	2.97		24.00	0.102	7.80		
CL429			**F-553**			0.43	0.43	0.41										149.45	148.36	1.09		18.00	1.809	6.89		
				BW 218	60.24	0.00	0.00	0.00	10.00	0.15	7.41	0.41	0.00	**3.03**	0.00	152.92	**3.48**	150.50	149.41		1		1.809		15.70	
708+00	60.24	Rt.	F-552			0.00	0.00	0.00					0.00					149.00	147.91	1.09		18.00	0.150	8.89		
CL429			**F-554**			0.42	0.42	0.40										146.60	146.56	0.04		18.00	0.068	1.67		
				BW 218	63.34	0.00	0.00	0.00	10.00	0.53	7.41	0.40	0.00	**2.96**	0.00	150.86	**4.25**	147.50	146.43		1		1.689		15.15	
705+00	63.34	Rt.	F-551			0.00	0.00	0.00					0.00					146.00	144.93	1.07		18.00	0.150	8.58		
CL429			**S-200**			0.88	0.88	0.83										146.98	146.78	0.20		18.00	0.467	5.03		J-BOTTOM
				BW 218	42.83	0.00	0.00	0.00	10.00	0.14	7.41	0.83	0.00	**6.17**	0.00	150.60	**3.62**	147.50	147.30		1		0.467		8.06	
697+50	71.48	Rt.	S-201			0.00	0.00	0.00					0.00					146.00	145.80	0.20		18.00	0.150	4.56		
CL429			**S-201**			0.05	0.92	0.05										146.20	145.53	0.67		18.00	0.324	3.66		J-BOTTOM
				BW 218	206.40	0.00	0.00	0.00	10.14	0.94	7.37	0.88	0.00	**6.47**	0.00	150.25	**4.05**	146.50	144.80		1		0.824		10.40	
697+93	72.47	Rt.	S-204			0.00	0.00	0.00					0.00					145.00	143.30	1.70		18.00	0.150	5.89		
CL429			**S-202**			0.34	1.09	0.32										146.28	146.20	0.08		24.00	0.095	2.41		J-BOTTOM
				BW 218	85.46	0.00	0.00	0.00	10.44	0.59	7.30	1.04	0.00	**7.57**	0.00	149.77	**3.49**	146.50	146.20		1		0.351		14.78	
698+50	83.46	Lt.	S-203			0.00	0.00	0.00					0.00					144.50	144.20	0.30		24.00	0.102	4.71		
CL429			**S-203**			0.12	1.21	0.12										145.60	145.40	0.20		24.00	0.159	3.53		J-BOTTOM
				BW 218	125.93	0.00	0.00	0.00	11.03	0.60	7.17	1.15	0.00	**8.26**	0.00	148.90	**3.30**	146.20	146.00		1		0.159		9.87	
699+35.00	85.89	Lt.	S-205			0.00	0.00	0.00					0.00					144.20	144.00	0.20		24.00	0.102	3.14		
CL429			**S-204**			0.27	1.20	0.26										145.53	144.51	1.02		18.00	0.510	4.60		J- BOTTOM
				BW 218	199.58	0.00	0.00	0.00	11.08	0.72	7.16	1.14	0.00	**8.13**	0.00	148.45	**2.92**	144.80	144.00		1		0.401		7.26	
700+00	84.71	Rt.	S-207			0.00	0.00	0.00					0.00					143.30	142.50	0.80		18.00	0.150	4.11		
CL429			**S-205**			0.20	1.41	0.19										141.34	139.84	1.50		24.00	1.060	7.53		
				GUT-S	141.49	0.00	0.00	0.00	11.62	0.31	7.04	1.34	0.00	**9.45**	0.00	147.56	**6.22**	142.50	141.00		1		1.060		25.53	
700+60	94.18	Lt.	S-210			0.00	0.00	0.00					0.00					140.50	139.00	1.50		24.00	0.102	8.13		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id:
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-210A**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 3/17/2011
Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.50 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 113.32
CL429			**S-207**			0.46	1.66	0.44										144.51	144.31	0.20		24.00	0.202	3.50		J-BOTTOM
				BW 218	100.52	0.00	0.00	0.00	11.80	0.48	7.00	1.57	0.00	**11.01**	0.00	147.66	**3.15**	144.00	143.70		1		0.298		13.63	
702+00	101.15	Rt.	S-208			0.00	0.00	0.00					0.00					142.00	141.70	0.30		24.00	0.102	4.34		
CL429			**S-208**			0.58	5.33	0.55										144.31	144.00	0.31		30.00	0.534	6.61		
				DBI-EJ	57.76	0.00	0.00	0.00	15.00	0.15	6.41	5.07	0.00	**32.46**	0.00	147.85	**3.54**	144.20	144.00		1		0.346		27.23	
702+00	0.63	Rt.	S-209			0.00	0.00	0.00					0.00					141.70	141.50	0.20		30.00	0.076	5.55		
CL429			**S-209**			0.42	5.75	0.40										141.30	141.00	0.30		30.00	0.585	8.29		J-BOTTOM
				MH-8J	51.25	0.00	0.00	0.00	15.15	0.10	6.38	5.47	0.00	**34.89**	0.00	148.20	**6.90**	141.80	141.50		1		0.585		35.60	
702+05.48	56.87	Lt.	S-210			0.00	0.00	0.00					0.00					139.30	139.00	0.30		30.00	0.076	7.25		
CL429			**S-210**			0.14	7.30	0.13										130.26	117.26	13.00		30.00	14.577	17.84		
				GUT-SJ	89.18	0.00	0.00	0.00	15.25	0.08	6.37	6.94	0.00	**44.17**	0.00	145.23	**14.97**	131.50	118.50		1		14.577		87.03	
702+00	107.82	Lt.	S-210A			0.00	0.00	0.00					0.00					129.00	116.00	13.00		30.00	0.303	17.73		
CL429			**S-210A**			0.00	7.30	0.00										116.26	114.57	1.69		30.00	3.938	8.98		
				MH-8J	42.94	0.00	0.00	0.00	15.33	0.00	6.35	6.94	0.00	**44.08**	0.00	120.89	**4.63**	112.70	112.50		1		0.466		15.62	
702+00	197.00	Lt.	OF-700			0.00	0.00	0.00					0.00					110.20	110.00	0.20		30.00	0.303	3.18		
CL429			**scupper**			0.75	0.75	0.71										150.49	147.20	3.29		12.00	1.871	6.72		
				?SCUPP	175.86	0.00	0.00	0.00	10.00	0.44	7.41	0.71	0.00	**5.28**	0.00	152.55	**2.06**	149.20	147.20		1		1.137		4.15	
696+75	83.00	Lt.	S-202			0.00	0.00	0.00					0.00					148.20	146.20	2.00		12.00	0.257	5.29		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id:
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-212A**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 3/17/2011
Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.50 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0240 / TAILW EL (ft): 113.32
CL429			**S-212**			0.29	0.29	0.27										125.91	115.81	10.10		18.00	13.267	7.51		
				GUT-S	76.13	0.00	0.00	0.00	10.00	0.17	7.41	0.27	0.00	**2.01**	0.00	136.11	**10.20**	127.10	117.00		1		13.267		55.03	
705+00	136.19	Lt.	S-212A			0.00	0.00	0.00					0.00					125.60	115.50	10.10		18.00	0.600	17.52		
CL429			**S-212A**			0.00	0.29	0.00										113.34	113.32	0.02		18.00	0.031	1.13		
				MH-8	55.74	0.00	0.00	0.00	10.17	0.00	7.37	0.27	0.00	**2.00**	0.00	121.20	**7.86**	111.70	111.50		1		0.359		6.91	
704+97.27	212.27	Lt.	OF-701			0.00	0.00	0.00					0.00					110.20	110.00	0.20		18.00	0.150	3.91		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id:
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-218A**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 3/17/2011
Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.50 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % HGL PHYS / MIN.	ACTUAL VEL. PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 113.32
BLRE2			**S-214**			0.25	0.25	0.23										125.52	125.22	0.30		18.00	0.719	4.22		
				GUT-S	41.72	0.00	0.00	0.00	10.00	0.16	7.41	0.23	0.00	**1.74**	0.00	128.03	**2.51**	126.60	126.30		1		0.719		9.95	
2707+53.73	10.12	Lt.	S-218			0.00	0.00	0.00					0.00					125.10	124.80	0.30		18.00	0.150	5.63		
CL429			**S-215**			0.61	0.61	0.58										124.59	118.34	6.25		18.00	4.893	13.43		
				BW 218	127.70	0.00	0.50	0.00	10.39	0.16	7.32	0.93	0.00	**6.78**	0.00	131.11	**6.52**	125.60	117.50		1		6.343		29.12	
707+93.7	148.14	Rt.	S-329			0.00	0.50	0.00					0.00					124.10	116.00	8.10		18.00	0.150	16.48		
BLRE2			**S-218**			0.17	0.42	0.16										124.87	124.67	0.20		18.00	0.373	4.10		
				GUT-S	53.68	0.10	0.60	0.02	10.59	0.22	7.27	0.52	0.00	**3.77**	0.00	127.79	**2.92**	125.60	125.40		1		0.373		7.11	
2708+00	10.12	Lt.	S-218A			0.00	0.00	0.00					0.00					124.10	123.90	0.20		18.00	0.150	4.03		
BLRE2			**S-218A**			0.22	3.27	0.21										117.03	116.70	0.33		30.00	0.577	6.87		
				GUT-S	56.87	0.02	2.66	0.00	15.38	0.14	6.35	4.38	0.00	**33.74**	0.00	128.38	**11.35**	116.90	116.70		1		0.352		27.27	
2708+60.00	10.12	Lt.	S-218C			0.00	1.50	0.00					5.92					114.40	114.20	0.20		30.00	0.076	5.55		
CL429			**S-218B**			0.00	0.00	0.00										125.60	125.60	0.00		18.00	0.004	0.42		stub pipe
				DBI-C	70.80	0.50	0.50	0.10	10.00	0.59	7.41	0.10	0.00	**0.74**	0.00	125.50	**-0.10**	125.70	125.60		1		0.141		4.35	
707+93.68	85.33	Lt.	S-218			0.00	0.00	0.00					0.00					124.20	124.10	0.10		18.00	0.150	2.46		
BLRE2			**S-218C**			0.00	3.27	0.00										115.84	114.05	1.79		30.00	0.573	6.85		
				MH-8J	312.42	0.00	2.66	0.00	15.52	0.00	6.32	4.38	0.00	**33.65**	0.00	120.72	**4.88**	114.50	112.50		1		0.640		35.70	
2708+75.78	66.22	Lt.	OF-702			0.00	1.50	0.00					5.92					112.00	110.00	2.00		30.00	0.076	7.27		
CLCON			**S-324**			0.13	0.13	0.13										126.81	125.21	1.60		18.00	3.333	6.23		
				P-5	48.00	0.00	0.00	0.00	10.00	0.13	7.41	0.13	0.00	**0.94**	0.00	130.27	**3.46**	128.10	126.50		1		3.333		21.70	
62+90	9.50	Lt.	S-325A			0.00	0.00	0.00					0.00					126.60	125.00	1.60		18.00	0.150	12.28		
CLCON			**S-325**			0.14	2.40	0.13										117.65	117.45	0.20		30.00	0.395	5.69		
				J-5	50.51	0.04	1.98	0.01	14.96	0.15	6.41	3.43	0.00	**27.92**	0.00	128.77	**11.12**	117.10	117.00		1		0.198		20.83	
63+39	50.78	Rt.	S-325A			0.00	1.50	0.00					5.92					114.60	114.50	0.10		30.00	0.076	4.24		
CLCON			**S-325A**			0.08	2.62	0.08										117.45	117.03	0.43		30.00	0.433	5.96		
				J-5	98.34	0.06	2.04	0.01	15.11	0.28	6.39	3.65	0.00	**29.24**	0.00	129.31	**11.86**	117.00	116.90		1		0.102		14.45	
62+90	38.50	Rt.	S-218A			0.00	1.50	0.00					5.92					114.50	114.40	0.10		30.00	0.076	2.94		
CLCON			**S-327**			0.00	2.26	0.00										117.91	117.65	0.26		30.00	0.373	5.53		
				DBI-EJ	70.12	1.29	1.94	0.26	14.75	0.21	6.45	3.29	0.00	**27.12**	0.00	125.00	**7.09**	117.20	117.10		1		0.143		17.35	
64+09.47	67.85	Rt.	S-325			0.00	1.50	0.00					5.92					114.70	114.60	0.10		30.00	0.076	3.53		
CLCON			**S-328**			0.26	2.11	0.25										118.09	117.91	0.18		30.00	0.306	5.01		
				J-6	57.51	0.00	0.64	0.00	14.55	0.19	6.48	2.88	0.00	**24.59**	0.00	127.09	**9.00**	117.30	117.20		1		0.174		19.30	
64+69	62.38	Rt.	S-327			0.00	1.50	0.00					5.92					114.80	114.70	0.10		30.00	0.076	3.93		
CLCON			**S-328A**			0.16	0.16	0.15										124.39	122.19	2.20		18.00	6.473	8.24		
				P-5	33.99	0.00	0.00	0.00	10.00	0.07	7.41	0.15	0.00	**1.10**	0.00	128.44	**4.05**	125.70	123.50		1		6.473		30.57	
64+27.16	38.50	Rt.	S-327			0.00	0.00	0.00					0.00					124.20	122.00	2.20		18.00	0.150	17.30		
BLRF			**S-329**			0.06	1.84	0.06										118.34	118.09	0.25		30.00	0.270	4.71		
				J-5	93.56	0.01	0.64	0.00	14.22	0.33	6.54	2.63	0.00	**23.11**	0.00	127.14	**8.80**	117.50	117.30		1		0.214		21.12	
3909+20	1.50	Rt.	S-328			0.00	1.50	0.00					5.92					115.00	114.80	0.20		30.00	0.076	4.30		
BLRF			**S-330**			0.00	1.17	0.00										118.37	118.34	0.03		30.00	0.141	3.39		
				DBI-E	19.50	0.00	0.13	0.00	14.13	0.10	6.55	1.64	0.00	**16.66**	0.00	123.76	**5.39**	117.60	117.50		1		0.513		35.69	
3909+20	21.00	Rt.	S-329			1.00	1.00	0.50					5.92					115.10	115.00	0.10		30.00	0.076	7.27		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-218A**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 3/17/2011
Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.50 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 113.32
CLCON			S-331			0.17	1.17	0.16										118.41	118.37	0.04		30.00	0.091	2.74		
				J-5	45.67	0.03	0.13	0.01	13.85	0.28	6.60	1.14	0.00	**13.44**	0.00	126.16	**7.75**	117.70	117.60		1		0.219		21.77	
66+10	36.50	Rt.	S-330			0.00	0.00	0.00					5.92					115.20	115.10	0.10		30.00	0.076	4.43		
CLCON			S-332			0.15	1.00	0.14										118.57	118.41	0.16		30.00	0.080	2.57		
				J-5	200.49	0.00	0.10	0.00	12.55	1.30	6.85	0.97	0.00	**12.59**	0.00	124.12	**5.55**	118.00	117.70		1		0.150		17.41	
68+14	36.50	Rt.	S-331			0.00	0.00	0.00					5.92					115.50	115.20	0.30		30.00	0.076	3.55		
CLCON			S-333			0.10	0.23	0.10										121.54	119.74	1.80		18.00	5.806	8.83		
				P-7	31.00	0.00	0.00	0.00	10.49	0.06	7.29	0.22	0.00	**1.61**	0.00	124.29	**2.75**	122.80	121.00		1		5.806		29.38	
68+14	5.50	Rt.	S-332			0.00	0.00	0.00					0.00					121.30	119.50	1.80		18.00	0.150	16.63		
CLCON			S-333A			0.10	0.10	0.09										119.55	118.85	0.70		18.00	1.022	3.65		
				P-5	68.50	0.00	0.00	0.00	10.00	0.31	7.41	0.09	0.00	**0.69**	0.00	122.96	**3.41**	120.80	120.10		1		1.022		11.76	
69+40	32.00	Lt.	S-335A			0.00	0.00	0.00					0.00					119.30	118.60	0.70		18.00	0.150	6.66		
CLCON			S-333B			0.11	0.11	0.11										119.41	119.41	0.00		18.00	0.005	0.45		
				P-5	49.50	0.01	0.01	0.00	10.00	0.41	7.41	0.11	0.00	**0.79**	0.00	121.35	**1.94**	118.70	118.60		1		0.202		5.28	
71+00	32.00	Lt.	S-336			0.00	0.00	0.00					0.00					117.20	117.10	0.10		18.00	0.150	2.99		
CLCON			S-334			0.13	0.13	0.13										122.69	121.59	1.10		18.00	0.967	3.88		
				P-7	113.77	0.00	0.00	0.00	10.00	0.49	7.41	0.13	0.00	**0.93**	0.00	125.43	**2.74**	123.90	122.80		1		0.967		11.34	
67+00	5.50	Rt.	S-333			0.00	0.00	0.00					0.00					122.40	121.30	1.10		18.00	0.150	6.42		
CLCON			S-335			0.05	0.34	0.04										119.07	119.01	0.06		24.00	0.115	2.65		
				P-5	49.50	0.01	0.03	0.00	10.67	0.31	7.25	0.33	0.00	**8.31**	0.00	120.78	**1.71**	118.50	118.30		1		0.404		16.07	
71+49.5	36.50	Rt.	S-335B			0.00	0.00	0.00					5.92					116.50	116.30	0.20		24.00	0.102	5.12		
CLCON			S-335A			0.08	0.63	0.08										118.79	118.57	0.22		24.00	0.174	3.25		
				P-5	126.00	0.02	0.10	0.00	11.90	0.65	6.98	0.61	0.00	**10.21**	0.00	122.87	**4.08**	118.10	118.00		1		0.079		7.02	
69+40	36.50	Rt.	S-332			0.00	0.00	0.00					5.92					116.10	116.00	0.10		24.00	0.102	2.23		
CLCON			S-335B			0.10	0.44	0.10										119.01	118.79	0.22		24.00	0.137	2.89		
				P-5	160.00	0.05	0.08	0.01	10.98	0.92	7.18	0.44	0.00	**9.06**	0.00	120.98	**1.97**	118.30	118.10		1		0.125		8.75	
71+00	36.50	Rt.	S-335A			0.00	0.00	0.00					5.92					116.30	116.10	0.20		24.00	0.102	2.78		
CLCON			S-336			0.18	0.29	0.17										119.41	119.07	0.34		18.00	0.492	4.52		
				P-6	68.50	0.01	0.02	0.00	10.41	0.25	7.31	0.28	0.00	**7.98**	0.00	121.01	**1.60**	118.60	118.50		1		0.146		4.45	
71+49.5	32.00	Lt.	S-335			0.00	0.00	0.00					5.92					117.10	117.00	0.10		18.00	0.150	2.52		
CLCON			S-336A			0.00	0.00	0.00										119.50	119.41	0.09		18.00	0.271	3.35		
				DBI-D	34.15	0.00	0.00	0.00	10.00	0.17	7.41	0.00	5.92	**5.92**	0.00	120.50	**1.00**	119.30	118.80		1		1.464		14.42	
71+68	60.70	Lt.	S-336			0.00	0.00	0.00					5.92					117.80	117.30	0.50		18.00	0.150	8.16		
CL429			Stub215			0.00	0.00	0.00										125.00	124.90	0.10		18.00	0.159	2.70		stub pipe
				DBI-C	62.81	0.50	0.50	0.10	10.00	0.39	7.41	0.35	0.00	**2.59**	0.00	151.63	**26.63**	125.70	125.60		1		0.159		4.63	
707+93.68	85.33	Rt.	S-215			0.50	0.50	0.25					0.00					124.20	124.10	0.10		18.00	0.150	2.62		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-292**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 4/29/2011
Date: 4/29/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.50 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % HGL MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
SR500			S-290			0.06	0.06	0.06										115.04	115.04	0.00		18.00	0.002	0.26		ZONE: 7
				P-7	37.71	0.00	0.00	0.00	10.00	0.31	7.41	0.06	0.00	**0.46**	0.00	116.91	**1.87**	115.00	114.80		1		0.530		8.64	FREQ. (Yrs): 10
839+47.50	47.50	Rt.	S-291			0.00	0.00	0.00					0.00					113.50	113.30	0.20		18.00	0.150	4.89		MANNINGS n: 0.0120
SR500			S-291			0.01	0.08	0.01										115.04	115.04	0.00		18.00	0.002	0.31		THROAT RT
				P-7	10.77	0.00	0.00	0.00	10.31	0.09	7.33	0.07	0.00	**0.54**	0.00	117.76	**2.72**	114.80	114.70		1		0.929		12.91	
839+10	51.50	Rt.	S-292			0.00	0.00	0.00					0.00					113.30	113.20	0.10		18.00	0.150	7.31		TAILW EL (ft): 114.70
SR500			S-292			0.06	2.28	0.05										115.04	114.70	0.34		24.00	0.412	5.01		THROAT LT
				P-7	82.98	0.00	2.53	0.00	18.60	0.00	5.88	2.68	0.00	**15.74**	0.00	116.77	**1.73**	114.70	114.60		1		0.121		8.59	
839+00.00	47.50	Rt.	OF-292			0.00	0.00	0.00					0.00					112.70	112.60	0.10		24.00	0.102	2.73		
SR500			S-293			0.06	2.15	0.05										115.38	115.20	0.18		24.00	0.377	4.79		THROAT LT
				P-7	48.50	0.00	2.53	0.00	18.43	0.17	5.90	2.55	0.00	**15.05**	0.00	116.62	**1.24**	115.30	115.20		1		0.206		11.49	
838+51.5	47.50	Rt.	S-292			0.00	0.00	0.00					0.00					113.30	113.20	0.10		24.00	0.102	3.66		
SR500			S-293A			1.41	1.41	1.34										115.67	115.58	0.09		24.00	0.200	3.49		EXISTING STRUCTURE
				U-EW	45.72	2.53	2.53	0.51	18.21	0.22	5.93	1.85	0.00	**10.95**	0.00	113.12	**-2.55**	115.12	115.58		1		-1.006		-25.00	
838+51.5	93.22	Rt.	S-293			0.00	0.00	0.00					0.00					113.12	113.58	-0.46		24.00	0.102	-7.96		
SR500			S-294			0.04	0.68	0.04										115.43	115.38	0.05		18.00	0.151	2.51		THROAT LT
				P-7	31.50	0.00	0.00	0.00	12.66	0.21	6.83	0.65	0.00	**4.43**	0.00	116.53	**1.10**	115.00	114.80		1		0.635		9.53	
838+20.00	47.50	Rt.	S-293			0.00	0.00	0.00					0.00					113.50	113.30	0.20		18.00	0.150	5.39		
SR500			S-295			0.09	0.65	0.09										115.46	115.43	0.03		18.00	0.137	2.38		THROAT LT - LOW POINT
				P-7	20.00	0.00	0.00	0.00	12.52	0.14	6.85	0.61	0.00	**4.21**	0.00	116.47	**1.01**	115.10	115.00		1		0.500		8.73	
838+00	47.50	Rt.	S-294			0.00	0.00	0.00					0.00					113.60	113.50	0.10		18.00	0.150	4.94		
SR500			S-295A			0.07	0.55	0.07										115.47	115.46	0.01		18.00	0.100	2.04		THROAT RT - LOW POINT
				P-7	10.58	0.00	0.00	0.00	12.43	0.09	6.87	0.52	0.00	**3.60**	0.00	117.38	**1.91**	115.20	115.10		1		0.946		13.07	
837+90.21	51.50	Rt.	S-295			0.00	0.00	0.00					0.00					113.70	113.60	0.10		18.00	0.150	7.40		
SR500			S-296			0.08	0.48	0.07										115.51	115.47	0.04		18.00	0.077	1.79		THROAT LT
				P-7	50.37	0.00	0.00	0.00	12.01	0.42	6.96	0.46	0.00	**3.17**	0.00	116.71	**1.20**	115.30	115.20		1		0.199		5.23	
837+40	47.50	Rt.	S-295A			0.00	0.00	0.00					0.00					113.80	113.70	0.10		18.00	0.150	2.96		
SR500			S-296A			0.04	0.40	0.04										115.54	115.51	0.03		18.00	0.056	1.52		THROAT RT
				P-7	50.16	0.00	0.00	0.00	11.59	0.42	7.04	0.38	0.00	**2.69**	0.00	117.68	**2.14**	115.40	115.30		1		0.199		5.24	
836+90	51.50	Rt.	S-296			0.00	0.00	0.00					0.00					113.90	113.80	0.10		18.00	0.150	2.97		
SR500			S-297			0.05	0.36	0.04										115.54	115.54	0.01		18.00	0.046	1.38		THROAT LT
				P-7	15.52	0.00	0.00	0.00	11.46	0.13	7.07	0.34	0.00	**2.44**	0.00	116.96	**1.42**	115.50	115.40		1		0.644		10.17	
836+75	47.50	Rt.	S-296A			0.00	0.00	0.00					0.00					114.00	113.90	0.10		18.00	0.150	5.75		
SR500			S-297A			0.05	0.32	0.05										115.56	115.54	0.01		18.00	0.036	1.21		THROAT LT
				P-7	40.00	0.00	0.00	0.00	11.13	0.33	7.14	0.30	0.00	**2.14**	0.00	117.11	**1.55**	115.60	115.50		1		0.250		5.92	
836+35	47.50	Rt.	S-297			0.00	0.00	0.00					0.00					114.10	114.00	0.10		18.00	0.150	3.35		
SR500			S-298			0.11	0.26	0.10										115.61	115.60	0.01		18.00	0.025	1.02		THROAT LT
				P-7	45.00	0.00	0.00	0.00	10.75	0.38	7.23	0.25	0.00	**1.81**	0.00	117.32	**1.71**	115.70	115.60		1		0.222		5.55	
835+90	47.50	Rt.	S-297A			0.00	0.00	0.00					0.00					114.20	114.10	0.10		18.00	0.150	3.14		
SR500			S-298A			0.04	0.16	0.04										115.70	115.70	0.00		18.00	0.009	0.61		THROAT RT
				P-7	20.40	0.00	0.00	0.00	10.58	0.17	7.27	0.15	0.00	**1.08**	0.00	118.33	**2.63**	115.80	115.70		1		0.490		8.63	
835+70	51.50	Rt.	S-298			0.00	0.00	0.00					0.00					114.30	114.20	0.10		18.00	0.150	4.88		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-292**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 4/29/2011
Date: 4/29/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.50 / INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. / MIN.	ACTUAL VEL. PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
SR500			S-299	P-7	70.11	0.12	0.12	0.11										115.80	115.80	0.00		18.00	0.005	0.47		ZONE: 7
						0.00	0.00	0.00	10.00	0.58	7.41	0.11	0.00	**0.83**	0.00	117.95	**2.15**	115.90	115.80		1		0.143		4.39	FREQ. (Yrs): 10
835+00	47.50	Rt.	S-298A			0.00	0.00	0.00					0.00					114.40	114.30	0.10		18.00	0.150	2.49		MANNINGS n: 0.0120
																										TAILW EL (ft): 114.70
																										THROAT LT

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id:
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-300**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 3/16/2011
Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.50 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
SR500			**S-300**			0.01	0.04	0.01										116.75	116.75	0.00		18.00	0.001	0.17		THROAT RT
				P-7	44.29	0.00	0.00	0.00	10.33	0.00	7.33	0.04	0.00	**0.31**	0.00	119.49	**2.74**	117.00	116.75		1		0.565		8.70	
834+50	51.50	Rt.	OF-300			0.00	0.00	0.00					0.00					115.50	115.25	0.25		18.00	0.150	4.92		
SR500			**S-301**			0.03	0.03	0.03										117.00	117.00	0.00		18.00	0.000	0.12		THROAT RT
				P-7	40.00	0.00	0.00	0.00	10.00	0.33	7.41	0.03	0.00	**0.22**	0.00	119.94	**2.94**	117.10	117.00		1		0.250		5.92	
834+10	51.50	Rt.	S-300			0.00	0.00	0.00					0.00					115.60	115.50	0.10		18.00	0.150	3.35		

ZONE: 7
FREQ. (Yrs): 10
MANNINGS n: 0.0120
TAILW EL (ft): 116.75

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-314**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 4/29/2011
Date: 4/29/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.50 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) / SPAN	SLOPE % HGL / PHYS	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0240 / TAILW EL (ft): 112.62
SR500			S-302			0.12	0.12	0.11										117.40	117.40	0.00		18.00	0.003	0.26		THROAT LT
				P-7	45.18	0.00	0.00	0.00	10.00	0.38	7.41	0.11	0.00	**0.83**	0.00	118.99	**1.59**	117.50	117.40		1		0.221		7.22	
834+00	47.50	Rt.	S-303			0.00	0.00	0.00					0.00					116.00	115.90	0.10		18.00	0.600	2.30		
SR500			S-303			0.05	0.17	0.05										117.31	117.30	0.01		18.00	0.010	0.65		THROAT RT
				P-7	55.15	0.00	0.00	0.00	10.38	0.46	7.32	0.16	0.00	**1.15**	0.00	120.32	**3.01**	117.40	117.30		1		0.181		4.98	
833+55	51.50	Rt.	S-303A			0.00	0.00	0.00					0.00					115.90	115.80	0.10		18.00	0.150	2.82		
SR500			S-303A			0.12	0.28	0.11										117.21	117.20	0.01		18.00	0.029	1.10		THROAT LT
				P-7	25.32	0.00	0.00	0.00	10.84	0.21	7.21	0.27	0.00	**1.95**	0.00	120.02	**2.81**	117.30	117.20		1		0.395		7.62	
833+00	47.50	Rt.	S-304			0.00	0.00	0.00					0.00					115.80	115.70	0.10		18.00	0.150	4.31		
SR500			S-304			0.05	0.33	0.04										117.12	117.10	0.02		18.00	0.039	1.27		THROAT RT
				P-7	50.16	0.00	0.00	0.00	11.05	0.42	7.16	0.31	0.00	**2.24**	0.00	121.30	**4.18**	117.20	117.10		1		0.199		5.24	
832+75	51.50	Rt.	S-305			0.00	0.00	0.00					0.00					115.70	115.60	0.10		18.00	0.150	2.97		
SR500			S-305			0.15	0.48	0.14										117.02	117.00	0.02		18.00	0.079	1.81		THROAT LT
				P-7	25.32	0.00	0.00	0.00	11.47	0.21	7.07	0.45	0.00	**3.20**	0.00	120.90	**3.88**	117.10	117.00		1		0.395		7.62	
832+25	47.50	Rt.	S-306			0.00	0.00	0.00					0.00					115.60	115.50	0.10		18.00	0.150	4.31		
SR500			S-306			0.05	0.52	0.04										116.87	116.80	0.07		18.00	0.094	1.97		THROAT RT
				P-7	75.00	0.00	0.00	0.00	11.68	0.63	7.03	0.50	0.00	**3.48**	0.00	122.25	**5.38**	117.00	116.80		1		0.267		6.00	
832+00	51.50	Rt.	S-307			0.00	0.00	0.00					0.00					115.50	115.30	0.20		18.00	0.150	3.39		
SR500			S-307			0.05	0.57	0.04										116.73	116.70	0.03		18.00	0.107	2.10		THROAT RT
				P-7	25.34	0.00	0.00	0.00	12.30	0.20	6.90	0.54	0.00	**3.71**	0.00	122.99	**6.26**	116.80	116.70		1		0.395		7.61	
831+25	51.50	Rt.	S-307A			0.00	0.00	0.00					0.00					115.30	115.20	0.10		18.00	0.150	4.31		
SR500			S-307A			0.09	0.66	0.09										116.67	116.60	0.07		18.00	0.141	2.42		THROAT LT
				P-7	50.35	0.00	0.00	0.00	12.50	0.35	6.86	0.62	0.00	**4.28**	0.00	123.33	**6.66**	116.70	116.60		1		0.199		5.23	
831+00	47.37	Rt.	S-308			0.00	0.00	0.00					0.00					115.20	115.10	0.10		18.00	0.150	2.96		
SR500			S-308			0.01	0.67	0.01										116.43	116.40	0.03		24.00	0.031	1.38		THROAT RT
				P-7	106.38	0.00	0.00	0.00	12.85	0.89	6.79	0.64	0.00	**4.33**	0.00	124.01	**7.58**	116.60	116.40		1		0.188		10.78	
830+50	50.64	Rt.	S-309			0.00	0.00	0.00					0.00					114.60	114.40	0.20		24.00	0.102	3.43		
CLCON			S-309			0.05	0.73	0.05										116.32	116.30	0.02		24.00	0.035	1.46		
				P-5	63.40	0.00	0.00	0.00	13.73	0.53	6.62	0.69	0.00	**4.57**	0.00	125.43	**9.11**	116.40	116.30		1		0.158		9.97	
51+30.81	51.78	Lt.	S-310			0.00	0.00	0.00					0.00					114.40	114.30	0.10		24.00	0.102	3.17		
CLCON			S-310			0.08	0.81	0.08										116.22	116.20	0.02		24.00	0.042	1.60		THROAT LT
				P-7	41.18	0.00	0.00	0.00	14.26	0.34	6.53	0.77	0.00	**5.03**	0.00	125.46	**9.24**	116.30	116.20		1		0.243		12.54	
51+58.51	5.25	Rt.	S-311			0.00	0.00	0.00					0.00					114.30	114.20	0.10		24.00	0.102	3.99		
CLCON			S-311			0.12	1.25	0.11										115.78	115.68	0.10		24.00	0.101	2.89		THROAT LT
				P-7	99.19	0.00	0.03	0.00	14.61	0.57	6.47	1.19	0.00	**7.69**	0.00	125.65	**9.87**	116.20	116.10		1		0.101		7.94	
52+00	5.25	Rt.	S-314			0.00	0.00	0.00					0.00					114.20	114.10	0.10		24.00	0.102	2.53		
CLCON			S-312			0.30	0.30	0.29										118.08	117.78	0.30		24.00	0.299	3.88		
				DBI-E	100.42	2.40	2.40	0.48	20.00	0.43	5.71	0.76	0.00	**4.36**	0.00	121.00	**2.92**	119.30	119.00		1		0.299		13.67	
52+89.27	94.52	Lt.	S-314			0.00	0.00	0.00					0.00					117.30	117.00	0.30		24.00	0.102	4.35		
CLCON			S-313			0.31	0.31	0.30										121.76	121.66	0.10		18.00	0.231	3.03		
				P-6	43.25	0.03	0.03	0.01	10.00	0.24	7.41	0.31	0.00	**2.26**	0.00	125.17	**3.41**	122.60	122.50		1		0.231		5.67	
52+00	48.50	Rt.	S-311			0.00	0.00	0.00					0.00					121.10	121.00	0.10		18.00	0.150	3.21		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-314**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 4/29/2011
Date: 4/29/2011

LOCATION OF UPPER END			STR. NO.	TYPE OF STR.	LEN.	AREAS (Ac)		SUB-TOTAL (C*A)	TIME OF CONC	TIME OF FLOW SECT.	INTEN	TOTAL (C*A)	BASE FLOW SUMM BASE	TOTAL FLOW	MINOR LOSS	INLET ELEV.	HGL CLEAR	HYDRAULIC GRADE CROWN / FLOWLINE			# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
						C= 0.95																				ZONE: 7
ALIGNMENT NAME			UPPER			C= 0.20																				FREQ. (Yrs): 10
						C= 0.50																				MANNINGS n: 0.0120
STATION	DIST	SD	LOWER		(ft.)	INC	TOTAL		(min)	(min)	(in/hr)		(cfs)	(cfs)	(ft.)	(ft.)	(ft.)	UPPER (ft.)	LOWER (ft.)	FALL (ft.)						TAILW EL (ft): 112.62
CLCON			S-314			0.14	1.69	0.14										115.29	115.02	0.27		24.00	0.232	3.76		THROAT LT
				J-7	115.12	0.00	2.43	0.00	20.43	0.00	5.65	2.09	0.00	**11.81**	0.00	126.20	**10.91**	116.10	112.00		1		3.561		46.76	
53+00	5.25	Rt.	OF-708			0.00	0.00	0.00					0.00					114.10	110.00	4.10		24.00	0.102	14.88		

Units: ENGLISH

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id:
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-319**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 3/16/2011
Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.50 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CLCON			**S-318**			0.20	0.20	0.19										123.80	122.80	1.00		18.00	1.810	5.50		ZONE: 7
				P-5	55.25	0.00	0.00	0.00	10.00	0.17	7.41	0.19	0.00	1.41	0.00	127.93	**4.13**	125.00	124.00		1		1.810		15.74	FREQ. (Yrs): 10
54+50	7.00	Lt.	S-319			0.00	0.00	0.00					0.00					123.50	122.50	1.00		18.00	0.150	8.91		MANNINGS n: 0.0120
CLCON			**S-319**			0.27	0.47	0.25										122.78	117.04	5.74		18.00	7.569	15.46		TAILW EL (ft): 113.32
				P-5	75.80	0.12	0.12	0.02	10.17	0.00	7.37	0.47	0.00	**3.44**	0.00	126.70	**3.92**	124.00	111.50		1		16.490		46.67	
54+50	48.25	Rt.	OF-706			0.00	0.00	0.00					0.00					122.50	110.00	12.50		18.00	0.150	26.41		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id:
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-321**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 3/17/2011
Date: 3/17/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.50 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 113.32
CLCON			**S-320**			0.22	0.22	0.21										125.79	125.50	0.29		18.00	0.495	6.44		
				P-5	58.00	0.00	0.00	0.00	10.00	0.15	7.41	0.21	0.00	**1.52**	0.00	129.91	**4.12**	127.00	125.50		1		2.586		18.79	
57+50	9.50	Lt.	S-321			0.00	0.00	0.00					0.00					125.50	124.00	1.50		18.00	0.150	10.63		
CLCON			**S-321**			0.35	0.57	0.33										124.30	117.49	6.81		18.00	8.262	16.37		
				P-5	82.43	0.09	0.09	0.02	10.15	0.00	7.37	0.56	0.00	**4.10**	0.00	128.63	**4.33**	125.50	111.50		1		16.985		47.33	
57+50	48.50	Rt.	OF-705			0.00	0.00	0.00					0.00					124.00	110.00	14.00		18.00	0.150	26.78		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id:
Description: **MAITLAND AVENUE EXT.**
County: **ORANGE**
Organization **DRMP, INC.**
Network: **S-322**
State Road: **414/429**
Designed by **RDF**
Checked by: **DWB**
Date: 3/16/2011
Date: 3/16/2011

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.65 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# B R L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. / MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 7 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 113.32
CLCON			**S-322**			0.00	3.29	0.00										117.21	116.48	0.73		36.00	0.319	5.77		
				DBI-BJ	229.08	0.00	1.00	0.00	10.80	0.00	7.22	3.33	16.79	**40.80**	0.00	122.00	**4.79**	118.10	113.00		1		2.226		108.29	
60+00	97.59	Lt.	OF-704			0.00	0.00	0.00					16.79					115.10	110.00	5.10		36.00	0.059	15.32		
CLCON			**S-323**			3.29	3.29	3.13										118.43	118.10	0.33		36.00	0.116	3.49		
				DBI-BJ	280.17	1.00	1.00	0.20	10.00	0.80	7.41	3.33	0.00	**24.64**	0.00	122.86	**4.43**	118.90	118.10		1		0.286		38.89	
62+80	87.97	Lt.	S-322			0.00	0.00	0.00					0.00					115.90	115.10	0.80		36.00	0.059	5.50		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

Ditch Calculations

HYDRAULIC WORKSHEET

Project Name: SR 429-201/Maitland Blvd. Extension - Right Outside Ditch Systems
FPID:
County: Orange
Zone: 7

Designer: Flynn
Checked by: Brown

10 year storm

3/16/2011

Begin Station	End Station	Side	% slope	Length ft	Width ft	Contrib. Area, ac	Runoff Coeff.	CA	Tc min	I in/hr	Runoff, cfs	Ditch Section FS	BW ft	BS	"n"	d_N, ft	d allow ft	d OK?	V_N ft/s	Q	A	Wp	Rh	V*Rh	Shear Stress =d*s*62.4	Max Permis Veg. Class D	Lining OK?
CL Const	CL Const																										
555+00.00	556+00.00	RT	-1.93	100	n/a	0.27	0.20	0.05	10	7.4	0.40	6	5	3	0.06	0.105	2.49	OK	0.725	0.42	0.57	5.97	0.10	0.07	0.126	0.6	OK
556+00.00	557+00.00	RT	-2.07	100	n/a	0.48	0.20	0.10	10	7.4	0.71	6	5	3	0.06	0.140	2.49	OK	0.894	0.70	0.79	6.29	0.13	0.11	0.181	0.6	OK
557+00.00	558+00.00	RT	-2.24	100	n/a	0.76	0.20	0.15	10	7.4	1.12	6	5	3	0.06	0.180	2.66	OK	1.081	1.13	1.05	6.66	0.16	0.17	0.252	0.6	OK
564+00.00	565+00.00	RT	-0.61	100	204.2	0.47	0.45	0.21	10	7.4	1.56	6	5	3	0.06	0.313	1.56	OK	0.778	1.56	2.01	7.89	0.25	0.20	0.119	0.6	OK
565+00.00	571+00.00	RT	0.31	600	n/a	3.64	0.43	1.57	10	7.4	11.63	6	5	3	0.06	1.077	1.48	OK	1.096	11.62	10.60	14.96	0.71	0.78	0.207	0.6	OK
571+00.00	572+00.00	RT	-0.10	100	214.2	4.13	0.47	1.94	10	7.4	14.39	6	5	4	0.06	1.522	2.00	OK	0.751	14.41	19.19	20.53	0.93	0.70	0.095	0.6	OK
572+00.00	573+00.00	RT	0.10	100	n/a	0.82	0.43	0.35	10	7.4	2.62	6	5	4	0.06	0.665	2.00	OK	0.475	2.63	5.54	11.79	0.47	0.22	0.041	0.6	OK
573+00.00	574+00.00	RT	0.27	100	n/a	0.39	0.45	0.18	10	7.4	1.32	6	5	4	0.06	0.355	2.00	OK	0.551	1.32	2.41	8.62	0.28	0.15	0.060	0.6	OK
574+00.00	577+00.00	RT	0.30	300	n/a	2.25	0.49	1.11	10	7.4	8.23	6	5	4	0.06	0.895	2.00	OK	0.971	8.23	8.48	14.13	0.60	0.58	0.169	0.6	OK
577+00.00	578+00.00	RT	0.70	100	n/a	1.24	0.56	0.69	10	7.4	5.12	6	5	4	0.06	0.568	2.00	OK	1.151	5.13	4.45	10.80	0.41	0.47	0.248	0.6	OK
578+00.00	579+00.00	RT	0.83	100	n/a	0.96	0.59	0.57	10	7.4	4.24	6	5	4	0.06	0.491	2.00	OK	1.157	4.23	3.66	10.01	0.37	0.42	0.254	0.6	OK
579+00.00	580+00.00	RT	0.28	100	n/a	0.71	0.61	0.43	10	7.4	3.20	6	5	4	0.06	0.565	2.00	OK	0.726	3.21	4.42	10.77	0.41	0.30	0.099	0.6	OK
580+00.00	581+00.00	RT	0.30	100	n/a	0.47	0.64	0.30	10	7.4	2.22	10	5	3	0.06	0.442	2.40	OK	0.638	2.22	3.48	10.84	0.32	0.20	0.083	0.6	OK
588+00.00	589+00.00	RT	0.10	100	n/a	18.47	0.20	3.69	10	7.4	27.37	3	5	4	0.06	2.232	0.28	*	0.957	27.36	28.60	21.26	1.35	1.29	0.139	0.6	OK
589+00.00	591+00.00	RT	1.50	200	n/a	17.03	0.20	3.41	10	7.4	25.24	3	5	4	0.06	1.119	1.32	OK	2.530	25.24	9.98	13.15	0.76	1.92	1.047	0.6	SOD
591+00.00	594+00.00	RT	0.50	300	n/a	8.25	0.20	1.65	10	7.4	12.22	3	5	4	0.06	1.024	3.81	OK	1.392	12.23	8.79	12.46	0.71	0.98	0.319	0.6	OK
594+00.00	598+00.00	RT	0.10	400	n/a	1.44	0.20	0.29	10	7.4	2.13	3	5	4	0.06	0.625	2.66	OK	0.475	2.13	4.49	9.55	0.47	0.22	0.039	0.6	OK
598+00.00	599+00.00	RT	1.50	100	n/a	0.38	0.20	0.08	10	7.4	0.56	3	5	4	0.06	0.135	1.74	OK	0.754	0.56	0.74	5.98	0.12	0.09	0.126	0.6	OK
599+00.00	600+00.00	RT	2.50	100	n/a	0.13	0.20	0.03	10	7.4	0.19	3	5	4	0.06	0.062	2.56	OK	0.597	0.19	0.32	5.45	0.06	0.04	0.097	0.6	OK
602+00.00	605+00.00	RT	-0.30	300	n/a	12.71	0.20	2.54	10	7.4	18.84	4	5	4	0.06	1.402	1.78	OK	1.266	18.83	14.87	16.56	0.90	1.14	0.262	0.6	OK
605+00.00	609+00.00	RT	0.10	400	n/a	11.94	0.20	2.39	10	7.4	17.69	4	5	4	0.06	1.765	2.00	OK	0.831	17.69	21.29	19.55	1.09	0.90	0.110	0.6	OK
609+00.00	612+00.00	RT	0.80	300	n/a	5.03	0.20	1.01	10	7.4	7.45	4	5	4	0.06	0.688	1.72	OK	1.399	7.46	5.33	10.67	0.50	0.70	0.343	0.6	OK
612+00.00	613+00.00	RT	0.40	100	n/a	0.12	0.20	0.02	10	7.4	0.18	4	5	4	0.06	0.100	1.34	OK	0.322	0.17	0.54	5.82	0.09	0.03	0.025	0.6	OK
613+00.00	617+00.00	RT	-0.05	400	n/a	6.03	0.20	1.21	28	4.9	5.92	3	5	4	0.06	1.268	1.34	OK	0.495	5.92	11.97	14.24	0.84	0.42	0.040	0.6	OK
617+00.00	622+00.00	RT	-0.10	500	n/a	6.97	0.20	1.39	10	7.4	10.32	3	5	4	0.06	1.405	1.91	OK	0.740	10.31	13.93	15.24	0.91	0.68	0.088	0.6	OK
622+00.00	623+00.00	RT	-2.50	100	n/a	7.19	0.20	1.44	10	7.4	10.66	3	5	4	0.06	0.625	2.19	OK	2.374	10.67	4.49	9.55	0.47	1.12	0.975	0.6	SOD
623+00.00	624+00.00	RT	-0.50	100	n/a	7.43	0.20	1.49	10	7.4	11.01	3	5	4	0.06	0.970	3.21	OK	1.351	11.00	8.14	12.07	0.67	0.91	0.303	0.6	OK
624+00.00	627+00.00	RT	-1.50	300	n/a	7.96	0.20	1.59	10	7.4	11.79	3	5	4	0.06	0.756	1.29	OK	2.042	11.80	5.78	10.51	0.55	1.12	0.708	0.6	SOD
631+00.00	633+00.00	RT	1.00	200	n/a	4.82	0.20	0.96	13	6.8	6.52	3	5	3	0.06	0.624	1.00	OK	1.521	6.52	4.29	8.95	0.48	0.73	0.389	0.6	OK
633+00.00	635+00.00	RT	1.00	200	n/a	3.54	0.20	0.71	10	7.4	5.25	3	5	3	0.06	0.554	1.15	OK	1.424	5.25	3.69	8.50	0.43	0.62	0.346	0.6	OK
635+00.00	637+00.00	RT	1.00	200	n/a	2.10	0.20	0.42	10	7.4	3.11	3	5	3	0.06	0.413	1.01	OK	1.206	3.11	2.58	7.61	0.34	0.41	0.258	0.6	OK
637+00.00	639+00.00	RT	1.00	200	n/a	0.77	0.20	0.15	10	7.4	1.14	3	5	3	0.06	0.234	1.68	OK	0.866	1.16	1.33	6.48	0.21	0.18	0.146	0.6	OK
					n/a																						
644+00.00	645+00.00	RT	3.00	100	n/a	3.03	0.20	0.61	10	7.4	4.48	3	5	3	0.06	0.373	3.05	OK	1.989	4.49	2.28	7.36	0.31	0.61	0.697	0.6	DITCH PVMT
645+00.00	646+00.00	RT	4.40	100	n/a	2.28	0.20	0.46	10	7.4	3.38	3	5	3	0.06	0.284	3.24	OK	2.035	3.38	1.66	6.79	0.24	0.50	0.778	0.6	DITCH PVMT
646+00.00	647+00.00	RT	3.50	100	n/a	1.85	0.20	0.37	10	7.4	2.75	3	5	3	0.06	0.269	2.28	OK	1.760	2.75	1.56	6.70	0.23	0.41	0.587	0.6	OK
647+00.00	648+00.00	RT	2.60	100	n/a	1.57	0.20	0.31	10	7.4	2.32	3	5	3	0.06	0.266	2.49	OK	1.507	2.32	1.54	6.68	0.23	0.35	0.432	0.6	OK
648+00.00	654+00.00	RT	0.05	600		1.44	0.20	0.29	10	7.4	2.13	3	5	3	0.06	0.767	2.69	OK	0.381	2.13	5.60	9.85	0.57	0.22	0.024	0.6	OK

* This ditch section terminates into a wetland / depression area. Flows are intended to spread out into the wetland for storage before entering cross drain

HYDRAULIC WORKSHEET

Project Name: SR 429-201/Maitland Blvd. Extension - Right Inside Ditch System
FPID:
County: Orange
Zone: 7

Designer: Flynn
Checked by: Brown

10 year storm

3/16/2011

Begin Station	End Station	Side	%	Length	Width	Contrib.	Runoff		Tc	I	Runoff,	Ditch Section			"n"	d_N,	d allow	d	V_N						Shear	Max Permis	Lining
			slope	ft	ft	Area, ac	Coeff.	CA	min	in/hr	cfs	FS	BW ft	BS		ft	ft	OK?	ft/s	Q	A	Wp	Rh	V*Rh	Stress	Veg.	OK?
CL Const	CL Const																								=d*s*62.4	Class D	
630+00.00	636+00.00	RT	0.05	600	87.2	1.20	0.60	0.71	10	7.4	5.30	6	5	4	0.06	1.120	2.00	OK	0.447	5.31	11.87	16.43	0.72	0.32	0.035	0.6	OK
636+00.00	637+00.00	RT	1.65	100	87.2	0.20	0.60	0.83	10	7.4	6.18	6	5	4	0.06	0.500	2.00	OK	1.648	6.18	3.75	10.10	0.37	0.61	0.515	0.6	OK
637+00.00	638+00.00	RT	1.62	100	87.2	0.20	0.60	0.95	10	7.4	7.06	6	5	4	0.06	0.539	2.00	OK	1.702	7.06	4.15	10.50	0.39	0.67	0.545	0.6	OK
638+00.00	639+00.00	RT	2.46	100	87.2	0.20	0.60	1.07	10	7.4	7.94	6	5	4	0.06	0.514	2.00	OK	2.043	7.95	3.89	10.25	0.38	0.78	0.789	0.6	need lining
639+00.00	640+00.00	RT	2.49	100	87.2	0.20	0.60	1.19	10	7.4	8.83	6	5	4	0.06	0.542	2.00	OK	2.115	8.83	4.17	10.53	0.40	0.84	0.841	0.6	need lining
640+00.00	646+00.00	RT	3.00	600	87.2	1.20	0.60	1.91	10	7.4	14.12	6	5	4	0.06	0.659	2.00	OK	2.585	14.12	5.46	11.72	0.47	1.20	1.233	0.6	need lining
646+00.00	647+00.00	RT	2.99	100	87.2	0.20	0.60	2.02	10	7.4	15.00	6	5	4	0.06	0.680	2.00	OK	2.627	15.00	5.71	11.94	0.48	1.26	1.269	0.6	need lining
647+00.00	648+00.00	RT	2.81	100	87.2	0.20	0.60	2.14	10	7.4	15.89	6	5	4	0.06	0.711	2.00	OK	2.609	15.87	6.08	12.26	0.50	1.29	1.247	0.6	need lining
648+00.00	649+00.00	RT	3.06	100	87.2	0.20	0.60	2.26	10	7.4	16.77	6	5	4	0.06	0.716	2.00	OK	2.732	16.77	6.14	12.30	0.50	1.36	1.366	0.6	need lining
649+00.00	650+00.00	RT	1.87	100	118.8	0.27	0.60	2.43	10	7.4	17.97	6	5	4	0.06	0.839	2.00	OK	2.331	17.97	7.71	13.56	0.57	1.33	0.979	0.6	need lining

HYDRAULIC WORKSHEET

Project Name: SR 429-201/Maitland Blvd. Extension
FPID:
County: Orange
Zone: 7

Designer: Gene McClendon
Checked by: Don Brown

10 year storm

3/16/2011

Begin Station	End Station	Side	% slope	Length ft	Width ft	Contrib. Area, ac	Runoff Coeff.	CA	Tc min	I in/hr	Runoff, cfs	Ditch Section FS	BW ft	BS	"n"	d_N, ft	d allow ft	d OK?	V_N ft/s	Q	A	Wp	Rh	V*Rh	Shear Stress =d*s*62.4	Max Permis Veg. Class D	Lining OK?
CL Const	CL Const																										
555+00.00	556+00.00	MED	-2.75	100	100	0.23	0.62	0.14	10	7.4	1.05	6	5	6	0.060	0.17	2.70	OK	1.136	1.16	1.02	7.07	0.14	0.16	0.292	0.6	OK
556+00.00	557+00.00	MED	-0.11	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.52	1.25	OK	0.404	2.14	5.30	15.45	0.34	0.14	0.036	0.6	OK
557+00.00	558+00.00	MED	-1.75	300	100	0.69	0.62	0.43	10	7.4	3.16	10	5	10	0.060	0.32	1.34	OK	1.232	3.23	2.62	11.43	0.23	0.28	0.349	0.6	OK
558+00.00	559+00.00	MED	-1.52	400	100	0.92	0.62	0.57	10	7.4	4.22	10	5	10	0.060	0.38	1.27	OK	1.262	4.22	3.34	12.64	0.26	0.33	0.360	0.6	OK
559+00.00	559+50.00	MED	-1.34	450	100	1.03	0.62	0.64	10	7.4	4.75	10	5	10	0.060	0.42	1.19	OK	1.252	4.84	3.86	13.44	0.29	0.36	0.351	0.6	OK
559+50.00	560+00.00	MED	-0.30	50	100	0.11	0.62	0.07	10	7.4	0.53	10	5	10	0.060	0.20	0.88	OK	0.393	0.55	1.40	9.02	0.16	0.06	0.037	0.6	OK
560+00.00	561+00.00	MED	-1.15	150	100	0.34	0.62	0.21	10	7.4	1.58	10	5	10	0.060	0.25	1.30	OK	0.871	1.63	1.88	10.02	0.19	0.16	0.179	0.6	OK
561+00.00	562+00.00	MED	-0.35	250	100	0.57	0.62	0.36	10	7.4	2.64	10	5	10	0.060	0.44	1.30	OK	0.657	2.72	4.14	13.84	0.30	0.20	0.096	0.6	OK
562+00.00	563+00.00	MED	-0.18	350	100	0.80	0.62	0.50	10	7.4	3.69	10	5	10	0.060	0.60	1.17	OK	0.559	3.69	6.60	17.06	0.39	0.22	0.067	0.6	OK
563+00.00	564+00.00	MED	-1.66	450	100	1.03	0.62	0.64	10	7.4	4.75	10	5	10	0.060	0.40	2.50	OK	1.357	4.88	3.60	13.04	0.28	0.37	0.414	0.6	OK
564+00.00	565+00.00	MED	-0.31	100	100	0.23	0.62	0.14	10	7.4	1.05	6	5	6	0.060	0.30	2.50	OK	0.528	1.08	2.04	8.65	0.24	0.12	0.058	0.6	OK
565+00.00	566+00.00	MED	-0.31	200	100	0.46	0.62	0.28	10	7.4	2.11	6	5	6	0.060	0.44	2.50	OK	0.653	2.20	3.36	10.35	0.32	0.21	0.085	0.6	OK
566+00.00	567+00.00	MED	-0.31	300	100	0.69	0.62	0.43	10	7.4	3.16	6	5	6	0.060	0.54	2.50	OK	0.731	3.25	4.45	11.57	0.38	0.28	0.104	0.6	OK
567+00.00	568+00.00	MED	-0.30	400	100	0.92	0.62	0.57	10	7.4	4.22	6	5	6	0.060	0.63	2.50	OK	0.783	4.33	5.53	12.66	0.44	0.34	0.118	0.6	OK
568+00.00	569+00.00	MED	-0.31	100	100	0.23	0.62	0.14	10	7.4	1.05	6	5	6	0.060	0.30	2.50	OK	0.528	1.08	2.04	8.65	0.24	0.12	0.058	0.6	OK
569+00.00	570+00.00	MED	-0.31	200	100	0.46	0.62	0.28	10	7.4	2.11	6	5	6	0.060	0.44	2.50	OK	0.653	2.20	3.36	10.35	0.32	0.21	0.085	0.6	OK
570+00.00	571+00.00	MED	-0.29	300	100	0.69	0.62	0.43	10	7.4	3.16	6	5	6	0.060	0.55	2.50	OK	0.714	3.26	4.57	11.69	0.39	0.28	0.100	0.6	OK
571+00.00	572+00.00	MED	-0.10	400	100	0.92	0.62	0.57	10	7.4	4.22	6	5	6	0.042	0.71	2.50	OK	0.690	4.53	6.57	13.64	0.48	0.33	0.044	0.6	OK
572+00.00	573+00.00	MED	0.10	200	100	0.46	0.62	0.28	10	7.4	2.11	6	5	6	0.060	0.59	2.50	OK	0.436	2.20	5.04	12.18	0.41	0.18	0.037	0.6	OK
573+00.00	574+00.00	MED	0.27	100	100	0.23	0.62	0.14	10	7.4	1.05	6	5	6	0.060	0.31	2.50	OK	0.502	1.07	2.13	8.77	0.24	0.12	0.052	0.6	OK
574+00.00	575+00.00	MED	0.31	800	100	1.84	0.62	1.14	10	7.4	8.44	6	5	6	0.042	0.73	2.50	OK	1.233	8.44	6.85	13.88	0.49	0.61	0.141	0.6	OK
575+00.00	576+00.00	MED	0.30	700	100	1.61	0.62	1.00	10	7.4	7.38	6	5	6	0.042	0.71	2.50	OK	1.195	7.85	6.57	13.64	0.48	0.58	0.133	0.6	OK
576+00.00	577+00.00	MED	0.30	600	100	1.38	0.62	0.85	10	7.4	6.33	6	5	6	0.042	0.71	2.50	OK	1.195	7.85	6.57	13.64	0.48	0.58	0.133	0.6	OK
577+00.00	578+00.00	MED	0.20	500	100	1.15	0.62	0.71	10	7.4	5.27	6	5	6	0.042	0.71	2.50	OK	0.975	6.41	6.57	13.64	0.48	0.47	0.089	0.6	OK
578+00.00	579+00.00	MED	0.25	400	100	0.92	0.62	0.57	10	7.4	4.22	6	5	6	0.060	0.66	2.58	OK	0.733	4.34	5.91	13.03	0.45	0.33	0.103	0.6	OK
579+00.00	580+00.00	MED	0.23	300	100	0.69	0.62	0.43	10	7.4	3.16	6	5	6	0.060	0.58	2.66	OK	0.655	3.22	4.92	12.06	0.41	0.27	0.083	0.6	OK
580+00.00	581+00.00	MED	0.24	200	100	0.46	0.62	0.28	10	7.4	2.11	6	5	6	0.060	0.47	2.73	OK	0.596	2.19	3.68	10.72	0.34	0.20	0.070	0.6	OK
581+00.00	582+00.00	MED	0.23	100	100	0.23	0.62	0.14	10	7.4	1.05	6	5	6	0.060	0.33	2.79	OK	0.480	1.10	2.30	9.01	0.26	0.12	0.047	0.6	OK
582+00.00	583+00.00	MED	0.24	460	63	0.67	0.43	0.28	10	7.4	2.10	6	5	6	0.060	0.46	2.68	OK	0.589	2.10	3.57	10.60	0.34	0.20	0.069	0.6	OK
583+00.00	584+00.00	MED	0.35	360	63	0.52	0.43	0.22	10	7.4	1.64	6	5	6	0.060	0.37	2.86	OK	0.631	1.68	2.67	9.50	0.28	0.18	0.081	0.6	OK
584+00.00	585+00.00	MED	0.48	260	63	0.38	0.43	0.16	10	7.4	1.19	6	5	6	0.060	0.29	2.92	OK	0.644	1.26	1.95	8.53	0.23	0.15	0.087	0.6	OK
585+00.00	586+00.00	MED	0.61	160	63	0.23	0.43	0.10	10	7.4	0.73	6	5	6	0.060	0.20	2.89	OK	0.588	0.73	1.24	7.43	0.17	0.10	0.076	0.6	OK
586+00.00	586+60.00	MED	0.65	60	63	0.09	0.43	0.04	10	7.4	0.27	6	5	6	0.060	0.12	2.83	OK	0.449	0.31	0.69	6.46	0.11	0.05	0.049	0.6	OK
586+60.00	587+00.00	MED	0.65	340	100	0.78	0.62	0.48	10	7.4	3.59	6	5	6	0.060	0.47	3.05	OK	0.981	3.61	3.68	10.72	0.34	0.34	0.191	0.6	OK
587+00.00	588+00.00	MED	0.66	300	100	0.69	0.62	0.43	10	7.4	3.16	6	5	6	0.060	0.44	2.76	OK	0.953	3.20	3.36	10.35	0.32	0.31	0.181	0.6	OK
588+00.00	589+00.00	MED	0.64	200	100	0.46	0.62	0.28	10	7.4	2.11	6	5	6	0.060	0.36	2.69	OK	0.840	2.16	2.58	9.38	0.27	0.23	0.144	0.6	OK
589+00.00	590+00.00	MED	0.88	100	100	0.23	0.62	0.14	10	7.4	1.05	6	5	6	0.060	0.23	2.64	OK	0.765	1.12	1.47	7.80	0.19	0.14	0.126	0.6	OK
590+00.00	591+00.00	MED	0.30	400	100	0.92	0.62	0.57	10	7.4	4.22	6	5	6	0.060	0.63	2.34	OK	0.783	4.33	5.53	12.66	0.44	0.34	0.118	0.6	OK
591+00.00	592+00.00	MED	0.59	300	100	0.69	0.62	0.43	10	7.4	3.16	6	5	6	0.060	0.45	2.64	OK	0.912	3.16	3.47	10.47	0.33	0.30	0.166	0.6	OK
592+00.00	593+00.00	MED	0.59	200	100	0.46	0.62	0.28	10	7.4	2.11	6	5	6	0.060	0.37	2.64	OK	0.819	2.19	2.67	9.50	0.28	0.23	0.136	0.6	OK
593+00.00	594+00.00	MED	0.87	100	100	0.23	0.62	0.14	10	7.4	1.05	6	5	6	0.060	0.23	2.64	OK	0.761	1.12	1.47	7.80	0.19	0.14	0.125	0.6	OK
594+00.00	595+00.00	MED	0.31	400	100	0.92	0.62	0.57	10	7.4	4.22	6	5	6	0.060	0.62	2.36	OK	0.789	4.27	5.41	12.54	0.43	0.34	0.120	0.6	OK
595+00.00	596+00.00	MED	0.59	300	100	0.69	0.62	0.43	10	7.4	3.16	6	5	6	0.060	0.45	2.64	OK	0.912	3.16	3.47	10.47	0.33	0.30	0.166	0.6	OK

HYDRAULIC WORKSHEET

Project Name: SR 429-201/Maitland Blvd. Extension
FPID:
County: Orange
Zone: 7

Designer: Gene McClendon
Checked by: Don Brown

3/16/2011

									10 year storm																				
Begin Station	End Station	Side	% slope	Length ft	Width ft	Contrib. Area, ac	Runoff Coeff.	CA	Tc min	I in/hr	Runoff, cfs	Ditch Section FS	BW ft	BS	"n"	d_N, ft	d allow ft	d OK?	V_N ft/s	Q	A	Wp	Rh	V*Rh	Shear Stress =d*s*62.4	Max Permis Veg. Class D	Lining OK?
CL Const	CL Const																												
596+00.00	597+00.00	MED	1.82	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.26	2.64	OK	1.120	2.21	1.98	10.23	0.19	0.22	0.295	0.6	OK
597+00.00	598+00.00	MED	0.93	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.21	1.50	OK	0.711	1.06	1.49	9.22	0.16	0.11	0.122	0.6	OK
598+00.00	599+00.00	MED	0.25	281	100	0.64	0.62	0.40	10	7.4	2.96	10	5	10	0.060	0.50	1.15	OK	0.596	2.98	5.00	15.05	0.33	0.20	0.078	0.6	OK
599+00.00	600+00.00	MED	1.05	181	100	0.41	0.62	0.26	10	7.4	1.90	10	5	10	0.060	0.28	1.06	OK	0.886	1.94	2.18	10.63	0.21	0.18	0.183	0.6	OK
600+00.00	600+80.50	MED	1.05	81	100	0.18	0.62	0.11	10	7.4	0.85	10	5	10	0.060	0.18	1.53	OK	0.693	0.85	1.22	8.62	0.14	0.10	0.118	0.6	OK
601+59.30	602+00.00	MED	-0.59	41	100	0.09	0.62	0.06	10	7.4	0.43	10	5	10	0.060	0.15	1.62	OK	0.468	0.46	0.98	8.01	0.12	0.06	0.055	0.6	OK
602+00.00	603+00.00	MED	-0.59	141	100	0.32	0.62	0.20	10	7.4	1.48	10	5	10	0.060	0.29	1.48	OK	0.677	1.55	2.29	10.83	0.21	0.14	0.107	0.6	OK
603+00.00	604+00.00	MED	-0.20	241	100	0.55	0.62	0.34	10	7.4	2.54	10	5	10	0.060	0.49	1.48	OK	0.527	2.56	4.85	14.85	0.33	0.17	0.061	0.6	OK
604+00.00	605+00.00	MED	-0.22	341	100	0.78	0.62	0.48	10	7.4	3.59	10	5	10	0.060	0.57	1.08	OK	0.601	3.67	6.10	16.46	0.37	0.22	0.078	0.6	OK
605+00.00	606+00.00	MED	-2.10	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.17	2.64	OK	0.949	1.08	1.14	8.42	0.14	0.13	0.223	0.6	OK
606+00.00	607+00.00	MED	-0.49	200	100	0.46	0.62	0.28	10	7.4	2.11	6	5	6	0.060	0.39	2.35	OK	0.768	2.20	2.86	9.74	0.29	0.23	0.119	0.6	OK
607+00.00	608+00.00	MED	-1.12	100	100	0.23	0.62	0.14	10	7.4	1.05	6	5	6	0.060	0.21	2.70	OK	0.819	1.08	1.31	7.55	0.17	0.14	0.147	0.6	OK
608+00.00	609+00.00	MED	-0.84	200	100	0.46	0.62	0.28	10	7.4	2.11	6	5	6	0.060	0.34	2.77	OK	0.932	2.23	2.39	9.14	0.26	0.24	0.178	0.6	OK
609+00.00	609+25.00	MED	-0.28	225	100	0.52	0.62	0.32	10	7.4	2.37	6	5	6	0.060	0.48	2.65	OK	0.651	2.46	3.78	10.84	0.35	0.23	0.084	0.6	OK
609+25.00	610+00.00	MED	-1.01	75	63	0.11	0.43	0.05	10	7.4	0.34	6	5	6	0.060	0.12	2.83	OK	0.561	0.38	0.69	6.46	0.11	0.06	0.076	0.6	OK
610+00.00	611+00.00	MED	-0.84	175	63	0.25	0.43	0.11	10	7.4	0.80	6	5	6	0.060	0.20	2.90	OK	0.690	0.86	1.24	7.43	0.17	0.12	0.105	0.6	OK
611+00.00	612+00.00	MED	-0.72	275	63	0.40	0.43	0.17	10	7.4	1.26	6	5	6	0.060	0.26	2.86	OK	0.742	1.27	1.71	8.16	0.21	0.16	0.117	0.6	OK
612+00.00	612+70.00	MED	-0.56	345	63	0.50	0.43	0.21	10	7.4	1.58	6	5	6	0.060	0.32	2.91	OK	0.734	1.62	2.21	8.89	0.25	0.18	0.111	0.6	OK
612+70.00	613+00.00	MED	-1.07	30	63	0.04	0.43	0.02	10	7.4	0.14	6	5	6	0.060	0.07	2.79	OK	0.414	0.16	0.38	5.85	0.06	0.03	0.047	0.6	OK
613+00.00	614+00.00	MED	-0.57	130	100	0.27	0.62	0.17	10	7.4	1.25	6	5	6	0.060	0.28	2.60	OK	0.688	1.29	1.87	8.41	0.22	0.15	0.100	0.6	OK
614+00.00	615+00.00	MED	-0.57	230	100	0.50	0.62	0.31	10	7.4	2.31	6	5	6	0.060	0.39	2.39	OK	0.829	2.37	2.86	9.74	0.29	0.24	0.139	0.6	OK
615+00.00	616+00.00	MED	-0.92	100	100	0.23	0.62	0.14	10	7.4	1.05	6	5	6	0.060	0.22	2.55	OK	0.763	1.08	1.39	7.68	0.18	0.14	0.126	0.6	OK
616+00.00	617+00.00	MED	-0.68	200	100	0.46	0.62	0.28	10	7.4	2.11	6	5	6	0.060	0.35	2.46	OK	0.852	2.12	2.49	9.26	0.27	0.23	0.149	0.6	OK
617+00.00	618+00.00	MED	-0.44	300	100	0.69	0.62	0.43	10	7.4	3.16	6	5	6	0.060	0.49	2.13	OK	0.826	3.21	3.89	10.96	0.35	0.29	0.135	0.6	OK
618+00.00	618+20.00	MED	-0.45	320	100	0.73	0.62	0.46	10	7.4	3.37	6	5	6	0.060	0.50	2.06	OK	0.844	3.38	4.00	11.08	0.36	0.30	0.140	0.6	OK
618+20.00	619+00.00	MED	-0.67	80	100	0.18	0.62	0.11	10	7.4	0.84	6	5	6	0.060	0.22	1.99	OK	0.653	0.91	1.39	7.68	0.18	0.12	0.093	0.6	OK
619+00.00	620+00.00	MED	-1.13	100	100	0.23	0.62	0.14	10	7.4	1.05	6	5	6	0.060	0.21	2.35	OK	0.823	1.08	1.31	7.55	0.17	0.14	0.148	0.6	OK
620+00.00	621+00.00	MED	-0.28	200	100	0.46	0.62	0.28	10	7.4	2.11	6	5	6	0.060	0.45	1.91	OK	0.629	2.18	3.47	10.47	0.33	0.21	0.079	0.6	OK
621+00.00	622+00.00	MED	-0.28	300	100	0.69	0.62	0.43	10	7.4	3.16	6	5	6	0.060	0.55	1.77	OK	0.702	3.20	4.57	11.69	0.39	0.27	0.096	0.6	OK
622+00.00	622+65.00	MED	-0.29	365	100	0.84	0.62	0.52	10	7.4	3.85	6	5	6	0.060	0.60	1.89	OK	0.752	3.88	5.16	12.30	0.42	0.32	0.109	0.6	OK
622+65.00	623+00.00	MED	0.71	235	100	0.54	0.62	0.33	10	7.4	2.48	6	5	6	0.060	0.38	1.89	OK	0.914	2.53	2.77	9.62	0.29	0.26	0.169	0.6	OK
623+00.00	624+00.00	MED	0.73	200	100	0.46	0.62	0.28	10	7.4	2.11	6	5	10	0.060	0.34	1.89	OK	0.843	2.21	2.62	10.49	0.25	0.21	0.155	0.6	OK
624+00.00	625+00.00	MED	0.73	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.23	4.96	OK	0.663	1.11	1.68	9.62	0.17	0.12	0.105	0.6	OK
625+00.00	626+00.00	MED	0.17	400	100	0.92	0.62	0.57	10	7.4	4.22	10	5	10	0.060	0.65	0.81	OK	0.569	4.25	7.48	18.06	0.41	0.24	0.069	0.6	OK
626+00.00	627+00.00	MED	0.18	300	100	0.69	0.62	0.43	10	7.4	3.16	10	5	10	0.060	0.56	0.95	OK	0.538	3.20	5.94	16.26	0.37	0.20	0.063	0.6	OK
627+00.00	628+00.00	MED	0.32	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.40	1.07	OK	0.596	2.14	3.60	13.04	0.28	0.16	0.080	0.6	OK
628+00.00	629+00.00	MED	0.64	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.24	1.05	OK	0.635	1.13	1.78	9.82	0.18	0.11	0.096	0.6	OK
629+00.00	630+00.00	MED	0.17	260	100	0.60	0.62	0.37	10	7.4	2.74	10	5	10	0.060	0.53	0.72	OK	0.507	2.77	5.46	15.65	0.35	0.18	0.056	0.6	OK
630+00.00	631+00.00	MED	0.17	160	100	0.37	0.62	0.23	10	7.4	1.69	10	5	10	0.060	0.42	0.85	OK	0.446	1.72	3.86	13.44	0.29	0.13	0.045	0.6	OK
631+00.00	631+60.00	MED	0.28	60	100	0.14	0.62	0.09	10	7.4	0.63	10	5	10	0.060	0.22	0.99	OK	0.403	0.64	1.58	9.42	0.17	0.07	0.039	0.6	OK

HYDRAULIC WORKSHEET

Project Name: SR 429-201/Maitland Blvd. Extension
FPID:
County: Orange
Zone: 7

Designer: Gene McClendon
Checked by: Don Brown

10 year storm

3/16/2011

Begin Station	End Station	Side	% slope	Length ft	Width ft	Contrib. Area, ac	Runoff Coeff.	CA	Tc min	I in/hr	Runoff, cfs	Ditch Section FS	BW ft	BS	"n"	d_N, ft	d allow ft	d OK?	V_N ft/s	Q	A	Wp	Rh	V*Rh	Shear Stress =d*s*62.4	Max Permis Veg. Class D	Lining OK?
CL Const	CL Const																										
631+60.00	632+00.00	MED	0.38	260	100	0.60	0.62	0.37	10	7.4	2.74	10	5	10	0.060	0.44	0.99	OK	0.680	2.81	4.14	13.84	0.30	0.20	0.103	0.6	OK
632+00.00	633+00.00	MED	0.33	220	100	0.51	0.62	0.31	10	7.4	2.32	10	5	10	0.060	0.42	0.97	OK	0.621	2.40	3.86	13.44	0.29	0.18	0.086	0.6	OK
633+00.00	634+00.00	MED	0.32	120	100	0.28	0.62	0.17	10	7.4	1.27	10	5	10	0.060	0.31	0.94	OK	0.517	1.30	2.51	11.23	0.22	0.12	0.062	0.6	OK
634+00.00	634+20.00	MED	0.25	20	100	0.05	0.62	0.03	10	7.4	0.21	10	5	10	0.060	0.13	0.92	OK	0.281	0.23	0.82	7.61	0.11	0.03	0.020	0.6	OK
634+20.00	635+00.00	MED	0.44	280	100	0.64	0.62	0.40	10	7.4	2.95	10	5	10	0.060	0.44	0.93	OK	0.734	3.04	4.14	13.84	0.30	0.22	0.120	0.6	OK
635+00.00	636+00.00	MED	0.86	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.31	0.90	OK	0.848	2.13	2.51	11.23	0.22	0.19	0.166	0.6	OK
636+00.00	637+00.00	MED	1.40	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.19	0.88	OK	0.825	1.08	1.31	8.82	0.15	0.12	0.166	0.6	OK
637+00.00	638+00.00	MED	1.95	500	100	1.15	0.62	0.71	10	7.4	5.27	10	5	10	0.060	0.40	0.86	OK	1.470	5.29	3.60	13.04	0.28	0.41	0.487	0.6	OK
638+00.00	639+00.00	MED	2.48	400	100	0.92	0.62	0.57	10	7.4	4.22	10	5	10	0.060	0.34	0.86	OK	1.516	4.33	2.86	11.83	0.24	0.37	0.526	0.6	OK
639+00.00	640+00.00	MED	2.93	300	100	0.69	0.62	0.43	10	7.4	3.16	10	5	10	0.060	0.28	0.81	OK	1.480	3.23	2.18	10.63	0.21	0.30	0.512	0.6	OK
640+00.00	641+00.00	MED	3.05	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.23	0.81	OK	1.354	2.27	1.68	9.62	0.17	0.24	0.438	0.6	OK
641+00.00	642+00.00	MED	3.02	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.16	0.77	OK	1.099	1.16	1.06	8.22	0.13	0.14	0.302	0.6	OK
642+00.00	643+00.00	MED	3.02	300	100	0.69	0.62	0.43	10	7.4	3.16	10	5	10	0.060	0.28	0.74	OK	1.503	3.28	2.18	10.63	0.21	0.31	0.528	0.6	OK
643+00.00	644+00.00	MED	3.02	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.23	0.73	OK	1.348	2.26	1.68	9.62	0.17	0.24	0.433	0.6	OK
644+00.00	645+00.00	MED	3.31	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.15	0.71	OK	1.109	1.08	0.98	8.01	0.12	0.13	0.310	0.6	OK
645+00.00	646+00.00	MED	2.73	400	100	0.92	0.62	0.57	10	7.4	4.22	10	5	10	0.060	0.33	0.39	OK	1.565	4.29	2.74	11.63	0.24	0.37	0.562	0.6	OK
646+00.00	647+00.00	MED	3.01	300	100	0.69	0.62	0.43	10	7.4	3.16	10	5	10	0.060	0.28	0.66	OK	1.500	3.28	2.18	10.63	0.21	0.31	0.526	0.6	OK
647+00.00	648+00.00	MED	2.77	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.23	0.64	OK	1.291	2.17	1.68	9.62	0.17	0.23	0.398	0.6	OK
648+00.00	649+00.00	MED	2.67	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.16	0.69	OK	1.033	1.09	1.06	8.22	0.13	0.13	0.267	0.6	OK
649+00.00	650+00.00	MED	2.06	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.25	0.61	OK	1.166	2.19	1.88	10.02	0.19	0.22	0.321	0.6	OK
650+00.00	651+00.00	MED	2.07	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.17	0.90	OK	0.942	1.07	1.14	8.42	0.14	0.13	0.220	0.6	OK
651+00.00	652+00.00	MED	1.70	300	63	0.43	0.43	0.18	10	7.4	1.37	10	5	10	0.060	0.21	0.90	OK	0.961	1.43	1.49	9.22	0.16	0.16	0.223	0.6	OK
652+00.00	653+00.00	MED	1.52	200	63	0.29	0.43	0.12	10	7.4	0.91	10	5	10	0.060	0.17	1.03	OK	0.807	0.92	1.14	8.42	0.14	0.11	0.161	0.6	OK
653+00.00	654+00.00	MED	1.39	100	63	0.14	0.43	0.06	10	7.4	0.46	10	5	10	0.060	0.12	1.09	OK	0.632	0.47	0.74	7.41	0.10	0.06	0.104	0.6	OK
654+00.00	655+00.00	MED	1.03	254	63	0.37	0.43	0.16	10	7.4	1.16	10	5	10	0.060	0.22	1.02	OK	0.768	1.22	1.58	9.42	0.17	0.13	0.141	0.6	OK
655+00.00	656+00.00	MED	1.62	154	63	0.22	0.43	0.09	10	7.4	0.70	10	5	10	0.060	0.15	1.09	OK	0.776	0.76	0.98	8.01	0.12	0.09	0.152	0.6	OK
656+00.00	656+53.65	MED	1.62	54	63	0.08	0.43	0.03	10	7.4	0.25	10	5	10	0.060	0.08	0.89	OK	0.538	0.25	0.46	6.61	0.07	0.04	0.081	0.6	OK
657+24.41	658+00.00	MED	-0.47	76	63	0.11	0.43	0.05	10	7.4	0.35	10	5	10	0.060	0.14	0.89	OK	0.402	0.36	0.90	7.81	0.11	0.05	0.041	0.6	OK
658+00.00	659+00.00	MED	-0.47	176	63	0.25	0.43	0.11	10	7.4	0.80	10	5	10	0.060	0.22	1.09	OK	0.519	0.82	1.58	9.42	0.17	0.09	0.065	0.6	OK
659+00.00	660+00.00	MED	-0.08	276	63	0.40	0.43	0.17	10	7.4	1.26	10	5	10	0.060	0.44	1.02	OK	0.314	1.30	4.14	13.84	0.30	0.09	0.022	0.6	OK
660+00.00	660+58.00	MED	-0.28	334	63	0.48	0.43	0.21	10	7.4	1.52	10	5	10	0.060	0.35	0.98	OK	0.514	1.53	2.98	12.03	0.25	0.13	0.060	0.6	OK
660+58.00	661+00.00	MED	-0.40	42	63	0.06	0.43	0.03	10	7.4	0.19	10	5	10	0.060	0.11	0.96	OK	0.324	0.22	0.67	7.21	0.09	0.03	0.028	0.6	OK
661+00.00	662+00.00	MED	-0.57	142	100	0.29	0.62	0.18	10	7.4	1.33	10	5	10	0.060	0.27	0.88	OK	0.640	1.33	2.08	10.43	0.20	0.13	0.096	0.6	OK
662+00.00	662+20.00	MED	-0.70	162	100	0.52	0.62	0.32	10	7.4	2.39	10	5	10	0.060	0.35	0.86	OK	0.818	2.43	2.98	12.03	0.25	0.20	0.153	0.6	OK
662+20.00	663+00.00	MED	-0.85	80	100	0.18	0.62	0.11	10	7.4	0.84	10	5	10	0.060	0.19	0.80	OK	0.642	0.84	1.31	8.82	0.15	0.10	0.101	0.6	OK
663+00.00	664+00.00	MED	-1.12	180	100	0.41	0.62	0.26	10	7.4	1.90	10	5	10	0.060	0.28	0.78	OK	0.915	2.00	2.18	10.63	0.21	0.19	0.196	0.6	OK
664+00.00	665+00.00	MED	-1.31	280	100	0.64	0.62	0.40	10	7.4	2.95	10	5	10	0.060	0.33	0.78	OK	1.084	2.97	2.74	11.63	0.24	0.26	0.270	0.6	OK
665+00.00	666+00.00	MED	-1.25	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.20	0.78	OK	0.802	1.12	1.40	9.02	0.16	0.12	0.156	0.6	OK
666+00.00	667+00.00	MED	-0.78	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.32	0.79	OK	0.822	2.16	2.62	11.43	0.23	0.19	0.156	0.6	OK

HYDRAULIC WORKSHEET

Project Name: SR 429-201/Maitland Blvd. Extension
FPID:
County: Orange
Zone: 7

Designer: Gene McClendon
Checked by: Don Brown

10 year storm

3/16/2011

Begin Station	End Station	Side	% slope	Length ft	Width ft	Contrib. Area, ac	Runoff Coeff.	CA	Tc min	I in/hr	Runoff, cfs	Ditch Section FS	BW ft	BS	"n"	d_N, ft	d allow ft	d OK?	V_N ft/s	Q	A	Wp	Rh	V*Rh	Shear Stress =d*s*62.4	Max Permis Veg. Class D	Lining OK?
CL Const	CL Const																										
667+00.00	668+00.00	MED	-0.27	101	100	0.23	0.62	0.14	10	7.4	1.07	10	5	10	0.060	0.30	0.79	OK	0.467	1.12	2.40	11.03	0.22	0.10	0.051	0.6	OK
668+00.00	668+01.00	MED	0.01	1	100	0.00	0.62	0.00	10	7.4	0.01	10	5	10	0.060	0.09	1.47	OK	0.045	0.02	0.53	6.81	0.08	0.00	0.001	0.6	OK
668+01.00	669+00.00	MED	0.26	299	100	0.69	0.62	0.43	10	7.4	3.15	10	5	10	0.060	0.51	1.47	OK	0.617	3.18	5.15	15.25	0.34	0.21	0.084	0.6	OK
669+00.00	670+00.00	MED	0.76	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.32	0.78	OK	0.812	2.13	2.62	11.43	0.23	0.19	0.152	0.6	OK
670+00.00	671+00.00	MED	1.29	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.20	0.78	OK	0.815	1.14	1.40	9.02	0.16	0.13	0.161	0.6	OK
671+00.00	672+00.00	MED	1.79	300	100	0.69	0.62	0.43	10	7.4	3.16	10	5	10	0.060	0.32	0.78	OK	1.246	3.27	2.62	11.43	0.23	0.29	0.357	0.6	OK
672+00.00	673+00.00	MED	2.24	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.24	0.78	OK	1.188	2.11	1.78	9.82	0.18	0.21	0.335	0.6	OK
673+00.00	674+00.00	MED	2.46	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.17	0.78	OK	1.027	1.17	1.14	8.42	0.14	0.14	0.261	0.6	OK
674+00.00	675+00.00	MED	1.94	300	100	0.69	0.62	0.43	10	7.4	3.16	10	5	10	0.060	0.31	0.58	OK	1.274	3.20	2.51	11.23	0.22	0.28	0.375	0.6	OK
675+00.00	676+00.00	MED	2.02	200	100	0.46	0.62	0.28	10	7.4	2.11	10	5	10	0.060	0.25	0.78	OK	1.154	2.16	1.88	10.02	0.19	0.22	0.315	0.6	OK
676+00.00	677+00.00	MED	2.10	100	100	0.23	0.62	0.14	10	7.4	1.05	10	5	10	0.060	0.17	0.78	OK	0.949	1.08	1.14	8.42	0.14	0.13	0.223	0.6	OK
677+00.00	678+00.00	MED	1.51	265	100	0.61	0.62	0.38	10	7.4	2.79	10	5	10	0.060	0.31	0.57	OK	1.124	2.82	2.51	11.23	0.22	0.25	0.292	0.6	OK
678+00.00	679+00.00	MED	1.59	165	100	0.38	0.62	0.23	10	7.4	1.74	10	5	10	0.060	0.24	0.85	OK	1.001	1.78	1.78	9.82	0.18	0.18	0.238	0.6	OK
679+00.00	679+65.00	MED	1.57	65	100	0.15	0.62	0.09	10	7.4	0.69	10	5	10	0.060	0.15	0.93	OK	0.764	0.74	0.98	8.01	0.12	0.09	0.147	0.6	OK
679+65.00	680+00.00	MED	1.51	235	63	0.34	0.43	0.14	10	7.4	1.07	10	5	10	0.060	0.19	0.92	OK	0.858	1.12	1.31	8.82	0.15	0.13	0.180	0.6	OK
680+00.00	681+00.00	MED	1.35	200	63	0.29	0.43	0.12	10	7.4	0.91	10	5	10	0.060	0.18	0.92	OK	0.785	0.96	1.22	8.62	0.14	0.11	0.152	0.6	OK
681+00.00	682+00.00	MED	2.13	100	63	0.14	0.43	0.06	10	7.4	0.46	10	5	10	0.060	0.11	0.98	OK	0.744	0.50	0.67	7.21	0.09	0.07	0.146	0.6	OK
682+00.00	682+20.00	MED	1.95	120	63	0.17	0.43	0.07	10	7.4	0.55	10	5	10	0.060	0.12	0.80	OK	0.749	0.56	0.74	7.41	0.10	0.08	0.146	0.6	OK
682+20.00	683+00.00	MED	1.95	380	63	0.89	0.43	0.38	10	7.4	2.82	10	5	10	0.060	0.29	0.80	OK	1.231	2.82	2.29	10.83	0.21	0.26	0.353	0.6	OK
698+00.00	699+00.00	MED	3.77	100	50	0.11	0.57	0.07	10	7.4	0.48	10	5	10	0.060	0.10	1.04	OK	0.936	0.56	0.60	7.01	0.09	0.08	0.235	0.6	OK
699+00.00	700+00.00	MED	-1.22	200	50	0.23	0.57	0.13	10	7.4	0.97	10	5	10	0.060	0.19	1.09	OK	0.770	1.01	1.31	8.82	0.15	0.11	0.145	0.6	OK
700+00.00	701+00.00	MED	-0.62	300	50	0.34	0.57	0.20	10	7.4	1.45	10	5	10	0.060	0.28	1.09	OK	0.681	1.49	2.18	10.63	0.21	0.14	0.108	0.6	OK
701+00.00	702+00.00	MED	-0.57	400	50	0.46	0.57	0.26	10	7.4	1.93	10	5	10	0.060	0.33	1.09	OK	0.715	1.96	2.74	11.63	0.24	0.17	0.117	0.6	OK
702+00.00	703+00.00	MED	-0.55	100	103	0.24	0.27	0.06	10	7.4	0.48	26	28	10	0.060	0.06	0.53	OK	0.275	0.48	1.74	30.16	0.06	0.02	0.021	0.6	OK
703+00.00	704+00.00	MED	-4.66	200	160	0.60	0.22	0.13	10	7.4	0.98	10	10	10	0.060	0.09	4.71	OK	1.021	1.00	0.98	11.81	0.08	0.08	0.262	0.6	OK
704+00.00	705+00.00	MED	-6.94	300	178	1.01	0.23	0.24	10	7.4	1.75	10	10	10	0.060	0.12	4.74	OK	1.486	2.00	1.34	12.41	0.11	0.16	0.520	0.6	OK
705+00.00	706+00.00	MED	-4.11	400	200.7	1.47	0.29	0.42	10	7.4	3.12	10	10	10	0.060	0.19	4.79	OK	1.506	3.41	2.26	13.82	0.16	0.25	0.487	0.6	OK
706+00.00	707+00.00	MED	-3.90	500	195	1.92	0.29	0.55	10	7.4	4.11	10	63	10	0.060	0.08	2.71	OK	0.903	4.61	5.10	64.61	0.08	0.07	0.195	0.6	OK
707+00.00	708+00.00	MED	-1.24	600	246	2.49	0.37	0.92	10	7.4	6.80	10	102	10	0.060	0.11	2.71	OK	0.630	7.15	11.34	104.21	0.11	0.07	0.085	0.6	OK
708+00.00	708+20.00	MED	-5.00	620	190	2.57	0.20	0.51	10	7.4	3.81	10	103	10	0.060	0.05	3.23	OK	0.751	3.89	5.18	104.00	0.05	0.04	0.156	0.6	OK
708+20.00	708+40.00	MED	-1.00	640	190	2.66	0.20	0.53	10	7.4	3.94	10	105	10	0.060	0.09	3.46	OK	0.496	4.73	9.53	106.81	0.09	0.04	0.056	0.6	OK
708+40.00	708+60.00	MED	-1.00	660	190	2.75	0.20	0.55	10	7.4	4.07	10	101	10	0.060	0.09	3.78	OK	0.496	4.55	9.17	102.81	0.09	0.04	0.056	0.6	OK
708+60.00	708+80.00	MED	-1.00	680	190	2.83	0.20	0.57	10	7.4	4.20	10	90	10	0.060	0.10	2.67	OK	0.531	4.83	9.10	92.01	0.10	0.05	0.062	0.6	OK
708+80.00	709+00.00	MED	-1.00	700	190	2.92	0.20	0.58	10	7.4	4.33	10	66	10	0.060	0.12	2.36	OK	0.597	4.81	8.06	68.41	0.12	0.07	0.075	0.6	OK
709+00.00	709+15.00	MED	-1.00	715	190	2.99	0.20	0.60	10	7.4	4.43	10	38	10	0.060	0.16	2.36	OK	0.713	4.52	6.34	41.22	0.15	0.11	0.100	0.6	OK

HYDRAULIC WORKSHEET

Project Name: SR 429-201/Maitland Blvd. Extension
FPID:
County: Orange
Zone: 7

Designer: DWB
Checked by: DWB

10 year storm

3/16/2011

Begin Station	End Station	Side	% slope	Length ft	Width ft	Contrib. Area, ac	Runoff Coeff.	CA	Tc min	I in/hr	Runoff, cfs	Ditch Section FS	BW ft	BS	"n"	d_N, ft	d allow ft	d OK?	V_N ft/s	Q	A	Wp	Rh	V*Rh	Shear Stress =d*s*62.4	Max Permis Veg. Class D	Lining OK?
CL Const	CL Const																										
555+00.00	557+00.00	LT	-1.00	200	98.9	0.45	0.28	0.13	10	7.4	0.93	6	5	4	0.06	0.202	2.00	OK	0.768	0.93	1.21	7.06	0.17	0.13	0.126	0.6	OK
557+00.00	558+00.00	LT	-1.06	300	99.1	0.68	0.28	0.19	10	7.4	1.39	6	5	4	0.06	0.249	2.00	OK	0.892	1.39	1.56	7.54	0.21	0.18	0.165	0.6	OK
558+00.00	561+00.00	LT	-0.94	600	83.5	1.15	0.28	0.32	10	7.4	2.37	6	5	4	0.06	0.347	2.00	OK	1.015	2.37	2.34	8.54	0.27	0.28	0.204	0.6	OK
561+00.00	571+00.00	LT	-0.31	1600	96.0	3.53	0.27	0.97	10	7.4	7.17	6	5	4	0.06	0.830	2.00	OK	0.944	7.17	7.59	13.47	0.56	0.53	0.161	0.6	OK
596+00.00	598+00.00	LT	0.37	200	90.2	0.41	0.20	0.08	10	7.4	0.61	3	5	4	0.06	0.215	2.00	OK	0.496	0.61	1.24	6.57	0.19	0.09	0.050	0.6	OK
598+00.00	600+00.00	LT	-0.10	200	85.5	0.39	0.20	0.08	10	7.4	0.58	3	0	10	0.06	0.528	1.30	OK	0.320	0.58	1.81	6.98	0.26	0.08	0.033	0.6	OK
644+85.00	646+00.00	LT	3.00	1115	n/a	5.39	0.20	1.08	42	4.0	4.30	3	5	4	0.02	0.192	1.30	OK	3.963	4.32	1.09	6.40	0.17	0.67	0.359	0.6	OK
646+00.00	647+00.00	LT	5.00	1000	n/a	5.06	0.20	1.01	42	4.0	4.04	3	5	4	0.02	0.160	1.30	OK	4.583	4.08	0.89	6.17	0.14	0.66	0.499	0.6	OK
647+00.00	648+00.00	LT	5.27	900	n/a	4.80	0.20	0.96	42	4.0	3.83	3	5	4	0.02	0.152	1.10	OK	4.560	3.83	0.84	6.11	0.14	0.63	0.500	0.6	OK
648+00.00	649+00.00	LT	4.68	800	n/a	4.55	0.20	0.91	42	4.0	3.63	3	5	4	0.02	0.153	2.20	OK	4.314	3.65	0.85	6.11	0.14	0.60	0.447	0.6	OK
649+00.00	650+00.00	LT	5.54	700	n/a	4.32	0.20	0.86	42	4.0	3.45	3	5	4	0.02	0.141	2.20	OK	4.466	3.46	0.77	6.03	0.13	0.57	0.487	0.6	OK
650+00.00	651+00.00	LT	2.51	600	85.0	1.17	0.20	0.23	10	7.4	1.73	3	5	4	0.06	0.225	1.60	OK	1.328	1.73	1.30	6.64	0.20	0.26	0.352	0.6	OK
651+00.00	654+00.00	LT	1.20	500	85.4	0.98	0.20	0.20	10	7.4	1.45	3	5	4	0.06	0.251	1.20	OK	0.980	1.45	1.48	6.83	0.22	0.21	0.188	0.6	OK
654+00.00	655+00.00	LT	0.10	200	86.6	0.40	0.20	0.08	10	7.4	0.59	3	5	4	0.06	0.110	1.70	OK	0.172	0.10	0.59	5.80	0.10	0.02	0.007	0.6	OK
655+00.00	656+00.00	LT	1.00	100	86.9	0.20	0.20	0.04	10	7.4	0.30	3	10	4	0.06	0.070	0.80	OK	0.415	0.30	0.72	10.51	0.07	0.03	0.044	0.6	OK
657+50.00	658+00.00	LT	-0.60	50	n/a	0.18	0.20	0.04	10	7.4	0.26	3	5	8	0.06	0.112	0.30	OK	0.416	0.26	0.63	6.26	0.10	0.04	0.042	0.6	OK
658+00.00	660+00.00	LT	0.30	200	72.5	0.33	0.20	0.07	10	7.4	0.49	3	5	8	0.06	0.196	0.30	OK	0.410	0.49	1.19	7.20	0.17	0.07	0.037	0.6	OK
660+00.00	661+00.00	LT	-0.20	100	72.5	0.17	0.20	0.03	10	7.4	0.25	3	5	8	0.06	0.150	0.40	OK	0.286	0.25	0.87	6.68	0.13	0.04	0.019	0.6	OK
661+00.00	662+00.00	LT	0.80	100	71.8	0.16	0.20	0.03	10	7.4	0.24	3	5	8	0.06	0.098	0.40	OK	0.443	0.24	0.54	6.10	0.09	0.04	0.049	0.6	OK
662+00.00	664+00.00	LT	-0.60	200	72.0	0.33	0.20	0.07	10	7.4	0.49	3	5	8	0.06	0.161	0.80	OK	0.517	0.49	0.95	6.81	0.14	0.07	0.060	0.6	OK
664+00.00	668+00.00	LT	0.10	1000	73.7	1.69	0.20	0.34	30	4.7	1.61	3	5	8	0.06	0.510	0.60	OK	0.406	1.61	3.98	10.72	0.37	0.15	0.032	0.6	OK
668+00.00	669+00.00	LT	0.50	600	75.3	1.04	0.20	0.21	25	5.2	1.07	3	10	6	0.06	0.184	0.30	OK	0.539	1.07	1.99	11.70	0.17	0.09	0.057	0.6	OK
669+00.00	674+00.00	LT	1.00	500	76.0	0.87	0.20	0.17	20	5.7	1.00	3	10	6	0.06	0.144	0.20	OK	0.655	1.00	1.53	11.33	0.14	0.09	0.090	0.6	OK
674+20.00	676+00.00	LT	0.30	860	n/a	4.14	0.20	0.83	20	5.7	4.73	3	5	4	0.06	0.650	1.70	OK	0.840	3.97	4.73	9.74	0.49	0.41	0.122	0.6	OK
676+00.00	678+00.00	LT	1.00	680	n/a	3.16	0.20	0.63	20	5.7	3.60	3	5	4	0.06	0.443	2.00	OK	1.240	3.60	2.90	8.23	0.35	0.44	0.276	0.6	OK
678+00.00	682+80.00	LT	0.05	480	n/a	1.63	0.20	0.33	20	5.7	1.86	3	0	8	0.06	0.995	1.00	OK	0.344	1.87	5.45	11.17	0.49	0.17	0.031	0.6	OK

Spread Calculation for SR 500 (US 441)

Northbound SR 500 (US 441) - Station 830+12 to Station 842+04 (CL Survey U.S. 441)
Analysis for Worst case Scenario for the temporary barrier wall protecting work in the Median.
Input Data (Worst Scenario)

Design Speed	45	mph	
Pavement Width flowing to Barrier Wall (W) =	25	ft	(Worst Condition)
Barrier Length/each (L) =	12	ft	
Rainfall Intensity (I) =	4.0	in/hr	
Runoff Coefficient (C) =	0.95		
Pavement Manning's N (n) =	0.016		
Roadway Cross Slope (Sx) =	0.009	ft/ft	
Roadway Longitudinal Slope (Sl) =	0.003	ft/ft	
Spread Width (T) =		ft/ft	
Flow Depth at the edge of Barrier Wall (y) =		ft/ft	

Spread and Flow Rate through Barrier Wall [1]

Flow along Barrier Wall
Qa = (0.56/n) * Sx^5/3 * Sl^1/2*T^8/3

Flow Through Barrier Wall
Qslot31 = 1.23*y for 31 inch slot

Spread Width
T = y/Sx

Flow Approaching Each Section of Barrier Wall from Pavement
Qp = C*I*A

A = L*W/43560	0.007	ac
Qp =	0.026	cfs

Spread Calculation

Section No.	Total Length (ft)	Approach Flow from the Section Qp (cfs)	Bypass Flow from last Section (cfs)	Total Flow Qa (cfs)	Calculated Spread Width T (ft)	Allowable Spread Width T [4] (ft)	Flow Depth y (ft)	Qslot31 [2] (cfs)	Bypass Next Section (cfs)
1	12	0.026	0.000	0.026	3.754	6.500	0.034	0.032	0.000
2	24	0.026	0.000	0.026	3.754	6.500	0.034	0.032	0.000
3	36	0.026	0.000	0.026	3.754	6.500	0.034	0.032	0.000
4	48	0.026	0.000	0.026	3.754	6.500	0.034	0.032	0.000
5	60	0.026	0.000	0.026	3.754	6.500	0.034	0.032	0.000

Notes: (1) Temporary Drainage Design Handbook, FDOT, Oct. 2001
(2) 75% of capacity is used
(3) The calculated spread meets the allowable spread criteria found in Section 3.9 of the FDOT 2010 Drainage Manual.
(4) The allowable spread is one half of the 11 ft lane plus the 1 ft offset from the barrier wall to the lane line.

