Florida Department of
TRANSPORTATION

FINAL LOCATION HYDRAULIC REPORT TECHNICAL MEMORANDUM

Florida Department of Transportation
District Five

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY
I-75 (SR 93) at NW 49th Street

Marion County, Florida
Financial Management Number: 435209-1-22-01
ETDM Number: 14242

OCTOBER 2020

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016, and executed by the Federal Highway Administration and FDOT.

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PROFESSIONAL ENGINEER CERTIFICATE

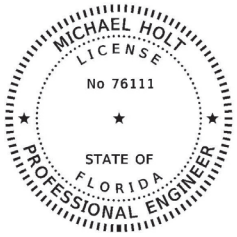
I hereby certify that I am a registered professional engineer in the State of Florida practicing engineering with Metric Engineering, Inc. and I have reviewed or approved the evaluation, findings, opinions and conclusions as reported for:

PROJECT:	**I-75 (SR 93) at NW 49th Street PD&E**
FINANCIAL PROJECT NUMBER:	**435209-1-22-01**
LOCATION:	**Marion County**
CLIENT:	**Florida Department of Transportation**

This Drainage Report includes a summary of data collection efforts, calculations, and an overall drainage review prepared for the I-75 at NW 49th Street PD&E Study in Marion County.

I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering and planning as applied through professional judgements and experience.

Florida Registered Engineer:
Name: Michael A. Holt, P.E.
Registration Number: FL # 76111



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY:

Michael A Holt Digitally signed by Michael A Holt Date: 2021.01.18 15:31:28 -05'00'

ON THE DATE ADJACENT TO THE SEAL

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1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) in conjunction with Marion County is planning to provide a new I-75 interchange at NW 49 Street just west of the City of Ocala, Florida. The proposed interchange is needed to support the economic viability of the Ocala 489, a 489-acre industrial and commercial development, which is intended to serve as an economic engine for job creation in the region.

The goal of the NW 49th Street and I-75 Interchange Project Development and Environment (PD&E) study is to develop a proposed improvement strategy that is technically sound, environmentally sensitive and publicly acceptable. As with every PD&E study, emphasis has been placed on the development, evaluation and documentation of detailed engineering and environmental studies including data collection, conceptual design, environmental analyses, project documentation, and the preparation of a Pond Siting Report (PSR) and Location Hydraulic Report (LHR).

After a comprehensive evaluation process, one alternative was selected as being the most effective option. The prefereed alternative (shown on **Appendix A, Figure 3**), diverging diamond interchange , consists of a diamond interchange in which the two directions of traffic on the minor road (NW 49th Street) crossover, or diverge, to the opposite side between the signalized crossover intersections at the on/off ramps. This eliminates the need for left-turning vehicles to cross the paths of approaching through vehicles, facilitating operational maneuvers and eliminating the potential for side-impact crashes. This allows for a simple two-phase operation at the two signalized intersections within the interchange (no left turns), thus improving efficiency. The preferred alternative also includes the extension of NW 49th Street from NW 44th Avenue to Marion County's future NW 35th Street extension (currently in final design). The proposed typical section for NW 49th Street will feature four 12-foot travel lanes with 7-foot bicycle lanes, a 28-foot raised median, and 6-foot sidewalk. The proposed right-of-way for NW 49th Street is 122 feet. NW 49th Street will curve towards the south east of I-75 to connect to Marion County's future NW 35th Street extension (Phase 2B) connection through the Magnum Materials Mine which is funded for construction in 2021 by the County. At the western limit, the proposed NW 49th Street will tie in to the existing NW 49th Street at the NW 44th Avenue intersection. Improvements at the NW 44th Avenue intersection include the addition of a northbound right turn lane and a southbound left turn lane for access to the proposed NW 49th Street and interchange ramps. Additionally, based on the preliminary profile of NW 49th Street, the intersection of NW 44th Avenue would need to be reconstructed to raise the profile approximately 2 feet.

The purpose of this memo is to identify potential floodplain impacts and encroachments and measures to minimize the impacts. The memo also will identify existing and proposed cross drains, their function, and potential floodplain impacts associated with the cross drain extensions. Since this project will not have major impacts to floodplains due to cross drain

extension and proposed roadway improvement, a technical memorandum is prepared per discussion with FDOT.

The project is in both the St Johns River Water Management District (SJRWMD) and the Southwest Florida Water Management District (SWFWMD). The western edge of I-75 acts as the divider between the two Water Management Districts. I-75 is under the jurisdiction of and permitted by SJRWMD and NW 44th Ave is permitted by SWFWMD. As the majority of the project falls under SJRWMD jurisdiction, and new impervious areas will be collected and ultimately discharged to the east, an interagency agreement will be sought to allow for a single permit under the authority of the SJRWMD. The project location and vicinity (USGS Quad) maps are shown in **Figures 1** and **2**, respectively. **Figure 3** shows the water management districts' boundaries within the project area.

2.0 FLOODPLAIN INFORMATION

The Federal Emergency Management Agency (FEMA) has developed Flood Insurance Rate Maps (FIRM) for Marion County. There are no FEMA regulated floodways within the limits of the project. Small segments of the project in Basin G2 and the NE Offsite Area are located within FEMA designated flood zones (both designated Zone AE - Elevations 73.0 and 69.7, respectively). The floodplain impacts in the project area are at the I-75 northbound roadside swales. Please refer to Figure 4 for a map of the FEMA floodplains and Figure 5 for the floodplain impact and compensation areas.

The floodplain impacts due to the interchange construction are estimated to be 3.52 acre-feet. The floodplain impacts will be compensated by regrading the swales along the east side of I-75 within Basin G2 utilizing the "Cup for Cup" method. The flood plain compensation provided by the proposed swales is approximately 5.45 acre-feet. **Appendix B** contains the flood impact and compensation calculations. A detailed floodplain compensation analysis should be provided in the final design.

3.0 EXISTING AND PROPOSED CROSS DRAINS

The proposed NW 49th Street is a new alignment; therefore, there are no existing cross drains or bridge structures for review. However, the I-75 corridor within the proposed interchange has 3 cross drains that function as equalizer pipesbetween northbound and southbound dry retention swales. **Figure 6** shows the existing cross drains and pre-development drainage patterns. All 3 existing cross drains will be extended to accommodate the future interchange's on and off ramp alignments. The functionality of these cross drains will be maintained, and the recommended improvements will not adversely impact the overall drainage function of I-75. Refer to **Table-1** for existing I-75 cross drain information. **Appendix C** contains the I-75 Straight Line Diagram showing the existing I-75 cross drains**.**

Since these cross drains are equalizer pipes, a cross drain analysis is not required during PD&E and will be conducted during the design. CD-1 and CD-2 are located outside the floodplain. No

significant floodplain impacts are anticipated with the cross drain extensions. Only CD-3 will have minor impact on a floodplain and the impact will be compensated within the roadside swales.

Table-1 Existing I-75 Cross Drain General Information

Cross Drain ID	Station Location	Pipe Description	Date of Plan
I-75 CD-1	2447+00	24" RCP	1992
I-75 CD-2	2475+00	24" RCP	1992
I-75 CD-3	2500+00	24" RCP	1992

No new cross drains are proposed within the mainline right-of-way, however one new cross drain, CD-4, is proposed to drain offsite runoff that will be blocked by the proposed NW 49th Street roadway alignment. The proposed 36" cross drain, CD-4, will maintain the historical flow connectivity, draining the offsite runoff into the depressional area within the Baldwin property. The depressional area within the Baldwin property has historically received runoff from the surrounding higher grounds. **Figure 7** shows the proposed cross drain extensions, new cross drain, and post-development drainage patterns.

Appendix D contains the ICPR documentation for CD-4. Preliminary analysis utilizing ICPR was performed for this PD&E, but the final design team should verify the proposed culvert size and its location, based on the final roadway alignment and profile. Overtopping analysis should be done during the final design to determine the probability of when (which storm frequency) water levels begin to flow over the proposed NW 49th St.

4.0 FLOODING HISTORY AND MAINTENANCE CONCERNS

During a phone interview with the FDOT maintenance staff at the Ocala Operations Center on May 2, 2019, it was indicated that no areas of flooding concern were present along the proposed I-75 and NW 49th Street Interchange area. The staff member, Jeff Purdy, mentioned the existing roadside ditch along I-75, ditch blocks, and median drainage pipes had no maintenance issues. The only maintenance issue discussed during the phone interview was that the median guardrails are too close to each other, which makes mowing more difficult with the standard mowing equipment.

