Location Hydraulics Report

US 41/SR 45 AT CSX GRADE SEPARATION
FROM S OF SR 676 TO N OF SR 676
Project Development & Environment (PD&E) Study

Florida Department of Transportation

District 7

Work Program Item Segment No.: 440749-1

Federal Aid Project No.: D719-029-B

ETDM Project No. 14345

Hillsborough County, Florida

March 2023

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 May 26, 2022, and executed by the Federal Highway Administration and FDOT.

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FROM S OF SR 676 TO N OF SR 676
Project Development & Environment (PD&E) Study
Design Change Reevaluation

Florida Department of Transportation
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March 2023

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TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting a Design Change and ROW Authorization Project Development and Environmental (PD&E) Reevaluation Study to evaluate the various operational improvements along US 41/SR 45/SR 599 from south of the Causeway Boulevard intersection to north of the Causeway Boulevard intersection.

The purpose of this project is to reduce traffic delays associated with the CSX railroad crossing, adequately support the safe movement of vehicle traffic, including trucks and freight, and enhance connectivity and safety for bicyclists and pedestrians.

The project limits identified along US 41 begin south of Denver Street (MP 22.578) and extend north of the Causeway Boulevard intersection to 23rd Avenue (MP 23.925). The improvements along Causeway Boulevard begin west of 45th Street (MP 3.554) and extend east of the Causeway Boulevard intersection terminating prior to the CSX crossing (624815B; MP 2.971). US 41 is currently a six-lane roadway throughout the project limits and Causeway Boulevard is currently four-lanes. US 41 and Causeway Boulevard are functionally classified by the FDOT as urban principal arterials. US 41 south of Causeway Boulevard and Causeway Boulevard west of US 41 are part of FDOT's Strategic Intermodal System (SIS), designated as a SIS Connector. The CSX railroad crossing east of US 41 is a designated SIS Railway Corridor and the CSX railroad crossing south of Causeway Boulevard is designated as a SIS Railway Connector. There is one bridge culvert south of Causeway Boulevard for US 41 over Delaney Creek (MP 23.003).

The project study is located in Sections 27, 28, 33, and 34 of Township 29 South and Range 19 East in the Tampa Bay Watershed within the Coastal Hillsborough Bay Tributary Planning Unit. The project is split between WBID 1605D (Delaney Creek Tidal) and WBID 1615 (Drainage to McKay Bay). Both WBIDs are verified as impaired for Enterococci. WBID 1605D is also impaired for lead, copper and iron. Along US 41, the stormwater runoff is collected by curb and gutter and conveyed either to FDOT stormwater management facilities (SMFs) located at the northwest and northeast corners of the US 41 and Causeway Boulevard intersection or directly to the outfall without treatment.

The purpose of this report is to provide a location hydraulics study for the project, in accordance with 23 CFR 650 Subpart A, Section 650.111. The report utilizes the National Flood Insurance Program maps to determine highway location encroachments. This report evaluates risks associated with the implementation of the project, impacts on natural and beneficial floodplain values, the discouragement of incompatible floodplain development, and measures to minimize floodplain impacts. Applicable floodplain management agencies were consulted to determine if the proposed project is consistent with existing floodplain management programs.

Based on the current effective maps, the entire project area is located within a FEMA Zone AE 100-year floodplain with a base flood elevation (BFE) which ranges between 12 and 13 feet. The FEMA BFE is based on storm surge. The riverine 100-year flood stage is based on the Delaney Creek Watershed Model and ranges from 4 to 8 feet within the project limits. An isolated Zone A exists on the north side of Causeway Boulevard east of the CSX railroad tracks that appears to be outside of the study limits.

The recommended alternative will have transverse and longitudinal impacts to the existing floodplain. The longitudinal impacts will result from filling the floodplain areas associated with proposed roadway widening and improvements. The transverse impacts will result from the replacement and extension of the existing cross drains and bridge culvert. These impacts cannot be avoided as the entire project is within the floodplain.

The analysis in this report indicates that the preferred alternative is feasible from a hydraulic perspective. The following statement summarizes the results of our analysis:

> *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. Thus, there will be no significant or 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.*

SECTION 1 INTRODUCTION

1.1 PROJECT BACKGROUND

The Florida Department of Transportation (FDOT) is conducting a Design Change and Right of Way (ROW) Authorization Reevaluation of a previous Environmental Assessment (EA) (Work Program Item Segment (WPIS) #No. 255598-1) with a Finding of No Significant Impact (FONSI) approved by the Federal Highway Administration on May 24, 1994. **Figure 1-1** shows the limits of the previous PD&E study completed along 22nd Street Causeway/Causeway Boulevard (State Road 676) from State Road (SR) 60 to US 301, in Hillsborough County, Florida. The segment currently being evaluated/advanced is shown as Segment 3 on **Figure 1-1.**

The previous study evaluated anticipated conditions for a 2015 Design Year. The FONSI documented the construction of a six-lane roadway to replace the existing 2- to 4-lane roadway beginning at SR 60 and extending approximately 7 miles east at US 301. Since the completion of the 1994 PD&E Study, Causeway Boulevard has been widened to four-lanes.

The project included a new interchange at US 41/Causeway Boulevard intersection for which the approved concept was a "compressed diamond" interchange with US 41 elevated over Causeway Boulevard. This interchange is also known as a Single Point Urban Interchange (SPUI) or a Tight Urban Diamond Interchange (TUDI). The study identified that the US 41 interchange bridge would carry three lanes of traffic in each direction with a barrier wall separating opposing traffic. The study recommended an additional grade separation of US 41 over the CSX railroad crossing south of Causeway Boulevard while the CSX railroad crossing east of US 41 would remain at-grade with Causeway Boulevard. The concept showed the SPUI ramps oriented along US 41 and one-way, one-lane frontage roads were provided in the southeast and northeast quadrants to provide local property access. Five-foot sidewalks and 4-foot bicycle lanes were proposed along both sides of Causeway Boulevard.

The current study effort being conducted under WPIS# 440749-1 is evaluating various intersection and operational improvements along Causeway Boulevard east and west of US 41 (SR 45/SR 599) along US 41 from south of the Causeway Boulevard intersection to north of the Causeway Boulevard intersection. These improvements include the construction of a grade separation of US 41/SR 45 at the CSX railroad crossing located approximately 1,400' south of the Causeway Boulevard intersection. Bicycle and pedestrian facility improvements along US 41 and Causeway Boulevard are also provided.

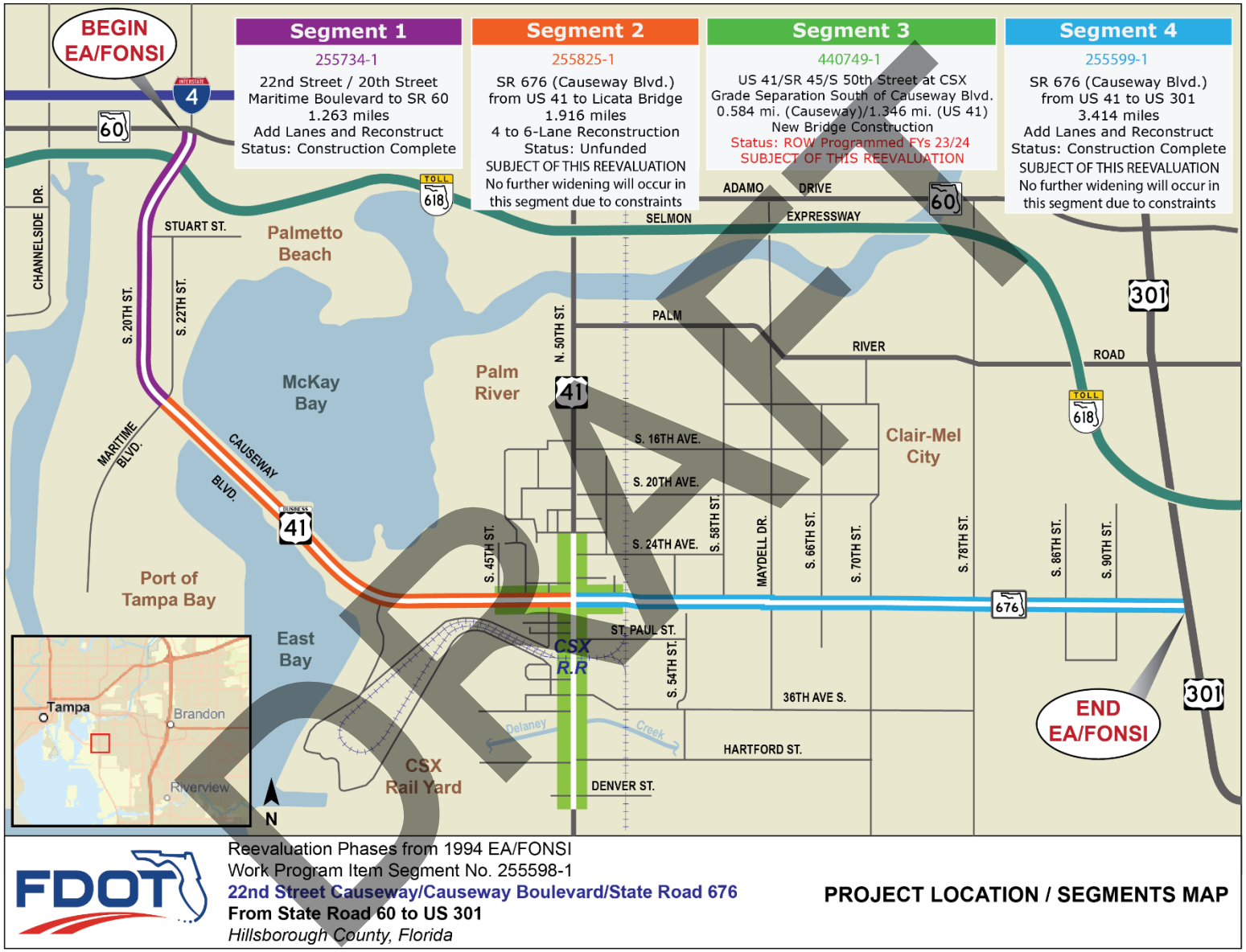


Figure 1-1. Project Location / Segments Map

1.2 PROJECT PURPOSE AND NEED

Purpose

The purpose of this project is to reduce traffic delays associated with the CSX railroad crossing, adequately support the safe movement of vehicle traffic, including trucks and freight, and enhance connectivity and safety for bicyclists and pedestrians.

Need

As expressed in the original 1994 EA/FONSI, the need for the 22nd Street Causeway/Causeway Boulevard improvements was based on the following criteria: System Linkage; Capacity; Transportation Demand; Federal, State, or Local Government Authority; Socioeconomic Demand; Modal Interrelationships; Safety; and Navigation.

For the current segment, US 41 and Causeway Boulevard are vital arterial highways which serve the City of Tampa located in Hillsborough County. The US 41/SR 45 and Causeway Boulevard intersection experiences traffic delays during the AM and PM peak periods with heavy truck traffic (approximately 13% of the daily volume) traversing through the intersection. The presence of CSX railroad crossings to the south and east of the intersection also further contribute to these traffic delays. The CSX railroad crossing located to the south of the intersection causes traffic delays particularly during the AM peak period. This project will address traffic delays associated with the CSX railroad crossing to the south of the US 41 and Causeway Boulevard intersection and will facilitate the safe movement of vehicle traffic through the project corridor.

In addition, this project will also address multimodal connectivity and safety within the area. Although there sidewalks and dedicated bicycle lanes along both sides of Causeway Boulevard within the project limits, there are only sidewalks and no dedicated bicycle facilities along US 41 within the project limits. Between 2017 and 2021, there were 10 crashes involving bicyclists or pedestrians. These 10 crashes resulted in 1 fatality as well as a total of 8 injuries.

The proposed improvements have been identified in the Hillsborough County Transportation Planning Organization's (TPO) 2045 Adopted Long Range Transportation Plan (under the Hillsborough County Freight Hot Spots), the TPO's Fiscal Year 2022/23-2026/27 Transportation Improvement Program, as well as the FDOT's Statewide Transportation Improvement Plan and Strategic Intermodal System (SIS) Adopted 1st 5-Year Program. US 41 has also been identified as a Goods Movement Roadway Corridor from I-4 to the Manatee County Line and is a priority project for the National Highway Freight Program.

1.3 EXISTING FACILITY AND PROPOSED IMPROVEMENTS

1.3.1 Existing Facility

The project limits identified along US 41 begin south of Denver Street (MP 22.578) and extend north of the Causeway Boulevard intersection to 23rd Avenue (MP 23.925). The improvements along Causeway Boulevard begin west of 45th Street (MP 3.554) and extend east of the Causeway Boulevard intersection

terminating prior to the CSX crossing (624815B; MP 2.971). US 41 is currently a six-lane roadway throughout the project limits and Causeway Boulevard is currently four-lanes. US 41 and Causeway Boulevard are functionally classified by the FDOT as urban principal arterials. US 41 south of Causeway Boulevard and Causeway Boulevard west of US 41 are part of FDOT's Strategic Intermodal System (SIS), designated as a SIS Connector. The CSX railroad crossing east of US 41 is a designated SIS Railway Corridor and the CSX railroad crossing south of Causeway Boulevard is designated as a SIS Railway Connector. There is one bridge culvert south of Causeway Boulevard for US 41 over Delaney Creek (MP 23.003).

US 41 from south of Denver Street to Causeway Boulevard is a divided 6-lane roadway with a 19-foot median, 10-foot outside travel lanes, 11-foot middle and inside travel lanes, curb and gutter, and a sidewalk on both sides. The inside northbound travel lane from north of St. Paul Street becomes one of the two left-turn lanes for the Causeway Boulevard intersection. The sidewalk on the east side is 6-foot wide and the sidewalk on the west side varies from 5-foot to 6-foot wide.

Along US 41 from north of Causeway Boulevard to just north of S. 23rd Avenue, the existing typical section consists of an undivided 6-lane roadway with asphalt pavement, 11-foot travel lanes, a centered 10-foot bi-directional turn lane, curb and gutter, and 4-foot sidewalk along both sides of the roadway.

Along Causeway Boulevard from S. 45th Street to Sagasta Street, the existing typical section consists of an undivided 4-lane roadway with concrete pavement, 12-foot lanes, a centered 14-foot bi-directional turn lane, curb and gutter, 4-foot bike lanes, and 6-foot sidewalks.

The existing typical section of Causeway Boulevard from Sagasta Street to US 41 consists of a divided 4-lane roadway with concrete pavement and 12-foot travel lanes, 4-foot bicycle lanes, and 6-foot sidewalks on both sides.

The existing typical section of Causeway Boulevard from US 41 to the end project limits consists of a divided 4-lane roadway with asphalt pavement, 12-foot outside lanes and 11-foot inside lanes, curb and gutter, 4-foot bicycle lanes and 6-foot sidewalks on both sides.

The majority of the existing ROW along US 41 is 100 feet wide. In the vicinity of the CSX railroad, the ROW width varies from 100 to 332-feet. CSX Transportation owns a large portion of the adjacent property along both sides of US 41 where the CSX railroad crosses at grade. Causeway Boulevard is 150 feet wide or greater west of S. 45th Street and reduces to 100 feet wide around S. 47th Street. The ROW increases around the US 41 intersection along Causeway Boulevard then reduces to 100 feet wide before the CSX railroad crossing.

1.3.2 Proposed Improvements

This Design Change and ROW Authorization Project Development and Environment (PD&E) Reevaluation study (WPIS# 440749-1), with a 2046 Design Year, is evaluating various operational improvements along US 41/SR 45/SR 599/S. Tamiami Trail (US 41) from south of the Causeway Boulevard intersection to north of the Causeway Boulevard intersection. The study will evaluate roadway widening/reconstruction, new stormwater management facilities, new bridge overpasses at Delaney Creek, the CSX railroad, and other roadways for local traffic needs. Intersection and operational improvements being evaluated include

signalization and turn lane additions for Hartford Street, US 41/Causeway Boulevard, and 47th Street. In addition to addressing operational improvements, this project will address the need for pedestrian/ bicycle accommodations and improving connectivity and safety for these modes.

There are multiple typical sections throughout the project limits. From just south of Denver Street to north of Trenton Street, the proposed typical section includes reconstructing US 41 with concrete pavement to accommodate a 6-lane divided urban curbed section with 12-foot lanes, 7-foot buffered bicycle lanes, and 10-foot sidewalks on both sides. The median width varies from 19-22 feet to provide turn lanes with raised traffic separators between opposing directions of travel. The proposed improvements will require the acquisition of ROW beyond the existing footprint varying from 0-22 feet along the west side and varying from 0-17 feet along the east side of US 41.

From north of Trenton Street the proposed typical section grade separates US 41 to continue a concrete paved typical section to south of St. Paul Street. The proposed typical section consists of a 6-lane divided urban section with concrete pavement, 12-foot lanes and 10-foot inside and outside paved shoulders. A northbound exit ramp connects to 36th Avenue with a t-intersection configuration on the east side of US 41. The proposed concrete ramp consists of a 15-foot travel lane, 7-foot buffered bicycle lane and a 10-foot sidewalk on the eastside. The existing US 41 southbound mainline pavement will be repurposed to accommodate a two-lane undivided frontage road for local access to adjacent properties. The proposed frontage road is an urban curbed section with asphalt pavement, 12-foot travel lanes, and a 10-foot sidewalk on the west side. Bridge overpasses are proposed for the US 41 mainline over Delaney Creek, 36th Avenue, and the at grade CSX Crossing (No 624802A). The proposed improvements will require the acquisition of ROW varying from 29 to 88 feet along the west side and varying from 39 to 200 feet along the east side.