Spread Calculation for SR 500 (US 441)

Northbound SR 500 (US 441) - Station 830+12 to Station 842+04 (CL Survey U.S. 441)

Analysis for Worst case Scenario for the low profle temporary barrier wall along the outside edge of pavement.

Input Data (Worst Scenario)

Design Speed	45	mph	
Pavement Width flowing to Barrier Wall (W) =	27	ft	(Worst Condition)
Barrier Length/each (L) =	12	ft	
Rainfall Intensity (I) =	4.0	in/hr	
Runoff Coefficient (C) =	0.95		
Pavement Manning's N (n) =	0.016		
Roadway Cross Slope (Sx) =	0.020	ft/ft	
Roadway Longitudinal Slope (Sl) =	0.00311	ft/ft	
Spread Width (T) =		ft/ft	
Flow Depth at the edge of Barrier Wall (y) =		ft/ft	

Spread and Flow Rate through Barrier Wall [1]

Flow along Barrier Wall

Qa = (0.56/n) * Sx^5/3 * Sl^1/2*T^8/3

Flow Through Barrier Wall

Qslot31 = 1.23*y for 31 inch slot

Spread Width

T = y/Sx

Flow Approaching Each Section of Barrier Wall from Pavement

Qp = C*I*A

A = L*W/43560	0.007	ac
Qp =	0.028	cfs

Spread Calculation

Section No.	Total Length (ft)	Approach Flow from the Section Qp (cfs)	Bypass Flow from last Section (cfs)	Total Flow Qa (cfs)	Calculated Spread Width T (ft)	Allowable Spread Width T [4] (ft)	Flow Depth y (ft)	Qslot31 [2] (cfs)	Bypass Next Section (cfs)
1	12	0.028	0.000	0.028	2.356	8.500	0.047	0.043	0.000
2	24	0.028	0.000	0.028	2.356	8.500	0.047	0.043	0.000
3	36	0.028	0.000	0.028	2.356	8.500	0.047	0.043	0.000
4	48	0.028	0.000	0.028	2.356	8.500	0.047	0.043	0.000

Notes: (1) Temporary Drainage Design Handbook, FDOT, Oct. 2001

(2) 75% of capacity is used

(3) The calculated spread meets the allowable spread criteria found in Section 3.9 of the FDOT 2010 Drainage Manual.

(4) The allowable spread is one half of the 11 ft lane plus the 3 ft offset from the barrier wall to the lane line.

INDEX OF SHEETS	
SHEET No.	SHEET TITLE
01	COVER
02	BOUNDARY AND TOPOGRAPHIC SURVEY
03	DEVELOPMENT INFORMATION AND NOTES
04	DEMOLITION AND SWPPP PLAN
05	SWPPP DETAILS
06	SITE LAYOUT PLAN
08	SITE GRADING PLAN
09	SITE GRADING PLAN
07	SITE DRAINAGE PLAN
10	CROSS SECTIONS
11	OVERALL UTILITY PLAN
12	PLAN AND PROFILE
13	PLAN AND PROFILE
14	PLAN AND PROFILE
15	DIRECTIONAL DRILL - RECLAIM & FORCE
16	LIFT STATION DETAILS AND NOTES
17	LIFT STATION DETAILS AND NOTES
18	CITY OF APOPKA DETAILS AND NOTES
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23	AUTOTURN PLAN
24	EASEMENT PLAN
L1	LANDSCAPE PLAN
L2	LANDSCAPE PLAN
L3	LANDSCAPE DETAILS AND NOTES

LEGAL DESCRIPTION

THE EAST ONE HALF OF THE WEST ONE HALF OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 24, TOWNSHIP 20 SOUTH, RANGE 27 EAST, (LESS ROAD RIGHT OF WAY ON THE SOUTH); SUBJECT TO AN EASEMENT FOR INGRESS AND EGRESS OVER THE EAST 30 FEET THEREOF. ALL OF SAID LANDS LYING AND BEING IN ORANGE COUNTY, FLORIDA.

PROJECT STATEMENT

PROPOSE THE DEVELOPMENT OF A 19-LOT SINGLE-FAMILY RESIDENTIAL SUBDIVISION TO BE KNOWN AS "PONKAN OAK MANOR". SITE IMPROVEMENTS CONSIST OF PAVING, GRADING, STORMWATER MANAGEMENT, UTILITIES, AND LANDSCAPING. THE TOTAL PROJECT SITE CONSISTS OF 9.956 ACRES WITH 4.540 ACRES OF IMPERVIOUS SURFACE.

JURISDICTIONAL AGENCY	PERMIT No.
CITY OF APOPKA (DEVELOPMENT ORDER)	.
ORANGE COUNTY (ACCESS)	.
FDEP (SEWER)	.
FDEP (WATER)	.
FDEP (NOI)	.
SJRWMD (STORMWATER)	.

THE GENERAL CONTRACTOR SHALL ENSURE THAT ANY SUBCONTRACTOR HAS A COMPLETE SET OF CONSTRUCTION DRAWINGS FOR ITS RESPECTIVE WORK. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR SUBCONTRACTORS ONLY UTILIZING INDIVIDUAL DRAWINGS FOR ITS WORK WHERE ADDITIONAL INFORMATION MAY BE CONTAINED ON OTHER DRAWINGS WITHIN THE SET.

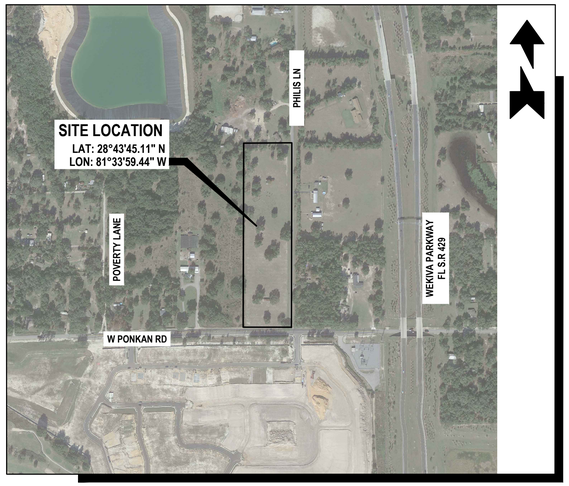
THESE DRAWINGS ARE THE PROPERTY OF NEWKIRK ENGINEERING, INC. ANY USE OR REPRODUCTION IN WHOLE OR PART IS PROHIBITED WITHOUT THE EXPRESSED WRITTEN CONSENT OF NEWKIRK ENGINEERING, INC. COPYRIGHT 2013 ALL RIGHTS RESERVED.

MINOR DEVELOPMENT PLANS FOR

PONKAN OAK MANOR

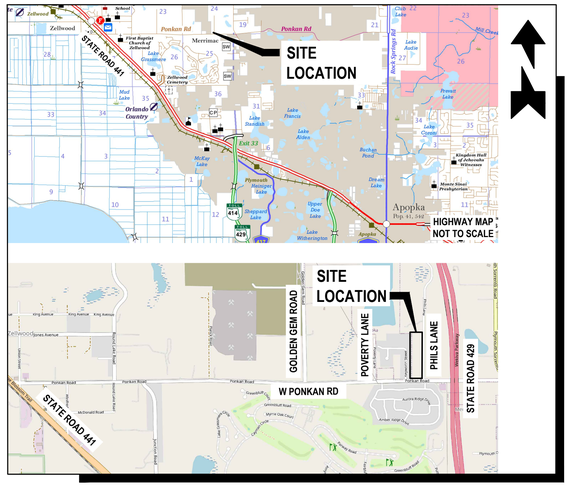
SECTION 24, TOWNSHIP 20 S, RANGE 27 E
24-20-27-0000-00-062
3405 WEST PONKAN ROAD
APOPKA, FL 32712

JUNE 2023



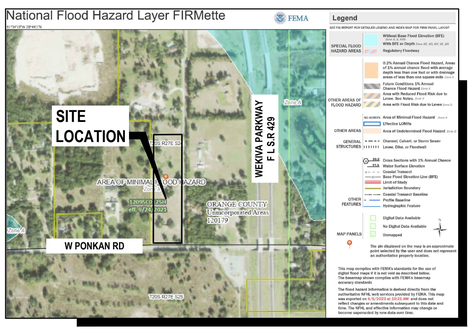
AERIAL MAP

SCALE: 1" = 500'



LOCATION MAP

SCALE: 1" = 2,000'

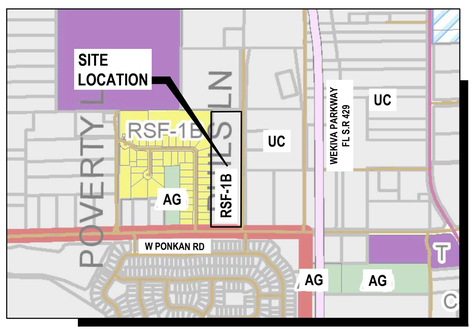


FLOOD ZONE MAP

FLOOD ZONE "X"

SCALE: 1" = 850'

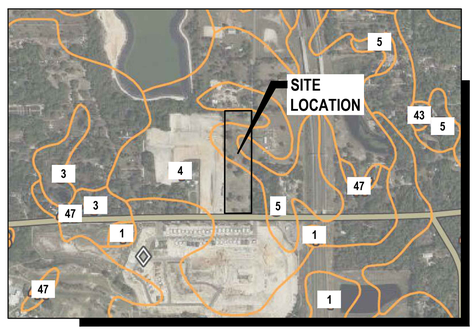
PANEL NO. 12095C0125 H, EFF. 9/24/2021



ZONING MAP

ZONING : RSF-1B (RESIDENTIAL SINGLE-FAMILY - LARGE LOT)

SCALE: 1" = 800'



SOILS MAP

SOIL TYPES: (4) CANDLER FINE SAND, 0 TO 5 PERCENT SLOPES
(5) CANDLER FINE SAND, 5 TO 12 PERCENT SLOPES

SCALE: 1" = 900'

PROJECT TEAM

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ENVIRONMENTAL: ECOLOGICAL CONSULTING SOLUTIONS, INC
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CONTACT NUMBERS

PLANNING & BUILDING - CITY OF APOPKA (407) 703-1712
WATER - CITY OF APOPKA (407) 703-1731
WASTEWATER - CITY OF APOPKA (407) 703-1731
ELECTRIC - DUKE ENERGY (407) 629-1010
TELECOMMUNICATIONS - SPECTRUM (855) 971-8277

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Civil Engineering
Transportation, CEI &
Landscape Architecture

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Harry Newkirk

HARRY NEWKIRK LICENSE NO. 62971 STATE OF FLORIDA PROFESSIONAL ENGINEER

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DRAWING NUMBER

01

PROJECT No. 2023-30

GENERAL CONSTRUCTION NOTES

1. GOVERNING SPECIFICATIONS: CITY OF APOPKA LAND DEVELOPMENT CODE, CITY OF APOPKA STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS, CURRENT EDITION.
2. ALL CONSTRUCTION WITHIN THE FDOT RIGHT-OF-WAY SHALL CONFORM TO THE 2022 - 2023 EDITION OF THE FDOT DESIGN STANDARD INDICES, THE 2022 EDITION OF THE FDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION AND THE 2017 EDITION OF THE FDOT UTILITY ACCOMMODATIONS MANUAL.
3. ALL UTILITY MATERIAL, CONSTRUCTION AND TESTING COVERED BY THESE DRAWINGS SHALL COMPLY WITH THE CITY OF APOPKA STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS, LATEST EDITION. ALL UTILITY WORK AND CONNECTIONS SHALL BE COORDINATED WITH THE CITY OF APOPKA INSPECTOR.
4. THE CONTRACTOR SHALL PAY FOR AND OBTAIN A BUILDING PERMIT. THE ENGINEER WILL SCHEDULE THE PRECONSTRUCTION CONFERENCE BEFORE THE CONTRACTOR'S START OF WORK. THE CONTRACTOR SHALL CONTACT THE BUILDING DEPARTMENT AT (407) 703-1713 FOR INFORMATION ON ISSUANCE OF CITY PERMITS AND / OR OTHER REQUIREMENTS.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER OF ANY DEFICIENCIES OR DISCREPANCIES AMONG THE DIVISIONS OF THE DRAWING AND SPECIFICATIONS PRIOR TO THE BID DATE. NEITHER THE OWNER OR ENGINEER WILL BE RESPONSIBLE FOR ANY DEFICIENCIES OR DISCREPANCIES RAISED AFTER THE BID OPENING. ACCORDINGLY, IN LIGHT OF THESE OBLIGATIONS, THE ENGINEER IS OBLIGATED TO INTERPRET THE DRAWINGS AND SPECIFICATIONS IN A MANNER THAT WILL PROVIDE THE OWNER WITH A COMPLETE, FUNCTIONING FACILITY FOR THE BID PRICE.
6. THESE DRAWINGS AND THE PROJECT MANUAL ARE COMPLEMENTARY, AND ANY REQUIREMENT OF ONE SHALL BE A REQUIREMENT OF THE OTHER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CAREFULLY EXAMINE THE DRAWINGS AND SPECIFICATIONS AND TO COMPARE THE REQUIREMENTS OF EACH DIVISION AND ENSURE THAT EACH TRADE OR SUBCONTRACTOR IS MAKING THE ALLOWANCES NECESSARY TO PROVIDE THE OWNER A COMPLETE FACILITY, OPERATIONAL IN ALL RESPECTS, UNLESS OTHERWISE SPECIFICALLY STATED IN THE DRAWINGS.
7. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR INSTRUCTING THE CONTRACTOR IN THE METHODS OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE METHOD TO CONSTRUCT THE IMPROVEMENTS AS SHOWN ON THE PLANS.
8. ONLY ONE TEMPORARY CONSTRUCTION SIGN IS PERMITTED, NOT TO EXCEED 32 SQUARE FEET IN SIGN AREA, MAXIMUM HEIGHT OF 8 FEET AND NO CLOSER THAN 10 FT FROM PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL APPLY FOR A TEMPORARY SIGN PERMIT AT THE CITY OF PALM COAST BUILDING DEPARTMENT. THE SIGN MUST BE REMOVED UPON RECEIPT OF THE CERTIFICATE OF OCCUPANCY.
9. LITTER CONTROL MEASURES TO PREVENT WIND-DRIVEN DEBRIS SHALL BE IMPLEMENTED THROUGHOUT THE DURATION OF CONSTRUCTION. ALL DEBRIS SHALL BE REMOVED AND THE PROJECT SITE CLEANED WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION.
10. AT NO TIME SHALL EXCAVATIONS BE LEFT UNCOVERED AFTER WORKING HOURS. CONTRACTOR SHALL SECURE THE WORK AREA AT THE END OF EACH DAY'S WORK.
11. AT ALL TIMES, THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT UNDERGROUND UTILITIES, STRUCTURES AND OTHER ASSOCIATED FACILITIES FROM DAMAGE DURING CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE MEASURES OF PROTECTION. ANY DAMAGED FACILITIES SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE CITY OR ENGINEER AT THE CONTRACTORS EXPENSE.
12. THERE SHALL BE NO DEVIATIONS FROM THESE PLANS UNLESS APPROVED IN WRITING BY THE ENGINEER AND THE OWNER.
13. THE CONTRACTOR SHALL CONTACT ALL CONCERNED UTILITIES AT LEAST FORTY-EIGHT (48) HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS.
14. CONTRACTOR SHALL COORDINATE AND COMPLY WITH ALL UTILITY COMPANIES INVOLVED IN PROJECT AND PAY ALL REQUIRED FEES AND COST.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CERTIFIED MATERIAL TEST RESULTS TO THE ENGINEER OF THE RECORD PRIOR TO THE RELEASE OF FINAL CERTIFICATION BY THE ENGINEER, TEST RESULTS MUST INCLUDE, BUT MAY NOT BE LIMITED TO, DENSITIES FOR SUBGRADE AND BASE DENSITIES AT UTILITY CROSSINGS, MANHOLES, INLETS, STRUCTURES. TEST SHALL INCLUDE ASPHALT GRADATION REPORTS, CONCRETE CYLINDERS, ETC.
16. WHERE NEW ASPHALT MEETS EXISTING ASPHALT, THE EXISTING ASPHALT SHALL BE SAW CUT TO PROVIDE A STRAIGHT EVEN LINE.
17. PRIOR TO REMOVING CURB OR GUTTER, THE ADJACENT ASPHALT SHALL BE SAW CUT TO PROVIDE A STRAIGHT EVEN LINE.
18. ALL PROPOSED ELEVATIONS REFER TO FINISHED GRADES.
19. CONCRETE WALKS SHALL BE 4 INCHES THICK HAVING A 3,000 PSI STRENGTH, POURED OVER PROPERLY PREPARED SUBGRADE. ALL CONCRETE SIDEWALKS SHALL BE 8 INCHES THICK ACROSS DRIVEWAYS. 1/2 INCH EXPANSION JOINTS SHALL BE PLACED AT A MAXIMUM OF 50'. CRACK CONTROL JOINTS SHALL BE 5' ON CENTERS.
20. CORE TESTS SHALL BE TAKEN TO VERIFY THICKNESS AND SUBSURFACE COMPACTION. PROVIDE FOR THREE SAMPLES, RANDOMLY LOCATED. TEST FOR EXTRACTION, GRADATION, LABORATORY DENSITY, AND MARSHALL'S STABILITY. PROVIDE A CERTIFICATE FROM THE TESTING AGENCY THAT MATERIALS AND INSTALLATION COMPLY WITH SPECIFICATIONS, SIGNED BY THE ASPHALTIC CONCRETE PRODUCER AND CONTRACTOR. ALL COSTS OF TESTS SHALL BE PAID BY THE CONTRACTOR. IF TESTS SHOW THE INSTALLATION DOES NOT MEET SPECIFICATIONS, THE PAVING SHALL BE REMOVED, REPLACED, AND RETESTED.
21. IF ANY MUCK-LIKE MATERIAL IS DISCOVERED, IT WILL BE REQUIRED TO BE REMOVED, BACKFILLED WITH APPROPRIATE FILL, COMPACTED, AND TESTED USING AASHTO T-180 MODIFIED PROCTOR METHOD.
22. FILL MATERIAL IS TO BE PLACED IN ONE FOOT LIFTS AND COMPACTED TO THE APPROPRIATE DENSITY (98% FOR PAVED AREAS AND 95% FOR BUILDING PADS AND ALL OTHER AREAS AS PER AASHTO T-180).
23. NO BURYING OF ANY ORGANIC MATERIALS ALLOWED.
24. ALL UTILITIES SHALL BE LOCATED UNDERGROUND.

SITE AND GENERAL INFORMATION

1. THE PROPERTY AREA BOUNDARY CONSISTS OF 433,704 SF OR 9.956 ACRES. FOR BOUNDARY AND TOPOGRAPHIC SURVEY REFER TO THE SURVEY PERFORMED BY DEEP SOUTH SURVEYING, SURVEY No. 23020040 (SEE SHEET No. 2 OF THESE PLANS).
2. THE ZONING IS RSF-1B (RESIDENTIAL SINGLE-FAMILY - LARGE LOT) WITH FUTURE LAND USE OF VLDSR.
3. THE TAX PARCEL NUMBERS ARE 24-20-27-0000-062.
6. THE EXISTING SITE CONDITION CONSISTS OF A VACANT, CLEARED PARCEL.
7. PER THE USDA NATURAL RESOURCES CONSERVATION SERVICE FOR ORANGE COUNTY, THE SCS SOILS MAP INDICATES THE SITE CONSISTS OF: (4) CANDLER FINE SANDS, 0 TO 5 PERCENT SLOPES AND (5) CANDLER FINE SANDS 5 TO 12 PERCENT SLOPES.
8. THE SITE IS LOCATED WITHIN ZONE "X" PER FEMA MAP PANEL No. 12095C0125 H, DATED SEPTEMBER 24, 2021.
9. ELECTRICAL UTILITY SERVICE WILL BE PROVIDED BY DUKE ENERGY. TELEPHONE AND INTERNET WILL BE PROVIDED BY AT&T, AND CABLE SERVICE WILL BE PROVIDED BY SPECTRUM.
10. SOLID WASTE WILL BE COLLECTED AND DISPOSED OF BY ORANGE COUNTY.
11. THE SITE IS NOT LOCATED WITHIN THE LIMITS OF A WELLHEAD PROTECTION ZONE AND THERE IS NO ORDINARY HIGH WATER (OHW) LINE WITHIN THE SITE.
12. POTABLE WATER AND WASTEWATER SERVICE WILL BE PROVIDED BY CITY OF APOPKA.
13. ALL ON-SITE WATER AND SEWER FACILITIES ARE OWNED AND MAINTAINED BY THE PROPERTY OWNER.
14. IRRIGATION SERVICE WILL BE PROVIDED BY A PROPOSED RECLAIM MAIN.

LEGEND

NOTE: NOT ALL SYMBOLS SHOWN HERE MAY BE APPLICABLE TO THESE DRAWINGS, ALSO THERE MAY BE ADDITIONAL SYMBOLS WITHIN PLANS NOT SHOWN HERE, SEE INDIVIDUAL DRAWING LEGEND WHERE APPLICABLE.

- #3 — BENCHMARK ID
- B24 — BORING ID
- TV — EXISTING CABLE TV PEDESTAL
- EXISTING CAP OR PLUG
- EXISTING CLEAN OUT
- EXISTING CONDUIT RISER/ MARKER
- E — EXISTING ELECTRIC METER
- +11.7 — EXISTING ELEVATION (SOFT)
- 5.0± — PROPOSED ELEVATION (SOFT)
- +11.75 — EXISTING ELEVATION (HARD)
- 5.00 — PROPOSED ELEVATION (HARD)
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING FLOW DIRECTION
- PROPOSED FLOW DIRECTION
- EXISTING GAS METER
- EXISTING GAS VALVE
- EXISTING GUY WIRE & ANCHOR PIN
- EXISTING MAIL BOX
- EXISTING MANHOLE (UNKNOWN)
- PROPOSED MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING SANITARY SEWER MANHOLE
- EXISTING ROAD SIGNS AND POSTS
- PROPOSED SIGN AND POST
- EXISTING TEE
- EXISTING UTILITY POLE
- EXISTING VALVE IRRIGATION
- EXISTING VALVE WATER
- PROPOSED WATER VALVE
- EXISTING WATER METER
- EXISTING STORM SEWER WITH INLET
- PROPOSED STORM SEWER WITH INLET
- 1/2" IRON ROD (NO I.D.)
- 4" BY 4" CONCRETE MONUMENT
- EXISTING EASEMENT
- FOC — EXISTING UNDERGROUND FIBER OPTIC CABLE
- #FM — EXISTING FORCE MAIN (# INDICATES SIZE)
- GAS — EXISTING GAS MAIN
- OHE — EXISTING OVERHEAD ELECTRIC CABLES
- OHT — EXISTING OVERHEAD TRAFFIC SIGNAL CABLE
- #RAW — EXISTING RAW WATER MAIN (# INDICATES SIZE)
- #REC — EXISTING RECLAIM WATER MAIN (# INDICATES SIZE)
- #SAN — PROPOSED SANITARY SEWER (# INDICATES SIZE)
- #WM — PROPOSED WATER MAIN (# INDICATES SIZE)
- 12 — EXISTING CONTOUR
- 10 — PROPOSED CONTOUR (SOFT)
- 10 — PROPOSED CONTOUR (HARD)
- UTEL — EXISTING UNDERGROUND TELEPHONE CABLE
- UTV — EXISTING UNDERGROUND TELEVISION CABLE
- UGE — EXISTING UNDERGROUND ELECTRICAL POWER CABLE
- JURISDICTIONAL WETLAND LINE
- #SAN — EXISTING SANITARY SEWER (# INDICATES SIZE)
- #W — EXISTING WATER MAIN (# INDICATES SIZE)
- EXISTING PIPE OR CONDUIT (TYPE SPECIFIED)
- EXISTING SWALE OR CENTER OF DITCH
- PROPOSED SWALE OR CENTER OF DITCH
- EXISTING TOP OF DITCH BANK
- EXISTING BOTTOM OF DITCH BANK
- EXISTING WOOD FENCE
- EXISTING WIRE OR CHAIN LINK FENCE
- PROPOSED WIRE OR CHAIN LINK FENCE
- PROPOSED SILT/SEDIMENT FENCE
- PROPOSED COIR ROLL OR WATTLE
- PROPOSED FLOATING TURBIDITY BARRIER
- TP — TP — PROPOSED TREE PROTECTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY AND TRAFFIC DESIGN STANDARDS - 2022 / 2023 AND QUALIFIED PRODUCTS LIST

INDEX NO.	DESCRIPTION
102	TEMPORARY EROSION AND SEDIMENT CONTROL
425-010	STRUCTURE BOTTOMS - TYPES J AND P
205	PIPE BACKFILL
425-021	CURB INLET TOP TYPES 5 AND 6
430-011	U-TYPE CONCRETE ENDWALLS - BAFFLES AND GRATE OPTIONAL - 15" TO 30" PIPE
430-001	MISCELLANEOUS DRAINAGE DETAILS
520-001	CURB & CURB AND GUTTER
522-002	PUBLIC SIDEWALK CURB RAMPS
350-001	CONCRETE PAVEMENT JOINTS
522-001	CONCRETE SIDEWALK
514	OPTIONAL BASE GROUP AND STRUCTURAL NUMBERS
102-600	GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES
102-602	TWO-LANE, TWO-WAY, WORK ON SHOULDER
102-603	TWO-LANE, TWO-WAY, WORK WITHIN THE TRAVEL WAY
700-101	TYPICAL SECTIONS FOR PLACEMENT OF SINGLE & MULTIPLE-COLUMN SIGNS
711-001	SPECIAL MARKING AREAS

ABBREVIATIONS

AWWA	AMERICAN WATER WORKS ASSOCIATION	GW	GROUND WATER	R	RADIUS
CMP	CORRUGATED METAL PIPE	H/C	HANDICAP	RCP	REINFORCED CONCRETE PIPE
CPP	CORRUGATED PLASTIC PIPE	HDPE	HIGH DENSITY POLYETHYLENE	RPM	REFLECTIVE PAVEMENT MARKER
CTV	CABLE TELEVISION	INV	INVERT	R/W	RIGHT-OF-WAY
DIP	DUCTILE IRON PIPE	K_H	HORIZONTAL PERMEABILITY	SAN	SANITARY
ESMT	EASEMENT	K_V	VERTICAL PERMEABILITY	SH	SEASONAL HIGH
EXIST	EXISTING	KO	KNOCK OUT	SMH	SANITARY MANHOLE
FAC	FLORIDA ADMINISTRATIVE CODE	LF	LINEAL FEET	SJRWMD	ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION	MB	MAP BOOK	SS	SANITARY SEWER
		MES	MITERED END SECTION	SWPPP	STORMWATER POLLUTION PREVENTION PLAN
		MJ	MECHANICAL JOINT		
		N/A	NOT APPLICABLE	TSB	TEMPORARY SEDIMENT BASIN
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY	NIC	NOT IN CONTRACT	TYP	TYPICAL
		NGVD	NATIONAL GEODETIC VERTICAL DATUM	UGE	UNDERGROUND ELECTRIC
FH	FIRE HYDRANT	OHE	OVERHEAD ELECTRIC	UGT	UNDERGROUND TELEPHONE
FOC	FIBER OPTIC CABLE	OR	OFFICIAL RECORD		
FF EL	FINISH FLOOR ELEVATION	PG	PAGE	USACOE	UNITED STATES ARMY CORP OF ENGINEERS
FM	FORCE MAIN	PSI	POUNDS PER SQUARE INCH	W	WATER (POTABLE)
FPD	FEET PER DAY	PVC	POLYVINYL CHLORIDE		
G	GAS	PVMT	PAVEMENT		
GPC	GULF POWER COMPANY				

SITE PREPARATION

1. SEE GEOTECHNICAL REPORT PREPARED BY UNIVERSAL ENGINEERING SCIENCES, LLC, REPORT No. 2019982 DATED MARCH 19, 2023.

REVISIONS

DATE	DESCRIPTION

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Civil Engineering
Transportation, CEI &
Landscape Architecture

NEWKIRK ENGINEERING INC.

DEVBELOPMENT INFORMATION AND NOTES

PONKAN OAK MANOR
3405 WEST PONKAN ROAD
APOPKA, FL 32712

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HARRY NEWKIRK LICENSE NO. 62971 STATE OF FLORIDA PROFESSIONAL ENGINEER

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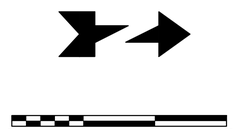
PROJECT No:	2023-30
DATE:	JUNE 2023
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	

DRAWING NUMBER

03



WARNING !!

CONTRACTOR SHALL TAKE ALL PRECAUTIONS DURING CONSTRUCTION TO AVOID CONTACT WITH EXISTING UNDERGROUND UTILITIES, GAS MAINS, UNDERGROUND ELECTRIC AND FIBER OPTIC LINES IN THE RIGHT-OF-WAY.

EROSION CONTROL NOTES:

1. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE SWPPP DURING CONSTRUCTION OPERATIONS.
2. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL DEVICES HAVE BEEN INSTALLED.
3. THE CONTRACTOR SHALL POST "NO TRESPASSING" SIGNAGE AT ALL SITE ENTRANCES PRIOR TO CONSTRUCTION.
4. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN AND AT LEAST ONCE A WEEK.
5. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SOIL SEDIMENT FROM LEAVING THE SITE.
6. GENERAL CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.
7. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON SITE INSPECTION.
8. NO TURBID WATER SHALL BE DISCHARGED OFF-SITE FROM THE DEWATERING OPERATION. CONTRACTOR SHALL TAKE MEASURES TO CONTROL TURBIDITY.
9. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OF NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
11. PROVIDE DUST CONTROL FOR ALL EARTHWORK OPERATIONS. COVER AREA WITH LIGHT COATING OF WATER OR OTHER APPROVED METHOD.

LAND ALTERATION / TREE PRESERVATION NOTES:

1. ALL TREES TO REMAIN MUST BE PROTECTED BY TREE PRESERVATION BARRICADES MEETING THE MINIMUM STANDARDS. PROTECTIVE BARRICADES SHALL REMAIN IN PLACE UNTIL LAND ALTERATION AND CONSTRUCTION ACTIVITIES ARE COMPLETED.
2. ALL TRIMMING SHALL BE UNDERTAKEN ON A TREE PROTECTED BY THE PROVISIONS OF THE LAND DEVELOPMENT CODE SHALL BE IN ACCORDANCE WITH THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) A-300 PRUNING STANDARDS.
3. OAK TREES LARGER THAN 36-INCHES AND ABOVE (HISTORIC) PRUNING SHALL BE PERFORMED BY AN ARBORIST CERTIFIED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE OR A REGISTERED CONSULTING ARBORIST WITH THE AMERICAN SOCIETY OF CONSULTING ARBORISTS. THE ARBORIST SHALL UNDERSTAND THAT THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) A300 PRUNING STANDARDS IS A STANDARD OF DIVISION 4.0.
4. ALL TREE ROOTS EXISTING WITHIN APPROVED IMPROVEMENT AREAS AND ORIGINATING FROM A PROTECTED TREE, SHALL BE SEVERED CLEAN AT THE LIMITS OF THE PRESERVED AREA WHERE INDICATED ON THIS PLAN.

DEMOLITION AND SWPPP NOTES:

1. ALL EROSION CONTROL DEVICES AND VISIBLE BARRICADES SHALL BE INSTALLED AND APPROVED BY THE ENGINEER PRIOR TO THE START OF CLEARING AND GRUBBING.
2. THE CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION MEETING WITH THE CITY AS SPECIFIED PRIOR TO START OF CONSTRUCTION.
3. THE SITE SHALL BE CLEARED AND GRUBBED OF ALL VEGETATION AND DEBRIS WITHIN THE APPROXIMATE LIMITS OF CLEARING AS INDICATED ON THE DRAWING.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE CITY OF APOPKA UTILITY DEPARTMENT, FLORIDA SUNSHINE AND EMERGENCY SERVICES FOR RESPECTIVE UTILITY LOCATIONS AND "NOTICE" OF CONSTRUCTION ACTIVITY.
5. ALL REMOVED MATERIAL SHALL BE HAULED OFF-SITE TO AN APPROVED LANDFILL. TREES MAY BE LOGGED OR MULCHED FOR OFF-SITE DISPOSAL AT THE CONTRACTOR'S DISCRETION.
6. ALL EROSION CONTROL DEVICES SHALL BE PLACED PRIOR TO THE START OF WORK AND REMAIN IN PLACE UNTIL ALL WORK IS COMPLETE.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR PERIODIC INSPECTION AND REMOVAL OF DEBRIS AND SILT BEHIND EROSION CONTROL DEVICES..
8. ALL INLETS AND PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY INLET PROTECTION MEASURES TO PREVENT SILTATION IN THE DRAINAGE SYSTEM (SEE DETAILS THIS DRAWING). THE ENTIRE DRAINAGE SYSTEM SHALL BE CLEANED OF ALL DEBRIS PRIOR TO FINAL ACCEPTANCE.
9. ALL OFF-SITE AREAS DISTURBED DURING CONSTRUCTION ACTIVITY SHALL BE IMMEDIATELY RESTORED TO PRIOR CONDITION UPON COMPLETION OF WORK.
10. SOILS ARE TO BE STABILIZED BY WATER OR OTHER MEANS DURING CONSTRUCTION. THIS IS INTENDED TO REDUCE SOIL EROSION, BLOWING SAND AND THE IMPACT TO NEIGHBORING PROPERTIES.
11. THE CONTRACTOR SHALL PROVIDE THE ENGINEER, CITY A MOT PLAN AT PRECONSTRUCTION MEETING. TRAFFIC SHALL BE ALLOWED TO CONTINUE DURING WORK. PROVIDE MEASURES TO DETOUR TRAFFIC AROUND OPEN EXCAVATION WITH ADEQUATE BARRICADES, SIGNAGE AND FLAGPERSON TO DIRECT TRAFFIC. EMERGENCY SERVICES SHALL BE NOTIFIED 48 HOUR IN ADVANCE.
12. EXISTING DRIVEWAYS SHOWN ADJACENT TO OR OUTSIDE LIMITS OF CONSTRUCTION SHALL REMAIN IN-SERVICE. EXISTING UTILITIES AND DRIVEWAYS SHALL NOT BE REMOVED UNLESS OTHERWISE NOTED.
13. IF ANY DEWATERING IS TO OCCUR DURING ANY PHASE OF CONSTRUCTION THEN DEWATERING ACTIVITY SHALL ADHERE TO CHAPTER 40C-22 FAC MORE SPECIFICALLY AS FOLLOWS. PER 40C-22.030(3) A "NOTICED GENERAL SHORT-TERM DEWATERING PERMIT" IS REQUIRED "ONLY IF" DEWATERING EXCEEDS 4 MILLION GALLONS PER DAY, EXCEPT DURING THE FIRST 120 HOURS OF DEWATERING WHEN THE DAILY AND INSTANTANEOUS PUMPAGE RATES SHALL NOT EXCEED 6 MILLION GALLONS PER DAY. AVERAGE DAILY WITHDRAWAL SHALL NOT EXCEED 2 MILLION GALLONS PER DAY FOR THE FIRST 60 DAYS OF THE DEWATERING ACTIVITY AND SHALL NOT EXCEED ONE MILLION GALLONS PER DAY OF A 180 DAY DURATION. EACH SPECIFIC DEWATERING PROJECT SHALL NOT EXCEED 180 DAYS. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE ANY DEWATERING ACTIVITY IS BELOW THE SPECIFIED THRESHOLD. OTHERWISE A PERMIT WILL BE REQUIRED AT THE EXPENSE OF THE CONTRACTOR. THE CONTRACTOR SHALL FAMILIARIZE ITSELF WITH CHAPTER 40C-22 FAC AND BE SOLELY RESPONSIBLE FOR OBTAINING AND SUBMITTING FORM RDS-50 TO SJRWMD A MINIMUM OF 10 DAYS PRIOR TO ANY DEWATERING ACTIVITY. SUBMITTAL OF FORM RDS-50 IS NOT REQUIRED IF DEWATERING IS 300,000 GALLONS PER DAY OR LESS AND WILL NOT EXCEED 30 DAYS IN DURATION.

CITY OF APOPKA RIGHT-OF-WAY NOTES:

1. NOTIFY CITY OF APOPKA DEVELOPMENT ENGINEERING DIVISION AT (407) 703-1718 A MINIMUM OF 24 HOURS PRIOR TO THE START OF CONSTRUCTION. FAILURE OF THE PERMITTEE TO OBTAIN THE APPROPRIATE INSPECTIONS PRIOR TO PROCEEDING WITH WORK SHALL NOT RELIEVE THE PERMITTEE FROM REEXCAVATION OR OTHER MEASURES NECESSARY FOR THE INSPECTION OF WORK.
2. CITY OF APOPKA TRAFFIC ENGINEERING (407) 703-1718 IS NOT A MEMBER OF SUNSHINE ONE CALL. WHEN REQUESTING LOCATES, PLEASE PROVIDE A MINIMUM ADVANCED NOTIFICATION OF TWO (2) BUSINESS DAYS PRIOR TO PROPOSED WORK.
3. COORDINATION WITH CITY OF APOPKA TRAFFIC OPERATIONS (407) 703-1718 IS REQUIRED WITH A MINIMUM ADVANCED NOTICE OF SEVEN (7) DAYS PRIOR TO ANY SIDEWALK, LANE OR ROAD CLOSURE (INCLUDING FLAGGING OPERATIONS).
4. OPERATIONS WITHIN THE COUNTY RIGHT-OF-WAY SHALL NORMALLY BE CONDUCTED 7:00 AM TO 7:00 PM, MONDAY THROUGH FRIDAY. ANY DEVIATION FROM THESE HOURS REQUIRES PRIOR APPROVAL FROM THE COUNTY DEVELOPMENT ENGINEER. EMERGENCY REPAIRS ARE EXCLUDED FROM THIS TIME RESTRICTION.
5. ALL EXISTING SIDEWALKS WITHIN COUNTY RIGHT-OF-WAY SHALL EITHER REMAIN OPEN OR BE PROVIDED A TEMPORARY WALKWAY IN ACCORDANCE WITH THE CURRENT VERSION OF FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD INDEX NO. 660. ANY DAMAGE TO SIDEWALKS SHALL BE REPAIRED AND/OR REPLACED IN LIKE KIND BY THE CONTRACTOR. NEW SIDEWALKS AND SECTIONS THROUGH DRIVEWAYS MUST BE AT A 1.5% CROSS SLOPE AND 2% MAXIMUM CROSS SLOPE PER ADA STANDARDS.
6. DRIVING OR STAGING OF CONSTRUCTION VEHICLES OR MATERIALS IS NOT PERMITTED WITHIN THE COUNTY RIGHT-OF-WAY OR ON PEDESTRIAN WALKWAYS AND PATHS. THERE SHALL BE NO OVERNIGHT CONSTRUCTION VEHICLE RELATED PARKING, CONSTRUCTION MATERIAL PLACEMENT OR STORAGE OF ANY KIND PERMITTED WITHIN THE COUNTY RIGHT-OF-WAY.
7. NO TRENCH OR EXCAVATION SHALL BE LEFT OPEN OR UNATTENDED OVERNIGHT, UNLESS APPROVED BY THE COUNTY DEVELOPMENT ENGINEERING INSPECTOR. EXCAVATIONS SHALL MEET THE DROP OFF PROTECTION REQUIREMENTS OF THE LATEST FDOT DESIGN STANDARD INDEX NO. 600.
8. RESTORATION SHALL BE REQUIRED FOR ANY DAMAGE TO SIDEWALKS, CURBS, OR OTHER EXISTING STRUCTURES IN THE RIGHT-OF-WAY. ALL DISTURBED AREAS WITHIN THE COUNTY RIGHT-OF-WAY SHALL BE RE-GRADED AND SODDED. SEED AND MULCH IS NOT AN ACCEPTABLE ALTERNATIVE TO SODDING.

TREE LEGEND

	EXISTING	REMOVED
PINE TREE	13	0
OAK TREE	1	0
	14	0

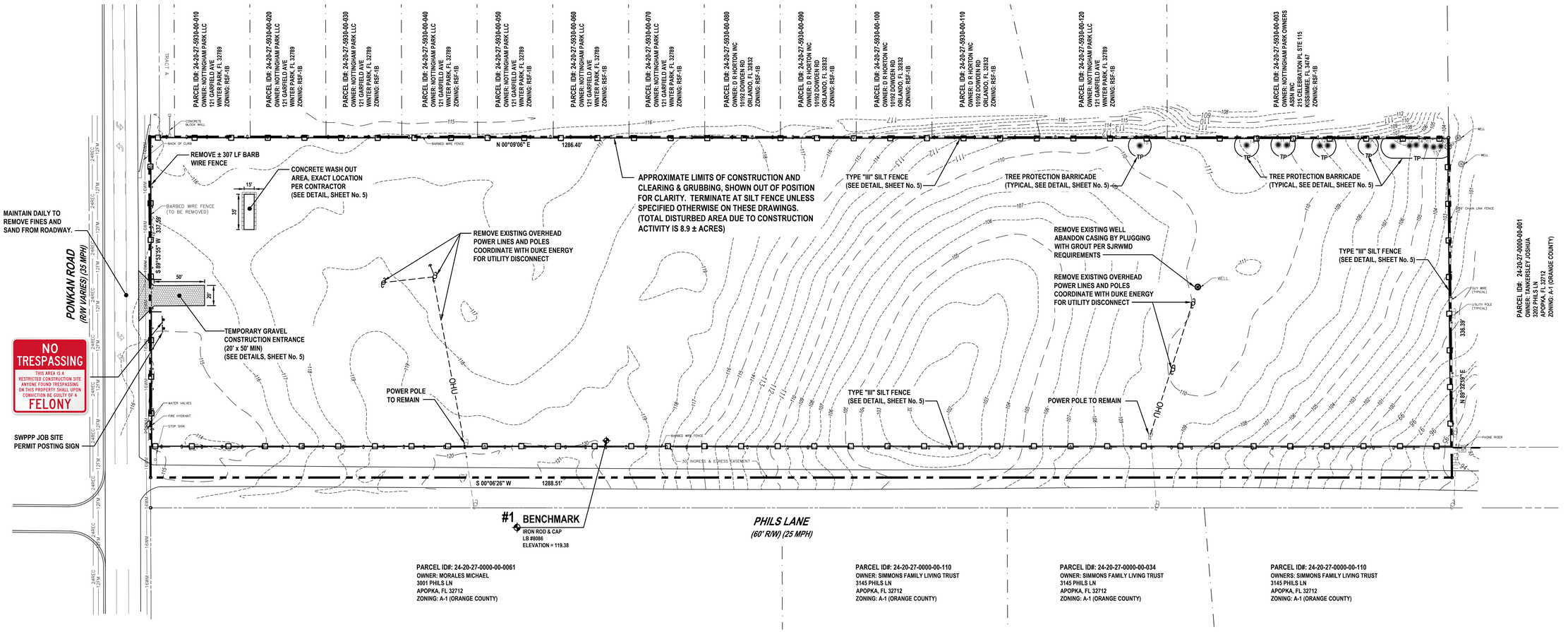
LEGEND:

- PROPOSED SILT FENCE (SEE DETAIL, SHEET No. 5)
- EXISTING TREE
- TREE PROTECTION BARRICADE (SEE DETAIL, SHEET No. 5)

BENCHMARK INFORMATION:

#1 SET IRON ROD AND CAP
LB #8086
ELEVATION 119.38

VERTICAL DATA
ELEVATIONS SHOWN HEREON ARE BASED ON ORANGE COUNTY BENCHMARK #1302027, WITH A PUBLISHED ELEVATION OF 78.261', NORTH AMERICAN VERTICAL DATUM OF 1988.



REVISIONS

DATE	DESCRIPTION

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Civil Engineering
Transportation, CEI &
Landscape Architecture
NEWKIRK ENGINEERING INC.

SWPP DETAILS AND NOTES

PONKAN OAK MANOR

3405 WEST PONKAN ROAD
APOPKA, FLORIDA 32712

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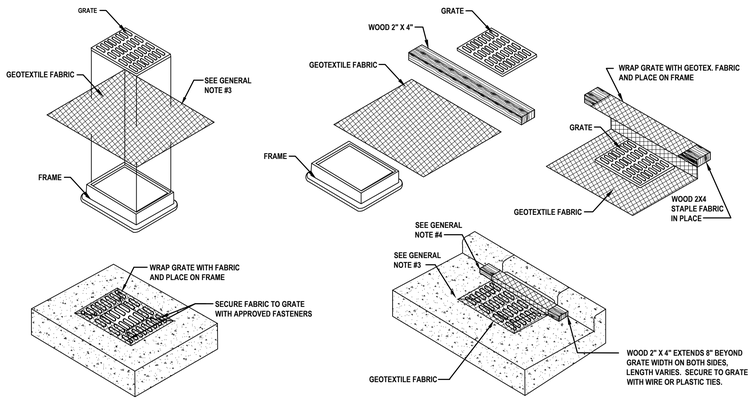
HARRY NEWKIRK LICENSE NO. 62971 STATE OF FLORIDA PROFESSIONAL ENGINEER

HARRY H. NEWKIRK, P.E. # 62971

PROJECT No:	2023-30
DATE:	JUNE 2023
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	1"=50'

DRAWING NUMBER

04



YARD INLET PROTECTION
(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)

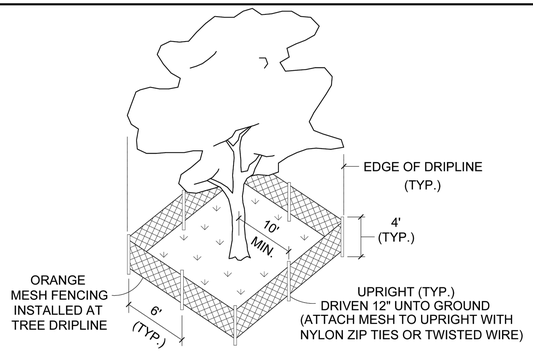
CURB INLET PROTECTION

GENERAL NOTES:

1. GEOTEXTILE TO BE MIRAFI FILTERWEAVE 402 OR GEOTEX 111F. ALTERNATIVES INCLUDE APPROVED EQUAL ASTM D4491 OR 100 TO 150 GALLON PER MINUTE PER SQUARE FOOT.
2. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.
3. FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
4. FOR CURB INLET PROTECTION AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
5. TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.
6. THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS, OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

GEOTEXTILE FABRIC INLET PROTECTION

NOT TO SCALE



TYP. CITY TREE BARRICADE DETAIL

N.T.S.

TREE BARRICADES ARE REQUIRED AROUND ALL TREES WHICH HAVE BEEN DESIGNATED ON THE SITE PLAN TO BE RETAINED AND PROTECTED. PRIOR TO ANY CLEARING OR CONSTRUCTION ACTIVITY OCCURING ON THE SITE, TREE BARRICADES SHALL BE CONSTRUCTED BY THE CONTRACTOR AND APPROVED BY BY THE CITY. TREE BARRICADES SHALL BE PLACED AT THE EDGE OF THE DRIPLINE OR A MINIMUM OF 10' FROM THE TRUNK OF THE TREE, WHICH EVER IS GREATER.

FOR THE BARRIER THE CITY RECOMMENDS SAFETY BARRICADE FENCING.

NOTE: EXISTING TREES IN LANDSCAPE BUFFER SHALL ALSO BE PROTECTED.

DATE: May 22, 2019	**TREE BARRICADE DETAIL**	**M112**

TEMPORARY SEEDING SPECIFICATION:

GENERAL
SEEDING CAN BE USED FOR TEMPORARY STABILIZATION. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 7 DAYS SHALL BE TEMPORARILY SEEDED AND WATERED. AREAS WHERE FINAL GRADING HAS BEEN COMPLETED FOR MORE THAN 7 DAYS SHALL BE TEMPORARILY SEEDED. TEMPORARY SEED MIXTURE IS SPECIFIED BELOW.

SEEDING MIXTURES
SEED MIXTURE SHALL BE BERMUDA COMMON 90 LB PURE LIVE SEED PER ACRE, FIBER 2000 LB PER ACRE, STABILIZER 120 LB PER ACRE AND FERTILIZER 300 LB PER ACRE.

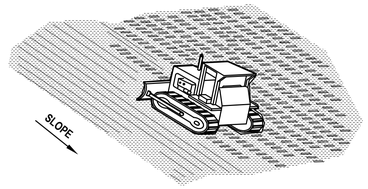
ALL SLOPES AND FLAT GRADE
APPLY 6:20:20 COMMERCIAL ORGANIC FERTILIZER AT A RATE OF 300 LB PER ACRE AND SEED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

TEMPORARY SEEDING

PLANTING DATES	SEED VARIETY	APPLICATION RATE
MARCH 15 -	PENSACOLA BAHIA (SCARIFIED)	90
OCTOBER 15	BERMUDA COMMON (50% HULLED)	25
0CTOBER 16 -	PENSACOLA BAHIA (SCARIFIED)	100
MARCH 14	BERMUDA COMMON (50% HULLED)	35
	ANNUAL RYE GRASS	10
	RYE GRAIN	30

MULCH SEEDED AREA WITH 2 TONS PER ACRE CLEAN GRAIN STRAW. ANCHOR STRAW WITH HYDRAULIC WOOD FIBER MULCH AT THE RATE OF 1000 LB PER ACRE, OR 150-200 POUNDS OF ORGANIC MULCH TACKIFIER PER ACRE, OR USE NETTING.

HYDRO FIBER MULCH MIXTURE SHALL BE PERFORMED IN A TANK WITH A CONTINUOUS AGITATION AND RECIRCULATION SYSTEM WITH SUFFICIENT OPERATING CAPACITY TO PRODUCE A HOMOGENOUS SLURRY AND DISCHARGE SYSTEM WHICH WILL APPLY THE SLURRY AT A CONTINUOUS AND UNIFORM RATE. MIXTURE SHALL CONTAIN A GREEN FUGITIVE DYE AS AN APPLICATION INDICATOR.

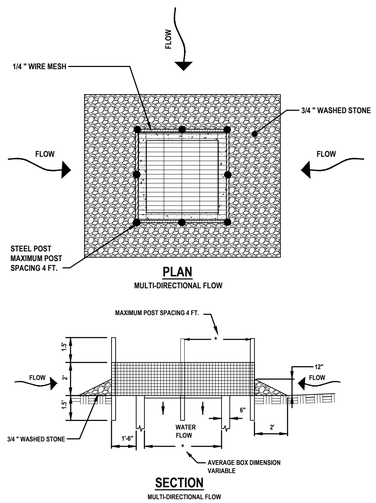


NOTE:

USE DOZER TRACKS TO CREATE GROOVES PERPENDICULAR TO THE SLOPE. GROOVES WILL CATCH SEED, FERTILIZER, MULCH, RAINFALL AND DECREASE SEDIMENT IN RUNOFF.

TRACKING DETAIL

NOT TO SCALE



PLAN
MULTI-DIRECTIONAL FLOW

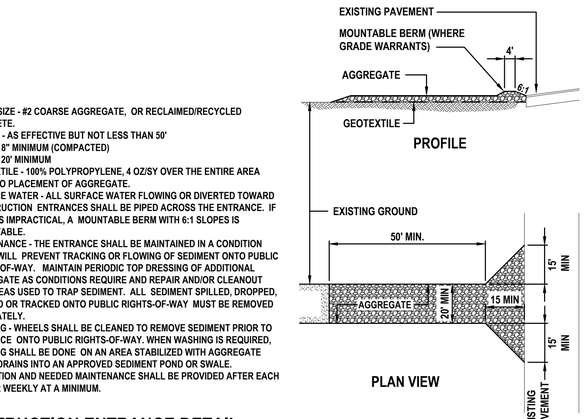
SECTION
MULTI-DIRECTIONAL FLOW

NOTE:

1. SEDIMENT CONTROL STONE SHALL BE 3/4" WASHED STONE.
2. WIRE MESH SHALL BE HARDWARE CLOTH 23 GAUGE MIN. AND SHALL HAVE 1/4 INCH MESH
3. TOP OF WIRE MESH SHALL BE A MINIMUM OF ONE FOOT BELOW THE SHOULDER OR ANY DIVERSION POINT.
4. STEEL POST SHALL BE 5 FT. IN LENGTH, BE INSTALLED 1.5 FT. DEEP MINIMUM, AND BE OF THE SELF-FASTENER ANGLE STEEL TYPE.
5. WOOD POST SHALL BE 5 FT. IN HEIGHT, BE INSTALLED TO 1.5 FT. DEEP MINIMUM, AND BE 3 INCHES IN DIAMETER.
6. POST SPACING SHALL BE A MAXIMUM OF 4 FT.

HARDWARE CLOTH INLET PROTECTION

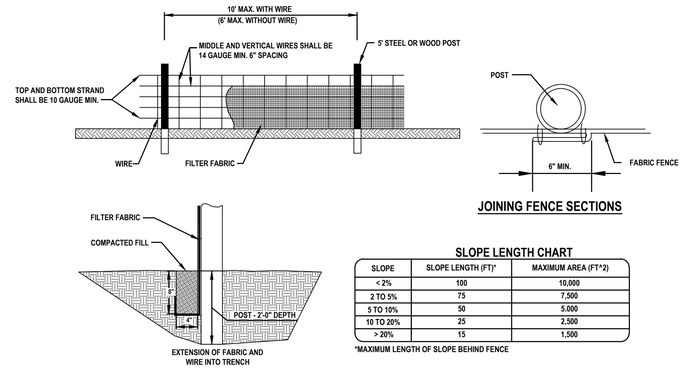
NOT TO SCALE



1. STONE SIZE - #2 COARSE AGGREGATE, OR RECLAIMED/RECYCLED CONCRETE
2. LENGTH - AS EFFECTIVE BUT NOT LESS THAN 50'
3. DEPTH - 8" MINIMUM (COMPACTED)
4. WIDTH - 20' MINIMUM
5. GEOTEXTILE - 100% POLYPROPYLENE, 4 OZ/SY OVER THE ENTIRE AREA PRIOR TO PLACEMENT OF AGGREGATE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 6:1 SLOPES IS ACCEPTABLE.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. MAINTAIN PERIODIC TOP DRESSING OF ADDITIONAL AGGREGATE AS CONDITIONS REQUIRE AND REPAIR AND/OR CLEANOUT ANY AREAS USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, WASHING SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE WHICH DRAINS INTO AN APPROVED SEDIMENT POND OR SWALE.
9. INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN OR WEEKLY AT A MINIMUM.

CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE



JOINING FENCE SECTIONS

SLOPE LENGTH CHART

SLOPE	SLOPE LENGTH (FT)*	MAXIMUM AREA (FT*2)
< 2%	100	10,000
2 TO 5%	75	7,500
5 TO 10%	50	5,000
10 TO 20%	25	2,500
> 20%	15	1,500

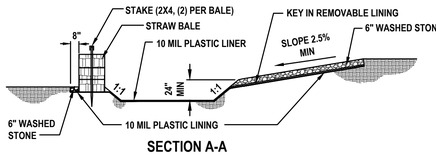
*MAXIMUM LENGTH OF SLOPE BEHIND FENCE

NOTES:

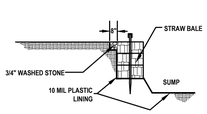
1. WWM MINIMUM 32" WIDTH WITH A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
2. FILTER FABRIC SHALL BE 36" WIDE AND SHALL BE FASTENED ADEQUATELY TO THE WIRE.
3. STEEL POST SHALL BE 5'-0" IN LENGTH AND BE OF THE SELF-FASTENER ANGLE STEEL TYPE.
4. WOOD POST SHALL BE 5'-0" IN LENGTH AND 2" IN DIAMETER.
5. SUPPORT POSTS SHALL BE INSTALLED ON THE DOWNHILL SIDE OF THE SEDIMENT FENCE (DOWNSTREAM FROM EXPECTED FLOWS)
6. ACCUMULATED SEDIMENT SHALL REMOVED WHEN 25% THE HEIGHT OF FENCE.
7. MAXIMUM DRAINAGE AREA 10,000 SF PER 100' OF FENCE.
8. MAXIMUM LENGTH UPSLOPE FROM FENCE PER CHART.

SEDIMENT FENCE DETAIL

NOT TO SCALE

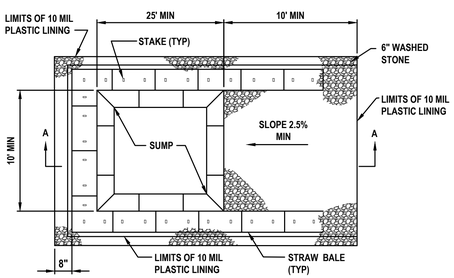


SECTION A-A



ALTERNATE SECTION
USE WHERE MORE THAN ONE ACCESSIBLE SIDE IS NEEDED

WASHOUT SIGN



PLAN

CONCRETE WASHOUT AREA

NOT TO SCALE

NOTES:

1. PIT IS SPECIFICALLY DESIGNATED, DIKED AND IMPERVIOUS CONTAINMENT TO PREVENT CONTACT BETWEEN CONCRETE WASH AND STORMWATER.
2. WASH WATER SHALL NOT BE ALLOWED TO FLOW TO SURFACE WATER.
3. FACILITY MUST HOLD SUFFICIENT VOLUME TO CONTAIN CONCRETE WASTE WITH A MINIMUM FREEBOARD OF 12."
4. FACILITY SHALL NOT BE FILLED BEYOND 95% CAPACITY UNLESS A NEW FACILITY IS CONSTRUCTED.
5. SAW CUT PORTLAND CEMENT CONCRETE, RESIDUE FROM SAWCUT & GRINDING TO BE DISPOSED OF IN THE PIT.
6. CONCRETE WASHOUTS SHALL BE LOCATED A MINIMUM OF 100' FROM DRAINAGE WAYS, INLETS, & SURFACE WATERS.
7. MANUFACTURED CONCRETE WASHOUT DEVICES MAY BE USED IF REMOVED FROM THE SITE WHEN 95% FULL CAPACITY.

REVISIONS

DATE	DESCRIPTION

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SWPP DETAILS AND NOTES
PONKAN OAK MANOR
3405 WEST PONKAN ROAD
APOPKA, FLORIDA 32712

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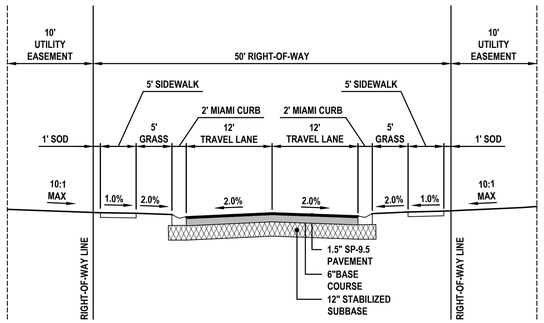
HARRY H. NEWKIRK, P.E. # 62971

PROJECT No:	2023-30
DATE:	JUNE 2023
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	AS SHOWN

DRAWING NUMBER

05

GRAPHIC SCALE
1"=50'



ROADWAY TYPICAL SECTION 50' RIGHT-OF-WAY

NOT TO SCALE (PONKAN OAK COURT)

COMMON AREAS

THE COMMON AREAS TRACTS WILL BE OWNED AND MAINTAINED BY THE PONKAN OAK MANOR HOA.

BENCHMARK

ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

SETBACK NOTE

WHEN TWO SETBACKS APPLY, THE MORE RESTRICTIVE SHALL PREVAIL.

LANDSCAPE NOTE

ALL TREE PRESERVATION, REMOVAL AND PLANTING SHALL COMPLY WITH THE REQUIREMENTS OF THE CITY OF APOPKA LAND DEVELOPMENT CODE AS AMENDED.

UTILITY NOTE

ALL UTILITIES SHALL COMPLY WITH THE CITY OF APOPKA PUBLIC WORKS / UTILITY DEPARTMENT STANDARD DETAILS AND SPECIFICATIONS.

EASEMENT NOTE

ALL UTILITY AND DRAINAGE EASEMENTS SHALL BE MAINTAINED BY THE PONKAN OAK MANOR HOA.

STORMWATER SYSTEM NOTE

THE PROPOSED STORMWATER SYSTEM SHALL COMPLY WITH THE CITY OF APOPKA LAND DEVELOPMENT CODE AS AMENDED AND ST. JOHNS RIVER WATER MANAGEMENT DISTRICT REQUIREMENTS.

STRIPING KEYNOTES: (PER FDOT INDEX No. 711-001, ONLY THERMOPLASTIC IN R/W)

1. 6" SOLID WHITE LINE
2. 6" SOLID YELLOW LINE
3. 6" SOLID DOUBLE YELLOW LINE
4. 24" WHITE STOP BAR
5. WHITE DIRECTIONAL ARROW
6. STANDARD CROSSWALK
7. SPECIAL EMPHASIS CROSSWALK
8. 24" DETECTABLE WARNING MAT (PER FDOT INDEX No. 522-002)
9. 6" WHITE SKIP LINE (6' - 10')
10. 18" YELLOW LINE @ 45° SPACED 5' ON CENTER
11. 18" WHITE LINE @ 45° SPACED 10' ON CENTER
12. 18" YELLOW LINE @ 45° SPACED 10' ON CENTER
13. BLUE RAISED PAVEMENT MARKER

PAVING LEGEND

STANDARD ASPHALT PAVEMENT — 1.5" SP-9.5 COMPACTED TO 98% OF LAB DENSITY, MARSHAL STABILITY 1,500 LBS. 6" CRUSHED CONCRETE BASE COMPACTED TO 98% MAXIMUM DENSITY, MINIMUM LBR 100. 12" STABILIZED SUBGRADE (LBR 130) COMPACTED TO A MINIMUM OF 98% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY VALUE (AASHTO T-180)

CONCRETE PAVEMENT — 6" CONCRETE (4,000 P.S.I. @ 28 DAYS) 12" STABILIZED SUBGRADE (LBR 40) MIN OF 98% MODIFIED PROCTOR MAX DRY DENSITY PER ASTM D1557, AASHTO T-180 (6" LIFTS) 12'x12' CONTROL JOINTS, 2" SAW CUT DEPTH SEE DETAILS, SHEET No. 22

CONCRETE SIDEWALK — 4" THICK CLASS I CONCRETE (3,000 P.S.I. @ 28 DAYS) PER FDOT INDEX 522-001 SEE DETAILS, SHEET No. 22

LEGEND

- MIAMI CURB
- TYPE "F" CURB
- SITE LIGHT POLES
- TRANSITION FROM TYPE 'F' CURB TO MIAMI CURB

STRIPING LEGEND

- PROPOSED BLUE REFLECTIVE PAVEMENT MARKER (MARKS FIRE HYDRANT)

DOG PARK / PARK AREA KEYNOTES:

SOURCE: PARKWAREHOUSE.COM

A. PARK BENCH - (4) MALIBU SERIES RECYCLED PLASTIC BENCH (6') SKU: 799be100

B. DOG STATION - (1) DOGIPOT WASTE STATION SKU: 328pd113

C. PEDESTAL GRILL - (2) 630 SERIES CHARCOAL GRILL, 300 SQ. IN. ROTATING GRILL SKU: 622gr110

D. PICNIC TABLE - (1) E-SERIES 46" ROUND ADA COMPLIANT TABLE SKU: 622pt120

E. PICNIC TABLE (1) E-SERIES 46" ROUND TABLE SKU: 622pt125

F. PLAYGROUND SET - CARSON'S CANYON, SET SHOWN IS ONLY REPRESENATIVE OF ACTUAL MODEL SKU: 622PG125

G. TRASH RECEPTACLE - STANDARD DUTY ROUND RECYCLED PLASTIC TRASH RECEPTACLE SKU: ACTR22

NOTE: CONTRACTOR TO DETERMINE IF FINAL PLAYGROUND SET SELECTED WILL FIT IN THE SPACE PROVIDED.

LOT TABLE

LOT #	AREA (AC)	AREA (SF)
LOT 1	0.207	9,000
LOT 2	0.207	9,000
LOT 3	0.234	10,200
LOT 4	0.234	10,200
LOT 5	0.262	11,400
LOT 6	0.262	11,400
LOT 7	0.262	11,400
LOT 8	0.372	16,200
LOT 9	0.372	16,200
LOT 10	0.372	16,214
LOT 11	0.624	27,168
LOT 12	0.444	19,335
LOT 13	0.240	10,450
LOT 14	0.240	10,450
LOT 15	0.240	10,450
LOT 16	0.215	9,350
LOT 17	0.215	9,350
LOT 18	0.189	8,250
LOT 19	0.189	8,250

TRACT TABLE

TRACT	AREA (SF)	AREA (AC)	USE
TRACT A	7,289	0.167	OPEN SPACE
TRACT B	6,615	0.152	OPEN SPACE
TRACT C	37,506	0.861	DRAINAGE
TRACT D	1,010	0.023	LIFT STATION
TRACT E	64,585	1.483	OPEN SPACE
TOTALS	117,005	2.686	

1.

PROPERTY INFORMATION	
FUTURE LAND USE (FLU)	VLDSR
ZONING (w/ OVERLAY)	APOPKA RSF-1B
FLOODZONE	"X"

2

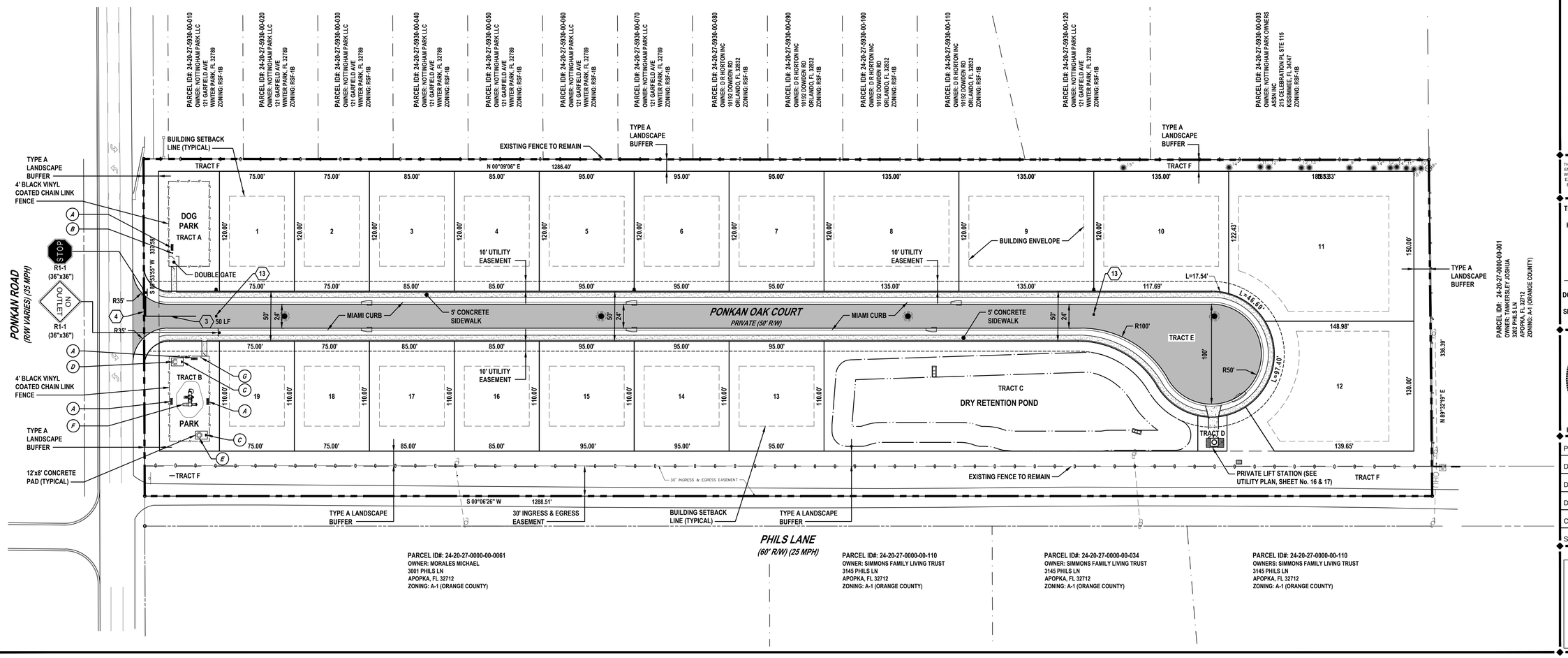
DIMENSIONAL REQUIREMENTS	SF
MAX. BUILDING HEIGHT	35 FT
MIN. LOT AREA	8,000 SF
MIN. LOT WIDTH	75 FT
FRONT	25 FT
REAR	25 FT
SIDE	10 FT
SIDE/CORNER	25 FT

3

PROPOSED SITE COVERAGE			
AREA TYPE	SF	ACRE	% OF SITE
LOT IMPERVIOUS	152,273	3.496	35.1%
ROW IMPERVIOUS	45,503	1.045	10.5%
DRY POND	30,193	0.693	7.0%
GREEN SPACE	205,735	4.723	47.4%
TOTAL SITE	433,704	9.956	100.0%
TOTAL LOT AREA	234,267	5.378	54.0%
TOTAL IMPERVIOUS	197,776	4.540	45.6%
TOTAL GREEN SPACE	205,735	4.723	47.4%
COMMON OPEN SPACE	130,039	2.985	30.0%

4

COMMON OPEN SPACE CALCULATION			
AREA TYPE	SF	ACRE	% OF PHASE
MIN. OPEN SPACE	86,741	1.991	20.0%
PROVIDED OPEN SPACE	130,039	2.985	30.0%



REVISIONS

DATE	DESCRIPTION

1230 North US1, Suite 3
Ormond Beach, Florida 32174
Phone (386) 872-7784
www.Newkirk-Engineering.com
C.A. # 30209
L.C. # 26000584
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Civil Engineering
Transportation, CEI &
Landscape Architecture
NEWKIRK ENGINEERING INC.

SITE LAYOUT PLAN
PONKAN OAK MANOR
3405 WEST PONKAN ROAD
APOPKA, FLORIDA 32712

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HARRY NEWKIRK LICENSE NO. 62971 STATE OF FLORIDA PROFESSIONAL ENGINEER

HARRY H. NEWKIRK, P.E. # 62971

PROJECT No:	2023-30
DATE:	JUNE 2023
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	1"=50'

DRAWING NUMBER

06

50 0 50 100

GRAPHIC SCALE

1"=50'

SUMMARY OF DRAINAGE:

THE MINIMUM WATER QUALITY TREATMENT VOLUME REQUIRED IS THE GREATER OF 0.5-INCHES OF RUNOFF OVER THE DRAINAGE RETENTION AREA, 1.25-INCHES OVER THE IMPERVIOUS SURFACE, OR 3.0-INCHES OF RUNOFF OVER IMPERVIOUS SURFACE (WEKIVA RECHARGE).. STORMWATER TREATMENT IS PROVIDED BY A DRY RETENTION SYSTEM. AN ADDITIONAL 0.5-INCH OF RUNOFF IS ADDED FOR AN ONLINE SYSTEM. THE TREATMENT SYSTEM IS DESIGNED TO ENSURE THE POST DEVELOPMENT DISCHARGE RATE AND VOLUME DOES NOT EXCEED THE PRE-DEVELOPMENT RATE AND VOLUME FOR THE MEAN ANNUAL, 25 YEAR-24 HOUR, AND 100 YEAR-24 HOUR STORM EVENTS.

PERMITTED RUNOFF		NODE: OFF-PHILS		
Design Storm		Rainfall (inches)	Inflow Rate (cfs)	Inflow Volume (ft^3)
Mean Annual, 24-Hour	PRE	4.30	0.00	1
10 Year, 24-Hour	PRE	6.70	0.19	5,162
25 Year, 24-hour	PRE	8.60	1.40	15,136
25 Year, 96-Hour	PRE	12.00	10.33	42,348
100 Year, 24-Hour	PRE	11.80	5.56	40,639

RECOVERY		
	UNITS	DRY POND
TREATMENT VOL.	CF	101,917
TREATMENT EL	FT	106.75
RECOVERY TIME	HRS	70

PROPOSED - DISCHARGE		NODE: OFF-PHILS		STAGE
Design Storm		Rainfall (inches)	Inflow Rate (cfs)	Inflow Volume (ft^3)	RET
Mean Annual, 24-Hour	POST	4.30	0.00	0	102.01
10 Year, 24-Hour	POST	6.70	0.00	0	102.93
25 Year, 24-hour	POST	8.60	0.00	0	104.37
25 Year, 96-Hour	POST	12.00	0.00	0	106.19
100 Year, 24-Hour	POST	11.80	0.00	0	106.69
				TOB	107.00

GENERAL DRAINAGE NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO DRAINAGE SYSTEM AND SHALL RESTORE ANY DAMAGED STRUCTURES.
2. ALL STORM PIPE SHALL BE CONSTRUCTED OF HDPE (SICE) PIPE OR RCP WITH CERTIFIED WATERTIGHT JOINTS BY THE MANUFACTURER. ACCEPTABLE HDPE PIPE SHALL BE HANCOR SUR-LOK WT, ADS SERIES 35, ADS N-12 WITH WT JOINT OR EQUAL.
3. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL MATERIAL AND STRUCTURES TO THE ENGINEER (NEWKIRK ENGINEERING, INC.) FOR APPROVAL PRIOR TO THE PRECONSTRUCTION MEETING.
4. CONTRACTOR TO PLACE FILTER FABRIC BETWEEN DRAINAGE STRUCTURES AND TOPS TO PREVENT SOIL INTRUSION. THE FABRIC SHALL BE PERIODICALLY CLEANED OF SAND A DEBRIS FABRIC SHALL REMAIN IN PLACE UNTIL PAVING IS COMPLETE.
5. ALL EXISTING STRUCTURES, UNLESS OTHERWISE NOTED TO REMAIN. FENCING TREES, & ETC., WITHIN THE CONSTRUCTION AREA SHALL BE REMOVED AND DISPOSED OF OFFSITE.
6. ALL DRAINAGE STRUCTURES SHALL BE PRE-CAST PER FDOT SPECIFICATIONS.
7. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC (H20) LOADING AND BE INSTALLED ACCORDINGLY PER FDOT STANDARD SPECIFICATIONS AND MANUFACTURES SPECIFICATIONS RESPECTIVELY.
8. ALL DRAINAGE STRUCTURES AND PIPES SHALL BE CLEANED OF SAND AT THE LAST STAGE OF CONSTRUCTION PRIOR TO THE FINAL INSPECTION.
9. ALL STORM INLET GRATES SHALL BE STEEL (TRAFFIC RATED).

DRAINAGE PIPE MINIMUM SLOPE REQUIREMENTS

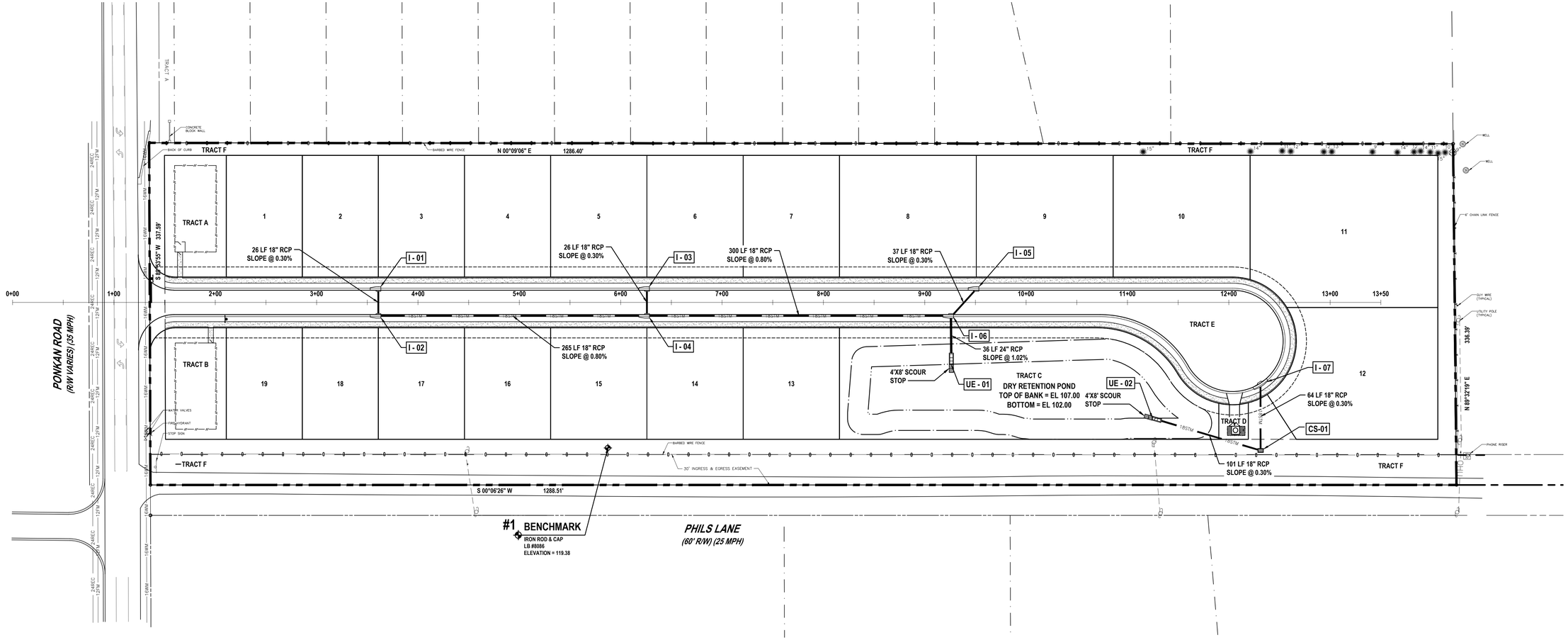
PIPE SIZE (IN)	SELF-CLEANSING VELOCITY (FPS)	MANNINGS (N)	RADIUS (FT)	CROSS-SECTIONAL AREA (FT)	WETTED PERIMETER	MINIMUM SLOPE (FT / 100 FT)
18	3.0	0.012	0.75	1.767	FULL & 1/2 FULL	0.0022
24	3.0	0.012	1.00	3.142	FULL & 1/2 FULL	0.0015

DRAINAGE STRUCTURE SCHEDULE

I.D.	STA.	OFFSET	STRUCTURE TYPE	TOP EL	SUMP EL	CONNECTIONS
CS-01	12+31.30	146.00 R	TYPE E INLET	106.80	101.30	18" PIPE - S INV 102.30 18" PIPE - W INV 102.82
I - 01	3+60.91	13.25 L	TYPE S INLET	114.11	108.91	18" PIPE - E INV 109.91
I - 02	3+60.91	13.25 R	TYPE S INLET	114.11	108.83	18" PIPE - W INV 109.83 18" PIPE - N INV 109.83
I - 03	6+25.91	13.25 L	TYPE S INLET	111.99	106.79	18" PIPE - E INV 107.79
I - 04	6+25.91	13.25 R	TYPE S INLET	111.99	106.71	18" PIPE - S INV 107.71 18" PIPE - W INV 107.71 18" PIPE - N INV 107.71
I - 05	9+50.91	13.25 L	TYPE S INLET	109.39	103.63	18" PIPE - SE INV 104.63
I - 06	9+25.91	13.25 R	TYPE S INLET	109.59	101.37	18" PIPE - S INV 105.31 18" PIPE - NW INV 104.52 24" PIPE - E INV 102.37
I - 07	12+31.23	80.55 R	TYPE 6 INLET	107.20	102.01	18" PIPE - E INV 103.01
UE - 01	9+26.23	61.03 R	24" U-EWALL 4:1 SLOPE WITH BAFFLE			24" PIPE - W INV 102.00
UE - 02	11+24.55	114.12 R	18" U-EWALL 4:1 SLOPE WITH BAFFLE			18" PIPE - N INV 102.00

NOTES:

1. ROUND STRUCTURE BOTTOMS ARE FDOT ALTERNATE 'A'.
2. SQUARE/RECTANGULAR STRUCTURE BOTTOMS ARE FDOT ALTERNATE 'B'.
3. 4'-0" DIAMETER AND SMALLER AND 3'-6" SQUARE STANDARD STRUCTURE BOTTOMS ARE FDOT TYPE DESIGNATED 'P' LARGER STANDARD STRUCTURE BOTTOMS ARE DESIGNATED TYPE 'J'.
4. INSTALL 12"x12" WEEP HOLE AT BOTTOM OF STRUCTURE WITH 24"x24"x12" THICK AGGREGATE BED WRAPPED WITH FILTER FABRIC.