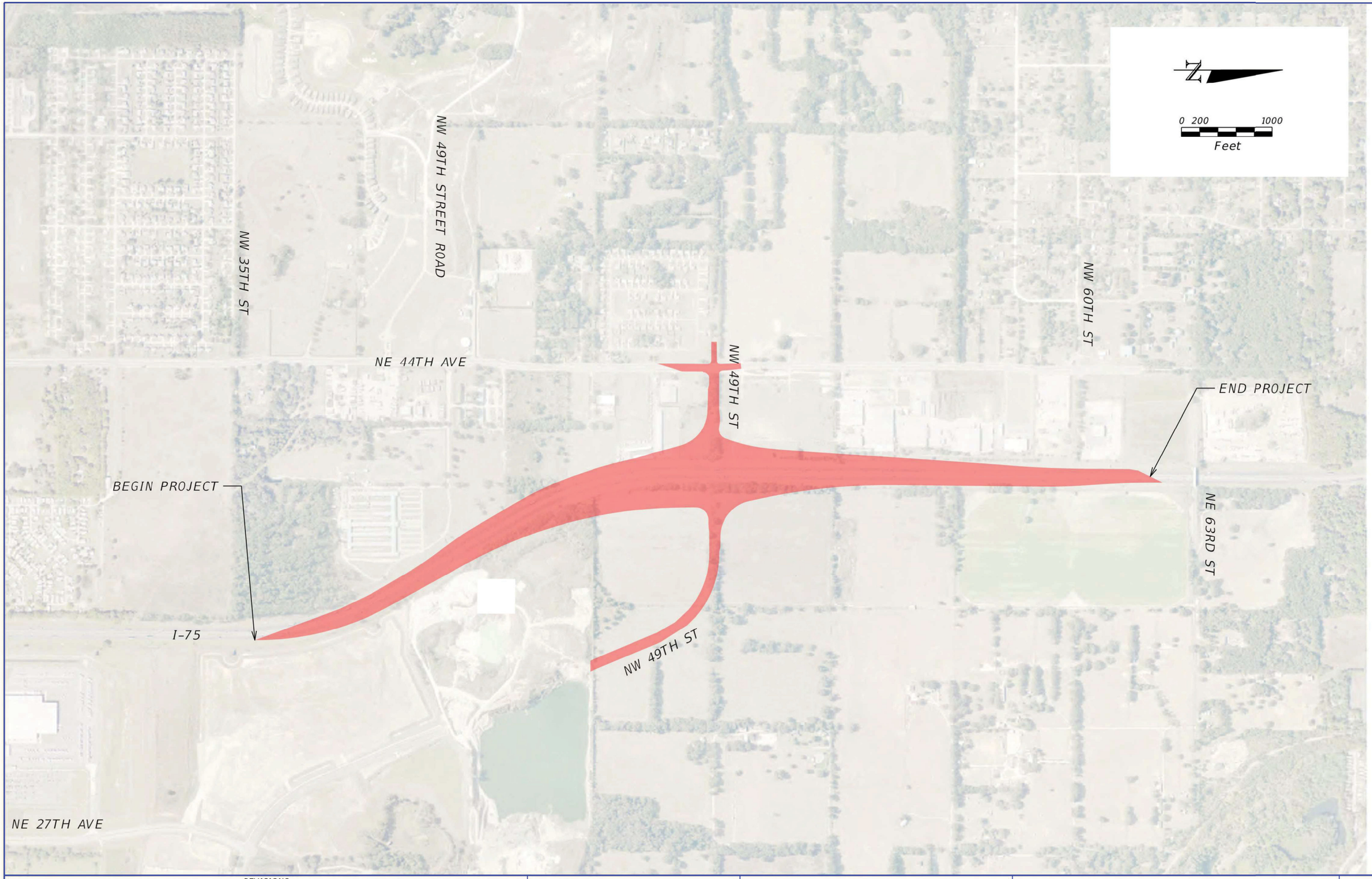
5.0 CONCLUSIONS

The proposed project will not create substantial changes to the existing floodplain elevations. The floodplain impacts will be compensated in the proposed regraded swales within the project boundaries. The proposed drainage features will be designed in accordance with the FDOT Drainage Manual, Topic No. 625-040-002.

Modifications to existing drainage structures (extending cross drains, relocating ditch blocks, and adding headwalls) included in this project will result in an insignificant change in their capacity to carry floodwater. These modifications will cause minimal increases in flood heights and flood limits which will not results in any significant adverse impacts on the natural and beneficial floodplain values or any significant change in flood risks or damage. There will be no significant change in the potential for interruption of termination of emergency service of emergency evacuation routes as the result of modifications to existing drainage structures. Therefore, it has been determined that this encroachment is not significant.

APPENDIX A:

FIGURES



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CERTIFICATE OF AUTHORIZATION 2294

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-75	MARION	435209-1-22-01

PROJECT LOCATION MAP
FIGURE 1

SHEET NO. A-1

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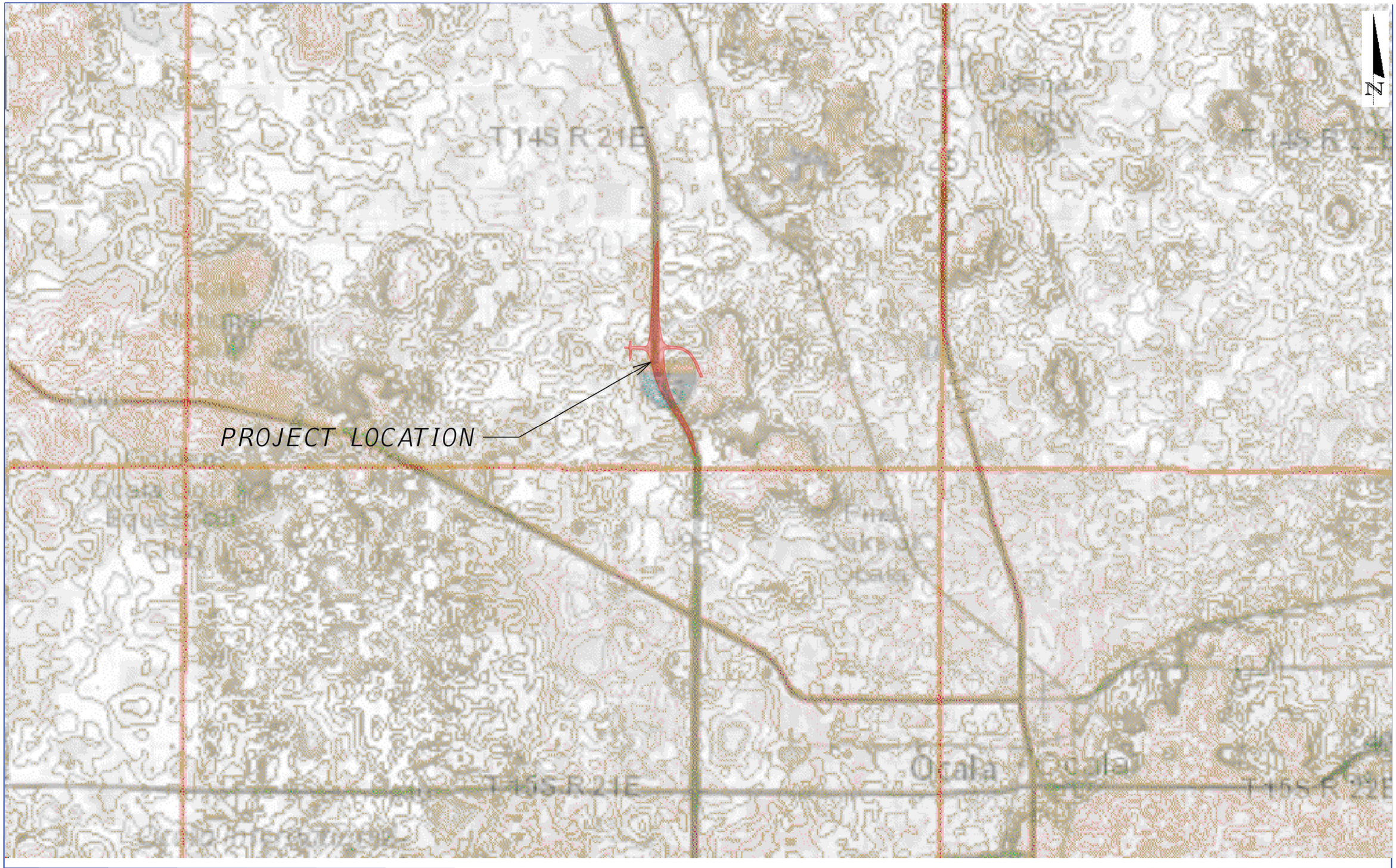

