



I-75 PD&E Study

From South of US 301 to North
of Fletcher Avenue

WPI Segment Number - 419235-3

Draft Location Hydraulic Report

Prepared for
**Florida Department
of Transportation**
District Seven

August 2008



INTERSTATE 75



Project Development & Environment Study

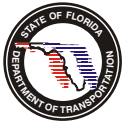
I-75 (SR 93A)
From South of US 301 to
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Prepared by:
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August 2008
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FDOT Project Manager

I-75 (SR 93A) Project Development and Environment Study
From south of US 301 to north of Fletcher Avenue
FPN: 419235 3 22 01

DRAFT LOCATION HYDRAULIC REPORT

Technical Memorandum
October 2008

This Draft Location Hydraulic Report (LHR) is an engineering tool used to identify potential floodplain encroachments due to the conceptual improvements. The preliminary calculations help estimate the size of the Floodplain Compensation (FPC) sites for each basin. The FPC site locations were screened using assumptions and judgments. The information presented in this document, including the FPC sizes and locations, are subject to change throughout the preliminary engineering and project design phases (1 through final).

INTRODUCTION

Protection of floodplains and floodways is required by Executive Order 11988, "Floodplain Management," U.S. Department of Transportation Order 5650.0, "Floodplain Management and Protection" and Federal-Aid Policy Guide 23 Code of Federal Regulations 650A. This Draft LHR is prepared in accordance with the requirements set forth in the Florida Department of Transportation (FDOT) Project Development and Environment (PD&E) Manual, Part 2, Chapter 24, revised April 22, 1998. This technical memorandum supports the I-75 (SR 93A) PD&E Study. It is intended to determine the effects of the encroachment within the 100-year base floodplain of the recommended alternative.

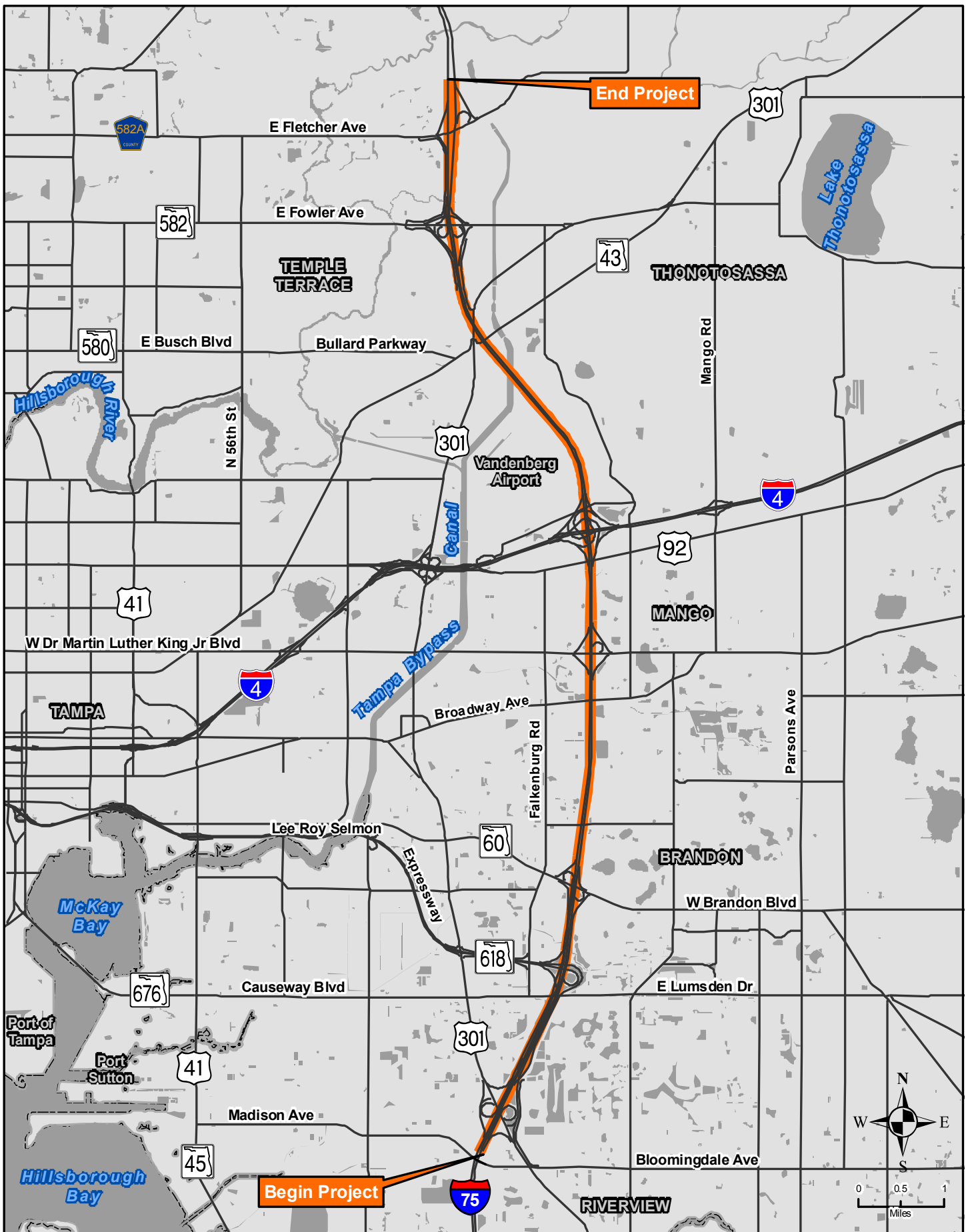
I-75, a north-south interstate highway, is part of the Florida Intrastate Highway System. This major trade and tourism corridor and emergency evacuation route is a six- and eight-lane limited access facility within the project limits from south of US 301 to north of Fletcher Avenue.

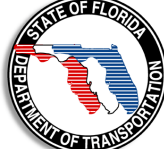
PROPOSED IMPROVEMENTS

The FDOT is proposing improvements to I-75 from south of US 301 to north of Fletcher Avenue, a distance of approximately 15.5 miles. The proposed improvements consist of widening the existing interstate facility and adding at least one special use lane (SUL) for both the northbound and southbound directions. The PD&E Study will evaluate the SUL options to determine the most appropriate design. A project location map is shown in Figure 1. The existing and proposed typical sections are shown in Figures 2 and 3, respectively.

This Draft LHR has been prepared to determine if any floodplains will be significantly affected due to the proposed improvements. Fifteen cross drains and eight bridges are within the study limits. The following 10 items discuss why the floodplain encroachments will be minimal.

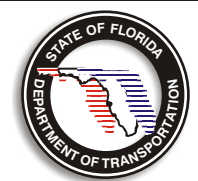
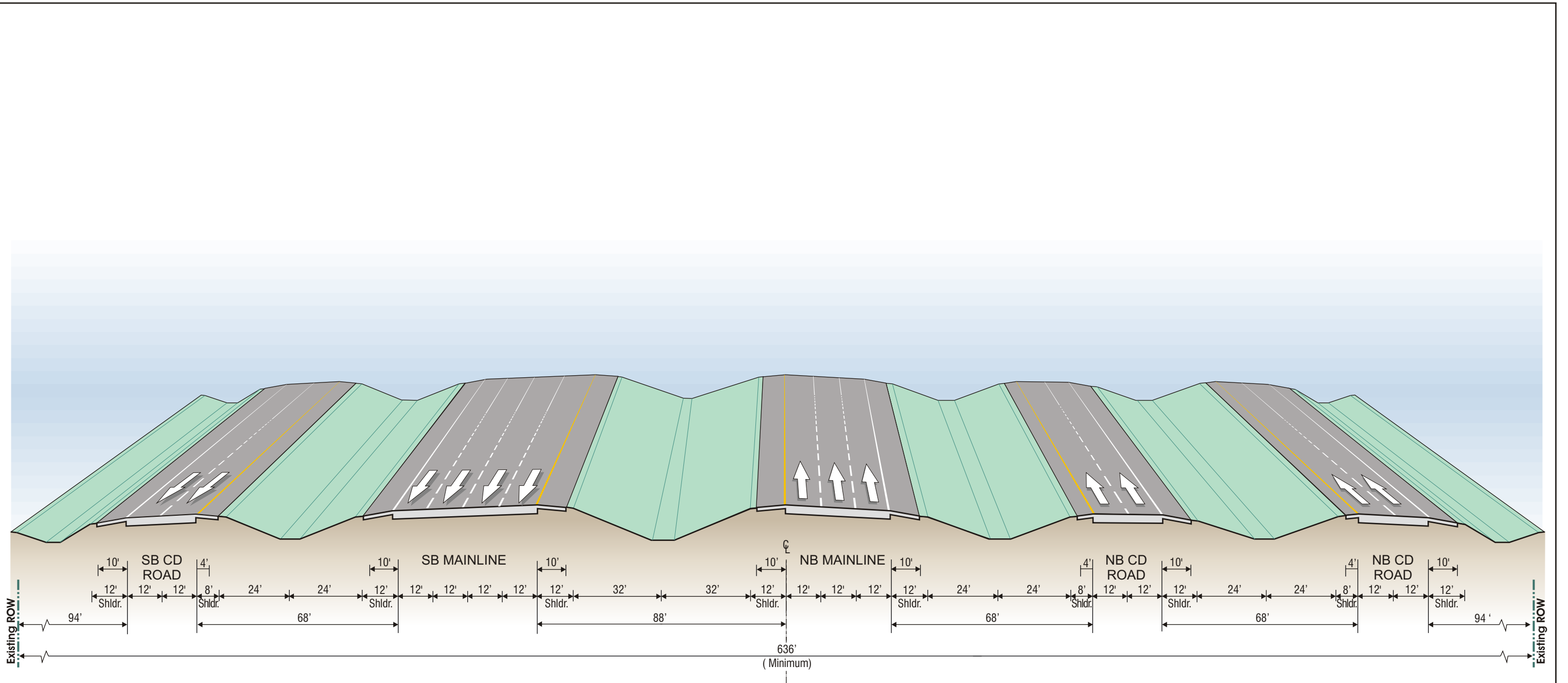
1. History of Flooding: FDOT drainage maps, Southwest Florida Water Management District (SWFWMD) 1-foot contour aerial maps and Federal Emergency Management




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Project Location

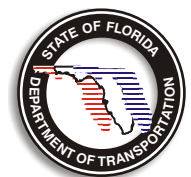
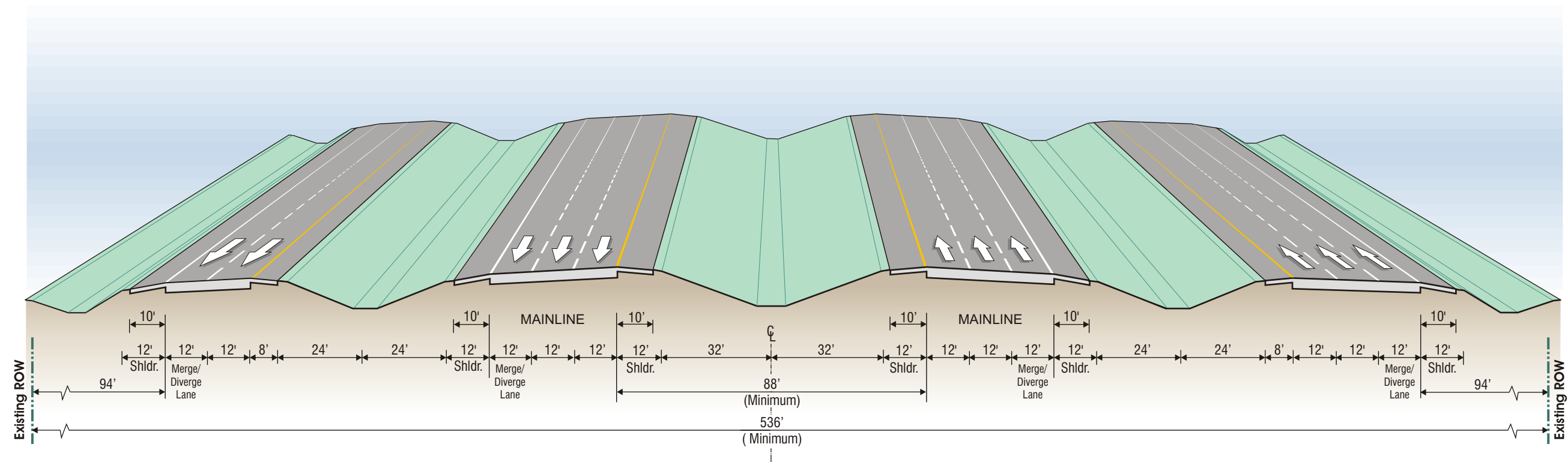
Figure 1



I - 75 (SR 93A) PD&E Study
From South of US 301 to North of Fletcher Avenue
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Existing Roadway Typical Section - Segment C
from US 301 to Crosstown Expressway
Seven General Purpose Lanes and Three Collector/Distributor Lanes

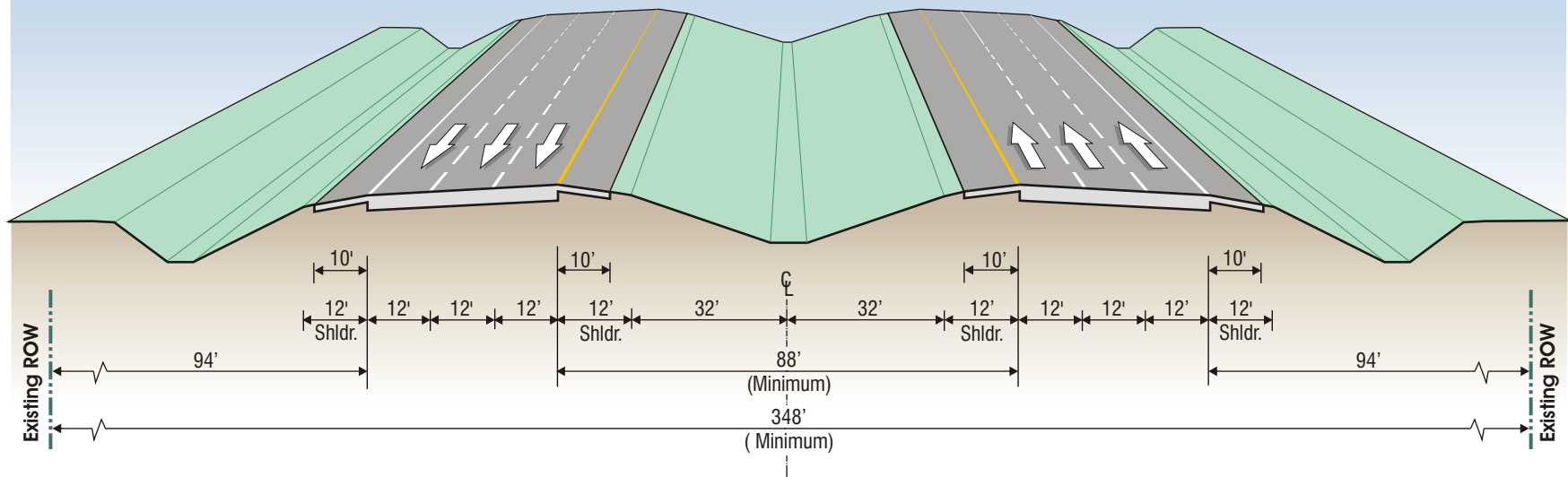
Figure 2a



I - 75 (SR 93A) PD&E Study
From South of US 301 to North of Fletcher Avenue
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Existing Roadway Typical Section - Segment D
from South of Crosstown Expressway to SR 60
Six General Purpose Lanes and Five Collector/Distributor Lanes

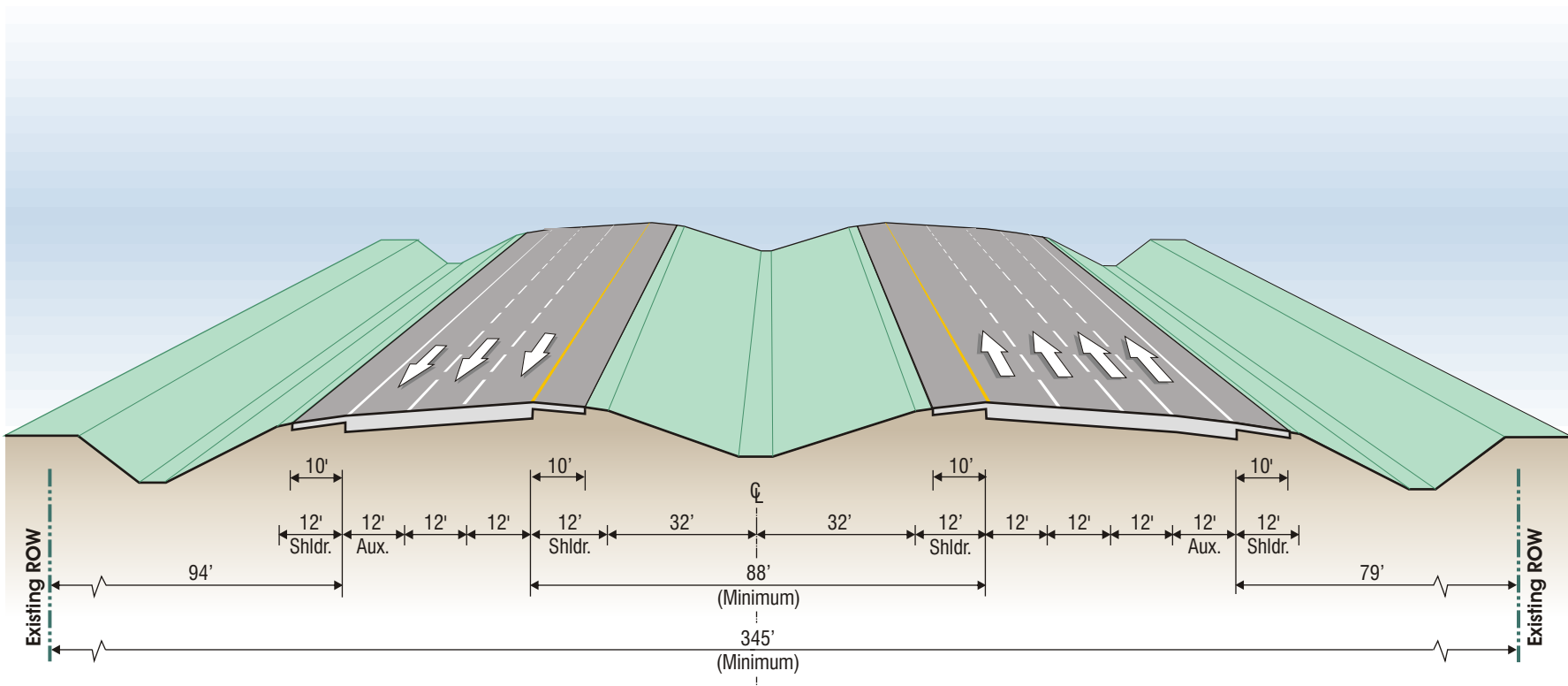
Figure 2b



I - 75 (SR 93A) PD&E Study
From South of US 301 to North of Fletcher Avenue
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Existing Roadway Typical Section - Segment E
from South of SR 60 to Martin Luther King Boulevard
Six General Purpose Lanes

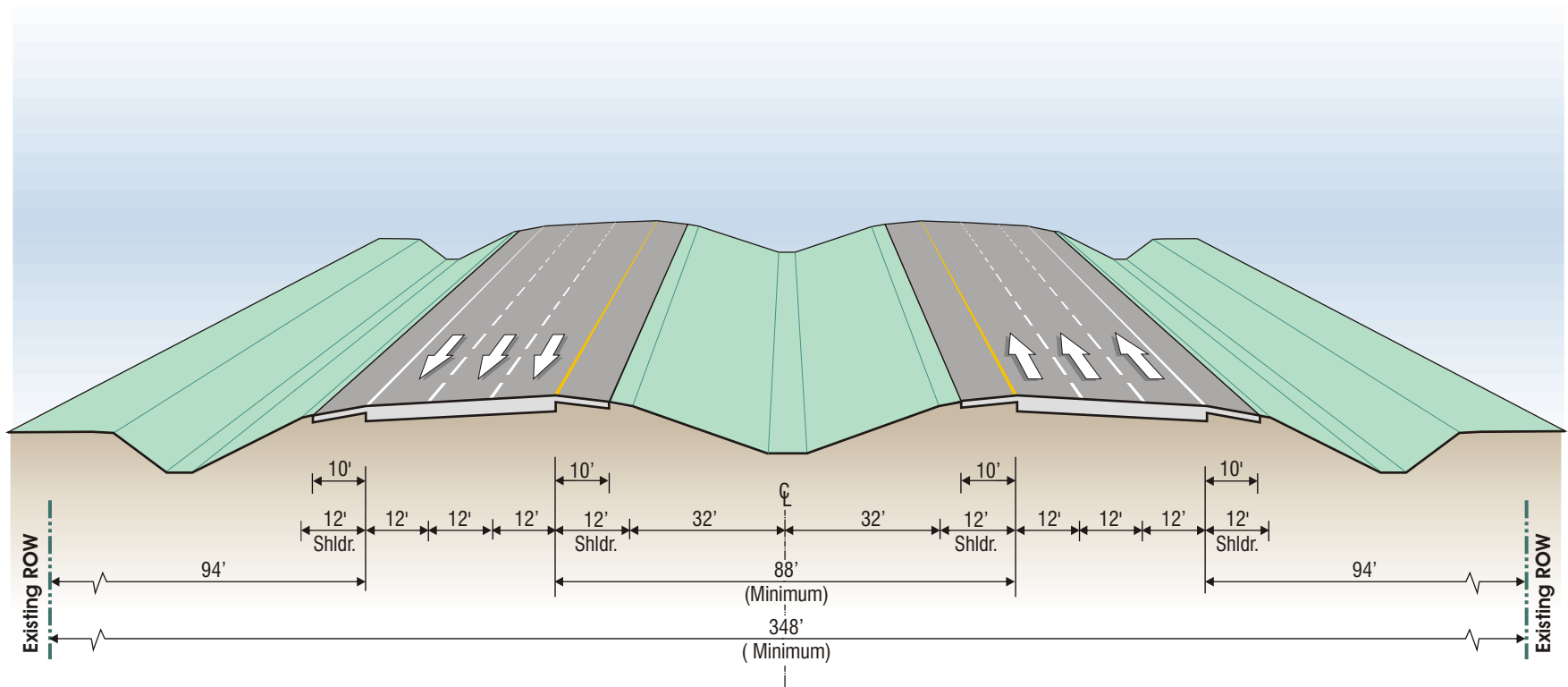
Figure 2c



I - 75 (SR 93A) PD&E Study
From South of US 301 to North of Fletcher Avenue
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**Existing Roadway Typical Section - Segment F
 from Martin Luther King Boulevard to I-4
 Seven General Purpose Lanes**

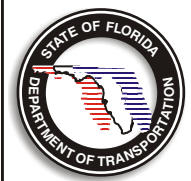
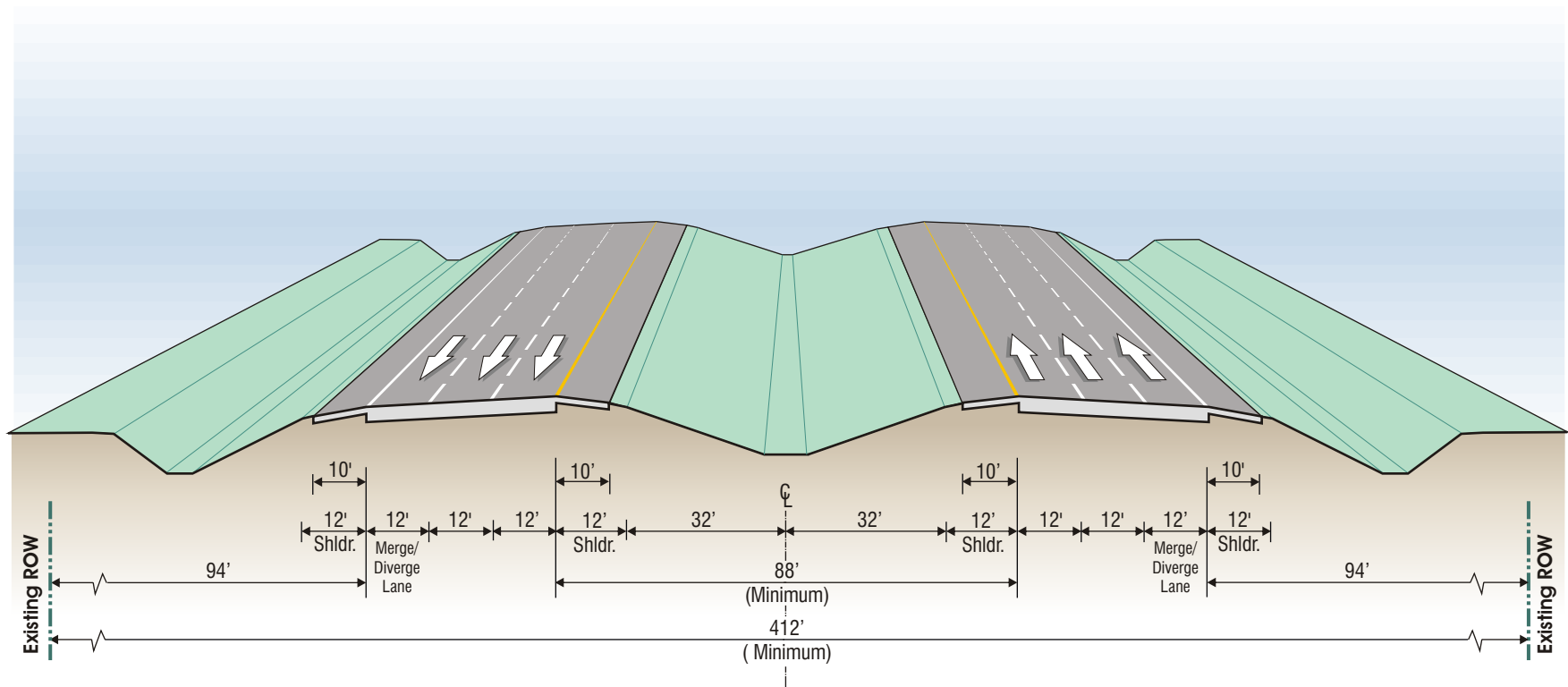
Figure 2d



I - 75 (SR 93A) PD&E Study
From South of US 301 to North of Fletcher Avenue
 WPI Segment No.: 419235-3
 Hillsborough County

Existing Roadway Typical Section - Segment G
from I-4 to Fowler Avenue
Six General Purpose Lanes

Figure 2e

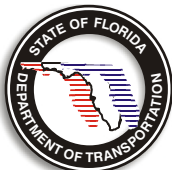


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Existing Roadway Typical Section - Segment H
from Fowler Avenue to Fletcher Avenue
Four General Purpose Lanes and Two Auxiliary Lanes

Figure 2f

TO BE DETERMINED



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

*From South of US 301 to North
of Fletcher Avenue*

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Hillsborough County

**Proposed Typical
Sections**

Figure 3

Agency (FEMA) Flood Insurance Rate Maps (FIRM) identified flood-prone areas within the I-75 study area. Field inspections were conducted in June 2008 for the purpose of identifying obvious drainage problems. Additionally, local maintenance offices were contacted as to any history of flooding problems within the study area. As a result of these efforts, no flooding problems associated with existing drainage conditions were identified for the length of the project.

2. Longitudinal or Transverse Encroachments: The majority of the encroachments will be longitudinal. However, locations F-1, F-4, F-8, F-11, F-12, F-23, and F-24 are areas where transverse encroachments may occur. FPC sites will provide volume compensation (cup for cup) for all floodplain impacts resulting from floodplain encroachments. The floodplain areas located within the I-75 right-of-way (exclusive of the existing roadway area) are shown in Table 1.

**Table 1
Existing Floodplain Areas Located within the Existing I-75 Right-of-Way**

Location	Station Range	Location	Estimated 100-year Floodplain Elevation (ft) ¹	Potential Floodplain Area within Right-of-Way (ac)
F-24	1977+70 to 1980+70	Ramp from EB Morris Bridge Road to NB I-75.	35.0	0.27
F-23	1916+90 to 1926+40		27.0 to 28.0	4.47
F-22	1774+20 to 1787+70		16.3	0.73
F-21	1742+40 to 1773+30		16.0 to 20.0	2.23
F-20	1712+00 to 1720+50	Ramp from WB I-4 to NB I-75	18.7	0.68
F-19	1708+30 to 1722+90	Ramp from SB I-75 to I-4	19.0	1.12
F-18	1698+00 to 1698+40	Ramp from WB I-4 to NB I-75	18.5	0.04
F-17	1693+40 to 1694+30	Ramp from NB I-75 to EB I-4	26.0	0.10
F-16	1683+70 to 1688+20	Ramp from NB I-75 to EB I-4	23.4	0.32
F-15	1665+30 to 1775+50		35.3	1.25
F-14	1623+90 to 1627+00	Ramp from EB MLK to NB I-75	36.3	0.17
F-13	1620+00 to 1621+00	Ramp from EB MLK to NB I-75	36.3	0.16
F-12	1591+00 to 1594+60		27.0	0.61
F-11	1587+40 to 1589+10		33.2	0.28
F-10	1579+80 to 1581+70		33.2	0.04
F-9	1563+00 to 1569+30		37.8	0.06
F-8	1539+60 to 1593+00		43.2	2.02
F-7	1478+30 to 1480+50	Ramp from EB SR 60 to NB I-75	38.0 to 39.0	0.27
F-6	1455+90 to 1462+90		29.0	1.17
F-5	1490+20 to 1455+80		29.0	1.19
F-4	1452+70 to 1440+20		24.0 to 28.0	1.99
F-3	1417+10 to 1419+10		27.3	0.15
F-2	1293+30 to 1314+50	Ramp from NB I-75 to SB US 301	24.0 to 28.0	1.38
F-1	1291+20 to 1292+80		22.7	0.19
		TOTAL		20.89

¹The estimated 100-year floodplain elevations were taken from the Revised Preliminary FIRMs for Hillsborough County. It is anticipated that the Revised Preliminary FIRMs will supersede the Current Effective FIRMs on August 28, 2008.

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 (SMFs) 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 floodplains. Therefore, no emergency services or evacuation opportunities will be adversely affected.

5. Base Flood Impacts: Encroachments to the 100-year base flood may occur at 24 locations along the project corridor (see Table 1). The project's drainage design will be consistent with local FEMA, FDOT, and SWFWMD's Stormwater Management Master Plan design guidelines stating 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: A regulated floodway is the floodplain area that is reserved in an unconfined or unobstructed and horizontal or vertical manner, to provide for the discharge of the base flood so that the cumulative increase in water surface elevation is no more than the FEMA designated maximum rise of 1-foot. According to the Floodway Boundary Maps and coordination with the FEMA representatives for Hillsborough County, the project crosses two regulatory floodways: Delaney Creek, which crosses I-75 at Station 1439+60 and Cow House Slough, which crosses I-75 at Station 1925+00.

It is anticipated that the floodway will not be adversely affected for the following reasons:

- Hydrologic and hydraulic analysis will be performed using standard engineering practice to demonstrate there will not be an increase in flood levels.
- The project's drainage design will be consistent with FEMA, FDOT, and SWFWMD's Stormwater Management Master Plan design guidelines. Therefore, no significant changes in base flood elevations or limits will occur.
- Encroachments into the floodplain will be mitigated for by providing compensation within the same floodplain.

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

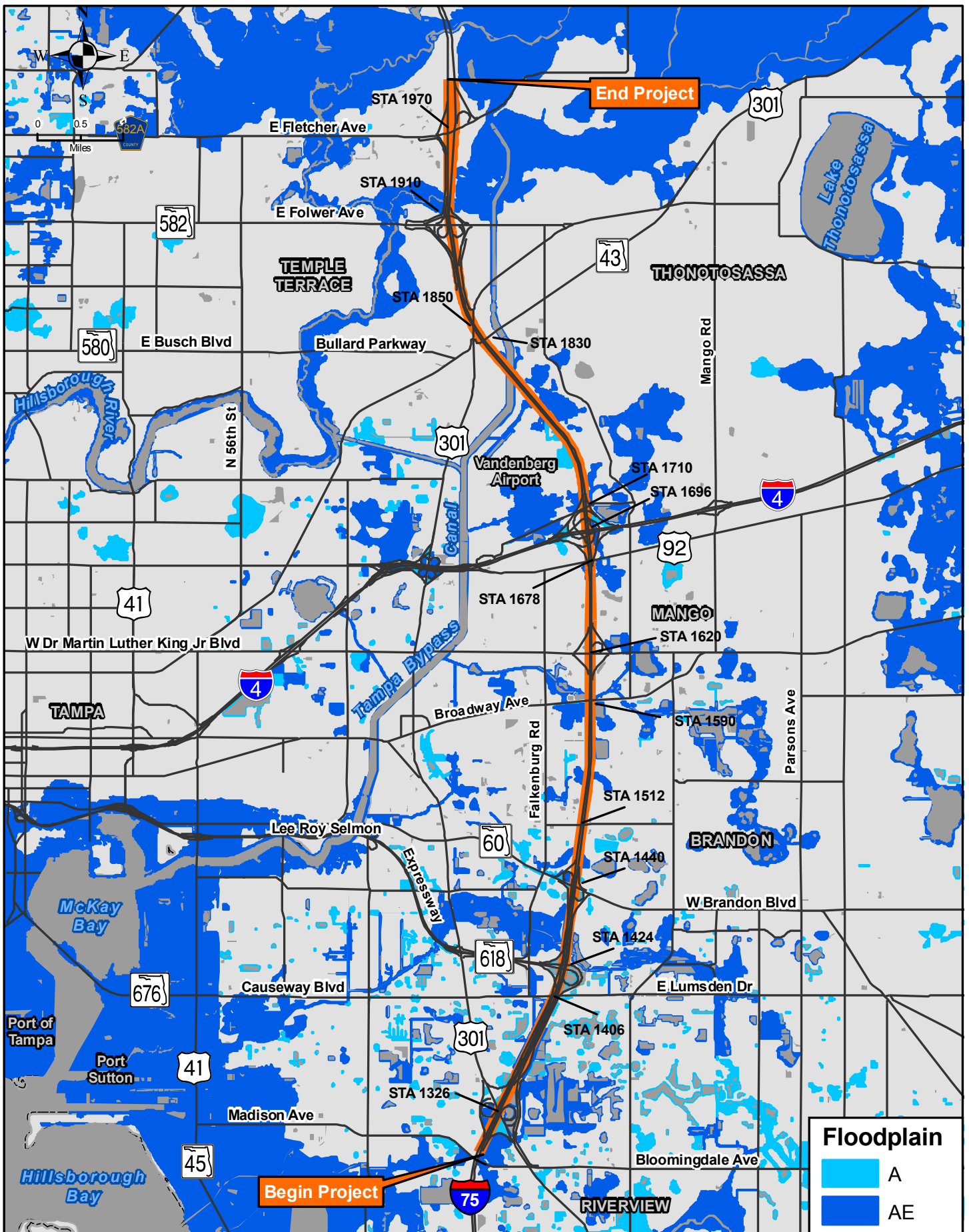
7. Natural and Beneficial Floodplain Values: The proposed roadway will follow the same general alignment as the existing roadway. Encroachments into the floodplain will be mitigated for by providing compensation within the same floodplain. Therefore, no natural and beneficial floodplain values will be 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 the local comprehensive plan for Hillsborough County. It should not encourage floodplain development due to federal (FEMA), state (SWFWMD), and local (Hillsborough County) regulations. Future development will be in accordance with designated land uses according to the adopted comprehensive plan and its land development regulations.

9. Floodplain/FIRM: The FIRMS for Hillsborough County (dated November 15, 2006) are referenced to the North American Vertical Datum, 1988. FEMA designates special flood hazard areas as areas subject to inundation by the 1 percent annual chance flood. Twenty-four locations within the I-75 limited access right-of-way study limits have been designated as special flood hazard areas. For the ultimate design typical section, the flood hazard areas were evaluated to determine the potential maximum floodplain encroachments for a typical section incorporating the entire right-of-way. A summary of the potential maximum floodplain encroachment areas is shown in Table 1; the flood hazard locations are labeled as F-1 through F-24. The estimated 100-year floodplain elevations were used with SWFWMD 1-foot 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. A list of the FIRM Community Panel numbers is shown in Table 2. A Geographic Information System drawing of the FIRMs is shown in Figure 4.

**Table 2
FEMA FIRM Community Panel Numbers**

Community Panel Number
12507C0236H
12507C0238H
12507C0240H
12507C0380H
12507C0387H
12507C0388H
12507C0389H



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 these alternatives and FPC sites will be provided for volume compensation (cup for cup) 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 the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that this encroachment is not significant.