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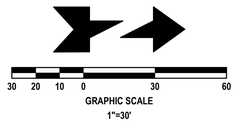

GRADING LEGEND:

– – 85 – –	EXISTING CONTOUR
— 85 —	PROPOSED CONTOUR
	DRAINAGE FLOW ARROW
×28.77	EXISTING SPOT ELEVATION
25.00	PROPOSED SPOT ELEVATION

GENERAL EARTHWORK NOTES:

1. IF ANY MUCK OR MUCK-LIKE MATERIAL IS DISCOVERED, IT WILL BE REQUIRED TO BE REMOVED, BACKFILLED WITH APPROPRIATE FILL, COMPACTED, AND TESTED USING AASHTO T-180 MODIFIED PROCTOR METHOD.
2. ALL FILLING IS TO BE PERFORMED IN ONE-FOOT LIFTS. THE COMPACTION REQUIREMENT IS 98% FOR PAVED AREAS AND 95% FOR UNPAVED AREAS PER AASHTO T-180 MODIFIED PROCTOR TEST.
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GENERAL GRADING NOTES:

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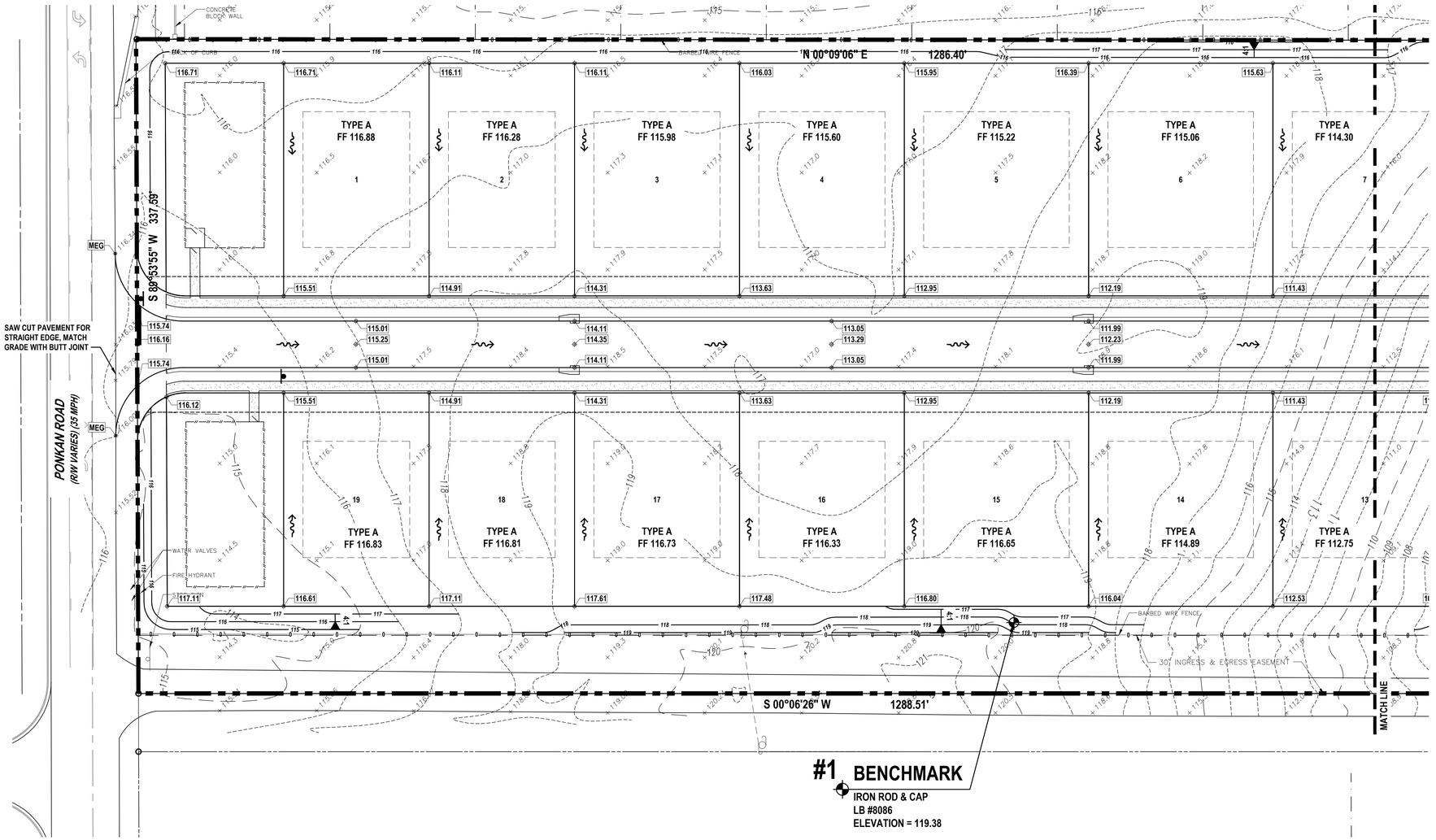
2. ALL SIDEWALK LANDINGS SHALL HAVE SLOPES NO GREATER THAN 1/8 INCH / 1 FOOT IN MANEUVERING SPACES AT ALL DOORWAYS.
3. ALL SIDEWALKS SHALL HAVE A 1 PERCENT CROSS SLOPE.
4. ALL IMPROVEMENTS SHALL BE STAKED FOR CONSTRUCTION BY MEANS OF DIGITAL COORDINATES BY SURVEY OR UTILIZING GEODETIC TOTAL STATION. SCALING OF DRAWINGS FOR PURPOSES OF STAKING ARE AT THE SURVEYOR.

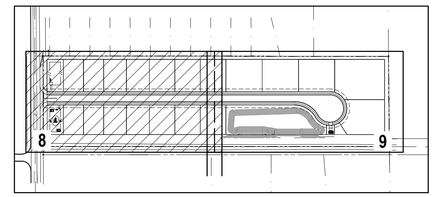
BENCHMARK INFORMATION:

#1 IRON ROD AND CAP
ELEVATION 78.261

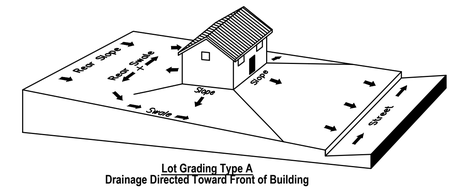
VERTICAL DATA
ELEVATIONS SHOWN HEREON ARE BASED ON ORANGE COUNTY BENCHMARK #1302027, WITH A PUBLISHED ELEVATION OF 78.261, NORTH AMERICAN VERTICAL DATUM OF 1988.



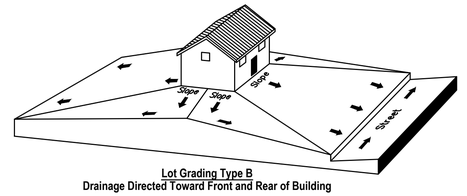
#1 **BENCHMARK**
IRON ROD & CAP
LB #8086
ELEVATION = 119.38



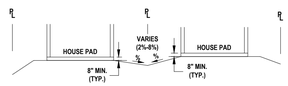
KEY MAP
NOT TO SCALE



Lot Grading Type A
Drainage Directed Toward Front of Building



Lot Grading Type B
Drainage Directed Toward Front and Rear of Building



NOTE:

1. ALL FINISHED FLOOR ELEVATIONS SHALL BE SET A MINIMUM OF 12 INCHES ABOVE THE CENTERLINE OF THE ADJACENT ROADWAY.
2. ALL FINISHED FLOOR ELEVATIONS ARE A MINIMUM OF 1 FOOT ABOVE THE BASE FLOOD ELEVATION AND/OR 1 FOOT ABOVE THE 100-YEAR DESIGN HIGH WATER LEVEL OF THE ADJACENT DETENTION AREA.
3. SIDE YARD SWALE SHALL BE CENTERED ON THE COMMON PROPERTY LINE.

TYPICAL LOT GRADING DETAILS
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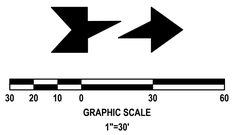

GRADING LEGEND:

– – 85 – –	EXISTING CONTOUR
— 85 —	PROPOSED CONTOUR
	DRAINAGE FLOW ARROW
×28.77	EXISTING SPOT ELEVATION
25.00	PROPOSED SPOT ELEVATION

DRY RETENTION POND CONSTRUCTION NOTES:

1. INITIALLY CONSTRUCT THE RETENTION BASIN TO ROUGH GRADE BY UNDER-EXCAVATING BASIN BOTTOM AND SIDE SLOPES BY 12-INCHES. THE INTERIOR SIDE SLOPES AND BASIN BOTTOM SHOULD BE EXCAVATED TO 1-FEET BELOW FINAL DESIGN SPECIFICATIONS. THE EXCESS SOILS AND UNDESIRABLE MATERIAL SHOULD BE CAREFULLY EXCAVATED AND REMOVED FROM THE POND SO THAT ALL ACCUMULATED SILTS, CLAYS, ORGANICS, AND OTHER FINE SEDIMENT MATERIAL HAS BEEN REMOVED FROM THE POND AREA. THE EXCAVATED MATERIAL SHOULD BE DISPOSED OFF-SITE AT LOCAL LANDFILL.
2. ONCE THE BASIN HAS BEEN EXCAVATED TO FINAL GRADE, THE ENTIRE BASIN BOTTOM SHOULD BE DEEP RAKED AND LOOSENED FOR OPTIMAL INFILTRATION.
3. FINALLY, THE RETENTION BASIN SHALL BE FINAL STABILIZED WITH BAHIA SOD.
4. CONTRACTOR TO PROVIDE SHOP DRAWINGS TO ENGINEER OF RECORD FOR APPROVAL PRIOR TO CONSTRUCTION.
5. WHERE TREES ARE SHOWN TO BE SAVED, DO NOT OVER EXCAVATE UNDER THE DRIPLINE. LIGHTLY CLEAR UNDESIRABLE VEGETATION (UNDERBRUSH).

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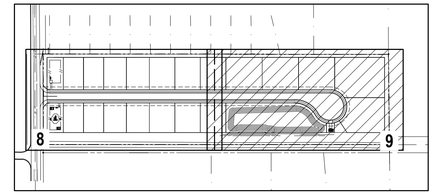
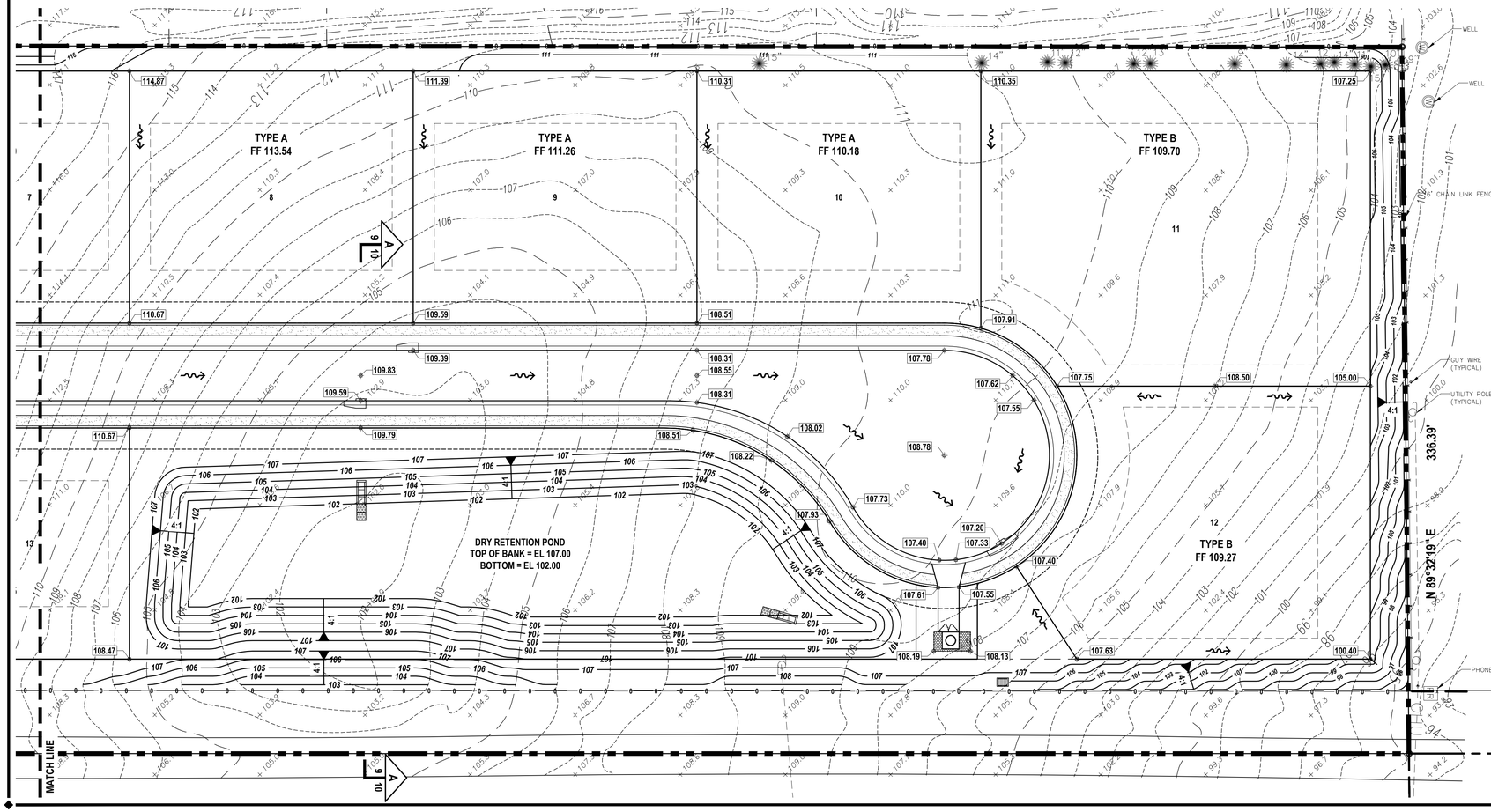
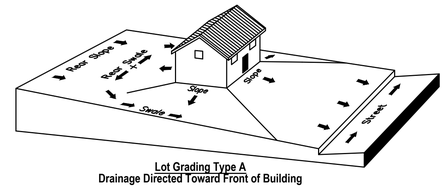


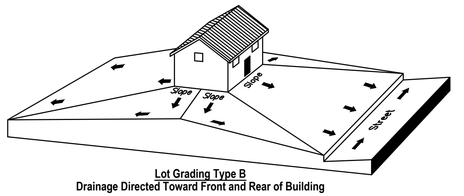
KEY MAP

NOT TO SCALE

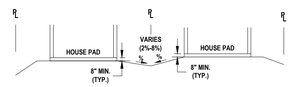




Lot Grading Type A
Drainage Directed Toward Front of Building



Lot Grading Type B
Drainage Directed Toward Front and Rear of Building



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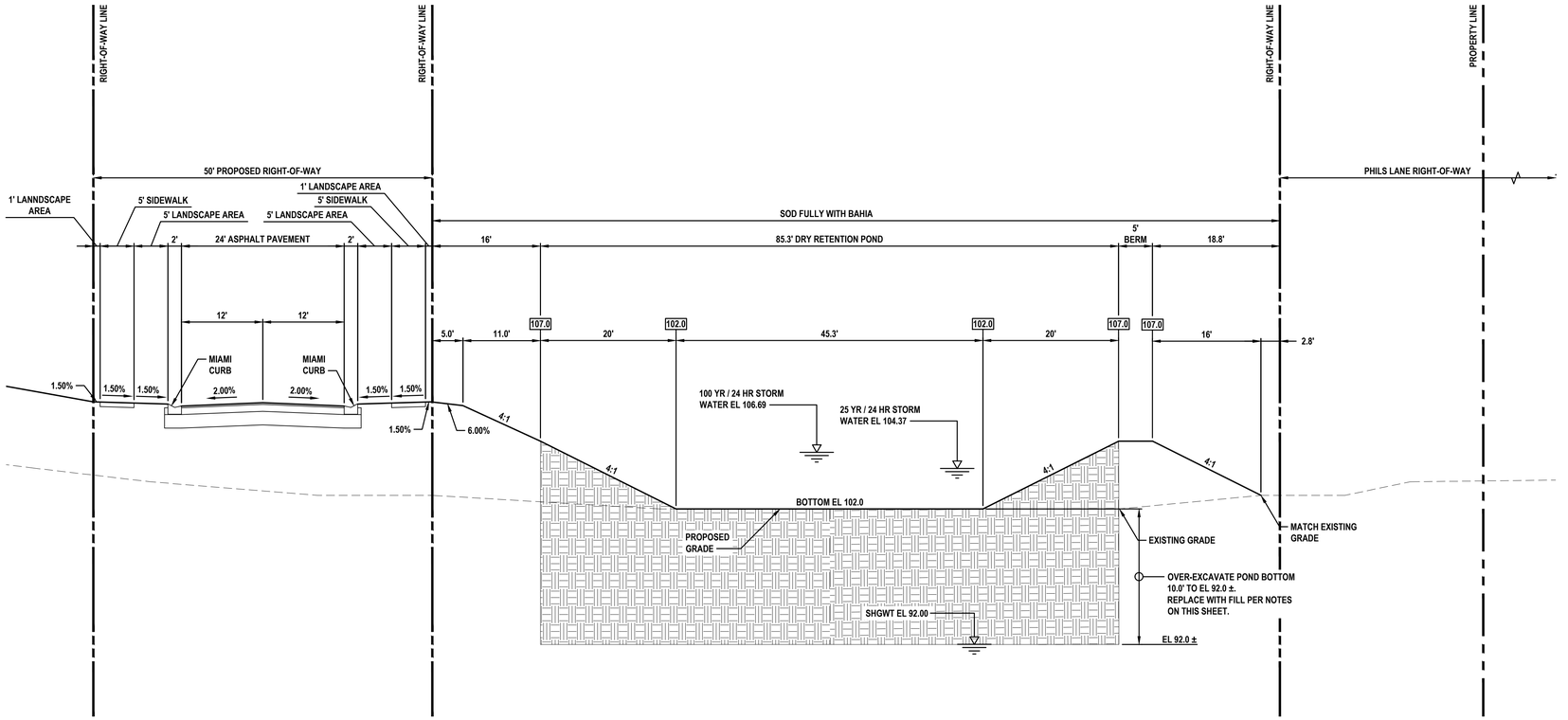
DRAWING NUMBER

09

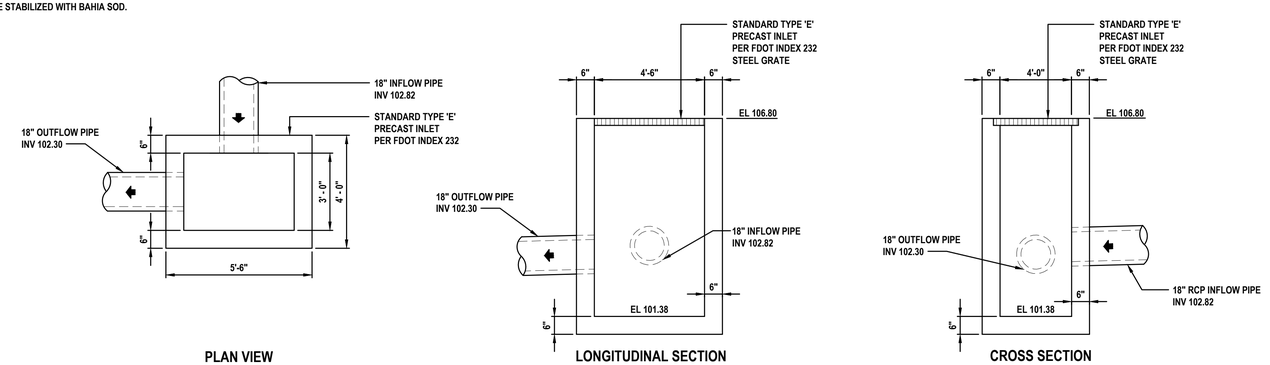


SECTION A (TYPICAL POND CROSS SECTION)

NOT TO SCALE

DRY RETENTION POND FILL NOTES:

1. EXCAVATE HATCHED AREA TO ELEVATION 92.00' TIE INTO EXISTING CLAY LAYER AT A 2:1 SLOPE AS INDICATED ON THE POND SECTION (THIS SHEET). CLAY MATERIAL TO BE REMOVED AND REPLACED WITH CLEAN FILL MATCHING THE SPECIFICATIONS BELOW.
2. PERCENT FINE SAND PASSING THROUGH #200 SIEVE SHALL BE 2.5%
3. MINIMUM PERMEABILITY EQUAL TO 30 FEET PER DAY, WHEN COMPACTED TO MINIMUM DENSITY EQUIVALENT TO 92 PERCENT OF THE SOIL'S MODIFIED PROCTOR DENSITY VALUE (ASTM D-1557)
4. FILL MATERIAL MUST BE NATIVE SAND, NOT PROCESSED OR WASHED.
5. EXCAVATION AND FILL MATERIALS SHALL INCLUDE THE ENTIRE FOOTPRINT OF THE DRY RETENTION POND.
6. ADEQUACY OF FILL MATERIAL MUST BE APPROVED BY PROFESSIONAL ENGINEER OR GEOTECHNICAL ENGINEER AT TIME OF PLACEMENT.
7. ONCE THE BASIN HAS BEEN EXCAVATED TO FINAL GRADE, THE ENTIRE BASIN BOTTOM SHOULD BE DEEP RAKED AND LOOSENED FOR OPTIMAL INFILTRATION.
8. FINALLY, THE BASIN SHOULD BE STABILIZED WITH BAHIA SOD.



EMERGENCY OVERFLOW STRUCTURE (CS-01) DETAIL

NOT TO SCALE

REVISIONS

DATE	DESCRIPTION

1230 North US1, Suite 3
Ormond Beach, Florida 32174
Phone (386) 672-7784
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CROSS SECTIONS

PONKAN OAK MANOR

3405 WEST PONKAN ROAD
APOPKA, FLORIDA 32712

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HARRY NEWKIRK LICENSE NO. 62971 STATE OF FLORIDA PROFESSIONAL ENGINEER

HARRY H. NEWKIRK, P.E. # 62971

PROJECT No:	2023-30
DATE:	JUNE 2023
DESIGN BY:	HHN
DRAWN BY:	BWD
CHECKED BY:	HHN
SCALE:	AS SHOWN

DRAWING NUMBER

10

50 0 50 100

GRAPHIC SCALE
1"=50'

WARNING !!

CONTRACTOR SHALL TAKE ALL PRECAUTIONS DURING CONSTRUCTION TO AVOID CONTACT WITH EXISTING UNDERGROUND UTILITIES, GAS MAINS AND OVERHEAD ELECTRIC IN THE RIGHT-OF-WAY.

UTILITY FLOW RATES:

POTABLE WATER DEMAND

AVERAGE DAILY FLOW

19 UNITS x 300 GPD = 5,700 GALLONS PER DAY

WASTEWATER DEMAND

AVERAGE DAILY FLOW

19 UNITS x 300 GPD = 5,700 GALLONS PER DAY

GENERAL SEWER NOTES:

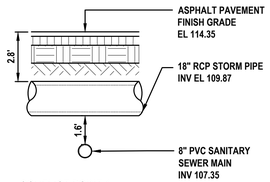
1. CITY OF APOPKA SHALL BE NOTIFIED PRIOR TO ANY SEWER CONSTRUCTION.
2. ALL SEWER CONSTRUCTION MUST COMPLY WITH FDEP REGULATIONS AND THE CITY OF APOPKA UTILITY DETAILS AND SPECIFICATIONS (LATEST EDITION).
3. ALL SANITARY LINES 6-INCHES AND LARGER SHALL BE INSPECTED BY CCTV PRIOR TO COMPLETION.
4. SEWER LINE MATERIAL SPECIFICATION REQUIRED TO MEET CITY OF APOPKA UTILITY DEPARTMENT CRITERIA.
5. THE CONTRACTOR SHALL AT ALL TIMES, DURING PIPE LAYING, DEWATER THE GROUND SUFFICIENTLY TO KEEP THE GROUNDWATER ELEVATION A MINIMUM OF 6" BELOW THE PIPE BEING LAID WITHIN THE AREA OF THE TRENCH.
6. ALL PIPES SHALL BE LAID ON A FIRM FOUNDATION. SOFT OR SPONGY BEDDING FOR PIPES WILL NOT BE ACCEPTED. ANY UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH A DRY, COMPACTED, GRANULAR MATERIAL SATISFACTORY TO THE CITY OF APOPKA UTILITY DEPARTMENT.
7. EXCAVATION AND BACKFILL: THE CONTRACTOR SHALL PROVIDE ADEQUATE SHEETING AND BRACING OF EXCAVATION WORK IN ORDER TO PROVIDE FOR THE SAFETY OF WORKMEN, AS WELL AS REPRESENTATIVES OF THE CITY OF APOPKA UTILITY DEPARTMENT, THE DESIGN ENGINEER, AND THE DEVELOPER.
8. ALL TRENCHES SHALL BE BACKFILLED WITH ACCEPTABLE MATERIAL AND COMPACTED TO MINIMUM COMPACTION OF (95) PERCENT OF THE OPTIMUM DENSITY OF THAT MATERIAL BASED ON THE AASHTO T-180 MODIFIED PROCTOR TEST.
9. ALL TESTING REQUIRED BY THE COUNTY SHALL BE PAID FOR BY THE CONTRACTOR.
10. GRAVITY MAINS MUST HAVE A TELEVISED INSPECTION. A VIDEO INSPECTION FORM MUST BE FAXED TO THE CITY OF APOPKA UTILITIES SERVICES DEPARTMENT 48 HOURS PRIOR TO VIDEO INSPECTION. A COUNTY INSPECTOR MUST BE PRESENT.
11. SEWER CLEANOUT LOCATED ON PAVEMENT AND SIDEWALK AREA SHALL BE TRAFFIC BEARING FLAT TOP BRASS CAP.
12. PLUMBING CONTRACTOR SHALL INSTALL TANK AND COORDINATE PIPE INVERTS TO BUILDING WITH UTILITY CONTRACTOR.
13. CITY OF APOPKA REQUIRES MINIMUM 3 FEET OF COVER FOR ALL UNDERGROUND PIPE INSTALLATIONS.

GENERAL WATER NOTES:

1. THE CITY OF APOPKA UTILITY DEPARTMENT SHALL BE NOTIFIED PRIOR TO BEGINNING ANY WATER SYSTEM CONSTRUCTION.
2. ALL WATER DISTRIBUTION CONSTRUCTION SHALL BE IN ACCORDANCE WITH FDEP REGULATIONS AND THE CITY OF APOPKA UTILITY DETAILS AND SPECIFICATIONS (LATEST EDITION).
3. CONTRACTOR IS TO VERIFY THE LOCATION (HORIZONTAL AND VERTICAL) OF ALL EXISTING UTILITIES (UNDERGROUND AND OVERHEAD) PRIOR TO COMMENCEMENT OF CONSTRUCTION. ANY CONFLICTS SHALL BE REPORTED TO THE ENGINEER.
4. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ANY EXISTING PAVEMENT, SIDEWALK, CURBING, UTILITIES AND DRAINAGE SYSTEMS DAMAGED DURING CONSTRUCTION. ALL DAMAGED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER.
5. LOCATION OF TELEPHONE, T.V. CABLE AND ELECTRICAL SERVICE CONNECTIONS TO BE DETERMINED BY APPROPRIATE UTILITIES PERSONNEL IN COOPERATION WITH CONTRACTOR.
6. ALL WATER MAINS SHALL BE LAID ON A FIRM FOUNDATION WITH ALL UNSUITABLE MATERIAL (MUCK, ROCK, COQUINA, ETC.) REMOVED AND REPLACED WITH CLEAN GRANULAR MATERIAL.
7. TRENCHES SHALL BE BACKFILLED WITH MATERIAL ACCEPTABLE TO THE CITY OF APOPKA UTILITY DEPARTMENT WITH A MINIMUM COMPACTION OF 98 PERCENT (AASHTO-T180).
8. WATER SERVICES FROM 3/4" TO 2" POLYETHYLENE (ENDOTRACE) WITH 36" MINIMUM COVER.
9. WATER MAIN FROM 4" TO 12" SHALL BE PVC CLASS 150 (DR 18) WITH 36" MINIMUM COVER.
10. ALL WATER AND FIRE SERVICES ARE REQUIRED TO HAVE A HARD BODY GATE VALVE OFF THE MAIN LINE.
11. ALL VALVES SHALL BE BOLTED TO TEES.
12. ALL POTABLE WATER PIPE SHALL HAVE "NSF POTABLE WATER" IMPRINTED ON THE PIPE.
13. ALL WATER MAIN FITTINGS 4 INCHES OR LARGER SHALL BE CEMENT LINED DIP.
14. A TAPPING CONTRACTOR ACCEPTABLE TO THE CITY OF APOPKA UTILITY DEPARTMENT WILL BE REQUIRED FOR TAPS.
15. THE CONTRACTOR SHALL MAKE ALL ATTEMPTS TO LOCATE BURIED UTILITIES AND NOTIFY THE UTILITY COMPANIES 48 HR. PRIOR TO CONSTRUCTION.
16. UTILITY TRENCH CONSTRUCTION SHALL CONFORM TO CITY OF APOPKA UTILITY DEPARTMENT, CITY OF APOPKA UTILITY DEPARTMENT AND OSHA REQUIREMENTS.
17. IN THE CASE WHERE SOLVENT CONTAMINATION IS FOUND IN THE TRENCH, WORK WILL BE STOPPED AND THE PROPER AUTHORITIES NOTIFIED. WITH THE APPROVAL OF THE CITY OF APOPKA UTILITY DEPARTMENT UTILITY DEPARTMENT, DUCTILE IRON PIPE, FITTINGS AND APPROVED SOLVENT RESISTANT GASKET MATERIAL SHALL BE USED IN THE CONTAMINATED AREA. THE DUCTILE IRON PIPE WILL EXTEND AT LEAST 100 FEET BEYOND ANY DISCOVERED SOLVENT.

UTILITY LEGEND

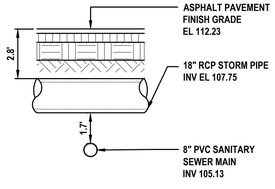
	PROPOSED 11.25° BEND
	PROPOSED 22.5° BEND
	PROPOSED 45° BEND
	PROPOSED 90° BEND
	PROPOSED TEE
	PROPOSED GATE VALVE
	PROPOSED FIRE HYDRANT ASSEMBLY
	PROPOSED SANITARY SEWER MANHOLE
8WM	PROPOSED 8" PVC CLASS 150 (DR-18) WATER MAIN (36" MIN. COVER)
4WM	PROPOSED 4" PVC CLASS 150 (DR-18) WATER MAIN (36" MIN. COVER)
2WS	PROPOSED 2" PE 4710 (SDR 9) WATER SERVICE (30" MINIMUM COVER)
1WS	PROPOSED 1" PE 4710 (SDR 9) WATER SERVICE (30" MINIMUM COVER)
6FM	PROPOSED DIRECTIONAL DRILL 6" HDPE (DR 11) FORCE MAIN
4FM	PROPOSED 4" PVC (DR 25) C-900 FORCE MAIN
1	CONFLICT DETAIL, THIS SHEET



CONFLICT POINT 1

UTILITY CONFLICT DETAIL

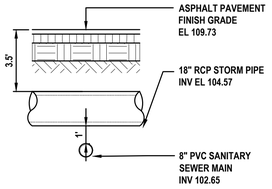
NOT TO SCALE



CONFLICT POINT 2

UTILITY CONFLICT DETAIL

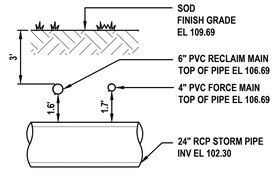
NOT TO SCALE



CONFLICT POINT 3

UTILITY CONFLICT DETAIL

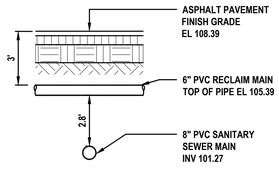
NOT TO SCALE



CONFLICT POINT 4

UTILITY CONFLICT DETAIL

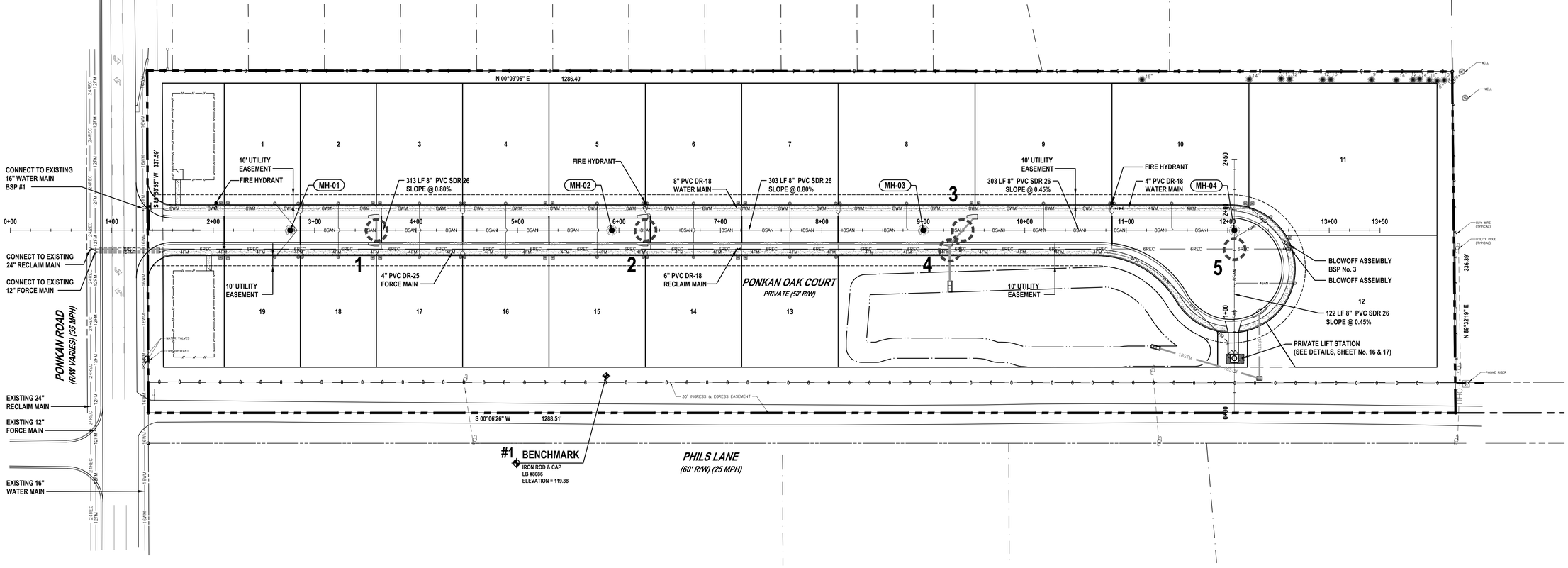
NOT TO SCALE



CONFLICT POINT 5

UTILITY CONFLICT DETAIL

NOT TO SCALE



REVISIONS

DATE	DESCRIPTION

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Phone (386) 872-7784
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C.A. # 30209
L.C. # 26000584
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OVERALL UTILITY PLAN
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3405 WEST PONKAN ROAD
APOPKA, FL 32712

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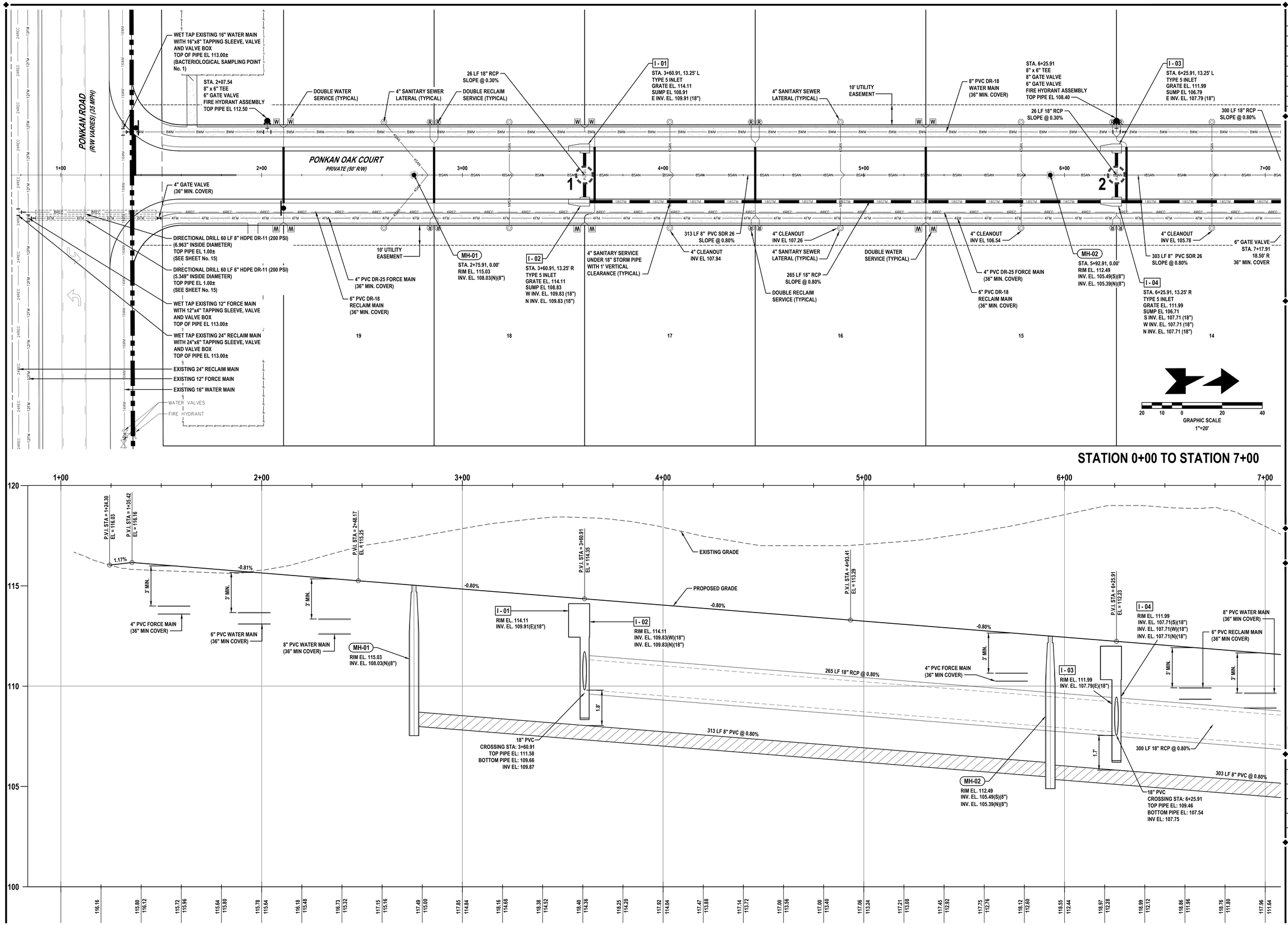
PROJECT No:	2023-30
DATE:	JUNE 2023
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	1"=50'

DRAWING NUMBER

11



STATION 0+00 TO STATION 7+00

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DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	1"=20'

DRAWING NUMBER

12

8" PVC DR-18 WATER MAIN (36" MIN. COVER)
DOUBLE WATER SERVICE (TYPICAL)
4" SANITARY SEWER LATERAL (TYPICAL)
DOUBLE RECLAIM SERVICE (TYPICAL)
MH-03
STA. 8+99.91, 0.00'
RIM EL. 110.04
INV. EL. 102.93(S)(8")
INV. EL. 102.83(N)(8")
I - 05
STA. 9+50.91, 13.25' L
TYPE 5 INLET
GRATE EL. 109.39
SUMP EL 103.63
SE INV. EL. 104.63 (18")
8" PVC DR18 WATER MAIN (36" MIN. COVER)
STA. 10+85.91
8" x 6" TEE
6" GATE VALVE
FIRE HYDRANT ASSEMBLY
8" x 4" REDUCER
4" GATE VALVE
TOP PIPE EL 105.50
8"x6" TEE
STA. 10+85.91
21.50' L
8"x4" REDUCER
STA. 10+91.40
21.50' L
36" MIN. COVER
8" GATE VALVE
STA. 10+95.07
21.50' L
36" MIN. COVER
4" PVC DR-18 WATER MAIN (36" MIN. COVER)
4" 45° BEND
STA. 12+23.57
21.50' L
36" MIN. COVER
PONKAN OAK COURT
PRIVATE (50' R/W)
7+00
8+00
9+00
10+00
11+00
12+00
4" SANITARY SERVICE UNDER 18" STORM PIPE WITH 1' VERTICAL CLEARANCE (TYPICAL)
4" CLEANOUT INV EL 105.78
6" GATE VALVE
STA. 7+17.91
18.50' R
36" MIN. COVER
303 LF 8" PVC SDR 26 SLOPE @ 0.80%
4" PVC DR-25 FORCE MAIN (36" MIN. COVER)
6" PVC DR18 RECLAIM MAIN (36" MIN. COVER)
4" CLEANOUT INV EL 105.02
300 LF 18" RCP SLOPE @ 0.80%
SINGLE RECLAIM SERVICE (TYPICAL)
36 LF 24" RCP SLOPE @ 1.02%
37 LF 18" RCP SLOPE @ -0.30%
I - 06
STA. 9+25.91, 13.25' R
TYPE 5 INLET
GRATE EL. 109.59
SUMP EL 101.37
S INV. EL. 105.31 (18")
NW INV. EL. 104.52 (18")
E INV. EL. 102.37 (24")
UE - 01
STA. 9+26.23, 61.03' R
24" U-EWALL 4:1 SLOPE
WITH BAFFLE
W INV. EL. 102.00 (24")
303 LF 8" PVC SDR 26 SLOPE @ 0.45%
4" PVC DR-25 FORCE MAIN (36" MIN. COVER)
6" PVC DR-18 RECLAIM MAIN (36" MIN. COVER)
DRY RETENTION POND
TOP OF BANK = EL 107.00
BOTTOM = EL 102.00
MH-04
STA. 12+06.58, 0.00'
RIM EL. 108.02
INV. EL. 101.45(S)(8")
INV. EL. 101.35(E)(8")
122 LF 8" PVC SDR 26 SLOPE @ 0.45%
4" CAP
2" BLOWOFF ASSEMBLY
4" GATE VALVE
STA. 12+58.28
13.21' R
36" MIN. COVER
6" CAP
2" BLOWOFF ASSEMBLY
6" GATE VALVE
STA. 12+60.27
18.50' R
36" MIN. COVER
4" 45° BEND
STA. 12+00.08
110.09' R
36" MIN. COVER
2 - 4" 45° BEND
TOP PIPE EL 105.00
36" MIN. COVER
UE - 02
STA. 11+24.55, 114.12' R
18" U-EWALL 4:1 SLOPE
WITH BAFFLE
N INV. EL. 102.00 (18")
I - 07
STA. 12+31.23, 80.55' R
TYPE 6 INLET
GRATE EL. 107.20
SUMP EL 102.01
E INV. EL. 103.01 (18")
CS-01
STA. 12+31.30, 146.00' R
TYPE E INLET
GRATE EL. 106.70
SUMP EL 101.30
S INV. EL. 102.30 (18")
W INV. EL. 102.82 (18")
PRIVATE LIFT STATION
(SEE DETAIL, SHEET No. 16 & 17)
14
13
1
2
3
4
5
20 10 0 20 40
GRAPHIC SCALE
1"=20'

STATION 0+00 TO STATION 7+50

7+00 8+00 9+00 10+00 11+00 12+00
120 115 110 105 100
EXISTING GRADE
PROPOSED GRADE
-0.80%
-0.44%
3' MIN.
4" PVC FORCE MAIN (36" MIN COVER)
6" PVC WATER MAIN (36" MIN COVER)
8" PVC WATER MAIN (36" MIN COVER)
300 LF 18" RCP @ 0.80%
303 LF 8" PVC @ 0.80%
303 LF 8" PVC @ 0.45%
MH-03
RIM EL. 110.04
INV. EL. 102.93(S)(8")
INV. EL. 102.83(N)(8")
P.V.I. STA = 9+25.92
EL = 109.83
I - 05
RIM EL. 109.39
INV. EL. 104.63(SE)(18")
1'
I - 06
RIM EL. 109.59
INV. EL. 105.31(S)(18")
INV. EL. 104.52(NW)(18")
INV. EL. 102.37(E)(24")
18" PVC
CROSSING STA: 9+38.87
TOP PIPE EL: 106.29
BOTTOM PIPE EL: 104.37
INV EL: 104.58
P.V.I. STA = 10+85.91
EL = 108.55
P.V.I. STA = 12+36.10
EL = 107.69
MH-04
RIM EL. 108.02
INV. EL. 101.45(S)(8")
INV. EL. 101.35(E)(8")
118.76 111.80
117.96 111.64
116.89 111.48
115.54 111.32
114.16 111.16
112.59 111.00
111.04 110.84
109.34 110.68
107.90 110.52
106.72 110.36
105.52 110.20
104.34 110.04
103.52 109.88
103.21 109.72
103.17 109.56
103.03 109.40
103.57 109.24
104.31 109.08
105.44 108.92
106.32 108.76
107.16 108.60
107.90 108.49
108.56 108.40
109.23 108.31
109.81 108.22
110.27 108.14
110.35 108.05
110.44 107.96
110.17
109.65

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PROJECT No:	2023-30
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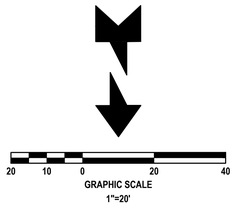
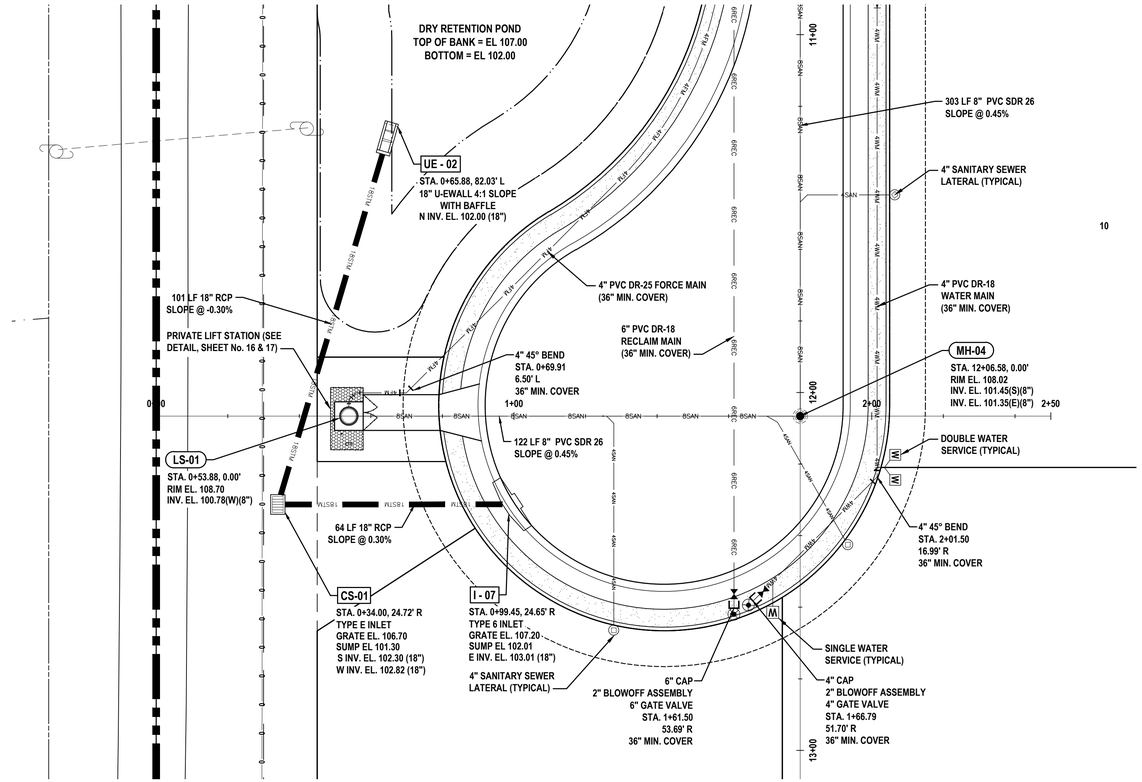
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	SCALE

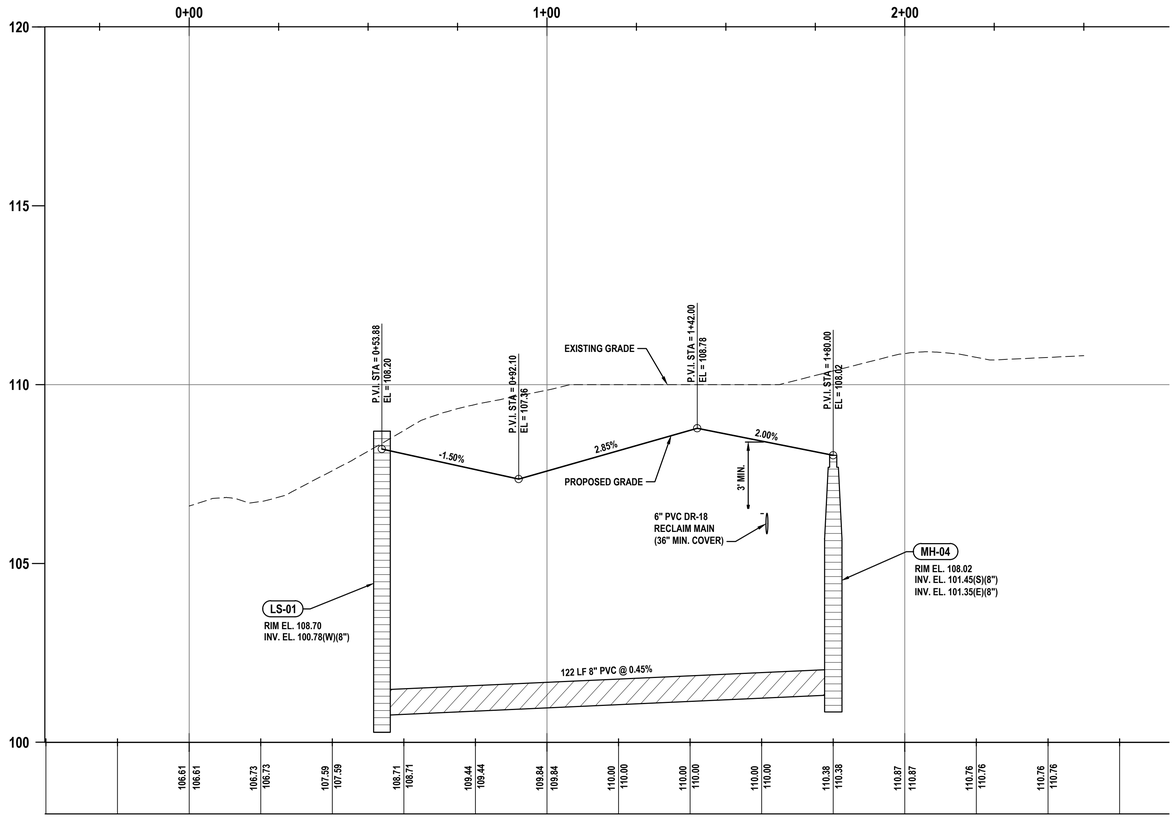
DRAWING NUMBER

13





STATION 0+00 TO STATION 2+50



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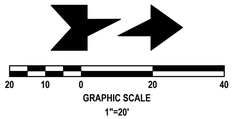
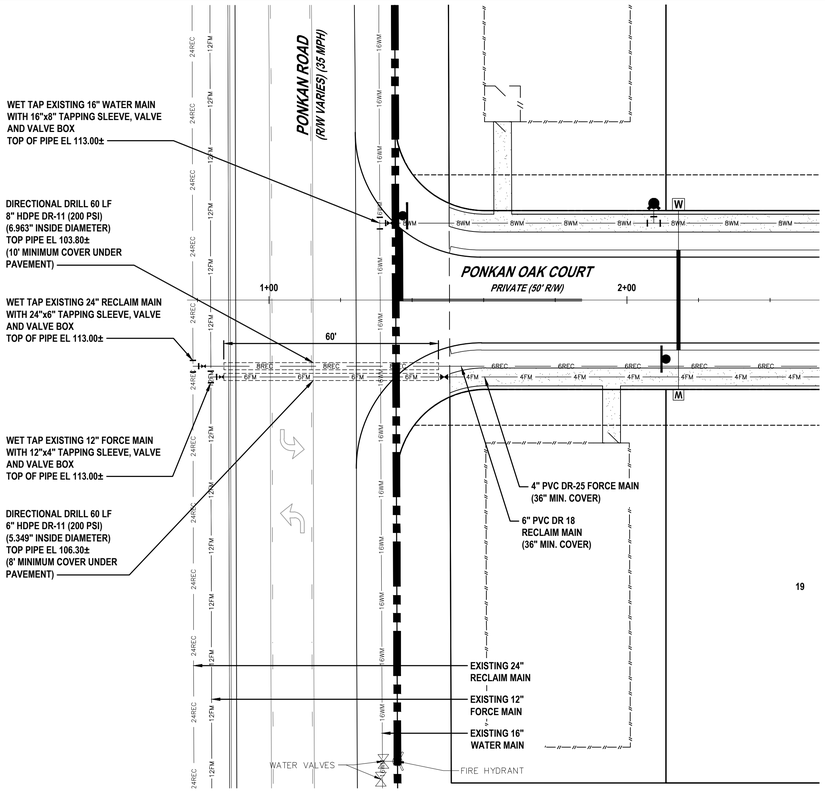
DATE:	JUNE 2023
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	SCALE

DRAWING NUMBER

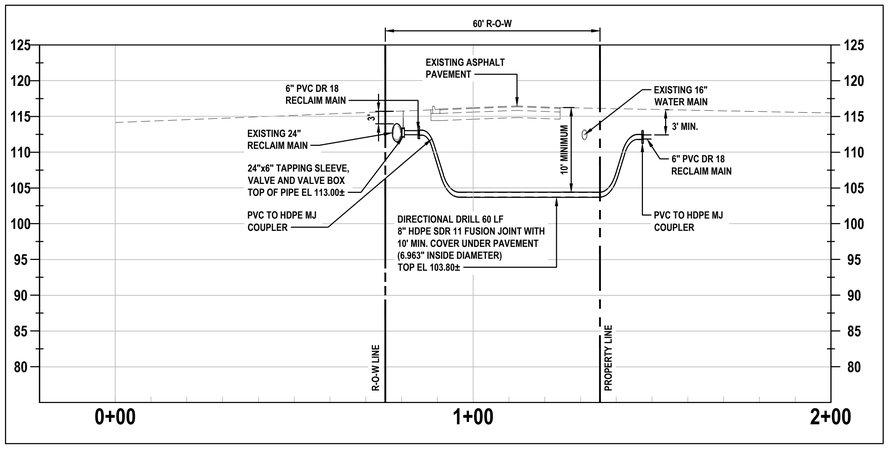
14





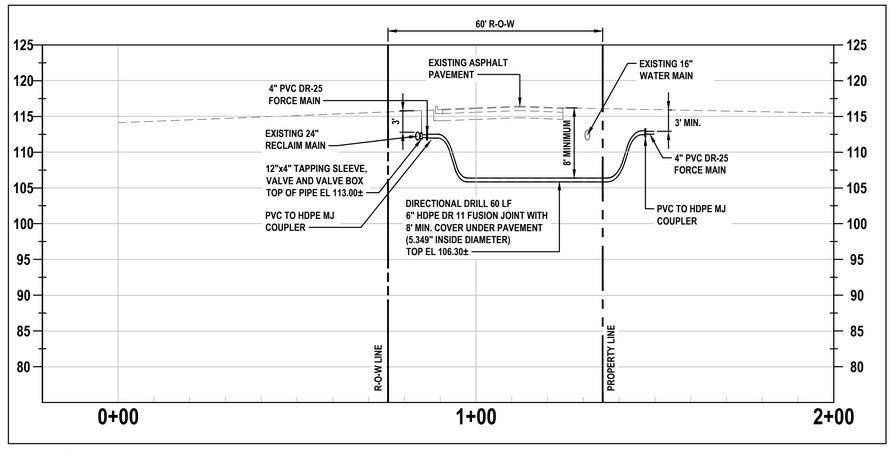
UTILITY LEGEND

- PROPOSED 11.25° BEND
- PROPOSED 22.5° BEND
- PROPOSED 45° BEND
- PROPOSED 90° BEND
- PROPOSED TEE
- PROPOSED GATE VALVE
- PROPOSED FIRE HYDRANT ASSEMBLY
- PROPOSED SANITARY SEWER MANHOLE
- 8WM — PROPOSED 8" PVC CLASS 150 (DR-18) WATER MAIN (36" MIN. COVER)
- 4WM — PROPOSED 4" PVC CLASS 150 (DR-18) WATER MAIN (36" MIN. COVER)
- 2WS — PROPOSED 2" PE 4710 (SDR 9) WATER SERVICE (30" MINIMUM COVER)
- 1WS — PROPOSED 1" PE 4710 (SDR 9) WATER SERVICE (30" MINIMUM COVER)
- 6FM — PROPOSED DIRECTIONAL DRILL 6" HDPE (DR 11) FORCE MAIN
- 4FM — PROPOSED 4" PVC (DR 25) C-900 FORCE MAIN
- 1 — CONFLICT DETAIL, THIS SHEET



HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

RECLAIM MAIN PROFILE



HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

FORCE MAIN PROFILE

WARNING !!

CONTRACTOR SHALL TAKE ALL PRECAUTIONS DURING CONSTRUCTION TO AVOID CONTACT WITH EXISTING UNDERGROUND UTILITIES, GAS MAINS AND OVERHEAD ELECTRIC IN THE RIGHT-OF-WAY.

REVISIONS

DATE	DESCRIPTION

1230 North US1, Suite 3
Ormond Beach, Florida 32174
Phone (386) 872-7784
www.Newkirk-Engineering.com
C.A. # 30209
L.C. # 26000584
C 2013
Civil Engineering
Transportation, CEI &
Landscape Architecture
NEWKIRK ENGINEERING INC.

DIERCTIONAL DRILL PLAN AND PROFILE - RECLAIM & FORCE

PONKAN OAK MANOR

3405 WEST PONKAN ROAD
APOPKA, FL 32712

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HARRY NEWKIRK LICENSE NO. 62971 STATE OF FLORIDA PROFESSIONAL ENGINEER

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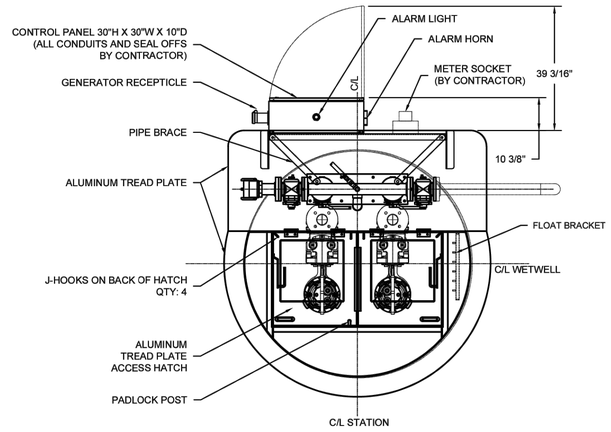
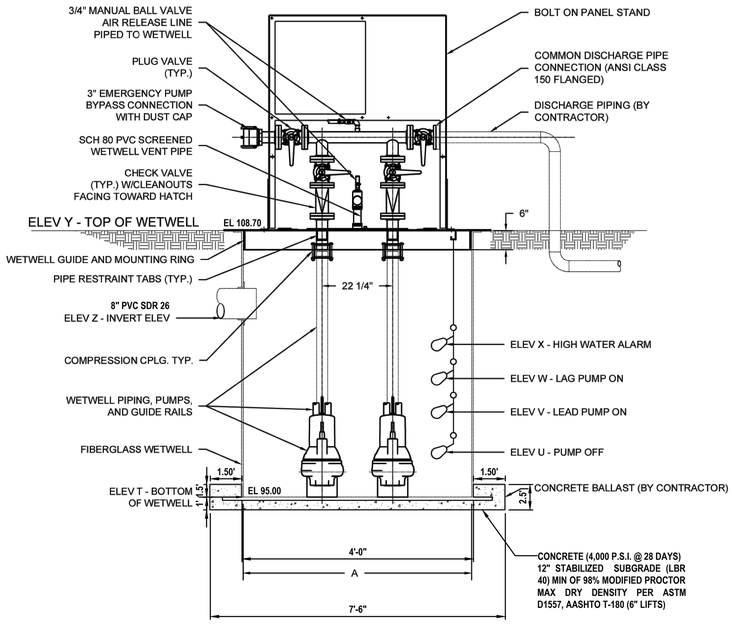
15





PUMPS:

MANUFACTURER:
PUMPS SHALL BE OF SUBMERSIBLE TYPE MANUFACTURED BY SULZER/ABS.

PUMPS SHALL BE SULZER MODEL XFP 80E CB1 60HZ, 18.8 HP,
3 PHASE, 230 VOLTS, ___ FLA, 3529 RPM

NO OTHER MANUFACTURERS WILL BE ALLOWED.

OPERATING CONDITIONS SHALL BE:
A. PRIMARY: 120 GPM AT 113.8 FEET TDH.
B. SECONDARY: __GPM AT ___FEET TDH.
C. MIN. SHUTOFF HEAD: ___FEET
PUMP CURVE RUNOUT: __GPM AT __FEET TDH OR LESS.

FIBERGLASS WET WELL:

WET WELL:
THE WET WELL SHALL BE CONSTRUCTED OF COMMERCIAL GRADE POLYESTER RESIN WITH GLASS FIBER REINFORCEMENT. EACH WET WELL SHALL HAVE AN ANTI-FLOTATION RING THAT IS AT LEAST 4 INCHES DIAMETER LARGER THAN THE WET WELL. THE WET WELL SHALL INCLUDE "NAKED TOP VAULT", GUIDE RAIL ASSEMBLIES, CABLE HOLDER, COVER AND DISCHARGE CONNECTIONS INSTALLED BY THE PUMP SUPPLIER.

GUIDE RAIL ASSEMBLY:
A GUIDE RAIL SYSTEM SHALL BE PROVIDED FOR EACH PUMP. EACH GUIDE RAIL SYSTEM SHALL INCLUDE A BASE ELBOW, DISCHARGE FLANGE WITH PROFILE GASKET, SS GUIDE RAIL, SS UPPER GUIDE RAIL BRACKET AND SS LIFTING CABLE.

WET WELL COVER:
THE COVER SHALL BE A 300PSF ALUMINUM COVER WITH HOLD OPEN ARM. THE COVER SHALL ALSO HAVE A WELDED 3" COUPLING FOR THE VENT AND A LOCKING PROVISION. ALL FASTENERS ON THE COVER SHALL BE SS.

FLOATS:
FLOATS SHALL BE ANCHOR SCIENTIFIC NORMALLY OPEN FLOAT SWITCHES.

LIFTING ASSEMBLY:
PUMP LIFTING DEVICE SHALL BE 304 SS LIFTING CABLE WITH SHACKLE SIZED PER PUMP WEIGHT.

ABOVE GRADE EQUIPMENT:
THE EQUIPMENT COMMON BASE SHALL BE REINFORCED ALUMINUM SAFETY PLATE. AN ALUMINUM HATCH SHALL BE PROVIDED FOR ACCESS TO THE WET WELL. THE ACCESS COVER SHALL BE OF ¼" ALUMINUM DIAMOND PLATE, REINFORCED WITH STIFFENER BARS AS REQUIRED. THE COVER SHALL BE ABLE TO WITHSTAND THE LIVE LOAD OF 300 LBS. PER SQUARE FOOT. THE COVER WILL HAVE STAINLESS STEEL HINGES AND BE EQUIPPED WITH A LIFTING HANDLE AND A PADLOCK LOCKING POST (PADLOCK BY OTHERS). THE COVER SHALL OPEN TO 90 DEGREES AND LOCK AUTOMATICALLY IN THAT POSITION BY A STAINLESS-STEEL POSITIVE LOCKING ARM. HOOKS WILL BE PROVIDED IN THE ACCESS HATCH FOR PUMP LIFTING CABLES OR CHAINS.

A CAUTION SIGN SHALL BE ATTACHED TO THE ACCESS HATCH. THE SIGN SHALL READ AS FOLLOWS:

CAUTION: DANGEROUS/HAZARDOUS GASES
LEVEL 2 CONFINED SPACE
DO NOT ENTER WITHOUT PROPER
EQUIPMENT OR SUPERVISION

REMOVABLE LIFTING EYES SHALL BE PLACED ABOUT THE PERIMETER OF THE EQUIPMENT BASE TO FACILITATE LIFTING AND HANDLING OF THE STATION.

PIPING AND VALVES:
THE STATION SEWAGE PIPING SHALL BE SCHEDULE 40 316 STAINLESS STEEL PIPE THAT WILL EXTEND DOWN THROUGH THE COMMON BASE PLATE TERMINATING IN PLAIN ENDS EXTERIOR TO THE PUMP CHAMBER. EACH DISCHARGE LINE SHALL BE FITTED WITH A PLUG VALVE AND CHECK VALVE AS SPECIFIED HEREIN AND SIZED AS SHOWN ON THE PLANS.

A ¾" TAPPING PORT WITH A MANUAL BALL VALVE WILL BE INSTALLED INTO THE PIPING ASSEMBLY TO ALLOW FOR AIR RELEASE TO THE WETWELL THROUGH THE BASE WITH A ¾" NPT SEALED CONNECTION.

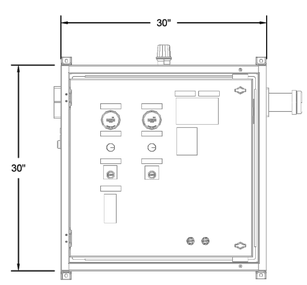
PLUG VALVES OF THE NON-LUBRICATED TYPE SHALL BE FURNISHED AND SIZED AS SHOWN ON THE PLANS. THE VALVE BODY SHALL BE OF HIGH-QUALITY CAST-IRON CONSTRUCTION WITH A WELDED NICKEL SEAT. THE VALVES SHALL BE FURNISHED WITH PERMANENTLY LUBRICATED, CORROSION RESISTANT BEARING SURFACES IN THE UPPER AND LOWER JOURNALS TO WITHSTAND FULL RATED BEARING LOADS AND TO PROVIDE LONG LIFE IN SEWAGE SERVICE. VALVES SHALL PROVIDE A LEAK TIGHT SEAL AGAINST FULL RATED PRESSURE IN BOTH DIRECTIONS. ONE HANDLE FOR VALVE OPERATION WILL BE PROVIDED WITH THE STATION

SPRING AND LEVER CHECK VALVES SIZED AS SHOWN ON THE PLANS SHALL BE INSTALLED IN THE DISCHARGE PIPING. THE VALVE SHALL PERMIT FLOW IN ONE DIRECTION ONLY AND CLOSE TIGHTLY WITHOUT SLAMMING WHEN THE DISCHARGE PRESSURE EXCEEDS THE INLET PRESSURE. THE VALVE IN THE FULLY OPEN POSITION SHALL PERMIT FULL FLOW THROUGH THE VALVE EQUAL TO THE NOMINAL PIPE DIAMETER. THE VALVE BODY SHALL BE OF HIGH-QUALITY CAST-IRON CONSTRUCTION CAPABLE OF VERTICAL INSTALLATION.

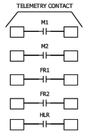
STATION OPTIONS		
	PIPE SIZE	WETWELL SIZE (A)
PROPOSED SIZE	2"	48"
	2"	60"
	2"	72"
	3"	48"
	3"	60"
	3"	72"
	4"	60"
	4"	72"

LIFT STATION DATA		
	DIMENSIONS	ELEV. AT CONSTANT
WET WELL DIAMETER (A)	4'-0" (48")	
WET WELL DEPTH	13'-8" (13.7')	
ELEV T		95.00
ELEV U		97.00
ELEV V		98.00
ELEV W		99.30
ELEV X		100.30
ELEV Y		108.70
ELEV Z		100.78 (8")

Enclosure Type:
__304SS, NEMA 4X

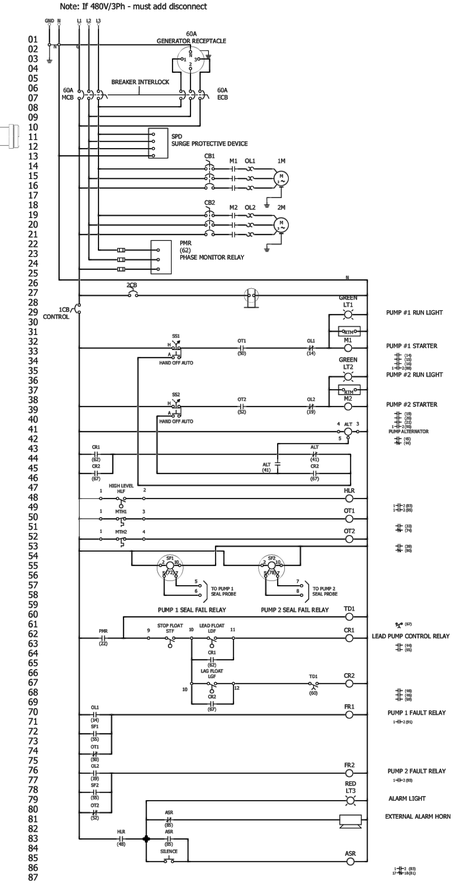


CONTROL PANEL:
PUMP CONTROL PANEL SHALL INCORPORATE THE FOLLOWING ITEMS:
A. NEMA 4X, _____ ENCLOSURE. ENCLOSURE SHALL INCLUDE THE PROVISION FOR PADLOCKING.
B. MAIN AND EMERGENCY CIRCUIT BREAKERS.
C. PANEL SHALL BE SERVICE ENTRANCE RATED.
D. EMERGENCY GENERATOR RECEPTACLE.
E. MOTOR CIRCUIT BREAKERS.
F. CONTROL CIRCUIT BREAKERS.
G. MOTOR STARTERS WITH OVERLOAD PROTECTION.
H. PUMP RUN INDICATOR LIGHTS.
I. HAND-OFF-AUTO SWITCHES.
J. ELAPSED TIME METERS.
K. 120V LIQUID LEVEL CONTROLS, STANDARD 4-FLOAT LOGIC.
L. ALTERNATOR.
M. PHASE MONITOR.
N. LIGHTNING ARRESTOR.
O. ALARM LIGHT & HORN WITH SILENCE BUTTON.
P. 120V GFI RECEPTACLE.

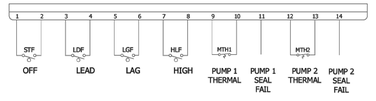


ELECTRICAL INFORMATION

SERVICE ENTRANCE:
V:_____ PH:_____
Note: If 480V/3Ph - must add disconnect



FIELD TERMINAL BLOCK LAYOUT



HYDRA SERVICE INC.
SPECIALIST IN FLUID MOVEMENT
HYDRA SERVICE INC.
BRADENTON, FL 941-713-8145
DEBARY, FL 407-330-3456

DRAWING NAME:

DRAWN BY: | DATE:

REVISIONS

DATE	DESCRIPTION

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Ormond Beach, Florida 32174
Phone (386) 872-7784
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Landscape Architecture
NEWKIRK ENGINEERING INC.

LIFT STATION DETAILS AND NOTES

PONKAN OAK MANOR
3405 WEST PONKAN ROAD
APOPKA, FL 32712

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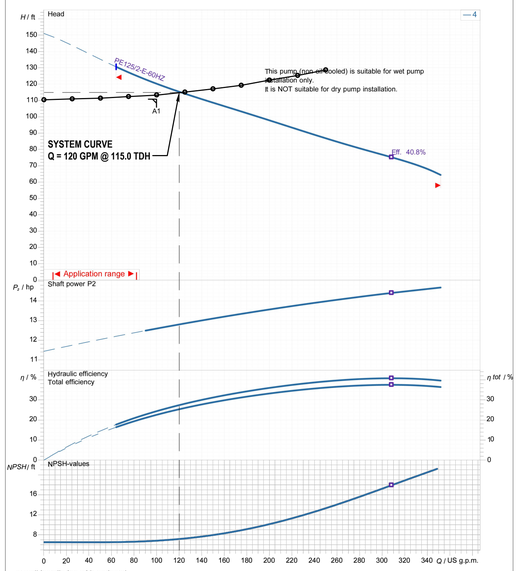
16

Curve number	Pump performance curves	SULZER
Reference curve XFP80E CB1 60HZ	XFP 80E CB1 60HZ (wet pit)	

				Discharge	Frequency
				DN80/100	60 Hz
Density	Viscosity	Test Standard		Rated speed	Date
62.31 lb/ft³	1.077E-5 ft²/s	ISO 9906, HI 11.6/14.6≤10kW		3543 rpm	2023-06-05
Flow	Head	Shaft power	Power input	Rated power P2	Hyd. efficiency	NPSH
100 US g.p.m.	110.8 ft			16.8 hp		



wet well installation with pedestal

Impeller size	N° of vanes	Impeller	Solid size	Revision
160 mm	1	contrablock impeller, 1 vane	45 mm	

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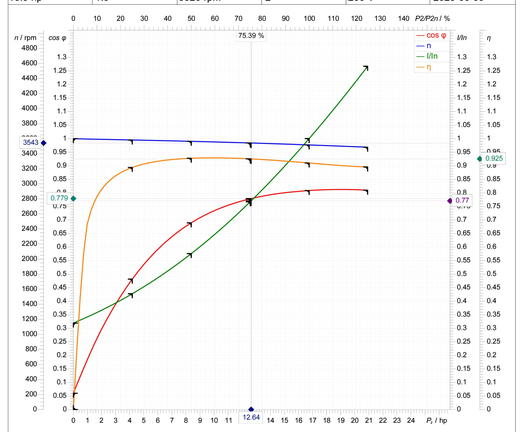
Spaix® 6-23.1 - 2023/05/26 (Build 4416), 64 bit data version March 23.2

Frequency 60 Hz	PE2	Motor performance curve PE125/2-E-60HZ	SULZER

Rated power	Service factor	Nominal Speed	Number of poles	Rated voltage	Date
16.8 hp	1.3	3520 rpm	2	230 V	2023-06-05



Symbol	No load	25 %	50 %	75 %	100 %	125 %
P2/ hp	0	4.191	8.381	12.57	16.76	
P1/ hp	0.4372	4.688	9.034	13.58	18.42	
I / A	13.6	18.22	24.53	32.68	42.62	
cos φ	0.0601	0.481	0.6894	0.778	0.8088	
n / rpm	3600	3583	3565	3543	3517	
s / %	0.000560	0.473	0.9691	1.572	2.308	
M / lbf ft	0	6.143	12.35	18.64	25.03	
η / %	0	89.39	92.78	92.55	91.02	

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting current	Starting torque	Moment of inertia	No. starts per hour
290 A	56.6 lbf ft	0.503 lb ft²	15

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Spaix® 6-23.1 - 2023/05/26 (Build 4416), 64 bi Data version March 23.2

TECHNICAL DATA

SULZER

Submersible Sewage Pump Type ABS XFP

XFP 80E-CB1 | 3", 2 Pole, 3-Phase, 60 Hz, PE2

Cable Data, PE2 Frame

	Motor	Motor Voltage	Cable Qty	Cable Type [2]	Cable Nominal Outside Diameter +/- .5mm (.02") Power	Ground
Power Cable	PE 125/2	208 volt	1	SOOW 8/4+16/3	24.4mm (0.96")	Integrated w/ Power
		230 volt	1	SOOW 8/4+16/3	24.4mm (0.96")	Integrated w/ Power
		460 volt	1	SOOW 10/7	20.7mm (0.82")	Integrated w/ Power
		600 volt	1	SOOW 10/7	20.7mm (0.82")	Integrated w/ Power
Control Cable	Motor Monitoring Type [3]		Cable Qty	Cable Type	Cable Nominal Outside Diameter +/- .5mm (.02")	
	Std monitoring		N/A	Integrated w/ Power	Integrated w/ Power	
Cable Length	Standard: 15m (49 feet)		Optional: 20m (65 feet), 30m (98 feet). Consult Factory for longer lengths			

[2] Type SOOW power cables have integrated control wires. [3] See motor protection on page 1.

Pump Data

Discharge Size	DN80 flanged, compatible with 3" class 125 ANSI flanges (ANSI flanged fitting must be rotated 22.5° for compatibility)								
Suction Size (Wet-Pit)	3"								
Volute Pressure Rating	16 bar (232 psi)								
Impeller Type	Semi-Open, 1-vane Contrablock, w/ Seal Protection System								
Impeller Code	5	4							
Impeller Diameter, mm (in.)	150 (5.9	140 (5.5"							
Solids Passage Size, mm (in.)	45 (1.77)	45 (1.77)							
Min. Recommended Flow, GPM [4]	150	155							

[4] Recommend minimum continuous flow. Consult factory for applications below this flow rate.

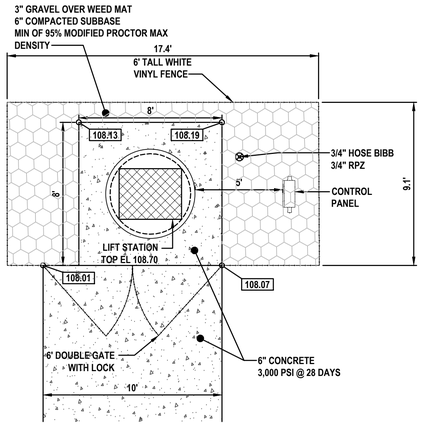
Materials of Construction

	Standard	Optional
Power/Control Cable Jacket	Chlorinated Polyethylene (CPE)	
Lifting Hoop	Stainless Steel 1.4401 (AISI 316)	
Cable Connection Chamber	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Motor Housing	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Intermediate Housing	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Seal Plate	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Pump and Motor Shaft	Stainless Steel 1.4021 (AISI 420)	
Impeller	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B) [5]	Duplex Stainless Steel 1.4470 (ASTM A890, CD3MN Grade 4A)
Wear Parts Bottom/Wear Plate	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B) [5]	Duplex Stainless Steel 1.4470 (ASTM A890, CD3MN Grade 4A)
Volute	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
External Hardware	Stainless Steel 1.4401 (AISI 316)	
O-Rings and Cable Glands	Nitrile (Buna-N)	Viton®
Mechanical Lower Seals Upper	Silicon Carbide / Silicon Carbide, Nitrile, 316 SS	Silicon Carbide / Silicon Carbide, Viton®, 316 SS
Coating/Protection	Two-part epoxy, blue, 120µm (4.7 mil) DFT	Two-part epoxy, blue, 400µm (15.7 mil); Wet-end liquid ceramic coating, 500µm (19.7 mil); Zinc Anodes

[5] Hardening of bottom edge of impeller vane and wear plate surface available. Consult factory for details.

General Data (Standard Materials of Construction & Cable Length)

	PE 125/2						
Overall Height	793mm (31.2")						
≈ Pump Weight (Non-Cooled)	187 kg (413 lb)						



LIFT STATION SITE PLAN

NOT TO SCALE

DS-E01-020 REV: 4 DATE: 10/16 Specifications Subject to Change Without Notice

Scan For More Info

TECHNICAL DATA

SULZER

Submersible Sewage Pump Type ABS XFP

XFP 80E-CB1 | 3", 2 Pole, 3-Phase, 60 Hz, PE2

Submersible Motor Specifications, PE2 Frame

Motor Design		NEMA design B, squirrel cage induction
Motor Type		Fully enclosed Premium Efficiency submersible, IP68 protection rating
Motor Efficiency Standard and Rating		IEC 60034-30, IE3 rating
Motor Efficiency Test Protocol		IEC 60034-2-1
Insulation Material		Class H, 180°C (356°F), copper windings
Motor Filling Medium		Air
Temperature Rise		Class A: Class B with optional cooling system
Maximum Fluid Temperature		40°C (104°F) continuous, 50°C (122°F) intermittent
Cooling System	OPT	Environmentally safe, nontoxic, oil-filled motor; no cooling jacket required
Motor Protection	Thermal	Normally closed bimetallic switch in each phase, connected in series, 140°C (284°F) +/- 5°C (41°F) opening temperature
	Leakage	Moisture detection probe in seal sensing chamber (for use with appropriate relay)
Sensing Chamber Filling Medium		Environmentally safe, nontoxic oil
Bearing Type	Upper	Single row deep groove ball bearing, permanently lubricated
	Lower	Double row angular contact ball bearing, permanently lubricated
Motor Starter Types		Suitable for use with direct-on-line (DOL), electronic soft starters, and PWM type Variable Frequency Drives [1]
Maximum Starts per Hour		15, evenly spaced
Inverter Duty Rating		Motors meet NEMA MG1, part 31 requirements
Maximum Submergence		20 meters (65 feet)
Available Voltages		208, 230, 460, 600 (consult factory for other voltages)
Voltage Tolerance from Rated		+/-10%
Agency Approvals		Factory Mutual, CSA
Explosion Proof Rating		NEC 500 Class 1, Division 1, Group C & D, Class T3C max surface temp

The picture above may differ from the actual product. For illustrative purposes only.

[1] Output filters may be required on VFDs. See document **DS-E00-001** for details.

Motor Ratings, PE2 Frame

Motor Model	Input Power (P1)	Rated Power Output (P2)	Nominal RPM	Rated Voltage	Full Load Amps	Locked Rotor Amps	NEMA Code Letter	NEMA Service Factor	Motor Efficiency at % Load 100	75	50	Power Factor at % Load 100	75	50
PE 125/2	13.7 kW	12.5 kW 16.8 HP	3517	208	47.1	321	H	1.3	91.0	92.6	92.8	0.809	0.778	0.689
				230	42.6	290								
				460	21.3	145								
				600	16.3	111								

DS-E01-020 REV: 4 DATE: 10/16 Specifications Subject to Change Without Notice

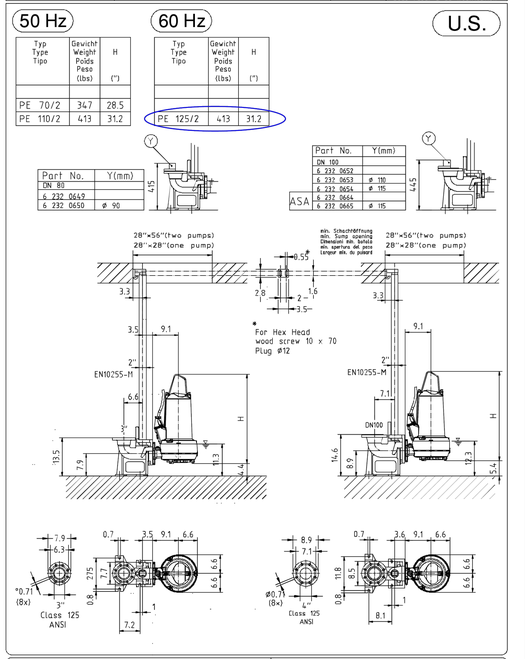
Scan For More Info

SULZER	Massblatt XFP 80E-CB1 Nassinstallation Dimension sheet WET-WELL Installation Dimensioni Installazione sommersa Hoja de dimensiones instalación sumergida Plan d'encombrement Installation noyee	No: AN-M.22.562 -04 Drawn: 11.05.09 / D.Whelan Issue Date: 09/05/2013 Änderungen vorbehalten Technical changes reserved Con riserva di modifiche Con reserva de modificaciones Sous réserve de modification

50 Hz | 60 Hz | U.S.

Typ Type Tipo	Gewicht Weight Poids Peso (lbs)	H (")
PE 70/2	347	28.5
PE 110/2	413	31.2

Typ Type Tipo	Gewicht Weight Poids Peso (lbs)	H (")
PE 125/2	413	31.2



Gewicht: Beinhaltet Pumpe/Halterung/Fusseheck) und Kabel (50 Hz = 10 m, 60 Hz = 15 m)
Weight: Includes pump, slider bracket and cable (50 Hz = 10 m, 60 Hz = 15 m)
Peso: Include pompa, pezzo intermedio a cavo (50 Hz = 10 m, 60 Hz = 15 m)
Peso: Incluye bomba, soporte deslizante y cable (50 Hz = 10 m, 60 Hz = 15 m)
Poids : incluant la pompe, le coulisseau et le câble (50 Hz = 10 m, 60 Hz = 15 m)

Guss-Allgemeintoleranzen nach DIN1680 – GTB16
General tolerances for castings in acc. to DIN1680-GTB16
Tolleranze generali delle fusioni seconde DIN1680-GTB16
Tolerancias generales para la fundición seg. de DIN1680-GTB16
Tolerance générale de la fonderie selon DIN1680-GTB16

REVISIONS	
DATE	DESCRIPTION

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Civil Engineering
Transportation, CEI &
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NEWKIRK ENGINEERING INC.

LIFT STATION DETAILS AND NOTES

PONKAN OAK MANOR

3405 WEST PONKAN ROAD

APOPKA, FL 32712

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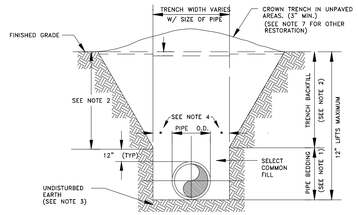
PROJECT No:	2023-30
DATE:	JUNE 2023
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	

DRAWING NUMBER

17



NOTES:

1. PIPE BEDDING: SELECT COMMON FILL COMPACTED TO 98% UNDER PAVEMENT OF THE MAXIMUM DENSITY AS PER AASHTO T-180.
2. TRENCH BACKFILL: COMMON FILL COMPACTED TO 98% UNDER PAVEMENT OF THE MAXIMUM DENSITY AS TO AASHTO T-180.
3. PIPE BEDDING UTILIZING SELECT COMMON FILL OR BEDDING ROCK IN ACCORDANCE WITH TYPE A BEDDING AND TRENCHING DETAIL MAY BE REQUIRED AS DIRECTED BY THE CITY.
4. (*): 15" MAX. FOR PIPE DIAMETERS LESS THAN 24", AND 24" FOR PIPE DIAMETER 24" AND LARGER.
5. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
6. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
7. FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF GOVERNING AGENCIES.
8. SURFACE RESTORATION WITHIN CITY RIGHT-OF-WAY, SHALL COMPLY WITH REQUIREMENTS OF RIGHT-OF-WAY UTILIZATION REGULATIONS.
9. ALL UNPAVED DISTURBED AREAS SHALL BE SODDED TO MATCH ADJACENT DOMINATE GRASS SPECIES.

TYPE "B" BEDDING AND OPEN-CUT DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 100

MINIMUM LENGTH (FT) TO BE RESTRAINED ON EACH SIDE OF FITTING(S). *											
	PIPE SIZE										
	6"	8"	10"	12"	16"	18"	20"	24"	30"	36"	48"
90° BEND	33	43	51	60							
45° BEND	14	18	22	25							
22-1/2° BEND	7	9	11	12							
11-1/4° BEND	4	5	6	6							
TEE**	1	7	24	44							
REDUCER (ONE SIZE SMALLER)		41	39	40							
DEAD END	74	96	115	136							

* ONLY RESTRAIN BRANCH PIPE FOR TEES. ONLY RESTRAIN LARGER PIPE FOR REDUCERS
** LENGTH ALONG RUN ASSUMED TO BE 18'

NOTES:

1. FITTINGS SHALL BE DUCTILE IRON RESTRAINED JOINT TYPE. FM FITTINGS TO BE LINED WITH PROTECTO 401.
2. INSTALL FULL LENGTHS OF PIPE WITH TOTAL LENGTH CONTAINING ONLY RESTRAINED JOINTS EQUAL TO OR GREATER THAN LENGTH SHOWN IN TABLE.
3. WHERE TWO OR MORE FITTINGS ARE TOGETHER, USE FITTING WHICH YIELDS GREATEST LENGTH OF RESTRAINED PIPE.
4. IN LINE VALVES AND THROUGH RUN OF TEES OUTSIDE LIMITS OF RESTRAINED JOINTS FROM OTHER FITTINGS NEED NOT BE RESTRAINED UNLESS OTHERWISE INDICATED.
5. LENGTHS SHOWN IN THE TABLE HAVE BEEN CALCULATED IN ACCORDANCE WITH THE PROCEDURE OUTLINED IN "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" AS PUBLISHED BY DIPRA, FOR PVC WITH THE FOLLOWING ASSUMPTIONS:
   TYPE OF PIPE: PVC
   WORKING PRESSURE: 150 P.S.I.** ** FM = 100 P.S.I. / WM OR RWM = 150 P.S.I.
   SOIL DESIGNATION: SM(SAND SILT)
   LAYING CONDITIONS: 3
6. FOR PIPE ENCASED IN POLYETHYLENE INCREASE THE GIVEN VALUE BY A FACTOR OF 1.5.
7. VALUES NOT LISTED IN THE TABLE TO BE COMPLETED BY THE ENGINEER.

RESTRAINED PIPE TABLE (PVC)

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 105

MINIMUM LENGTH (FT) TO BE RESTRAINED ON EACH SIDE OF FITTING(S). *											
	PIPE SIZE										
	6"	8"	10"	12"	16"	18"	20"	24"	30"	36"	48"
90° BEND					61	67	73	84	100	114	
45° BEND					26	28	31	35	42	48	
22-1/2° BEND					13	14	15	17	20	23	
11-1/4° BEND					6	7	8	9	10	12	
TEE**					52	62	74	95	124	152	
REDUCER (ONE SIZE SMALLER)					48	25	25	47	66	66	
DEAD END					111	123	135	157	188	218	

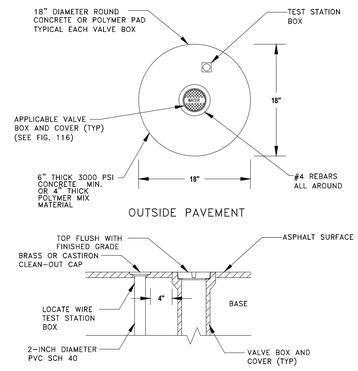
* ONLY RESTRAIN BRANCH PIPE FOR TEES. ONLY RESTRAIN LARGER PIPE FOR REDUCERS
** LENGTH ALONG RUN ASSUMED TO BE 18'

NOTES:

1. FITTINGS SHALL BE RESTRAINED JOINT TYPE. FM FITTINGS TO BE LINED WITH PROTECTO 401.
2. INSTALL FULL LENGTHS OF PIPE WITH TOTAL LENGTH CONTAINING ONLY RESTRAINED JOINTS EQUAL TO OR GREATER THAN LENGTH SHOWN IN TABLE.
3. WHERE TWO OR MORE FITTINGS ARE TOGETHER, USE FITTING WHICH YIELDS GREATEST LENGTH OF RESTRAINED PIPE.
4. IN LINE VALVES AND THROUGH RUN OF TEES OUTSIDE LIMITS OF RESTRAINED JOINTS FROM OTHER FITTINGS NEED NOT BE RESTRAINED UNLESS OTHERWISE INDICATED.
5. LENGTHS SHOWN IN THE TABLE HAVE BEEN CALCULATED IN ACCORDANCE WITH THE PROCEDURE OUTLINED IN "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" AS PUBLISHED BY DIPRA, WITH THE FOLLOWING ASSUMPTIONS:
   TYPE OF PIPE:
   WORKING PRESSURE: 150 P.S.I.** ** FM = 100 P.S.I. / WM OR RWM = 150 P.S.I.
   SOIL DESIGNATION: SM(SAND SILT)
   LAYING CONDITIONS: 3
6. VALUES NOT LISTED IN THE TABLE TO BE COMPLETED BY THE ENGINEER.

RESTRAINED PIPE TABLE (DI)

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JAUARY 2014	FIG. 106



VALVE IDENTIFICATION TAG TO BE INSTALLED BY CITY & PAID FOR BY DEVELOPER

VALVE BOX

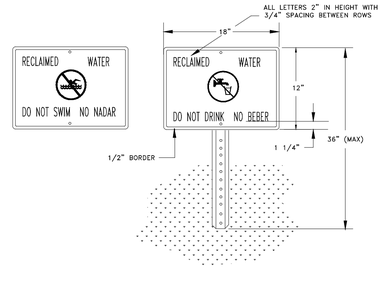
CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 109

MINIMUM PRESSURE RATING									
PSI	DI FITTINGS		PIPE MATERIAL*			GATE VALVE**		FORCEMAIN*	
	≤24"	>24"	PVC	DI	HDPE	≤12"	>12"	PVC	HDPE
100								●	●
150			●		●		●		
200						●			
250		●		●					
350	●								

* PVC SHALL HAVE A MAXIMUM DIMENSION RATIO (DR) OF 18 AND HDPE SHALL BE MAX DR11. FORCEMAIN: PVC SHALL BE MAX DR18 UNLESS DESIGN REQUIRES OTHERWISE AND HDPE SHALL BE MAX DR17.
** BUTTERFLY VALVES SHALL BE CLASS 150B

PIPE AND APPURTENANCES PRESSURE RATING

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JAUARY 2014	FIG. 110

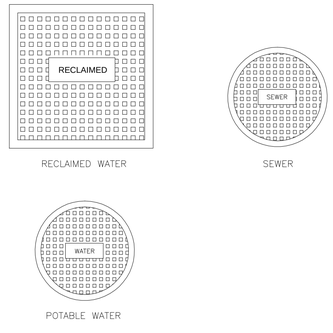


NOTES:

1. HEIGHT OF SIGN WILL DEPEND ON LOCATION AND SURROUNDING LANDSCAPE PLANT TYPES. IN ALL CASES, THE SIGN SHALL BE VISIBLE TO THE PUBLIC.
2. BACKGROUND SHALL BE WHITE, LETTERS AND FIGURES SHALL BE BLACK. PROHIBITIVE SYMBOL SHALL BE RED.
3. ENGINEERING GRADE REFLECTIVE MATERIALS SHALL BE USED.
4. POST SHALL BE U CHANNEL 12 FT. 2 LB. HOT ROLLED HIGH TENSILE RAIL OR BILLET STEEL, HOT DIP GALVANIZED PER ASTM A-123.
5. MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
6. SIGNS SHALL BE PLACED BY THE CONTRACTOR IN ACCORDANCE WITH THE CITY APPROVED ENGINEERING PLANS AND/OR AS APPROVED BY PUBLIC SERVICES DEPARTMENT.

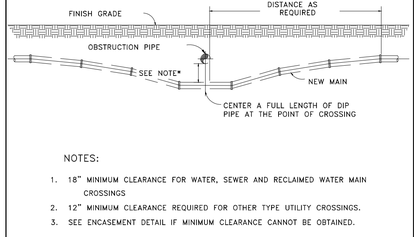
RECLAIMED WATER ADVISORY SIGN

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 115



TYPICAL VALVE BOX COVER DETAILS

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 116



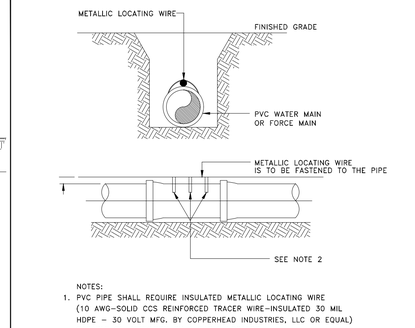
NOTES:

1. 18" MINIMUM CLEARANCE FOR WATER, SEWER AND RECLAIMED WATER MAIN CROSSINGS
2. 12" MINIMUM CLEARANCE REQUIRED FOR OTHER TYPE UTILITY CROSSINGS.
3. SEE ENCASEMENT DETAIL IF MINIMUM CLEARANCE CANNOT BE OBTAINED.

* CONSTRUCT UNIFORM PIPE DEFLECTION NOT TO EXCEED 75% OF MANUFACTURER RECOMMENDED MAXIMUM DEFLECTION PER PIPE JOINT

UTILITY CROSSING PIPE DEFLECTION DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 117

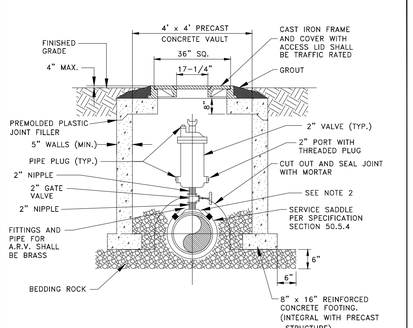


NOTES:

1. PVC PIPE SHALL REQUIRE INSULATED METALLIC LOCATING WIRE (10 AWG-SOLID CCS REINFORCED TRACER WIRE-INSULATED 30 MIL HDPE – 30 VOLT MFG. BY COPPERHEAD INDUSTRIES, LLC OR EQUAL) CAPABLE OF DETECTION BY A CABLE LOCATOR.
2. SHALL BE BURIED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND ATTACHED WITH DUCT TAPE OR NYLON STRAPS AT 3 LOCATIONS PER JOINT. LOCATING WIRE SHALL TERMINATE AT THE TEST STATION BOX AS SHOWN IN FIG. 109.
3. BE CAPABLE OF EXTENDING 12" ABOVE TOP OF TEST STATION BOX IN SUCH A MANNER SO AS NOT TO INTERFERE WITH VALVE OPERATION.
4. SPLICES SHOULD BE MADE USING STANDARDS AND PRODUCTS DESIGNED FOR DIRECT BURIAL CONDUCTORS.
5. WIRE INSULATION SHALL BE COLOR CODED FOR THE TYPE OF PIPE BEING INSTALLED.

PVC PIPE LOCATING WIRE DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	MAY 2022	FIG. 204

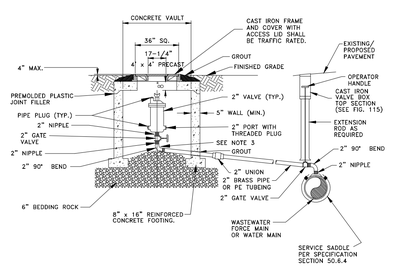


NOTES:

1. ABOVE DETAIL IS BASED ON 2 INCH COMBINATION AIR/VACUUM RELEASE VALVE. CHANGE PIPE AND FITTINGS ACCORDINGLY FOR OTHER VALVE SIZES AND TYPES. VALVE SIZES TO BE DETER-MINED BY THE ENGINEER AND APPROVED BY THE CITY PRIOR TO INSTALLATION.
2. THE MINIMUM DIMENSION FROM TOP OF PIPE TO FINISHED GRADE SHALL BE 4.0 FEET.
3. ALL STRUCTURES TO BE TRAFFIC BEARING RATED.

AIR OR COMBINATION AIR/VACUUM RELEASE VALVE DETAIL - UNDERGROUND

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 119

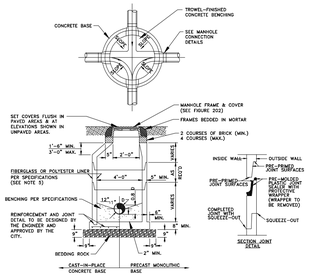


NOTES:

1. ABOVE DETAIL IS BASED ON 2 INCH COMBINATION AIR/VACUUM RELEASE VALVE. CHANGE PIPE AND FITTINGS ACCORDINGLY FOR OTHER VALVE SIZES AND TYPES. VALVE SIZES TO BE DETERMINED BY THE ENGINEER AND APPROVED BY THE CITY PRIOR TO INSTALLATION.
2. THE MINIMUM DIMENSION FROM ELBOW INVERT TO FINISHED GRADE SHALL BE 4.0 FEET.
3. THE AIR RELEASE VALVE SHALL BE ADEQUATELY SUPPORTED.
4. ALL FITTINGS ARE TO BE BRASS.

OFFSET AIR OR COMBINATION AIR/VACUUM RELEASE VALVE DETAIL - UNDERGROUND

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 120



FORCE MAIN MANHOLE LINER*

DIAMETER (INCHES)	HEIGHT (FEET) 3–6	7–12	13–17	MATERIAL	MANUFACTURER
48					
60					
72					

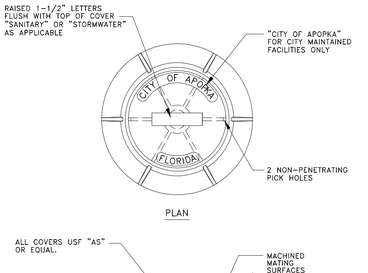
* TO BE COMPLETED BY THE ENGINEER

NOTES:

1. MANHOLE SHOWN IS FOR SEWER SIZE 8" THRU 24". SEE SECTION 20.4 OF THE MANUAL FOR MANHOLE DIAMETER FOR SEWERS LARGER THAN 24".
2. DROP CONNECTIONS ARE REQUIRED WHENEVER INVERT OF INFLUENT SEWER IS 24" OR MORE ABOVE THE INVERT OF THE MANHOLE. SEE MANHOLE CONNECTION DETAILS.
3. THE THICKNESS OF THE LINER SHALL BE 3/8" MINIMUM.
4. EACH BENCH WALL SHALL BE A MINIMUM OF 18 INCHES LONG FROM THE WALL OF THE MANHOLE TOWARD THE CENTER.
5. SANITARY SEWER MANHOLES MAY BE REQUIRED TO BE LINED IN ACCORDANCE WITH THE CITY OF APOPKA LIST OF APPROVED MATERIALS AND PRODUCTS AS DIRECTED BY THE CITY.

TYPICAL MANHOLE

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2015	FIG. 200

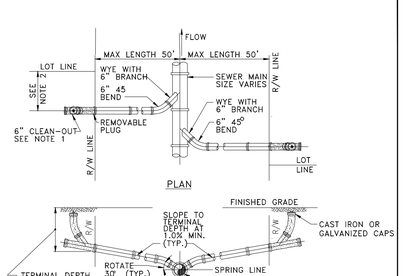


NOTES:

1. MANHOLE FRAME AND COVER ARE TO BE TRAFIC BEARING RATED H-20, CLASS 30 MEETING ASTM A 48.

STANDARD MANHOLE FRAME AND COVER

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 202

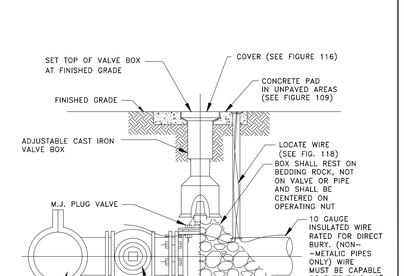


NOTES:

1. CLEAN-OUT (SHOWN SHADED) SHALL BE INSTALLED BY THE BUILDER IN ACCORDANCE WITH STANDARD PLUMBING CODE.
2. LOCATE SINGLE LATERAL AS CLOSE TO LOT LINE AS POSSIBLE.
3. INVERT OF SERVICE LATERAL SHALL NOT ENTER SEWER MAIN BELOW SPRING LINE.
4. RESIDENTIAL SERVICES SHALL BE 4 INCHES & NON-RESIDENTIAL SERVICES SHALL BE 6 INCHES IN DIAMETER AS A MINIMUM.
5. GALVANIZED, OR CAST IRON CLEAN-OUT CAP SHALL BE USED ON THE STUBOUT FOR EACH SERVICE.
6. LATERAL SHALL BE MARKED WITH AN "S" STAMPED OR CUT IN THE CURB.

SERVICE LATERAL DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 206



FORCE MAIN WET TAP TIE-IN DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 206

REVISIONS

DATE	DESCRIPTION
.	.
.	.

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CITY OF APOPKA
DETAILS AND NOTES
PONKAN OAK MANOR
3405 WEST PONKAN ROAD
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PROJECT No:	2023-30
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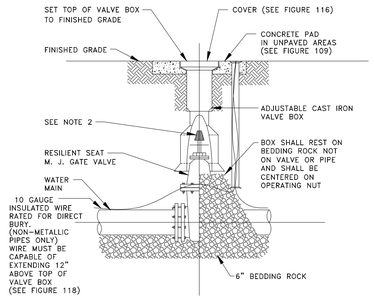
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	AS SHOWN

DRAWING NUMBER

18

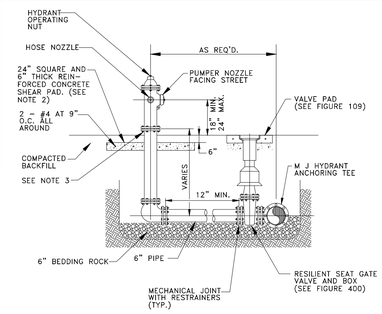


NOTES:

1. PVC EXTENSIONS MAY BE USED ON VALVE BOX INSTALLATION.
2. THE ACTUATING NUT FOR DEEPER VALVES SHALL BE EXTENDED TO WITHIN A 3 FEET BELOW FINISHED GRADE.

GATE VALVE AND BOX DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 400

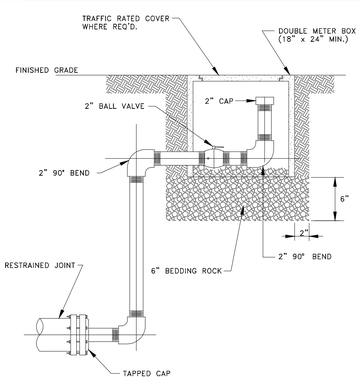


NOTES:

1. FIRE HYDRANT SHALL BE SUPPLIED WITHOUT A WEEP HOLE, OR WITH A PERMANENTLY PLUGGED WEEP HOLE.
2. THE SHEAR PAD SHALL BE RECESSED SIX (6) INCHES BELOW THE FINISHED GRADE AND THE RECESSED SECTION SODDED.
3. CLEARANCE BETWEEN BOTTOM OF BOLTS AND TOP OF SHEAR PAD SHALL BE A TWELVE (12) INCH MINIMUM.
4. FIRE HYDRANTS SHALL BE IDENTIFIED IN ACCORDANCE WITH THE CITY OF APOPKA UTILITIES DESIGN CONSTRUCTION STANDARDS MANUAL.

FIRE HYDRANT ASSEMBLY DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 402

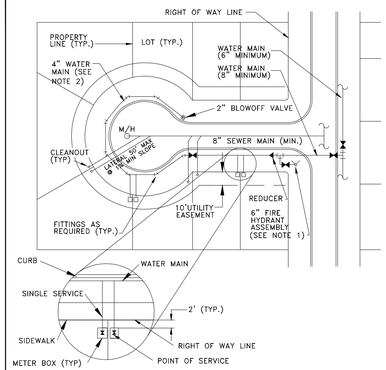


NOTES:

1. ALL 2 INCH PIPE AND FITTINGS SHALL BE SCHEDULE 40 GALVANIZED STEEL OR BRASS WITH THREADED (NPT) JOINTS. USE TEFLON TAPE ON JOINTS.
2. COLOR SHALL BE APPROPRIATE FOR USE.

BLOWOFF VALVE DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 403

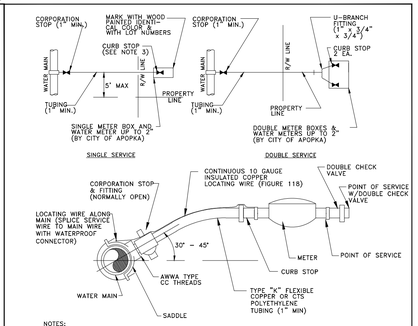


NOTES:

1. ANCHORING TYPE 90° BEND SHALL ONLY BE USED WHERE RIGHT-OF-WAY CONSTRUCTION WILL NOT ALLOW INSTALLATION OF A STRAIGHT ASSEMBLY.
2. POTABLE WATER MAINS SHALL BE MINIMUM 4" FOR THE LAST 500' OF A CUL-DE SAC NOT SERVING A HYDRANT.

TYPICAL SERVICE LOCATION DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	MAY 2022	FIG. 404

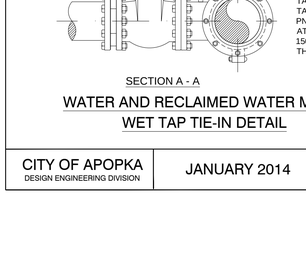


NOTES:

1. ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
2. NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
3. EACH SERVICE SHALL TERMINATE AT A CURB STOP(S) WHICH SHALL BE BURIED APPROXIMATELY 3" BELOW FINAL GRADE AND SHALL BE CLEARLY MARKED WITH A 2" x 2" x 18" STAKE WITH THE TOP PAINTED BLUE FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER, AND MARKED WITH THE NUMBER OF THE LOT(S) TO BE SERVED.
4. RECLAIMED WATER SERVICES SHALL USE PURPLE COLORED CTS POLYETHYLENE TUBING.
5. POTABLE WATER SERVICES SHALL USE BLUE COLORED CTS POLYETHYLENE TUBING.
6. ALL SERVICE UNDER EXISTING OR PROPOSED PAVEMENT SHALL BE INSTALLED IN A MINIMUM 2" PVC SLEEVE.

WATER SERVICE CONNECTION DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2016	FIG. 405



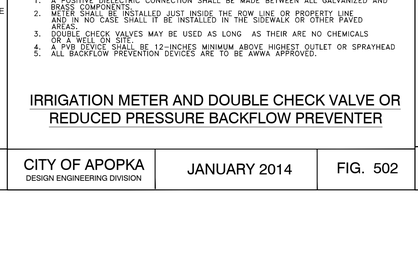
NOTES

1. SIZE ON SIZE WET TAPS WILL CALL FOR FULL ENCIRCLEMENT STAINLESS STEEL MJ TAPPING SLEEVE; MUELLER H-304, OR EQUAL.
2. ALL NEWLY INSTALLED TAPPING SLEEVES & TAPPING VALVES SHALL BE PNEUMATICALLY TESTED AT A TEST PRESSURE OF 150PSI FOR A PERIOD OF THIRTY MINUTES.

SECTION A - A

WATER AND RECLAIMED WATER MAINS WET TAP TIE-IN DETAIL

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 406

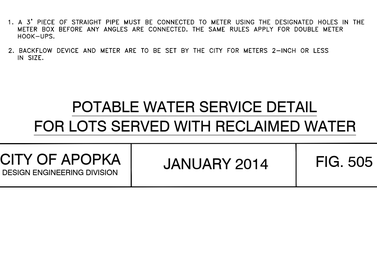


NOTES:

1. A POSITIVE DIELECTRIC CONNECTION SHALL BE MADE BETWEEN ALL GALVANIZED AND BRASS COMPONENTS.
2. METER SHALL BE INSTALLED JUST INSIDE THE ROW LINE OR PROPERTY LINE AND IN NO CASE SHALL IT BE INSTALLED IN THE SIDEWALK OR OTHER PAVED AREAS.
3. DOUBLE CHECK VALVES MAY BE USED AS LONG AS THEIR ARE NO CHEMICALS OR A WELL ON SITE.
4. A PVB DEVICE SHALL BE 12-INCHES MINIMUM ABOVE HIGHEST OUTLET OR SPRAYHEAD
5. ALL BACKFLOW PREVENTION DEVICES ARE TO BE AWWA APPROVED.

IRRIGATION METER AND DOUBLE CHECK VALVE OR REDUCED PRESSURE BACKFLOW PREVENTER

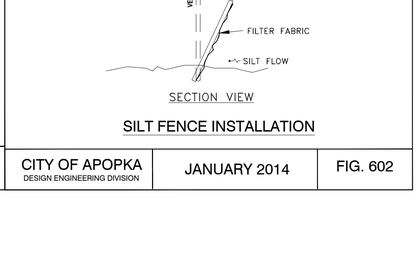
CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 502



1. A 3' PIECE OF STRAIGHT PIPE MUST BE CONNECTED TO METER USING THE DESIGNATED HOLES IN THE METER BOX BEFORE ANY ANGLES ARE CONNECTED. THE SAME RULES APPLY FOR DOUBLE METER HOOK-UPS.
2. BACKFLOW DEVICE AND METER ARE TO BE SET BY THE CITY FOR METERS 2-INCH OR LESS IN SIZE.

POTABLE WATER SERVICE DETAIL FOR LOTS SERVED WITH RECLAIMED WATER

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 505



SILT FENCE INSTALLATION

CITY OF APOPKA DESIGN ENGINEERING DIVISION	JANUARY 2014	FIG. 602

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CITY OF APOPKA DETAILS AND NOTES

PONKAN OAK MANOR

3405 WEST PONKAN ROAD
APOPKA, FL 32712

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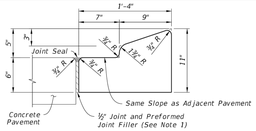
PROJECT No:	2023-30
DATE:	JUNE 2023
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	AS SHOWN

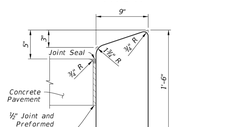
DRAWING NUMBER

19



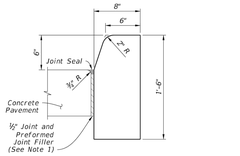
NOTE: *For use adjacent to concrete or flexible pavement, concrete shown (See Note 4).*

TYPE A



NOTE: *For use adjacent to concrete or flexible pavement, concrete shown.*

TYPE B

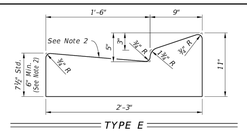


NOTE: *For use adjacent to concrete or flexible pavement, concrete shown.*

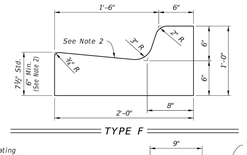
TYPE D

NOTES:

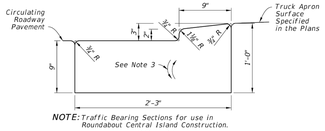
1. *For Type A, Type B, and Type D Curb: Expansion joint, preformed joint filler and joint seal are required between curbs and concrete pavement only, see Sheet 3.*
2. *For Type E, Type F, Drop Curb, and Valley Gutter: When used on high side of roadways, match the cross slope of the gutter to the cross slope of the adjacent pavement. The thickness of the lip is 6", unless otherwise shown on Plans.*
3. *For Type RA, rotate entire section so that gutter cross slope matches slope of adjacent circulating roadway pavement.*
4. *For details depicting usage of Type A Curb adjacent to flexible pavement see Sheet 3.*



TYPE E

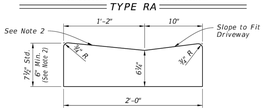


TYPE F

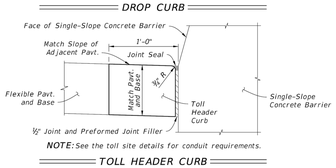


NOTE: *Traffic Bearing Sections for use in Roundabout Central Island Construction.*

TYPE RA

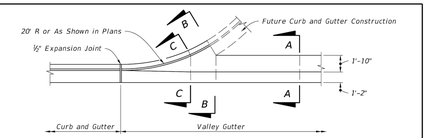


DROP CURB

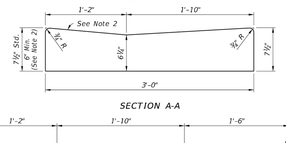


NOTE: *See the toll site details for conduit requirements.*

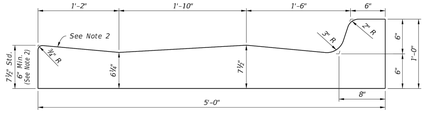
TOLL HEADER CURB



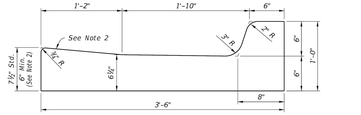
PLAN VIEW



SECTION A-A

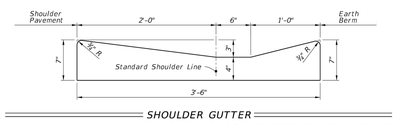


SECTION B-B



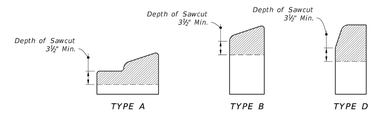
SECTION C-C

VALLEY GUTTER

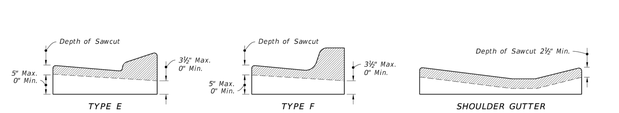


SHOULDER GUTTER

CONCRETE CURB AND GUTTER

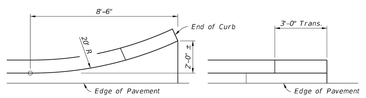


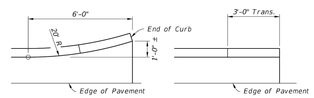
CONTRACTION JOINTS IN CURB

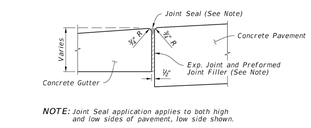


NOTE: *Sawcuts should be avoided within valley gutter and within curb and gutter endings.*

CONTRACTION JOINTS IN CURB & GUTTER

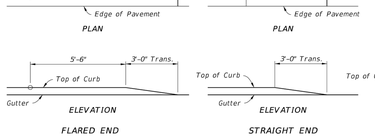






NOTE: *Joint Seal application applies to both high and low sides of pavement, low side shown.*

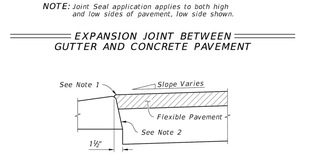
EXPANSION JOINT BETWEEN GUTTER AND CONCRETE PAVEMENT



CURB TYPE A — CURB AND GUTTER TYPE E AND TYPE F

NOTE: *Ends of Type B and D Curb transition from full to zero heights in 3 ft.*

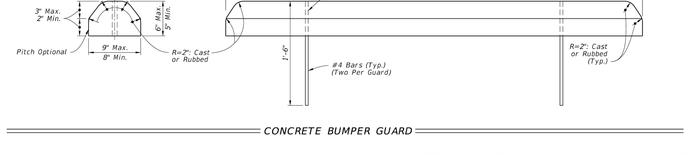
CURB AND CURB & GUTTER ENDINGS



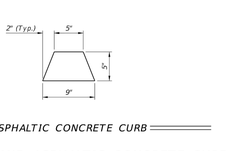
NOTES:

1. *Surface on Low Side of Pavement to be ½" Above Lip of Gutter. Surface on High Side to be Flush With Lip of Curb or Curb & Gutter.*
2. *Applies to both high and low sides of pavement, low side shown. Applies to shoulder gutter only where adjoining traffic lanes.*

CURB AND GUTTER AND TYPE A CURB ADJACENT TO FLEXIBLE PAVEMENT



CONCRETE BUMPER GUARD



ASPHALTIC CONCRETE CURB

CURB AND GUTTER JOINTS AND ENDINGS, CONCRETE BUMPER GUARD, AND ASPHALTIC CONCRETE CURB

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FDOT DETAILS

PONKAN OAK MANOR

3405 WEST PONKAN ROAD

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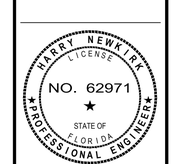

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DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	AS SHOWN

DRAWING NUMBER

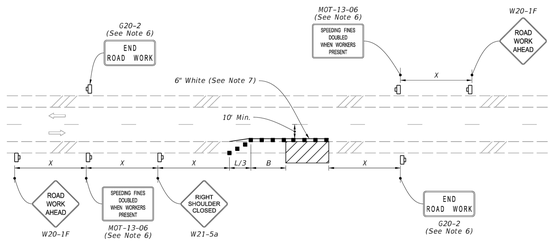
20

NOTE:

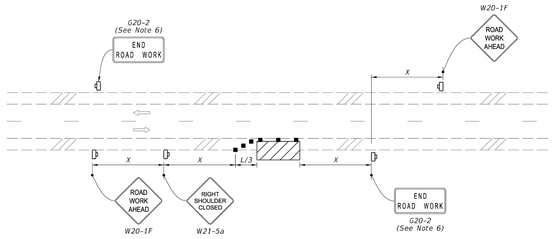
1. This Index applies to Two-Lane, Two-Way and Multilane Roadways, including Medians of divided roadways, with work on the shoulder.
2. L = Taper Length
   X = Work Zone Sign Spacing
   B = Buffer Length
   See Index 102-600 for "L", "X", "B", and channelizing device spacing values.
3. Where work activities are between 2' and 15' from the edge of traveled way, the Engineer may omit signs and channelizing devices for work operations 60 minutes or less.
4. When four or more work vehicles enter the through traffic lanes in a one hour period (excluding establishing and terminating the work areas), use a flagger or lane closure to accommodate work vehicle ingress and egress.
5. For work less than 2' from the traveled way and work zone speed is greater than 45 MPH, use a lane closure.
6. The "Speeding Fines Doubled When Workers Present" signs (M0T-13-06) and "End Road Work" Signs (G20-2) along with the associated work zone sign spacing distances may be omitted when the work operation is in place for 24 hours or less.
7. Temporary pavement markings may be omitted when the work operation is in place for 3 days or less.
8. Omit "Shoulder Closed" signs (W21-5a) along with associated work zone sign spacing distances for work on the median.
9. When there is no paved shoulder, the "Worker" sign (W21-1) may be used instead of the "Shoulder Closed" sign (W21-5a).

SYMBOLS:

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Lane Identification and Direction of Traffic



TWO-LANE ROADWAY
SHOULDER WORK LESS THAN 2' FROM THE TRAVELED WAY
WITH WORK ZONE SPEED OF 45 MPH OR LESS



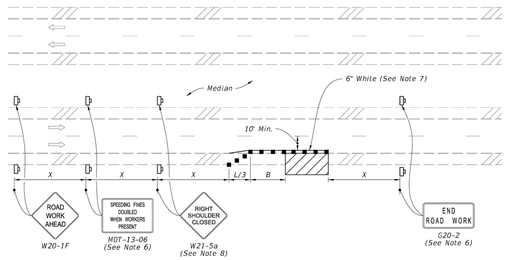
TWO-LANE ROADWAY
SHOULDER WORK BETWEEN 2' AND 15' FROM THE TRAVELED WAY

9/22/2021 2:48:48 PM

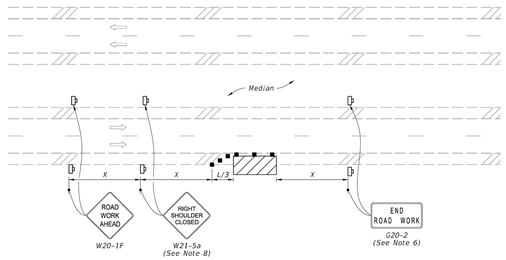
LAST REVISION	DESCRIPTION:	FDOT FY 2022-23 STANDARD PLANS	TWO-LANE AND MULTILANE, WORK ON SHOULDER	INDEX	SHEET
11/01/21				102-602	1 of 2

SYMBOLS:

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Lane Identification and Direction of Traffic



MULTILANE ROADWAY
SHOULDER WORK LESS THAN 2' FROM THE TRAVELED WAY
WITH WORK ZONE SPEED OF 45 MPH OR LESS



MULTILANE ROADWAY
SHOULDER WORK BETWEEN 2' AND 15' FROM THE TRAVELED WAY

9/27/2021 2:48:48 PM

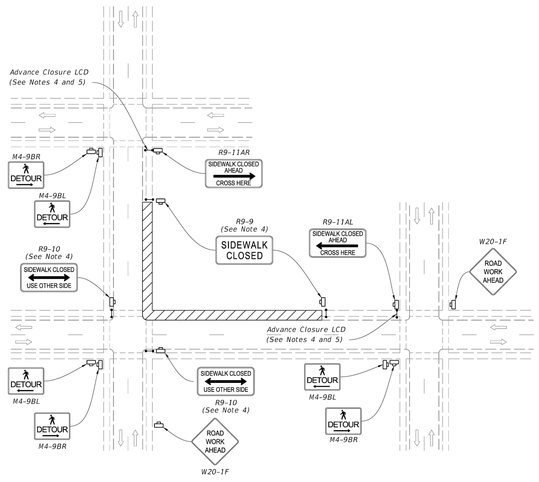
LAST REVISION	DESCRIPTION:	FDOT FY 2022-23 STANDARD PLANS	TWO-LANE AND MULTILANE, WORK ON SHOULDER	INDEX	SHEET
11/01/20				102-602	2 of 2

NOTES:

1. Cover or deactivate pedestrian traffic signal display(s) controlling closed crosswalks.
2. Place pedestrian LCDs across the full width of the closed sidewalk.
3. For post mounted signs located near or adjacent to a sidewalk, maintain a minimum 7' clearance from the bottom of the sign panel to the surface of the sidewalk.
4. "Sidewalk Closed" signs (R9-XX) may be mounted on pedestrian LCDs in accordance with the manufacturer's instructions.
5. Omit the Advance Closure LCD if it blocks access to other pedestrian facilities (e.g., transit stops, residences, or business entrances).

SYMBOLS:

- Work Area
- Work Zone Sign
- Pedestrian Longitudinal Channelizing Device (LCD)
- Lane Identification and Direction of Traffic



PEDESTRIAN DETOUR

12:26:54 PM 9/21/2021

LAST REVISION	DESCRIPTION:	FDOT FY 2022-23 STANDARD PLANS	SIDEWALK CLOSURE	INDEX	SHEET
11/01/20				102-660	1 of 2

REVISIONS

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MAINTENANCE OF TRAFFIC
PONKAN OAK MANOR
3405 WEST PONKAN ROAD
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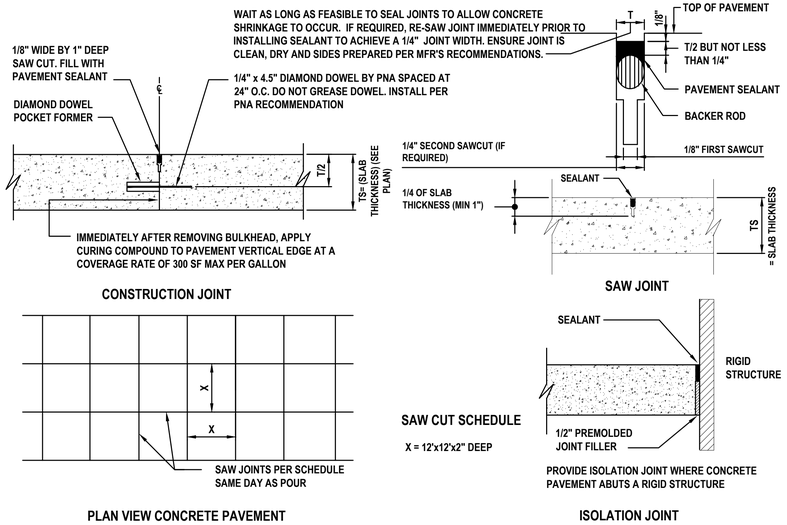
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	AS SHOWN

DRAWING NUMBER

21



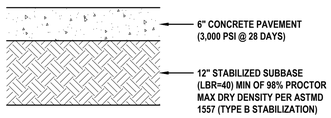
CONCRETE PAVEMENT JOINT DETAILS

NOT TO SCALE

6" BASE:
1) CRUSHED CONCRETE (LBR=150) MIN OF 98% MODIFIED PROCTOR MAX DENSITY PER AASHTO T-180 (4" MAX. LIFTS)
2) LIMEROCK (LBR=100) MIN OF 98% MODIFIED PROCTOR MAX DENSITY PER AASHTO T-180 (4" MAX. LIFTS)

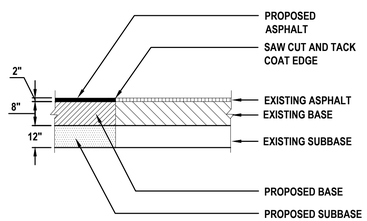
ASPHALT PAVEMENT

NOT TO SCALE



CONCRETE PAVEMENT

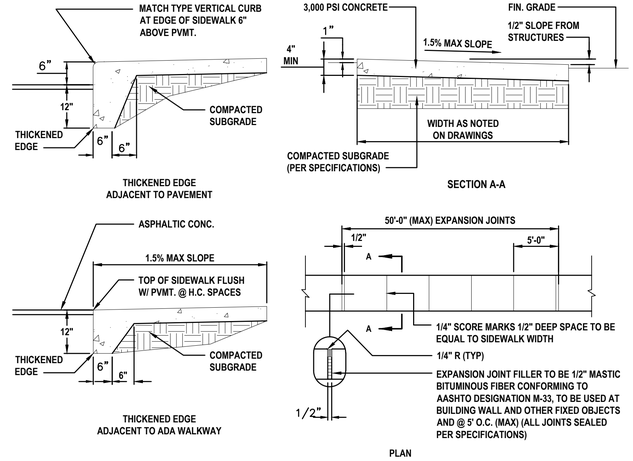
NOT TO SCALE



PAVEMENT BUTT JOINT DETAIL

NOT TO SCALE

CONCRETE WALKS SHALL BE 4 INCHES THICK, CLASS I, HAVING A 3,000 PSI STRENGTH @ 28 DAYS, POURED OVER PROPERLY PREPARED SUBGRADE. ALL CONCRETE SIDEWALKS SHALL BE 8 INCHES THICK ACROSS DRIVEWAYS. 1/2 INCH EXPANSION JOINTS SHALL BE PLACED AT A MAXIMUM OF 5'. CRACK CONTROL JOINTS SHALL BE 5' ON CENTERS.

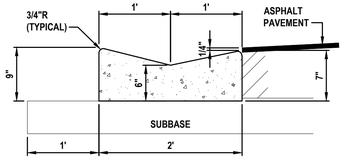


SIDEWALK DETAILS

NOT TO SCALE

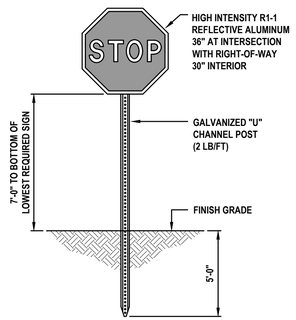
CURB CONSTRUCTION NOTES

1. ALL CURBS TO BE CONSTRUCTED OF 28 DAY, 3000 P.S.I. CONCRETE.
2. 1/2" PRE-MOLDED EXPANSION JOINT REQUIRED EVERY 50', CONSTRUCTION JOINT REQUIRED EVERY 10' MAXIMUM (4' MINIMUM).
3. 1/2" PRE-MOLDED EXPANSION JOINT REQUIRED AT EACH SIDE OF ALL STORM INLET STRUCTURES AND AT ALL RADIUS POINTS.
4. 6" SUBBASE TO BE COMPACTED AND TESTED TO 98% DENSITY BASED ON AASHTO T-180 MODIFIED PROCTOR TEST AND SHALL BE STABILIZED TO A MINIMUM L.B.R. 40.
5. EXPANSION JOINT MATERIAL MUST COVER ENTIRE CROSS SECTION OF CURB.
6. IN NO INSTANCE SHALL EXTRUDED CURBS (DEFINED AS HEADER-TYPE CURBS INSTALLED DIRECTLY ON TOP OF PAVEMENT) BE PERMITTED.



MIAMI CURB

NOT TO SCALE



STOP SIGN DETAIL

NOT TO SCALE

REVISIONS

DATE	DESCRIPTION

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MISCELLANEOUS DETAILS
PONKAN OAK MANOR
3405 WEST PONKAN ROAD
APOPKA, FL 32712

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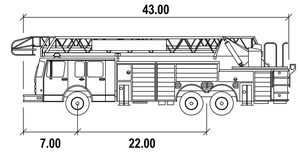
CHECKED BY:	HHN
SCALE:	

DRAWING NUMBER

22

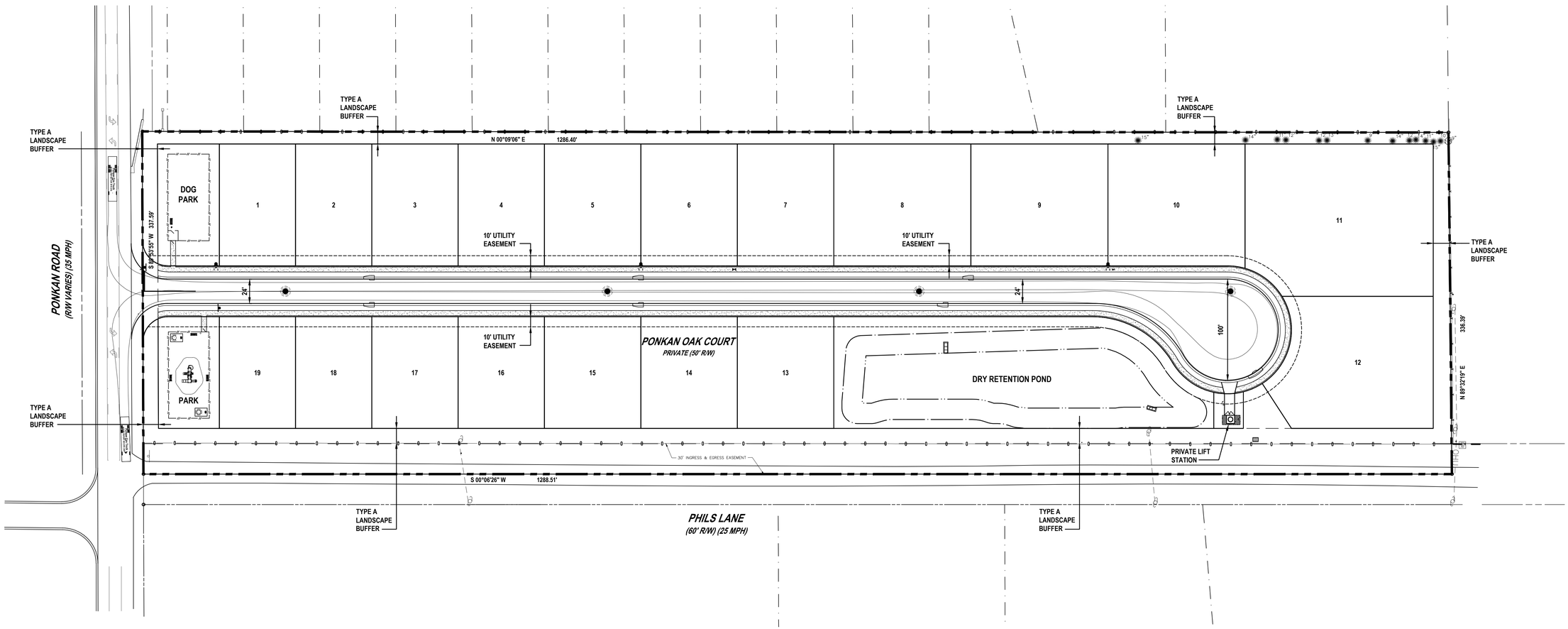
50 0 50 100

GRAPHIC SCALE
1"=50'



Aerial Fire Truck

		feet
Width	:	8.50
Track	:	8.50
Lock to Lock Time	:	6.0
Steering Angle	:	33.3



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AUTOTURN PLAN
PONKAN OAK MANOR
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HARRY H. NEWKIRK, P.E. # 62971

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DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	1"=50'

DRAWING NUMBER

23

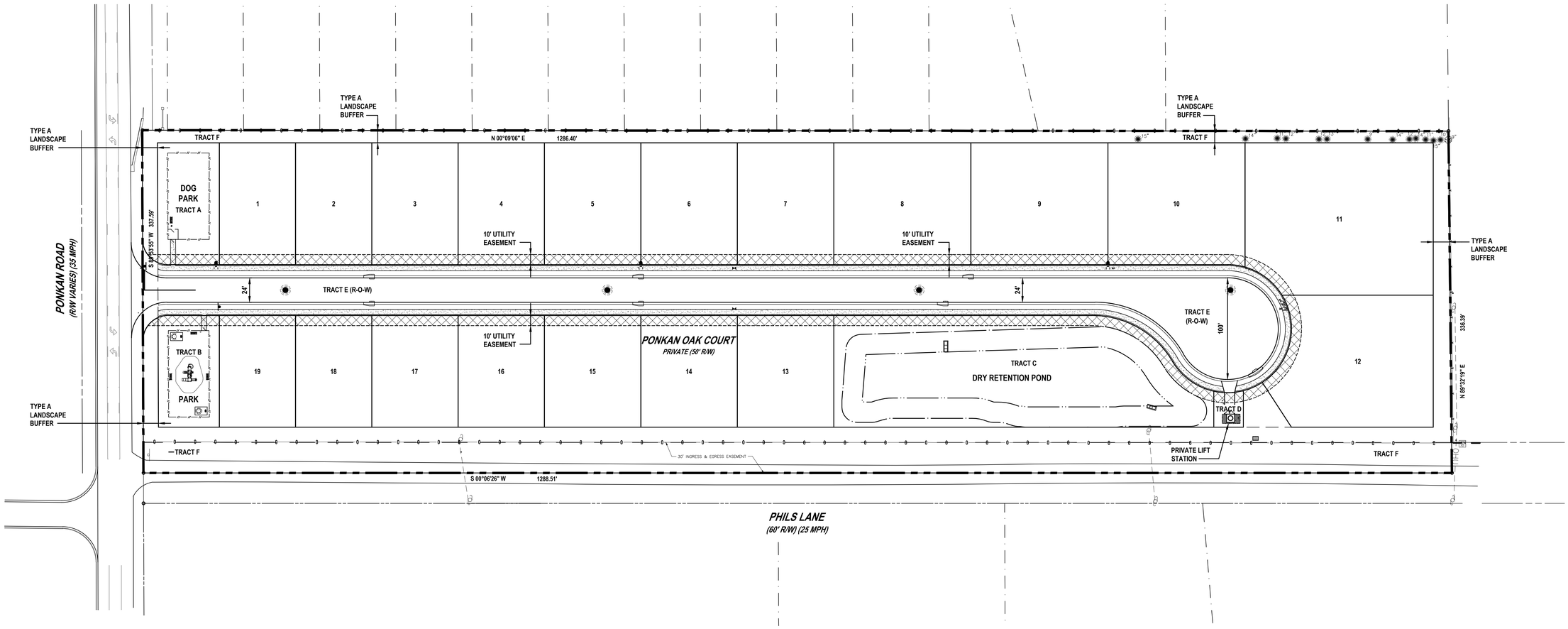
50 0 50 100

GRAPHIC SCALE
1"=50'

EASEMENT LEGEND :

UTILITY EASEMENT

TRACT TABLE			
TRACT	AREA (SF)	AREA (AC)	USE
TRACT A	7,289	0.167	OPEN SPACE
TRACT B	6,615	0.152	OPEN SPACE
TRACT C	37,506	0.861	DRAINAGE
TRACT D	1,010	0.023	LIFT STATION
TRACT E	64,585	1.483	OPEN SPACE
TOTALS	117,005	2.686	



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EASEMENT PLAN

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APOPKA, FLORIDA 32712

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HARRY H. NEWKIRK, P.E. # 62971

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CHECKED BY:	HHN
SCALE:	1"=50'

DRAWING NUMBER

24

PLANT SCHEDULE

SHADE TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AR	2	ACER RUBRUM	RED MAPLE	3" CAL., 10` HT.	
QV	19	QUERCUS VIRGINIANA	SOUTHERN LIVE OAK	3" CAL., 10` HT.	

UNDERSTORY TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
CV	9	CHIONANTHUS VIRGINICUS	WHITE FRINGETREE	2" CAL., 8` HT.	
IC	105	ILEX CASSINE	DAHOON HOLLY	2" CAL., 8` HT.	3' C.T.
IVP	36	ILEX VOMITORIA 'PENDULA'	WEEPING YAUPON HOLLY	2" CAL., 8` HT.	
LIM	12	LAGERSTROEMIA INDICA X FAURIEI `MUSKOGEE`	MUSKOGEE CRAPE MYRTLE	2" CAL., 8` HT.	M.T. LILAC
MGL	12	MAGNOLIA GRANDIFLORA `LITTLE GEM`	DWARF SOUTHERN MAGNOLIA	2" CAL., 8` HT.	
MV	10	MAGNOLIA VIRGINIANA	SWEET BAY MAGNOLIA	2" CAL., 8` HT.	
PA3	6	PRUNUS ANGUSTIFOLIA	CHICKASAW PLUM	2" CAL., 8` HT.	
QG	1	QUERCUS GEMINATA	SAND LIVE OAK	2" CAL., 8` HT.	
QL	5	QUERCUS LAURIFOLIA	LAUREL OAK	2" CAL., 8` HT.	

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
MC	64	MYRICA CERIFERA	WAX MYRTLE	3 GAL., 24" HT, X 18" SPRD.	36" O.C.
VOS	69	VIBURNUM OBOVATUM 'SELECT'	WALTER'S VIBURNUM	3 GAL., 15" HT. X 15" SPRD.	36" O.C.

1286.40' TYPE "A" BUFFER
1 CANOPY TREE, 6 UNDERSTORY TREES, & 5 SHRUBS PER 100 L.F. REQUIRES
13 CANOPY TREES AND 77 UNDERSTORY TREES REQUIRED
14 EXISTING CANOPY TREES, 1 PROPOSED CANOPY TREE AND 77 UNDERSTORY TREES PROVIDED

EXISTING CONCRETE BLOCK WALL

IC 3 | QL 1 | IVP 1 | PA3 3 | IC 3 | IVP 3 | QG 1 | MGL 1 | IC 2 | QL 1 | IC 2 | MV 1 | IC 3 | CV 4 | IC 2 | IVP 3 | MGL 1 | IC 2 | MGL 1 | IC 4 | MGL 1 | IVP 3 | IC 2 | QL 1

5' MULCH RING (TYPICAL)

TYPE "A" LANDSCAPE BUFFER

BARBED WIRE FENCE

LIM 3

TYPE "A" LANDSCAPE BUFFER

DOG PARK

IC 4 | QV 1 | QV 1 | VOS 36 | LIM 3 | QV 1 | MC 28 | QV 1

10' UTILITY EASEMENT

SOD

PONKAN OAK COURT

PONKAN ROAD

337.39' - 42.82' DRIVEWAY = 294.77' TYPE "A" BUFFER
1 CANOPY TREE, 6 UNDERSTORY TREES, & 5 SHRUBS PER 100 L.F. REQUIRES
3 CANOPY TREES AND 18 UNDERSTORY TREES REQUIRED
3 CANOPY TREES AND 18 UNDERSTORY TREES PROVIDED

QV 1 | LIM 3 | VOS 33 | IC 2 | QV 1 | IC 5 | MGL 1

PARK

CONC. PAD, TYP.

LIM 3 | MC 36

5' MULCH RING (TYPICAL)

EXISTING FIRE HYDRANT

QV 1

TYPE "A" LANDSCAPE BUFFER

IC 3 | QV 1 | IVP 1 | PA3 3 | IC 4 | IVP 3 | QV 1 | MGL 1 | MV 1 | QL 1 | IC 4 | CV 4 | IC 5 | IVP 2 | QV 1 | IC 2 | IVP 2 | MGL 1 | QV 1 | IVP 2 | IC 6 | QL 1

30' INGRESS & EGRESS EASEMENT

PHILS LANE

1288.51' TYPE "A" BUFFER
1 CANOPY TREE, 6 UNDERSTORY TREES, & 5 SHRUBS PER 100 L.F. REQUIRES
13 CANOPY TREES AND 77 UNDERSTORY TREES REQUIRED
13 CANOPY TREES AND 77 UNDERSTORY TREES PROVIDED

MATCH-LINE SEE SHEET L2

LEGEND

ST. AUGUSTINE SOD

GRAPHIC SCALE
30 20 10 0 30 60
1"=30'

REVISIONS

DATE	DESCRIPTION

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LANDSCAPE PLAN
PONKAN OAK MANOR
3405 WEST PONKAN ROAD
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PROJECT No:	2023-30
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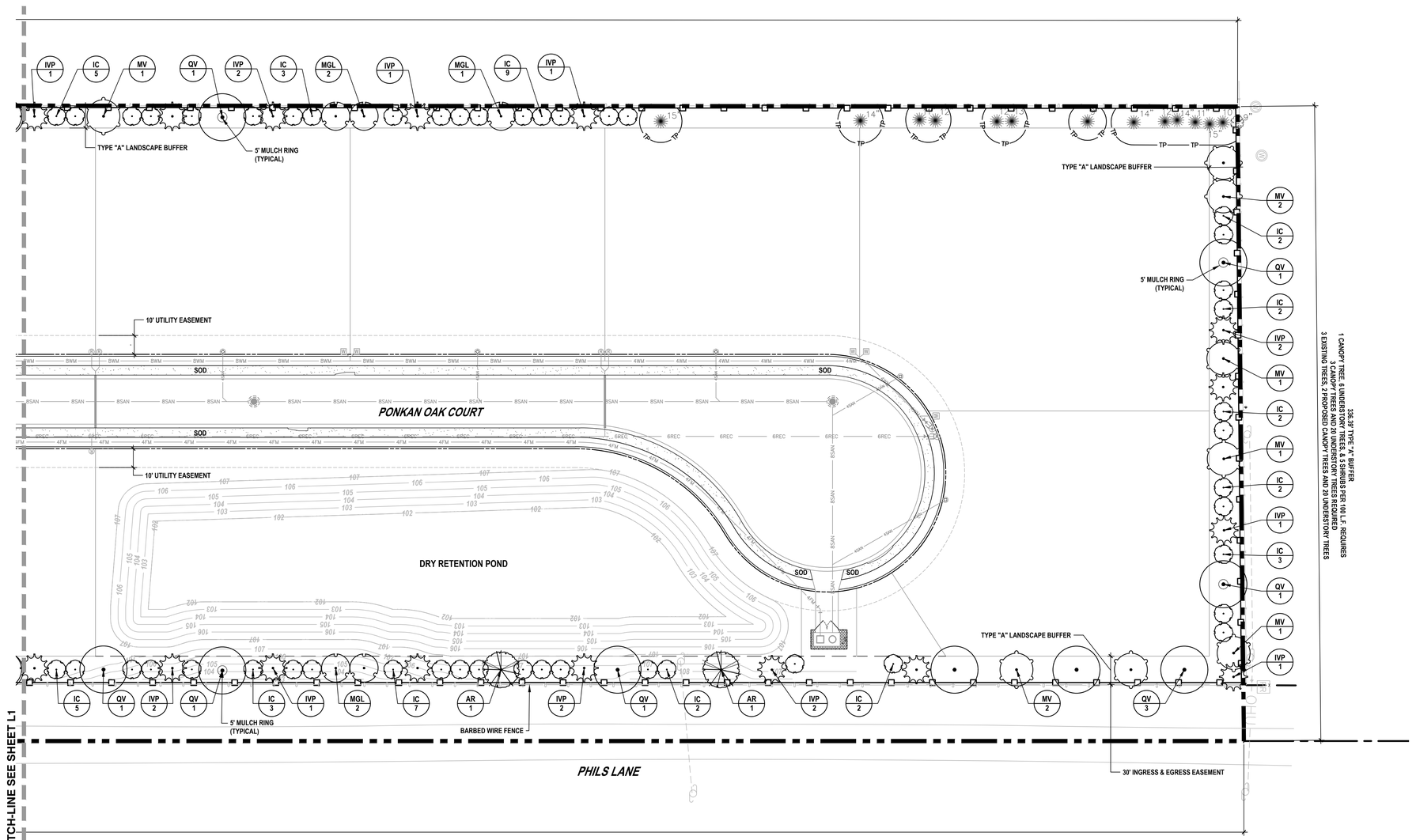
DESIGN BY:	LAA
DRAWN BY:	CRA
CHECKED BY:	LAA
SCALE:	1" = 30'

DRAWING NUMBER

L1



EXISTING TREE LEGEND

- PINE TREE
- OAK TREE

LEGEND

- ST. AUGUSTINE SOD

30 20 10 0 30 60

GRAPHIC SCALE
1"=30'

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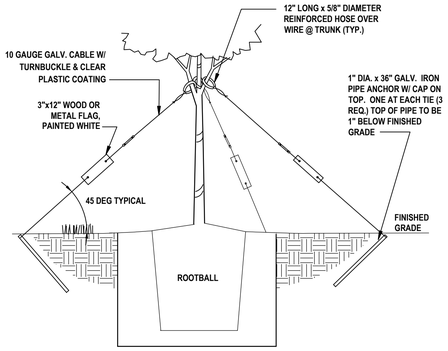
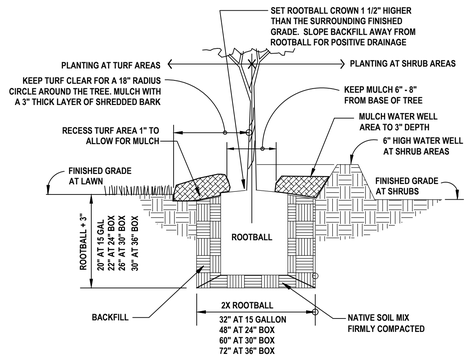
DRAWING NUMBER

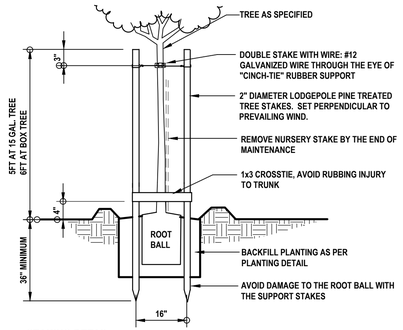
L2



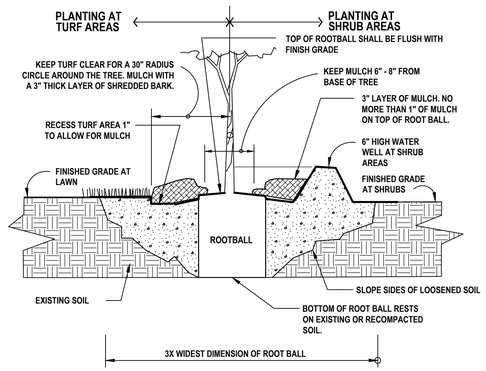
STAKING DETAIL



PLANT PIT DETAIL



STAKING DETAIL



PLANT PIT DETAIL

LANDSCAPE SOIL SPECIFICATIONS

1. CONTRACTOR WILL BE RESPONSIBLE FOR ANY REQUIRED EXCAVATION AND FOR RAKING AND SMOOTHING OF GRADE. IT IS RECOMMENDED THAT LANDSCAPE CONTRACTOR COORDINATE WITH GRADING CONTRACTOR TO ESTABLISH SUBGRADES FOR PLANTING AREAS AS REQUIRED BELOW.
2. LANDSCAPE SOIL REFERS TO STOCKPILED TOPSOIL OR THE PLANTING MIXTURE AS SPECIFIED BELOW. STRUCTURAL SOIL OR FILL DIRT SHALL NOT BE USED IN PLANTED AREAS.
3. TOPSOIL SHALL BE STOCKPILED IF THE SITE CONSISTS OF NATIVE PLANT COMMUNITIES. IF NOXIOUS AND/OR INVASIVE PLANT SPECIES ARE PRESENT, TOPSOIL SHALL NOT BE STOCKPILED AND THE PLANTING MIXTURE BELOW SHALL BE USED.
4. IF STOCKPILED, THE TOPSOIL SHALL BE SALVAGED TO A DEPTH OF 4 TO 6 INCHES AND STOCKPILED NO HIGHER THAN 3 FEET IN HEIGHT.
5. TOPSOIL SHALL BE STORED FOR AS SHORT A DURATION AS POSSIBLE TO ENSURE SURVIVAL OF SEEDS AND SOIL ORGANISMS.
6. IF TOPSOIL HAS NOT BEEN STOCKPILED, PLANTING MIXTURE FOR TREES AND SHRUBS SHALL CONSIST OF 1/3 "COMPOST", 1/3 COARSE SAND, AND 1/3 EXISTING SOIL, THOROUGHLY MIXED. IF THE EXISTING SOIL IS NOT NATIVE AND FREE OF INVASIVES, THEN TOPSOIL SHALL BE IMPORTED FOR THIS COMPONENT.
7. MIXTURE FOR PALMS SHALL BE 50 PERCENT COARSE SAND AND 50 PERCENT EXISTING SOIL. MIX THOROUGHLY WITH EXISTING SOIL.
8. LANDSCAPE SOIL SHALL BE USED IN ALL PLANT BEDS CONSISTING OF SHRUBS AND GROUNDCOVER TO A DEPTH OF 6" AND MULCH TO A DEPTH OF 3".
9. LANDSCAPE SOIL SHALL BE FREE OF DEBRIS, WEEDS, PARTICLES LARGER THAN 0.50 INCHES AND RINSATE CONTAINING LIME OR TOXIC MATERIALS.
10. EXISTING SOIL SHOULD NOT BE CONTINUOUSLY EXCAVATED BENEATH THE DRIP LINE OF EXISTING TREES. IN THIS CASE, IF SHRUBS OR GROUNDCOVER ARE PROPOSED, THEY SHOULD BE PLANTED IN NATIVE SOIL WITHOUT AMENDMENT.

REFER TO LANDSCAPE DETAILS FOR MINIMUM PLANTING PIT DIMENSIONS.

LANDSCAPE NOTES

1. ALL PLANT MATERIAL SHALL CONFORM TO THE STANDARDS FOR FLORIDA #1 OR BETTER AS DESCRIBED IN THE CURRENT "GRADES AND STANDARDS FOR NURSERY PLANTS", STATE OF FLORIDA, DEPARTMENT OF AGRICULTURE, TALLAHASSEE, OR THEIR EQUAL AS DETERMINED BY THE LANDSCAPE ARCHITECT. PLANT MATERIAL SHALL BE CLEARLY IDENTIFIED AS FLORIDA #1 OR BETTER ON EITHER LABELS OR INVOICES.
2. ALL PLANT SPECIFICATIONS MUST BE MET OR EXCEEDED. SIZES IN PLANT SCHEDULE ARE MINIMUMS AND EACH MUST BE MET. CONTAINERS MAY NEED TO BE UPSIZED TO MEET ALL SPECIFICATIONS.
3. ALL MULCH SHALL BE PINE BARK AND INSTALLED 3" DEEP. TREES IN SOD TO BE IN A 5' MINIMUM-MULCHED RING. ALL PALMS TO BE IN A 3' MULCH RING. MULCH TO BE INSTALLED 6" FROM TRUNK AND 2" FROM PLANTS.
4. SOD SHALL BE ST. AUGUSTINE "FLORITAM" UNLESS OTHERWISE NOTED ON THE PLAN AND SHALL BE 95% WEED-FREE. WHERE SPECIFIED, BAHIA SOD SHALL BE 85% WEED-FREE. ALL SOD SHALL BE INSTALLED WITH TIGHT JOINTS, ROLLED AND FERTILIZED.
5. ALL DIMENSIONS SHALL BE FIELD-CHECKED BY THE LANDSCAPE CONTRACTOR PRIOR TO CONSTRUCTION, WITH ANY DISCREPANCIES REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT.
6. THE PLANT MATERIALS SCHEDULE IS PROVIDED FOR THE CONVENIENCE OF THE LANDSCAPE CONTRACTOR; SHOULD THERE BE ANY DISCREPANCY BETWEEN THE PLAN AND THE PLANT LIST, THE PLAN WILL PREVAIL.
7. ALL MATERIALS MUST BE AS SPECIFIED ON THE LANDSCAPE PLAN. IF MATERIALS OR LABOR DO NOT ADHERE TO THE SPECIFICATIONS, THEY WILL BE REJECTED AT NO ADDITIONAL COST TO THE OWNER.
8. PLANTING BEDS MAY BE TREATED WITH CHEMICAL HERBICIDE AS NEEDED. USE AS DIRECTED BY MANUFACTURERS.
9. NO SUBSTITUTIONS OR CHANGES OF ANY KIND WILL BE ALLOWED AT THE TIME OF BIDDING SO AS TO PROVIDE FOR FAIR COMPARISON.
10. THE CONTRACTOR SHALL VERIFY EXISTENCE AND LOCATION OF ALL EXISTING UTILITIES AND UNDERGROUND CONDITIONS PRIOR TO HIS COMMENCEMENT OF THE ANY WORK.
11. ALL BUILDING MATERIALS AND LABOR SHALL CONFORM TO THE FLORIDA BUILDING CODE AND ALSO TO ALL LOCAL CODES THAT HAVE JURISDICTION.
12. ALL PERMIT AND VARIANCE APPLICATIONS SHALL BE MADE BY THE CONTRACTOR.
13. PRIOR TO CONSTRUCTION OF PLANTING BEDS, ALL AREAS ARE TO HAVE SOIL TESTS CONDUCTED TO DETERMINE pH AND SOIL FERTILITY. IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO AMEND THE SOIL TO MEET ADEQUATE FERTILITY AND pH FOR CORRESPONDING PLANT MATERIAL. ALL TEST RESULTS SHALL BE REPORTED TO THE LANDSCAPE ARCHITECT.
14. WHERE AZALEAS, ROSES OR LOROPETALUMS ARE TO BE PLANTED, THE SOIL SHALL BE AMENDED BY REMOVING SOME OF THE NATIVE SOIL AND REPLACING WITH SOIL WITH A PH RANGE OF BETWEEN 5.5 - 6.5.
15. EQUIPMENT SHALL BE OPERATED IN A MANNER AS NOT TO INJURE OR DESTROY ANY TREES SHOWN TO REMAIN. CONTRACTOR SHALL NOT CAUSE OR ALLOW THE CLEANING OF EQUIPMENT OR MATERIAL WITHIN THE DRIP LINE OF ANY TREE OR GROUPS OF TREES TO BE RETAINED OR THOSE PROPOSED. NOR SHALL THE CONTRACTOR ALLOW THE DISPOSAL OF WASTE MATERIAL SUCH AS PAINT, SOLVENTS, ASPHALT, CONCRETE, MORTAR OR ANY OTHER MATERIAL HARMFUL TO THE LIFE OF A TREE WITHIN THE DRIP LINE OF ANY TREE OR GROUP OF TREES. NO ATTACHMENT, WIRES (OTHER THAN PROTECTIVE GUY WIRES), SIGNS, OR PERMITS MAY BE FASTENED TO A TREE.
16. ANY EXISTING TREES CREDITED TOWARDS REQUIRED BUFFERS OR LANDSCAPE REQUIREMENTS REMOVED FOR ANY REASON SHALL BE REPLACED WITH TREES MEETING CITY APPROVAL WITH REGARDS TO SPECIES AND SIZE.
17. ALL QUESTIONS CONCERNING THE PLAN AND/OR SPECIFICATIONS SHALL BE DIRECTED TO THE LANDSCAPE ARCHITECT (386) 872-7794.
18. ALL TREES AND PALMS MUST BE STAKED USING THE DETAILS PROVIDED OR ARBORGUY STAKING SYSTEMS. ANY STAKING SYSTEM NOT INCLUDED MUST BE APPROVED IN WRITING BY THE LANDSCAPE ARCHITECT.
19. ALL UNIMPROVED AREA NOT OTHERWISE PLANTED OR MULCHED SHALL BE SODDED WITH BAHIA UNLESS OTHERWISE NOTED ON THE LANDSCAPE PLAN.
20. THE CONTRACTOR SHALL GUARANTEE ALL INSTALLED PLANT MATERIAL FOR A PERIOD OF ONE (1) YEAR AFTER ACCEPTANCE IN WRITING BY OWNER OR OWNER'S REPRESENTATIVE. ALL PLANT MATERIAL SHALL BE WATERED REGULARLY AS NEEDED UNTIL ESTABLISHED. FOR TREES, UP TO ONE YEAR AND FOR SHRUBS/GROUNDCOVER, GENERALLY 2 -3 MONTHS.
21. REMOVAL OF ALL CONSTRUCTION DEBRIS, LIMEROCK, EXCESS OF BUILDERS SAND, CONCRETE AND MORTAR DEBRIS, EXISTING WEEDS AND GRASS, AND ALL FOREIGN MATERIALS IN THE PLANTING BED AND SOD AREAS SHALL BE REMOVED.
22. ALL EXISTING TREES AND PALMS WILL BE PROPERLY PRUNED AND CLEANED OF DEADWOOD, BROKEN BRANCHES, DEAD FROND AND VINES AS NEEDED. ALL STRUCTURAL PRUNING OF HARDWOOD TREES SHALL BE PERFORMED UNDER THE DIRECTION OF A CERTIFIED ARBORIST.
23. ALL NOXIOUS OR EXOTIC VEGETATION THAT DETRACTS FROM THE APPEARANCE OF THE EXISTING OR PLANTED VEGETATION WITHIN THE TREE PROTECTION AREA OR BUFFERS SHALL BE REMOVED. THE EDGE OF THE AREAS TO REMAIN NATURAL SHALL BE MULCHED 5' IN AND A CURVILINEAR BED LINE SHALL BE CREATED ADJACENT TO SODDED AREAS.
24. ALL PLANTS SHALL BE INSTALLED ACCORDING TO THE FLORIDA FRIENDLY BEST MANAGEMENT PRACTICES FOR PROTECTION OF WATER RESOURCES BY THE GREEN INDUSTRIES.

PLANT SPECIFICATION NOTES

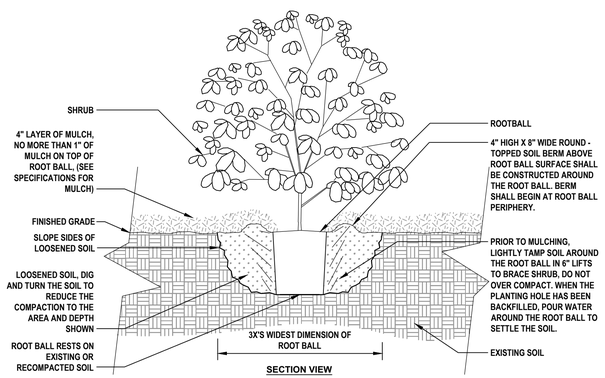
1. PLANT DESCRIPTIONS ARE FOR MINIMUM ACCEPTABLE SPECIFICATIONS. ALL CRITERIA LISTED FOR CONTAINER SIZE, CALIPER, HEIGHT, SPREAD, ETC. MUST BE MET FOR PLANT MATERIAL ACCEPTANCE. FOR EXAMPLE, IF A THREE (3) GALLON SHRUB DOES NOT MEET THE HEIGHT OR SPREAD SPECIFICATION, IT WILL NOT BE ACCEPTED.
2. IF SPECIFIED PLANTS ARE UNAVAILABLE AT THE TIME OF CONSTRUCTION, CONTRACTOR MAY REPLACE SPECIFIED PLANTS WITH PLANTS APPROVED BY LANDSCAPE ARCHITECT AND CITY STAFF.

PLANT ESTABLISHMENT

1. IRRIGATE EVERY DAY FOR ONE MONTH.
2. IRRIGATE EVERY OTHER DAY FOR ONE ADDITIONAL MONTH.
3. IRRIGATE TWICE A WEEK THEREAFTER OR MORE OFTEN DURING DRY PERIODS IF PLANTS ARE SHOWING SIGNS OF DISTRESS SUCH AS WILTING OR BROWNING.
4. ENSURE RAIN SENSOR IS OPERATING CORRECTLY AND SYSTEM IS NOT WATERING ON DAYS WHEN IT RAINS.

1 TREE PLANTING DETAIL

1" = 1'-0" P-CO-2023-30-01



SECTION VIEW

NOTES:
1. SHRUBS SHALL BE OF QUALITY PRESCRIBED IN THE ROOT OBSERVATIONS DETAIL AND SPECIFICATIONS.
2. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS RELATED TO THIS DETAIL.

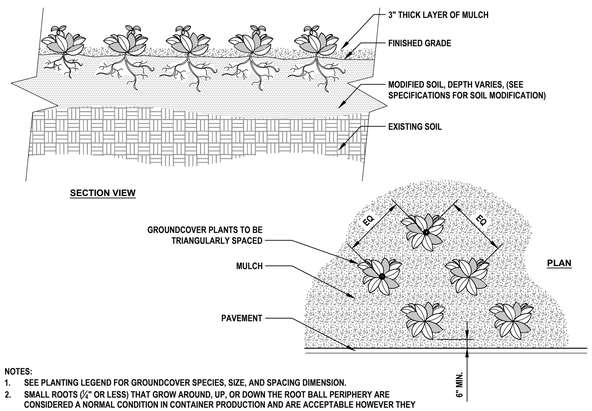
3 SHRUB PLANTING DETAIL

NTS P-CO-2023-30-04

URBAN TREE FOUNDATION © 2014
OPEN SOURCE FREE TO USE

2 SMALL TREE PLANTING DETAIL

1" = 1'-0" P-CO-2023-30-03



NOTES:
1. SEE PLANTING LEGEND FOR GROUNDCOVER SPECIES, SIZE, AND SPACING DIMENSION.
2. SMALL ROOTS (¼" OR LESS) THAT GROW AROUND, UP, OR DOWN THE ROOT BALL PERIPHERY ARE CONSIDERED A NORMAL CONDITION IN CONTAINER PRODUCTION AND ARE ACCEPTABLE HOWEVER THEY SHOULD BE ELIMINATED AT THE TIME OF PLANTING. ROOTS ON THE PERIPERHY CAN BE REMOVED AT THE TIME OF PLANTING. (SEE ROOT BALL SHAVING CONTAINER DETAIL).
3. SETTLE SOIL AROUND ROOT BALL OF EACH GROUNDCOVER PRIOR TO MULCHING.

4 GROUNDCOVER LAYOUT

1/16" = 1'-0" P-CO-2023-30-02

REVISIONS	
DATE	DESCRIPTION

1230 North US1, Suite 3
Ormond Beach, Florida 32174
Phone (386) 872-7794
www.Newkirk-Engineering.com
C.A. # 30209
L.C. # 26000584
C 2013
Civil Engineering
Transportation, CEI &
Landscape Architecture
NEWKIRK ENGINEERING INC.

LANDSCAPE DETAILS AND NOTES

PONKAN OAK MANOR

3405 WEST PONKAN ROAD
APOPKA, FLORIDA 32712

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THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY LAUREN ADAMS, RLA # 6667278 ON

LAUREN ADAMS LICENSE NO. 6667278 STATE OF FLORIDA LANDSCAPE ARCHITECT

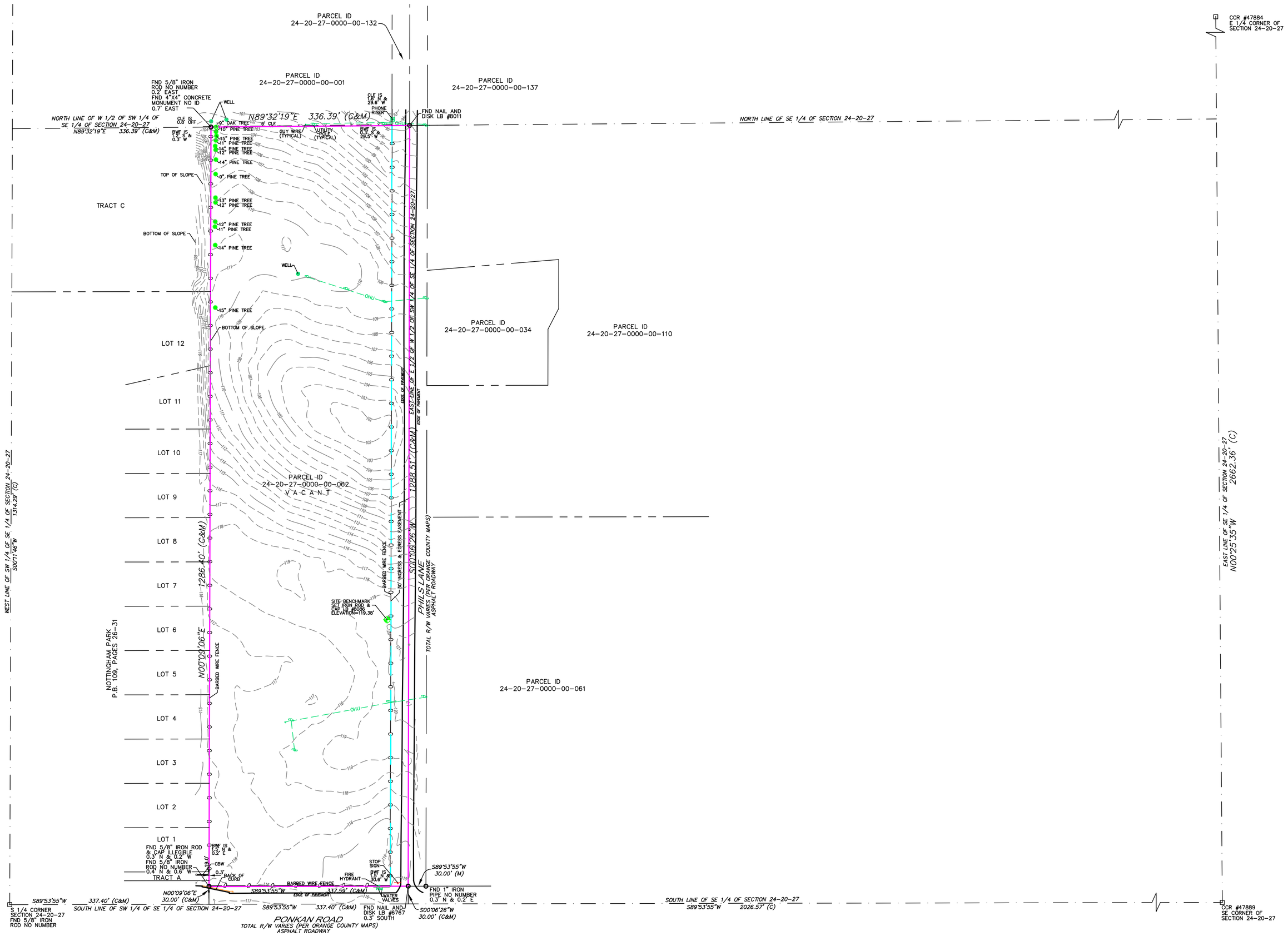
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

PROJECT No:	2023-30
DATE:	JUNE 2023
DESIGN BY:	LAA
DRAWN BY:	CRA
CHECKED BY:	LAA
SCALE:	AS SHOWN

DRAWING NUMBER

L3

BOUNDARY AND TOPOGRAPHIC SURVEY



Legal Description:

The East one half of the West one half of the Southwest 1/4 of the Southeast 1/4 of Section 24, Township 20 South, Range 27 East, (Less Road right of way on the South); Subject to an easement for ingress and egress over the East 30 feet thereof. All of said lands lying and being in Orange County, Florida.

Legend:

—//—	=	WF = WOOD FENCE
—X—	=	CLF = CHAIN LINK FENCE
—o—o—	=	VF = VINYL FENCE
	=	COVERED AREA
	=	CONCRETE
	=	ASPHALT
P	=	PLAT
M	=	MEASURED
D	=	DEEDED
C	=	CALCULATED
P.C.	=	POINT OF CURVATURE
P.C.C.	=	POINT OF COMPOUND CURVATURE
P.R.C.	=	POINT OF REVERSE CURVATURE
P.I.	=	POINT OF INTERSECTION
P.T.	=	POINT OF TANGENCY
C.M.	=	CONCRETE MONUMENT
P.C.P.	=	PERMANENT CONTROL POINT
P.O.B.	=	POINT OF BEGINNING
P.O.C.	=	POINT OF COMMENCEMENT
P.R.M.	=	PERMANENT REFERENCE MONUMENT
I.P.	=	IRON PIPE
I.R.	=	IRON ROD
IRC	=	IRON ROD & CAP
N&D	=	NAIL AND DISK
℄	=	CENTER LINE
R/W	=	RIGHT OF WAY
R	=	RADIUS
L	=	ARC LENGTH
Δ	=	CENTRAL ANGLE
C.D.	=	CHORD DISTANCE
C.B.	=	CHORD BEARING
FND	=	FOUND
PG.	=	PAGES
P.B.	=	PLAT BOOK
D.U.E.	=	DRAINAGE AND UTILITY EASEMENT
D.E.	=	DRAINAGE EASEMENT
U.E.	=	UTILITY EASEMENT
A/C	=	AIR CONDITIONER
C/S	=	CONCRETE SLAB
OHU	=	OVERHEAD UTILITY LINE
P/E	=	POOL EQUIPMENT
ENC.	=	ENCROACHMENT
O.R.	=	OFFICIAL RECORD
LB	=	LICENSES BUSINESS
LS	=	LICENSED SURVEYOR
CATV	=	CABLE TV RAISER
E.O.P.	=	EDGE OF PAVEMENT
C.B.W.	=	CONCRETE BLOCK WALL
COV'D.	=	COVERED
M.B.S.L.	=	MINIMUM BUILDING SETBACK LINE

Surveyor's Notes:

1. The surveyor has not abstracted the land shown hereon for easements, right of way, or restrictions of record which may affect the title or use of the land. There may be additional easements and restrictions that are not shown on this survey, but may be found in the public records of this county.
2. No underground improvements have been located except as shown.
3. The property shown hereon appears to lie in "Zone X" - an area outside of 100 year flooding, according to FIRM Map Number 12095C0125H, with an effective date of 09/24/2021. The surveyor makes no guarantees as to the above statement. Contact your local floodplain official or F.E.M.A. agent for verification.
4. The survey shown hereon was conducted without the benefit of a current title commitment.
5. This surveyor did not review the covenants and restrictions of the plat named in the legal description shown above.
6. Elevations shown hereon are based on Orange County Benchmark #1302027 with a published elevation of 78.261 feet, North American Vertical Datum of 1988.

DEEP SOUTH SURVEYING
596 Terranova Circle
Winter Haven, Florida 33884
863.797.3366
deepsouthsurveying@gmail.com
Certificate of Authorization LB8086

I HEREBY CERTIFY THAT THIS SURVEY IS A TRUE AND CORRECT REPRESENTATION OF A SURVEY PREPARED UNDER MY DIRECTION.

DAVID P WINTERS License Number LS7034 STATE OF FLORIDA Professional Surveyor and Mapper

Winters, David

03/08/2023

David P. Winters, LS #7034

NOT VALID WITHOUT AN AUTHENTICATED ELECTRONIC SIGNATURE AND AUTHENTICATED ELECTRONIC SEAL AND/OR THIS MAP IS NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

Certified to/ for the exclusive use of:

P & P Buildcon, LLC
Phillip Simmons and Patricia Simmons
PGA Title, Inc.
Stewart Title Guaranty Company

Basis of Bearing:

Bearings shown hereon are based on the SOUTH line of the SE 1/4 of Section 24, Township 20 South, Range 27 East, being S89°53'55"W, assumed.

GRAPHIC SCALE
100 0 50 100
1 inch = 100 ft.

Property Address:

3405 W Ponkan Road
Apopka, Florida 32712

This Survey is intended for mortgage or refinance purposes only. Exclusively for use by those to whom it is certified. This Survey is not to be used for Construction, permitting, design, or any other use without the written consent of DEEP SOUTH SURVEYING, LLC. PHOTOCOPYING FORBIDDEN. COPYRIGHTED MATERIAL.©

SURVEY NO. :	23020040
FIELD DATE:	03/06/2023
REVIEWED BY:	E.W.B.
SURVEYED BY:	M.L.
DRAWN BY:	S.D.B.

SHEET NO.: 1 of 1

NEWKIRK ENGINEERING, INC.
CIVIL ENGINEERING - TRANSPORTATION - CEI - LANDSCAPE ARCHITECTURE
1230 N US HWY 1, SUITE 3, ORMOND BEACH, FLORIDA 32174 386-872-7794

June 15, 2023

Jean Sanchez
City of Apopka
Community Development Department
120 E Main Street, 2nd Floor
Apopka, FL 32712

Re: Ponkan Oak Manor
3405 W Ponkan Road
Minor Development Application

Dear Ms. Sanchez:

The Applicant, P&P BUILDCON LLC, proposes a 19-lot single family subdivision to be known as "Ponkan Oak Manor". The proposed site is 9.956 acres with 4.540 acres impervious surface. Stormwater treatment will be provided by an on-site dry detention pond with zero discharge. Sanitary sewer improvements consist of a 4" force main which connects the existing system along West Ponkan Road. The proposed development will utilize a privately owned and operated lift station to handle all wastewater generated from the project site. Potable water improvements consist of an 8-inch main with 1-inch service & water meters provided for each lot. Fire protection will be provided by three (3) proposed fire hydrants. Irrigation service will be provided by a proposed 6" reclaim main with individual services for each lot.

The following information is provided with the submittal.

- Application Fee of $785
- Narrative Letter
- Minor Development Plan Subdivision Application
- Concurrency Verification Application
- Applicant Agent Authorization
- Warranty Deed
- Property Tax Card
- Survey
- (2) 24" x 36" Site Plan Drawings
- (1) 11" x 17" Site Plan Drawings
- Stormwater Report
- Hydraulic Report
- Lift Station Report
- Geotechnical Report
- Environmental Report

If you have any questions or need additional information, please feel free to call or email me at bdonley@Newkirk-Engineering.com.

Sincerely,

NEWKIRK ENGINEERING, INC.

Brad Donley

Brad Donley, E.I.
Project Engineer, Newkirk Engineering, Inc.

HYDRAULIC REPORT

PONKAN OAK MANOR

3405 W PONKAN ROAD
APOPKA, FL 32712

JUNE 2023

Civil Engineering—Transportation—CEI
1230 North US Highway 1, Suite 3
Ormond Beach, FL 32174
(386) 872-7794
www.Newkirk-Engineering.com

Professional Engineer Certificate

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Newkirk Engineering Inc., a corporation authorized as an engineering business, Certificate of Authorization No. 30209, by the State of Florida, Department of Professional Regulation and Board of Professional Engineers. I have reviewed or approved the evaluation, findings, opinions and conclusions as reported for:

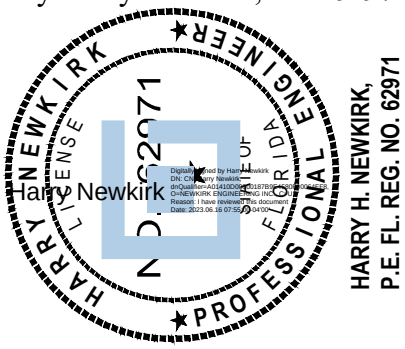
Project: Ponkan Oak Manor

Location: 3405 W Ponkan Road, Apopka, FL 32712

Client: P&P Buildcon LLC

I acknowledge that the procedures and references used to develop the results are standard to the professional practice of civil engineering as applied through design standards and criteria set forth by the federal, state and local regulatory agencies as well as professional judgment and experience.

This report has been digitally signed and sealed by Harry Newkirk, PE #62971 on



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

Name: Harry Newkirk,

PE License No: 62971

Address: 1230 North US Highway 1

Suite 3

Ormond Beach, FL 32174

TABLE OF CONTENTS

PAGE	TITLE
1	Table of Contents
2	Project Description
2	Potable Water Demand Flows
2	Fire Demand Design Flows
2	Water Modeling
3 -4	Summary of Hydraulic Modeling for the Fire Flow Analysis
Appendix A	Site Location Maps
Appendix B	EPANET Water and Fire Analysis
Appendix C	Utility Plan Sheets

PROJECT DESCRIPTION:

This project is located on the northwest quadrant of the West Ponkan Road and Phils Lane intersection in the City of Apopka, Orange County, Florida within Section 24, Township 20 South, Range 27 East. A site location map is provided in **Appendix A** of this report. Water and wastewater services will be provided by the City of Apopka.

The proposed development of the project consists of 19 single family lots, EPANET hydraulic software was used to model the potable water system. Based on the hydraulic model analysis an 8-inch and 4-inch water mains provide adequate flow and pressure for the development.

POTABLE WATER DEMAND DESIGN FLOWS:

Based on the City of Apopka Utilities Division – Potable Water Rules, Design and Construction Specifications, the calculated water flow demand is:

Single Family Units	Demand GPD	Average Daily Flow GPD	Maximum Daily Flow (2*ADF)		Peak Daily Flow (4*ADF)	
			GPD	GPM	GPD	GPM
19	300 per Unit	5,700	11,400	8	22,800	16

FIRE WATER DEMAND DESIGN FLOWS:

Using ISO Standards, the Needed Fire Flow for a single-family dwelling unit is 2,000 gpm. The Needed Fire Flow will be assigned to network future connection dead ends to confirm that the minimum required pressure (20 psi) is maintained in the system for the worst-case network locations.

WATER MODELING:

As required by the Utilities Division, City of Apopka, the project will be modelled using factors of Maximum = 2.0 and Peak = 4.0 (see Table 1.1 above for demand calculations). Based on the flows listed above, the following scenarios will be modeled for the proposed development.