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
I-75	MARION	435209-1-22-01

VICINITY / USGS QUAD MAP
FIGURE 2

SHEET NO. A-2

A-2

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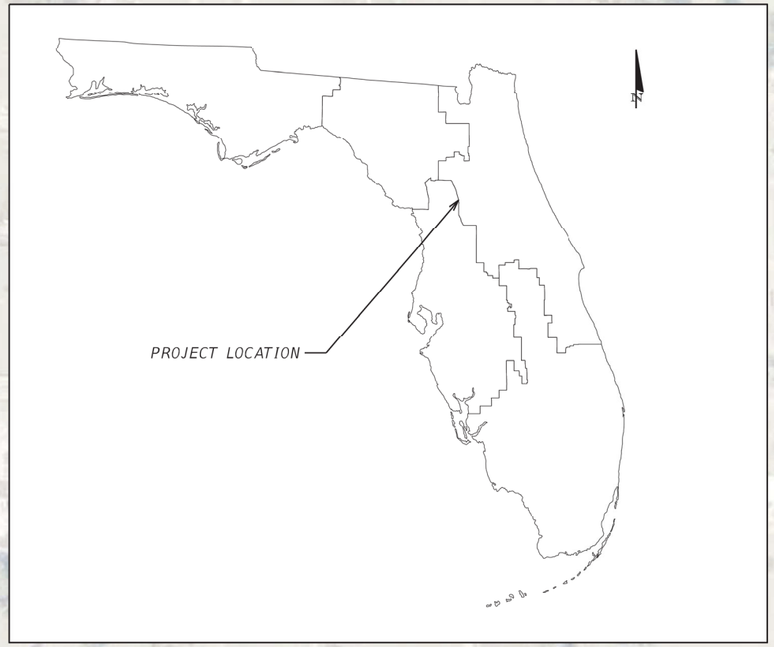

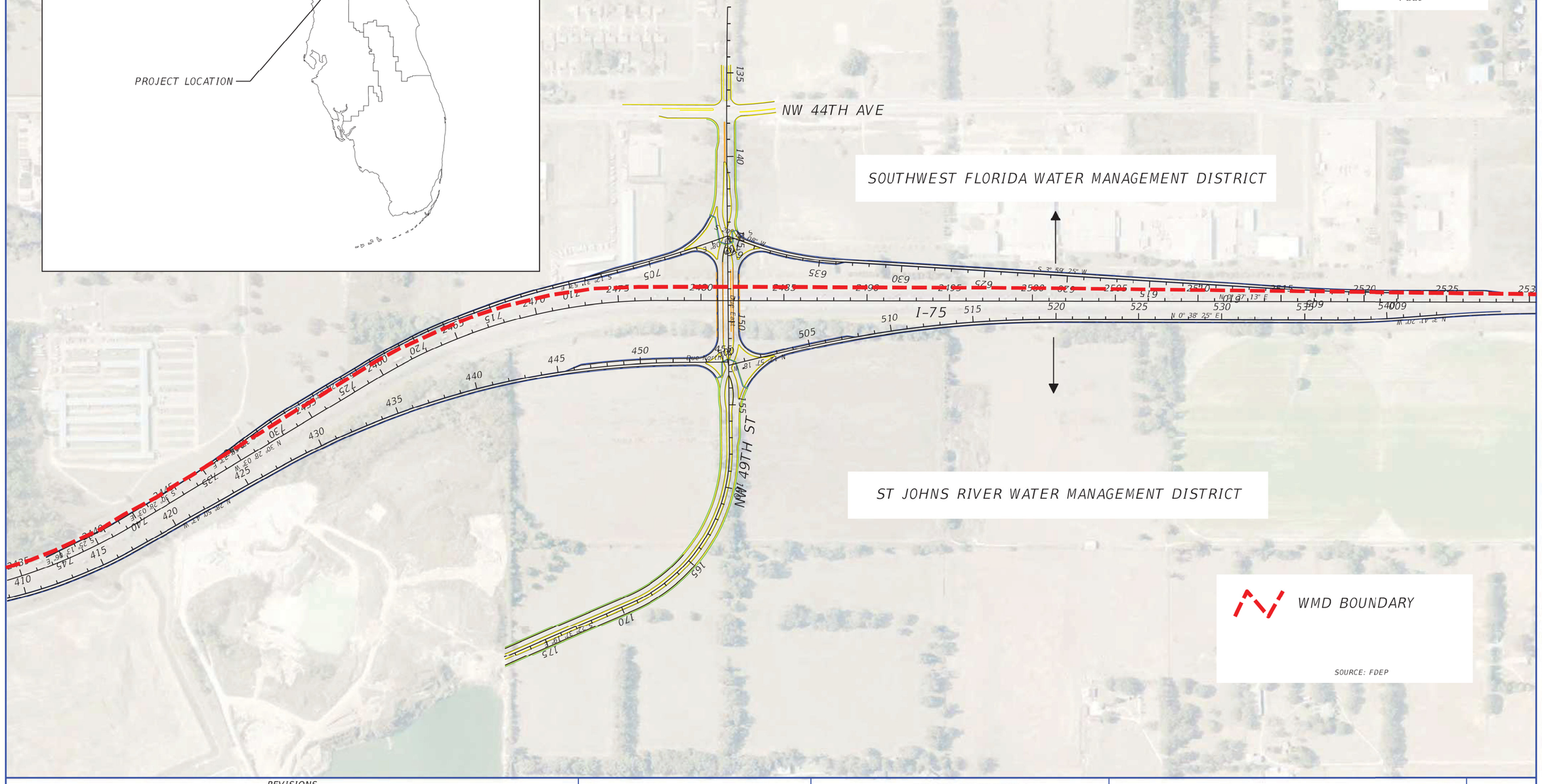

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I-75	MARION	435209-1-22-01

WATER MANAGEMENT DISTRICT BOUNDARY MAP FIGURE 3

SHEET NO. A-3

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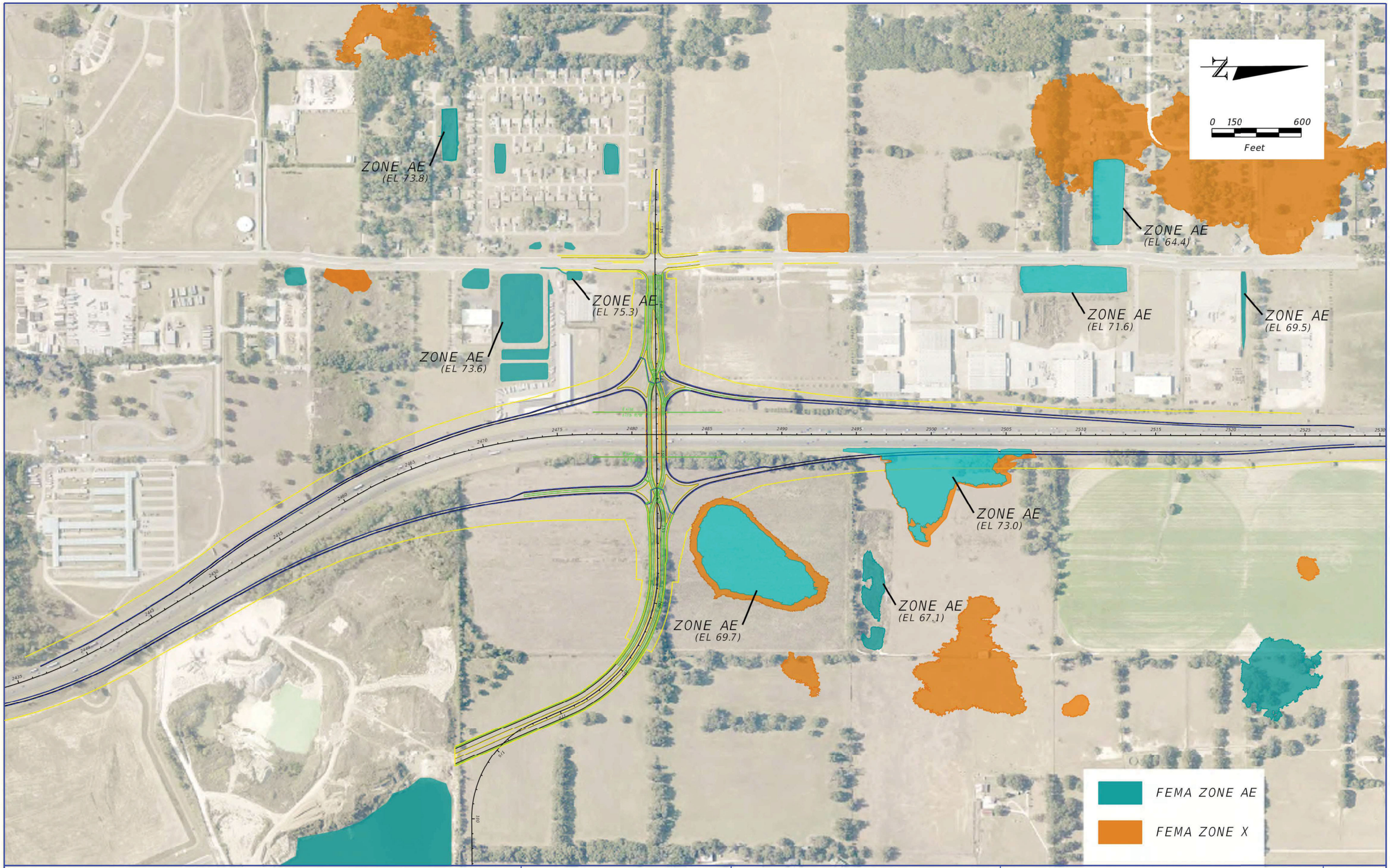

