Project Development & Environment Study

I-75 (SR 93A)

From Moccasin Wallow Road (CR 6)
to South of US Highway 301 (SR 43)

Draft
Location Hydraulic Report

WPI Segment No.: 419235-2
Manatee & Hillsborough Counties

Prepared for the

Florida Department of Transportation
District Seven

April 2010

Manuel Santos, E.I.
FDOT Project Manager

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Prepared by:
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From Moccasin Wallow Road to south of U.S. 301

FPID No. 419235-2-22-01

Draft Location Hydraulic Report

April 2010

The information presented in this document is subject to change until the final Phase of the project. This Draft Location Hydraulic Report (LHR) is preliminary and used as an engineering tool to identify potential floodplain encroachments as a result of the conceptual improvements. The calculations presented in this report are preliminary and help in estimating the preliminary size of the Floodplain Compensation (FPC) sites for each basin. The FPC site locations are screened using preliminary information based upon many assumptions and judgments. The FPC sizes and locations included in the documentation are subject to change throughout the preliminary engineering and project design phases (1 thru final).

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate and improve the operational capacity of I-75 (State Road 93A), from Moccasin Wallow Road in Manatee County to south of U.S. 301 in Hillsborough County. I-75 is a north-south interstate highway, part of the Florida Intrastate Highway System (FIHS), which is a major trade and tourism corridor as well as a critical evacuation route. The total project length is approximately 25 miles and the conceptual improvements include the addition of at least one Special Use Lane (SUL) for both the northbound and southbound directions for the existing 6 & 8 -lane limited access facility. This PD&E Study will evaluate the many SUL options so as to determine the most appropriate for the conceptual improvements. A project location map illustrating the PD&E study limits is shown in **Figure 1**. The existing typical sections and proposed typical sections are shown in **Figures 2 & 3**, respectively with Alternative 2 being the recommended alternative.

A *Draft Pond Sizing Technical Memorandum* has been prepared as part of this study and indicates approximate anticipated sizes of Floodplain Compensation (FPC) Sites to offset floodplain encroachments associated with the build alternative for both the recommended improvements and ultimate condition.

This *Draft Location Hydraulic Report* has been prepared to determine if any floodplains will be significantly affected due to the conceptual improvements. There are 67 cross drains within the study limits including eight bridges. The following 10 items have been addressed to document that the floodplain encroachments will be minimal.

1. History of Flooding: FDOT drainage maps, Southwest Florida Water Management District (SWFWMD) 1-foot contour aerial maps and Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) were used to identify flood-prone areas within the I-75 study area. Field inspections were conducted in April 2008 to identify obvious drainage problems. Additionally, local maintenance offices having jurisdiction within the study area, as well as asset management contractors, were contacted to determine any history of flooding problems within the study area. As a

result of this evaluation and coordination, no flooding problems associated with existing drainage conditions have been identified for the length of the study limits.

2. Longitudinal or Transverse Encroachments: The majority of the encroachments will be longitudinal with some transverse encroachments associated with the front and sides slopes for the bridge approaches. Locations F-2, F-3, F-10 and F-11 are areas where transverse encroachments may occur, see **Table 1** for floodplain areas located within the I-75 right-of-way. FPC sites will be provided for volume compensation for all floodplain impacts as a result of the floodplain encroachments.

Table 1: Existing Floodplain Areas Located within the Existing Right-of-Way. ③

Location / Encroachment Longitudinal (L) Transverse (T)	Station Range	Low Roadway Elevation within Floodplain (ft) ②	Estimated 100-year Floodplain Elevation (ft) ①	Potential Floodplain Area within Right-of-Way (ac)
F-11 (T)	1221+50 to 1226+00	24.25	19.0	2.50
F-10 (T)	1152+00 to 1175+00	32.71	10.0	3.71
F-9 (T)	1106+00 to 1117+50	21.75	16.0	3.99
F-8 (L)	942+00 to 1006+00	31.82 – 55.18 ④	23.0 – 29.0 ④	37.61
F-7 (L)	919+00 to 942+00	31.82 – 55.18 ④	29.0 – 30.0 ④	14.09
F-6 (L)	906+00 to 911+00	41.65	33.0	0.57
F-5 (L)	825+00 to 895+00	36.60 – 50.24 ④	33.0 – 37.0 ④	29.97
F-4 (L)	589+50 to 601+50	43.26	35.4 – 35.0 ④	1.04
F-3 (L)	508+00 to 523+00	24.97	21.0	1.85
F-2 (T)	367+00 to 384+00	28.25	9.0	3.10
F-1 (L)	235+00 to 301+00	19.89	17.3	52.08
Total				150.51

