

Manual Basin: Basin 3A1

Scenario: Scenario1
 Node: Pond 3A1
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 38.0000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
50.0000	3	3	

Comment:

Manual Basin: Basin 3A2

Scenario: Scenario1
 Node: Pond 3A2
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 38.0000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
26.3800	3	3	

Comment:

Manual Basin: Basin 3A3

Scenario: Scenario1
 Node: Pond 3A3
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 10.0000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
14.6500	2	2	

Comment:

Manual Basin: Basin 4C2

Scenario: Scenario1
 Node: Pond 4C2
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 10.0000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
6.4000	3	3	

Comment:

Manual Basin: Basin 7 Downstream

Scenario: Scenario1
 Node: Area 7 Downstream
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 10.0000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
23.3000	4	4	

Comment:

Manual Basin: Basin 7 Upstream

Scenario: Scenario1
 Node: Area 7 Upstream
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 21.7000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
12.4000	4	4	

Comment:

Manual Basin: Basin Downstream 6

Scenario: Scenario1
 Node: CD-6 downstream
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 37.5000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
27.1200	2	2	

Comment:

Manual Basin: Basin E

Scenario: Scenario1
 Node: Area E
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 11.9000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
8.0900	1	1	

Comment:

Manual Basin: Basin F

Scenario: Scenario1
 Node: Area F
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 16.4000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
34.3000	1	1	

Comment:

Node: Area 7 Downstream

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 97.00 ft
 Warning Stage: 114.00 ft

Stage [ft]	Area [ac]	Area [ft2]
97.00	0.9300	40511
98.00	1.1000	47916
99.00	1.2800	55757
100.00	1.4500	63162
101.00	1.6100	70132
102.00	1.7700	77101
103.00	1.9300	84071
104.00	2.1100	91912
105.00	2.3100	100624
106.00	2.5300	110207
107.00	2.7600	120226
108.00	3.0300	131987
109.00	3.3500	145926
110.00	3.8200	166399
111.00	5.5600	242194
112.00	7.3200	318859
113.00	8.8500	385506

Comment:

Node: Area 7 Upstream

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 109.00 ft
 Warning Stage: 125.00 ft

Stage [ft]	Area [ac]	Area [ft2]
115.00	0.7600	33106
116.00	1.4100	61420
117.00	2.2200	96703
118.00	3.6800	160301
119.00	5.6900	247856
120.00	7.9100	344560
121.00	9.1800	399881
122.00	10.6400	463478
123.00	11.5300	502247
124.00	12.4000	540144
114.00	0.5000	21780

Stage [ft]	Area [ac]	Area [ft2]
113.00	0.4500	19602
112.00	0.4000	17424
111.00	0.3500	15246
110.00	0.3000	13068
109.00	0.2500	10890

Comment:

Node: Area E

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 125.00 ft
 Warning Stage: 132.00 ft

Stage [ft]	Area [ac]	Area [ft2]
125.00	0.3500	15246
126.00	1.5100	65776
127.00	2.6600	115870
128.00	3.7500	163350
129.00	4.5800	199505
130.00	5.9000	257004
131.00	7.4200	323215
132.00	8.0900	352400

Comment:

Node: Area F

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 102.00 ft
 Warning Stage: 133.00 ft

Stage [ft]	Area [ac]	Area [ft2]
103.00	0.5900	25700
104.00	0.6900	30056
105.00	0.7900	34412
106.00	1.0100	43996
107.00	1.3100	57064
108.00	1.5500	67518
109.00	1.8800	81893
110.00	2.1500	93654
111.00	2.3600	102802

Stage [ft]	Area [ac]	Area [ft2]
112.00	2.6000	113256
113.00	2.9100	126760
114.00	3.3500	145926
115.00	4.0000	174240
116.00	5.2000	226512
117.00	6.4600	281398
118.00	7.7500	337590
119.00	9.0500	394218
120.00	10.6400	463478
121.00	12.3300	537095
122.00	13.9100	605920
123.00	15.4400	672566
124.00	17.3600	756202
125.00	19.5900	853340
126.00	22.1300	963983
127.00	25.2700	1100761
128.00	29.6700	1292425
129.00	31.7600	1383466
130.00	33.1800	1445321
131.00	33.8300	1473635
132.00	34.3000	1494108
102.00	0.3000	13068

Comment:

Node: CD-6 downstream

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 102.00 ft
 Warning Stage: 107.40 ft

Stage [ft]	Area [ac]	Area [ft2]
102.00	7.0000	304920
103.00	8.8600	385942
104.00	9.1100	396832
105.00	9.8200	427759
106.00	13.1100	571072
107.00	15.9300	693911
108.00	17.5400	764042
109.00	19.2000	836352
110.00	21.1400	920858
111.00	23.2900	1014512
112.00	25.4400	1108166
113.00	27.4000	1193544

Comment:

Node: Downstream Floodplain

Scenario: Scenario1
 Type: Time/Stage
 Base Flow: 0.00 cfs
 Initial Stage: 103.00 ft
 Warning Stage: 107.00 ft
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	103.00
0	0	0	12.0000	106.40
0	0	0	24.0000	103.00

Comment:

Node: Pond 3A1

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 103.00 ft
 Warning Stage: 109.88 ft

Stage [ft]	Area [ac]	Area [ft2]
103.00	4.3900	191228
104.00	4.6400	202118
105.00	4.9000	213444
106.00	5.1600	224770
107.00	5.4300	236531
108.00	5.7000	248292
109.88	6.7800	295337

Comment:

Node: Pond 3A2

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 103.00 ft
 Warning Stage: 108.00 ft

Stage [ft]	Area [ac]	Area [ft2]
103.00	2.4800	108029
104.00	2.6600	115870
105.00	2.8500	124146
106.00	3.0400	132422
107.00	3.2300	140699
108.00	3.4300	149411

Comment:

Node: Pond 3A3

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 103.00 ft
 Warning Stage: 110.00 ft

Stage [ft]	Area [ac]	Area [ft2]
103.00	12.3800	539273
104.00	12.7000	553212
105.00	13.0200	567151
106.00	13.3400	581090
107.00	13.6600	595030
108.00	13.9900	609404
109.00	14.3200	623779
110.00	14.6500	638154

Comment:

Node: Pond 4C2

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 104.00 ft
 Warning Stage: 115.00 ft

Stage [ft]	Area [ac]	Area [ft2]
104.00	1.4100	61420
105.00	1.5500	67518
106.00	1.7000	74052
107.00	1.8500	80586
108.00	2.0100	87556
109.00	2.1800	94961
110.00	2.3500	102366
111.00	2.5200	109771

Stage [ft]	Area [ac]	Area [ft2]
112.00	2.6900	117176
113.00	2.8600	124582
114.00	3.0400	132422
115.00	3.2200	140263

Comment:

Pipe Link: CD-6		Upstream	Downstream
Scenario:	Scenario1	Invert: 103.00 ft	Invert: 102.00 ft
From Node:	Area F	Manning's N: 0.0120	Manning's N: 0.0120
To Node:	CD-6 downstream	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 3.00 ft	Max Depth: 3.00 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	160.00 ft	Op Table:	Op Table:
FHWA Code:	1	Ref Node:	Ref Node:
Entr Loss Coef:	0.00	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	0.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 ft	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: CD-6A		Upstream	Downstream
Scenario:	Scenario1	Invert: 105.00 ft	Invert: 104.90 ft
From Node:	CD-6 downstream	Manning's N: 0.0120	Manning's N: 0.0120
To Node:	Pond 3A1	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 4.00 ft	Max Depth: 4.00 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	150.00 ft	Op Table:	Op Table:
FHWA Code:	1	Ref Node:	Ref Node:
Entr Loss Coef:	0.00	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	0.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 ft	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: CD-6B		Upstream	Downstream
Scenario:	Scenario1	Invert: 105.00 ft	Invert: 104.50 ft
From Node:	Pond 3A1	Manning's N: 0.0120	Manning's N: 0.0120
To Node:	Pond 3A2	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 4.00 ft	Max Depth: 4.00 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	350.00 ft	Op Table:	Op Table:
FHWA Code:	1	Ref Node:	Ref Node:
Entr Loss Coef:	0.00	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	0.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 ft	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: CD-6C		Upstream	Downstream
Scenario:	Scenario1	Invert: 103.00 ft	Invert: 102.90 ft
From Node:	Pond 3A2	Manning's N: 0.0120	Manning's N: 0.0120
To Node:	Downstream Floodplain	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 4.00 ft	Max Depth: 4.00 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	130.00 ft	Op Table:	Op Table:
FHWA Code:	1	Ref Node:	Ref Node:
Entr Loss Coef:	0.00	Manning's N: 0.0000	Manning's N: 0.0000
Exit Loss Coef:	0.00	Top Clip	
Bend Loss Coef:	0.00	Default: 0.00 ft	Default: 0.00 ft
Bend Location:	0.00 ft	Op Table:	Op Table:
Energy Switch:	Energy	Ref Node:	Ref Node:
		Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: CD-7		Upstream	Downstream
Scenario:	Scenario1	Invert: 109.00 ft	Invert: 108.50 ft
From Node:	Area 7 Upstream	Manning's N: 0.0120	Manning's N: 0.0120
To Node:	Area 7 Downstream	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Flow Direction:	Both	Bottom Clip	
Damping:	0.0000 ft	Default: 0.00 ft	Default: 0.00 ft
Length:	160.00 ft	Op Table:	Op Table:
FHWA Code:	1	Ref Node:	Ref Node:
Entr Loss Coef:	0.00	Manning's N: 0.0000	Manning's N: 0.0000
		Top Clip	

Exit Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Loss Coef:	0.00	Op Table:		Op Table:	
Bend Location:	0.00 ft	Ref Node:		Ref Node:	
Energy Switch:	Energy	Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link: Equalizer Pipe		Upstream	Downstream		
Scenario:	Scenario1	Invert:	105.00 ft	Invert:	104.90 ft
From Node:	Pond 4C2	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Pond 3A1	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	180.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 ft	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Weir Link: Ridge EF		Bottom Clip	
Scenario:	Scenario1	Default:	0.00 ft
From Node:	Area E	Op Table:	
To Node:	Area F	Ref Node:	
Link Count:	1	Top Clip	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Rectangular	Discharge Coefficients	
Invert:	126.00 ft	Weir Default:	2.800
Control Elevation:	126.00 ft	Weir Table:	
Max Depth:	30.00 ft	Orifice Default:	0.600
Max Width:	315.00 ft	Orifice Table:	
Fillet:	0.00 ft		

Comment:

Weir Link: Ridge3A3to6DS		Bottom Clip	
Scenario:	Scenario1	Default:	0.00 ft
From Node:	Pond 3A3		

To Node:	CD-6 downstream	
Link Count:	1	Op Table:
Flow Direction:	Both	Ref Node:
Damping:	0.0000 ft	Top Clip
Weir Type:	Broad Crested Vertical	Default: 0.00 ft
Geometry Type:	Rectangular	Op Table:
Invert:	105.00 ft	Ref Node:
Control Elevation:	105.00 ft	Discharge Coefficients
Max Depth:	30.00 ft	Weir Default: 2.800
Max Width:	300.00 ft	Weir Table:
Fillet:	0.00 ft	Orifice Default: 0.600
		Orifice Table:

Comment:

Weir Link: Ridge7DSto6DS

Scenario:	Scenario1	Bottom Clip
From Node:	Area 7 Downstream	Default: 0.00 ft
To Node:	CD-6 downstream	Op Table:
Link Count:	1	Ref Node:
Flow Direction:	Both	Top Clip
Damping:	0.0000 ft	Default: 0.00 ft
Weir Type:	Broad Crested Vertical	Op Table:
Geometry Type:	Rectangular	Ref Node:
Invert:	113.00 ft	Discharge Coefficients
Control Elevation:	113.00 ft	Weir Default: 2.800
Max Depth:	30.00 ft	Weir Table:
Max Width:	158.00 ft	Orifice Default: 0.600
Fillet:	0.00 ft	Orifice Table:

Comment:

Simulation: 100yr

Scenario: Scenario1
 Run Date/Time: 8/6/2019 2:27:51 PM
 Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000

Max Calculation Time: 30.0000

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
 Extern Hydrograph Set:
 Curve Number Set: 1
 Green-Ampt Set:
 Vertical Layers Set:
 Impervious Set: 1

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Manual Basin Rain Opt: Global
Max dZ: 1.0000 ft	
Link Optimizer Tol: 0.0001 ft	Rainfall Name: ~FDOT-24
	Rainfall Amount: 10.56 in
Edge Length Option: Automatic	Storm Duration: 24.0000 hr
	Dflt Damping (1D): 0.0050 ft
	Min Node Srf Area 100 ft2
	(1D):
	Energy Switch (1D): Energy

Comment:

Simulation: 10yr

Scenario: Scenario1
 Run Date/Time: 8/6/2019 2:27:57 PM
 Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

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

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
 Extern Hydrograph Set:
 Curve Number Set: 1

 Green-Ampt Set:
 Vertical Layers Set:
 Impervious Set: 1

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Manual Basin Rain Opt: Global

Max dZ: 1.0000 ft
 Link Optimizer Tol: 0.0001 ft
 Edge Length Option: Automatic

Rainfall Name: ~FDOT-24
 Rainfall Amount: 7.20 in
 Storm Duration: 24.0000 hr
 Dflt Damping (1D): 0.0050 ft
 Min Node Srf Area (1D): 100 ft2
 Energy Switch (1D): Energy

Comment:

Simulation: 25yr

Scenario: Scenario1
 Run Date/Time: 8/6/2019 2:28:03 PM
 Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

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

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Lookup Tables

Rainfall Folder:	Boundary Stage Set:
Unit Hydrograph Folder:	Extern Hydrograph Set:
	Curve Number Set: 1
	Green-Ampt Set:
	Vertical Layers Set:
	Impervious Set: 1

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Manual Basin Rain Opt: Global
Max dZ: 1.0000 ft	
Link Optimizer Tol: 0.0001 ft	Rainfall Name: ~FDOT-24
	Rainfall Amount: 8.40 in
Edge Length Option: Automatic	Storm Duration: 24.0000 hr
	Dflt Damping (1D): 0.0050 ft
	Min Node Srf Area 100 ft2
	(1D):
	Energy Switch (1D): Energy

Comment:

Simulation: 50yr

Scenario: Scenario1
 Run Date/Time: 8/6/2019 2:28:09 PM
 Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

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

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: 1

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: 1

Tolerances & Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight Fact: 0.5 dec

dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Manual Basin Rain Opt: Global

Rainfall Name: ~FDOT-24

Rainfall Amount: 9.60 in

Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft

Min Node Srf Area (1D): 100 ft2

Energy Switch (1D): Energy

Comment:

Curve Number: 1 [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
1	1	76.0
2	2	83.0

Land Cover Zone	Soil Zone	Curve Number [dec]
3	3	79.0
4	4	74.0

CD-7 Upstream stages are controlled by a higher ground elevation. Downstream stages are less than pre-development.

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Area 7 Downstream	100yr	114.00	108.24	0.0010	28.77	0.00	135345
Area 7 Upstream	100yr	125.00	111.03	0.0010	10.26	8.98	15358
Area E	100yr	132.00	126.04	0.0003	7.20	7.18	67802
Area F	100yr	133.00	105.88	0.0010	37.17	33.15	42916
CD-6 downstream	100yr	107.40	105.55	0.0006	60.19	49.60	506739
Downstream Floodplain	100yr	107.00	106.40	0.0024	38.16	19.89	0
Pond 3A1	100yr	109.88	106.47	0.0007	51.72	28.04	231455
Pond 3A2	100yr	108.00	106.40	0.0010	28.83	38.16	136787
Pond 3A3	100yr	110.00	105.55	0.0008	57.04	0.00	574797
Pond 4C2	100yr	115.00	106.49	0.0007	9.64	3.11	77435
Area 7 Downstream	10yr	114.00	104.84	0.0010	16.95	0.00	99240
Area 7 Upstream	10yr	125.00	110.35	0.0010	6.01	5.35	14022
Area E	10yr	132.00	126.03	0.0004	4.32	4.07	67164
Area F	10yr	133.00	105.06	0.0010	21.88	18.18	35149
CD-6 downstream	10yr	107.40	105.05	0.0006	32.60	10.39	435731
Downstream Floodplain	10yr	107.00	106.40	0.0024	23.94	21.82	0
Pond 3A1	10yr	109.88	105.99	0.0007	35.43	13.80	226421
Pond 3A2	10yr	108.00	106.40	0.0010	24.07	23.94	137390
Pond 3A3	10yr	110.00	103.78	0.0006	11.39	0.00	550083
Pond 4C2	10yr	115.00	106.00	0.0006	4.80	1.51	74228
Area 7 Downstream	25yr	114.00	106.15	0.0010	21.20	0.00	111737
Area 7 Upstream	25yr	125.00	110.58	0.0010	7.52	6.70	14459
Area E	25yr	132.00	126.03	0.0004	5.35	5.32	67436
Area F	25yr	133.00	105.33	0.0010	27.56	24.15	37755
CD-6 downstream	25yr	107.40	105.10	0.0006	42.08	27.96	442902
Downstream Floodplain	25yr	107.00	106.40	0.0024	28.86	21.18	0
Pond 3A1	25yr	109.88	106.17	0.0007	41.22	19.07	227944
Pond 3A2	25yr	108.00	106.40	0.0010	24.29	28.86	137402
Pond 3A3	25yr	110.00	104.58	0.0008	31.88	0.00	561255

CD-6 and CD-6A, B, and C upstream floodplain stages are <1' greater than pre-development

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Pond 4C2	25yr	115.00	106.19	0.0007	6.75	1.99	75451
Area 7 Downstream	50yr	114.00	107.35	0.0010	25.46	0.00	124388
Area 7 Upstream	50yr	125.00	110.82	0.0010	9.04	8.02	14928
Area E	50yr	132.00	126.04	0.0003	6.38	6.35	67644
Area F	50yr	133.00	105.64	0.0010	32.89	29.29	40738
CD-6 downstream	50yr	107.40	105.21	0.0006	51.53	36.52	458736
Downstream Floodplain	50yr	107.00	106.40	0.0024	33.82	20.48	0
Pond 3A1	50yr	109.88	106.34	0.0007	47.05	23.95	229822
Pond 3A2	50yr	108.00	106.40	0.0010	24.47	33.82	136777
Pond 3A3	50yr	110.00	105.21	0.0009	41.93	0.00	570123
Pond 4C2	50yr	115.00	106.36	0.0007	8.45	2.56	76543

Link Min/Max Conditions [Scenario1]

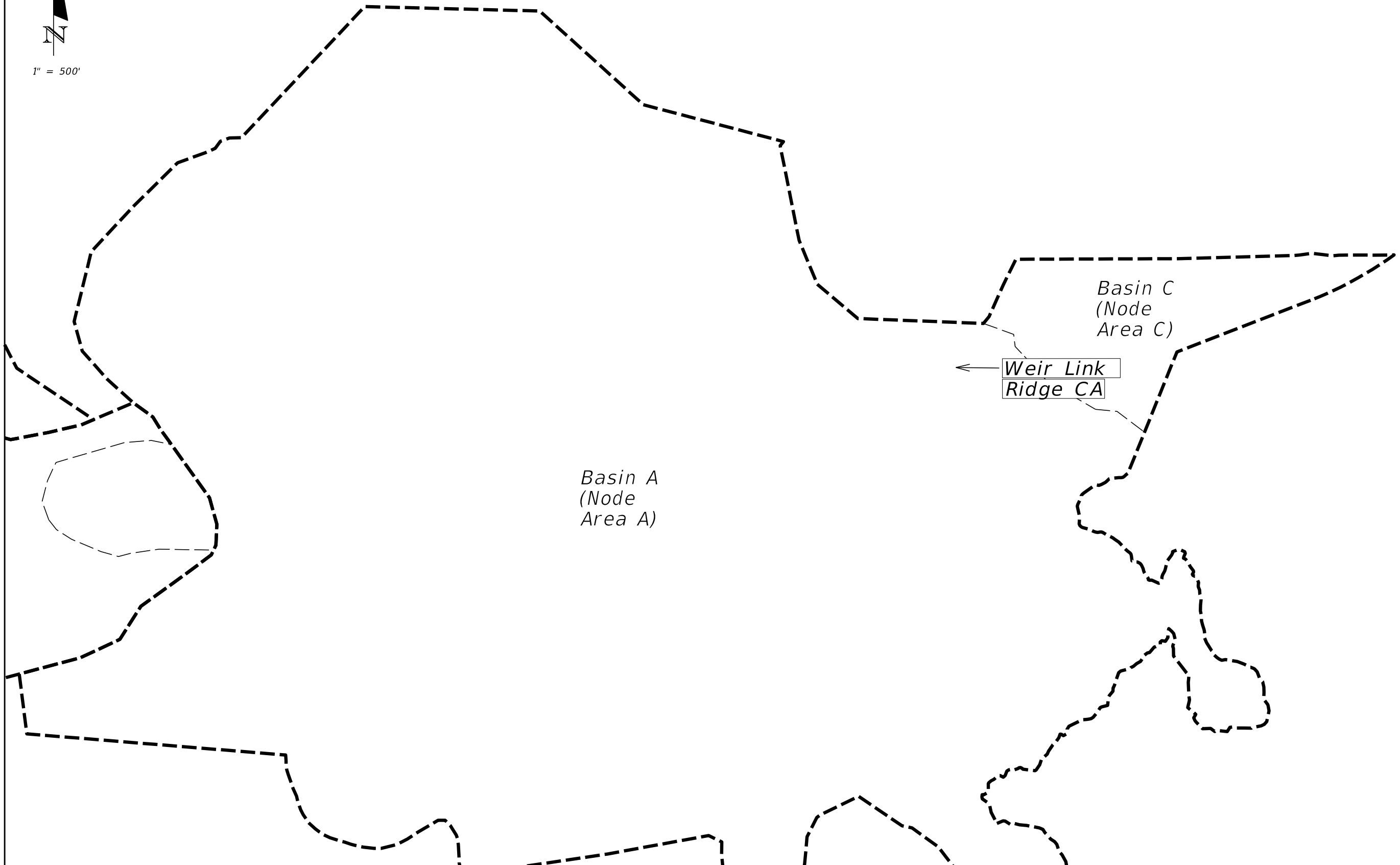
Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
CD-6	100yr	33.15	-0.16	-0.06	4.75	7.48	5.70
CD-6A	100yr	0.00	-13.15	0.01	-2.86	-4.93	-3.90
CD-6B	100yr	13.60	-10.89	0.36	3.23	-4.68	3.85
CD-6C	100yr	38.16	-19.89	1.07	4.28	-5.39	4.58
CD-7	100yr	8.98	0.00	-0.01	5.08	5.98	5.53
Equalizer Pipe	100yr	3.11	-5.91	0.08	-2.46	-4.54	-3.48
Ridge EF	100yr	7.18	0.00	0.02	0.00	0.00	0.00
Ridge3A3to6DS	100yr	0.00	-49.60	0.46	-0.98	-0.98	-0.98
Ridge7DSto6DS	100yr	0.00	0.00	0.00	0.00	0.00	0.00
CD-6	10yr	18.18	0.00	13.55	4.22	7.18	5.46
CD-6A	10yr	0.00	-5.57	0.01	-2.02	-3.90	-2.96
CD-6B	10yr	6.34	-10.83	0.14	2.63	-4.67	-3.26
CD-6C	10yr	23.94	-21.82	1.32	3.62	-5.53	-4.48
CD-7	10yr	5.35	0.00	-0.01	3.19	4.21	3.70
Equalizer Pipe	10yr	1.51	-3.01	0.03	-1.83	-3.74	-2.78
Ridge EF	10yr	4.07	0.00	0.02	0.00	0.00	0.00
Ridge3A3to6DS	10yr	0.00	-10.39	-0.10	0.00	0.00	0.00
Ridge7DSto6DS	10yr	0.00	0.00	0.00	0.00	0.00	0.00
CD-6	25yr	24.15	0.00	-6.41	4.10	7.55	5.76
CD-6A	25yr	0.00	-8.06	0.01	-2.35	-4.31	-3.33
CD-6B	25yr	8.81	-10.85	0.18	2.88	-4.67	3.47
CD-6C	25yr	28.86	-21.18	1.13	3.85	-5.49	-4.44
CD-7	25yr	6.70	0.00	-0.01	3.79	5.03	4.41
Equalizer Pipe	25yr	1.99	-4.10	0.08	-2.09	-4.07	-3.07
Ridge EF	25yr	5.32	0.00	0.02	0.00	0.00	0.00
Ridge3A3to6DS	25yr	0.00	-27.96	-0.11	0.00	0.00	0.00
Ridge7DSto6DS	25yr	0.00	0.00	0.00	0.00	0.00	0.00
CD-6	50yr	29.29	-0.14	-0.16	4.44	7.48	5.70
CD-6A	50yr	0.00	-10.68	0.01	-2.63	-4.65	-3.64
CD-6B	50yr	11.31	-10.87	0.29	3.08	-4.68	3.67
CD-6C	50yr	33.82	-20.48	1.11	4.10	-5.44	4.43
CD-7	50yr	8.02	0.00	-0.01	4.54	5.59	5.07

Flow rates used for overtopping calculations.