From north of St. Paul Street to the Causeway Boulevard intersection, the proposed typical section along US 41 consists of a 6-lane divided urban section with concrete pavement, 12-foot lanes, 10-foot outside paved shoulders on the west side and a 7-foot buffered bicycle lane on the east side. The median bifurcates to accommodate three 12-foot left turn lanes approaching the intersection with one 12-foot right turn lane along the outside in the northbound direction. Milling and resurfacing is proposed for the outside 22-feet of the existing southbound lanes. This area will be restriped to provide a frontage road with one 15-foot lane and a 7-foot buffered bicycle lane on the outside with a new raised curb and 10-foot sidewalk. The proposed improvements will require the acquisition of ROW varying from 0 to 160 feet along the east side only.

The proposed typical section for US 41 north of Causeway Boulevard consists of a 6-lane divided urban section with 12-foot lanes, 7-foot buffered bike lanes and 6-foot sidewalks. The northbound lanes will be asphalt and the southbound lanes will be concrete. There are two 12-foot left turn lanes and one 12-foot right turn lane shown in the southbound direction. The proposed improvements will require the acquisition of ROW varying from 30 to 45 feet along the west side and varying from 0 to 45 feet along the east side.

The proposed typical section for Causeway Boulevard from S. 45th Street to US 41 widens the existing concrete pavement to accommodate a 4-lane divided urban section with 11-foot travel lanes, 7-foot buffered bike lanes and 6-foot sidewalks along the outside. Approaching the US 41 intersection, there are two 11-foot left turn lanes and three 11-foot right turn lanes in the eastbound direction. The proposed improvements will require the acquisition of ROW varying from 0 to 44 feet along the north side only.

The proposed typical section for Causeway Boulevard from US 41 to the end project limit just west of the CSX railroad crossing consists of a westbound concrete and eastbound asphalt 4-lane divided urban section with 11-foot travel lanes, 7-foot buffered bike lanes and 6-foot sidewalks on the outside. Approaching the US 41 intersection, there are two 11-foot left turn lanes and one 11-foot right turn lane in the westbound direction. The proposed improvements will require the acquisition of ROW varying from 0 to 4 feet along the north side only.

1.4 REPORT PURPOSE

The purpose of this report is to provide a location hydraulics study for the project, in accordance with 23 CFR 650 Subpart A, Section 650.111. The report utilizes the National Flood Insurance Program maps to determine highway location encroachments. This report evaluates risks associated with the implementation of the project, impacts on natural and beneficial floodplain values, the discouragement of incompatible floodplain development, and measures to minimize floodplain impacts. Applicable floodplain management agencies were consulted to determine if the proposed project is consistent with existing floodplain management programs. All elevations referenced within the report are in the North American Vertical Datum of 1988 (NAVD 88) unless otherwise noted.

SECTION 2 DATA COLLECTION

2.1 EXISTING ROADWAY CONDITIONS

A dominant feature of the area is the CSX Railroad leading in and out of the Port of Tampa. A single railroad track currently crosses US 41 at grade approximately 1475 ft. south of the intersection and crosses Causeway Boulevard approximately 1400 ft. east of the intersection. These at-grade crossings create long delays to vehicular traffic on both US 41 and Causeway Blvd. A significant portion of this traffic is truck traffic traveling to and from the port.

The functional classification for both US 41 and Causeway Boulevard is Urban Principal Arterial -Other. Both facilities are on the State Highway System and US 41 is on the National Highway System. A portion of the project limits is designated a Strategic Intermodal System (SIS) connector along US 41 from south of the project limits to Causeway Boulevard and along Causeway Boulevard from US 41 to west of the project limits. Both facilities are considered evacuation routes. The posted speed limit is 50 miles per hour (mph) for US 41 and 45 mph for Causeway Boulevard. The context classification for both facilities is listed as C3C.

Existing land uses within the study area include commercial and vacant lots. Commercial businesses have access points to US 41 throughout the corridor. The existing topography is relatively flat within the study area with elevations averaging around 7 ft NAVD. Refer to **Figure 2-1** for a topographic map.

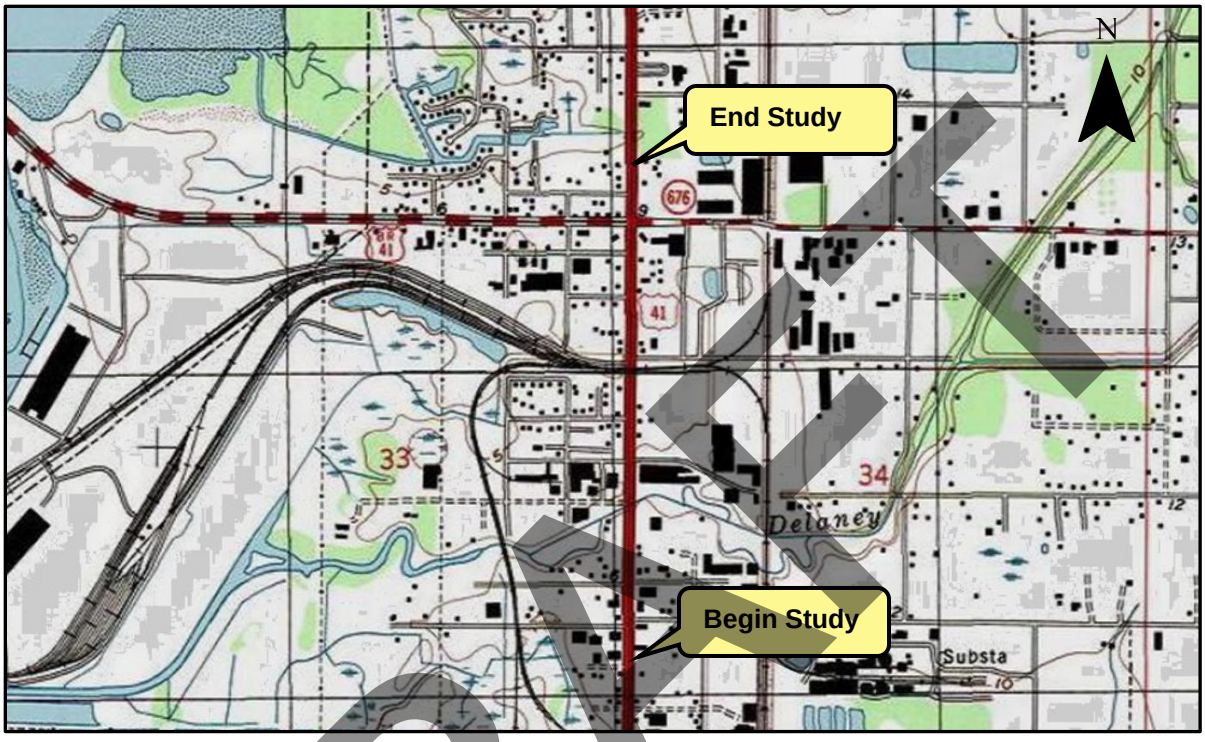


Figure 2-1: USGS Topographic Map

The proposed improvements include adding an overpass on US 41 at CSX railroad crossing south of Causeway Blvd and intersection improvements at US 41 and Causeway Blvd with the focus of improving the turning movements at the US 41/Causeway Blvd intersection. Off-site stormwater management facilities will be constructed to treat and attenuate the additional stormwater runoff from the proposed improvements.

2.2 FLOOD INSURANCE RATE MAPS (FIRMS)

The project is located within Federal Emergency Management Agency (FEMA) Insurance Rate Maps (FIRMs) 12057C0366J and 12057C0367J effective October 7, 2021 in Hillsborough County. FIRM Panel 12057C0366J covers the project area along Causeway Boulevard west of S 47th Street. FIRM Panel 120570367J covers the project limits along US 41 and on Causeway Boulevard east of 47th Street. US 41 crosses over the Delaney Creek within the project limits on FIRM Panel 12057C0367J. Based on the new effective maps, Delaney Creek is no longer listed as a FEMA Floodway within the project limits. The FEMA FIRMs are provided in **Appendix A**.

Based on the current effective maps, the entire project area is located within a FEMA Zone AE 100-year floodplain with a base flood elevation (BFE) which ranges between 12 and 13 feet. The FEMA BFE is based

on storm surge. The riverine 100-year flood stage is based on the Delaney Creek Watershed Model and ranges from 4 to 8 feet within the project limits. An isolated Zone A exists on the north side of Causeway Boulevard east of the CSX railroad tracks that appears to be outside of the study limits.

Flood Zones A and AE represent a 1% annual change of flood, which is commonly referred to as the 100-year flood. The receiving water body (Hillsborough Bay) is tidally influenced.

2.3 FLOODING HISTORY

There are no active flood investigations documented in the vicinity of the project but there were four past flood investigations.

Investigation #1003112009174 at 4141 Causeway Boulevard filed in 2006 reported flooding of private property several times per year. The property is 5.1 feet below the FEMA effective 100-year flood elevation and substantial development has occurred in the area since the FDOT system was designed in 1978. A blocked outfall pipe on Port Authority property was identified as the likely problem. No new complaints have been issued for this location.

Investigation #1005202009518 at 3630 South 50th Street filed in 2005 reported flooding of private property and a building from roadway runoff during larger storm events. The property is located in a low area below the 100-year floodplain with groundwater table estimated 0-1 feet below ground. Poorly maintained private swales were identified as a potential issue. Vegetation around an FDOT ditch bottom inlet was also identified and cleared. No new complaints have been issued for this location.

Investigation #1006222010167 at 2436 South 50th Street filed in 2009 reported flooding of a business. The complainant did not report a history of flooding and believed the problem could be the recent widening project on Causeway Boulevard. No new complaints have been issued for this location.

Investigation #1008292016754 identified standing water on 31st Avenue and 34th Avenue beside South 50th Street during a field review for an upcoming sidewalk project under FPID 439038-1. Inadequate drainage systems on the side streets were identified as the likely cause. No new complaints have been issued for these locations.

2.4 SOILS DATA AND SEASONAL HIGH GROUNDWATER TABLE DETERMINATION

The Natural Resources Conservation Service (NRCS) Web Soil Survey classifies seven soil types along the project limits, which are shown in **Figure 2-2** and listed in **Table 1**.

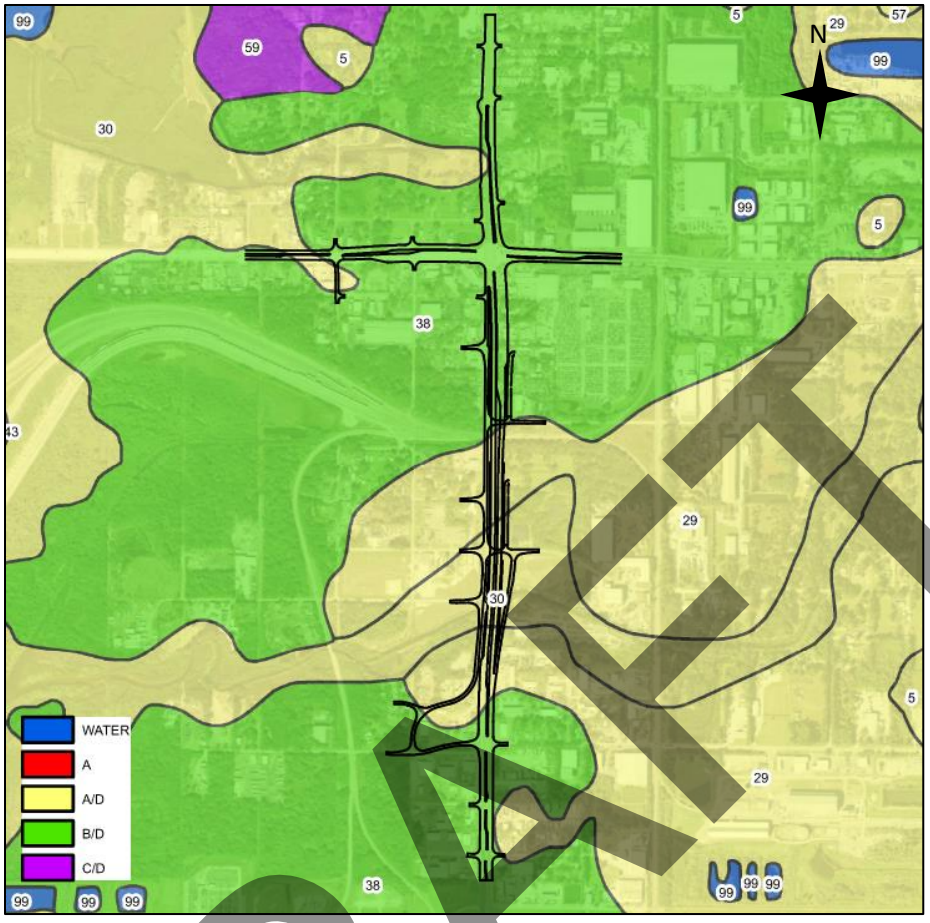


Figure 2-2: NCRS Soil Survey Information

Table 1: NRCS Soil Survey Information

Map Unit and Name		Drainage Class	Hydrologic Soil Group	Depth to Water Table (ft)
5	Basinger, Holopaw, and Samsula soils	Very poorly drained	A/D	+2.0-1.0
29	Myakka fine sand	Poorly drained	A/D	0.0-1.0
30	Myakka fine sand	Very poorly drained	A/D	0.0-1.0
38	Pinellas fine sand	Poorly drained	B/D	0.0-1.0
57	Winder fine sand	Poorly drained	C/D	0.0-1.0
59	Winder fine sand	Poorly drained	C/D	0.0-1.0
99	Water	-	-	-

Seasonal high groundwater table elevations were determined for the project based on geotechnical investigations and existing surface water information. All elevations are in NAVD88 datum unless otherwise stated.

Tierra, Inc. performed geotechnical soil borings to determine seasonal high groundwater table (SHGWT) elevations along the roadway alignment. A copy of the geotechnical report is provided in **Appendix D**. The seasonal high water table elevations range between 3.3 and 7.8 feet along the corridor.

SECTION 3 EXISTING DRAINAGE CONDITIONS

The project study area is located in the Tampa Bay Watershed within the Coastal Hillsborough Bay Tributary Planning Unit. The project is split between WBID 1605D (Delaney Creek Tidal) and WBID 1615 (Drainage to McKay Bay). Both WBIDs are verified as impaired for Enterococci. WBID 1605D is also impaired for lead, copper and iron. Refer to **Appendix A** for the WBID Map. Along US 41, the stormwater runoff is collected by curb and gutter and conveyed either to Delaney Creek or the unnamed creek located north and south of Causeway Boulevard respectively. Formal water quality is not currently provided along US 41. Causeway Boulevard from the begin project area to east of 47th Street sheet flows to the existing roadside ditches and outfalls directly to East Bay with no formal water quality treatment. Causeway Boulevard from east of 47th Street to the end of the project area is collected by curb and gutter and conveyed to existing FDOT SMFs (ERP 27063.000) located at the northwest and northeast corners of US 41 and Causeway Blvd. intersection.

The project traverses two subwatersheds within the Delaney Creek Watershed. The northern portion of the project is within the Palm River Coastal subwatershed and the southern portion of the project is within the Delaney Creek subwatershed. The Palm River Coastal subwatershed begins north of the project limits and drains southwest to an existing channel south of 24th Avenue and outfalls at McKay Bay. The southern boundary of the subwatershed is Causeway Boulevard. The Delaney Creek subwatershed begins at Causeway Boulevard and drains southwest to Delaney Creek and outfalls to East Bay. The southern boundary of the subwatershed is Santa Fe Road. Both subwatersheds ultimately outfall to Hillsborough Bay. Refer to **Figure 3-1** for a map of the existing watersheds.

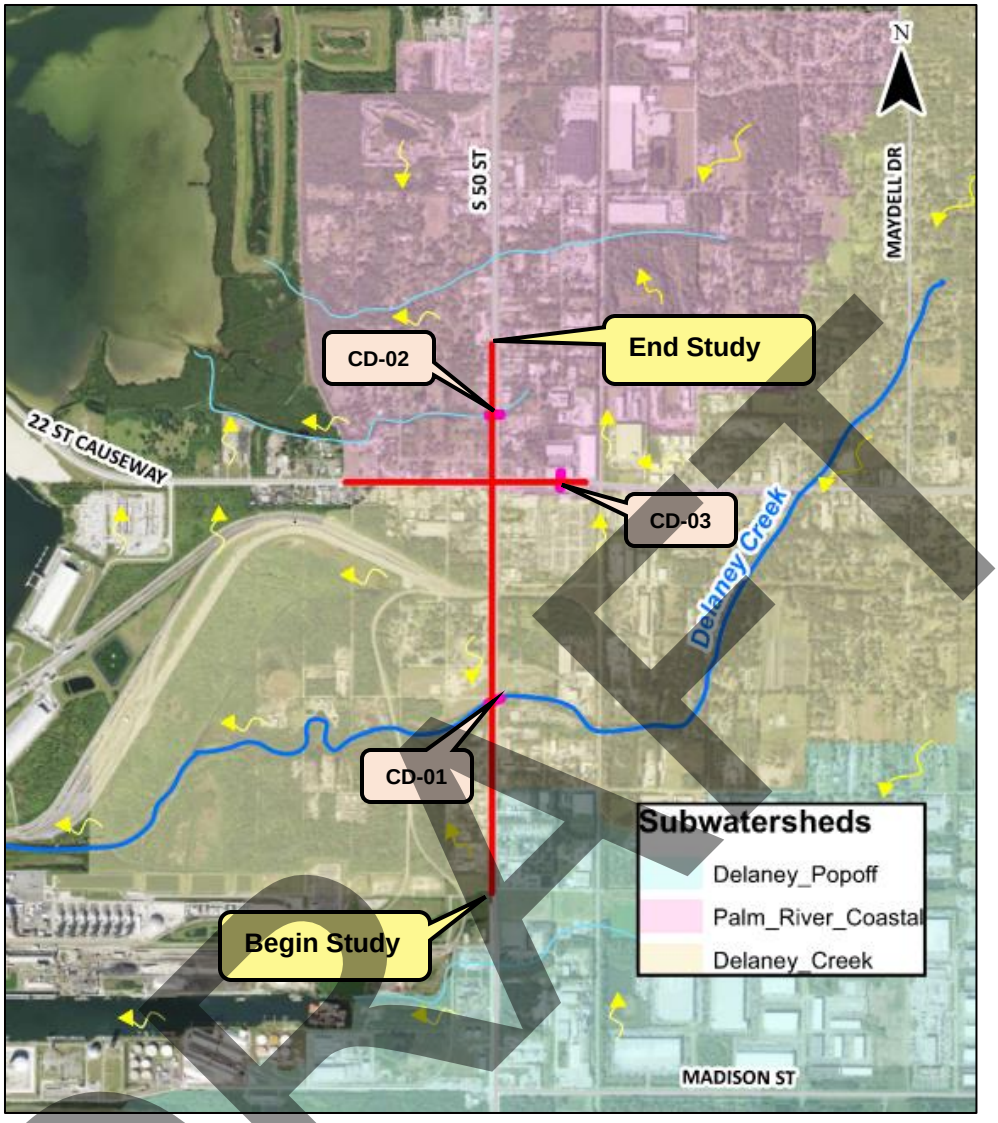


Figure 3-1 Watershed Map

3.1 EXISTING CROSS DRAINS

The Straight Line Diagram (SLD) for US 41 (SR 45/SR 599) and Causeway Blvd. (SR 676/SR 45), existing plans (FPID 439038-1-52-01), The Delaney /Archie Creek Watershed Masterplan, and field reconnaissance were used to identify existing cross drains within the corridor. Runoff crosses US 41 from the east to the west through two existing cross drains (CD-01 and CD-02) and from south to north along Causeway Blvd through one existing cross drain (CD-03). The existing cross drain locations are shown in **Table 2**. CD-02 was not identified in the SLD. It was within a section not inventoried due to ongoing construction. The locations of the existing cross drains are shown on the Map in **Figure 3-1**. The cross drain photos and review checklist are located in **Appendix E**.

Table 2: Summary of Existing Cross Drains

Cross Drain	Size	Length	Location		Road
			Milepost	Station	
CD-01	(3) 11' X 8' RCBC	120 ft	23.003	71+35	US 41
CD-02	(2) 42" RCP	103 ft	23.735	110+00	US 41
CD-03	24"X 38" RCP	151 ft	2.918	304+00	Causeway Blvd.

SECTION 4 FLOODPLAIN INVOLVEMENT

4.1 FLOODPLAINS

The preferred alternative will have transverse and longitudinal impacts to the existing floodplain. The longitudinal impacts will result from filling the floodplain areas associated with proposed roadway widening and improvements. The transverse impacts will result from the replacement and extension of the existing cross drains and bridge culvert. These impacts cannot be avoided as the entire project is within the floodplain. Coastal transects 76 and 78 are within the project limits and storm surge has a major impact on the project area.

4.2 FLOODWAYS

Delaney Creek is not designated as a floodway within the project limits on FEMA FIRM 12057C0367J. According to Hillsborough County Drainage Staff, a "no-rise" certification will not be required for the project.

4.3 RISK EVALUATION

There is no significant change in flood "Risk" associated with this project. The encroachments will not have a significant potential for interruption or termination of transportation facilities needed for emergency vehicles or used as an evacuation route. In addition, no significant adverse impacts on natural and beneficial floodplain values are anticipated and no significant impacts to highway users are expected. Therefore, the encroachments are considered minimal. Per the FDOT PD&E Manual Part 2, Chapter 13.2.2.5, the following items must be documented within this report:

A. General description of the project including location, length, existing and proposed typical sections, drainage basins, and cross drains.
Refer to Section 1 of this report for the project description and typical sections. Section 3 of this report discusses the drainage patterns and Section 4 discusses the existing and proposed cross drains.

B. Determination of whether the proposed action is in the base floodplain.
The entire project is located within the base floodplain. Refer to Section 4.1 of this report.

C. The history of flooding of the existing facilities and/or measures to minimize any impacts due to the proposed improvements.
The history of flooding within the project is discussed in Section 2.4 of this report. The proposed improvements will be designed in accordance with the latest version of the FDOT Drainage Manual.

D. Determination of whether the encroachment is longitudinal or transverse, and if it is a longitudinal encroachment, an evaluation and discussion of practical avoidance alternatives.
Refer to Section 4.1 of this report.

E. The practicability of avoidance alternatives and/or measures to minimize impacts.
The proposed floodplain impacts are unavoidable. The ponds that are to be constructed as part of this project will double as floodplain mitigation for the roadway improvements. The modeled improvements do not show any adverse effects to the roadway corridor or the surrounding areas.

F. Impact of the project on emergency services and evacuation.
This project will not have any effect on emergency services or evacuation. The flood stages are not changing in the proposed condition and the profiles along both US 41 and Causeway Boulevard are being raised where feasible.

G. Impacts of the project on the base flood, likelihood of flood risk, overtopping, location of overtopping, backwater.
The proposed project will not impact or change the items mentioned above.

H. Determination of the impact of the project on regulatory floodways, if any, and documentation of coordination with FEMA and local agencies to determine the requirements for the project to be developed consistent with the regulatory floodway.
The project is not located within a FEMA regulatory floodway. Refer to Section 4.2 of this report.

I. The impacts on natural and beneficial floodplain values, and measures to restore and preserve the natural and beneficial floodplain values impacted by the project.
There are no adverse impacts proposed to the natural and beneficial floodplain values. The majority of the floodplain is due to the tidal influence and storm surge.

J. Consistency of the project with the local floodplain development plan or the land use elements in the Local Government Comprehensive Plan (LGCP), and the potential of encouraging development within the base floodplain.
The proposed project is mostly comprised of operational improvements within an industrial corridor. There is minimal risk of encouraging additional development adjacent to the corridor within the base floodplain.

K. Measures to minimize floodplain impacts associated with the project, and measures to restore and preserve the natural and beneficial floodplain values impacted by the project.
Bridges and MSE walls were proposed throughout the corridor to minimize impacts to the floodplain. The existing intersection at Causeway Boulevard and US 41 will remain in place as will a significant amount of the existing pavement.

L. A map showing project location, and impacted floodplains. A FIRM Map should be used if available. If not, other maps (e.g., US Geological Survey (USGS), U.S. Army Corps of Engineers (USACE), Soil Conservation Service (SCS), Bureau of Land Management, U.S. Forest Service, or best available information from the WMDs) may be used. Copies of applicable maps should be included in the appendix.
*Refer to Section 1 and **Appendix A** of this report.*

M. Results of any risk assessments performed.
Refer to Section 4 of this report.

4.4 PROJECT CLASSIFICATION

The floodplain encompasses the entire project area. Based on preliminary modeling efforts, there are no rises to the flood stages associated with the preferred alternative. There will still be minimal impacts to Delaney Creek and the unnamed creek due to the replacement and extension of the existing cross drains. Minimal encroachments on a floodplain occur when there is floodplain involvement, but the impacts on human life, transportation facilities, and natural and beneficial floodplain values are not significant and can be resolved with minimal efforts. Normally, these minimal efforts to address the impacts will consist of applying the Department's drainage design standards and following the Water Management District's procedures to achieve results that will not increase or significantly change the flood elevations and/or limits.

> *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. Thus, there will be no significant or 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.*

APPENDICES

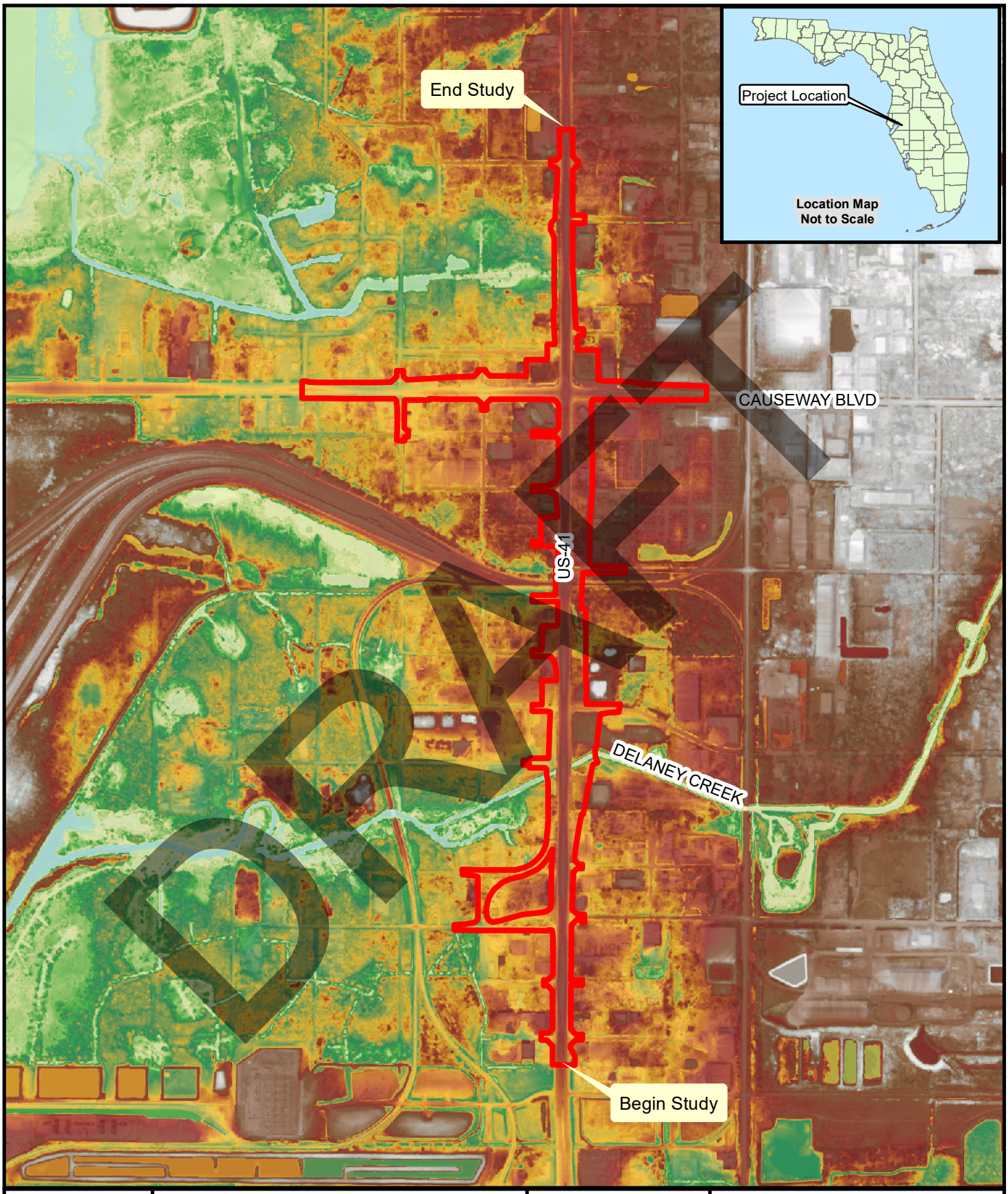
Appendix A – Exhibits

Appendix B – Geotechnical Investigation and Soil Analysis

Appendix C – Cross Drain Pictures and Review Checklist

APPENDIX A

Exhibits



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

Project Limits

High : 21.2331

Low : -1.89339

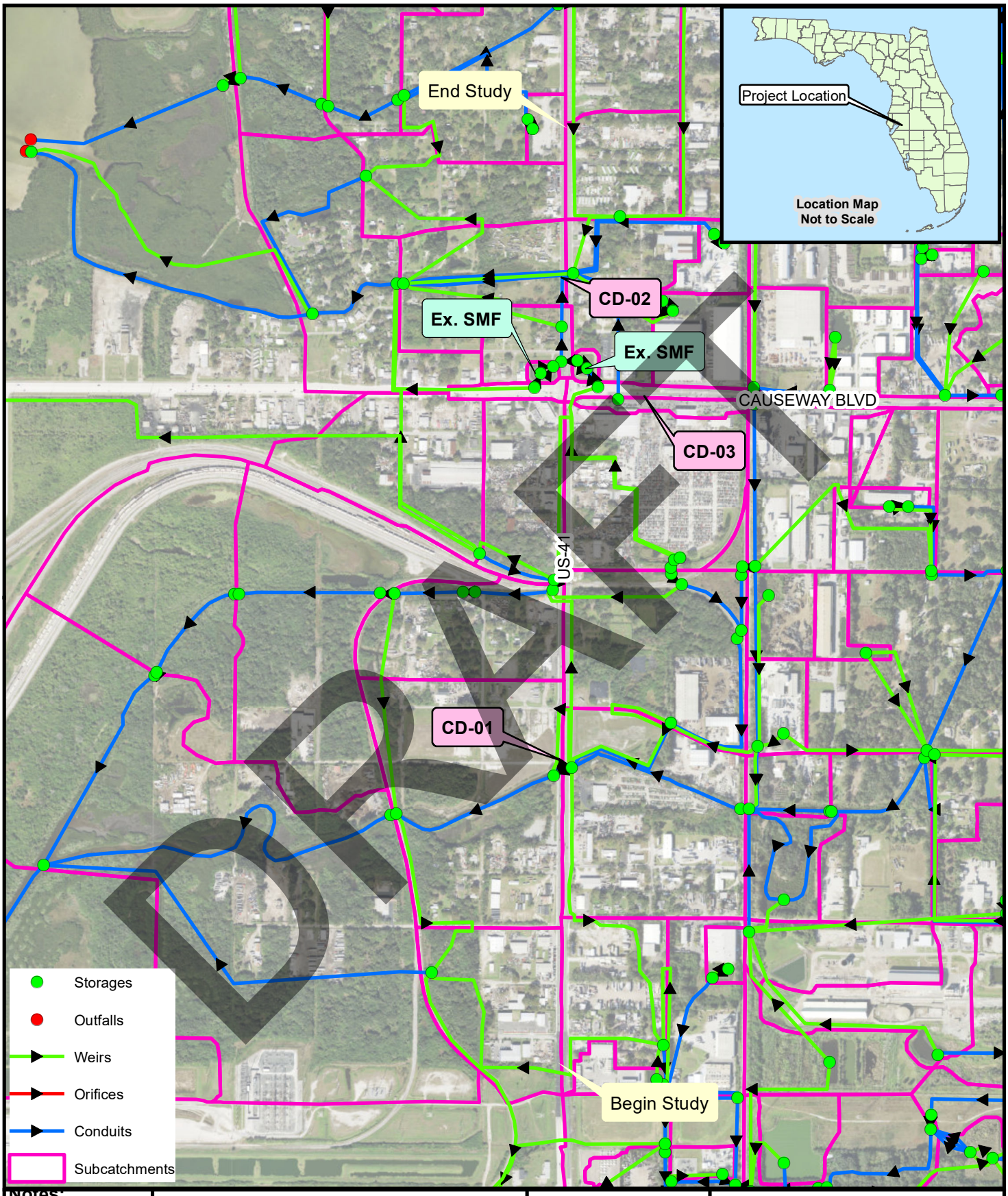
0 1,000

1" = 1000'

RK&K

Figure 1
Topographic Map
US41 at CSX
440749-1
Hillsborough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\TopoMap.mxd



Notes:

A- Project: 18033

B- Data From - Imagery, Esri
Dalaney Creek Model

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

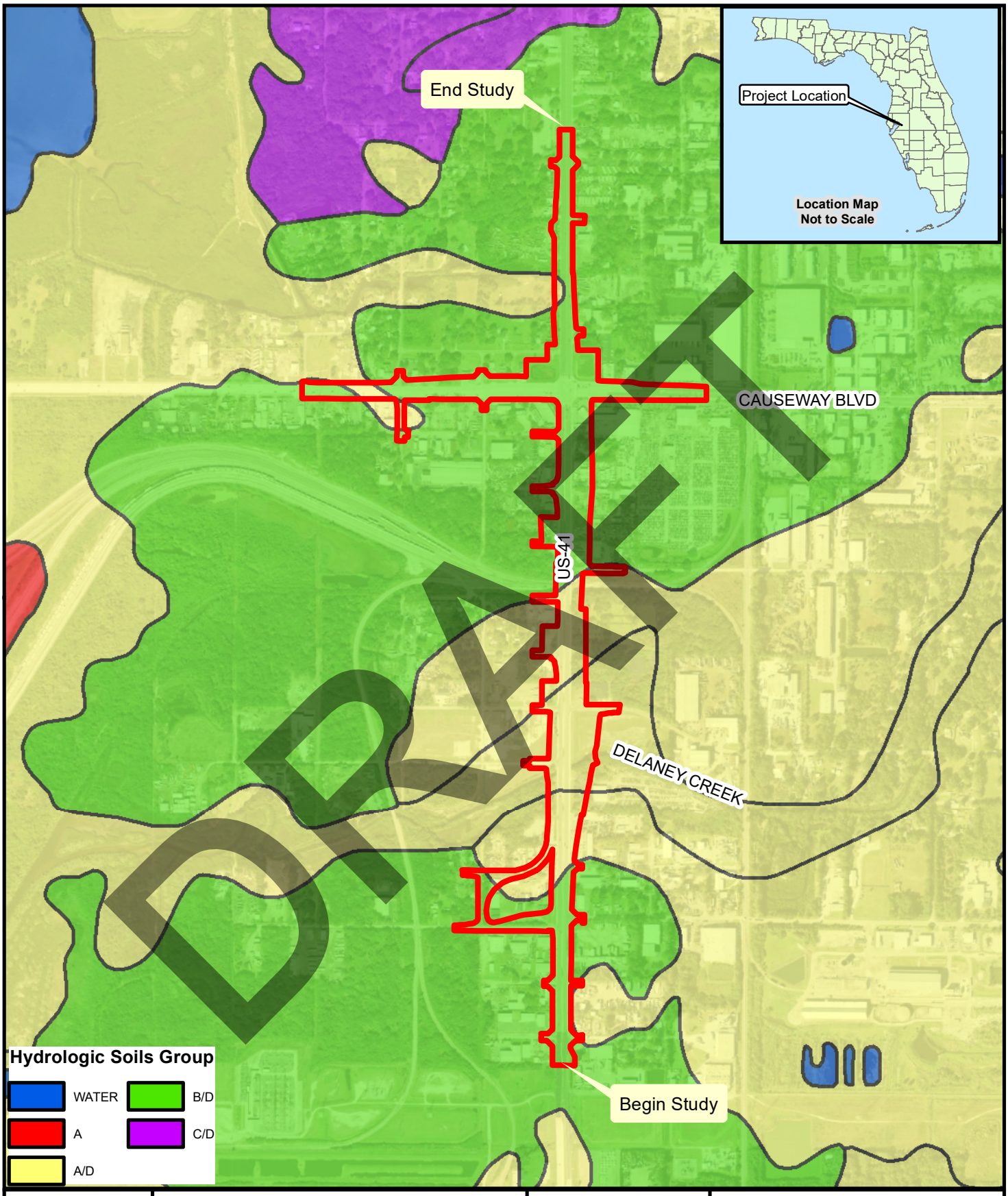
Explanation of Features

0 1,000
1" = 1000'