① The estimated 100-year floodplain elevations within Hillsborough County are taken from the FEMA current effective FIRMs (2008) for Hillsborough County. The estimated 100-year floodplain elevations within Manatee County are taken from the FEMA current effective FIRMs (1984 & 1992) for Manatee County.

② The low roadway elevations were taken from the existing as-builts for I-75 (SR 93); (SPN 10075-3402, 3403, 3404, 3405, 3406, 3413, 3420, 3421)

③ All elevations are referenced to NAVD 1988. Conversion equation determined from ACOE Corpscon software: NGVD 1929 – 1.135 ft = NAVD 1988

④ The range of low roadway elevations within the station limits correspond with the range of base flood elevations identified on the FEMA FIRMs for Hillsborough County. All low roadway elevations within the station limits are greater than the corresponding base flood elevations.

3. Avoidance Alternatives: All of the floodplain encroachments resulting from the proposed SULs will be minimal due to the proposed alignment following the same general alignment as the existing roadway. During the design phase, further floodplain impacts may be minimized by adjusting the typical section within the encroachment area by revising side slopes. Additionally, the stormwater management facilities (SMF) serving the project will be located to avoid or minimize impacts to floodplain resources and functions where reasonable and feasible.

4. Emergency Services and Evacuations: I-75 is a designated emergency evacuation route. There is no history of stormwater overtopping I-75 due to the existing floodplain; therefore, no emergency services or evacuation opportunities will be adversely affected.

5. Base Flood Impacts: There are 11 locations along the project corridor where encroachments to the 100-year base flood may occur, see **Table 1**. The project's drainage design will be consistent with local FEMA, FDOT, and SWFWMD design guidelines which state that no net encroachment, up to that encompassed by the 100-year event, will

be allowed, and that compensating storage shall be equivalently provided; therefore, no significant changes in base flood elevations or limits will occur.

6. Regulatory Floodway: There are 3 regulated floodway areas within the study limits as designated on the FEMA FIRMs. **Table 2** is a summary of the regulated floodways and the station where the right-of-way crosses each.

Table 2: Regulated Floodways Summary

Zone AE Floodway Areas	Station at Crossing
Alafia River	1159+00
Bullfrog Creek	1111+00
Little Manatee River	371+00

A No-Rise Certification and a conveyance analysis will be required, during the subsequent design phase, at all regulated floodway crossings to ensure there is no net loss of historic storage or other impacts to offsite properties due to the proposed improvements.

7. Natural and Beneficial Floodplain Values: The proposed roadway will follow the same general alignment as the existing roadway and compensating storage will be provided equivalent to any proposed encroachments; therefore, no natural and beneficial floodplain values will be significantly affected.

8. Floodplain Consistency and Development: The conceptual improvements will not directly or indirectly support floodplain development in a manner inconsistent with the National Flood Insurance Program, which prohibits development within the base floodplain. The conceptual improvements are also in accordance with Hillsborough and Manatee Counties comprehensive plans. Future development will be in accordance with designated land uses according to the adopted comprehensive plans and their land development regulations.

9. Floodplain/FIRM: A GIS drawing of the FIRM maps illustrating the project limits is shown in **Figure 4**. A tabulated list of the FIRM Community Panel numbers is shown in **Table 3**. The FIRMs for Hillsborough County (dated August 28, 2008) are referenced to the NAVD 1988, and the FIRMs for Manatee County (dated March 15, 1984 and July 15, 1992) are referenced to the NGVD 1929. FEMA designates special flood hazard areas as areas subject to inundation by the 1 percent annual chance flood. There are 11 locations within the I-75 limited access right-of-way study limits that have been designated as special flood hazard areas. For the ultimate design typical, the flood hazard areas were evaluated to determine the potential maximum floodplain encroachments for a typical section incorporating the entire right-of-way. The existing roadway is outside the 100-year floodplain elevations, as indicated in **Table 1**, and is not included as an encroachment. The existing roadside ditches and median swales within the 100-year floodplain elevation limits, as shown on the FIRMs, are included as potential areas where floodplain encroachments may occur. **Table 1** is a summary of the potential maximum floodplain encroachment areas. The estimated 100-year floodplain elevations were used with SWFWMD 1-ft contour topographic maps, and the proposed alignment to estimate the preliminary encroachment areas. The refined encroachment areas will be determined

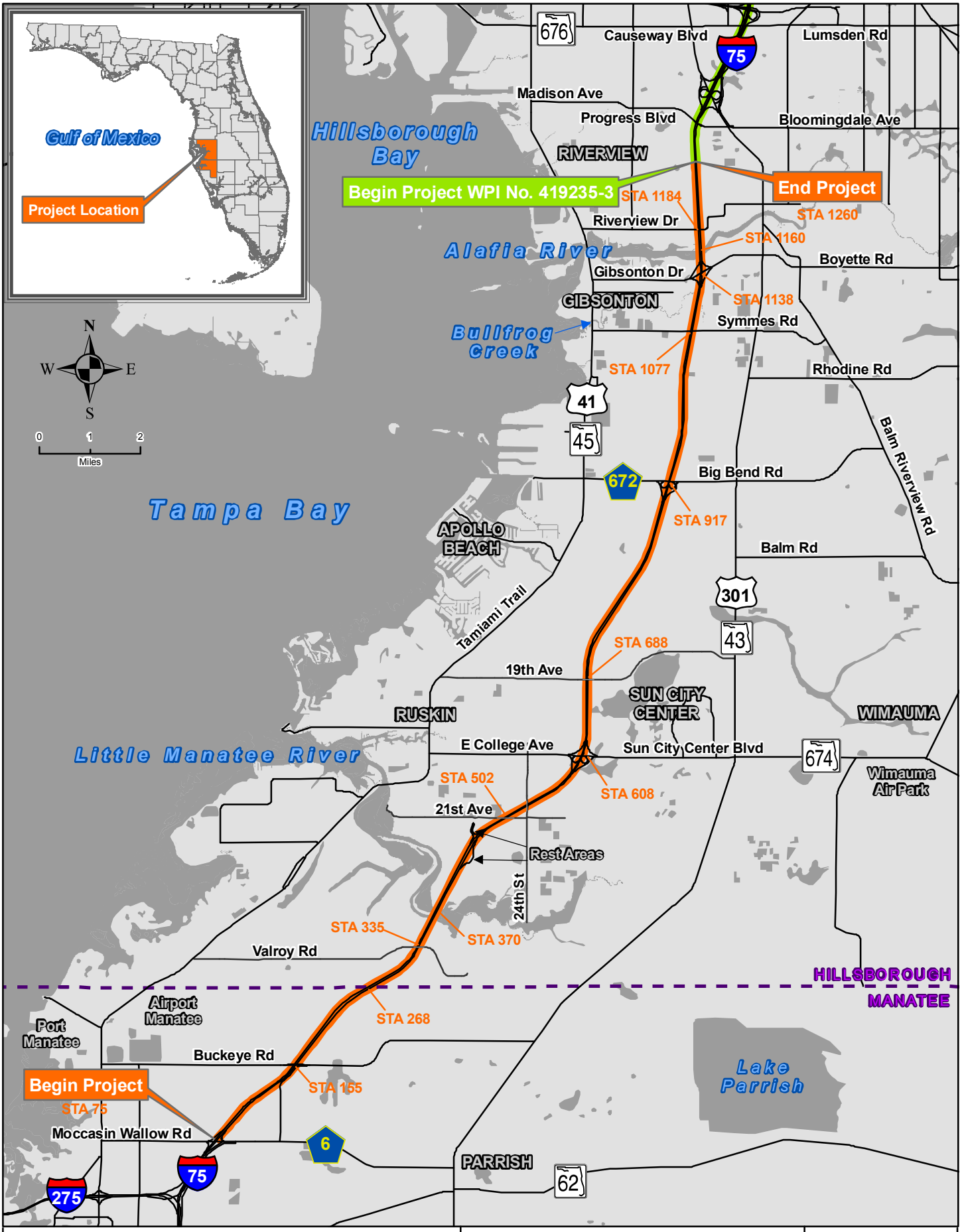
during the subsequent design phase when more detailed survey and SMF sizing information is available. The flood hazard locations are labeled as F-1 through F-11 in **Table 1**.