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
Equalizer Pipe	50yr	2.56	-5.08	0.07	-2.30	-4.34	-3.31
Ridge EF	50yr	6.35	0.00	0.03	0.00	0.00	0.00
Ridge3A3to6DS	50yr	0.00	-36.52	0.34	-0.79	-0.79	-0.79
Ridge7DSto6DS	50yr	0.00	0.00	0.00	0.00	0.00	0.00



1" = 500'



Basin A
(Node
Area A)

Basin C
(Node
Area C)

Weir Link
Ridge CA

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CD-8, 9, 10 PRE-DEV ICPR EXHIBIT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		F-81

Manual Basin: Basin A

Scenario: Scenario1
 Node: Area A
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 53.0000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
398.7000	A	A	

Comment:

Manual Basin: Basin C

Scenario: Scenario1
 Node: Area C
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 37.4000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
20.5700	C	C	

Comment:

Node: Area A

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 102.00 ft
 Warning Stage: 105.00 ft

Stage [ft]	Area [ac]	Area [ft2]
102.00	61.9000	2696364
103.00	79.5800	3466505
104.00	214.9700	9364093
105.00	254.2000	11072952

Comment:

Node: Area C

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 107.00 ft
 Warning Stage: 119.00 ft

Stage [ft]	Area [ac]	Area [ft2]
107.00	0.0900	3920
108.00	0.7900	34412
109.00	1.9800	86249
110.00	4.2300	184259
111.00	5.6400	245678
112.00	7.2000	313632
113.00	7.5400	328442
114.00	7.9000	344124
115.00	8.2400	358934
116.00	8.4100	366340
117.00	8.6300	375923
118.00	8.8300	384635
119.00	8.9600	390298

Comment:

Weir Link: Ridge CA

Scenario: Scenario1	Bottom Clip
From Node: Area C	Default: 0.00 ft
To Node: Area A	Op Table:
Link Count: 1	Ref Node:
Flow Direction: Both	Top Clip
Damping: 0.0000 ft	Default: 0.00 ft
Weir Type: Broad Crested Vertical	Op Table:
Geometry Type: Rectangular	Ref Node:
Invert: 110.00 ft	Discharge Coefficients
Control Elevation: 110.00 ft	Weir Default: 2.800
Max Depth: 30.00 ft	Weir Table:
Max Width: 270.00 ft	Orifice Default: 0.600
Fillet: 0.00 ft	Orifice Table:

Comment:

Simulation: 100yr

Scenario: Scenario1
 Run Date/Time: 7/29/2019 11:24:46 AM
 Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

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

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
 Extern Hydrograph Set:
 Curve Number Set: 1

 Green-Ampt Set:
 Vertical Layers Set:
 Impervious Set: 1

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Manual Basin Rain Opt: Global
Max dZ: 1.0000 ft	
Link Optimizer Tol: 0.0001 ft	Rainfall Name: ~FDOT-24
	Rainfall Amount: 10.56 in
Edge Length Option: Automatic	Storm Duration: 24.0000 hr

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

Comment:

Simulation: 10yr

Scenario: Scenario1
 Run Date/Time: 7/29/2019 11:24:51 AM
 Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

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

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
 Extern Hydrograph Set:
 Curve Number Set: 1

 Green-Ampt Set:

Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Manual Basin Rain Opt: Global
Max dZ: 1.0000 ft	
Link Optimizer Tol: 0.0001 ft	Rainfall Name: ~FDOT-24
	Rainfall Amount: 7.20 in
Edge Length Option: Automatic	Storm Duration: 24.0000 hr
	Dflt Damping (1D): 0.0050 ft
	Min Node Srf Area 100 ft2
	(1D):
	Energy Switch (1D): Energy

Comment:

Simulation: 25yr

Scenario: Scenario1
Run Date/Time: 7/29/2019 11:24:59 AM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

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

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File
Save Restart: False

Resources & Lookup Tables

Resources
Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables
Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1

Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight: 0.5 dec
Fact:
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Manual Basin Rain Opt: Global

Rainfall Name: ~FDOT-24
Rainfall Amount: 8.40 in
Storm Duration: 24.0000 hr

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

Comment:

Simulation: 50yr

Scenario: Scenario1
Run Date/Time: 7/29/2019 11:25:04 AM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

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

End Time: 0 0 0 30.0000

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

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1

Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight: 0.5 dec
Fact:
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Manual Basin Rain Opt: Global

Rainfall Name: ~FDOT-24
Rainfall Amount: 9.60 in
Storm Duration: 24.0000 hr

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

Comment:

Curve Number: 1 [Set]

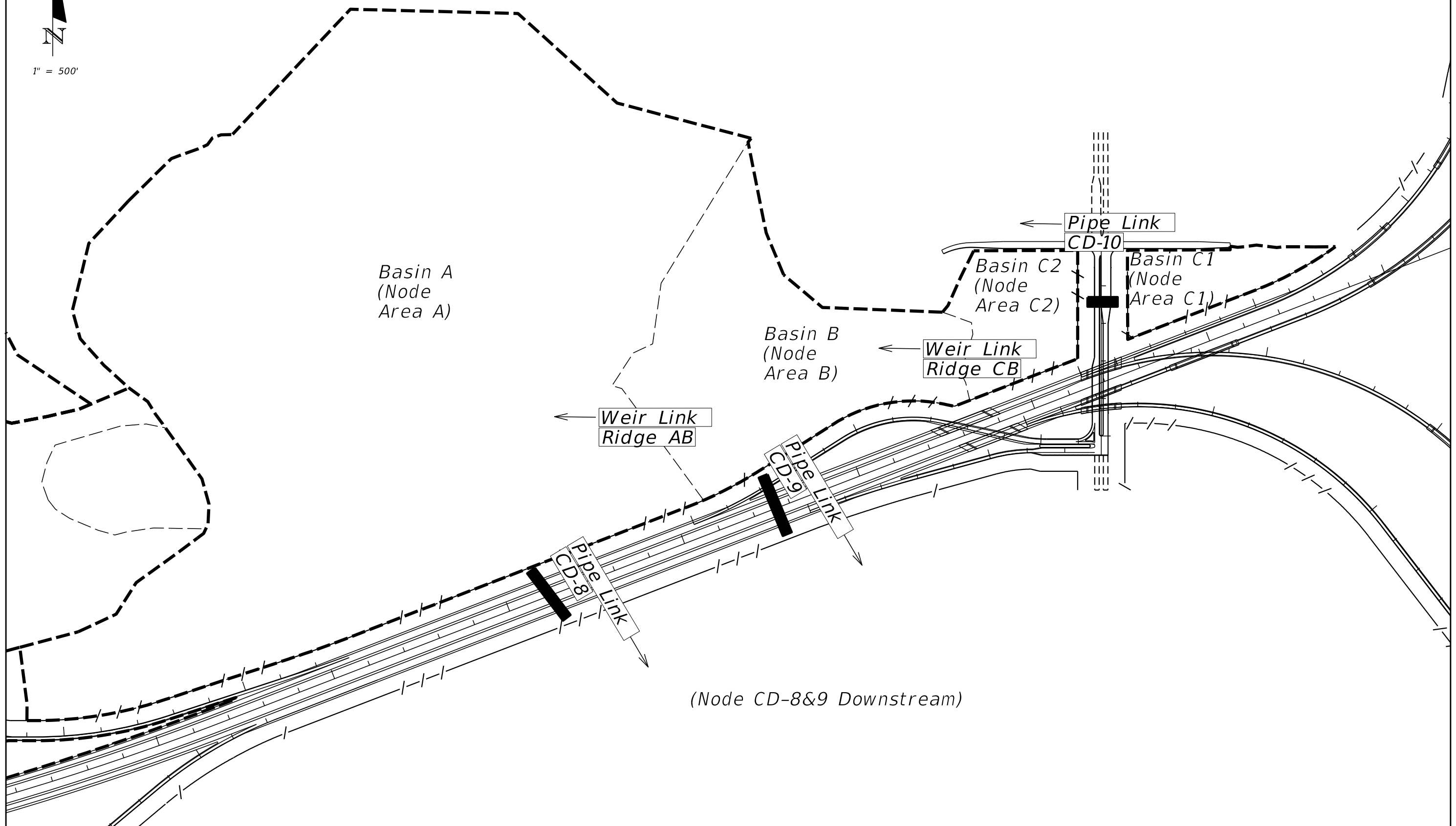
Land Cover Zone	Soil Zone	Curve Number [dec]
A	A	82.6
C	C	76.0

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Area A	100yr	105.00	104.31	0.0010	324.06	0.00	9895868
Area C	100yr	119.00	110.07	0.0010	16.27	13.63	188482
Area A	10yr	105.00	103.78	0.0008	201.95	0.00	8080959
Area C	10yr	119.00	110.04	0.0010	9.63	5.43	186544
Area A	25yr	105.00	103.98	0.0010	245.61	0.00	9258816
Area C	25yr	119.00	110.05	0.0010	11.99	8.66	187381
Area A	50yr	105.00	104.17	0.0010	289.23	0.00	9649041
Area C	50yr	119.00	110.06	0.0010	14.37	11.10	187943



1" = 500'



REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	CD-8, 9, 10 POST-DEV ICPR EXHIBIT	SHEET NO. F-91
DATE	DESCRIPTION	DATE	DESCRIPTION			
				ROAD NO.	COUNTY	FINANCIAL PROJECT ID

Manual Basin: Basin A

Scenario: Scenario1
 Node: Area A
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 53.0000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
198.0900	A	A	

Comment:

Manual Basin: Basin B

Scenario: Scenario1
 Node: Area B
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 30.4000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
33.7700	B	B	

Comment:

Manual Basin: Basin C1

Scenario: Scenario1
 Node: Area C1
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 37.4000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
6.0800	C	C	

Comment:

Manual Basin: Basin C2

Scenario: Scenario1
 Node: Area C2
 Hydrograph Method: NRCS Unit Hydrograph
 Infiltration Method: Curve Number
 Time of Concentration: 17.8000 min
 Max Allowable Q: 0.00 cfs
 Time Shift: 0.0000 hr
 Unit Hydrograph: UH256
 Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
8.9600	C	C	

Comment:

Node: Area A

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 102.00 ft
 Warning Stage: 132.00 ft

Stage [ft]	Area [ac]	Area [ft2]
102.00	61.7500	2689830
103.00	72.5200	3158971
104.00	76.8100	3345844
105.00	80.6600	3513550
106.00	85.1600	3709570
107.00	93.1600	4058050
108.00	100.1600	4362970
109.00	106.6600	4646110
110.00	114.1600	4972810
111.00	118.1600	5147050
112.00	123.0100	5358316
113.00	127.5100	5554336
114.00	130.5100	5685016
115.00	133.5100	5815696
116.00	136.5800	5949425
117.00	139.6400	6082718
118.00	142.7400	6217754
119.00	145.7600	6349306
120.00	149.2600	6501766
121.00	152.7600	6654226
122.00	156.0600	6797974
123.00	160.3600	6985282
124.00	164.9600	7185658
125.00	169.6600	7390390

Stage [ft]	Area [ac]	Area [ft2]
126.00	174.4600	7599478
127.00	179.3600	7812922
128.00	184.1400	8021138
129.00	189.2000	8241552
130.00	194.0200	8451511
131.00	197.3100	8594824
132.00	198.0900	8628800

Comment:

Node: Area B

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 104.00 ft
 Warning Stage: 114.00 ft

Stage [ft]	Area [ac]	Area [ft2]
104.00	13.0700	569329
105.00	15.1000	657756
106.00	16.7200	728323
107.00	18.9100	823720
108.00	21.1500	921294
109.00	23.0900	1005800
110.00	29.0900	1267160
111.00	30.9800	1349489
112.00	33.2300	1447499
113.00	33.7100	1468408
114.00	33.7700	1471021

Comment:

Node: Area C1

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 114.50 ft
 Warning Stage: 143.00 ft

Stage [ft]	Area [ac]	Area [ft2]
119.00	0.2700	11761
120.00	1.0500	45738
121.00	1.5700	68389
122.00	2.2900	99752

Stage [ft]	Area [ac]	Area [ft2]
123.00	3.2300	140699
124.00	3.8700	168577
125.00	4.1700	181645
126.00	4.5800	199505
127.00	4.7700	207781
128.00	4.9900	217364
129.00	5.1400	223898
130.00	5.2700	229561
131.00	5.4000	235224
132.00	5.5100	240016
133.00	5.6100	244372
134.00	5.7300	249599
135.00	5.8100	253084
136.00	5.8700	255697
137.00	5.9200	257875
138.00	5.9700	260053
139.00	6.0000	261360
140.00	6.0200	262231
141.00	6.0400	263102
142.00	6.0600	263974
143.00	6.0800	264845
118.00	0.2000	8712
117.00	0.1500	6534
116.00	0.1000	4356
115.00	0.0500	2178
114.50	0.0200	871

Comment:

Node: Area C2

Scenario: Scenario1
 Type: Stage/Area
 Base Flow: 0.00 cfs
 Initial Stage: 107.00 ft
 Warning Stage: 119.00 ft

Stage [ft]	Area [ac]	Area [ft2]
107.00	0.0900	3920
108.00	0.7900	34412
109.00	1.9800	86249
110.00	4.2300	184259
111.00	5.6400	245678
112.00	7.2000	313632
113.00	7.5400	328442
114.00	7.9000	344124
115.00	8.2400	358934

Stage [ft]	Area [ac]	Area [ft2]
116.00	8.4100	366340
117.00	8.6300	375923
118.00	8.8300	384635
119.00	8.9600	390298

Comment:

Node: CD-8&9 Downstream

Scenario: Scenario1
 Type: Time/Stage
 Base Flow: 0.00 cfs
 Initial Stage: 102.00 ft
 Warning Stage: 107.00 ft
 Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	102.00
0	0	0	12.0000	106.00
0	0	0	24.0000	102.00

Comment:

Pipe Link: CD-10

	Upstream	Downstream
Scenario:	Scenario1	
From Node:	Area C1	
To Node:	Area C2	
Link Count:	1	
Flow Direction:	Both	
Damping:	0.0000 ft	
Length:	165.00 ft	
FHWA Code:	1	
Entr Loss Coef:	0.00	
Exit Loss Coef:	0.00	
Bend Loss Coef:	0.00	
Bend Location:	0.00 ft	
Energy Switch:	Energy	
	Invert: 114.50 ft	Invert: 113.50 ft
	Manning's N: 0.0120	Manning's N: 0.0120
	Geometry: Circular	Geometry: Circular
	Max Depth: 1.50 ft	Max Depth: 1.50 ft
	Bottom Clip	
	Default: 0.00 ft	Default: 0.00 ft
	Op Table:	Op Table:
	Ref Node:	Ref Node:
	Manning's N: 0.0000	Manning's N: 0.0000
	Top Clip	
	Default: 0.00 ft	Default: 0.00 ft
	Op Table:	Op Table:
	Ref Node:	Ref Node:
	Manning's N: 0.0000	Manning's N: 0.0000

Comment:

Pipe Link: CD-8

	Upstream	Downstream
Scenario:	Scenario1	
	Invert: 102.00 ft	Invert: 101.50 ft

From Node:	Area A	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	CD-8&9	Geometry:	Circular	Geometry:	Circular
	Downstream	Max Depth:	1.50 ft	Max Depth:	1.50 ft
Link Count:	1	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:		Op Table:	
Length:	290.00 ft	Ref Node:		Ref Node:	
FHWA Code:	1	Manning's N:	0.0000	Manning's N:	0.0000
Entr Loss Coef:	0.00	Top Clip			
Exit Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Loss Coef:	0.00	Op Table:		Op Table:	
Bend Location:	0.00 ft	Ref Node:		Ref Node:	
Energy Switch:	Energy	Manning's N:	0.0000	Manning's N:	0.0000
Comment:					

Pipe Link:	CD-9	Upstream		Downstream	
Scenario:	Scenario1	Invert:	103.50 ft	Invert:	103.00 ft
From Node:	Area B	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	CD-8&9	Geometry:	Circular	Geometry:	Circular
	Downstream	Max Depth:	1.50 ft	Max Depth:	1.50 ft
Link Count:	1	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:		Op Table:	
Length:	340.00 ft	Ref Node:		Ref Node:	
FHWA Code:	1	Manning's N:	0.0000	Manning's N:	0.0000
Entr Loss Coef:	0.00	Top Clip			
Exit Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Loss Coef:	0.00	Op Table:		Op Table:	
Bend Location:	0.00 ft	Ref Node:		Ref Node:	
Energy Switch:	Energy	Manning's N:	0.0000	Manning's N:	0.0000
Comment:					

Weir Link:	Ridge AB			Bottom Clip	
Scenario:	Scenario1			Default:	0.00 ft
From Node:	Area A			Op Table:	
To Node:	Area B			Ref Node:	
Link Count:	1			Top Clip	
Flow Direction:	Both			Default:	0.00 ft
Damping:	0.0000 ft			Op Table:	
Weir Type:	Broad Crested Vertical			Ref Node:	
Geometry Type:	Rectangular			Discharge Coefficients	
Invert:	105.00 ft			Weir Default:	2.800
Control Elevation:	105.00 ft			Weir Table:	
Max Depth:	30.00 ft			Orifice Default:	0.600
Max Width:	738.00 ft				

Fillet: 0.00 ft

Orifice Table:

Comment:

Weir Link: Ridge CB

Scenario:	Scenario1	Bottom Clip
From Node:	Area C2	Default: 0.00 ft
To Node:	Area B	Op Table:
Link Count:	1	Ref Node:
Flow Direction:	Both	Top Clip
Damping:	0.0000 ft	Default: 0.00 ft
Weir Type:	Broad Crested Vertical	Op Table:
Geometry Type:	Rectangular	Ref Node:
Invert:	110.00 ft	Discharge Coefficients
Control Elevation:	110.00 ft	Weir Default: 2.800
Max Depth:	30.00 ft	Weir Table:
Max Width:	270.00 ft	Orifice Default: 0.600
Fillet:	0.00 ft	Orifice Table:

Comment:

Simulation: 100yr

Scenario: Scenario1
 Run Date/Time: 8/7/2019 10:14:25 AM
 Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

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

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File
Save Restart: False

Resources & Lookup Tables

Resources
Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables
Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1

Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight: 0.5 dec
Fact:
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Manual Basin Rain Opt: Global

Rainfall Name: ~FDOT-24
Rainfall Amount: 10.56 in
Storm Duration: 24.0000 hr

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

Comment:

Simulation: 10yr

Scenario: Scenario1
Run Date/Time: 8/7/2019 10:14:31 AM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

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

End Time: 0 0 0 30.0000

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

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1

Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight: 0.5 dec
Fact:
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Manual Basin Rain Opt: Global

Rainfall Name: ~FDOT-24
Rainfall Amount: 7.20 in
Storm Duration: 24.0000 hr

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

Comment:

Simulation: 25yr

Scenario: Scenario1
 Run Date/Time: 8/7/2019 10:14:37 AM
 Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

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

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

 Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
 Extern Hydrograph Set:
 Curve Number Set: 1

 Green-Ampt Set:
 Vertical Layers Set:
 Impervious Set: 1

Tolerances & Options

Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Manual Basin Rain Opt: Global
Max dZ: 1.0000 ft	
Link Optimizer Tol: 0.0001 ft	Rainfall Name: ~FDOT-24
	Rainfall Amount: 8.40 in
Edge Length Option: Automatic	Storm Duration: 24.0000 hr
	Dflt Damping (1D): 0.0050 ft
	Min Node Srf Area 100 ft2
	(1D):
	Energy Switch (1D): Energy

Comment:

Simulation: 50yr

Scenario: Scenario1
 Run Date/Time: 8/7/2019 10:14:44 AM
 Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

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

Output Time Increments

Hydrology

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

Surface Hydraulics

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

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1

Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight: 0.5 dec
Fact:
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Manual Basin Rain Opt: Global

Rainfall Name: ~FDOT-24
Rainfall Amount: 9.60 in
Storm Duration: 24.0000 hr

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

Comment:

Curve Number: 1 [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
A	A	82.6
B	B	68.0
C	C	76.0

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Area A	100yr	132.00	104.12	0.0010	171.63	7.36	3266759
Area B	100yr	114.00	105.04	0.0010	30.19	22.73	3266759
Area C1	100yr	143.00	115.74	0.0010	4.81	4.74	3266759
Area C2	100yr	119.00	110.05	0.0010	12.35	8.61	3266759
CD-8&9 Downstream	100yr	107.00	106.00	0.0028	12.34	17.22	0
Area A	10yr	132.00	103.35	0.0008	110.94	5.15	3225287
Area B	10yr	114.00	104.79	0.0010	19.18	4.53	3225287
Area C1	10yr	143.00	115.40	0.0010	2.85	2.81	3225287
Area C2	10yr	119.00	110.02	0.0010	7.35	2.51	3225287
CD-8&9 Downstream	10yr	107.00	106.00	0.0028	9.66	17.13	0
Area A	25yr	132.00	103.60	0.0009	132.64	5.79	3225287
Area B	25yr	114.00	105.01	0.0010	22.97	7.81	3225287
Area C1	25yr	143.00	115.53	0.0010	3.54	3.50	3225287
Area C2	25yr	119.00	110.03	0.0010	9.13	4.58	3225287
CD-8&9 Downstream	25yr	107.00	106.00	0.0028	10.74	17.12	0
Area A	50yr	132.00	103.89	0.0010	154.32	6.69	3325978
Area B	50yr	114.00	105.03	0.0010	26.88	16.39	660293
Area C1	50yr	143.00	115.65	0.0010	4.25	4.19	3805
Area C2	50yr	119.00	110.04	0.0010	10.92	6.75	187023
CD-8&9 Downstream	50yr	107.00	106.00	0.0028	11.66	17.12	0

The stages in Area A are not adversely affected by the proposed cross drains compared to the pre-development.

The stages in Area B remain below the floodplain elevation.

Area C1 stages are controlled by a higher ground elevation. Downstream stages are less than pre-development.

The stages in Area C2 are not affected by the proposed cross drains when compared to the pre-development.

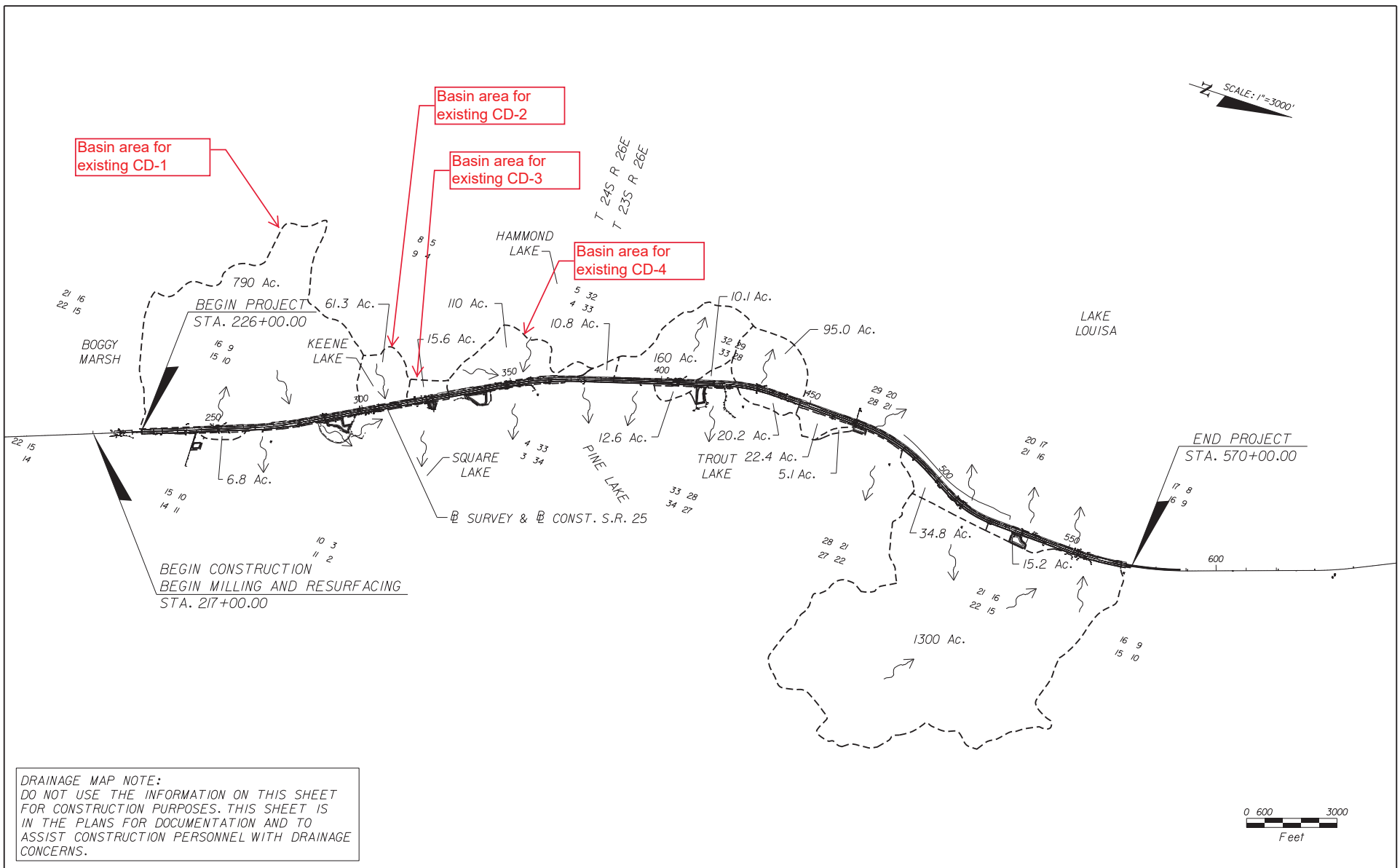
Link Min/Max Conditions [Scenario1]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
CD-10	100yr	4.74	0.00	0.09	3.03	4.79	3.78
CD-8	100yr	7.36	-10.90	0.30	-6.17	-6.85	-6.51
CD-9	100yr	5.40	-6.32	0.29	-3.58	-5.08	-4.32
Ridge AB	100yr	0.00	-18.44	-0.25	0.00	0.00	0.00
Ridge CB	100yr	8.61	0.00	0.13	0.63	0.63	0.63
CD-10	10yr	2.81	0.00	0.07	2.54	4.45	3.50
CD-8	10yr	5.15	-10.90	0.30	-6.17	-6.85	-6.51
CD-9	10yr	4.53	-6.23	0.26	-3.52	-5.19	-4.35
Ridge AB	10yr	0.00	0.00	0.00	0.00	0.00	0.00
Ridge CB	10yr	2.51	0.00	0.04	0.00	0.00	0.00
CD-10	25yr	3.50	0.00	0.09	2.72	4.72	3.72
CD-8	25yr	5.79	-10.90	0.30	-6.17	-6.85	-6.51
CD-9	25yr	5.03	-6.23	0.25	-3.52	-5.18	-4.35
Ridge AB	25yr	0.00	-2.86	-0.04	0.00	0.00	0.00
Ridge CB	25yr	4.58	0.00	0.08	0.00	0.00	0.00
CD-10	50yr	4.19	0.00	0.08	2.89	4.80	3.78
CD-8	50yr	6.69	-10.90	0.33	-6.17	-6.85	-6.51
CD-9	50yr	5.37	-6.23	0.24	-3.52	-5.18	-4.35
Ridge AB	50yr	0.00	-11.39	-0.15	0.00	0.00	0.00
Ridge CB	50yr	6.75	0.00	0.12	0.00	0.00	0.00

Flow rates used for overtopping calculations.

Appendix G – Existing Permits

SCALE: 1"=3000'



DRAINAGE MAP NOTE:
 DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES. THIS SHEET IS IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.



REVISIONS				FRANK, F.U. P.E. P.E. LICENSE NUMBER 49940 HDR Engineering, Inc. 315 E. ROBINSON STREET, SUITE 400 ORLANDO, FL. 32801-1949 CERTIFICATE OF AUTHORIZATION 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP SHEET NO. 5
DATE	DESCRIPTION	DATE	ROAD NO.		COUNTY	FINANCIAL PROJECT ID		
			S.R. 25		LAKE	2384221-52-01		

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 60G15-23.003, F.A.C.

March 30, 2005

St. Johns River Water Management District
ERP Permitting
975 Keller Road
Altamonte Springs, FL 32714

Existing cross
drain 1-3
information used
for the HY-8
existing conditions
analysis

RE: SR 25 (US 27) Widening
From Boggy Marsh Road to 1000 ft North Lake Louisa Road
Lake County
**ERP Permit Application – Individual Permit
(Cross Drain Calculations)**

To Whom It May Concern:

Please find enclosed the following information pertaining to the referenced project:

- Five (5) Signed And Sealed Cross Drain Calculations

The above calculations are to supplement the permit application package submitted on March 28, 2005.

Should you have any questions, please contact me at (407) 420-4215 or via email at Glen.Partlow@hdrinc.com.

Sincerely,
HDR Engineering, Inc.



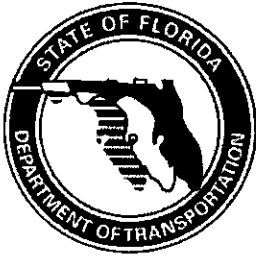
Glen Partlow, PE
Drainage Engineer

cc: Todd Long, FDOT
Amy Sirmans, FDOT
Mike Hill, FDOT
Andy Lauzier, HDR
File

90260-2
RECEIVED

MAR 30 2005

POST
ALTAMONTE SVC. CTR.



Drainage Design Documentation
for

SR 25 (US 27)

From Boggy Marsh Road to 1000 ft. North of
Lake Louisa Road

SJRWMD Permit Submittal
(Cross Drains)

Financial Project ID. 238422-1-32-02

Prepared by:

HDR

HDR Engineering, Inc
315 E. Robinson St., Suite 400
Orlando, FL 32801

March 2005

90260-2

RECEIVED

MAR 30 2005

PDS

ALTAMONTE SVCS. CTR

[Handwritten Signature]
FL PF # 58725
3-30-2005

Crossdrain Analysis

SECTION 15 CROSS DRAINS

15.1 Pre Development Analysis:

Six cross drains were identified within the project limits. The cross drains are identified on the following table:

ID	Station	Size	Action
CD 1	287+13	(2) 10'x4' CBC	Extend
CD 2	305+50	4'x3' CBC	Extend
CD 3	321+48	2'x2' CBC + 30" RCP	Replace
CD 4	348+48	5'x2' CBC	Extend
CD 5	511+72	4'x3' CBC	Extend
CD 6	553+53	(3) 6'x5' CBC	Extend

CD 3 and CD 5 originally were 2'x2' concrete box culverts that had been extended with 30" round RCP. The FDOT has requested that these cross drains be replaced with new cross drain pipes. All other cross drains, 30" and larger, will be extended if possible.