- Total Project Peak Daily Flow Demand, excluding Fire Flow (Scenario # 1)
- Total Project Maximum Daily Demand with Fire Flow @ Fire Hydrant 3 (Scenario # 2)

Please see Section II below for further discussion on the hydraulic modeling and the included assumptions.

SUMMARY OF HYDRAULIC MODELING FOR THE FIRE FLOW ANALYSIS:

EPANET hydraulic software was used to analyze the proposed water system to ensure that the required flows and pressures are available to provide fire protection and the peak daily demand for the proposed residential development.

Fire hydrants will be spaced throughout the subdivision with a maximum separation of 500-feet.

The model conditions are as follows:

I. Maximum Daily Flow
II. Maximum Daily Flow plus Fire Flow
III. Connection pressure values for the existing water system was based on an assumed watermain pressure of 60 psi.
IV. A "C" factor of 130 was used for PVC pipe.

The head calculation used for the hydraulic model was based on the elevation of the tie-in pressure and an assumed water main pressure of 60 psi. The connection was modeled as a reservoir with a calculated head of 251.74 feet. See calculation below.

Tie-in pressure: 60 psi x 2.31 = 138.6 ft
Tie-in elevation: = 113.14 ft
Total Head = 251.74 ft

$QR = QF \times (HR / HF)^{0.54}$

Where:

QR = Rated Capacity @ 20 psi (in GPM)
QF = Total Test Flow
HR = Static Pressure minus 20 psi
HF = Static Pressure minus Residual Pressure

Several assumptions are also made and are listed as follows:

Head Losses: Head losses were calculated using the Hazen-Williams formula from EPANET software.

$$Hf = 10.44(L)*Q^{1.85}/(C^{1.85}*D^{4.8655})$$

Where: "C" value of = 130 for PVC
D = Diameter of Pipe
L = Length of Pipe
Hf = Head Loss thru Pipe
Q = Flow

Minor Losses: Minor losses due to fittings, backflow preventers, etc. are calculated using the method of loss coefficient, hf = K V^2 / 2g. The minor losses are modeled by adding specific fittings or backflow preventer to the pipe system at their appropriate location.

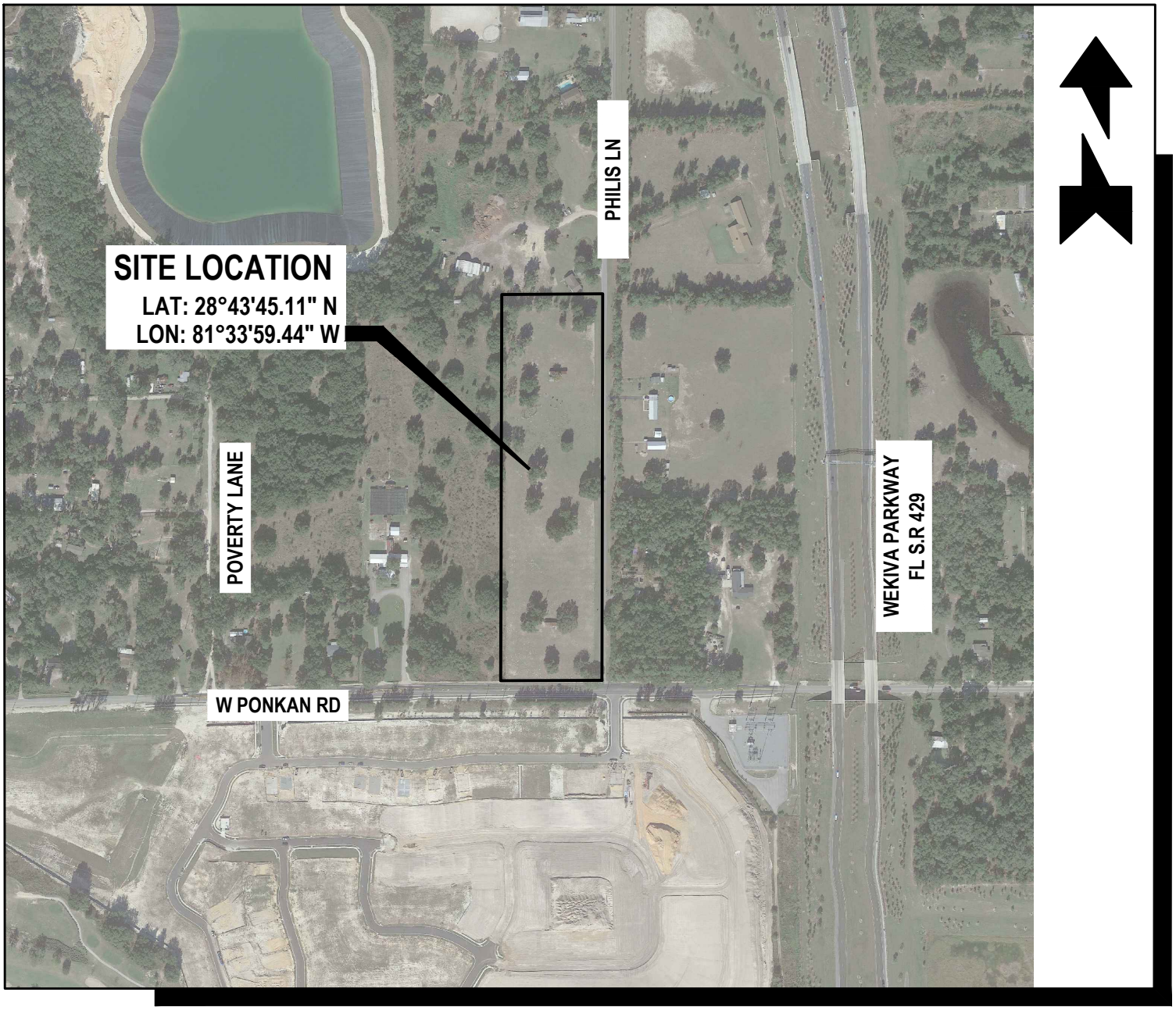
The system was modeled by dividing the total MDF Demand calculated in Table 1.1 by the number of nodes included in the system to determine the average MDF demand for each node. The results of the Hydraulic Analysis for the subdivision water system are provided in **Appendix B and C** and are summarized below:

Scenario #1: Peak Daily Flow: The respective peak demands were assigned to the corresponding nodes in the hydraulic model. The minimum pressure in the system was 60.33 psi at Junction 1. The maximum pipe velocity was 0.10 fps at Pipe 1. All water main pressure during each peak daily flow model maintained a minimum pressure of 20 psi.

Scenario #2: Peak Daily Flow plus Fire Flow (2,000 gpm): The fire demand was assigned to Node FH3 with Maximum Daily Flow Demand per Scenario #1. The minimum pressure in the system was 32.98 psi at Node FH3. The maximum pipe velocity was 12.87 fps at Pipe 1. All water mains during each fire flow model maintained a minimum pressure of 20 psi.

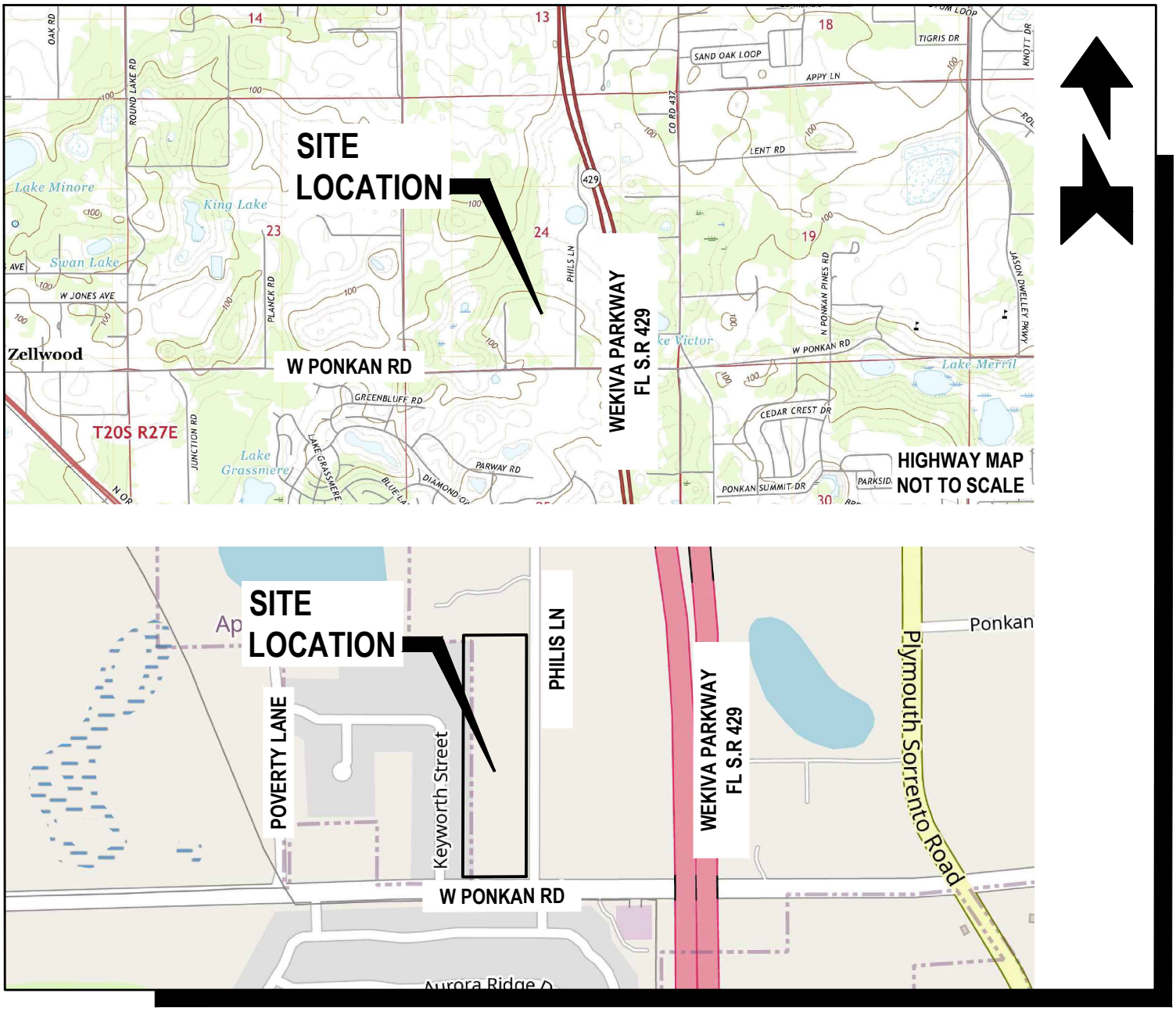
APPENDIX A

SITE LOCATION MAPS



AERIAL MAP

SCALE: 1" = 500'



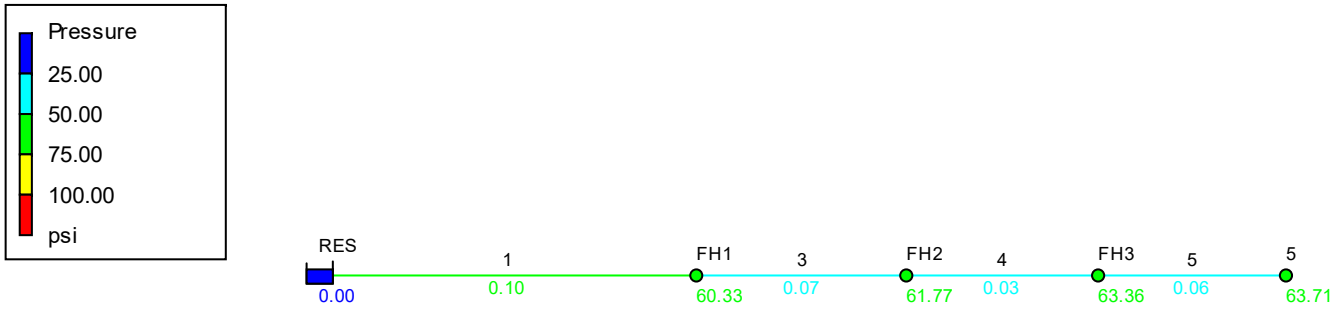
LOCATION MAP

SCALE: 1" = 800'

APPENDIX B

EPANET WATER AND FIRE ANALYSIS

SCENARIO 1: PEAK DAILY FLOW



SCENARIO 1: PEAK DAILY FLOW

Network Table - Nodes

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc FH1	112.5	5	5.00	251.74	60.33
Junc FH2	109.19	5.8	5.80	251.74	61.77
Junc FH3	105.51	2.5	2.50	251.74	63.36
Junc 5	104.7	2.5	2.50	251.74	63.71
Resvr RES	251.74	#N/A	-15.80	251.74	0.00

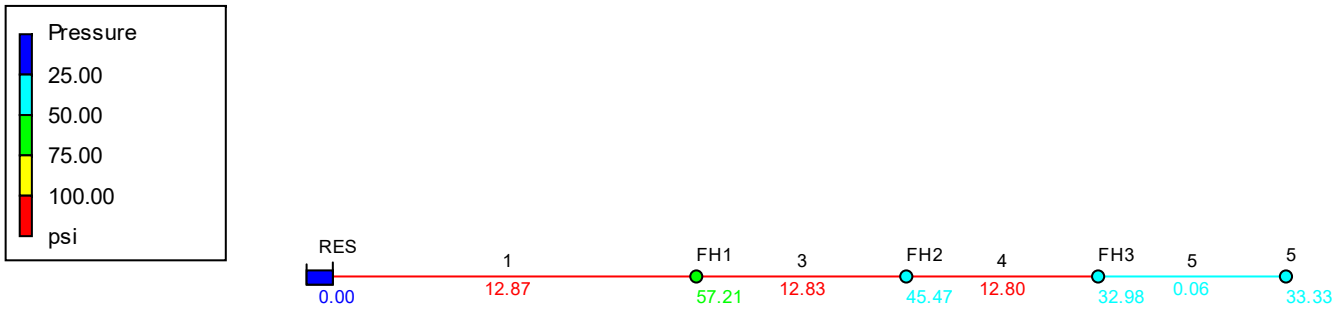
SCENARIO 1: PEAK DAILY FLOW

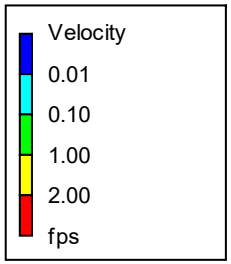
Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor
Pipe 3	418	8	130	10.80	0.07	0.00	0.039
Pipe 4	460	8	130	5.00	0.03	0.00	0.043
Pipe 5	187	4	130	2.50	0.06	0.01	0.044
Pipe 1	77	8	130	15.80	0.10	0.01	0.043

SCENARIO 2: FIRE FLOW

Day





SCENARIO 2: FIRE FLOW

Network Table - Nodes

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc FH1	112.5	5	5.00	244.53	57.21
Junc FH2	109.19	5.8	5.80	214.13	45.47
Junc FH3	105.51	2002.5	2002.50	181.63	32.98
Junc 5	104.7	2.5	2.50	181.63	33.33
Resvr RES	251.74	#N/A	-2015.80	251.74	0.00

SCENARIO 2: FIRE FLOW

Network Table - Links

Link ID	Length ft	Diameter in	Roughness	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor
Pipe 3	418	8	130	2010.80	12.83	72.72	0.019
Pipe 4	460	8	130	2005.00	12.80	70.67	0.019
Pipe 5	187	4	130	2.50	0.06	0.01	0.044
Pipe 1	77	8	130	2015.80	12.87	93.61	0.024

APPENDIX C

UTILITY PLAN SHEETS

50 0 50 100
GRAPHIC SCALE
1"=50'

WARNING !!

CONTRACTOR SHALL TAKE ALL PRECAUTIONS DURING CONSTRUCTION TO AVOID CONTACT WITH EXISTING UNDERGROUND UTILITIES, GAS MAINS AND OVERHEAD ELECTRIC IN THE RIGHT-OF-WAY.

UTILITY FLOW RATES:

POTABLE WATER DEMAND

AVERAGE DAILY FLOW

19 UNITS x 300 GPD = 5,700 GALLONS PER DAY

WASTEWATER DEMAND

AVERAGE DAILY FLOW

19 UNITS x 300 GPD = 5,700 GALLONS PER DAY

GENERAL SEWER NOTES:

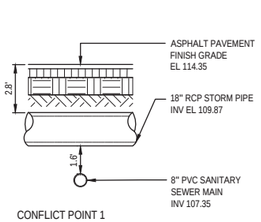
1. CITY OF APOPKA SHALL BE NOTIFIED PRIOR TO ANY SEWER CONSTRUCTION.
2. ALL SEWER CONSTRUCTION MUST COMPLY WITH FDEP REGULATIONS AND THE CITY OF APOPKA UTILITY DETAILS AND SPECIFICATIONS (LATEST EDITION).
3. ALL SANITARY LINES 6-INCHES AND LARGER SHALL BE INSPECTED BY CCTV PRIOR TO COMPLETION.
4. SEWER LINE MATERIAL SPECIFICATION REQUIRED TO MEET CITY OF APOPKA UTILITY DEPARTMENT CRITERIA.
5. THE CONTRACTOR SHALL AT ALL TIMES, DURING PIPE LAYING, DEWATER THE GROUND SUFFICIENTLY TO KEEP THE GROUNDWATER ELEVATION A MINIMUM OF 6" BELOW THE PIPE BEING LAID WITHIN THE AREA OF THE TRENCH.
6. ALL PIPES SHALL BE LAID ON A FIRM FOUNDATION. SOFT OR SPONGY BEDDING FOR PIPES WILL NOT BE ACCEPTED. ANY UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH A DRY, COMPACTED, GRANULAR MATERIAL SATISFACTORY TO THE CITY OF APOPKA UTILITY DEPARTMENT.
7. EXCAVATION AND BACKFILL: THE CONTRACTOR SHALL PROVIDE ADEQUATE SHEETING AND BRACING OF EXCAVATION WORK IN ORDER TO PROVIDE FOR THE SAFETY OF WORKMEN, AS WELL AS REPRESENTATIVES OF THE CITY OF APOPKA UTILITY DEPARTMENT, THE DESIGN ENGINEER, AND THE DEVELOPER.
8. ALL TRENCHES SHALL BE BACKFILLED WITH ACCEPTABLE MATERIAL AND COMPACTED TO MINIMUM COMPACTION OF (95) PERCENT OF THE OPTIMUM DENSITY OF THAT MATERIAL BASED ON THE AASHTO T-180 MODIFIED PROCTOR TEST.
9. ALL TESTING REQUIRED BY THE COUNTY SHALL BE PAID FOR BY THE CONTRACTOR.
10. GRAVITY MAINS MUST HAVE A TELEVISED INSPECTION. A VIDEO INSPECTION FORM MUST BE FAXED TO THE CITY OF APOPKA UTILITIES SERVICES DEPARTMENT 48 HOURS PRIOR TO VIDEO INSPECTION. A COUNTY INSPECTOR MUST BE PRESENT.
11. SEWER CLEANOUT LOCATED ON PAVEMENT AND SIDEWALK AREA SHALL BE TRAFFIC BEARING FLAT TOP BRASS CAP.
12. PLUMBING CONTRACTOR SHALL INSTALL TANK AND COORDINATE PIPE INVERTS TO BUILDING WITH UTILITY CONTRACTOR.
13. CITY OF APOPKA REQUIRES MINIMUM 3 FEET OF COVER FOR ALL UNDERGROUND PIPE INSTALLATIONS.

GENERAL WATER NOTES:

1. THE CITY OF APOPKA UTILITY DEPARTMENT SHALL BE NOTIFIED PRIOR TO BEGINNING ANY WATER SYSTEM CONSTRUCTION.
2. ALL WATER DISTRIBUTION CONSTRUCTION SHALL BE IN ACCORDANCE WITH FDEP REGULATIONS AND THE CITY OF APOPKA UTILITY DETAILS AND SPECIFICATIONS (LATEST EDITION).
3. CONTRACTOR IS TO VERIFY THE LOCATION (HORIZONTAL AND VERTICAL) OF ALL EXISTING UTILITIES (UNDERGROUND AND OVERHEAD) PRIOR TO COMMENCEMENT OF CONSTRUCTION. ANY CONFLICTS SHALL BE REPORTED TO THE ENGINEER.
4. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ANY EXISTING PAVEMENT, SIDEWALK, CURBING, UTILITIES AND DRAINAGE SYSTEMS DAMAGED DURING CONSTRUCTION. ALL DAMAGED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER.
5. LOCATION OF TELEPHONE, T.V. CABLE AND ELECTRICAL SERVICE CONNECTIONS TO BE DETERMINED BY APPROPRIATE UTILITIES PERSONNEL IN COOPERATION WITH CONTRACTOR.
6. ALL WATER MAINS SHALL BE LAID ON A FIRM FOUNDATION WITH ALL UNSUITABLE MATERIAL (MUCK, ROCK, COQUINA, ETC.) REMOVED AND REPLACED WITH CLEAN GRANULAR MATERIAL.
7. TRENCHES SHALL BE BACKFILLED WITH MATERIAL ACCEPTABLE TO THE CITY OF APOPKA UTILITY DEPARTMENT WITH A MINIMUM COMPACTION OF 98 PERCENT (AASHTO-T180).
8. WATER SERVICES FROM 3/4" TO 2" POLYETHYLENE (ENDOTRACE) WITH 36" MINIMUM COVER.
9. WATER MAIN FROM 4" TO 12" SHALL BE PVC CLASS 150 (DR 18) WITH 36" MINIMUM COVER.
10. ALL WATER AND FIRE SERVICES ARE REQUIRED TO HAVE A HARD BODY GATE VALVE OFF THE MAIN LINE.
11. ALL VALVES SHALL BE BOLTED TO TEES.
12. ALL POTABLE WATER PIPE SHALL HAVE "NSF POTABLE WATER" IMPRINTED ON THE PIPE.
13. ALL WATER MAIN FITTINGS 4 INCHES OR LARGER SHALL BE CEMENT LINED DIP.
14. A TAPPING CONTRACTOR ACCEPTABLE TO THE CITY OF APOPKA UTILITY DEPARTMENT WILL BE REQUIRED FOR TAPS.
15. THE CONTRACTOR SHALL MAKE ALL ATTEMPTS TO LOCATE BURIED UTILITIES AND NOTIFY THE UTILITY COMPANIES 48 HR. PRIOR TO CONSTRUCTION.
16. UTILITY TRENCH CONSTRUCTION SHALL CONFORM TO CITY OF APOPKA UTILITY DEPARTMENT, CITY OF APOPKA UTILITY DEPARTMENT AND OSHA REQUIREMENTS.
17. IN THE CASE WHERE SOLVENT CONTAMINATION IS FOUND IN THE TRENCH, WORK WILL BE STOPPED AND THE PROPER AUTHORITIES NOTIFIED. WITH THE APPROVAL OF THE CITY OF APOPKA UTILITY DEPARTMENT UTILITY DEPARTMENT, DUCTILE IRON PIPE, FITTINGS AND APPROVED SOLVENT RESISTANT GASKET MATERIAL SHALL BE USED IN THE CONTAMINATED AREA. THE DUCTILE IRON PIPE WILL EXTEND AT LEAST 100 FEET BEYOND ANY DISCOVERED SOLVENT.

UTILITY LEGEND

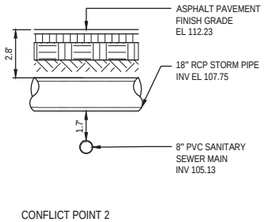
	PROPOSED 11.25° BEND
	PROPOSED 22.5° BEND
	PROPOSED 45° BEND
	PROPOSED 90° BEND
	PROPOSED TEE
	PROPOSED GATE VALVE
	PROPOSED FIRE HYDRANT ASSEMBLY
	PROPOSED SANITARY SEWER MANHOLE
8WM	PROPOSED 8" PVC CLASS 150 (DR-18) WATER MAIN (36" MIN. COVER)
4WM	PROPOSED 4" PVC CLASS 150 (DR-18) WATER MAIN (36" MIN. COVER)
2WS	PROPOSED 2" PE 4710 (SDR 9) WATER SERVICE (30" MINIMUM COVER)
1WS	PROPOSED 1" PE 4710 (SDR 9) WATER SERVICE (30" MINIMUM COVER)
6FM	PROPOSED DIRECTIONAL DRILL 6" HDPE (DR 11) FORCE MAIN
4FM	PROPOSED 4" PVC (DR 25) C-900 FORCE MAIN
1	CONFLICT DETAIL, THIS SHEET



CONFLICT POINT 1

UTILITY CONFLICT DETAIL

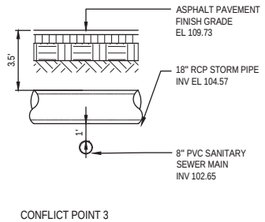
NOT TO SCALE



CONFLICT POINT 2

UTILITY CONFLICT DETAIL

NOT TO SCALE



CONFLICT POINT 3

UTILITY CONFLICT DETAIL

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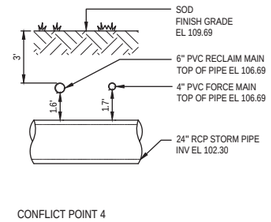

CONFLICT POINT 4

UTILITY CONFLICT DETAIL

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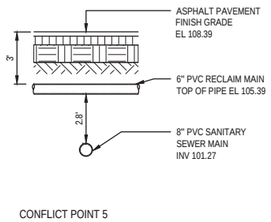

CONFLICT POINT 5

UTILITY CONFLICT DETAIL

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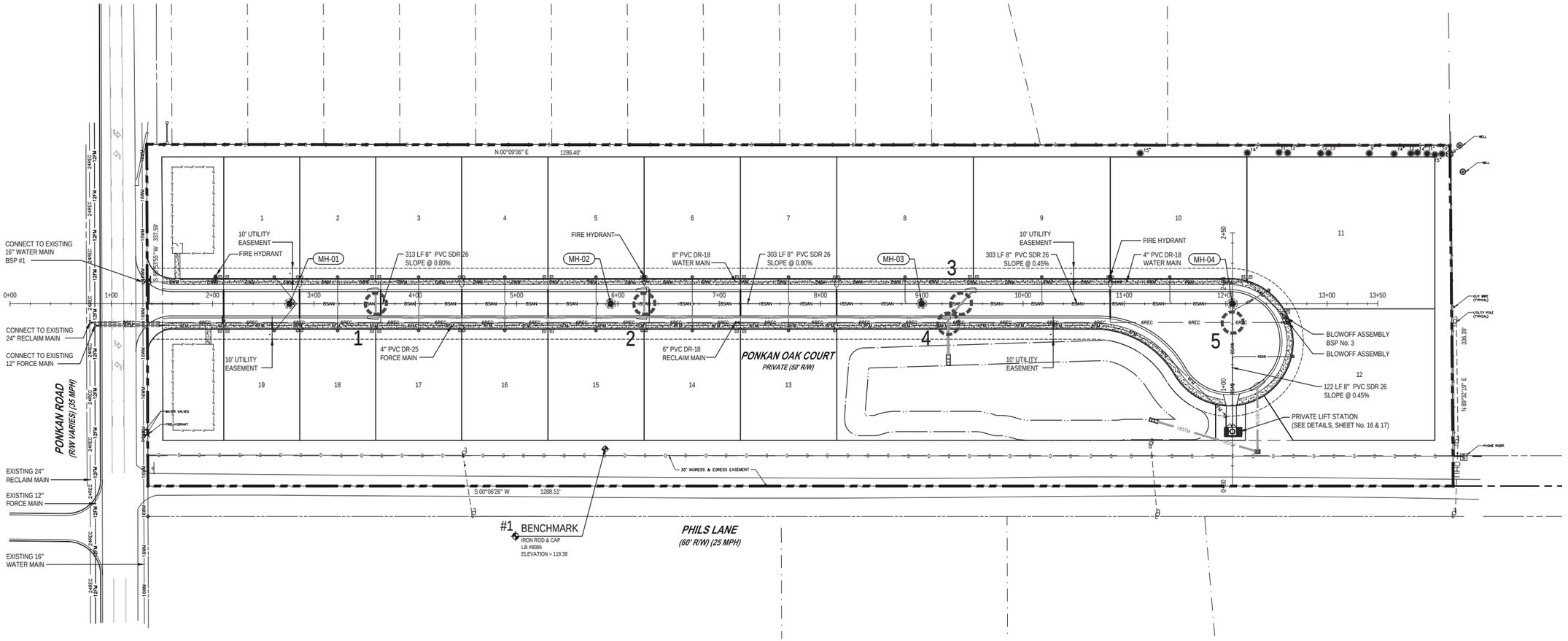

REVISIONS	
DATE	DESCRIPTION

1230 North US1, Suite 3
Ormond Beach, Florida 32174
Phone (386) 872-7794
www.NewkirkEngineering.com
C.A. # 30209
L.C. # 26000584
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NEWKIRK ENGINEERING INC.

OVERALL UTILITY PLAN
PONKAN OAK MANOR

3405 WEST PONKAN ROAD
APOPKA, FL 32712

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PROJECT No:	2023-30
DATE:	JUNE 2023
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	1"=50'

DRAWING NUMBER

11

WET TAP EXISTING 16" WATER MAIN WITH 16"x8" TAPPING SLEEVE, VALVE AND VALVE BOX
TOP OF PIPE EL 113.00±
(BACTERIOLOGICAL SAMPLING POINT No. 1)

STA. 2+07.54
8" x 6" TEE
6" GATE VALVE
FIRE HYDRANT ASSEMBLY
TOP PIPE EL 112.50

PONKAN ROAD
(R/W VARIES) (35 MPH)

DOUBLE WATER SERVICE (TYPICAL)

4" SANITARY SEWER LATERAL (TYPICAL)

DOUBLE RECLAIM SERVICE (TYPICAL)

26 LF 18" RCP
SLOPE @ 0.30%

I - 01
STA. 3+60.91, 13.25' L
TYPE 5 INLET
GRATE EL. 114.11
SUMP EL 108.91
E INV. EL. 109.91 (18")

4" SANITARY SEWER LATERAL (TYPICAL)

10' UTILITY EASEMENT

8" PVC DR-18 WATER MAIN (36" MIN. COVER)

STA. 6+25.91
8" x 6" TEE
8" GATE VALVE
6" GATE VALVE
FIRE HYDRANT ASSEMBLY
TOP PIPE EL 108.40

26 LF 18" RCP
SLOPE @ 0.30%

I - 03
STA. 6+25.91, 13.25' L
TYPE 5 INLET
GRATE EL. 111.99
SUMP EL 106.79
E INV. EL. 107.79 (18")

300 LF 18" RCP
SLOPE @ 0.80%

PONKAN OAK COURT
PRIVATE (50' R/W)

1+00 2+00 3+00 4+00 5+00 6+00 7+00

4" GATE VALVE
(36" MIN. COVER)

DIRECTIONAL DRILL 60 LF 8" HDPE DR-11 (200 PSI)
(6.963" INSIDE DIAMETER)
TOP PIPE EL 1.00±
(SEE SHEET No. 15)

DIRECTIONAL DRILL 60 LF 6" HDPE DR-11 (200 PSI)
(5.349" INSIDE DIAMETER)
TOP PIPE EL 1.00±
(SEE SHEET No. 15)

WET TAP EXISTING 12" FORCE MAIN WITH 12"x4" TAPPING SLEEVE, VALVE AND VALVE BOX
TOP OF PIPE EL 113.00±

WET TAP EXISTING 24" RECLAIM MAIN WITH 24"x6" TAPPING SLEEVE, VALVE AND VALVE BOX
TOP OF PIPE EL 113.00±

EXISTING 24" RECLAIM MAIN
EXISTING 12" FORCE MAIN
EXISTING 16" WATER MAIN
WATER VALVES
FIRE HYDRANT

10' UTILITY EASEMENT

4" PVC DR-25 FORCE MAIN (36" MIN. COVER)

6" PVC DR-18 RECLAIM MAIN (36" MIN. COVER)

MH-01
STA. 2+75.91, 0.00'
RIM EL. 115.03
INV. EL. 108.03(N)(8")

I - 02
STA. 3+60.91, 13.25' R
TYPE 5 INLET
GRATE EL. 114.11
SUMP EL 108.83
W INV. EL. 109.83 (18")
N INV. EL. 109.83 (18")

4" SANITARY SERVICE UNDER 18" STORM PIPE WITH 1' VERTICAL CLEARANCE (TYPICAL)

313 LF 8" PVC SDR 26
SLOPE @ 0.80%

4" CLEANOUT
INV EL 107.94

4" CLEANOUT
INV EL 107.26

4" SANITARY SEWER LATERAL (TYPICAL)

265 LF 18" RCP
SLOPE @ 0.80%

DOUBLE RECLAIM SERVICE (TYPICAL)

DOUBLE WATER SERVICE (TYPICAL)

4" CLEANOUT
INV EL 106.54

4" PVC DR-25 FORCE MAIN (36" MIN. COVER)

6" PVC DR-18 RECLAIM MAIN (36" MIN. COVER)

MH-02
STA. 5+92.91, 0.00'
RIM EL. 112.49
INV. EL. 105.49(S)(8")
INV. EL. 105.39(N)(8")

I - 04
STA. 6+25.91, 13.25' R
TYPE 5 INLET
GRATE EL. 111.99
SUMP EL 106.71
S INV. EL. 107.71 (18")
W INV. EL. 107.71 (18")
N INV. EL. 107.71 (18")

4" CLEANOUT
INV EL 105.78

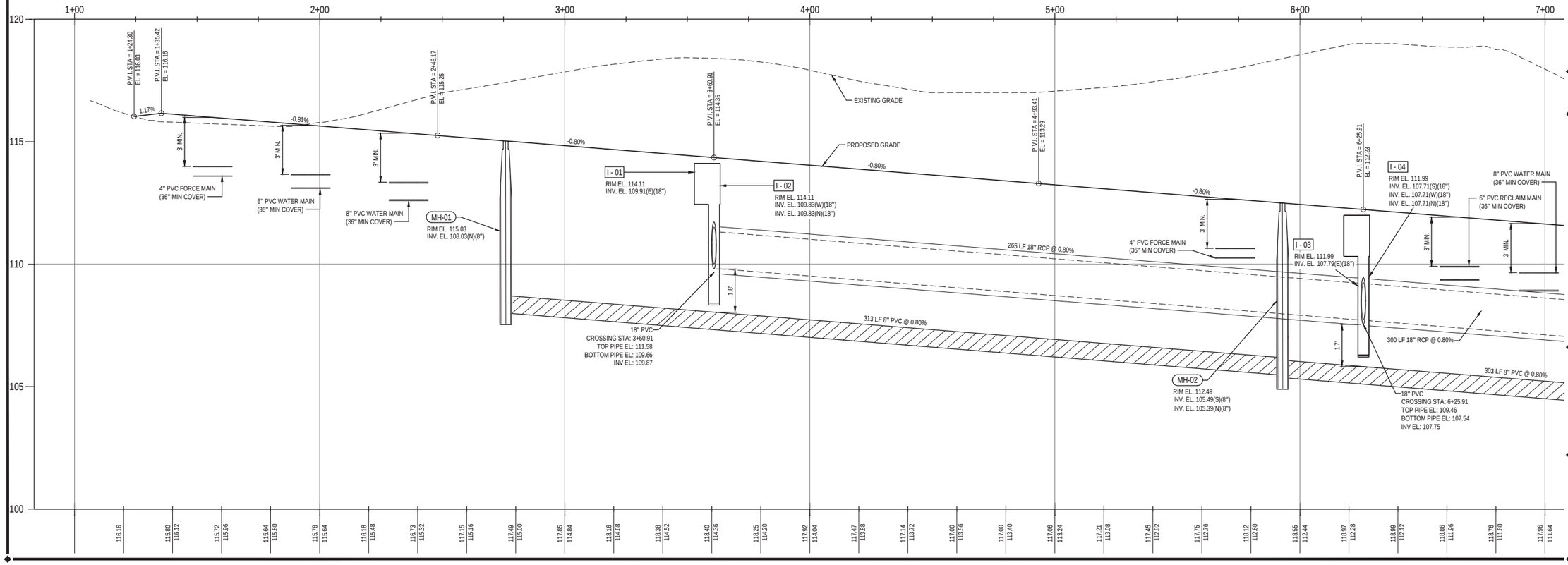
303 LF 8" PVC SDR 26
SLOPE @ 0.80%

6" GATE VALVE
STA. 7+17.91
18.50' R
36" MIN. COVER

19 18 17 16 15 14

20 10 0 20 40
GRAPHIC SCALE
1"=20'

STATION 0+00 TO STATION 7+00



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DATE:	JUNE 2023
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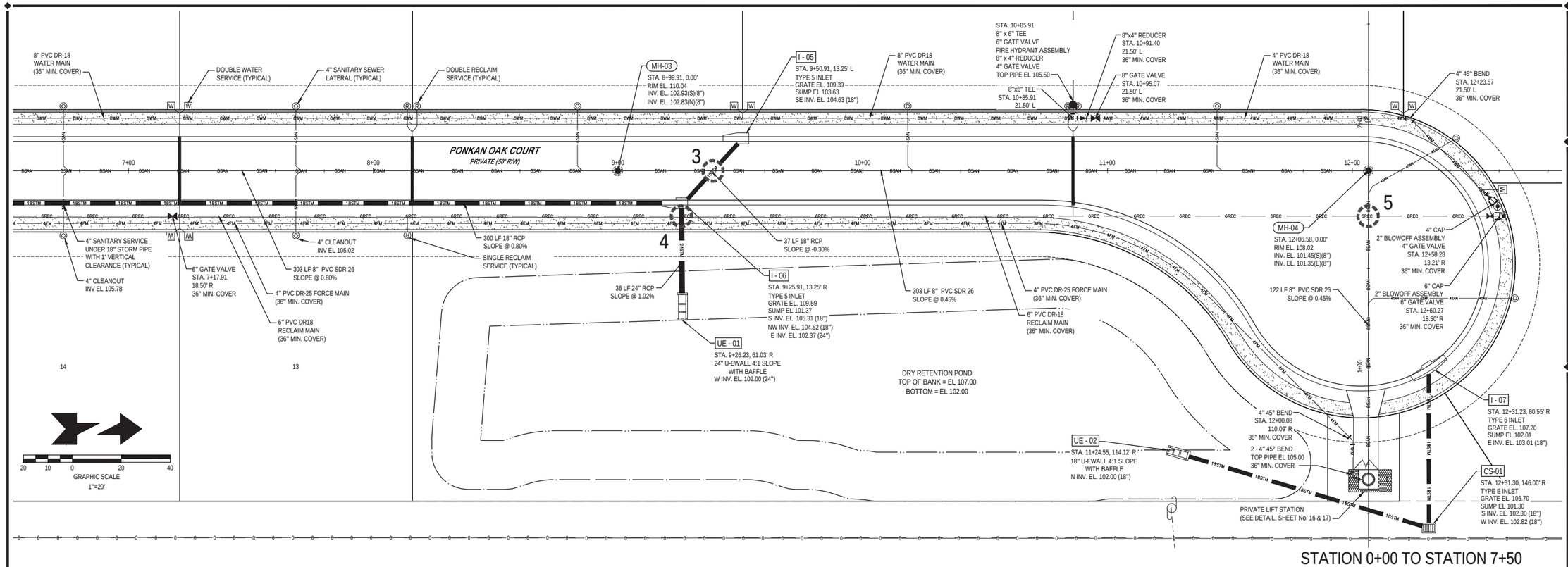
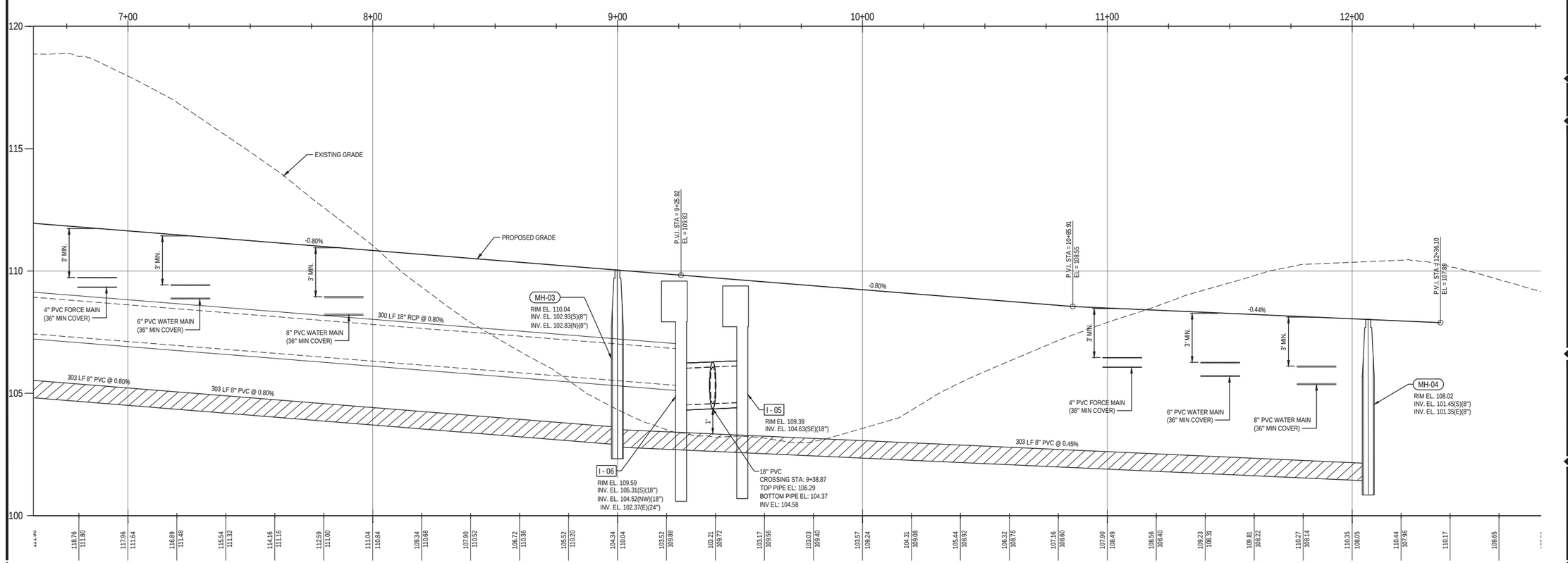
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	1"=20'

DRAWING NUMBER

12





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SCALE:	SCALE

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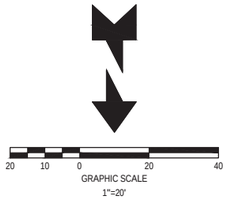
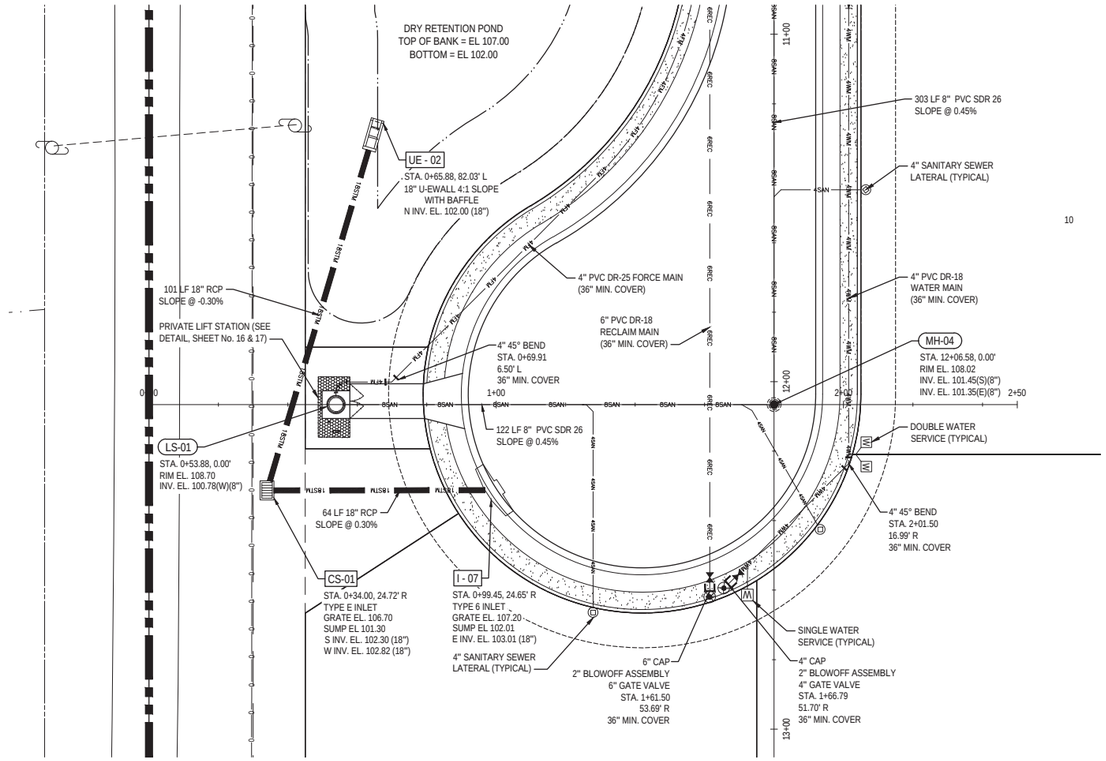
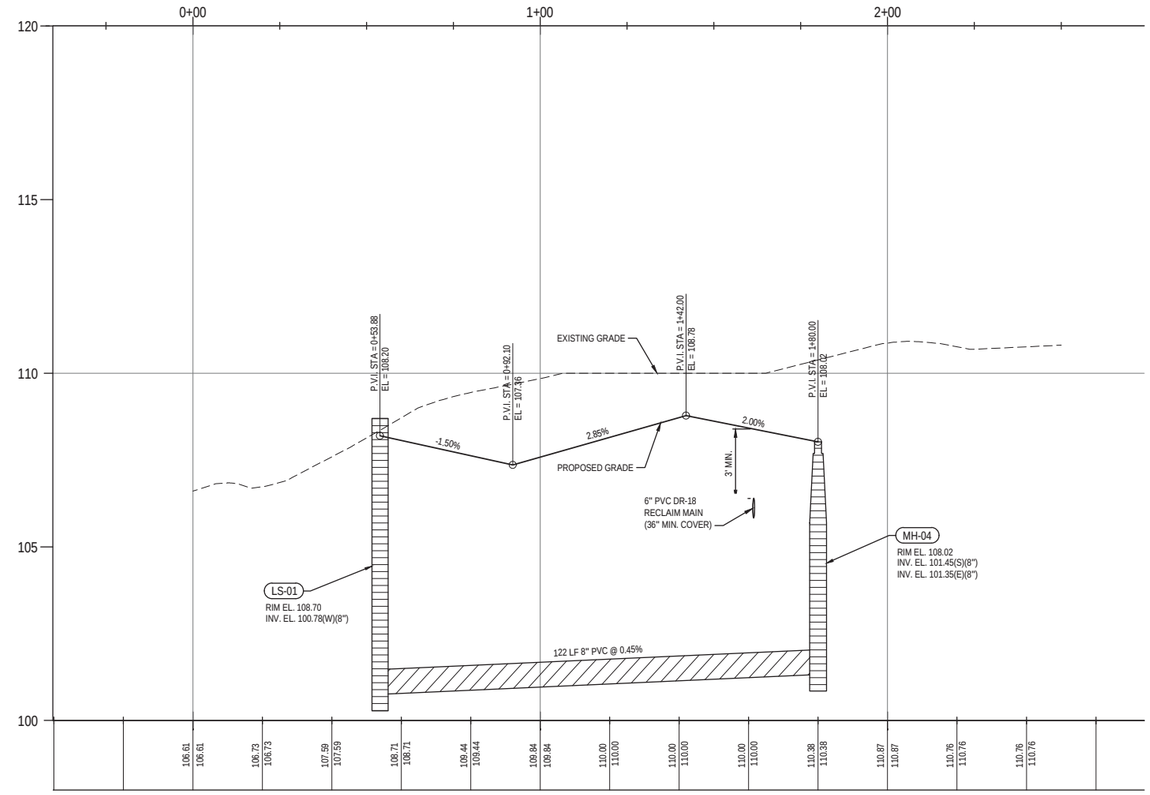
13





STATION 0+00 TO STATION 2+50



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CHECKED BY:	HHN
SCALE:	SCALE

DRAWING NUMBER

14

LIFT STATION REPORT

PONKAN OAK MANOR

3405 W PONKAN ROAD
APOPKA, FL 32712

JUNE 2023

Civil Engineering—Transportation—CEI
1230 North US Highway 1, Suite 3
Ormond Beach, FL 32174
(386) 872-7794
www.Newkirk-Engineering.com

Professional Engineer Certificate

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Newkirk Engineering Inc., a corporation authorized as an engineering business, Certificate of Authorization No. 30209, by the State of Florida, Department of Professional Regulation and Board of Professional Engineers. I have reviewed or approved the evaluation, findings, opinions and conclusions as reported for:

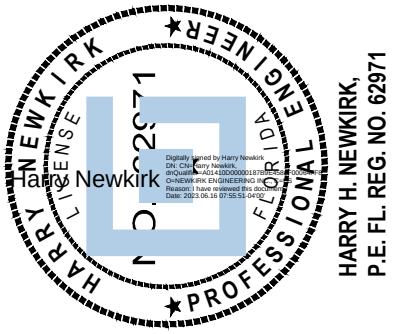
Project: Ponkan Oak Manor

Location: 3405 W Ponkan Road, Apopka, FL 32712

Client: P&P Buildcon LLC

I acknowledge that the procedures and references used to develop the results are standard to the professional practice of civil engineering as applied through design standards and criteria set forth by the federal, state and local regulatory agencies as well as professional judgment and experience.

This report has been digitally signed and sealed by Harry Newkirk, PE #62971 on



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Name: Harry Newkirk,

PE License No: 62971

Address: 1230 North US Highway 1

Suite 3

Ormond Beach, FL 32174

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1	Table of Contents
2	Project Description
2	Wastewater Flows
2	Pump Selection
2	Floatation Check
Appendix A	Site Location Map
Appendix B	Lift Station Calculations
Appendix C	Pump Data
Appendix D	Lift Station Details

1.0 PROJECT DESCRIPTION

Ponkan Oak Manor is a proposed 19-unit single-family development in Apopka, Florida. The project is located at the northwest quadrant of the W Ponkan Road and Phils Lane intersection. The proposed development is a vacant cleared property located within Section 24, Township 20 South, Range 27 East. See **Appendix A** for site location and aerial map.

The development will utilize a gravity sewer system that will feed to a proposed private lift station. The proposed duplex lift station (LS-01) will discharge through a 4" force main which will tie in to the existing 12" force main that runs along the south side of W Ponkan Road. This system connects to the master lift station along Ponkan Road and eventually makes its way to the City of Apopka Water Reclamation Facility.

2.0 WASTEWATER FLOW:

Wastewater inflow to the lift station is estimated based on the number of proposed single-family units. A wastewater flow rate of 300 GPD per Equivalent Residential Units (ERU) and appropriate peaking factors were used to calculate the Average Daily Flow (ADF) and the Peak Daily Flow (PDF) rates.

Total Residential Lots	Demand GPD	Average Daily Flow		Maximum Daily Flow (2*ADF)		Peak Daily Flow (4*ADF)	
		GPD	GPM	GPD	GPM	GPD	GPM
Proposed: 19	300 / Unit	5,700	3.9	11,400	7.9	22,800	15.8

3.0 PUMP SELECTION:

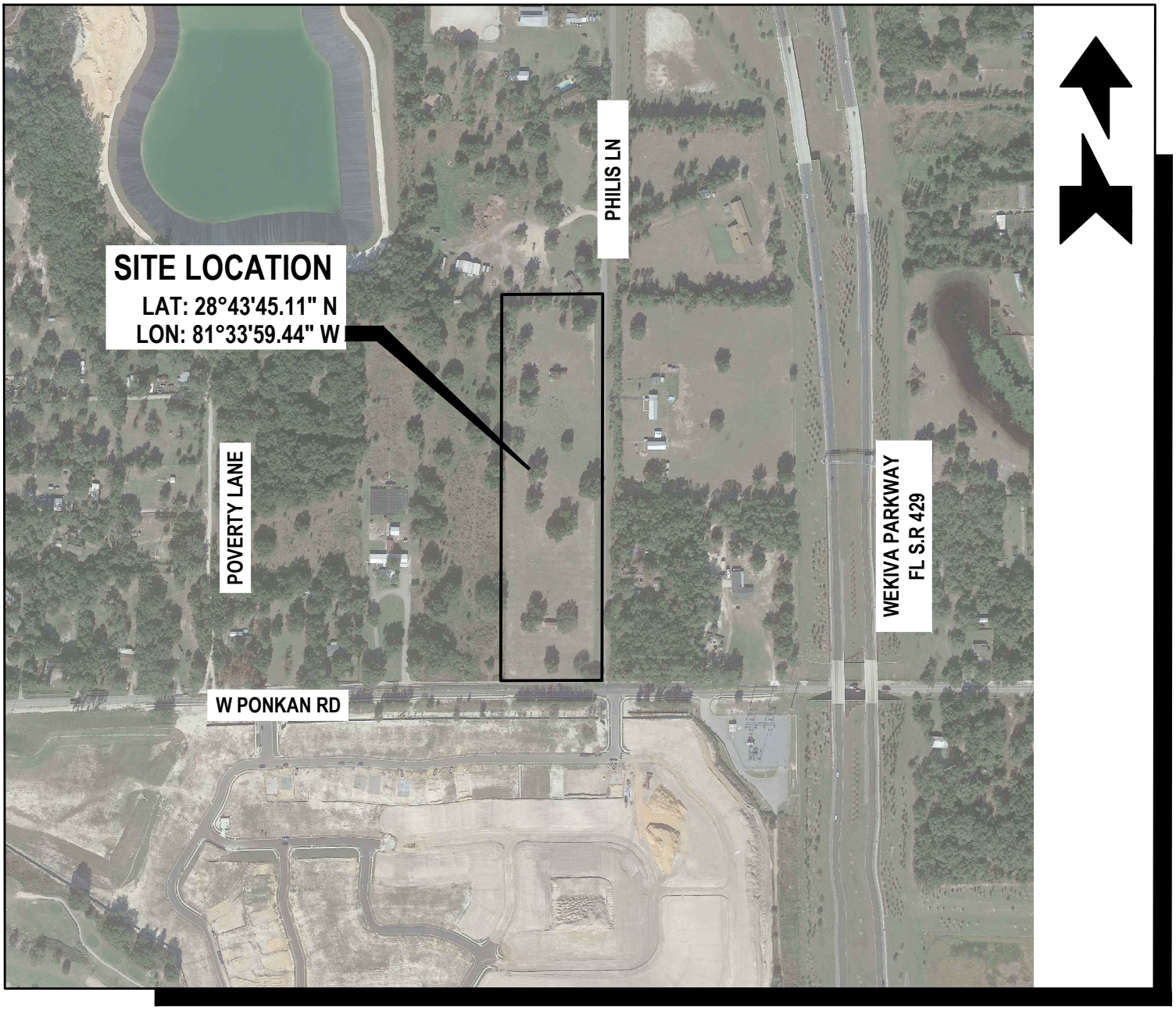
The proposed pump is a SULZER Pump Model XFP 80E CB1 60 HZ; Impeller: 160 mm (cast iron); 16.8 HP; 3520 RPM; 3 Phase, 230 Volt, 60 Hz. With a design peak flow of 16 GPM, the pump operates at 120 gallons per minute (GPM) at 115.0 feet total dynamic head (TDH) with a 24.6-minute pump cycle time and a 4-inch force main velocity of 3.06 feet per second. See lift station calculations, **Appendix B**.

4.0 FLOATATION CHECK:

The wet well was verified to have enough ballast to resist the groundwater floatation force. **Appendix B** provides a summary of the buoyancy calculations. A factor of safety of 2.07 is provided, which exceeds the minimum safety of 1.5 required by standard engineering practices (assuming no water or equipment within the wet well).

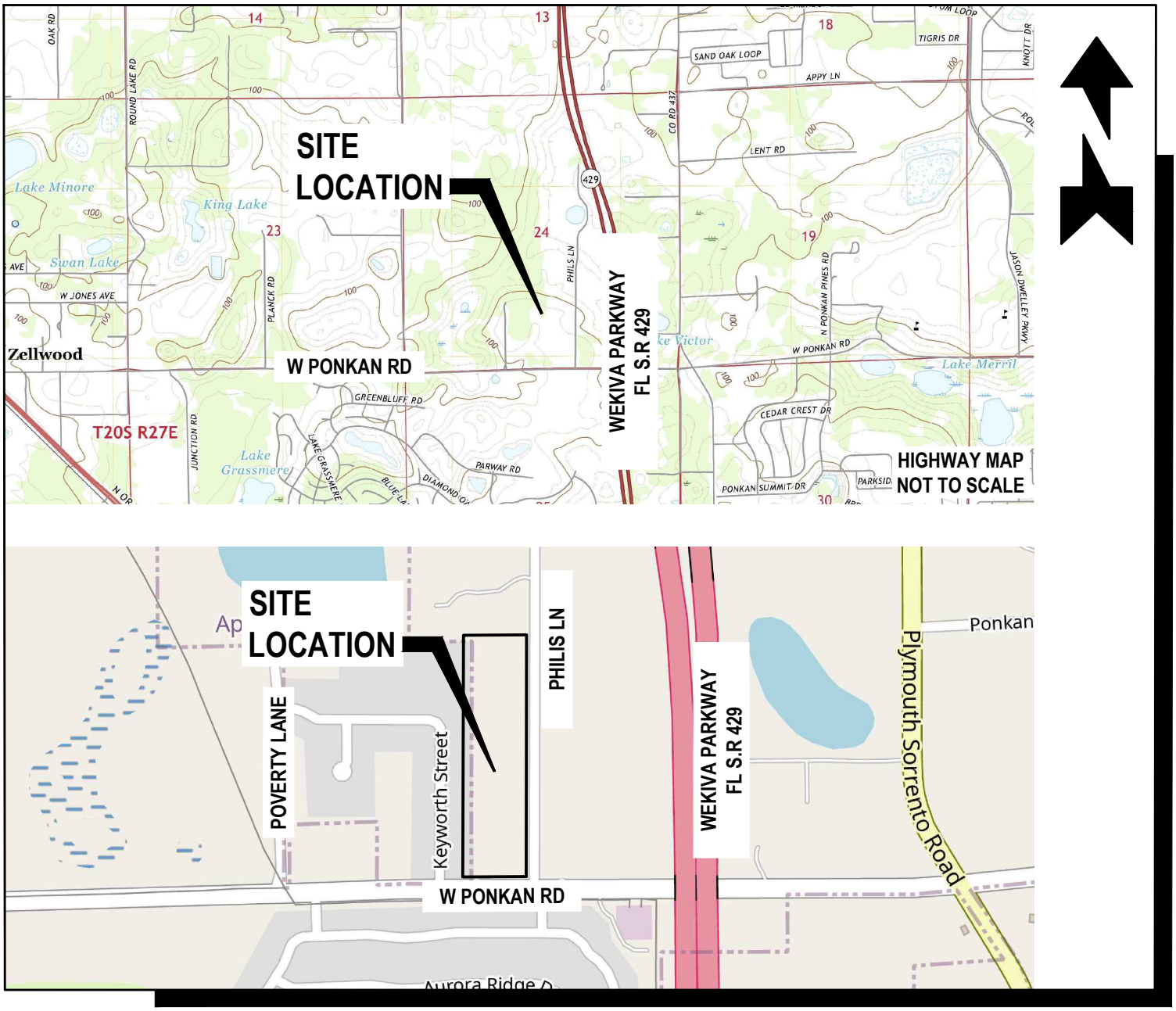
APPENDIX A

LOCATION MAP



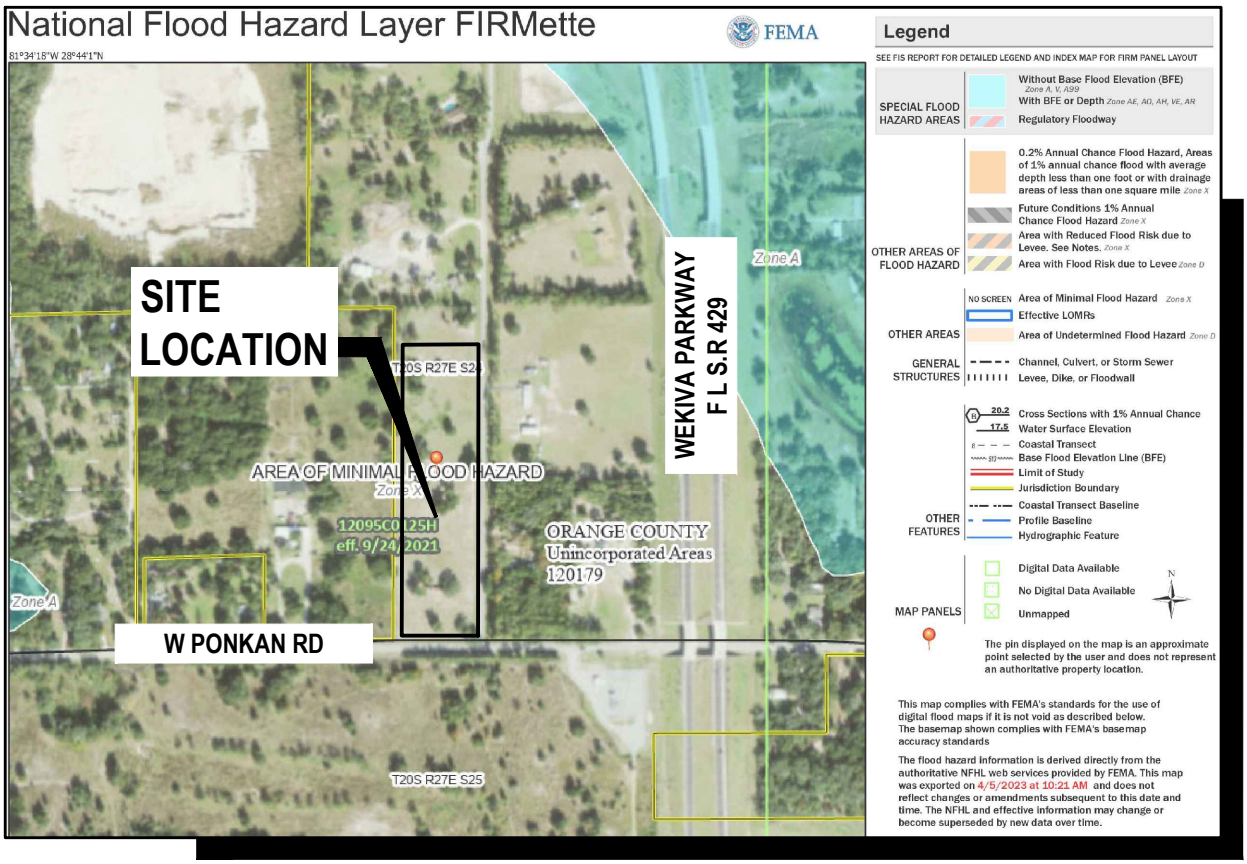
AERIAL MAP

SCALE: 1" = 500'



LOCATION MAP

SCALE: 1" = 800'



FLOOD ZONE MAP

FLOOD ZONE "X"

SCALE: 1" = 850'

PANEL NO. 12095C0125 H, EFF. 9/24/2021

APPENDIX B

LIFT STATION CALCULATIONS

LIFT STATION CALCULATIONS - SCENARIO 1: PROPOSED PROJECT ONLY

PROJECT:	**PONKAN OAK MANOR**
LOCATION:	**3405 W PONKAN ROAD, APOPKA, FL 32712**
LIFT STATION NO.	**LS-01**

1. DESIGN FLOW:

RESIDENTIAL

A)	TOTAL UNITS	19	ERU
B)	GPD/UNITS	300	GPD/UNITS
C)	POPULATION	57	(ERU x 3)
D)	PEAK DAILY Q COEFFICIENT = (18 +P^2) / (4+P^2)	4	
		-	
AVERAGE FLOW = (A x B)		5,700	GPD
PEAK DAY DEMAND		22,800	GPD
PEAK HOUR DEMAND		950	GPH
PEAK MINUTE DEMAND		15.8	GPM
ESTIMATED MONTHLY FLOW		173,850	GAL

TOTAL AVERAGE FLOW	**5,700**	**GPD**
PEAK DAY DEMAND	**22,800**	**GPD**
PEAK HOUR DEMAND	**950**	**GPH**
PEAK MINUTE DEMAND	**16**	**GPM**
ESTIMATED MONTHLY FLOW	**173,850**	**GAL**

2. WET WELL CHECK

PUMP MINIMUM GPM = SUM OF Q PEAK = **16** GPM

MINIMUM STORAGE VOLUME (V min) = [T min * Q out] / 4

T min = MINIMUM CYLCE TIME BETWEEN PUMP STARTS 15 MIN
Q out = PUMP DISCHAGE FLOW RATE OUT OF WET WELL **100** GPM

V min = **375** GAL

SIZE: **4** FT DIA WETWELL **94 GAL PER VERT FT**

A. WET WELL SIZE:

	STAGE (EL)		VOL (GAL)
ELEV. OF TOP WET WELL	108.70	FT	N/A
FORCE MAIN DISCHARGE ELEV.	105.70	FT	N/A
ELEV. OF INFLUENT PIPE INVERT	100.78	FT	543
HIGH WATER ALARM	100.30	FT	498
LAG PUMP ON	99.30	FT	404
LEAD PUMP ON	98.00	FT	282
PUMP OFF	97.00	FT	188
BOTTOM	95.00	FT	0

3. LIFT STATION HYDRAULIC DESIGN

A. STATIC HEAD

WET WELL BOTTOM ELEV.	95.00	FT
FORCE MAIN HIGH POINT	113.50	FT
STATIC HEAD	18.50	FT

B. PRESSURE HEAD

FORCE MAIN PRESSURE	40.0	PSI
PRESSURE HEAD	92.40	FT
TOTAL HEAD	**110.9**	**FT**

C. SYSTEM LOSSES

$$H_P = \Delta Z + \frac{0.81}{g} * \left(\frac{fLQ^2}{d^5} + \frac{\sum K * Q^2}{d^4}\right)$$

Fitting Type	Quantity	K	K total
Discharge		1	0
90 Bend	3	0.5	1.5
45 Bend	8	0.4	3.2
22.5 Bend		0.26	0
11.25 Bend	0	0.16	0
Expansion	1	0.6	0.6
Plug Valve		0.4	0
Check Valve	1	2.5	2.5
Ball Valve	1	0.05	0.05
Gate Valve	3	0.14	0.42
Wye Branch		0.6	0
Contraction		0.5	0
		K total =	8.27

DIAMETER OF FORCE MAIN =	4	IN
LENGTH OF PVC FORCE MAIN PIPE	1,163	FT
FRICTION LOSS COEFF PER 100 LF	0.570	
FRICTION LOSS COEFF (f)	0.0057	
SOLVE FOR Q^2	57.37	

SYSTEM CURVE (TDH) = STATIC HEAD + PRESSURE HEAD + PIPE FRICTION LOSSES

Q (GPM)	Q (CFS)	TDH (FT)
0	0.000	110.9
25	0.056	111.1
50	0.111	111.6
75	0.167	112.5
100	0.223	113.7
125	0.278	115.3
150	0.334	117.3
175	0.390	119.6
200	0.445	122.3
225	0.501	125.3
250	0.557	128.7

PLOT RESULTS ON PUMP CURVE TO DETERMINE PUMP OPERATING CONDITIONS

TDH = 115.0 FT

Q = 120 GPM

4. RECHECK WET WELL DESIGN

AVG DAILY FLOW RATE (Q in)	**4**	GPM	
VOLUME PUMP OFF TO LEAD ON	**94**	GAL	
PUMP CAPACITY (Q out)	**120.0**	GPM	
PUMP CYCLE TIME =	**24.6**	MIN	> 15.0 MIN (O.K)
STARTS PER HOUR =	**2**		

5. CHECK FORCE MAIN VELOCITY

PUMP DISCHARGE (Q)	120.0	GPM	
DIAMETER OF FORCE MAIN (d)	4	IN	
AREA OF FORCE MAIN (A)	0.087	SF	
VELOCITY = Q / A	**3.06**	FPS	> 2.5 FPS

6. BUOYANCY CALCULATIONS

WETWELL DIMENSIONS			
WETWELL INSIDE DIAMETER		4.00	FT
WETWELL WALL THICKNESS		2.00	IN
WETWELL OUTSIDE DIAMETER		4.33	FT
TOP SLAB THICKNESS		2.00	IN
HATCH DIMENSIONS	L	36.00	IN
	W	36.00	IN
DIA. BOTTOM SLAB		7.33	FT
BOTTOM SLAB THICKNESS		12.00	IN

PHYSICAL PROPERTIES		
CONCRETE DENSITY	150.00	LB/CF
SOIL DENSITY	110.00	LB/CF
WATER DENSITY	62.40	LB/CF
SUBMERGED WEIGHT OF SOIL	47.60	LB/CF
FIBERGLASS DENSITY (SPECIFIC GRAVITY = 1.65) (1.65 x Water Density) =	102.96	LB/CF

WETWELL ELEVATIONS		
TOP	108.70	FT
WATER TABLE (MAX STAGE 100YR STORM)	106.69	FT
WETWELL INVERT	97.00	FT

UPWARD FORCES ON WETWETLL		
WEIGHT OF WATER DISPLACED BY WETWELL	8,917	LBS
WEIGHT OF WATER DISPLACED BY BOTTOM SLAB	2,633	LBS
UPLIFT FORCE	**11,551**	**LBS**
UPLIFT FORCE (WITH 1.50 FACTOR OF SAFETY)	**17,326**	**LBS**

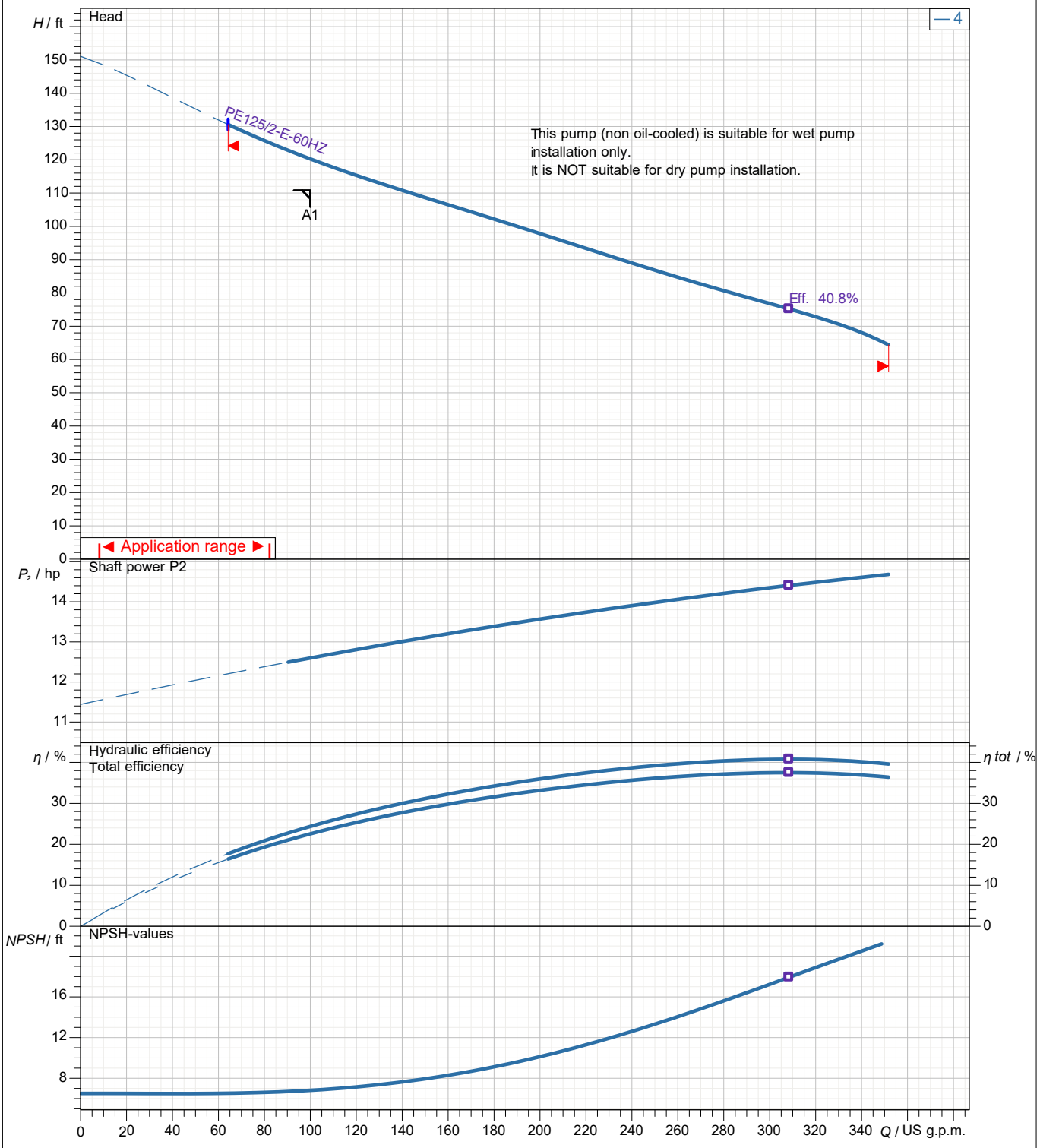
DOWNWARD FORCES ON WETWETLL		
WEIGHT OF WETWELL ABOVE WATER TABLE	414	LBS
WEIGHT OF WETWELL BELOW WATER TABLE	857	LBS
WEIGHT OF TOP SLAB	181	LBS
WEIGHT OF BOTTOM SLAB	3,697	LBS
WEIGHT OF SOIL ABOVE FLANGE, DRY	6,069	LBS
WEIGHT OF SOIL ABOVE FLANGE, WET	12,661	LBS
DOWN FORCES	**23,880**	**LBS**
FACTOR OF SAFETY PROVIDED	**2.07**	

APPENDIX C

PUMP DATA

Curve number	Pump performance curves	SULZER
Reference curve XFP80E CB1 60HZ	XFP 80E CB1 60HZ (wet pit)	

					Discharge	Frequency
					DN80/100	60 Hz
Density	Viscosity	Test Standard			Rated speed	Date
62.31 lb/ft³	1.077E-5 ft²/s	ISO 9906, HI 11.6/14.6≤10kW			3543 rpm	2023-06-05
Flow	Head	Shaft power	Power input	Rated power P2	Hyd. efficiency	NPSH
100 US g.p.m.	110.8 ft			16.8 hp		



Wet well installation with pedestal

Impeller size	N° of vanes	Impeller	Solid size	Revision
160 mm	1	Contrablock impeller, 1 vane	45 mm	

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Data version March 23.2

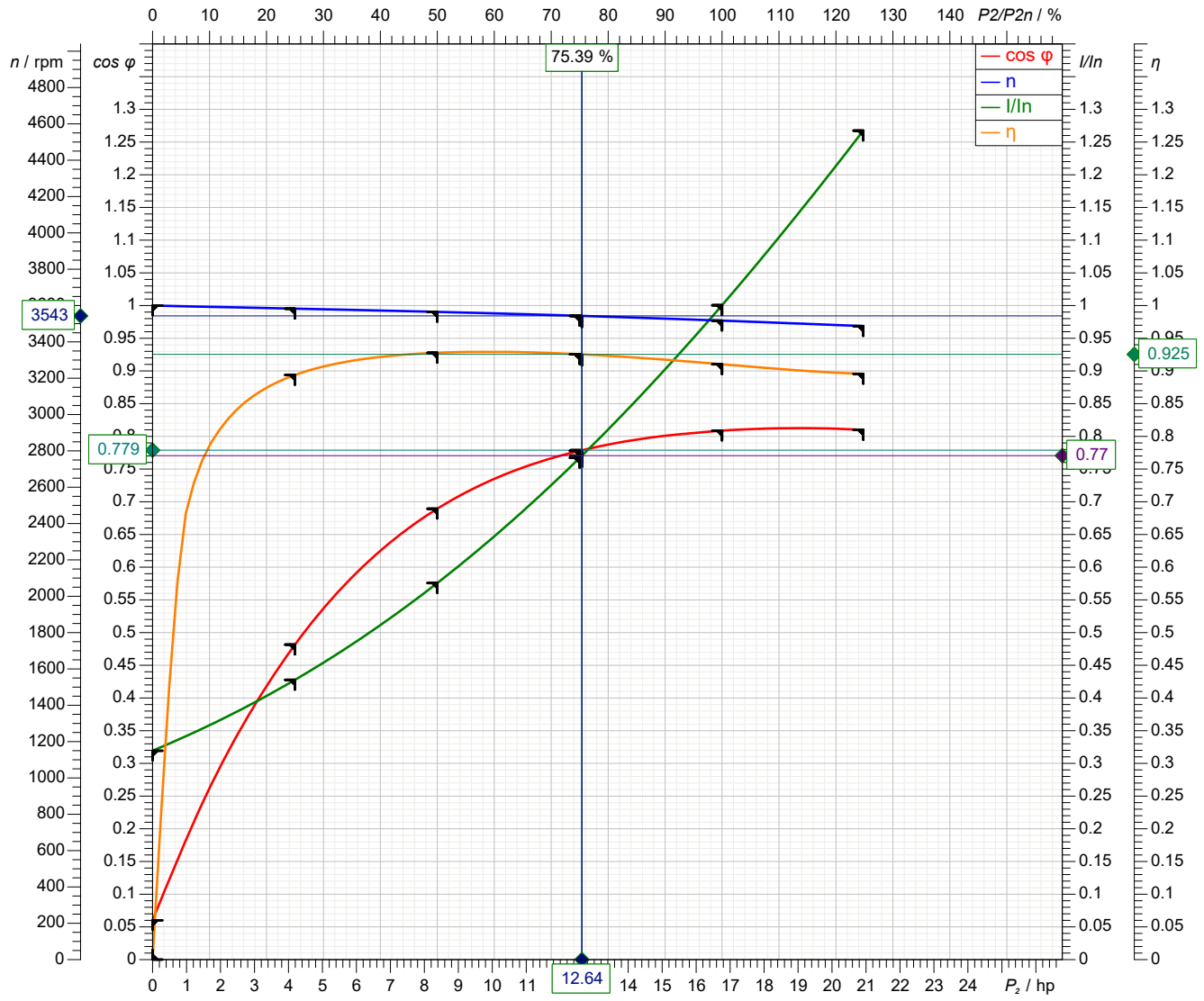
Frequency	PE2
60 Hz	

Motor performance curve

PE125/2-E-60HZ

SULZER

Rated power	Service factor	Nominal Speed	Number of poles	Rated voltage	Date
16.8 hp	1.3	3520 rpm	2	230 V	2023-06-05



Symbol	No load	25 %	50 %	75 %	100 %	125 %
P2/ hp	0	4.191	8.381	12.57	16.76	
P1/ hp	0.4372	4.688	9.034	13.58	18.42	
I / A	13.6	18.22	24.53	32.68	42.62	
cos φ	0.06015	0.4816	0.6894	0.778	0.8088	
n / rpm	3600	3583	3565	3543	3517	
s / %	0.0005609	0.4732	0.9691	1.572	2.308	
M / lbf ft	0	6.143	12.35	18.64	25.03	
η / %	0	89.39	92.78	92.55	91.02	

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting current	Starting torque	Moment of inertia	No. starts per hour
290 A	56.6 lbf ft	0.503 lb ft²	15

Sulzer reserves the right to change any data and dimensions without prior notice
and can not be held responsible for the use of information contained in this software.

Spaix® 6-23.1 - 2023/05/26 (Build 4416), 64 bi
Data version March 23.2

Submersible Sewage Pump Type ABS XFP

XFP 80E-CB1 | 3", 2 Pole, 3-Phase, 60 Hz, PE2

Submersible Motor Specifications, PE2 Frame

Motor Design		NEMA design B, squirrel cage induction
Motor Type		Fully enclosed Premium Efficiency submersible, IP68 protection rating
Motor Efficiency Standard and Rating		IEC 60034-30, IE3 rating
Motor Efficiency Test Protocol		IEC 60034-2-1
Insulation Material		Class H, 180ºC (356ºF), copper windings
Motor Filling Medium		Air
Temperature Rise		Class A; Class B with optional cooling system
Maximum Fluid Temperature		40ºC (104ºF) continuous, 50ºC (122ºF) intermittent
Cooling System	**OPT**	Environmentally safe, nontoxic, oil-filled motor; no cooling jacket required
Motor Protection	**Thermal**	Normally closed bimetallic switch in each phase, connected in series, 140ºC (284ºF) +/- 5ºC (41ºF) opening temperature
	Leakage	Moisture detection probe in seal sensing chamber (for use with appropriate relay)
Sensing Chamber Filling Medium		Environmentally safe, nontoxic oil
Bearing Type	**Upper**	Single row deep groove ball bearing, permanently lubricated
	Lower	Double row angular contact ball bearing, permanently lubricated
Motor Starter Types		Suitable for use with direct-on-line (DOL), electronic soft starters, and PWM type Variable Frequency Drives [1]
Maximum Starts per Hour		15, evenly spaced
Inverter Duty Rating		Motors meet NEMA MG1, part 31 requirements
Maximum Submergence		20 meters (65 feet)
Available Voltages		208, 230, 460, 600 (consult factory for other voltages)
Voltage Tolerance from Rated		+/-10%
Agency Approvals		Factory Mutual, CSA
Explosion Proof Rating		NEC 500 Class 1, Division 1, Group C & D, Class T3C max surface temp

The picture above may differ from the actual product.
For illustrative purposes only.

[1] Output filters may be required on VFDs. See document **DS-E00-001** for details.

Motor Ratings, PE2 Frame

Motor Model	Input Power (P1)	Rated Power Output (P2)	Nominal RPM	Rated Voltage	Full Load Amps	Locked Rotor Amps	NEMA Code Letter	NEMA Service Factor	Motor Efficiency at % Load			Power Factor at % Load		
									100	75	50	100	75	50
PE 125/2	13.7 kW	12.5 kW 16.8 HP	3517	208 230 460 600	47.1 42.6 21.3 16.3	321 290 145 111	H	1.3	91.0	92.6	92.8	0.809	0.778	0.689

DS-E01-020 REV: 4 DATE: 10/16 Specifications Subject to Change Without Notice

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Scan For More Info

Cable Data, PE2 Frame

	Motor	Motor Voltage	Cable Qty	Cable Type [2]	Cable Nominal Outside Diameter +/- .5mm (.02")	
					Power	Ground
Power Cable	PE 125/2	208 volt	1	SOOW 8/4+16/3	24.4mm (0.96")	Integrated w/ Power
		230 volt	1	SOOW 8/4+16/3	24.4mm (0.96")	Integrated w/ Power
		460 volt	1	SOOW 10/7	20.7mm (0.82")	Integrated w/ Power
		600 volt	1	SOOW 10/7	20.7mm (0.82")	Integrated w/ Power
Control Cable	Motor Monitoring Type [3]		Cable Qty	Cable Type	Cable Nominal Outside Diameter +/- .5mm (.02")	
	Std monitoring		N/A	Integrated w/ Power	Integrated w/ Power	
Cable Length	Standard: 15m (49 feet)		Optional: 20m (65 feet), 30m (98 feet); Consult Factory for longer lengths			

[2] Type SOOW power cables have integrated control wires. [3] See motor protection on page 1.

Pump Data

Discharge Size	DN80 flanged, compatible with 3" class 125 ANSI flanges (ANSI flanged fitting must be rotated 22.5° for compatibility)										
Suction Size (Wet-Pit)	3"										
Volute Pressure Rating	16 bar (232 psi)										
Impeller Type	Semi-Open, 1-vane, Contrablock, w/ Seal Protection System										
Impeller Code	.5	.4									
Impeller Diameter, mm (in.)	150 (5.9	160 (6.3)									
Solids Passage Size, mm (in.)	45 (1.77)	45 (1.77)									
Min. Recommended Flow, GPM [4]	150	155									

[4] Recommend minimum continuous flow. Consult factory for applications below this flow rate.

Materials of Construction

	Standard	Optional
Power/Control Cable Jacket	Chlorinated Polyethylene (CPE)	
Lifting Hoop	Stainless Steel 1.4401 (AISI 316)	
Cable Connection Chamber	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Motor Housing	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Intermediate Housing	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Seal Plate	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Pump and Motor Shaft	Stainless Steel 1.4021 (AISI 420)	
Impeller	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B) [5]	Duplex Stainless Steel 1.4470 (ASTM A890, CD3MN Grade 4A)
Wear Parts Bottom/Wear Plate	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B) [5]	Duplex Stainless Steel 1.4470 (ASTM A890, CD3MN Grade 4A)
Volute	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
External Hardware	Stainless Steel 1.4401 (AISI 316)	
O-Rings and Cable Glands	Nitrile (Buna-N)	Viton®
Mechanical Seals Lower	Silicon Carbide / Silicon Carbide, Nitrile, 316 SS	Silicon Carbide / Silicon Carbide, Viton®, 316 SS
Mechanical Seals Upper	Silicon Carbide / Silicon Carbide, Nitrile, 316 SS	
Coating/Protection	Two-part epoxy, blue, 120µm (4.7 mil) DFT	Two-part epoxy, blue, 400µm (15.7 mil); Wet-end liquid ceramic coating, 500µm (19.7 mil); Zinc Anodes

[5] Hardening of bottom edge of impeller vane and wear plate surface available. Consult factory for details.

General Data (Standard Materials of Construction & Cable Length)

	PE 125/2
Overall Height	793mm (31.2")
≈ Pump Weight (Non-Cooled)	187 kg (413 lb)

SULZER

Massblatt XFP 80E-CB1 Nassinstallation
Dimension sheet WET-WELL Installation
Dimensioni Installazione sommersa
Hoja de dimensiones instalación sumergida
Plan d'encombrement Installation noyee

No: AN-M.22.562 -04
Drawn: 11.05.09 / D.Whelan
Issue Date: 09/05/2013
Änderungen vorbehalten
Technical changes reserved
Con riserva di modifiche
Con reserva de modificaciones
Sous réserve de modification

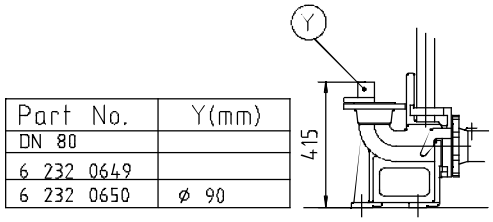
50 Hz

Typ Type Tipo	Gewicht Weight Poids Peso (lbs)	H (")
PE 70/2	347	28.5
PE 110/2	413	31.2

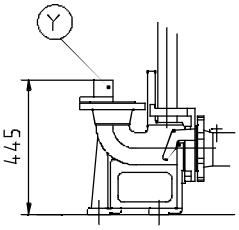
60 Hz

Typ Type Tipo	Gewicht Weight Poids Peso (lbs)	H (")
PE 125/2	413	31.2

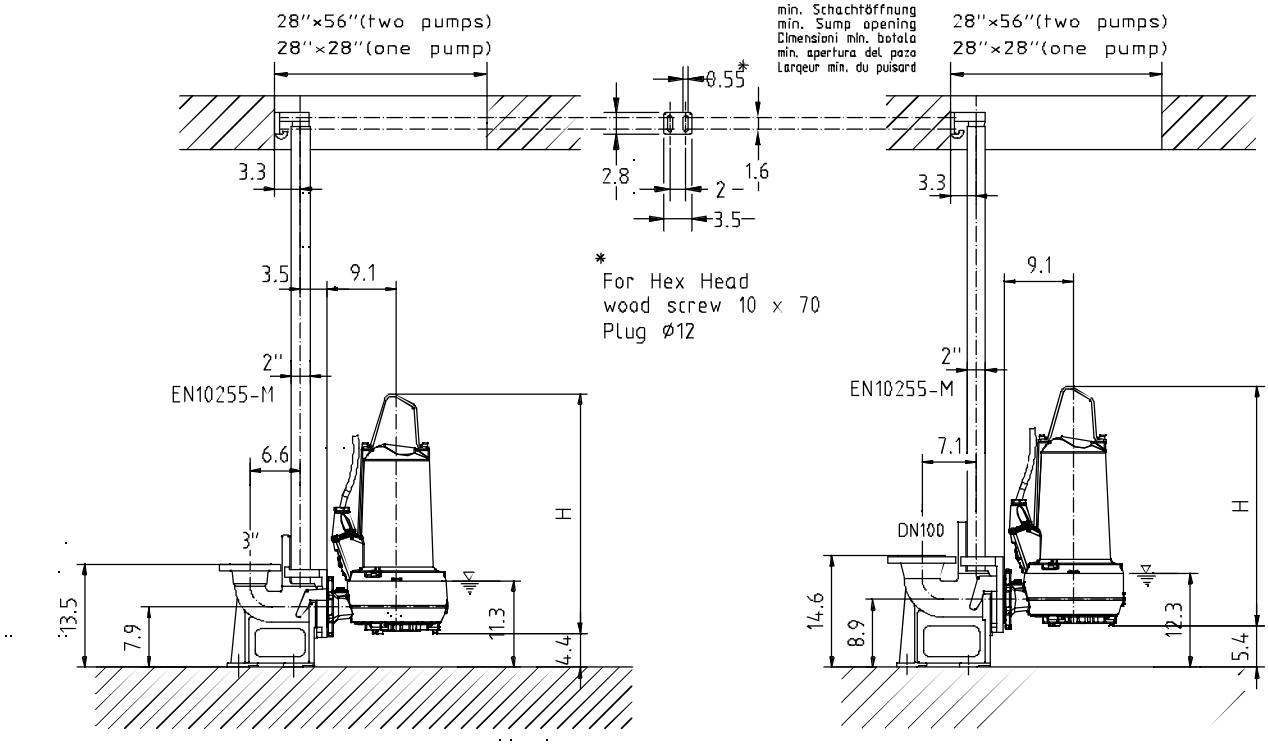
U.S.

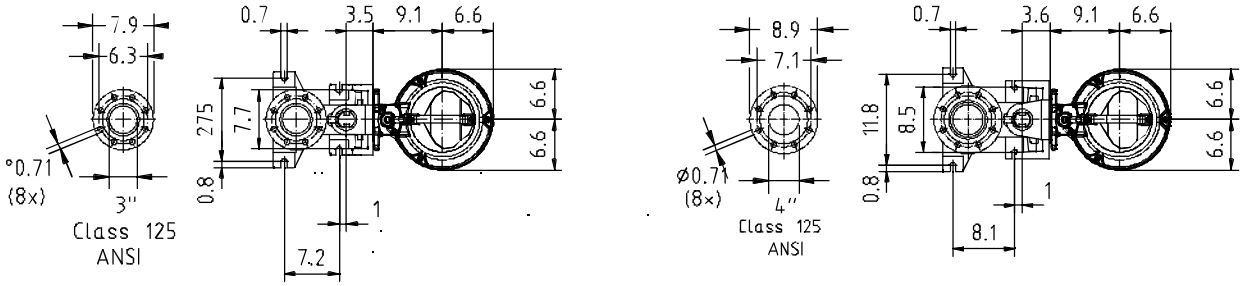


Part No.	Y(mm)
DN 80	
6 232 0649	
6 232 0650	ø 90



	Part No.	Y(mm)
	DN 100	
	6 232 0652	
	6 232 0653	ø 110
	6 232 0654	ø 115
ASA	6 232 0664	
	6 232 0665	ø 115





Gewicht: Beinhaltet Pumpe,Halterung(Fussstuck) und Kabel (50 Hz = 10 m; 60 Hz = 15 m)

Weight: includes pump, slider bracket and cable (50 Hz = 10 m; 60 Hz = 15 m)

Peso: include pompa, pezza intermedio a cavo (50 Hz = 10 m; 60 Hz = 15 m)

Peso: Incluye bomba, soporte deslizante y cable (50 Hz = 10 m; 60 Hz = 15 m)

Poids : incluant la pompe, le coulisseau et le cable (50 Hz = 10 m; 60 Hz = 15 m)

Guss-Allgemeintoleranzen nach DIN1680 - GTB16

General tolerances for castings in acc. to DIN1680-GTB16

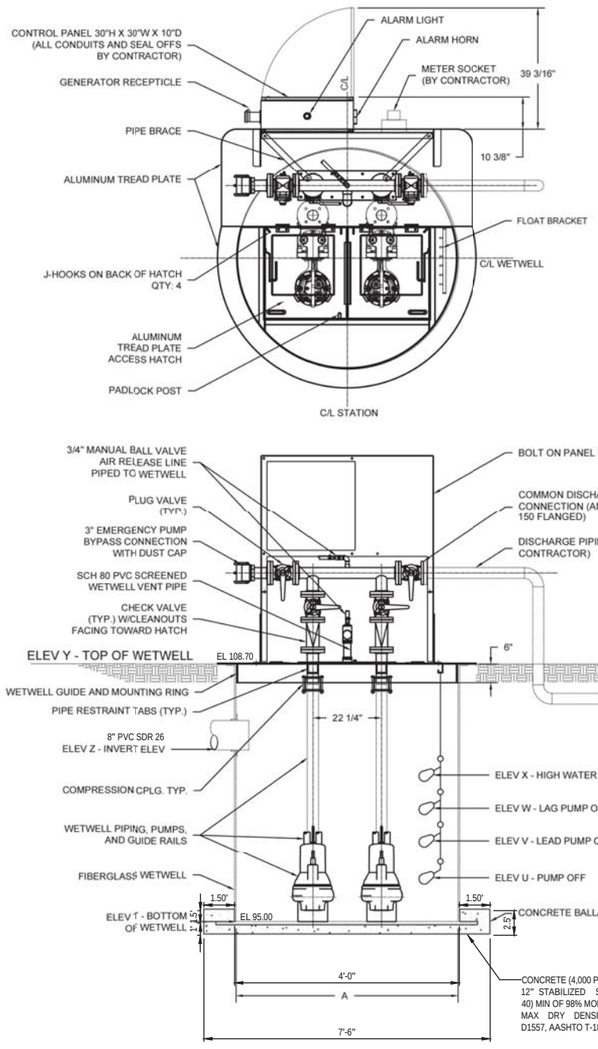
Tolleranze generali delle fusioni secondo DIN1680-GTB16

Tolerancias generales para la fundición seg. de DIN1680-GTB16

Tolerance générale de la fonderie selon DIN1680-GTB16

APPENDIX D

LIFT STATION DETAILS



PUMPS:

MANUFACTURER:
PUMPS SHALL BE OF SUBMERSIBLE TYPE MANUFACTURED BY SULZER/ABS.

PUMPS SHALL BE SULZER MODEL XFP 80E CB1 60HZ, 16.8 ___HP,
3 PHASE, 230 VOLTS, ___ FLA, 3520 RPM

NO OTHER MANUFACTURERS WILL BE ALLOWED.

OPERATING CONDITIONS SHALL BE:
A. PRIMARY: 120 GPM AT 110.0 FEET TDH.
B. SECONDARY: ___GPM AT ___FEET TDH.
C. MIN. SHUTOFF HEAD: ___FEET.
PUMP CURVE RUNOUT: ___GPM AT ___FEET TDH OR LESS.

FIBERGLASS WET WELL:

WET WELL:
THE WET WELL SHALL BE CONSTRUCTED OF COMMERCIAL GRADE POLYESTER RESIN WITH GLASS FIBER REINFORCEMENT. EACH WET WELL SHALL HAVE AN ANTI-FLOTATION RING THAT IS AT LEAST 4 INCHES DIAMETER LARGER THAN THE WET WELL. THE WET WELL SHALL INCLUDE "NAKED TOP VAULT", GUIDE RAIL ASSEMBLIES, CABLE HOLDER, COVER AND DISCHARGE CONNECTIONS INSTALLED BY THE PUMP SUPPLIER.

GUIDE RAIL ASSEMBLY:
A GUIDE RAIL SYSTEM SHALL BE PROVIDED FOR EACH PUMP. EACH GUIDE RAIL SYSTEM SHALL INCLUDE A BASE ELBOW, DISCHARGE FLANGE WITH PROFILE GASKET, SS GUIDE RAIL, SS UPPER GUIDE RAIL BRACKET AND SS LIFTING CABLE.

WET WELL COVER:
THE COVER SHALL BE A 300PSF ALUMINUM COVER WITH HOLD OPEN ARM. THE COVER SHALL ALSO HAVE A WELDED 3" COUPLING FOR THE VENT AND A LOCKING PROVISION. ALL FASTENERS ON THE COVER SHALL BE SS.

FLOATS:
FLOATS SHALL BE ANCHOR SCIENTIFIC NORMALLY OPEN FLOAT SWITCHES.

LIFTING ASSEMBLY:
PUMP LIFTING DEVICE SHALL BE 304 SS LIFTING CABLE WITH SHACKLE SIZED PER PUMP WEIGHT.

ABOVE GRADE EQUIPMENT:
THE EQUIPMENT COMMON BASE SHALL BE REINFORCED ALUMINUM SAFETY PLATE. AN ALUMINUM HATCH SHALL BE PROVIDED FOR ACCESS TO THE WET WELL. THE ACCESS COVER SHALL BE OF ¼" ALUMINUM DIAMOND PLATE, REINFORCED WITH STIFFENER BARS AS REQUIRED. THE COVER SHALL BE ABLE TO WITHSTAND THE LIVE LOAD OF 300 LBS. PER SQUARE FOOT. THE COVER WILL HAVE STAINLESS STEEL HINGES AND BE EQUIPPED WITH A LIFTING HANDLE AND A PADLOCK LOCKING POST (PADLOCK BY OTHERS). THE COVER SHALL OPEN TO 90 DEGREES AND LOCK AUTOMATICALLY IN THAT POSITION BY A STAINLESS-STEEL POSITIVE LOCKING ARM. HOOKS WILL BE PROVIDED IN THE ACCESS HATCH FOR PUMP LIFTING CABLES OR CHAINS.

A CAUTION SIGN SHALL BE ATTACHED TO THE ACCESS HATCH. THE SIGN SHALL READ AS FOLLOWS:

CAUTION: DANGEROUS/HAZARDOUS GASES
LEVELS IN CONFINED SPACE
DO NOT ENTER WITHOUT PROPER
EQUIPMENT OR SUPERVISION

REMOVABLE LIFTING EYES SHALL BE PLACED ABOUT THE PERIMETER OF THE EQUIPMENT BASE TO FACILITATE LIFTING AND HANDLING OF THE STATION.

PIPING AND VALVES:
THE STATION SEWAGE PIPING SHALL BE SCHEDULE 40 316 STAINLESS STEEL PIPE THAT WILL EXTEND DOWN THROUGH THE COMMON BASE PLATE TERMINATING IN PLAIN ENDS EXTERIOR TO THE PUMP CHAMBER. EACH DISCHARGE LINE SHALL BE FITTED WITH A PLUG VALVE AND CHECK VALVE AS SPECIFIED HEREIN AND SIZED AS SHOWN ON THE PLANS.

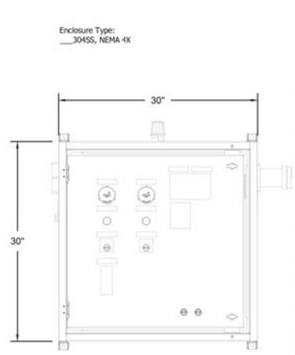
A ¾" TAPPING PORT WITH A MANUAL BALL VALVE WILL BE INSTALLED INTO THE PIPING ASSEMBLY TO ALLOW FOR AIR RELEASE TO THE WETWELL THROUGH THE BASE WITH A ¾" NPT SEALED CONNECTION.

PLUG VALVES OF THE NON-LUBRICATED TYPE SHALL BE FURNISHED AND SIZED AS SHOWN ON THE PLANS. THE VALVE BODY SHALL BE OF HIGH-QUALITY CAST-IRON CONSTRUCTION WITH A WELDED NICKEL SEAT. THE VALVES SHALL BE FURNISHED WITH PERMANENTLY LUBRICATED, CORROSION RESISTANT BEARING SURFACES IN THE UPPER AND LOWER JOURNALS TO WITHSTAND FULL RATED BEARING LOADS AND TO PROVIDE LONG LIFE IN SEWAGE SERVICE. VALVES SHALL PROVIDE A LEAK TIGHT SEAL AGAINST FULL RATED PRESSURE IN BOTH DIRECTIONS. ONE HANDLE FOR VALVE OPERATION WILL BE PROVIDED WITH THE STATION.

SPRING AND LEVER CHECK VALVES SIZED AS SHOWN ON THE PLANS SHALL BE INSTALLED IN THE DISCHARGE PIPING. THE VALVE SHALL PERMIT FLOW IN ONE DIRECTION ONLY AND CLOSE TIGHTLY WITHOUT SLAMMING WHEN THE DISCHARGE PRESSURE EXCEEDS THE INLET PRESSURE. THE VALVE IN THE FULLY OPEN POSITION SHALL PERMIT FULL FLOW THROUGH THE VALVE EQUAL TO THE NOMINAL PIPE DIAMETER. THE VALVE BODY SHALL BE OF HIGH-QUALITY CAST-IRON CONSTRUCTION CAPABLE OF VERTICAL INSTALLATION.

STATION OPTIONS		
	PIPE SIZE	WETWELL SIZE (A)
PROPOSED SIZE	2"	48"
	2"	60"
	2"	72"
	3"	48"
	3"	60"
	3"	72"
	4"	60"
	4"	72"

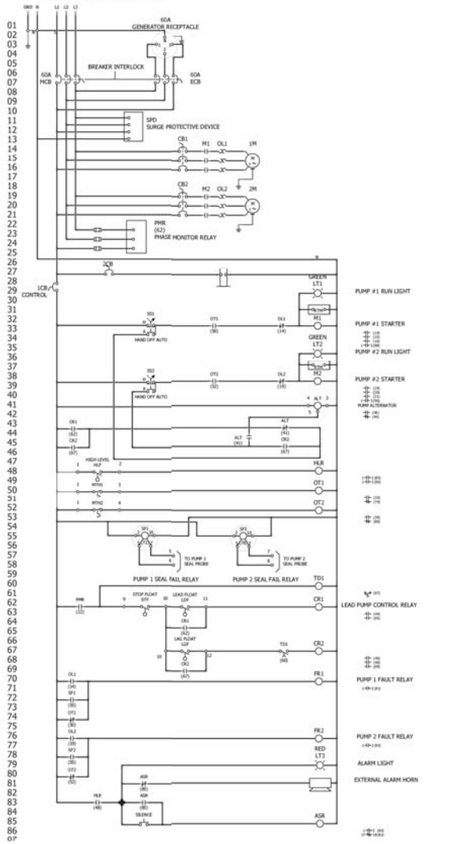
LIFT STATION DATA		
	DIMENSIONS	ELEV. AT CONSTANT
WET WELL DIAMETER (A)	4'-0" (48")	
WET WELL DEPTH	13'-8" (13.7")	
ELEV T		95.00
ELEV U		97.00
ELEV V		98.00
ELEV W		99.30
ELEV X		100.30
ELEV Y		108.70
ELEV Z		100.78 (8")



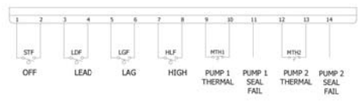
CONTROL PANEL:
PUMP CONTROL PANEL SHALL INCORPORATE THE FOLLOWING ITEMS:
A. NEMA 4X , _____ ENCLOSURE. ENCLOSURE SHALL INCLUDE THE PROVISION FOR PADLOCKING.
B. MAIN AND EMERGENCY CIRCUIT BREAKERS.
C. PANEL SHALL BE SERVICE ENTRANCE RATED.
D. EMERGENCY GENERATOR RECEPTACLE.
E. MOTOR CIRCUIT BREAKERS.
F. CONTROL CIRCUIT BREAKERS.
G. MOTOR STARTERS WITH OVERLOAD PROTECTION.
H. PUMP RUN INDICATOR LIGHTS.
I. HAND-OFF-AUTO SWITCHES.
J. ELAPSED TIME METERS.
K. 120V LIQUID LEVEL CONTROLS, STANDARD 4-FLOAT LOGIC.
L. ALTERNATOR.
M. PHASE MONITOR.
N. LIGHTNING ARRESTOR.
O. ALARM LIGHT & HORN WITH SILENCE BUTTON.
P. 120V GFI RECEPTACLE.

ELECTRICAL INFORMATION

SERVICE ENTRANCE:
V:_____ PH:___
Note: If 480V/3Ph - must add disconnect



FIELD TERMINAL BLOCK LAYOUT



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BRADENTON, FL 941-713-8145
DEBARY, FL 407-330-3456

DRAWING NAME:
DRAWN BY:
DATE:

REVISIONS

DATE	DESCRIPTION

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Phone (386) 872-7794
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L.C. # 26000584
C 2013
Civil Engineering,
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NEWKIRK ENGINEERING INC.

LIFT STATION DETAILS AND NOTES

PONKAN OAK MANOR

3405 WEST PONKAN ROAD
APOPKA, FL 32712

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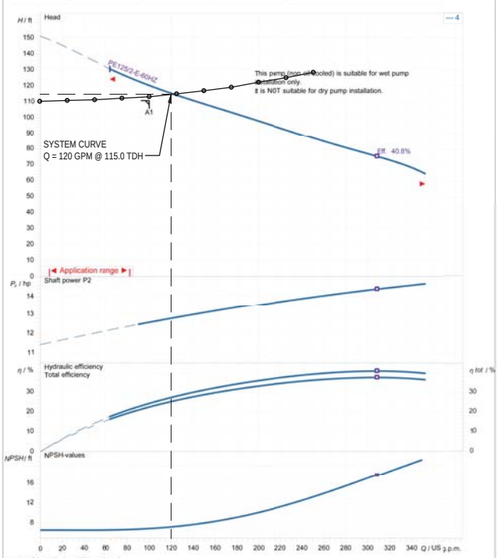
DATE:	JUNE 2023
DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	

DRAWING NUMBER

16

Curve number	Pump performance curves	SULZER
Reference curve XFP80E CB1 60HZ	XFP 80E CB1 60HZ (wet pit)	

				Discharge	Frequency
				DN80/100	60 Hz
Density	Viscosity	Test Standard		Rated speed	Date
62.31 lb/ft³	1.077E-5 ft²/s	ISO 9906, HI 11.6/14.6<10kW		3543 rpm	2023-06-05
Flow	Head	Shaft power	Power input	Rated power P2	Hyd. efficiency	NPSH
100 US g.p.m.	110.8 ft			16.8 hp		



wet well installation with pedestal

Impeller size	N° of vanes	Impeller	Solid size	Revision
160 mm	1	contrablock impeller, 1 vane	45 mm	

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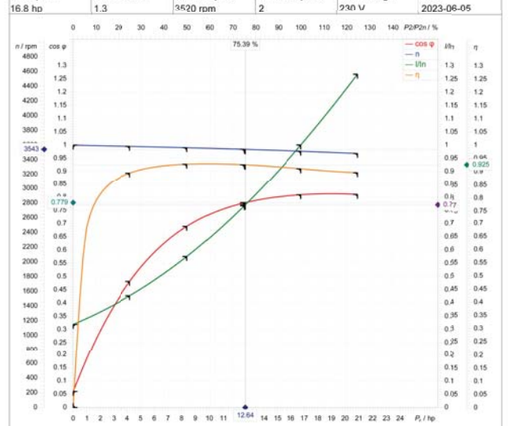
Frequency 60 Hz	PE2	Motor performance curve	SULZER
		PE125/2-E-60HZ	

Rated power	Service factor	Nominal Speed	Number of poles	Rated voltage	Date
16.8 hp	1.3	3520 rpm	2	230 V	2023-06-05



Symbol	No load	25 %	50 %	75 %	100 %	125 %
P2/ hp	0	4.191	8.381	12.57	16.76	
P1/ hp	0.4372	4.688	9.034	13.58	18.42	
I / A	13.6	18.22	24.53	32.68	42.62	
cos φ	0.0601	0.481	0.689	0.778	0.808	
n / rpm	3600	3583	3565	3543	3517	
s / %	0.000560	0.473	0.969	1.572	2.308	
M / lbf ft	0	6.143	12.35	18.64	25.03	
η / %	0	89.39	92.78	92.55	91.02	

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting current	Starting torque	Moment of inertia	No. starts per hour
290 A	56.6 lbf ft	0.503 lb ft²	15

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Spaw® 6-23.1 - 2023/05/26 (Build 4416), 64 bit Data version March 23.2

LIFT STATION SITE PLAN

NOT TO SCALE

TECHNICAL DATA

SULZER

Submersible Sewage Pump Type ABS XFP

XFP 80E-CB1 | 3", 2 Pole, 3-Phase, 60 Hz, PE2

Cable Data, PE2 Frame

	Motor	Motor Voltage	Cable Qty	Cable Type [1]	Cable Nominal Outside Diameter +/- .5mm (.02") Power	Ground
Power Cable	PE 125/2	208 volt	1	SOOW 9/4+16/3	24.4mm (0.96")	Integrated w/ Power
		230 volt	1	SOOW 9/4+16/3	24.4mm (0.96")	Integrated w/ Power
		460 volt	1	SOOW 10/7	20.7mm (0.82")	Integrated w/ Power
		600 volt	1	SOOW 10/7	20.7mm (0.82")	Integrated w/ Power
Control Cable	Motor Monitoring Type [2]		Cable Qty	Cable Type	Cable Nominal Outside Diameter +/- .5mm (.02")	
	Std monitoring		N/A	Integrated w/ Power	Integrated w/ Power	
Cable Length	Standard: 15m (49 feet)		Optional: 20m (65 feet), 30m (98 feet) Consult Factory for longer lengths			

[1] Type SOOW power cables have integrated control wires. [2] See motor protection on page 1

Pump Data

Discharge Size	DN80 flanged, compatible with 3" class 125 ANSI flanges /ANSI flanged fitting must be rotated 22.5° for compatibility)										
Suction Size (Wet-Pit)	3"										
Volute Pressure Rating	16 bar (232 psi)										
Impeller Type	Semi-Open, 1-vane, Contrablock, w/ Seal Protection System										
Impeller Code	5	4									
Impeller Diameter, mm (in.)	150 (5.9	160 (6.3"									
Solids Passage Size, mm (in.)	45 (1.77)	45 (1.77)									
Min. Recommended Flow, GPM *	150	155									

* Recommend minimum continuous flow. Consult factory for applications below this flow rate.

Materials of Construction

	Standard	Optional
Power/Control Cable Jacket	Chorinated Polyethylene (CPE)	
Lifting Hoop	Stainless Steel 1.4401 (AISI 316)	
Cable Connection Chamber	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Motor Housing	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Intermediate Housing	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Seal Plate	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Pump and Motor Shaft	Stainless Steel 1.4021 (AISI 420)	
Impeller	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B) *	Duplex Stainless Steel 1.4470 (ASTM A890, CD3MN Grade 4A)
Wear Parts Bottom/Wear Plate	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B) *	Duplex Stainless Steel 1.4470 (ASTM A890, CD3MN Grade 4A)
Volute	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
External Hardware	Stainless Steel 1.4401 (AISI 316)	
O-Rings and Cable Glands	Nitrile (Buna-N)	Viton®
Mechanical Lower	Silicon Carbide / Silicon Carbide, Nitrile, 316 SS	Silicon Carbide / Silicon Carbide, Viton®, 316 SS
Seals Upper	Silicon Carbide / Silicon Carbide, Nitrile, 316 SS	
Coating/Protection	Two-part epoxy, blue, 120µm (4.7 mil) DFT	Two-part epoxy, blue, 400µm (15.7 mil); Wet-end liquid ceramic coating, 500µm (19.7 mil); Zinc Anodes

* Hardening of bottom edge of impeller vane and wear plate surface available. Consult factory for details.

General Data (Standard Materials of Construction & Cable Length)

	PE 125/2
Overall Height	793mm (31.2")
≈ Pump Weight (Non-Cooled)	187 kg (413 lb)

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Page | 2

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TECHNICAL DATA

SULZER

Submersible Sewage Pump Type ABS XFP

XFP 80E-CB1 | 3", 2 Pole, 3-Phase, 60 Hz, PE2

Submersible Motor Specifications, PE2 Frame

Motor Design		NEMA design B, squirrel cage induction
Motor Type		Fully enclosed Premium Efficiency submersible, IP68 protection rating
Motor Efficiency Standard and Rating		IEC 60034-30, IE3 rating
Motor Efficiency Test Protocol		IEC 60034-2-1
Insulation Material		Class H, 180°C (356°F), copper windings
Motor Filling Medium		Air
Temperature Rise		Class A, Class B with optional cooling system
Maximum Fluid Temperature		40°C (104°F) continuous, 50°C (122°F) intermittent
Cooling System	OPT	Environmentally safe, nontoxic, oil-filled motor; no cooling jacket required
Motor Protection	Thermal	Normally closed bimetallic switch in each phase, connected in series, 140°C (284°F) +/- 5°C (41°F) opening temperature
	Leakage	Moisture detection probe in seal sensing chamber (for use with appropriate relay)
Sensing Chamber Filling Medium		Environmentally safe, nontoxic oil
Bearing Type	Upper	Single row deep groove ball bearing, permanently lubricated
	Lower	Double row angular contact ball bearing, permanently lubricated
Motor Starter Types		Suitable for use with direct-on-line (DOL), electronic soft starters, and PWM type Variable Frequency Drives*
Maximum Starts per Hour		15, evenly spaced
Inverter Duty Rating		Motors meet NEMA MG1, part 31 requirements
Maximum Submergence		20 meters (65 feet)
Available Voltages		208, 230, 460, 600 (consult factory for other voltages)
Voltage Tolerance from Rated		+/-10%
Agency Approvals		Factory Mutual, CSA
Explosion Proof Rating		NEC 500 Class 1, Division 1, Group C & D, Class T3C max surface temp

The picture above may differ from the actual product. For illustrative purposes only.

* Output filters may be required on VFDs. See document **DS-E00-001** for details.

Motor Ratings, PE2 Frame

Motor Model	Input Power (P1)	Rated Power Output (P2)	Nominal RPM	Rated Voltage	Full Load Amps	Locked Rotor Amps	NEMA Code Letter	NEMA Service Factor	Motor Efficiency at % Load 100	75	50	Power Factor at % Load 100	75	50
PE 125/2	13.7 kW	12.5 kW 16.8 HP	3517	208	47.1	321	H	1.3	91.0	92.6	92.8	0.809	0.778	0.689
				230	42.6	290								
				460	21.3	145								
				600	16.3	111								

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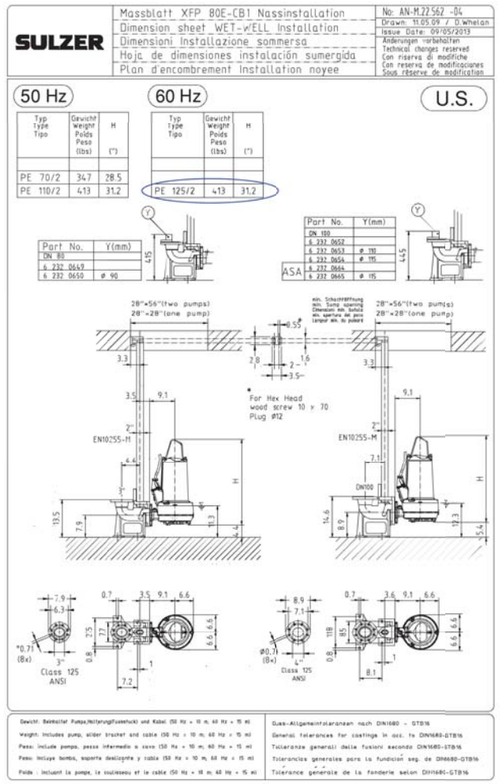

REVISIONS	
DATE	DESCRIPTION

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NEWKIRK ENGINEERING INC.

LIFT STATION DETAILS AND NOTES

PONKAN OAK MANOR

3405 WEST PONKAN ROAD

APOPKA, FL 32712

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DESIGN BY:	BWD
DRAWN BY:	DAB
CHECKED BY:	HHN
SCALE:	

DRAWING NUMBER

17

GEOTECHNICAL EXPLORATION

PONKAN OAK MANOR SUBDIVISION
APOPKA, ORANGE COUNTY, FLORIDA

UES PROJECT NO. 0130.2300140.0000
UES REPORT NO. 2019982

PREPARED FOR:

P & P Buildcon LLC
1918 Meadow Crest Drive
Apopka, FL 32712

Attention: Mr. Pankaj Patel

PREPARED BY:

Universal Engineering Sciences, LLC
3532 Maggie Boulevard
Orlando, Florida 32811
(407) 423-0504

March 19, 2023

Materials Testing
Geotechnical Engineering
Environmental
Building Sciences & Safety
Inspections & Code Compliance
Virtual Design Consulting

May 19, 2023

P & P Buildcon LLC
1918 Meadow Crest Drive
Apopka, FL 32712
(407) 639-4657

Attention: Mr. Pankaj Patel
pankajpat2826@gmail.com

Reference: **Geotechnical Exploration**
Ponkan Oak Manor Subdivision
Apopka, Orange County, Florida
UES Project No. 0130.2300140.0000
UES Report No. 2019982

Dear Mr. Patel:

UES has completed a geotechnical exploration at the above referenced site in Orange County, Florida. The scope of our exploration was planned in conjunction with and authorized by you. This exploration was performed in accordance with UES Proposal No. 2012979, dated April 11, 2023, and generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made.

The following report presents the results of our field exploration with a geotechnical engineering interpretation of those results with respect to the project characteristics as provided to us. We have included our estimates of the seasonal high groundwater level at the boring locations and geotechnical recommendations for foundation design, pavement design, site preparation, and stormwater design. *The site was found to be generally suitable for the proposed construction following typical site preparation procedures presented in this report.*

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Respectfully Submitted,
UNIVERSAL ENGINEERING SCIENCES, LLC
Certificate of Authorization No. 549

Luke G. Shafer, E.I.
Geotechnical Staff Engineer

RICARDO C. KIRIAKIDIS LICENSE NO. 70602 STATE OF FLORIDA PROFESSIONAL ENGINEER

Ricardo C. Kiriakidis L., Ph.D., P.E.
Date: 5/19/2023
Geotechnical Department Manager
Florida Registration No. 70602

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USGS Location Map A-1

APPENDIX B
Boring Location Plan B-1
Boring Logs B-2
Key to Boring Logs Sheet B-3

APPENDIX C
GBC Document C-1
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1.0 PROJECT DESCRIPTION

We understand that you will be developing a new residential subdivision located in Orange County, Florida. More specifically, the site is located at 3405 W Ponkan Road in Apopka, Florida. We were provided with a conceptual site plan showing the proposed site improvements. The site plan identified nineteen (19) single-family residential homes, one (1) stormwater pond, and associated paved roadways.

Although detailed loading conditions were not provided, we have assumed that the maximum loadings for the proposed structures will not exceed 40 kips per column and 3 kips per linear foot for structural walls. We have assumed that the finished floor elevation of the new building will be near existing grade.

Should any of the above information or assumptions made by UES be inconsistent with the planned development and construction, we request that you contact us immediately to allow us the opportunity to review the new information in conjunction with our report and revise or modify our engineering recommendations accordingly, as needed.

No site or project facilities/improvements, other than those described herein, should be designed using the soil information presented in this report. Moreover, UES will not be responsible for the performance of any site improvement so designed and constructed.

2.0 PURPOSE

The purposes of this exploration were:

- to explore and evaluate the subsurface conditions at the site with special attention to potential problems that may impact the proposed development,
- to provide our estimates of the seasonal high groundwater level at the boring locations and
- to provide geotechnical engineering recommendations for foundation design, pavement design, site preparation and stormwater pond parameters.

This report presents an evaluation of site conditions on the basis of geotechnical procedures for site characterization. The recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards. We would be glad to provide you with a proposal for these services at your request.

Our exploration was not designed to specifically address the potential for surface expression of deep geological conditions, such as sinkhole development related to karst activity. This evaluation requires a more extensive range of field services than those performed in this study. We would be pleased to conduct an exploration to evaluate the probable effect of the regional geology upon the proposed construction, if you so desire.

3.0 SITE DESCRIPTION

The subject site is located within Section 24, Township 20 South, Range 27 East in Orange County, Florida. More specifically, the subject property is located at 3405 W Ponkan Road in Apopka, Florida, as shown on the attached Figure A-1. At the time of drilling, the site was a grassy lot with some trees.

3.1 SOIL SURVEY

There are two (2) native soil types mapped within the general vicinity of the site according to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey of Orange County. A brief summary of the mapped surficial soil types are presented in Table I.

TABLE I
SUMMARY OF PUBLISHED SOIL DATA [1]

Soil Symbol	Soil Type	Hydrologic Group	Drainage Characteristics	Depth to Published Seasonal High GWT [2] (feet)
4	Candler fine sand, 0 to 5 percent slopes	A	Excessively Drained	>6½
5	Candler fine sand, 5 to 12 percent slopes	A	Excessively Drained	>6½

1. Data obtained from the NRCS online webpage, accessed on 5/17/2023

Figure I: Web Soil Survey
(Image obtained from the USDA NRCS Web Soil Survey online webpage, accessed on 5/17/2023)

3.2 TOPOGRAPHY

According to information obtained from the United States Geologic Survey (USGS) "Apopka, Florida" quadrangle map, the pre-development ground surface elevation across the site area was approximately +95 to +115 feet National Geodetic Vertical Datum (NGVD). The site is located approximately 1,400 feet west of Lake Victor. According to the USGS map, the normal water level in the lake is noted at +57 feet NGVD. A copy of a portion of the USGS Map is included in Appendix A.

4.0 SCOPE OF SERVICES

The services conducted by UES during our geotechnical exploration were as follows:

- Drilled five (5) Standard Penetration Test (SPT) borings within the proposed lots to a depth of 20 feet below existing land surface (bls).
- Drilled four (4) SPT borings within the proposed pavement area to a depth of 10 feet bls.
- Two (2) SPT borings to a depth of 25 feet bls in proposed pond area
- Secured samples of representative soils encountered in the soil borings and hand auger for review, laboratory analysis and classification by a Geotechnical Engineer.
- Measured the existing site groundwater levels and provide an estimate of the seasonal high groundwater level at the testing locations.
- Conducted laboratory testing on selected soil samples obtained in the field to determine their engineering properties.
- Assessed the existing soil conditions with respect to the proposed construction.
- Prepared a report which documents the results of our exploration and analysis with geotechnical engineering recommendations.

5.0 FIELD EXPLORATION

The SPT borings were performed with a truck mounted drilling rig. Horizontal and vertical survey control was not provided for the test locations prior to our field exploration program. UES located the test borings by using the provided site plan, measuring from existing on-site landmarks shown on an aerial photograph, and by using handheld GPS devices. The indicated test locations should be considered accurate to the degree of the methodologies used. The approximate boring locations are shown in Appendix B.

The SPT borings, designated B-01 through B-05, R-01 through R-04, P-01 and P-02 on the attached Boring Location Plan in Appendix B, were performed in general accordance with the procedures of ASTM D 1586 "Standard Method for Penetration Test and Split-Barrel Sampling of Soils". SPT sampling was performed continuously to 10 feet to detect variations in the near surface soil profile and on approximate 5 feet centers thereafter.

Ground surface elevations at the boring locations would be beneficial to help us to identify any anomalies in our measured and estimated seasonal high groundwater levels, as well as improve the usefulness the groundwater information during the civil engineering design of the site.

6.0 LABORATORY TESTING

The soil samples recovered from the test borings and hand auger were returned to our laboratory and visually classified in general accordance with ASTM D 2487 "Standard Classification of Soils for Engineering Purposes" (Unified Soil Classification System). We selected representative soil samples from the borings for laboratory testing to aid in classifying the soils and to help to evaluate the general engineering characteristics of the site soils. The results of these tests are shown on the boring logs in Appendix B. A summary of the tests performed is shown in Table II.

TABLE II
LABORATORY METHODOLOGIES

Test Performed	Number Performed	Reference
Grain Size Analysis (#200 wash only)	4	ASTM D 1140 "Amount of Material in Soils Finer than the No. 200 (75 - µm) sieve"
Moisture Content	6	ASTM D 2216 "Laboratory Determination of Water (Moisture) Content of Soil by Mass"
Soil Sieve Analysis	2	ASTM D 6913 "Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis"

7.0 SUBSURFACE CONDITIONS

7.1 GENERALIZED SOIL PROFILE

The results of our field exploration and laboratory analysis, together with pertinent information obtained from the SPT borings, such as soil profiles, penetration resistance and groundwater levels are shown on the boring logs included in Appendix B. The Key to Boring Logs, Soil Classification Chart is also included in Appendix B.

The soil profiles were prepared from field logs after the recovered soil samples were examined by a Geotechnical Engineer. The stratification lines shown on the boring logs represent the approximate boundaries between soil types, and may not depict exact subsurface soil conditions. The actual soil boundaries may be more transitional than depicted. A generalized profile of the soils encountered at our boring locations is presented in Table III. For detailed soil profile, please refer to the attached boring logs.

TABLE III
GENERALIZED SOIL PROFILE

Typical Depth (feet, bls)		Soil Description	Range of SPT "N" Values (blows/ft)
From	To		
Surface	25*	Very loose to dense fine SAND with varied clay fine contents [SP, SP-SC, SC]	2 to 43

7.2 NOTABLE FINDINGS – LOOSE SOIL CONDITIONS

A notable finding during the exploration program was the periodic presence of very loose to loose soil conditions observed in the several of the borings performed across the site. The loose, near surface soils, within approximately 1 to 10 feet of the surface, exhibited SPT "N" blow count values ranging from 1 blow per foot (bpf) to 5 bpf.

It has been our experience that soils with SPT "N" blow counts less than approximately 5 bpf may not provide adequate support for the structures without some soil improvement. Larger sized compaction equipment may be required to achieve the in-place soil densities recommended in the site preparation section of this report. The site contractor should select their equipment appropriately.

8.0 GROUNDWATER CONDITIONS

8.1 EXISTING GROUNDWATER LEVEL

We measured the water levels in the boreholes on May 2, 2023 during our drilling operations. Groundwater was not encountered at the boring locations at the time of our exploration. The encountered groundwater level at each of the boring locations is shown on the attached boring logs.

Fluctuations in groundwater levels should be anticipated throughout the year, primarily due to seasonal variations in rainfall, surface runoff, and other factors that may vary from the time the borings were conducted.

8.2 SEASONAL HIGH GROUNDWATER LEVEL

Based on historical data, the rainy season in Central Florida is between June and October of the year. In order to estimate the seasonal high water level at the boring locations, many factors are examined, including the following:

- Measured groundwater level
- Drainage characteristics of existing soil types
- Current & historical rainfall data
- Natural relief points (such as lakes, rivers, wetlands, etc.)
- Man-made drainage systems (ditches, canals, retention basins, etc.)
- On-site types of vegetation
- Review of available data (soil surveys, USGS maps, etc.)
- Redoximorphic features (mottling, stripping, etc.)

Based on the results of our field exploration and the factors listed above, we estimate that the seasonal high groundwater level at the boring locations will form as a perch condition **at depths ranging from approximately 4 to 12½ feet below existing grade depending on the boring locations**. Note that areas where shallow hydraulic restrictive soils were found may affect nearby green areas and/or pavements. If any excavation to be conducted during rainy or wet season to the depth of estimated seasonal high groundwater table, a sump pump may be sufficient to control water to allow for sufficient subgrade preparation. The actual method(s) of controlling the water should be determined by the contractor.

Please note, ground surface elevations at the boring locations would be beneficial to allow us to identify any anomalies in both our measured and estimated seasonal high groundwater levels, as well as improve the usefulness the groundwater information during the civil engineering design of the site.

It should be noted that the estimated seasonal high water levels provided should be considered accurate to about ½ foot +/- and do not provide any assurance that groundwater levels will not exceed these estimated levels during any given year in the future. Should the impediments to surface water drainage be present, or should rainfall intensity and duration, or total rainfall quantities, exceed the normally anticipated rainfall quantities, groundwater levels might exceed our seasonal high estimates. Further, it should be understood that changes in the surface hydrology and subsurface drainage from on-site and/or off-site improvements could have significant effects on the normal and seasonal high groundwater levels.

9.0 FOUNDATION DESIGN RECOMMENDATIONS

The following recommendations are made based upon a review of the attached soil test data, our understanding of the proposed construction, and experience with similar projects and subsurface conditions. The applicability of geotechnical recommendations is very dependent upon project characteristics such as improvement locations, and grade alterations. UES must review the final site and grading plans to validate all recommendations rendered herein. Additionally, if subsurface conditions are encountered during construction, which were not encountered in the hand auger and borings, report those conditions immediately to us for observation and recommendations.

9.1 STRUCTURAL AND GRADING INFORMATION

We understand that your group is in the design phase of a new single family development located in Orange County, Florida. The site plan identified nineteen (19) single-family residential homes, one (1) stormwater pond, and associated paved roadways.

Although detailed loading conditions were not provided, we have assumed that the maximum loadings for the proposed structures will not exceed 40 kips per column and 3 kips per linear foot for structural walls. We have assumed that the finished floor elevation of the new building will be near existing grade.

Prior to finalizing any design, the structural/grading information outlined above should be confirmed by the project structural/civil engineer. This is crucial to our evaluation and estimates of settlements. If any of this information is incorrect or if you anticipate any changes, please inform UES immediately so that we may review and modify our recommendations as appropriate.

9.2 ANALYSIS

Based on the results of the soil borings, the near surface soils within the proposed building areas appear to be mostly interbedded layers of very loose to dense sandy soils with varying amounts of clay [SP, SP-SC, SC] to a depth of 25 feet below grade.

It is our opinion that proposed structures can be supported on properly designed and constructed shallow foundation systems. Provided that the site preparation recommendations outlined in this report are followed, and any loose surficial soils are properly densified, the parameters outlined below may be used for foundation design.

9.3 BEARING PRESSURE

Provided our suggested site preparation procedures are followed, we recommend designing shallow footing foundations for a **maximum allowable net soil bearing pressure of 2,500 pounds per square foot (psf)**. The allowable net bearing pressure is that pressure that may be transmitted to the soil in excess of the minimum surrounding overburden pressure. The allowable bearing pressure should include dead load plus sustained live load. Per the Florida Building Code (FLBC), the foundations should be designed for the most unfavorable effects due to the combinations of loads specified in the FLBC.

9.4 FOUNDATION SIZE

The minimum width recommended for an isolated column footing is 24 inches. For continuous wall or slab on grade foundations, the minimum footing width should comply with the current

FLBC, but under no circumstances should be less than 12 inches. Even though the maximum allowable soil bearing pressure may not be achieved, these width recommendations should control the size of the foundations.

9.5 Bearing Depth

The base of all footings should be at least 12 inches below finished grade elevation in accordance with the FLBC. We recommend stormwater and surface water be diverted away from the building exterior, both during and after construction, to reduce the possibility of erosion beneath the exterior footings.

9.6 Bearing Material

The foundations may bear on either the compacted suitable native soils or compacted structural backfill. The bearing level soils should exhibit a density of at least 95 percent of the maximum dry density as determined by ASTM D 1557 (Modified Proctor) **to a depth of at least 2 feet below foundation level**. In addition to compaction, the bearing soils must exhibit stability and be free of "pumping" conditions.

9.7 Settlement Estimates

Post-construction settlement of the structure will be influenced by several interrelated factors, such as (1) subsurface stratification and strength/compressibility characteristics of the bearing soils to a depth of approximately twice the width of the footing; (2) footing size, bearing level, applied loads, and resulting bearing pressures beneath the foundation; (3) site preparation and earthwork construction techniques used by the contractor, and (4) external factors, including but not limited to vibration from offsite sources and groundwater fluctuations beyond those normally anticipated for the naturally-occurring site and soil conditions which are present.

Our settlement estimates for the structure are based upon adherence to our recommended site preparation procedures presented in this report. Any deviation from these recommendations could result in an increase in the estimated post-construction settlement of the structures. Furthermore, should building loads change from those assumed by us, greater settlements may be expected.

Due to the sandy nature of the surficial soils, following the compaction operations we expect the majority of settlement to be elastic in nature and occur relatively quickly, on application of the loads, during and immediately following construction. Using the recommended maximum allowable bearing pressure, the assumed maximum structural loads, and the field and laboratory test data which we have correlated into the strength and compressibility characteristics of the subsurface soils, **we estimate the total post-construction vertical settlement of the proposed structure to be on the order of 1 inch or less.**

Differential settlement results from differences in applied bearing pressures and the variations in the compressibility characteristics of the subsurface soils. Assuming our site preparation recommendations are followed, **we anticipate post-construction differential settlement of less than ½ inch.**

9.8 FLOOR SLABS

Conventional floor slabs may be supported upon the compacted fill and should be structurally isolated from other foundation elements or adequately reinforced to prevent distress due to differential movements. For the slab design, we recommend using a subgrade modulus (k) of 100 pounds per cubic inch, which can be achieved by compacting the subgrade soils as recommended in this report. We recommend using a sheet vapor barrier (in accordance with Florida Building Code requirements) beneath the building slab-on-grade to help control moisture migration through the slab.

10.0 PAVEMENT RECOMMENDATIONS

10.1 GENERAL

We assume that the proposed parking and drive areas will consist of a combination of flexible asphaltic and rigid concrete pavement sections with typical light and some heavy duty traffic. Our recommendations for both pavement types are listed in the following sections. The following recommendations are based on the pavement areas being prepared as recommended in this report. no organic material was encountered in the road borings. however if any is found during construction UES should be notified immediately.

10.2 ASPHALTIC PAVEMENTS

10.2.1 Layer Components

At the time of this exploration, specific traffic loading information was not provided to us. We have assumed the following conditions for our recommended minimum pavement design.

- the subgrade soils are prepared as described in the site preparation section of this report
- a twenty (20) year design life
- terminal serviceability index (P_t) of 2.5
- reliability of 90 percent
- total equivalent 18-kip single axle loads (E_{18}SAL) up to 35,000 for light duty pavements - car and pickup truck traffic
- total equivalent 18-kip single axle loads (E_{18}SAL) up to 250,000 for heavy duty pavements – occasional heavy truck traffic (delivery, trash collection, service lanes, etc.)

We recommend using a three-layer pavement section for the proposed asphaltic parking/drive areas consisting of stabilized subgrade, base course, and surface course. Based on the results of our soil borings, the assumed traffic loading information and review of the 2020 FDOT Flexible Pavement Design Manual, our minimum recommended pavement component thicknesses are presented in Table IV on the following page. Where applicable, the local municipality minimum standards should be followed when more stringent than the recommendations herein.

TABLE IV
MINIMUM ASPHALTIC PAVEMENT COMPONENT THICKNESSES

Service Level	Layer Component		
	Surface Course (inches)	Base Course (inches)	Stabilized Subgrade (inches)
Light Duty	1½*	6	12
Heavy Duty	2½	8	12

*Roads which will accommodate heavy truck traffic should be designed as heavy duty

10.2.2 Subgrade

We recommend that the stabilized subgrade materials immediately beneath the base course exhibit a minimum Limerock Bearing Ratio (LBR) of 40 as specified by Florida Department of Transportation (FDOT). The stabilized subgrade should be compacted to at least 98 percent of the Modified Proctor maximum dry density (ASTM D 1557) value.

Stabilized subgrade can be imported materials or a blend of on-site and imported materials. If a blend is proposed, we recommend that the contractor perform a mix design to find the optimum mix proportions.

Compaction testing of the subgrade should be performed to full depth at a frequency of at least one (1) test per 5,000 square feet.

10.2.3 Base Course

Based on the results of our exploration and our experience in the project area, limerock, soil-cement and recycled crushed concrete are suitable base course materials for this project. However, local municipality standards may govern the use of recycled crushed concrete use as an alternative base course material. We recommend the civil engineer consult with the local municipalities prior to selecting the base course material for this project.

For a limerock base, the base course should be compacted to a minimum density of 98 percent of the Modified Proctor maximum dry density and exhibit a minimum LBR of 100. The limerock material should comply with the latest edition of the Florida Department of Transportation (FDOT) Road and Bridge Construction specifications.

For a soil-cement base, we recommend the contractor perform a soil-cement design with a minimum seven (7)-day strength of 300 pounds per square inch (psi) on the materials he intends to use. Place soil-cement in maximum 6-inch lifts uniform and compact in place to a minimum density of 95 percent of the maximum dry density according to specifications in ASTM D-558, "Moisture Density Relations of Soil Cement Mixtures".

Place and finish the soil-cement according to Portland Cement Association requirements. Final review of the soil-cement base course should include manual "chaining" and/or "soundings" seven days after placement. Shrinkage cracks will form in the soil-cement mixture and you should expect reflection cracking on the surface course.

Recycled Concrete Aggregate (RCA) may provide a cost-effective alternative material in lieu of limerock or soil cement base courses. Local availability, along with municipality standards, typically governs the use of crushed concrete use as an alternative base course

material. The advantages of using crushed concrete as a pavement base course include its high strength (stronger than limerock), resistance to groundwater related distress, and lack of reflection cracking caused by thermal expansion and contraction.

If RCA base is used, the base course material should be sourced from an FDOT approved supplier. The base should be compacted to a minimum density of 98 percent of the Modified Proctor maximum dry density and exhibit a minimum LBR of 150. The base material should comply with the latest edition of the FDOT Road and Bridge Construction Specifications.

Compaction testing of the base course should be performed to full depth at a frequency of at least one (1) test per 5,000 square feet,

10.2.4 Surface Course

For the pavements, we recommend that the surfacing consist of FDOT SuperPave (SP) asphaltic concrete. The surface course should consist of FDOT SP-9.5 fine mix for light-duty areas and FDOT SP-12.5 topped with SP-9.5 fine mix for heavy duty areas. The asphalt concrete should be placed within the allowable lift thicknesses for fine Type SP mixes per the latest edition of FDOT, Standard Specifications for Road and Bridge Construction.

The asphaltic concrete should be compacted to an average field density of 93 percent of the laboratory maximum density determined from specific gravity (G_{mm}) methods, with an individual test tolerance of **+2 percent and -1.2% of the design G_{mm}**. Specific requirements for the SuperPave asphaltic concrete structural course are outlined in the latest edition of FDOT, Standard Specifications for Road and Bridge Construction.

Note: If the Designer (or Contract Documents) limits compaction to the static mode only or lifts are placed one-inch thick, then the average field density should be 92 percent, with an individual test tolerance of + 3 percent, and -1.2% of the design G_{mm}.

After placement and field compaction, the wearing surface should be cored to evaluate material thickness and density. Cores should be obtained at frequencies of at least one (1) core per 5,000 square feet of placed pavement, or a minimum of two (2) cores per day's production.

10.2.5 Effects of Groundwater

One of the most critical influences on the pavement performance in Central Florida is the relationship between the pavement base course and the seasonal high groundwater level. Sufficient separation will need to be maintained between the bottom of base course and the anticipated seasonal high groundwater level. We recommend that the seasonal high groundwater and the bottom of the base course be separated by at least 12 inches for RCA and soil-cement base courses, and at least 18 inches for a limerock base course.

The separation should be confirmed by reviewing the final site grading and paving plan. If the separation is not provided by grading, the installation of underdrains will be required.

10.2.6 Landscape Underdrains

In the event that landscape areas adjacent to the pavements include large mounds (>1 foot) of poorly draining organic topsoils or silty/clayey sands, we recommend that landscape drains be provided to protect the roadway against adverse effects from over-irrigation or

excess rainfall. Poorly draining silty and clayey material causes the irrigation and rainwater to perch and migrate laterally into the pavement components, which eventually compromises the integrity of the pavement section.

10.3 CONCRETE "RIGID" PAVEMENTS

Concrete pavement is a rigid pavement that transfers much lighter wheel loads to the subgrade soils than a flexible asphalt pavement; therefore, requiring less subgrade preparation. Concrete pavement is recommended in truck court areas, under the dumpster areas, and 10 feet in front of the trash enclosures, at a minimum.

We recommend using the existing surficial sands or approved structural fill densified to at least 98 percent of Modified Proctor test maximum dry density (ASTM D 1557) without additional stabilization under concrete pavement, with the following stipulations:

1. Prior to placement of concrete, the subgrade soils should be prepared as recommended in The Site Preparation section of this report

2. The surface of the subgrade soils must be smooth, and any disturbances or wheel rutting corrected prior to placement of concrete.

3. The subgrade soils must be moistened prior to placement of concrete.

4. Concrete pavement thickness should be uniform throughout, with exception to the thickened edges (curb or footing).

5. The bottom of the pavement should be separated from the seasonal high groundwater level by at least 12 inches.

Based on the results of our exploration and review of the FDOT Rigid Pavement Design Manual, our recommended minimum concrete pavement design is shown in Table V.

TABLE V
MINIMUM CONCRETE PAVEMENT THICKNESSES

Service Level	Minimum Pavement Thickness	Maximum Control Joint Spacing	Recommended Saw Cut Depth
Light Duty	6 inches	12 feet x 12 feet	2 inches
Heavy Duty	7 inches	14 feet x 14 feet	2⅓ inches

We recommend using concrete with a minimum 28-day compressive strength of at least 4,000 pounds per square inch. Layout of the Saw cut control joints should form square panels, and the depth of saw cut joints should be ⅓ of the concrete slab thickness.

We recommend allowing UES to review and comment on the final concrete pavement design, including section and joint details (type of joints, joint spacing, etc.), prior to the start of construction.

For further details on concrete pavement construction, please reference the "Guide to Jointing of Non-Reinforced Concrete Pavements" published by the Florida Concrete and

Products Association, Inc., and "Building Quality Concrete Parking Areas", published by the Portland Cement Association.

Specimens to verify the compressive strength of the pavement concrete should be obtained for at least every 50 cubic yards, or at least once for each day's placement, whichever is greater.

11.0 SITE PREPARATION

We recommend normal, good practice site preparation procedures for the new construction areas. These procedures include: stripping/clearing of the site to remove existing vegetation, roots, topsoils, organics, debris, utility lines, etc. Following stripping, the exposed subgrade soils should be proof-rolled, and all subgrade and subsequent fill/backfill soils should be properly densified.

A more detailed description of this work is presented in this section.

1. Prior to construction, existing underground utility lines within the construction areas should be located. It should be noted that if underground pipes are not properly removed or plugged, they may serve as conduits for subsurface erosion which may lead to excessive settlement of overlying structures.

2. If necessary, perform any remedial dewatering prior to any earthwork operations. Dewatering should be performed to a depth of at least **2 feet below the bottom of any excavations or compacted surface**.

3. Strip the proposed construction limits of existing vegetation, topsoil, roots, organic soils, debris and other deleterious materials within and 5 feet beyond the perimeter of the new construction areas. Expect clearing and grubbing to depths of **6 to 18 inches**. We strongly recommend that the stripped/excavated surfaces be observed and probed by representatives of UES.

4. Proof-roll the exposed subsurface soils under the observation of UES, to locate any soft areas of unsuitable soils, and to increase the density of the shallow loose fine sand soils. If deemed necessary by UES, in areas that continue to "yield", remove any deleterious materials and replace with a clean, compacted sand backfill.

5. After approval of the stripped surface, within the building areas, compact the upper **2 feet of the exposed subgrade soils** (including the 5 feet margin) to at least 95 percent of the Modified Proctor test maximum dry density (ASTM D 1557).

6. Place fill/backfill as necessary. All fill should consist of clean sand with less than 10 percent soil fines and be free of organics, debris and other deleterious materials. Fill soils containing between 5 and 10 percent fines may require strict moisture control. Place fill in maximum 12-inch loose, uniform lifts and compact each lift at least 95 percent of the Modified Proctor maximum dry density.

7. Within the pavement areas, the upper 12 inches of subgrade beneath the base course or concrete slabs (sub-base) should be stabilized and compacted to at least 98 percent of the Modified Proctor maximum dry density.

8. Test the subgrade and each lift of fill for compaction at a frequency of not less than one test per 2,500 square feet in the building areas and 5,000 square feet of pavement areas, with a minimum of 4 tests in each area.

9. Prior to the placement of reinforcing steel and concrete, verify compaction within the footing trenches to a depth of 2 feet. We recommend testing every column footing and at least one test every 100 feet of wall footing, with a minimum of 4 tests per building. Re-compaction of the foundation excavation bearing level soils, if loosened by the excavation process, can typically be achieved by making several passes with a walk-behind vibratory sled or jumping jack.

Stability of the compacted soils is essential and independent of compaction and density control. If the near surface soils or the structural fill experience "pumping" conditions, terminate all earthwork activities in that area. Pumping conditions occur when there is too much water present in the soil-water matrix. Earthwork activities are actually attempting to compact the water and not the soil. The disturbed soils should be dried in place by scarification and aeration prior to any additional earthwork activities.

Vibrations produced during vibratory compaction operations at the site may be significantly noticeable within 100 feet and may cause distress to adjacent structures if not properly regulated. Provisions should be made to monitor these vibrations so that any necessary modifications in the compaction operations can be made in the field before potential damages occur.

UES can provide vibration monitoring services to help document and evaluate the effects of the surface compaction operation on existing structures. It is recommended that large vibratory rollers remain a minimum of 50 feet from existing structures. Within this zone, the use of a static roller or small hand guided plate compactors is recommended.

12.0 STORMWATER POND DESIGN CONSIDERATIONS

We understand that the project will include One (1) proposed stormwater pond located within the eastern portion of the property. Two (2) SPT borings, designated P-01 & P-02, were completed within the footprint of the proposed pond. Our recommended stormwater design parameters are shown below in Table VI.

TABLE VI
STORMWATER MANAGMENT DESIGN PARAMETERS

Design Parameter	Estimated Average Values	
Relevant Boring Logs	P-01	P-02
Depth to Base of Surficial Aquifer (bls)(ft)	5½	4
Estimated Fillable Porosity of Surficial in-situ sands (percent)	20	20
Estimated Seasonal High Groundwater Level (Feet)	2½	3
Estimated Weighted Horizontal Saturated Hydraulic Conductivity of Surficial Aquifer (feet per day)*	10	10
Estimated Weighted Vertical Unsaturated Hydraulic Conductivity of Surficial Aquifer (feet per day)*	7	7

* unfactored

The estimated depths in Table VI are referenced to the existing ground surface at the time of our exploration. The actual infiltration rates from the stormwater swales may be influenced by pond geometry, natural soil variability, in-situ depositional characteristics and soil density, retention volumes, and groundwater mounding effects. Appropriate factors of safety should be incorporated into the design process. The stormwater pond bottoms and side slopes should be stabilized according to applicable Water Management District and local municipality guidelines.

14.0 DEWATERING AND EXCAVATION CONSIDERATIONS

Depending upon the time of year construction commences and the depth of excavation required, some dewatering may be required for the successful construction of this project. Where excavations will extend only a few feet below the groundwater table, a sump pump may be sufficient to control the groundwater table. Deeper excavations may require well points and/or sock drains to control the groundwater table. Regardless of the method(s) used, we recommend drawing down the water level at least 2 feet below the bottom of the excavation. The actual method(s) of dewatering should be determined by the contractor. The design and discharge of the dewatering system must be performed in accordance with applicable regulatory criteria (i.e. water management district, etc.) and compliance with such criteria is the sole responsibility of the contractor.

Excavations should be sloped as necessary to prevent slope failure and to allow backfilling. As a minimum, temporary excavations below 4-foot depth should be sloped in accordance with OSHA regulations. Where lateral confinement will not permit slopes to be laid back, the excavation should be shored in accordance with OSHA requirements. During excavation, excavated material should not be stockpiled at the top of the slope within a horizontal distance equal to the excavation depth. Provisions for maintaining workman safety within excavations is the sole responsibility of the contractor.

15.0 CONSTRUCTION RELATED SERVICES

We recommend the owner retain UES to provide inspection services during the site preparation procedures for confirmation of the adequacy of the earthwork operations. Field tests and observations include verification of foundation and pavement subgrades by monitoring earthwork operations and performing quality assurance tests of the placement of compacted structural fill courses.

The geotechnical engineering design does not end with the advertisement of the construction documents. The design is an on-going process throughout construction. Because of our familiarity with the site conditions and the intent of the engineering design, we are most qualified to address site problems or construction changes, which may arise during construction, in a timely and cost-effective manner.

16.0 LIMITATIONS

This report has been prepared for the exclusive use of *P & P Buildcon LLC,* and other designated members of their design/construction team associated with the proposed construction for the specific project discussed in this report. No other site or project facilities should be designed using the soil information contained in this report. As such, UES will not be responsible for the performance of any other site improvement designed using the data in this report.

This report should not be relied upon for final design recommendations or professional opinions by unauthorized third parties without the expressed written consent of UES. Unauthorized third parties that rely upon the information contained herein without the expressed written consent of Universal Engineering Sciences, LLC assume all risk and liability for such reliance. The recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated on the Boring Location Plan and from other information as referenced.

This report does not reflect any variations which may occur between the boring locations. The nature and extent of such variations may not become evident until the course of construction. If variations become evident, it will then be necessary for a re-evaluation of the recommendations of this report after performing on-site observations during the construction period and noting the characteristics of the variations.

Borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, UES does not recommend relying on our boring information for estimation of material quantities unless our contracted services ***specifically*** include sufficient exploration for such purpose(s) and within the report we so state that the level of exploration provided should be sufficient to detect anomalous conditions or estimate such quantities. Therefore, UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.

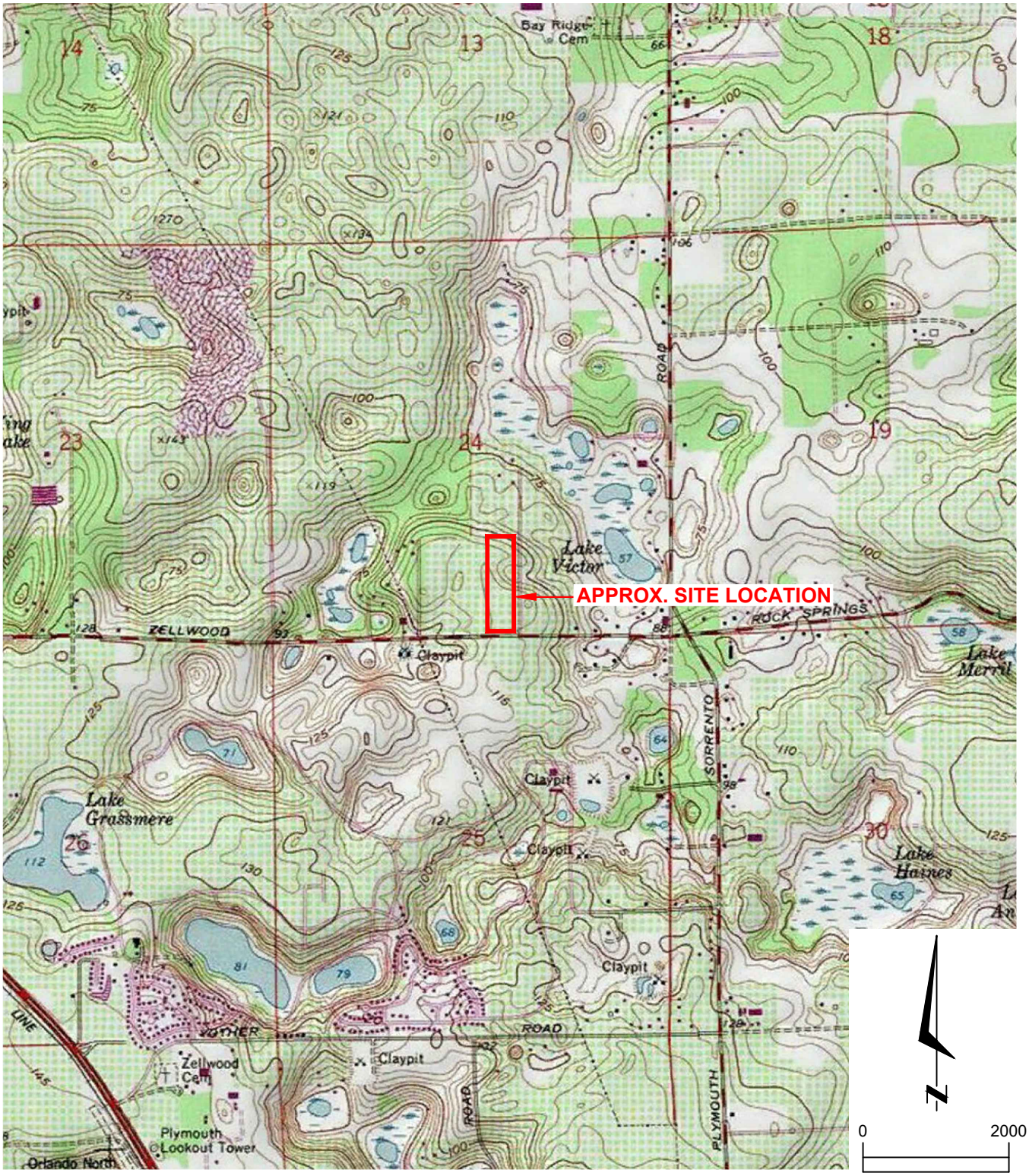
All users of this report are cautioned that there was no requirement for UES to attempt to locate any man-made buried objects or identify any other potentially hazardous conditions that may exist at the site during the course of this exploration. Therefore, no attempt was made by UES to locate or identify such concerns. UES cannot be responsible for any buried man-made objects or environmental hazards which may be subsequently encountered during construction that are not discussed within the text of this report. We can provide this service if requested.

During the early stages of most construction projects, geotechnical issues not addressed in this report may arise. Because of the natural limitations inherent in working with the subsurface, it is not possible for a geotechnical engineer to predict and address all possible problems. A Geotechnical Business Council (GBC), "Important Information About Your Geotechnical Engineering Report" appears in Appendix C, and will help explain the nature of geotechnical issues.

Further, we present documents in Appendix C: Constraints and Restrictions, to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

• • • • • • • • • •

APPENDIX A



SOURCE: USGS QUADRANGLE MAP OF "APOPKA, FLORIDA".

UES

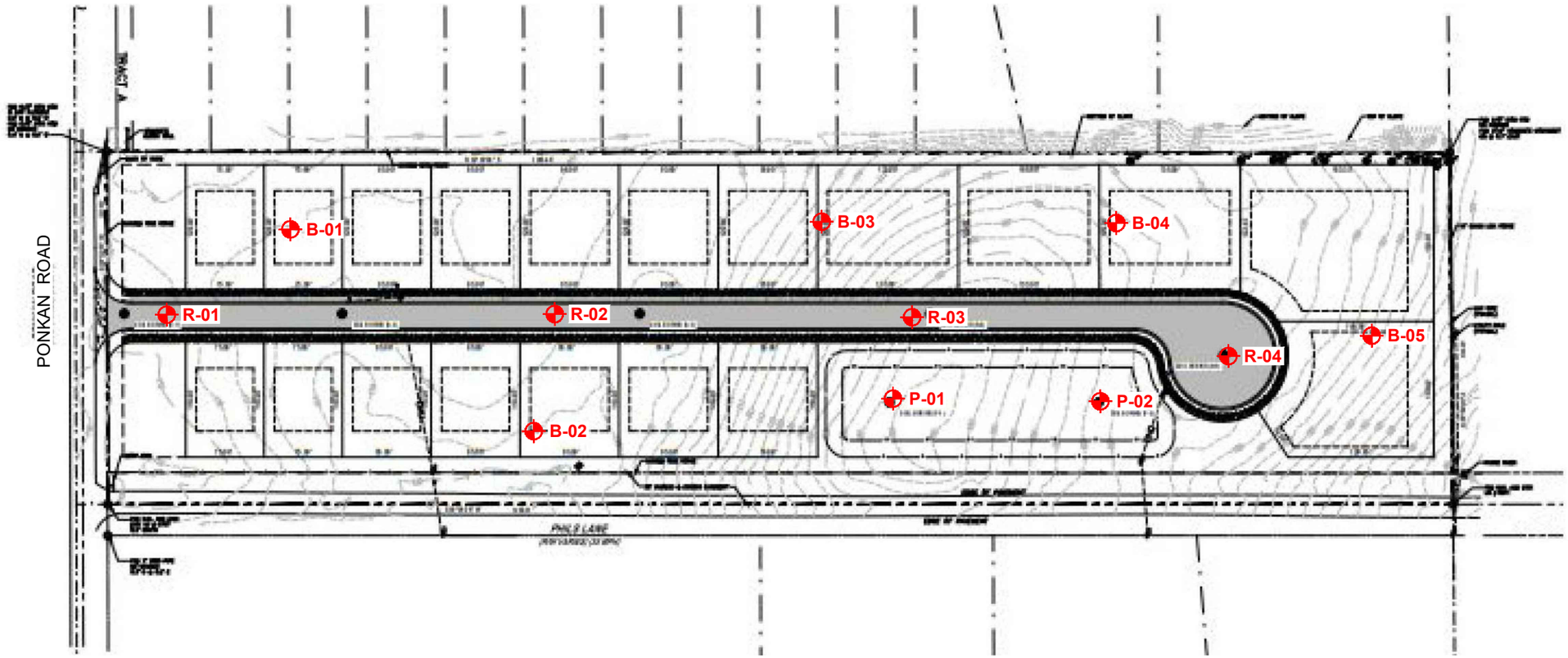
GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

U.S.G.S. SITE LOCATION MAP

DRAWN BY:	R.K.S.	DATE:	5 - 9 - 23	CHECKED BY:	L.S.	DATE:	5 - 9 - 23
SCALE:	AS SHOWN	PROJECT NO:	0130.2300140.0000	REPORT NO:	2019982	PAGE NO:	A-1

23-0354-01

APPENDIX B



0 120

SCALE (FT.)

LEGEND

APPROX. STANDARD PENETRATION TEST BORING LOCATION (SPT)

BORINGS PERFORMED 5/2/23 & 5/3/23

THIS DRAWING CREATED USING PLAN PROVIDED BY CLIENT.

23-0354-01

FOR: P & P BUILDCON, LLC

DRAWN BY:	R.K.S.	DATE:	5 - 9 - 23
CHECKED BY:	L.S.	DATE:	5 - 9 - 23
REPORT NO:	2019982	SCALE:	AS SHOWN
PROJECT NO:	0130.2300140.0000		

GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

SOIL BORING LOCATION PLAN

UES

PAGE NO: B-1

UES
BORING LOG

PROJECT NO.:	0130.2300140.0000
REPORT NO.:	2019982
PAGE:	B-2.1

PROJECT: GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

BORING I.D.: **B-01** SHEET: **1 of 1**
SECTION: 24 TOWNSHIP: 20 S RANGE: 27 E

CLIENT: P&P BUILDCON, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED, N.E. = NOT ENCOUNTERED, * = PERCHED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): N.E.
DATE OF READING: 5/2/23
EST. SHGWT (ft): 6.5*

DATE STARTED: 5/2/23
DATE FINISHED: 5/2/23
DRILLED BY: UESGEO - CM/CA
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Dark gray fine SAND [SP]						
						-- loose, dark gray light gray						
		2-3-3-6	6									
						-- very loose, light gray						
		2-2-2-4	4									
5		1-1-2-3	3									
				▽		Medium dense light gray with gray tan fine SAND with clay [SP-SC]						
		2-4-8-12	12									
						Dense orange tan clayey fine SAND [SC]						
		9-13-19	32									
		18-20-21	41									
10												
15		11-17-24	41									
20		16-19-23	42			BORING TERMINATED AT 20.0 FT.						
25												

W-12789.GPJ

UES
BORING LOG

PROJECT NO.:	0130.2300140.0000
REPORT NO.:	2019982
PAGE:	B-2.2

PROJECT: GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

BORING I.D.: **B-02** SHEET: **1 of 1**
SECTION: 24 TOWNSHIP: 20 S RANGE: 27 E

CLIENT: P&P BUILDCON, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED, N.E. = NOT ENCOUNTERED, * = PERCHED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): N.E.
DATE OF READING: 5/2/23
EST. SHGWT (ft): 12.5*

DATE STARTED: 5/2/23
DATE FINISHED: 5/2/23
DRILLED BY: UESGEO - CM/CA
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Very loose gray light gray fine SAND [SP]						
		2-2-2	4									
						-- light gray						
		2-2-2	4									
5		1-1-2	3									
		2-2-2	4									
						-- loose						
		2-2-4	6			-- medium dense, with gray tan						
		2-4-7	11									
10				▽								
						Dense orange tan clayey fine SAND [SC]						
15		10-14-18	32									
						-- with pink color						
		15-18-21	39									
20						BORING TERMINATED AT 20.0 FT.						
25												

W-12789.GPJ

UES
BORING LOG

PROJECT NO.:	0130.2300140.0000
REPORT NO.:	2019982
PAGE:	B-2.3

PROJECT: GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

BORING I.D.: **B-03** SHEET: **1 of 1**
SECTION: 24 TOWNSHIP: 20 S RANGE: 27 E

CLIENT: P&P BUILDCON, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED, N.E. = NOT ENCOUNTERED, * = PERCHED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): N.E.
DATE OF READING: 5/2/23
EST. SHGWT (ft): 13*

DATE STARTED: 5/2/23
DATE FINISHED: 5/2/23
DRILLED BY: UESGEO - CM/CA
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Very loose gray fine SAND [SP]						
		1-2-2	4			-- loose, light gray						
		2-3-3	6									
5		2-1-2	3			-- very loose						
		2-2-3	5			-- loose	2	3				
		2-3-3	6									
		5-9-8	17			Medium dense light gray with tan orange fine SAND with clay [SP-SC]						
10				▽								
		10-14-17	31			Dense orange tan clayey fine SAND [SC]						
15						-- tan orange						
		15-18-21	39									
20						BORING TERMINATED AT 20.0 FT.						
25												

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BORING LOG

PROJECT NO.:	0130.2300140.0000
REPORT NO.:	2019982
PAGE:	B-2.4

PROJECT: GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

BORING I.D.: **B-04** SHEET: **1 of 1**
SECTION: 24 TOWNSHIP: 20 S RANGE: 27 E

CLIENT: P&P BUILDCON, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED, N.E. = NOT ENCOUNTERED, * = PERCHED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): N.E.
DATE OF READING: 5/3/23
EST. SHGWT (ft): 6.5*

DATE STARTED: 5/3/23
DATE FINISHED: 5/3/23
DRILLED BY: UESGEO - CM/CA
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Very loose gray fine SAND [SP]						
		2-2-2	4			-- loose, light gray						
		2-2-3	5			-- with roots						
5		2-2-3	5									
		5-8-9	17	▽		Medium dense light gray with gray tan fine SAND with clay [SP-SC]	11	5				
		10-11-15	26			Medium dense gray tan clayey fine SAND [SC]						
10		9-10-13	23									
						-- tan gray						
15		6-8-8	16									
						-- gray tan						
20		7-9-11	20			BORING TERMINATED AT 20.0 FT.						
25												

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BORING LOG

PROJECT NO.:	0130.2300140.0000
REPORT NO.:	2019982
PAGE:	B-2.5

PROJECT: GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

BORING I.D.: **B-05** SHEET: **1 of 1**
SECTION: 24 TOWNSHIP: 20 S RANGE: 27 E

CLIENT: P&P BUILDCON, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED, N.E. = NOT ENCOUNTERED, * = PERCHED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): N.E.
DATE OF READING: 5/3/23
EST. SHGWT (ft): 8*

DATE STARTED: 5/3/23
DATE FINISHED: 5/3/23
DRILLED BY: UESGEO - CM/CA
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Dark gray fine SAND [SP]						
						-- loose, dark gray to gray, with roots						
		2-2-3	5			-- gray						
		2-3-4	7			-- very loose, light gray						
5		1-1-1	2									
		1-2-3	5			-- loose						
		2-3-4	7	▽								
		17-9-10	19			Medium dense orange clayey fine SAND [SC]						
10												
						-- gray tan						
15		8-7-8	15									
						-- gray						
20		7-9-9	18			BORING TERMINATED AT 20.0 FT.						
25												

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UES
BORING LOG

PROJECT NO.:	0130.2300140.0000
REPORT NO.:	2019982
PAGE:	B-2.6

PROJECT: GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

BORING I.D.: **P-01** SHEET: **1 of 1**
SECTION: 24 TOWNSHIP: 20 S RANGE: 27 E

CLIENT: P&P BUILDCON, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED, N.E. = NOT ENCOUNTERED, * = PERCHED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): N.E.
DATE OF READING: 5/3/23
EST. SHGWT (ft): 5*

DATE STARTED: 5/3/23
DATE FINISHED: 5/3/23
DRILLED BY: UESGEO - CM/CA
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Dark gray fine SAND [SP]						
						-- loose, dark gray to gray						
		3-3-3	6									
						-- gray						
		3-3-4	7				7	3				
						Loose gray with gray tan fine SAND with clay [SP-SC]						
5				▽								
		3-3-4	7			Medium dense orange clayey fine SAND [SC]						
		6-11-11	22									
		7-9-12	21				35	17				
10		8-11-14	25									
15		6-7-7	14									
20		5-6-7	13									
25		6-7-9	16									
						BORING TERMINATED AT 25.0 FT.						

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UES
BORING LOG

PROJECT NO.:	0130.2300140.0000
REPORT NO.:	2019982
PAGE:	B-2.7

PROJECT: GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

BORING I.D.: **P-02** SHEET: **1 of 1**
SECTION: 24 TOWNSHIP: 20 S RANGE: 27 E

CLIENT: P&P BUILDCON, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED, N.E. = NOT ENCOUNTERED, * = PERCHED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): N.E.
DATE OF READING: 5/3/23
EST. SHGWT (ft): 3.5*

DATE STARTED: 5/3/23
DATE FINISHED: 5/3/23
DRILLED BY: UESGEO - CM/CA
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Loose gray fine SAND [SP]						
		2-3-3	6									
						Medium dense gray with gray tan fine SAND with clay [SP-SC]						
		3-9-13	22	▽			7	3				
						Dense gray tan clayey fine SAND [SC]						
5		11-14-19	33			-- tan gray						
		17-18-21	39									
		19-22-20	42				27	11				
						-- medium dense, gray red						
10		10-12-15	27									
						-- gray tan						
15		8-9-11	20									
20		6-8-7	15									
25		7-9-9	18									
						BORING TERMINATED AT 25.0 FT.						

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UES
BORING LOG

PROJECT NO.:	0130.2300140.0000
REPORT NO.:	2019982
PAGE:	B-2.8

PROJECT: GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

BORING I.D.: **R-01** SHEET: **1 of 1**
SECTION: 24 TOWNSHIP: 20 S RANGE: 27 E

CLIENT: P&P BUILDCON, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED, N.E. = NOT ENCOUNTERED, * = PERCHED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): N.E.
DATE OF READING: 5/2/23
EST. SHGWT (ft): 6.5*

DATE STARTED: 5/2/23
DATE FINISHED: 5/2/23
DRILLED BY: UESGEO - CM/CA
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Very loose gray fine SAND [SP]						
		1-2-1	3									
		1-1-2	3			-- loose, light gray						
5		1-2-3	5			Medium dense orange tan fine SAND with clay [SP-SC]						
		3-7-13	20	▽		Dense orange tan clayey fine SAND [SC]						
		16-20-23	43									
10		14-18-18	36			BORING TERMINATED AT 10.0 FT.						
15												
20												
25												

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UES
BORING LOG

PROJECT NO.:	0130.2300140.0000
REPORT NO.:	2019982
PAGE:	B-2.9

PROJECT: GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

BORING I.D.: **R-02** SHEET: **1 of 1**
SECTION: 24 TOWNSHIP: 20 S RANGE: 27 E

CLIENT: P&P BUILDCON, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED, N.E. = NOT ENCOUNTERED, * = PERCHED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): N.E.
DATE OF READING: 5/2/23
EST. SHGWT (ft): 8*

DATE STARTED: 5/2/23
DATE FINISHED: 5/2/23
DRILLED BY: UESGEO - CM/CA
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Loose gray fine SAND with roots [SP]						
		2-2-3	5									
		3-3-3	6			-- light gray, no roots						
5		2-2-3	5									
		2-3-4	7			Loose light gray with tan gray fine SAND with clay [SP-SC]						
		2-4-6	10	▽		Medium dense orange tan clayey fine SAND [SC]						
10		8-11-13	24			BORING TERMINATED AT 10.0 FT.						
15												
20												
25												

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UES
BORING LOG

PROJECT NO.:	0130.2300140.0000
REPORT NO.:	2019982
PAGE:	B-2.10

PROJECT: GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

BORING I.D.: **R-03** SHEET: **1 of 1**
SECTION: 24 TOWNSHIP: 20 S RANGE: 27 E

CLIENT: P&P BUILDCON, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED, N.E. = NOT ENCOUNTERED, * = PERCHED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): N.E.
DATE OF READING: 5/2/23
EST. SHGWT (ft): 3.5*

DATE STARTED: 5/2/23
DATE FINISHED: 5/2/23
DRILLED BY: UESGEO - CM/CA
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Dark gray fine SAND [SP]						
		2-3-3	6			-- loose, dark gray to light gray						
						-- medium dense, light gray						
		4-6-6	12	▽								
						Medium dense orange tan clayey fine SAND [SC]						
5		4-6-11	17									
		10-10-12	22									
		11-11-10	21									
		10-12-11	23									
10						BORING TERMINATED AT 10.0 FT.						
15												
20												
25												

W-12789.GPJ

UES
BORING LOG

PROJECT NO.:	0130.2300140.0000
REPORT NO.:	2019982
PAGE:	B-2.11

PROJECT: GEOTECHNICAL EXPLORATION
PONKAN OAK MANOR
APOPKA, ORANGE COUNTY, FLORIDA

BORING I.D.: **R-04** SHEET: **1 of 1**
SECTION: 24 TOWNSHIP: 20 S RANGE: 27 E

CLIENT: P&P BUILDCON, LLC
LOCATION: SEE BORING LOCATION PLAN
REMARKS: SHGWT = SEASONAL HIGH GROUNDWATER TABLE, N.S. = NOT SURVEYED, N.E. = NOT ENCOUNTERED

G.S. ELEVATION (ft): N.S.
WATER TABLE (ft): N.E.
DATE OF READING: 5/3/23
EST. SHGWT (ft): 10

DATE STARTED: 5/3/23
DATE FINISHED: 5/3/23
DRILLED BY: UESGEO - CM/CA
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N BLOWS / FT	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT/ DAY)	ORG. CONT. (%)
0						Very loose gray fine SAND [SP]						
		2-1-2	3									
		2-2-2	4			-- light gray						
5		2-2-2	4									
						-- loose						
		2-2-3	5			Loose orange tan fine SAND with clay [SP-SC]						
		2-2-3	5									
						-- medium dense						
10		5-6-9	15	▽		BORING TERMINATED AT 10.0 FT.						
15												
20												
25												

W-12789.GPJ

KEY TO BORING LOGS

SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION
N-Value	No. of Blows of a 140-lb. Weight Falling 30 Inches Required to Drive a Standard Spoon 1 Foot
WOR	Weight of Drill Rods
WOH	Weight of Drill Rods and Hammer
	Sample from Auger Cuttings
	Standard Penetration Test Sample
	Thin-wall Shelby Tube Sample (Undisturbed Sampler Used)
RQD	Rock Quality Designation
	Stabilized Groundwater Level
	Seasonal High Groundwater Level (also referred to as the W.S.W.T.)
NE	Not Encountered
GNE	Groundwater Not Encountered
BT	Boring Terminated
-200 (%)	Fines Content or % Passing No. 200 Sieve
MC (%)	Moisture Content
LL	Liquid Limit (Atterberg Limits Test)
PI	Plasticity Index (Atterberg Limits Test)
NP	Non-Plastic (Atterberg Limits Test)
K	Coefficient of Permeability
Org. Cont.	Organic Content
G.S. Elevation	Ground Surface Elevation

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% retained on the No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels and gravel-sand-silt mixtures
			GC	Clayey gravels and gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS 5% or less passing No. 200 sieve	SW**	Well-graded sands and gravelly sands, little or no fines
			SP**	Poorly graded sands and gravelly sands, little or no fines
		SANDS with 12% or more passing No. 200 sieve	SM**	Silty sands, sand-silt mixtures
			SC**	Clayey sands, sand-clay mixtures
FINE-GRAINED SIOLS 50% or more passes the No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diamicaceous fine sands or silts, elastic silts
			CH	Inorganic clays or clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
			PT	Peat, muck and other highly organic soils

*Based on the material passing the 3-inch (75 mm) sieve
** Use dual symbol (such as SP-SM and SP-SC) for soils with more than 5% but less than 12% passing the No. 200 sieve

RELATIVE DENSITY
(Sands and Gravels)
Very loose – Less than 4 Blow/Foot
Loose – 4 to 10 Blows/Foot
Medium Dense – 11 to 30 Blows/Foot
Dense – 31 to 50 Blows/Foot
Very Dense – More than 50 Blows/Foot

CONSISTENCY
(Silts and Clays)
Very Soft – Less than 2 Blows/Foot
Soft – 2 to 4 Blows/Foot
Firm – 5 to 8 Blows/Foot
Stiff – 9 to 15 Blows/Foot
Very Stiff – 16 to 30 Blows/Foot
Hard – More than 30 Blows/Foot

RELATIVE HARDNESS
(Limestone)
Soft – 100 Blows for more than 2 Inches
Hard – 100 Blows for less than 2 Inches

MODIFIERS

These modifiers Provide Our Estimate of the Amount of Minor Constituents (Silt or Clay Size Particles) in the Soil Sample
Trace – 5% or less
With Silt or With Clay – 6% to 11%
Silty or Clayey – 12% to 30%
Very Silty or Very Clayey – 31% to 50%

These Modifiers Provide Our Estimate of the Amount of Organic Components in the Soil Sample
Trace – Less than 3%
Few – 3% to 4%
Some – 5% to 8%
Many – Greater than 8%

These Modifiers Provide Our Estimate of the Amount of Other Components (Shell, Gravel, Etc.) in the Soil Sample
Trace – 5% or less
Few – 6% to 12%
Some – 13% to 30%
Many – 31% to 50%

APPENDIX C

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

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CONSTRAINTS & RESTRICTIONS

The intent of this document is to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.

STORMWATER REPORT

PONKAN OAK MANOR

3405 W PONKAN ROAD
APOPKA, FL 32712

JUNE 2023

Civil Engineering—Transportation—CEI
1230 North US Highway 1, Suite 3
Ormond Beach, FL 32174
(386) 872-7794
www.Newkirk-Engineering.com

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Newkirk Engineering Inc., a corporation authorized as an engineering business, Certificate of Authorization No. 30209, by the State of Florida, Department of Professional Regulation and Board of Professional Engineers. I have reviewed or approved the evaluation, findings, opinions, and conclusions as reported for:

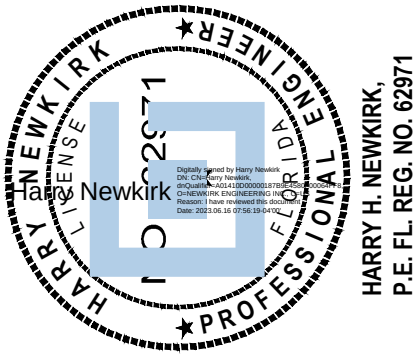
Project: **"PONKAN OAK MANOR"**

Location: **4305 W PONKAN ROAD,**
APOPKA, FL 32712

Client: **P&P BUILDCON LLC**

I acknowledge that the procedures and references used to develop the results are standard to the professional practice of civil engineering as applied through design standards and criteria set forth by the federal, state and local regulatory agencies as well as professional judgment and experience.

This report has been digitally signed and sealed by Harry Newkirk, PE #62971 on



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

Name: Harry Newkirk,
PE License No: 62971
Address: 1230 North US Highway 1
Suite 3
Ormond Beach, FL 32174

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5	Pre-Development Flood Routing Model
5	Post-Development Flood Routing Model
6	Tailwater Considerations
6	Erosion and Sediment Control
6	Assumptions and References Used
7	Conclusion

Appendix A Maps

- Aerial Location Map
- Site Location Map
- Soils Map
- FIRM Map

Appendix B Pre-Development Calculations

Appendix C Post-Development Calculations

Appendix D Stormwater Recovery

Appendix E BMP Analysis

Appendix F Pipe Sizing Calculations

INTRODUCTION

The project proposes the development of a 19-lot single family residential subdivision with improvements consisting of paving, grading, utilities, and a stormwater management facility. The proposed development is located on a 9.956-acre parcel in Apopka, Florida, Section 24, Township 20 S, Range 27 E. The project is located at the northwest corner of the Phils Lane and West Ponkan Road intersection. See **Appendix A** for site location and aerial map.

Stormwater management is provided by a proposed dry retention pond routed to the northeast corner of the property, matching the existing flow pattern from the parcel. The dry retention pond is designed to hold the runoff from all storm events to prevent discharge to adjacent properties and roadways. Stormwater calculations are designed for a drainage basin of 9.956 acres with 4.540 acres of impervious surface.

EXISTING CONDITIONS

Land Coverage

The existing site is an undeveloped, cleared parcel with a zoning classification of RSF-1B (Residential Single-Family Large-Lot), See Aerial Location map in **Appendix A**.

Topography

Elevations undulate between EL 121.0 and EL 92.0 across the site. Site runoff discharges to three respective locations along Phils Lane. The site naturally sheet flows from west to east with the lowest outfall location being at the northeast property corner. See **Appendix B,** Pre-Development Basin Map.

Flood Zone

The property is located within Zone "X", per FEMA Map Panel No. 12095C0125 H dated September 24, 2021. See FEMA FIRM map in **Appendix A**.

Soils

To the best of my knowledge, the soils on site will drain/percolate according to the assumptions made in the drainage calculations. See **Appendix A** for Soils Map. Assumptions are based on normal season conditions for the site. According to the Orange County Soil Survey, the soils consist of the following:

(4) Candler Fine Sands, 0-5% slopes, Hydrologic Group = A

(5) Candler Fine Sands, 0-12% slopes, Hydrologic Group = A

Geotechnical Report provided by Universal Engineering Sciences, Report No. 24-5828.

PROPOSED PROJECT

The subject site is a 9.956-acre residential development with paving, grading, drainage, and utility improvements. The stormwater system provides water quality (treatment volume) for a 9.956-acre drainage basin with 4.540 acres of impervious surface. The required treatment volume for the site is 1.977 Ac-Ft and 2.340 Ac-Ft is provided. The stormwater discharge from the site is captured by a series of inlets which convey the runoff to the dry retention pond. In consideration of the site being in a closed basin, the pond was designed to produce no discharge in any of the design storm events. The retention area uses an emergency overflow control structure (CS-01) set above the 100-year 24-hour peak stage elevation for discharge in unprecedented storm events. The system is designed to recover the provided treatment volume through soil percolation within 72 hours.

POSITIVE OUTFALL

The proposed stormwater system is designed to impound all site runoff without discharge and recover through soil percolation. Positive outfall from the project site is provided through the grate of a Type 'E' emergency control structure to the lowest outfall point along Phils Lane. In the event that a storm event reaches peak stages higher than the 100-year, 24-hour peak stage, the runoff will discharge to the north along the western swale of Phils Lane.

STORMWATER MANAGEMENT

A. SJRWMD

For dry retention, the design treatment volume is the greater of one 0.5-inch of runoff from the drainage area or 1.25-inch of runoff from the impervious area. An additional 0.5-inch was added to the required treatment volume for an on-line system. Due to the project site being within the Wekiva Recharge area, 3" of runoff over the site impervious was accounted for in the treatment calculations. This basin of special concern also requires that the pond is made capable of holding the volumetric difference of the 25-year, 96-hour storm event in the pre vs. post conditions. The required treatment volume also provides a net improvement for nitrogen and phosphorus removal since the project is located within an impaired area. The proposed treatment volume for the site is governed by the volumetric difference of the 25-year, 96-hour event requirements (largest treatment volume required). Water Quality volume recovery in the dry retention pond is attained by recovering the provided treatment volume in 72 hours.

The design storms are the Mean Annual,10-year 24-hour, 25-year 24-hour, 25-year 96-hour, and 100-year 24-hour storm events utilizing SCSIII-24 FLMOD/SJRWMD96 rainfall distribution. During the design storms the post-development peak discharge rate cannot exceed the pre-development peak discharge rate. The system shall be designed to provide for the appropriate treatment volume of stormwater runoff throughout the required storm events.

The system is designed to meet the requirements of SJRWMD and the City of Apopka.

PRE-DEVELOPMENT FLOOD ROUTING MODEL

The site pre-development condition consists of three drainage basins with a pervious CN of 32.00 and no impervious surface. The PRE-1 drainage basin consists of the southern portion of the site and is linked directly to the outfall with all discharge sheet flowing to Phils Lane. The PRE-2 drainage basin captures all runoff from the center of the site and flows to an on-site depression which is modeled as PRE-DEPRESSION. When the runoff stages to EL 104.10 the stormwater then discharges over a natural berm PRE-BERM and outfalls to Phils Lane. The PRE-3 basin consists of the northern portion of the site and outfalls directly to Phils Lane. The pre-development basins are modeled as hydrographs and discharge to the node "OFF-PHILS" via sheet and overland flow with respective times of concentration.

POST-DEVELOPMENT FLOOD ROUTING MODEL

The site post development drainage Basin (POST) represents the contributing area for the stormwater system and includes all site improvements. POST is 2.20 acres with 49.8% of impervious area, 35.3% of DCIA, and a pervious CN of 36.00 and a time of concentration of 15 minutes. The pond utilizes a percolation link due to the type A soils on site to model the recovery of stormwater throughout the storm events. The percolation link is modeled with a link to the Aquifer which is represented as a time/stage node (AQ).

POST drains to Node (RET) via inlet catchment and pipe conveyance. The retention system (RET) is linked directly to the outfall (OFF) through the emergency control structure (CS-01), which is set above the 100-year storm event to eliminate discharge.

TAILWATER CONSIDERATIONS

Tailwater for the pre-development and post development conditions is set at EL 102 which is the lowest point along Phils Lane where the stormwater can sheet flow and discharge from the property. The project site maintains outfall through a Type 'E' emergency control structure that directly links the retention pond and the outfall location along Phils Lane.

EROSION AND SEDIMENT CONTROL PLANS

All pervious surfaces will be planted with trees, shrubs and sodded solid to prevent erosion. All inlets will have a 1-foot sump to trap sediments/fines. All pond slopes and other pervious areas of the property will be sodded solid or seeded and mulched to prevent erosion. A temporary gravel construction entrance will be provided to prevent fines and sands from leaving the site and contaminating adjacent roadways. Silt fence will be installed around the entire site and around inlets during construction to retain sediment on-site and assure that any discharges from the site do not cause or contribute to a violation of state water quality standards.

ASSUMPTIONS AND REFERENCES USED

A. S.C.S. Unit Hydrograph Method
B. FLMOD Rainfall Distribution
C. ICPR 4.07.08 Analysis Software
D. ECS Florida, LLC Geotechnical Report
E. Other references and assumptions listed in the drainage calculations.

CONCLUSION

Calculations indicate that the proposed stormwater treatment system meets the requirements for pollution abatement volume per St. Johns River Water Management District, Florida Department of Environmental Protection, and the City of Apopka Land Development Code. All stormwater runoff is directed into the stormwater treatment system by the conveyance of pavement grades to a series of inlets. The dry retention pond is capable of holding the runoff from all required storm events without discharge. The dry retention system is designed to recover the provided treatment volume in 70 hours through soil percolation.

PERMITTED RUNOFF			NODE: OFF-PHILS	
Design Storm		Rainfall (inches)	Inflow Rate (cfs)	Inflow Volume (ft^3)
Mean Annual, 24-Hour	PRE	4.30	0.00	1
10 Year, 24-Hour	PRE	6.70	0.19	5,162
25 Year, 24-hour	PRE	8.60	1.40	15,136
25 Year, 96-Hour	PRE	12.00	10.33	42,348
100 Year, 24-Hour	PRE	11.80	5.56	40,639

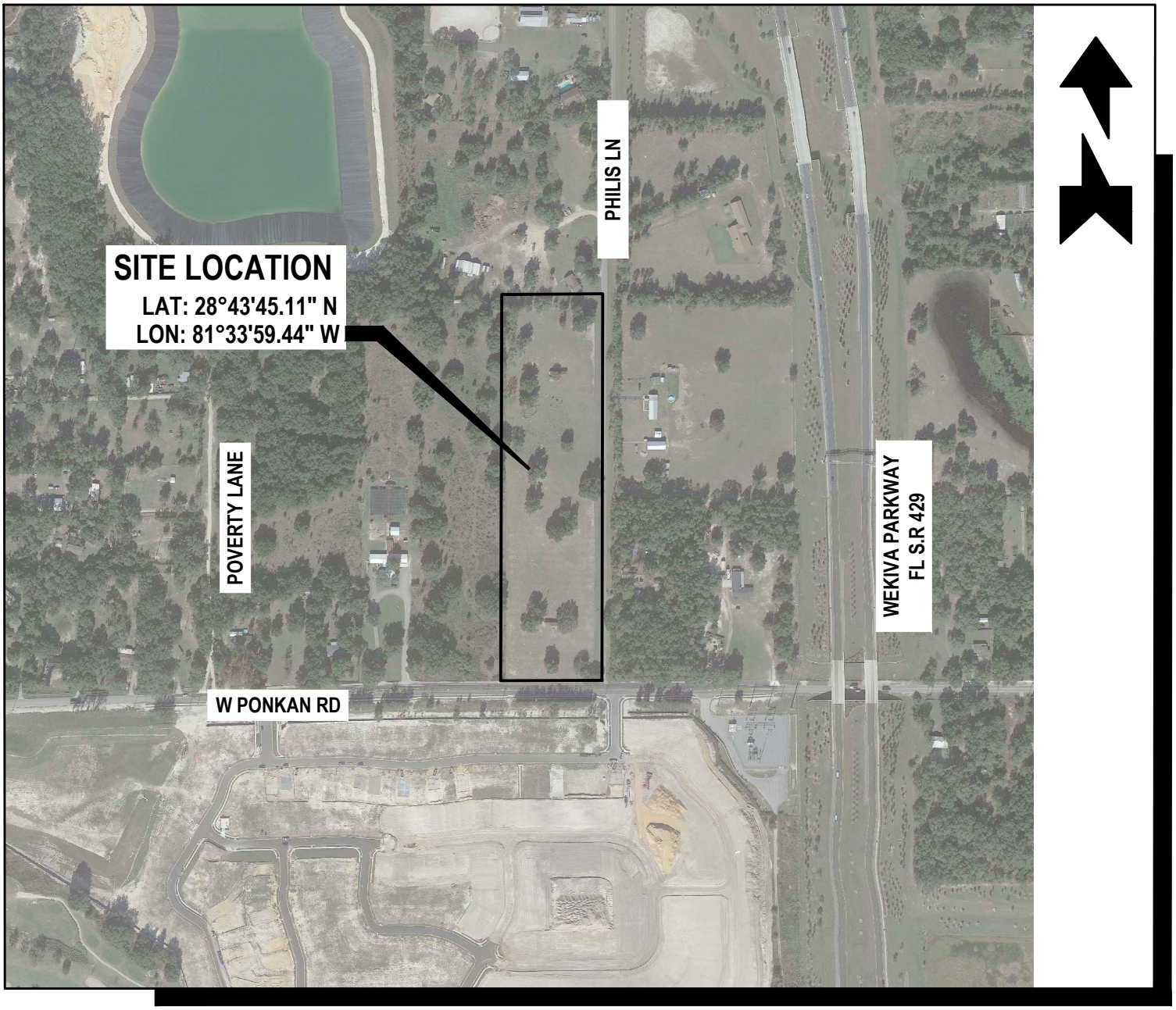
PROPOSED - DISCHARGE			NODE: OFF-PHILS		STAGE
Design Storm		Rainfall (inches)	Inflow Rate (cfs)	Inflow Volume (ft^3)	RET
Mean Annual, 24-Hour	POST	4.30	0.00	0	102.01
10 Year, 24-Hour	POST	6.70	0.00	0	102.93
25 Year, 24-hour	POST	8.60	0.00	0	104.37
25 Year, 96-Hour	POST	12.00	0.00	0	106.19
100 Year, 24-Hour	POST	11.80	0.00	0	106.69
				TOB	107.00

RECOVERY		
	UNITS	**DRY POND**
TREATMENT VOL.	CF	101,917
TREATMENT EL	FT	106.75
RECOVERY TIME	HRS	70

See Appendix B – D

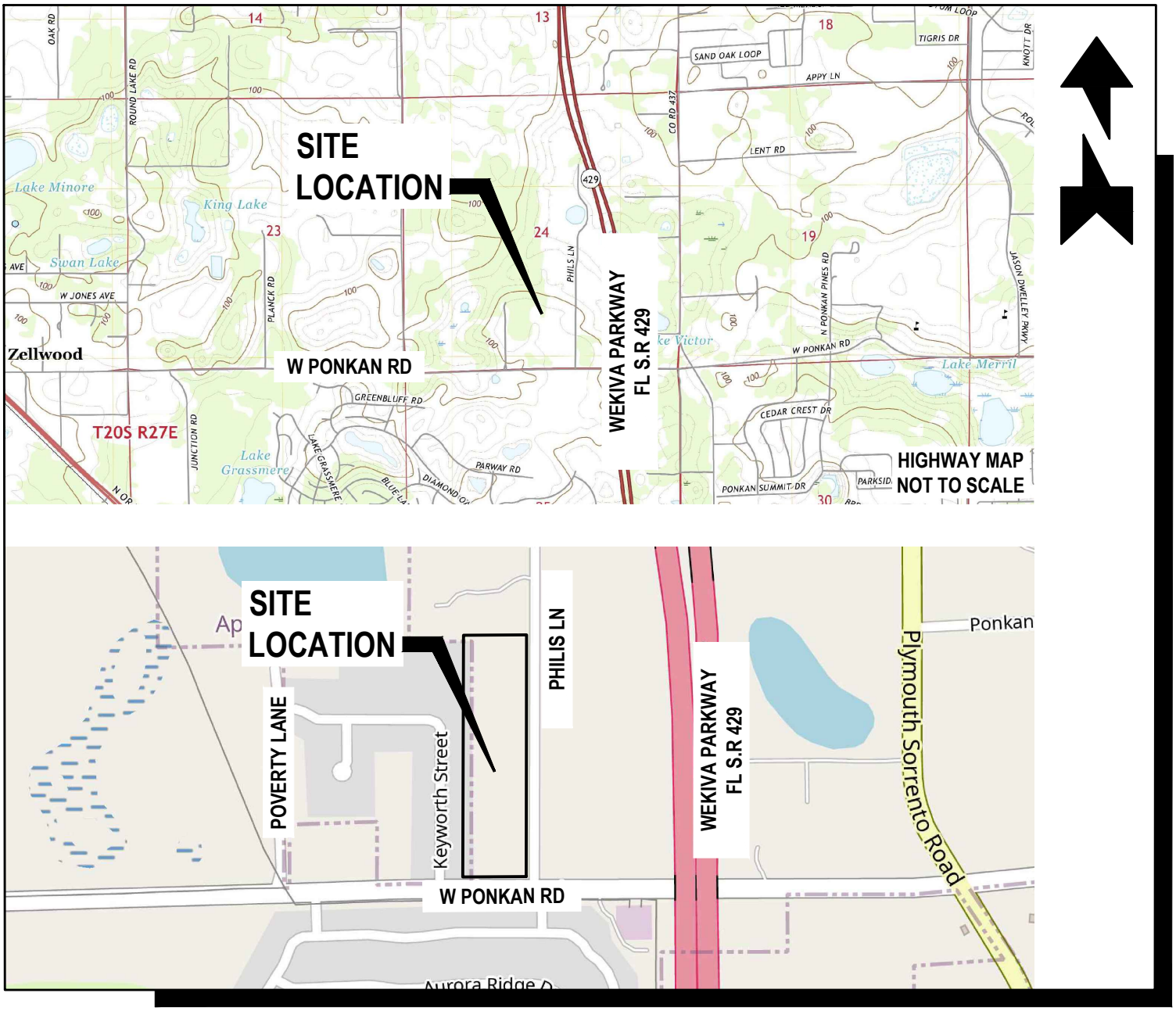
APPENDIX A

MAPS



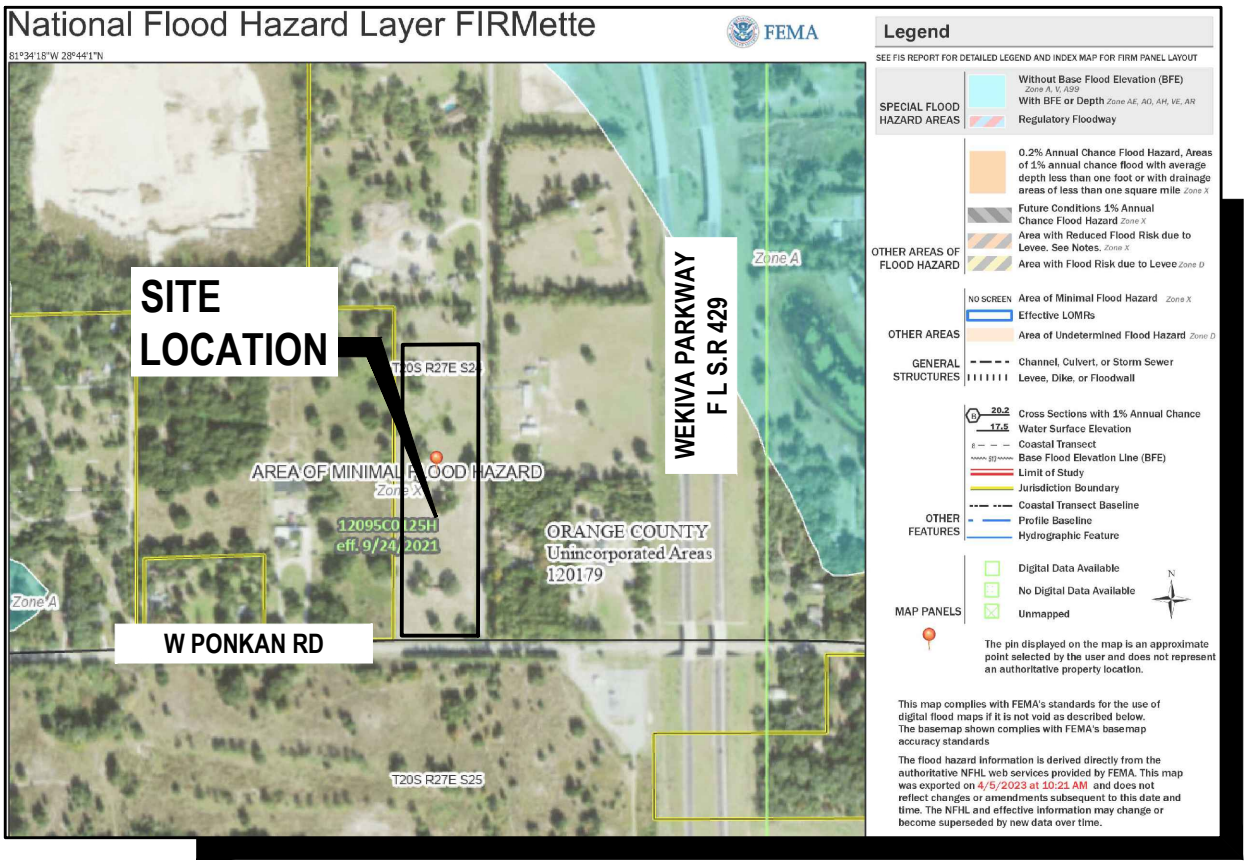
AERIAL MAP

SCALE: 1" = 500'



LOCATION MAP

SCALE: 1" = 800'

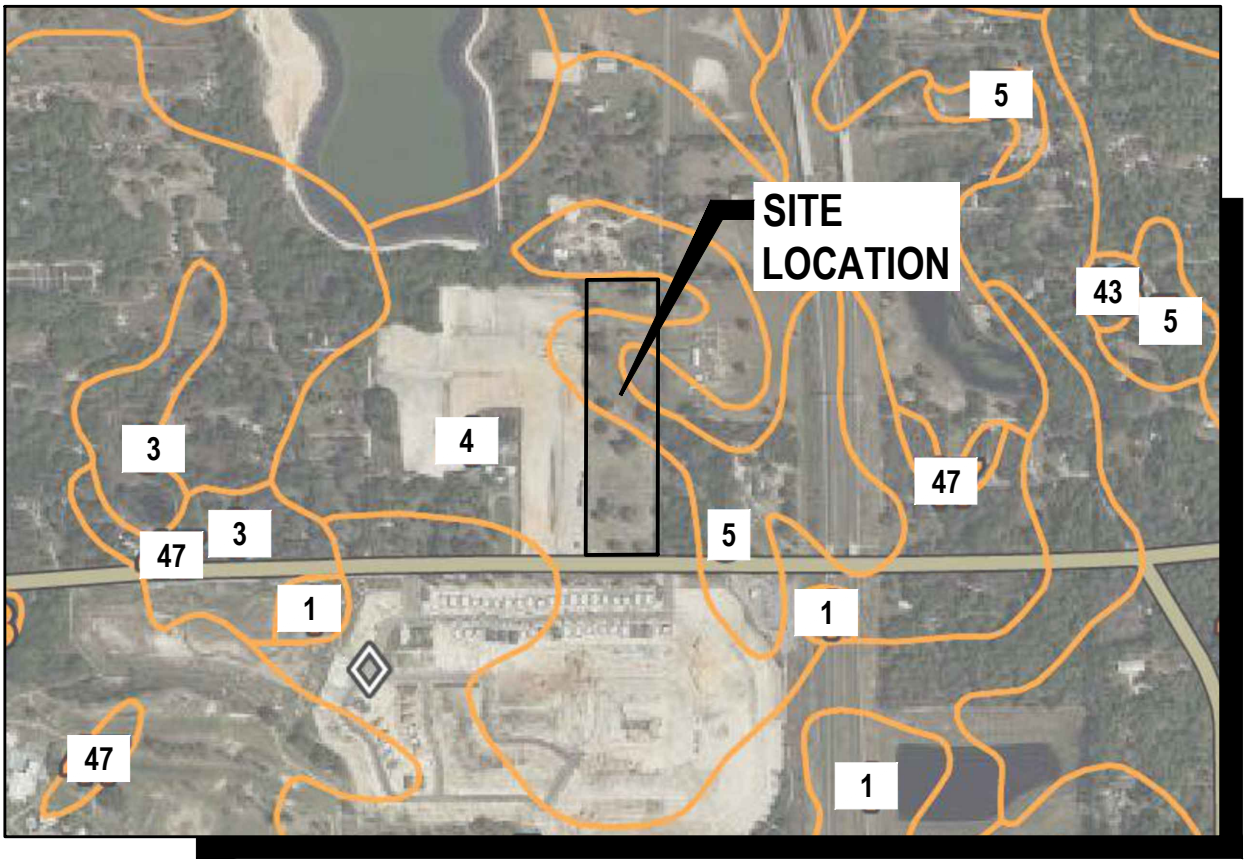


FLOOD ZONE MAP

FLOOD ZONE "X"

SCALE: 1" = 850'

PANEL NO. 12095C0125 H, EFF. 9/24/2021



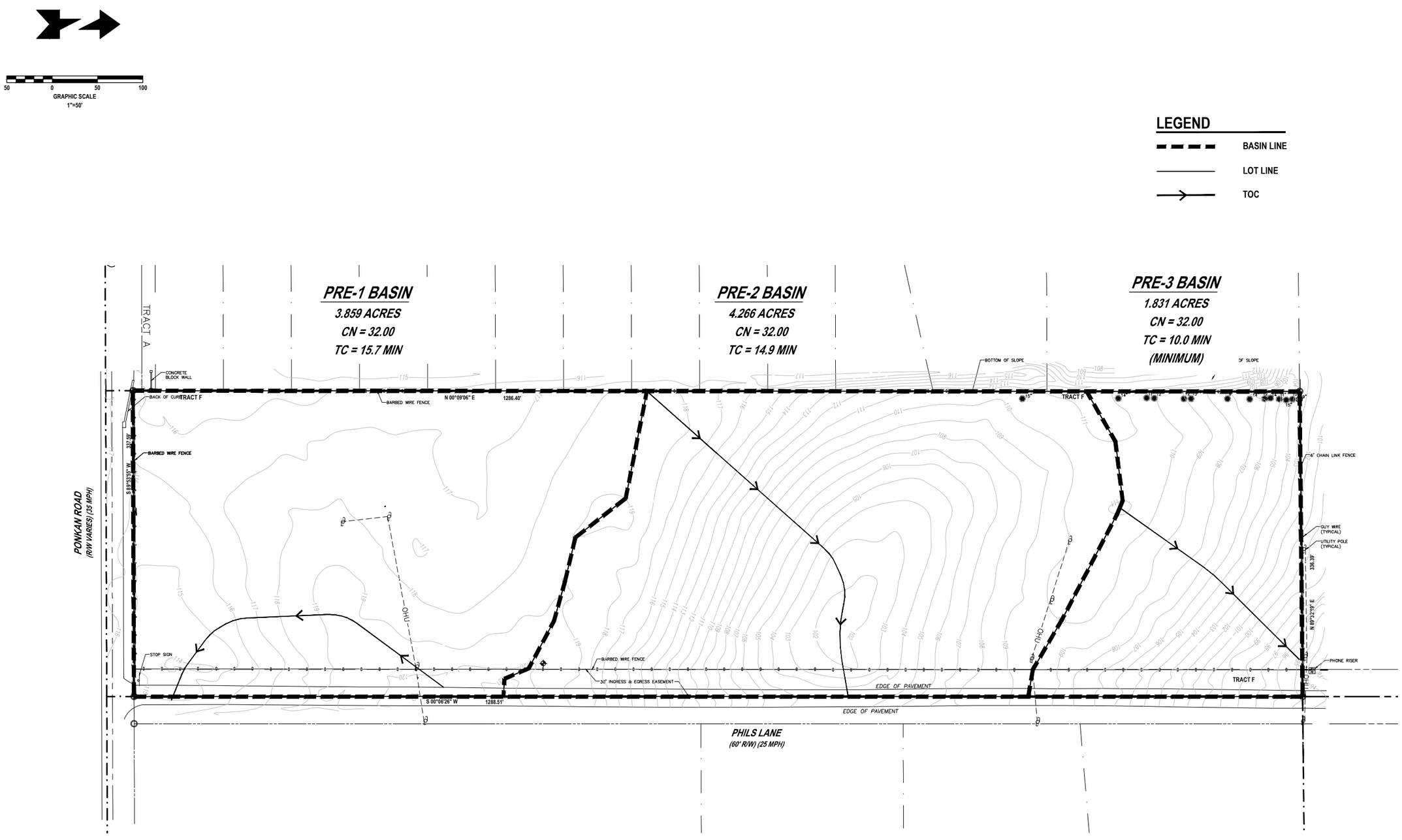
SOILS MAP

SOIL TYPES: (4) CANDLER FINE SAND, 0 TO 5 PERCENT SLOPES
(5) CANDLER FINE SAND, 5 TO 12 PERCENT SLOPES

SCALE: 1" = 900'

APPENDIX B

PRE-DEVELOPMENT CALCULATIONS



REVISIONS	
DATE	DESCRIPTION

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C.A. # 30209
L.C. # 26000384
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Civil Engineering,
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NEWKIRK ENGINEERING INC.

PRE DEVELOPMENT BASIN MAP

PONKAN OAK MANOR

3405 W PONKAN ROAD
APOPKA, FLORIDA 32712

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THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY HARRY NEWKIRK, PE # 62971 ON

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PROJECT No:	2023-30
DATE:	APRIL 2023
DESIGN BY:	HHN
DRAWN BY:	BWD
CHECKED BY:	HHN
SCALE:	1" = 50'

DRAWING NUMBER

PRE

NEWKIRK ENGINEERING, INC.
CIVIL ENGINEERING - TRANSPORTATION - CEI - LANDSCAPE ARCHITECTURE
1230 N US HWY 1, SUITE 3, ORMOND BEACH, FLORIDA 32174 386-872-7794

PRE-DEVELOPMENT HYDROGRAPH WORKSHEET

BASIN NAME	BASIN ACRES	PERVIOUS		IMPERVIOUS		WET POND NWL		WETLAND		COMPOSITE CN
		ACRES	CN	ACRES	CN	ACRES	CN	ACRES	CN	
PRE-1	3.859	3.859	32.00		98.0		100.0		93.0	32.00
PRE-2	4.266	4.266	32.00		98.0		100.0		93.0	32.00
PRE-3	1.831	1.831	32.00		98.0		100.0		93.0	32.00
TOTAL	9.956	9.956	32.00		98.0		100.0		93.0	32.00

PRE-DEVELOPMENT						
BASIN NAME	SOIL TYPE	DESCRIPTION	CONDITION	HYDRAULIC GROUP	AREA (AC)	CN
PRE-1	4 CANDLER FINE SAND, 0 TO 5% SLOPES	WOODS-GRASS	GOOD	A	3.859	32
				TOTAL	3.859	32.00

SOURCES: SCS SOILS SURVEY FOR SEMINOLE COUNTY, FLORIDA
SCS TR 55, Agricultural Lands, Woods

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PRE-DEVELOPMENT

TIME OF CONCENTRATION CALCULATIONS

BASIN: PRE-1

Sheet Flow

Tt = Travel time (min)				
s = slope	s =	0.01300	ft/ft	$s = \frac{EL_2 - EL_1}{L}$
L = Flow length (ft)	L =	100	ft	
n = Manning's Roughness Coefficien	n =	0.24	Grass, Dense	
P2 = 2-year/24-hour rainfall (in)	P2 =	5	in	
	EL 2 =	120.70	Upsteam Invert	
	EL 1 =	119.40	Downstream Invert	
	Tt =	**13.6**	**min**	$Tt = \frac{(.0007(nL)^{0.8}(60))}{(\sqrt{P2} * s^{0.4})}$

Overland Flow

Tt = Travel time (min)				
s = slope	s =	0.01752	ft/ft	
L = Flow length (ft)	L =	274	ft	$V_{Paved} = 20.3282s^{.5}$
V = Velocity (ft/s)	V =	2.14	ft/s Unpaved	
	EL 2 =	119.40	Upsteam Invert	
	EL 1 =	114.60	Downstream Invert	
	Tt =	**2.1**	**min**	$Tt = \frac{L}{60V}$

Open Channel Flow

Tt = Travel time (min)				
s = slope (ft/ft)	s =		ft/ft	
L = Flow length (ft)	L =	0	ft	
n = Manning's Roughness Coefficien	n =	0	0	
a = Area	a =	0	sf	
p = Wetted perimeter	p =	0	ft	
R = Hydraulic radius (a/p)	R =	0.00	ft	
V = Velocity (ft/s)	V =	0.00	ft/s	$V = \frac{1.486\, R^{\frac{2}{3}} s^{.5}}{n}$
	EL 2 =	0.0	Upsteam Invert	
	EL 1 =	0.0	Downstream Invert	
	Tt =	**0.0**	**min**	$Tt = \frac{L}{60V}$
	Tc =	**15.7**	**min**	

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BASIN: PRE-2

Sheet Flow

Tt = Travel time (min)				
s = slope	s =	0.01400	ft/ft	$s = \frac{EL_2 - EL_1}{L}$
L = Flow length (ft)	L =	100	ft	
n = Manning's Roughness Coefficient	n =	0.24	Grass, Dense	
P2 = 2-year/24-hour rainfall (in)	P2 =	5	in	
	EL 2 =	118.60	Upsteam Invert	
	EL 1 =	117.20	Downstream Invert	
	Tt =	**13.2**	**min**	$Tt = \frac{(.0007(nL)^{0.8}(60))}{(\sqrt{P2} * s^{0.4})}$

Overland Flow

Tt = Travel time (min)				
s = slope	s =	0.03886	ft/ft	$V_{Paved} = 20.3282s^{.5}$
L = Flow length (ft)	L =	332	ft	$V_{Unpaved} = 16.1345s^{.5}$
V = Velocity (ft/s)	V =	3.18	ft/s Unpaved	
	EL 2 =	117.20	Upsteam Invert	
	EL 1 =	104.30	Downstream Invert	
	Tt =	**1.7**	**min**	$Tt = \frac{L}{60V}$

Open Channel Flow

Tt = Travel time (min)				$V = \frac{1.486\, R^{\frac{2}{3}} s^{.5}}{n}$
s = slope (ft/ft)	s =		ft/ft	
L = Flow length (ft)	L =	0	ft	
n = Manning's Roughness Coefficient	n =	0	0	
a = Area	a =	0	sf	
p = Wetted perimeter	p =	0	ft	
R = Hydraulic radius (a/p)	R =		ft	
V = Velocity (ft/s)	V =	0.00	ft/s	
	EL 2 =	0.0	Upsteam Invert	
	EL 1 =	0.0	Downstream Invert	
	Tt =	**0.0**	**min**	$Tt = \frac{L}{60V}$
	Tc =	**14.9**	**min**	

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BASIN: B-3

Sheet Flow

Tt = Travel time (min)				
s = slope	s =	0.04000	ft/ft	$s = \frac{EL_2 - EL_1}{L}$
L = Flow length (ft)	L =	100	ft	
n = Manning's Roughness Coefficient	n =	0.24	Grass, Dense	
P2 = 2-year/24-hour rainfall (in)	P2 =	5	in	
	EL 2 =	111.60	Upsteam Invert	
	EL 1 =	107.60	Downstream Invert	
	Tt =	**8.7**	**min**	$Tt = \frac{(.0007(nL)^{0.8}(60))}{(\sqrt{P2} * s^{0.4})}$

Overland Flow

Tt = Travel time (min)				
s = slope	s =	0.08125	ft/ft	$V_{Paved} = 20.3282s^{.5}$
L = Flow length (ft)	L =	160	ft	$V_{Unpaved} = 16.1345s^{.5}$
V = Velocity (ft/s)	V =	4.60	ft/s Unpaved	
	EL 2 =	107.60	Upsteam Invert	
	EL 1 =	94.60	Downstream Invert	
	Tt =	**0.6**	**min**	$Tt = \frac{L}{60V}$

Open Channel Flow

Tt = Travel time (min)				
s = slope (ft/ft)	s =		ft/ft	
L = Flow length (ft)	L =	0	ft	
n = Manning's Roughness Coefficient	n =	0	0	
a = Area	a =	0	sf	
p = Wetted perimeter	p =	0	ft	
R = Hydraulic radius (a/p)	R =		ft	
V = Velocity (ft/s)	V =	0.00	ft/s	$V = \frac{1.486\, R^{\frac{2}{3}} s^{.5}}{n}$
	EL 2 =	0.0	Upsteam Invert	
	EL 1 =	0.0	Downstream Invert	
	Tt =	**0.0**	**min**	$Tt = \frac{L}{60V}$
	Tc =	**9.2**	**min**	

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POND BORING ANALYSIS

Boring	Boring Top Elevation (ft)	Depth to Water (ft)	Depth to SHGWT (ft)	Seasonal High Water Elevation (ft)
R-01	115.2	N.E.	6.5	108.7
R-02	118.0	N.E.	8.0	110.0
R-03	103.5	N.E.	3.5	100.0
R-04	110.0	N.E.	10.0	100.0
B-01	117.0	N.E.	6.5	110.5
B-02	119.0	N.E.	12.5	106.5
B-03	113.5	N.E.	13.0	100.5
B-04	108.5	N.E.	6.5	102.0
B-05	105.1	N.E.	8.0	97.1
P-01	102.0	N.E.	5.0	97.0
P-02	107.5	N.E.	3.5	104.0
Site Average	110.8	N.E.	7.5	103.3
Pond Average	105.8	N.E.	5.8	100.0

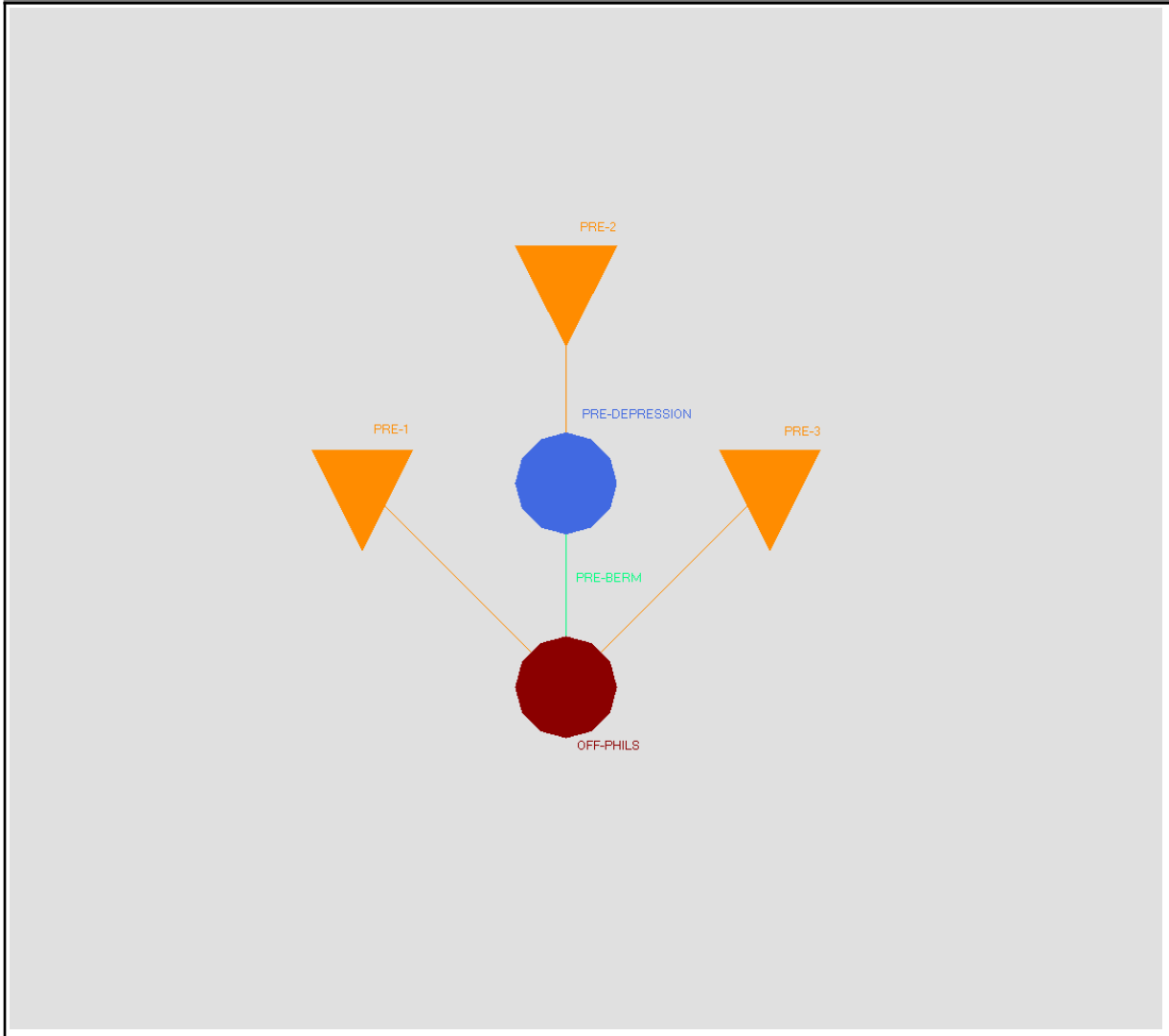
* N.E. = Not Encountered

* SHGWT EL set at 92.00 due to overexcavation of clay layer beneath pond bottom

Test Location	Vertical Percolation (ft/day)	Horizontal Percolation (ft/day)	Aquifer Base (EL)
P-01	30.00	10.00	104.90
P-02	30.00	10.00	108.70
Average	30.00	10.00	106.8
FOS = 2	15.00	5.00	

Soil Porosity 20%

Background Image: PRE



Simple Basin: PRE-1

Scenario:	Scenario1
Node:	OFF-PHILS
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	15.7000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH323
Peaking Factor:	323.0
Area:	3.8590 ac

Curve Number: 32.0
% Impervious: 0.00
% DCIA: 0.00
% Direct: 0.00
Rainfall Name:

Comment:

Simple Basin Runoff Summary [Scenario1]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
PRE-1	01_MA_24H	0.00	24.0167	4.30	0.00	3.8590	32.0	0.00	0.00
PRE-1	02_10Y_24H	0.12	12.8667	6.70	0.25	3.8590	32.0	0.00	0.00
PRE-1	03_25Y_24H	0.90	12.3667	8.60	0.73	3.8590	32.0	0.00	0.00
PRE-1	04_25Y_96H	6.57	15.1667	12.00	2.04	3.8590	32.0	0.00	0.00
PRE-1	05_100Y_24H	3.58	12.1667	11.80	1.97	3.8590	32.0	0.00	0.00

Simple Basin Mass Balance Summary [Scenario1]

Basin Name	Sim Name	Total Rainfall	Total Irrigation	Total Runoff	Total ET	Total Initial Abst	Total Recharge	Change Soil Storage
PRE-1 [in]	01_MA_24H	4.30	0.00	0.00	0.00	0.00	0.00	4.30
PRE-1 [ft3]	01_MA_24H	60235	0	1	0	0	0	60234
PRE-1 [ac-ft]	01_MA_24H	1.38	0.00	0.00	0.00	0.00	0.00	1.38
PRE-1 [in]	02_10Y_24H	6.70	0.00	0.25	0.00	0.00	0.00	6.45
PRE-1 [ft3]	02_10Y_24H	93855	0	3494	0	0	0	90361
PRE-1 [ac-ft]	02_10Y_24H	2.15	0.00	0.08	0.00	0.00	0.00	2.07
PRE-1 [in]	03_25Y_24H	8.60	0.00	0.73	0.00	0.00	0.00	7.87
PRE-1 [ft3]	03_25Y_24H	120470	0	10250	0	0	0	110220
PRE-1 [ac-ft]	03_25Y_24H	2.77	0.00	0.24	0.00	0.00	0.00	2.53
PRE-1 [in]	04_25Y_96H	12.00	0.00	2.04	0.00	0.00	0.00	9.96
PRE-1 [ft3]	04_25Y_96	168098	0	28633	0	0	0	139465

Basin Name	Sim Name	Total Rainfall	Total Irrigation	Total Runoff	Total ET	Total Initial Abst	Total Recharge	Change Soil Storage
	H							
PRE-1 [ac-ft]	04_25Y_96H	3.86	0.00	0.66	0.00	0.00	0.00	3.20
PRE-1 [in]	05_100Y_24H	11.80	0.00	1.97	0.00	0.00	0.00	9.83
PRE-1 [ft3]	05_100Y_24H	165296	0	27529	0	0	0	137768
PRE-1 [ac-ft]	05_100Y_24H	3.79	0.00	0.63	0.00	0.00	0.00	3.16

Simple Basin: PRE-2

Scenario:	Scenario1
Node:	PRE-DEPRESSION
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	14.9000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH323
Peaking Factor:	323.0
Area:	4.2660 ac
Curve Number:	32.0
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin Runoff Summary [Scenario1]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
PRE-2	01_MA_24H	0.00	24.0167	4.30	0.00	4.2660	32.0	0.00	0.00
PRE-2	02_10Y_24H	0.14	12.8500	6.70	0.25	4.2660	32.0	0.00	0.00
PRE-2	03_25Y_24H	1.02	12.3500	8.60	0.73	4.2660	32.0	0.00	0.00
PRE-2	04_25Y_96H	7.55	15.1500	12.00	2.05	4.2660	32.0	0.00	0.00
PRE-2	05_100Y_24H	4.06	12.1500	11.80	1.97	4.2660	32.0	0.00	0.00

Simple Basin Mass Balance Summary [Scenario1]

Basin Name	Sim Name	Total Rainfall	Total Irrigation	Total Runoff	Total ET	Total Initial Abst	Total Recharge	Change Soil Storage
PRE-2 [in]	01_MA_24H	4.30	0.00	0.00	0.00	0.00	0.00	4.30
PRE-2 [ft3]	01_MA_24H	66588	0	1	0	0	0	66587
PRE-2 [ac-ft]	01_MA_24H	1.53	0.00	0.00	0.00	0.00	0.00	1.53
PRE-2 [in]	02_10Y_24H	6.70	0.00	0.25	0.00	0.00	0.00	6.45
PRE-2 [ft3]	02_10Y_24H	103753	0	3869	0	0	0	99884
PRE-2 [ac-ft]	02_10Y_24H	2.38	0.00	0.09	0.00	0.00	0.00	2.29
PRE-2 [in]	03_25Y_24H	8.60	0.00	0.73	0.00	0.00	0.00	7.87
PRE-2 [ft3]	03_25Y_24H	133176	0	11347	0	0	0	121829
PRE-2 [ac-ft]	03_25Y_24H	3.06	0.00	0.26	0.00	0.00	0.00	2.80
PRE-2 [in]	04_25Y_96H	12.00	0.00	2.05	0.00	0.00	0.00	9.95
PRE-2 [ft3]	04_25Y_96H	185827	0	31701	0	0	0	154126
PRE-2 [ac-ft]	04_25Y_96H	4.27	0.00	0.73	0.00	0.00	0.00	3.54
PRE-2 [in]	05_100Y_24H	11.80	0.00	1.97	0.00	0.00	0.00	9.83
PRE-2 [ft3]	05_100Y_24H	182730	0	30469	0	0	0	152261
PRE-2 [ac-ft]	05_100Y_24H	4.19	0.00	0.70	0.00	0.00	0.00	3.50

Simple Basin: PRE-3

Scenario:	Scenario1
Node:	OFF-PHILS
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH323
Peaking Factor:	323.0
Area:	1.8310 ac
Curve Number:	32.0
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00

Rainfall Name:

Comment:

Simple Basin Runoff Summary [Scenario1]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
PRE-3	01_MA_24H	0.00	24.0167	4.30	0.00	1.8310	32.0	0.00	0.00
PRE-3	02_10Y_24H	0.07	12.5667	6.70	0.25	1.8310	32.0	0.00	0.00
PRE-3	03_25Y_24H	0.51	12.3000	8.60	0.74	1.8310	32.0	0.00	0.00
PRE-3	04_25Y_96H	4.26	15.0833	12.00	2.06	1.8310	32.0	0.00	0.00
PRE-3	05_100Y_24H	2.11	12.0667	11.80	1.97	1.8310	32.0	0.00	0.00

Simple Basin Mass Balance Summary [Scenario1]

Basin Name	Sim Name	Total Rainfall	Total Irrigation	Total Runoff	Total ET	Total Initial Abst	Total Recharge	Change Soil Storage
PRE-3 [in]	01_MA_24H	4.30	0.00	0.00	0.00	0.00	0.00	4.30
PRE-3 [ft3]	01_MA_24H	28580	0	1	0	0	0	28580
PRE-3 [ac-ft]	01_MA_24H	0.66	0.00	0.00	0.00	0.00	0.00	0.66
PRE-3 [in]	02_10Y_24H	6.70	0.00	0.25	0.00	0.00	0.00	6.45
PRE-3 [ft3]	02_10Y_24H	44532	0	1670	0	0	0	42862
PRE-3 [ac-ft]	02_10Y_24H	1.02	0.00	0.04	0.00	0.00	0.00	0.98
PRE-3 [in]	03_25Y_24H	8.60	0.00	0.74	0.00	0.00	0.00	7.86
PRE-3 [ft3]	03_25Y_24H	57160	0	4889	0	0	0	52271
PRE-3 [ac-ft]	03_25Y_24H	1.31	0.00	0.11	0.00	0.00	0.00	1.20
PRE-3 [in]	04_25Y_96H	12.00	0.00	2.06	0.00	0.00	0.00	9.94
PRE-3 [ft3]	04_25Y_96H	79758	0	13671	0	0	0	66087
PRE-3 [ac-ft]	04_25Y_96H	1.83	0.00	0.31	0.00	0.00	0.00	1.52
PRE-3 [in]	05_100Y_2	11.80	0.00	1.97	0.00	0.00	0.00	9.83

Basin Name	Sim Name	Total Rainfall	Total Irrigation	Total Runoff	Total ET	Total Initial Abst	Total Recharge	Change Soil Storage
	4H							
PRE-3 [ft3]	05_100Y_24H	78429	0	13114	0	0	0	65315
PRE-3 [ac-ft]	05_100Y_24H	1.80	0.00	0.30	0.00	0.00	0.00	1.50

Node: OFF-PHILS

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 102.00 ft
Warning Stage: 102.00 ft
Boundary Stage:

Comment:

Node Max Conditions [Scenario1]

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]
OFF-PHILS	01_MA_24H	102.00	102.00	0.0000	0.00	0.00	0
OFF-PHILS	02_10Y_24H	102.00	102.00	0.0000	0.19	0.00	0
OFF-PHILS	03_25Y_24H	102.00	102.00	0.0000	1.39	0.00	0
OFF-PHILS	04_25Y_96H	102.00	102.00	0.0000	10.30	0.00	0
OFF-PHILS	05_100Y_24H	102.00	102.00	0.0000	5.53	0.00	0

Node Mass Balance Condensed [Scenario1]

Node Name	Sim Name	Total Inflow [ft3]	Total Outflow [ft3]	Stored Volume (Flow Based) [ft3]
OFF-PHILS	01_MA_24H	1	0	1
OFF-PHILS	02_10Y_24H	5160	0	5160
OFF-PHILS	03_25Y_24H	15132	0	15132
OFF-PHILS	04_25Y_96H	42335	0	42335
OFF-PHILS	05_100Y_24H	40631	0	40631

Node: PRE-DEPRESSION

Scenario: Scenario1

Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 102.00 ft
Warning Stage: 104.00 ft

Stage [ft]	Area [ac]	Area [ft2]
102.00	0.0890	3877
103.00	0.3090	13460
104.00	0.5600	24394

Comment:

Node Max Conditions [Scenario1]

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-DEPRESSION	01_MA_24H	104.00	102.00	0.0000	0.00	0.00	3879
PRE-DEPRESSION	02_10Y_24H	104.00	102.58	0.0010	0.14	0.00	9442
PRE-DEPRESSION	03_25Y_24H	104.00	103.18	0.0010	1.02	0.00	15481
PRE-DEPRESSION	04_25Y_96H	104.00	104.17	0.0010	7.55	0.08	24394
PRE-DEPRESSION	05_100Y_24H	104.00	104.12	0.0010	4.06	0.00	24394

Node Mass Balance Condensed [Scenario1]

Node Name	Sim Name	Total Inflow [ft3]	Total Outflow [ft3]	Stored Volume (Flow Based) [ft3]
PRE-DEPRESSION	01_MA_24H	1	0	1
PRE-DEPRESSION	02_10Y_24H	3866	0	3866
PRE-DEPRESSION	03_25Y_24H	11342	0	11342
PRE-DEPRESSION	04_25Y_96H	31685	53	31632
PRE-DEPRESSION	05_100Y_24H	30460	0	30460

Weir Link: PRE-BERM

Scenario: Scenario1
From Node: PRE-DEPRESSION
To Node: OFF-PHILS
Link Count: 1
Flow Direction: Both

Bottom Clip
Default: 0.00 ft
Op Table:
Ref Node:
Top Clip

Damping:	0.0000 ft		
Weir Type:	Broad Crested Vertical	Default:	0.00 ft
Geometry Type:	Irregular	Op Table:	
Invert:	104.10 ft	Ref Node:	
Control Elevation:	104.10 ft	Discharge Coefficients	
Cross Section:	PRE-WEIR	Weir Default:	2.800
		Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Comment:

Weir Cross Section: PRE-WEIR

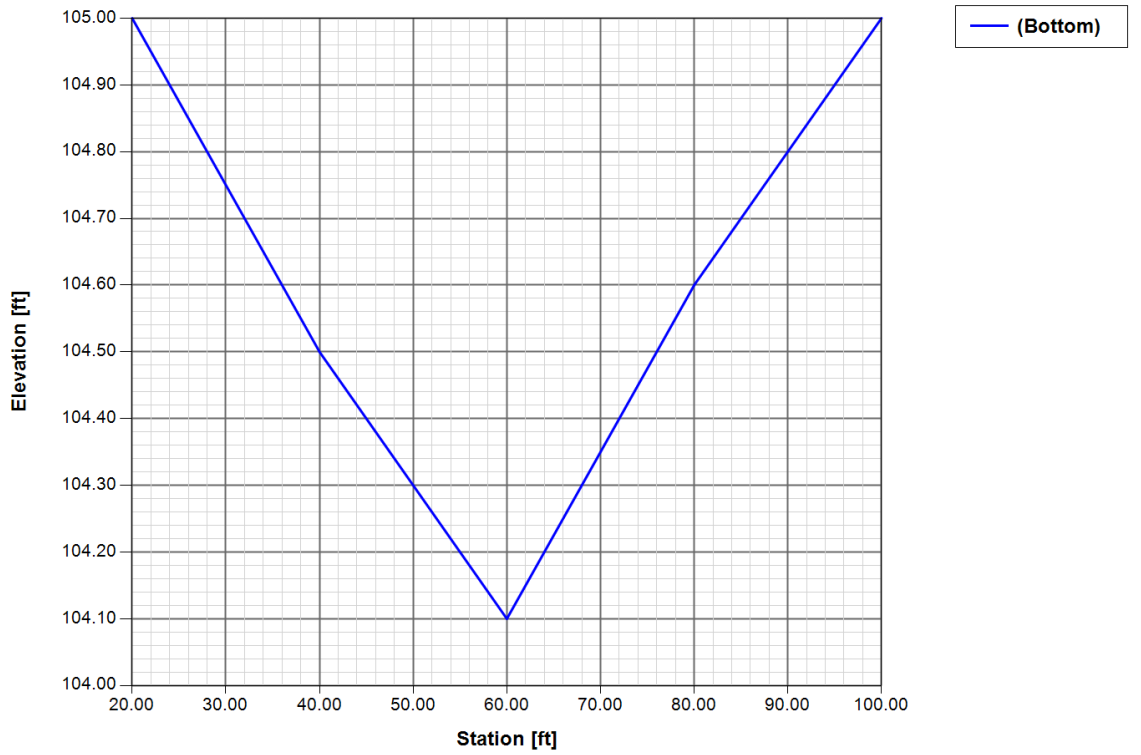
Scenario: Scenario1
Lid: No

Bottom Point Table

Order	Station [ft]	Elevation [ft]
0	20.00	105.00
1	40.00	104.50
2	60.00	104.10
3	80.00	104.60
4	100.00	105.00

Comment:

Weir Cross Section: PRE-WEIR Scenario: PRE-WEIR



Simulation: 01_MA_24H

Scenario: Scenario1
Run Date/Time: 5/15/2023 4:05:22 PM
Program Version: ICPR4 4.07.08

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 Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	4.30 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 (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 02_10Y_24H

Scenario: Scenario1
Run Date/Time: 5/15/2023 4:05:26 PM
Program Version: ICPR4 4.07.08

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 Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	6.70 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 (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 03_25Y_24H

Scenario: Scenario1
Run Date/Time: 5/15/2023 4:05:31 PM
Program Version: ICPR4 4.07.08

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 Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	8.60 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 (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 04_25Y_96H

Scenario: Scenario1
Run Date/Time: 5/15/2023 4:05:35 PM
Program Version: ICPR4 4.07.08

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 Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SJRWMD-96
		Rainfall Amount:	12.00 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 (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 05_100Y_24H

Scenario: Scenario1
Run Date/Time: 5/15/2023 4:05:39 PM
Program Version: ICPR4 4.07.08

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 Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	11.80 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 (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

APPENDIX C

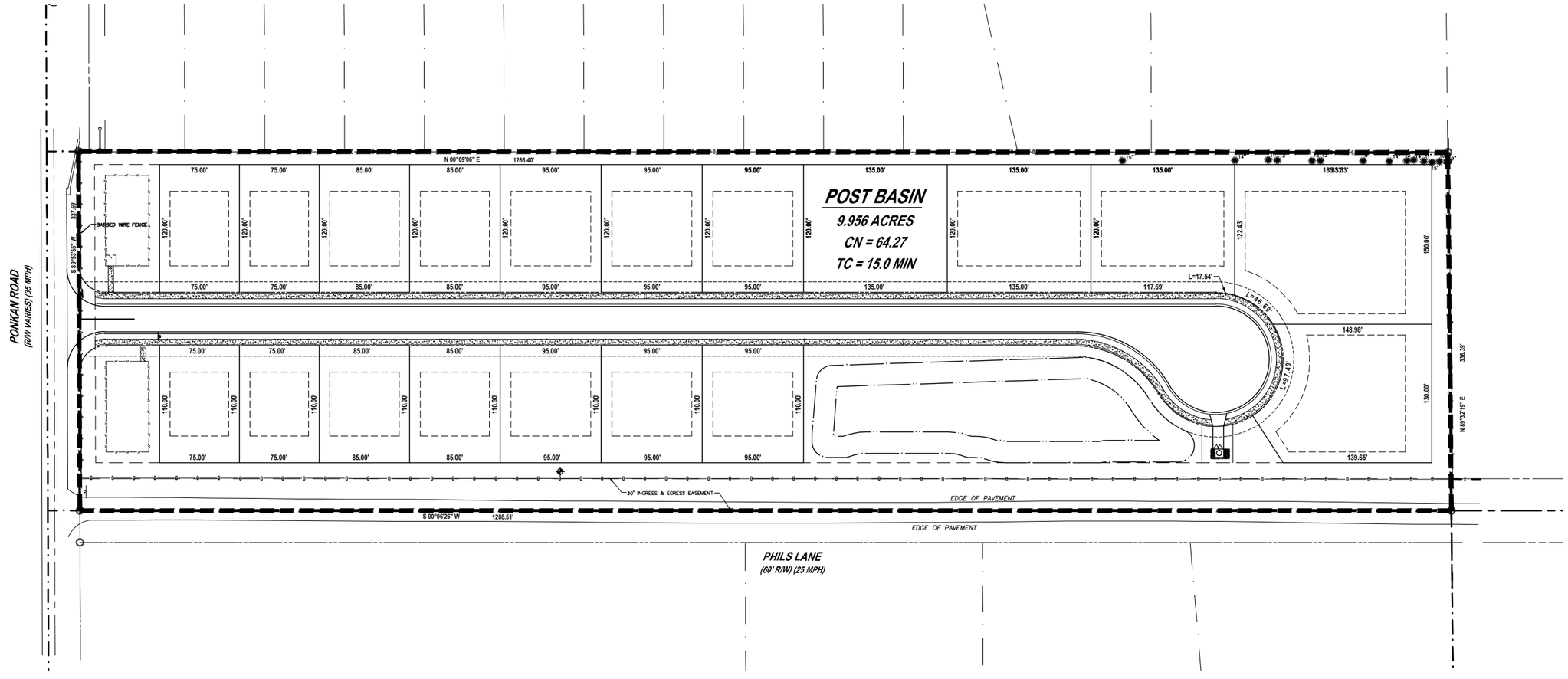
POST-DEVELOPMENT CALCULATIONS

GRAPHIC SCALE
50 0 50 100
1"=50'

LEGEND

BASIN LINE

LOT LINE



REVISIONS

DATE	DESCRIPTION

1230 North US1, Suite 3
Ormond Beach, Florida 32174
Phone (386) 872-7794
www.Newkirk-Engineering.com
C.A. # 30209
L.C. # 26000384

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Civil Engineering,
Transportation, CEI &
Landscape Architecture

NEWKIRK ENGINEERING INC.

POST DEVELOPMENT BASIN MAP

PONKAN OAK MANOR
3405 W PONKAN ROAD
APOPKA, FLORIDA 32712

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PROJECT No:	2023-30
DATE:	APRIL 2023
DESIGN BY:	HHN
DRAWN BY:	BWD
CHECKED BY:	HHN
SCALE:	1" = 50'

DRAWING NUMBER

POST

NEWKIRK ENGINEERING, INC.

CIVIL ENGINEERING - TRANSPORTATION - CEI - LANDSCAPE ARCHITECTURE
1230 N US HWY 1, SUITE 3, ORMOND BEACH, FLORIDA 32174 386-872-7794

POST-DEVELOPMENT CALCULATIONS

BASIN	BASIN ACRES	PERVIOUS		DCIA IMPERVIOUS		NON DCIA IMPERVIOUS		WET POND NWL / WETLAND		COMPOSITE CN	NON DCIA CN
		ACRES	CN	ACRES	CN	ACRES	CN	ACRES	CN		
POST	9.956	5.416	36.00	0.780	98.00	3.761	98.00		100.00	64.27	61.41
TOTAL	9.956	5.416	36.00	0.780	98.00	3.761	98.00		100.00	64.27	61.41

POST-DEVELOPMENT

BASIN NAME	SOIL TYPE	DESCRIPTION	CONDITION	HYDRAULIC GROUP	AREA (AC)	CN
POST	4 CANDLER FINE SAND, 0 TO 5	URBAN OPEN	GOOD	A	3.859	36.00
	5 CANDLER FINE SAND, 0 TO 1	URBAN OPEN	GOOD	A	1.557	36.00
				TOTAL	5.416	36.00

DCIA IMP	DIRECT	IMP
%	%	%
7.8%		45.6%

NEWKIRK ENGINEERING, INC.
CIVIL ENGINEERING - TRANSPORTATION - CEI - LANDSCAPE ARCHITECTURE
1230 N US HWY 1, SUITE 3, ORMOND BEACH, FLORIDA 32174 386-872-7794

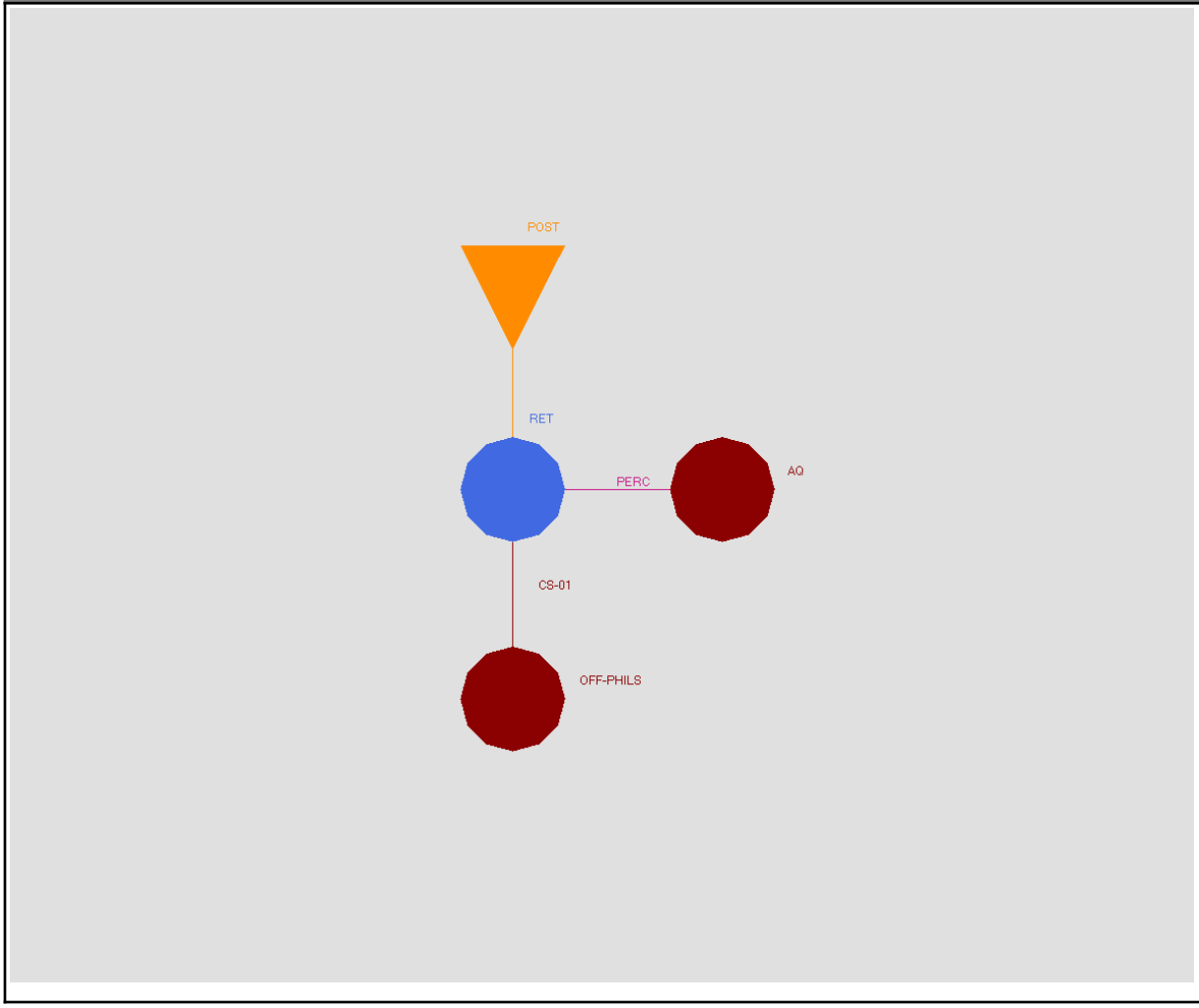
Treatment Volume Calculations: Dry Retention				
SJRWMD Dry Retention Pond				
A. 0.5"	of runoff over drainage basin		**0.415 Ac-Ft**	
B. Impervious area x	1.25"	(excluding pond)	**0.473 Ac-Ft**	
C. + Addtitional 0.5" for online system			**0.888 Ac-Ft**	
D. + 50% required treatment volume for OFW			**No OFW**	
E. Impervious Area x	3.0" (Wekiva Recharge)		**1.135 Ac-Ft**	
F. 25 Year 96 Hour Volumetric Difference Pre vs. Post			**1.977 Ac-Ft**	
G. Treatment Volume Required for BMP Nutrient Removal			**1.602 Ac-Ft**	
H. Total Required Treatment Volume			**1.977 Ac-Ft**	<-Governs
I. Total Provided Treatment Volume			**2.340 Ac-Ft**	

Post Dry Retention Pond

Stage (MSL)	Area (SF)	Area (Ac)	Volume Ac-Ft		Treatment Depth = Treatment Volume / Basin Area
					Treament Depth (in) = 2.820
102.00	14,539	0.334	0.000	0.000	Bottom of Pond
103.00	17,409	0.400	0.367	0.367	
104.00	20,450	0.469	0.801	0.801	
105.00	23,596	0.542	1.307	1.307	
106.00	26,843	0.616	1.886	1.886	
107.00	30,193	0.693	2.540	2.540	Top of Bank

Treatment Vol Elevation (Ft)
106.75
Treatment Vol (Ac-Ft)
2.340

Background Image: POST



Simple Basin: POST

Scenario:	Scenario1
Node:	RET
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	15.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH323
Peaking Factor:	323.0
Area:	9.9560 ac
Curve Number:	36.0
% Impervious:	45.60

% DCIA: 7.80
% Direct: 0.00
Rainfall Name:

Comment:

Simple Basin Runoff Summary [Scenario1]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
POST	01_MA_24H	2.67	12.1333	4.30	0.68	9.9560	55.7	45.60	7.80
POST	02_10Y_24H	9.92	12.1167	6.70	1.81	9.9560	53.7	45.60	7.80
POST	03_25Y_24H	17.80	12.1000	8.60	2.96	9.9560	53.0	45.60	7.80
POST	04_25Y_96H	29.82	60.0667	12.00	5.37	9.9560	52.3	45.60	7.80
POST	05_100Y_24H	33.33	12.1000	11.80	5.20	9.9560	52.3	45.60	7.80

Simple Basin Mass Balance Summary [Scenario1]

Basin Name	Sim Name	Total Rainfall	Total Irrigation	Total Runoff	Total ET	Total Initial Abst	Total Recharge	Change Soil Storage
POST [in]	01_MA_24H	4.30	0.00	0.68	0.00	0.00	0.00	3.62
POST [ft3]	01_MA_24H	155403	0	24738	0	0	0	130665
POST [ac-ft]	01_MA_24H	3.57	0.00	0.57	0.00	0.00	0.00	3.00
POST [in]	02_10Y_24H	6.70	0.00	1.81	0.00	0.00	0.00	4.89
POST [ft3]	02_10Y_24H	242140	0	65399	0	0	0	176741
POST [ac-ft]	02_10Y_24H	5.56	0.00	1.50	0.00	0.00	0.00	4.06
POST [in]	03_25Y_24H	8.60	0.00	2.96	0.00	0.00	0.00	5.64
POST [ft3]	03_25Y_24H	310806	0	106796	0	0	0	204010
POST [ac-ft]	03_25Y_24H	7.14	0.00	2.45	0.00	0.00	0.00	4.68
POST [in]	04_25Y_96H	12.00	0.00	5.37	0.00	0.00	0.00	6.63
POST [ft3]	04_25Y_96H	433683	0	194111	0	0	0	239572
POST	04_25Y_96	9.96	0.00	4.46	0.00	0.00	0.00	5.50

Basin Name	Sim Name	Total Rainfall	Total Irrigation	Total Runoff	Total ET	Total Initial Abst	Total Recharge	Change Soil Storage
[ac-ft]	H							
POST [in]	05_100Y_24H	11.80	0.00	5.20	0.00	0.00	0.00	6.60
POST [ft3]	05_100Y_24H	426455	0	188086	0	0	0	238369
POST [ac-ft]	05_100Y_24H	9.79	0.00	4.32	0.00	0.00	0.00	5.47

Node: AQ

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 92.00 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	92.00
0	0	0	72.0000	92.00

Comment:

Node Max Conditions [Scenario1]

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]
AQ	01_MA_24H	0.00	92.00	0.0000	2.53	0.00	0
AQ	02_10Y_24H	0.00	92.00	0.0000	2.99	0.00	0
AQ	03_25Y_24H	0.00	92.00	0.0000	3.55	0.00	0
AQ	04_25Y_96H	0.00	92.00	0.0000	4.20	0.00	0
AQ	05_100Y_24H	0.00	92.00	0.0000	4.56	0.00	0

Node Mass Balance Condensed [Scenario1]

Node Name	Sim Name	Total Inflow [ft3]	Total Outflow [ft3]	Stored Volume (Flow Based) [ft3]
AQ	01_MA_24H	24725	0	24725
AQ	02_10Y_24H	52319	0	52319
AQ	03_25Y_24H	64189	0	64189
AQ	04_25Y_96H	106887	0	106887
AQ	05_100Y_24H	86486	0	86486

Node: OFF-PHILS

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 102.00 ft
Warning Stage: 102.00 ft
Boundary Stage:

Comment:

Node Max Conditions [Scenario1]

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]
OFF-PHILS	01_MA_24H	102.00	102.00	0.0000	0.00	0.00	0
OFF-PHILS	02_10Y_24H	102.00	102.00	0.0000	0.00	0.00	0
OFF-PHILS	03_25Y_24H	102.00	102.00	0.0000	0.00	0.00	0
OFF-PHILS	04_25Y_96H	102.00	102.00	0.0000	0.00	0.00	0
OFF-PHILS	05_100Y_24H	102.00	102.00	0.0000	0.00	0.00	0

Node Mass Balance Condensed [Scenario1]

Node Name	Sim Name	Total Inflow [ft3]	Total Outflow [ft3]	Stored Volume (Flow Based) [ft3]
OFF-PHILS	01_MA_24H	0	0	0
OFF-PHILS	02_10Y_24H	0	0	0
OFF-PHILS	03_25Y_24H	0	0	0
OFF-PHILS	04_25Y_96H	0	0	0
OFF-PHILS	05_100Y_24H	0	0	0

Node: RET

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 102.00 ft
Warning Stage: 107.00 ft

Stage [ft]	Area [ac]	Area [ft2]
102.00	0.3340	14549
103.00	0.4000	17424
104.00	0.4690	20430
105.00	0.5420	23610

Stage [ft]	Area [ac]	Area [ft2]
106.00	0.6160	26833
107.00	0.6930	30187

Comment:

Node Max Conditions [Scenario1]

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]
RET	01_MA_24H	107.00	102.01	-0.0007	2.67	2.53	14578
RET	02_10Y_24H	107.00	102.93	0.0010	9.92	2.99	17225
RET	03_25Y_24H	107.00	104.37	0.0010	17.80	3.55	21591
RET	04_25Y_96H	107.00	106.19	0.0010	29.82	4.20	27459
RET	05_100Y_24H	107.00	106.69	0.0010	33.33	4.56	29159

Node Mass Balance Condensed [Scenario1]

Node Name	Sim Name	Total Inflow [ft3]	Total Outflow [ft3]	Stored Volume (Flow Based) [ft3]
RET	01_MA_24H	24729	24725	4
RET	02_10Y_24H	65387	52319	13068
RET	03_25Y_24H	106765	64189	42577
RET	04_25Y_96H	194095	106887	87208
RET	05_100Y_24H	188036	86486	101550

Drop Structure Link: CS-01		Upstream Pipe		Downstream Pipe	
Scenario:	Scenario1	Invert:	102.00 ft	Invert:	102.38 ft
From Node:	RET	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	OFF-PHILS	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	1.50 ft	Max Depth:	1.50 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:	128.00 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:	Energy				

Pipe Comment:

Weir Component		Bottom Clip	
Weir:	1	Default:	0.00 ft
Weir Count:	1	Op Table:	
Weir Flow Direction:	Both	Ref Node:	
Damping:	0.0000 ft	**Top Clip**	
Weir Type:	Sharp Crested Vertical	Default:	0.00 ft
Geometry Type:	Rectangular	Op Table:	
Invert:	106.70 ft	Ref Node:	
Control Elevation:	106.70 ft	**Discharge Coefficients**	
Max Depth:	999.00 ft	Weir Default:	3.200
Max Width:	3.00 ft	Weir Table:	
Fillet:	0.00 ft	Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Simulation: 01_MA_24H

Scenario: Scenario1
Run Date/Time: 5/25/2023 10:18:10 AM
Program Version: ICPR4 4.07.08

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 Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	4.30 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 (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 02_10Y_24H

Scenario: Scenario1
Run Date/Time: 5/25/2023 10:18:15 AM
Program Version: ICPR4 4.07.08

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 Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	6.70 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 (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 03_25Y_24H

Scenario: Scenario1
Run Date/Time: 5/25/2023 10:18:18 AM
Program Version: ICPR4 4.07.08

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 Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	8.60 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 (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 04_25Y_96H

Scenario: Scenario1
Run Date/Time: 5/25/2023 10:18:22 AM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	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 Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SJRWMD-96
		Rainfall Amount:	12.00 in
Edge Length Option:	Automatic	Storm Duration:	96.0000 hr
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 (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 05_100Y_24H

Scenario: Scenario1
Run Date/Time: 5/25/2023 10:18:32 AM
Program Version: ICPR4 4.07.08

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

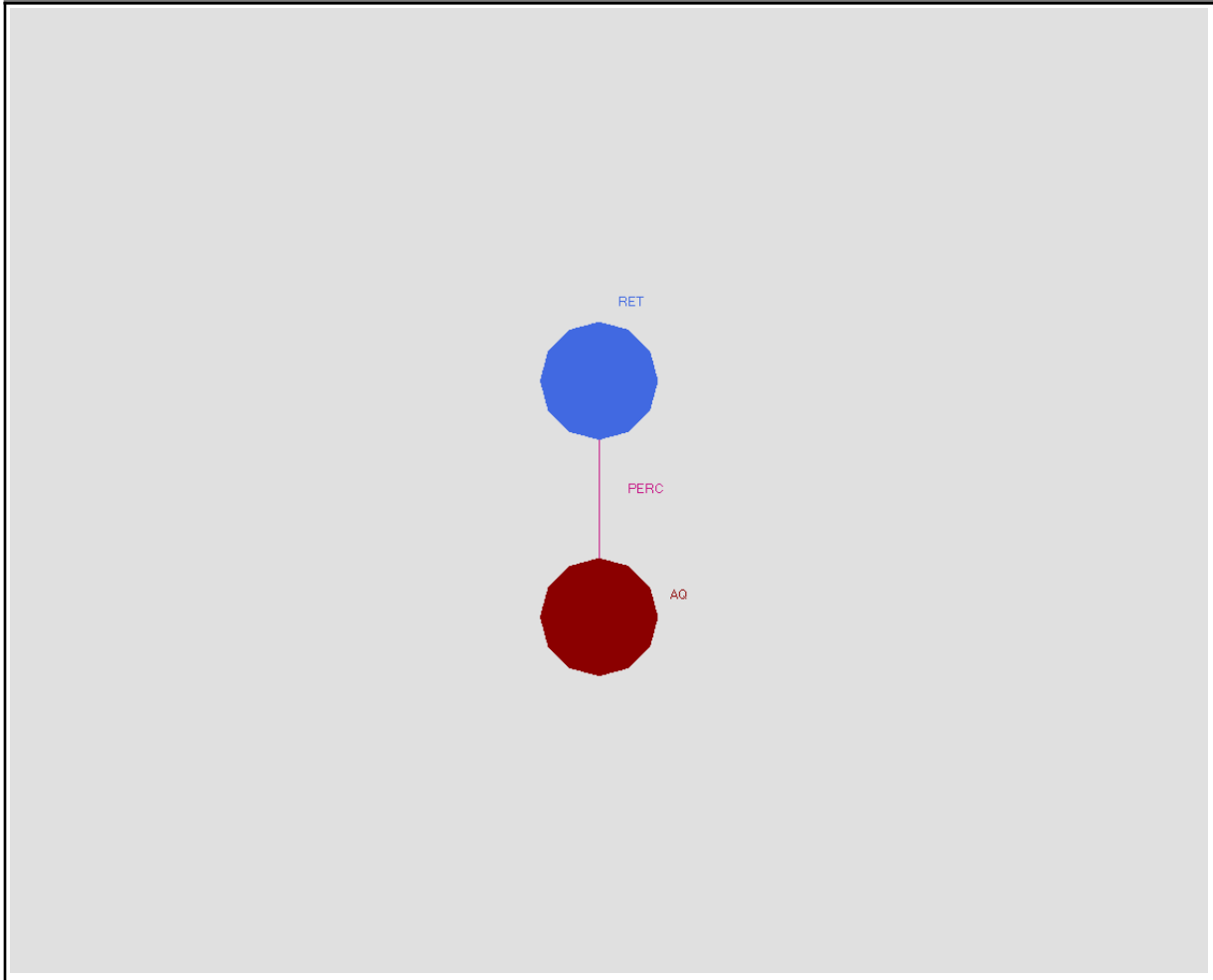
Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	11.80 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 (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

APPENDIX D

RECOVERY

Background Image: REC

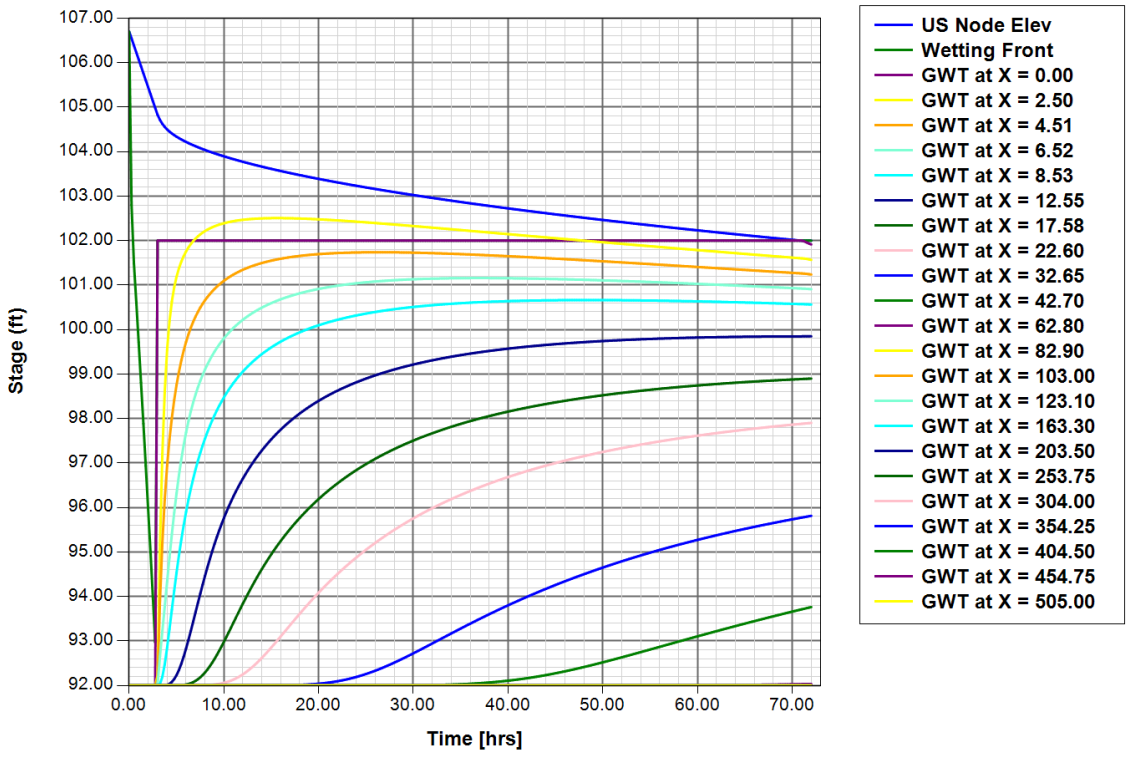


Percolation Link: PERC

Scenario:	Scenario1	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	RET		
To Node:	AQ	Vertical Flow Termination:	Horizontal Flow Algorithm
Link Count:	1	Perimeter 1:	851.00 ft
Flow Direction:	Both	Perimeter 2:	1264.00 ft
Aquifer Base Elevation:	91.50 ft	Perimeter 3:	3983.00 ft
Water Table Elevation:	92.00 ft	Distance P1 to P2:	50.00 ft
Annual Recharge Rate:	0 ipy	Distance P2 to P3:	450.00 ft
Horizontal Conductivity:	5.000 fpd	# of Cells P1 to P2:	10
Vertical Conductivity:	15.000 fpd	# of Cells P2 to P3:	45
Fillable Porosity:	0.200		
Layer Thickness:	10.00 ft		

Comment:

Perc Link: PERC (Sim: REC_72H) [PERC]



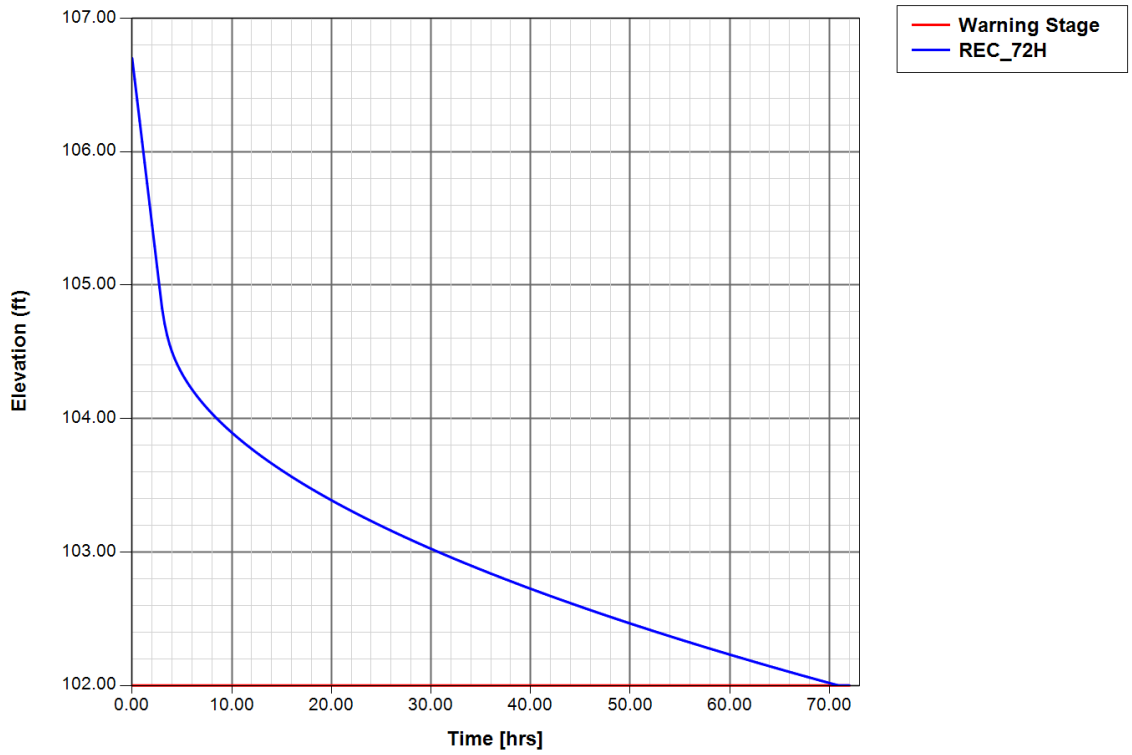
Node: RET

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 106.70 ft
Warning Stage: 102.00 ft

Stage [ft]	Area [ac]	Area [ft2]
102.00	0.3340	14549
103.00	0.4000	17424
104.00	0.4690	20430
105.00	0.5420	23610
106.00	0.6160	26833
107.00	0.6930	30187

Comment:

Node Stage w/Warning Stage: RET [Scenario1]



Node: AQ

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 92.00 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	92.00
0	0	0	72.0000	92.00

Comment:

Simulation: REC_72H

Scenario: Scenario1
Run Date/Time: 5/25/2023 10:16:27 AM

Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	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 Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	0.00 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
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 (2D):	Energy	Energy Switch (1D):	Energy

Comment:

APPENDIX E

BMP ANALYSIS

Complete Report (not including cost) Ver 4.3.2

Project: Ponkan Oak Manor
Date: 5/26/2023 9:55:49 AM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Ponkan Basin
Rainfall Zone	Florida Zone 2
Annual Mean Rainfall	50.00

Pre-Condition Landuse Information

Landuse	Undeveloped - Dry Prairie: TN=2.025 TP=0.184
Area (acres)	9.96
Rational Coefficient (0-1)	0.00
Non DCIA Curve Number	32.00
DCIA Percent (0-100)	0.00
Nitrogen EMC (mg/l)	2.025
Phosphorus EMC (mg/l)	0.184
Runoff Volume (ac-ft/yr)	0.116
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	0.290
Phosphorus Loading (kg/yr)	0.026

Post-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	9.96
Rational Coefficient (0-1)	0.08
Non DCIA Curve Number	50.61
DCIA Percent (0-100)	7.80
Wet Pond Area (ac)	0.00

Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	3.242
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	8.276
Phosphorus Loading (kg/yr)	1.307

Catchment Number: 1 Name: Ponkan Basin

Project: Ponkan Oak Manor
Date: 5/26/2023

Retention Design

Retention Depth (in)	1.930
Retention Volume (ac-ft)	1.602

Watershed Characteristics

Catchment Area (acres)	9.96
Contributing Area (acres)	9.960
Non-DCIA Curve Number	50.61
DCIA Percent	7.80
Rainfall Zone	Florida Zone 2
Rainfall (in)	50.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	96
Provided TN Treatment Efficiency (%)	98
Required TP Treatment Efficiency (%)	98
Provided TP Treatment Efficiency (%)	98

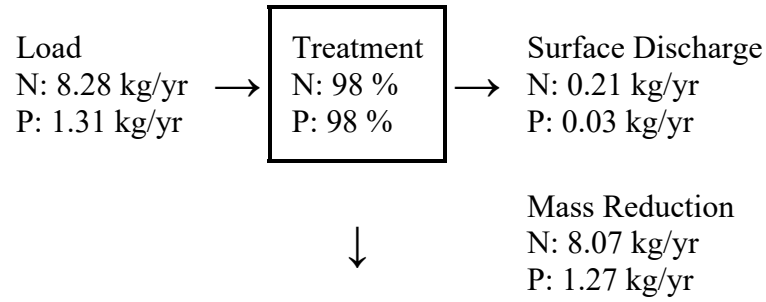
Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

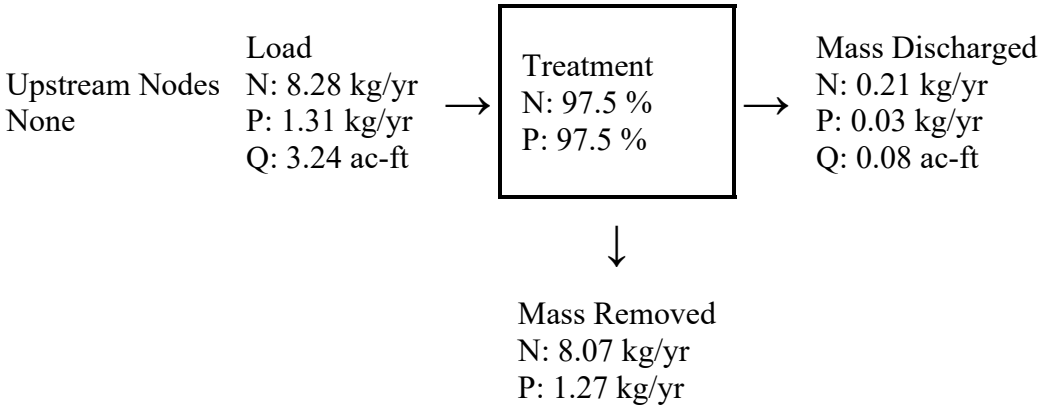
Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	0.000
TN Mass Load (kg/yr)	8.069
TN Concentration (mg/L)	0.000
TP Mass Load (kg/yr)	1.275
TP Concentration (mg/L)	0.000

Load Diagram for Retention (stand-alone)



Load Diagram for Retention (As Used In Routing)



Summary Treatment Report Version: 4.3.2

Project: Ponkan Oak Manor

Date:5/26/2023

Analysis Type: Net

Routing Summary
Catchment 1 Routed to Outlet

Improvement

BMP Types:

Catchment 1 - (Ponkan Basin) Retention

Based on % removal values to the nearest percent

Total nitrogen target removal met? **Yes**

Total phosphorus target removal met? **Yes**

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	.29 kg/yr	
Total N post load	8.28 kg/yr	
Target N load reduction	96 %	
Target N discharge load	.29 kg/yr	
Percent N load reduction	98 %	
Provided N discharge load	.21 kg/yr	.46 lb/yr
Provided N load removed	8.07 kg/yr	17.79 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	.026 kg/yr	
Total P post load	1.307 kg/yr	
Target P load reduction	98 %	
Target P discharge load	.026 kg/yr	
Percent P load reduction	98 %	
Provided P discharge load	.033 kg/yr	.07 lb/yr
Provided P load removed	1.275 kg/yr	2.811 lb/yr

APPENDIX F

PIPE SIZING CALCULATIONS

Storm Sewer Design

Project: PONKAN Engineer:NEWKIRK Road: PONKAN Location:ORANGE
Return Period: 25 years County:Orange Drainage Coefficients: C1 = 0.95 C2 = 0.20 C3 = 0.00
Outfall Ground Elevation (feet) :102.00 Outfall Hydraulic Grade (feet) :102.00

Str	To	Length	Increment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V Hl
1	2	26.50	0.52	0.52	0.55	7.0	3.9	114.11	112.98	112.95	0.03	18.0	0.117	2.20	3.9	0.50
			0.29	0.29		15.0			111.41	111.33						
I-01						15.0			109.91	109.83	0.08	0.012	0.300		6.3	
2	4	265.00	0.46	0.98	1.04	7.0	7.3	114.11	112.95	111.86	1.09	18.0	0.412	4.13	7.3	0.50
			0.26	0.55		15.0			111.33	109.21						
I-02						15.2			109.83	107.71	2.12	0.012	0.800		10.2	0.13
3	4	26.50	0.55	0.55	0.58	7.0	4.1	111.99	111.90	111.86	0.03	18.0	0.128	2.30	4.1	0.50
			0.27	0.27		15.0			109.29	109.21						
I-03						15.0			107.79	107.71	0.08	0.012	0.300		6.3	0.04
4	6	300.00	0.52	2.05	2.16	6.8	14.8	111.99	111.86	106.81	5.05	18.0	1.684	8.36	14.8	0.50
			0.26	1.08		15.0			109.21	106.81						
I-04						16.3			107.71	105.31	2.40	0.012	0.800		10.2	0.54
5	6	37.00	0.65	0.65	0.69	7.0	4.8	109.39	105.63	105.52	0.11	18.0	0.299	3.89	4.8	0.50
			0.35	0.35		15.0			106.13	106.02						
I-05						15.0			104.63	104.52	0.11	0.012	0.300		6.2	0.12
6	7	36.00	0.57	3.27	3.46	6.7	23.3	109.59	102.37	102.00	0.37	24.0	1.033	9.01	23.3	0.50
			0.33	1.76		15.0			104.37	104.00						
I-06						16.9			102.37	102.00	0.37	0.012	1.030		24.9	0.63

FINAL DEVELOPMENT PLAN
FOR
OAK POINTE - SOUTH

APOPKA, FLORIDA

MARCH 2018

(REVISED MAY 2023)

Digitally signed by David Evans
DN: CN=David Evans, dnQualifier=A01410D00000186DCD9BAA80000C7AF, O=Evans Engineering, C=US
Date: 2023.05.31 10:32:06-04'00'

DAVID L. EVANS LICENSE No. 46586 STATE OF FLORIDA PROFESSIONAL ENGINEER

This item has been electronically signed and sealed by David L. Evans P.E using a Digital Signature and date. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

EVANS ENGINEERING, INC.
CERTIFICATE OF AUTHORIZATION NO. 6788

DAVID L. EVANS
FLORIDA P.E. NO. 46586
DATE:

PARCEL ID. NUMBERS:
29-21-28-0000-00-011, 29-21-28-0000-00-016
29-21-28-0000-00-033, 29-21-28-0000-00-037
AND PORTIONS OF
29-21-28-0000-00-038, 32-21-28-0000-00-004, 32-21-28-0000-00-030

SHEET INDEX

1.0	COVER SHEET
2.0	GENERAL NOTES
3.0	EXISTING CONDITIONS & DEMOLITION PLAN
4.0	STORMWATER POLLUTION PREVENTION PLAN
4.1	SWPPP NOTES
4.2	SWPPP DETAILS
5.0	OVERALL SITE PLAN
5.1-5.6	SITE GEOMETRY PLAN
6.1-6.6	PAVING, GRADING, AND DRAINAGE PLAN
6.7-6.8	PAVING, GRADING, AND DRAINAGE STORM STRUCTURE TABLES
6.9	OFFSITE SIDEWALK W MCCORMICK ROAD
7.1-7.6	UTILITY PLAN
7.7	SANITARY STRUCTURE TABLES
7.8-7.11	UTILITY ASSET TABLES
8.1-8.12	PLAN AND PROFILES
8.13	FORCE MAIN CONNECTION PLAN AND PROFILE
8.14	LIFT STATION PLAN AND PROFILE
8.15	WATER MAIN CONNECTION PLAN AND PROFILE
8.16	REUSE MAIN CONNECTION PLAN AND PROFILE
9.1-9.3	PAVING, GRADING, AND DRAINAGE DETAILS
10.1-10.2	UTILITY DETAILS
11.1-11.2	LIFT STATION DETAILS
12.1-12.3	FIRE TRUCK TURNING RADIUS

APPLICANT / OWNER
THOMPSON HILLS ESTATES, LLC
207 ISLAND DRIVE.
JUPITER, FLORIDA 33477
PHONE: (561)746-8848
CONTACT: MALCOLM JONES

ENGINEER
EVANS ENGINEERING, INC.
719 IRMA AVENUE
ORLANDO, FLORIDA 32803
PHONE: (407)872-1515
CONTACT: DAVID EVANS, P.E.