RK&K

Figure 2
Existing Drainage Map
US 41 at CSX
440749-1
Hillsborough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\ExistingDrainageMap2.mxd



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

Project Limits

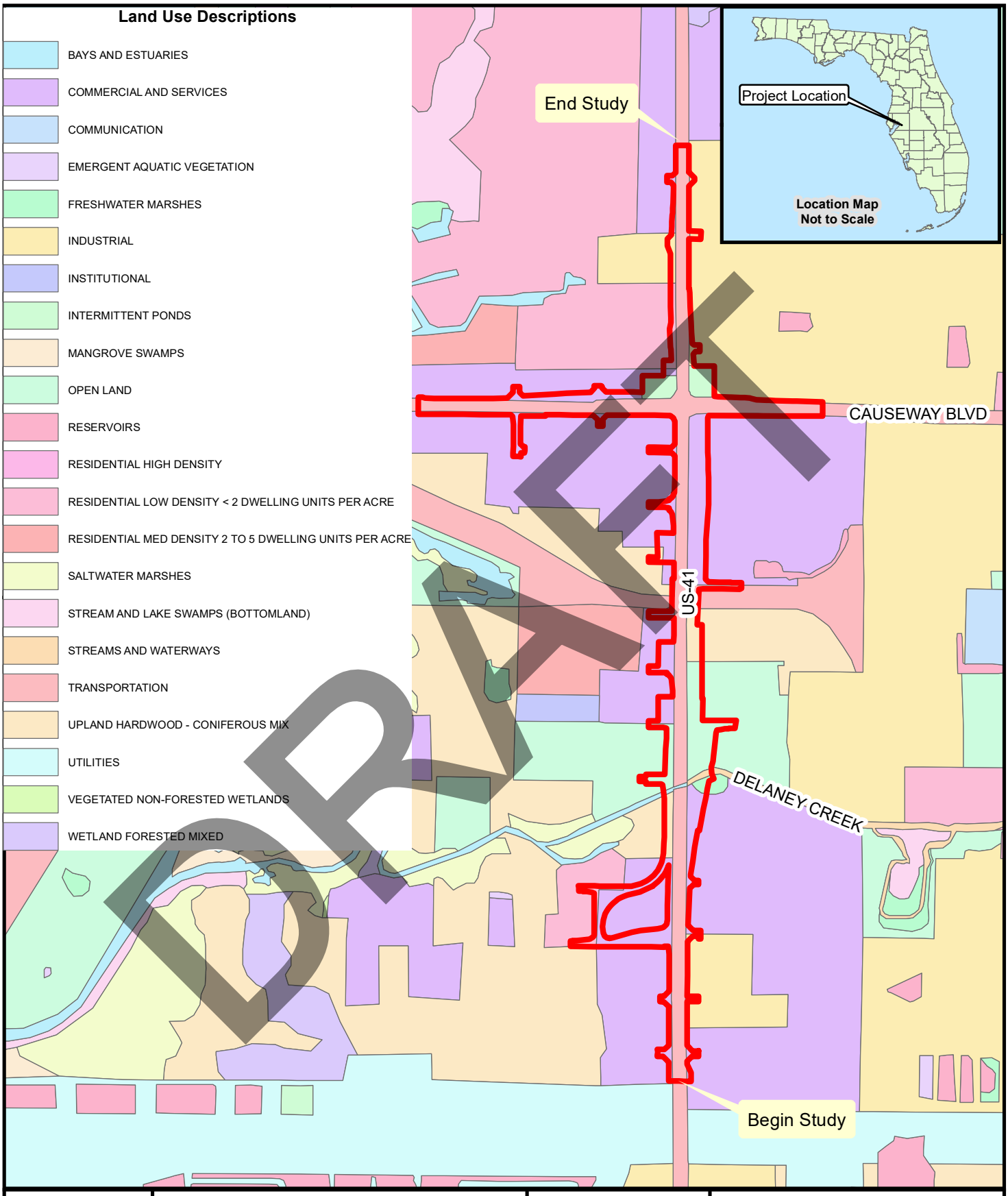
0 1,000

1" = 1000'

RK&K

Figure 3
Soils Map
US41 at CSX
440749-1
Hillsborough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\SoilsMap.mxd



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

Project Limits

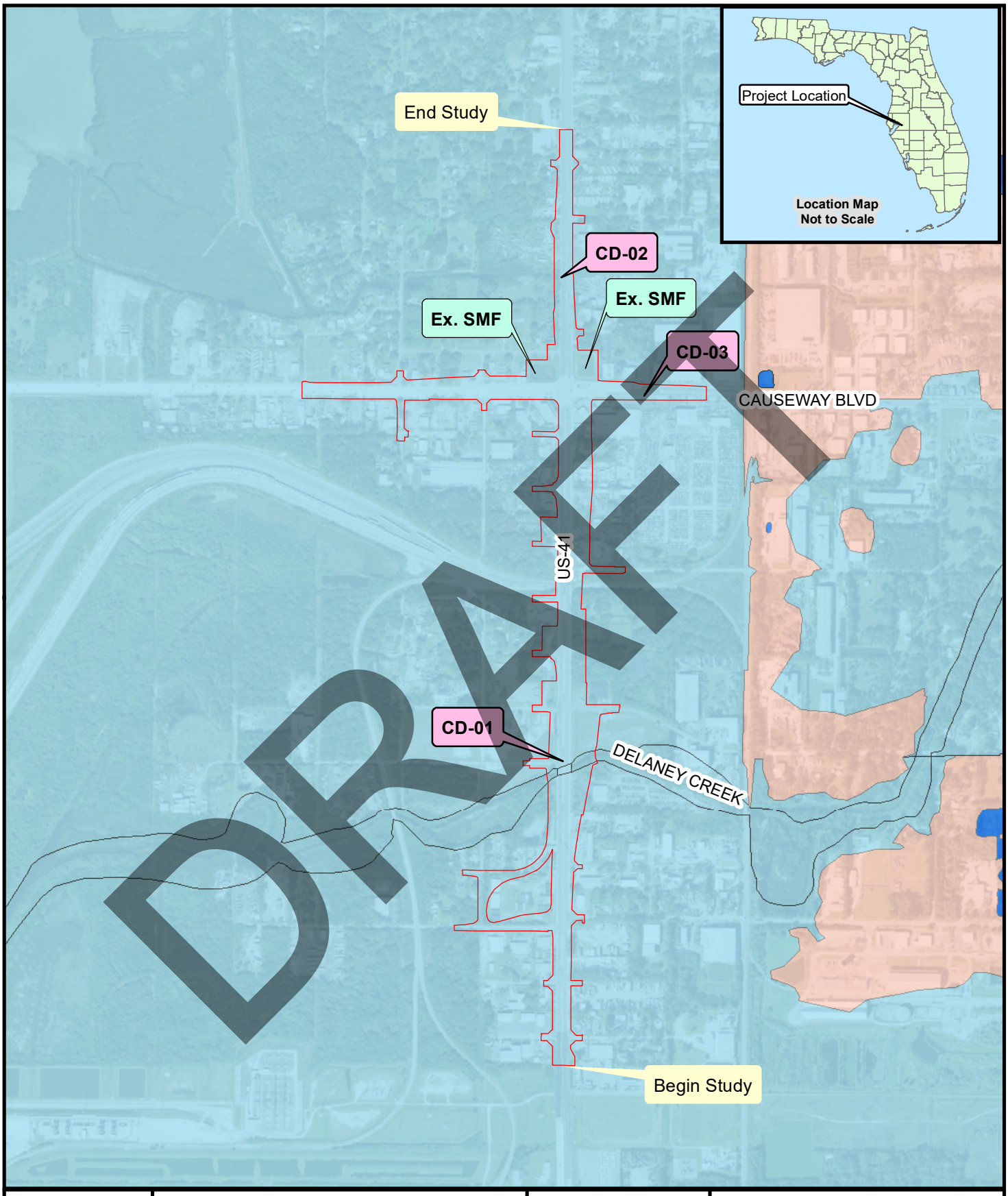
0 1,000

1" = 1000'

RK&K

Figure 4
Land Use Map
US41 at CSX
440749-1
Hillsborough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\LandUseMap.mxd



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

Flood Zone

A

AE

X

Project Limits

0 1,000

1" = 1000'

RK&K

Figure 5
FEMA Map
US41 at CSX
440749-1
Hillsborough County, FL

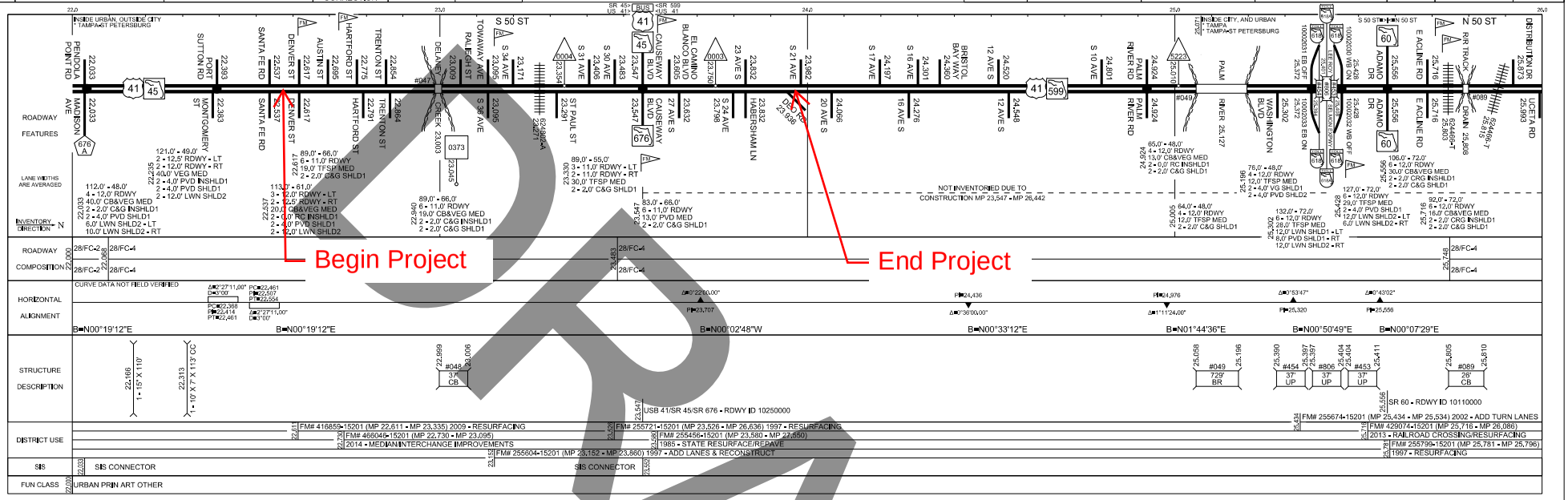
Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\FEMAMap.mxd

	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	03/13/2015	03/25/2015	25.716	25.716		08/16/2017
BY	FTE / JW-JR	FTE / KA	CONST FM#			FTE/KA
			CORRECTION			

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:
12	US 41	SR 45/SR 599	HILLSBOROUGH	07	10 060 000	4 OF 7



REALIGNMENT

(MP 26.565 TO MP 26.878)
SEE ROADWAY ID: 10060001
MP 0.000 TO MP 0.367

DELETED

(MP 26.565 TO MP 26.878)

NET ROADWAY ID LENGTH: 27.291

END MP: 27.604

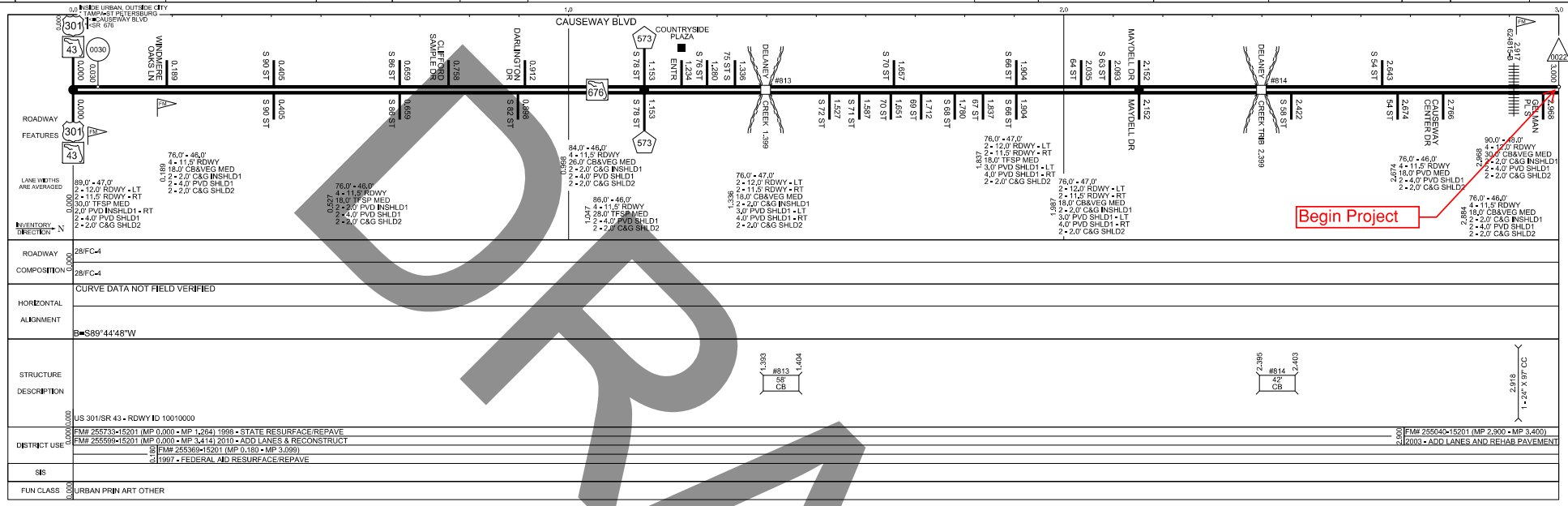
Version: 1.4.2.24 03/23/2015

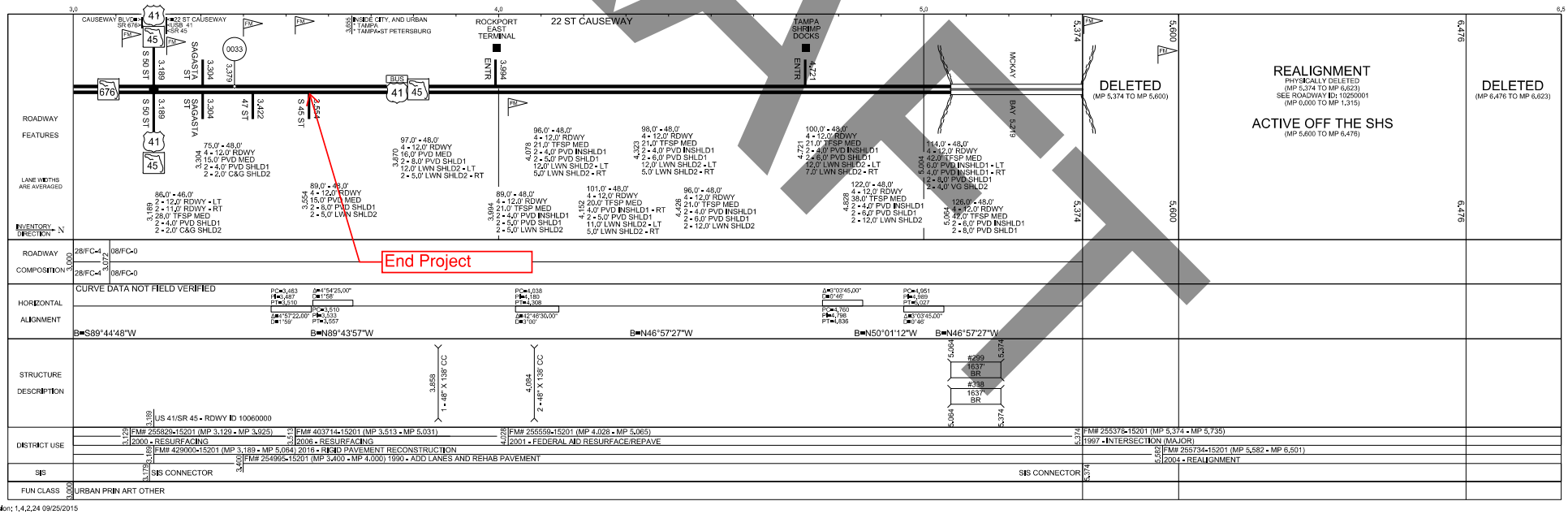
	5 YR INV.	SLD REV	BMP	EMP	INV	SLD REV
DATE	9/03/2015	9/29/2015	0.000	9.639	01/20/2017	03/30/2017
BY	FTE / KA-JR	FTE / KA	CONST ACCEPT & RDWY TRANSFER		FTE/JR-JM	FTE/KA

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:
12	USB 41	SR 676/SR 45	HILLSBOROUGH	07	10 250 000	1 OF 5





Version: 1,4,2,24 09/25/2015

STATE OF FLORIDA

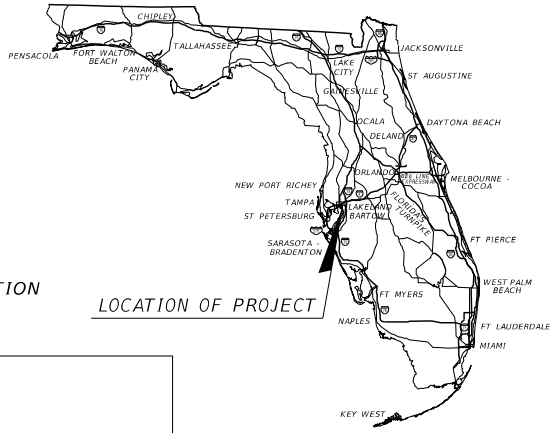
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 440749-1-52-01

HILLSBOROUGH COUNTY (1006000)

US 41/SR 45/SR 599 FROM SOUTH OF SR 676/CAUSEWAY BOULEVARD INTERSECTION
TO NORTH OF THE SR 676/CAUSEWAY BOULEVARD INTERSECTION



LOCATION OF PROJECT

PROJECT LOCATION URL:	https://tinyurl.com/2bushcz6
PROJECT LIMITS:	BEGIN MP 22.578 TO END MP 23.925
EXCEPTIONS:	NONE
BRIDGE LIMITS:	BR#1 MP 22.999 TO MP 23.015 BR#2 MP 23.076 TO MP 23.104 BR#3 MP 23.228 TO MP 23.306
RAILROAD CROSSING:	CSX CROSSING: 624802A - MP 23.271

FDOT DISTRICT DESIGN ENGINEER	FDOT DISTRICT TRAFFIC OPERATIONS ENGINEER
CONCURRING WITH: TYPICAL SECTION ELEMENTS TARGET SPEED DESIGN & POSTED SPEEDS	CONCURRING WITH: TARGET SPEED DESIGN & POSTED SPEEDS
FDOT DISTRICT INTERMODAL SYSTEMS DEVELOPMENT MANAGER	FDOT DISTRICT STRUCTURES DESIGN ENGINEER
CONCURRING WITH: CONTEXT CLASSIFICATION TARGET SPEED	CONCURRING WITH: TYPICAL SECTION ELEMENTS
FHWA TRANSPORTATION ENGINEER	LOCAL TRANSPORTATION ENGINEER
CONCURRING WITH: TYPICAL SECTION ELEMENTS	CONCURRING WITH: TYPICAL SECTION ELEMENTS
NOT USED	NOT USED
CONCURRING WITH:	CONCURRING WITH:

APPROVED BY:

BRANAN A. ANDERSON LICENSE No 78438 STATE OF FLORIDA PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

Branan R Anderson
2022.10.14 13:02:40 -04'00'

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.

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

INDEX OF SHEETS

SHEET NO. 1

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

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

CRITERIA

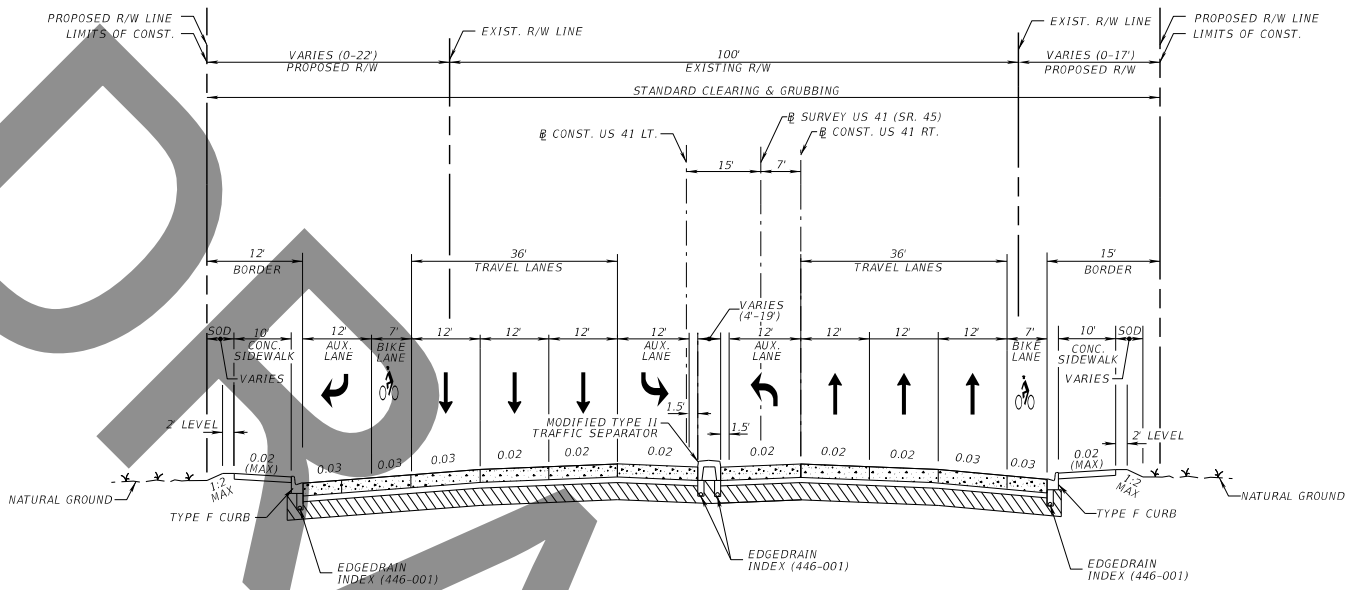
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1) CURB ON HIGH SPEED FACILITY
2) BORDER WIDTH
3) MEDIAN WIDTH

TYPICAL SECTION No. 1



US 41 (SR 45)
MP 22.578 TO MP 22.927 ℄ CONST. US 41 LT.
MP 22.578 TO MP 22.961 ℄ CONST. US 41 RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	2

10/14/2022 12:32:55 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

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

CRITERIA

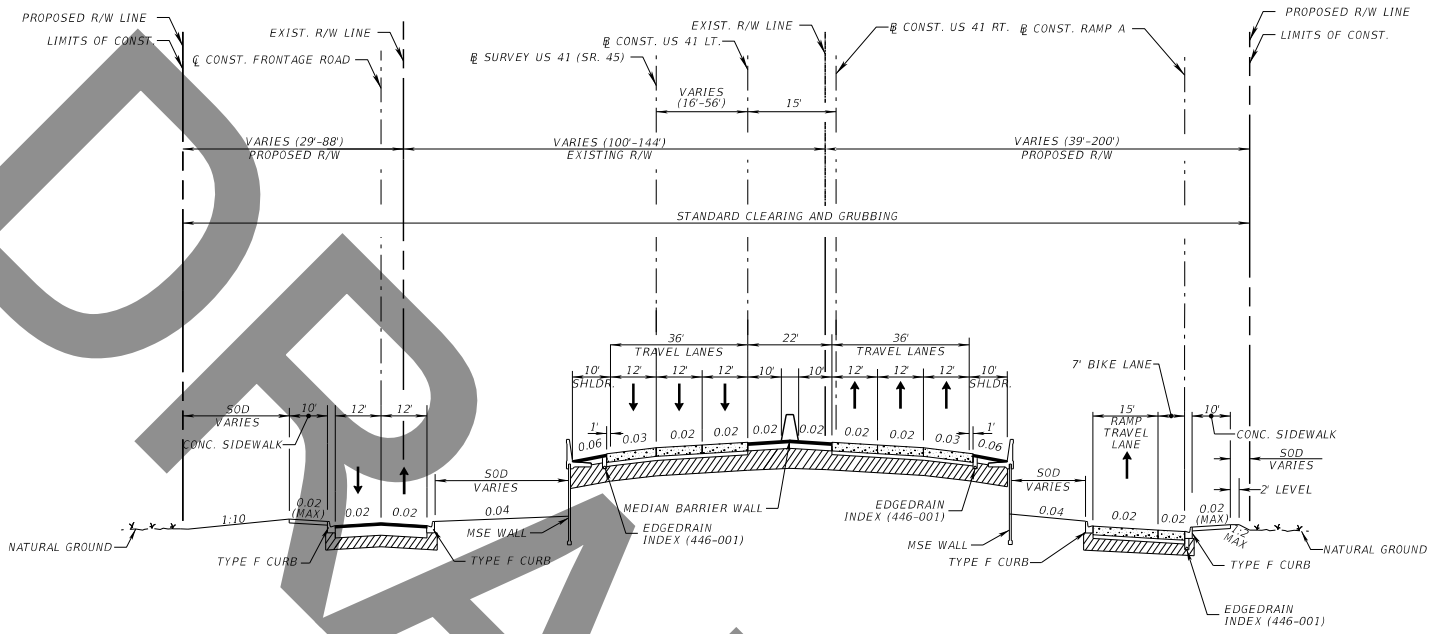
- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1) SHOULDER CROSS SLOPE

TYPICAL SECTION No. 2



US 41 (SR 45)
MP 22.927 TO MP 22.999 ℄ CONST. US 41 LT.
MP 23.015 TO MP 23.076 ℄ CONST. US 41 LT.
MP 23.104 TO MP 23.228 ℄ CONST. US 41 LT.
MP 22.961 TO MP 23.001 ℄ CONST. US 41 RT.
MP 23.017 TO MP 23.076 ℄ CONST. US 41 RT.
MP 23.104 TO MP 23.228 ℄ CONST. US 41 RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

FRONTAGE ROAD
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

RAMP
DESIGN SPEED = 40 MPH
POSTED SPEED = 40 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	3

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

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

CRITERIA

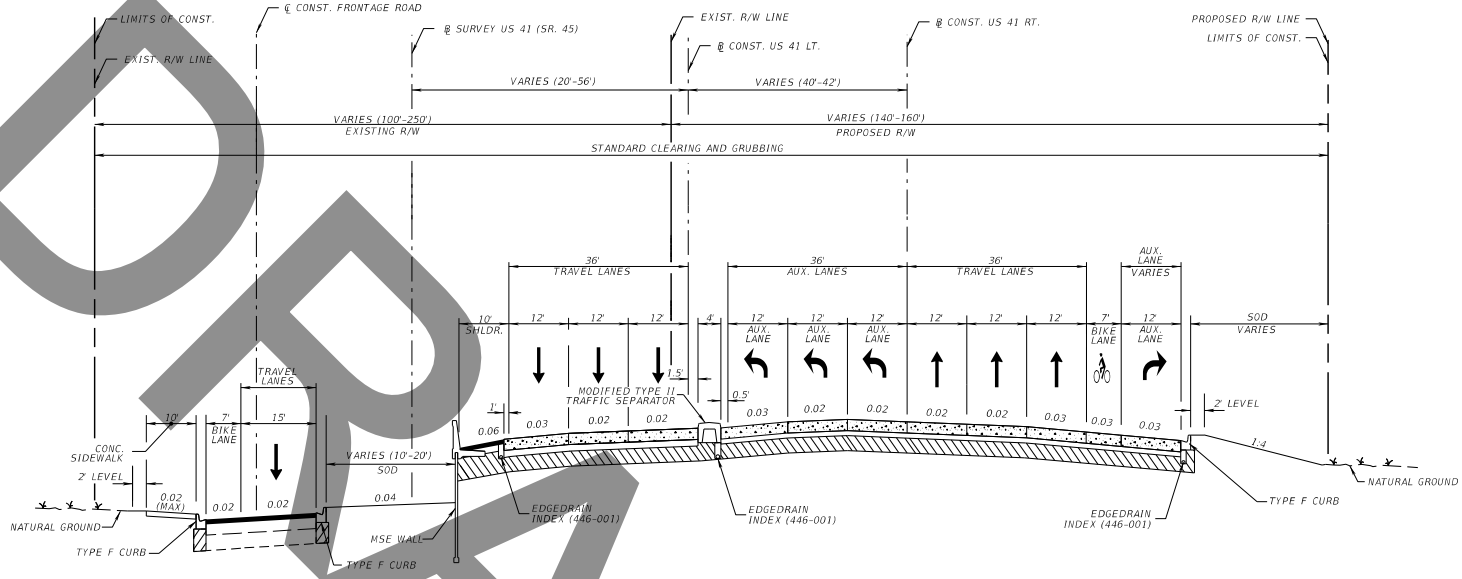
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1) CURB ON HIGH SPEED FACILITY

TYPICAL SECTION No. 3



US 41 (SR 45)
MP 23.306 TO MP 23.555 ℄ CONST. US 41 LT.
MP 23.306 TO MP 23.555 ℄ CONST. US 41 RT.

FRONTAGE RD.
MP 0.194 TO MP 0.375 ℄ CONST. FRONTAGE RD.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

FRONTAGE ROAD
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	4

10/14/2022 12:33:28 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

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

CRITERIA

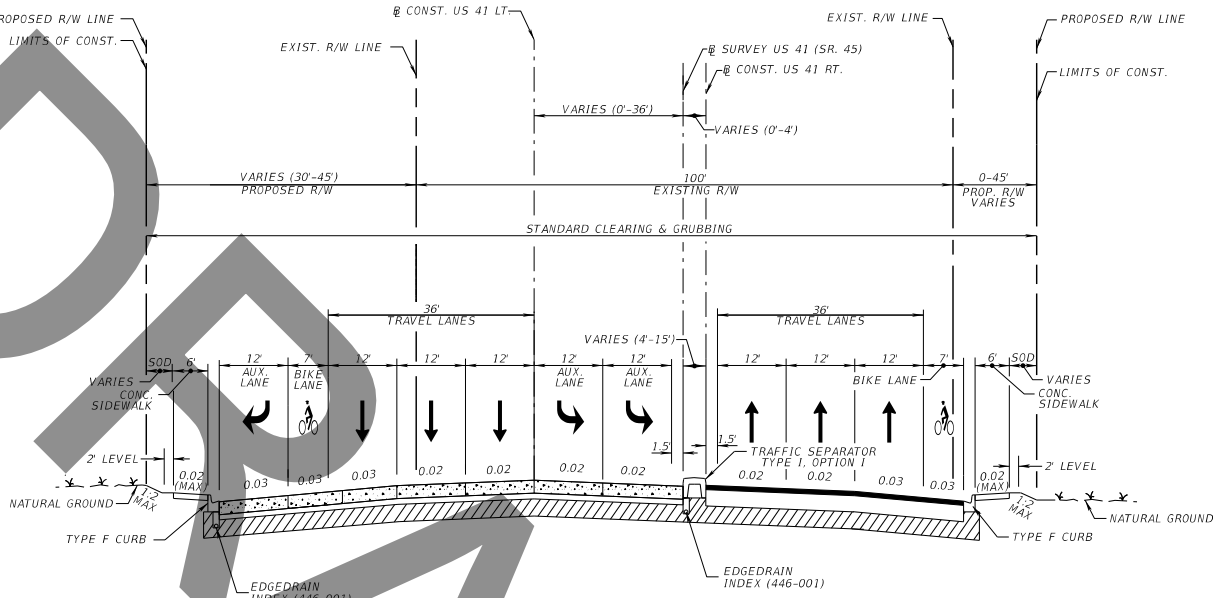
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1) CURB ON HIGH SPEED FACILITY

TYPICAL SECTION No. 4



US 41 (SR 45)
MP 23.555 TO MP 23.925 ℄ CONST. US 41 LT.
MP 23.555 TO MP 23.925 ℄ CONST. US 41 RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	5

10/14/2022 12:33:40 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

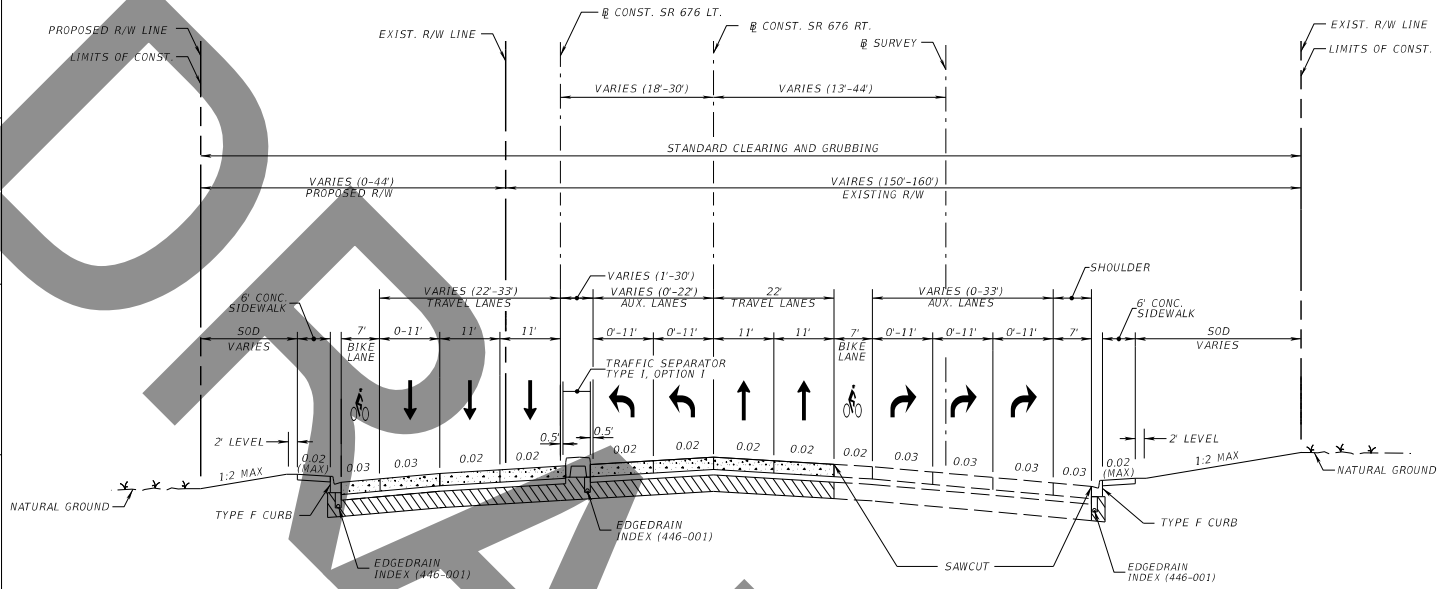
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

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

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 5



SR 676 (CAUSEWAY BLVD.)
MP 3.554 TO MP 3.176 ℄ CONST. CAUSEWAY LT.
MP 3.554 TO MP 3.175 ℄ CONST. CAUSEWAY RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 28,000
ESTIMATED OPENING YEAR = 2026 AADT = 42,600
ESTIMATED DESIGN YEAR = 2046 AADT = 65,900
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 304

SR 676 / CAUSEWAY BLVD.
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	6

10/14/2022 12:33:53 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

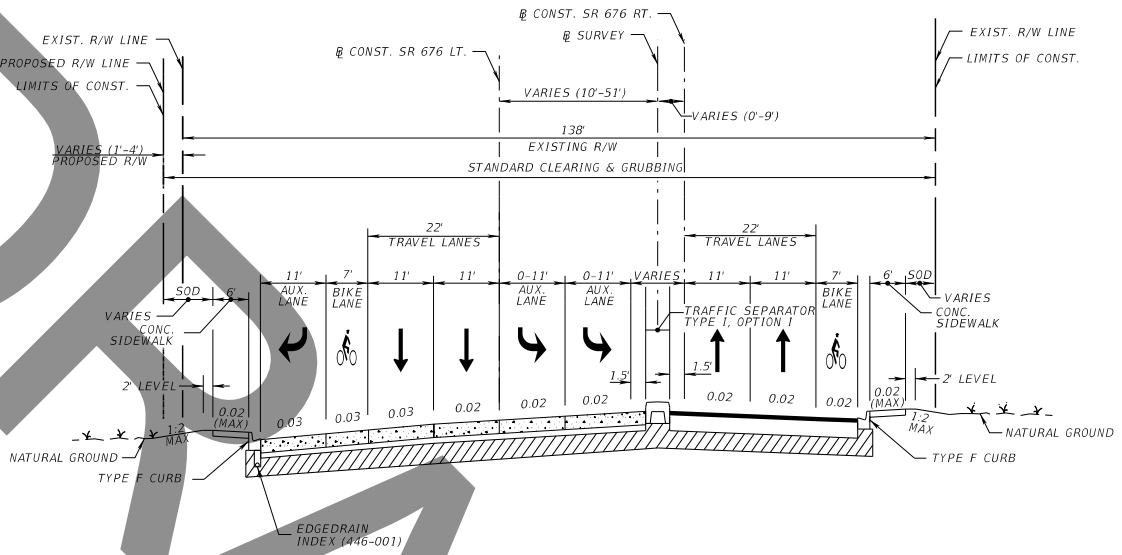
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

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

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 6



SR 676 (CAUSEWAY BLVD.)
MP 3.176 TO MP 2.971 ℄ CONST. CAUSEWAY LT.
MP 3.175 TO MP 2.971 ℄ CONST. CAUSEWAY RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 28,000
ESTIMATED OPENING YEAR = 2026 AADT = 42,600
ESTIMATED DESIGN YEAR = 2046 AADT = 65,900
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 304

SR 676 / CAUSEWAY BLVD.
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	7

10/14/2022 12:34:07 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

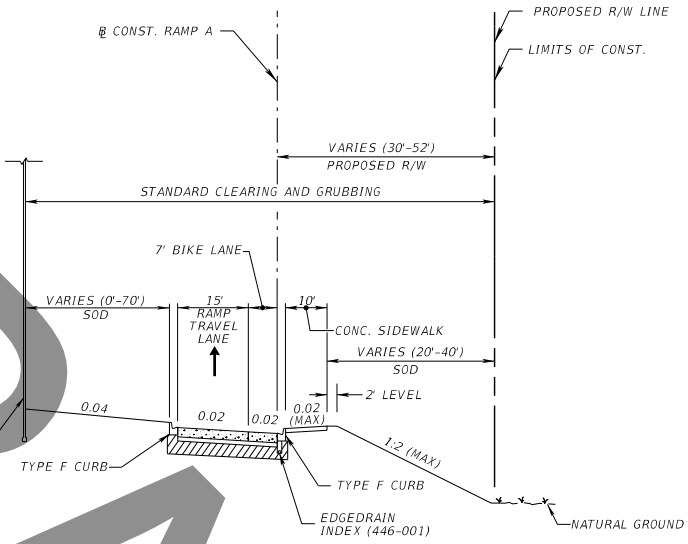
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
(X) 7 - BOTH MEDIAN TYPES

CRITERIA

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

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 7



RAMP A - US 41 TO 36TH AVE S.
MP 0.000 TO MP 0.228 ℄ CONST. RAMP A

NOT TO SCALE

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

RAMP A
DESIGN SPEED = 40 MPH
POSTED SPEED = 40 MPH

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	8

10/14/2022 12:34:21 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

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

CRITERIA

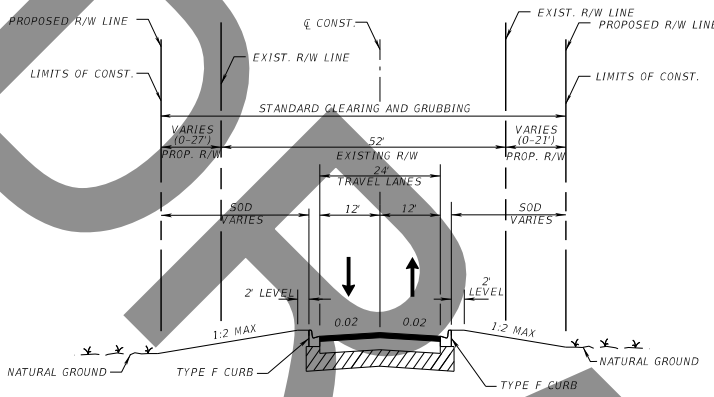
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1) BIKE LANE WIDTH

TYPICAL SECTION No. 8

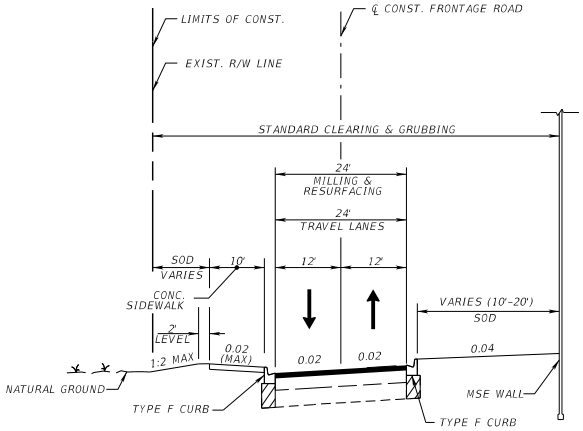


HARTFORD ST.
MP 0.000 TO MP 0.189 ℄ CONST. HARTFORD ST.

TOWAWAY AVE. / 36TH AVE.
MP 0.000 TO MP 0.122 ℄ CONST. 36TH ST.

ST PAUL ST.
MP 0.000 TO MP 0.09 ℄ CONST. ST PAUL ST.

FRONTAGE RD.
MP 0.000 TO MP 0.194 ℄ CONST. FRONTAGE RD.



FRONTAGE RD.
MP 0.375 TO MP 0.758 ℄ CONST. FRONTAGE RD.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

HARTFORD ST.
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

TOWAWAY AVE. / 36TH ST.
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

ST. PAUL ST.
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

FRONTAGE RD.
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	9

10/14/2022 12:34:33 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

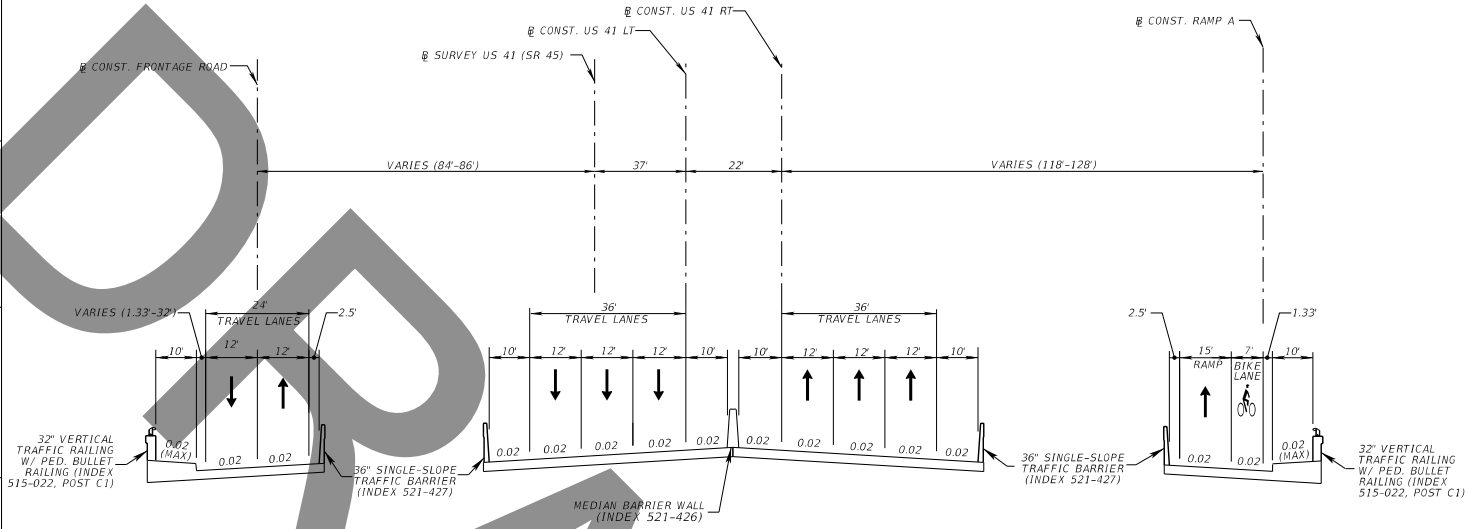
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
(X) 7 - BOTH MEDIAN TYPES

CRITERIA

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

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 9



US 41 (SR 45) OVER DELANEY CREEK
MP 22.999 TO MP 23.015 ℄ CONST. US 41 LT.
MP 23.001 TO MP 23.017 ℄ CONST. US 41 RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	10

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

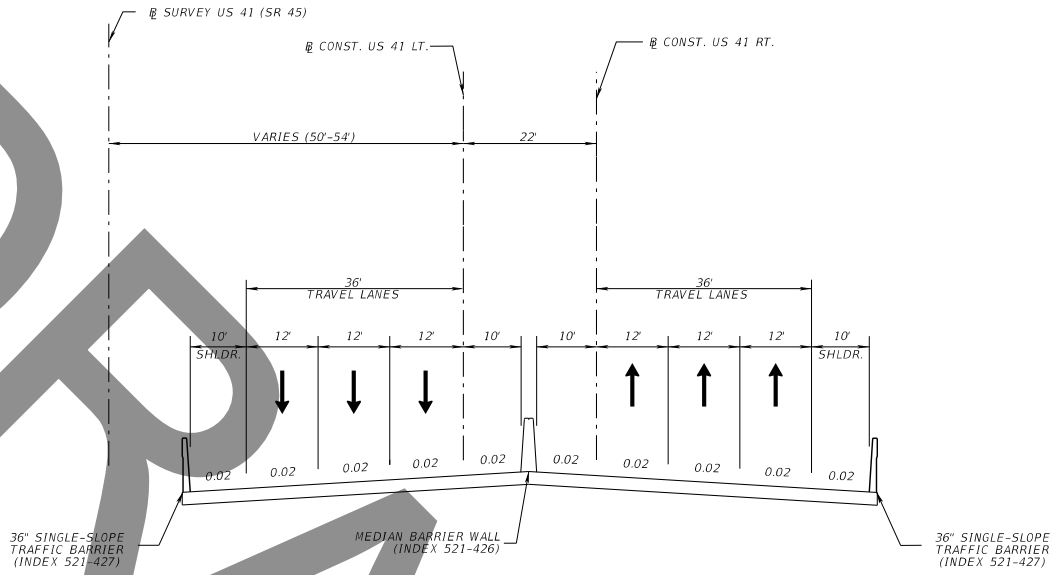
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- (X) 7 - BOTH MEDIAN TYPES

CRITERIA

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

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 10



US 41 (SR 45) OVER 36TH AVE. S.
MP 23.076 TO MP 23.104 ℄ CONST. US 41 LT.
MP 23.076 TO MP 23.104 ℄ CONST. US 41 RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	11

10/14/2022 12:35:01 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

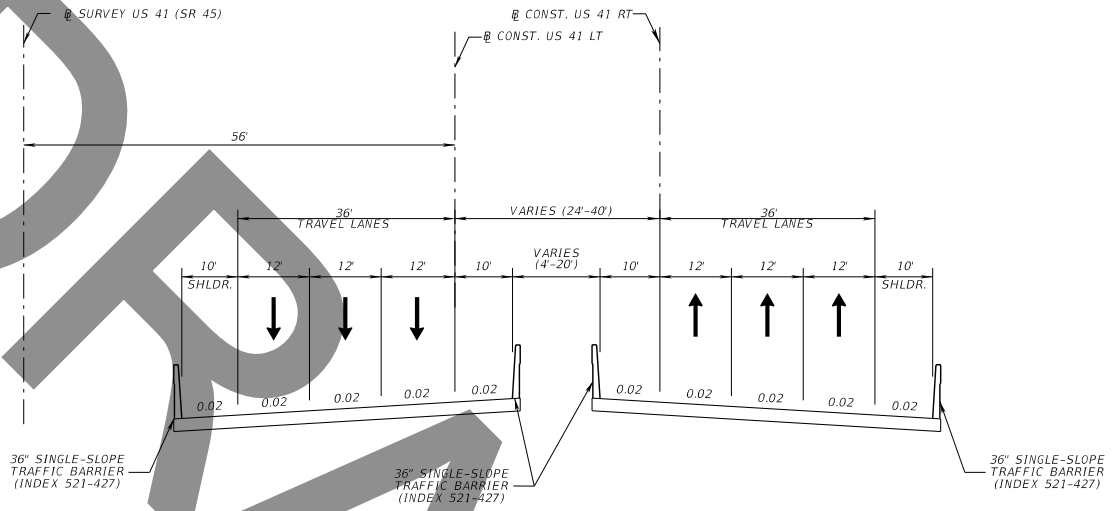
( )	1 - FREEWAY
( )	2 - RESTRICTIVE w/Service Roads
( )	3 - RESTRICTIVE w/660 ft. Connection Spacing
( )	4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( )	5 - RESTRICTIVE w/440 ft. Connection Spacing
( )	6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
(X)	7 - BOTH MEDIAN TYPES

CRITERIA

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

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 11



US 41 (SR 45) OVER CSX
MP 23.228 TO MP 23.306 ℄ CONST. US 41 LT.
MP 23.228 TO MP 23.306 ℄ CONST. US 41 RT.

TRAFFIC DATA

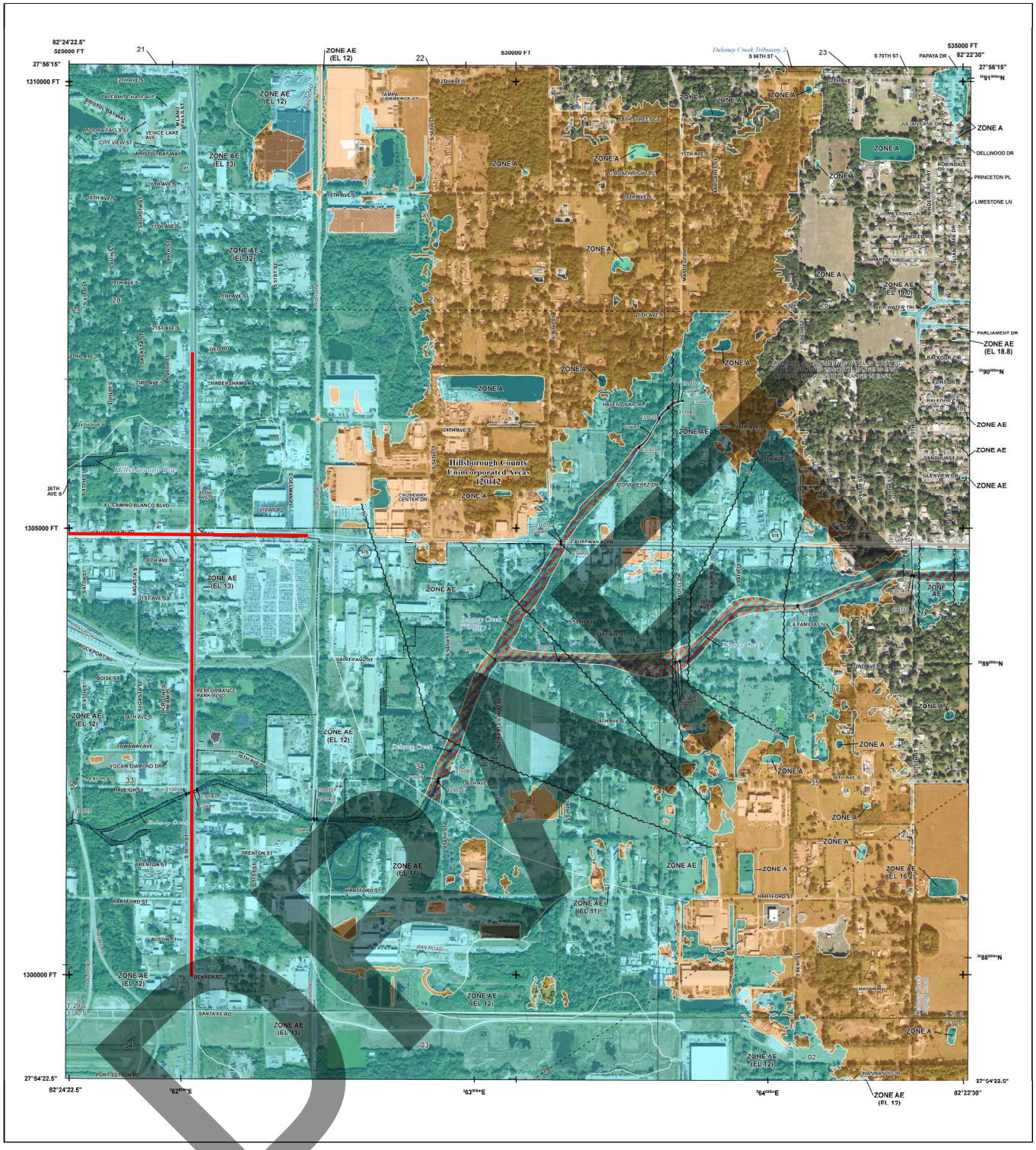
CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	12

10/14/2022 12:35:11 PM



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

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

OTHER AREAS OF FLOOD HAZARD

- 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

- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall
- 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 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 (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.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 2018; 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.

SCALE

Map Projection:
State Plane Transverse Mercator, Florida West Zone 0902; North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

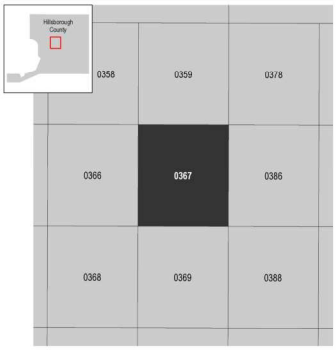
N

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 feet

0 125 250 500 meters

PANEL LOCATOR



FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
and Incorporated Areas

PANEL **367** OF **801**

FEMA

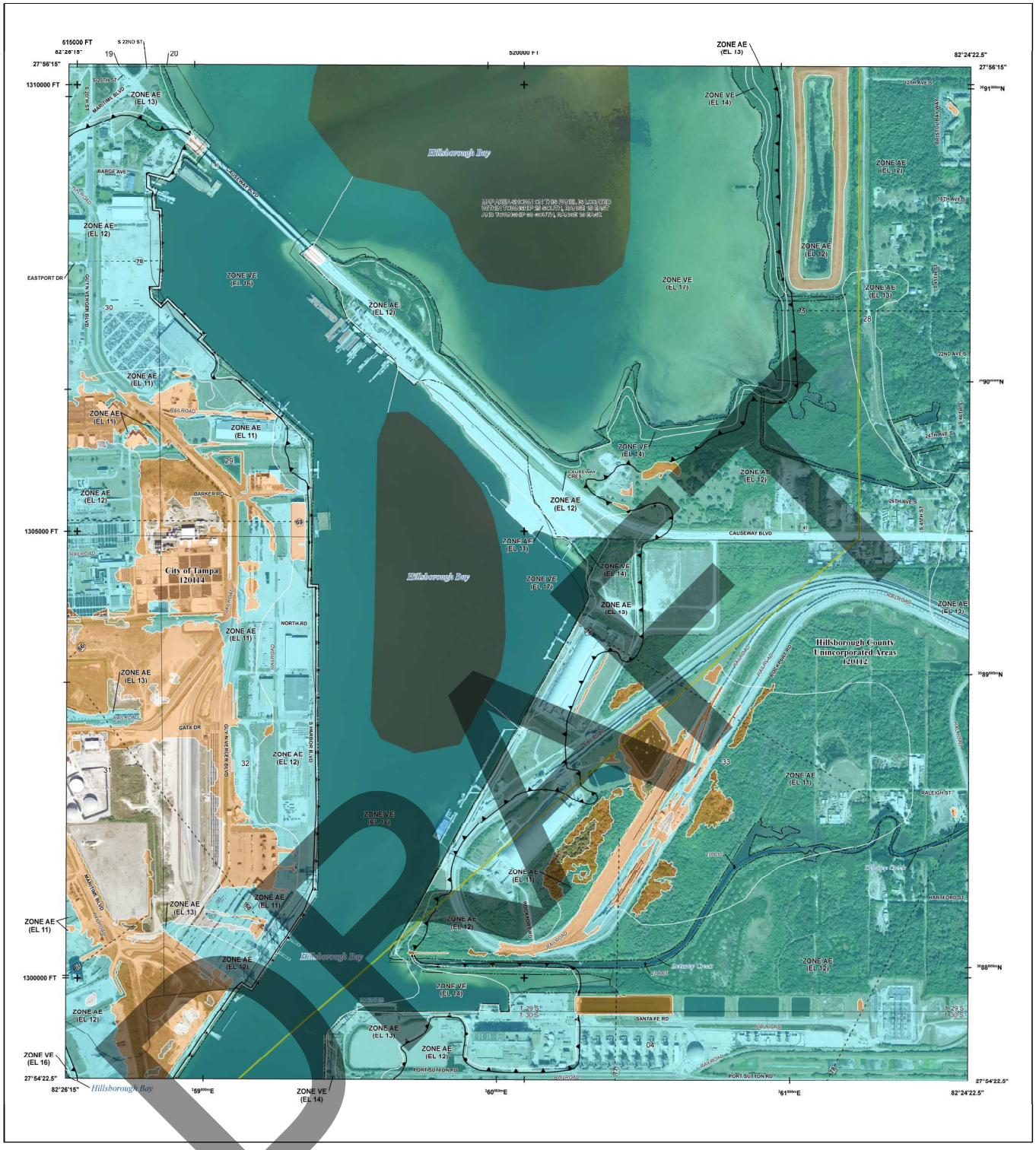
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0367	J

VERSION NUMBER
2.4.3.5

MAP NUMBER
12057C0367J

MAP REVISED
OCTOBER 7, 2021



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

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

OTHER AREAS OF FLOOD HAZARD
- 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
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
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GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall
- 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 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 (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.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.

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

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Base map information shown on this FIRM was provided by Hillsborough County, dated 2008 and 2018; 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 (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between Zone VE and the LiMWA (or between the shoreline and the LiMWA 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 (LiMWA)

SCALE

N

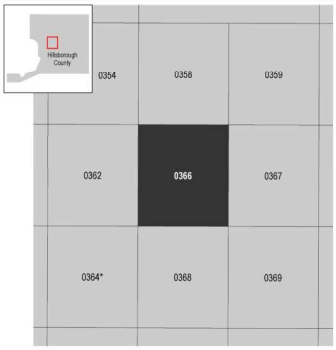
Map Projection: State Plane Transverse Mercator, Florida West Zone 0902; North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 feet

0 125 250 500 meters

PANEL LOCATOR



*PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
and Incorporated Areas

PANEL 366 OF 801

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0366	J

VERSION NUMBER
2.4.3.5

MAP NUMBER
12057C0366J

MAP REVISED
OCTOBER 7, 2021

APPENDIX B

Geotechnical Investigation and Soil Analysis

February 18, 2021

Rummel Klepper & Kahl
14055 Riveredge Drive, Suite 301
Tampa, Florida 33637

Attn: Mr. Erik Fleming, P.E.

RE: Seasonal High Groundwater Table Estimates
US 41/SR 45/SR 599 from South of the SR 676/Causeway Boulevard Intersection to North of the SR 676/Causeway Boulevard Intersection
Hillsborough County, Florida
FPID Nos.: 440749-1-22-01 and 440749-1-32-01
Tierra Project No.: 6511-18-025

Mr. Fleming:

Tierra, Inc. has estimated Seasonal High Groundwater Tables (SHGWTs) along the project roadway alignment and preliminary pond alternative sites associated with the above referenced project. The seasonal high groundwater level estimates are presented as an attachment to this letter.

Review of Available Data

As part of our study, Tierra reviewed published soils information obtained from the "Soil Survey of Hillsborough County, Florida" published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) and topographic information obtained from the Tampa, Florida Quadrangle Map published by the United States Geological Survey (USGS).

Seasonal High Groundwater Estimates

SHGWT estimates were completed at select locations along the roadway alignments typically on alternating sides of the existing roadway and at intervals of approximately 200 to 400 feet. SHGWT borings were also completed within the preliminary pond alternatives. The SHGWT estimates were based on soil stratigraphy, measured groundwater levels from the borings as well as the Hillsborough County, Florida USDA Soil Survey information. A **Summary of Seasonal High Groundwater Table Estimates** is presented as an attachment with this letter.

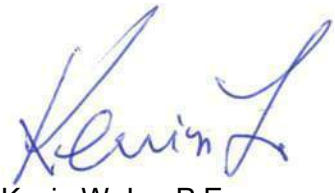
Tierra, Inc.
7351 Temple Terrace Highway • Tampa, Florida 33637
(813) 989-1354 • Fax (813) 989-1355
Florida Certificate No. 6486

Tierra, Inc. appreciates the opportunity to be of service to Rummel Klepper & Kahl on this project. If you have any questions or comments regarding this information, please contact our office at your earliest convenience.

Sincerely,
TIERRA, INC.

Juan M. Navarrete II, E.I.
Geotechnical Engineer Intern

Joseph R. Antinori, P.E.
Geotechnical Engineer
Florida License No. 73176



Kevin W. Lo, P.E.
Chief Geotechnical Engineer
Florida License No. 56959

Attachments:
Summary of Seasonal High Groundwater Table Estimates

Summary of Seasonal High Groundwater Table Estimates
US 41/SR 45/SR 599 from South of the SR 676/Causeway Boulevard Intersection to North of the SR 676/Causeway Boulevard Intersection
Hillsborough County, Florida
FPID Nos.: 440749-1-22-01 and 440749-1-32-01
Tierra Project No. 6511-18-025

Boring Name	Boring Location[1] (C/L Const)		Boring Location[1] State Plane Coordinates		Ground Elevation[1] (ft., NAVD88)	Boring Depth (feet)	Measured Groundwater Table			USDA Soil Survey		Estimated SHGWT[4]	
	Sation	Offset	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	SHGWT Depth[3] (ft.)	Depth (ft.)	Elevation (ft., NAVD88)
US 41													
SH - 59R	59 + 93	102 RT	1300904	526470	5.0	3.5	10/20/20	1.5	3.5	38	0.5-1.5	0.8	4.2
SH - 60L2	59 + 94	87 LT	1300907	526280	5.8	5.0	02/02/21	2.9	2.9	38	0.5-1.5	1.5	4.3
SH - 62R2	62 + 11	126 RT	1301122	526494	6.6	5.0	02/02/21	3.3	3.3	38	0.5-1.5	2.0	4.6
SH - 63L	63 + 34	135 LT	1301246	526234	5.8	5.0	10/22/21	3.0	2.8	29	0.5-1.5	1.5	4.3
SH - 66L2	68 + 15	68 LT	1301728	526304	5.6	5.0	02/02/21	3.6	2.0	29	0.5-1.5	1.8	3.8
SH - 68R	68 + 47	68 RT	1301759	526439	6.5	5.0	10/20/20	5.0	1.5	29	0.5-1.5	2.8	3.7
SH - 70L	70 + 49	83 LT	1301962	526290	5.3	5.0	10/22/20	GNE	≤ 0.3	30	0.0-0.5	2.0	3.3
SH - 71R	71 + 63	193 RT	1302074	526567	5.4	5.0	02/02/21	3.2	2.2	30	0.0-0.5	2.0	3.4
SH - 74R	74 + 01	66 RT	1302312	526441	7.6	7.0	10/21/20	6.0	1.6	30	0.0-0.5	4.0	3.6
SH - 75L	74 + 97	52 LT	1302409	526323	6.4	5.0	10/22/20	4.0	2.4	30	0.0-0.5	2.5	3.9
SH - 77L	77 + 27	83 LT	1302639	526294	6.3	5.0	10/22/20	4.5	1.8	29/30	0.5-1.5/0.0-0.5	2.2	4.1
SH - 77R	77 + 62	75 RT	1302674	526452	7.2	6.5	02/02/21	5.4	1.8	30	0.0-0.5	3.0	4.2
SH - 79R1	78 + 99	54 RT	1302811	526432	7.1	5.0	10/21/20	3.5	3.6	29	0.5-1.5	2.5	4.6
SH - 79R2	80 + 08	201 RT	1302919	526579	6.2	5.0	10/21/20	3.5	2.7	29	0.5-1.5	1.5	4.7
SH - 80L	80 + 48	78 LT	1302961	526300	6.3	5.0	10/22/20	3.0	3.3	29	0.5-1.5	1.8	4.5
SH - 81R	81 + 18	53 RT	1303030	526432	6.8	5.0	10/21/20	3.5	3.3	29	0.5-1.5	2.0	4.8
SH - 85R1	84 + 52	59 RT	1303364	526439	7.3	4.5	10/21/20	4.0	3.3	29	0.5-1.5	2.3	5.0
SH - 85L	84 + 89	63 LT	1303402	526317	6.5	6.0	02/02/21	4.9	1.6	29/38	0.5-1.5	2.0	4.5
SH - 85R2	85 + 13	202 RT	1303424	526583	5.3	3.0	10/22/20	2.5	2.8	29	0.5-1.5	0.5	4.8

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	Sation	Offset	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	SHGWT Depth[3] (ft.)	Depth (ft.)	Elevation (ft., NAVD88)
US 41													
SH - 86L	86 + 16	55 LT	1303529	526327	6.8	5.0	10/22/20	4.0	2.8	38	0.5-1.5	2.0	4.8
SH - 86R	86 + 43	227 RT	1303554	526608	7.3	5.0	10/22/20	3.5	3.8	29	0.5-1.5	2.3	5.0
SH - 90R	90 + 59	71 RT	1303971	526455	7.2	4.0	10/22/20	3.0	4.2	38	0.5-1.5	2.3	4.9
SH - 92L	92 + 47	91 LT	1304160	526294	7.3	4.5	10/28/20	4.5	2.8	38	0.5-1.5	2.5	4.8
SH - 92R1	92 + 64	62 RT	1304176	526447	7.2	4.5	10/22/20	3.0	4.2	38	0.5-1.5	2.3	4.9
SH - 95R	94 + 96	74 RT	1304408	526460	7.0	4.0	10/22/20	3.0	4.0	38	0.5-1.5	2.0	5.0
SH - 96L	96 + 22	58 LT	1304535	526328	6.7	4.0	02/02/21	3.3	3.4	38	0.5-1.5	1.7	5.0
SH - 98R	99 + 02	221 RT	1304813	526609	7.6	5.0	02/02/21	4.8	2.8	38	0.5-1.5	2.5	5.1
SH - 103L	103 + 65	63 LT	1305179	526328	5.6	5.0	11/03/20	4.0	1.6	38	0.5-1.5	1.3	4.3
SH - 104R	104 + 47	61 RT	1305260	526452	6.3	5.0	10/22/20	4.0	2.3	38	0.5-1.5	2.0	4.3
SH - 106L2	106 + 19	68 LT	1305433	526324	6.9	5.0	02/02/21	4.0	2.9	38	0.5-1.5	2.5	4.4
SH - 107R	107 + 71	45 RT	1305584	526438	7.2	5.0	11/02/20	5.0	2.2	38	0.5-1.5	2.7	4.5
SH - 110R	110 + 20	46 RT	1305833	526440	6.5	5.0	11/02/20	4.0	2.5	38	0.5-1.5	2.0	4.5
SH - 110L	110 + 35	59 LT	1305849	526335	6.2	3.5	11/02/20	GNE	≤ 2.7	38	0.5-1.5	1.8	4.4
SH - 114L	114 + 13	44 LT	1306227	526350	7.1	4.0	11/02/20	GNE	≤ 3.1	38	0.5-1.5	2.0	5.1
SH - 119L	118 + 82	83 LT	1306696	526311	8.8	6.5	11/02/20	6.0	2.8	38	0.5-1.5	3.7	5.1

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	Sation	Offset	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	SHGWT Depth[3] (ft.)	Depth (ft.)	Elevation (ft., NAVD88)
Causeway Boulevard													
SH - 258R	257 + 91	30 RT	1304901	522180	6.4	5.0	11/25/20	4.5	1.9	30	0.0-0.5	2.5	3.9
SH - 265L	266 + 13	102 LT	1305029	523002	4.5	5.0	11/25/20	2.5	2.0	30	0.0-0.5	1.0	3.5
SH - 266R	266 + 65	37 RT	1304890	523054	3.8	5.0	11/25/20	1.8	2.0	30	0.0-0.5	0.3	3.5
SH - 270L	269 + 99	102 LT	1305027	523388	5.0	5.0	11/25/20	2.0	3.0	30	0.0-0.5	1.5	3.5
SH - 275L	275 + 43	94 LT	1305016	523933	4.8	3.5	11/25/20	2.0	2.8	38	0.5-1.5	1.0	3.8
SH - 276R	276 + 42	46 RT	1304876	524031	4.8	4.5	12/07/20	1.5	3.3	38	0.5-1.5	1.0	3.8
SH - 282L	282 + 46	95 LT	1305015	524635	5.3	5.0	11/03/20	3.5	1.8	30	0.0-0.5	1.5	3.8
SH - 283R	283 + 22	47 RT	1304873	524711	5.2	5.0	12/07/20	2.0	3.2	38	0.5-1.5	1.5	3.7
SH - 285L	285 + 33	55 LT	1304974	524922	5.0	4.0	11/03/20	2.0	3.0	30	0.0-0.5	1.2	3.8
SH - 287R2	287 + 58	60 RT	1304858	525146	5.0	7.5	02/02/21	2.5	2.5	30/38	0.0-0.5/0.5-1.5	1.2	3.8
SH - 290L	290 + 77	72 LT	1304988	525466	5.3	3.5	11/03/20	3.5	1.8	38	0.5-1.5	1.5	3.8
SH - 291R	291 + 34	72 RT	1304844	525523	5.6	5.0	02/02/21	3.0	2.6	38	0.5-1.5	1.5	4.1
SH - 295L	295 + 48	77 LT	1304991	525937	6.6	4.5	11/03/20	3.5	3.1	38	0.5-1.5	2.0	4.6
SH - 297R	295 + 93	61 RT	1304853	525982	6.4	4.0	12/07/20	3.0	3.4	38	0.5-1.5	1.8	4.6
SH - 302L	302 + 58	95 LT	1305006	526647	7.7	5.0	11/03/20	4.0	3.7	38	0.5-1.5	2.5	5.2
SH - 303R	303 + 23	31 RT	1304880	526712	7.9	5.0	12/07/20	3.0	4.9	38	0.5-1.5	2.5	5.4
SH - 308R	307 + 71	49 RT	1304860	527160	8.5	5.0	12/07/20	3.0	5.5	38	0.5-1.5	1.5	7.0
SH - 310R	310 + 55	48 RT	1304859	527444	9.3	5.0	12/07/20	2.0	7.3	38	0.5-1.5	1.5	7.8

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	Station (ft.)	Offset (ft.)	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	Depth (ft)	Depth (ft.)	Elevation (ft., NAVD88)
SMF 1A													
PBA - SMF 1A-1	66+03	528 RT	1301512	526899	6.2	4.0	02/02/21	3.0	3.2	29	0.5-1.5	1.5	4.7
SMF 1B													
PBA - SMF 1B-1	68+42	166 LT	1301755	526206	5.2	5.5	02/02/21	4.5	0.7	29	0.5-1.5	1.5	3.7
SH - 66L2	68+15	68 LT	1301728	526304	5.6	5.0	02/02/21	3.6	2.0	29	0.5-1.5	1.8	3.8
SMF 1C													
Note: Several attempts to complete hand augers within the footprint of SMF 1C were terminated due to refusal on fill material (rocks, brick, etc.). The depth of the fill material above natural grades was not determined. It is recommended that the SHGWT reported by the USDA be used for preliminary evaluation.													
PBA - SMF 1C-1	---	---	---	---	---	---	---	---	---	30	0.0-0.5	Not determined due to fill material	
SMF 2A													
SH - 79R2	80+08	201 RT	1302919	526579	6.2	5.0	10/21/20	3.5	2.7	29	0.5-1.5	1.5	4.7
PBA - SMF 2A-1	80+37	270 RT	1302947	526649	5.8	4.5	02/02/21	2.5	3.3	29	0.5-1.5	1.0	4.8
SMF 2B													
Note: Site was inaccessible due to locked gates and signs stating, "Contaminated Area Avoid Contact with Soil and Water". It is recommended that the SHGWT reported by the USDA and the estimated SHGWT at adjacent pond boring PBASMF 2A-1 be used for preliminary evaluation.													
PBA - SMF 2A-1	80+37	270 RT	1302947	526649	5.8	4.5	02/02/21	2.6	3.2	29	0.5-1.5	1.0	4.8
SMF 2C													
Note: Site was inaccessible due to locked gates and signs stating, "Contaminated Area Avoid Contact with Soil and Water". It is recommended that the SHGWT reported by the USDA and the estimated SHGWT at adjacent roadway boring SH-74R be used for preliminary evaluation.													
SH - 74R	74+01	66 RT	1302312	526441	7.6	7.0	10/21/20	6.0	1.6	30	0.0-0.5	4.0	3.6

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	Station (ft.)	Offset (ft.)	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	Depth (ft)	Depth (ft.)	Elevation (ft., NAVD88)
SMF 3A-1													
PBA - SMF 3A1-1	295+88	224 RT	1304690	525975	6.3	5.0	02/02/21	3.4	2.9	38	0.5-1.5	1.5	4.8
SMF 3A-2													
PBA - SMF 3A2-2	291+73	205 RT	1304711	525561	6.4	4.0	02/02/21	3.5	2.9	38	0.5-1.5	2.2	4.2
SMF 3A-2 (Alternate)													
PBA - SMF 3A2 ALT-1	284+67	193 RT	1304726	524854	6.0	4.0	02/02/21	3.8	2.2	38	0.5-1.5	2.0	4.0
SMF 3B													
PBA - SMF 3B-1	290+78	455 LT	1305371	525468	4.9	4.0	02/02/21	3.0	1.9	38	0.5-1.5	1.5	3.4
SMF 3C													
PBA - SMF 3C-1	282+32	293 LT	1305213	524622	6.1	3.5	02/02/21	3.3	2.8	30	0.0-0.5	2.0	4.1
SH - 282L	282+46	95 LT	1305015	524635	5.3	5.0	11/03/20	1.8	3.5	30	0.0-0.5	1.5	3.8
SH - 285L	285+33	55 LT	1304974	524922	5.0	4.0	11/03/20	2.0	3.0	30	0.0-0.5	1.2	3.8

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United States Department of Agriculture

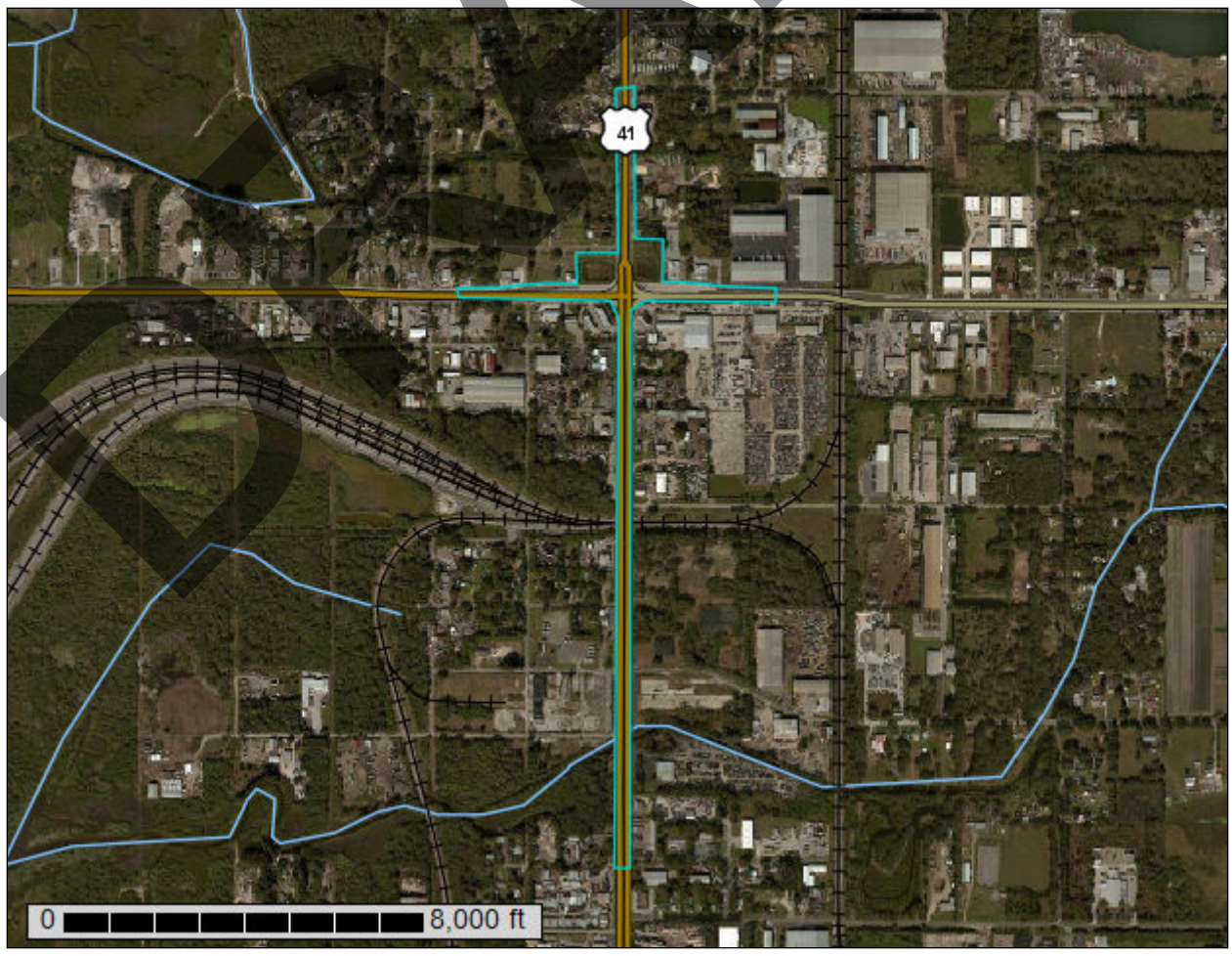
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hillsborough County, Florida

US 41/SR 45 @ CSX Grade Separation



August 1, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

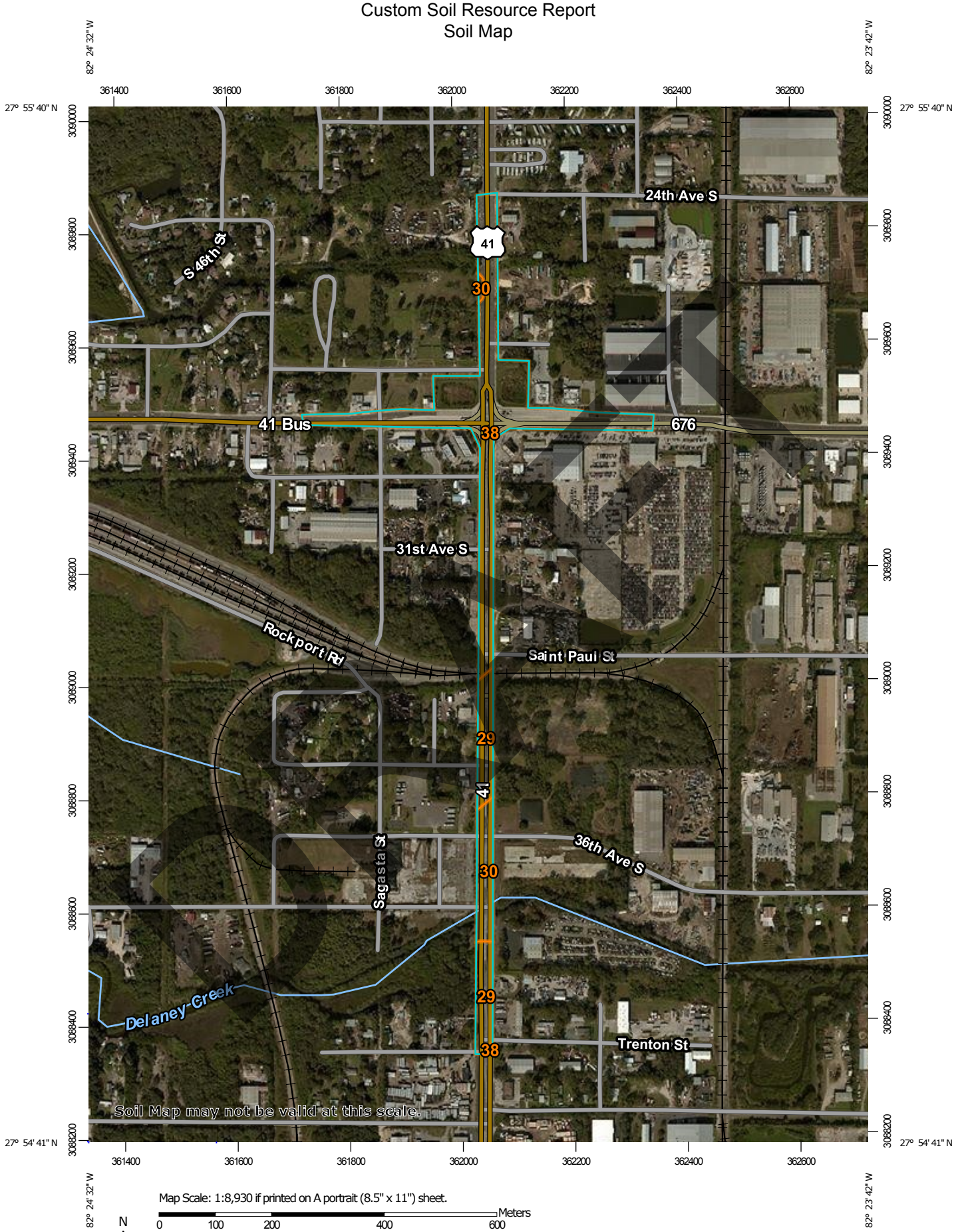
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:8,930 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hillsborough County, Florida
Survey Area Data: Version 16, Oct 4, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 29, 2010—Jan 17, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
29	Myakka fine sand, 0 to 2 percent slopes	3.0	16.7%
30	Myakka fine sand, frequently flooded	1.8	10.3%
38	Pinellas fine sand	13.1	73.1%
Totals for Area of Interest		**17.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Hillsborough County, Florida

29—Myakka fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2s3lg
Elevation: 0 to 130 feet
Mean annual precipitation: 42 to 56 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Myakka and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Myakka

Setting

Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 20 inches: fine sand
Bh - 20 to 36 inches: fine sand
C - 36 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Basinger

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Wabasso

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Cassia

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, rises on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Immokalee

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Satellite

Percent of map unit: 1 percent
Landform: Rises on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, rise, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

30—Myakka fine sand, frequently flooded

Map Unit Setting

National map unit symbol: 1j72h

Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 324 to 354 days
Farmland classification: Not prime farmland

Map Unit Composition

Myakka, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Myakka, Frequently Flooded

Setting

Landform: Tidal marshes on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 22 inches: fine sand
Bh - 22 to 40 inches: fine sand
C - 40 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Salinity, maximum in profile: Strongly saline (16.0 to 32.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Other vegetative classification: Salt Marsh (R155XY009FL)
Hydric soil rating: Yes

Minor Components

Samsula

Percent of map unit: 10 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)

Hydric soil rating: Yes

38—Pinellas fine sand

Map Unit Setting

National map unit symbol: 1j72q
Elevation: 20 to 100 feet
Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 324 to 354 days
Farmland classification: Not prime farmland

Map Unit Composition

Pinellas and similar soils: 91 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pinellas

Setting

Landform: Plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 11 inches: fine sand
Bk - 11 to 22 inches: fine sand
Btg - 22 to 27 inches: sandy clay loam
Cg - 27 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Cabbage Palm Flatwoods (R155XY005FL)
Hydric soil rating: No

Minor Components

Malabar

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Wabasso

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

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APPENDIX C

Cross Drain Pictures and Review Checklist

FPID: 440749-1-22-01
DATE: 9/28/2020
ATTENDEES: ROUSANA MARRERO GONZALEZ, VERONICA PEREZ HERRERA

CROSS DRAIN FIELD REVIEW NOTES

SR 45

STR. NO.	DESCRIPTION					# OF BARRELS	SIZE	MATERIAL	CULVERT SILTATION	CONDITION OF ENDWALL/CULVERT	SCOUR	SIGNS OF HIGHWATER	CHANNEL DESCRIPTION	ROADWAY ISSUES	PHOTO	NOTES
	BASELINE	STATION/ LOCATION	OFFSET	SIDE	STR. TYPE				NOTE DETERMINE DEPTH OF SILT	NOTE CRACKING, SPALLING, DETERIORATION	MEASURE DEPTH OF SCOUR HOLE	MEASURE HEIGHT OF WATER STAIN ABOVE CULVERT INVERT	(WET, DRY, VEGETATION, DEBRIS,EROSION, SOIL, ETC.)	NOTE DEPRESSIONS, CRACKING, CURB ISSUES, ETC.		
27	US 41	71+16.79	55.45	X LT RT	Curb Inlet DBI MH Gutter OTHER Concrete Headwall	1 2 X 3 4	18" 24" 36" 42" 48" 54" 60" X OTHER 11'X8' CBC	RCP CMP SRAP X OTHER CONC. BOX	NO SILT OTHER	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER		Channel full of water. Hard to verify silt and scour.
28	US 41	71+60.80	55.80	LT X RT	Curb Inlet DBI MH Gutter X OTHER Concrete Headwall	1 2 X 3 4	18" 24" 36" 42" 48" 54" 60" X OTHER 11'X8' CBC	RCP CMP SRAP X OTHER CONC. BOX	NO SILT OTHER	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER		Channel full of water. Hard to verify silt and scour.
78	US 41	109+95.09	60.61	X LT RT	Curb Inlet DBI MH Gutter X OTHER Winged end wall	1 X 2 3 4	18" 24" 36" X 42" 48" 54" 60" OTHER	X RCP CMP SRAP OTHER	NO SILT OTHER	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER		Channel full of water. Hard to verify silt and scour.
80	US 41	109+95.42	57.49	LT X RT	Curb Inlet DBI MH Gutter X OTHER Concrete Endwall	1 X 2 3 4	18" 24" 36" X 42" 48" 54" 60" OTHER	X RCP CMP SRAP OTHER	NO SILT OTHER	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER		Channel full of water. Hard to verify silt and scour.
259	CAUSEWAY	303+97.68	38.62	LT X RT	Curb Inlet X DBI MH Gutter OTHER	X 1 2 3 4	18" 24" 36" 42" 48" 54" 60" X OTHER 24"X38"	X RCP CMP SRAP OTHER	NO SILT X OTHER Grate slightly silted	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER		
276	CAUSEWAY	304+00.85	110.61	X LT RT	Curb Inlet DBI MH Gutter X OTHER Straight End Wall	X 1 2 3 4	18" 24" 36" 42" 48" 54" 60" X OTHER 24"X38"	X RCP CMP SRAP OTHER	X NO SILT OTHER	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER