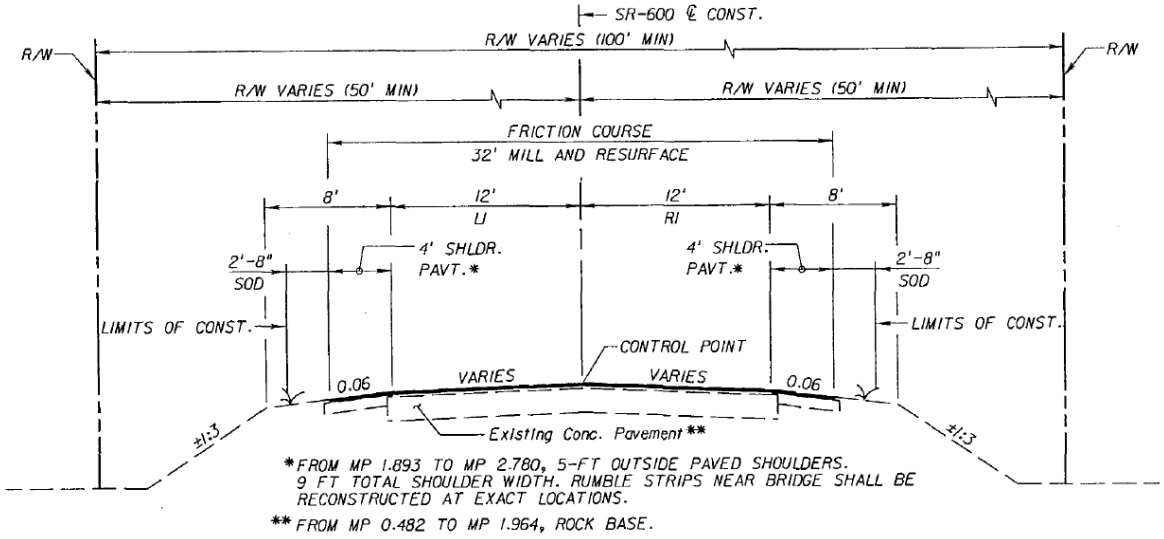
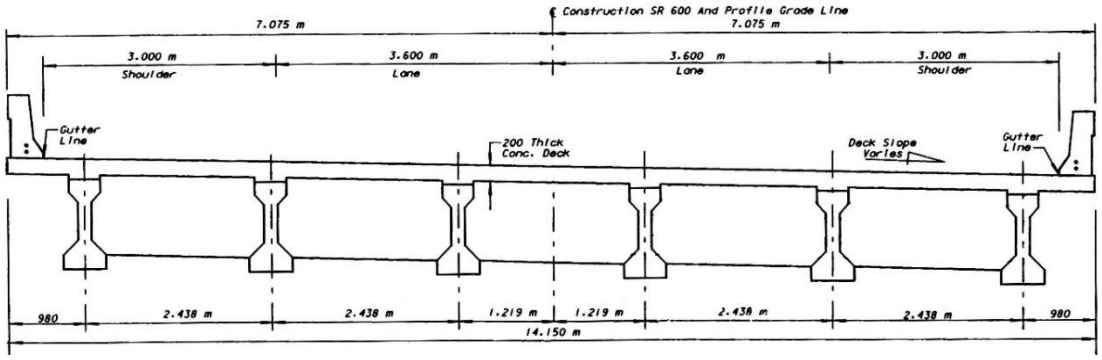
Appendix A – Existing Typical Sections

Typical Section #1



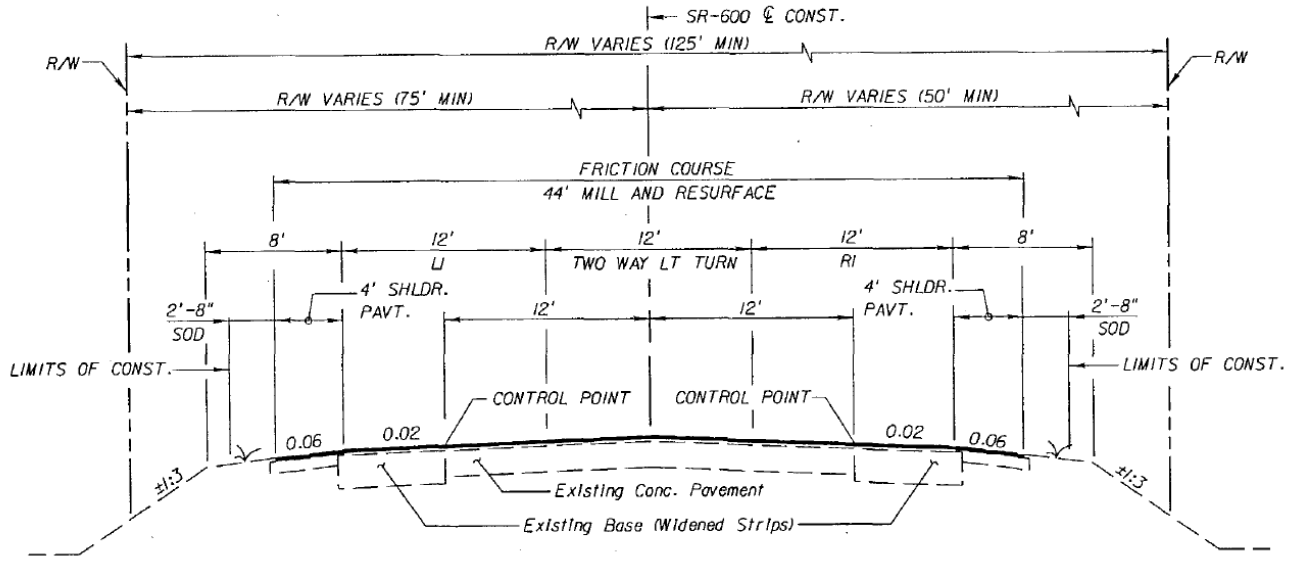
Roadway ID 92010000/92010100: M.P. 0.299 to M.P. 2.780 (excluding bridge)
Design Speed: 60 mph

Typical Section #2



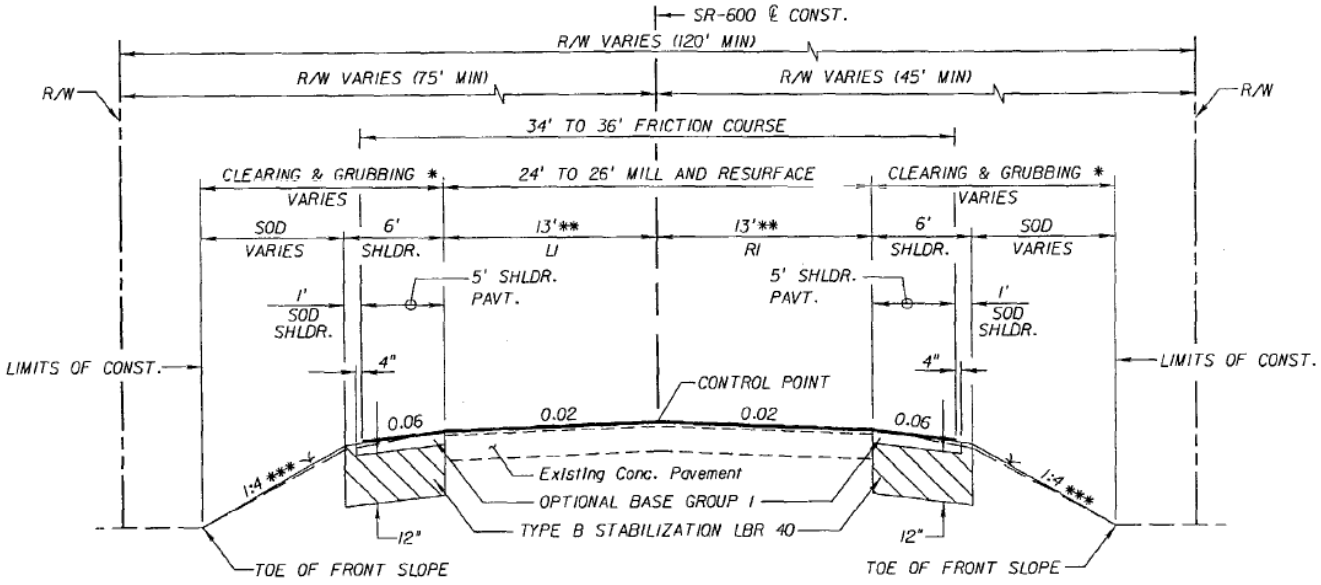
Roadway ID 92010100: M.P. 0.447 to M.P. 0.888 (bridge typical)
Design Speed: 60 mph

Typical Section #3



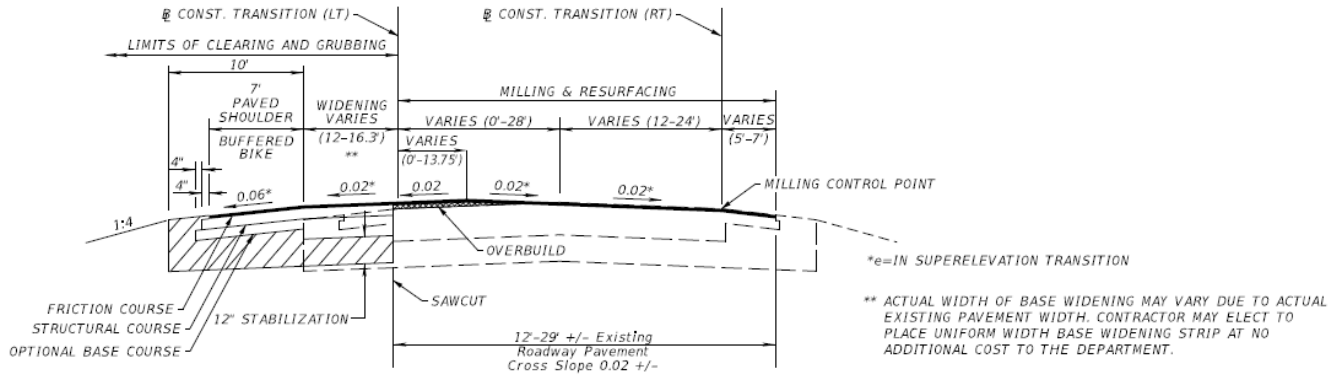
Roadway ID 92010000: M.P. 2.780 to M.P. 3.330
Design Speed: 50 mph

Typical Section #4



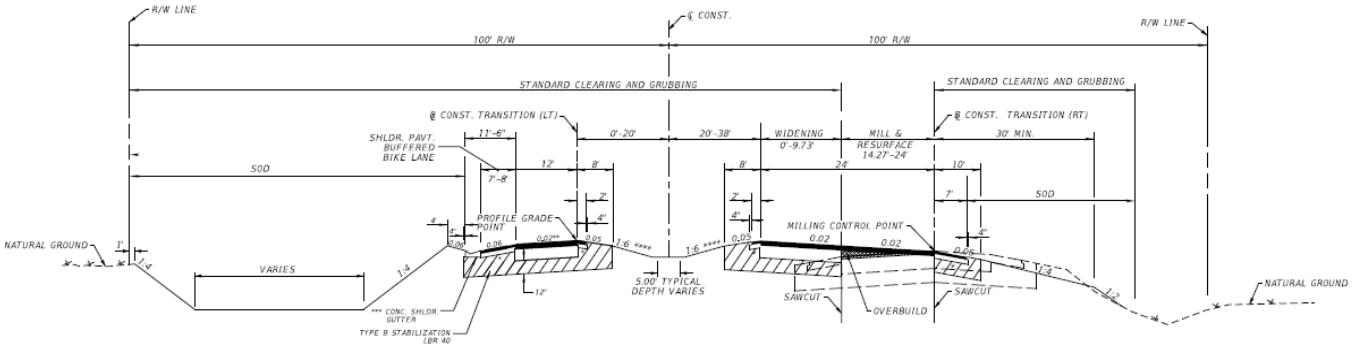
Roadway ID 92010000: M.P. 3.330 to M.P. 3.754
Design Speed: 60 mph

Typical Section #5



Roadway ID 92010000: M.P. 3.754 to M.P. 3.878
Design Speed: 55 mph

Typical Section #6



Roadway ID 92010000: M.P. 3.878 to M.P. 4.117
Design Speed: 55 mph

Appendix B1 – Curve Number Calculations

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: (Present) Developed Basin 1 - 1177+00 to 1210+00

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Impervious Area	98			2.90	284.20
Type A	Open Space (Good)	39			4.09	159.51
Type D	Open Space (Good)	80			16.65	1332.00
Use only one CN source per line.				Totals =	23.64	1775.71

CN (weighted) = total product/total area = $\frac{1775.71}{23.64}$ = 75.11 Use CN = **75**

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: Present (Developed) Basin 1 - 1177+00 to 1210+00

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	CN [1] Fig 2-3	CN [1] Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Impervious Area	98			6.33	620.71
Type A	Open Space (Good)	39			3.05	118.79
Type D	Open Space (Good)	80			14.26	1140.83
Use only one CN source per line.				Totals =	23.64	1880.33

CN (weighted) = total product/total area = $\frac{1880.33}{23.64}$ = 79.54 Use CN = **80**

Notes:
1. Post pervious area hydrologic group is calculated by using the same percentage as pre
For example: Pre Basin 1 soil is 12% Hydrologic Group A and 84% D
2. The impervious/pervious area is calculated based on a conservative typical section of a 22 ft grass median with 2 ft curb & gutter and 5 ft grass median each side, 2-11 ft travel lanes each side, no shoulders and 12 ft shared use path on each side. The basin width is assumed to be a minimum of 151 ft.

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: (Present) Developed Basin 2 - 1210+00 to 1244+00

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Impervious Area	98			4.01	392.98
Type D	Open Space (Good)	80			15.03	1202.80
Use only one CN source per line.				Totals =	19.04	1595.78

CN (weighted) = total product/total area = $\frac{1595.78}{19.04}$ = 83.79 Use CN = **84**

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: Present (Developed) Basin 2 - 1210+00 to 1244+00

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Impervious Area	98			8.20	803.17
Type D	Open Space (Good)	80			10.85	867.95
Use only one CN source per line.				Totals =	19.04	1671.12

CN (weighted) = total product/total area = $\frac{1671.12}{19.04}$ = 87.75 Use CN = **88**

Notes:
1. Post pervious area hydrologic group is calculated by using the same percentage as pre
For example: Pre Basin 1 soil is 12% Hydrologic Group A and 84% D
2. The impervious/pervious area is calculated based on a conservative typical section of a 22 ft grass median with 2 ft curb & gutter and 5 ft grass median each side, 2-11 ft travel lanes each side, no shoulders and 12 ft shared use path on each side. The basin width is assumed to be a minimum of 151 ft.

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: (Present) Developed Basin 3 - 1244+00 to 1333+00

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	CN [1] Fig 2-3	CN [1] Fig 2-4	Area ☑ acres ☐ mi^2 ☐ %	
Type D	Impervious Area	98			8.07	790.86
Type D	Open Space (Good)	80			37.70	3015.74
Use only one CN source per line.				Totals =	45.77	3806.60

CN (weighted) = total product/total area = $\frac{3806.60}{45.77}$ = 83.17 Use CN = **83**

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: Present (Developed) Basin 3 - 1244+00 to 1333+00

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi^2 ☐ %	
Type D	Impervious Area	98			18.18	1782.04
Type D	Open Space (Good)	80			27.58	2206.61
Use only one CN source per line.				Totals =	45.77	3988.65

CN (weighted) = total product/total area = $\frac{3988.65}{45.77}$ = 87.15 Use CN = **87**

Notes:
1. Post pervious area hydrologic group is calculated by using the same percentage as pre
For example: Pre Basin 1 soil is 12% Hydrologic Group A and 84% D
2. The impervious/pervious area is calculated based on a conservative typical section of a 22 ft grass median with 2 ft curb & gutter and 5 ft grass median each side, 2-11 ft travel lanes each side, no shoulders and 12 ft shared use path on each side. The basin width is assumed to be a minimum of 151 ft.

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: (Present) Developed Basin 4 - 1333+00 to 1383+00

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Impervious Area	98			4.17	408.66
Type D	Open Space (Good)	80			21.54	1723.33
Use only one CN source per line.				Totals =	25.71	2131.99

CN (weighted) = total product/total area = $\frac{2131.99}{25.71}$ = 82.92 Use CN = **83**

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: Present (Developed) Basin 4 - 1333+00 to 1383+00

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi^2 ☐ %	
Type D	Impervious Area	98			10.22	1001.15
Type D	Open Space (Good)	80			15.50	1239.67
Use only one CN source per line.				Totals =	25.71	2240.82

CN (weighted) = total product/total area = $\frac{2240.82}{25.71}$ = 87.15 Use CN = **87**

Notes:
1. Post pervious area hydrologic group is calculated by using the same percentage as pre
For example: Pre Basin 1 soil is 12% Hydrologic Group A and 84% D
2. The impervious/pervious area is calculated based on a conservative typical section of a 22 ft grass median with 2 ft curb & gutter and 5 ft grass median each side, 2-11 ft travel lanes each side, no shoulders and 12 ft shared use path on each side. The basin width is assumed to be a minimum of 151 ft.

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: (Present) Developed Basin 1- Pond 1

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Woods (Good)	77			3.10	238.70
Use only one CN source per line.				Totals =	3.10	238.70

CN (weighted) = total product/total area = $\frac{238.70}{3.10}$ = 77.00 Use CN = **77**

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: Present (Developed) Basin 1- Pond 1

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Area at Control	100			2.09	208.87
Type D	Woods (Good)	77			1.01	77.87
Use only one CN source per line.				Totals =	3.10	286.74

CN (weighted) = total product/total area = $\frac{286.74}{3.10}$ = 92.50 Use CN = **92**

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: (Present) Developed Basin 2- Pond 2

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	CN [1] Fig 2-3	CN [1] Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Woods (Good)	77			3.50	269.50
Use only one CN source per line.				Totals =	3.50	269.50

CN (weighted) = total product/total area = $\frac{269.50}{3.50}$ = 77.00 Use CN = **77**

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: Present (Developed) Basin 2- Pond 2

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Area at Control	100			2.33	232.82
Type D	Open Space (Good)	77			1.17	90.23
Use only one CN source per line.				Totals =	3.50	323.05

CN (weighted) = total product/total area = $\frac{323.05}{3.50}$ = 92.30 Use CN = **92**

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: (Present) Developed Basin 3 Pond 1 2 and 3

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	CN [1] Fig 2-3	CN [1] Fig 2-4	Area ☑ acres ☐ mi^2 ☐ %	
Type D	Woods Grass Combination (Good)	79			6.25	493.75
Use only one CN source per line.				Totals =	6.25	493.75

CN (weighted) = total product/total area = $\frac{493.75}{6.25}$ = 79.00 Use CN = **79**

Note: Basin 3 Pond 1 was used as a conservative estimate because it is the largest pond.

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: Present (Developed) Basin 3 Pond 1 2 and 3

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi^2 ☐ %	
Type D	Area at Control	100			4.71	471.04
Type D	Open Space (Good)	80			1.54	123.16
	Use only one CN source per line.			Totals =	6.25	594.21

CN (weighted) = total product/total area = $\frac{594.21}{6.25}$ = 95.07 Use CN = **95**

Note: Basin 3 Pond 1 was used as a conservative estimate because it is the largest pond.

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: (Present) Developed Basin 4 Pond 1 2 and 3

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Woods (Good)	77			3.60	277.20
Use only one CN source per line.				Totals =	3.60	277.20

CN (weighted) = total product/total area = $\frac{277.20}{3.60}$ = 77.00 Use CN = **77**

Note: Basin 4 Pond 3 was used as a conservative estimate because it (and Pond 2-same size) is larger than Pond 1

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023
County: Osceola **Checked by:** AE **Date:** 5/3/2023

Circle One: Present (Developed) Basin 4 Pond 1 2 and 3

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Area at Control	100			2.59	259.17
Type D	Open Space (Good)	80			1.01	80.66
Use only one CN source per line.				Totals =	3.60	339.83

CN (weighted) = total product/total area = $\frac{339.83}{3.60}$ = 94.40 Use CN = **94**

Note: Basin 4 Pond 3 was used as a conservative estimate because it (and Pond 2-same size) is larger than Pond 1

Appendix B2 – Water Quantity Calculations

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/3/2023

County: Osceola **Checked by:** AE **Date:** 5/3/2023

Pre vs. Post Runoff

PRE-DEVELOPED :

Basin	Basin Area (ac)	Pond Area (ac)	Total Area (ac)	CN	S=	Runoff (in)	
						P (in)	P (in)
						25-yr, 72-hr	100-yr, 72-hr
						10.5	12
1	23.64	3.10	26.74	75	3.27	7.39	8.80
Combined 1 & 2	42.68	6.60	49.28	79	2.70	7.83	9.27
2	19.04	3.50	22.54	83	2.09	8.35	9.81
3	45.77	6.25	52.02	83	2.10	8.35	9.81
4	25.71	3.60	29.31	82	2.17	8.28	9.74

POST-DEVELOPED :

Basin	Basin Area (ac)	Pond Area (ac)	Total Area (ac)	CN	S=	Runoff (in)	
						P (in)	P (in)
						25-yr, 72-hr	100-yr, 72-hr
						10.5	12
1	23.64	3.10	26.74	81	2.34	8.14	9.59
Combined 1 & 2	42.68	6.60	49.28	84	1.84	8.57	10.04
2	19.04	3.50	22.54	88	1.30	9.08	10.57
3	45.77	6.25	52.02	88	1.35	9.04	10.52
4	25.71	3.60	29.31	88	1.36	9.03	10.51

INCREASE RUNOFF :

DELTA RUNOFF ac-ft

$$= \frac{(\text{Runoff Post (in)} - \text{Runoff Pre (in)}) * A \text{ (ac)}}{12 \text{ (in/ft)}}$$

Basin	Storage Required (ac-ft)	
	P (in)	P (in)
	25-yr, 72-hr	100-yr, 72-hr
	10.5	12
1	1.67	1.75
Combined 1 & 2	3.03	3.16
2	1.37	1.41
3	3.00	3.09
4	1.82	1.88

Notes: 1. Some soils in this area are classified as Type A/D, B/D, C/D by NRCS. To be conservative, Type D soils are used.
2. DELTA RUNOFF ac-ft is the **Attenuation Storage Volume Required**.
3. PDS-based precipitation frequency estimates were obtained from the SFWMD Applicant's Handbook
PDS=Partial Duration Series
4. The pond that produced the most delta runoff for the basin was used in this calculation

Appendix B3 – Water Quality Calculations

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/1/2023
County: Osceola **Checked by:** AE **Date:** 5/1/2023

Basin Parameters

Basin	Station Range of Basin		Length of Basin	Area	Proposed Impervious Area	Existing Impervious Area	Net Increase Impervious Area
			(ft)	(ac)	(ac)	(ac)	(ac)
Basin 1	1179+00.00	1210+00.00	3100	23.64	6.33	2.90	3.43
Basin 2	1210+00.00	1244+00.00	3400	19.04	8.20	4.01	4.19
Basin 3	1244+00.00	1333+00.00	8900	45.77	18.18	8.07	10.11
Basin 4	1333+00.00	1383+00.00	5000	25.71	10.22	4.17	6.05

Water Quality Volume Required (SFWMD)

Basin	1" Runoff Over Basin	2.5" Runoff Over Impervious	Greater Volume Required (Wet Detention)	With Addn'l 50% Treatment Vol. Req. (Wet Detention)
	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)
Basin 1	1.97	0.72	1.97	2.96
Basin 2	1.59	0.87	1.59	2.38
Basin 3	3.81	2.11	3.81	5.72
Basin 4	2.14	1.26	2.14	3.21

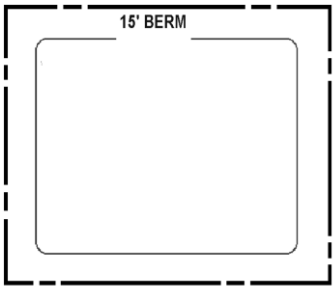
Assumptions/Notes:
1. Preliminary proposed typical section assumes a right-of-way width of 148-ft. 90-ft impervious and 58-ft pervious per foot of basin length is assumed.
2. Once final typical sections are designed this will need to be updated.
3. Existing Impervious was measured within the existing right-of-way and does not include side streets or driveways

Appendix B4 – Pond Sizing Calculations

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/2/2023
County: Osceola **Checked by:** AE **Date:** 5/2/2023

Basin 1 and 2 Pond Combined

PRELIMINARY POND SIZE :



ASSUMED POND ROW = 6.00 ac using a 15% S.F. -> **6.9 ac**

Pond has a 15 ft maintenance berm and 4 : 1 max. side slopes.

Each side of the required R.O.W for a square pond is: 511 ft

Assuming a Rectangular (2:1) Pond: 361 ft by 723 ft

Existing ground @ pond site averages: 66.0 ft The Top Contour is: 69.0
The Bottom Contour is: 66.0

To tie the High Brm to exis. grnd. within ROW the berm buffer needs to be: 21 wide

STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary pond.

	STAGE ELEVATION (ft)	**SURFACE AREA** (sq-ft)	(ac)	**TOTAL STORAGE** (ac-ft)
Bottom Elevation:	62.0	165839	3.81	16.46
	63.0	172419	3.96	12.57
	64.0	179127	4.11	8.54
	65.0	185963	4.27	4.35
Control Water Elevation:	66.0	192926	4.43	0.00
	67.0	200018	4.59	4.51
	68.0	207238	4.76	9.19
Berm Elevation:	69.0	214586	4.93	14.03

Water Quality Volume Required =	**5.34 ac-ft**	**@**	**67.2 ft**	**Wet Detention Treatment**
Attenuation Volume Required =	**3.03 ac-ft**	**@**	**66.7 ft**	**25YR/72HR**
100-Year Volume Required =	**3.16 ac-ft**	**@**	**66.7 ft**	**100YR/72HR**

BASE CLEARANCE:

Lowest EOP B1= 69

CHECKS:

Is Wet treatment depth < than 1.5 ft?
Wet Trmt Dpth = 1.16 ft ok

Is Wet attenuation depth < than 4 ft?
Wet Attnt Dpth = 0.67 ft ok

Is basin < than 10 ft?
Basin Dpth = 0.69 ft ok

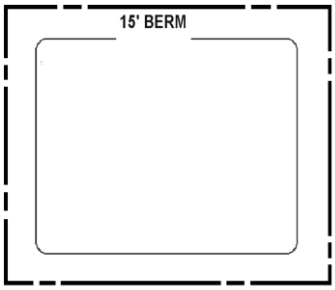
At least one foot of freeboard under High Berm?
Water Quality Freeboard = 1.8 ok
Attenuation Freeboard = 2.3 ok
Flood Protection Freeboard = 2.3 ok

Notes:
1. Basin 2 drainage will flow offsite without treatment and attenuation, but will be compensated for by providing treatment and attenuation for existing impervious area in Basin 1.
2. Water Quality Volume Requirement for this pond was calculated by adding the Water Quality volume of Basin 1 and Basin 2.
3. Attenuation Volume and 100-year volume requirements for this pond are the sum of Basin 1 and Basin 2 attenuation volume and 100-year volume, respectively.

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/2/2023
County: Osceola **Checked by:** AE **Date:** 5/2/2023

Basin 1 Pond 1 Sizing

PRELIMINARY POND SIZE :



ASSUMED POND ROW = 3.10 ac using a 15% S.F. -> **3.6 ac**

Pond has a 15 ft maintenance berm and 4 : 1 max. side slopes. 3.7

Each side of the required R.O.W for a square pond is: 367 ft

Assuming a Rectangular (2:1) Pond: 260 ft by 520 ft

Existing ground @ pond site averages: 66.0 ft The Top Contour is: 68.2
The Bottom Contour is: 65.2

To tie the High Brm to exis. grnd. within ROW the berm buffer needs to be: 17.92 wide

STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary pond.

	STAGE ELEVATION (ft)	**SURFACE AREA** (sq-ft)	(ac)	**TOTAL STORAGE** (ac-ft)
Bottom Elevation:	61.2	72702	1.67	7.50
	62.2	77080	1.77	5.78
	63.2	81586	1.87	3.96
	64.2	86220	1.98	2.03
Control Water Elevation:	65.2	90982	2.09	0.00
	66.2	95872	2.20	2.14
	67.2	100890	2.32	4.40
Berm Elevation:	68.2	106036	2.43	6.78

Water Quality Volume Required =	**2.96 ac-ft**	**@**	**66.6 ft**	**Wet Detention Treatment**
Attenuation Volume Required =	**1.67 ac-ft**	**@**	**66.0 ft**	**25YR/72HR**
100-Year Volume Required =	**1.75 ac-ft**	**@**	**66.0 ft**	**100YR/72HR**

BASE CLEARANCE:

Lowest EOP B1= 69

CHECKS:

Is Wet treatment depth < than 1.5 ft?
Wet Trmt Dpth = 1.33 ft ok

Is Wet attenuation depth < than 4 ft?
Wet Attnt Dpth = 0.76 ft ok

Is basin < than 10 ft?
Basin Dpth = 0.80 ft ok

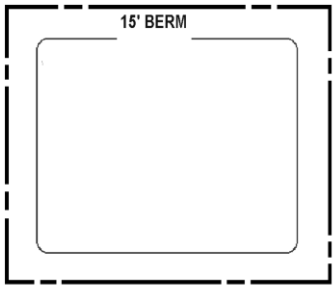
At least one foot of freeboard under High Berm?
Water Quality Freeboard = 1.7 ok
Attenuation Freeboard = 2.2 ok
Flood Protection Freeboard = 2.2 ok

Notes:
1. Basin 2 drainage will flow offsite without treatment and attenuation, but will be compensated for by providing treatment and attenuation for existing impervious area in Basin 1.
2. Water Quality Volume Requirement for this pond was calculated by adding the Water Quality volume of Basin 1 and Basin 2.
3. Attenuation Volume and 100-year volume requirements for this pond are the sum of Basin 1 and Basin 2 attenuation volume and 100-year volume, respectively.

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/2/2023
County: Osceola **Checked by:** AE **Date:** 5/2/2023

Basin 2 Pond 2 Sizing

PRELIMINARY POND SIZE :



ASSUMED POND ROW = 3.50 ac using a 15% S.F. -> **4.0 ac**

Pond has a 15 ft maintenance berm and 4 : 1 max. side slopes.

Each side of the required R.O.W for a square pond is: 390 ft

Assuming a Rectangular (2:1) Pond: 276 ft by 552 ft

Existing ground @ pond site averages: 66.0 ft The Top Contour is: 69.0
The Bottom Contour is: 66.0

To tie the High Brm to exis. grnd. within ROW the berm buffer needs to be: 21 wide

STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary pond.

	STAGE ELEVATION (ft)	**SURFACE AREA** (sq-ft)	(ac)	**TOTAL STORAGE** (ac-ft)
Bottom Elevation:	62.0	82060	1.88	8.41
	63.0	86707	1.99	6.47
	64.0	91483	2.10	4.43
	65.0	96386	2.21	2.27
Control Water Elevation:	66.0	101418	2.33	0.00
	67.0	106577	2.45	2.39
	68.0	111864	2.57	4.89
Berm Elevation:	69.0	117280	2.69	7.53

Water Quality Volume Required =	**2.38 ac-ft**	**@**	**67.0 ft**	**Wet Detention Treatment**
Attenuation Volume Required =	**1.37 ac-ft**	**@**	**66.6 ft**	**25YR/72HR**
100-Year Volume Required =	**1.41 ac-ft**	**@**	**66.6 ft**	**100YR/72HR**

BASE CLEARANCE:

Lowest EOP B1= 69

CHECKS:

Is Wet treatment depth < than 1.5 ft?
Wet Trmt Dpth = 0.97 ft ok

Is Wet attenuation depth < than 4 ft?
Wet Attnt Dpth = 0.57 ft ok

Is basin < than 10 ft?
Basin Dpth = 0.59 ft ok

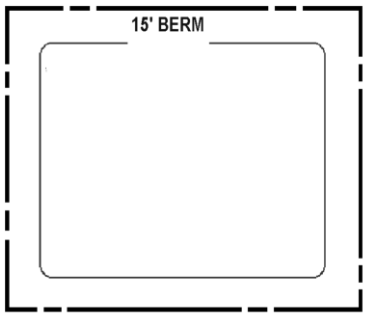
At least one foot of freeboard under High Berm?
Water Quality Freeboard = 2.0 ok
Attenuation Freeboard = 2.4 ok
Flood Protection Freeboard = 2.4 ok

Notes:
1. Basin 2 drainage will flow offsite without treatment and attenuation, but will be compensated for by providing treatment and attenuation for existing impervious area in Basin 1.
2. Water Quality Volume Requirement for this pond was calculated by adding the Water Quality volume of Basin 1 and Basin 2.
3. Attenuation Volume and 100-year volume requirements for this pond are the sum of Basin 1 and Basin 2 attenuation volume and 100-year volume, respectively.

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/2/2023
County: Osceola **Checked by:** AE **Date:** 5/2/2023

Basin 3 Pond 1 Sizing

PRELIMINARY POND SIZE :



ASSUMED POND ROW = 6.25 ac using a 22% S.F. -> **7.6 ac**

Pond has a 15 ft maintenance berm and 4 : 1 max. side slopes.

Each side of the required R.O.W for a square pond is: 522 ft

Assuming a Rectangular (2:1) Pond: 369 ft by 738 ft

Existing ground @ pond site averages: 67.0 ft

The Top Contour is: 69.6
The Bottom Contour is: 66.6

To tie the High Brm to exis. grnd. within ROW the berm buffer needs to be: 19.4 wide

STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary pond.

	STAGE ELEVATION (ft)	**SURFACE AREA** (sq-ft)	(ac)	**TOTAL STORAGE** (ac-ft)
Bottom Elevation:	62.6	177,221	4.07	17.54
	63.6	184,020	4.22	13.40
	64.6	190,948	4.38	9.09
	65.6	198,003	4.55	4.63
Control Water Elevation:	66.6	205,187	4.71	0.00
	67.6	212,499	4.88	4.79
	68.6	219,938	5.05	9.76
Berm Elevation:	69.6	227,506	5.22	14.89

Water Quality Volume Required =	**5.72 ac-ft**	**@**	**67.8 ft**	**Wet Detention Treatment**
Attenuation Volume Required =	**3.00 ac-ft**	**@**	**67.2 ft**	**25YR/72HR**
100-Year Volume Required =	**3.09 ac-ft**	**@**	**67.2 ft**	**100YR/72HR**

BASE CLEARANCE:

Lowest EOP = 76

CHECKS:

Is Wet treatment depth < than 1.5 ft?
Wet Trmt Dpth = 1.17 ft ok

Is Wet attenuation depth < than 4 ft?
Wet Attnt Dpth = 0.62 ft ok

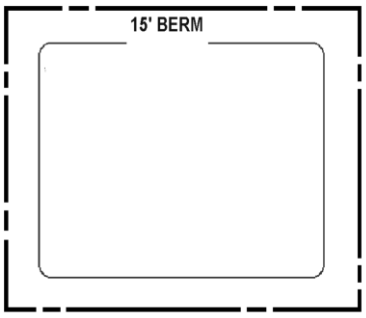
Is basin < than 10 ft?
Basin Dpth = 0.64 ft ok

At least one foot of freeboard under High Berm?
Water Quality Freeboard = 1.8 ok
Attenuation Freeboard = 2.4 ok
Flood Protection Freeboard = 2.4 ok

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/2/2023
County: Osceola **Checked by:** AE **Date:** 5/2/2023

Basin 3 Pond 2 Sizing

PRELIMINARY POND SIZE :



ASSUMED POND ROW = 6.25 ac using a 15% S.F. -> **7.2 ac**

Pond has a 15 ft maintenance berm and 4 : 1 max. side slopes.

Each side of the required R.O.W for a square pond is: 522 ft

Assuming a Rectangular (2:1) Pond: 369 ft by 738 ft

Existing ground @ pond site averages: 65.0 ft The Top Contour is: 66.0
The Bottom Contour is: 63.0

To tie the High Brm to exis. grnd. within ROW the berm buffer needs to be: 13.12 wide

STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary pond.

	STAGE ELEVATION (ft)	**SURFACE AREA** (sq-ft)	(ac)	**TOTAL STORAGE** (ac-ft)
Bottom Elevation:	59.0	187,953	4.31	18.57
	60.0	194,954	4.48	14.17
	61.0	202,082	4.64	9.61
	62.0	209,339	4.81	4.89
Control Water Elevation:	63.0	216,724	4.98	0.00
	64.0	224,236	5.15	5.06
	65.0	231,877	5.32	10.30
Berm Elevation:	66.0	239,645	5.50	15.71

Water Quality Volume Required =	**5.72 ac-ft**	**@**	**64.1 ft**	**Wet Detention Treatment**
Attenuation Volume Required =	**3.00 ac-ft**	**@**	**63.6 ft**	**25YR/72HR**
100-Year Volume Required =	**3.09 ac-ft**	**@**	**63.6 ft**	**100YR/72HR**

BASE CLEARANCE:

Lowest EOP = 76

CHECKS:

Is Wet treatment depth < than 1.5 ft?
Wet Trmt Dpth = 1.11 ft ok

Is Wet attenuation depth < than 4 ft?
Wet Attnt Dpth = 0.59 ft ok

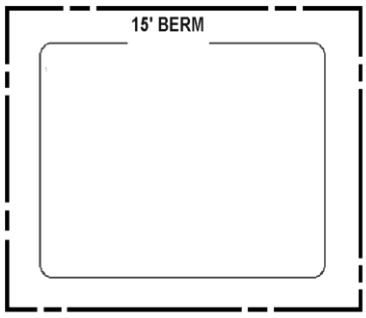
Is basin < than 10 ft?
Basin Dpth = 0.61 ft ok

At least one foot of freeboard under High Berm?
Water Quality Freeboard = 1.9 ok
Attenuation Freeboard = 2.4 ok
Flood Protection Freeboard = 2.4 ok

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/2/2023
County: Osceola **Checked by:** AE **Date:** 5/2/2023

Basin 3 Pond 3 Sizing

PRELIMINARY POND SIZE :



ASSUMED POND ROW = 6.25 ac using a 15% S.F. -> **7.2 ac**

Pond has a 15 ft maintenance berm and 4 : 1 max. side slopes.

Each side of the required R.O.W for a square pond is: 522 ft

Assuming a Rectangular (2:1) Pond: 369 ft by 738 ft

Existing ground @ pond site averages: 65.0 ft The Top Contour is: 68.4
The Bottom Contour is: 65.4

To tie the High Brm to exis. grnd. within ROW the berm buffer needs to be: 22.52 wide

STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary pond.

	STAGE ELEVATION (ft)	**SURFACE AREA** (sq-ft)	(ac)	**TOTAL STORAGE** (ac-ft)
Bottom Elevation:	61.4	172,006	3.95	17.05
	62.4	178,706	4.10	13.02
	63.4	185,533	4.26	8.84
	64.4	192,489	4.42	4.50
Control Water Elevation:	65.4	199,573	4.58	0.00
	66.4	206,785	4.75	4.66
	67.4	214,124	4.92	9.50
Berm Elevation:	68.4	221,592	5.09	14.50

Water Quality Volume Required =	**5.72 ac-ft**	**@**	**66.6 ft**	**Wet Detention Treatment**
Attenuation Volume Required =	**3.00 ac-ft**	**@**	**66.0 ft**	**25YR/72HR**
100-Year Volume Required =	**3.09 ac-ft**	**@**	**66.0 ft**	**100YR/72HR**

BASE CLEARANCE:

Lowest EOP = 76

CHECKS:

Is Wet treatment depth < than 1.5 ft?
Wet Trmt Dpth = 1.20 ft ok

Is Wet attenuation depth < than 4 ft?
Wet Attnt Dpth = 0.64 ft ok

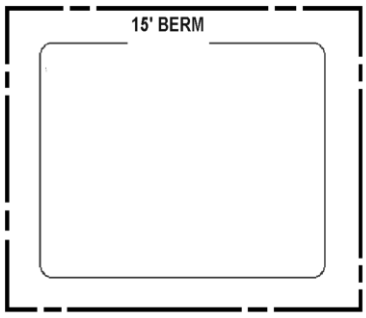
Is basin < than 10 ft?
Basin Dpth = 0.66 ft ok

At least one foot of freeboard under High Berm?
Water Quality Freeboard = 1.8 ok
Attenuation Freeboard = 2.4 ok
Flood Protection Freeboard = 2.3 ok

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/2/2023
County: Osceola **Checked by:** AE **Date:** 5/2/2023

Basin 4 Pond 1 Sizing

PRELIMINARY POND SIZE :



ASSUMED POND ROW = 3.60 ac using a 15% S.F. -> **4.1 ac**

Pond has a 15 ft maintenance berm and 4 : 1 max. side slopes.

Each side of the required R.O.W for a square pond is: 396 ft

Assuming a Rectangular (2:1) Pond: 280 ft by 560 ft

Existing ground @ pond site averages: 66.0 ft The Top Contour is: 66.8
The Bottom Contour is: 63.8

To tie the High Brm to exis. grnd. within ROW the berm buffer needs to be: 12 wide

STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary pond.

	STAGE ELEVATION (ft)	**SURFACE AREA** (sq-ft)	(ac)	**TOTAL STORAGE** (ac-ft)
Bottom Elevation:	59.8	96100	2.21	9.77
	60.8	101124	2.32	7.50
	61.8	106276	2.44	5.12
	62.8	111556	2.56	2.62
Control Water Elevation:	63.8	116964	2.69	0.00
	64.8	122500	2.81	2.75
	65.8	128164	2.94	5.63
Berm Elevation:	66.8	133956	3.08	8.63

Water Quality Volume Required =	**3.21 ac-ft**	**@**	**64.9 ft**	**Wet Detention Treatment**
Attenuation Volume Required =	**1.82 ac-ft**	**@**	**64.4 ft**	**25YR/72HR**
100-Year Volume Required =	**1.88 ac-ft**	**@**	**64.4 ft**	**100YR/72HR**

BASE CLEARANCE:

Lowest EOP = 76

CHECKS:

Is Wet treatment depth < than 1.5 ft?
Wet Trmt Dpth = 1.14 ft ok

Is Wet attenuation depth < than 4 ft?
Wet Attnt Dpth = 0.66 ft ok

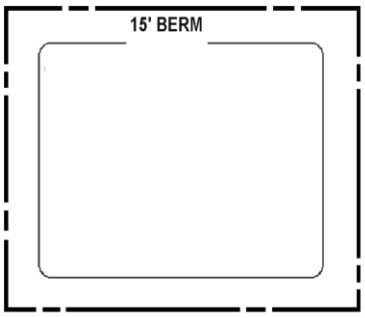
Is basin < than 10 ft?
Basin Dpth = 0.68 ft ok

At least one foot of freeboard under High Berm?
Water Quality Freeboard = 1.9 ok
Attenuation Freeboard = 2.3 ok
Flood Protection Freeboard = 2.3 ok

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/2/2023
County: Osceola **Checked by:** AE **Date:** 5/2/2023

Basin 4 Pond 2 Sizing

PRELIMINARY POND SIZE :



ASSUMED POND ROW = 3.60 ac using a 15% S.F. -> **4.1 ac**

Pond has a 15 ft maintenance berm and 4 : 1 max. side slopes.

Each side of the required R.O.W for a square pond is: 396 ft

Assuming a Rectangular (2:1) Pond: 280 ft by 560 ft

Existing ground @ pond site averages: 65.5 ft

The Top Contour is: 66.8
The Bottom Contour is: 63.8

To tie the High Brm to exis. grnd. within ROW the berm buffer needs to be: 14 wide

STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary pond.

	STAGE ELEVATION (ft)	**SURFACE AREA** (sq-ft)	(ac)	**TOTAL STORAGE** (ac-ft)
Bottom Elevation:	59.8	93636	2.15	9.53
	60.8	98596	2.26	7.32
	61.8	103684	2.38	5.00
	62.8	108900	2.50	2.56
Control Water Elevation:	63.8	114244	2.62	0.00
	64.8	119716	2.75	2.69
	65.8	125316	2.88	5.50
Berm Elevation:	66.8	131044	3.01	8.44

Water Quality Volume Required =	**3.21 ac-ft**	**@**	**64.9 ft**	**Wet Detention Treatment**
Attenuation Volume Required =	**1.82 ac-ft**	**@**	**64.4 ft**	**25YR/72HR**
100-Year Volume Required =	**1.88 ac-ft**	**@**	**64.4 ft**	**100YR/72HR**

BASE CLEARANCE:

Lowest EOP = 76

CHECKS:

Is Wet treatment depth < than 1.5 ft?
Wet Trmt Dpth = 1.17 ft ok

Is Wet attenuation depth < than 4 ft?
Wet Attnt Dpth = 0.67 ft ok

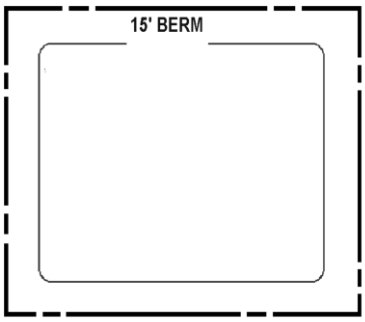
Is basin < than 10 ft?
Basin Dpth = 0.69 ft ok

At least one foot of freeboard under High Berm?
Water Quality Freeboard = 1.8 ok
Attenuation Freeboard = 2.3 ok
Flood Protection Freeboard = 2.3 ok

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/2/2023
County: Osceola **Checked by:** AE **Date:** 5/2/2023

Basin 4 Pond 3 Sizing

PRELIMINARY POND SIZE :



ASSUMED POND ROW = 3.60 ac using a 15% S.F. -> **4.1 ac**

Pond has a 15 ft maintenance berm and 4 : 1 max. side slopes.

Each side of the required R.O.W for a square pond is: 396 ft

Assuming a Rectangular (2:1) Pond: 280 ft by 560 ft

Existing ground @ pond site averages: 65.5 ft The Top Contour is: 67.0
The Bottom Contour is: 64.0

To tie the High Brm to exis. grnd. within ROW the berm buffer needs to be: 15 wide

STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary pond.

	STAGE ELEVATION (ft)	**SURFACE AREA** (sq-ft)	(ac)	**TOTAL STORAGE** (ac-ft)
Bottom Elevation:	60.0	92416	2.12	9.41
	61.0	97344	2.23	7.23
	62.0	102400	2.35	4.94
	63.0	107584	2.47	2.53
Control Water Elevation:	64.0	112896	2.59	0.00
	65.0	118336	2.72	2.65
	66.0	123904	2.84	5.43
Berm Elevation:	67.0	129600	2.98	8.34

Water Quality Volume Required =	**3.21 ac-ft**	**@**	**65.2 ft**	**Wet Detention Treatment**
Attenuation Volume Required =	**1.82 ac-ft**	**@**	**64.7 ft**	**25YR/72HR**
100-Year Volume Required =	**1.88 ac-ft**	**@**	**64.7 ft**	**100YR/72HR**

BASE CLEARANCE:

Lowest EOP = 76

CHECKS:

Is Wet treatment depth < than 1.5 ft?
Wet Trmt Dpth = 1.18 ft ok

Is Wet attenuation depth < than 4 ft?
Wet Attnt Dpth = 0.68 ft ok

Is basin < than 10 ft?
Basin Dpth = 0.70 ft ok

At least one foot of freeboard under High Berm?
Water Quality Freeboard = 1.8 ok
Attenuation Freeboard = 2.3 ok
Flood Protection Freeboard = 2.3 ok

Appendix B5 – Floodplain Compensation Calculations

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/15/2023

County: Osceola **Checked by:** AE **Date:** 5/15/2023

FLOODPLAIN ANALYSIS 1236+31.80 to 1236+97.10						
LOCATION	LENGTH	CROSS-SECTION FILL		AVG. FILL	FLOODPLAIN IMPACT	
STATION	(FT)	2 x SF	SF	SF	FT^3	ACRE-FT
1236+31.80		0.00	0.00			
	18.20			79.075	1439.16	0.03
1236+50.00		316.30	158.15			
	47.10			79.075	3724.43	0.09
1236+97.10		0.00	0.00			
					TOTAL	0.12

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/15/2023

County: Osceola **Checked by:** AE **Date:** 5/15/2023

FLOODPLAIN ANALYSIS 1343+61.90 to 1346+84.70						
LOCATION	LENGTH	CROSS-SECTION FILL		AVG. FILL	FLOODPLAIN IMPACT	
STATION	(FT)	2 x SF	SF	SF	FT^3	ACRE-FT
1343+61.90		0.00	0.00			
	38.10			0.655	24.96	0.00
1344+00.00		2.62	1.31			
	100.00			1.3775	137.75	0.00
1345+00.00		2.89	1.45			
	100.00			9.3725	937.25	0.02
1346+00.00		34.60	17.30			
	84.70			8.65	732.66	0.02
1346+84.70		0.00	0.00			
					TOTAL	**0.04**

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/15/2023

County: Osceola **Checked by:** AE **Date:** 5/15/2023

FLOODPLAIN ANALYSIS 1346+84.70 to 1380+76.80						
LOCATION	LENGTH	CROSS-SECTION FILL		AVG. FILL	FLOODPLAIN IMPACT	
STATION	(FT)	2 x SF	SF	SF	FT^3	ACRE-FT
1346+84.70		0.00	0.00			
	15.30			24.035	367.74	0.01
1347+00.00		96.14	48.07			
	100.00			46.9875	4698.75	0.11
1348+00.00		91.81	45.91			
	100.00			63.145	6314.50	0.14
1349+00.00		160.77	80.39			
	100.00			83.055	8305.50	0.19
1350+00.00		171.45	85.73			
	100.00			82.2025	8220.25	0.19
1351+00.00		157.36	78.68			
	100.00			95.3425	9534.25	0.22
1352+00.00		224.01	112.01			
	100.00			117.9525	11795.25	0.27
1353+00.00		247.80	123.90			
	100.00			130.7025	13070.25	0.30
1354+00.00		275.01	137.51			
	100.00			137.5025	13750.25	0.32
1355+00.00		275.00	137.50			
	100.00			130.4175	13041.75	0.30
1356+00.00		246.67	123.34			
	100.00			116.2325	11623.25	0.27
1357+00.00		218.26	109.13			
	100.00			102.9475	10294.75	0.24
1358+00.00		193.53	96.77			
	100.00			110.81	11081.00	0.25
1359+00.00		249.71	124.86			
	100.00			121.9275	12192.75	0.28
1360+00.00		238.00	119.00			
	100.00			125.215	12521.50	0.29
1361+00.00		262.86	131.43			
	100.00			129.275	12927.50	0.30
1362+00.00		254.24	127.12			
	100.00			128.715	12871.50	0.30
1363+00.00		260.62	130.31			
	100.00			133.59	13359.00	0.31
1364+00.00		273.74	136.87			
	100.00			136.99	13699.00	0.31
1365+00.00		274.22	137.11			
	100.00			180.135	18013.50	0.41
1366+00.00		446.32	223.16			
	100.00			176.355	17635.50	0.40
1367+00.00		259.10	129.55			

	100.00			124.5425	12454.25	0.29
1368+00.00		239.07	119.54			
	100.00			114.6575	11465.75	0.26
1369+00.00		219.56	109.78			
	100.00			101.9	10190.00	0.23
1370+00.00		188.04	94.02			
	100.00			90.0675	9006.75	0.21
1371+00.00		172.23	86.12			
	100.00			91.7575	9175.75	0.21
1372+00.00		194.80	97.40			
	100.00			89.535	8953.50	0.21
1373+00.00		163.34	81.67			
	100.00			97.1975	9719.75	0.22
1374+00.00		225.45	112.73			
	100.00			114.0975	11409.75	0.26
1375+00.00		230.94	115.47			
	100.00			109.21	10921.00	0.25
1376+00.00		205.90	102.95			
	100.00			100.5725	10057.25	0.23
1377+00.00		196.39	98.20			
	100.00			95.7475	9574.75	0.22
1378+00.00		186.60	93.30			
	100.00			100.3	10030.00	0.23
1379+00.00		214.60	107.30			
	100.00			106.845	10684.50	0.25
1380+00.00		212.78	106.39			
	76.80			53.195	4085.38	0.09
1380+76.80		0.00	0.00			
					TOTAL	**8.56**

Project: SR 600 (US 17-92) **Designed by:** AM **Date:** 5/15/2023

County: Polk/Osceola **Checked by:** AE **Date:** 5/15/2023

FLOODPLAIN ANALYSIS 1380+76.80 to 1385+00.00						
LOCATION	LENGTH	CROSS-SECTION FILL		AVG. FILL	FLOODPLAIN IMPACT	
STATION	(FT)	2 x SF	SF	SF	FT^3	ACRE-FT
1380+76.80		0.00	0.00			
	23.20			0	0.00	0.00
1381+00.00		0.00	0.00			
	100.00			42.9275	4292.75	0.10
1382+00.00		171.71	85.86			
	100.00			71.115	7111.50	0.16
1383+00.00		112.75	56.38			
	100.00			54.365	5436.50	0.12
1384+00.00		104.71	52.36			
	100.00			26.1775	2617.75	0.06
1385+00.00		0.00	0.00			
					TOTAL	0.45

Project: SR 600 (US 17-92) **Designed by:** OB **Date:** 5/15/2023
County: Polk/Osceola **Checked by:** MK **Date:** 5/15/2023

FLOODPLAIN ANALYSIS BASIN 4 POND 1				
NOTES	POND CONTOUR EL.	CONTOUR AREA	EL. DIFFERENCE	FLOODPLAIN IMPACT
	FT	ACRES	FT	ACRE-FT
BOTTOM	59.75	2.21		
			1.00	
	60.75	2.32		
			1.00	
	61.75	2.44		
			1.00	
	62.75	2.56		
			1.00	
CONTROL	63.75	2.69		
			1.00	
EXISTING GROUND	64.75	2.81		
			1.00	0.07
FLOODPLAIN EL.	65.75	2.94		
			1.00	0.13
BERM EL.	66.75	3.08		
			0.25	-0.06
1:4 TIE DOWN	67.00	3.33		
|			-1.00	0.09
v	66.00	3.51		
			TOTAL	**0.22**

Project:	SR 600 (US 17-92)	AM	**Designed by:**	5/15/2023	**Date:** 5/3/2023
County:	Polk/Osceola	AE	**Checked by:**	5/15/2023	**Date:** 5/3/2023

Floodplain Compensation Area 1

PRELIMINARY FLOODPLAIN COMPENSATION AREA :
STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary floodplain compensation area

Soil Type Smyrna Fine Sand, 0-2% Slopes

Depth to water Table 6"-18"

Floodplain Elevation (ft) = 66.0

Existing Ground Elevation (ft) = 65.0

SHWT Elevation (ft) = 64.0

	STAGE ELEVATION (ft)	SURFACE AREA (sq-ft)	SURFACE AREA (ac)	TOTAL STORAGE (ac-ft)
SHWT	64.0	529690	12.16	0.00
Berm	65.0	535352	12.29	12.23

Notes:
1. Floodplain Elevations from FEMA Floodplain Map
2. SHWT estimated from geotechnical report (Preliminary Soil Survey Report, June 2, 2021)
3. Slope between compensation contours estimated to be 1:4

Project: SR 600 (US 17-92)	AM	**Designed by:** 5/15/2023	**Date:**	5/3/2023
County: Polk/Osceola	AE	**Checked by:** 5/15/2023	**Date:**	5/3/2023

Floodplain Compensation Area 2

PRELIMINARY FLOODPLAIN COMPENSATION AREA :
STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary floodplain compensation area

Soil Type Ona Fine Sand, 0-2% Slopes

Depth to water Table 6"-18"

Floodplain Elevation (ft) = 67.0

Existing Ground Elevation (ft) = 65.0

SHWT Elevation (ft) = 64.0

	STAGE ELEVATION (ft)	SURFACE AREA (sq-ft)	SURFACE AREA (ac)	TOTAL STORAGE (ac-ft)
SHWT	64.0	478289	10.98	0.00
Berm	65.0	483952	11.11	11.05

Notes:

1. Floodplain Elevations from FEMA Floodplain Map
2. SHWT estimated from geotechnical report (Preliminary Soil Survey Report, June 2, 2021)
3. Slope between compensation contours estimated to be 1:4

Project:	SR 600 (US 17-92)	AM	**Designed by:**	5/15/2023	**Date:** 5/3/2023
County:	Polk/Osceola	AE	**Checked by:**	5/15/2023	**Date:** 5/3/2023

Floodplain Compensation Area 3

PRELIMINARY FLOODPLAIN COMPENSATION AREA :
STAGE-STORAGE RELATIONSHIP :

Below are the Stage - Storage calculations for the preliminary floodplain compensation area

Soil Type: Myakka/ Immokalee Fine Sand, 0-2% Slopes

Depth to water Table: 6"-18"

Floodplain Elevation (ft) = 67.0

Existing Ground Elevation (ft) = 65.0

SHWT Elevation (ft) = 64.0

	STAGE ELEVATION (ft)	SURFACE AREA (sq-ft)	SURFACE AREA (ac)	TOTAL STORAGE (ac-ft)
SHWT	64.0	501811	11.52	0.00
Berm	65.0	507474	11.65	11.59

Notes:
1. Floodplain Elevations from FEMA Floodplain Map
2. SHWT estimated from geotechnical report (Preliminary Soil Survey Report, June 2, 2021)
3. Slope between compensation contours estimated to be 1:4

Station Range	Floodplain Zone	Floodplain Elevation (ft)[1]	Lowest Existing PGL (ft)	Volume of Fill (ac-ft)
1236+31.80 to 1236+97.10	AE (Floodway)	67	66[2]	0.12
1236+97.10 to 1343+61.90	X	N/A	N/A	N/A
1343+61.90 to 1346+84.70	A	67	68[3]	0.04
1346+84.70 to 1380+76.80	A/AE	67/67	65	8.56
1380+76.80 to 1385+00.00	A	67	65	0.45
Basin 4 Pond 1	A	67	66	0.22
			TOTAL	9.40

Notes:

1. Zone A elevations are estimated from LiDAR Data
2. Existing ground elevation below existing bridge (extending bridge)
3. Although Lowest PGL is higher than floodplain, impact occurs in roadside swales

Appendix B6 – Permanent Pool Volume Calculations

Calculation of Permanent Pool Volume (PPV)

$$PPV\ (required) = \frac{A\ x\ C\ x\ R\ x\ RT}{WS\ x\ CF}$$

A =drainage area
C = runoff coefficient
R = wet season rainfall
RT = residence time
WS = no. of wet season days
CF = conversion factor

For Pond 3:

A =52.02 ac
C = 0.55
R = 31 in
RT = 21 days
WS =153 days
CF = 12 in/ft

$$PPV\ (required) = \frac{A\ x\ C\ x\ R\ x\ RT}{WS\ x\ CF} = \frac{52.02\ ac\ x\ 0.55\ x\ 31\ in\ x\ 21\ days}{153\ days\ x\ 12\ in/ft} = 10.14\ ac-ft$$

Total PPV provided for Pond 3 = 17.54 ac-ft > 10.14 ac-ft OK

For Pond 4:

A =29.31 ac
C = 0.55
R = 31 in
RT = 21 days
WS =153 days
CF = 12 in/ft

$$PPV\ (required) = \frac{A\ x\ C\ x\ R\ x\ RT}{WS\ x\ CF} = \frac{29.31\ ac\ x\ 0.55\ x\ 31\ in\ x\ 21\ days}{153\ days\ x\ 12\ in/ft} = 5.71\ ac-ft$$

Total PPV provided for Pond 4 = 9.77 ac-ft > 5.71 ac-ft OK

For Pond 1+2:

A =49.28 ac
C = 0.57
R = 31 in
RT = 21 days
WS =153 days
CF = 12 in/ft

$$PPV\ (required) = \frac{A\ x\ C\ x\ R\ x\ RT}{WS\ x\ CF} = \frac{49.28\ ac\ x\ 0.57\ x\ 31\ in\ x\ 21\ days}{153\ days\ x\ 12\ in/ft} = 9.95\ ac-ft$$

Total PPV provided for Pond 1+2 = 16.46 ac-ft > 9.95 ac-ft OK

Appendix C – Correspondence

SUMMARY MEMORANDUM

Meeting Date:	June 21, 2021 (Monday)	**Time**:	9:00 am –12:00 pm
Project:	US 17/92 Project Development & Environmental (PD&E) Study		
FPID:	437200-1-22-01		
Subject:	Environmental Look Around Meeting		

I. ATTENDEES

NAME	Agency
Ray Stangle	Osceola County
Linette Matheny	Osceola County
Josh DeVries	Osceola County
Susan Gosselin	Osceola County
Lorena Cucek	FDOT
Paul Yeargain	VHB
Cecily Mevorach	VHB
Kevin Freeman	VHB

II. INTRODUCTION / OBJECTIVE:

This in the field meeting was held to bring together different stakeholders to conduct an Environmental Look Around (ELA) for this Project. The purpose of an ELA is to discuss watershed-wide stormwater needs, regional treatment, and alternative permitting approaches. The ELA Team met on site and the study team provided an overview of the project and alternatives planned. Then talked through some of the preliminary pond area and other ponds planned by other adjacent projects.

III. DISCUSSION NOTES:

The following are notes of the open dialogue during the meeting:

- Intercession City has history been known to flood and the water generally flows south from Old Tampa Highway to US 17/92
- Osceola County staff suggest we talk with John Jeannin (JJ) the road and bridge director to get his thoughts on the Intercession City and the corridor
- There are a mixture of basins that flow through intercession City and it is subject to flooding in some areas. JJ will provide additional insight and information (see July 15 meeting below).
- The pond within the wetlands will be very hard to permit. The County recommended that we not propose new ponds along the corridor to avoid impacts to wetlands. Specifically, they commented on one of the ponds in Basin 1 (highlighted on the attached Exhibit).

- Osceola County staff provided two alternative suggestions for stormwater ponds:
    - Look at providing a pond outside of the corridor that could treat/attenuate other areas within the basin that currently do not have stormwater management facilities. This would compensate for the widening along 17-92. They agreed to review areas within the County and within the Reedy Creek Basin to provide recommendations.
    - Look at a stormwater pond/park in Intercession City that could treat/attenuate existing neighborhoods in lieu of a stormwater pond along the roadway. The location is shown on the attached Exhibit. The County indicated they would look to see if they have potential funds that could be used to construct a park associated with the pond. This would be a great benefit to the community.

IV. NEXT STEPS

- Discuss this project with JJ at Osceola County to get his thoughts
- Josh to check in with planning staff on latest status of BK Ranch
- Osceola County to provide input on the pond alternatives (meeting scheduled with County staff on July 15)

SUMMARY MEMORANDUM

Meeting Date:	July 29, 2021 (Thursday)	**Time**:	4:00 pm –5:00pm
Project:	US 17/92 Project Development & Environmental (PD&E) Study		
FPID:	437200-1-22-01		
Subject:	US 17/92 and CR 532/SR 538 Joint Use Pond Coordination Meeting		

I. ATTENDEES

NAME	Agency
Dana Chester	CFX
Edwards Spencer	Kimley-Horn
Greg Seidel	Balmoral Group
Laura Phillips	GAI Consultants
Mark Owen	GAI Consultants
Carnot Evans	CFX
Lorena Cucek	FDOT
Karen Snyder	FDOT
George Borchik	FDOT
Efren Rivera	FDOT
Ferrell Hicksson	FDOT
Paul Yeargain	VHB
Oscar Bermudez	VHB
Kevin Freeman	VHB

II. INTRODUCTION / OBJECTIVE:

This meeting was held to discuss the potential of joint use ponds for the SR 538 and CR 532 Project and the US 17/92 Project

III. DISCUSSION NOTES:

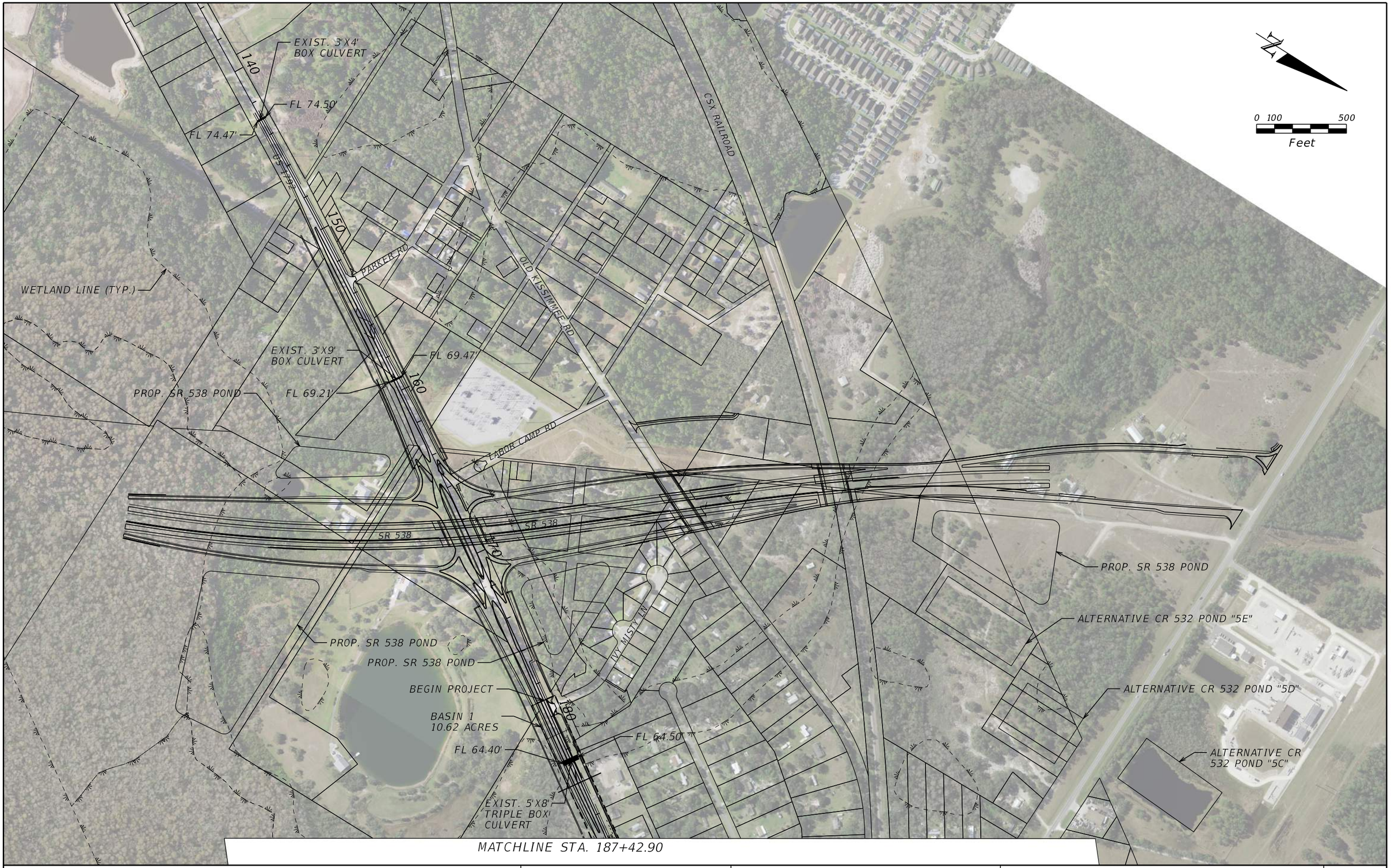
The following are notes of the open dialogue during the meeting:

- The SR 538 plans will be at 60% development Monday, August 1, 2021
- The CR 532 plans are expected to be at 30% in September of 2021.
- Ponds 6A (2 ponds) and Pond 7C will be used for CR 532 Project.
- The ponds identified for the SR 538 project are considered final ponds. The ponds for CR 532 are considered options and will be refined further.
- Pond 7C is slated to be a partial take at this time.
- Kevin explained that the CR 532 intersection with US 17/92 will be realigned and it may impact pond 7C.

- Pond south of STA 190 is for runoff from US 17/92 and will be turned over to FDOT once it has been constructed. It was noted that expanding this parcel makes sense since FDOT will maintain in the future.
- Kevin mentioned that at the ELA Osceola County expressed interest in a joint use pond.
- Lorena suggested it is best to approach the property owner once for a take. Will save money and aggravation to the property owner.
- It appears that Pond 7C and the Pond South of STA 190 are the best two options for joint use ponds.

IV. Action Items:

- Paul and Oscar will provide information regarding the size of the basin needed for the joint use ponds to CFX.
- Kevin will share the proposed layout after Lorena has reviewed and approved with CFX.



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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

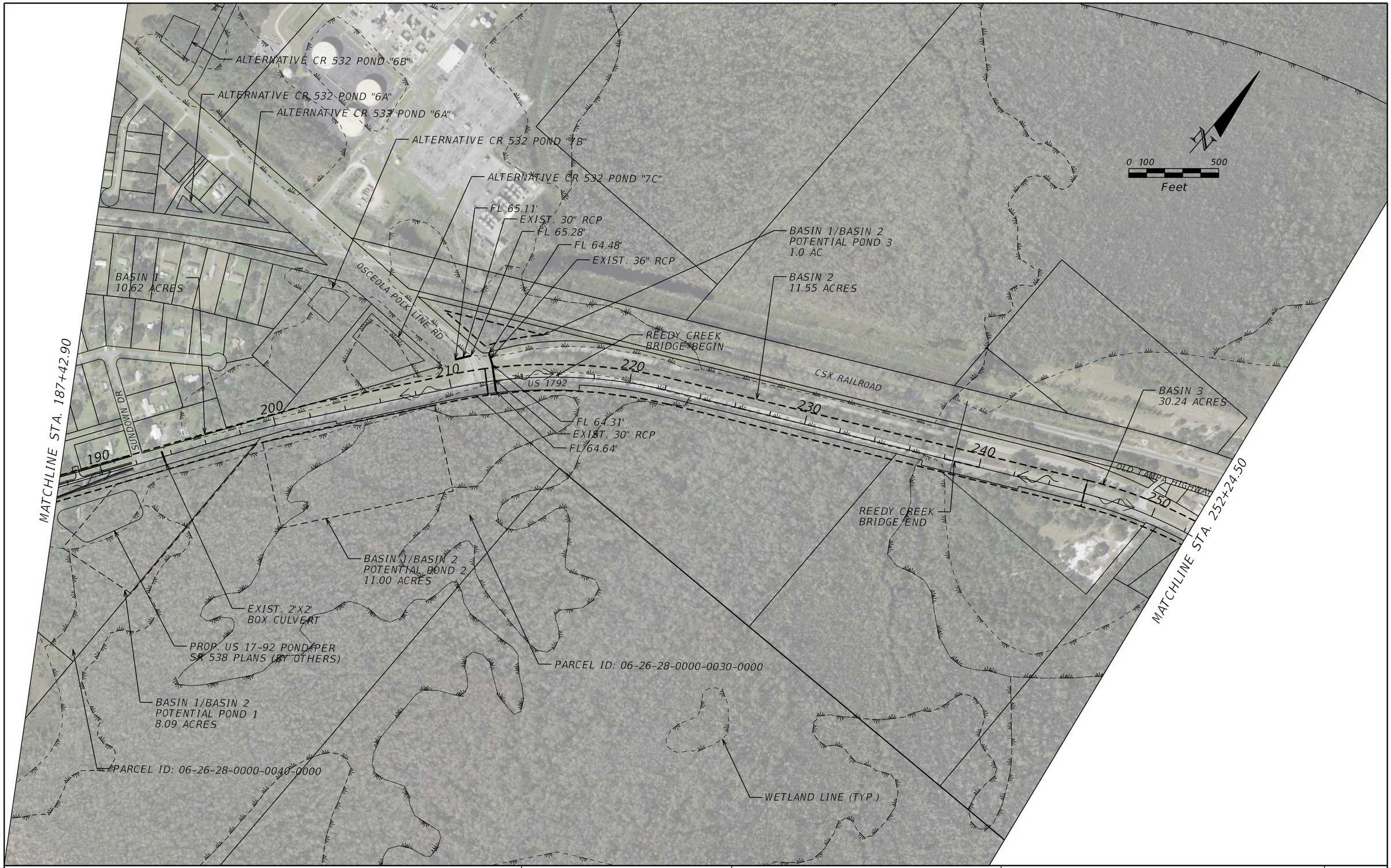
PAUL W. YEARGAIN, P.E.
P.E. LICENSE NUMBER 50682
VANASSE HANGEN BRUSTLIN, INC.
225 E. ROBINSON STREET
ORLANDO, FL 32801
CERTIFICATE OF AUTHORIZATION 3932

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600	POLK OSCEOLA	437200-1-22-01

DRAINAGE MAP 01

SHEET NO.
A1



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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600	POLK OSCEOLA	437200-1-22-01

DRAINAGE MAP 02

SHEET NO. A2

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Memorandum

To: Patrick McConaghy, PE
Senior Drainage Engineer
FDOT District 5

Date: August 4, 2021

Project #: 63316.11

From: Oscar Bermudez

Re: US 17/92 CR54 to Ave A -CFX Joint Use Pond

Joint Use Pond CFX and FDOT

CFX is currently designing the SR 538 and CR 532 (Osceola Polk Line Road) improvements. The western segment of the Referenced project (US 17/92 CR54 to Ave A) is located within the limits of the CFX project.

CFX and FDOT have discussed the feasibility of including joint use ponds along the corridor where there is overlap.

The US 17/92 CR54 to Ave A begins at STA 179+00 and the improvements from SR 538, along US 17/92, end at approximately STA 190+17.

The CFX improvements include a pond on the south side of US 17/92 located at approximately STA 190+00, that would solely serve their improvements on US 17/92. The pond is located on parcel 06-26-28-0000-0040-0000. It was noted that this pond will be handed over to FDOT in the future, since it serves US 17/92.

- Basin 1 of the US 17/92 CR54 to Ave A begins at STA 179+00 and ends at STA 212+00. The intent would be to include Basin 1 to a joint use pond located on parcel 06-26-28-0000-0040-0000.

The CFX improvements along CR 532, include a pond located at the northeast corner of the intersection of US 17/92 and CR 532. This pond will need to be adjusted because the geometry of CR 532 will be revised within the US 1792 improvements. The pond is located on parcel 06-26-28-0000-0030-0000.

- Basin 2 of the US 17/92 CR54 to Ave A begins at STA 212+00 and ends at STA 246+00. The majority of Basin 2 includes the bridge over Reedy Creek, and there is no land adjacent to the basin to serve as a pond site. Basin 2 would not be hydraulicly connected to the ponds, and offsite compensation would need to be credited. Therefore, the intent would be to include Basin 2 to a joint use pond located on parcel 06-26-28-0000-0030-0000, and parcel 06-26-28-0000-0040-0000 if needed.

Below are the volumes needed for each basin followed by our calculations.

	Basin Area (Ac)	Water Quality Volume (Ac-ft)	Net New Impervious Area (Ac)	Proposed CN
Basin 1	16.36	2.05	3.92	83
Basin 2	11.55	1.44	4.58	93

225 E. Robinson Street, Suite 300, Landmark Center Two, Orlando, Florida 32801
P 407.839.4006 **F** 407.839.4008 www.vhb.com

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** OB **Date:** 8/9/2021
County: Osceola **Checked by:** PY **Date:** 8/9/2021

Circle One: Present (Developed) Basin 1 - 179+00 to 212+00

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi² ☐	
Type D	Impervious Area	98			6.82	668.18
Type A	Open Space (Good)	39			1.68	65.52
Type D	Open Space (Good)	80			7.87	629.24
Use only one CN source per line.				Totals =	16.36	1362.94

CN (weighted) = total product/total area = $\frac{1362.94}{16.36}$ = 83.29 Use CN = **83**

Notes:
1. Post pervious area hydrologic group is calculated by using the same percentage as pre
For example: Pre Basin 1 soil is 12% Hydrologic Group A and 84% D
2. The impervious/pervious area is calculated based on a conservative typical section of a 22 ft grass median with 2 ft curb & gutter and 4 ft paved median each side, 2 12 ft travel lanes each side, 7 ft paved shoulders with curb and gutter on each side, 6 ft sidewalks each side. The basin width is assumed to be a minimum of 148 ft.

WORKSHEET 2: Runoff curve number and runoff

Project: SR 600 (US 17-92) **Designed by:** OB **Date:** 8/9/2021
County: Osceola **Checked by:** PY **Date:** 8/9/2021

Circle One: Present (Developed) Basin 2 - 212+00 to 246+00

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area ☑ acres ☐ mi² ☐ %	
Type D	Impervious Area	98			8.59	841.41
Type D	Open Space (Good)	80			2.97	237.28
Use only one CN source per line.				Totals =	11.55	1078.70

CN (weighted) = total product/total area = $\frac{1078.70}{11.55}$ = 93.38 Use CN = **93**

Notes:
1. Post pervious area hydrologic group is calculated by using the same percentage as pre
For example: Pre Basin 1 soil is 12% Hydrologic Group A and 84% D
2. The impervious/pervious area is calculated based on a conservative typical section of a 22 ft grass median with 2 ft curb & gutter and 4 ft paved median each side, 2 12 ft travel lanes each side, 7 ft paved shoulders with curb and gutter on each side, 6 ft sidewalks each side. The basin width is assumed to be a minimum of 148 ft.

Project: SR 600 (US 17-92) **Designed by: OB** **Date:** 8/9/2021
County: Osceola **Checked by: PY** **Date:** 8/9/2021

Basin Parameters

Basin	Station Range of Basin		Length of Basin	Area	Proposed Impervious Area	Existing Impervious Area	Net Increase Impervious Area
			(ft)	(ac)	(ac)	(ac)	(ac)
Basin 1	179+00.00	212+00.00	3300	16.36	6.82	2.90	3.92
Basin 2	212+00.00	246+00.00	3400	11.55	8.59	4.01	4.58

Water Quality Volume Required (SFWMD)

Basin	1" Runoff Over Basin	2.5" Runoff Over Impervious	Greater Volume Required (Wet Detention)	With Addn'l 50% Treatment Vol. Req. (Wet Detention)
	(ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)
Basin 1	1.36	0.82	1.36	2.05
Basin 2	0.96	0.95	0.96	1.44

Assumptions/Notes:
1. Preliminary proposed typical section assumes a right-of-way width of 148-ft. 90-ft impervious and 58-ft pervious per foot of basin length is assumed.
2. Once final typical sections are designed this will need to be updated.
3. Existing Impervious was measured within the existing right-of-way and does not include side streets or driveways

0 100 750
Feet

ALTERNATIVE CR 532 POND "5C"
ALTERNATIVE CR 532 POND "6B"
ALTERNATIVE CR 532 POND "5D"
ALTERNATIVE CR 532 POND "5E"
PROP. SR 538 POND
ALTERNATIVE CR 532 POND "6A"
ALTERNATIVE CR 532 POND "6A"
ALTERNATIVE CR 532 POND "7B"
ALTERNATIVE CR 532 POND "7C"
JOINT USE POND 2B 1.96 AC
FL 65.11'
EXIST. 30" RCP
FL 65.28'
FL 64.48'
EXIST. 36" RCP
FL 64.31'
CSX RAILROAD
OLD KISSIMMEE RD
DAIRY CENTER RD
HAINES CREEK
FL 69.47'
FL 74.50'
US 192
EXIST. 3'X4' BOX CULVERT
FL 74.47'
EXIST. 3'X9' BOX CULVERT
FL 69.21'
PROP. SR 538 POND
BEGIN PROJECT
BASIN 1 10.62 ACRES
EXIST. 5'X8' TRIPLE BOX CULVERT
FL 64.50'
FL 64.40'
JOINT USE POND 2A 1.20 ACRES
EXIST. 30" RCP
FL 64.64'
BASIN 1 10.62 ACRES
EXIST. 2'X2' BOX CULVERT
JOINT USE POND 1 8.10 ACRES
PROP. US 17-92 POND PER SR 538 PLANS (BY OTHERS)
PARCEL ID: 06-26-28-0000-0040-0000
REEDY CREEK BRIDGE BEGIN
PROP. SR 538 POND
PROP. SR 538 POND
WETLAND LINE (TYP.)
130
140
150
160
170
180
190
200
210
220
230
240

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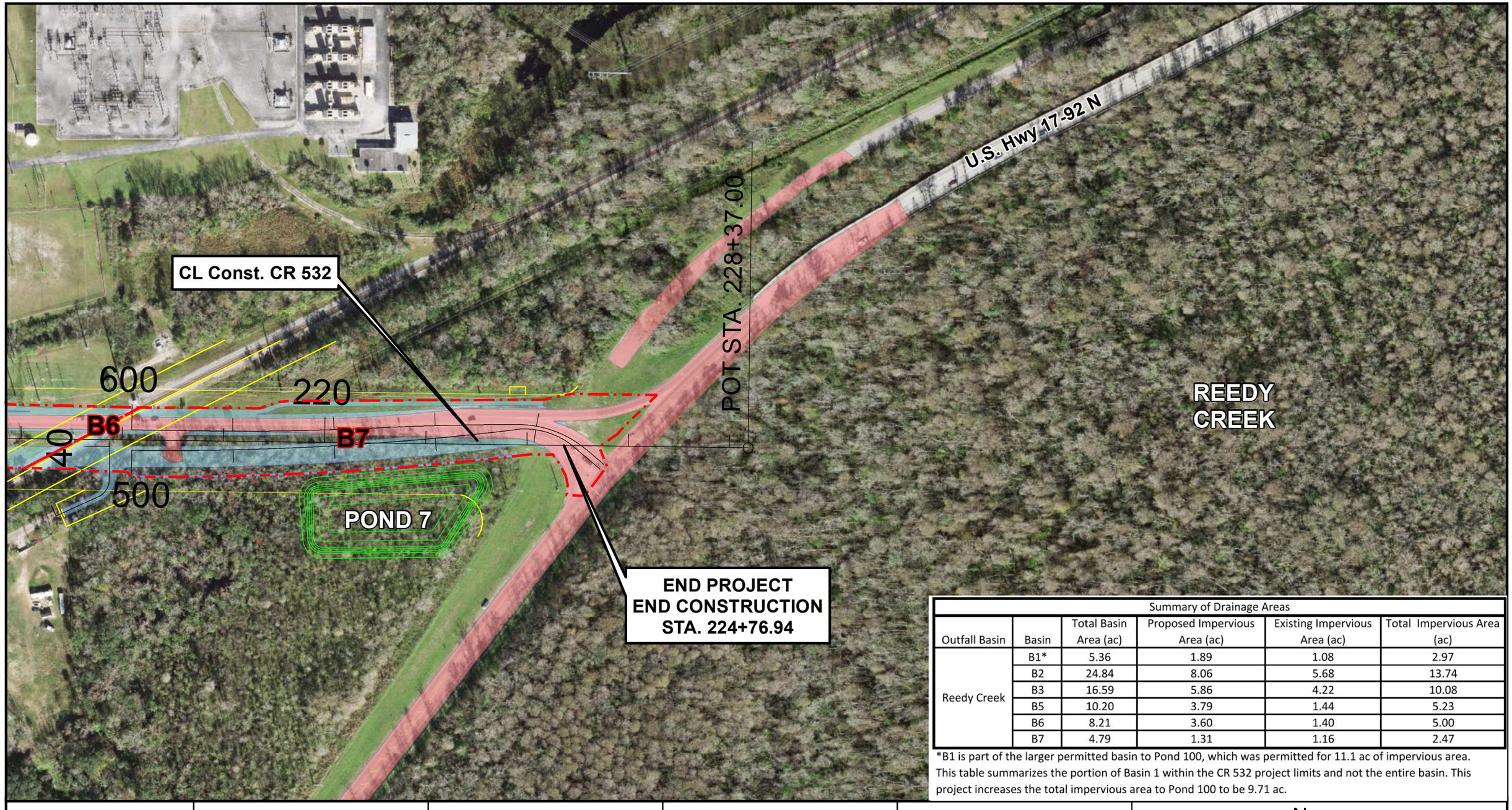
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 600	POLK OSCEOLA	437200-1-22-01

CFX JOINT USE POND

SHEET NO. 1

$USER$ $DATE$ $TIME$ $MODELNAME$ $FILE$



Summary of Drainage Areas					
Outfall Basin	Basin	Total Basin Area (ac)	Proposed Impervious Area (ac)	Existing Impervious Area (ac)	Total Impervious Area (ac)
Reedy Creek	B1*	5.36	1.89	1.08	2.97
	B2	24.84	8.06	5.68	13.74
	B3	16.59	5.86	4.22	10.08
	B5	10.20	3.79	1.44	5.23
	B6	8.21	3.60	1.40	5.00
	B7	4.79	1.31	1.16	2.47

*B1 is part of the larger permitted basin to Pond 100, which was permitted for 11.1 ac of impervious area. This table summarizes the portion of Basin 1 within the CR 532 project limits and not the entire basin. This project increases the total impervious area to Pond 100 to be 9.71 ac.

the balmoral group

Legend

- Roadway Basins
- Existing Impervious
- Proposed Impervious

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

FIGURE 6

Proposed Treatment Exhibit CR 532

N

0 200 400 Feet

VOLUME CALCULATIONS FOR PROPOSED CONDITION

Project:	CR532 Widening from Lake Wilson Road to US 17-92				
FPID:	538-235A	**Designer:**	MM	**Date:**	5/19/2022
County:	Osceola County	**Reviewer:**	JN	**Checked:**	5/19/2022

Wet Detention Online Pond Treatment Calculations:

Pond 7

Existing Impervious =	1.16 Ac	
Post Dev. Total Impervious Area =	2.47 Ac	
Net Additional Impervious =	1.31 Ac	
Total Drainage area =	4.79 Ac	
Drainage Area Excluding Pond =	3.45 Ac	
2.5" runoff from new impervious area =	0.27 Ac-Ft	*(Net Imperv. Area)*
1.0" runoff from drainage area =	0.40 Ac-Ft	*(Including Pond)*
Required Treatment Volume (T.V.) =	**0.40**	Ac-ft

Provided Treatment Volume Based on Contributing Basin

Total Impervious Area to Pond =	2.47 Ac	
Total Drainage Area =	4.79 Ac	
2.5" runoff from new impervious area =	0.52 Ac-Ft	*(Total Imperv. Area)*
1.0" runoff from drainage area =	0.40 Ac-Ft	*(Including Pond)*
Provided Treatment Volume (T.V.) =	**0.52**	Ac-ft

Storage Calculations: Wet Detention Pond 7

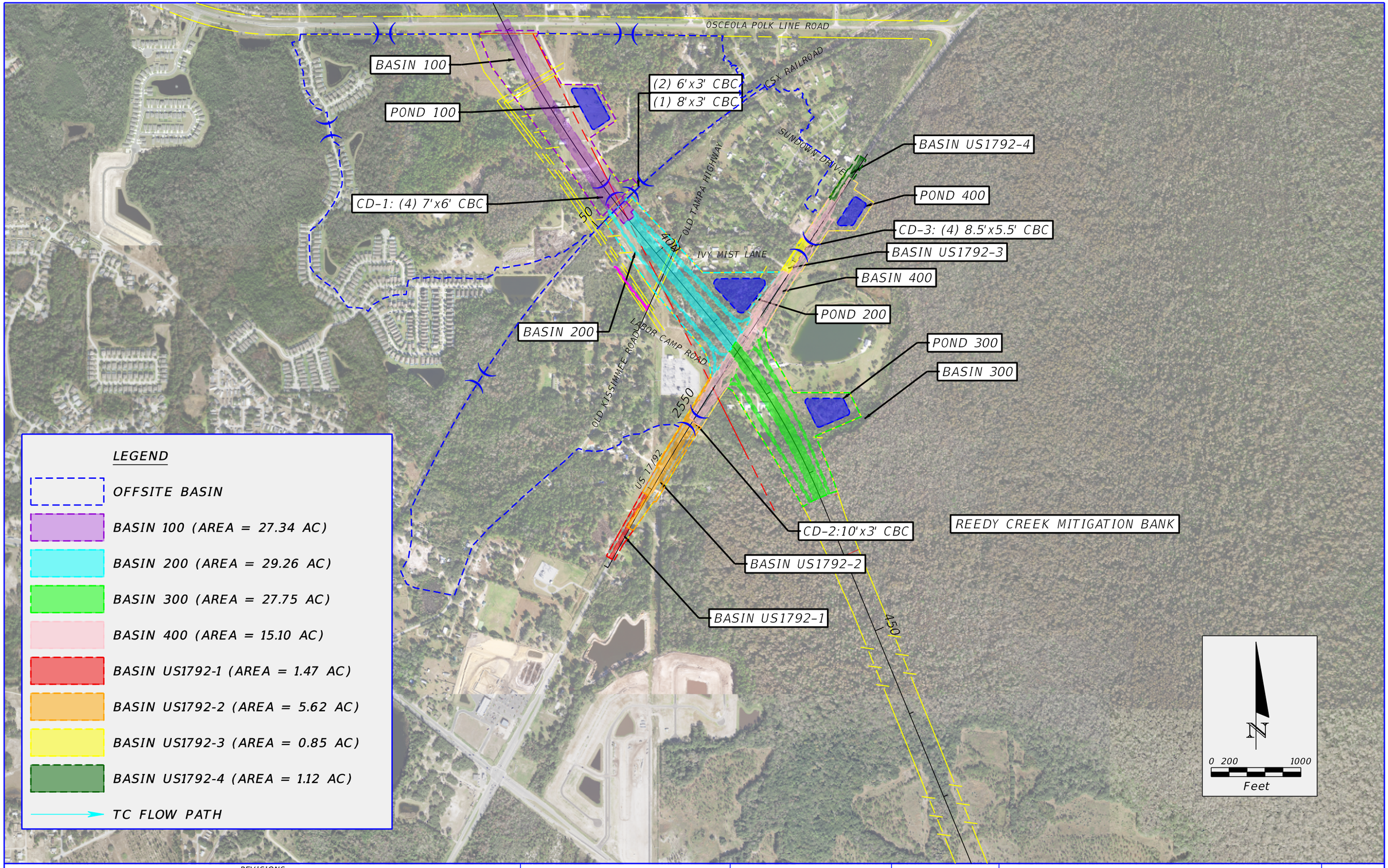
Elev	h	Area	Area	Inc. Volume	Cumulative Vol.	
---	ft	sf	ac	Ac-ft	Ac-ft	
71.5-70.0	--	--	1.34	--	--	
70.00	1.0	45,738	1.05	1.01	2.79	Inside Top of Berm
69.00	1.0	42,253	0.97	0.93	1.78	
68.00	1.0	38,768	0.89	0.85	0.85	
67.00	0.0	35,284	0.81	0.00	0.00	NWL

Overflow Weir Elevation (Top of Treatment Volume):

Elev. = 67.7 = **0.60** **Ac-Ft** Provided Treatment Volume

Profile Grade Line

Low Pt. STA	Side	PGL Elev	X Slope	Pav't Width (PGL Location to LEOT)	LEOP Elev
222+46.82	RT	71.46	2.0%	24.0	70.98



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

GAI CONSULTANTS, INC.
1301 RIVERPLACE BLVD. - SUITE 900
JACKSONVILLE, FL 32207
CERTIFICATE OF AUTHORIZATION 9951

SR 538 EXTENSION
TO CR 532

ROAD NO.	COUNTY
SR 538	OSCEOLA

gai consultants

POST-DEVELOPMENT BASIN MAP

SHEET NO.

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SR 538 (Poinciana Parkway) Extension
Segment 2
Osceola County, Florida

Calculated By: DV **Date:** 1/22/2022
Basin No. 400 **Checked By:** BS **Date:** 1/25/2022
Stage/Storage Calculations (Pond 400)

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
71.00	Outside Berm	1.96				7.02
			1.77	1.00	1.77	
70.00	Inside Berm	1.58				5.25
			1.51	1.70	2.57	
68.30	PAV/TV	1.44				2.68
			1.34	2.00	2.68	
66.30	(NWL)	1.24				0.00
			1.00			
64.00	(1:2 BREAK)	1.04				0.00
			1.00			
57.00	Pond Bottom	0.76	1.00			

Provided PAV = 2.68 **ac-ft.**

Bleed Down Volume within 24 hours
1/2" of the required detention volume = 0.5 in x Required Treatment Volume = 1.34 Ac-Ft