SURVEYOR
ROGER A. HAGLER, P.L.S.M.
PROFESSIONAL LAND SURVEYORS, MAPPERS
585 ORANGE AVE.
SEBASTIAN, FLORIDA 32958
PHONE: (772)205-1231
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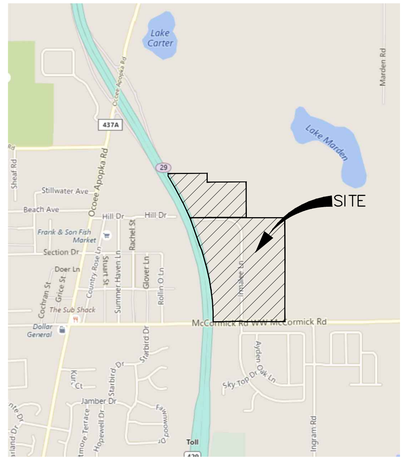
GEOTECHNICAL ENGINEER
ARDAMAN & ASSOCIATES
8008 SOUTH ORANGE AVENUE
ORLANDO, FLORIDA 32809
PHONE: (407)855-3860
CONTACT: CHUCK CUNNINGHAM



VICINITY MAP
N.T.S.

PLAN PROVIDED FOR:

- ☐ PRELIMINARY PLAN
- ☐ BID SET
- ☐ PERMIT REVIEW SET
- ■ CONSTRUCTION SET
- ☐ RECORD DRAWING

* THIS PLAN SHALL NOT BE USED FOR CONSTRUCTION UNLESS APPROVED FOR CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ALL PERMITS HAVE BEEN OBTAINED PRIOR TO STARTING CONSTRUCTION.

* THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF THE OAK POINTE DEVELOPMENT AGREEMENT.

EVANS ENGINEERING, INC.
CIVIL ENGINEERING LAND PLANNING PERMITTING SERVICES
719 IRMA AVENUE
ORLANDO, FLORIDA 32803
(407) 872-1515
www.evansenginc.com
CERTIFICATE OF AUTHORIZATION NO. 00006788

UTILITY COMPANIES

WATER
ORANGE COUNTY UTILITIES
9150 CURRY FORD RD. 2ND FLOOR
ORLANDO, FLORIDA 32825

WASTEWATER
ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD, 2ND FLOOR
ORLANDO, FLORIDA 32825

RECLAIMED WATER
ORANGE COUNTY UTILITIES
9150 CURRY FORD ROAD, 2ND FLOOR
ORLANDO, FLORIDA 32825

STORMWATER
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

PHONE
BRIGHTHOUSE NETWORKS,
CENTURY LINK
3767 ALL AMERICAN BLVD.
ORLANDO, FLORIDA 32810
(407)291-2500

CABLE
BRIGHTHOUSE NETWORKS,
CENTURY LINK
3767 ALL AMERICAN BLVD.
ORLANDO, FLORIDA 32810
(407)291-2500

GAS
LAKE APOPKA NATURAL GAS
1320 S. VINELAND ROAD
WINTER GARDEN, FLORIDA 34777
(407)656-2734

ELECTRIC
DUKE ENERGY
P.O. BOX 14042
ST. PETERSBURG, FLORIDA 33733
(407)629-1010

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LEGAL DESCRIPTION

TRACT 1

A PARCEL OF LAND SITUATE IN SECTIONS 29 AND 32, TOWNSHIP 21 SOUTH, RANGE 28 EAST, ORANGE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTH 1/4 CORNER OF SAID SECTION 29, SAID POINT-OF-BEGINNING ALSO BEING ON THE EASTERLY RIGHT-OF-WAY LINE OF IRMALEE LANE AS SHOWN ON OOCEA RIGHT-OF-WAY MAP, PROJECT NO. 75320-6460-604; THENCE RUN ALONG SAID RIGHT-OF-WAY LINE AND THE WEST LINE OF THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 29, NORTH 00°00'34" WEST, A DISTANCE OF 676.02 FEET TO THE SOUTHEAST CORNER OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SAID SECTION 29; THENCE RUN NORTH 89°36'10" EAST ALONG THE NORTH LINE OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION 29, A DISTANCE OF 662.29 FEET TO THE NORTHEAST CORNER OF SAID SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4; THENCE RUN SOUTH 00°07'19" WEST ALONG THE EAST LINE OF SAID SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4, A DISTANCE OF 679.97 FEET TO THE SOUTHEAST CORNER OF SAID SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF THE SOUTHEAST 1/4; THENCE RUN SOUTH 00°05'25" WEST ALONG THE EAST LINE OF THE WEST 1/2 OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF AFORESAID SECTION 32, A DISTANCE OF 1299.53 FEET TO A POINT OF INTERSECTION WITH A LINE LYING 30 FEET NORTH OF AN PARALLEL WITH THE SOUTH LINE OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SAID SECTION 32, SAID LINE ALSO BEING THE NORTH RIGHT-OF-WAY LINE OF WEST MCCORMICK ROAD AS LAID OUT AND IN USE; THENCE RUN SOUTH 89°44'22" WEST ALONG SAID RIGHT-WAY LINE, A DISTANCE OF 659.62 FEET TO THE EASTERLY RIGHT-OF-WAY LINE OF AFORESAID IRMALEE LANE; THENCE RUN NORTH 00°02'30" EAST ALONG SAID RIGHT-OF-WAY LINE AND THE WEST LINE OF THE WEST 1/2 OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SAID SECTION 32, A DISTANCE OF 1301.88 FEET BACK TO THE POINT-OF-BEGINNING.

THE ABOVE DESCRIBED PARCEL CONTAINS 1307158 SQUARE FEET OR 30.008 ACRES MORE OR LESS.

FOR THE PURPOSE OF THIS DESCRIPTION ALL BEARINGS ARE REATIVE TO THE FLORIDA STATE PLANE SYSTEM, NATIONAL ADJUSTED DATUM OF 1983 (NAD83), EAST ZONE TRANSVERSE MERCATOR, ZONE FL83-EF.

TRACT 2:

A PARCEL OF LAND SITUATE IN SECTIONS 29 AND 32, TOWNSHIP 21 SOUTH, RANGE 28 EAST, ORANGE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTH 1/4 CORNER OF SAID SECTION 29, SAID POINT ALSO BEING ON THE EASTERLY RIGHT-OF-WAY LINE OF IRMALEE LANE AS SHOWN ON OOCEA RIGHT-OF-WAY MAP, PROJECT NO. 75320-6460-604; THENCE RUN SOUTH 89°58'41" WEST, A DISTANCE OF 105.10 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF SAID IRMALEE LANE AND THE POINT-OF-BEGINNING OF THE PARCEL INTENDED TO BE DESCRIBED;

THENCE FROM SAID POINT-OF-BEGINNING RUN ALONG SAID WESTERLY RIGHT-OF-WAY LINE FOR THE FOLLOWING THREE (3) COURSES, FIRST SOUTH 00°00'34" WEST, A DISTANCE OF 131.79 FEET; THENCE SOUTH 03°46'11" EAST, A DISTANCE OF 300.95 FEET; THENCE SOUTH 00°02'30 WEST, A DISTANCE OF 870.05 FEET TO A POINT OF INTERSECTION WITH A LINE LYING 30 FEET NORTH OF AND PARALLEL WITH THE SOUTH LINE OF THE NORTHWEST 1/4 OF SAID SECTION 32, SAID LINE ALSO BEING THE NORTH RIGHT-OF-WAY LINE OF WEST MCCORMICK ROAD AS LAID OUT AND IN USE; THENCE RUN SOUTH 89°44'26" WEST ALONG SAID RIGHT-OF-WAY LINE, A DISTANCE OF 432.05 FEET TO A POINT OF INTERSECTION WITH THE EASTERLY LIMITED ACCESS RIGHT-OF-WAY LINE OF STATE ROAD 429, AS SHOWN ON THE ORLANDO ORANGE COUNTY EXPRESSWAY AUTHORITY RIGHT-OF-WAY MAP, PROJECT NO. 75320-6460-604; THENCE ALONG THE SAID EASTERLY LIMITED ACCESS RIGHT-OF-WAY LINE FOR THE FOLLOWING FIVE (5) COURSES, THE FIRST BEING FROM A POINT ON A CURVE NON-TANGENT TO THE PRECEEDING COURSE, CONCAVE TO THE WEST, HAVING A RADIUS OF 5071.07 FEET, A CHORD OF NORTH 06°38'25" WEST, 1230.71 FEET AND FROM WHICH A RADIAL LINE BEARS NORTH 89°49'25" WEST; THENCE NORTHWESTERLY ALONG THE ARC OF SAID CURVE, SUBTENDED BY A CENTRAL ANGLE OF 13°56'23", A DISTANCE OF 1233.75 FEET TO A POINT OF NON-TANGENCY; THENCE NORTH 00°13'36" EAST, A DISTANCE OF 81.23 FEET; THENCE NORTH 21°02'59" WEST, A DISTANCE OF 108.56 FEET TO A POINT ON A CURVE BEING NON-TANGENT TO THE PRECEEDING COURSE, CONCAVE TO THE WEST, HAVING A RADIUS OF 5061.07 FEET, A CHORD OF NORTH 19°40'31" WEST, 265.41 FEET AND FROM WHICH A RADIAL LINE BEARS SOUTH 71°49'38" WEST; THENCE RUN NORTHWESTERLY ALONG THE ARC OF SAID CURVE, SUBTENDED BY A CENTRAL ANGLE OF 3°00'18", A DISTANCE OF 265.44 FEET TO A POINT OF INTERSECTION WITH THE AFORESAID RIGHT-OF-WAY LINE OF IRMALEE LANE; THENCE DEPARTING FROM SAID EASTERLY LIMITED ACCESS RIGHT-OF-WAY LINE, RUN ALONG THE RIGHT-OF-WAY LINE OF IRMALEE LANE FOR THE FOLLOWING FOUR (4) COURSES, FIRST NORTH 81°37'49" EAST, A DISTANCE OF 93.13 FEET; THENCE NORTH 89°44'46" EAST, A DISTANCE OF 433.52 FEET TO THE BEGINNING OF A CURVE, CONCAVE TO THE SOUTHWEST, HAVING A RADIUS OF 235.00 FEET AND A CHORD OF SOUTH 45°07'54" EAST, 333.05 FEET ; THENCE SOUTHEASTERLY ALONG THE ARC OF SAID CURVE, SUBTENDED BY A CENTRAL ANGLE OF 90°14'00", A DISTANCE OF 370.14 FEET TO THE END OF SAID CURVE; THENCE RUN SOUTH 00°00'34" EAST, A DISTANCE OF 334.61 FEET BACK TO THE POINT-OF-BEGINNING.

THE ABOVE DESCRIBED PARCEL CONTAINS 990921 SQUARE FEET OR 22.748 ACRES MORE OR LESS.

FOR THE PURPOSE OF THIS DESCRIPTION ALL BEARINGS ARE REATIVE TO THE FLORIDA STATE PLANE SYSTEM, NATIONAL ADJUSTED DATUM OF 1983 (NAD83), EAST ZONE TRANSVERSE MERCATOR, ZONE FL83-EF

TRACT 3:

A PARCEL OF LAND SITUATE IN SECTION 29, TOWNSHIP 21 SOUTH, RANGE 28 EAST, ORANGE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SAID SECTION 29, SAID POINT-OF-BEGINNING ALSO BEING AT THE NORTHEAST CORNER OF THE RIGHT-OF-WAY FOR IRMALEE LANE AS SHOWN ON THE OOCEA RIGHT-OF-WAY MAP, PROJECT NO. 75320-6460-604; THENCE RUN SOUTH 89°44'46" WEST ALONG SAID RIGHT-WAY LINE AND THE SOUTH LINE OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SAID SECTION 29, A DISTANCE OF 404.10 FEET TO A POINT AT THE SOUTHEAST CORNER OF THOSE LANDS DESCRIBED IN THAT CERTAIN WARANTY DEED RECORDED IN OFFICIAL RECORD BOOK 10023 AT PAGE 6676 OF THE PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA; THENCE TRAVERSE SAID LANDS FOR THE FOLLOWING THREE (3) COURSES, FIRST NORTH 00°05'58" EAST, A DISTANCE OF 252.94 FEET; THENCE SOUTH 89°44'46" WEST, A DISTANCE OF 148.04 FEET; THENCE SOUTH 07°57'26" WEST, A DISTANCE OF 255.56 FEET BACK TO THE AFORESAID RIGHT-OF-WAY OF IRMALEE LANE; THENCE RUN SOUTH 89°44'46" WEST ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 330.19 FEET TO A POINT OF INTERSECTION WITH THE EASTERLY LIMITED ACCESS RIGHT-OF-WAY LINE OF STATE ROAD 429, AS SHOWN ON THE ORLANDO ORANGE COUNTY EXPRESSWAY AUTHORITY RIGHT-OF-WAY MAP, PROJECT NO. 75320-6460-604, SAID POINT BEING A POINT ON A NON-TANGENT CURVE, CONCAVE TO THE SOUTHWEST, HAVING A RADIUS OF 5061.07 FEET, A CHORD OF NORTH 26°14'53" WEST, 640.22 FEET AND FROM WHICH A RADIAL LINE BEARS SOUTH 67°22'42" WEST; THENCE RUN NORTHWESTERLY ALONG THE ARC OF SAID CURVE, SUBTENDED BY A CENTRAL ANGLE OF 7°15'10", A DISTANCE OF 640.65 FEET; THENCE CONTINUE ALONG SAID LIMITED ACCESS RIGHT-OF-WAY LINE NORTH 29°36'57" WEST, A DISTANCE OF 237.79 FEET TO A POINT OF INTERSECTION WITH THE EAST LINE OF THE NORTHWEST 1/4 OF SAID SECTION 29; THENCE DEPARTING FROM SAID LIMITED ACCESS RIGHT-OF-WAY LINE AND ALONG THE EAST LINE OF THE NORTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SAID SECTION 29, NORTH 00°04'09" EAST, A DISTANCE OF 37.87 FEET TO A POINT OF INTERSECTION WITH A LINE LYING 150 FEET NORTH OF AND PARALLEL WITH THE SOUTH LINE OF THE WEST 1/2 OF THE NORTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SAID SECTION 29; THENCE RUN NORTH 89°30'29" EAST ALONG SAID PARALLEL LINE, A DISTANCE OF 658.90 FEET TO THE EAST LINE OF SAID WEST 1/2; THENCE RUN SOUTH 00°01'48" WEST ALONG SAID EAST LINE, A DISTANCE OF 150.02 FEET TO THE SOUTH LINE OF THE EAST 1/2 OF THE NORTHEAST 1/4 OF THE SOUTHWEST 1/4 OF SAID SECTION 29; THENCE RUN NORTH 89°30'33" EAST ALONG SAID SOUTH LINE, A DISTANCE OF 659.01 FEET TO THE SOUTHEAST CORNER OF SAID EAST 1/2; THENCE RUN SOUTH 00°00'34" EAST ALONG THE EAST LINE OF SAID EAST 1/2, A DISTANCE OF 676.01 FEET BACK TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCEL CONTAINS 990921 SQUARE FEET OR 22.748 ACRES MORE OR LESS.

S 29, T 21S, R 28E
S 32, T 21S, R 28E

J:\J0851\25851 - Oak Pointe\Drawings\Final\South\25851 Final South - Coversheet.dwg [01] Plotted on: May 31, 2023 - 9:26am by Al Abukhdair

Design Standards

Lot Criteria

Setback Table	Single Family	Townhomes
Front Porch(1)	19'	N/A
Front (Garage)	30'	22'
Front (Building)	25'	22'
Rear	20'	15'
Side	7.5'	10' Ext. 0' Int.
Side Street(2)	15'	15'
Accessory Structure Rear	5'	N/A
Lot Dimensions		
Minimum Lot Area	7,800 SF (0.179 AC)	2,530 SF
Minimum Lot Width	70' *	23'
Minimum Lot Depth	120'	110'
Max lot coverage	75%	75%
Max Building Height	35' / 2 stories	35' / 2 stories
Minimum Living Area	1,500 SF	1,350 SF

*MINIMUM LOT WIDTH NOTE:

THE FOLLOWING LOTS OF A MINIMUM LOT WIDTH OF 65': 9, 13, 17, 21, 69, 73, 77, 79

	Count	Percentage
65' Width Lots	8	6.9%
70' Width Lots	108	93.1%
Total Lots	116	100.0%

SITE DATA:

TOTAL AREA	78.0 AC
RESIDENTIAL:	69.1 AC
COMMERCIAL:	8.9 AC
PHASES:	1
SINGLE FAMILY UNITS	116
TOWNHOME UNITS	118
TOTAL UNITS	234

DENSITY (TOTAL UNITS / TOTAL AREA):

234 (UNITS) / 69.19 AC = 3.38 U/AC

RECREATIONAL AREA:

REQUIRED (3.6 AC / 1000 PERSONS):

1 UNIT = 2.6 PERSONS 234 (UNITS) x 2.6 = 608 PERSONS

608 x (3.6/1000) = 2.19 AC

PROVIDED

TRACT N-1 = 0.55 AC

TRACT K-6 = 1.95 AC

TOTAL = 2.50 AC

OPEN SPACE CALCULATIONS:

REQUIRED:

SINGLE FAMILY:

TOTAL AREA	50.26 AC
REQUIRED %	20 %
REQUIRED AREA	10.05 AC

TOWNHOUSES:

TOTAL AREA	18.89 AC
REQUIRED %	30 %
REQUIRED AREA	5.67 AC

TOTAL REQ'D OPEN SPACE AREA 15.72 AC

PROVIDED:

SINGLE FAMILY:

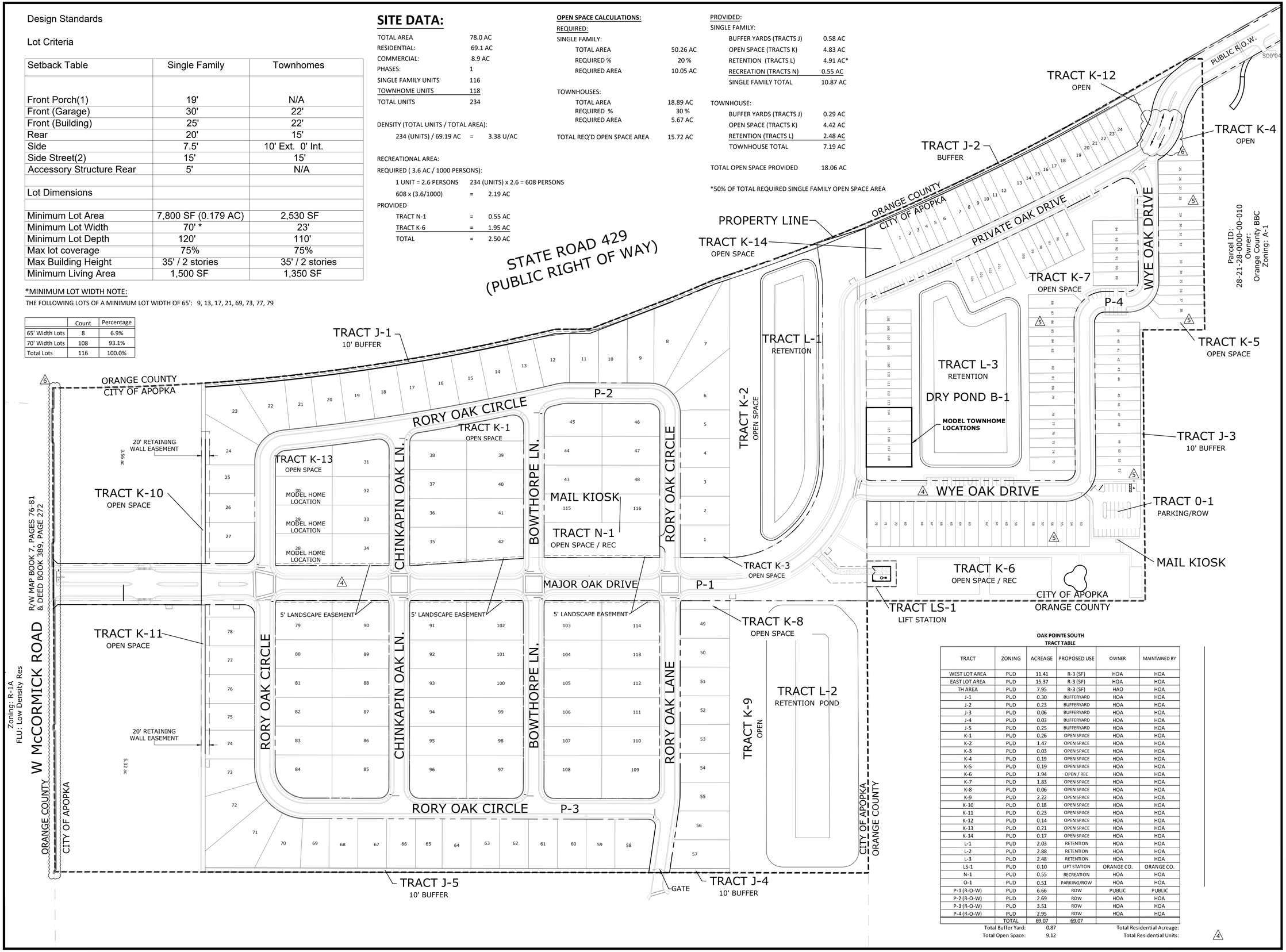
BUFFER YARDS (TRACTS J)	0.58 AC
OPEN SPACE (TRACTS K)	4.83 AC
RETENTION (TRACTS L)	4.91 AC*
RECREATION (TRACTS N)	0.55 AC
SINGLE FAMILY TOTAL	10.87 AC

TOWNHOUSE:

BUFFER YARDS (TRACTS J)	0.29 AC
OPEN SPACE (TRACTS K)	4.42 AC
RETENTION (TRACTS L)	2.48 AC
TOWNHOUSE TOTAL	7.19 AC

TOTAL OPEN SPACE PROVIDED 18.06 AC

*50% OF TOTAL REQUIRED SINGLE FAMILY OPEN SPACE AREA



OAK POINTE SOUTH
TRACT TABLE

TRACT	ZONING	ACREAGE	PROPOSED USE	OWNER	MAINTAINED BY
WEST LOT AREA	PUD	11.41	R-3 (SF)	HOA	HOA
EAST LOT AREA	PUD	15.37	R-3 (SF)	HOA	HOA
TH AREA	PUD	7.95	R-3 (SF)	HAO	HOA
J-1	PUD	0.30	BUFFERYARD	HOA	HOA
J-2	PUD	0.23	BUFFERYARD	HOA	HOA
J-3	PUD	0.06	BUFFERYARD	HOA	HOA
J-4	PUD	0.03	BUFFERYARD	HOA	HOA
J-5	PUD	0.25	BUFFERYARD	HOA	HOA
K-1	PUD	0.26	OPEN SPACE	HOA	HOA
K-2	PUD	1.47	OPEN SPACE	HOA	HOA
K-3	PUD	0.03	OPEN SPACE	HOA	HOA
K-4	PUD	0.19	OPEN SPACE	HOA	HOA
K-5	PUD	0.19	OPEN SPACE	HOA	HOA
K-6	PUD	1.94	OPEN / REC	HOA	HOA
K-7	PUD	1.83	OPEN SPACE	HOA	HOA
K-8	PUD	0.06	OPEN SPACE	HOA	HOA
K-9	PUD	2.22	OPEN SPACE	HOA	HOA
K-10	PUD	0.18	OPEN SPACE	HOA	HOA
K-11	PUD	0.23	OPEN SPACE	HOA	HOA
K-12	PUD	0.14	OPEN SPACE	HOA	HOA
K-13	PUD	0.21	OPEN SPACE	HOA	HOA
K-14	PUD	0.17	OPEN SPACE	HOA	HOA
L-1	PUD	2.03	RETENTION	HOA	HOA
L-2	PUD	2.88	RETENTION	HOA	HOA
L-3	PUD	2.48	RETENTION	HOA	HOA
LS-1	PUD	0.10	LIFT STATION	ORANGE CO.	ORANGE CO.
N-1	PUD	0.55	RECREATION	HOA	HOA
O-1	PUD	0.51	PARKING/ROW	HOA	HOA
P-1 (R-O-W)	PUD	6.66	ROW	PUBLIC	PUBLIC
P-2 (R-O-W)	PUD	2.69	ROW	HOA	HOA
P-3 (R-O-W)	PUD	3.51	ROW	HOA	HOA
P-4 (R-O-W)	PUD	2.95	ROW	HOA	HOA
	TOTAL	69.07		69.07	

Total Buffer Yard: 0.87 Total Residential Acreage:

Total Open Space: 9.12 Total Residential Units:

EVANS ENGINEERING, INC.
CIVIL ENGINEERING LAND PLANNING PERMITTING SERVICES
719 IRMA AVENUE
ORLANDO, FLORIDA 32803
(407) 872-1515
www.evansenginc.com
CERTIFICATE OF AUTHORIZATION NO. 00006788

EVANS ENGINEERING, INC.

CERTIFICATE OF AUTHORIZATION NO. 6788

DAVID L. EVANS
FLORIDA P.E. NO. 46586

DATE:

OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

OVERALL SITE PLAN

REVISIONS			
DATE	NO.	DETAIL	BY
8-13-18	1	PR18-11 CITY OF APOPKA COMMENTS DATED 7/24/18	JSK
3/8/22	3	TH LOT LINE REVISION	APV
5/22/23	4	GATE REMOVAL AND ROW SIDEWALK REVISION	AHA

DRAWN BY: JSK
DATE: JUN, 2019
CHECKED BY: DLE
JOB #: 25801

GRAPHIC SCALE

100 0 50 100 200

(IN FEET)
1 inch = 100 ft.

SHEET #: 5.0

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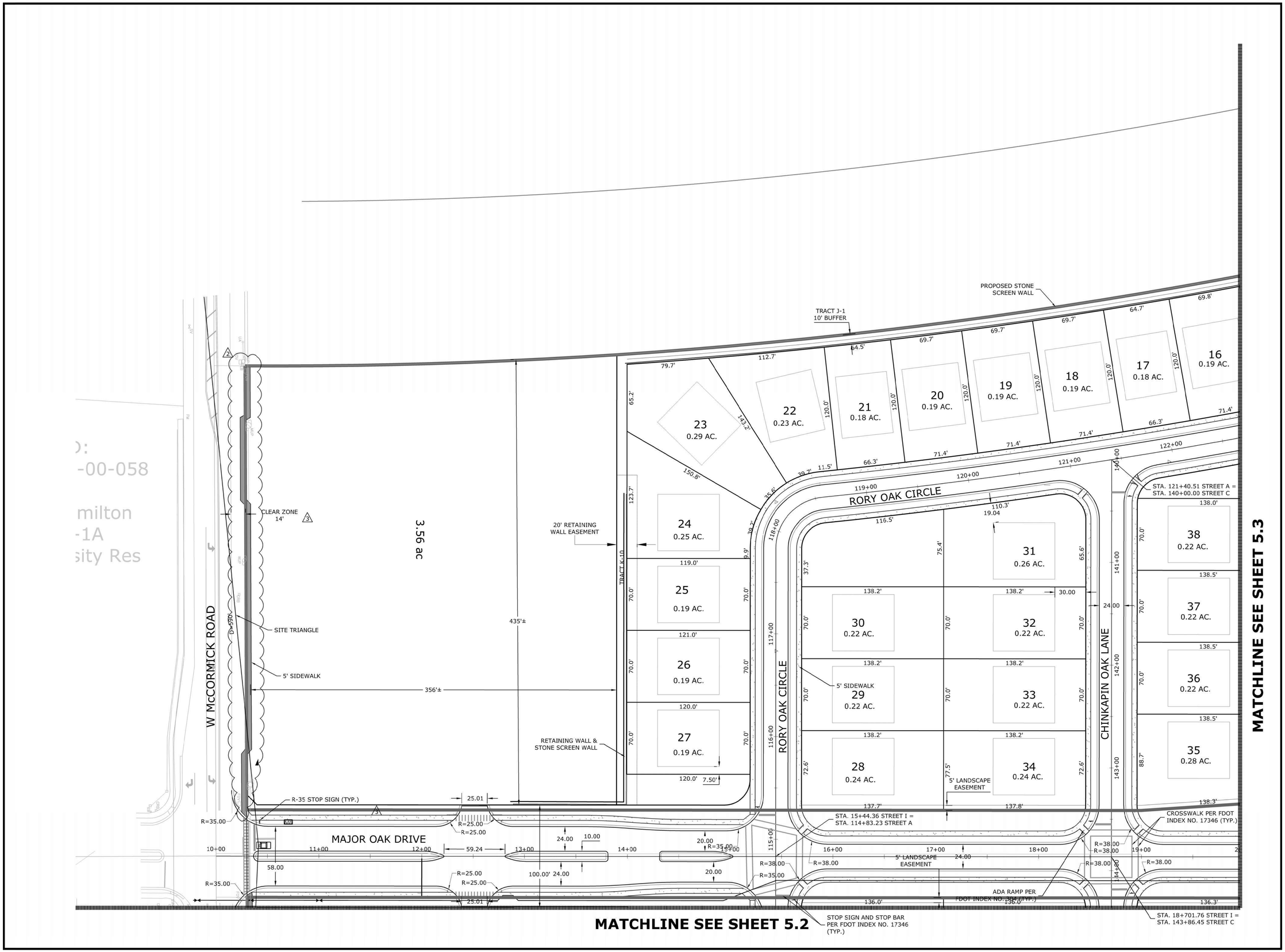
J:\JOBS\25801 - Oak Pointe\Drawings\Final\South\25801 Final South - Overall Site Plan.dwg (01) Plotted on: May 31, 2023 - 9:44am by Al Abukhdir



MATCHLINE SEE SHEET 5.3

MATCHLINE SEE SHEET 5.2

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FLORIDA P.E. NO. 46586

DATE:

OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

SITE GEOMETRY PLAN

REVISIONS

DATE	NO.	DETAIL	BY
7-25-18	3	OCU 18-E-053 PW COMMENTS DATED 7-09-18	JSK
5/22/23	4	GATE REMOVAL AND ROW SIDEWALK REVISION	AHA

DRAWN BY:	DATE:
JSK	JUN, 2019
CHECKED BY:	JOB #:
DLE	25801

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.

SHEET #:
5.1

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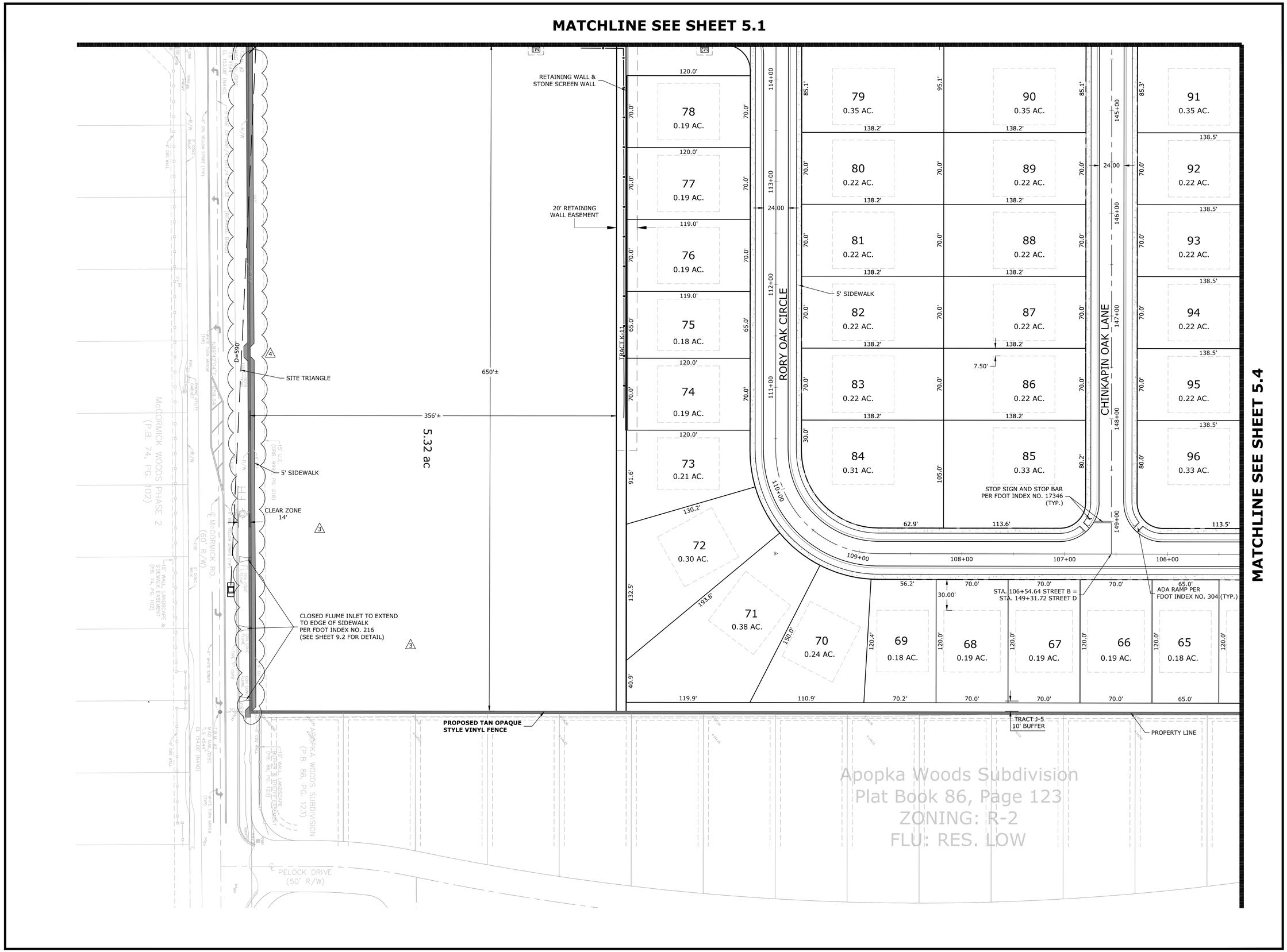

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OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

SITE GEOMETRY PLAN

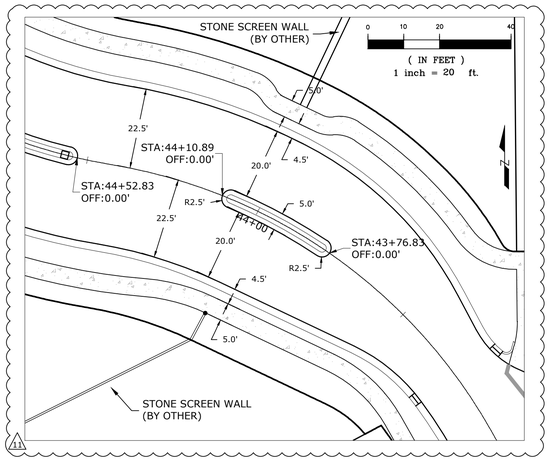
REVISIONS

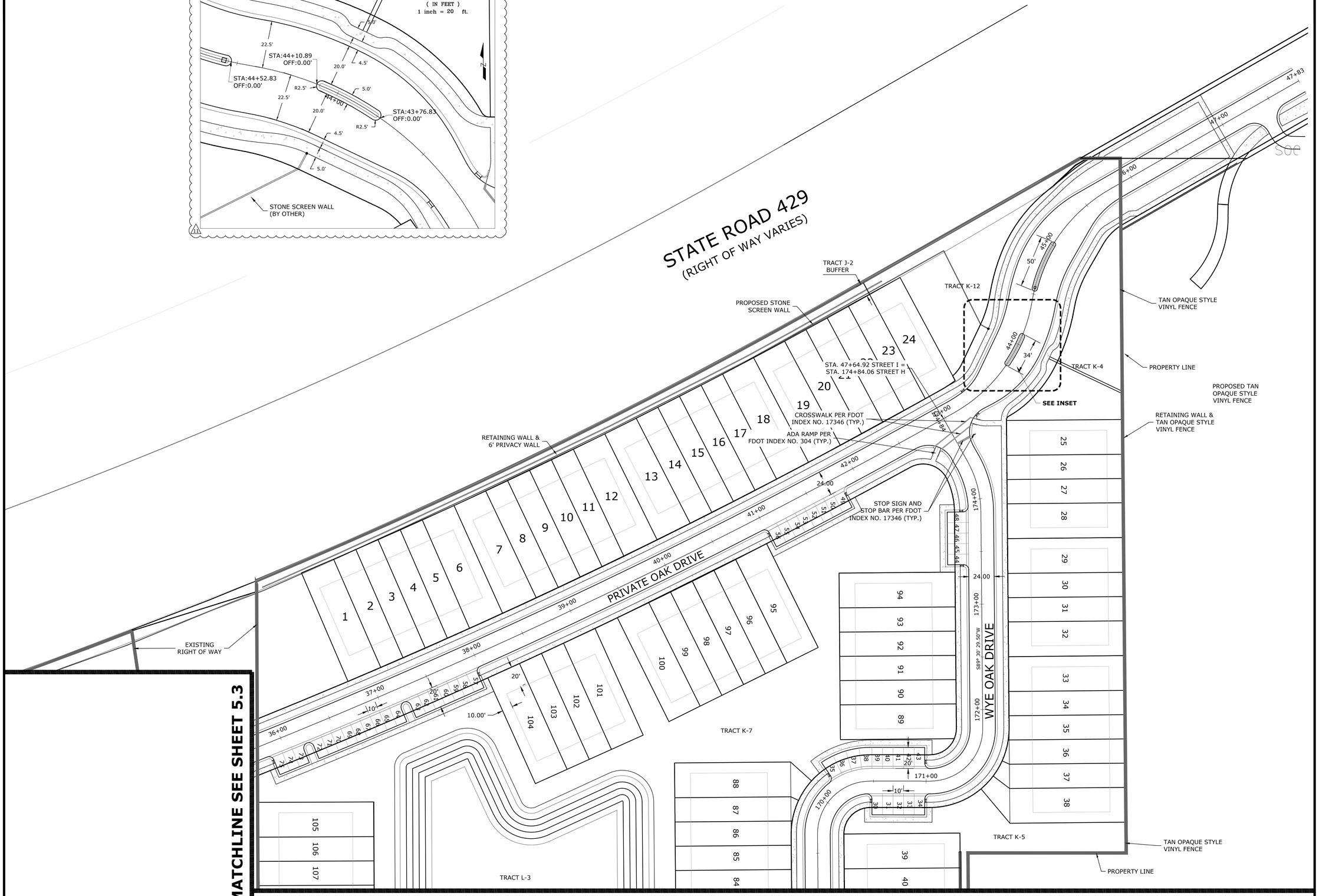
DATE	NO.	DETAIL	BY
7-25-18	3	OCU 18-E-053 PW COMMENTS DATED 7-09-18	JSK
5/22/23	4	GATE REMOVAL AND ROW SIDEWALK REVISION	AHA

DRAWN BY:	DATE:
JSK	JUN, 2019
CHECKED BY:	JOB #:
DLE	25801

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.

SHEET #:
5.2





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OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

SITE GEOMETRY PLAN

REVISIONS			
DATE	NO.	DETAIL	BY
11-11-20	1	REVISED PER APOPKA FD	JSK
6/2/22	2	RFI - NORTH ENTRY GEOMETRY	APV
5/22/23	3	GATE REMOVAL AND ROW SIDEWALK REVISION	AHA

DRAWN BY:	DATE:
JSK	JUN, 2019
CHECKED BY:	JOB #:
DLE	25801

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

SHEET #:
5.5

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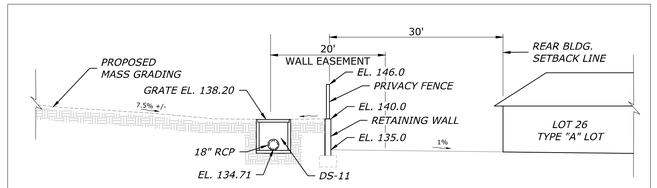
May 23, 2023 - 5:33pm by Al Rochefort
J:\25801\25801 - Oak Pointe\Drawings\Final South\25801 Final South - Site Geo Plan.dwg (05) Plotted on

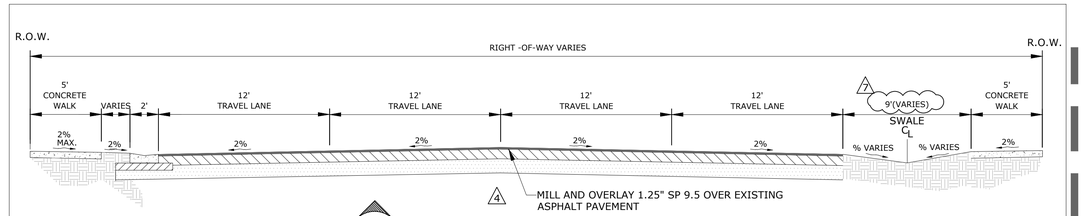
NOTES:

1. ALL RESIDENTIAL FLOOR ELEVATIONS SHALL BE ELEVATED TO A MINIMUM OF 24-INCHES ABOVE THE BASE FLOOD ELEVATION.
2. ALL NON-RESIDENTIAL FLOOR ELEVATIONS SHALL BE ELEVATED TO A MINIMUM OF 24-INCHES ABOVE BASE FLOOD ELEVATION UNLESS FLOOD PROOFED IN ACCORDANCE WITH SECTION 8-52(2) FLOOD DAMAGE PREVENTION CODE.
3. ALL SIDEWALKS TO BE A MINIMUM OF 4-INCHES THICK EXCEPT AT DRIVEWAY APPROACHES WHERE SIDEWALKS SHALL BE AT LEAST 6-INCHES THICK.
4. ALL SIDEWALKS SHALL NOT EXCEED 2 % CROSS SLOPES
5. SIDEWALKS FRONTING INDIVIDUAL LOTS SHALL BE CONSTRUCTED AT TIME OF BUILDING CONSTRUCTION. SIDEWALKS FRONTING OPEN SPACE / RECREATION TRACTS SHALL BE CONSTRUCTED WITH INFRASTRUCTURE.
6. ALL PONDS SHALL BE MAINTAINED BY THE HOA.
7. STORM DRAINAGE SERVING PRIVATE ROADWAYS SHALL BE OWNED AND MAINTAINED BY HOA.

8. OFFSITE STORM WITHIN COMMERCIAL PARCELS TO BE CONSTRUCTED WITH PHASE 1.



C 6.1 RETAINING WALL TYPICAL SECTION
N.T.S.



D 6.1 WEST MCCORMICK ROAD TYPICAL SECTION
N.T.S.

LEGEND:

(A) LOT GRADING TYPE (SEE DETAIL 1 SHEET 9.3)

STATE ROAD 429
(RIGHT OF WAY VARIES)

W. McCORMICK ROAD

RORY OAK CIRCLE

CHINKAPIN OAK LANE

MAJOR OAK DRIVE

REFER TO OFFSITE SIDEWALK SHEET C6.9

BEGIN RETAINING WALL
BOTTOM WALL EL. 140.00
TOP WALL EL. 140.00
TOP PRIVACY FENCE EL. 146.00

20' RETAINING WALL EASEMENT

NOTE:
CONTOUR GRADES ARE PROPOSED FOR MASS GRADING

END RETAINING WALL
BOTTOM WALL EL. 140.00
TOP WALL EL. 140.00
TOP PRIVACY FENCE EL. 146.00

BOTTOM WALL EL. 135.00
TOP WALL EL. 140.00
TOP PRIVACY FENCE EL. 146.00

TYPE F CURB (TYP)

GRADE BREAK

MATCHLINE SEE SHEET 6.3

MATCHLINE SEE SHEET 6.2

EVANS ENGINEERING, INC.
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ORLANDO, FLORIDA 32803
(407) 872-1515
www.evansenginc.com
CERTIFICATE OF AUTHORIZATION NO. 00006788

EVANS ENGINEERING, INC.
CERTIFICATE OF AUTHORIZATION NO. 6788

DAVID L. EVANS
FLORIDA P.E. NO. 46586

DATE:

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OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

PAVING, GRADING, AND DRAINAGE PLAN

REVISIONS

NO.	DETAIL	DATE	BY
1	REV. PER GENERAL COMMENTS PR18-11 DATED 4-23-18	7-9-18	JSK
2	REV. PER GENERAL COMMENTS 18-E-053 DATED 7-9-18	7-9-18	JSK
3	REV. PER GENERAL COMMENTS 18-E-053 DATED 8-29-18	8-31-18	CA
4	CONTRCTOR'S RFI	12-20-18	JSK
5	CONTRCTOR'S RFI	3-20-20	JSK
6	GATE REMOVAL AND ROW SIDEWALK REVISION	5/22/23	AHA

DRAWN BY: JSK
DATE: JUN, 2019
CHECKED BY: DLE
JOB #: 25801

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

SHEET #: 6.1

J:\2025\25801 — Oak Pointe\Drawings\Final\South\25801 Final South – P2D.dwg (01) Plotted on: May 31, 2023 – 9:11am by Al Rauhdorf

MATCHLINE SEE SHEET 6.1

MATCHLINE SEE SHEET 6.4

BEGIN RETAINING WALL
BOTTOM WALL EL. 140.50
TOP WALL EL. 140.50
TOP PRIVACY FENCE EL. 146.00

BOTTOM WALL EL. 135.00
TOP WALL EL. 140.00
TOP PRIVACY FENCE EL. 146.00

20' RETAINING WALL EASEMENT

NOTE:
CONTOUR GRADES ARE PROPOSED FOR MASS GRADING

END RETAINING WALL
BOTTOM WALL EL. 140.00
TOP WALL EL. 140.00
TOP PRIVACY FENCE EL. 146.00

REFER TO OFFSITE SIDEWALK SHEET C6.9

5.32 ac

RORY OAK CIRCLE

CHINKAPIN OAK LANE

GRADE BREAK

TYPE F CURB (TYP)

30.00

PAD = 133.65 FFE = 134.32 — 78 (A)
PAD = 135.90 FFE = 136.57 — 77 (A)
PAD = 137.90 FFE = 138.57 — 76 (A)
PAD = 139.20 FFE = 139.87 — 75 (A)
PAD = 140.30 FFE = 140.97 — 74 (A)
PAD = 141.20 FFE = 141.87 — 73 (A)
PAD = 142.00 FFE = 142.67 — 72 (A)
PAD = 142.50 FFE = 143.17 — 71 (A)
PAD = 142.90 FFE = 143.57 — 70 (A)
PAD = 144.10 FFE = 144.77 — 69 (A)
PAD = 145.20 FFE = 145.87 — 68 (A)
PAD = 146.10 FFE = 146.77 — 67 (A)
PAD = 146.10 FFE = 146.77 — 66 (A)
PAD = 145.50 FFE = 146.17 — 65 (A)

PAD = 133.20 FFE = 133.87 — 79 (A)
PAD = 135.50 FFE = 136.17 — 80 (A)
PAD = 137.50 FFE = 138.17 — 81 (A)
PAD = 139.05 FFE = 139.72 — 82 (A)
PAD = 141.10 FFE = 141.77 — 83 (A)
PAD = 142.00 FFE = 142.67 — 84 (A)

PAD = 130.40 FFE = 131.07 — 90 (A)
PAD = 133.55 FFE = 134.22 — 89 (A)
PAD = 135.90 FFE = 136.57 — 88 (A)
PAD = 138.40 FFE = 139.07 — 87 (A)
PAD = 141.30 FFE = 141.97 — 86 (A)
PAD = 143.30 FFE = 143.97 — 85 (A)

PAD = 129.80 FFE = 130.47 — 91 (A)
PAD = 132.60 FFE = 133.27 — 92 (A)
PAD = 135.35 FFE = 136.02 — 93 (A)
PAD = 138.10 FFE = 138.77 — 94 (A)
PAD = 141.00 FFE = 141.67 — 95 (A)
PAD = 142.30 FFE = 142.97 — 96 (A)

Apopka Woods Subdivision
Plat Book 86, Page 123
ZONING: R-2
FLU: RES. LOW

LEGEND:
(A) LOT GRADING TYPE (SEE DETAIL 1 SHEET 9.3)

NOTE:
ALL SIDEWALK CROSS SLOPES SHOULD NOT EXCEED 2%

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DAVID L. EVANS
FLORIDA P.E. NO. 46586

DATE:

OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

PAVING, GRADING, AND DRAINAGE PLAN

REVISIONS			
DATE	NO.	DETAIL	BY
5-24-18	1	REV. PER GENERAL COMMENTS PR18-11 DATED 4-23-18	JSK
12-20-18	2	CONTRCTOR'S RFI	JSK
5-22-23	3	GATE REMOVAL AND ROW SIDEWALK REVISION	AHA

DRAWN BY:	DATE:
JSK	JUN, 2019
CHECKED BY:	JOB #:
DLE	25801

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

SHEET #:
6.2

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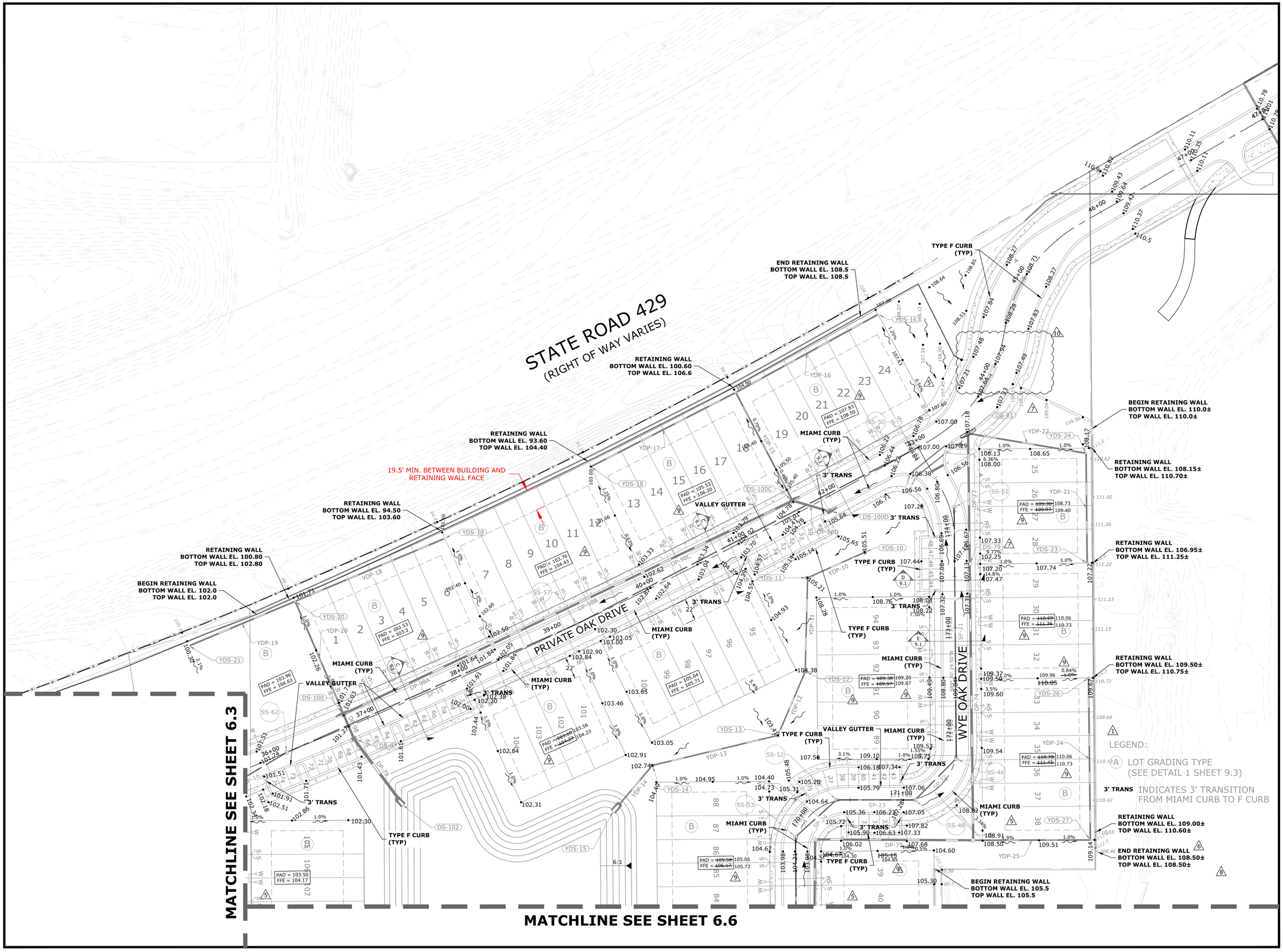

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FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

PAVING, GRADING, AND DRAINAGE PLAN

REVISIONS

DATE	NO.	DETAIL	BY
7-9-18	1	REV. PER GENERAL COMMENTS PR18-11 DATED 4-23-18	JSK
12-20-18	5	CONTRCTOR'S RFI	JSK
12-02-21	6	REVISION PER QC	ATB
3/9/22	7	REVISION PER ROW GEO ADJUSTMENTS	APV
7/12/22	8	RFI PER CONTRACTOR	APV
4/27/23	9	REVISED TOWNHOME PADS	AHA
5-22-23	10	GATE REMOVAL AND ROW SIDEWALK REVISION	AHA

DRAWN BY:	DATE:
JSK	JUN, 2019
CHECKED BY:	JOB #:
DLE	25801

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

SHEET #:
6.5

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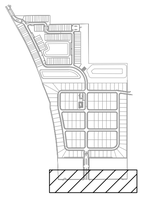
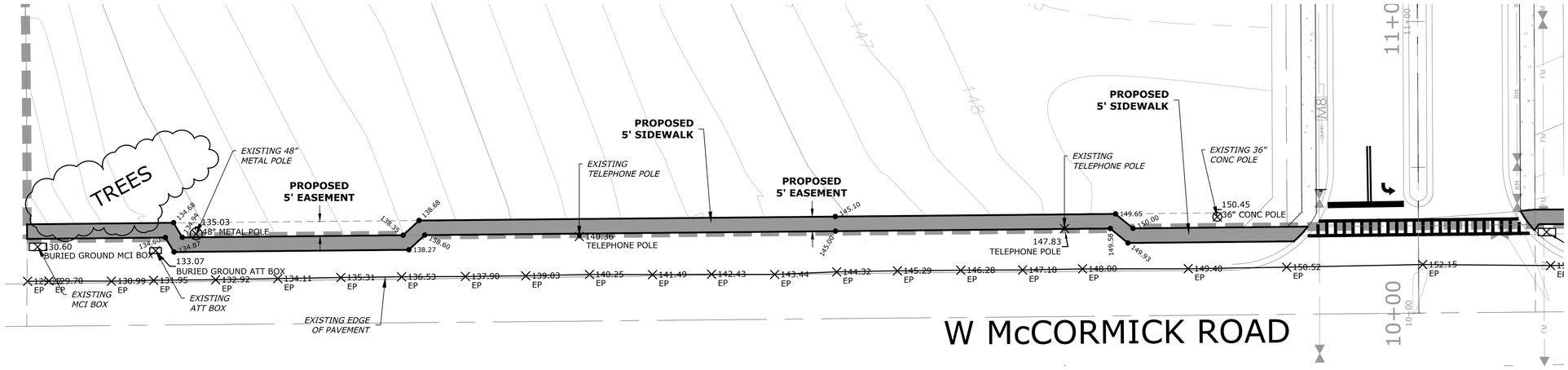
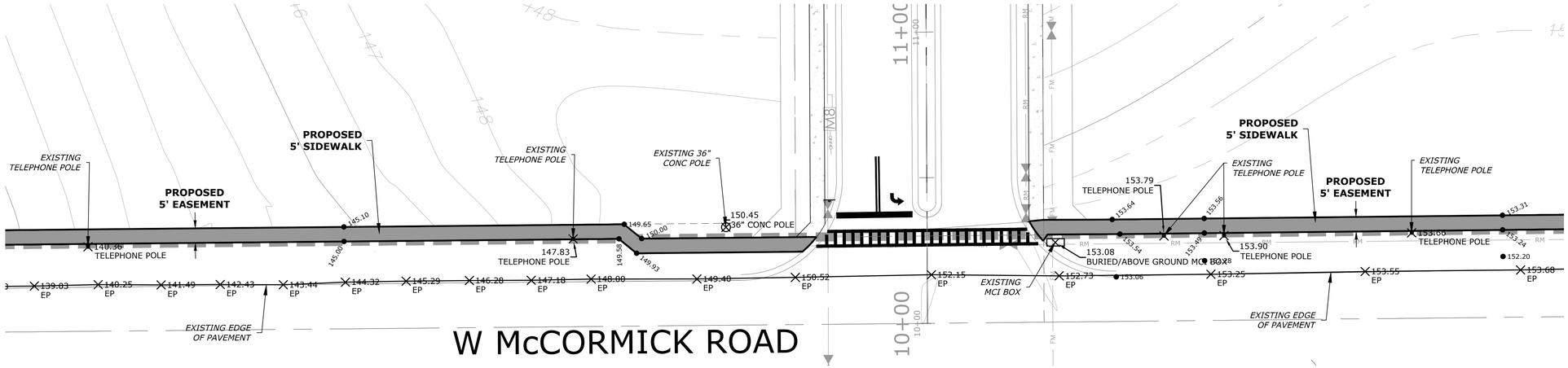
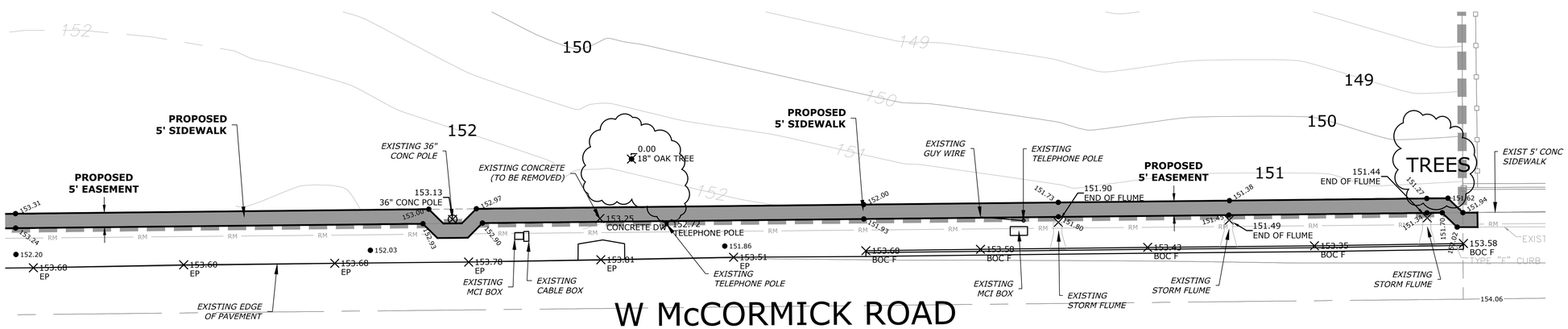


KEY MAP







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DATE:

OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

OFFSITE SIDEWALK
W McCORMICK ROAD

REVISIONS			
DATE	NO.	DETAIL	BY

DRAWN BY: AHA	DATE: MAR, 2023
CHECKED BY: DLE	JOB #: 25801

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch = 20 ft.

SHEET #:

6.9

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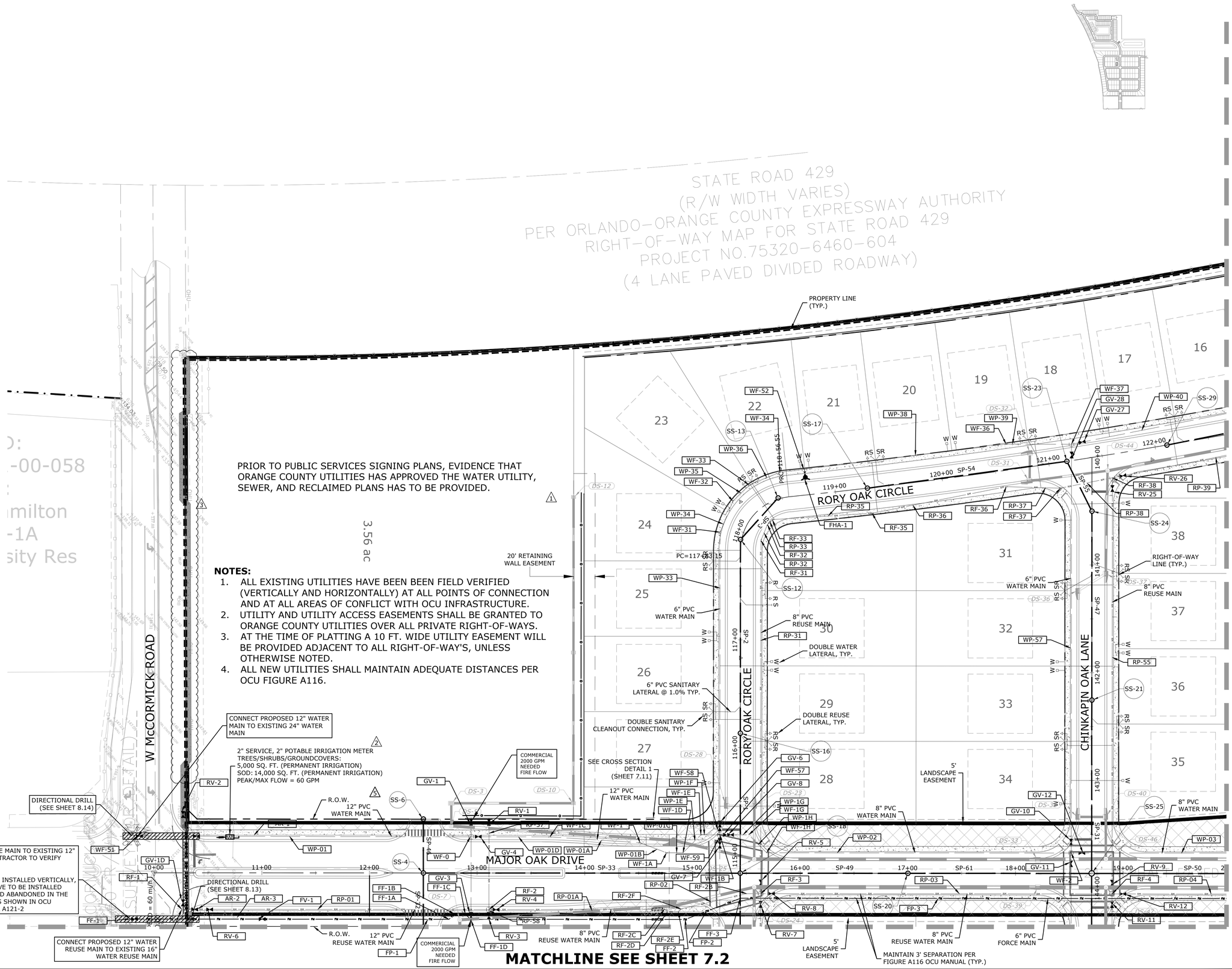

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OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS
CITY OF APOPKA, FLORIDA

UTILITY PLAN

REVISIONS			
NO.	DATE	DETAIL	BY
1	5-24-18	REV. PER GENERAL COMMENTS PR18-11 DATED 4-23-18	JSK
2	9-1-22	ADDED IRRIGATION METER	AHA
3	5-22-23	GATE REMOVAL AND ROW SIDEWALK REVISION	AHA

DRAWN BY:	DATE:
JSK	JUN, 2019
CHECKED BY:	JOB #:
DLE	25801

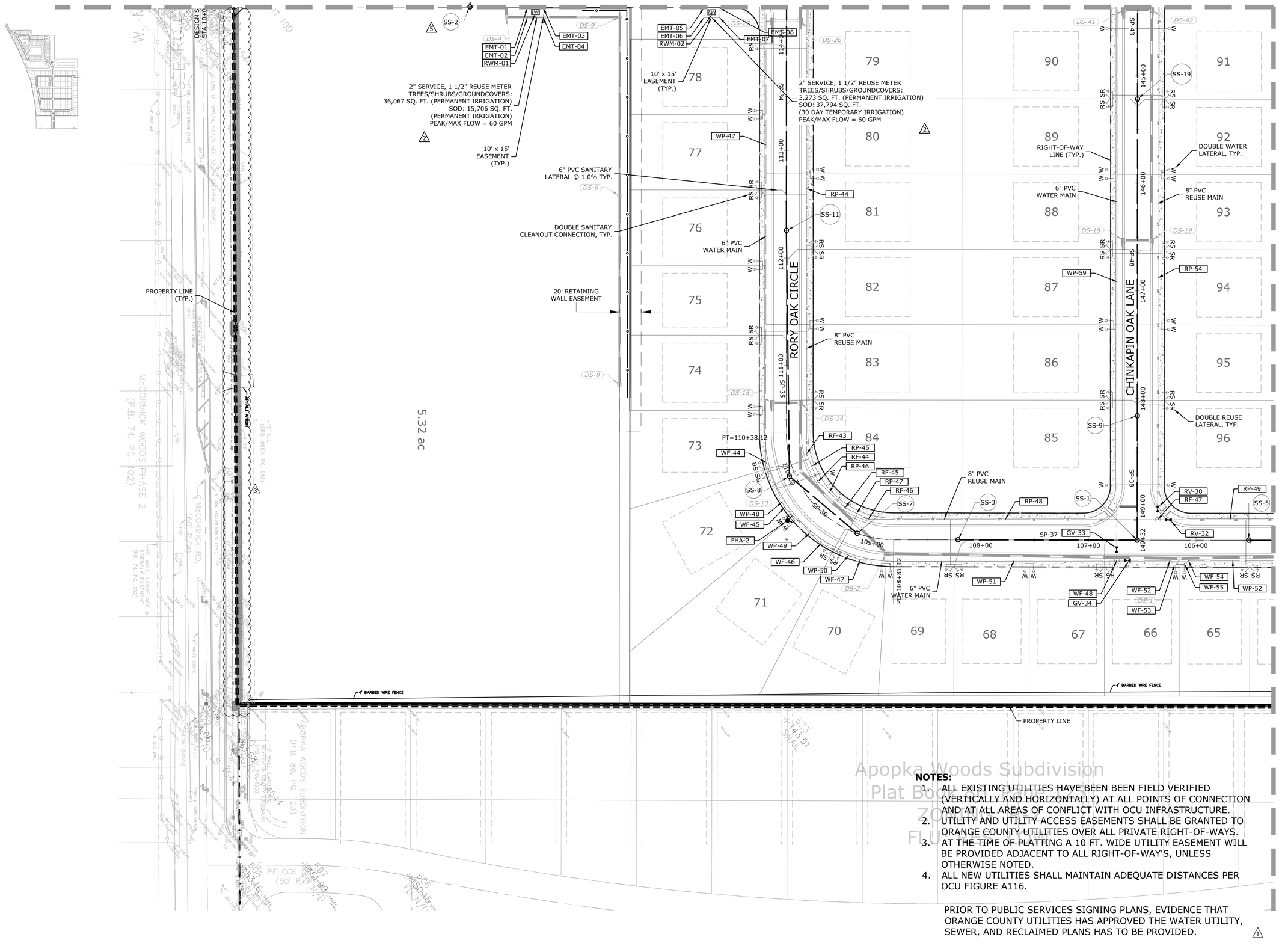
GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

SHEET #:
7.1

J:\25801\25801 - Oak Pointe\Drawings\Final\South\25801 Final South - Utility Plan.DWG (01) Plotted on: May 31, 2023 - 9:35am by Al Abukhdir

MATCHLINE SEE SHEET 7.1

MATCHLINE SEE SHEET 7.4



NOTES:

1. ALL EXISTING UTILITIES HAVE BEEN BEEN FIELD VERIFIED (VERTICALLY AND HORIZONTALLY) AT ALL POINTS OF CONNECTION AND AT ALL AREAS OF CONFLICT WITH OCU INFRASTRUCTURE.
2. UTILITY AND UTILITY ACCESS EASEMENTS SHALL BE GRANTED TO ORANGE COUNTY UTILITIES OVER ALL PRIVATE RIGHT-OF-WAYS.
3. AT THE TIME OF PLATTING A 10 FT. WIDE UTILITY EASEMENT WILL BE PROVIDED ADJACENT TO ALL RIGHT-OF-WAY'S, UNLESS OTHERWISE NOTED.
4. ALL NEW UTILITIES SHALL MAINTAIN ADEQUATE DISTANCES PER OCU FIGURE A116.

PRIOR TO PUBLIC SERVICES SIGNING PLANS, EVIDENCE THAT ORANGE COUNTY UTILITIES HAS APPROVED THE WATER UTILITY, SEWER, AND RECLAIMED PLANS HAS TO BE PROVIDED. 1

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OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

UTILITY PLAN

REVISIONS			
DATE	NO.	DETAIL	BY
5-24-18	1	REV. PER GENERAL COMMENTS PR18-11 DATED 4-23-18	JSK
7-28-22	2	UPDATED IRRIGATION METER DETAILS	AHA
5-22-23	3	CATE REMOVAL AND ROW SIDEWALK REVISION	AHA

DRAWN BY:	DATE:
JSK	JUN, 2019
CHECKED BY:	JOB #:
DLE	25801

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

SHEET #:
7.2

J:\JOBS\25801 – Oak Pointe\Drawings\Civil\South\25801 Final South – Utility Plan.DWG (02) Plotted on May 31, 2023 – 9:39am by Al Abukhdair

NOTES:

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PRIOR TO PUBLIC SERVICES SIGNING PLANS, EVIDENCE THAT ORANGE COUNTY UTILITIES HAS APPROVED THE WATER UTILITY, SEWER, AND RECLAIMED PLANS HAS TO BE PROVIDED.

STATE ROAD 429
(RIGHT OF WAY VARIES)

PROPERTY LINE

PRIVATE OAK DRIVE

WYE OAK DRIVE

10004
10619
LF FT 246 DISTURBED

RESIDENTIAL 1000GPM NEEDED FIRE FLOW (TYP.)

PRC=44+43.32

PC=43+09.16

PT=43+84.00

PC=169+67.99

PT=170+46.99

PC=171+82.50

SP-23 171+00

SP-21 173+00

FT=174+37.63

RIGHT-OF-WAY LINE (TYP.)

SINGLE REUSE LATERAL, TYP.

8" PVC REUSE MAIN

6" PVC WATER MAIN

DOUBLE WATER LATERAL, TYP.

DOUBLE SANITARY CLEANOUT CONNECTION, TYP.

6" PVC SANITARY LATERAL @ 1.0% TYP.

5/8" REUSE METER
APPROX. 6,000-7,000 SQ. FT. MAX IRRIGATED AREA FOR EACH 6-UNIT TOWNHOME BLOCK (PENDING DRIVEWAY/HARDSCAPE LAYOUT) PEAK/MAX FLOW = 20 GPM

5/8" REUSE METER
APPROX. 6,000-7,000 SQ. FT. MAX IRRIGATED AREA FOR EACH 6-UNIT TOWNHOME BLOCK (PENDING DRIVEWAY/HARDSCAPE LAYOUT) PEAK/MAX FLOW = 20 GPM

5/8" REUSE METER
APPROX. 6,000-7,000 SQ. FT. MAX IRRIGATED AREA FOR EACH 6-UNIT TOWNHOME BLOCK (PENDING DRIVEWAY/HARDSCAPE LAYOUT) PEAK/MAX FLOW = 20 GPM

5/8" REUSE METER
APPROX. 6,000-7,000 SQ. FT. MAX IRRIGATED AREA FOR EACH 6-UNIT TOWNHOME BLOCK (PENDING DRIVEWAY/HARDSCAPE LAYOUT) PEAK/MAX FLOW = 20 GPM

1" REUSE METER
APPROX. 4,500-5,500 SQ. FT. MAX IRRIGATED AREA FOR EACH 4-UNIT TOWNHOME BLOCK (PENDING DRIVEWAY/HARDSCAPE LAYOUT) PEAK/MAX FLOW = 20 GPM

1" REUSE METER
APPROX. 4,500-5,500 SQ. FT. MAX IRRIGATED AREA FOR EACH 4-UNIT TOWNHOME BLOCK (PENDING DRIVEWAY/HARDSCAPE LAYOUT) PEAK/MAX FLOW = 20 GPM

1" REUSE METER
APPROX. 4,500-5,500 SQ. FT. MAX IRRIGATED AREA FOR EACH 4-UNIT TOWNHOME BLOCK (PENDING DRIVEWAY/HARDSCAPE LAYOUT) PEAK/MAX FLOW = 20 GPM

1" REUSE METER
APPROX. 4,500-5,500 SQ. FT. MAX IRRIGATED AREA FOR EACH 4-UNIT TOWNHOME BLOCK (PENDING DRIVEWAY/HARDSCAPE LAYOUT) PEAK/MAX FLOW = 20 GPM

5/8" REUSE METER
APPROX. 6,000-7,000 SQ. FT. MAX IRRIGATED AREA FOR EACH 6-UNIT TOWNHOME BLOCK (PENDING DRIVEWAY/HARDSCAPE LAYOUT) PEAK/MAX FLOW = 20 GPM

5/8" REUSE METER
APPROX. 6,000-7,000 SQ. FT. MAX IRRIGATED AREA FOR EACH 6-UNIT TOWNHOME BLOCK (PENDING DRIVEWAY/HARDSCAPE LAYOUT) PEAK/MAX FLOW = 20 GPM

PROPERTY LINE

MATCHLINE SEE SHEET 7.3

MATCHLINE SEE SHEET 7.6

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CERTIFICATE OF AUTHORIZATION NO. 6788

DAVID L. EVANS
FLORIDA P.E. NO. 46586

DATE:

OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

UTILITY PLAN

REVISIONS			
DATE	NO.	DETAIL	BY
5-24-18	1	REV. PER GENERAL COMMENTS PR18-11 DATED 4-23-18 GATE REMOVAL AND ROW	JSK
5-22-23	2	SIDEWALK REVISION	AHA

DRAWN BY:	DATE:
JSK	JUN, 2019
CHECKED BY:	JOB #:
DLE	25801

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

SHEET #:
7.5

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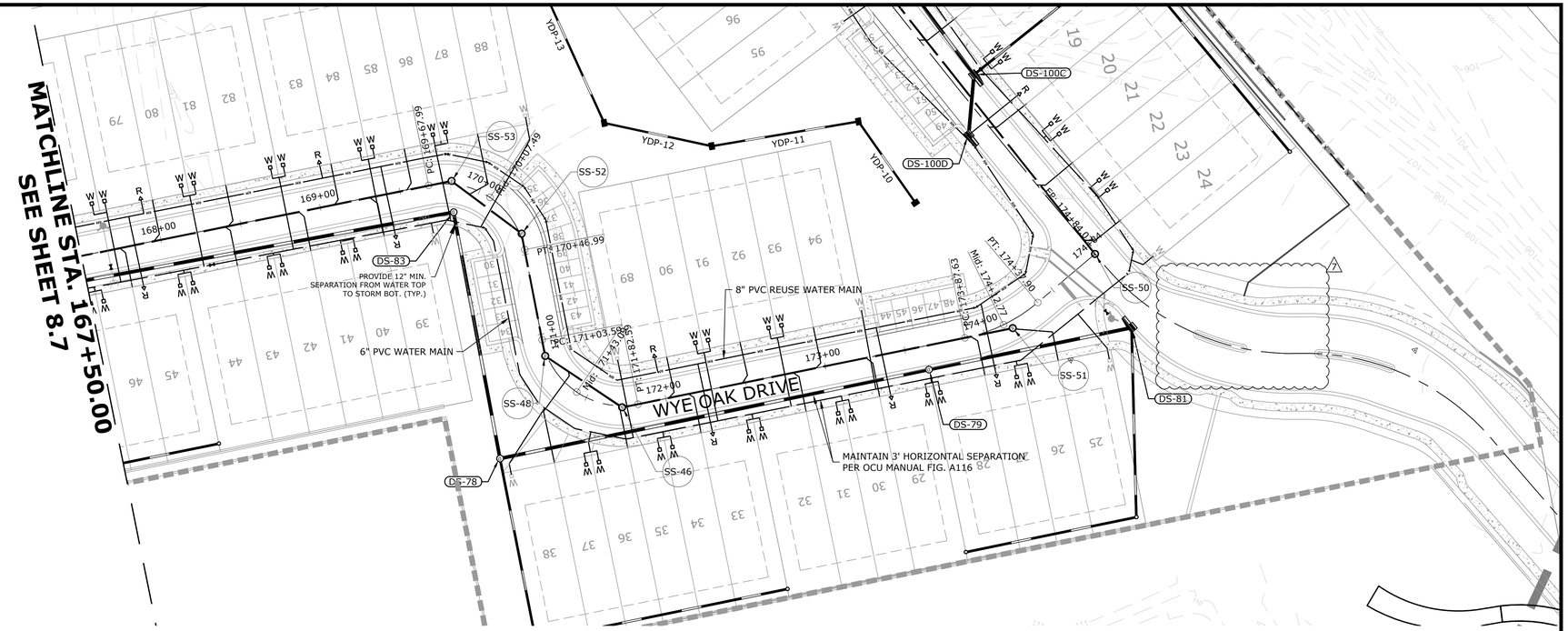

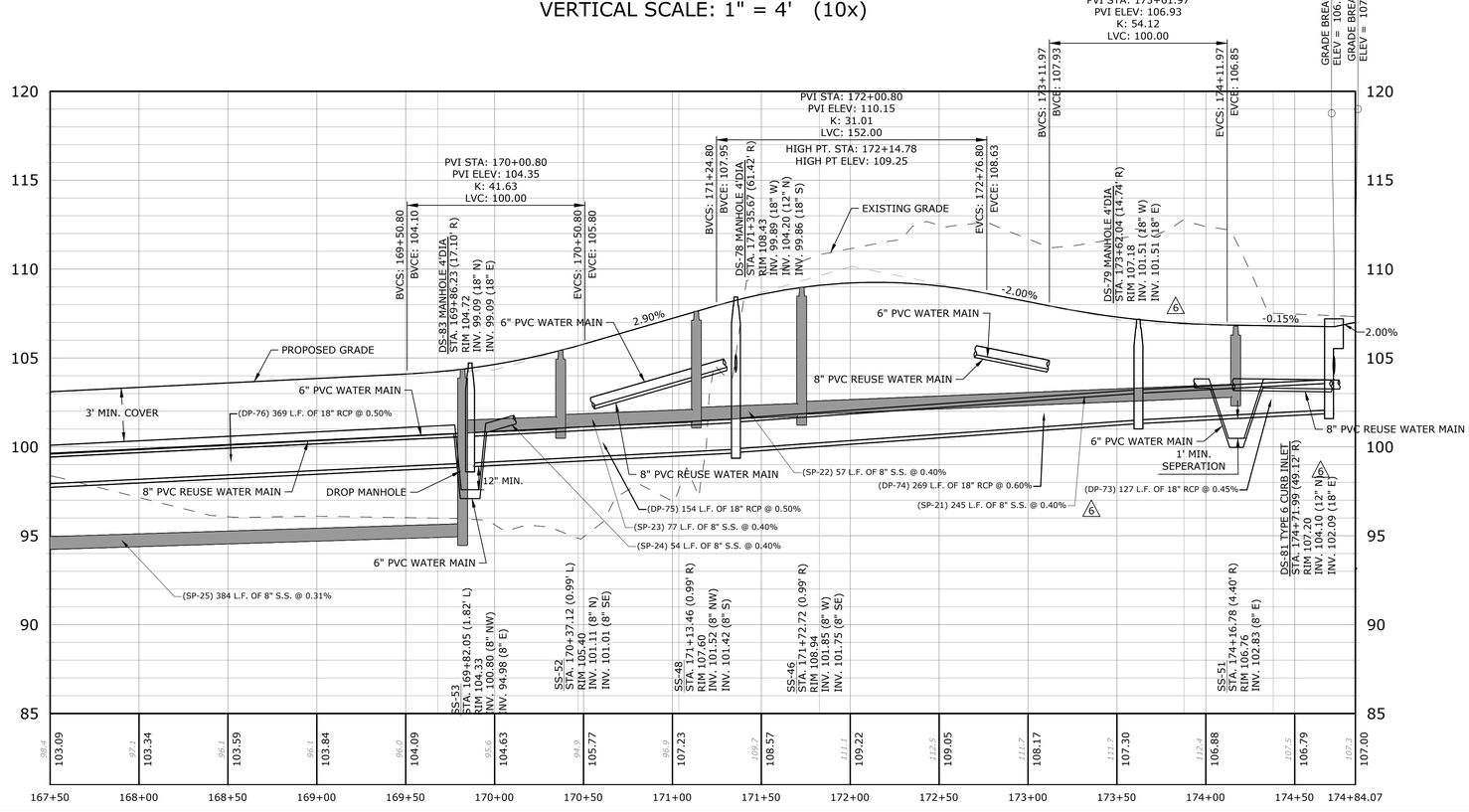

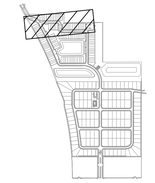

KEY MAP

NOTE:

1. ALWAYS PROVIDE MINIMUM SEPARATION BETWEEN UTILITIES PER FIGURE A116 OCU MANUAL.
2. ALL PRESSURE PIPES TO YEILD TO STORM AND SANITARY UTILITIES, WITH ALL MAINTAINING 3' COVER.
3. OUTSIDE DROP MANHOLES SHALL BE USED WHERE INVERTS DIFFER IN GRADE GREATER THEN 24".

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DATE:

OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

PLAN AND PROFILES
WYE OAK DRIVE

REVISIONS			
DATE	NO.	DETAIL	BY
3/29/22	6	REVISION PER MACK/OCU CODE	APV
5/23/23	7	GATE REMOVAL AND ROW SIDEWALK REVISION	AHA

DRAWN BY: JSK	DATE: JUN, 2019
CHECKED BY: DLE	JOB #: 25801

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

SHEET #:
8.8

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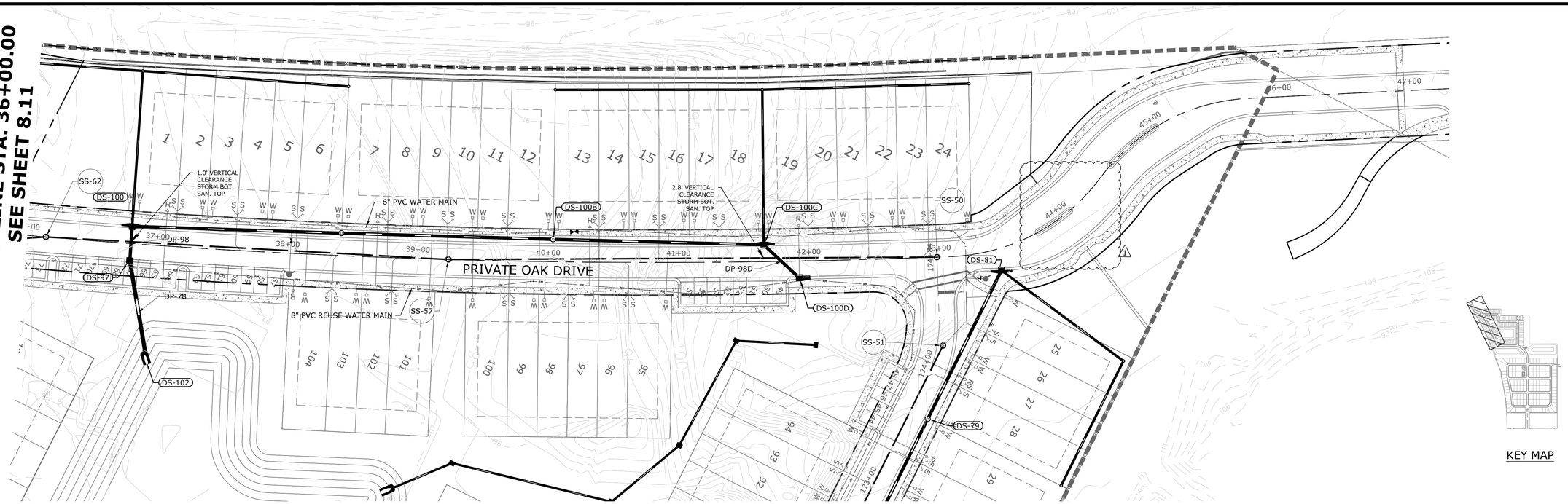
MATCHLINE STA. 36+00.00
SEE SHEET 8.11



KEY MAP

NOTE:
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(IN FEET)
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SHEET #:
8.12

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OAK POINTE - SOUTH

FINAL CONSTRUCTION PLANS

CITY OF APOPKA, FLORIDA

PLAN AND PROFILES
PRIVATE OAK DRIVE

REVISIONS			
DATE	NO.	DETAIL	BY
5-23-23	1	GATE REMOVAL AND ROW SIDEWALK REVISION	AHA

DRAWN BY:	DATE:
JSK	JUN, 2019
CHECKED BY:	JOB #:
DLE	25801

J:\JOBS\25801 - Oak Pointe\Drawings\Final\South\25801 Final South - PLPR - Sheet 1.dwg (04) Plotted on: May 25, 2023 - 9:38am by Al Abukhdir

EVANS ENGINEERING, INC.

719 Irma Avenue
Orlando, FL 32803
(407) 872-1515
www.evansenginc.com

June 5, 2023

To: City of Apopka

Subject: Project#: Oak Pointe North
Construction Revision

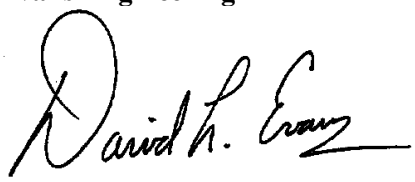
Dear Staff,

Please find enclosed revised civil plans. The following adjustments have been made to all sheets:

- Removal of North Gate along Private Oak Drive near the townhomes
- Revised sidewalk in the ROW along W McCormick Rd
- Sheet 6.9 Offsite sidewalk has been added to the plan set

If you have any further concerns, please contact our office for assistance.

Sincerely,
Evans Engineering



David Evans P.E.

EVANS ENGINEERING, INC.

719 Irma Avenue
Orlando, FL 32803
(407) 872-1515
www.evansenginc.com

May 8, 2023

To: City of Apopka

Subject: Oak Pointe South (18-E-053)
Construction Revision

Dear Staff,

Please find enclosed revised civil plans. The grade revisions within the enclosed plans are as follows:

- Lots 1-24 PAD/FFE and Storm Structure Table Yard Drains 16-19 inlet grate elevations located behind these lots.
- Lots 101-104 PAD/FFE
- Lots 25-44 PAD/FFE
- Lots 83-88 PAD/FFE
- Lots 73-78 PAD/FFE

If you have any questions or comments, please feel free to let us know.

Sincerely,
Evans Engineering

David L. Evans

David Evans P.E.

included w/ plans sent to Engineering & Public Services

City of Apopka
Community Development Department
120 E. Main Street, 2nd Floor, Apopka, Florida 32703
407-703-1712

– FOR OFFICIAL USE ONLY–	
DATE SUBMITTED:	6.9.23
FEE PAID: $	1000 —
CHECK #:	1712819
RECEIPT #:	3200677

APPLICATION FOR MDP/CSP/PLAT/REPLAT

RECEIVED
JUN 05 2023
By

	APPLICATION TYPE	FEES
☐	Major Development Plan	$1,000
☑	Construction Site Plan/Revision to Approved Development Plan	$1,000
☐	Replat	$500 plus $15 per lot
☐	Plat	$500 plus $15 per lot
☐	Resubmittal (after 3 submittals)	$500

Project Name:	Oak Pointe South		
Engineer/Project Representative Information:			
Company Name:	Evans Engineering, Inc.		
Engineer Name:	David Evans, PE		
Street Address:	713 Irma Ave		
City: Orlando		State: FL	Zip: 32803
Phone: 407-872-1515	Fax:	E-mail: permitting@evansenginc.com	
Owner Information:			
Owner Name:	D.R. Horton - Lou Avelli, Land Development Manager		
Street Address:	10192 Dowden Rd		
City: Orlando		State: FL	Zip: 32832
Phone: 407-467-6801	Fax:	E-mail: lavelli@drhorton.com	
Property Information:			
Parcel I.D. #(s):	29-21-28-6067-00-001, 29-21-28-6067-00-002,see attached		
Address:	1527 W McCormick Road Apopka, FL 32703		
Future Land Use:	Res Low	Zoning:	PUD
Size (acres):	53.92	Number/Type of Units:	116 SF, 118 TH
Existing Use:	Residential	Proposed Use:	Residential

Sidewalk Revision on McCormick and Landscape	29-21-28-6067-00-001, 29-21-28-6067-00-002
North Gate	29-21-28-6067-18-003
Landscape on SR 429	29-21-28-6067-00-101
Landscape on North Pond	29-21-28-6067-11-002
Landscape behind Townhomes	29-21-28-6067-00-102
Tract south of Townhomes	29-21-28-6067-11-014
Tract north of Townhomes	29-21-28-6067-11-012

DOCUMENTS REQUIRED FOR SUBMITTAL (if applicable) (Electronic submission or CD only)

- Signed, Notarized Authorized Agent Form (if property owner did not sign application)
- Signed & Sealed Boundary Survey
- Signed/Sealed Development Plans (2 sets)
- Signed/Sealed Landscaping Plan
- Color architectural elevations of proposed buildings (all four sides)
- Traffic Impact Analysis
- Concurrency Verification Letter
- Wetland/threatened/endangered species report
- Phase 1 Environmental report
- Habitat study for projects 10 acres or more in size
- Stormwater and Geotechnical Engineering reports
- Photometric plan
- Documents confirming required Community Meeting

CERTIFICATION AND SIGNATURE

By: _____
Owner(s) of Record (Signature)

Louis Avelli
(Print Name)

By: _____
Owner(s) of Record (Signature)

_____
(Print Name)

STATE OF FLORIDA
COUNTY OF ORANGE

The foregoing instrument was acknowledged before me on this 2nd day of June, 2023 by Louis Avelli who is personally known to me or has produced _____ as Identification and who did / did not (circle one) take an oath.

Christine M. Hurst
Notary Public (Signature)

My Commission Expires: 6-29-2025

Christine M. Hurst
Notary Public (Print Name)

CHRISTINE MARIE HURST
Notary Public-State of Florida
Commission # HH 147229
My Commission Expires
June 29, 2025

Rev. 11-16-22