Stormwater Management Report

For

N. Hancock Road Widening
(Segment A)

For

Lake County Public Works

Prepared By:

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November, 2010

TABLE OF CONTENTS

Items		Page
1.	Signature Page	i
2.	Introduction and Purpose	1
3.	Existing Conditions	1
4.	Proposed Conditions	2
5.	Stormwater Criteria	4
6.	Wetlands	4
7.	Floodplains and Floodways	5
8.	Geotechnical	5
9.	Stormsewer System	6

Appendix A – Typical Section, Location Map, and Drainage Maps
Appendix B – Basin #1 Stormwater Calculations
Appendix C – Basin #2 Stormwater Calculations
Appendix D – Basin #3 – Big Sky Subdivision Existing Permit Data and Modified Stormwater Calculations
Appendix E – Basin #4 – Reserve at Minneola Existing Permit Data
Appendix F – FEMA Floodplain Maps
Appendix G – Geotechnical Information and Soils Data Maps
Appendix H – Cross Drain Calculations
Appendix I – Stormsewer Calculations
Appendix J – Skyridge Valley Subdivision - Pond J, Existing Permit Data

Stormwater Management Report

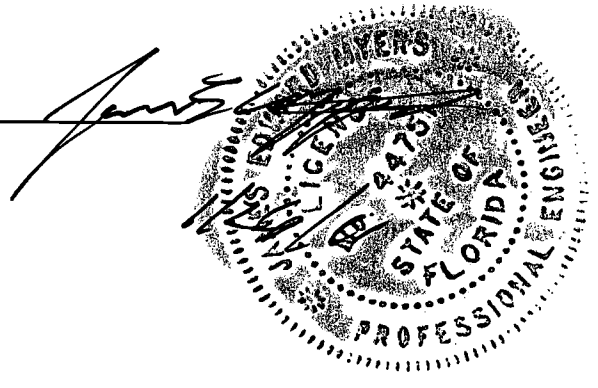
For

N. Hancock Road Widening Project (Segment A)

Lake County, Florida

November, 2010

The engineering data, associated design elements, and conclusions contained in these Stormwater Management Calculations that are being submitted to Lake County Public Works and the St. Johns River Water Management District was prepared and assembled under the direct supervision of the undersigned Professional Engineer registered in the State of Florida.



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LAKE COUNTY
FLORIDA

Stormwater Management Report

Introduction and Purpose

Lake County proposes to construct an extension of N. Hancock Road from just south of Old Hwy 50 to north of Fosgate Avenue. The roadway is on a new alignment and is located within the City of Minneola in Lake County, Florida **(See Appendix A for Location Map).**

The proposed roadway will consist of a 4-lane divided urban section with a 5' sidewalk, 12' multi-use lane, 22' median, and 2-4' bike lanes, all within a 120' right-of-way. The proposed extension of N. Hancock Road will accommodate the expected future traffic capacity increases. **See Appendix A for proposed typical roadway section.**

With the extension of N. Hancock Road roadway comes an increase in stormwater runoff and pollutant loading. Due to this increase, the development of stormwater management facilities, in the form of dry retention ponds, for the treatment and attenuation of the additional stormwater runoff will be required. This Stormwater Management Report has been prepared to document the expected increase and proposed management of this stormwater runoff.

Existing Conditions

The topography of the project area is rolling, with elevations ranging from 106.00 ft. (north of Old Hwy 50) to 220.0 ft. (near Gatewood Avenue) The drainage areas in the vicinity of Hancock Road are outlined on the Drainage Maps **(See Appendix A).** Existing drainage patterns and basin boundaries were determined using the project survey, Lake County LIDAR, field investigations, and USGS Topographic Maps.

There are four (4) existing drainage basins within the corridor, all of which are considered to be closed (land locked) basins.

Basin 1 extends from the project beginning to the Hancock Road and Old Hwy 50 intersection. The existing Hancock Road in this basin (2.21 acres) was treated and attenuated in the SkyRidge Subdivision, Pond J (North Hancock Road Phase II project; SJRWMD Permit #40-069-50126-3) **(See Appendix J).** The SkyRidge Pond J also provides treatment and attenuation for existing Old Highway 50 (1.14 acres) between Hancock and Turkey Farms Roads.

Basin 2 starts at the intersection of Hancock Road and Old Hwy 50 to the existing to the ridge approximately midway (station 214+10) of the proposed alignment on the Black West Development property. The runoff from this basin sheet flows to a depressional area in the northeast quadrant of the intersection of Hancock Road and Old Hwy 50.

Basin 3 encompasses that portion of the proposed alignment from the ridge (station 214+10) to station 240+20 of the proposed alignment. The runoff from this basin sheet flows to the land-locked Patterson Lake (Pond Chain 555-1) located to the east of the

proposed alignment at the east end of Jim Hunt Road. A portion of this basin (Stations 233+80 to 240+20) is a part of the Big Sky Subdivision and the existing ponds will be impacted by this project.

Basin 4 starts at station 240+20 of the proposed alignment and ends at the northern terminus of the project. This area discharges to the west into Plum Lake.

The portion of existing Hancock Road from 256+90 to the northern terminus of the project discharges to the existing Reserve at Minneola pond (NODE 30) in the northwest quadrant of the intersection of Hancock and Fosgate Roads. Treatment and attenuation for the proposed widening of Hancock Road was provided for under The Reserve at Minneola project; SJRWMD Permit #4-069-92447-1. Per this permit, the total area allowed to discharge to the pond from Hancock Road is 2.341 acres of which 1.288 acres can be impervious.

A telephone memorandum is located in **Appendix E** regarding a conversation with Mr. Mark Jacobson, City Engineer with the City of Minneola, about this pond. It was confirmed that the volume set aside for the Hancock Road widening is still available for use.

Proposed Conditions

The proposed roadway improvements consist of the new alignment of Hancock Road with a typical section of a 4-lane divided, urban facility with a sidewalk and multi-use path. The proposed drainage system will be a series of curb inlets and an underground pipe network that is designed to collect and convey roadway stormwater runoff away from the roadway and into two (2) new dry retention ponds. The ponds will provide water quality treatment (pollution abatement volume) and attenuate the required stormwater runoff volume. Due to the basins being land-locked, the attenuation volumes for all basins exceed the treatment volumes.

Offsite stormwater runoff will bypass the stormwater management system except in Basin 1. Stormwater runoff from the Black West property will be captured within Pond 1 and the pond has been designed to include the additional offsite area. Offsite areas draining to the remaining existing right-of-way will be diverted to proposed cross drains to maintain historic flow paths.

Below is a description of each basin and pond location **(See Appendix A for Drainage Maps):**

Basin #1 – From Project Beginning to New Hwy 50/Blackwest Intersection (Stations 187+00 to 211+00):

Pond 1 is located in the triangular infield area in the northeast quadrant of the intersection of Old Hwy 50 and N. Hancock Road and bounded on the north side by the realigned

Lake County Trail. The pond will provide water quality and storage for the 100year/24 hour storm event for a portion of proposed Hancock Road along with the trail and offsite area coming from the Black West property.

In addition, there is additional impervious proposed due to the realignment of Old Highway 50 from Turkey Farms Road to the New Highway 50/Black West intersection. This new impervious area (1.05 acres) is being diverted to the SkyRidge Pond J. No adverse impacts are anticipated to the SkyRidge Pond J since the project design proposes to remove 1.14 acres of old highway 50 from the SkyRidge Pond J basin. The result is a reduction in overall impervious area to the SkyRidge Pond J of 0.09 acres.

Basin #2 – From New Hwy 50/Blackwest Intersection to North of Fosgate Avenue (Stations 211+00 to 256+80):
This basin is located mostly on the undeveloped Blackwest property. The proposed Pond 2 is located adjacent to the east right-of-way line of Hancock Road and just south of Jim Hunt Road. A control structure will be installed in the pond to provide an overflow that discharges to the east into land-locked Patterson Lake (Pond Chain 555-1).

The pre-development basin for the attenuation analysis includes only the project area from Stations 214+10 to 233+80.

Basin #3 – From Station 233+80 to 240+20 (Big Sky Subdivision):
The proposed Hancock Road within this segment is discharging to proposed Pond 2 which removes 1.88 acres from the subdivision. However, the new alignment impacts the existing subdivision and its stormwater management system. In **Appendix D,** the existing SJRWMD permit data (permit #42-069-101701-1) has been included along with the proposed changes to those calculations based upon the impacts caused by the proposed project.

Basin #4 – From North of Fosgate Avenue to Project End (Stations 256+80 to End of Project):
The runoff from the roadway is to be collected and directed into the existing pond (NODE 30) within The Reserve at Minneola subdivision. The SJRWMD permit number for this subdivision is 4-069-92447-1. The total area allowed in the pond from Hancock Road is 2.341 acres of which 1.288 acres can be impervious area. Based upon the proposed improvements of Hancock Road, only the runoff from station 256+90 to the end of the project can be accommodated for in this pond. The total area discharging to the pond is 1.85 acres of which 1.26 acres is impervious.

Adjacent to the north end of the project continues another widening project is being designed by Lake County. There is no drainage co-mingling between the two projects.

Stormwater Criteria

This project is regulated by the rules and criteria set forth by Lake County and the St. Johns River Water Management District (SJRWMD). This project falls within the Lake Apopka Hydrologic Basin. However, as stated in Chapter 11.7(a)(1)iii of the MSSW Handbook, the sub-basins within the project corridor do not discharge water to Lake Apopka or its tributaries for the 100 year – 24 hour storm event (land–locked) and therefore, Lake Apopka Basin criteria does not have to be met.

Water Quality:

The stormwater management systems used for this project are dry retention ponds. Therefore, the required water quality volume provided equals 1.25 inches over the contributing impervious area plus 0.5 inches over the total basin area or 1 inch over the total basin, whichever is greater.

The ultimate outfalls for this project are not considered Outstanding Florida Waters (OFW) nor classified as waters of special concern.

Water Quantity:

The location of Pond 1 is in the bottom of the basin with no outfall. Therefore, the required volume to be provided is for the total post development 100 year – 24 hour storm event. Pond 2 has a discharge via a drop structure and stormsewer down Jim Hunt Road to a land-locked basin. Therefore, the required volume to be provided is the pre/post difference for the 25 year – 24 hour storm event for Lake County and the 25 year – 96 hour storm event for the SJRWMD.

Each Basin's respective treatment and attenuation volumes (in acre-feet) are summarized below:

Basin Number (Roadway Only)	Treatment Volume* (Dry Retention)	Attenuation Volume*	Volume Required**	Governing Criteria
1	1.19	5.58	5.58	Lake County/SJRWMD
2	1.75	9.79	9.79	SJRWMD
4	Treatment and Attenuation provided in Existing Reserve at Minneola Pond			

* see Stormwater Calculations in **Appendices B - E**

** Greater of the volume between treatment and attenuation

Wetlands

No impacts to wetlands are anticipated due to the construction of this project.

Floodplains and Floodways

Flooding History:

According to Lake County staff, the project has no flooding issues. However, there is some existing erosion issues just east of the intersection of Old Hwy 50 and Hancock Road.

Floodways:

There are no regulatory floodways located within the limits of this corridor.

Floodplains:

Based upon the FEMA Flood Insurance Rate Map (Map No. 12096C0555 D) and current Lake County GIS, there is one (1) location within the project limits that is considered to have a 100 year floodplain. This location has an established elevation and is shown below.

Floodplain Name	Floodplain Elevation (NAVD 1988)	Floodplain Elevation (NGVD 1929)
Pond Chain 555-1 (Patterson Lake)	85.0	84.0

Source: FEMA FIRM's, July 3, 2002

The Conversion equation from NAVD 88 to NGVD 29 datum's is (NAVD 88)-(NGVD 29) = 0.965 ft.

Impacts to the 100 year floodplain are not anticipated. **See Appendix F for Floodplain Information.**

Geotechnical

Geotechnical information was obtained in the areas of both Ponds 1, 2, and the Big Sky pond modification. Below is a table identifying various pond control parameters based upon information provided by Andreyev Engineering, Inc. and is also included in **Appendix G.**

Pond Number	Boring Number	GSE	Depth to Aquifer (ft)	Depth to SHWT(ft)	Horizontal Hydraulic Conduct. (ft/day)	Unsat. Hydraulic Conduct. (ft/day)	Storage Coefficient
Pond 1	PB-4/PB-5	121.0	40.0	29.0	40	26	0.25
Pond 2	PB-6	92.0	35.0	11.0	32	21	0.25
Big Sky	PB-8	131.0	40.0	39	40	26	0.25

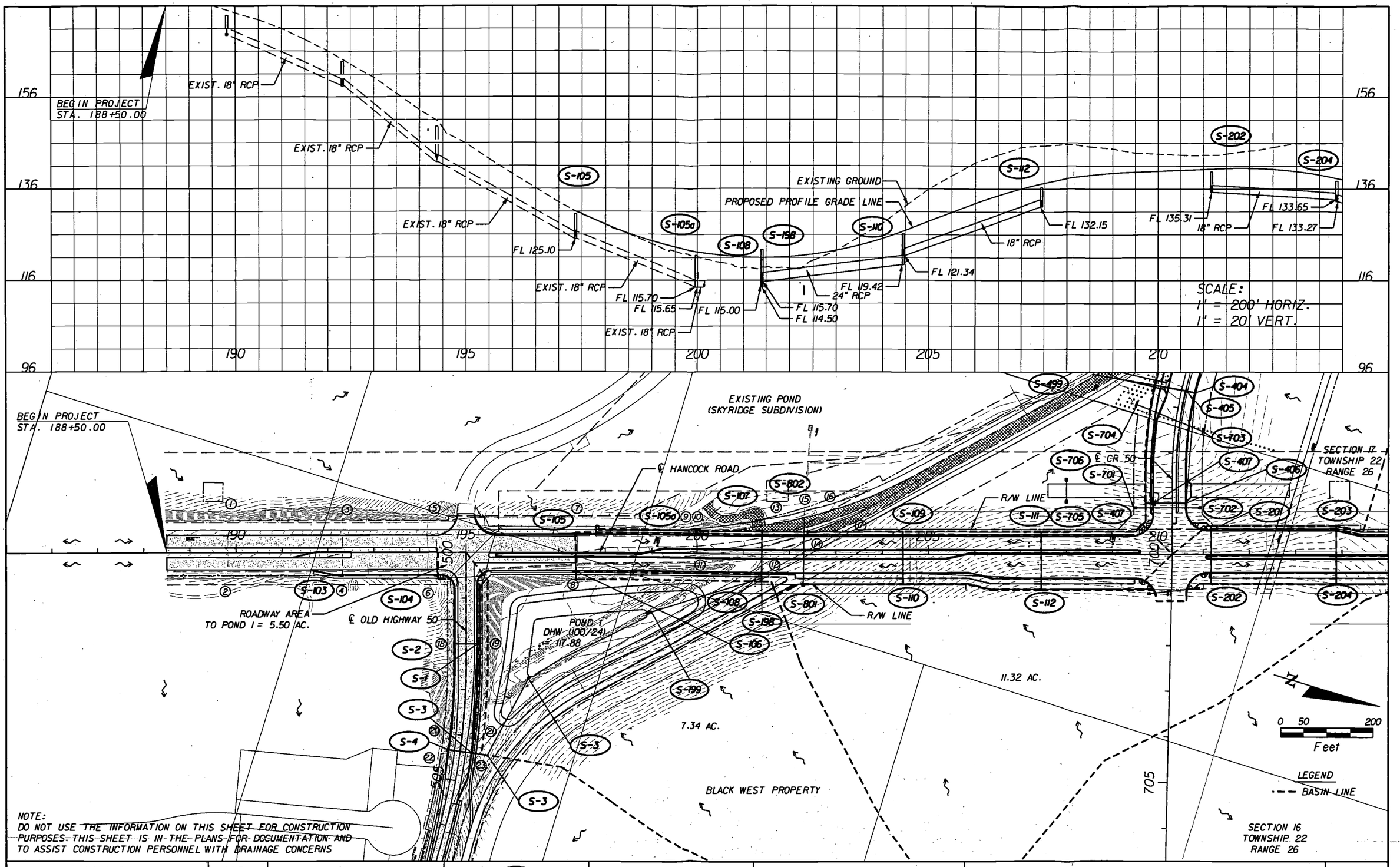
To determine the Hydrologic Soil Group for the project for use in the hydrology model, the USDA, National Cooperative Soil Survey for Lake County, Florida was used. All of the soils within the project corridor are Type A. **See Appendix G for Geotechnical Information.**

Stormsewer System

The stormsewer system for this project has been designed for a 10 year storm event. The tailwater for each system was determined using the 10yr-24hr design peak stage in each pond. Minor losses have been incorporated into the stormsewer calculations allowing the Hydraulic Grade Line to rise to the edge of pavement elevation of the roadway.

See Appendix I for Stormsewer Tabulation Sheets.

APPENDIX A
(Typical Section, Location Map, and Drainage Maps)



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LAKE COUNTY
FLORIDA

LAKE COUNTY
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ENGINEERING DIVISION
123 N. SINCLAIR AVENUE
TAVARES, FLORIDA 32778

SIGNATURE
DATE
DINO E. LUCARELLI, P.E. NO. 39556

DRAINAGE MAP

SHEET NO. 2

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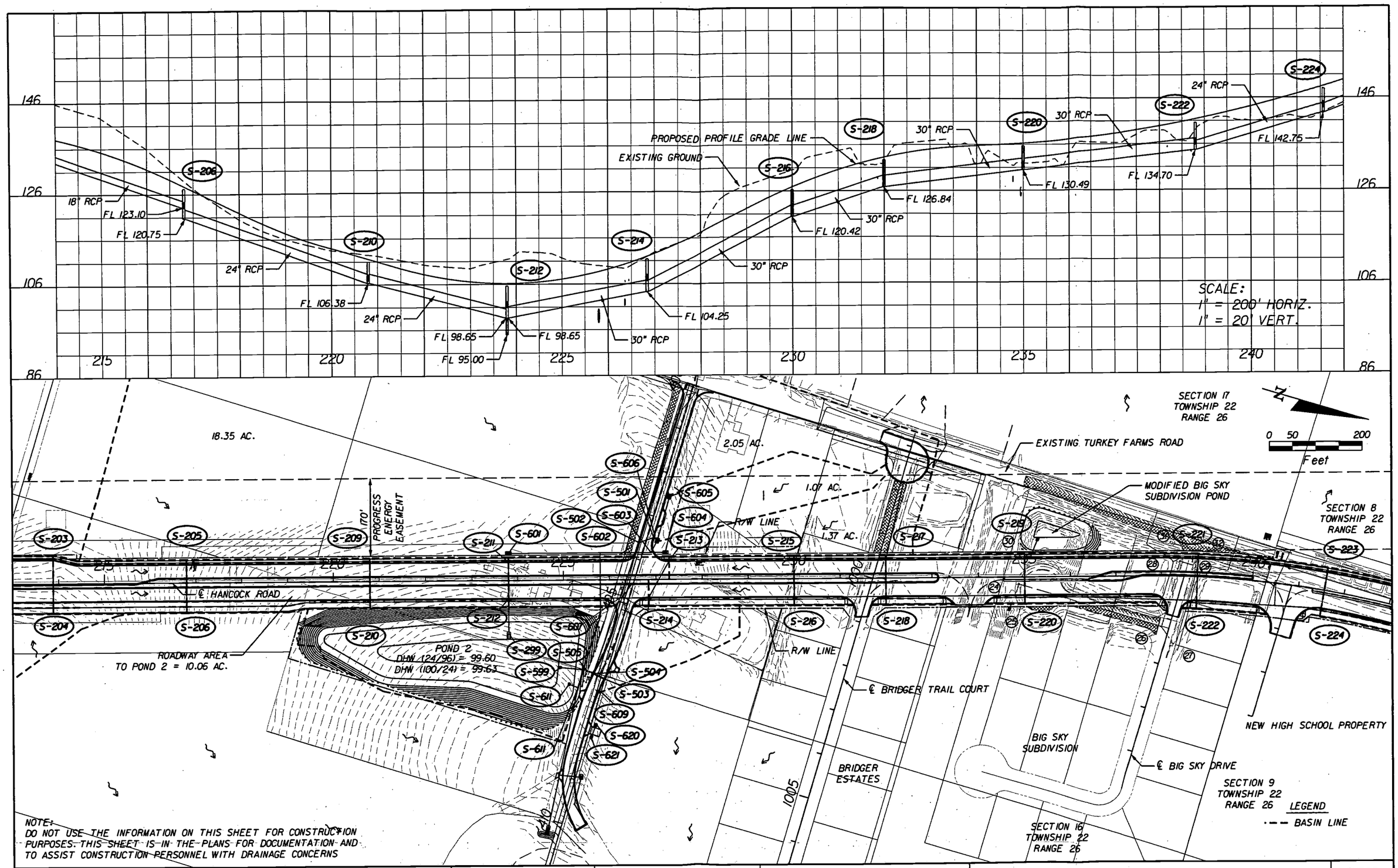

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DRAINAGE MAP

SHEET NO. 3

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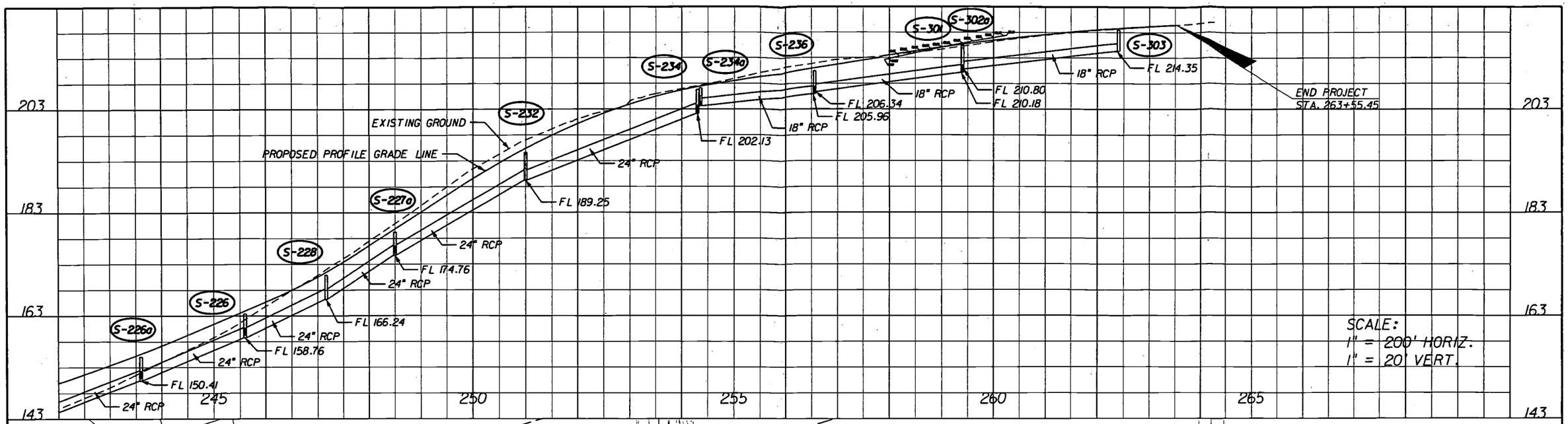

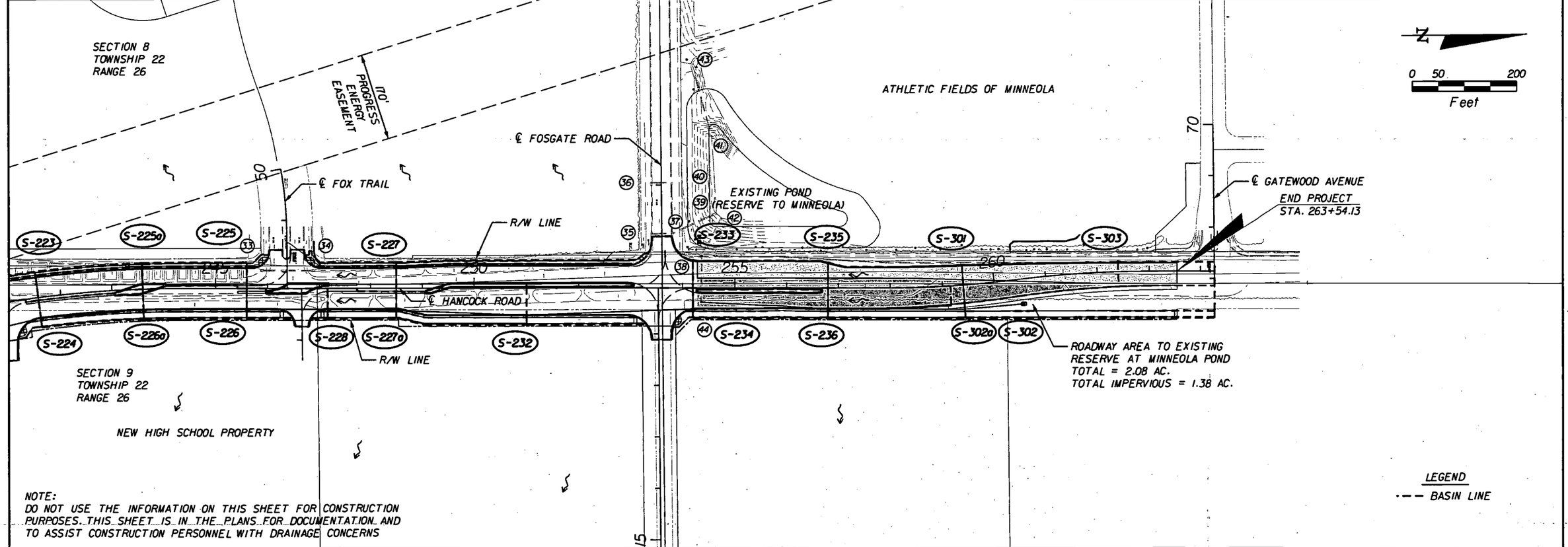

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DATE
DINO E. LUCARELLI, P.E. NO. 39556

DRAINAGE MAP

SHEET NO. 4

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1. INLET
TOP EL. 174.00
E 18" RCP INV. 169.46
N 18" RCP INV. 169.61

2. INLET
TOP EL. 174.27
W 18" RCP INV. 169.82

3. INLET
TOP EL. 163.80
E 18" RCP INV. 158.36
S 18" RCP INV. 158.54
N 18" RCP INV. 158.59

4. INLET
TOP EL. 163.89
W 18" RCP INV. 158.72

5. INLET
TOP EL. 149.98
E 18" RCP INV. 141.87
S 18" RCP INV. 141.88
N 18" RCP INV. 141.83

6. INLET
TOP EL. 150.03
W 18" RCP INV. 142.29

7. INLET
TOP EL. 130.82
E 18" RCP INV. 125.13
S 18" RCP INV. 125.14
N 18" RCP INV. 125.10

8. INLET
TOP EL. 130.92
W 18" RCP INV. 125.69

9. INLET
TOP EL. 120.54
E 18" RCP INV. 115.68
S 18" RCP INV. 115.70
N 18" RCP INV. 115.65

10. MITERED END SECTION
18" RCP INV. 114.33

11. INLET
TOP EL. 120.81
W 18" RCP INV. 116.48

12. INLET
TOP EL. 118.33
N 18" RCP INV. 113.44

13. INLET
TOP EL. 117.65
N 18" RCP INV. 112.90
S 18" RCP INV. 112.84

14. INLET
TOP EL. 117.97
N 18" RCP INV. 112.89
S 18" RCP INV. 112.88
W 18" RCP INV. 112.84

15. INLET
TOP EL. 117.56
N 18" RCP INV. 113.10
S 18" RCP INV. 112.68
E 18" RCP INV. 112.48
W 24" RCP INV. 107.18

16. INLET
TOP EL. 117.85
S 18" RCP INV. 113.04

17. INLET
TOP EL. 118.12
N 18" RCP INV. 113.61
S 18" RCP INV. 113.58

18. INLET
TOP EL. 138.25
E 18" RCP INV. 131.50

19. INLET
TOP EL. 138.25
E 18" RCP INV. 131.44

20. INLET
TOP EL. 122.80
E 18" RCP INV. 116.99
W 18" RCP INV. 116.87

21. INLET
TOP EL. 122.75
E 18" RCP INV. 116.58
W 18" RCP INV. 116.66

22. MITERED END SECTION
18" RCP INV. 116.06

23. MITERED END SECTION
18" RCP INV. 115.72

24. INLET
TOP EL. 131.92
N 15" RCP INV. 125.18
E 15" RCP INV. 127.79
W 24" RCP INV. 124.92

25. MITERED END SECTION
15" RCP INV. 127.93

26. MANHOLE
TOP EL. 139.01
S 15" RCP INV. 130.80
W 15" RCP INV. 130.90
NE 15" RCP INV. 133.50

27. INLET
TOP EL. 140.61
SW 15" RCP INV. 135.31

28. INLET
TOP EL. 136.39
N 15" RCP INV.
E 15" RCP INV.

29. INLET
TOP EL. 136.45
S 15" RCP INV.

30. MITERED END SECTION
24" RCP INV. 127.93

31. MITERED END SECTION
15" RCP INV. 131.60

32. MITERED END SECTION
15" RCP INV. 133.43

33. MITERED END SECTION
18" RCP INV. 160.10

34. MITERED END SECTION
18" RCP INV. 165.14

35. INLET
TOP EL. 205.20
N 18" RCP INV. 202.54

36. INLET
TOP EL. 206.60
N 18" RCP INV. 203.45

37. INLET
TOP EL. 205.23
S 18" RCP INV. 201.71
W 24" RCP INV. 201.73
N 24" RCP INV. 201.77

38. INLET
TOP EL. 206.64
E 24" RCP INV. 201.13
W 24" RCP INV. 201.16

39. ENDWALL
24" RCP INV. 201.61

40. INLET
TOP EL. 206.70
S 18" RCP INV. 203.17
E 24" RCP INV. 203.13

41. ENDWALL
18" RCP INV. 203.16

42. ENDWALL
24" RCP INV. 201.15

43. CATCH BASIN
TOP EL. 210.00
18" RCP INV.

44. CATCH BASIN
TOP EL. 208.75
W 24" RCP INV. 203.30

SUB-BASIN AREAS

STRUCTURE NUMBER	IMPERVIOUS (AC.)	PERVIOUS (AC.)
S-1	0.15	0.02
S-2	0.09	0.00
S-3	0.22	0.03
S-4	0.14	0.00
S-101	0.46	2.07
S-102	0.35	0.14
S-103	0.32	1.40
S-104	0.40	0.02
S-105	0.48	0.58
S-106	0.42	0.08
S-107	0.53	0.18
S-108	0.67	0.34
S-109	0.26	0.08
S-110	0.41	0.11
S-111	0.23	0.05
S-112	0.37	0.06

STRUCTURE NUMBER	IMPERVIOUS (AC.)	PERVIOUS (AC.)
S-201	0.09	0.01
S-202	0.06	0.02
S-203	0.29	0.02
S-204	0.21	0.05
S-205	0.31	0.05
S-206	0.30	0.08
S-209	0.34	0.13
S-210	0.41	0.14
S-211	0.55	0.20
S-212	0.61	0.20
S-213	0.23	0.09
S-214	0.32	0.12
S-215	0.17	0.06
S-216	0.21	0.08
S-217	0.30	0.07
S-217a	0.19	0.00
S-218	0.33	0.05
S-219	0.32	0.11
S-220	0.44	0.10
S-221	0.27	0.05
S-222	0.37	0.02
S-223	0.23	0.02
S-224	0.21	0.04
S-225	0.37	0.03
S-225a	0.18	0.03
S-226	0.19	0.03
S-226a	0.25	0.03
S-227	0.66	0.04
S-228	0.52	0.11
S-232	0.53	0.03
S-233	0.33	0.05
S-234	0.27	0.06

STRUCTURE NUMBER	IMPERVIOUS (AC.)	PERVIOUS (AC.)
S-235	0.27	0.03
S-236	0.29	0.05
S-301	0.45	0.12
S-302	0.13	0.46
S-303	0.24	0.04
S-401	0.16	0.02
S-402	0.08	0.01
S-403	0.48	0.06
S-404	0.10	0.00
S-405	0.31	0.02
S-406	0.11	0.00
S-407	0.19	0.01
S-501	0.13	0.00
S-502	0.13	0.00
S-503	0.07	0.00
S-504	0.07	0.00

STRUCTURE NO.	STATION	DESIGN FLOOD		BASE FLOOD		OVERTOPPING FLOOD				GREATEST FLOOD			
		2% PROB.	50 YR.FREQ.	1% PROB.	100 YR.FREQ.								
		DISCHARGE	STAGE	DISCHARGE	STAGE	DISCHARGE	STAGE	PROB. %	FREQ. YR.	DISCHARGE	STAGE	PROB. %	FREQ. YR.

NOTE: THE HYDRAULIC DATA IS SHOWN FOR INFORMATIONAL PURPOSES ONLY, TO INDICATE THE FLOOD DISCHARGES AND WATER SURFACE ELEVATIONS WHICH MAY BE ANTICIPATED IN ANY GIVEN YEAR. THIS DATA WAS GENERATED USING HIGHLY VARIABLE FACTORS DETERMINED BY A STUDY OF THE WATERSHED. MANY JUDGEMENTS AND ASSUMPTIONS ARE REQUIRED TO ESTABLISH THESE FACTORS. THE RESULTANT HYDRAULIC DATA IS SENSITIVE TO CHANGES, PARTICULARLY OF ANTECEDENT CONDITIONS, URBANIZATION, CHANNELIZATION, AND LAND USE. USERS OF THIS DATA ARE CAUTIONED AGAINST THE ASSUMPTION OF PRECISION WHICH CAN NOT BE ATTAINED. DISCHARGES ARE IN CUBIC FEET PER SECOND AND STAGES ARE IN FEET, NAVD 88.

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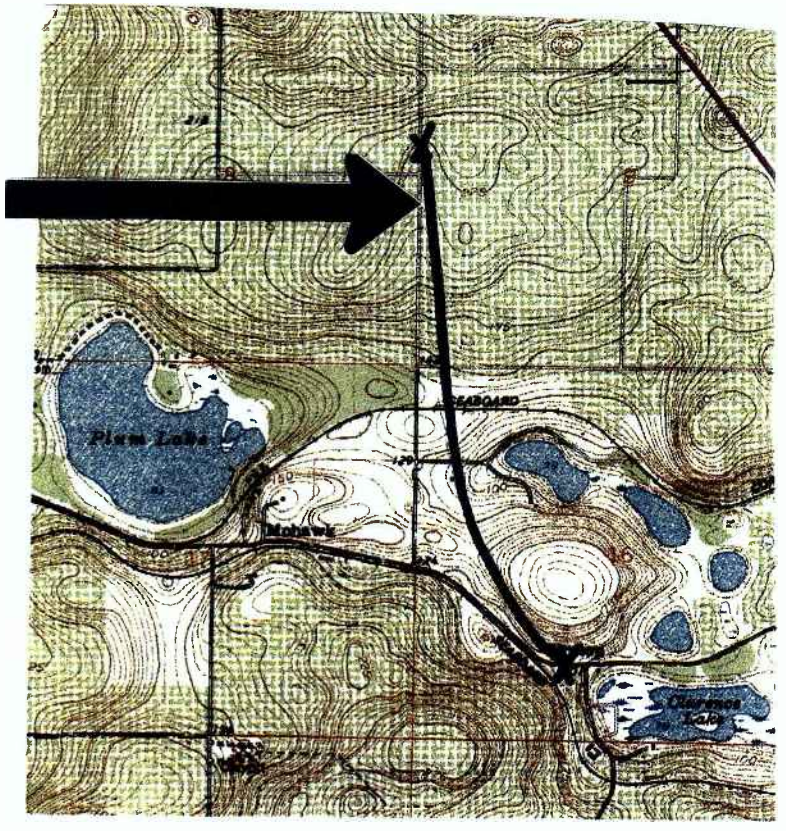
EXISTING DRAINAGE STRUCTURES

SHEET NO. 5

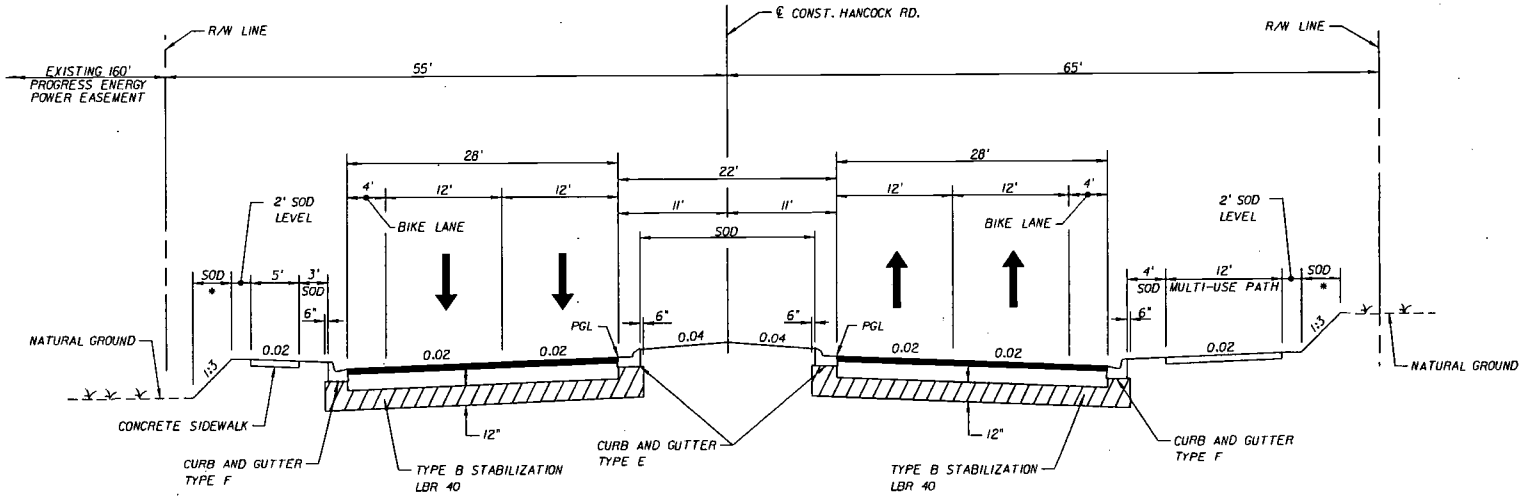
PROJECT

PROJECT



QUAD NAME: CLERMONT EAST

1 OF 1	T200901	NORTH HANCOCK ROAD SEGMENT A	TLP Engineering C nsultants
	JEM		9505 KINGSBURY COURT WINDERMERE, FL 34786 (407) 770-7064
	8-30-2009	LOCATION MAP	CERTIFICATE OF AUTHORIZATION NO. 27265 JAMES E. MYERS, FL REG. PE #47511
	N.T.S.		NO. DATE APPROV REVISIONS



TYPICAL SECTION
NORTH HANCOCK ROAD
STA. + . TO STA. + .

REVISIONS	DATE

TY LIN INTERNATIONAL
225 E. ROBINSON STREET, SUITE 490
ORLANDO, FLORIDA 32801
P 407.563.7101 F 407.999.8228
CERTIFICATE OF AUTHORIZATION 00002017

LAKE COUNTY
FLORIDA

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
123 N. SINCLAIR AVENUE
TAVARES, FLORIDA 32778

SIGNATURE
DATE
DINO E. LUCARELLI, P.E. NO. 39556

#USER# #DATE# #TIME# #FILE#

PROPOSED TYPICAL SECTION

SHEET NO.

APPENDIX B
(Basin #1 Stormwater Calculations)

Stormwater Management Report

N. Hancock Road - Segment A

Lake County Engineering Department

Lake County, Florida

Basin No. 1

Treatment Volume Calculation

Calculated By: JEM Date: November 9, 2010

Checked By: Date:

SJRWMD Treatment Volume Requirement

Water Quality Volume for a Dry Retention System is based upon the greater of (1) 1.0 inch of runoff over the basin area or (2) 1.25 inches of runoff over the impervious area plus an additional 0.5 inches over the entire basin area.

Vt(1) = One inch of runoff from the basin area
Vt(1) = ((14.28 ac.) * 1.0 in.)/12
Vt(1) = 1.19 acre-ft

Vt(2) = 1.5 inches of runoff over the impervious area + 0.5 inches over the entire basin
Vt(2) = ((3.36 ac. * 1.25 in.)+(0.5 in. *14.28 ac.))/12
Vt(2) = 0.95 acre-ft

Therefore 1.19 Acre-ft for the required treatment volume

Is Basin part of an OFW (yes or no)? no Add an additional 50%

TOTAL BASIN REQUIRED TREATMENT VOLUME = 1.19 acre-ft

Stormwater Management Report

N. Hancock Road - Segment A

Lake County Engineering Department
Lake County, Florida

Basin No. 1 — Calculated By: JEM — Date: November 9, 2010
Post-Developed CN and SCS Runoff Volume Calculation — Checked By: — Date:

Proposed Condition

BASIN DESIGNATION	**Basin No. 1**
TYPE EVALUATION	**Post-Developed, 100yr/24hr storm**
BASIN SIZE	14.28 **Acres**
RAINFALL DEPTH	11 **Inches**

SOIL LAND USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA	PRODUCT
Grass, good condition		A	39	1.88	73.32
Grass, good condition (pond area)		A	39	1.70	66.3
Impervious, rdwy			98	3.07	300.86
Offsite Impervious Area (Trail on BlackWest)			98	0.29	28.42
Offsite Area to pond (From Black West)		A	39	7.34	286.26
			TOTAL	14.28	755.16

WEIGHTED, CN = $\frac{\text{PRODUCT}}{\text{AREA OR \%}}$ = 52.9

SOIL STORAGE, S = $\frac{1000}{CN} - 10$ = 8.91 **INCHES**

RUNOFF, R = $\frac{(P-0.2S)^2}{(P+0.8S)}$ = 4.69 **INCHES**

RUNOFF VOLUME, V = $\frac{R}{12} \times \text{AREA}$ = 5.58 **ACRE-FT**

Post Developed Volume = 5.58 **ACRE-FT**
Post Developed Volume = 243000 **CUBIC FEET**

Stormwater Management Report
N. Hancock Road - Segment A
Lake County Engineering Department
Lake County, Florida

Basin No. 1
Pond Stage-Storage Relationship

Calculated By: JEM **Date:** November 9, 2010
Checked By: **Date:**

STAGE vs. STORAGE CALCULATIONS
POND 1

Stage (ft NGVD 1929)	Surface Area (sf)	Surface Area (Ac)	Average Area (Ac)	Incremental Depth (ft.)	Incremental Volume (Ac-Ft)	Total Volume (Ac-Ft)
108.00	17,424	0.40	0.00	0.00	0.00	0.00
117.50	55,756	1.28	0.84	9.50	7.98	7.98
119.00	74,052	1.70	1.49	1.50	2.23	10.21

Required Water Quality Volume =	1.19	ac-ft
Required Treatment Stage =	109.42	ft
Provided Treatment Stage =	109.50	ft
Provided Treatment Volume =	1.26	ac-ft

Total Required Retention Volume =	5.58	ac-ft
Total Retention Stage =	115.89	ft

PONDS Version 3.2.0217
Retention Pond Recovery - Refined Method
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Devo Seereeram, Ph.D., P.E.

Project Data

Project Name: Hancock Road Pond No. 1

Simulation Description:
Project Number:

Engineer : Jim Myers, PE

Supervising Engineer:

Date: 11-09-2010

Aquifer Data

Base Of Aquifer Elevation, [B] (ft datum):	81.00
Water Table Elevation, [WT] (ft datum):	92.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day):	20.00
Fillable Porosity, [n] (%):	25.00
Unsaturated Vertical Infiltration Rate, [Iv] (ft/day):	13.0
Maximum Area For Unsaturated Infiltration, [Av] (ft^2):	36590.0

Geometry Data

Equivalent Pond Length, [L] (ft):	412.0
Equivalent Pond Width, [W] (ft):	138.0

Ground water mound is expected to intersect the pond bottom

Stage vs Area Data

Stage (ft datum)	Area (ft^2)
108.00	17424.0
117.50	55756.0
119.00	74052.0

Detailed Results :: *Scenario 1 :: Basin 1 to Pond 1 - Slug Load*

Elapsed Time (hours)	Inflow Rate (ft^3/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft^3/s)	Overflow Discharge (ft^3/s)	Cumulative Inflow Volume (ft^3)	Cumulative Infiltration Volume (ft^3)	Cumulative Discharge Volume (ft^3)	Flow Type
0.000	40510.8300	0.0000	92.000	0.00000	0.00000	0.0	0.0	0.0	N.A.
0.002	40510.8300	0.0000	115.476	5.50544	0.00000	243065.0	33.0	0.0	U/P
2.400	0.0000	0.0000	114.431	5.50501	0.00000	243065.0	47567.0	0.0	U/P
6.000	0.0000	0.0000	112.637	5.59581	0.00000	243065.0	118903.6	0.0	U/P
12.000	0.0000	0.0000	107.555	3.83214	0.00000	243065.0	243065.0	0.0	U/S
24.000	0.0000	0.0000	104.265	0.00000	0.00000	243065.0	243065.0	0.0	S
36.000	0.0000	0.0000	102.528	0.00000	0.00000	243065.0	243065.0	0.0	S
48.000	0.0000	0.0000	101.387	0.00000	0.00000	243065.0	243065.0	0.0	S
60.000	0.0000	0.0000	100.553	0.00000	0.00000	243065.0	243065.0	0.0	S
72.000	0.0000	0.0000	99.905	0.00000	0.00000	243065.0	243065.0	0.0	S
84.000	0.0000	0.0000	99.381	0.00000	0.00000	243065.0	243065.0	0.0	S
96.000	0.0000	0.0000	98.944	0.00000	0.00000	243065.0	243065.0	0.0	S
120.000	0.0000	0.0000	98.283	0.00000	0.00000	243065.0	243065.0	0.0	S
144.000	0.0000	0.0000	97.761	0.00000	0.00000	243065.0	243065.0	0.0	S
168.000	0.0000	0.0000	97.336	0.00000	0.00000	243065.0	243065.0	0.0	S
192.000	0.0000	0.0000	96.981	0.00000	0.00000	243065.0	243065.0	0.0	S
216.000	0.0000	0.0000	96.679	0.00000	0.00000	243065.0	243065.0	0.0	S
240.000	0.0000	0.0000	96.418	0.00000	0.00000	243065.0	243065.0	0.0	S
264.000	0.0000	0.0000	96.190	0.00000	0.00000	243065.0	243065.0	0.0	S
288.000	0.0000	0.0000	95.988	0.00000	0.00000	243065.0	243065.0	0.0	S
312.000	0.0000	0.0000	95.807	0.00000	0.00000	243065.0	243065.0	0.0	S
336.000	0.0000	0.0000	95.645	----	----	243065.0	243065.0	0.0	N.A.

Summary of Results :: *Scenario 1 :: Basin 1 to Pond 1 - Slug Load*

	Time (hours)	Stage (ft datum)	Rate (ft^3/s)	Volume (ft^3)
Stage				
Minimum	0.000	92.00		
Maximum	0.002	115.48		
Inflow				
Rate - Maximum - Positive	0.002		40510.8300	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	0.002			243065.0
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	336.000			243065.0
Infiltration				
Rate - Maximum - Positive	6.000		5.5958	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	12.000			243065.0
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	336.000			243065.0
Combined Discharge				
Rate - Maximum - Positive	None		None	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	None			None
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	336.000			0.0
Discharge Structure 1 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Discharge Structure 2 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Discharge Structure 3 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Pollution Abatement:				
36 Hour Stage and Infiltration Volume	36.000	102.53		243065.0
72 Hour Stage and Infiltration Volume	72.000	99.91		243065.0

APPENDIX C
(Basin #2 Stormwater Calculations)

Stormwater Management Report

N. Hancock Road - Segment A

Lake County Engineering Department

Lake County, Florida

Basin No. 2 — Calculated By: JEM Date: May 19, 2010

Treatment Volume Calculation — Checked By: Date:

SJRWMD Treatment Volume Requirement

Water Quality Volume for a Dry Retention System is based upon the greater of (1) 1.0 inch of runoff over the basin area or (2) 1.25 inches of runoff over the impervious area plus an additional 0.5 inches over the entire basin area.

Vt(1) = One inch of runoff from the basin area
Vt(1) = ((15.85 ac.) * 1.0 in.)/12
Vt(1) = 1.32 acre-ft

Vt(2) = 1.5 inches of runoff over the impervious area + 0.5 inches over the entire basin
Vt(2) = ((10.43 ac. * 1.25 in.)+(0.5 in. *15.85 ac.))/12
Vt(2) = 1.75 acre-ft

Therefore 1.75 **Acre-ft for the required treatment volume**

Is Basin part of an OFW (yes or no)? no **Add an additional 50%**

TOTAL BASIN REQUIRED TREATMENT VOLUME = 1.75 **acre-ft**

Stormwater Management Report

N. Hancock Road - Segment A

Lake County Engineering Department
Lake County, Florida

Basin No. 2 — Calculated By: JEM — Date: May 19, 2010
Pre-Developed CN and SCS Runoff Volume Calculation — Checked By: — Date:

Proposed Condition

BASIN DESIGNATION	Basin No. 2 (Station 214+10 to 233+80)
TYPE EVALUATION	Pre-Developed, 25yr/96hr storm
BASIN SIZE	8.57 Acres
RAINFALL DEPTH	12 Inches

SOIL LAND USE DESCRIPTION	NAME	SOIL GROUP	CN	AREA	PRODUCT
Grass, good condition		A	39	5.82	227
Grass, good condition (pond area)		A	39	2.75	107.3
Impervious, rdwy			98	0.00	
Offsite Area		A	39	0.00	
			TOTAL	8.57	334.2

WEIGHTED, CN = $\frac{\text{PRODUCT}}{\text{AREA OR \%}}$ = 39.0

SOIL STORAGE, S = $\frac{1000}{CN} - 10$ = 15.64 INCHES

RUNOFF, R = $\frac{(P-0.2S)^2}{(P+0.8S)}$ = 3.21 INCHES

RUNOFF VOLUME, V = $\frac{R}{12} \times \text{AREA}$ = 2.29 ACRE-FT

Pre Developed Volume = 2.29 ACRE-FT
Pre Developed Volume = 99900 CUBIC FEET

Stormwater Management Report

N. Hancock Road - Segment A

Lake County Engineering Department
Lake County, Florida

Basin No. 2 — Calculated By: JEM — Date: May 19, 2010
Post-Developed CN and SCS Runoff Volume Calculation — Checked By: — Date:

Proposed Condition

BASIN DESIGNATION	**Basin No. 2 (Station 211+00 to 256+90)**
TYPE EVALUATION	**Post-Developed, 25yr/96hr storm**
BASIN SIZE	**15.85 Acres**
RAINFALL DEPTH	**12 Inches**

SOIL LAND USE DESCRIPTION	NAME	SOIL GROUP	CN	AREA	PRODUCT
Grass, good condition		A	39	2.67	104.13
Grass, good condition (pond area)		A	39	2.75	107.25
Impervious, rdwy			98	10.43	1022.1
Offsite Area		A	39	0.00	
			TOTAL	15.85	1233.5

WEIGHTED, CN = $\frac{\text{PRODUCT}}{\text{AREA OR \%}}$ = 77.8

SOIL STORAGE, S = $\frac{1000}{CN} - 10$ = 2.85 INCHES

RUNOFF, R = $\frac{(P-0.2S)^2}{(P+0.8S)}$ = 9.15 INCHES

RUNOFF VOLUME, V = $\frac{R}{12} \times \text{AREA}$ = 12.08 ACRE-FT

Post Developed Volume = 12.08 ACRE-FT
Post Developed Volume = 526400 CUBIC FEET

Stormwater Management Report

N. Hancock Road - Segment A

Lake County Engineering Department
Lake County, Florida

Basin No. 2
Pond Stage-Storage Relationship

Calculated By: JEM **Date:** May 19, 2010
Checked By: **Date:**

STAGE vs. STORAGE CALCULATIONS

POND 2

Stage (ft NGVD 1929)	*Surface Area (sf)*	*Surface Area (Ac)*	*Average Area (Ac)*	*Incremental Depth (ft.)*	*Incremental Volume (Ac-Ft)*	*Total Volume (Ac-Ft)*
90.00	23,522	0.54	0.00	0.00	0.00	0.00
99.50	67,082	1.54	1.04	9.50	9.88	9.88
101.00	87,555	2.01	1.77	1.50	2.66	12.54

Required Water Quality Volume =	1.75	ac-ft
Required Treatment Stage =	91.68	ft
Provided Treatment Stage =	91.70	ft
Provided Treatment Volume =	1.77	ac-ft
Total Required Retention Volume =	9.79	ac-ft
Total Retention Stage =	99.45	ft

PONDS Version 3.2.0217
Retention Pond Recovery - Refined Method
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Devo Seereeram, Ph.D., P.E.

Project Data

Project Name: Hancock Road - Pond 2

Simulation Description:
Project Number:

Engineer : Jim Myers, PE

Supervising Engineer:

Date: 04-27-2010

Aquifer Data

Base Of Aquifer Elevation, [B] (ft datum):	57.00
Water Table Elevation, [WT] (ft datum):	81.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day):	16.00
Fillable Porosity, [n] (%):	25.00
Unsaturated Vertical Infiltration Rate, [Iv] (ft/day):	10.5
Maximum Area For Unsaturated Infiltration, [Av] (ft^2):	45302.0

Geometry Data

Equivalent Pond Length, [L] (ft):	500.0
Equivalent Pond Width, [W] (ft):	190.0

Ground water mound is expected to intersect the pond bottom

Stage vs Area Data

Stage (ft datum)	Area (ft^2)
90.00	23522.0
99.50	67082.0
101.00	87555.0

Detailed Results :: *Scenario 1 :: slug load to Pond 2*

Elapsed Time (hours)	Inflow Rate (ft^3/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft^3/s)	Overflow Discharge (ft^3/s)	Cumulative Inflow Volume (ft^3)	Cumulative Infiltration Volume (ft^3)	Cumulative Discharge Volume (ft^3)	Flow Type
0.000	71075.3400	0.0000	81.000	0.00000	0.00000	0.0	0.0	0.0	N.A.
0.002	71075.3400	0.0000	99.441	5.50545	0.00000	426452.0	33.0	0.0	U/P
2.400	0.0000	0.0000	98.711	8.30557	0.00000	426452.0	47567.1	0.0	U/P
6.000	0.0000	0.0000	95.864	8.85205	0.00000	426452.0	209679.3	0.0	U/S
12.000	0.0000	0.0000	94.611	2.31730	0.00000	426452.0	269246.0	0.0	S
24.000	0.0000	0.0000	93.105	1.18272	0.00000	426452.0	331300.8	0.0	S
36.000	0.0000	0.0000	91.963	0.79356	0.00000	426452.0	371432.8	0.0	S
48.000	0.0000	0.0000	91.027	0.57316	0.00000	426452.0	399864.1	0.0	S
60.000	0.0000	0.0000	90.229	0.30773	0.00000	426452.0	420954.2	0.0	S
72.000	0.0000	0.0000	89.548	0.06363	0.00000	426452.0	426452.0	0.0	S
84.000	0.0000	0.0000	88.991	0.00000	0.00000	426452.0	426452.0	0.0	S
96.000	0.0000	0.0000	88.525	0.00000	0.00000	426452.0	426452.0	0.0	S
120.000	0.0000	0.0000	87.812	0.00000	0.00000	426452.0	426452.0	0.0	S
144.000	0.0000	0.0000	87.246	0.00000	0.00000	426452.0	426452.0	0.0	S
168.000	0.0000	0.0000	86.781	0.00000	0.00000	426452.0	426452.0	0.0	S
192.000	0.0000	0.0000	86.392	0.00000	0.00000	426452.0	426452.0	0.0	S
216.000	0.0000	0.0000	86.060	0.00000	0.00000	426452.0	426452.0	0.0	S
240.000	0.0000	0.0000	85.773	0.00000	0.00000	426452.0	426452.0	0.0	S
264.000	0.0000	0.0000	85.520	0.00000	0.00000	426452.0	426452.0	0.0	S
288.000	0.0000	0.0000	85.297	0.00000	0.00000	426452.0	426452.0	0.0	S
312.000	0.0000	0.0000	85.098	0.00000	0.00000	426452.0	426452.0	0.0	S
336.000	0.0000	0.0000	84.918	----	----	426452.0	426452.0	0.0	N.A.

Summary of Results :: *Scenario 1 :: slug load to Pond 2*

	Time (hours)	Stage (ft datum)	Rate (ft^3/s)	Volume (ft^3)
Stage				
Minimum	0.000	81.00		
Maximum	0.002	99.44		
Inflow				
Rate - Maximum - Positive	0.002		71075.3400	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	0.002			426452.0
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	336.000			426452.0
Infiltration				
Rate - Maximum - Positive	6.000		8.8521	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	72.000			426452.0
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	336.000			426452.0
Combined Discharge				
Rate - Maximum - Positive	None		None	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	None			None
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	336.000			0.0
Discharge Structure 1 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Discharge Structure 2 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Discharge Structure 3 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Pollution Abatement:				
36 Hour Stage and Infiltration Volume	36.000	91.96		371432.8
72 Hour Stage and Infiltration Volume	72.000	89.55		426452.0

Name:	Post	Pre	Post	Pre	Post
Group:	BASE	BASE	BASE	BASE	BASE
Simulation:	prepost10024	prepost10024	prepost1024	prepost1024	prepost2524
Node:	Pond2	Pre	Pond2	Pre	Pond2
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):	2.67	2.67	2.67	2.67	2.67
Comp Time Inc(min):	2.67	2.67	2.67	2.67	2.67
Rain File:	Flmod	Flmod	Flmod	Flmod	Flmod
Rain Amount(in):	11.000	11.000	7.500	7.500	8.600
Duration(hrs):	24.00	24.00	24.00	24.00	24.00
Status:	Onsite	Onsite	Onsite	Onsite	Onsite
TC(min):	20.00	20.00	20.00	20.00	20.00
Time Shift(hrs):	0.00	0.00	0.00	0.00	0.00
Area(ac):	15.850	8.570	15.850	8.570	15.850
Vol of Unit Hyd(in):	1.001	1.000	1.001	1.000	1.001
Curve Num:	77.800	39.000	77.800	39.000	77.800
DCIA(%):	0.000	0.000	0.000	0.000	0.000
Time Max(hrs):	12.13	12.18	12.13	12.36	12.13
Flow Max(cfs):	76.45	11.28	46.43	3.04	55.85
Runoff Volume(in):	8.192	2.636	4.910	0.955	5.927
Runoff Volume(ft3):	471349	82019	282512	29722	340986

Name:	Pre	Post	Pre
Group:	BASE	BASE	BASE
Simulation:	prepost2524	prepost2596	prepost2596
Node:	Pre	Pond2	Pre
Type:	SCS	SCS	SCS
Unit Hydrograph:	Uh323	Uh323	Uh323
Peaking Factor:	323.0	323.0	323.0
Spec Time Inc(min):	2.67	2.67	2.67
Comp Time Inc(min):	2.67	2.67	2.67
Rain File:	Flmod	Sjrwmd96	Sjrwmd96
Rain Amount(in):	8.600	12.000	12.000
Duration(hrs):	24.00	96.00	96.00
Status:	Onsite	Onsite	Onsite
TC(min):	20.00	20.00	20.00
Time Shift(hrs):	0.00	0.00	0.00
Area(ac):	8.570	15.850	8.570
Vol of Unit Hyd(in):	1.000	1.001	1.000
Curve Num:	39.000	77.800	39.000
DCIA(%):	0.000	0.000	0.000
Time Max(hrs):	12.31	60.09	60.09
Flow Max(cfs):	5.14	69.59	13.60
Runoff Volume(in):	1.419	9.150	3.212
Runoff Volume(ft3):	44135	526435	99930

Name	Simulation	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Inflow cfs	Max Outflow cfs
Outfall TW	prepost10024	85.00	85.00	0.0000	0	2.30	0.00
Pond2	prepost10024	99.63	101.00	0.0050	68885	75.23	2.30
Outfall TW	prepost1024	85.00	85.00	0.0000	0	0.00	0.00
Pond2	prepost1024	97.10	101.00	0.0050	56076	45.58	0.00
Outfall TW	prepost2524	85.00	85.00	0.0000	0	0.00	0.00
Pond2	prepost2524	98.10	101.00	0.0050	60670	54.78	0.00
Outfall TW	prepost2596	85.00	85.00	0.0000	0	1.52	0.00
Pond2	prepost2596	99.60	101.00	0.0050	68446	69.54	1.52

==== Basins ====

Name: Post | Node: Pond2 | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323
Rainfall File:
Rainfall Amount(in): 0.000
Area(ac): 15.850
Curve Number: 77.80
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 0.00
Time of Conc(min): 20.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: Pre | Node: Pre | Status: Onsite
Group: BASE | Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323
Rainfall File:
Rainfall Amount(in): 0.000
Area(ac): 8.570
Curve Number: 39.00
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 0.00
Time of Conc(min): 20.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

==== Nodes ====

Name: OutfallTW | Base Flow(cfs): 0.000 | Init Stage(ft): 85.000
Group: BASE | Warn Stage(ft): 85.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	85.000
100.00	85.000

Name: Pond2 | Base Flow(cfs): 0.000 | Init Stage(ft): 90.000
Group: BASE | Warn Stage(ft): 101.000
Type: Stage/Area

Stage(ft)	Area(ac)

90.000	0.5400
99.500	1.5400
101.000	2.0100

Drop Structures

Name: ControlStructur From Node: Pond2 Length(ft): 489.00
Group: BASE To Node: OutfallTW Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	92.000	79.000
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation: Automatic
Solution Algorithm: Most Restrictive
Flow: Both
Entrance Loss Coef: 0.500
Exit Loss Coef: 1.000
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 1 for Drop Structure ControlStructur ***

TABLE

Count: 1
Type: Horizontal
Flow: Both
Geometry: Rectangular

Bottom Clip(in): 0.000
Top Clip(in): 0.000
Weir Disc Coef: 3.200
Orifice Disc Coef: 0.600

Span(in): 54.00
Rise(in): 36.00

Invert(ft): 99.500
Control Elev(ft): 99.500

Hydrology Simulations

Name: prepost10024
Filename: C:\Documents and Settings\TLPProjects\TYLIN_Projects\T200901 - Lake Hancock Road\PSR Update\Revision#1\prepost10024.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Flmod
Rainfall Amount(in): 11.00

Time(hrs)	Print Inc(min)
30.000	5.00

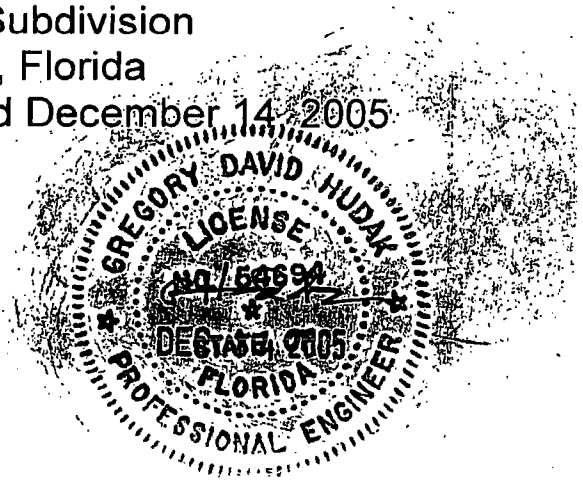
APPENDIX D
(Basin #3 – Big Sky Subdivision Existing Permit Data and Modified Stormwater Calculations)

SCANNED
DEC 16 2005
ALTAMONTE SPRINGS

BIG SKY SUBDIVISION

10170.1
RECEIVED
DEC 14 2005
PDS
ALTAMONTE SVC. CTR

Big Sky Subdivision
Minneola, Florida
Submitted December 14, 2005



RETENTION POND (Ponds 1, 2 & 3 are interconnected)

Stage [ft]	Area [sf]	Area [ac]	Incremental Storage [cf]	Cumulative Storage [cf]
124	4,000	0.092		0
			5,133	
125	6,266	0.144		5,133
			7,271	
126	8,275	0.190		12,404
			9,402	
127	10,529	0.242		21,806
			11,915	
128	13,300	0.305		33,720
			15,844	
129	18,388	0.422		49,564
			21,114	
130	23,839	0.547		70,678
			26,715	
131	29,591	0.679		97,393

25-Year, 96-Hour Volumetric Difference

Pre-Development Runoff Volume (25-yr/24-hr storm) =	2.29 ac-ft
Post Development Runoff Volume (25-yr/24-hr storm) =	4.45 ac-ft
25-Year, 96-Hour Volumetric Difference =	**2.16 ac-ft**
	94,090 cf
Volume Provided =	**97,393 cf**

Jan 31, 2006 Revised plans show outfall structure @ 130.5'

Runoff Curve Numbers

Project: Big Sky Subdivision Date: 12/8/2005

Location: Turkey Farms Road

Basin: PRE1

Circle one: **Present** Developed

Soil Name and Hydrologic Group	Area Description	CN TABLE 2-2	Area acres	Product of CN x Area
Astatula A	Open Space (good condition)	39	9.88	385.32
Astatula A	Woods-Grass Combo (good condition)	32	0.90	28.8
			10.78	414.12

CN = 38.4

Precipitation, P =	11	inches
Soil Storage, S =	16.0	inches
Runoff, R =	2.5	inches
Runoff Volume, V =	2.29	acre-ft

Runoff Curve Numbers

Project: Big Sky Subdivision Date: 12/8/2005

Location: Turkey Farms Road

Basin: SITE1

Circle one: Present **Developed**

Soil Name and Hydrologic Group	Area Description	CN TABLE 2-2	Area acres	Product of CN x Area
Astatula A	Open Space (good condition)	39	6.91	269.49
	Impervious	98	2.97	291.06
Astatula A	Woods-Grass Combo (good condition)	32	0.90	28.8
			10.78	589.35

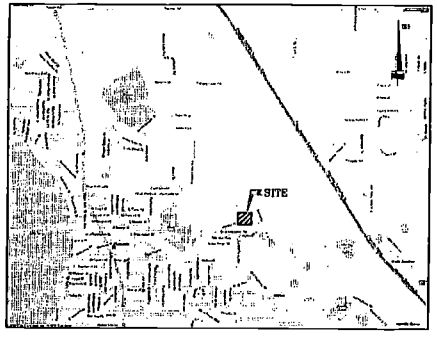
CN = ***54.7***

Precipitation, P =	11	inches
Soil Storage, S =	8.3	inches
Runoff, R =	4.9	inches
Runoff Volume, V =	4.45	acre-ft

CONSTRUCTION PLANS
FOR
BIG SKY DEVELOPMENT
SECTION 16, TOWNSHIP 22 SOUTH, RANGE 26 EAST
MINNEOLA, FLORIDA

INDEX OF SHEETS	
SHEET TITLE	NO.
COVER SHEET	C-1
GENERAL NOTES	C-2 & C-3
EXISTING CONDITIONS AND DEMOLITION PLAN	C-4
FINISH GRADING PLAN	C-5
POST DEVELOPMENT DRAINAGE MAP	C-6
UTILITY PLAN	C-7
ROADWAY PLAN & PROFILE	C-8 & C-9
STANDARD DETAILS	C-10 THRU C-13
OFF-SITE IMPROVEMENTS	C-14
BIG SKY DEVELOPMENT PLAT	*
LANDSCAPE PLAN	*

* ATTACHED



VICINITY MAP

LEGAL DESCRIPTION:
(PREPARED BY SURVEYOR)

That part of Tracts 7 and 8, Section 16, Township 22 South, Range 26 East, according to the LAKE HIGHLANDS COMPANY PLAT recorded in Plat Book 3, Pag 32, Public Records of Lake County, Florida, described as follows:

Commence at the Northwest corner of said Section 16; thence Nah 89°50'44" East, along the North line of said Section 16, for a distance of 32.68 feet to he Point of Beginning; thence continue North 89°50'44" East, along the North line of saidSection 16, for a distance of 773.48 feet; Thence leaving said North line, run South30°18'07" West, for a distance of 552.33 feet to the North line of the abandon 160 Raload; Thence run South 89°40'20" West, along said North line for a distance of 781.78 fee to ; Thence leaving said North line, run North 01°07'30" East, along said West line, a distore of 534.82 feet to the Point of Beginning. Subject to Florida Power right-of-way and Lak Highlands Company Roadways.

Containing 9.88 Acres (430,401 Sq Feet) More or Less.

DEVELOPMENT TEAM

OWNER/DEVELOPER
BIG SKY DEVELOPMENT, LLC
23742 PLANTATION PALMS BLVD.
LAND-O-LAKES, FLORIDA 34639
PHONE: (408) 570-7836
ATTN: BRUCE BRADFORD

ENGINEER
VITAL DESIGNS, INC.
1344 HARDY AVENUE
ORLANDO, FLORIDA 32803
PHONE: (407) 895-7173
FAX: (407) 895-7225
ATTN.: GREG HUDAK, P.E.

SURVEYOR
CPH ENGINEERS, INC.
500 W. FULTON STREET
SANFORD, FLORIDA 32771
PHONE: (407) 322-8841
FAX: (407) 330-0839
ATTN.: WILLIAM ELLIOTT, PLS

GEOTECHNICAL
ANDREYEV ENGINEERING, INC.
105 COAST ROAD
SANFORD, FLORIDA 32771
PHONE: (407) 330-7763

NOTES:

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST CITY OF MINNEOLA STANDARDS AND SPECIFICATIONS.

THIS IS TO CERTIFY THAT THESE 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", STATE OF FLORIDA, AS PREPARED BY FDOT, TALLAHASSEE, FLORIDA DATED LATEST EDITION.

BENCHMARK:

ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 AND SAID ELEVATIONS ARE BASED ON BENCHMARKS SUPPLIED BY LAKE COUNTY PUBLIC WORKS DEPARTMENT AND ARE AS FOLLOWS:

a) DESIGNATION # LK-160 A 4"X4" CONCRETE MONUMENT WITH 3" BRASS DISK IN CENTER STAMPED LK 160 FROM THE INTERSECTION OF TURKEY FARMS ROAD AND EAST GRASSY LAKE ROAD GO EASTERLY AND SOUTHERLY ON TURKEY FARMS ROAD 1.80 Mi±. STATION IS ON THE RIGHT 25.30' WEST OF THE CENTERLINE OF TURKEY FARMS ROAD, 0.5' BELOW THE SURFACE.
ELEVATION : 130.809

b) DESIGNATION # LK-161 A 4"X4" CONCRETE MONUMENT WITH 3" BRASS DISK IN CENTER STAMPED LK 161 STATION IS LOCATED IN THE NORTHWEST QUADRANT OF THE INTERSECTION OF OLD HIGHWAY 50 AND TURKEY FARMS ROAD, 41.50'± WEST OF THE CENTERLINE OF TURKEY FARMS ROAD AND 30.30' NORTH OF NE CENTERLINE OF TURKEY FARMS ROAD AND 30.30' NORTH OF THE CENTERLINE OF OLD HIGHWAY 50, 0.50'± BELOW GROUND.
ELEVATION : 122.326

NOTE:

THE CONTRACTOR SHALL FIELD CHECK PROVIDED BENCHMARKS FOR ACCURACY AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

RECEIVED
OCT 07 2005
PDS
ALTAMONTE SPG. CTR.

COVER SHEET

DATE | REVISIONS:

DRAWN BY: ESS | DESIGN BY: GDH | CHECKED BY: GDH | APPROVED BY: GDH

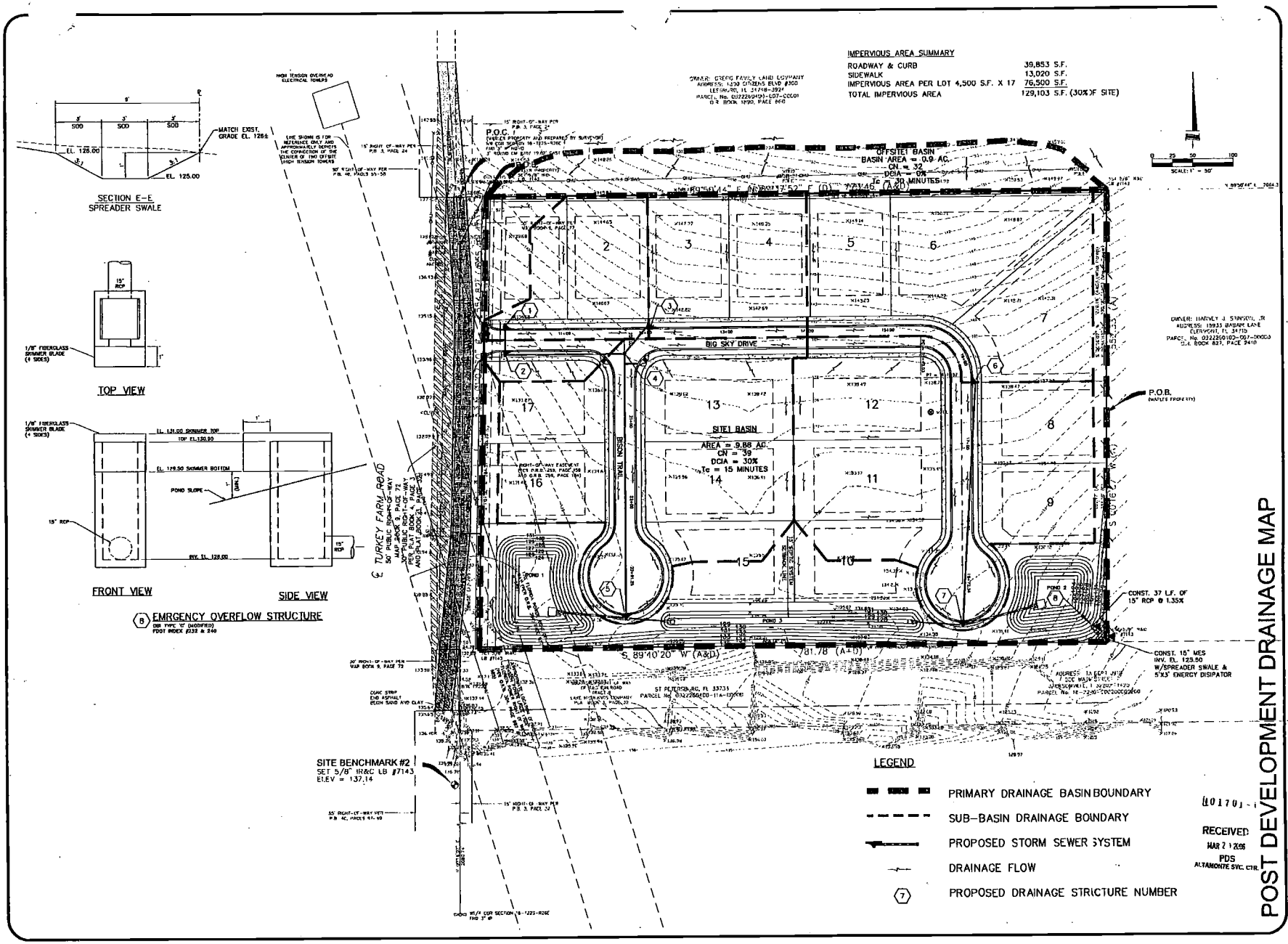
GREG O. HUDAK P.E. # 54684

VITAL DESIGNS, INC.
CIVIL ENGINEERING & LAND DEVELOPMENT DESIGN SERVICES
1344 HARDY AVENUE, ORLANDO, FL 32803 • PHONE: (407) 895-7173 FAX: (407) 895-7225

project:
Big Sky Development
Turkey Farms Road
Minneola, Florida

date: 9/15/05

sheet no. C-1
1 of: 14



REVISIONS:

DATE	

DRAWN BY	ESS
DESIGN BY	GDH
CHECKED BY	GDH
APPROVED BY	GDH

VITAL DESIGNS, INC.
CIVIL ENGINEERING & LAND DEVELOPMENT DESIGN SERVICES
1344 HARDY AVENUE, ORLANDO, FL 32803-PHONE: (407) 895-7173-FAX: (407) 895-7225

project: BIG SKY DEVELOPMENT
TURKEY FARMS ROAD
MONTEOLA, FLORIDA

date: 11/2/05

sheet no. C-6
6 of: 14

Stormwater Management Report

N. Hancock Road - Segment A

Lake County Engineering Department

Lake County, Florida

Basin No. 3 (Big Sky Subdivision)
Treatment Volume Calculation

Calculated By: JEM Date: May 19, 2010
Checked By: Date:

SJRWMD Treatment Volume Requirement

Water Quality Volume for a Dry Retention System is based upon the greater of (1) 1.0 inch of runoff over the basin area or (2) 1.25 inches of runoff over the impervious area plus an additional 0.5 inches over the entire basin area.

Vt(1) = One inch of runoff from the basin area
Vt(1) = ((8.90 ac.) * 1.0 in.)/12
Vt(1) = 0.74 acre-ft

Vt(2) = 1.5 inches of runoff over the impervious area + 0.5 inches over the entire basin
Vt(2) = ((2.41 ac. * 1.25 in.)+(0.5 in. *8.90 ac.))/12
Vt(2) = 0.62 acre-ft

Therefore 0.74 **Acre-ft for the required treatment volume**

Is Basin part of an OFW (yes or no)? no **Add an additional 50%**

TOTAL BASIN REQUIRED TREATMENT VOLUME = 0.74 **acre-ft**

Stormwater Management Report

N. Hancock Road - Segment A

Lake County Engineering Department
Lake County, Florida

Basin No. 3 (Big Sky Subdivision) — Calculated By: JEM — Date: May 19, 2010
Pre-Developed CN and SCS Runoff Volume Calculation — Checked By: — Date:

Proposed Condition

BASIN DESIGNATION	Ponds 1, 2, and 3 interconnected
TYPE EVALUATION	Pre-Developed, 25yr/96hr storm
BASIN SIZE	8.90 Acres
RAINFALL DEPTH	11 Inches

SOIL LAND USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA	PRODUCT
Open Space, good condition		A	39	8.00	312
Woods-Grass Combo, good condition		A	32	0.90	28.8
			TOTAL	8.90	340.8

WEIGHTED, CN = $\frac{\text{PRODUCT}}{\text{AREA OR \%}}$ = 38.3

SOIL STORAGE, S = $\frac{1000}{\text{CN}} - 10$ = 16.12 INCHES

RUNOFF, R = $\frac{(P-0.2S)^2}{(P+0.8S)}$ = 2.53 INCHES

RUNOFF VOLUME, V = $\frac{R}{12} \times \text{AREA}$ = 1.88 ACRE-FT

Pre Developed Volume = 1.88 ACRE-FT
Pre Developed Volume = 81800 CUBIC FEET

Stormwater Management Report

N. Hancock Road - Segment A

Lake County Engineering Department
Lake County, Florida

Basin No. 3 (Big Sky Subdivision) Calculated By: JEM Date: May 19, 2010
Post-Developed CN and SCS Runoff Volume Calculation Checked By: Date:

Proposed Condition

BASIN DESIGNATION Ponds 1, 2, and 3 interconnected
TYPE EVALUATION Post-Developed, 25yr/96hr storm
BASIN SIZE 8.90 Acres
RAINFALL DEPTH 11 Inches

SOIL LAND USE DESCRIPTION	SOIL NAME / GROUP	CN	AREA	PRODUCT
Open Space, good condition (30%)	A	39	5.59	218.01
Impervious (70%)		98	2.41	236.18
Woods-Grass Combo, good condition	A	32	0.90	28.8
		TOTAL	8.90	482.99

WEIGHTED, CN = $\frac{\text{PRODUCT}}{\text{AREA OR \%}}$ = 54.3

SOIL STORAGE, S = $\frac{1000}{\text{CN}} - 10$ = 8.43 INCHES

RUNOFF, R = $\frac{(P-0.2S)^2}{(P+0.8S)}$ = 4.89 INCHES

RUNOFF VOLUME, V = $\frac{R}{12} \times \text{AREA}$ = 3.63 ACRE-FT

Post Developed Volume = 3.63 ACRE-FT
Post Developed Volume = 158000 CUBIC FEET

Stormwater Management Report

N. Hancock Road - Segment A

Lake County Engineering Department

Lake County, Florida

Basin No. 3 (Big Sky Subdivision) **Calculated By:** JEM **Date:** May 19, 2010

Pond Stage-Storage Relationship **Checked By:** **Date:**

STAGE vs. STORAGE CALCULATIONS
Ponds 1, 2, and 3 interconnected

Stage (ft NGVD 1929)	Surface Area (sf)	Surface Area (Ac)	Average Area (Ac)	Incremental Depth (ft.)	Incremental Volume (Ac-Ft)	Total Volume (Ac-Ft)
124.00	3,179	0.073	0.000	0.000	0.000	0.000
125.00	5,314	0.122	0.097	1.000	0.097	0.097
126.00	7,230	0.166	0.144	1.000	0.144	0.241
127.00	9,408	0.216	0.191	1.000	0.191	0.432
128.00	12,066	0.277	0.246	1.000	0.246	0.679
129.00	17,075	0.392	0.334	1.000	0.334	1.013
130.00	22,433	0.515	0.453	1.000	0.453	1.467
131.00	28,096	0.645	0.580	1.000	0.580	2.047

Required Water Quality Volume =	0.74	ac-ft
Required Treatment Stage =	128.19	ft
Provided Treatment Stage =	128.20	ft
Provided Treatment Volume =	0.74	ac-ft
Total Required Retention Volume =	1.75	ac-ft
Total Retention Stage =	130.50	ft

PONDS Version 3.2.0217
Retention Pond Recovery - Refined Method
Copyright 2003
Devo Seereeram, Ph.D., P.E.

Project Data

Project Name: Hancock Road - Pond 3 - Big Sky Subdivision

Simulation Description:
Project Number:

Engineer : Jim Myers, PE

Supervising Engineer:

Date: 04-29-2010

Aquifer Data

Base Of Aquifer Elevation, [B] (ft datum):	92.00
Water Table Elevation, [WT] (ft datum):	93.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day):	20.00
Fillable Porosity, [n] (%):	25.00
Unsaturated Vertical Infiltration Rate, [Iv] (ft/day):	13.0
Maximum Area For Unsaturated Infiltration, [Av] (ft^2):	15638.0

Geometry Data

Equivalent Pond Length, [L] (ft):	750.0
Equivalent Pond Width, [W] (ft):	150.0

Ground water mound is expected to intersect the pond bottom

Stage vs Area Data

Stage (ft datum)	Area (ft^2)
124.00	3179.0
126.00	7230.0
128.00	12066.0
130.00	22433.0
131.00	28096.0

Detailed Results :: *Scenario 1 :: slug load to Pond 3*

Elapsed Time (hours)	Inflow Rate (ft^3/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft^3/s)	Overflow Discharge (ft^3/s)	Cumulative Inflow Volume (ft^3)	Cumulative Infiltration Volume (ft^3)	Cumulative Discharge Volume (ft^3)	Flow Type
0.000	12705.0000	0.0000	93.000	0.00000	0.00000	0.0	0.0	0.0	N.A.
0.002	12705.0000	0.0000	130.504	2.35294	0.00000	76230.0	14.1	0.0	U/P
2.400	0.0000	0.0000	129.613	2.29481	0.00000	76230.0	20329.4	0.0	U/P
6.000	0.0000	0.0000	127.796	1.82018	0.00000	76230.0	48939.4	0.0	U/P
12.000	0.0000	0.0000	124.518	0.78303	0.00000	76230.0	74309.6	0.0	U/P
24.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
36.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
48.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
60.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
72.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
84.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
96.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
120.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
144.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
168.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
192.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
216.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
240.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
264.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
288.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
312.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry
336.000	0.0000	0.0000	----	----	----	76230.0	76230.0	0.0	dry

Summary of Results :: *Scenario 1 :: slug load to Pond 3*

	Time (hours)	Stage (ft datum)	Rate (ft^3/s)	Volume (ft^3)
Stage				
Minimum	0.000	93.00		
Maximum	0.002	130.50		
Inflow				
Rate - Maximum - Positive	0.002		12705.0000	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	0.002			76230.0
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	336.000			76230.0
Infiltration				
Rate - Maximum - Positive	0.002		2.3529	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	12.000			74309.6
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	336.000			76230.0
Combined Discharge				
Rate - Maximum - Positive	None		None	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	None			None
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	336.000			0.0
Discharge Structure 1 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Discharge Structure 2 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Discharge Structure 3 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Pollution Abatement:				
36 Hour Stage and Infiltration Volume	36.000	Dry		76230.0
72 Hour Stage and Infiltration Volume	72.000	Dry		76230.0

APPENDIX E
(Basin #4 – Reserve at Minneola Existing Permit Data)

POST-DEVELOPMENT HYDROGRAPH DATA:

BASIN NUMBER: NO. 301 (ON SITE BASIN WITH OUTFALL TO NODE 30)

BASIN AREA: 2.341 AC

PERVIOUS AREA: 1.053 AC

IMPERV. AREA: 1.288 AC

O = allowable

BUILDING AREA:	0 SF	= 0.0 AC
PAVEMENT AREA:	850 LF	= 1.093 AC
SIDEWALK AREA:	850 LF	= 0.195 AC
	TOTAL	= 1.288 AC

WATER SURFACE AREA: 0 AC

SCS SOIL TYPE: NO. 4, (HYD. GROUP 'A')

VEGETATIVE COVER SOD LAWN - GOOD

SCS HYDRAULIC CN: 39

SCS IMPERVIOUS CN: 98

SCS WATER SURFACE CN: 100

SCS COMPOSITE CN [39(1.053)+98(1.288)+100(0.0)]/2.341 = **71.46**

SCS COMPOSITE CN **71.46**

TIME OF CONCENTRATION: TC = T1+T2

ASUME 10 MIN. FOR TC

TC = = 10.0 MIN.

STORMWATER MANAGEMENT REPORT FOR

THE RESERVE AT MINNEOLA

669 LOT RESIDENTIAL SUBDIVISION

MINNEOLA , FLORIDA

REVISED
JULY 20, 2004

FOR REVIEW BY:

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
618 EAST SOUTH STREET
ORLANDO, FLORIDA 32801

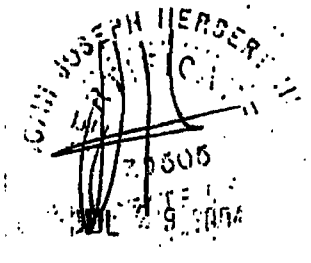
PREPARED BY:

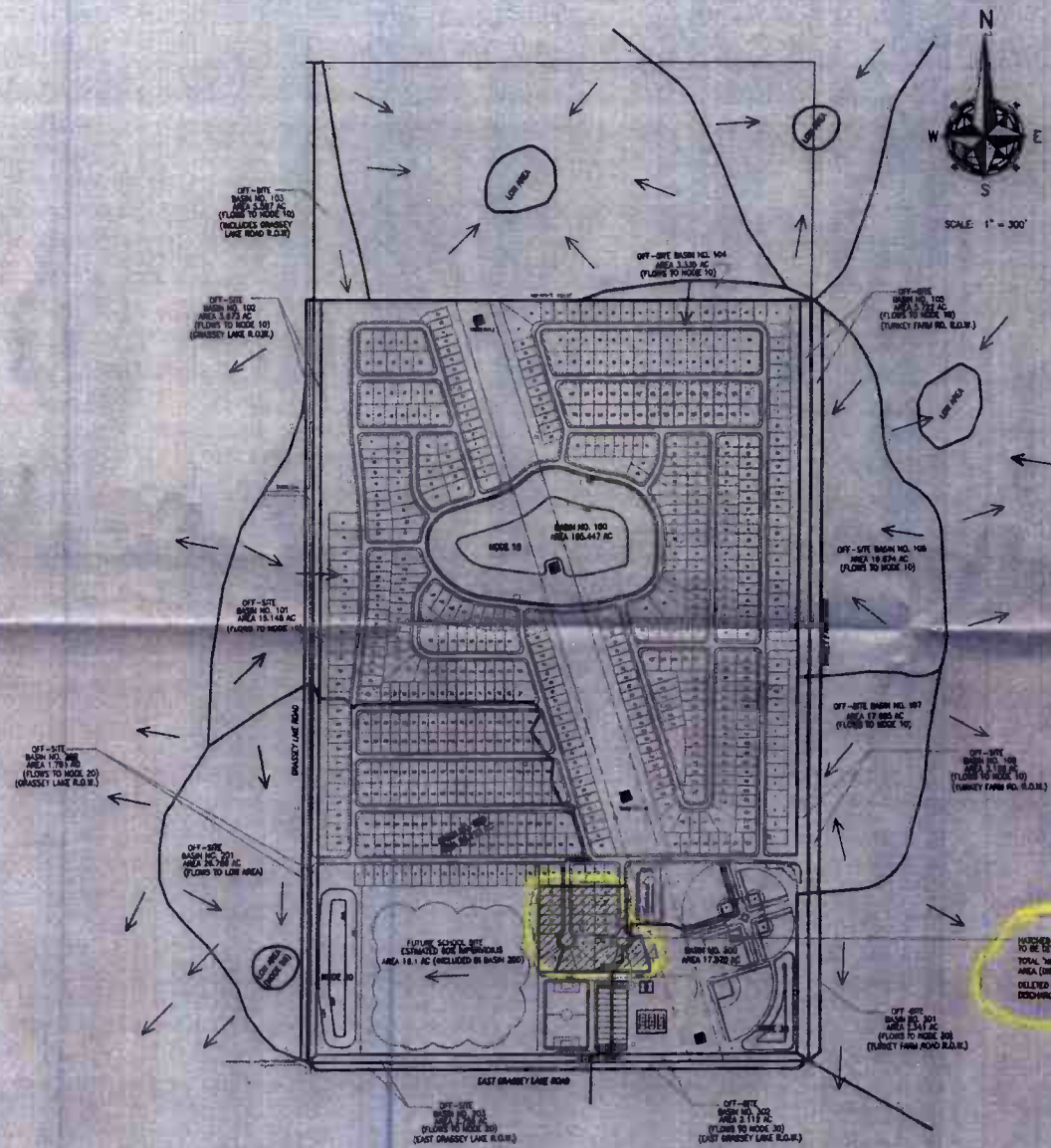
AMERICAN CIVIL ENGINEERING COMPANY
JOHN HERBERT, P.E.
207 N. MOSS RD., SUITE 211
WINTER SPRINGS, FLORIDA 32708
(407) 327-7700

PREPARED FOR:

MAUDEHELEN, LLC
1100 TOWN PLAZA CT.., SUITE 1000
WINTER SPRINGS, FLORIDA 32708
(407) 699-4286

92447-1
RECEIVED
AUG 05 2004
WMD
ALTAMONTE SVC. CTR.





POST DEVELOPMENT BASIN MAP
SCALE: 1" = 300'

AMERICAN CIVIL ENGINEERING CO.

POST DEVELOPMENT BASIN MAP
THE RESERVE AT MINNEOLA
MINNEOLA, FLORIDA

68 - 77

TLP Engineering Consultants, Inc.

TELEPHONE REPORT

PROJECT:	Hancock Road Widening		PROJECT NO:	T200901.01.01	
FROM:	Jim Myers	WITH:	TLP Engineers	DATE:	10/22/2009
TO:	Mark Jacobson City Engineer	WITH:	City of Minneola	TIME:	3:00 PM
PHONE NO.:	352-394-3598 ext. 233				

The following is our understanding of the subject matter covered in this conversation. If this differs from your understanding, please notify us within five working days.

1. Two weeks ago, the ballfields, park, and pond have formally been dedicated to the City from the developer.

2. The extra volume that was included in the pond for the future widening of Hancock Road is still available.

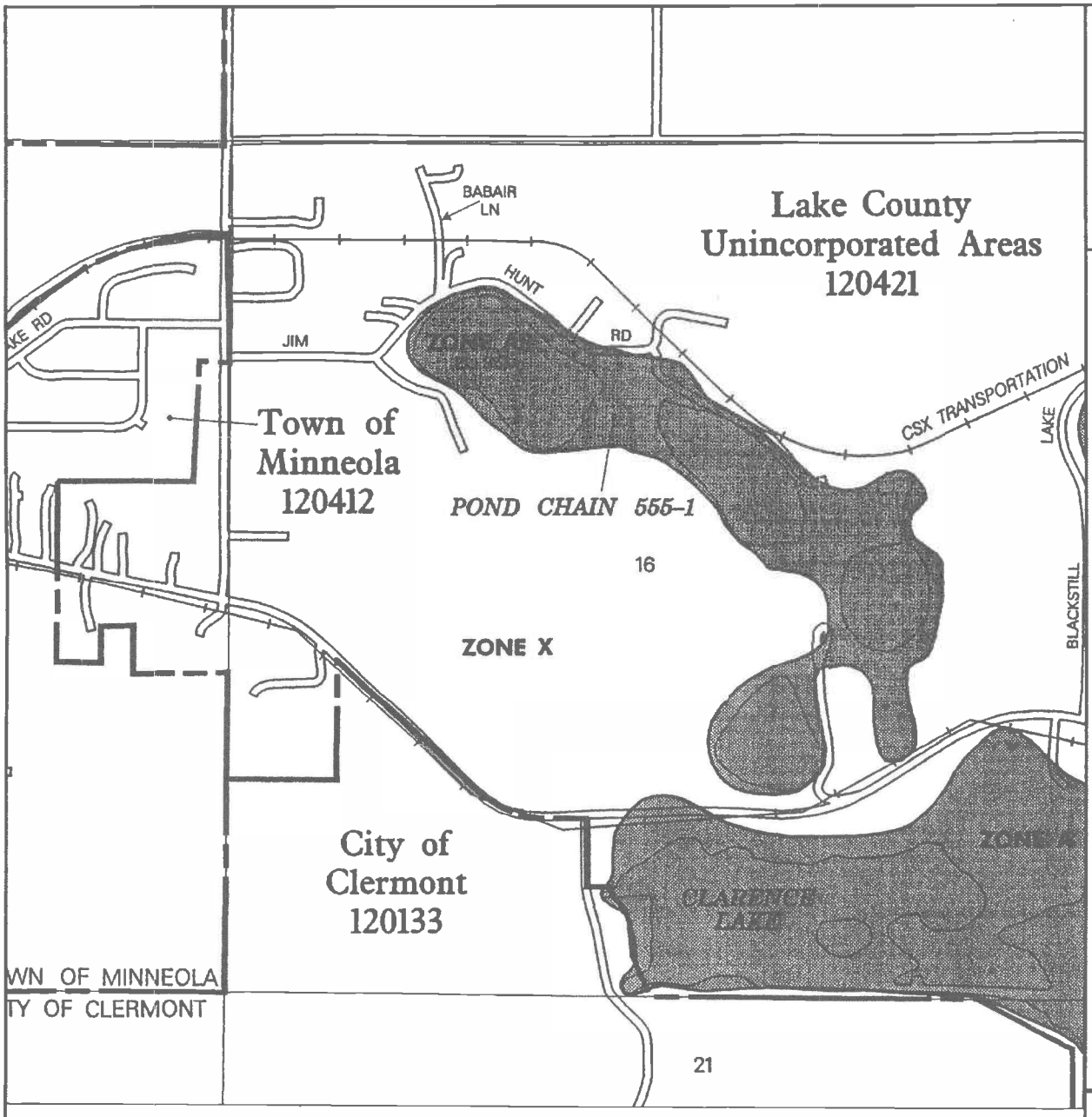
3. The City would prefer that the County make use of the existing stormsewer pipes that discharge into the existing pond. This will eliminate any construction in the pond and a possible safety concern for public using the park.

4. Since the pond is now owned by the City, a joint use agreement will be needed between the City and County to use this pond.

5. The City requests that a copy of the update Pond Siting Report be given to the City for informational purposes only.

REPORTED BY: Jim Myers

APPENDIX F
(FEMA Floodplain Map)



APPROXIMATE SCALE

1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

LAKE COUNTY,
FLORIDA
AND INCORPORATED AREAS

PANEL 555 OF 725

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLERMONT, CITY OF	120133	0565	D
LAKE COUNTY	120421	0555	D
MINNEOLA, TOWN OF	120412	0555	D
MONTVERDE, TOWN OF	120894	0555	D

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
12069C0555 D

EFFECTIVE DATE:
JULY 3, 2002

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

APPENDIX G
(Geotechnical Information)

Jim Myers

From: Ed Miguens [EMiguens@andreyevengineering.com]
Sent: Tuesday, April 13, 2010 6:29 PM
To: dino.lucarelli@tylin.com; jim.tlpeng@gmail.com
Cc: Ray Jones

Attachments: Preliminary Pond Design Parameters (Final Study).xls

Preliminary Pond Design Parame...

Dino/Jim,

Attached are the design parameters for Pond #1 located NE of N. Hancock Road and E. Old Highway 50. Please note that borings PB-4 and PB-5 were drilled at the top of pond embankment (east side) adjacent to the bike path. Based on the cross-section at Sta. 199+50, the ground elevation at
PB-5 is estimated to be around 121 feet. Additional lab/field testing is required for Pond #2 before I can provide the design parameters. I will move forward with the drilling/testing for the Pond #3 site with the site plan provided today. Please call with any questions.

Thanks, Ed.

Ed Miguens, P.E.
Vice President
Andreyev Engineering, Inc.
1170 West Minneola Avenue,
Clermont, Florida 34711
E. emiguens@andreyevengineering.com
T. 352-241-0508
F. 352-241-0977
C. 407-427-3491

TABLE 1
STORMWATER MANAGEMENT DESIGN PARAMETERS
N. HANCOCK ROAD EXTENSION PROJECT
LAKE COUNTY, FLORIDA
AEI PROJECT NO.: CPGT-09-0048

BORING NO.	POND NO.	DEPTH TO BOTTOM OF AQUIFER (FEET)	DEPTH TO WET SEASON GROUNDWATER TABLE (FEET)	HORIZONTAL HYDRAULIC CONDUCTIVITY (FT./DAY)	UNSATURATED HYDRAULIC CONDUCTIVITY (FT./DAY)	STORAGE COEFFICIENT
PB-4/PB-5	1	40*	29	40	26	0.25

* - Maximum Depth of Boring

Jim Myers

From: Ed Miguens [EMiguens@andreyevengineering.com]
Sent: Thursday, April 15, 2010 3:01 PM
To: Dino Lucarelli; jim.tlpeng@gmail.com
Cc: Ray Jones

Attachments: Preliminary Pond Design Parameters Pond 2 (Final Study).xls

Preliminary Pond Design Parame...

Dino/Jim,

Attached are the preliminary design parameters for Pond #2 located south of Jim Hunt Road. Based on the site topographic information presented on the site plan, the ground elevation at boring PB-6 (drilled in the lower elevations of the pond site) is estimated to be 92 feet. Based on this estimated elevation, the normal wet season high groundwater table depth of 11 feet presented in the table attached, corresponds to approximate elevation 81 feet. The water elevation of the lake to the east as shown on USGS Topographic map is 79 feet. I will provide the preliminary design parameters for Pond 3 in the next couple of days after completing the testing. Please call should you have any questions.

Thanks, Ed.

Ed Miguens, P.E.
Vice President
Andreyev Engineering, Inc.
1170 West Minneola Avenue
Clermont, Florida 34711
E. emiguens@andreyevengineering.com
T. 352-241-0508
F. 352-241-0977
C. 407-427-3491

TABLE 1
STORMWATER MANAGEMENT DESIGN PARAMETERS
N. HANCOCK ROAD EXTENSION PROJECT
LAKE COUNTY, FLORIDA
AEI PROJECT NO.: CPGT-09-0048

BORING NO.	POND NO.	DEPTH TO BOTTOM OF AQUIFER (FEET)	DEPTH TO WET SEASON GROUNDWATER TABLE (FEET)	HORIZONTAL HYDRAULIC CONDUCTIVITY (FT./DAY)	UNSATURATED VERTICAL HYDRAULIC CONDUCTIVITY (FT./DAY)	STORAGE COEFFICIENT
PB-6	2	35*	11	32	21	0.25

* - Maximum Depth of Boring

Jim Myers

From: Ed Miguens [EMiguens@andreyevengineering.com]
Sent: Wednesday, April 28, 2010 12:02 PM
To: Dino Lucarelli; jim.tlpeng@gmail.com
Cc: Ray Jones
Subject: N. Hancock Road Extension

Attachments: Preliminary Pond Design Parameters Pond 3 (Final Study).xls

Preliminary Pond Design Parame...

Dino/Jim,

Attached are the recommended design parameters for Pond #3. Boring PB-8 was drilled near the southwest corner of the existing pond at the top of embankment. The ground elevation at the boring location as interpreted from the topo information is near 131 to 132 feet. Please call should you have any questions.

Thanks, Ed.

Ed Miguens, P.E.
Vice President
Andreyev Engineering, Inc.
1170 West Minneola Avenue
Clermont, Florida 34711
E. emiguens@andreyevengineering.com
T. 352-241-0508
F. 352-241-0977
C. 407-427-3491

TABLE 1
STORMWATER MANAGEMENT DESIGN PARAMETERS
N. HANCOCK ROAD EXTENSION PROJECT
LAKE COUNTY, FLORIDA
AEI PROJECT NO.: CPGT-09-0048

BORING NO.	POND NO.	DEPTH TO BOTTOM OF AQUIFER (FEET)	DEPTH TO WET SEASON GROUNDWATER TABLE (FEET)	HORIZONTAL HYDRAULIC CONDUCTIVITY (FT./DAY)	UNSATURATED VERTICAL HYDRAULIC CONDUCTIVITY (FT./DAY)	STORAGE COEFFICIENT
PB-8	3	40*	39	40	26	0.25

* - Maximum Depth of Boring

Hydrologic Soil Group—Lake County Area, Florida
(N. Hancock Road)

USDA Natural Resources Conservation Service

Web Soil Survey 2.2
National Cooperative Soil Survey

Hydrologic Soil Group--Lake County Area, Florida
(N. Hancock Road)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:11,300 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 17N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lake County Area, Florida
Survey Area Data: Version 7, Nov 29, 2006

Date(s) aerial images were photographed: 9/9/2007

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Lake County Area, Florida				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
8	Candler sand, 0 to 5 percent slopes	A	297.4	62.7%
9	Candler sand, 5 to 12 percent slopes	A	81.1	17.1%
10	Candler sand, 12 to 40 percent slopes	A	45.6	9.6%
17	Arents	B	0.4	0.1%
21	Lake sand, 0 to 5 percent slopes	A	26.1	5.5%
28	Myakka sand	B/D	4.6	1.0%
40	Placid and Myakka sands, depressional	A/D	6.2	1.3%
99	Water		13.1	2.8%
Totals for Area of Interest			**474.6**	**100.0%**

APPENDIX H
(Cross Drain Calculations)

HY-8 Analysis Results

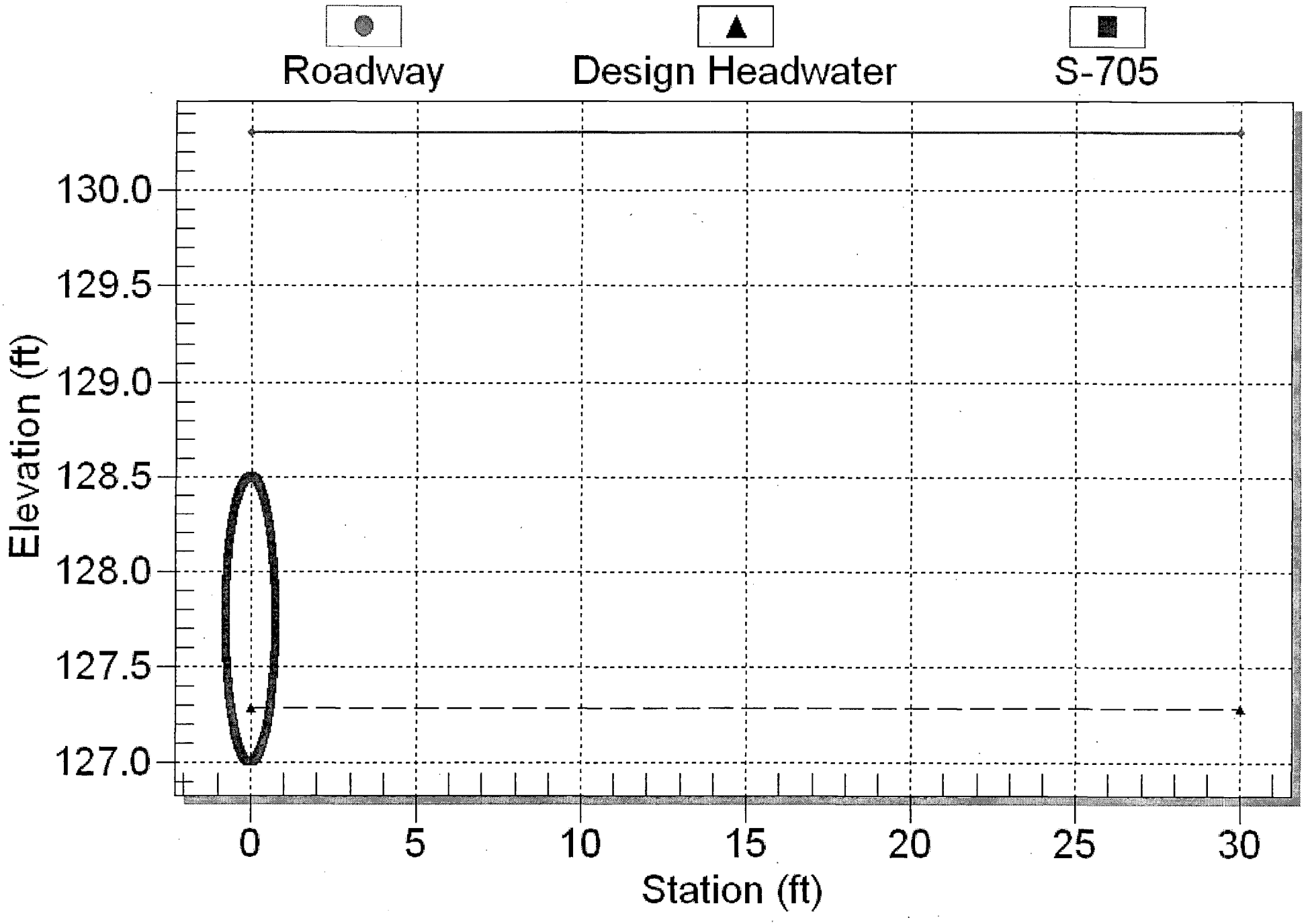
Crossing Summary Table

Culvert Crossing: S-705

Headwater Elevation (ft)	Total Discharge (cfs)	S-705 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
127.00	0.00	0.00	0.00	1
127.09	0.03	0.03	0.00	1
127.15	0.06	0.06	0.00	1
127.21	0.09	0.09	0.00	1
127.23	0.12	0.12	0.00	1
127.26	0.15	0.15	0.00	1
127.27	0.18	0.18	0.00	1
127.29	0.20	0.20	0.00	1
127.32	0.24	0.24	0.00	1
127.35	0.27	0.27	0.00	1
127.38	0.30	0.30	0.00	1
130.30	13.56	13.56	0.00	Overtopping

Crossing: S-705, Culvert: S-705

Front View (Not to scale)



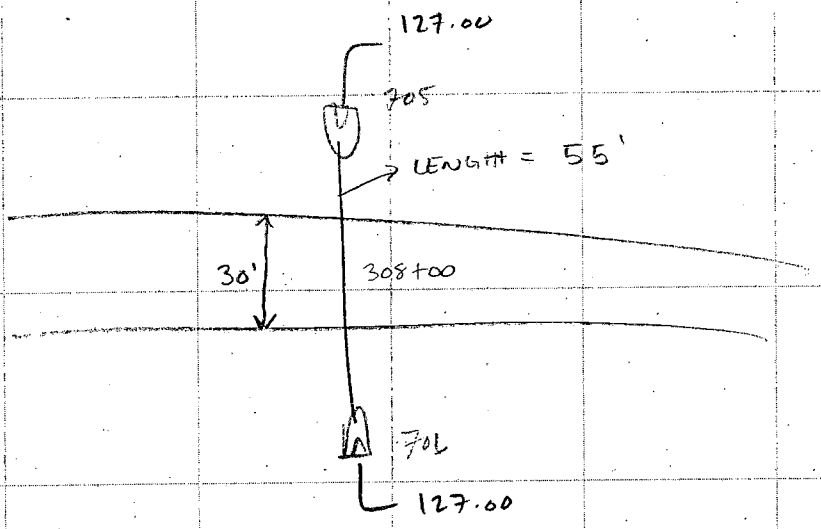
TY·LIN INTERNATIONAL

Project: | Job No. | Sheet: of

Item: | Designer: | Date:

Checker: | Date:

Grid: 1/10"



$Q = CiA$

$= (.2)(4)(.2\ AC) = .16$

$= (.2)(5.6)(.2\ AC) = .23$

HY-8 Analysis Results

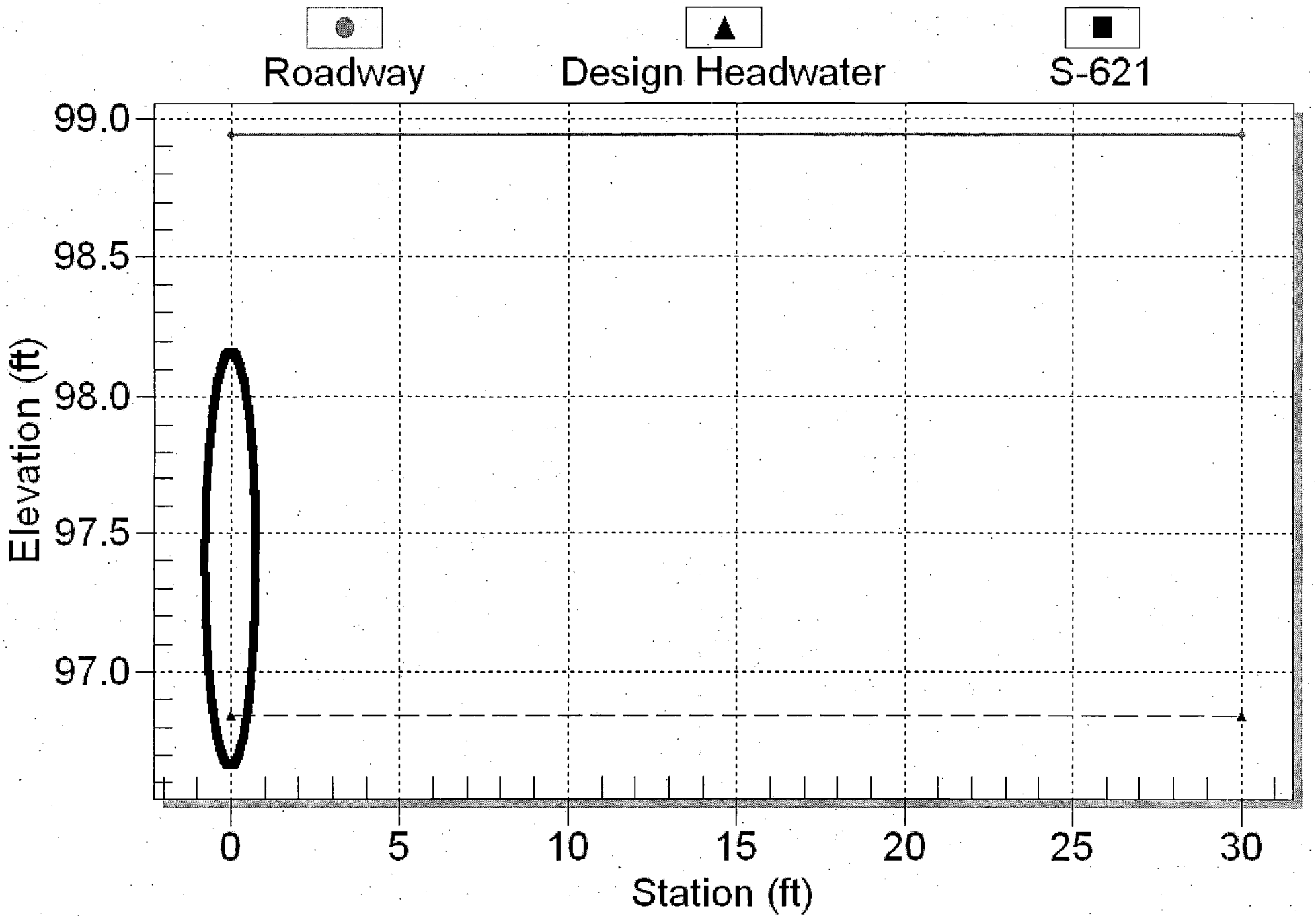
Crossing Summary Table

Culvert Crossing: S-621

Headwater Elevation (ft)	Total Discharge (cfs)	S-621 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
96.66	0.00	0.00	0.00	1
500095.82	0.03	0.03	0.00	1
500095.82	0.05	0.05	0.00	1
96.75	0.08	0.08	0.00	1
96.77	0.10	0.10	0.00	1
96.80	0.13	0.13	0.00	1
96.83	0.15	0.15	0.00	1
96.84	0.16	0.16	0.00	1
96.88	0.20	0.20	0.00	1
96.91	0.23	0.23	0.00	1
96.94	0.25	0.25	0.00	1
98.94	110.41	110.41	0.00	Overtopping

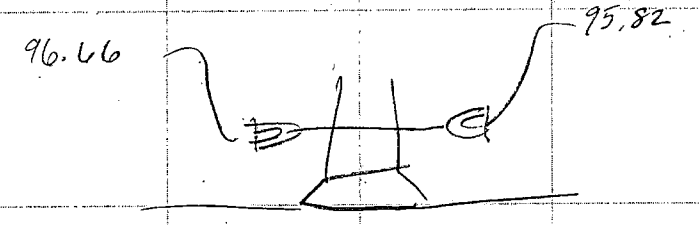
Crossing. S-621

Front View (Not to scale)



TY·LIN INTERNATIONAL

Project:	S-621 CD	Job No.	Sheet: of
Item:		Designer:	Date:
		Checker:	Date:
			Grid: 1/10"



PIPE SLOPE = .024

DITCH BOTTOM WIDTH = 3'

SLOPES = 1:3

$Q = CiA$

$Q = (.2)(4\ in/hr)(.20\ ac) = .16\ cfs$

$Q_{over} = (.2)(5.6\ in/hr)(.20) = .23\ cfs$

HY-8 Analysis Results

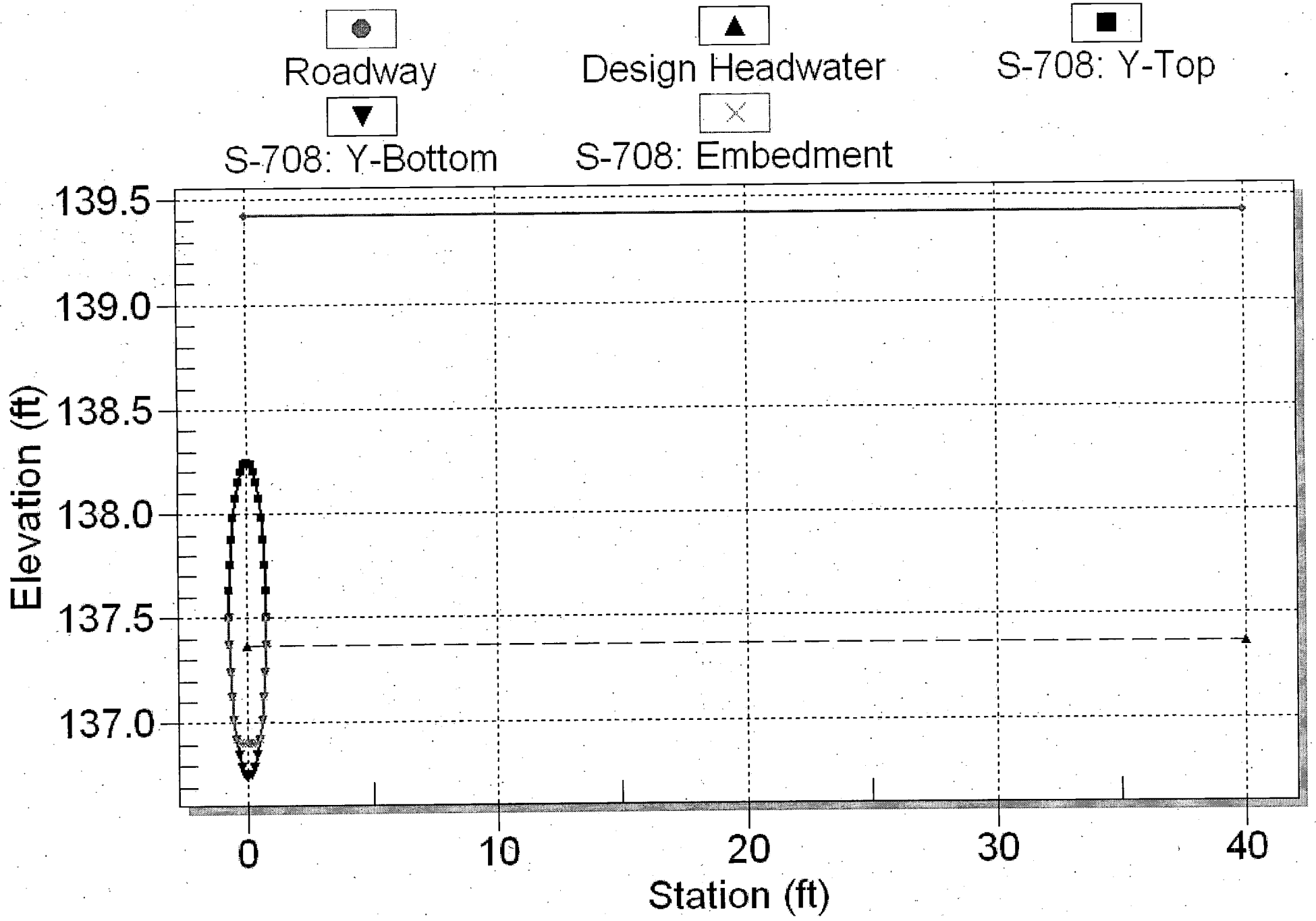
Crossing Summary Table

Culvert Crossing: S-708

Headwater Elevation (ft)	Total Discharge (cfs)	S-708 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
137.75	0.00	0.00	0.00	1
137.03	0.12	0.12	0.00	1
137.13	0.23	0.23	0.00	1
137.18	0.35	0.35	0.00	1
137.31	0.46	0.46	0.00	1
137.28	0.58	0.58	0.00	1
137.32	0.70	0.70	0.00	1
137.36	0.81	0.81	0.00	1
137.36	0.83	0.83	0.00	1
137.43	1.04	1.04	0.00	1
137.47	1.16	1.16	0.00	1
139.42	5.56	5.56	0.00	Overtopping

Crossing. S-708

Front View (Not to scale)



T·Y·LIN INTERNATIONAL

Project: N HANCOCK RD	Job No.	Sheet:	of
Item: CD 707 - 708	Designer:	Date:	
	Checker:	Date:	
		Grid: 1/10"	

Cover = 3.38

Min Q = 0

Design Q = .832 cfs

Overtopping Q = 1.16 cfs

i_d = 4 in/hr

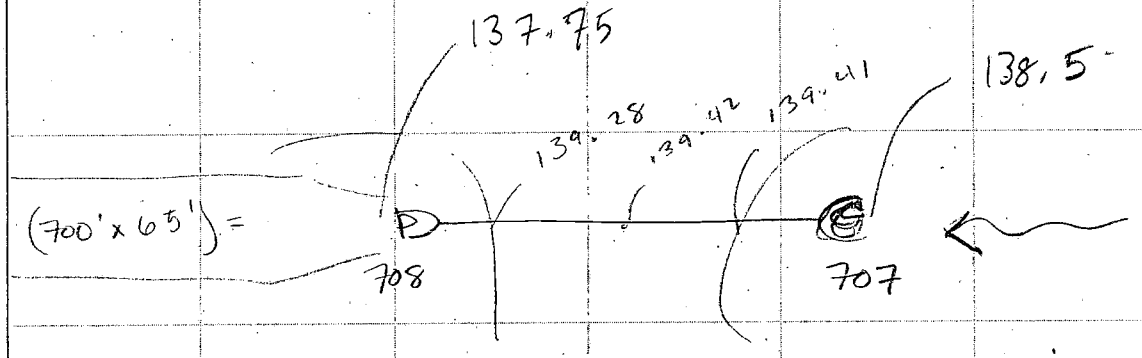
i_{over} = 5.6 in/hr

$Q = CiA = .832$ cfs

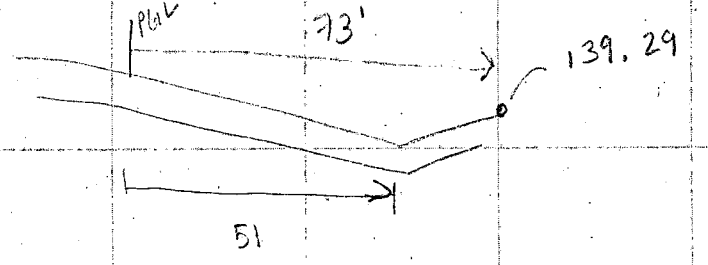
A = 1.04 acres

C = .2

i = 4 in/hr



Channel Slope = $\frac{137.68 - 137.43}{50} = .005$



HY-8 Analysis Results

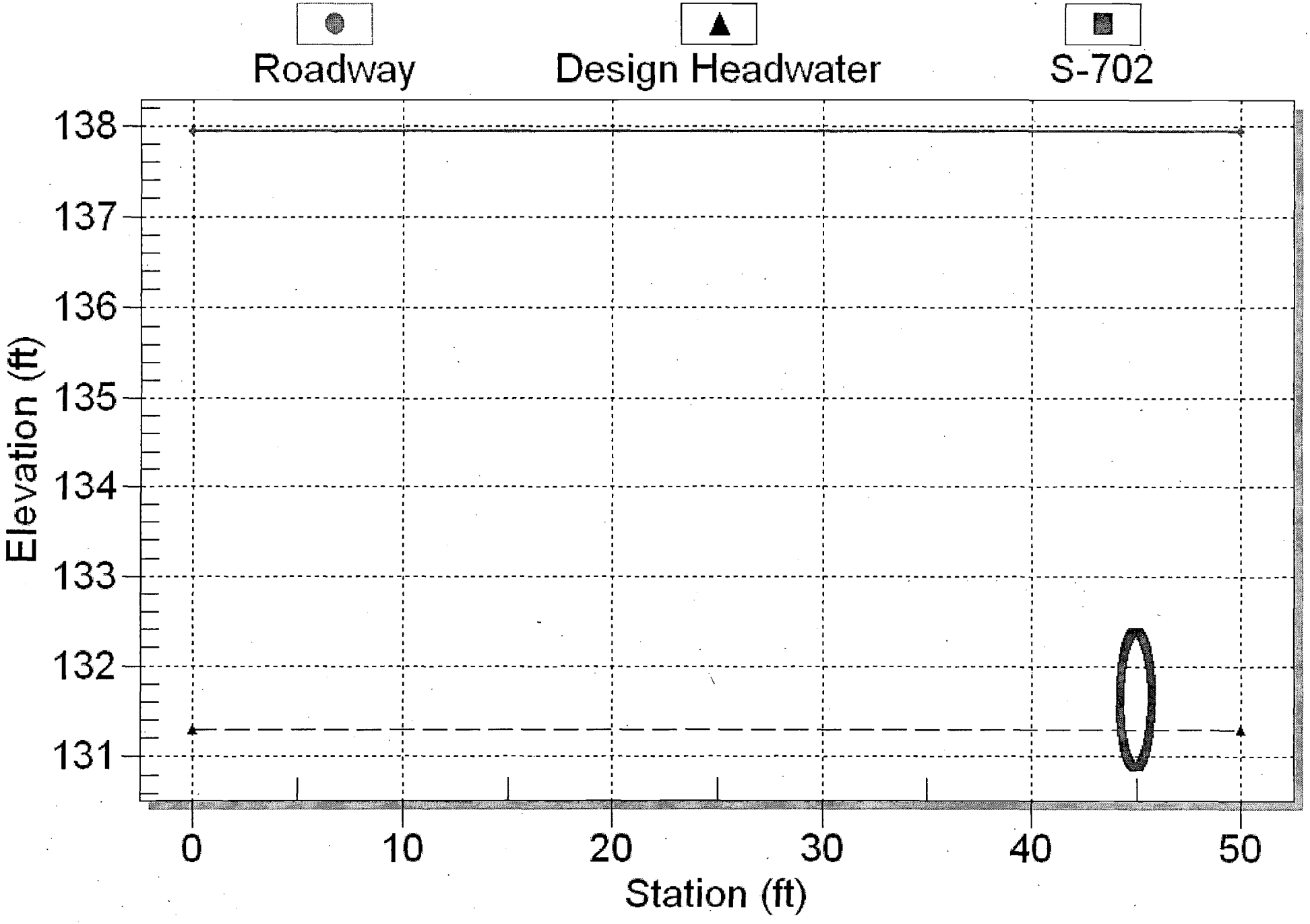
Crossing Summary Table

Culvert Crossing: S-702

Headwater Elevation (ft)	Total Discharge (cfs)	S-702 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
130.88	0.00	0.00	0.00	1
130.95	0.04	0.04	0.00	1
131.02	0.09	0.09	0.00	1
131.12	0.14	0.14	0.00	1
131.11	0.18	0.18	0.00	1
131.14	0.22	0.22	0.00	1
131.20	0.27	0.27	0.00	1
131.29	0.32	0.32	0.00	1
131.30	0.32	0.32	0.00	1
131.23	0.40	0.40	0.00	1
131.25	0.45	0.45	0.00	1
137.94	18.93	18.93	0.00	Overtopping

Crossing: S-702, Culvert: S-702

Front View (Not to scale)



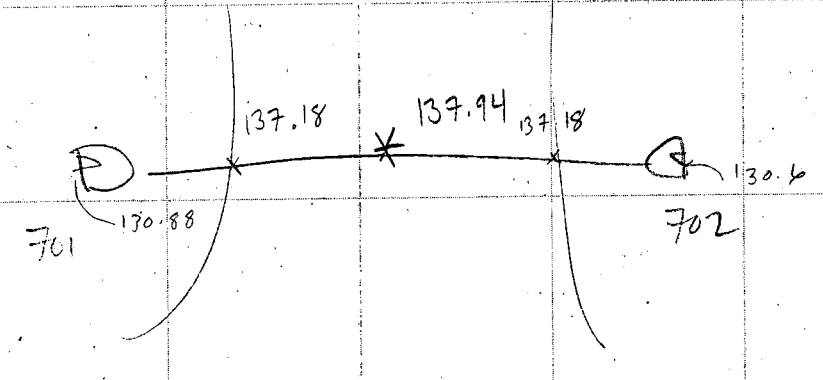
TYLIN INTERNATIONAL

Project: N Hancock RD	Job No.	Sheet: of
Item: CD 701-702	Designer:	Date:
	Checker:	Date:
		Grid: 1/10"

$Q_{min} = 0$

$Q_{design} = .4\,(4\ ^{in}/_{hr})(.20) = .032$ cfs

$Q_{overtop} = .4\,(5.6\ ^{in}/_{hr})(.20) = .45$ cfs



HY-8 Analysis Results

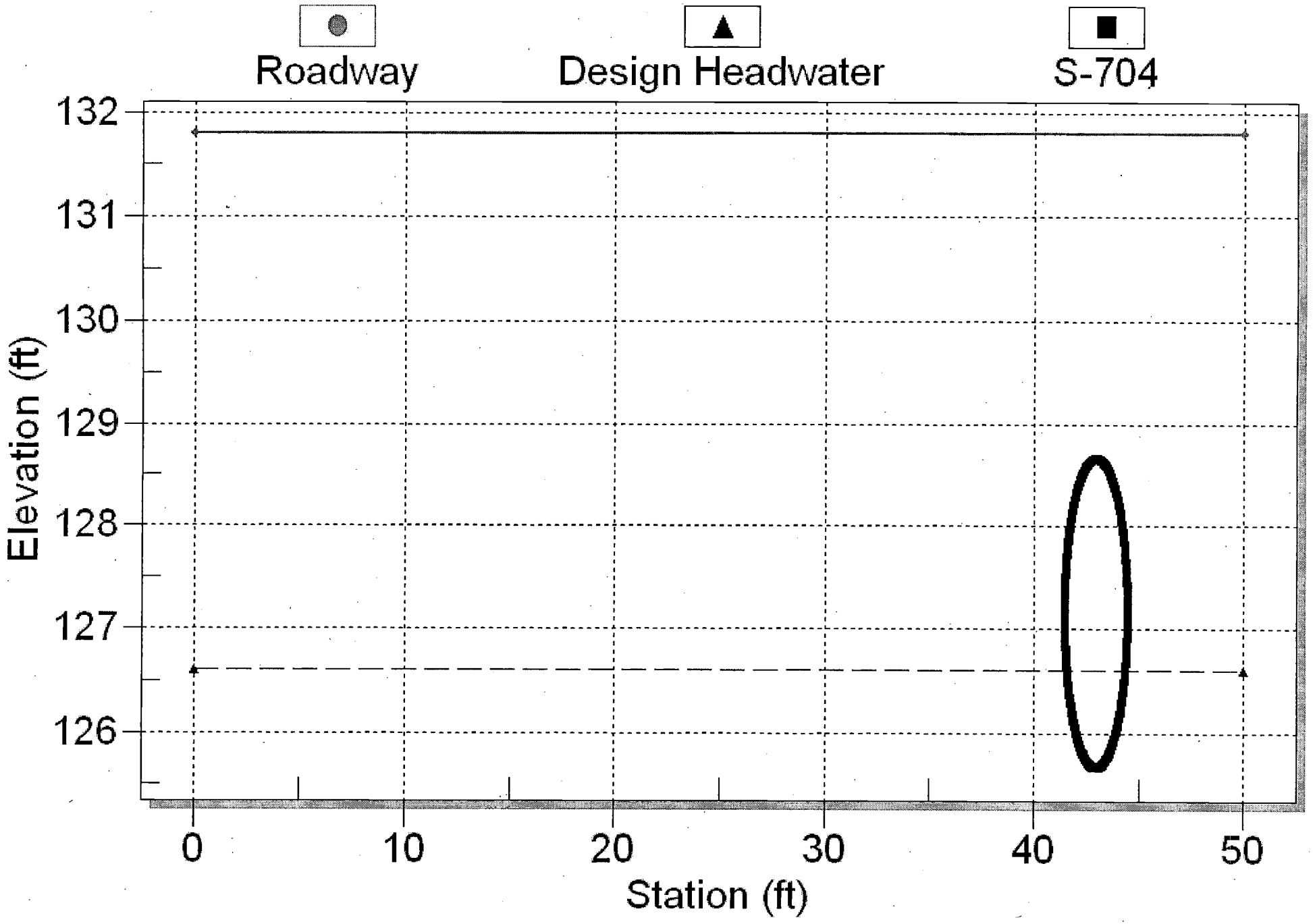
Crossing Summary Table

Culvert Crossing: S-704

Headwater Elevation (ft)	Total Discharge (cfs)	S-704 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
125.66	0.00	0.00	0.00	1
125.95	0.72	0.72	0.00	1
126.14	1.44	1.44	0.00	1
126.25	2.17	2.17	0.00	1
126.35	2.89	2.89	0.00	1
126.44	3.61	3.61	0.00	1
126.53	4.33	4.33	0.00	1
126.59	5.05	5.05	0.00	1
126.60	5.16	5.16	0.00	1
126.72	6.50	6.50	0.00	1
126.78	7.22	7.22	0.00	1
131.80	72.84	72.84	0.00	Overtopping

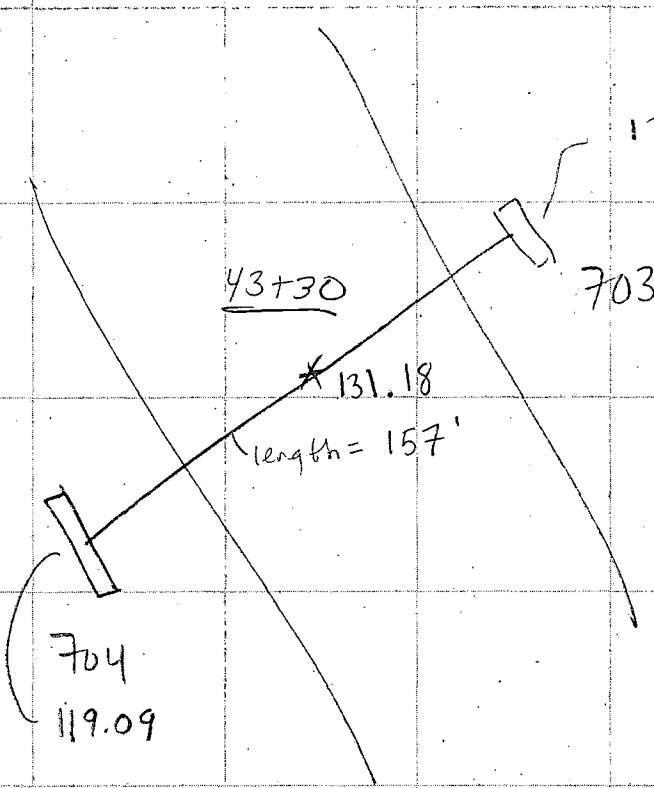
Crossing. S-704

Front View (Not to scale)



T·Y·LIN INTERNATIONAL

Project: N HANCOCK RD	Job No.	Sheet: of
Item: Cross Drain 703-704	Designer:	Date:
	Checker:	Date:
		Grid: 1/10"



Q_{min} = 0 cfs

Q_{des} = 5.16 cfs = (6.45)(4)(.2)

Q_{our} = 7.22 cfs = (6.45)(5.6)(.2)

APPENDIX I
(Stormsewer Calculations)

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id **570013.00** County: **Lake County** Network: **50 West** Designed by **J.J. Kaye** Date: 9/27/2010
Description: . Organization **T Y LIN INTERNATIONAL** State Road: **Hancock Road** Checked by: **Dino Lucareli** Date: 9/27/2010

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.25 / 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.)	# BR 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): 117.17
CL50			**S-401**			0.16	0.24	0.15										120.11	120.05	0.07		18.00	0.022	0.96		
				P-5	302.91	0.02	0.02	0.00	10.29	2.52	7.34	0.23	0.00	**1.70**	0.00	123.05	**2.94**	120.40	119.95		1		0.148		4.41	
37+65	17.25	Lt.	S-403			0.00	0.00	0.00					0.00					118.90	118.45	0.45		18.00	0.150	2.49		
CL50			**S-402**			0.08	0.08	0.08										120.40	120.40	0.00		18.00	0.003	0.33		
				P-5	34.50	0.01	0.01	0.00	10.00	0.29	7.41	0.08	0.00	**0.58**	0.00	123.05	**2.65**	120.44	120.40		1		0.137		4.40	
37+65	17.25	Rt.	S-401			0.00	0.00	0.00					0.00					118.94	118.90	0.05		18.00	0.150	2.49		
CL50			**S-403**			0.48	0.72	0.46										120.05	119.72	0.32		18.00	0.176	2.70		
				P-6	182.87	0.06	0.08	0.01	12.81	1.13	6.80	0.70	0.00	**4.78**	0.00	125.85	**5.80**	119.95	119.68		1		0.146		4.38	
40+70	27.82	Lt.	S-404			0.00	0.00	0.00					0.00					118.45	118.18	0.27		18.00	0.150	2.48		
CL50			**S-404**			0.10	1.12	0.10										119.72	119.64	0.08		18.00	0.392	4.03		
				P-5	21.25	0.00	0.09	0.00	13.94	0.09	6.59	1.08	0.00	**7.12**	0.00	128.54	**8.82**	119.68	119.64		1		0.188		5.33	
42+60	30.25	Lt.	S-405			0.00	0.00	0.00					0.00					118.18	118.14	0.04		18.00	0.150	3.01		
CL50			**S-405**			0.31	1.42	0.29										119.08	117.17	1.91		18.00	0.930	7.74		
				P-8	205.89	0.02	0.11	0.00	14.03	0.00	6.57	1.38	0.00	**9.07**	0.00	128.90	**9.81**	119.64	117.17		1		1.200		12.51	
42+60	9.00	Lt.	S-499			0.00	0.00	0.00					0.00					118.14	115.67	2.47		18.00	0.150	7.08		
CL50			**S-406**			0.11	0.30	0.10										133.38	119.72	13.66		18.00	5.633	9.37		
				P-5	242.48	0.00	0.01	0.00	10.55	0.43	7.28	0.28	0.00	**2.05**	0.00	137.39	**4.01**	134.61	119.68		1		6.158		28.41	
45+10	30.25	Lt.	S-404			0.00	0.00	0.00					0.00					133.11	118.18	14.93		18.00	0.150	16.08		
CL50			**S-407**			0.19	0.19	0.18										133.78	133.67	0.10		18.00	0.144	2.19		
				P-5	72.50	0.01	0.01	0.00	10.00	0.55	7.41	0.18	0.00	**1.33**	0.00	137.40	**3.63**	134.71	134.61		1		0.144		4.41	
45+10	42.25	Rt.	S-406			0.00	0.00	0.00					0.00					133.21	133.11	0.10		18.00	0.150	2.49		

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.

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **570013.00** County: **Lake County** Network: **Ex. Pond** Designed by **J.J. Kaye** Date: 9/27/2010
Description: . Organization **T Y LIN INTERNATIONAL** State Road: **Hancock Road** Checked by: **Dino Lucareli** Date: 9/27/2010

LOCATION / UPPER END / ALIGNMENT NAME / STATION / DIST / SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.25 / 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.)	# BR L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS / MIN.	ACTUAL VEL. / PHYS. VEL. / (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CLHANCOC	**S-233a**			0.00 / 1.39	0.00										203.26	203.15	0.11		24.00	0.172	3.24		ZONE: 7
		MH-7	65.10	0.00 / 0.70	0.00	12.74	0.00	6.81	1.49	0.00	**10.16**	0.00	206.46	**3.20**	203.13	203.15		1		-0.031		-4.34	FREQ. (Yrs): 10
254+37.46 61.94 Lt.	S-399			0.00 / 0.00	0.00					0.00					201.13	201.15	-0.02		24.00	0.102	-1.38		MANNINGS n: 0.0120
CLHANCOC	**S-234a**			0.00 / 1.39	0.00										204.00	203.26	0.74		24.00	0.823	10.43		
		MH-7	89.58	0.00 / 0.70	0.00	12.60	0.14	6.84	1.49	0.00	**10.20**	0.00	207.12	**3.12**	205.30	203.13		1		2.422		38.80	
254+35.95 27.63 Rt.	S-233a			0.00 / 0.00	0.00					0.00					203.30	201.13	2.17		24.00	0.102	12.35		TAILW EL (ft): 203.15
CLHANCOC	**S-235**			0.27 / 0.27	0.26										207.49	207.46	0.03		18.00	0.030	1.11		
		P-5	92.50	0.03 / 0.03	0.01	10.00	0.77	7.41	0.26	0.00	**1.96**	0.00	210.21	**2.72**	207.60	207.46		1		0.145		4.41	
256+56 52.25 Lt.	S-236			0.00 / 0.00	0.00					0.00					206.10	205.96	0.13		18.00	0.150	2.49		
CLHANCOC	**S-236**			0.29 / 1.39	0.28										207.00	204.33	2.66		18.00	1.208	7.97		
		P-5	220.41	0.05 / 0.70	0.01	12.14	0.46	6.93	1.49	0.00	**10.34**	0.00	210.45	**3.45**	207.46	204.80		1		1.208		12.59	
256+56 40.25 Rt.	S-234a			0.00 / 0.00	0.00					0.00					205.96	203.30	2.66		18.00	0.150	7.13		
CLHANCOC	**S-301**			0.45 / 0.70	0.43										211.84	211.68	0.17		18.00	0.196	2.85		
		P-5	85.45	0.12 / 0.16	0.03	11.00	0.50	7.17	0.70	0.00	**5.04**	0.00	214.91	**3.07**	211.80	211.68		1		0.145		4.41	
259+40 38.45 Lt.	S-302a			0.00 / 0.00	0.00					0.00					210.30	210.18	0.12		18.00	0.150	2.49		
CLHANCOC	**S-302**			0.13 / 0.13	0.12										213.31	211.14	2.18		18.00	1.912	5.95		
		DBI-C	113.80	0.46 / 0.46	0.12	10.00	0.32	7.41	0.24	0.00	**1.77**	0.00	216.08	**2.77**	214.48	212.30		1		1.912		15.91	
260+51.57 48.46 Rt.	S-302a			0.00 / 0.00	0.00					0.00					212.98	210.80	2.18		18.00	0.150	9.00		
CLHANCOC	**S-302a**			0.00 / 0.83	0.00										210.93	207.09	3.84		18.00	1.336	7.50		
		MH-8	287.33	0.00 / 0.62	0.00	11.50	0.64	7.06	0.94	0.00	**6.64**	0.00	215.50	**4.57**	211.68	207.84		1		1.336		13.22	
259+40 47.00 Rt.	S-236			0.00 / 0.00	0.00					0.00					210.18	206.34	3.84		18.00	0.150	7.48		
CLHANCOC	**S-303**			0.24 / 0.24	0.23										214.73	212.30	2.43		18.00	0.808	5.01		
		P-5	301.16	0.04 / 0.04	0.01	10.00	1.00	7.41	0.24	0.00	**1.79**	0.00	218.46	**3.72**	215.85	212.30		1		1.178		12.41	
262+40 18.05 Lt.	S-301			0.00 / 0.00	0.00					0.00					214.35	210.80	3.55		18.00	0.150	7.03		

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: **570013.00** County: **Lake County** Network: **Jim Hunt** Designed by **J.J. Kaye** Date: 9/27/2010
Description: . Organization **T Y LIN INTERNATIONAL** State Road: **Hancock Road** Checked by: **Dino Lucareli** Date: 9/27/2010

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.25 / C= 0.50 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.)	# BR L S	PIPE SIZE (in.) RISE SPAN	SLOPE % HGL PHYS MIN.	ACTUAL VEL. PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CLJHUNT			S-501			0.13	0.13	0.12										106.09	106.01	0.07		18.00	0.221	2.33		ZONE: 7
				P-6	32.87	0.00	0.00	0.00	10.00	0.23	7.41	0.12	0.00	**0.91**	0.00	109.79	**3.70**	107.18	107.11		1		0.221		5.61	FREQ. (Yrs): 10
403+45	13.25	Lt.	S-502			0.00	0.00	0.00					0.00					105.68	105.61	0.07		18.00	0.150	3.18		MANNINGS n: 0.0120
CLJHUNT			S-502			0.13	0.26	0.12										102.14	100.60	1.54		18.00	0.509	3.71		
				P-6	302.59	0.00	0.00	0.00	10.23	1.36	7.35	0.24	0.00	**1.80**	0.00	109.72	**7.58**	103.16	101.62		1		0.509		8.16	
403+64.44	13.25	Rt.	S-504			0.00	0.00	0.00					0.00					101.66	100.12	1.54		18.00	0.150	4.62		TAILW EL (ft): 95.50
CLJHUNT			S-503			0.07	0.07	0.07										100.50	100.47	0.03		18.00	0.113	1.56		
				P-5	26.50	0.00	0.00	0.00	10.00	0.22	7.41	0.07	0.00	**0.50**	0.00	104.26	**3.76**	101.65	101.62		1		0.113		4.07	
406+70	13.25	Lt.	S-504			0.00	0.00	0.00					0.00					100.15	100.12	0.03		18.00	0.150	2.30		
CLJHUNT			S-504			0.07	0.40	0.07										100.41	99.29	1.12		18.00	6.404	10.97		
				P-5	17.49	0.00	0.00	0.00	11.59	0.03	7.04	0.38	0.00	2.67	0.00	104.26	**3.85**	101.62	100.50		1		6.404		31.64	
406+70	13.25	Rt.	S-505			0.00	0.00	0.00					0.00					100.12	99.00	1.12		18.00	0.150	17.90		
CLJHUNT			S-505			0.00	0.40	0.00										95.53	95.50	0.03		18.00	0.055	1.51		
				MH-7	56.29	0.00	0.00	0.00	11.62	0.00	7.04	0.38	0.00	**2.66**	0.00	103.00	**7.47**	92.98	91.50		1		2.629		18.70	
406+70	30.74	Rt.	S-599			0.00	0.00	0.00					0.00					91.48	90.00	1.48		18.00	0.150	10.58		

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: **570013.00** County: **Lake County** Network: **Pond 1a** Designed by **J.J. Kaye** Date: 9/27/2010
Description: . Organization **T Y LIN INTERNATIONAL** State Road: **Hancock Road** Checked by: **Dino Lucareli** Date: 9/27/2010

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.25 / C= 0.50 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.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
																										ZONE: 7
																										FREQ. (Yrs): 10.
																										MANNINGS n: 0.0120
CLHANCOC			S-107			0.53	0.53	0.51										117.48	117.36	0.11		18.00	0.138	2.80		TAILW EL (ft): 113.50
				P-6	80.50	0.18	0.18	0.04	10.00	0.48	7.41	0.55	0.00	**4.09**	0.00	120.43	**2.95**	117.82	117.71		1		0.138		4.34	
201+41.15	40.25	Lt.	S-108			0.00	0.00	0.00					0.00					116.32	116.21	0.11		18.00	0.150	2.46		
CLHANCOC			**S-108**			0.67	2.47	0.64										117.02	117.00	0.02		30.00	0.163	3.66		
				J-6	11.75	0.34	0.83	0.09	11.63	0.05	7.03	2.55	0.00	**17.97**	0.00	120.43	**3.41**	117.50	117.00		1		4.255		120.94	
201+41.15	40.25	Rt.	S-198			0.00	0.00	0.00					0.00					115.00	114.50	0.50		30.00	0.076	24.64		
CLHANCOC			**S-109**			0.26	0.26	0.24										122.47	121.77	0.70		18.00	0.870	4.66		
				P-5	80.50	0.08	0.08	0.02	10.00	0.29	7.41	0.26	0.00	**1.96**	0.00	126.15	**3.68**	123.54	122.84		1		0.870		10.89	
204+45	40.25	Lt.	S-110			0.00	0.00	0.00					0.00					122.04	121.34	0.70		18.00	0.150	6.16		
CLHANCOC			**S-110**			0.41	1.27	0.39										120.22	117.70	2.52		24.00	0.828	7.86		
				J-5	304.23	0.11	0.31	0.03	10.99	0.65	7.18	1.28	0.00	**9.19**	0.00	126.15	**5.93**	121.42	117.70		1		1.223		27.33	
204+45	40.25	Rt.	S-108			0.00	0.00	0.00					0.00					119.42	115.70	3.72		24.00	0.102	8.70		
CLHANCOC			**S-111**			0.23	0.23	0.22										132.99	132.66	0.34		18.00	0.363	3.27		
				P-5	92.50	0.05	0.05	0.01	10.00	0.47	7.41	0.23	0.00	**1.72**	0.00	136.59	**3.60**	133.99	133.65		1		0.363		6.97	
207+45	40.25	Lt.	S-112			0.00	0.00	0.00					0.00					132.49	132.15	0.34		18.00	0.150	3.95		
CLHANCOC			**S-112**			0.37	0.60	0.35										132.61	121.80	10.81		18.00	3.601	9.64		
				P-5	300.24	0.06	0.12	0.02	10.47	0.52	7.30	0.60	0.00	**4.39**	0.00	136.35	**3.75**	133.65	122.84		1		3.601		21.74	
207+45	52.25	Rt.	S-110			0.00	0.00	0.00					0.00					132.15	121.34	10.81		18.00	0.150	12.30		
CLHANCOC			**S-198**			0.00	2.47	0.00										115.35	113.50	1.85		30.00	0.727	12.12		
				MH-7J	254.85	0.00	0.83	0.00	11.69	0.00	7.02	2.55	0.00	**17.94**	0.00	120.59	**5.24**	117.00	110.50		1		2.551		71.31	
201+41.15	52.00	Rt.	S-199			0.00	0.00	0.00					0.00					114.50	108.00	6.50		30.00	0.076	14.53		

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: **570013.00** County: **Lake County** Network: **Pond 1b** Designed by **J.J. Kaye** Date: 9/27/2010
Description: . Organization **T Y LIN INTERNATIONAL** State Road: **Hancock Road** Checked by: **Dino Lucareli** Date: 9/27/2010

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.25 / 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.)	# BR L S	PIPE SIZE (in:) / RISE / SPAN	SLOPE % / HGL / PHYS	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL50EAST			S-1			0.15	0.24	0.14										133.99	116.45	17.54		18.00	7.350	9.61		ZONE: 7
				P-5	238.58	0.02	0.02	0.01	10.42	0.41	7.31	0.23	0.00	**1.69**	0.00	137.93	**3.95**	135.25	116.45		1		7.881		32.15	FREQ. (Yrs): 10
502+00	25.25	Lt.	S-3			0.00	0.00	0.00					0.00					133.75	114.95	18.80		18.00	0.150	18.19		MANNINGS n: 0.0120
CL50EAST			S-2			0.09	0.09	0.09										134.21	134.14	0.07		18.00	0.141	1.79		TAILW EL (ft): 113.50
				P-5	50.50	0.00	0.00	0.00	10.00	0.42	7.41	0.09	0.00	**0.65**	0.00	137.93	**3.72**	135.32	135.25		1		0.141		4.41	
502+00	25.25	Rt.	S-1			0.00	0.00	0.00					0.00					133.82	133.75	0.07		18.00	0.150	2.49		
CL50EAST			S-3			0.22	0.60	0.21										116.06	116.01	0.05		18.00	0.153	2.99		
				P-5	34.75	0.03	0.05	0.01	10.83	0.19	7.21	0.58	0.00	**4.21**	0.00	119.13	**3.06**	116.45	116.40		1		0.153		4.66	
504+35.38	25.25	Lt.	S-5			0.00	0.00	0.00					0.00					114.95	114.90	0.05		18.00	0.150	2.64		
CL50EAST			S-4			0.14	0.14	0.13										116.45	116.45	0.00		18.00	0.008	0.56		
				P-5	50.50	0.00	0.00	0.00	10.00	0.42	7.41	0.13	0.00	**0.99**	0.00	119.13	**2.67**	116.52	116.45		1		0.132		4.26	
504+35.38	25.25	Rt.	S-3			0.00	0.00	0.00					0.00					115.02	114.95	0.07		18.00	0.150	2.41		
CL50EAST			S-5			0.00	0.60	0.00										115.34	113.50	1.84		18.00	0.950	9.43		
				MH-7	194.15	0.00	0.05	0.00	11.03	0.00	7.17	0.58	0.00	**4.18**	0.00	118.40	**3.06**	116.40	109.50		1		3.552		21.53	
504+35.38	60.00	Lt.	S-099			0.00	0.00	0.00					0.00					114.90	108.00	6.90		18.00	0.150	12.18		

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.

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **570013.00** County: **Lake County** Network: **Pond 2** Designed by **J.J. Kaye** Date: 9/27/2010
Description: . Organization **T Y LIN INTERNATIONAL** State Road: **Hancock Road** Checked by: **Dino Lucareli** Date: 9/27/2010

LOCATION OF UPPER END / ALIGNMENT NAME / STATION / DIST / SD	STR. NO. UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.25 / C= 0.50 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 LOWER (ft.)	HYDRAULIC GRADE FALL (ft.)	# BR 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): 95.50
CLHANCOC	S-201			0.09	0.09	0.08										135.83	135.69	0.13		18.00	0.145	1.77		
		P-5	92.50	0.01	0.01	0.00	10.00	0.77	7.41	0.08	0.00	**0.63**	0.00	139.56	**3.73**	136.95	136.81		1		0.145		4.41	
211+17.39 52.25 Lt.	S-202			0.00	0.00	0.00					0.00					135.45	135.31	0.13		18.00	0.150	2.49		
CLHANCOC	S-202			0.06	0.15	0.06										135.66	133.99	1.67		18.00	0.617	3.44		
		P-5	270.11	0.02	0.02	0.00	10.77	1.31	7.23	0.15	0.00	**1.07**	0.00	139.80	**4.13**	136.81	135.15		1		0.617		8.99	
211+17.39 40.25 Rt.	S-204			0.00	0.00	0.00					0.00					135.31	133.65	1.67		18.00	0.150	5.09		
CLHANCOC	S-203			0.29	0.29	0.28										134.14	134.00	0.13		18.00	0.145	2.47		
		P-5	92.50	0.02	0.02	0.01	10.00	0.62	7.41	0.28	0.00	**2.11**	0.00	137.51	**3.38**	134.91	134.77		1		0.145		4.41	
213+87.5 52.25 Lt.	S-204			0.00	0.00	0.00					0.00					133.41	133.27	0.13		18.00	0.150	2.49		
CLHANCOC	S-204			0.21	0.65	0.20										133.74	123.56	10.17		18.00	3.478	9.61		
		P-5	292.50	0.05	0.10	0.01	12.08	0.51	6.94	0.65	0.00	**4.50**	0.00	137.75	**4.02**	134.77	124.60		1		3.478		21.33	
213+87.5 40.25 Rt.	S-206			0.00	0.00	0.00					0.00					133.27	123.10	10.17		18.00	0.150	12.07		
CLHANCOC	S-205			0.31	0.31	0.30										123.86	123.75	0.12		18.00	0.144	2.52		
		P-5	80.50	0.05	0.05	0.01	10.00	0.53	7.41	0.31	0.00	**2.29**	0.00	127.21	**3.34**	124.60	124.48		1		0.144		4.41	
216+80 40.25 Lt.	S-206			0.00	0.00	0.00					0.00					123.10	122.98	0.12		18.00	0.150	2.49		
CLHANCOC	S-206			0.30	1.26	0.28										121.33	108.38	12.96		24.00	3.239	11.34		
		P-5	400.00	0.08	0.24	0.02	12.59	0.59	6.84	1.26	0.00	**8.61**	0.00	127.21	**5.87**	122.75	108.38		1		3.594		46.63	
216+80 40.25 Rt.	S-210			0.00	0.00	0.00					0.00					120.75	106.38	14.37		24.00	0.102	14.84		
CLHANCOC	S-209			0.34	0.34	0.32										107.75	107.64	0.12		18.00	0.144	2.61		
		P-5	80.50	0.13	0.13	0.03	10.00	0.51	7.41	0.36	0.00	**2.64**	0.00	111.03	**3.27**	108.42	108.30		1		0.144		4.41	
220+80 40.25 Lt.	S-210			0.00	0.00	0.00					0.00					106.92	106.80	0.12		18.00	0.150	2.49		
CLHANCOC	S-210			0.41	2.01	0.39										107.19	99.46	7.72		24.00	2.575	11.47		
		P-5	300.00	0.14	0.50	0.03	13.18	0.44	6.73	2.04	0.00	**13.69**	0.00	111.03	**3.84**	108.38	100.65		1		2.575		39.59	
220+80 40.25 Rt.	S-212			0.00	0.00	0.00					0.00					106.38	98.65	7.72		24.00	0.102	12.60		
CLHANCOC	S-211			0.55	0.55	0.53										102.17	101.47	0.70		18.00	0.870	5.79		
		P-6	80.50	0.20	0.20	0.05	10.00	0.23	7.41	0.58	0.00	**4.28**	0.00	105.63	**3.45**	103.02	102.32		1		0.870		10.89	
223+80 40.25 Lt.	S-212			0.00	0.00	0.00					0.00					101.52	100.82	0.70		18.00	0.150	6.16		
CLHANCOC	S-212			0.61	10.08	0.58										96.14	95.50	0.64		42.00	0.848	24.14		
		J-6	75.36	0.20	2.12	0.05	14.49	0.00	6.49	10.10	0.00	**65.58**	0.00	105.63	**9.49**	98.50	93.50		1		6.635		285.52	
223+80 40.25 Rt.	S-299			0.00	0.00	0.00					0.00					95.00	90.00	5.00		42.00	0.048	29.68		
CLHANCOC	S-213			0.23	0.23	0.22										109.40	106.90	2.49		18.00	2.717	6.80		
		P-5	91.74	0.09	0.09	0.02	10.00	0.22	7.41	0.24	0.00	**1.80**	0.00	113.19	**3.80**	110.59	108.09		1		2.717		19.18	
227+28 40.25 Lt.	S-214			0.00	0.00	0.00					0.00					109.09	106.59	2.49		18.00	0.150	10.85		
CLHANCOC	S-214			0.32	6.90	0.30										105.85	100.25	5.60		30.00	1.842	13.58		
		J-5	304.00	0.12	1.21	0.03	14.12	0.37	6.56	6.85	0.00	**44.93**	0.00	111.40	**5.56**	106.75	101.15		1		1.842		60.81	
226+84 40.25 Rt.	S-212			0.00	0.00	0.00					0.00					104.25	98.65	5.60		30.00	0.076	12.39		
CLHANCOC	S-215			0.17	0.17	0.16										122.56	121.86	0.70		18.00	0.870	4.20		
		P-5	80.50	0.06	0.06	0.01	10.00	0.32	7.41	0.18	0.00	**1.33**	0.00	126.31	**3.76**	123.71	123.01		1		0.870		10.89	
230+00 40.25 Lt.	S-216			0.00	0.00	0.00					0.00					122.21	121.51	0.70		18.00	0.150	6.16		
CLHANCOC	S-216			0.21	6.34	0.20										121.53	106.75	14.78		30.00	4.678	19.64		
		J-5	316.00	0.08	1.01	0.02	13.85	0.27	6.60	6.28	0.00	**41.45**	0.00	126.31	**4.78**	122.92	106.75		1		5.118		101.33	
230+00 40.25 Rt.	S-214			0.00	0.00	0.00					0.00					120.42	104.25	16.17		30.00	0.076	20.64		

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.

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **570013.00** County: **Lake County** Network: **Pond 2** Designed by **J.J. Kaye** Date: 9/27/2010
Description: . Organization **T Y LIN INTERNATIONAL** State Road: **Hancock Road** Checked by: **Dino Lucareli** Date: 9/27/2010

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.25 / 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.)	# BR LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CLHANCOC			S-217			0.30	0.49	0.29										129.21	128.51	0.70		18.00	0.870	5.50		ZONE: 7
				P-5	80.50	0.07	0.07	0.02	10.49	0.24	7.29	0.48	0.00	**3.52**	0.00	132.73	**3.52**	130.12	129.42		1		0.870		10.89	FREQ. (Yrs): 10
232+00	40.25	Lt.	S-218			0.00	0.00	0.00					0.00					128.62	127.92	0.70		18.00	0.150	6.16		MANNINGS n: 0.0120
CLHANCOC			S-217a			0.19	0.19	0.18										132.97	130.12	2.84		18.00	1.636	5.90		
				GUT-V	173.78	0.00	0.00	0.00	10.00	0.49	7.41	0.18	0.00	**1.31**	0.00	135.70	**2.73**	134.19	130.12		1		2.341		17.55	
232+40	209.36	Lt.	S-217			0.00	0.00	0.00					0.00					132.69	128.62	4.07		18.00	0.150	9.93		TAILW EL (ft): 95.50
CLHANCOC			S-218			0.33	5.96	0.31										128.07	121.65	6.42		30.00	3.210	16.33		
				J-5	200.00	0.05	0.87	0.01	13.64	0.20	6.64	5.88	0.00	**39.03**	0.00	132.73	**4.67**	129.34	122.92		1		3.210		80.62	
232+00	40.25	Rt.	S-216			0.00	0.00	0.00					0.00					126.84	120.42	6.42		30.00	0.076	16.42		
CLHANCOC			S-219			0.32	0.32	0.31										132.45	132.41	0.04		18.00	0.048	1.41		
				P-5	80.50	0.11	0.11	0.03	10.00	0.67	7.41	0.34	0.00	**2.49**	0.00	135.72	**3.27**	133.11	132.41		1		0.870		10.89	
235+00	40.25	Lt.	S-220			0.00	0.00	0.00					0.00					131.61	130.91	0.70		18.00	0.150	6.16		
CLHANCOC			S-220			0.44	5.14	0.41										132.01	128.36	3.65		30.00	1.216	10.88		
				J-5	300.00	0.10	0.75	0.02	13.18	0.46	6.72	5.07	0.00	**34.09**	0.00	135.72	**3.70**	132.99	129.34		1		1.216		49.42	
235+00	40.25	Rt.	S-218			0.00	0.00	0.00					0.00					130.49	126.84	3.65		30.00	0.076	10.07		
CLHANCOC			S-221			0.27	0.27	0.26										137.14	136.20	0.94		18.00	1.016	4.95		
				P-5	92.50	0.05	0.05	0.01	10.00	0.31	7.41	0.27	0.00	**2.00**	0.00	140.83	**3.69**	138.23	137.29		1		1.016		11.73	
238+80	40.25	Lt.	S-222			0.00	0.00	0.00					0.00					136.73	135.79	0.94		18.00	0.150	6.64		
CLHANCOC			S-222			0.37	4.38	0.35										136.13	132.99	3.14		30.00	0.831	10.16		
				J-5	377.74	0.02	0.54	0.01	12.56	0.62	6.84	4.30	0.00	**29.40**	0.00	140.59	**4.47**	137.20	132.99		1		1.115		47.23	
238+80	52.25	Rt.	S-220			0.00	0.00	0.00					0.00					134.70	130.49	4.21		30.00	0.076	9.62		
CLHANCOC			S-223			0.23	0.23	0.22										144.49	144.38	0.12		18.00	0.144	2.32		
				P-5	80.50	0.02	0.02	0.01	10.00	0.58	7.41	0.22	0.00	**1.66**	0.00	147.96	**3.47**	145.36	145.24		1		0.144		4.41	
241+56.25	40.25	Lt.	S-224			0.00	0.00	0.00					0.00					143.86	143.74	0.12		18.00	0.150	2.49		
CLHANCOC			S-224			0.21	3.74	0.20										143.86	136.70	7.16		24.00	2.649	14.17		
				P-5	270.19	0.04	0.47	0.01	12.25	0.32	6.91	3.67	0.00	**25.35**	0.00	147.96	**4.10**	144.75	136.70		1		2.979		42.61	
241+56.25	40.25	Rt.	S-222			0.00	0.00	0.00					0.00					142.75	134.70	8.05		24.00	0.102	13.56		
CLHANCOC			S-225			0.37	0.37	0.35										160.14	160.03	0.12		18.00	0.144	2.61		
				P-5	80.49	0.03	0.03	0.01	10.00	0.51	7.41	0.36	0.00	**2.66**	0.00	163.41	**3.27**	160.81	160.69		1		0.144		4.41	
245+60	40.25	Lt.	S-226			0.00	0.00	0.00					0.00					159.31	159.19	0.12		18.00	0.150	2.49		
CLHANCOC			S-225a			0.18	0.18	0.17										151.52	151.40	0.12		18.00	0.144	2.19		
				P-5	80.49	0.03	0.03	0.01	10.00	0.61	7.41	0.18	0.00	**1.32**	0.00	155.06	**3.55**	152.45	152.34		1		0.144		4.41	
243+60	40.25	Lt.	S-226a			0.00	0.00	0.00					0.00					150.95	150.84	0.12		18.00	0.150	2.49		
CLHANCOC			S-226			0.19	2.87	0.18										159.63	152.41	7.22		24.00	3.629	15.14		
				P-5	198.85	0.03	0.35	0.01	11.81	0.22	7.00	2.81	0.00	**19.68**	0.00	163.41	**3.79**	160.76	152.41		1		4.200		50.61	
245+60	40.25	Rt.	S-226a			0.00	0.00	0.00					0.00					158.76	150.41	8.35		24.00	0.102	16.11		
CLHANCOC			S-226a			0.25	3.30	0.24										151.37	144.75	6.62		24.00	3.314	15.15		
				P-5	199.73	0.03	0.41	0.01	12.03	0.22	6.95	3.24	0.00	**22.50**	0.00	155.06	**3.69**	152.41	144.75		1		3.836		48.37	
243+60	40.25	Rt.	S-224			0.00	0.00	0.00					0.00					150.41	142.75	7.66		24.00	0.102	15.40		
CLHANCOC			S-227			0.66	0.66	0.63										176.71	176.56	0.14		18.00	0.172	2.67		
				P-5	83.25	0.04	0.04	0.01	10.00	0.52	7.41	0.64	0.00	**4.72**	0.00	179.29	**2.59**	176.69	176.56		1		0.145		4.41	
248+50	40.25	Lt.	S-227a			0.00	0.00	0.00					0.00					175.19	175.06	0.12		18.00	0.150	2.49		

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.

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **570013.00** County: **Lake County** Network: **Pond 2** Designed by **J.J. Kaye** Date: 9/27/2010
Description: . Organization **T Y LIN INTERNATIONAL** State Road: **Hancock Road** Checked by: **Dino Lucareli** Date: 9/27/2010

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.25 / 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): 95.50
CLHANCOC			**S-227a**			0.00	1.79	0.00										175.37	168.24	7.13		24.00	5.336	15.51		
				MH-8J	133.53	0.00	0.18	0.00	11.49	0.14	7.07	1.75	0.00	**12.34**	0.00	179.21	**3.85**	176.76	168.24		1		6.383		62.63	
248+50	43.00	Rt.	S-228			0.00	0.00	0.00					0.00					174.76	166.24	8.52		24.00	0.102	19.93		
CLHANCOC			**S-228**			0.52	2.31	0.49										166.98	160.76	6.22		24.00	3.974	15.00		
				P-5	156.50	0.11	0.29	0.03	11.63	0.17	7.03	2.27	0.00	**15.94**	0.00	170.89	**3.91**	168.24	160.76		1		4.777		54.09	
247+16.50	40.25	Rt.	S-226			0.00	0.00	0.00					0.00					166.24	158.76	7.48		24.00	0.102	17.22		
CLHANCOC			**S-232**			0.53	1.13	0.50										189.74	176.76	12.98		24.00	5.188	13.18		
				P-5	250.17	0.03	0.14	0.01	11.17	0.32	7.13	1.11	0.00	**7.92**	0.00	194.60	**4.86**	191.25	176.76		1		5.791		59.45	
251+00	52.25	Rt.	S-227a			0.00	0.00	0.00					0.00					189.25	174.76	14.49		24.00	0.102	18.92		
CLHANCOC			**S-233**			0.33	0.33	0.31										203.22	203.09	0.13		18.00	0.145	2.56		
				P-5	92.50	0.05	0.05	0.01	10.00	0.60	7.41	0.33	0.00	**2.42**	0.00	206.54	**3.32**	203.93	203.80		1		0.145		4.41	
254+30.25	52.25	Lt.	S-234			0.00	0.00	0.00					0.00					202.43	202.30	0.13		18.00	0.150	2.49		
CLHANCOC			**S-234**			0.27	0.60	0.26										202.53	191.25	11.28		24.00	3.414	9.64		
				P-5	330.47	0.06	0.11	0.01	10.60	0.57	7.26	0.60	0.00	**4.35**	0.00	206.78	**4.25**	204.13	191.25		1		3.898		48.68	
254+30.25	40.25	Rt.	S-232			0.00	0.00	0.00					0.00					202.13	189.25	12.88		24.00	0.102	15.50		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
SPREAD TABULATION REPORT

Financial Prj Id: **Pond 1a** County: . Rainfall Zone: **10** Designed: **T Y LIN INTERNAT** Date: 9/23/2010
Description: **570013.00** Organization **Hancock Road** State Road: **Lake County** Checked: **J.J. Kaye** Date: 9/23/2010

Structure No.	Station	Side	Type of Structure	Drainage Area (acres)	Composite Runoff Coefficient	Rainfall Intensity (in/hr)	Overland Runoff (cfs)	Previous Inlet Bypass (cfs)	Total Runoff (cfs)	Cross Slope (ft/ft)	Longitudinal Slope (ft/ft)	Manning's n	Calculated Spread (ft)	Allowable Spread (ft)	Sumped Spread (ft)	Intercepted Flow (cfs)	Bypass Flow to Nxt Inlet (cfs)	Bypass to Structure No.
S-111	207+45	L	P-5	0.28	0.82	4.00	0.93	0.00	0.93	0.020	0.0225	0.016	4.87	7.50	0.00	0.92	0.00	S-109
S-112	207+45	R	P-5	0.44	0.85	4.00	1.48	0.00	1.48	0.020	0.0225	0.016	6.24	7.50	0.00	1.34	0.14	S-110
S-109	204+45	L	P-5	0.34	0.78	4.00	1.06	0.00	1.06	0.020	0.0376	0.016	4.53	7.50	0.00	0.99	0.07	S-107
S-110	204+45	R	J-5	0.52	0.80	4.00	1.66	0.14	1.80	0.020	0.0376	0.016	6.04	7.50	0.00	1.43	0.37	S-108
S-107	201+41.15	L	P-6	0.71	0.77	4.00	1.10	0.07	1.17	0.020	0.0030	0.016	8.91	7.50	4.78	1.17	0.00	SAG
S-108	201+41.15	R	J-6	1.01	0.71	4.00	1.44	0.37	1.81	0.020	0.0030	0.016	10.73	7.50	6.40	1.81	0.00	SAG

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FLORIDA DEPARTMENT OF TRANSPORTATION
SPREAD TABULATION REPORT

Financial Prj Id: **Pond 1b**
Description: **570013.00**

County: .
Organization **Hancock Road**

Rainfall Zone: **10**
State Road: **Lake County**

Designed: **T Y LIN INTERNAT** Date: 9/23/2010
Checked: **J.J. Kaye** Date: 9/23/2010

Structure No.	Station	Side	Type of Structure	Drainage Area (acres)	Composite Runoff Coefficient	Rainfall Intensity (in/hr)	Overland Runoff (cfs)	Previous nlet Bypass (cfs)	Total Runoff (cfs)	Cross Slope (ft/ft)	Longitudinal Slope (ft/ft)	Manning's n	Calculated Spread (ft)	Allowable Spread (ft)	Sumped Spread (ft)	Intercepted Flow (cfs)	Bypass Flow to Nxt Inlet (cfs)	Bypass to Structure No.
S-1	502+00	L	P-5	0.17	0.86	4.00	0.58	0.00	0.58	0.020	0.0599	0.016	2.37	7.50	0.00	0.57	0.00	S-3
S-2	502+00	R	P-5	0.09	0.95	4.00	0.35	0.00	0.35	0.020	0.0599	0.016	0.00	7.50	0.00	0.25	0.10	S-4
S-3	504+35.38	L	P-5	0.25	0.86	4.00	0.87	0.00	0.88	0.020	0.1136	0.016	2.62	7.50	4.70	0.88	0.00	SAG
S-4	504+35.38	R	P-5	0.14	0.95	4.00	0.53	0.10	0.63	0.020	0.1136	0.016	1.83	7.50	3.79	0.63	0.00	SAG

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SPREAD TABULATION REPORT

Financial Prj Id: **Pond 2** County: Rainfall Zone: **10** Designed: **T Y LIN INTERNAT** Date: 9/23/2010
Description: **570013.00** Organization **Hancock Road** State Road: **Lake County** Checked: **J.J. Kaye** Date: 9/23/2010

Structure No.	Station	Side	Type of Structure	Drainage Area (acres)	Composite Runoff Coefficient	Rainfall Intensity (in/hr)	Overland Runoff (cfs)	Previous nlet Bypass (cfs)	Total Runoff (cfs)	Cross Slope (ft/ft)	Longitudinal Slope (ft/ft)	Manning's n	Calculated Spread (ft)	Allowable Spread (ft)	Sumped Spread (ft)	Intercepted Flow (cfs)	Bypass Flow to Nxt Inlet (cfs)	Bypass to Structure No.
S-201	211+17.39	L	P-5	0.09	0.90	4.00	0.34	0.00	0.34	0.020	0.0040	0.016	4.46	7.50	0.00	0.34	0.00	
S-202	211+17.39	R	P-5	0.08	0.81	4.00	0.25	0.00	0.25	0.020	0.0040	0.016	3.72	7.50	0.00	0.25	0.00	S-212
S-203	213+87.5	L	P-5	0.32	0.90	4.00	1.14	0.00	1.14	0.020	0.0212	0.016	5.53	7.50	0.00	1.11	0.03	S-205
S-204	213+87.5	R	P-5	0.27	0.81	4.00	0.86	0.00	0.86	0.020	0.0212	0.016	4.74	7.50	0.00	0.86	0.00	S-206
S-233	254+30.25	L	P-5	0.38	0.85	4.00	1.31	0.00	1.31	0.020	0.0193	0.016	6.10	7.50	0.00	1.25	0.06	S-227
S-234	254+30.25	R	P-5	0.33	0.82	4.00	1.09	0.00	1.09	0.020	0.0193	0.016	5.54	7.50	0.00	1.07	0.02	S-232
S-205	216+80	L	P-5	0.36	0.85	4.00	1.24	0.03	1.27	0.020	0.0490	0.016	4.66	7.50	0.00	1.10	0.17	S-209
S-206	216+80	R	P-5	0.38	0.80	4.00	1.21	0.00	1.21	0.020	0.0490	0.016	4.54	7.50	0.00	1.06	0.15	S-210
S-227	248+50	L	P-5	0.70	0.91	4.00	2.55	0.06	2.61	0.020	0.0650	0.016	6.36	7.50	0.00	1.63	0.99	S-225
S-232	251+00	R	P-5	0.56	0.91	4.00	2.04	0.02	2.06	0.020	0.0530	0.016	5.94	7.50	0.00	1.47	0.59	S-227a
S-209	220+80	L	P-5	0.47	0.76	4.00	1.43	0.17	1.60	0.020	0.0300	0.016	6.03	7.50	0.00	1.37	0.23	S-211
S-210	220+80	R	P-5	0.54	0.78	4.00	1.68	0.15	1.83	0.020	0.0300	0.016	6.45	7.50	0.00	1.49	0.34	S-212
S-225	245+60	L	P-5	0.40	0.90	4.00	1.44	0.99	2.42	0.020	0.0430	0.016	6.77	7.50	0.00	1.67	0.75	S-225a
S-227a	248+50	R	MH-8J	0.00	0.00	4.00	0.00	0.59	0.59	0.020	0.0650	0.016	0.00	7.50	0.00	0.00	0.59	S-228
S-225a	243+60	L	P-5	0.21	0.85	4.00	0.71	0.75	1.46	0.020	0.0387	0.016	5.39	7.50	0.00	1.25	0.22	S-223
S-228	247+16.50	R	P-5	0.62	0.83	4.00	2.08	0.59	2.67	0.020	0.0567	0.016	6.64	7.50	0.00	1.68	0.98	S-226
S-223	241+56.25	L	P-5	0.25	0.89	4.00	0.90	0.22	1.12	0.020	0.0310	0.016	4.94	7.50	0.00	1.05	0.06	S-221
S-226	245+60	R	P-5	0.22	0.86	4.00	0.75	0.98	1.73	0.020	0.0430	0.016	5.74	7.50	0.00	1.37	0.36	S-226a
S-221	238+80	L	P-5	0.32	0.85	4.00	1.08	0.06	1.14	0.020	0.0206	0.016	5.59	7.50	0.00	1.11	0.03	S-219
S-226a	243+60	R	P-5	0.28	0.87	4.00	0.98	0.36	1.35	0.020	0.0387	0.016	5.16	7.50	0.00	1.18	0.17	S-224
S-219	235+00	L	P-5	0.43	0.77	4.00	1.34	0.03	1.37	0.020	0.0063	0.016	8.12	7.50	0.00	1.37	0.00	S-217
S-224	241+56.25	R	P-5	0.25	0.84	4.00	0.84	0.17	1.01	0.020	0.0310	0.016	4.65	7.50	0.00	0.97	0.03	S-222
S-217	232+00	L	P-5	0.37	0.82	4.00	1.22	0.00	1.22	0.020	0.0221	0.016	5.68	7.50	0.00	1.17	0.06	S-215
S-222	238+80	R	J-5	0.39	0.91	4.00	1.42	0.03	1.46	0.020	0.0206	0.016	6.32	7.50	0.00	1.34	0.12	S-220
S-215	230+00	L	P-5	0.23	0.78	4.00	0.72	0.06	0.77	0.020	0.0421	0.016	3.55	7.50	0.00	0.76	0.01	S-213
S-220	235+00	R	J-5	0.53	0.82	4.00	1.75	0.12	1.87	0.020	0.0063	0.016	9.29	7.50	0.00	1.81	0.06	S-218
S-213	227+28	L	P-5	0.32	0.76	4.00	0.97	0.01	0.98	0.020	0.0435	0.016	4.13	7.50	0.00	0.92	0.06	S-211
S-218	232+00	R	J-5	0.38	0.86	4.00	1.31	0.06	1.36	0.020	0.0221	0.016	6.02	7.50	0.00	1.27	0.10	S-216

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FLORIDA DEPARTMENT OF TRANSPORTATION
SPREAD TABULATION REPORT

Financial Prj Id: **Pond 2** County: . Rainfall Zone: **10** Designed: **T Y LIN INTERNAT** Date: 9/23/2010
Description: **570013.00** Organization **Hancock Road** State Road: **Lake County** Checked: **J.J. Kaye** Date: 9/23/2010

Structure No.	Station	Side	Type of Structure	Drainage Area (acres)	Composite Runoff Coefficient	Rainfall Intensity (in/hr)	Overland Runoff (cfs)	Previous nlet Bypass (cfs)	Total Runoff (cfs)	Cross Slope (ft/ft)	Longitudinal Slope (ft/ft)	Manning's n	Calculated Spread (ft)	Allowable Spread (ft)	Sumped Spread (ft)	Intercepted Flow (cfs)	Bypass Flow to Nxt Inlet (cfs)	Bypass to Structure No.
S-216	230+00	R	J-5	0.29	0.75	4.00	0.88	0.10	0.97	0.020	0.0421	0.016	4.15	7.50	0.00	0.92	0.05	S-214
S-214	226+84	R	J-5	0.44	0.76	4.00	1.34	0.05	1.39	0.020	0.0380	0.016	5.27	7.50	0.00	1.21	0.18	S-212
S-211	223+80	L	P-6	0.76	0.76	4.00	1.16	0.29	1.44	0.020	0.0030	0.016	9.75	7.50	5.50	1.44	0.00	SAG
S-212	223+80	R	J-6	0.82	0.78	4.00	1.27	0.52	1.79	0.020	0.0030	0.016	10.67	7.50	6.35	1.79	0.00	SAG

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FLORIDA DEPARTMENT OF TRANSPORTATION
SPREAD TABULATION REPORT

Financial Prj Id: **Ex. Pond** County: . Rainfall Zone: **10** Designed: **T Y LIN INTERNAT** Date: 9/23/2010
Description: **570013.00** Organization **Hancock Road** State Road: **Lake County** Checked: **J.J. Kaye** Date: 9/23/2010

Structure No.	Station	Side	Type of Structure	Drainage Area (acres)	Composite Runoff Coefficient	Rainfall Intensity (in/hr)	Overland Runoff (cfs)	Previous nlet Bypass (cfs)	Total Runoff (cfs)	Cross Slope (ft/ft)	Longitudinal Slope (ft/ft)	Manning's n	Calculated Spread (ft)	Allowable Spread (ft)	Sumped Spread (ft)	Intercepted Flow (cfs)	Bypass Flow to Nxt Inlet (cfs)	Bypass to Structure No.
S-236	256+56	R	P-5	0.34	0.85	4.00	1.15	0.00	1.15	0.020	0.0160	0.016	6.00	7.50	5.65	1.15	0.00	SAG
S-302	260+51.57	R	DBI-C	0.59	0.40	4.00	0.95	0.00	0.95	0.020	0.0113	0.016	0.00	7.50	0.00	0.00	0.95	S-301
S-303	262+40	L	P-5	0.29	0.85	4.00	0.97	0.00	0.97	0.020	0.0072	0.016	6.70	7.50	0.00	0.97	0.00	S-301
S-301	259+40	L	P-5	0.57	0.81	4.00	1.84	0.95	2.80	0.020	0.0138	0.016	9.34	7.50	0.00	2.19	0.61	S-235
S-235	256+56	L	P-5	0.30	0.88	4.00	1.06	0.61	1.67	0.020	0.0160	0.016	7.17	7.50	7.22	1.67	0.00	SAG

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FLORIDA DEPARTMENT OF TRANSPORTATION
SPREAD TABULATION REPORT

Financial Prj Id: **50 West**
Description: **570013.00**

County: .
Organization **Hancock Road**

Rainfall Zone: **10**
State Road: **Lake County**

Designed: **T Y LIN INTERNAT** Date: 9/23/2010
Checked: **J.J. Kaye** Date: 9/23/2010

Structure No.	Station	Side	Type of Structure	Drainage Area (acres)	Composite Runoff Coefficient	Rainfall Intensity (in/hr)	Overland Runoff (cfs)	Previous Inlet Bypass (cfs)	Total Runoff (cfs)	Cross Slope (ft/ft)	Longitudinal Slope (ft/ft)	Manning's n	Calculated Spread (ft)	Allowable Spread (ft)	Sumped Spread (ft)	Intercepted Flow (cfs)	Bypass Flow to Nxt Inlet (cfs)	Bypass to Structure No.
S-401	37+65	L	P-5	0.17	0.89	4.00	0.61	0.00	0.61	0.020	0.0200	0.016	3.90	7.50	3.69	0.61	0.00	SAG
S-402	37+65	R	P-5	0.09	0.88	4.00	0.32	0.00	0.32	0.020	0.0200	0.016	2.25	7.50	2.38	0.32	0.00	SAG
S-405	42+60	L	P-8	0.33	0.91	4.00	1.19	0.00	1.19	0.020	0.0288	0.016	2.09	7.50	0.00	1.04	0.15	S-403
S-406	45+10	L	P-5	0.11	0.95	4.00	0.41	0.00	0.41	0.020	0.0242	0.016	2.66	7.50	0.00	0.41	0.00	S-404
S-407	45+10	R	P-5	0.19	0.93	4.00	0.72	0.00	0.72	0.013	0.0242	0.016	5.28	7.50	0.00	0.72	0.00	S-404
S-404	42+60	L	P-5	0.10	0.95	4.00	0.38	0.00	0.38	0.020	0.0275	0.016	2.34	7.50	0.00	0.38	0.00	S-403
S-403	40+70	L	P-6	0.54	0.87	4.00	1.89	0.15	2.04	0.020	0.0030	0.016	11.26	7.50	6.92	2.04	0.00	SAG

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FLORIDA DEPARTMENT OF TRANSPORTATION
SPREAD TABULATION REPORT

Financial Prj Id: **Jim Hunt**
Description: **570013.00**

County: .
Organization **Hancock Road**

Rainfall Zone: **10**
State Road: **Lake County**

Designed: **T Y LIN INTERNAT** Date: 9/23/2010
Checked: **J.J. Kaye** Date: 9/23/2010

Structure No.	Station	Side	Type of Structure	Drainage Area (acres)	Composite Runoff Coefficient	Rainfall Intensity (in/hr)	Overland Runoff (cfs)	Previous nlet Bypass (cfs)	Total Runoff (cfs)	Cross Slope (ft/ft)	Longitudinal Slope (ft/ft)	Manning's n	Calculated Spread (ft)	Allowable Spread (ft)	Sumped Spread (ft)	Intercepted Flow (cfs)	Bypass Flow to Nxt Inlet (cfs)	Bypass to Structure No.
S-501	403+45	L	P-6	0.13	0.95	4.00	0.49	0.00	0.49	0.020	0.0075	0.016	4.62	7.50	2.67	0.49	0.00	SAG
S-502	403+64.44	R	P-6	0.13	0.95	4.00	0.24	0.00	0.24	0.020	0.0030	0.016	4.00	7.50	1.68	0.24	0.00	SAG
S-503	406+70	L	P-5	0.07	0.95	4.00	0.27	0.00	0.27	0.020	0.0500	0.016	0.00	7.50	2.14	0.27	0.00	SAG
S-504	406+70	R	P-5	0.07	0.95	4.00	0.27	0.00	0.27	0.020	0.0500	0.016	0.00	7.50	2.14	0.27	0.00	SAG

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FLORIDA DEPARTMENT OF TRANSPORTATION
SPREAD TABULATION REPORT

Financial Prj Id: **Offsite**
Description: **570013.00**
County: .
Organization **Hancock Road**
Rainfall Zone: **10**
State Road: **Lake County**
Designed: **T Y LIN INTERNAT** Date: 9/23/2010
Checked: **J.J. Kaye** Date: 9/23/2010

Structure No.	Station	Side	Type of Structure	Drainage Area (acres)	Composite Runoff Coefficient	Rainfall Intensity (in/hr)	Overland Runoff (cfs)	Previous Inlet Bypass (cfs)	Total Runoff (cfs)	Cross Slope (ft/ft)	Longitudinal Slope (ft/ft)	Manning's n	Calculated Spread (ft)	Allowable Spread (ft)	Sumped Spread (ft)	Intercepted Flow (cfs)	Bypass Flow to Nxt Inlet (cfs)	Bypass to Structure No.
S-614	410+14.32	L	P-5	0.08	0.86	4.00	0.28	0.00	0.28	0.020	0.0250	0.016	1.65	7.50	2.18	0.28	0.00	SAG
S-615	410+14.59	R	P-5	0.08	0.86	4.00	0.28	0.00	0.28	0.020	0.0250	0.016	1.65	7.50	2.18	0.28	0.00	SAG

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APPENDIX J
(Skyridge Valley Subdivision – Pond J, Existing Permit Data)

McCOY & ASSOCIATES
ENGINEERS & PLANNERS

ADDENDUM #2

STORMWATER MANAGEMENT STUDY

Supplemental Calculations for the
10-Year 24-Hour, 25-Year 24-Hour and 25-Year 96-Hour
Design Storm Events

SKYRIDGE VALLEY RESIDENTIAL SUBDIVISION

Sections 16, 20 & 21; Township 22S; Range 26E; City of Clermont, Lake County, Florida
(Project #98-004)

OCTOBER 1998

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4-069-0352AERP
PDS
ORLANDO
SJR WMDD

713 W. MONTROSE STREET
CLERMONT, FL 34711

352-394-5756
FAX 352-394-5758

HYDROGRAPH SUMMARY TABLE

25-YEAR 24 HOUR STORM EVENT

HYDROGRAPH NO.	BASIN ID	AREA (ac.)	IMPERVIOUS AREA (ac)	CN	TIME of CONC. (min)	PEAK DISCHARGE (cfs)	DISCHARGE VOLUME (ac-ft)	TIME to PEAK (hrs)
			PRE-DEVELOPMENT					
1	PRE "A"	40.69		39	39.35	18.54	4.66	12.08
2	PRE "B"	134.63		40	71.52	44.39	16.58	12.42
5	Hancock Road	6.910	2.210	58	17.00	20.15	2.01	12.00
3	"OS-1"	32.58	0.115	40	21.33	26.32	4.05	12.08
4	"OS-2"	48.92	2.990	43	58.19	24.93	7.31	12.12
19	"OS-2" Routed					0.00	0.00	0.00
6	Combined "A/OS-1/Hancock Rd."					64.35	10.71	12.08
7	Combined "B/OS-2"					44.39	16.58	12.42
8	POST "A"	41.12	16.060	63	30.00	102.19	13.95	12.08
13	Combined "A/OS-1/Hancock Rd."					148.00	20.00	12.08
16	WRA "A" Routed					0.00	0.00	0.00
9	POST "B"	87.28	32.249	61	45.00	154.28	27.90	12.08
11	"OS-2"	23.42	1.361	43	47.35	14.09	3.50	12.08
14	Combined "B/OS-2/WRA "C""					168.38	31.40	12.08
17	WRA "B" Routed					8.83	8.78	21.25
10	POST "C"	46.90	16.968	61	30.00	108.94	14.99	12.08
12	"OS-3"	25.50	1.629	43	58.19	13.00	3.81	12.17
15	Combined "C/OS-3"					121.87	18.80	12.08
18	WRA "C" Routed					0.00	0.00	0.00

EROSION CONTROL PLAN

An erosion control plan shall be conducted by the Contractor and Contractor shall execute all measures necessary to limit the transport of sediments outside the limits of the project to the volume and amount as that are existing prior to the commencement of construction. This condition will be satisfied for the total anticipated construction period. Provision must be made to preserve the integrity and capacity of stormwater inlets, sediment basins, slope drains, grading patterns, etc. required to meet this provision throughout the life of the construction. Contractor shall provide hay bails, silt barriers, temporary grassing, etc. as required to fully comply with the intent of this specification. Upon completion of construction and completed stabilization of potential erosion areas, the contractor shall remove sedimentation control measures and clean and repair any areas effected by the construction activities.

STORMWATER RETENTION AREAS

The stormwater retention areas shall receive priority status in the scheduling of construction operations. The retention areas shall be completed and seeded prior to any upland excavation. All necessary measures, including turbidity barriers, shall be taken to insure that the water quality of the off-site receiving waters or wetlands will not be degraded. In the event of retention area sedimentation during the course of construction, the Contractor shall take such measures as required to maintain the dimensions, elevations, volumes and soil permeability characteristics of said retention areas.

STOCKPILING MATERIAL

No excavated material shall be stockpiled in such a manner as to direct stormwater off the project site or into any adjacent water body or stormwater collection system.

TEMPORARY SEEDING

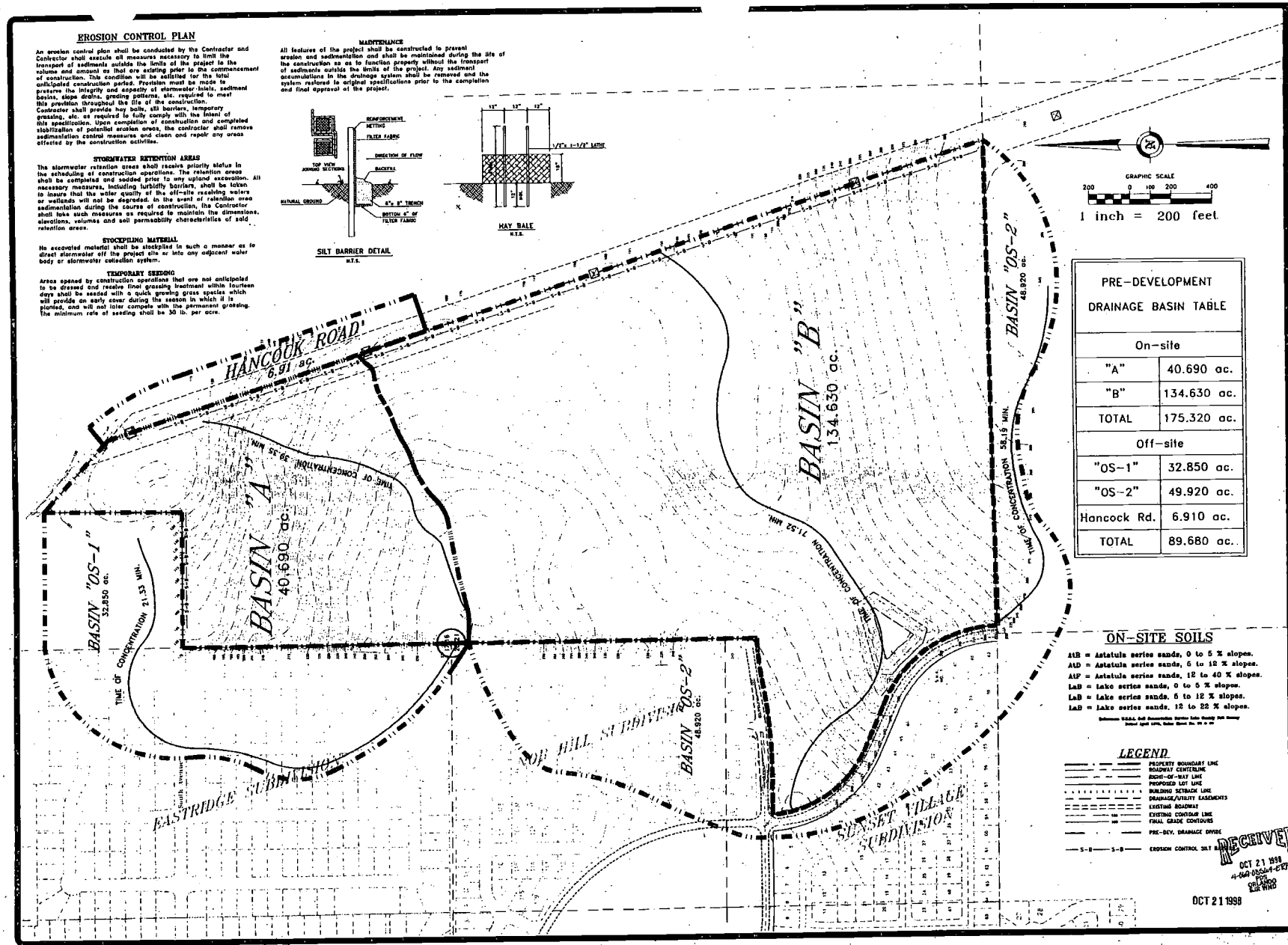
Areas opened by construction operations that are not anticipated to be dressed and receive final grassing treatment within fourteen days shall be seeded with a quick growing grass species which will provide an early cover during the season in which it is planted, and will not later compete with the permanent grassing. The minimum rate of seeding shall be 30 lb. per acre.

MAINTENANCE

All features of the project shall be constructed to prevent erosion and sedimentation and shall be maintained during the life of the construction so as to function properly without the transport of sediments outside the limits of the project. Any sediment accumulations in the drainage system shall be removed and the system restored to original specifications prior to the completion and final approval of the project.

SILT BARRIER DETAIL
N.T.S.

HAY BALE
N.T.S.



PRE-DEVELOPMENT DRAINAGE BASIN TABLE	
On-site	
"A"	40.690 ac.
"B"	134.630 ac.
TOTAL	175.320 ac.
Off-site	
"OS-1"	32.850 ac.
"OS-2"	49.920 ac.
Hancock Rd.	6.910 ac.
TOTAL	89.680 ac.

ON-SITE SOILS

AtB = Astatula series sands, 0 to 5 % slopes.
AtD = Astatula series sands, 5 to 12 % slopes.
AtF = Astatula series sands, 12 to 40 % slopes.
LaB = Lake series sands, 0 to 5 % slopes.
LaB = Lake series sands, 5 to 12 % slopes.
LaB = Lake series sands, 12 to 22 % slopes.

Reference: SCS Soil Conservation Service Lake County Soil Survey Sheet Aprox 1990, Index Sheet No. 99 & 100

LEGEND

- PROPERTY BOUNDARY LINE
- ROADWAY CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED LOT LINE
- BUILDING SETBACK LINE
- DRAINAGE/UTILITY EASEMENTS
- EXISTING ROADWAY
- EXISTING CONTOUR LINE
- FINAL GRADE CONTOURS
- PRE-DEV. DRAINAGE DIVIDE
- S-B S-B EROSION CONTROL SILT BARRIER

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REVISIONS	DATE
REVISED AS PER ENGINEERS COMMENTS DATED 9/17/98.	9/98
REVISED DRAINAGE BASINS AND TABLE	9/98

Florida Geodetic Surveying, Inc.
720 W. Montrose Street
Clermont, Florida 34711
(352) 394-3000

SKYRIDGE VALLEY RESIDENTIAL SUBDIVISION
Sec. 16, 20 & 21; Twp. 22 S; Rge. 26 E, City of Clermont, Lake County, Fl.

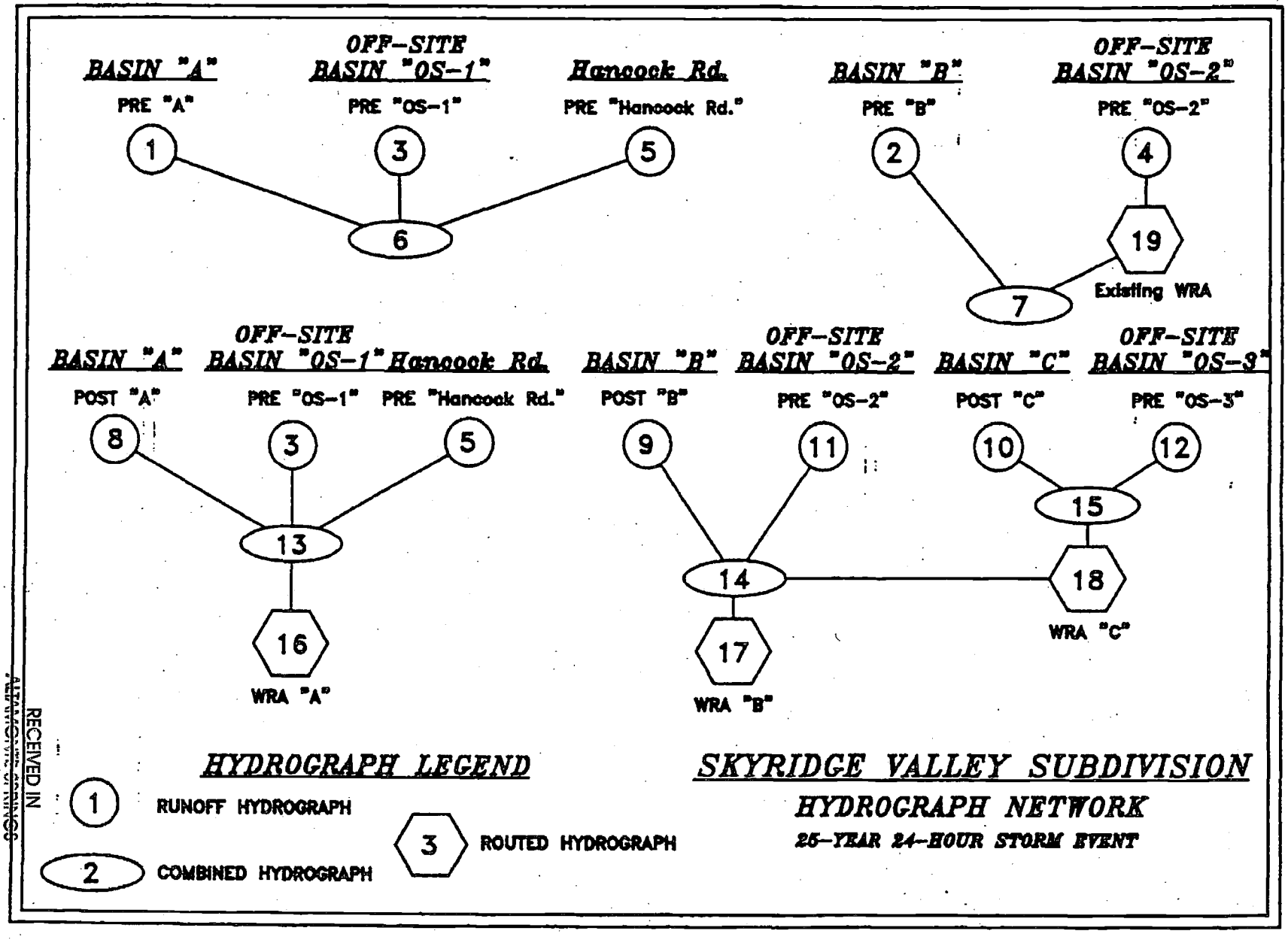
APPLICANT/DEVELOPER: Centex Homes, Inc.
Ralph E. Smith, Jr. Development Manager
Southpoint Bldg., Suite 230 151 Southhall Lane
Maitland, Fl. 32751-7190 TEL: (407) 661-2150

McCoy & Associates
CONSULTING ENGINEERS
P.O. Box 121274
713 W. Montrose Street
Clermont, Florida 34712-1274
(352) 394-5756
(352) 394-5759 FAX

DRAWN BY: RMc
CHECKED BY:
DATE: JULY 1998
SCALE: 1" = 200'
JOB NO. 98-004
DESCRIPTION

PRE-DEVELOPMENT DRAINAGE/EROSION CONTROL PLAN

SHEET 3 OF 60



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