A hydrologic analysis was conducted to estimate the discharges for the design year frequency, the base flood and the greatest flood. A design frequency of 50 years was determined as the minimum for this roadway. The base flood and the greatest flood used frequencies of 100 years and 500 years, respectively.

Discharge rates for cross drains 48" and smaller were estimated using recommended design procedures found in the FDOT Cross Drain Handbook, dated August 1996. This design procedure is for culvert extensions and replacements in areas with no known historical problems. Using the methodologies suggested in the handbook the 25 year discharge (Q_{25}) was estimated taking the cross sectional area of the pipe and multiplying it by a velocity of 6 feet per second. The 50 year discharge, (Q_{50}) was estimated by multiplying Q_{25} by 1.25, the 100 year discharge, (Q_{100}) was estimated by

multiplying Q_{25} by 1.4 and the 500 year discharge (Q_{500}) was estimated by multiplying (Q_{100}) by 1.7.

The rational method ($Q=CIA$) was used to determine Q_{50} and Q_{100} for cross drains greater than 48" and less than 20' bridge. Please see the attached calculation to see applicable drainage areas, run-off coefficients, rainfall intensities and time of concentrations. Q_{500} was estimated by plotting Q_{50} and Q_{100} flow rates on log probability paper and projecting a line to the 500 year probability. The discharges determined using the rational method were compared to the discharges determined in the Location Hydraulics Report for SR 25 prepared by FDOT District 5, updated February 1999. The two methods produced comparable results and the discharges determined using the rational method were chosen for comparison since they were slightly higher.

After the flow rates were determined, a hydraulic analysis using FHWA Culvert Analysis HY-8, Version 6.1 was conducted. Using the design (Q_{50}), base (Q_{100}) and greatest (Q_{500}) discharges the pre-developed conditions were modeled to determine the water surface elevation for each design event. The tailwater elevations used for the HY-8 analysis are consistent with the elevations found the SR 25 Design High Water Report prepared by HDR Engineering, dated December 2003.

15.2 Post Development Analysis

A hydraulic analysis using FHWA Culvert Analysis HY-8, Version 6.1 for the post-developed conditions was conducted using the same discharge rates and tailwater condition as the pre-developed condition. The pre-development and post-development water surface elevations for the 50 year storm and overtopping frequencies are summarized in the following table. The largest post-development water surface elevation stage increase was 0.15 ft and the road is not overtopped during the design event.

ID	50 year		Overtopping	
	Pre Elevation (ft)	Post Elevation (ft)	Elevation (ft)	Frequency (year)
CD 1	112.59	112.59	115.60	>500
CD 2	112.71	112.76	155.29	229
CD 3	112.60	112.07	117.00	388
CD 4	107.75	107.90	110.37	213
CD 5	101.60	101.60	103.34	168
CD 6	98.34	98.35	103.39	>500

15.3 Scour:

Only one existing crossdrain, CD 2, showed signs of scour during the project field review. A scour hole approximately 13.5" deep was observed on the downstream end of the crossdrain. Since the crossdrain is to be extended and that the scour hole is small and localized, it was determined that a blanket of rubble rip-rap would be sufficient on the downstream side of the proposed extension.

Financial Project ID : 238422-1-52-01
Date : 10/13/2004

STRUCTURE No.	STATION	DESIGN FLOOD		BASE FLOOD		OVERTOPPING FLOOD				GREATEST FLOOD			
		2 % Prob.	50 yr Freq.	1 % Prob.	100 yr Freq.	Discharge	Stage	Prob. %	Freq. yr	Discharge	Stage	Prob. %	Freq. yr
		Discharge	Stage	Discharge	Stage								
S-213	287+13	285.8	112.59	344.1	113.00					470	113.83	0.2	500
S-235	305+50	90.0	112.76	100.8	113.38	132.4	115.29	0.44	229				
S-307	321+35	36.8	111.19	41.2	112.07	64.5	117.00	0.26	388				
S-419	348+48	75.0	107.90	84.0	108.49	107.7	110.37	0.47	213				
S-726	511+72	90.0	101.60	100.8	102.18	119.6	103.34	0.60	168				
S-765	553+53	273.4	98.35	314.7	98.58					420	99.17	0.2	500

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 (cfs) and stages are in feet (ft), NAVD, 1988.

DEFINITIONS:

Data adapted from : N/A

- Design Flood : The flood selected by the FDOT to be utilized to assure a standard level of hydraulic performance.
- Base Flood : The flood having a 1 % chance of being exceeded in any year. (100 yr frequency)
- Overtopping Flood : The flood where flow occurs (A) over the highway, (B) over a watershed divide or (C) thru emergency relief structures.
- Greatest Flood : The most severe flood which can be predicted where overtopping is not practicable, normally one with a 0.2 % chance of being exceeded in any year. (500 yr frequency)

Prepared By : Glen T. Partlow, P.E.
Date : October 13, 2004

Approved for use
on this project By : _____
Date : _____

Structure No.	Existing Culverts			FLOW RATES, cfs							FLOOD STAGES, ft						
	No. of barrels	Dia. inch	Flow area sq ft	Q 25	Q 50	Q 100	Overtopping			Q 500	Fl	i yr	25 yr	50 yr	100 yr	Overtop stage	500 yr
							Flow	% Prob.	Freq yr								
S-213	2	10 x 4	80.0	N/A	285.8	344.1	698	0.03	3856	470.0		-	-	112.59	113.00	115.60	113.83
S-235	1	4 x 3	12.0	72.0	90.0	100.8	132.4	0.44	229	171.4		-	-	112.76	113.38	115.29	-
S-307	1	30	4.9	29.5	36.8	41.2	64.5	0.26	388	70.1		-	-	111.19	112.07	117.00	-
S-419	1	5 x 2	10.0	60.0	75.0	84.0	107.7	0.47	213	142.8		-	-	107.90	108.49	110.37	-
S-726	1	4 x 3	12.0	72.0	90.0	100.8	119.6	0.60	168	171.4		-	-	101.60	102.18	103.34	-
S-765	3	6 x 5	90.0	N/A	273.4	314.7	979	0.00	55989	420.0		-	-	98.35	98.58	103.18	99.17

% Probability : 4.0 2.0 1.0 0.2
 Log of prob. : 0.6021 0.301 0 -0.69897

Q₂₅ = A V, V = 6.0 fps
 Q₅₀ = Q₂₅*1.25
 Q₁₀₀ = Q₂₅*1.4
 Q₅₀₀ = Q₁₀₀*1.7

Was Determined from LOG(flow) vers LOG(prob.) ratios

Was determined from stage vers flow ratios

Flow rates in CD-4
Pre-development
model in ICPR.

CURRENT DATE: 10-02-2004
CURRENT TIME: 12:46:00

FILE DATE: 10-02-2004
FILE NAME: 28713EX

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

C U L V E R T N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	109.41	109.20	150.00	2 RCB	10.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs)

FILE: 28713EX

DATE: 10-02-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
112.59 <i>50YR</i>	285.8	285.8	0.0	0.0	0.0	0.0	0.0	0.00	1
112.72	304.2	304.2	0.0	0.0	0.0	0.0	0.0	0.00	1
112.86	322.6	322.6	0.0	0.0	0.0	0.0	0.0	0.00	1
112.99	341.1	341.1	0.0	0.0	0.0	0.0	0.0	0.00	1
113.01 <i>100YR</i>	344.1	344.1	0.0	0.0	0.0	0.0	0.0	0.00	1
113.24	377.9	377.9	0.0	0.0	0.0	0.0	0.0	0.00	1
113.36	396.3	396.3	0.0	0.0	0.0	0.0	0.0	0.00	1
113.48	414.7	414.7	0.0	0.0	0.0	0.0	0.0	0.00	1
113.60	433.2	433.2	0.0	0.0	0.0	0.0	0.0	0.00	1
113.72	451.6	451.6	0.0	0.0	0.0	0.0	0.0	0.00	1
113.84 <i>500YR</i>	470.0	470.0	0.0	0.0	0.0	0.0	0.0	0.00	1
115.60	698.2	698.2	0.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS

FILE: 28713EX

DATE: 10-02-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
112.59	0.000	285.80	0.00	0.00
112.72	0.000	304.22	0.00	0.00
112.86	0.000	322.64	0.00	0.00
112.99	0.000	341.06	0.00	0.00
113.01	0.000	344.10	0.00	0.00
113.24	0.000	377.90	0.00	0.00
113.36	0.000	396.32	0.00	0.00
113.48	0.000	414.74	0.00	0.00
113.60	0.000	433.16	0.00	0.00
113.72	0.000	451.58	0.00	0.00
113.84	0.000	470.00	0.00	0.00

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-02-2004
 CURRENT TIME: 12:46:00

FILE DATE: 10-02-2004
 FILE NAME: 28713EX

PERFORMANCE CURVE FOR CULVERT 1 - 2 (10.00 (ft) BY 4.00 (ft)) RCB

DIS- CHARGE FLOW (cfs)	HEAD- WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
285.80	112.59	3.13	3.18	3-M2t	2.28	1.85	1.86	1.86	7.68	0.00
304.22	112.72	3.26	3.31	2-M2c	2.38	1.93	1.93	1.86	7.87	0.00
322.64	112.86	3.39	3.45	2-M2c	2.48	2.01	2.01	1.86	8.02	0.00
341.06	112.99	3.52	3.58	2-M2c	2.58	2.09	2.09	1.86	8.17	0.00
344.10	113.01	3.54	3.60	2-M2c	2.59	2.10	2.10	1.86	8.20	0.00
377.90	113.24	3.77	3.83	2-M2c	2.77	2.23	2.23	1.86	8.46	0.00
396.32	113.36	3.90	3.95	2-M2c	2.86	2.31	2.31	1.86	8.59	0.00
414.74	113.48	4.03	4.07	2-M2c	2.95	2.38	2.38	1.86	8.72	0.00
433.16	113.60	4.15	4.19	2-M2c	3.05	2.45	2.45	1.86	8.85	0.00
451.58	113.72	4.28	4.31	2-M2c	3.14	2.52	2.52	1.86	8.97	0.00
470.00	113.84	4.41	4.43	2-M2c	3.23	2.58	2.58	1.86	9.09	0.00
El. inlet face invert					109.41 ft	El. outlet invert			109.20 ft	
El. inlet throat invert					0.00 ft	El. inlet crest			0.00 ft	

***** SITE DATA ***** CULVERT INVERT *****
 INLET STATION 0.00 ft
 INLET ELEVATION 109.41 ft
 OUTLET STATION 150.00 ft
 OUTLET ELEVATION 109.20 ft
 NUMBER OF BARRELS 2
 SLOPE (V/H) 0.0014
 CULVERT LENGTH ALONG SLOPE 150.00 ft

***** CULVERT DATA SUMMARY *****
 BARREL SHAPE BOX
 BARREL SPAN 10.00 ft
 BARREL RISE 4.00 ft
 BARREL MATERIAL CONCRETE
 BARREL MANNING'S n 0.012
 INLET TYPE CONVENTIONAL
 INLET EDGE AND WALL SQUARE EDGE (90-45 DEG.)
 INLET DEPRESSION NONE

CURRENT DATE: 10-02-2004
CURRENT TIME: 12:46:00

FILE DATE: 10-02-2004
FILE NAME: 28713EX

TAILWATER

CONSTANT WATER SURFACE ELEVATION
111.06

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	92.00 ft
CREST LENGTH	200.00 ft
OVERTOPPING CREST ELEVATION	115.60 ft

CURRENT DATE: 10-02-2004
 CURRENT TIME: 12:47:21

FILE DATE: 10-02-2004
 FILE NAME: 28713PR

FHWA CULVERT ANALYSIS
 HY-8, VERSION 6.1

C U L V N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	109.40	109.20	170.00	2 RCB	10.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: 28713PR DATE: 10-02-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
112.59 <i>50YR</i>	285.8	285.8	0.0	0.0	0.0	0.0	0.0	0.00	1
112.72	304.2	304.2	0.0	0.0	0.0	0.0	0.0	0.00	1
112.85	322.6	322.6	0.0	0.0	0.0	0.0	0.0	0.00	1
112.98	341.1	341.1	0.0	0.0	0.0	0.0	0.0	0.00	1
113.00 <i>100YR</i>	344.1	344.1	0.0	0.0	0.0	0.0	0.0	0.00	1
113.23	377.9	377.9	0.0	0.0	0.0	0.0	0.0	0.00	1
113.36	396.3	396.3	0.0	0.0	0.0	0.0	0.0	0.00	1
113.48	414.7	414.7	0.0	0.0	0.0	0.0	0.0	0.00	1
113.60	433.2	433.2	0.0	0.0	0.0	0.0	0.0	0.00	1
113.72	451.6	451.6	0.0	0.0	0.0	0.0	0.0	0.00	1
113.83 <i>500YR</i>	470.0	470.0	0.0	0.0	0.0	0.0	0.0	0.00	1
116.50	795.7	795.7	0.0	0.0	0.0	0.0	0.0	0.00	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 28713PR DATE: 10-02-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
112.59	0.000	285.80	0.00	0.00
112.72	0.000	304.22	0.00	0.00
112.85	0.000	322.64	0.00	0.00
112.98	0.000	341.06	0.00	0.00
113.00	0.000	344.10	0.00	0.00
113.23	0.000	377.90	0.00	0.00
113.36	0.000	396.32	0.00	0.00
113.48	0.000	414.74	0.00	0.00
113.60	0.000	433.16	0.00	0.00
113.72	0.000	451.58	0.00	0.00
113.83	0.000	470.00	0.00	0.00

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-02-2004
 CURRENT TIME: 12:47:21

FILE DATE: 10-02-2004
 FILE NAME: 28713PR

PERFORMANCE CURVE FOR CULVERT 1 - 2(10.00 (ft) BY 4.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
285.80	112.59	3.13	3.19	3-M2t	2.41	1.85	1.86	1.86	7.68	0.00
304.22	112.72	3.26	3.32	2-M2c	2.51	1.93	1.93	1.86	7.87	0.00
322.64	112.85	3.39	3.45	2-M2c	2.61	2.01	2.01	1.86	8.02	0.00
341.06	112.98	3.52	3.58	2-M2c	2.72	2.09	2.09	1.86	8.17	0.00
344.10	113.00	3.54	3.60	2-M2c	2.74	2.10	2.10	1.86	8.20	0.00
377.90	113.23	3.77	3.83	2-M2c	2.92	2.23	2.23	1.86	8.46	0.00
396.32	113.36	3.90	3.96	2-M2c	3.02	2.31	2.31	1.86	8.59	0.00
414.74	113.48	4.03	4.08	2-M2c	3.12	2.38	2.38	1.86	8.72	0.00
433.16	113.60	4.15	4.20	2-M2c	3.22	2.45	2.45	1.86	8.85	0.00
451.58	113.72	4.28	4.32	2-M2c	3.31	2.52	2.52	1.86	8.97	0.00
470.00	113.83	4.41	4.43	2-M2c	3.41	2.58	2.58	1.86	9.09	0.00
El. inlet face invert					109.40 ft	El. outlet invert			109.20 ft	
El. inlet throat invert					0.00 ft	El. inlet crest			0.00 ft	

***** SITE DATA ***** CULVERT INVERT *****
 INLET STATION 0.00 ft
 INLET ELEVATION 109.40 ft
 OUTLET STATION 170.00 ft
 OUTLET ELEVATION 109.20 ft
 NUMBER OF BARRELS 2
 SLOPE (V/H) 0.0012
 CULVERT LENGTH ALONG SLOPE 170.00 ft

***** CULVERT DATA SUMMARY *****
 BARREL SHAPE BOX
 BARREL SPAN 10.00 ft
 BARREL RISE 4.00 ft
 BARREL MATERIAL CONCRETE
 BARREL MANNING'S n 0.012
 INLET TYPE CONVENTIONAL
 INLET EDGE AND WALL SQUARE EDGE (90-45 DEG.)
 INLET DEPRESSION NONE

CURRENT DATE: 10-02-2004
CURRENT TIME: 12:47:21

FILE DATE: 10-02-2004
FILE NAME: 28713PR

TAILWATER

CONSTANT WATER SURFACE ELEVATION
111.06

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	114.00 ft
CREST LENGTH	200.00 ft
OVERTOPPING CREST ELEVATION	116.50 ft

CURRENT DATE: 09-08-2004
 CURRENT TIME: 10:43:08

FILE DATE: 09-08-2004
 FILE NAME: 30550EX

FHWA CULVERT ANALYSIS
 HY-8, VERSION 6.1

C U L V E R T N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	107.93	107.85	150.00	1 RCB	4.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: 30550EX DATE: 09-08-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
112.71 <i>504R</i>	90.0	90.0	0.0	0.0	0.0	0.0	0.0	0.00	1
113.14	98.1	98.1	0.0	0.0	0.0	0.0	0.0	0.00	1
113.30 <i>1004R</i>	100.8	100.8	0.0	0.0	0.0	0.0	0.0	0.00	1
114.05	114.4	114.4	0.0	0.0	0.0	0.0	0.0	0.00	1
114.33	122.6	119.1	0.0	0.0	0.0	0.0	0.0	2.31	26
114.37	130.7	119.8	0.0	0.0	0.0	0.0	0.0	10.02	7
114.40	138.8	120.3	0.0	0.0	0.0	0.0	0.0	17.33	5
114.42	147.0	120.8	0.0	0.0	0.0	0.0	0.0	25.28	5
114.45	155.1	121.2	0.0	0.0	0.0	0.0	0.0	32.62	4
114.47	163.3	121.6	0.0	0.0	0.0	0.0	0.0	40.46	4
114.49 <i>5004R</i>	171.4	121.9	0.0	0.0	0.0	0.0	0.0	48.41	4
114.30	118.7	118.7	0.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 30550EX DATE: 09-08-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
112.71	0.000	90.00	0.00	0.00
113.14	0.000	98.14	0.00	0.00
113.30	0.000	100.80	0.00	0.00
114.05	0.000	114.42	0.00	0.00
114.33	-0.003	122.56	1.15	0.94
114.37	-0.002	130.70	0.86	0.66
114.40	-0.003	138.84	1.20	0.86
114.42	-0.002	146.98	0.91	0.62
114.45	-0.004	155.12	1.33	0.86
114.47	-0.004	163.26	1.25	0.77
114.49	-0.003	171.40	1.07	0.62

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

CURRENT DATE: 09-08-2004
 CURRENT TIME: 10:43:08

FILE DATE: 09-08-2004
 FILE NAME: 30550EX

PERFORMANCE CURVE FOR CULVERT 1 - 1(4.00 (ft) BY 3.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)	
90.00	112.71	4.60	4.78	2-M2c	3.00	2.51	2.51	1.97	8.96	0.00	
98.14	113.14	5.03	5.21	2-M2c	3.00	2.66	2.66	1.97	9.22	0.00	
100.80	113.30	5.18	5.37	2-M2c	3.00	2.71	2.71	1.97	9.31	0.00	
114.42	114.05	6.00	6.12	2-M2c	3.00	2.95	2.95	1.97	9.71	0.00	
119.10	114.32	6.31	6.39	6-FFc	3.00	3.00	3.00	1.97	9.93	0.00	
119.82	114.36	6.36	6.43	6-FFc	3.00	3.00	3.00	1.97	9.98	0.00	
120.32	114.39	6.39	6.46	6-FFc	3.00	3.00	3.00	1.97	10.03	0.00	
120.78	114.42	6.42	6.49	6-FFc	3.00	3.00	3.00	1.97	10.07	0.00	
121.17	114.44	6.45	6.51	6-FFc	3.00	3.00	3.00	1.97	10.10	0.00	
121.55	114.47	6.47	6.54	6-FFc	3.00	3.00	3.00	1.97	10.13	0.00	
121.92	114.49	6.50	6.56	6-FFc	3.00	3.00	3.00	1.97	10.16	0.00	
El. inlet face invert					107.93 ft	El. outlet invert			107.85 ft		
El. inlet throat invert					0.00 ft	El. inlet crest			0.00 ft		

***** SITE DATA ***** CULVERT INVERT *****
 INLET STATION 0.00 ft
 INLET ELEVATION 107.93 ft
 OUTLET STATION 150.00 ft
 OUTLET ELEVATION 107.85 ft
 NUMBER OF BARRELS 1
 SLOPE (V/H) 0.0005
 CULVERT LENGTH ALONG SLOPE 150.00 ft

***** CULVERT DATA SUMMARY *****
 BARREL SHAPE BOX
 BARREL SPAN 4.00 ft
 BARREL RISE 3.00 ft
 BARREL MATERIAL CONCRETE
 BARREL MANNING'S n 0.012
 INLET TYPE CONVENTIONAL
 INLET EDGE AND WALL SQUARE EDGE (90-45 DEG.)
 INLET DEPRESSION NONE

CURRENT DATE: 09-08-2004
CURRENT TIME: 10:43:08

FILE DATE: 09-08-2004
FILE NAME: 30550EX

TAILWATER

CONSTANT WATER SURFACE ELEVATION
109.82

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	92.00 ft
CREST LENGTH	200.00 ft
OVERTOPPING CREST ELEVATION	114.30 ft

CURRENT DATE: 09-08-2004
 CURRENT TIME: 10:44:10

FILE DATE: 09-08-2004
 FILE NAME: 30550PR

FHWA CULVERT ANALYSIS
 HY-8, VERSION 6.1

C U L V E R T N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	108.00	107.85	165.00	1 RCB	4.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: 30550PR DATE: 09-08-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
112.76 <i>50YR</i>	90.0	90.0	0.0	0.0	0.0	0.0	0.0	0.00	1
113.21	98.1	98.1	0.0	0.0	0.0	0.0	0.0	0.00	1
113.38 <i>100YR</i>	100.8	100.8	0.0	0.0	0.0	0.0	0.0	0.00	1
114.16	114.4	114.4	0.0	0.0	0.0	0.0	0.0	0.00	1
114.65	122.6	122.6	0.0	0.0	0.0	0.0	0.0	0.00	1
115.17	130.7	130.7	0.0	0.0	0.0	0.0	0.0	0.00	1
115.33	138.8	133.1	0.0	0.0	0.0	0.0	0.0	4.77	16
115.37	147.0	133.6	0.0	0.0	0.0	0.0	0.0	12.34	6
115.40	155.1	134.0	0.0	0.0	0.0	0.0	0.0	19.99	5
115.42	163.3	134.4	0.0	0.0	0.0	0.0	0.0	27.31	4
115.44 <i>500YR</i>	171.4	134.7	0.0	0.0	0.0	0.0	0.0	35.24	4
115.29	132.4	132.4	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 30550PR DATE: 09-08-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
112.76	0.000	90.00	0.00	0.00
113.21	0.000	98.14	0.00	0.00
113.38	0.000	100.80	0.00	0.00
114.16	0.000	114.42	0.00	0.00
114.65	0.000	122.56	0.00	0.00
115.17	0.000	130.70	0.00	0.00
115.33	-0.002	138.84	1.00	0.72
115.37	-0.003	146.98	1.05	0.71
115.40	-0.003	155.12	1.11	0.72
115.42	-0.004	163.26	1.59	0.97
115.44	-0.004	171.40	1.45	0.85

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

CURRENT DATE: 09-08-2004
CURRENT TIME: 10:44:10

FILE DATE: 09-08-2004
FILE NAME: 30550PR

PERFORMANCE CURVE FOR CULVERT 1 - 1(4.00 (ft) BY 3.00 (ft)) RCB

DIS- CHARGE FLOW (cfs)	HEAD- WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
90.00	112.76	4.60	4.76	2-M2c	3.00	2.51	2.51	1.97	8.96	0.00
98.14	113.21	5.03	5.21	2-M2c	3.00	2.66	2.66	1.97	9.22	0.00
100.80	113.38	5.18	5.38	2-M2c	3.00	2.71	2.71	1.97	9.31	0.00
114.42	114.16	6.00	6.16	2-M2c	3.00	2.95	2.95	1.97	9.71	0.00
122.56	114.65	6.54	6.65	6-FFc	3.00	3.00	3.00	1.97	10.21	0.00
130.70	115.17	7.13	7.17	6-FFc	3.00	3.00	3.00	1.97	10.89	0.00
133.07	115.33	7.31	7.33	6-FFc	3.00	3.00	3.00	1.97	11.09	0.00
133.59	115.37	7.35	7.37	6-FFc	3.00	3.00	3.00	1.97	11.13	0.00
134.01	115.39	7.38	7.39	6-FFc	3.00	3.00	3.00	1.97	11.17	0.00
134.37	115.42	7.40	7.42	6-FFc	3.00	3.00	3.00	1.97	11.20	0.00
134.71	115.44	7.43	7.44	6-FFc	3.00	3.00	3.00	1.97	11.23	0.00
El. inlet face invert					108.00 ft	El. outlet invert		107.85 ft		
El. inlet throat invert					0.00 ft	El. inlet crest		0.00 ft		

***** SITE DATA ***** CULVERT INVERT *****
 INLET STATION 0.00 ft
 INLET ELEVATION 108.00 ft
 OUTLET STATION 165.00 ft
 OUTLET ELEVATION 107.85 ft
 NUMBER OF BARRELS 1
 SLOPE (V/H) 0.0009
 CULVERT LENGTH ALONG SLOPE 165.00 ft

***** CULVERT DATA SUMMARY *****
 BARREL SHAPE BOX
 BARREL SPAN 4.00 ft
 BARREL RISE 3.00 ft
 BARREL MATERIAL CONCRETE
 BARREL MANNING'S n 0.012
 INLET TYPE CONVENTIONAL
 INLET EDGE AND WALL SQUARE EDGE (90-45 DEG.)
 INLET DEPRESSION NONE

CURRENT DATE: 09-08-2004
CURRENT TIME: 10:44:10

FILE DATE: 09-08-2004
FILE NAME: 30550PR

TAILWATER

CONSTANT WATER SURFACE ELEVATION
109.82

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	114.00 ft
CREST LENGTH	200.00 ft
OVERTOPPING CREST ELEVATION	115.29 ft

CURRENT DATE: 09-08-2004
 CURRENT TIME: 10:48:20

FILE DATE: 09-08-2004
 FILE NAME: 32148EX

FHWA CULVERT ANALYSIS
 HY-8, VERSION 6.1

C U L V E R T N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	107.18	106.21	175.00	1 RCB	2.00	2.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: 32148EX DATE: 09-08-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
112.60 <i>50YR</i>	36.8	36.8	0.0	0.0	0.0	0.0	0.0	0.00	1
113.43	40.1	40.1	0.0	0.0	0.0	0.0	0.0	0.00	1
113.71 <i>100YR</i>	41.2	41.2	0.0	0.0	0.0	0.0	0.0	0.00	1
115.31	46.8	46.8	0.0	0.0	0.0	0.0	0.0	0.00	1
116.31	50.1	50.0	0.0	0.0	0.0	0.0	0.0	0.00	3
116.37	53.5	50.2	0.0	0.0	0.0	0.0	0.0	2.77	26
116.38	56.8	50.2	0.0	0.0	0.0	0.0	0.0	6.07	9
116.39	60.1	50.2	0.0	0.0	0.0	0.0	0.0	9.43	8
116.40	63.4	50.3	0.0	0.0	0.0	0.0	0.0	12.70	7
116.41	66.8	50.3	0.0	0.0	0.0	0.0	0.0	15.90	6
116.41 <i>500YR</i>	70.1	50.3	0.0	0.0	0.0	0.0	0.0	19.26	6
116.35	50.1	50.1	0.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 32148EX DATE: 09-08-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
112.60	0.000	36.80	0.00	0.00
113.43	0.000	40.13	0.00	0.00
113.71	0.000	41.20	0.00	0.00
115.31	0.000	46.79	0.00	0.00
116.31	1.000	50.12	0.15	0.30
116.37	-0.001	53.45	0.52	0.97
116.38	-0.001	56.78	0.52	0.92
116.39	-0.001	60.11	0.46	0.77
116.40	-0.001	63.44	0.49	0.77
116.41	-0.001	66.77	0.60	0.90
116.41	-0.001	70.10	0.54	0.77

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

CURRENT DATE: 09-08-2004
CURRENT TIME: 10:48:20

FILE DATE: 09-08-2004
FILE NAME: 32148EX

TAILWATER

CONSTANT WATER SURFACE ELEVATION
107.74

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	92.00 ft
CREST LENGTH	400.00 ft
OVERTOPPING CREST ELEVATION	116.35 ft

CURRENT DATE: 09-08-2004
 CURRENT TIME: 10:49:20

FILE DATE: 09-08-2004
 FILE NAME: 32148PR

FHWA CULVERT ANALYSIS
 HY-8, VERSION 6.1

C U L V E R T N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	107.20	106.50	190.00	1 RCP	2.50	2.50	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: 32148PR DATE: 09-08-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
111.19 <i>50 YR</i>	36.8	36.8	0.0	0.0	0.0	0.0	0.0	0.00	1
111.90	40.1	40.1	0.0	0.0	0.0	0.0	0.0	0.00	1
112.07 <i>100 YR</i>	41.2	41.2	0.0	0.0	0.0	0.0	0.0	0.00	1
113.09	46.8	46.8	0.0	0.0	0.0	0.0	0.0	0.00	1
113.79	50.1	50.1	0.0	0.0	0.0	0.0	0.0	0.00	1
114.47	53.5	53.5	0.0	0.0	0.0	0.0	0.0	0.00	1
115.20	56.8	56.8	0.0	0.0	0.0	0.0	0.0	0.00	1
115.95	60.1	60.1	0.0	0.0	0.0	0.0	0.0	0.00	1
116.74	63.4	63.4	0.0	0.0	0.0	0.0	0.0	0.00	1
116.85	66.8	63.9	0.0	0.0	0.0	0.0	0.0	0.00	30
117.01 <i>500 YR</i>	70.1	64.5	0.0	0.0	0.0	0.0	0.0	0.51	30
117.00	64.5	64.5	0.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 32148PR DATE: 09-08-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
111.19	0.000	36.80	0.00	0.00
111.90	0.000	40.13	0.00	0.00
112.07	0.000	41.20	0.00	0.00
113.09	0.000	46.79	0.00	0.00
113.79	0.000	50.12	0.00	0.00
114.47	0.000	53.45	0.00	0.00
115.20	0.000	56.78	0.00	0.00
115.95	0.000	60.11	0.00	0.00
116.74	0.000	63.44	0.00	0.00
116.85	-0.003	66.77	2.91	4.36
117.01	-0.005	70.10	5.09	7.26

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

CURRENT DATE: 09-08-2004
 CURRENT TIME: 10:49:20

FILE DATE: 09-08-2004
 FILE NAME: 32148PR

PERFORMANCE CURVE FOR CULVERT 1 - 1(2.50 (ft) BY 2.50 (ft)) RCP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)	
36.80	111.19	3.89	3.99	2-M2c	2.50	2.05	2.05	1.24	8.54	0.00	
40.13	111.90	4.31	4.70	2-M2c	2.50	2.12	2.12	1.24	9.09	0.00	
41.20	112.07	4.45	4.87	2-M2c	2.50	2.14	2.14	1.24	9.25	0.00	
46.79	113.09	5.26	5.89	2-M2c	2.50	2.26	2.26	1.24	10.03	0.00	
50.12	113.79	5.80	6.59	2-M2c	2.50	2.33	2.33	1.24	10.59	0.00	
53.45	114.47	6.37	7.27	2-M2c	2.50	2.40	2.40	1.24	11.13	0.00	
56.78	115.20	6.98	8.00	2-M2c	2.50	2.47	2.47	1.24	11.65	0.00	
60.11	115.95	7.63	8.75	6-FFc	2.50	2.50	2.50	1.24	12.25	0.00	
63.44	116.74	8.31	9.54	6-FFc	2.50	2.50	2.50	1.24	12.92	0.00	
63.86	116.85	8.40	9.65	6-FFc	2.50	2.50	2.50	1.24	13.01	0.00	
64.50	117.00	8.53	9.80	6-FFc	2.50	2.50	2.50	1.24	13.14	0.00	
El. inlet face invert					107.20 ft		El. outlet invert		106.50 ft		
El. inlet throat invert					0.00 ft		El. inlet crest		0.00 ft		

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***** SITE DATA ***** CULVERT INVERT *****
INLET STATION                               0.00 ft
INLET ELEVATION                             107.20 ft
OUTLET STATION                              190.00 ft
OUTLET ELEVATION                            106.50 ft
NUMBER OF BARRELS                           1
SLOPE (V/H)                                0.0037
CULVERT LENGTH ALONG SLOPE                  190.00 ft
    
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***** CULVERT DATA SUMMARY *****
BARREL SHAPE                                CIRCULAR
BARREL DIAMETER                             2.50 ft
BARREL MATERIAL                             CONCRETE
BARREL MANNING'S n                          0.012
INLET TYPE                                  CONVENTIONAL
INLET EDGE AND WALL                          SQUARE EDGE WITH HEADWALL
INLET DEPRESSION                             NONE
    
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CURRENT DATE: 09-08-2004
CURRENT TIME: 10:49:20

FILE DATE: 09-08-2004
FILE NAME: 32148PR

TAILWATER

CONSTANT WATER SURFACE ELEVATION
107.74

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	114.00 ft
CREST LENGTH	400.00 ft
OVERTOPPING CREST ELEVATION	117.00 ft

CURRENT DATE: 09-08-2004
 CURRENT TIME: 10:55:24

FILE DATE: 09-08-2004
 FILE NAME: 34848EX

FHWA CULVERT ANALYSIS
 HY-8, VERSION 6.1

C U L V N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	103.88	103.58	150.00	1 RCB	5.00	2.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: 34848EX DATE: 09-08-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
107.75 <i>504R</i>	75.0	75.0	0.0	0.0	0.0	0.0	0.0	0.00	1
108.16	81.8	81.8	0.0	0.0	0.0	0.0	0.0	0.00	1
108.30 <i>1004R</i>	84.0	84.0	0.0	0.0	0.0	0.0	0.0	0.00	1
109.12	95.3	95.3	0.0	0.0	0.0	0.0	0.0	0.00	1
109.28	102.1	97.3	0.0	0.0	0.0	0.0	0.0	4.02	27
109.30	108.9	97.6	0.0	0.0	0.0	0.0	0.0	10.33	7
109.32	115.7	97.9	0.0	0.0	0.0	0.0	0.0	16.88	6
109.34	122.5	98.1	0.0	0.0	0.0	0.0	0.0	23.24	5
109.36	129.2	98.3	0.0	0.0	0.0	0.0	0.0	29.99	5
109.37	136.0	98.4	0.0	0.0	0.0	0.0	0.0	36.77	5
109.38 <i>5004R</i>	142.8	98.6	0.0	0.0	0.0	0.0	0.0	42.94	4
109.25	97.0	97.0	0.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 34848EX DATE: 09-08-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
107.75	0.000	75.00	0.00	0.00
108.16	0.000	81.78	0.00	0.00
108.30	0.000	84.00	0.00	0.00
109.12	0.000	95.34	0.00	0.00
109.28	-0.001	102.12	0.78	0.76
109.30	-0.001	108.90	0.96	0.88
109.32	-0.001	115.68	0.94	0.81
109.34	-0.002	122.46	1.15	0.94
109.36	-0.002	129.24	0.98	0.76
109.37	-0.001	136.02	0.80	0.59
109.38	-0.002	142.80	1.26	0.88

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

15-24

CURRENT DATE: 09-08-2004
 CURRENT TIME: 10:55:24

FILE DATE: 09-08-2004
 FILE NAME: 34848EX

PERFORMANCE CURVE FOR CULVERT 1 - 1(5.00 (ft) BY 2.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
75.00	107.75	3.82	3.87	2-M2c	2.00	1.92	1.92	1.85	7.83	0.00
81.78	108.16	4.25	4.28	6-FFc	2.00	2.00	2.00	1.85	8.18	0.00
84.00	108.30	4.40	4.42	6-FFc	2.00	2.00	2.00	1.85	8.40	0.00
95.34	109.12	5.24	5.20	6-S2n	2.00	2.00	1.90	1.85	10.04	0.00
97.32	109.27	5.39	5.35	6-S2n	2.00	2.00	1.90	1.85	10.24	0.00
97.61	109.30	5.42	5.37	6-S2n	2.00	2.00	1.90	1.85	10.28	0.00
97.86	109.32	5.44	5.39	6-S2n	2.00	2.00	1.90	1.85	10.30	0.00
98.07	109.33	5.45	5.40	6-S2n	2.00	2.00	1.90	1.85	10.32	0.00
98.26	109.35	5.47	5.42	6-S2n	2.00	2.00	1.90	1.85	10.34	0.00
98.45	109.37	5.49	5.43	6-S2n	2.00	2.00	1.90	1.85	10.36	0.00
98.61	109.38	5.50	5.45	6-S2n	2.00	2.00	1.90	1.85	10.38	0.00

El. inlet face invert 103.88 ft El. outlet invert 103.58 ft
 El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT *****
 INLET STATION 0.00 ft
 INLET ELEVATION 103.88 ft
 OUTLET STATION 150.00 ft
 OUTLET ELEVATION 103.58 ft
 NUMBER OF BARRELS 1
 SLOPE (V/H) 0.0020
 CULVERT LENGTH ALONG SLOPE 150.00 ft

***** CULVERT DATA SUMMARY *****
 BARREL SHAPE BOX
 BARREL SPAN 5.00 ft
 BARREL RISE 2.00 ft
 BARREL MATERIAL CONCRETE
 BARREL MANNING'S n 0.012
 INLET TYPE CONVENTIONAL
 INLET EDGE AND WALL SQUARE EDGE (90-45 DEG.)
 INLET DEPRESSION NONE

CURRENT DATE: 09-08-2004
CURRENT TIME: 10:55:24

FILE DATE: 09-08-2004
FILE NAME: 34848EX

TAILWATER

CONSTANT WATER SURFACE ELEVATION
105.43

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	92.00 ft
CREST LENGTH	300.00 ft
OVERTOPPING CREST ELEVATION	109.25 ft

CURRENT DATE: 09-08-2004
CURRENT TIME: 10:56:28

FILE DATE: 09-08-2004
FILE NAME: 34848PR

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

C U L V E R T N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	103.90	103.58	177.00	1 RCB	5.00	2.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs)

FILE: 34848PR

DATE: 09-08-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
107.90	50 YR 75.0	75.0	0.0	0.0	0.0	0.0	0.0	0.00	1
108.34	81.8	81.8	0.0	0.0	0.0	0.0	0.0	0.00	1
108.49	100 YR 84.0	84.0	0.0	0.0	0.0	0.0	0.0	0.00	1
109.33	95.3	95.3	0.0	0.0	0.0	0.0	0.0	0.00	1
109.88	102.1	102.1	0.0	0.0	0.0	0.0	0.0	0.00	1
110.20	108.9	105.8	0.0	0.0	0.0	0.0	0.0	0.00	30
110.41	115.7	108.2	0.0	0.0	0.0	0.0	0.0	6.54	23
110.43	122.5	108.4	0.0	0.0	0.0	0.0	0.0	12.87	6
110.45	129.2	108.6	0.0	0.0	0.0	0.0	0.0	19.76	6
110.47	136.0	108.8	0.0	0.0	0.0	0.0	0.0	26.17	5
110.48	500 YR 142.8	109.0	0.0	0.0	0.0	0.0	0.0	32.92	5
110.37	107.7	107.7	0.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS

FILE: 34848PR

DATE: 09-08-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
107.90	0.000	75.00	0.00	0.00
108.34	0.000	81.78	0.00	0.00
108.49	0.000	84.00	0.00	0.00
109.33	0.000	95.34	0.00	0.00
109.88	0.000	102.12	0.00	0.00
110.20	-0.006	108.90	3.12	2.87
110.41	-0.002	115.68	0.99	0.86
110.43	-0.002	122.46	1.20	0.98
110.45	-0.001	129.24	0.86	0.67
110.47	-0.002	136.02	1.04	0.76
110.48	-0.002	142.80	0.90	0.63

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

CURRENT DATE: 09-08-2004
 CURRENT TIME: 10:56:28

FILE DATE: 09-08-2004
 FILE NAME: 34848PR

PERFORMANCE CURVE FOR CULVERT 1 - 1(5.00 (ft) BY 2.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)	
75.00	107.90	3.82	4.00	2-M2c	2.00	1.92	1.92	1.85	7.83	0.00	
81.78	108.34	4.25	4.44	6-FFc	2.00	2.00	2.00	1.85	8.18	0.00	
84.00	108.49	4.40	4.59	6-FFc	2.00	2.00	2.00	1.85	8.40	0.00	
95.34	109.33	5.24	5.43	6-FFc	2.00	2.00	2.00	1.85	9.53	0.00	
102.12	109.88	5.79	5.98	6-FFc	2.00	2.00	2.00	1.85	10.21	0.00	
105.78	110.20	6.12	6.30	6-FFc	2.00	2.00	2.00	1.85	10.58	0.00	
108.15	110.41	6.35	6.51	6-FFc	2.00	2.00	2.00	1.85	10.81	0.00	
108.40	110.43	6.37	6.53	6-FFc	2.00	2.00	2.00	1.85	10.84	0.00	
108.62	110.45	6.40	6.55	6-FFc	2.00	2.00	2.00	1.85	10.86	0.00	
108.81	110.47	6.41	6.57	6-FFc	2.00	2.00	2.00	1.85	10.88	0.00	
108.98	110.48	6.43	6.58	6-FFc	2.00	2.00	2.00	1.85	10.90	0.00	
El. inlet face invert					103.90 ft	El. outlet invert			103.58 ft		
El. inlet throat invert					0.00 ft	El. inlet crest			0.00 ft		

***** SITE DATA ***** CULVERT INVERT *****
 INLET STATION 0.00 ft
 INLET ELEVATION 103.90 ft
 OUTLET STATION 177.00 ft
 OUTLET ELEVATION 103.58 ft
 NUMBER OF BARRELS 1
 SLOPE (V/H) 0.0018
 CULVERT LENGTH ALONG SLOPE 177.00 ft

***** CULVERT DATA SUMMARY *****
 BARREL SHAPE BOX
 BARREL SPAN 5.00 ft
 BARREL RISE 2.00 ft
 BARREL MATERIAL CONCRETE
 BARREL MANNING'S n 0.012
 INLET TYPE CONVENTIONAL
 INLET EDGE AND WALL SQUARE EDGE (90-45 DEG.)
 INLET DEPRESSION NONE

CURRENT DATE: 09-08-2004
CURRENT TIME: 10:56:28

FILE DATE: 09-08-2004
FILE NAME: 34848PR

TAILWATER

CONSTANT WATER SURFACE ELEVATION
105.43

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	114.00 ft
CREST LENGTH	300.00 ft
OVERTOPPING CREST ELEVATION	110.37 ft

CURRENT DATE: 09-08-2004
 CURRENT TIME: 11:02:41

FILE DATE: 09-08-2004
 FILE NAME: 51172EX

FHWA CULVERT ANALYSIS
 HY-8, VERSION 6.1

C U L V E R T N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	97.00	96.61	150.00	1 RCB	4.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: 51172EX DATE: 09-08-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
101.60 <i>50 yr</i>	90.0	90.0	0.0	0.0	0.0	0.0	0.0	0.00	1
102.03	98.1	98.1	0.0	0.0	0.0	0.0	0.0	0.00	1
102.18 <i>100 yr</i>	100.8	100.8	0.0	0.0	0.0	0.0	0.0	0.00	1
102.77	114.4	110.8	0.0	0.0	0.0	0.0	0.0	0.00	30
102.85	122.6	112.0	0.0	0.0	0.0	0.0	0.0	9.41	11
102.87	130.7	112.4	0.0	0.0	0.0	0.0	0.0	17.22	6
102.89	138.8	112.7	0.0	0.0	0.0	0.0	0.0	24.84	5
102.91	147.0	113.0	0.0	0.0	0.0	0.0	0.0	32.90	5
102.93	155.1	113.3	0.0	0.0	0.0	0.0	0.0	40.98	5
102.94	163.3	113.5	0.0	0.0	0.0	0.0	0.0	48.37	4
102.96 <i>500 yr</i>	171.4	113.8	0.0	0.0	0.0	0.0	0.0	56.26	4
102.80	111.2	111.2	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 51172EX DATE: 09-08-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
101.60	0.000	90.00	0.00	0.00
102.03	0.000	98.14	0.00	0.00
102.18	0.000	100.80	0.00	0.00
102.77	-0.007	114.42	3.58	3.13
102.85	-0.002	122.56	1.19	0.97
102.87	-0.002	130.70	1.12	0.86
102.89	-0.002	138.84	1.30	0.94
102.91	-0.002	146.98	1.07	0.73
102.93	-0.002	155.12	0.85	0.55
102.94	-0.002	163.26	1.34	0.82
102.96	-0.003	171.40	1.34	0.78

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

CURRENT DATE: 09-08-2004
CURRENT TIME: 11:02:41

FILE DATE: 09-08-2004
FILE NAME: 51172EX

TAILWATER

CONSTANT WATER SURFACE ELEVATION
97.49

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	92.00 ft
CREST LENGTH	300.00 ft
OVERTOPPING CREST ELEVATION	102.80 ft

CURRENT DATE: 09-08-2004
CURRENT TIME: 11:03:58

FILE DATE: 09-08-2004
FILE NAME: 51172PR

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

C U L V E R T N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	97.00	96.60	170.00	1 RCB	4.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs)

FILE: 51172PR

DATE: 09-08-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
101.60 <i>50 YR</i>	90.0	90.0	0.0	0.0	0.0	0.0	0.0	0.00	1
102.03	98.1	98.1	0.0	0.0	0.0	0.0	0.0	0.00	1
102.18 <i>100 YR</i>	100.8	100.8	0.0	0.0	0.0	0.0	0.0	0.00	1
103.00	114.4	114.4	0.0	0.0	0.0	0.0	0.0	0.00	1
103.28	122.6	118.6	0.0	0.0	0.0	0.0	0.0	0.00	30
103.39	130.7	120.3	0.0	0.0	0.0	0.0	0.0	9.50	14
103.41	138.8	120.6	0.0	0.0	0.0	0.0	0.0	17.12	6
103.43	147.0	120.9	0.0	0.0	0.0	0.0	0.0	24.73	5
103.45	155.1	121.2	0.0	0.0	0.0	0.0	0.0	32.82	5
103.47	163.3	121.5	0.0	0.0	0.0	0.0	0.0	40.19	4
103.48 <i>500 YR</i>	171.4	121.7	0.0	0.0	0.0	0.0	0.0	48.13	4
103.34	119.6	119.6	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS

FILE: 51172PR

DATE: 09-08-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
101.60	0.000	90.00	0.00	0.00
102.03	0.000	98.14	0.00	0.00
102.18	0.000	100.80	0.00	0.00
103.00	0.000	114.42	0.00	0.00
103.28	-0.006	122.56	3.96	3.23
103.39	-0.001	130.70	0.91	0.70
103.41	-0.002	138.84	1.08	0.78
103.43	-0.002	146.98	1.31	0.89
103.45	-0.002	155.12	1.08	0.70
103.47	-0.003	163.26	1.61	0.99
103.48	-0.003	171.40	1.56	0.91

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

CURRENT DATE: 09-08-2004
 CURRENT TIME: 11:03:58

FILE DATE: 09-08-2004
 FILE NAME: 51172PR

PERFORMANCE CURVE FOR CULVERT 1 - 1(4.00 (ft) BY 3.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
90.00	101.60	4.60	4.34	2-M2c	3.00	2.51	2.51	0.89	8.96	0.00
98.14	102.03	5.03	4.90	2-M2c	3.00	2.66	2.66	0.89	9.22	0.00
100.80	102.18	5.18	5.13	2-M2c	3.00	2.71	2.71	0.89	9.31	0.00
114.42	103.00	6.00	5.95	2-M2c	3.00	2.95	2.95	0.89	9.71	0.00
118.60	103.27	6.27	6.20	6-S2n	3.00	3.00	2.90	0.89	10.22	0.00
120.29	103.39	6.39	6.30	6-S2n	3.00	3.00	2.90	0.89	10.37	0.00
120.64	103.41	6.41	6.32	6-S2n	3.00	3.00	2.90	0.89	10.40	0.00
120.94	103.43	6.43	6.34	6-S2n	3.00	3.00	2.90	0.89	10.43	0.00
121.22	103.45	6.45	6.36	6-S2n	3.00	3.00	2.90	0.89	10.45	0.00
121.46	103.47	6.47	6.37	6-S2n	3.00	3.00	2.90	0.89	10.47	0.00
121.70	103.48	6.48	6.39	6-S2n	3.00	3.00	2.90	0.89	10.49	0.00
El. inlet face invert					97.00 ft	El. outlet invert			96.60 ft	
El. inlet throat invert					0.00 ft	El. inlet crest			0.00 ft	

***** SITE DATA ***** CULVERT INVERT *****

INLET STATION 0.00 ft
 INLET ELEVATION 97.00 ft
 OUTLET STATION 170.00 ft
 OUTLET ELEVATION 96.60 ft
 NUMBER OF BARRELS 1
 SLOPE (V/H) 0.0024
 CULVERT LENGTH ALONG SLOPE 170.00 ft

***** CULVERT DATA SUMMARY *****

BARREL SHAPE BOX
 BARREL SPAN 4.00 ft
 BARREL RISE 3.00 ft
 BARREL MATERIAL CONCRETE
 BARREL MANNING'S n 0.012
 INLET TYPE CONVENTIONAL
 INLET EDGE AND WALL SQUARE EDGE (90-45 DEG.)
 INLET DEPRESSION NONE

CURRENT DATE: 09-08-2004
CURRENT TIME: 11:03:58

FILE DATE: 09-08-2004
FILE NAME: 51172PR

TAILWATER

CONSTANT WATER SURFACE ELEVATION
97.49

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	114.00 ft
CREST LENGTH	300.00 ft
OVERTOPPING CREST ELEVATION	103.34 ft

CURRENT DATE: 10-13-2004
 CURRENT TIME: 14:34:12

FILE DATE: 10-13-2004
 FILE NAME: 55353EX

FHWA CULVERT ANALYSIS
 HY-8, VERSION 6.1

C U L V N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	94.81	94.80	150.00	3 RCB	6.00	5.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: 55353EX DATE: 10-13-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
98.34 ^{50 YR}	273.4	273.4	0.0	0.0	0.0	0.0	0.0	0.00	1
98.43	288.1	288.1	0.0	0.0	0.0	0.0	0.0	0.00	1
98.52	302.7	302.7	0.0	0.0	0.0	0.0	0.0	0.00	1
98.60 ^{100 YR}	314.7	314.7	0.0	0.0	0.0	0.0	0.0	0.00	1
98.71	332.0	332.0	0.0	0.0	0.0	0.0	0.0	0.00	1
98.81	346.7	346.7	0.0	0.0	0.0	0.0	0.0	0.00	1
98.91	361.4	361.4	0.0	0.0	0.0	0.0	0.0	0.00	1
99.01	376.0	376.0	0.0	0.0	0.0	0.0	0.0	0.00	1
99.11	390.7	390.7	0.0	0.0	0.0	0.0	0.0	0.00	1
99.18	405.3	405.3	0.0	0.0	0.0	0.0	0.0	0.00	1
99.31 ^{500 YR}	420.0	420.0	0.0	0.0	0.0	0.0	0.0	0.00	1
103.18	948.4	948.4	0.0	0.0	0.0	0.0	0.0	0.0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 55353EX DATE: 10-13-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
98.34	0.000	273.40	0.00	0.00
98.43	0.000	288.06	0.00	0.00
98.52	0.000	302.72	0.00	0.00
98.60	0.000	314.70	0.00	0.00
98.71	0.000	332.04	0.00	0.00
98.81	0.000	346.70	0.00	0.00
98.91	0.000	361.36	0.00	0.00
99.01	0.000	376.02	0.00	0.00
99.11	0.000	390.68	0.00	0.00
99.18	0.000	405.34	0.00	0.00
99.31	0.000	420.00	0.00	0.00

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-13-2004
 CURRENT TIME: 14:34:12

FILE DATE: 10-13-2004
 FILE NAME: 55353EX

PERFORMANCE CURVE FOR CULVERT 1 - 3(6.00 (ft) BY 5.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
273.40	98.34	3.28	3.53	3-M2t	5.00	1.93	2.65	2.65	5.73	0.00
288.06	98.43	3.39	3.62	3-M2t	5.00	2.00	2.65	2.65	6.04	0.00
302.72	98.52	3.50	3.71	3-M2t	5.00	2.07	2.65	2.65	6.35	0.00
314.70	98.60	3.59	3.79	3-M2t	5.00	2.12	2.65	2.65	6.60	0.00
332.04	98.71	3.72	3.90	3-M2t	5.00	2.20	2.65	2.65	6.96	0.00
346.70	98.81	3.83	4.00	3-M2t	5.00	2.26	2.65	2.65	7.27	0.00
361.36	98.91	3.93	4.10	3-M2t	5.00	2.33	2.65	2.65	7.58	0.00
376.02	99.01	4.04	4.20	3-M2t	5.00	2.39	2.65	2.65	7.88	0.00
390.68	99.11	4.14	4.30	3-M2t	5.00	2.45	2.65	2.65	8.19	0.00
405.34	99.18	4.24	4.37	3-M2t	5.00	2.51	2.65	2.65	8.50	0.00
420.00	99.31	4.34	4.50	3-M2t	5.00	2.57	2.65	2.65	8.81	0.00

El. inlet face invert 94.81 ft El. outlet invert 94.80 ft
 El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT *****
 INLET STATION 0.00 ft
 INLET ELEVATION 94.81 ft
 OUTLET STATION 150.00 ft
 OUTLET ELEVATION 94.80 ft
 NUMBER OF BARRELS 3
 SLOPE (V/H) 0.0001
 CULVERT LENGTH ALONG SLOPE 150.00 ft

***** CULVERT DATA SUMMARY *****
 BARREL SHAPE BOX
 BARREL SPAN 6.00 ft
 BARREL RISE 5.00 ft
 BARREL MATERIAL CONCRETE
 BARREL MANNING'S n 0.012
 INLET TYPE CONVENTIONAL
 INLET EDGE AND WALL SQUARE EDGE (90-45 DEG.)
 INLET DEPRESSION NONE

CURRENT DATE: 10-13-2004
CURRENT TIME: 14:34:12

FILE DATE: 10-13-2004
FILE NAME: 55353EX

TAILWATER

CONSTANT WATER SURFACE ELEVATION
97.45

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	92.00 ft
CREST LENGTH	200.00 ft
OVERTOPPING CREST ELEVATION	103.18 ft