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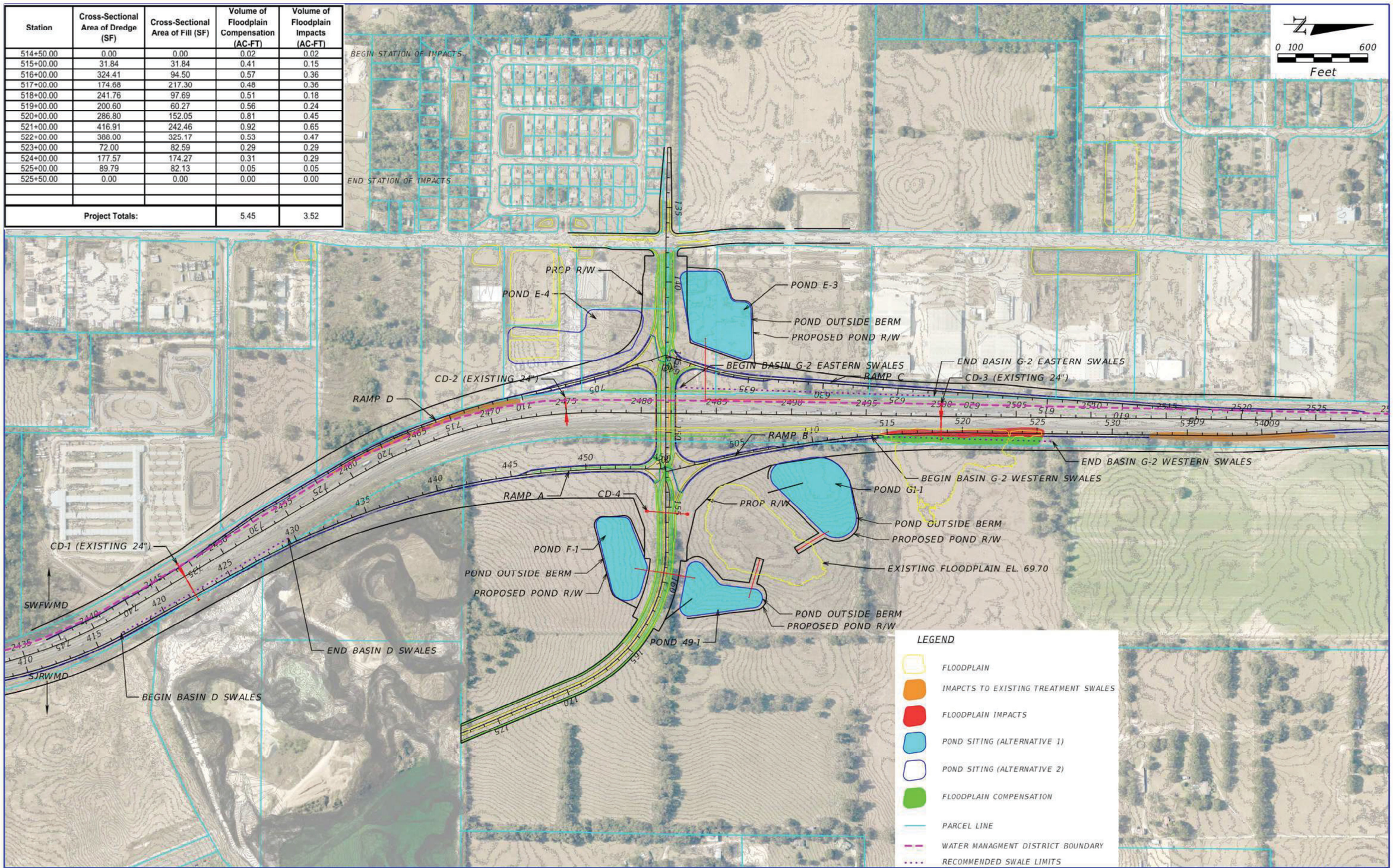
I-75	MARION	435209-1-22-01

FEMA FLOODPLAIN MAP
FIGURE 4

SHEET NO. A-4

Jillian.Berbakov 10/9/2020 11:24:33 AM J:\Drainage\I-75 @ 49th Street\Drainage\FLOODPLAIN_EXHIBIT2.DGN

Station	Cross-Sectional Area of Dredge (SF)	Cross-Sectional Area of Fill (SF)	Volume of Floodplain Compensation (AC-FT)	Volume of Floodplain Impacts (AC-FT)
514+50.00	0.00	0.00	0.02	0.02
515+00.00	31.84	31.84	0.41	0.15
516+00.00	324.41	94.50	0.57	0.36
517+00.00	174.68	217.30	0.48	0.36
518+00.00	241.76	97.69	0.51	0.18
519+00.00	200.60	60.27	0.56	0.24
520+00.00	286.80	152.05	0.81	0.45
521+00.00	416.91	242.46	0.92	0.65
522+00.00	388.00	325.17	0.53	0.47
523+00.00	72.00	82.59	0.29	0.29
524+00.00	177.57	174.27	0.31	0.29
525+00.00	89.79	82.13	0.05	0.05
525+50.00	0.00	0.00	0.00	0.00
Project Totals:			5.45	3.52



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I-75	MARION	435209-1-22-01

$USERS $DATES $TIMES $FILES

PROPOSED POND/ FLOODPLAIN COMPENSATION MAP
FIGURE 5

SHEET NO. A-5

N

0 200 800

Feet

R/W LINE

BASIN D

BASIN E

BASIN G

NW 44TH AVE

NW 44TH AVE

EXIST. POND #3

OFFSITE AREA E
10.48 AC.

EXIST. BARRACUDA POND

BASIN E
TOTAL AREA: 16.72 AC
IMP. AREA: 3.51 AC.

CD-2
(Existing 24")

CD-3
(EXISTING 24")

BASIN G2
TOTAL AREA: 19.64 AC.
IMP AREA: 6.32 AC.

I-75

BASIN G1
8.86 AC.
IMP. AREA 2.83 AC.

DEPRESSIONAL AREA 2

OFFSITE AREA G1
9.38 AC.

D1 POPOFF

D2 POPOFF

CD-1
(EXISTING 24")

BASIN F
TOTAL AREA: 15.78 AC.
IMP AREA: 2.96 AC.

BASIN F-OFF
TOTAL AREA: 18.20 AC.
IMP AREA: 0.00 AC.

BASIN D
TOTAL AREA: 15.90 AC.
IMP AREA: 5.32 AC.

DEPRESSIONAL AREA 1

MAGNUM MATERIALS MINING PIT

PROP. R/W LINE

OFFSITE AREA D1
120.40 AC.

OFFSITE DEPRESSIONAL AREA

EXIST. POND DRA B-6

MAGNUM MATERIALS MINING PIT

BASIN F

LEGEND

PARCEL LINE

EXISTING FLOW ARROW

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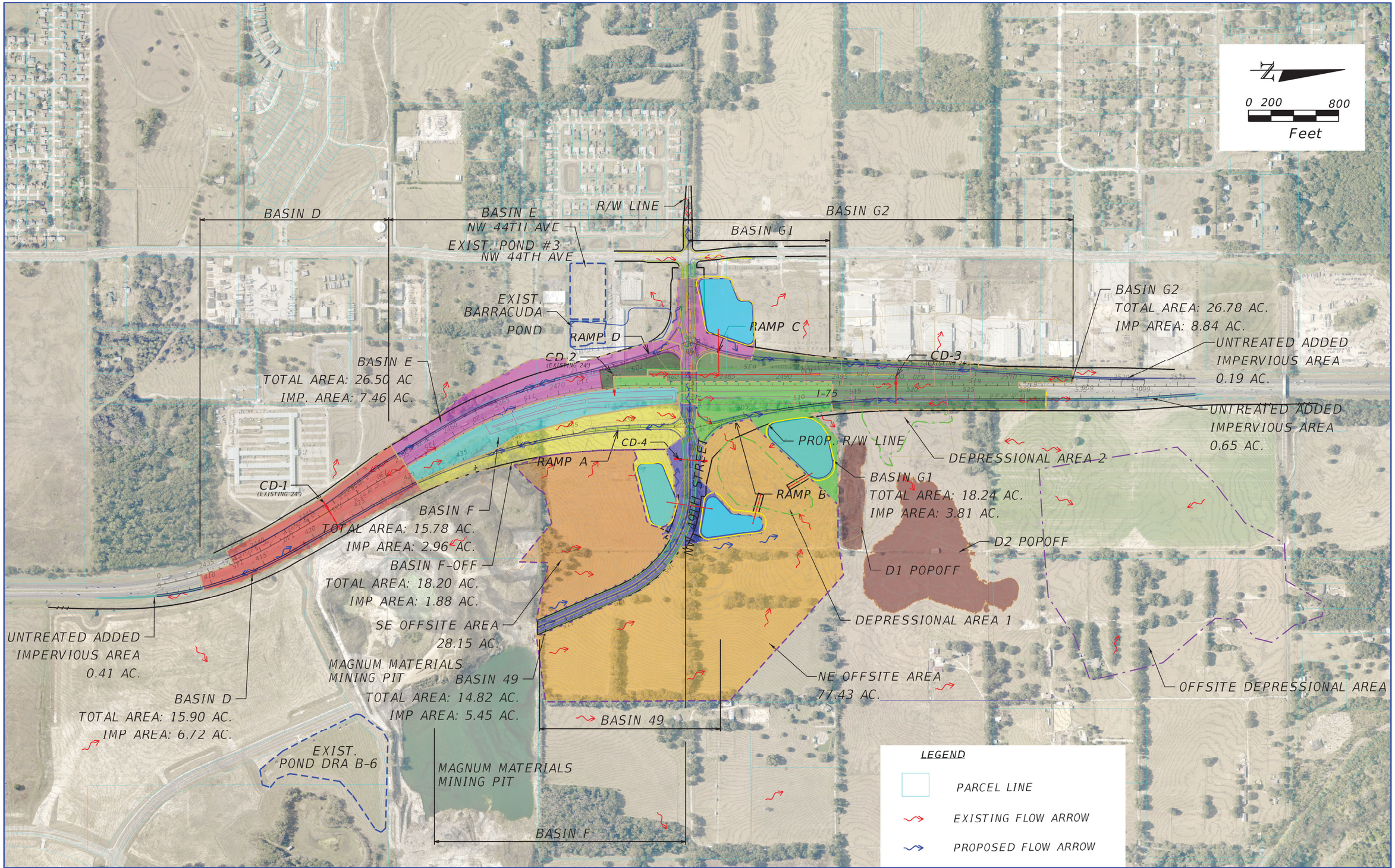
I-75	MARION	435209-1-22-01

PRE-DEVELOPMENT
DRAINAGE MAP
FIGURE 6

SHEET NO.
A-6

$USERS $DATES $TIMES $FILES



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POST-DEVELOPMENT DRAINAGE MAP FIGURE 7

SHEET NO. A-7

Michael.Holt

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APPENDIX B:

CALCULATIONS

TIME OF CONCENTRATION &
CURVE NUMBER CALCULATIONS

Time of Concentration, Tc & Curve Number, CN Calculations

BASIN: **E-OFFSITE (EX)**

Sheet __1__ of __1_ Proj. I-75&49th
Computed By: __JPB__ Date: _9/07/2020_
Checked By: __MAH__ Date: 10/12/2020

Tc Calculations:

Sheet Flow

				Segment ID:	AB				
1.	Surface description (table 3-1, TR-55)				Grass				
2.	Manning's Roughness coefficient, n (table 3-1, TR-55)				0.15				
3.	Two year 24 hour rainfall, P2			in	4.8				
4.	Flow length, L (total L< 300 ft)			ft	300				
5.	Land slope , s		Begin Elev.	ft	129.0				
			End Elev.	ft	123.0				
	Slope = (E1-E2)/L		Slope	ft/ft	0.020				
6.	Tt = (0.007*(nL)^0.8)/((P2^0.5)(s^0.4)) * 60		Compute Tt	min.	19.27	+		=	19.3

Shallow Concentrated Flow

				Segment ID:	BC				
7.	Surface description (paved or unpaved)				unpaved				
	Velocity Coefficient K (Paved = 20.328, Unpaved = 16.1345)				20.328				
8.	Flow length, L			ft	2650				
9.	Watercourse slope, S		Begin Elev.	ft	123.0				
			End Elev.	ft	69.0				
	Slope = (E1-E2)/L		Slope	ft/ft	0.020				
10.	Average velocity, V (V = K*S^0.5)			ft/s	2.90				
11.	Tt = L/(60*V)		Compute Tt	min.	15.2	+		=	15.2

Channel Flow

				Segment ID:	CD				
14.	Hydraulic radius, R = A / WP			ft	0.00				
15.	Flow length, L			ft	500				
16.	Slope, s		Begin Elev.	ft	32.0				
			End Elev.	ft	31.0				
	Slope = (E1-E2)/L		Slope	ft/ft	0.002				
17.	Manning's roughness coefficient, n (table 3-1, TR-55)				0.15				
18.	V = (1.49*R^.67*s^0.5)/N			ft/s	0.00				
19.	Tt = L/(60*V)		Compute Tt	min.	0.0	+		=	0.0

20.	Total of 6, 11 and 19							=	34.5 min.
	Minimum Time of Concentration			minimum:	10.0	min.			
	Time of Concentration								**34.5 min.**
									0.6 hr

CN Calculations:

Land Use Description	Soil Group	CN	Area (ac.)	Product
Impervious Areas	A/D	98	0.00	0.00
Pastureland	A	39	150.21	5858.19
Water Bodies	A/D	100	0.00	0.00
		TOTALS:	150.21	5858.19
			COMPOSITE CN =	**39.0**

FLOODPLAIN IMPACTS AND COMPENSATION CALCULATIONS

Dredge & Fill Volumes

Computed: JPB Date: 08/27/2020
Checked: MAH Date: 10/09/2020

Swales I-75

Station	Cross-Sectional Area of Dredge (SF)	Cross-Sectional Area of Fill (SF)	Volume of Floodplain Compensation (AC-FT)	Volume of Floodplain Impacts (AC-FT)	
514+50.00	0.00	0.00	0.02	0.02	Represents begin station of impacts
515+00.00	31.84	31.84	0.41	0.15	
516+00.00	324.41	94.50	0.57	0.36	
517+00.00	174.68	217.30	0.48	0.36	
518+00.00	241.76	97.69	0.51	0.18	
519+00.00	200.60	60.27	0.56	0.24	
520+00.00	286.80	152.05	0.81	0.45	
521+00.00	416.91	242.46	0.92	0.65	
522+00.00	388.00	325.17	0.53	0.47	
523+00.00	72.00	82.59	0.29	0.29	
524+00.00	177.57	174.27	0.31	0.29	
525+00.00	89.79	82.13	0.05	0.05	
525+50.00	0.00	0.00	0.00	0.00	Represents end station of impacts
Project Totals:			5.45	3.52	

APPENDIX C:

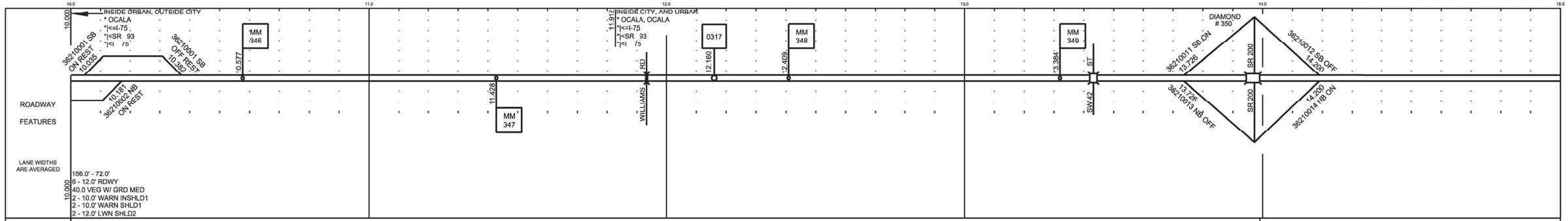
I-75 STRAIGHT LINE DIAGRAMS

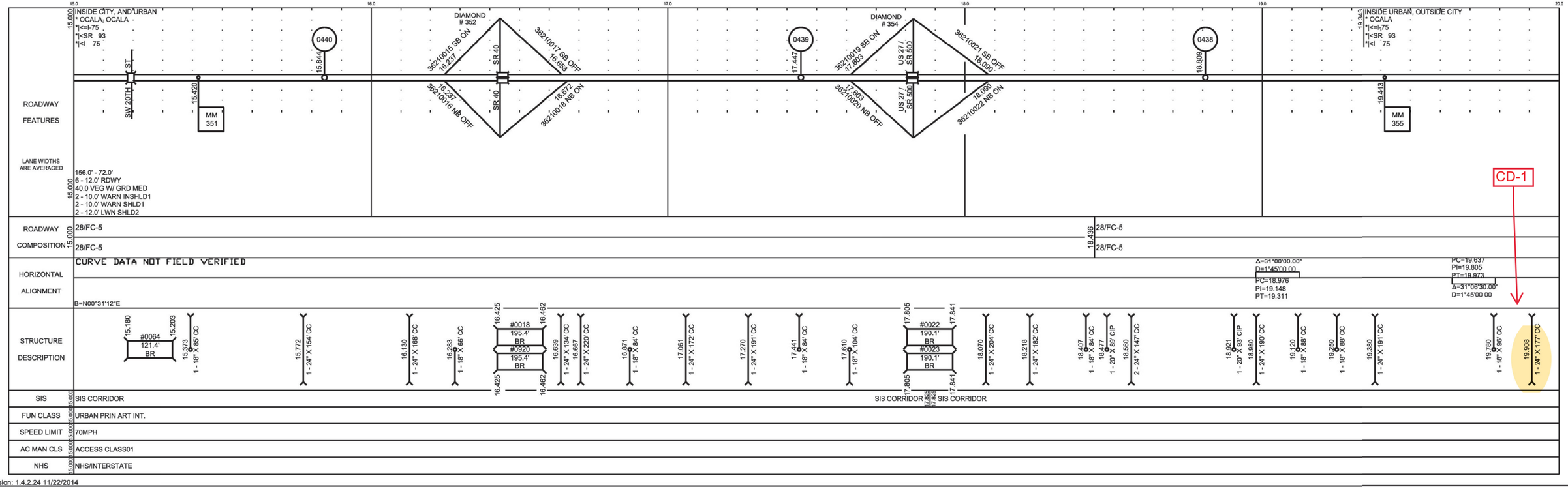
	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	05/29/2014	06/25/2014	000.000	038.282		12/09/2014 MR
BY	Jim Manzone	Michael Register				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02	I 75	SR 93	MARION	05	36210000	2 OF 4





Version: 1.4.2.24 11/22/2014

	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	05/29/2014	06/25/2014	000.000	038.282		12/09/2014 MR
BY	Jim Manzone	Michael Register				

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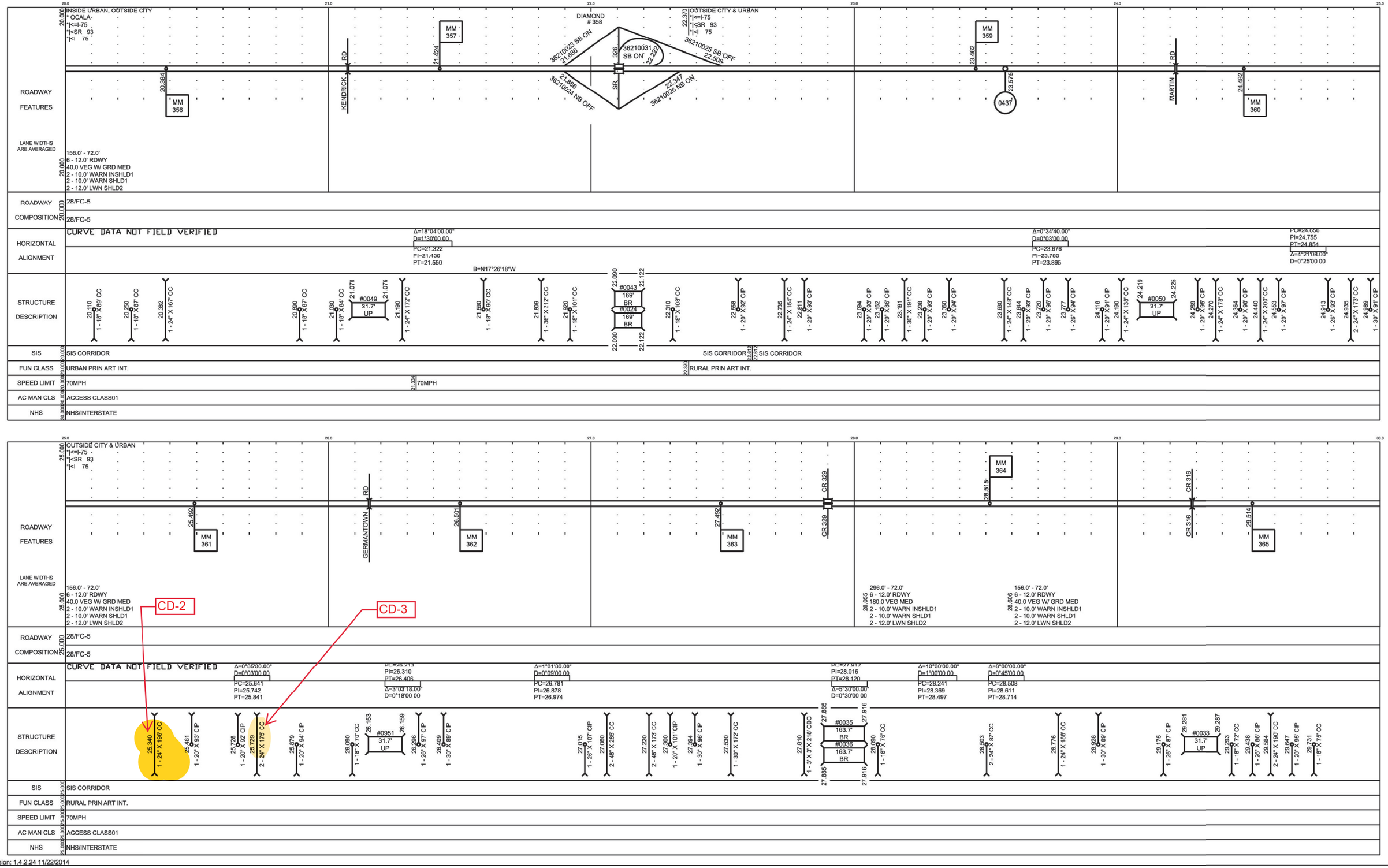
SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02	I 75	SR 93	MARION	05	36210000	3 OF 4



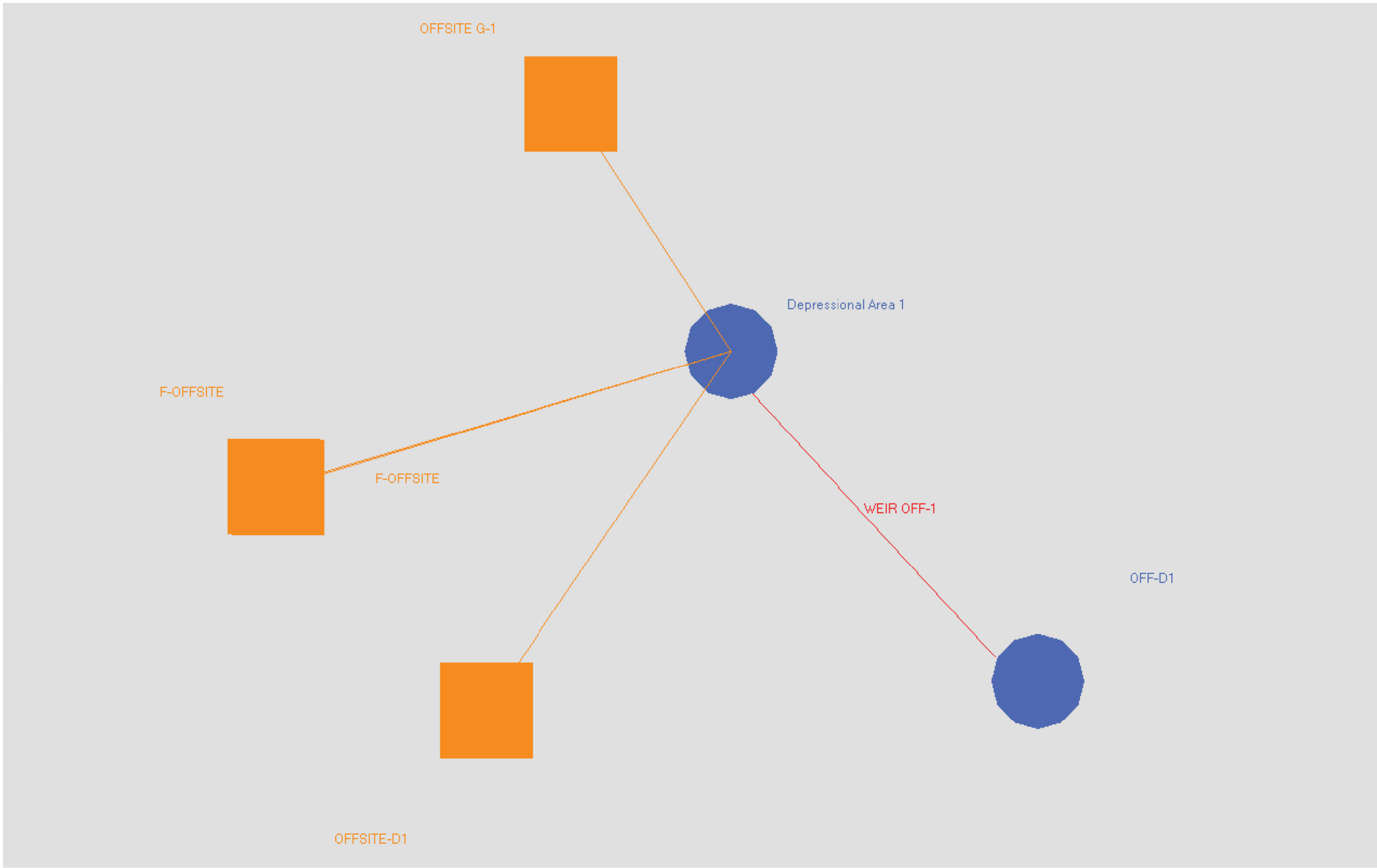
Version: 1.4.2.24 11/22/2014

APPENDIX D:

ICPR DOCUMENTATION

PRE-DEVELOPMENT ICPR DOCUMENTATION

Pre-Development Node-Link Diagram



Node Max Conditions [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]
Depressional Area 1	100yr-24hr	73.00	72.10	0.0010	226.32	0.00	523664
Depressional Area 1	10yr-24hr	73.00	68.80	0.0010	25.83	0.00	224758
Depressional Area 1	25yr-24hr	73.00	70.12	0.0010	81.95	0.00	344143
Depressional Area 1	50yr-24hr	73.00	71.15	0.0010	148.66	0.00	435605
OFF-D1	100yr-24hr	73.00	66.00	0.0000	0.00	0.00	43996
OFF-D1	10yr-24hr	73.00	66.00	0.0000	0.00	0.00	43996
OFF-D1	25yr-24hr	73.00	66.00	0.0000	0.00	0.00	43996
OFF-D1	50yr-24hr	73.00	66.00	0.0000	0.00	0.00	43996

Manual Basin: F-OFFSITE

Scenario: Pre-Development
Node: Depressional Area 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 40.9000 min
Max Allowable Q: 999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
18.2000	OFFSITE	OFFSITE	

Comment:

Manual Basin: OFFSITE G-1

Scenario: Pre-Development
Node: Depressional Area 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 25.5000 min
Max Allowable Q: 999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
9.3800	OFFSITE	OFFSITE	

Comment:

Manual Basin: OFFSITE-D1

Scenario: Pre-Development
Node: Depressional Area 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 34.5000 min
Max Allowable Q: 999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
120.4000	OFFSITE	OFFSITE	

Comment:

Curve Number: CurveNumbers [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
OFFSITE	OFFSITE	39.0

Node: Depressional Area 1

Scenario: Pre-Development
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 66.00 ft
Warning Stage: 73.00 ft

Stage [ft]	Area [ac]	Area [ft2]
66.00	0.1200	5227
67.00	1.7600	76666
68.00	3.4700	151153
69.00	5.5900	243500
70.00	7.6700	334105
71.00	9.6700	421225
72.00	11.8100	514444
73.00	13.8600	603742

Comment:

Node: OFF-D1

Scenario: Pre-Development
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 66.00 ft
Warning Stage: 73.00 ft

Stage [ft]	Area [ac]	Area [ft2]
66.00	1.0100	43996
67.00	1.4500	63162
70.00	2.6800	116741
71.00	2.9000	126324
72.00	3.6100	157252
73.00	3.8500	167706

Comment: Represents offsite pop-off location for Depressional Area 1

Weir Link: WEIR OFF-1

Scenario: Pre-Development
From Node: Depressional Area 1
To Node: OFF-D1
Link Count: 1
Flow Direction: Both
Damping: 0.0000 ft
Weir Type: Broad Crested Vertical

Bottom Clip

Default: 0.00 ft
Op Table:
Ref Node:

Top Clip

Default: 0.00 ft
Op Table:

Geometry Type:	Irregular
Invert:	73.00 ft
Control Elevation:	73.00 ft
Cross Section:	X-OFF-1-W

Ref Node:	

Discharge Coefficients

Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment: represents elevation at which the depression overtops to the adjacent offsite depressional area to the north

Simulation: 100yr-24hr

Scenario:	Pre-Development
Run Date/Time:	1/4/2021 3:41:23 PM
Program Version:	ICPR4 4.04.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]
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:	CurveNumbers
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Basins

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	11.40 in
Edge Length Option:	Automatic	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-24hr

Scenario: Pre-Development
Run Date/Time: 1/4/2021 3:41:39 PM
Program Version: ICPR4 4.04.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]
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:	
		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	CurveNumbers
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Basins

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	6.40 in
Edge Length Option:	Automatic	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-24hr

Scenario:	Pre-Development
Run Date/Time:	1/4/2021 3:41:56 PM
Program Version:	ICPR4 4.04.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]
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: CurveNumbers
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Basins

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: ~FLMOD
Rainfall Amount: 8.25 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-24hr

Scenario: Pre-Development
Run Date/Time: 1/4/2021 3:42:13 PM
Program Version: ICPR4 4.04.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

Hydrology [sec]	Surface Hydraulics

		[sec]
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: CurveNumbers
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Basins

Tolerances & Options

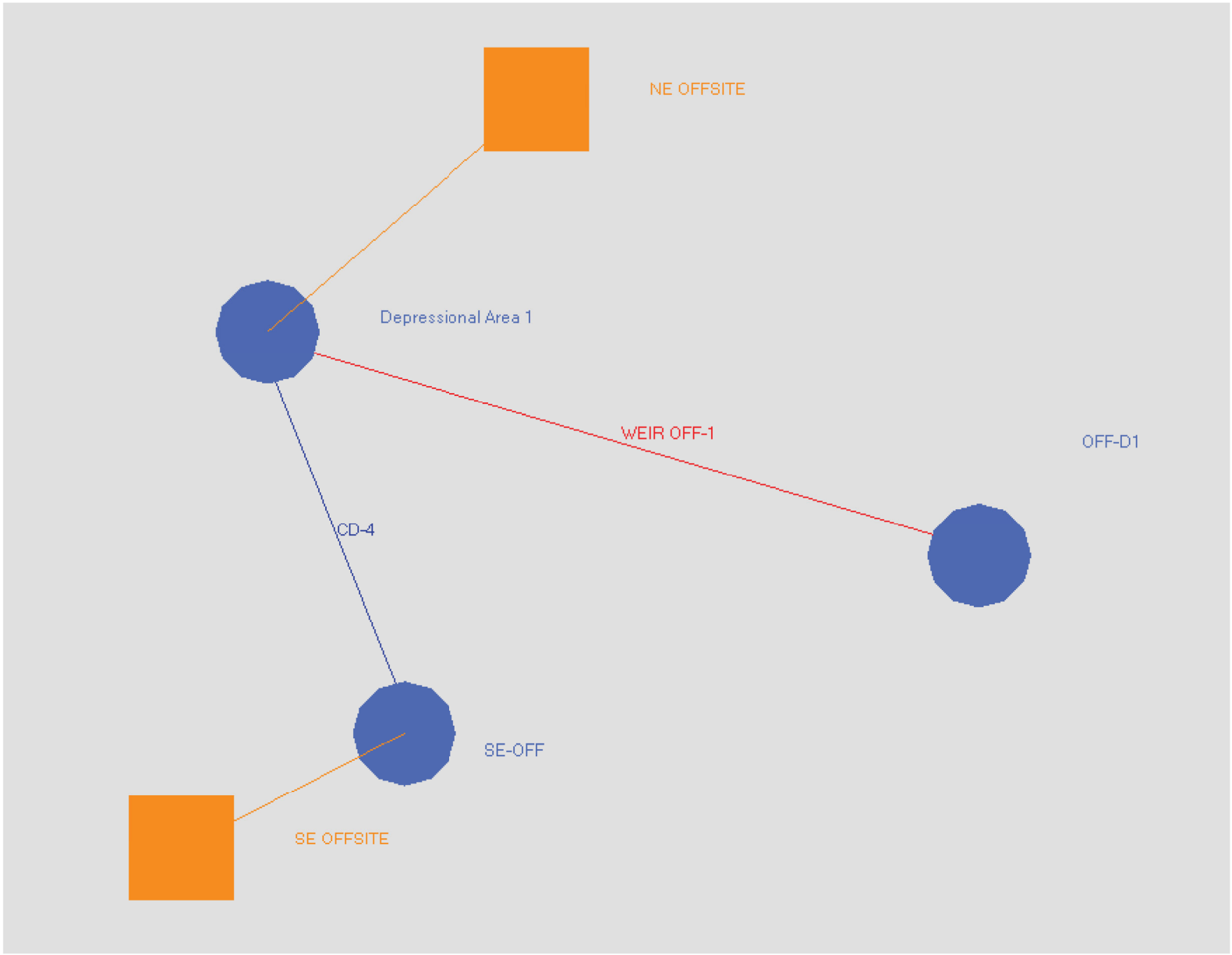
Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global
Rainfall Name: ~FLMOD
Rainfall Amount: 9.84 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

POST-DEVELOPMENT ICPR DOCUMENTATION

Post-Development Node-Link Diagram



Node Max Conditions [Post-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]
Depressional Area 1	100yr-24hr	73.00	71.18	0.0010	163.28	0.00	438424
OFF-D1	100yr-24hr	73.00	66.00	0.0000	0.00	0.00	43996
SE-OFF	100yr-24hr	82.40	81.53	0.0010	44.82	43.79	3961
Depressional Area 1	10yr-24hr	73.00	68.37	0.0010	18.69	0.00	185314
OFF-D1	10yr-24hr	73.00	66.00	0.0000	0.00	0.00	43996
SE-OFF	10yr-24hr	82.40	78.94	0.0010	5.10	5.04	1601
Depressional Area 1	25yr-24hr	73.00	69.50	0.0010	59.38	0.00	288627
OFF-D1	25yr-24hr	73.00	66.00	0.0000	0.00	0.00	43996
SE-OFF	25yr-24hr	82.40	79.80	0.0010	16.23	16.04	2469
Depressional Area 1	50yr-24hr	73.00	70.38	0.0010	107.60	0.00	366978
OFF-D1	50yr-24hr	73.00	66.00	0.0000	0.00	0.00	43996
SE-OFF	50yr-24hr	82.40	80.61	0.0010	29.44	28.99	3223

Manual Basin: NE OFFSITE

Scenario: Post-Development
Node: Depressional Area 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 34.5000 min
Max Allowable Q: 999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
77.4300	OFFSITE	OFFSITE	

Comment:

Manual Basin: SE OFFSITE

Scenario: Post-Development
Node: SE-OFF
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 32.3000 min
Max Allowable Q: 999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
28.1500	OFFSITE	OFFSITE	

Comment:

Curve Number: CurveNumbers [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
OFFSITE	OFFSITE	39.0

Node: Depressional Area 1

Scenario: Post-Development
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 66.00 ft
Warning Stage: 73.00 ft

Stage [ft]	Area [ac]	Area [ft2]
66.00	0.1200	5227
67.00	1.7600	76666
68.00	3.4700	151153

Stage [ft]	Area [ac]	Area [ft2]
69.00	5.5900	243500
70.00	7.6700	334105
71.00	9.6700	421225
72.00	11.8100	514444
73.00	13.8600	603742

Comment:

Node: OFF-D1

Scenario: Post-Development
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 66.00 ft
Warning Stage: 73.00 ft

Stage [ft]	Area [ac]	Area [ft2]
66.00	1.0100	43996
67.00	1.4500	63162
70.00	2.6800	116741
71.00	2.9000	126324
72.00	3.6100	157252
73.00	3.8500	167706
74.00	4.2600	185566

Comment: Represents offsite pop-off location for Depressional Area 1

Node: SE-OFF

Scenario: Post-Development
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 78.00 ft
Warning Stage: 82.40 ft

Stage [ft]	Area [ac]	Area [ft2]
78.00	0.0100	436
82.00	0.1000	4356
82.40	0.1000	4356

Comment: Warning stage set at roadway sag

Pipe Link: CD-4

Scenario: Post-Development
From Node: SE-OFF
To Node: Depressional Area 1

Upstream		Downstream	
Invert:	78.00 ft	Invert:	73.00 ft
Manning's N:	0.0120	Manning's N:	0.0120
Geometry:	Circular	Geometry:	Circular
Max Depth:	3.00 ft	Max Depth:	3.00 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:	182.00 ft	Ref Node:		Ref Node:	
FHWA Code:	1	Manning's N:	0.0000	Manning's N:	0.0000
Entr Loss Coef:	0.50	**Top Clip**			
Exit Loss Coef:	1.00	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: WEIR OFF-1

Scenario:	Post-Development	**Bottom Clip**	
From Node:	Depressional Area 1	Default:	0.00 ft
To Node:	OFF-D1	Op Table:	
Link Count:	1	Ref Node:	
Flow Direction:	Both	**Top Clip**	
Damping:	0.0000 ft	Default:	0.00 ft
Weir Type:	Broad Crested Vertical	Op Table:	
Geometry Type:	Irregular	Ref Node:	
Invert:	73.00 ft	**Discharge Coefficients**	
Control Elevation:	73.00 ft	Weir Default:	2.800
Cross Section:	X-OFF-1-W	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Comment: represents elevation at which the depression overtops to the adjacent offsite depressional area to the north

Simulation: 100yr-24hr

Scenario:	Post-Development
Run Date/Time:	1/4/2021 5:35:52 PM
Program Version:	ICPR4 4.04.00

General

Run Mode:	Normal			
	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]
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: CurveNumbers
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Basins

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: ~FLMOD
Rainfall Amount: 11.40 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: 10yr-24hr

Scenario: Post-Development
Run Date/Time: 1/4/2021 5:36:07 PM
Program Version: ICPR4 4.04.00

General

Run Mode: Normal

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

End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]
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: CurveNumbers
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Basins

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: ~FLMOD
Rainfall Amount: 6.40 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: 25yr-24hr

Scenario: Post-Development
Run Date/Time: 1/4/2021 5:36:27 PM
Program Version: ICPR4 4.04.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]
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: CurveNumbers
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Basins

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: ~FLMOD
Rainfall Amount: 8.25 in
Storm Duration: 24.0000 hr

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

Comment: SJRWMD storm event

Simulation: 50yr-24hr

Scenario:	Post-Development
Run Date/Time:	1/4/2021 5:36:48 PM
Program Version:	ICPR4 4.04.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]
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:	CurveNumbers
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Basins

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	9.84 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment: