

**SELMON
EXPRESSWAY**

Whiting Street PD&E Study

**Location Hydraulic
Report Technical
Memorandum**

April 2024

Professional Engineer Certification

Location Hydraulic Report Technical Memorandum

Project: Whiting Street Project Development and Environment Study

THEA Project No: HI-0112

Date: April 2024

This location hydraulic report technical memorandum contains engineering information for the Whiting Street Project Development and Environment Study in Hillsborough County, Florida. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of civil engineering as applied through professional judgment and experience.

I hereby certify that I am a registered professional engineer in the State of Florida practicing with H.W. Lochner, Inc. and that I have prepared or approved the evaluation, findings, opinions, conclusions, or technical advice for this project.

This item has been digitally signed and sealed by Theresa D. Ellison, P.E. on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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1.0 Project Summary

1.1 Project Description

In July 2019, the Tampa Hillsborough Expressway Authority (THEA), in coordination with the City of Tampa, began a Project Development and Environment (PD&E) Study to evaluate the needs, costs, and effects of extending East Whiting Street (Whiting Street), from North Brush Street (Brush Street) to North Meridian Avenue (Meridian Avenue), reconfiguring the Selmon Expressway on-ramp at South Jefferson Street (Jefferson Street) in order to construct a new Whiting Street off-ramp (proposed Ramp 6B), removing the Channelside Drive off-ramp (existing Ramp 6B), and reconfiguring the eastbound off-ramp at South Florida Avenue (Florida Avenue).

The extension would provide a direct connection of the Whiting Street corridor to Meridian Avenue, thereby improving traffic flow and safety for all transportation modes and offering additional connections within the street network. It was anticipated that existing Ramp 6B would be removed, the Florida Avenue off-ramp (Ramp 6A) would be widened to two lanes, and a new Whiting Street off-ramp (proposed Ramp 6B) would extend from the Selmon Expressway, near Morgan Street, to Nebraska Avenue and intersect with the new Whiting Street alignment to provide a direct connection from the Selmon Expressway. See **Figure 1-1** for the project location map.



Figure 1.1: Project Location Map

On February 22, 2022, a Public Hearing was held at the THEA boardroom to present the project's preferred alternative to the public, project stakeholders, and other interested parties. Based on comments received during this hearing, and during subsequent meetings with project stakeholders such as the City of Tampa, it was determined that the project preferred alternative should be revised to only address proposed improvements to Whiting Street and its connection to Meridian Avenue, and the removal of the eastbound existing Ramp 6B and replace it with a ramp connecting to Whiting Street (proposed Ramp 6B). Widening of Ramp 6A to two lanes would no longer be proposed. However, modifications to the existing gore striping are proposed to increase deceleration distance and improvements along the horizontal curve of Ramp 6A are proposed to improve safety for drivers and pedestrians.

These modifications to the project's preferred alternative also resulted in the need to revise the project's purpose and need to reflect the vision of project stakeholders. The revised purpose and need for the project are provided in **Section 1.2** below.

1.2 Project Purpose & Need

The purpose of this project is to provide a direct connection of the Whiting Street corridor to Meridian Avenue to improve traffic flow and safety for all transportation modes and offer additional connections within the street network. The project will also reconfigure the Selmon Expressway on-ramp at South Jefferson Street to construct the proposed Ramp 6B, remove existing Ramp 6B, and modify Ramp 6A to improve deceleration distance and improve safety along the horizontal curve. These improvements will improve safety, traffic circulation, and access to Whiting Street and Meridian Avenue.

The need for the project is based on the following criteria:

Roadway System Linkage

Based on volume forecasts found in the Tampa Bay Regional Planning Model (TBRPM) Version 8.2 and the proposed additional development associated with the Water Street Development plan and future development plans at the former Ardent Mill site, traffic demand and congestion along the capacity constrained Channelside Drive and Cumberland Avenue corridors are expected to significantly increase by the design year (2046). The proposed extension of Whiting Street to Meridian Avenue will provide a parallel route for these facilities which would better distribute vehicular demand, promote safety, and improve traffic operations along these corridors. Additionally, the Whiting Street extension will also support the City of Tampa's accessibility objectives through grid network enhancement.

Multimodal Linkage

The Tampa Center City Plan envisions Tampa as a community of livable places and connected people. One of the "building blocks" for this future is livable connections for "safe pedestrian and bicycle access around town". Proposed improvements along Whiting Street include the addition of a 10-foot-wide two-way cycle track and 10-foot-wide sidewalks on both the north and south sides of the roadway. These improvements will provide safe travel facilities for both pedestrians and bicyclists, as well as a connection between the Selmon Greenway Trail and Meridian Avenue Trail, and to the Riverwalk via City of Tampa's proposed "Quick

Build” cycle track along Whiting Street west of Jefferson Street, which will further enhance multimodal linkages.

Safety

Existing Ramp 6B terminates into a 5-leg intersection at Channelside Drive and Morgan Street, which is a major pedestrian access point to Amalie Arena. This creates both safety and operational concerns at this location. Six (6) years of data (2013-2018) were reviewed, and 14 crashes have occurred at this ramp. As the Water Street Project builds out to the east of the ramp system, pedestrian conflicts are expected to increase. Also, the planned widening of the Selmon Expressway south of the downtown ramps will alleviate congestion issues and result in higher speed and higher volume interactions at this ramp. As such, eliminating pedestrian conflicts, and redirecting Downtown East traffic beyond the Water Street District is critical to proactively address safety concerns as both the Selmon Expressway and Downtown Tampa continue to develop.

Transportation Demand

Based upon the Tampa Bay Regional Planning Model (TBRPM) Version 8.2, East Jackson Street (39,000 average annual daily traffic (AADT) and Kennedy Boulevard (34,000 AADT) are expected to reach their operational capacity by 2040. As the Water Street Project develops, vehicle demand is expected to increase. The proposed connection of Whiting Street could carry up to 14,800 AADT, providing valuable route divergence and congestion relief to the parallel facilities.

1.3 Preferred Alternative

THEA has committed to provide a new connection to North Meridian Avenue, by extending Whiting Street between Brush Street and Meridian Avenue. To construct the extension of Whiting Street, the existing railroad tracks will need to be removed. Removing the railroad tracks and completing the extension to Meridian Avenue will offer an additional connection within the street network, providing additional route choices and alleviating congestion. Along with the improvements to Whiting Street, existing Ramp 6B is proposed to be relocated. Ramp 6A will maintain its current geometry and includes striping improvements and safety enhancements. These improvements are not exclusive to one another, but have been divided into four distinct locations based on sequence of construction. See **Figure 1-2** for each location of proposed improvements. Construction sequencing would occur in alphabetical order (A-D).

Below is a detailed description of the proposed improvements for each location.

Location A

Whiting Street currently ends at Brush Street, west of the existing railroad tracks. The preferred alternative proposes to extend Whiting Street, from Brush Street to Meridian Avenue, with a new signal at the T-intersection of Whiting Street and Meridian Avenue. The proposed typical section for the Whiting Street extension includes two 11-foot-wide travel lanes in the eastern direction, one 11-foot-wide travel lane in the western direction, a 10-foot-wide cycle track separated from the north side of the westbound travel lane by a four-foot traffic separator, curb and gutter, and 10-foot-wide sidewalks on both the north and

south sides of the road. The eastbound approach to Meridian Avenue includes one 11-foot-wide dedicated left turn lane and one 11-foot-wide left/right turn lane. The existing grassed median on Meridian Avenue will be split to accommodate the proposed signalized intersection. Turn lane improvements are proposed along Meridian Avenue at the new signalized intersection. The preferred alternative does not propose any other improvements to Meridian Avenue.

Location B

Whiting Street is currently a two-lane roadway with on-street parking on both the north and south sides of the road. Whiting Street is a brick road in need of repair. The proposed typical section for Whiting Street includes two 11-foot-wide travel lanes in the eastern direction, one 11-foot-wide travel lane in the western direction, a 10-foot-wide cycle track separated from the north side of the westbound travel lane by a four-foot traffic separator, curb and gutter, and 10-foot-wide sidewalks on both the north and south sides of the road. The 10-foot-wide cycle track will extend to Jefferson Street to tie into the City of Tampa’s quick build cycle track, which will continue west to the Riverwalk. The preferred alternative also includes the installation of a new traffic signal at the intersection of Whiting Street and Brush Street.



Figure 1.2: Locations of Proposed Improvements

Location C

Existing Ramp 6B provides users the ability to travel east along Channelside Drive, towards Amalie Arena and the Florida Aquarium. The preferred alternative proposes removing existing Ramp 6B and constructing a new ramp 6B approximately 700 feet north, providing a direct connection to Whiting Street. The proposed ramp includes a single 15-foot-wide ramp lane which diverts from the Selmon Expressway, north of Morgan Street, and remains on structure beyond the existing Jefferson Street on-ramp. From this point, the ramp profile begins to decrease and the ramp will be supported by a Mechanically Stabilized Earth (MSE) wall, which ends approximately 100 feet south of Whiting Street. The ramp widens to three 12-foot-wide lanes at the intersection, with one dedicated left turn lane and two dedicated right turn lanes. The proposed ramp will cut off access north, along Nebraska Avenue, and therefore requires a horizontal curve to connect Nebraska Avenue to Finley Street. Prior to the construction of the new Whiting Street off-ramp, the existing Jefferson Street on-ramp entrance will be shifted to the north to accommodate its alignment.

Location D

The current configuration of Ramp 6A includes a tight single lane loop ramp that merges onto Florida Avenue under a free-flow condition. While modifications to the geometry of the ramp are not proposed as part of this project, striping improvements are proposed at the gore to increase deceleration distance. Additional safety enhancements are proposed to be considered during the design phase. These improvements include High Friction Surface Treatment (HFST) along the curve of the ramp, the addition of Rectangular Rapid Flashing Beacon (RRFB) pedestrian signals at the ramp's connection with Florida Avenue, the removal of existing landscaping within the inside of the ramp loop to improve sight distance, and additional advisory signs to promote slower speeds along the ramp.

Please refer to **Appendix A** for the Preferred Alternative Concept Plans.

2.0 Existing Conditions

2.1 Roadway

Whiting Street is a two-lane, non-continuous roadway that terminates at Brush Street. Whiting Street is currently an east-west arterial with discontinuity from Brush Street to Meridian Avenue. East of Meridian Avenue, Whiting Street picks up again, providing access to the Channelside District.

2.2 Drainage

The study area is located within the Ybor City Drain drainage basin in Downtown Tampa, which is rapidly developing and has limited open land. The entire study area is within the jurisdiction of the Southwest Florida Water Management District (SWFWMD). Ybor City Drain is defined as Water Body ID (WBID) 1584A1 by the Florida Department of Environmental Protection (FDEP) and is verified as impaired for fecal coliform on the current FDEP 303(d) Impaired Waters List. There are no Outstanding Florida Waters (OFW) within the project limits.

Drainage within the study area is accomplished through collection and conveyance by vertical pipes connected to the bridge piles, storm drains, concrete ditches, side drains, inlets and cross drains.

The project limits cross one stormwater basin, Basin 200, as described below. The existing drainage basin map is provided in **Appendix B**.

Basin 200

Basin 200 extends from east of Morgan Street to the end of the project limits and includes Whiting Street and Meridian Avenue. Bridge deck runoff from the expressway in this basin is typically conveyed to a storm drain system on the ground level by vertical pipes connected to the expressway's structural piles. The storm drain system conveys runoff northeast, before turning south and discharging into the Garrison Channel via an 8'x5' concrete box culvert. Runoff from Meridian Avenue is collected by an existing storm drain system and conveyed to an existing stormwater management facility (Pond 2) constructed under SWFWMD ERP No. 441660.032 for the Meridian Avenue improvements. Runoff from the west end of Whiting Street is collected by an existing storm drain system and conveyed north along Jefferson Street, west along Jackson Street and, ultimately, to the Jackson Street Basin outfall at the Hillsborough River. A portion of the east end of Whiting Street is collected by an existing storm drain system and conveyed north along Brush Street, west along Jackson Street and, ultimately, to the Jackson Street Basin outfall at the Hillsborough River. The remaining portion of Whiting Street flows to an existing concrete ditch on the north side of existing Pond 2. The ditch flows east and then south along the west side of the existing railroad to a ditch bottom inlet. The ultimate outfall for both existing Pond 2 and the concrete ditch is the Garrison Channel via a 60" pipe.

2.3 Soils and Geotechnical Data

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey for the area is attached in **Appendix C**. This survey indicates that the soils along the project alignment consist of Urban Land, 0 to 2 percent slopes (56). Urban Land (56) comprises of up to 85 percent impervious surfaces such as asphalt and concrete. Urban land (56) surfaces are covered by streets, parking lots, buildings and other structures. Most areas classified as Urban land (56) are artificially drained by sewer systems, gutters and other man-made drainage systems. Annual precipitation, as well as depth to seasonal high water table in naturally drained areas, are not reported by the USDA on soils consisting of Urban Land.

2.4 Land Use

The existing land use data reported by Plan Hillsborough reveals a variety of land uses within ½ mile of the proposed project corridor. These land uses and their respective acreages are summarized according to land use designations in **Table 2.1** below and are provided graphically in **Figure 2.3**. As shown, the majority of existing land use types within a ½ mile of the project corridor are public/quasi-public/institutions, light commercial, and multi-family.

Table 2.1: Existing Land Use

Description	Acres	% Total
Educational	11	2
Heavy Commercial	1	<1
Heavy Industrial	27	5
Light Commercial	122	20
Light Industrial	19	3
Multi-Family	98	16
Public / Quasi-Public / Institutions	220	37
Public Communications / Utilities	7	1
Right of Way / Roads / Highways	48	8
Single Family / Mobile Home	9	2
Two Family	1	<1
Vacant	39	6
Total:	602	100

Note: Existing land use data represents year 2021.
Source: Plan Hillsborough, June 2021.

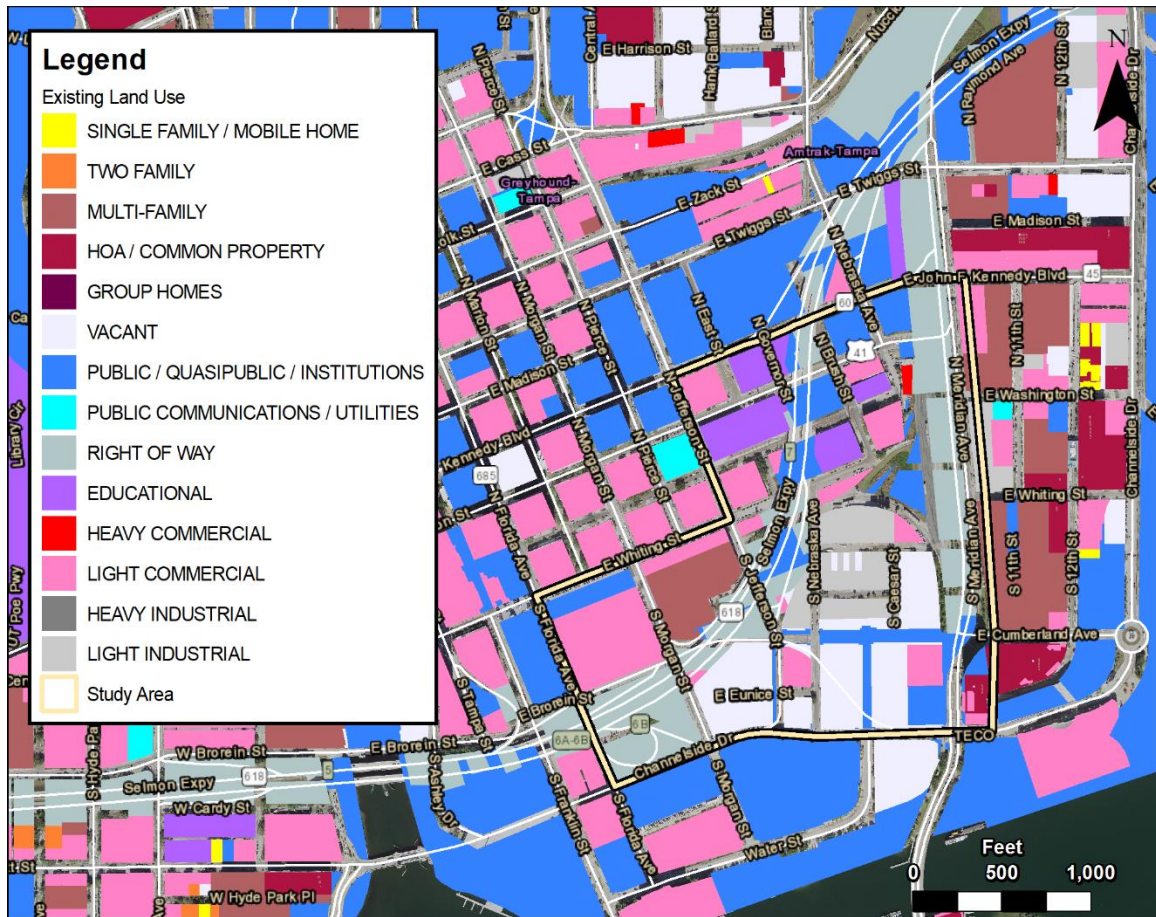


Figure 2.1: Existing Land Use Map

2.5 Floodplains and Floodways

2.5.1 Flooding History

Runoff from Whiting Street and other adjacent properties drains east and flows through the concrete-lined ditch at the east end of Whiting Street, on the north side of the existing stormwater management facility constructed for the Meridian Avenue improvements. The ditch flows east and then south along the west side of the existing railroad to a ditch bottom inlet, ultimately discharging into Garrison Channel. This ditch washed out fill under the railroad tracks several times; consequently, THEA lined the railroad ditch with fabricform. No flooding of existing roadways has occurred.



Figure 2.2: Existing Flooding

2.5.2 Flood Insurance Rate Maps

The Federal Emergency Management Agency (FEMA) has designated locations of the 100-year base floodplain within the project corridor as shown on Flood Insurance Rate Map (FIRM) Number 12057C0354H (Effective Date: August 28, 2008). Based on a recent floodplain update, FIRM Number 12057C0354J (Map Revised Date: October 7, 2021) is available. Both maps are included in **Appendix D**.

2.5.3 Flood Zone Descriptions

The majority of the study limits are outside of the floodplain. Portions of the project along the east end of the Whiting Street extension are within Zone X, defined as areas of 0.2% (500-year) annual chance flood hazard; areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile. The portion of the project along Meridian Avenue is within Zone AE (11) and Zone AE (12), defined as areas of special flood hazard with base flood elevations determined. Based on previous permitting, these 100-year flood elevations are associated with a tidal storm surge. Flood elevations are referenced to the North America Vertical Datum of 1988 (NAVD 88).

2.5.4 Regulatory Floodways

There are no FEMA regulatory floodways located within the project limits.

3.0 Proposed Conditions

3.1 Roadway

The Preferred Alternative consists of the following improvements and is shown in **Appendix A**:

- Extend East Whiting Street from North Brush Street to intersect North Meridian Avenue at a proposed signalized intersection;
- Add a left turn lane on North Meridian Avenue at the new intersection with East Whiting Street;
- Provide a traffic signal at the Whiting Street at Brush Street intersection;
- Widen the existing segment of East Whiting Street, between North Jefferson Street and North Brush Street;
- Provide a 10-foot-wide cycle track separated on the north side of East Whiting Street and 10-foot-wide sidewalks on both the north and south sides of the road; and
- New ramp providing a direct connection to Whiting Street.

3.2 Drainage

The improvements within the study area will require stormwater management facilities to meet SWFWMD permitting requirements as described in the following sections.

Basin 200

A future intermodal center is planned to impact existing stormwater pond (Pond 2), constructed under SWFWMD ERP No. 441660.032, in its entirety. To accommodate the intermodal center and the improvements along Whiting Street and Meridian Avenue, it is anticipated that the existing stormwater pond (Pond 2) will be replaced with a stormwater detention vault. The proposed stormwater detention vault would be constructed within the right-of-way and beneath East Whiting Street. It will provide the current permitted treatment volume for existing Pond 2 and the additional treatment volume required by the proposed improvements. The existing outfall to Garrison Channel will be utilized; therefore, water quantity attenuation is not required since the discharge is to a tidally-influenced waterbody without restrictions, resulting in no adverse impacts.

Existing flow patterns will be maintained and it is assumed that any existing offsite stormwater runoff will be “passed through” the stormwater vault system, where necessary, with no additional treatment required. Weir structures and pipes must be sized to accommodate the additional offsite flows passing through the system.

3.3 Floodplains and Floodways

The majority of the study limits are outside of the floodplain. Portions of the project along the east end of the Whiting Street extension are within Zone X, defined as areas of 0.2% (500-year) annual chance flood hazard; areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile. Impacts to Zone X floodplains do not require compensation.

The portion of the project along Meridian Avenue is within Zone AE (11) and Zone AE (12), defined as areas of special flood hazard with base flood elevations determined. The proposed improvements include connecting Whiting Street to Meridian Avenue and the addition of a left turn lane along Meridian Avenue at the new intersection. Based on previous permitting, these 100-year flood elevations are associated with a tidal storm surge. Therefore, floodplain compensation is not required.

Please refer to **Appendix E** for existing permit information.

4.0 Recommendations & Conclusions

The impacts to the floodplains along the project corridor are determined to have no encroachment.

4.1 Project Summary Statement

In accordance with FDOT's PD&E Manual, Part 2, Chapter 13, Floodplains, the corridor has been evaluated to determine the impact of the proposed hydraulic modifications. Summary statements are grouped into six categories based upon the type of hydraulic improvements and estimated floodplain impact. The proposed project can be best described as Project Activity Category 1 – "Projects Which Will Not Involve Any Work Below the 100-Year Flood Elevation". This statement is used when the 100-year flood elevation is available from existing information, and it is evident that project will not involve any work below the 100-year flood elevation.

PROJECTS WHICH WILL NOT INVOLVE ANY WORK BELOW THE 100-YEAR FLOOD ELEVATION

Although this project involves work within the limits of the 100-year floodplain, the floodplain is associated with tidal surge and, thus, this project does not encroach upon the base floodplain.

In addition to the above statement, since this project does not involve regulatory floodways and does not support incompatible base floodplain development, the following statement is added:

It has been determined, through consultation with local, state, and federal water resources and floodplain management agencies that there is no regulatory floodway involvement on the project and that the project will not support base floodplain development that is incompatible with existing floodplain management programs.

4.2 Risk Evaluation

Part 2, Chapter 13 - Floodplains of the FDOT's PD&E Manual, refers to the Federal-Aid Policy Guide CFR 650A in conducting the risk evaluation. Because it has been determined that there are no encroachments to the base floodplain, it can be concluded that the encroachments do not create:

- a significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route
- a significant flood risk
- a significant adverse impact on natural and beneficial floodplain values

Therefore, the floodplain encroachments will not create a risk to highway users (loss of life, service disruption) or risks to property owners (damages, service disruption, property loss).

4.3 PD&E Manual Requirements

Part 2, Chapter 13 - Floodplains of the FDOT's PD&E Manual, lists the report criteria for projects with floodplains within the project limits. The FDOT has different requirements based on the level of significance of the encroachment. This project was determined to have no encroachment and the requirements for this level of significance are listed below:

- The history of flooding of the existing facilities and/or measures to minimize any impacts due to the proposed improvements.

There is no history of flooding of the existing facilities. The proposed improvements will maintain the existing roadway profile. Minor impacts are to a floodplain associated with a tidal surge; therefore, there will be no impacts to the base floodplain.

- Determination of whether the encroachment is longitudinal or transverse, and if it is a longitudinal encroachment an evaluation and discussion of practicable avoidance alternatives.

Minor impacts are to a floodplain associated with a tidal surge; therefore, there is no encroachment into the base floodplain.

- The practicability of avoidance alternatives and/or measures to minimize impacts.

Minor impacts are to a floodplain associated with a tidal surge; therefore, there are no impacts to the base floodplain.

- Impact of the proposed improvement on emergency services and evacuation.

The existing roadway profile will be preserved as much as possible along the entire project corridor. Therefore, the roadway will continue to provide equal operation of emergency services and evacuation access as in the existing condition.

- Impacts of the proposed improvement on the base flood, likelihood of flood risk, overtopping, location of overtopping, backwater, etc.

Minor impacts are to a floodplain associated with a tidal surge; therefore, there are no impacts to the base floodplain. The likelihood of flood risk is minimal. No overtopping of the roadway is anticipated for the entire roadway corridor.

- Determination of the impact of the proposed improvements on regulatory floodways, if any, and documentation of coordination with FEMA and local agencies to determine the project's consistency with the regulatory floodway.

No regulatory floodways exist within the project limits.

- The impacts on natural and beneficial floodplain values, and measures to restore and preserve these values.

Since the majority of the proposed improvements are located within the existing right-of-way, no adverse impact on natural and beneficial floodplain values are anticipated.

- Consistency of the proposed improvements with the local floodplain development plan or the land use elements in the Comprehensive Plan, and the potential of encouraging development in the base floodplain.

The proposed improvements are consistent with local plans and do not increase or encourage the potential of development in the base floodplain.

- A map showing project, location, and impacted floodplains. Copies of applicable FIRM maps should be included in the appendix.

A project location map is included as Figure 1.1. Flood Insurance Rate Map (FIRM) Number 12057C0354H (Effective Date: August 28, 2008) and FIRM Number 12057C0354J (Map Revised Date: October 7, 2021) are included in Appendix D.

- Results of any risk assessments performed.

This Location Hydraulic Report (LHR) Technical Memorandum is in support of the Whiting Street PD&E Study and determines if any impacts to floodplains and floodways occur as a result of the proposed improvements to the roadway and associated drainage/conveyance systems. The results of the risk assessment indicate that the floodplain encroachment level will be none and is described as Category 1.

5.0 References

The references used in defining and developing the information base included, but was not necessarily limited to, the following:

- United States Geological Survey (USGS), Tampa Quadrangle Map
- United States Department of Agriculture, Natural Resource Conservation Service, Soil Survey of Hillsborough County, Florida
- Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) Number 12037C0354H (Effective Date: August 28, 2008)
- Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) Number 12037C0354J (Map Revised Date: October 7, 2021)
- FDOT Drainage Manual (January 2021)
- FDOT Project Development and Environment Manual, Part 2, Chapter 13: Floodplains (July 2020)

Appendices







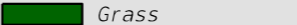
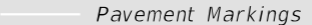
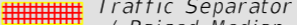



Appendix A

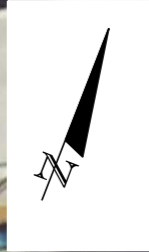
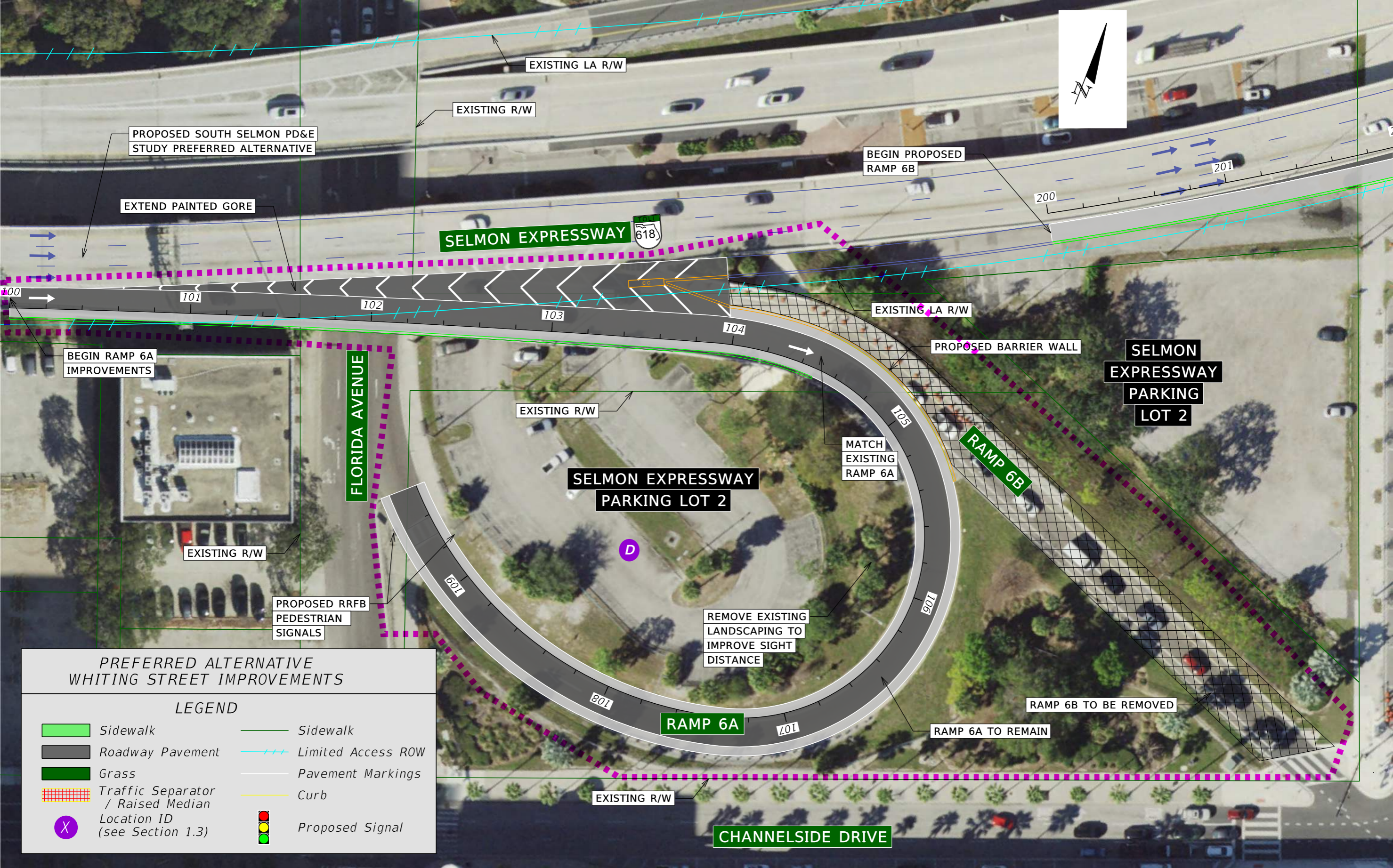
PREFERRED ALTERNATIVE CONCEPT PLANS



**PREFERRED ALTERNATIVE
WHITENING STREET IMPROVEMENTS**

LEGEND

 Sidewalk	 Sidewalk
 Roadway Pavement	 Limited Access ROW
 Grass	 Pavement Markings
 Traffic Separator / Raised Median	 Curb
 Location ID (see Section 1.3)	 Proposed Signal



PROPOSED SOUTH SELMON PD&E STUDY PREFERRED ALTERNATIVE

EXTEND PAINTED GORE

SELMON EXPRESSWAY



BEGIN PROPOSED RAMP 6B

200

201

BEGIN RAMP 6A IMPROVEMENTS

EXISTING LA R/W

PROPOSED BARRIER WALL

SELMON EXPRESSWAY PARKING LOT 2

FLORIDA AVENUE

EXISTING R/W

SELMON EXPRESSWAY PARKING LOT 2

MATCH EXISTING RAMP 6A

RAMP 6B

EXISTING R/W

PROPOSED RRFB PEDESTRIAN SIGNALS

REMOVE EXISTING LANDSCAPING TO IMPROVE SIGHT DISTANCE

RAMP 6B TO BE REMOVED

RAMP 6A

RAMP 6A TO REMAIN

EXISTING R/W

CHANNELSIDE DRIVE

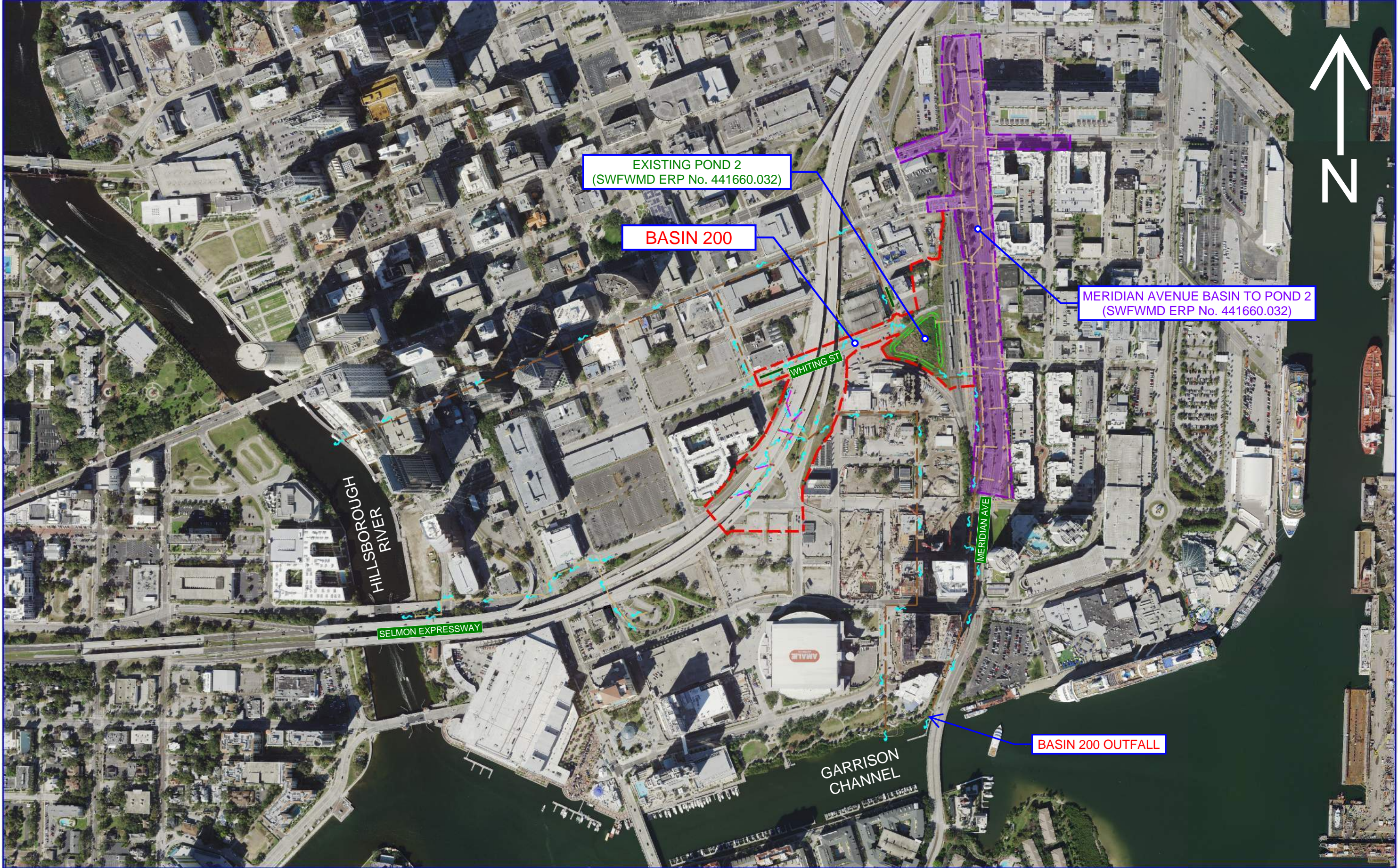
PREFERRED ALTERNATIVE WHITING STREET IMPROVEMENTS

LEGEND

- | | | | |
|--|-----------------------------------|--|--------------------|
| | Sidewalk | | Sidewalk |
| | Roadway Pavement | | Limited Access ROW |
| | Grass | | Pavement Markings |
| | Traffic Separator / Raised Median | | Curb |
| | Location ID (see Section 1.3) | | Proposed Signal |

Appendix B

EXISTING DRAINAGE MAP



H.W. LOCHNER, INC.
 4350 W. CYPRESS STREET
 SUITE 800
 TAMPA, FL 33607

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY		
ROAD NO.	COUNTY	THEA PROJECT NO.
SR 618	HILLSBOROUGH	HI-0141

WHITING STREET PD&E STUDY EXISTING DRAINAGE MAP

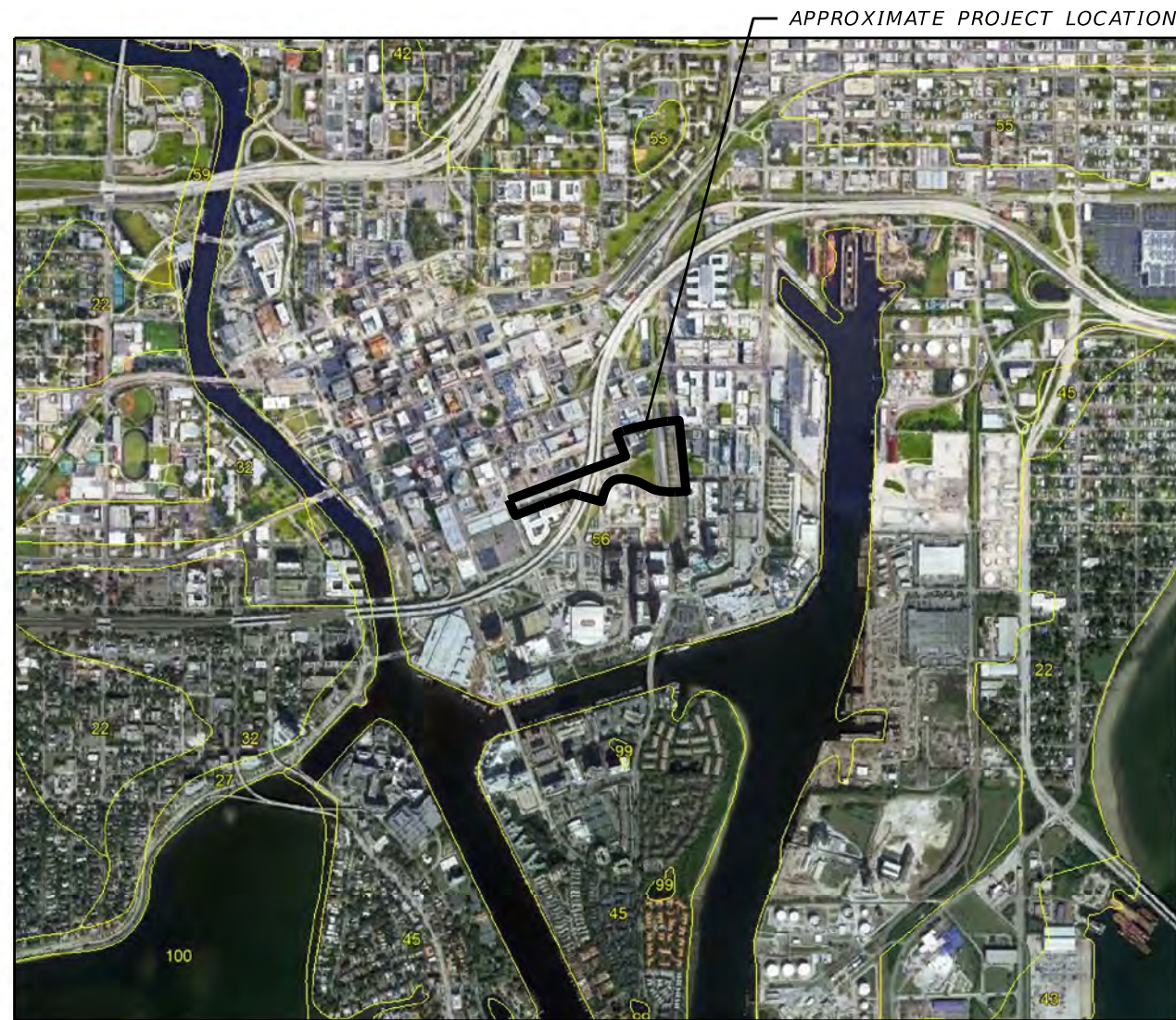
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Appendix C

USDA SOIL SURVEY MAP & USGS TOPOGRAPHIC MAP

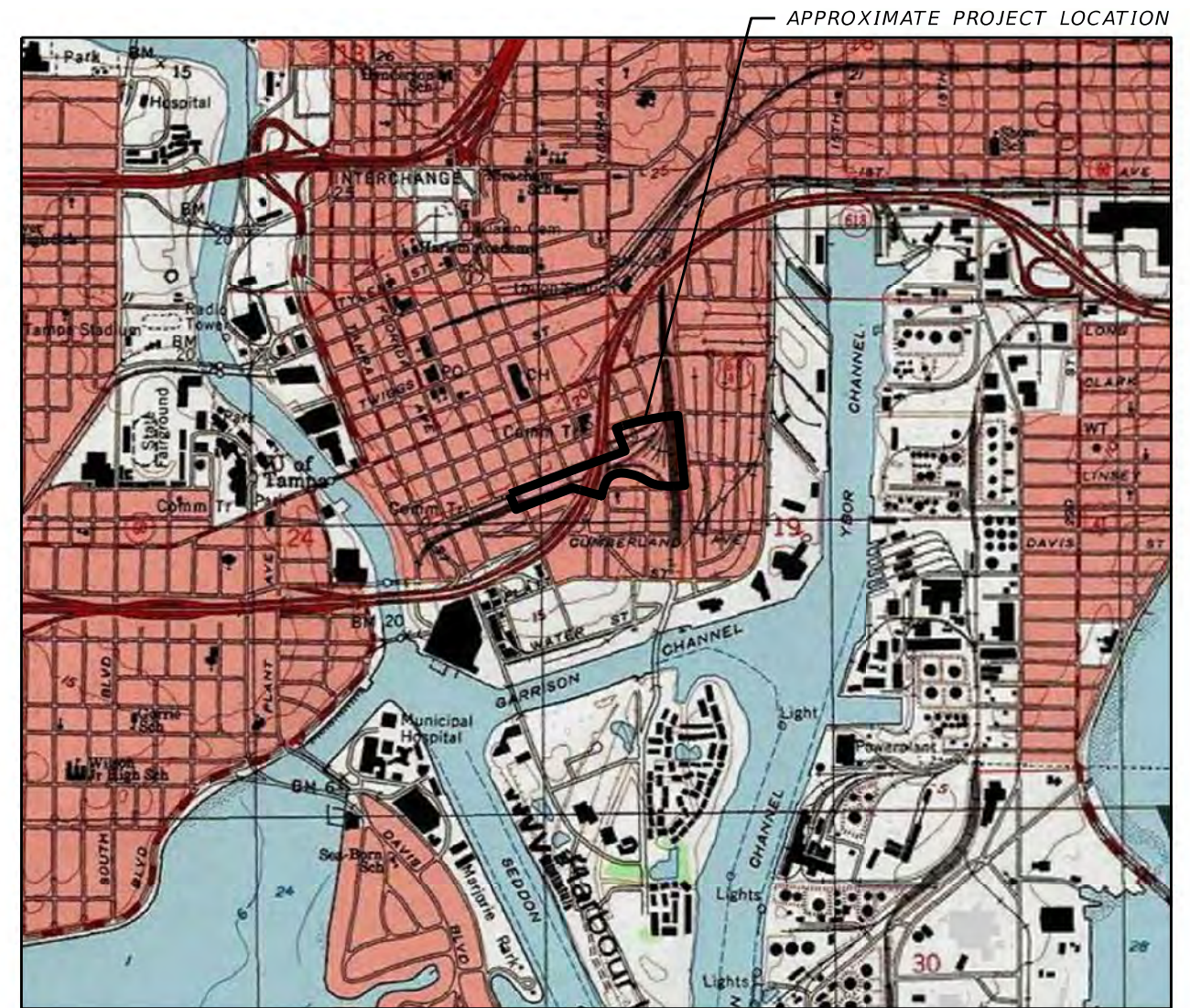
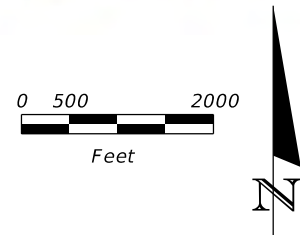
USDA SOIL SURVEY MAP

USGS TOPOGRAPHIC MAP



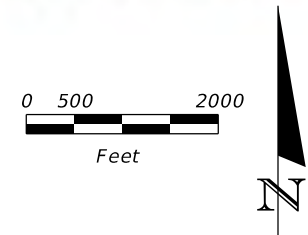
REFERENCE: USDA SOIL SURVEY OF HILLSBOROUGH COUNTY, FLORIDA

TOWNSHIP: 29 S 29 S
 RANGE: 18 E 19 E
 SECTION: 24 19



REFERENCE: "TAMPA, FLORIDA" USGS QUADRANGLE MAP

TOWNSHIP: 29 S 29 S
 RANGE: 18 E 19 E
 SECTION: 24 19



REVISIONS				KIRK M. EASTMAN, P.E. P.E. LICENSE NUMBER 50733 AREHNA ENGINEERING, INC. 5012 W. LEMON STREET TAMPA, FLORIDA 33609	TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY			SHEET NO. C-1
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	THEA PROJECT NO.	
					SR 618	HILLSBOROUGH	HI-0141	USDA & USGS VICINITY MAPS

Appendix D

FEMA FLOOD INSURANCE RATE MAP

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or Floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Coastal Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Coastal Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Florida State Plane west zone (FPSZ92). The horizontal datum was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSMC-3, #5202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov. Information on elevation reference marks is readily available through a variety of sources: the NGS website, www.ngs.noaa.gov/cgi-bin/datasheet.pl, the Land Boundary Information System (LABINS) maintained by the Florida Department of Environmental Protection www.labins.org and the Hillsborough County Survey Division www.hillsboroughcounty.org/geospatial/survey/.

Base map information shown on this FIRM was derived from multiple sources. Road centerlines were provided by the City of Tampa Geographic Information System (GIS) group. These data were aligned to aerial imagery at 6-inch pixel resolution dated 2004. Surface water features were provided by the Hillsborough County Information Technology & Services GIS Section. These data were digitized from aerial imagery at 1-foot and 6-inch pixel resolution dated February 2000 and April 2004. Political boundaries were provided by the Hillsborough County Real Estate Department, Survey Division, GIS Section. These data were compiled in 2003. Public Land Survey System (range, township, and sections) were provided by the Florida Geographic Data Library. These data were produced at a scale of 1:24,000.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the FEMA Map Service Center at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://msc.fema.gov/>.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/>.



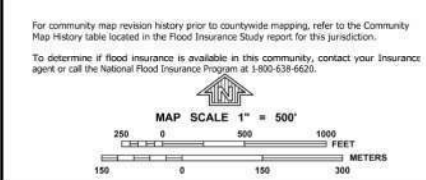
In cooperation with the Federal Emergency Management Agency (FEMA), Hillsborough County developed this Flood Insurance Rate Map in a digital countywide format to assist communities in their efforts to minimize the loss of property and life through effectively management development in floodprone areas. Hillsborough County has implemented a long term approach to floodplain management to reduce the impacts of flooding. This is demonstrated by the County's commitment to map floodplain areas at the local level. As part of this effort, Hillsborough County is working closely with FEMA as a Cooperating Technical Partner to produce and maintain this digital FIRM.



Project Area

LEGEND

- SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
- The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AV, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently deteriorated. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE AV** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS
- ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
- OTHERWISE PROTECTED AREAS (OPAs)
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988
- Cross section line
- Transit line
- 87°07'45", 32°22'30"
- 77°6" N
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone 18AD 83 UTM Zone 17
- 3000-foot grid scale: Florida State Plane coordinate system, West zone (FPSZ92), Transverse Mercator projection
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile
- M1.5
- 410285
- Junction
- MAP REPOSITORY
- Refer to listing of Map Repositories on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
- August 28, 2008
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL



NFIP PANEL 0354H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 354 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

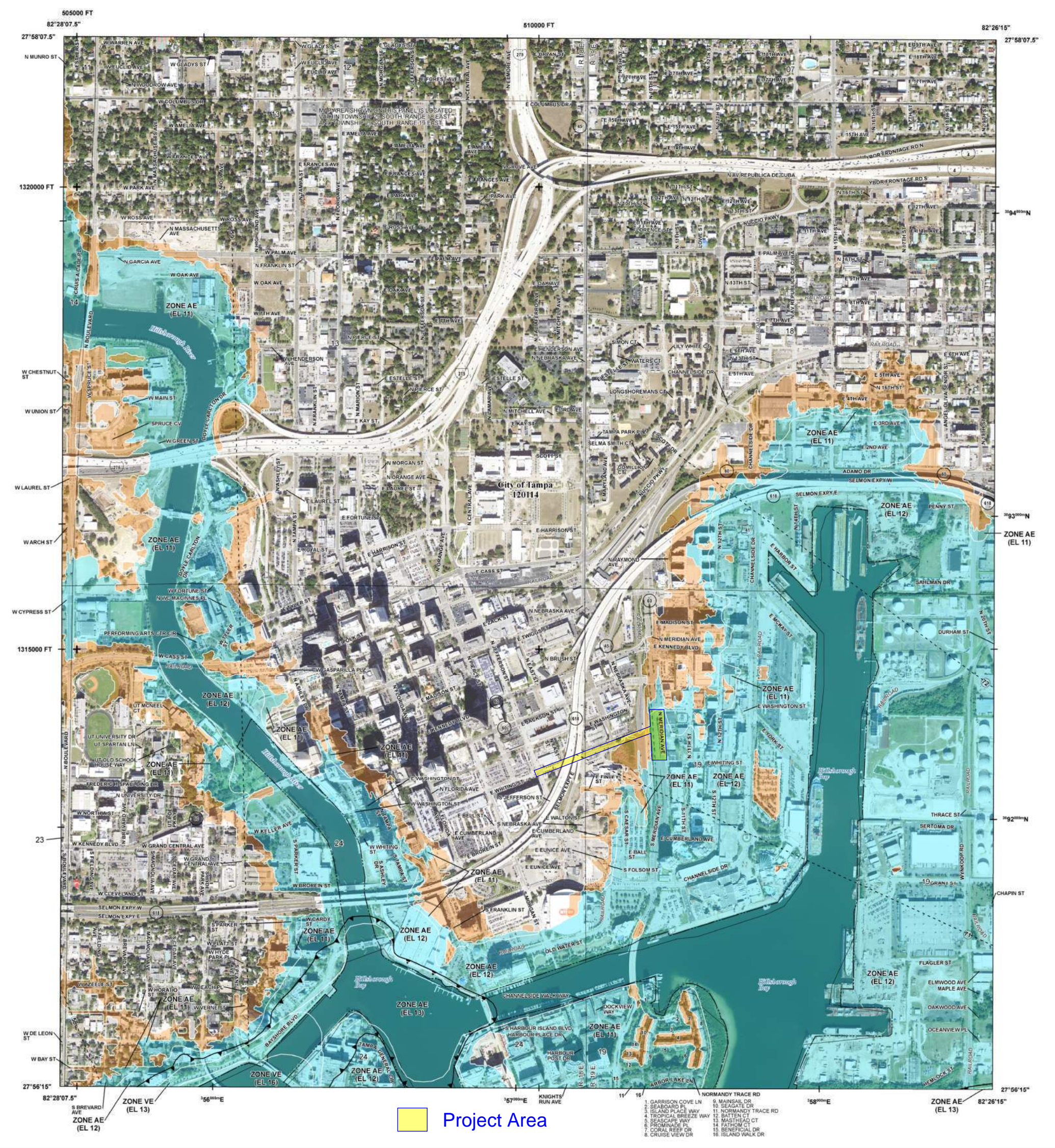
COMMUNITY	NUMBER	PANEL	SUFFIX
TAMPA, CITY OF	120114	0354	H

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
12057C0354H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency



Project Area

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTPS://MSC.FEMA.GOV](https://MSC.FEMA.GOV)

- SPECIAL FLOOD HAZARD AREAS**
 - Without Base Flood Elevation (BFE) Zone A.V. A99
 - With BFE or Depth Zone AE, AO, AH, VE, AR
 - Regulatory Floodway
 - 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
 - Future Conditions 1% Annual Chance Flood Hazard Zone X
 - Area with Reduced Flood Risk due to Levee See Notes. Zone X
 - Area with Flood Risk due to Levee Zone D
- OTHER AREAS OF FLOOD HAZARD**
 - NO SCREEN Area of Minimal Flood Hazard Zone X
 - Area of Undetermined Flood Hazard Zone D
- OTHER AREAS**
- GENERAL STRUCTURES**
 - Channel, Culvert, or Storm Sewer
 - Levee, Dike, or Floodwall
 - Cross Sections with 1% Annual Chance Water Surface Elevation
 - Coastal Transect
 - Coastal Transect Baseline
 - Profile Baseline
 - Hydrographic Feature
 - Base Flood Elevation Line (BFE)
- OTHER FEATURES**
 - Limit of Study
 - Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2927) or visit the FEMA Flood Map Service Center website at <https://mfc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

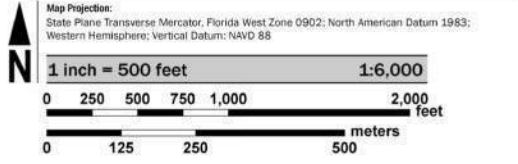
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided by Hillsborough County, dated 2008 and 2016; the Florida Department of Transportation, dated 2017; the Florida Resources and Environmental Analysis Center, dated 2003; and the U.S. Department of Agriculture, dated 2018.

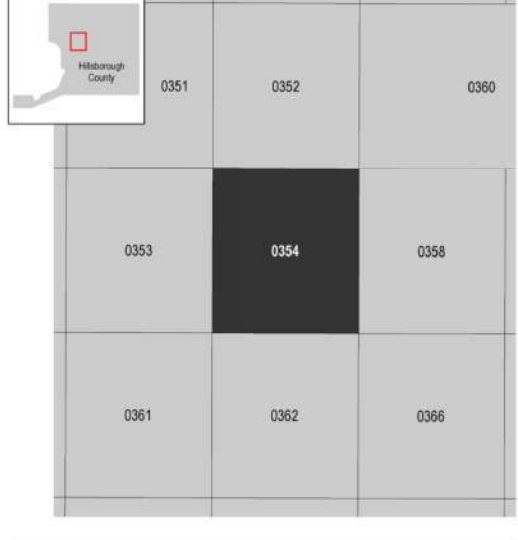
LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LMWA). The LMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between Zone VE and the LMWA (or between the shoreline and the LMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in the Zone VE.

Limit of Moderate Wave Action (LMWA)

SCALE



PANEL LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
HILLSBOROUGH COUNTY, FLORIDA
 and Incorporated Areas
 PANEL 354 OF 801

Panel Contains:
 COMMUNITY NUMBER PANEL SUFFIX
 TAMPA, CITY OF 120114 0354 J

FEMA
 National Flood Insurance Program

VERSION NUMBER 2.4.3.5
 MAP NUMBER 12057C0354J
 MAP REVISED OCTOBER 7, 2021

Appendix E

EXISTING PERMIT INFORMATION

EXCERPT FROM
SWFWMD ENVIRONMENTAL RESOURCE
PERMIT NO. 1660.032
MERIDIAN AVENUE POND 2 MODIFICATION

As a result of the project, approximately 0.03 acres (1200 square feet) of Garrison Channel will be impacted from the construction of an endwall and 60" discharge pipe. No mitigation is proposed.

Because Meridian Avenue is located in a highly urbanized area of downtown Tampa, no wildlife has been seen or is expected to be found in the vicinity of the project. However, due to the potential for manatees to occur within the vicinity of Garrison Channel, standard manatee protection measures will be implemented during construction of the discharge pipe at Garrison Channel to avoid any potential impacts. A copy of the Standard Manatee Construction Conditions is provided in (Appendix A, pgs. A-10 & A-11).

2.5 SEASONAL HIGH GROUNDWATER

Law Engineering and Environmental Services conducted soil borings along Meridian and Channelside Drive in 1994. The SHGW elevation ranged from a depth of 2.13 feet at boring B-14 to a depth of 2.72 at boring B-12 (Appendix C, page C-2). AIM Engineering & Surveying surveyed several geotechnical boring sites (by others) to determine the SHGW just north of Twiggs Street for the Lee Roy Selmon Crosstown Expressway project (Appendix C, page C-37). Figure 6 shows the location of the above mentioned soil borings. The SHGW ranged from a depth of 2 feet in borings SH-1 and SH-2 to a depth of 2.25 for boring SH-3. Williams Earth Sciences drilled an additional 56 soil borings along the Meridian Avenue project including proposed Whiting and Jackson Streets in February 2002. Due to the very disturbed nature of the soils, the SHWT could not be determined, but was estimated as 2 feet below ground surface. The soil borings indicates that the present groundwater level ranges from a depth of 6 feet at Station 107+50 (90 LT) to 2.5 feet at Station 111+40 (12 LT). Design high water elevations for setting/ evaluation of the roadway profile are addressed in a separate report.

2.6 FLOODPLAIN

The project site is located on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community-Panel Number 120114 0024 C, as depicted on September 30, 1982. The project is within areas designated Zone A10, Zone B, and Zone C (Appendix A, Figure 3). The figure shows that Meridian Avenue from

Channelside Drive to Washington Street lies within Zone A10 with the flood elevation determined to be 11 feet. The area including Meridian Avenue from Washington Street to North of Kennedy Boulevard and East of Nebraska Avenue is in Zone B. The remainder of the project lies within Zone C or areas of minimal flooding. No floodplain compensation is proposed since 100-year flood elevations are due to tidal surge.

3.0 SPREAD CALCULATIONS

Per the FDOT spread standard, spread resulting from a rainfall intensity of 4.0 in/hr shall not exceed ½ the travel lane adjacent to the gutter. Refer to Appendix F for spread calculations. The maximum allowable spread was reduced to 5 feet for roadway sections that slope & drain to the median since water is not expected to be present in high-speed travel lanes.

4.0 EXISTING STORMWATER MANAGEMENT SYSTEM

The existing Ponds 1 and 2 were permitted (SWFWMD # 401660.10) to include a basin area of 6.67 acres, of which 4.33 acres is future development. The area of future development is located east of Meridian Avenue from Cumberland Avenue to Channelside Drive. The existing ground elevation in this area is too low to connect to the exfiltration pond and discharges directly to the outfall pipe. Since effluent filtration ponds require treatment of the first ½" of stormwater runoff from the contributing drainage area the required treatment volume for Pond 1 and 2 is 0.28 ac-ft. Pond 1 is located on the east side of Meridian Avenue and Pond 2 on the west, just south of Cumberland Avenue.

The *Soil Survey of Hillsborough County* shows Urban Land (#56) within the project area (Figure 4). Urban Land soils are predominately covered with concrete, asphalt, buildings or other impervious surfaces that are artificially drained. Law Engineering and Environmental Services (Appendix C, page C-13) conducted soil borings along Meridian Avenue and Channelside Drive in 1994. The SHGW elevation ranged from a depth of 2.13 feet at boring B-14 to a depth of 2.72 feet at boring B-12. The Seasonal High Water Table (SHWT) for Ponds 1 & 2 was determined to be at elevation 5 feet.

EXCERPT FROM
SWFWMD CONCEPTUAL PERMIT NO. 49042679.000
CITY OF TAMPA WATERFRONT DISTRICT

**SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
CONCEPTUAL
PERMIT NO. 49042679.000**

EXPIRATION DATE: **October 12, 2021**

PERMIT ISSUE DATE: **October 12, 2016**

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapter 62-330, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to use the information outlined herein and shown by the application, approved drawings, plans, specifications and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District), to proceed with further applications for construction permitting.

PROJECT NAME: Waterfront District
GRANTED TO: City of Tampa
 Attn: Richard A. Hoel
 306 East Jackson Street, 6th Floor North
 Tampa, FL 33602
OTHER PERMITTEES: N/A

ABSTRACT: This Urban Infill or Redevelopment Conceptual Permit grants conceptual approval per Rule 62-330.055, F.A.C. for re-development within the Waterfront District, which is located within the City of Tampa's Downtown Core Community Redevelopment Area. The provided conceptual stormwater management plan identifies ten (10) on-site post-development drainage sub-basins and establishes the existing annual nutrient loadings at 497.84 kg (1,095.25 lbs) of nitrogen and 68.38 kg (150.44 lbs) of phosphorous within the 85.72-acre redevelopment boundary. Conceptual approval also includes the realignment of multiple roadways, and the preliminary design and placement of four (4) nutrient separating baffle boxes as identified on Sheets 162-165 of the conceptual plans. Additional information regarding the limitations of development within the proposed conceptual redevelopment boundary is stated below and on the permitted construction drawings for this project. The project site is located north and east of the Amalie Arena in downtown Tampa, Hillsborough County.

OP. & MAIN. ENTITY: City of Tampa
OTHER OP. & MAIN. ENTITY: N/A
COUNTY: Hillsborough
SEC/TWP/RGE: S19/T29S/R19E, S24/T29S/R18E
**TOTAL ACRES OWNED
OR UNDER CONTROL:** 85.72
PROJECT SIZE: 85.72 Acres
LAND USE: Government
DATE APPLICATION FILED: October 21, 2015
AMENDED DATE: November 23, 2015

I. Water Quantity/Quality

Water Quantity/Quality Comments:

Runoff from the proposed project area discharges into Garrison Channel which is a part of Tampa Bay. Direct discharges to the tidal waters of Tampa Bay do not require attenuation.

Pursuant to Rule 62-330.055, F.A.C., all redevelopment associated with this project must result in a net improvement to the receiving waterbody (Tampa Bay).

Future projects within the conceptually approved redevelopment boundary shall use the master ledger associated with this permit in order to determine the amount of treatment credits available. Activities requested under the general permit in Rule 62-330.450, F.A.C., that use the BMPs approved in the stormwater master plan, that reduce impervious surfaces, or that otherwise meet the pollutant loading target in the stormwater master plan, and that also comply with all the terms and conditions of the general permit, will result in a debit to the ledger. Once the entire pollutant load target is reached for the receiving waters, no more development is allowed under the general permit, and further development will require an individual permit for construction, alteration, operation, removal, or abandonment that meets all conditions for issuance under Rule 62-330.301, F.A.C.

A mixing zone is not required.

A variance is not required.

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type	Encroachment Result* (feet)
0.00	0.00	No Encroachment	N/A

Floodplain Comments:

Floodplain mapped within and adjacent to the project boundary is the result of coastal flood surge. No compensation for impacts to the floodplain are required.

*Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims Minimal Impact type of compensation.

III. Environmental Considerations

No wetlands or other surface waters exist within the project area.