Table 3: FEMA FIRM Community Panel Numbers

Hillsborough County	
Community Panel No.	Effective Date
12057C0386H	Aug 8, 2008
12057C0387H	Aug 8, 2008
12057C0389H	Aug 8, 2008
12057C0388H	Aug 8, 2008
12057C0501H	Aug 8, 2008
12057C0503H	Aug 8, 2008
12057C0511H	Aug 8, 2008
12057C0515H	Aug 8, 2008
12057C0494H	Aug 8, 2008
12057C0657H	Aug 8, 2008
12057C0659H	Aug 8, 2008
12057C0658H	Aug 8, 2008
12057C0670H	Aug 8, 2008
12057C0662H	Aug 8, 2008
12057C0665H	Aug 8, 2008

Manatee County	
Community Panel No.	Effective Date
120153 0039 B	March 15, 1984
120153 0038 B	March 15, 1984
120153 0205 C	July 15, 1992
120153 0182 C	July 15, 1992

10. Risk Assessment: Based on the FDOT's floodplain categories, this project falls under **Category 4**: "PROJECTS ON EXISTING ALIGNMENT INVOLVING REPLACEMENT OF EXISTING DRAINAGE STRUCTURES WITH NO RECORD OF DRAINAGE PROBLEMS". Floodplain encroachments do not vary significantly with any of the alternatives and FPC sites will be provided for volume compensation for all floodplain impacts as a result of the floodplain encroachments. *The proposed structures will perform hydraulically in a manner equal to or greater than the existing structures, and backwater surface elevations are not expected to increase. As a result, there will be no significant adverse impacts on natural and beneficial floodplain values. There will be no significant change in flood risk, and there will not be a significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that this encroachment is not significant.*



I-75 (SR 93A) PD&E Study

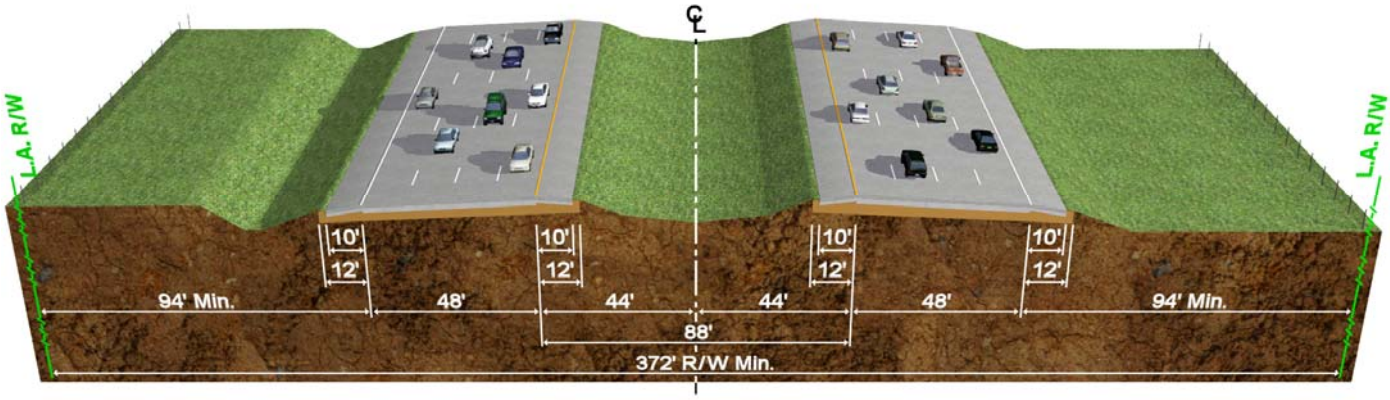
Moccasin Wallow Road to US 301

WPI Segment No.: 419235-2

Hillsborough and Manatee Counties

Project Location Map

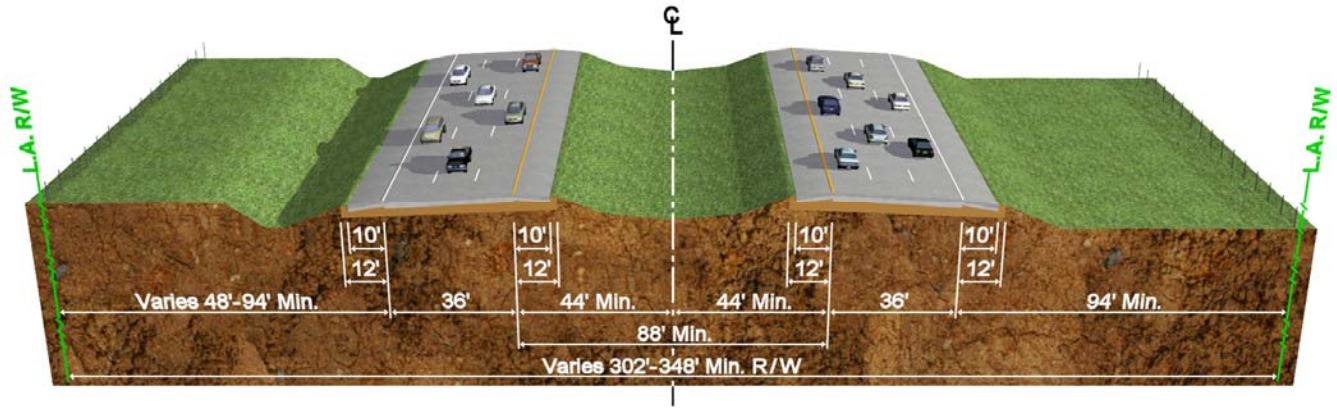
Figure 1



Typical Section #2

From Gibsonton Drive to South of US 301

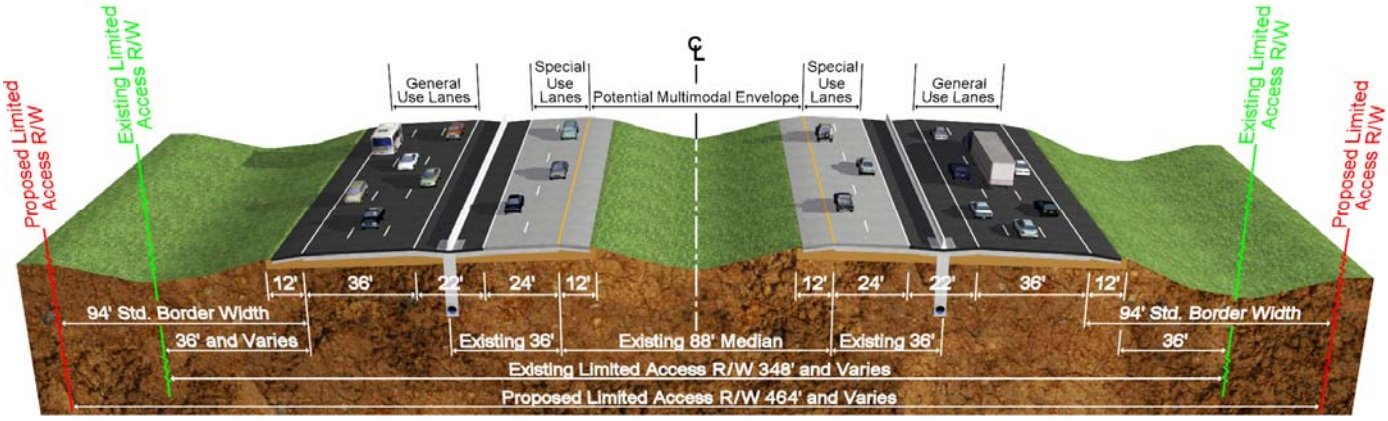
Design Speed = 70 mph



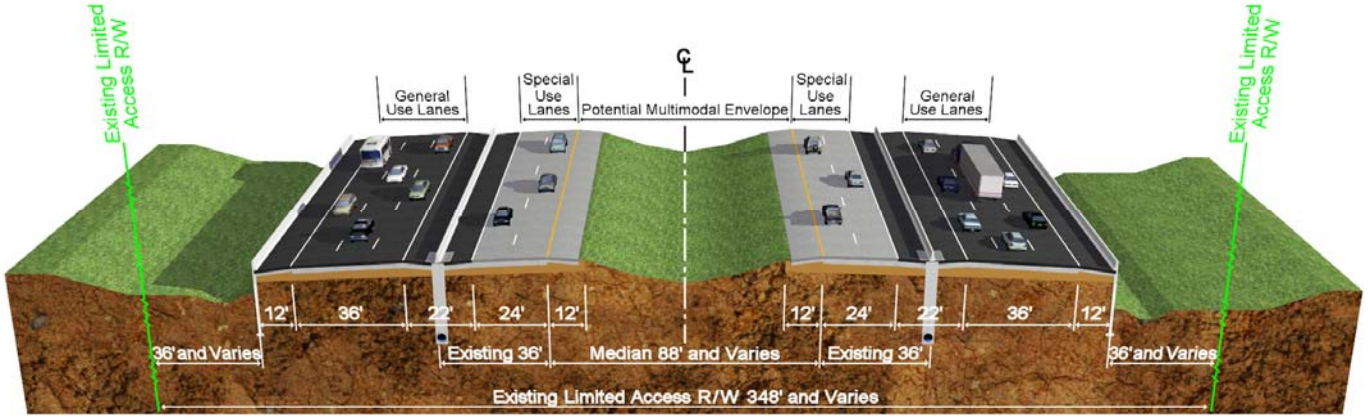
Typical Section #1

From Moccasin Wallow Road to Gibsonton Drive

Design Speed = 70 mph



Alternative 1A



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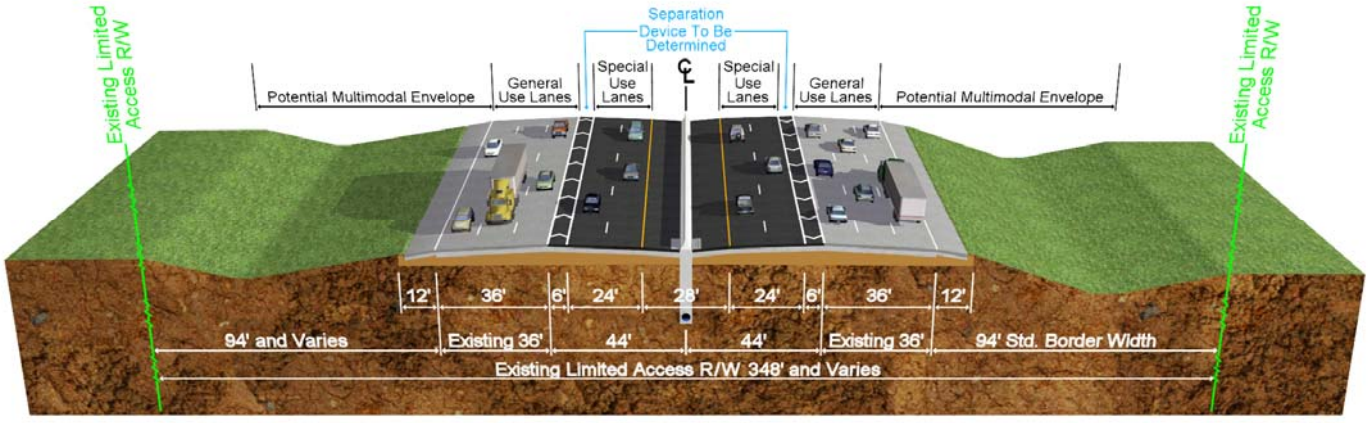
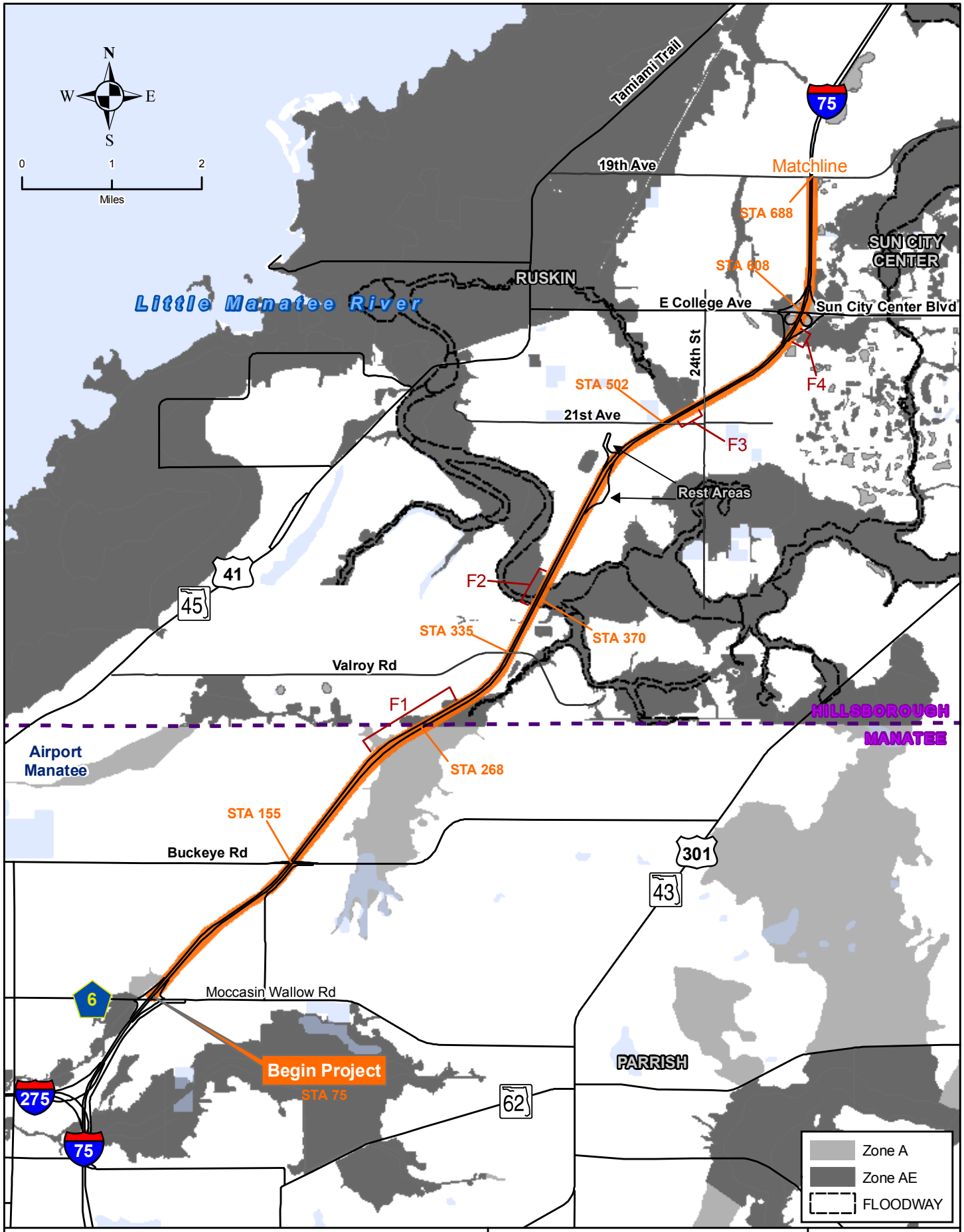


Alternative 2

I-75 (SR 93A) PD&E Study ***Moccasin Wallow Rd to US 301*** WPI Segment No. 419235-2 Hillsborough and Manatee Counties	**Proposed Typical Sections**	**Figure 3**



I-75 (SR 93A) PD&E Study

Moccasin Wallow Road to South of US 301

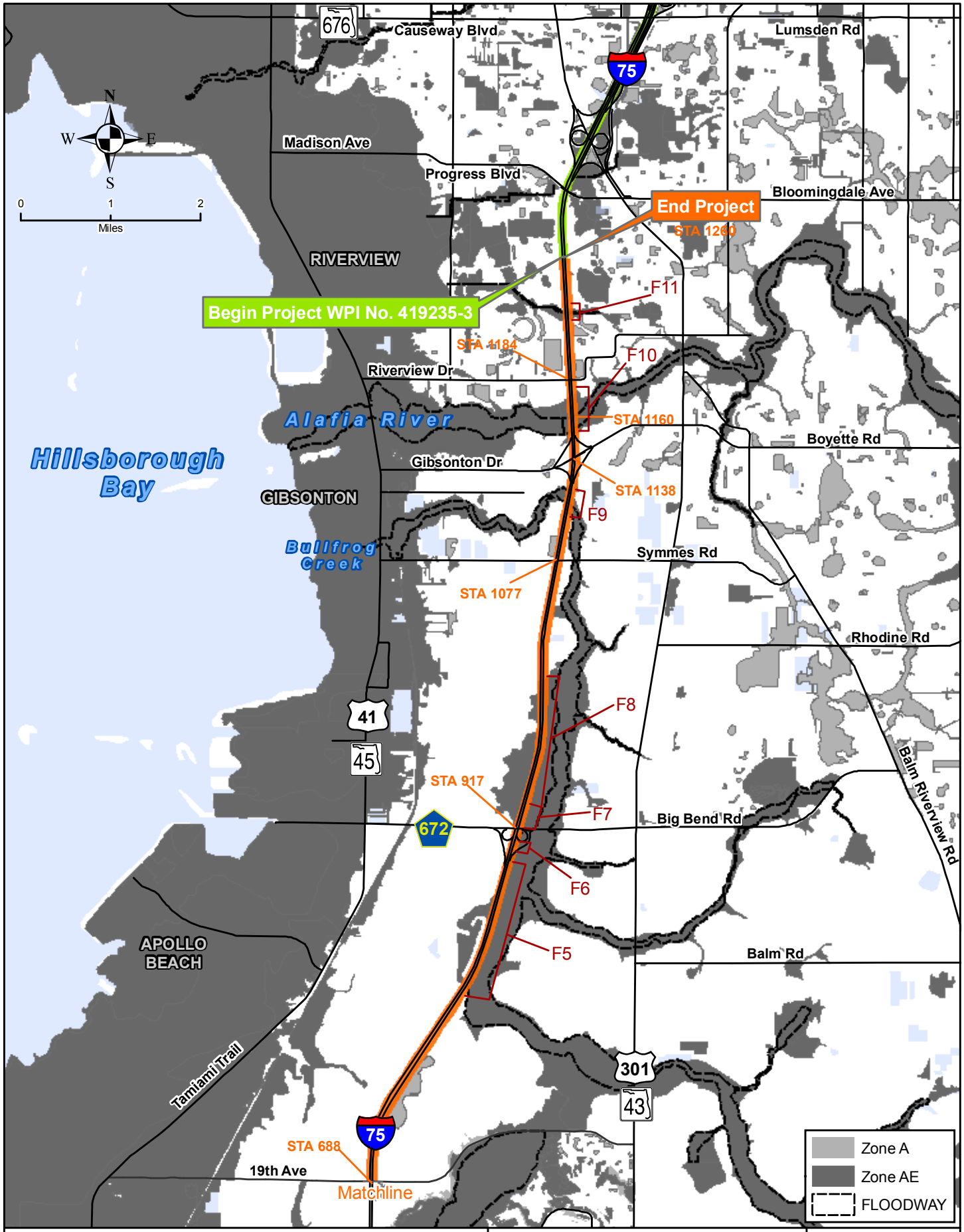
WPI Segment No.: 419235-2

Hillsborough and Manatee Counties

FEMA Floodplain Map

Figure 4

Sheet 1 of 2



I-75 (SR 93A) PD&E Study

Moccasin Wallow Road to South of US 301

WPI Segment No.: 419235-2
Hillsborough and Manatee Counties

FEMA Floodplain Map

Figure 4
Sheet 2 of 2