CURRENT DATE: 10-13-2004
 CURRENT TIME: 14:50:03

FILE DATE: 10-13-2004
 FILE NAME: 55353PR

FHWA CULVERT ANALYSIS
 HY-8, VERSION 6.1

C U L V E R T N O.	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	94.81	94.80	172.00	3 RCB	6.00	5.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: 55353PR DATE: 10-13-2004

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
98.35 <i>50YR</i>	273.4	273.4	0.0	0.0	0.0	0.0	0.0	0.00	1
98.45	288.1	288.1	0.0	0.0	0.0	0.0	0.0	0.00	1
98.54	302.7	302.7	0.0	0.0	0.0	0.0	0.0	0.00	1
98.58 <i>100YR</i>	314.7	314.7	0.0	0.0	0.0	0.0	0.0	0.00	1
98.73	332.0	332.0	0.0	0.0	0.0	0.0	0.0	0.00	1
98.79	346.7	346.7	0.0	0.0	0.0	0.0	0.0	0.00	1
98.93	361.4	361.4	0.0	0.0	0.0	0.0	0.0	0.00	1
99.03	376.0	376.0	0.0	0.0	0.0	0.0	0.0	0.00	1
99.10	390.7	390.7	0.0	0.0	0.0	0.0	0.0	0.00	1
99.23	405.3	405.3	0.0	0.0	0.0	0.0	0.0	0.00	1
99.33 <i>500YR</i>	420.0	420.0	0.0	0.0	0.0	0.0	0.0	0.00	1
103.39	969.6	969.6	0.0	0.0	0.0	0.0	0.0	0.0 OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 55353PR DATE: 10-13-2004

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
98.35	0.000	273.40	0.00	0.00
98.45	0.000	288.06	0.00	0.00
98.54	0.000	302.72	0.00	0.00
98.58	0.000	314.70	0.00	0.00
98.73	0.000	332.04	0.00	0.00
98.79	0.000	346.70	0.00	0.00
98.93	0.000	361.36	0.00	0.00
99.03	0.000	376.02	0.00	0.00
99.10	0.000	390.68	0.00	0.00
99.23	0.000	405.34	0.00	0.00
99.33	0.000	420.00	0.00	0.00

<1> TOLERANCE (ft) = 0.010

<2> TOLERANCE (%) = 1.000

15-39

CURRENT DATE: 10-13-2004
CURRENT TIME: 14:50:03

FILE DATE: 10-13-2004
FILE NAME: 55353PR

PERFORMANCE CURVE FOR CULVERT 1 - 3(6.00 (ft) BY 5.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
273.40	98.35	3.28	3.54	3-M2t	5.00	1.93	2.65	2.65	5.73	0.00
288.06	98.45	3.39	3.64	3-M2t	5.00	2.00	2.65	2.65	6.04	0.00
302.72	98.54	3.50	3.73	3-M2t	5.00	2.07	2.65	2.65	6.35	0.00
314.70	98.58	3.59	3.77	3-M2t	5.00	2.12	2.65	2.65	6.60	0.00
332.04	98.73	3.72	3.92	3-M2t	5.00	2.20	2.65	2.65	6.96	0.00
346.70	98.79	3.83	3.98	3-M2t	5.00	2.26	2.65	2.65	7.27	0.00
361.36	98.93	3.93	4.12	3-M2t	5.00	2.33	2.65	2.65	7.58	0.00
376.02	99.03	4.04	4.22	3-M2t	5.00	2.39	2.65	2.65	7.88	0.00
390.68	99.10	4.14	4.29	3-M2t	5.00	2.45	2.65	2.65	8.19	0.00
405.34	99.23	4.24	4.42	3-M2t	5.00	2.51	2.65	2.65	8.50	0.00
420.00	99.33	4.34	4.52	3-M2t	5.00	2.57	2.65	2.65	8.81	0.00
El. inlet face invert					94.81 ft	El. outlet invert			94.80 ft	
El. inlet throat invert					0.00 ft	El. inlet crest			0.00 ft	

***** SITE DATA ***** CULVERT INVERT *****

INLET STATION 0.00 ft
 INLET ELEVATION 94.81 ft
 OUTLET STATION 172.00 ft
 OUTLET ELEVATION 94.80 ft
 NUMBER OF BARRELS 3
 SLOPE (V/H) 0.0001
 CULVERT LENGTH ALONG SLOPE 172.00 ft

***** CULVERT DATA SUMMARY *****

BARREL SHAPE BOX
 BARREL SPAN 6.00 ft
 BARREL RISE 5.00 ft
 BARREL MATERIAL CONCRETE
 BARREL MANNING'S n 0.012
 INLET TYPE CONVENTIONAL
 INLET EDGE AND WALL SQUARE EDGE (90-45 DEG.)
 INLET DEPRESSION NONE

CURRENT DATE: 10-13-2004
CURRENT TIME: 14:50:03

FILE DATE: 10-13-2004
FILE NAME: 55353PR

TAILWATER

CONSTANT WATER SURFACE ELEVATION
97.45

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	114.00 ft
CREST LENGTH	200.00 ft
OVERTOPPING CREST ELEVATION	103.39 ft

Rational Method: Peak Runoff Calculations

Project: SR 25/ US 27
 Location: Lake County

By: BD Date: 9/7/04
 Checked: _____ Date: _____

Station	Size	Total Area (ft ²)	Total Area (acres)	Runoff C Pervious	Onsite Area (acres)	Impervious Area (acres)	Runoff C Impervious	TOC (min)	Zone 7 50 yr Rainfall Int. (in/hr)	Zone 7 100 yr Rainfall Int. (in/hr)	50 yr Peak Runoff, Q (ft ³ /sec)	100 yr Peak Runoff, Q (ft ³ /sec)	500 yr Peak Runoff, Q (ft ³ /sec)
287+13	(2) 10' x 4' CBC	34,263,721	786.58	0.10	7.51	2.02	0.95	95.18	3.0	3.5	285.79	344.13	470
553+53	(3) 6' x 5' CBC	57,709,487	1324.82	0.10	6.15	1.58	0.95	193.36	1.7	1.9	273.39	314.65	420

Rational Equation Q = CIA

15.42

WORKSHEET 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: SR 25/ US 27 By: B.D. Date: 3/3/04
 Location: Lake County Checked: _____ Date: _____

Circle One: Present Developed CD 553+53

Circle One: T_c T_t through subarea _____

NOTES: Space for as many as two segments per flow type can be used for each worksheet.
 Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c only)

- Segment ID _____
1. Surface Description (table 3-1.).....
 2. Manning's roughness coeff., n (table 3-1.).....
 3. Flow length, L (total L ≤ 300 ft.)..... ft
 4. Two-yr 24-hr rainfall, P₂..... in
 5. Land slope, s ft/ft
 6. T_t = $\frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t...hr

AB			
Dense Underbrush			
0.80			
300			
4.7			
0.0500			
0.86	+		= 0.86

Shallow concentrated flow

- Segment ID _____
7. Surface Description (paved or unpaved).....
 8. Flow length, L ft
 9. Watercourse slope, s ft/ft
 10. Average velocity, V (figure 3-1) ft/s
 11. T_t = $\frac{L}{3600 V}$ Compute T_thr

BC			
unpaved			
10970			
0.0064			
1.29	0.00		
2.364	+		= 2.36

Channel flow

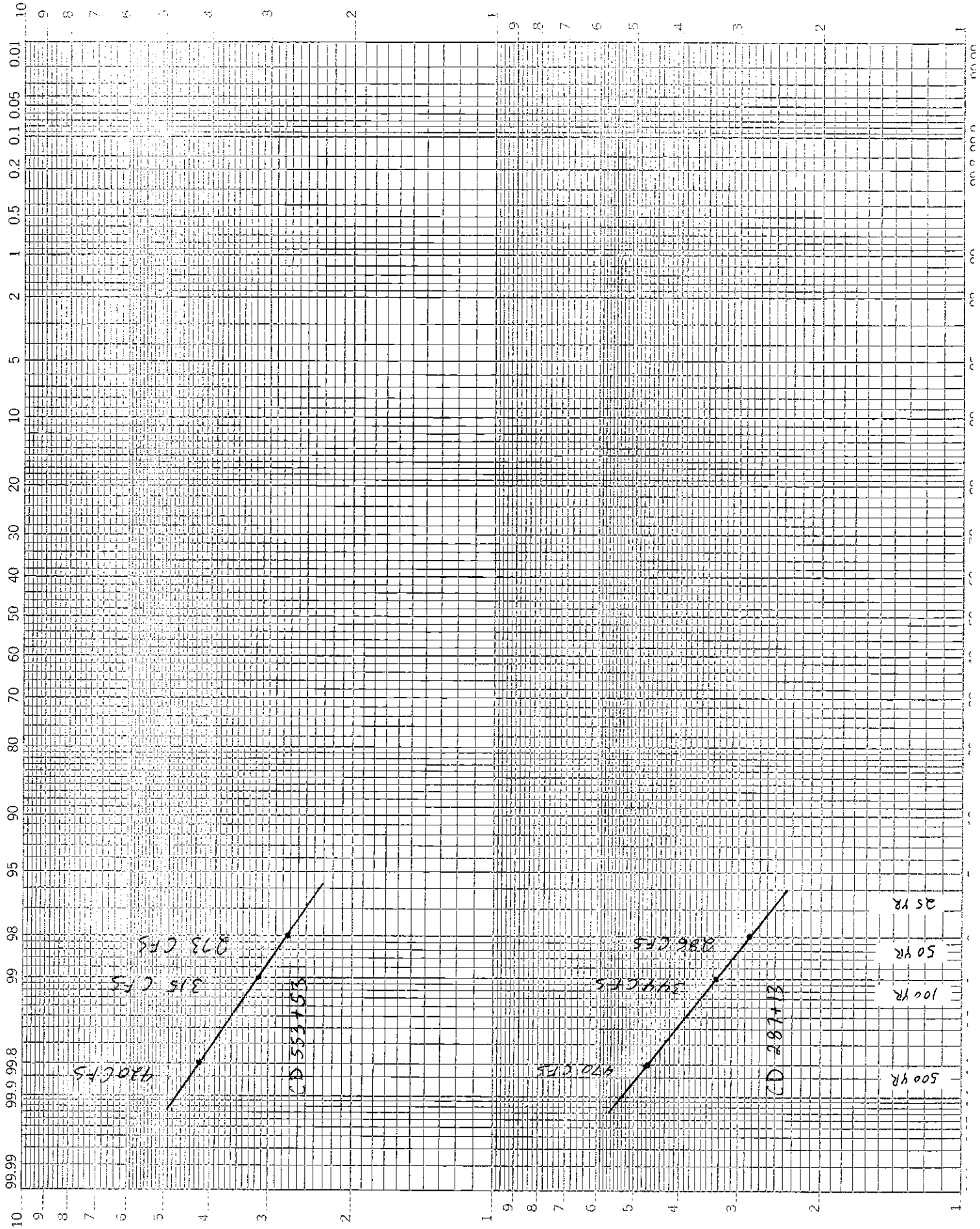
- Segment ID _____
12. Cross sectional flow area, a ft²
 13. Wetted perimeter, P_w ft/ft
 14. Hydraulic radius, r = a/P_w Compute r ft
 15. Channel slope, s ft/ft
 16. Manning's roughness coeff., n
 17. V = $1.49 r^{2/3} s^{1/2} / n$ Compute V ft/s
 18. Flow length, L ft
 19. T_t = L / 3600 V Compute T hr
 20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) hr

	+		= 0.00
			3.22

193 minutes

46 8040

KE PROBABILITY X 2 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.



25 YR
50 YR
100 YR
500 YR

15-45

LOCATION HYDRAULIC REPORT

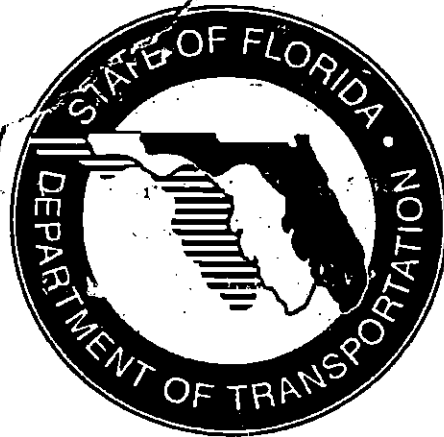
SR 25/US27

FROM POLK COUNTY LINE (US 192)
TO NEW FLORIDA'S TURNPIKE INTERCHANGE (SR 91)

STATE PROJECT NO. 11200-1501

WORK PROGRAM ITEM NO. 5112884

LAKE COUNTY



PREPARED BY:

MICHAEL H. HILL, P.E.

FDOT DISTRICT 5 DRAINAGE DESIGN

AUGUST 1997

UPDATED: FEBRUARY 1999

All units in English measure except stationing.

STATE PROJEC NO. 11200-1501
 F.A. PROJECT NO. 5112884
 W.P.I. NO. 5112884
 DATE: 8/1/97

SHEET OF 51225/US27
 From POLK CO Line
 to FL TP SR91

STRUCTURE NO.	STATION meters	X-Drain Size	DESIGN FLOOD		BASE FLOOD		OVERTOPPING FLOOD				GREATEST FLOOD				
			2% PROB.	50 YR. FREQ.	1% PROB.	100 YR. FREQ.	Rd. TP		PROB. %	FREQ. YRS.	DISCHARGE	STAGE	PROB. %	FREQ. YRS.	
			DISCHARGE	STAGE	DISCHARGE	STAGE	DISCHARGE	STAGE							DISCHARGE
5-3	11+70	4'x3'CBC	43	128.5	50	128.9	131.8	N/A				63	129.2	0.2	500
5-6	20+85	30"	31	137.5	36	138.0	139.4					45	139.1		
5-9	26+30	30"	31	133.8	35	134.3	137.3					44	136.4		
5-13	43+25	3'x5'CBC	87	119.5	92	119.9	123.5					126	120.8		
5-15	52+25	2'x2+30"	18	137.8	20	138.0	141.3					25	138.7		
5-19	61+00	2'x2+30"	24	116.1	27	118.5	121.2					35	119.6		
5-21	70+90	2'x2+30"	15	125.9	17	126.1	129.7					21	126.4		
5-24	81+75	2-10'x4'	255	114.3	292	114.4	118.3	CD 287+13				370	114.6	12	
5-27	87+30	4'x8'CBC	36	112.1	41	112.2	115.7					52	112.4		
4-28	92+20	2'x2+30"	20	110.1	23	110.7	117.7					29	111.1		
6-30	100+90	5'x2'	55	107.6	63	108.0	110.9					60	108.9		
6-26	117+75	2'x2+30+24	17	112.1	20	112.4	117.5					25	113.0		
7-27	121+35	2'x2+30+24	16	111.5	18	111.7	115.6					23	112.2		
6-39	125+85	2'x2+30	26	111.9	30	112.5	117.1					37	114.1		
9-44	136+40	30"	33	118.2	37	118.6	122.5					47	119.5		
6-47	144+60	4'x5'	41	101.0	47	101.1	104.5					60	101.4		
11-48	156+85	2'x2+30"	17	109.9	20	100.1	103.8					25	100.6		
50	162+90	3-6'x5'	216	100.9	247	101.0	104.3	CD 553+53				313	101.1		
53	172+00	10'x5'	80	98.4	92	98.4	104.3					117	98.4		
61	182+90	4x2	64	167.5	74	165.6	166.5	168.2	0.2	500		93	168.2		

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, NGVD, 1929.

DEFINITIONS

DESIGN FLOOD:

THE FLOOD SELECTED BY F.O.D.T. TO BE UTILIZED TO ASSURE A STANDARD LEVEL OF HYDRAULIC PERFORMANCE.

BASE FLOOD:

THE FLOOD HAVING A 1% CHANCE OF BEING EXCEEDED IN ANY YEAR, 100 YR. FREQUENCY.

OVERTOPPING FLOOD:

THE FLOOD WHERE FLOW OCCURS (A) OVER THE HIGHWAY (B) OVER A WATERSHED DIVIDE OR (C) THRU EMERGENCY RELIEF STRUCTURES.

GREATEST FLOOD:

THE MOST SEVERE FLOOD WHICH CAN BE PREDICTED WHERE OVERTOPPING IS NOT

DATA ADAPTED

FROM: Std. Rational Method & NIECS
 Crosses Held for TMI Dept.

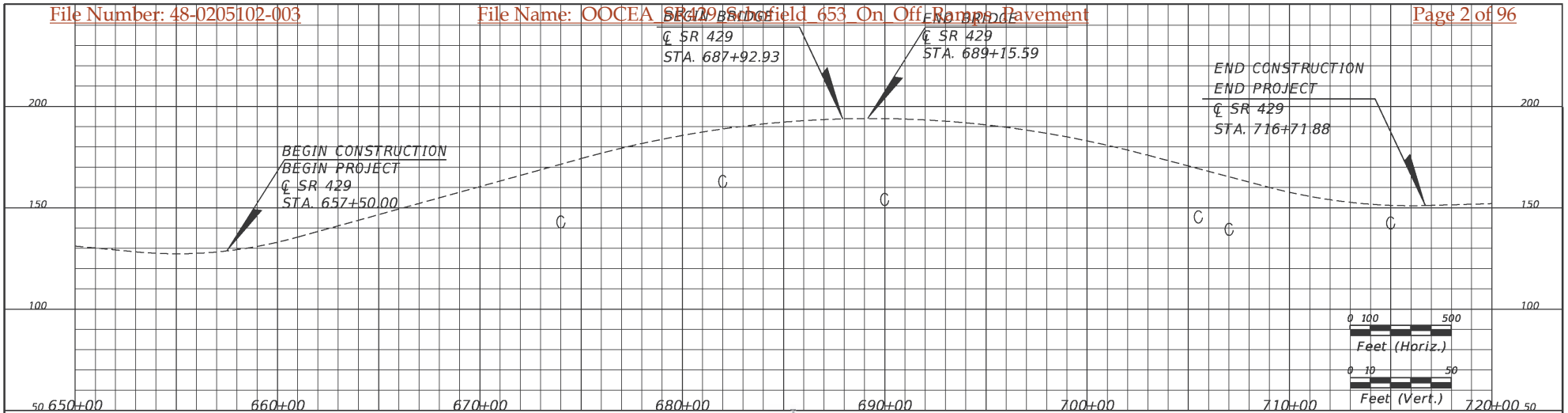
PREPARED BY: Bill Deese

DATE: 9/92

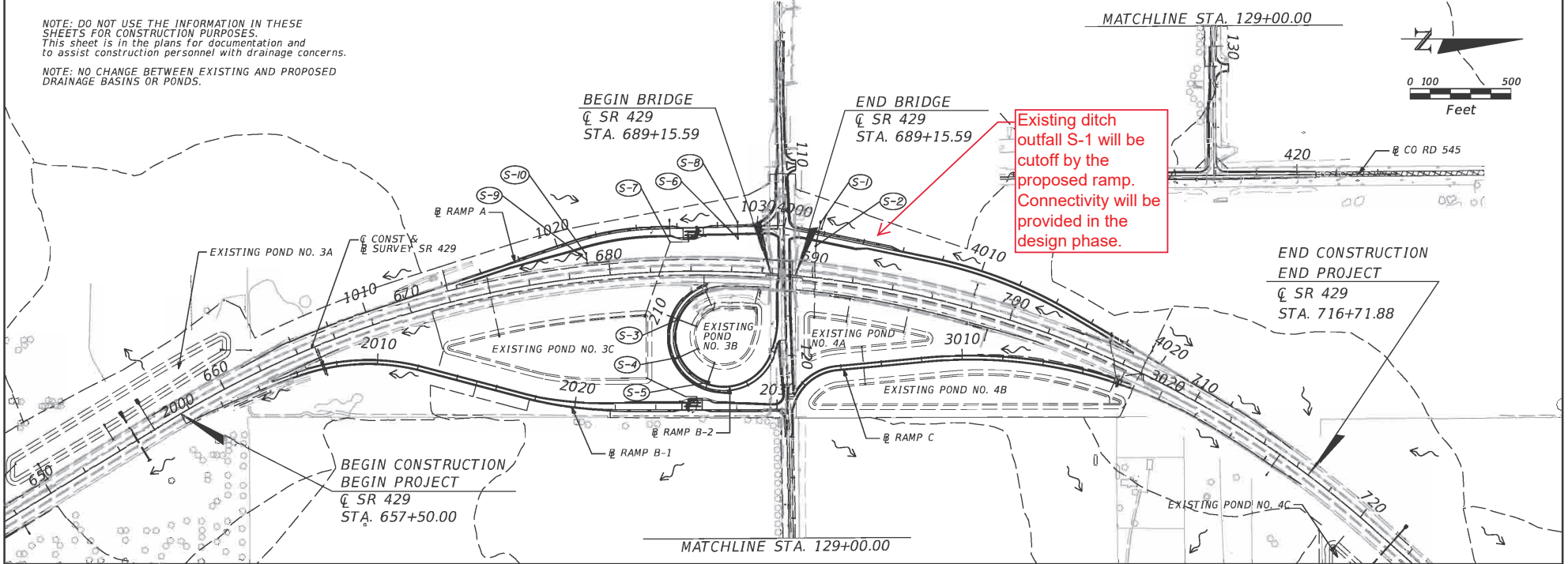
APPROVED FOR USE

90260-2
 1547

RECEIVED
 MAR 0 2005



NOTE: DO NOT USE THE INFORMATION IN THESE SHEETS FOR CONSTRUCTION PURPOSES. This sheet is in the plans for documentation and to assist construction personnel with drainage concerns.
NOTE: NO CHANGE BETWEEN EXISTING AND PROPOSED DRAINAGE BASINS OR PONDS.



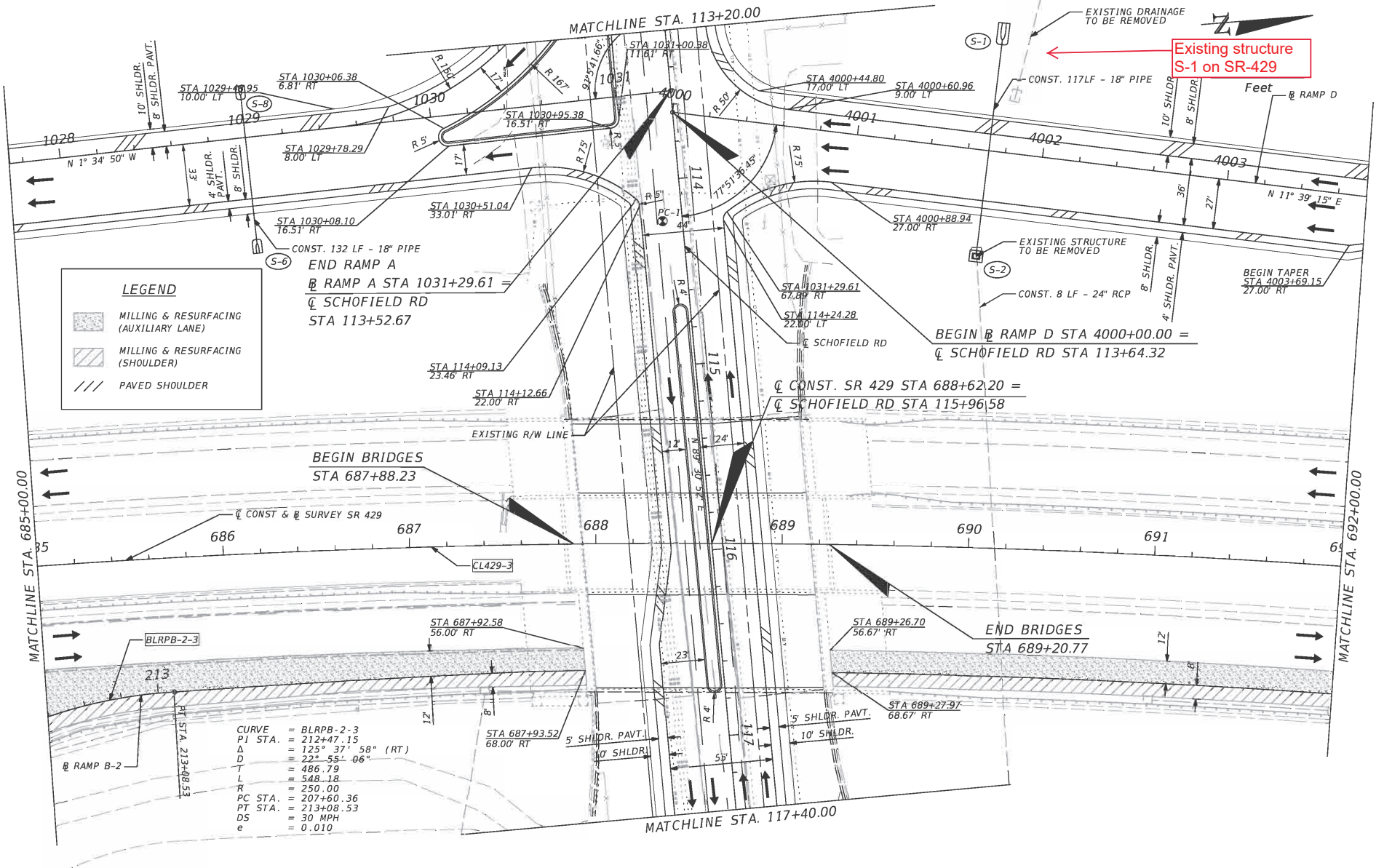
REVISIONS	
DATE	DESCRIPTION

TROY W. VARGAS, P.E. LICENSE NO. 57621
 201 N. Magnolia Ave.
 Suite 200
 Orlando FL 32801
 Phone 407.839.4300
 Fax 407.839.1621
WBQ
 Design & Engineering
 CERTIFICATE OF AUTHORIZATION NO. 6736

OOCEA PROJ. NO.
 429-305

PROPOSED DRAINAGE MAP
 G-52

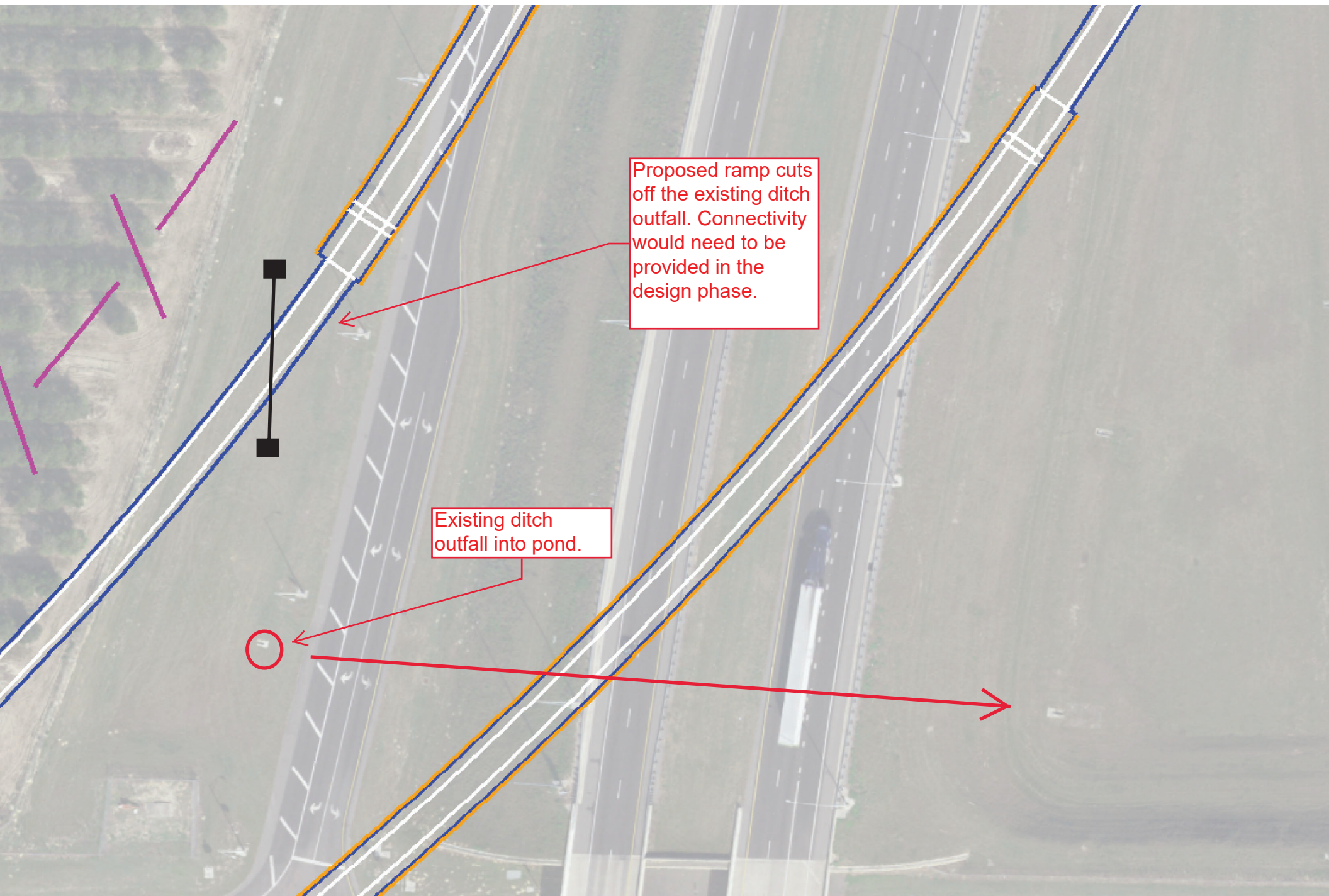
SHEET NO.
 4



REVISIONS		TROY W. VARGAS, P.E. LICENSE NO. 57621		OOCEA PROJ. NO.	EXPRESSWAY AUTHORITY	ROADWAY PLAN SHEET (5) STA. 685+00 TO 692+00	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION				
				429-305		G-53	28

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Area G1	100yr	121.00	106.34	0.0010	37.06	14.71	77943
Area G2	100yr	121.00	106.34	0.0010	122.14	56.42	200486
Downstream	100yr	107.00	106.40	0.0024	56.42	92.06	0
Area G1	10yr	121.00	106.15	0.0010	67.78	5.11	75318
Area G2	10yr	121.00	106.15	0.0010	109.77	60.78	195595
Downstream	10yr	107.00	106.40	0.0024	21.23	92.07	0
Area G1	25yr	121.00	106.22	0.0010	47.56	8.95	76252
Area G2	25yr	121.00	106.22	0.0010	114.16	38.74	197333
Downstream	25yr	107.00	106.40	0.0024	35.02	92.07	0
Area G1	50yr	121.00	106.29	0.0010	35.85	12.49	77276
Area G2	50yr	121.00	106.29	0.0010	118.58	48.28	199245
Downstream	50yr	107.00	106.40	0.0024	48.28	92.06	0



Proposed ramp cuts off the existing ditch outfall. Connectivity would need to be provided in the design phase.

Existing ditch outfall into pond.

Appendix H – Proposed Typical Sections

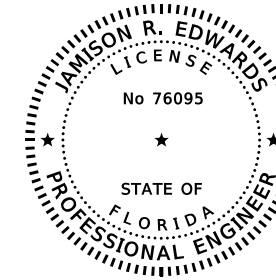
CENTRAL FLORIDA EXPRESSWAY AUTHORITY (CFX)

TYPICAL SECTION PACKAGE

LAKE/ORANGE COUNTY CONNECTOR FEASIBILITY/PD&E STUDY
FROM US 27 TO SR 429
CFX PROJECT NUMBER 599-225

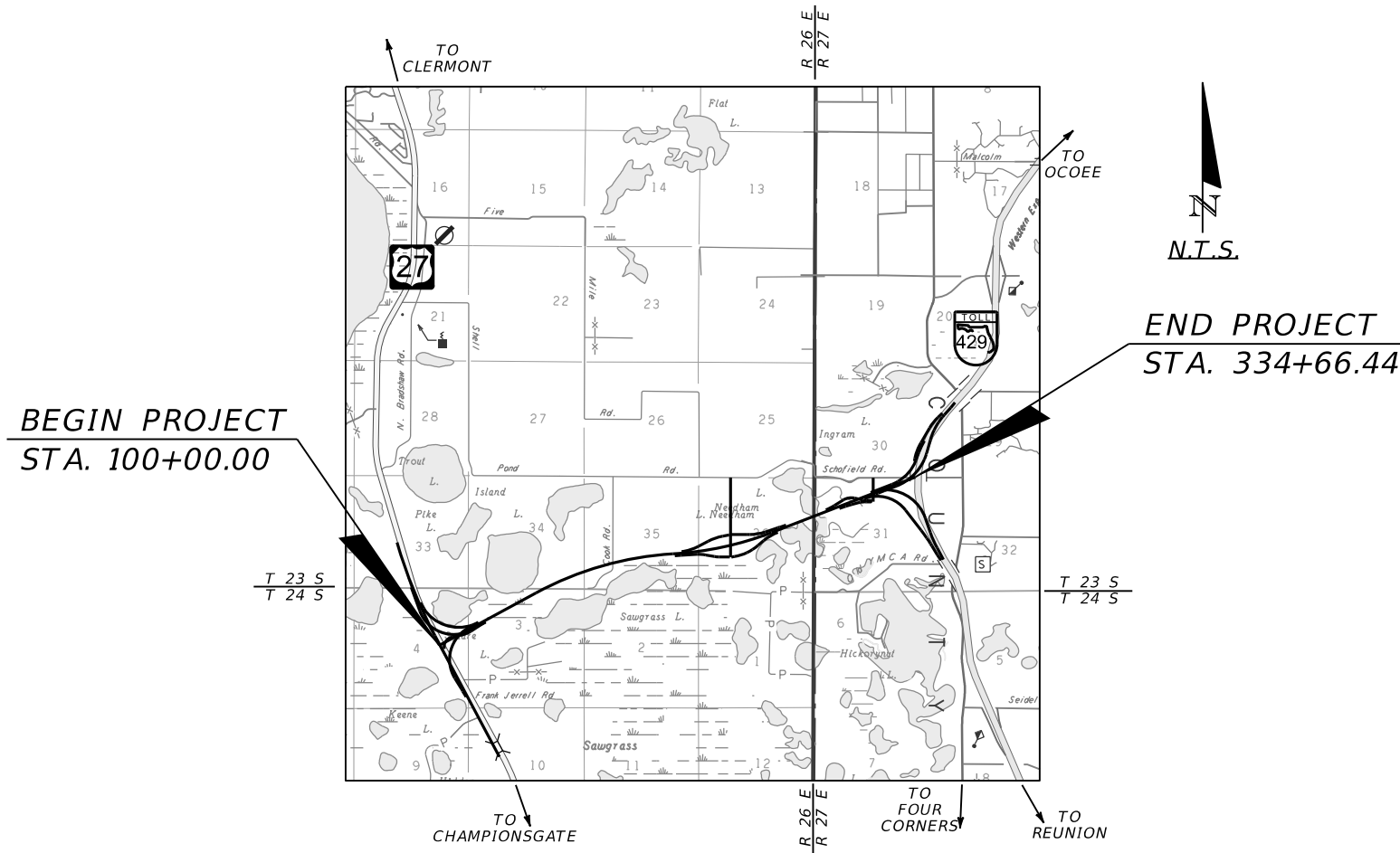
LAKE COUNTY & ORANGE COUNTY

THIS DOCUMENT HAS BEEN DIGITALLY
SIGNED AND SEALED BY:



PRINTED COPIES OF THIS DOCUMENT ARE
NOT CONSIDERED SIGNED AND SEALED.
THE SIGNATURE MUST BE VERIFIED
ON THE ELECTRONIC DOCUMENTS.

METRIC ENGINEERING, INC.
525 TECHNOLOGY PARKWAY, SUITE 153
LAKE MARY, FLORIDA 32746
TEL. (407) 644-1898
FAX. (407) 644-2376
CERTIFICATE OF AUTHORIZATION 2294
VENDOR NO. F-59-1685550
JAMISON R. EDWARDS, P.E. NO. 76095



END PROJECT
STA. 334+66.44

BEGIN PROJECT
STA. 100+00.00

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL
BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN
ACCORDANCE WITH RULE 61G15-23.004 F.A.C.

TYPICAL SECTION PACKAGE

SHEET NO.	SHEET DESCRIPTION
1	COVER SHEET
2	TYPICAL SECTION NO. 1
3	TYPICAL SECTION NO. 2
4	TYPICAL SECTION NO. 3
5	TYPICAL SECTION NO. 4
6	TYPICAL SECTION NO. 5
7	TYPICAL SECTION NO. 6
8	TYPICAL SECTION NO. 7
9	TYPICAL SECTION NO. 8
10	TYPICAL SECTION NO. 9
11	TYPICAL SECTION NO. 10
12	TYPICAL SECTION NO. 11
13	TYPICAL SECTION NO. 12
14	TYPICAL SECTION NO. 13
15	TYPICAL SECTION NO. 14
16	TYPICAL SECTION NO. 15
17	TYPICAL SECTION NO. 16
18	TYPICAL SECTION NO. 17
19	TYPICAL SECTION NO. 18
20	TYPICAL SECTION NO. 19

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL () C3C : SUBURBAN COMM.
- () C2 : RURAL () C4 : URBAN GENERAL
- () C2T : RURAL TOWN () C5 : URBAN CENTER
- () C3R : SUBURBAN RES. () C6 : URBAN CORE
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE () MAJOR COLLECTOR
- (X) FREEWAY/EXPWY. () MINOR COLLECTOR
- () PRINCIPAL ARTERIAL () LOCAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

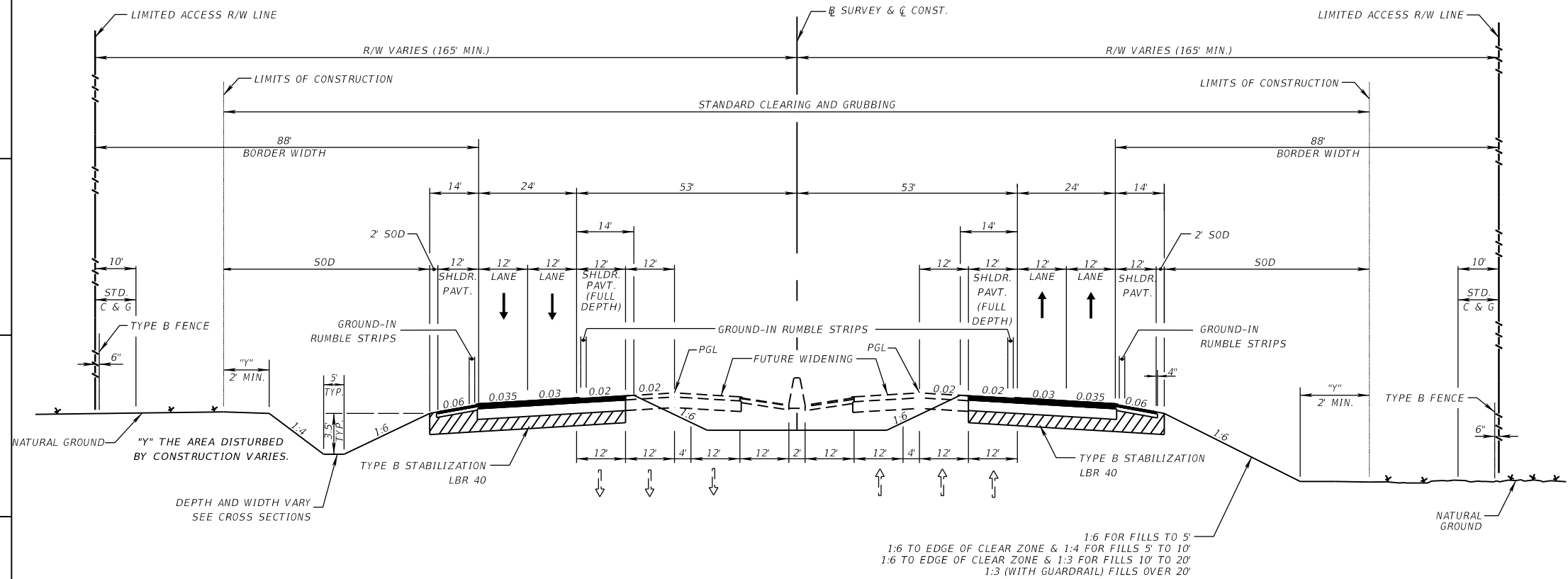
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

BORDER WIDTH

TYPICAL SECTION No. 1



TYPICAL SECTION LAKE/ORANGE COUNTY CONNECTOR

- STA. 124+06.28 TO STA. 124+70.04
- STA. 149+37.04 TO STA. 187+42.31
- STA. 188+98.37 TO STA. 242+96.46
- STA. 244+86.16 TO STA. 304+82.71
- STA. 308+86.36 TO STA. 312+51.19
- STA. 314+97.38 TO STA. 317+81.95
- STA. 321+08.54 TO STA. 334+66.44

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD% T = TBD% (24 HOUR)
 DESIGN SPEED = 70 MPH
 POSTED SPEED = 70 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

SHEET NO.

H-2

NOT TO SCALE

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL () C3C : SUBURBAN COMM.
- () C2 : RURAL () C4 : URBAN GENERAL
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- () C3R : SUBURBAN RES. () C6 : URBAN CORE
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- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
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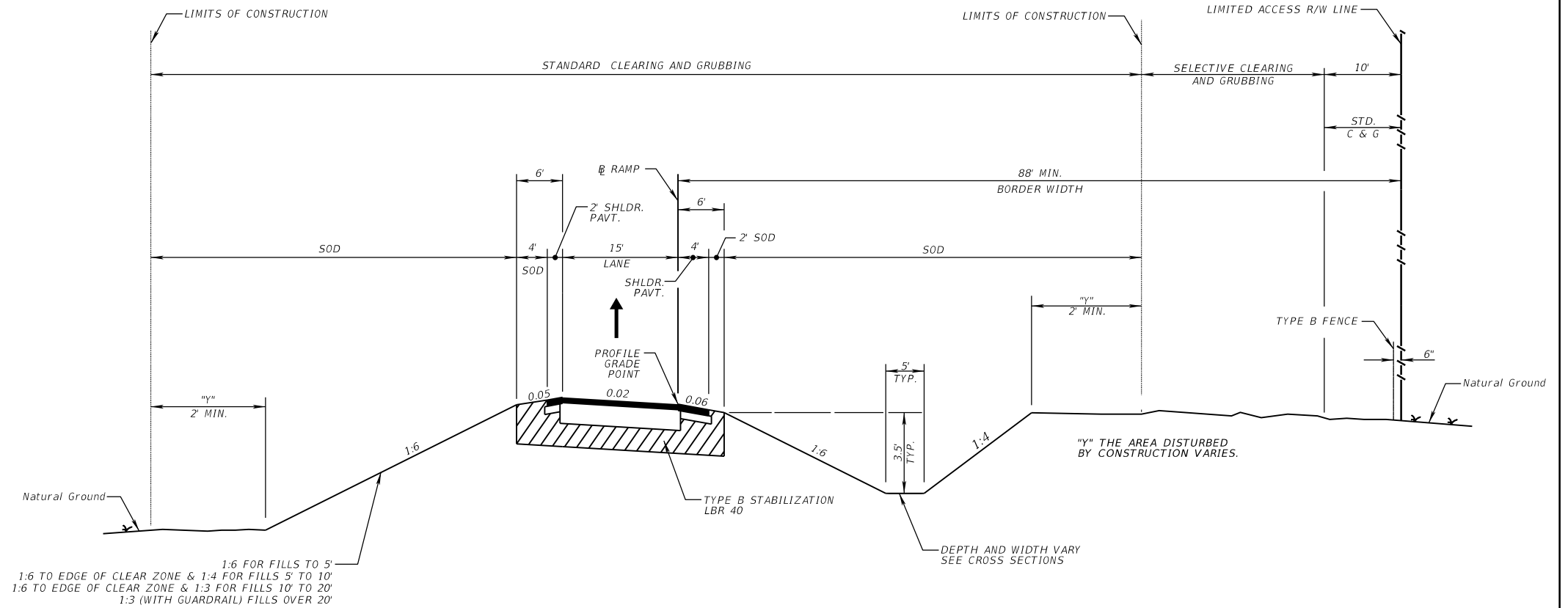
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

BORDER WIDTH

TYPICAL SECTION No. 2



TYPICAL SECTION SINGLE LANE RAMP

- RAMP 01
- RAMP 02
- RAMP 03
- RAMP 04
- RAMP 05
- RAMP 06
- RAMP 07
- RAMP 08
- RAMP 09
- RAMP 10
- RAMP 11
- RAMP 12
- RAMP 13
- RAMP 14
- RAMP 15

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD% T = TBD% (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

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SHEET NO.

H-3

NOT TO SCALE

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL () C3C : SUBURBAN COMM.
- () C2 : RURAL () C4 : URBAN GENERAL
- () C2T : RURAL TOWN () C5 : URBAN CENTER
- () C3R : SUBURBAN RES. () C6 : URBAN CORE
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

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- (X) FREEWAY/EXPWY. () MINOR COLLECTOR
- () PRINCIPAL ARTERIAL () LOCAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
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- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

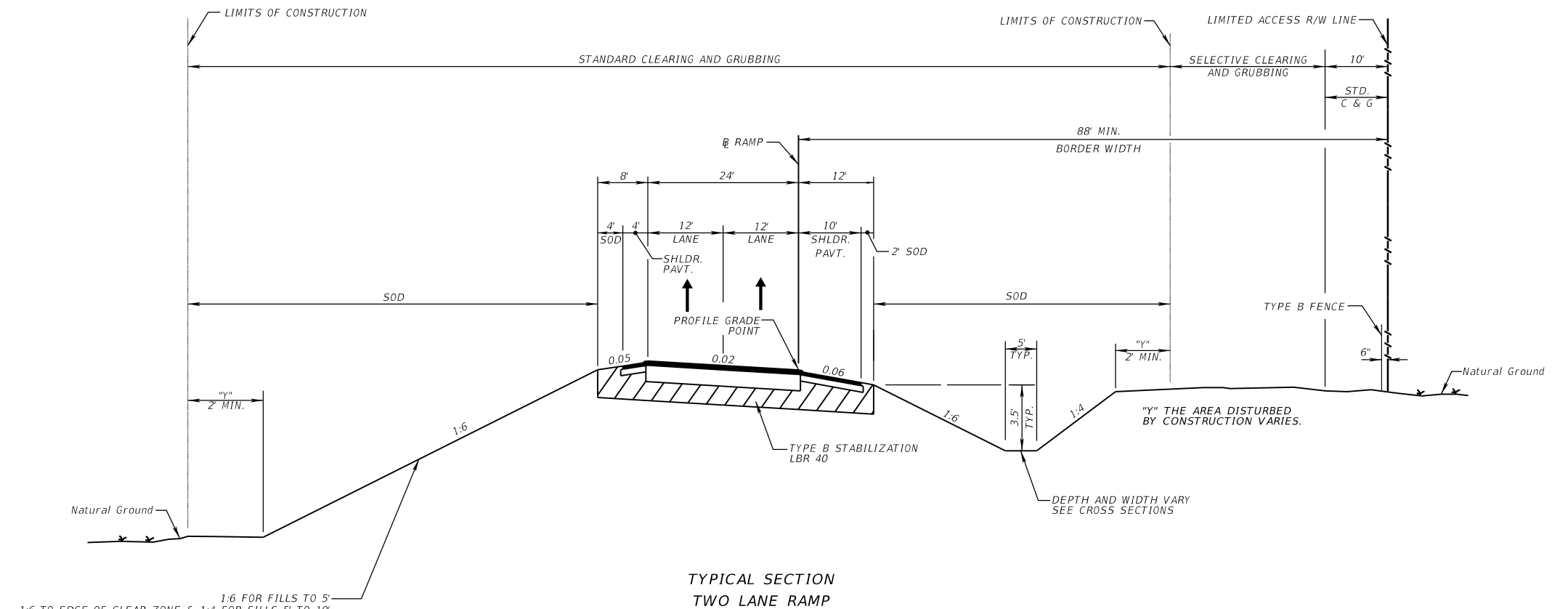
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

BORDER WIDTH

TYPICAL SECTION No. 3



TYPICAL SECTION TWO LANE RAMP

RAMP 06
RAMP 08
RAMP 09

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD% T = TBD% (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

1:6 FOR FILLS TO 5'
 1:6 TO EDGE OF CLEAR ZONE & 1:4 FOR FILLS 5' TO 10'
 1:6 TO EDGE OF CLEAR ZONE & 1:3 FOR FILLS 10' TO 20'
 1:3 (WITH GUARDRAIL) FILLS OVER 20'

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SHEET NO.

H- 4

NOT TO SCALE

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

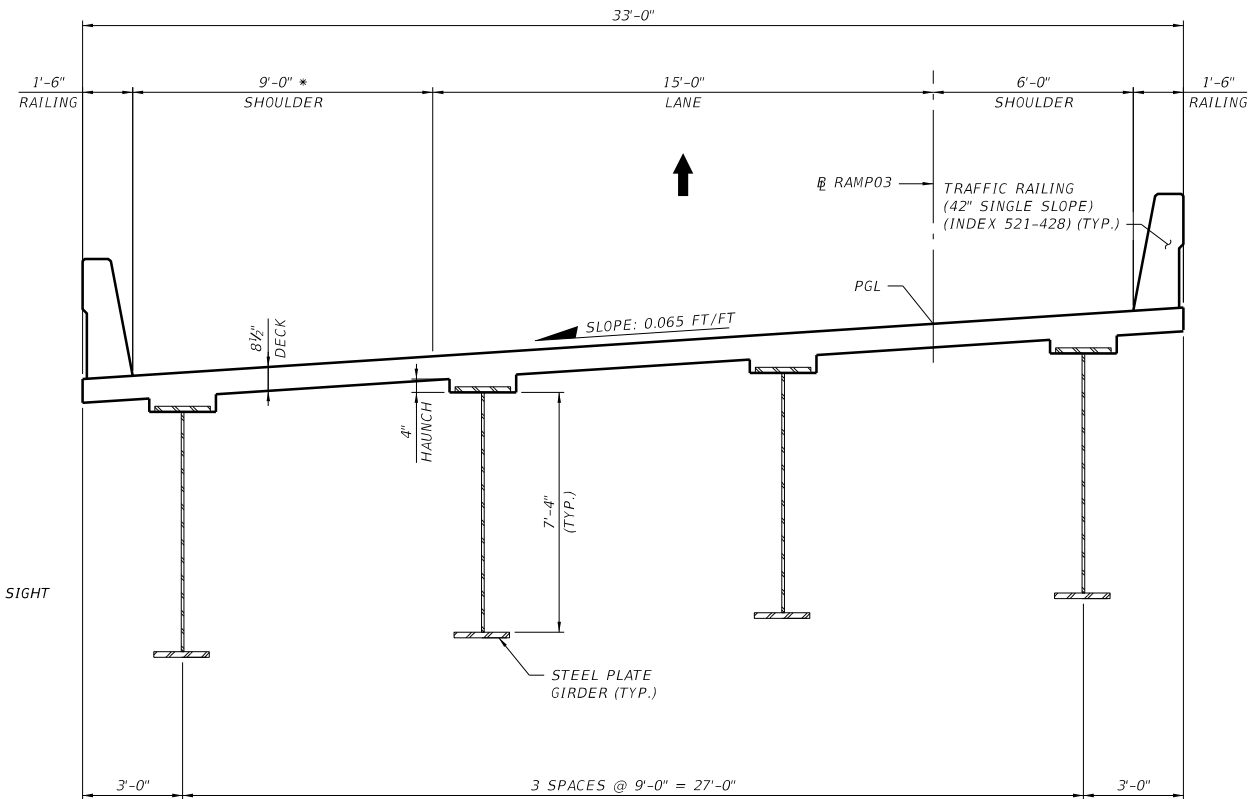
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 4



* NOTE: NON-TYPICAL SHOULDER WIDTH BASED ON SIGHT DISTANCE REQUIREMENTS

TYPICAL SECTION
BRIDGE 01
RAMP 3 OVER US 27
STA. 915+50.45 TO STA. 922+01.56

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

NOT TO SCALE

SHEET NO.

H- 5

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

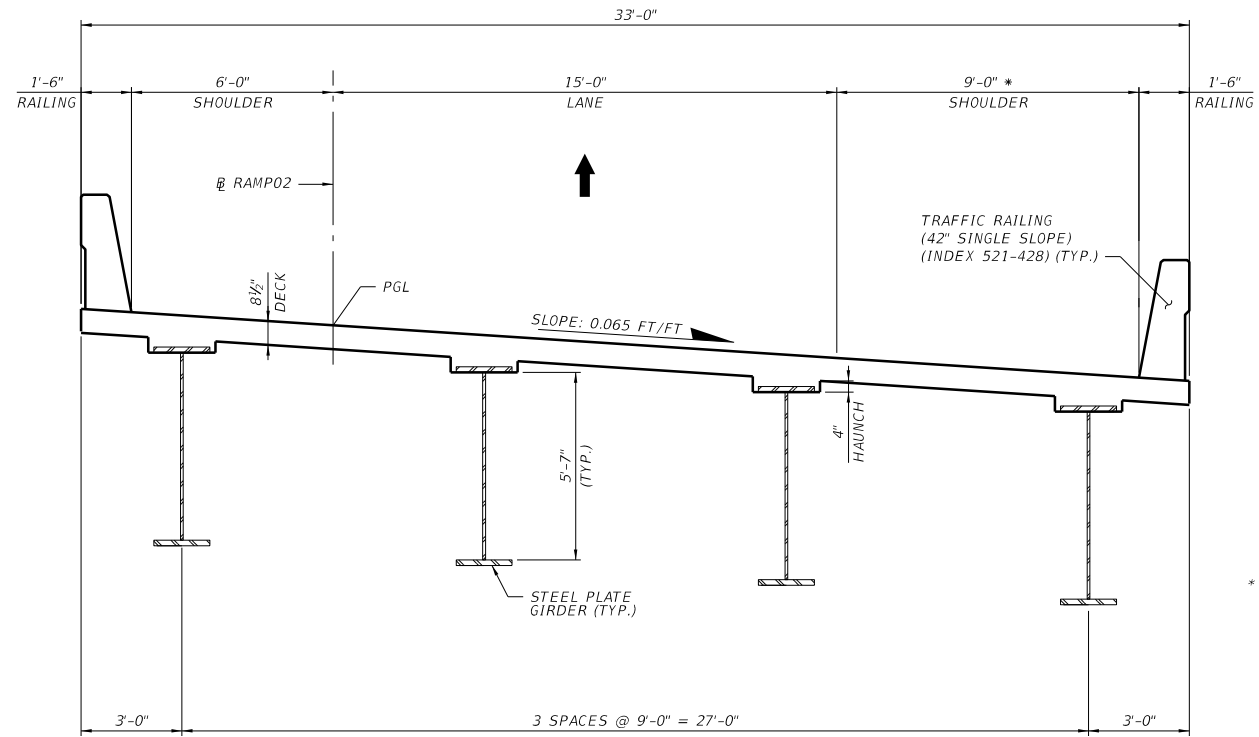
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 5



* NOTE: NON-TYPICAL SHOULDER WIDTH BASED ON SIGHT DISTANCE REQUIREMENTS

**TYPICAL SECTION
BRIDGE 02
RAMP 2 OVER US 27 AND RAMP 3
STA. 808+16.21 TO STA. 830+20.65**

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

SHEET NO.

H-6

NOT TO SCALE

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

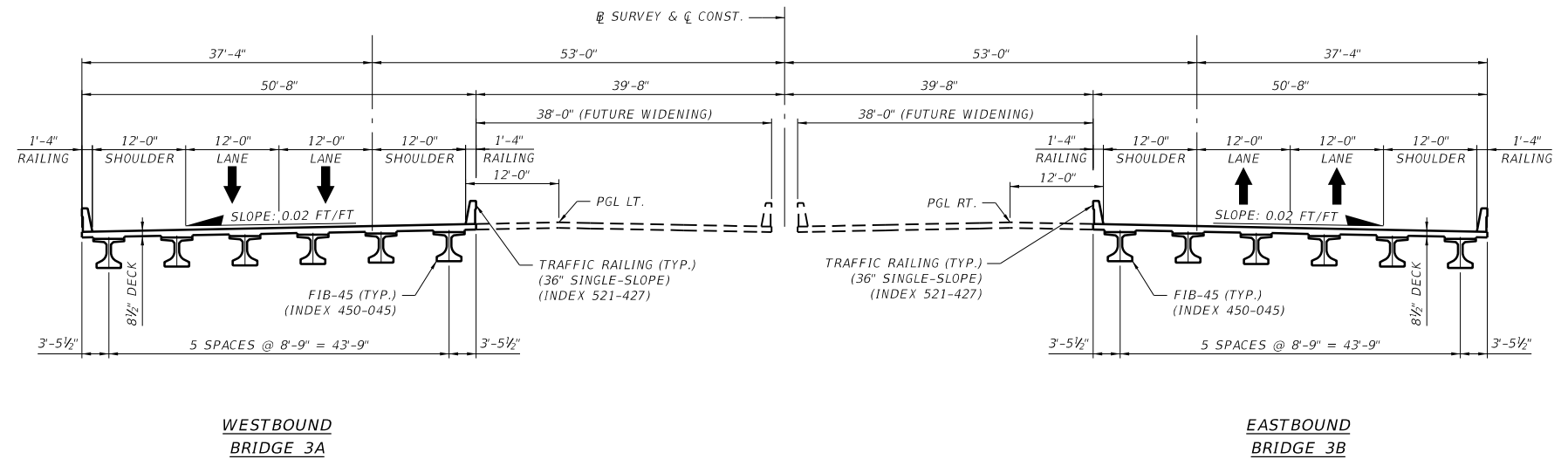
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 6



TYPICAL SECTION
BRIDGE 3A AND 3B
MAINLINE OVER EXISTING WETLANDS
STA. 124+70.08 TO STA. 149+37.08

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD% T = TBD% (24 HOUR)
 DESIGN SPEED = 70 MPH
 POSTED SPEED = 70 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

NOT TO SCALE

SHEET NO.

H-7

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

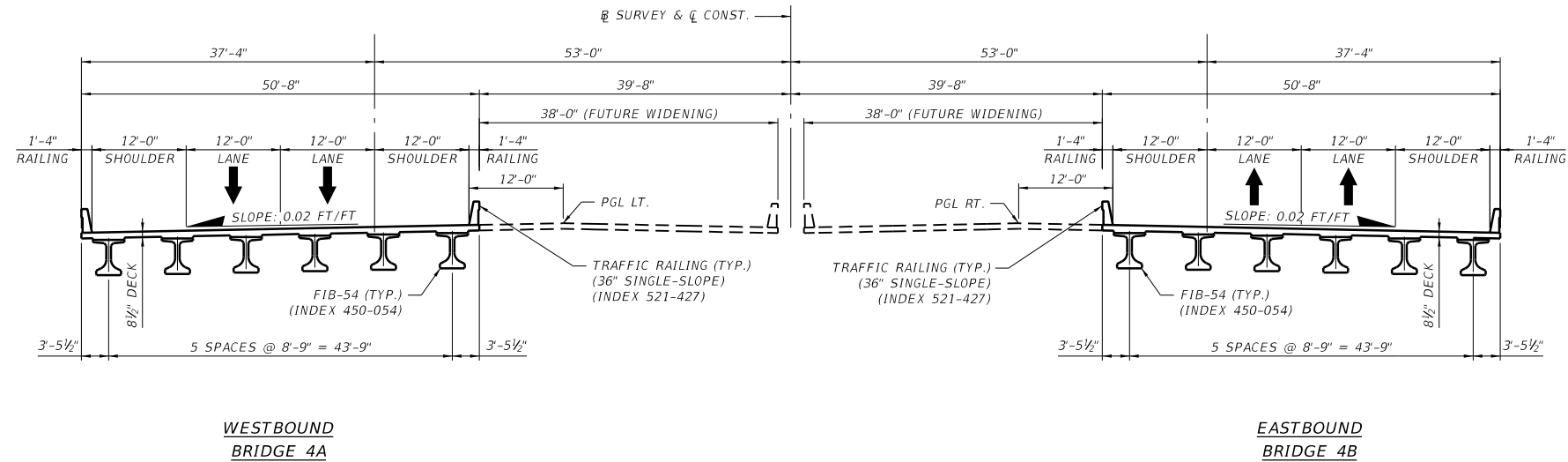
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 7



**TYPICAL SECTION
BRIDGE 4A AND 4B
MAINLINE OVER COOK RD.
EB BRIDGE STA. 187+43.97 TO STA. 188+70.33
WB BRIDGE STA. 187+71.40 TO STA. 188+96.81**

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 70 MPH
 POSTED SPEED = 70 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

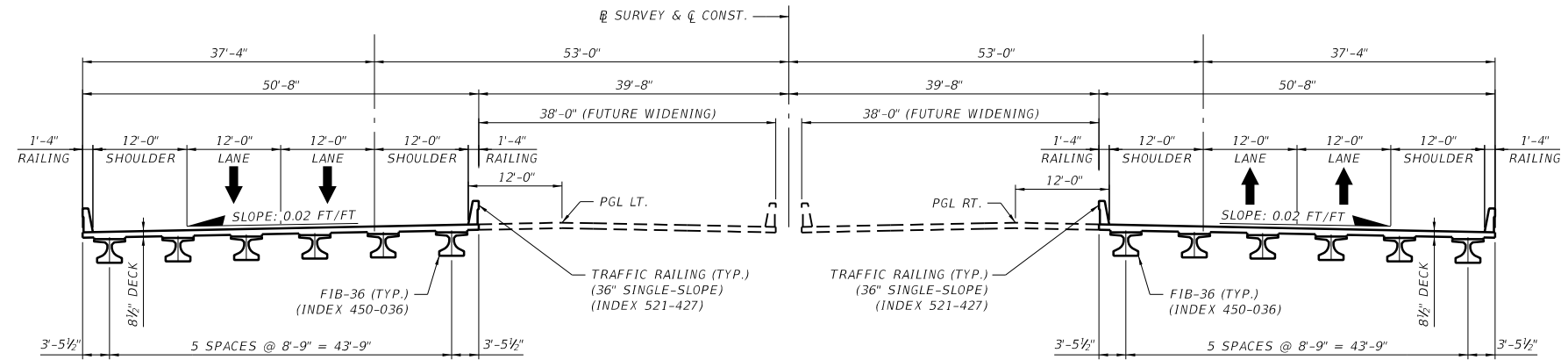
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 8



**WESTBOUND
BRIDGE 5A**

**EASTBOUND
BRIDGE 5B**

**TYPICAL SECTION
BRIDGE 5A AND 5B
MAINLINE OVER CR 455
EB BRIDGE STA. 242+99.26 TO STA. 244+57.07
WB BRIDGE STA. 243+24.18 TO STA. 244+83.18**

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD% T = TBD% (24 HOUR)
 DESIGN SPEED = 70 MPH
 POSTED SPEED = 70 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

SHEET NO.

H-9

NOT TO SCALE

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

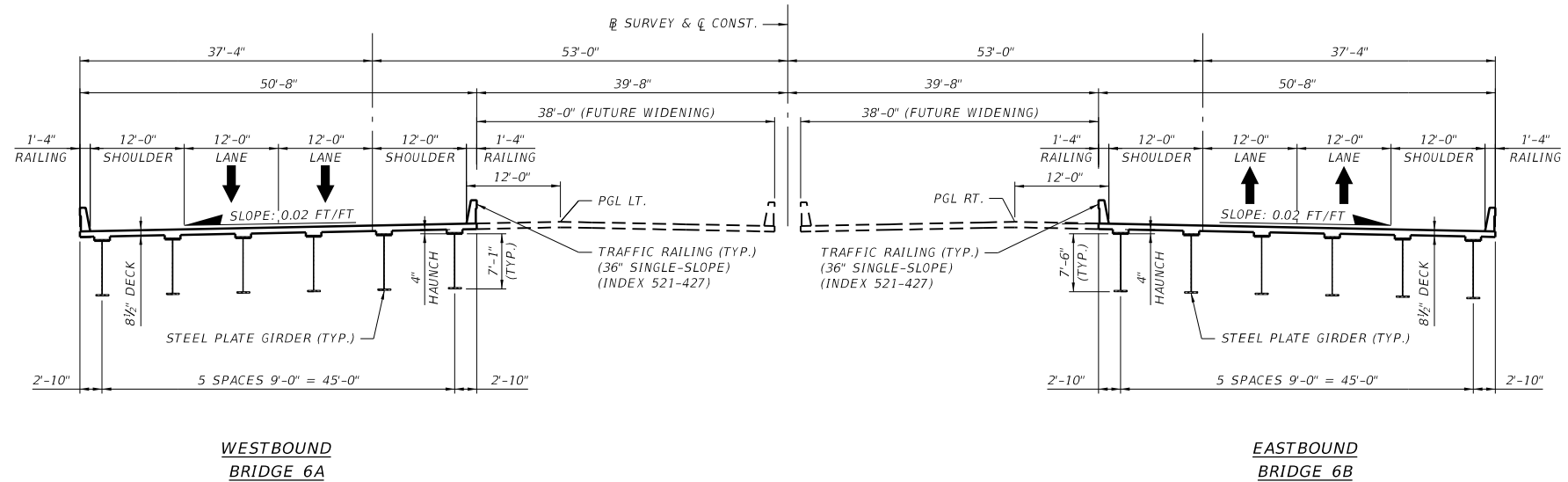
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 9



**TYPICAL SECTION
BRIDGE 6A AND 6B
MAINLINE OVER RAMP 9
EB BRIDGE STA. 306+74.88 TO STA. 308+86.36
WB BRIDGE STA. 304+82.71 TO STA. 306+85.08**

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD% T = TBD% (24 HOUR)
 DESIGN SPEED = 70 MPH
 POSTED SPEED = 70 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

NOT TO SCALE

SHEET NO.
H- 10

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

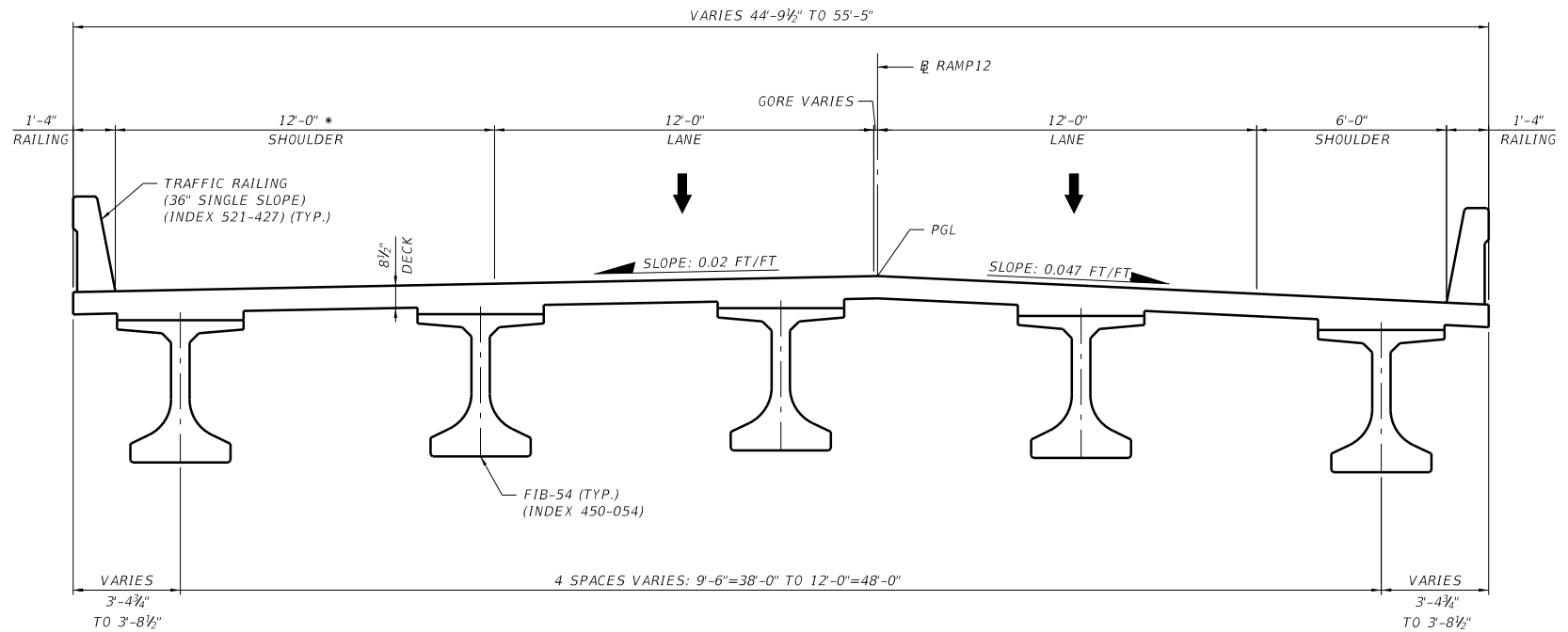
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 10



* NOTE: NON-TYPICAL SHOULDER WIDTH BASED ON SIGHT DISTANCE REQUIREMENTS

**TYPICAL SECTION
BRIDGE 7A
MAINLINE OVER VALENCIA PARKWAY
STA. 313+22.95 TO STA. 314+84.80**

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

SHEET NO.

H- 11

NOT TO SCALE

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

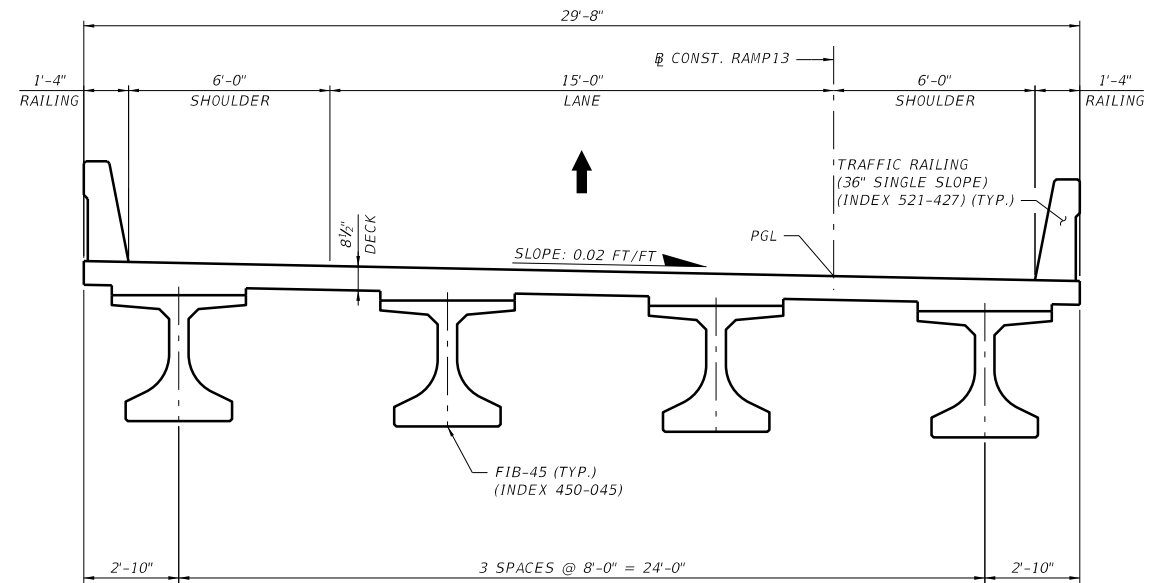
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 11



**TYPICAL SECTION
BRIDGE 7B
MAINLINE OVER VALENCIA PARKWAY
STA. 1903+42.02 TO STA. 1905+07.10**

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

NOT TO SCALE

SHEET NO.

H- 12

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

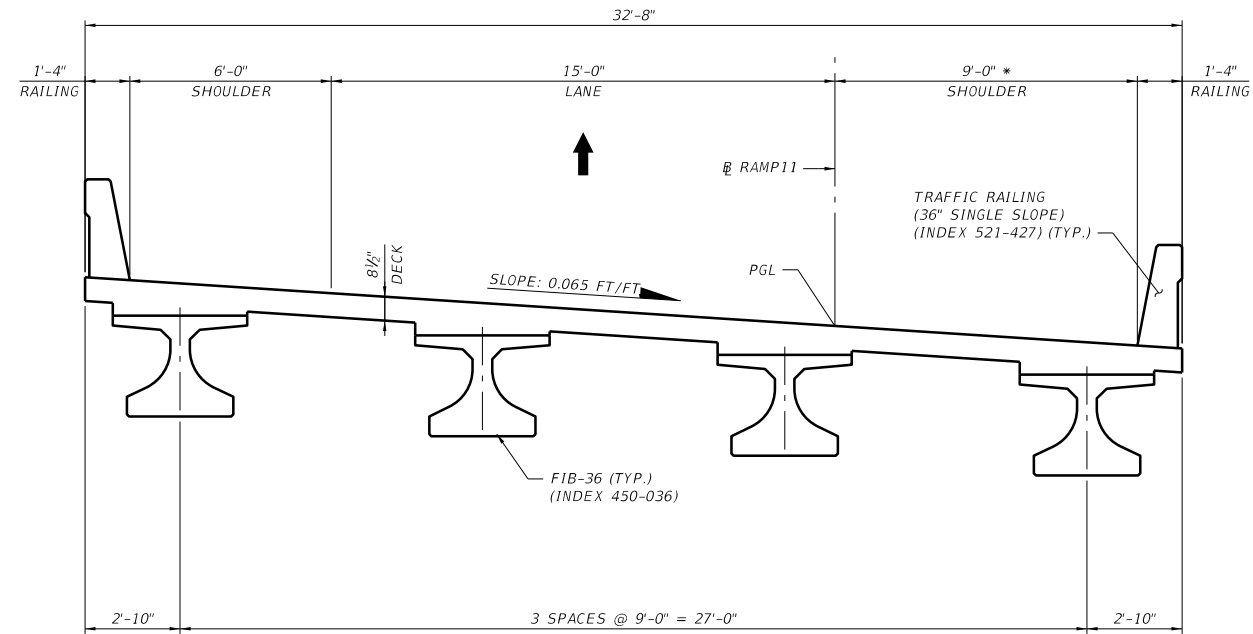
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 12



* NOTE: NON-TYPICAL SHOULDER WIDTH BASED ON SIGHT DISTANCE REQUIREMENTS

**TYPICAL SECTION
BRIDGE 7C
MAINLINE OVER VALENCIA PARKWAY
STA. 1703+27.25 TO STA. 1704+82.45**

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

SHEET NO.

H- 13

NOT TO SCALE

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

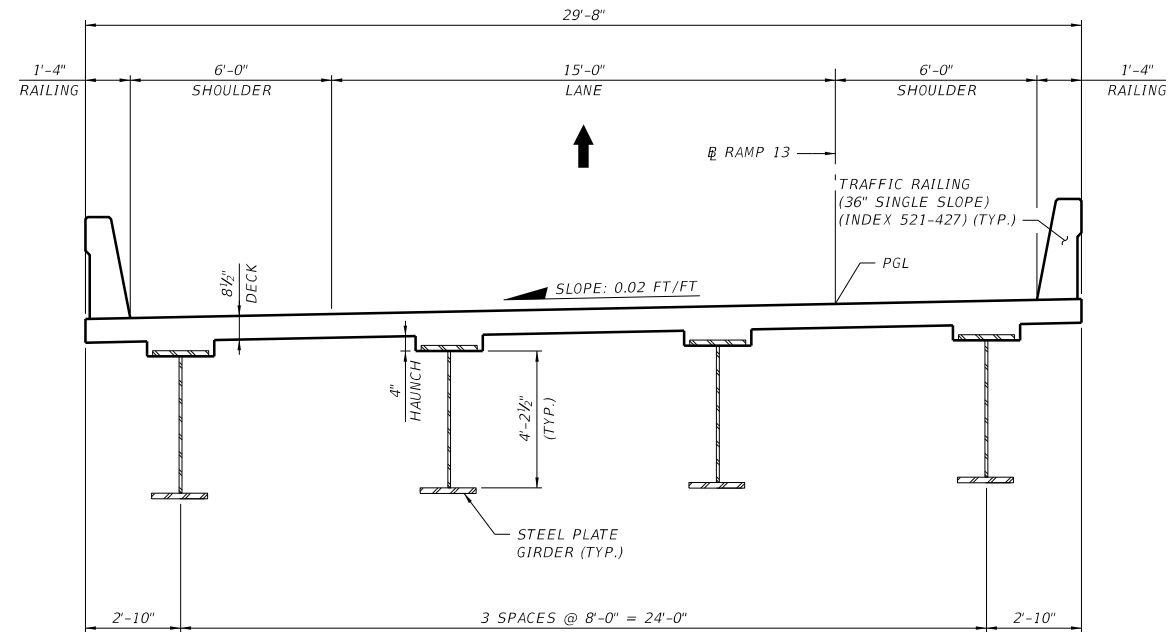
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 13



TYPICAL SECTION
BRIDGE 08
RAMP 13 OVER RAMP 12
STA. 1908+52.29 TO STA. 1911+78.88

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

SHEET NO.

H- 14

NOT TO SCALE

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

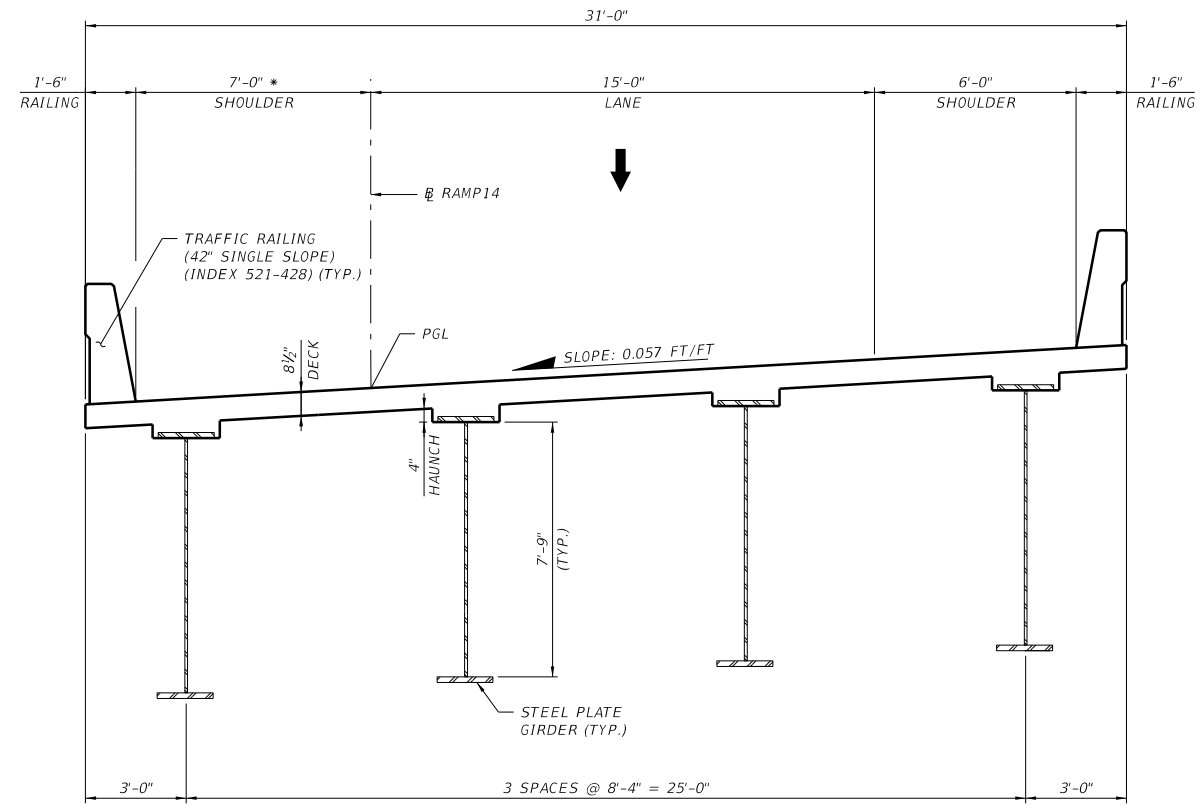
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 14



* NOTE: NON-TYPICAL SHOULDER WIDTH BASED ON SIGHT DISTANCE REQUIREMENTS

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

**TYPICAL SECTION
 BRIDGE 09
 RAMP 14 OVER SCHOFIELD RD.
 STA. 2015+92.20 STA. 2018+09.96**

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

NOT TO SCALE

SHEET NO.

H- 15

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

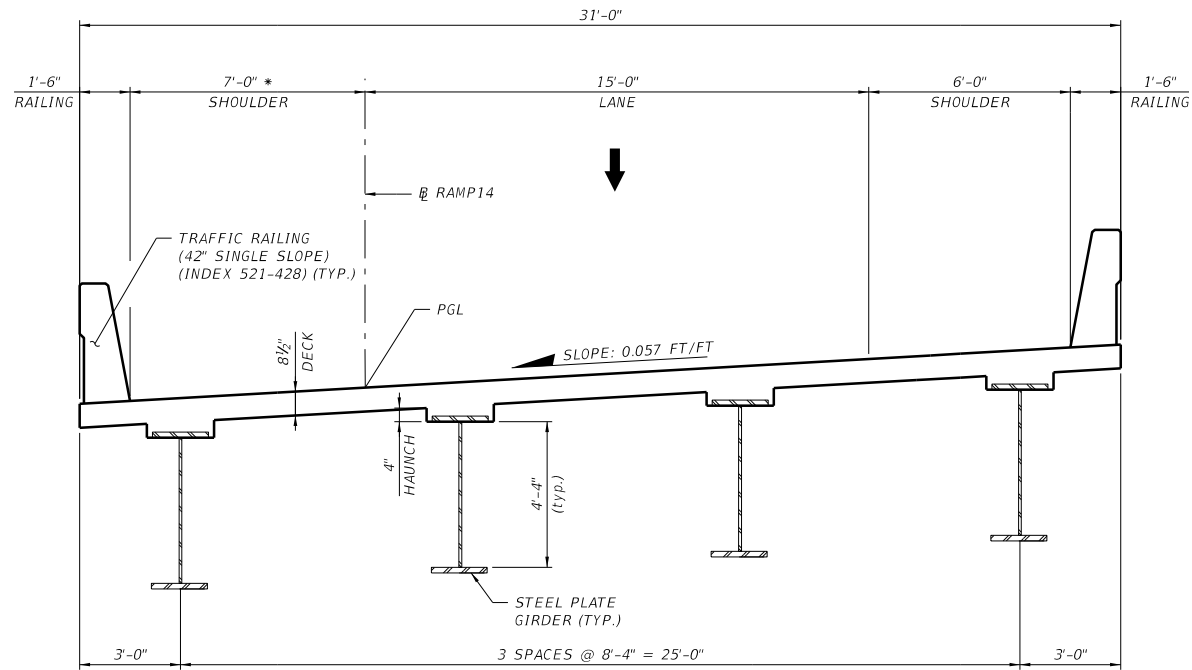
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 15



* NOTE: NON-TYPICAL SHOULDER WIDTH BASED ON SIGHT DISTANCE REQUIREMENTS

**TYPICAL SECTION
BRIDGE 10
RAMP 14 OVER RAMP 15
STA. 2022+60.99 TO STA. 2025+93.37**

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

SHEET NO.

H- 16

NOT TO SCALE

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

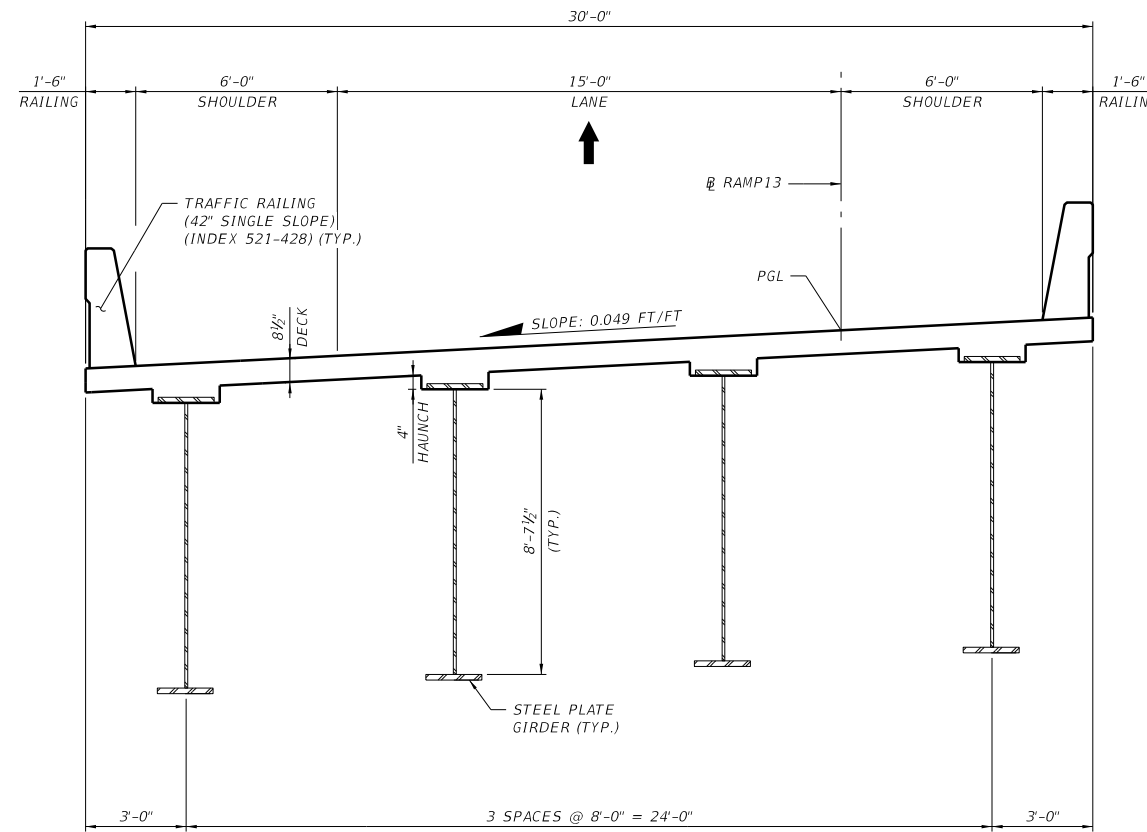
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 16



TYPICAL SECTION
BRIDGE 11
RAMP 13 OVER SR 429
STA. 1920+01.36 TO STA. 1930+07.89

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

NOT TO SCALE

SHEET NO.

H- 17

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

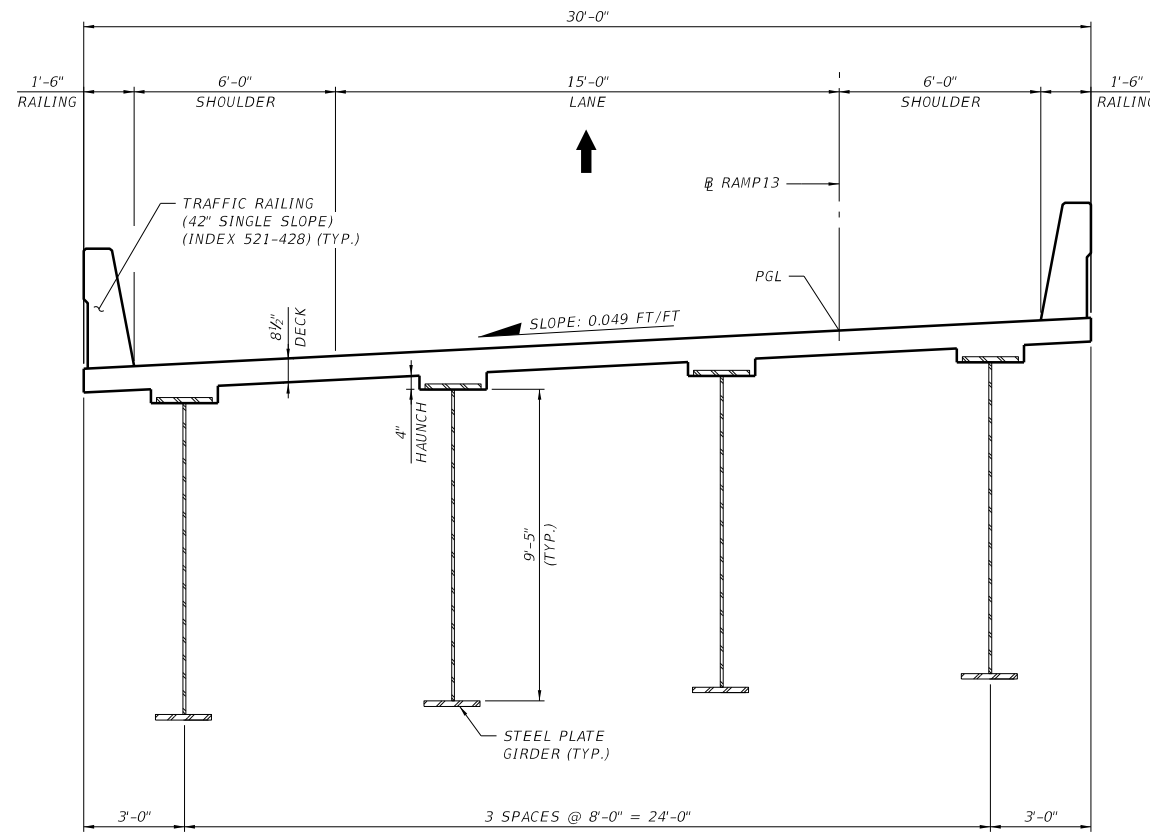
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 17



**TYPICAL SECTION
BRIDGE 12
RAMP 13 OVER EXISTING SR 429 NB ON-RAMP
STA. 1933+86.94 TO STA. 1936+48.73**

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

SHEET NO.

H- 18

NOT TO SCALE

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

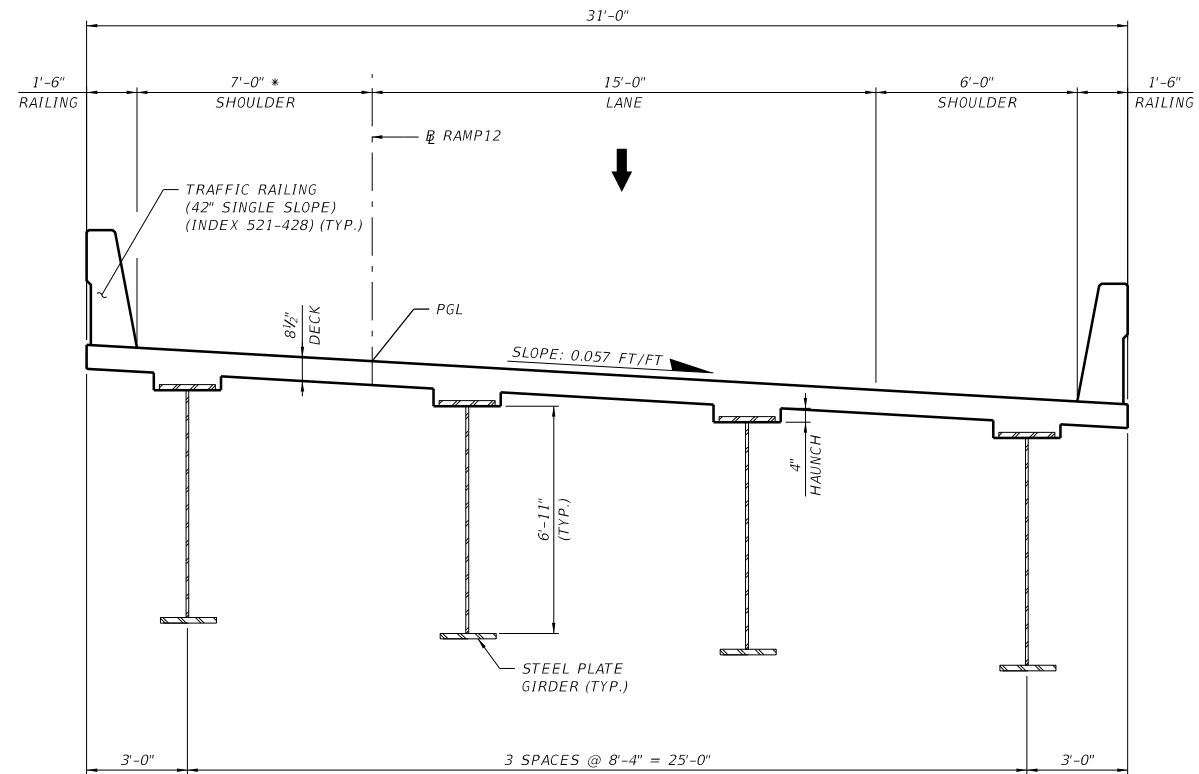
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 18



* NOTE: NON-TYPICAL SHOULDER WIDTH BASED ON SIGHT DISTANCE REQUIREMENTS

**TYPICAL SECTION
BRIDGE 13
RAMP 12 OVER SR 429
STA. 1819+81.74 TO STA. 1826+01.97**

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

SHEET NO.

H- 19

NOT TO SCALE

PROJECT CONTROLS

CONTEXT CLASSIFICATION

- () C1 : NATURAL
- () C2 : RURAL
- () C2T : RURAL TOWN
- () C3R : SUBURBAN RES.
- (X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- () INTERSTATE
- (X) FREEWAY/EXPWY.
- () PRINCIPAL ARTERIAL
- () MINOR ARTERIAL

HIGHWAY SYSTEM

- () NATIONAL HIGHWAY SYSTEM
- () STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- () OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

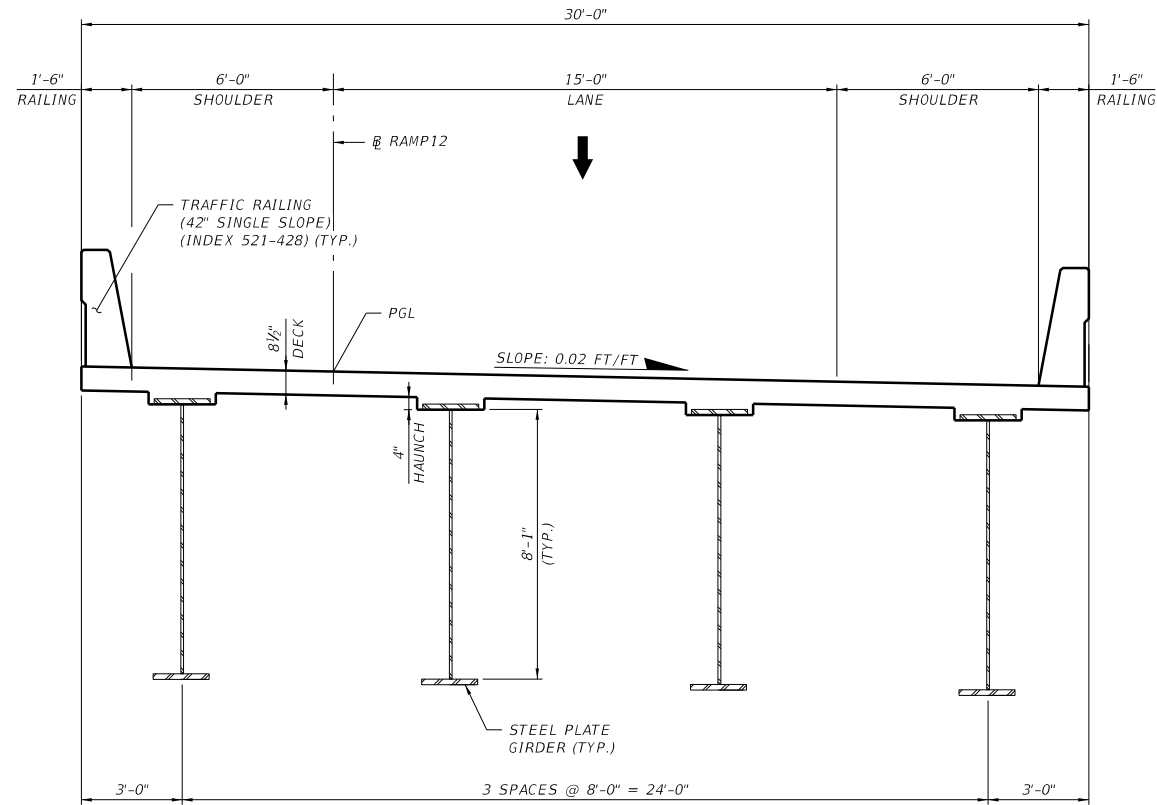
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- () RESURFACING (LA FACILITIES)
- () RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

N/A

TYPICAL SECTION No. 19



**TYPICAL SECTION
BRIDGE 14
RAMP 12 OVER EXISTING SR 429 NB OFF-RAMP
STA. 1830+51.23 TO STA. 1832+77.86**

TRAFFIC DATA

CURRENT YEAR = TBD AADT = TBD
 ESTIMATED OPENING YEAR = TBD AADT = TBD
 ESTIMATED DESIGN YEAR = TBD AADT = TBD
 K = TBD% D = TBD % T = TBD % (24 HOUR)
 DESIGN SPEED = 50 MPH
 POSTED SPEED = 45 MPH

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

SHEET NO.

H- 20

NOT TO SCALE

Appendix I – Time of Concentration

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-4 (Basin 4 Upstream)

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007 * (n * L)^{0.8}) / (P^{0.5} * s^{0.4})$

Segment ID			
		Range (Natural)	
		0.130	
	ft	300	
	ft	165.0	
	ft	153.0	
	in	4.92	
	ft/ft	0.040	
	hr	0.214	
			0.214
			min = 12.9

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
		2	
	ft	1100	
		153.0	
		104.0	
	ft/ft	0.0445	
	ft/sec	3.41	
	hr	0.09	
			0.09
			min = 5.4

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49 * r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
	ft		
	ft		
	ft^2	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/sec		
	hr		
			0.0
			min =

TOTAL TIME (hr)	0.30
TOTAL TIME (min)	18.2

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-4C (Basin Downstream)

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007*(n*L)^{0.8})/(P^{0.5} * s^{0.4})$

Segment ID			
		Range (Natural)	
		0.130	
	ft	300	
	ft	183.0	
	ft	166.0	
	in	4.92	
	ft/ft	0.057	
	hr	0.186	
			0.186
			min = 11.2

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
		2	
	ft	1450	
		166.0	
		104.0	
	ft/ft	0.0428	
	ft/sec	3.34	
	hr	0.12	
			0.12
			min = 7.2

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49*r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
	ft		
	ft		
	ft^2	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/sec		
	hr		
			0.0
			min =

TOTAL TIME (hr)	0.31
TOTAL TIME (min)	18.4

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-5 (Basin G-1)

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007*(n*L)^{0.8})/(P^{0.5} * s^{0.4})$

Segment ID			
		Range (Natural)	
		0.130	
	ft	300	
	ft	169.0	
	ft	164.5	
	in	4.92	
	ft/ft	0.015	
	hr	0.317	
			0.317
		min =	19.0

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
		2	
	ft	1000	
		164.5	
		102.0	
	ft/ft	0.0625	
	ft/sec	4.03	
	hr	0.07	+
			= 0.07
		min =	4.1

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49*r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
	ft		
	ft		
	ft^2	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/sec		
	hr		
			=
		min =	0.0

TOTAL TIME (hr)	0.39
TOTAL TIME (min)	23.2

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-5 (Basin G-2)

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007 * (n * L)^{0.8}) / (P^{0.5} * s^{0.4})$

Segment ID			
		Range (Natural)	
		0.130	
	ft	300	
	ft	141.5	
	ft	141.0	
	in	4.92	
	ft/ft	0.002	
	hr	0.764	
			0.764
			min = 45.9

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
		2	
	ft	746	
		141.0	
		102.0	
	ft/ft	0.0523	
	ft/sec	3.69	
	hr	0.06	
			0.06
			min = 3.4

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49 * r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
	ft		
	ft		
	ft^2	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/sec		
	hr		
			0.0
			min =

TOTAL TIME (hr)	0.82
TOTAL TIME (min)	49.2

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: Basin CD-6 Downstream

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007 * (n * L)^{0.8}) / (P^{0.5} * s^{0.4})$

Segment ID			
		Range (Natural)	
		0.130	
	ft	300	
	ft	116.5	
	ft	113.5	
	in	4.92	
	ft/ft	0.010	
	hr	0.373	0.373
			min = 22.4

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
		2	
	ft	1307	
		113.5	
		103.0	
	ft/ft	0.0080	
	ft/sec	1.45	
	hr	0.25	0.25
			min = 15.1

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49 * r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
	ft		
	ft		
	ft^2	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/sec		
	hr		
			min = 0.0

TOTAL TIME (hr)	0.62
TOTAL TIME (min)	37.5

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-6 (Basin E)

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL , [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007*(n*L)^{0.8})/(P^{0.5} * s^{0.4})$

Segment ID			
	Fallow		
	0.050		
	300		
ft	133.0		
ft	131.0		
ft	4.92		
in	0.007		
ft/ft	0.204		
hr		0.204	
		min =	12.3

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
	2		
	458		
ft	131.0		
	125.0		
ft/ft	0.0131		
ft/sec	1.85		
hr	0.07	+	
		min =	0.07
			4.1

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49*r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
ft			
ft	0.00		
ft^2	0.00		
ft	#DIV/0!		
ft			
ft			
ft			
ft/ft	#DIV/0!		
ft/sec			
hr		min =	0.0

TOTAL TIME (hr)	0.27
TOTAL TIME (min)	16.4

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-6 (Basin F)

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007 * (n * L)^{0.8}) / (P^{0.5} * s^{0.4})$

Segment ID			
		Fallow	
		0.050	
	ft	300	
	ft	126.0	
	ft	120.5	
	in	4.92	
	ft/ft	0.018	
	hr	0.136	0.136
			min = 8.2

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
		2	
	ft	608	
		120.5	
		103.0	
	ft/ft	0.0288	
	ft/sec	2.74	
	hr	0.06	0.06
		+	min = 3.7

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49 * r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
	ft		
	ft		
	ft^2	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/sec		
	hr		0.0
			min =

TOTAL TIME (hr)	0.20
TOTAL TIME (min)	11.9

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: Basin 3A1/3A2

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007 * (n * L)^{0.8}) / (P^{0.5} * s^{0.4})$

Segment ID			
		Concrete	
		0.011	
	ft	300	
	ft	145.0	
	ft	142.0	
	in	4.92	
	ft/ft	0.010	
	hr	0.052	0.052
			min = 3.1

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
		1	
	ft	4110	
		142.0	
		103.0	
	ft/ft	0.0095	
	ft/sec	1.98	
	hr	0.58	0.58
		+	min = 34.6

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49 * r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
	ft		
	ft		
	ft^2	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/sec		
	hr		0.0
			min =

TOTAL TIME (hr)	0.63
TOTAL TIME (min)	37.7

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-7 Pre

NUMBER:
FILE:

CONDITIONS	
Pre-Development	X
Post-Development	
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007*(n*L)^{0.8})/(P^{0.5} * s^{0.4})$

Segment ID			
	Fallow		
	0.050		
	300		
ft	127.0		
ft	125.5		
ft	4.92		
in	0.005		
ft/ft	0.229		
hr		0.229	
		min =	13.8

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
	2		
	1775		
ft	125.5		
	97.0		
ft/ft	0.0161		
ft/sec	2.04		
hr	0.24	+	= 0.24
		min =	14.5

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49*r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
ft			
ft	0.00		
ft^2	0.00		
ft	#DIV/0!		
ft			
ft			
ft			
ft/ft	#DIV/0!		
ft/sec			
hr		=	
		min =	0.0

TOTAL TIME (hr)	0.47
TOTAL TIME (min)	28.2

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-7

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007*(n*L)^{0.8})/(P^{0.5} * s^{0.4})$

Segment ID			
	Fallow		
	0.050		
	300		
ft	127.0		
ft	125.5		
ft	4.92		
in	0.005		
ft/ft	0.229		
hr		0.229	
		min =	13.8

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
	2		
	855		
ft	125.5		
	115.0		
ft/ft	0.0123		
ft/sec	1.79		
hr	0.13	+	
		=	0.13
		min =	8.0

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49*r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
ft			
ft	0.00		
ft^2	0.00		
ft	#DIV/0!		
ft			
ft			
ft			
ft/ft	#DIV/0!		
ft/sec			
hr		=	
		min =	0.0

TOTAL TIME (hr)	0.36
TOTAL TIME (min)	21.7

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-8 (Basin A)

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007 * (n * L)^{0.8}) / (P^{0.5} * s^{0.4})$

Segment ID			
		Fallow	
		0.050	
	ft	300	
	ft	120.0	
	ft	115.0	
	in	4.92	
	ft/ft	0.017	
	hr	0.142	0.142
			min = 8.5

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
		2	
	ft	2888	
		115.0	
		102.0	
	ft/ft	0.0045	
	ft/sec	1.08	
	hr	0.74	0.74
			min = 44.5

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49 * r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
	ft		
	ft		
	ft^2	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/sec		
	hr		
			min = 0.0

TOTAL TIME (hr)	0.88
TOTAL TIME (min)	53.0

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-9 (Basin B)

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007*(n*L)^{0.8})/(P^{0.5} * s^{0.4})$

Segment ID			
		Fallow	
		0.050	
	ft	300	
	ft	114.0	
	ft	111.5	
	in	4.92	
	ft/ft	0.008	
	hr	0.187	
			0.187
		min =	11.2

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
		2	
	ft	1374	
		111.5	
		104.0	
	ft/ft	0.0055	
	ft/sec	1.19	
	hr	0.32	+
			0.32
		min =	19.2

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49*r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
	ft		
	ft		
	ft^2	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/sec		
	hr		
			0.0
		min =	

TOTAL TIME (hr)	0.51
TOTAL TIME (min)	30.4

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-8&9 Downstream

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007*(n*L)^{0.8})/(P^{0.5} * s^{0.4})$

Segment ID			
		Fallow	
		0.050	
	ft	300	
	ft	106.0	
	ft	103.0	
	in	4.92	
	ft/ft	0.010	
	hr	0.174	0.174
			min = 10.4

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
		2	
	ft	1550	
		103.0	
		102.0	
	ft/ft	0.0006	
	ft/sec	0.41	
	hr	1.05	1.05
			min = 63.0

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49*r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600*V$

Segment ID			
	ft		
	ft		
	ft^2	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/sec		
	hr		
			min = 0.0

TOTAL TIME (hr)	1.22
TOTAL TIME (min)	73.5

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: CD-10 (Basin C1)

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007 * (n * L)^{0.8}) / (P^{0.5} * s^{0.4})$

Segment ID			
		Woods, light underbrush	
		0.400	
	ft	300	
	ft	150.0	
	ft	137.5	
	in	4.92	
	ft/ft	0.042	
	hr	0.518	
			0.518
			min = 31.1

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
		2	
	ft	896	
		137.5	
		118.0	
	ft/ft	0.0218	
	ft/sec	2.38	
	hr	0.10	
		+	
			0.10
			min = 6.3

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49 * r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
	ft		
	ft		
	ft^2	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/sec		
	hr		
			0.0
			min =

TOTAL TIME (hr)	0.62
TOTAL TIME (min)	37.4

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.

TIME OF CONCENTRATION

PROJECT TITLE: CFX Connector
LOCATION : LAKE COUNTY
BASIN NAME: Basin C2

NUMBER:
FILE:

CONDITIONS	
Pre-Development	
Post-Development	X
Rainfall Zone:	7

COMPUTED VARIABLE	
Tdc	X
Tdt	
Frequency:	

Water Resources Group		Date
Computed By	LB	08/08/19
Checked By	MH	

SHEET FLOW (Applicable To Tdc Only)

- 1) SURFACE DESCRIPTION (table 5-4)
- 2) MANNING'S ROUGHNESS COEFF., [n] (table 5-4)
- 3) FLOW LENGTH, [L] (TOTAL L <= 300 ft)
- 4) HIGH ELEVATION, [A]
- 5) LOW ELEVATION, [B]
- 6) TWO YEAR 24-hr RAINFALL, [P]
- 7) LAND SLOPE, [s]
- 8) COMPUTE Tdt: $Tdt = (.007 * (n * L)^{0.8}) / (P^{0.5} * s^{0.4})$

Segment ID			
	ft	fallow	
	ft	0.050	
	ft	300	
	ft	116.0	
	ft	108.0	
	in	4.92	
	ft/ft	0.027	
	hr	0.117	0.117
			min = 7.0

SHALLOW CONCENTRATED FLOW

- 9) SURFACE DESCRIPTION Enter 1 (Paved) or 2 (Unpaved)
- 10) FLOW LENGTH, [L], (STA 670+00.48 - STA 681+00.28)
- 11) HIGH ELEVATION, [C]
- 12) LOW ELEVATION, [D]
- 13) WATERCOURSE SLOPE, [s]
- 14) AVERAGE VELOCITY, [V] **
- 15) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
	ft	2	
	ft	477	
	ft	109.0	
	ft	108.0	
	ft/ft	0.0021	
	ft/sec	0.74	
	hr	0.18	0.18
		+	min = 10.8

CHANNEL FLOW

- 16) DEPTH OF FLOW
- 17) FRONT SLOPE (Z:1)
- 19) BACK SLOPE (Z:1)
- 21) BOTTOM WIDTH
- 22) CROSS SECTIONAL FLOW AREA, [a]
- 23) WETTED PERIMETER, [Pdw]
- 24) HYDRAULIC RADIUS, [r] = a / Pdw
- 25) FLOW LENGTH, [L]
- 26) HIGH ELEVATION, [D]
- 27) LOW ELEVATION, [E]
- 28) CHANNEL SLOPE, [s]
- 29) MANNING'S ROUGHNESS COEFF., [n]
- 30) COMPUTE V: $V = (1.49 * r^{2/3} * s^{1/2}) / n$
- 31) COMPUTE Tdt: $Tdt = L / 3600 * V$

Segment ID			
	ft		
	ft		
	ft		
	ft		
	ft	0.00	
	ft	0.00	
	ft	#DIV/0!	
	ft		
	ft		
	ft/ft	#DIV/0!	
	ft/ft		
	ft/sec		
	hr		
			min = 0.0

TOTAL TIME (hr)	0.30
TOTAL TIME (min)	17.8

** Reference: FDOT Drainage Manual Chapter 5.5, TR-55 Chapter 3 & APP-F.