



Beckett Bridge

Project Development & Environment (PD&E) Study

from **Chesapeake Drive to Forest Avenue**
Tarpon Springs, Pinellas County, FL



Pinellas County Project ID: PID 2161 • ETDM #: 13040
FDOT Financial Project ID: 424385-1-28-01

March 2013

Cover Updated January 2016

Wetlands Evaluation/Essential Fish Habitat Technical Memorandum

Prepared for:
Pinellas County
Department of Environment & Infrastructure
14 South Ft Harrison Avenue
Clearwater, FL 33756

Prepared by:
URS Corporation
7650 W Courtney Campbell Causeway
Tampa, FL 33607



Table of Contents

1.0	INTRODUCTION	1
1.1	Project Need.....	3
1.1.1	ETDM Evaluation	4
2.0	ALTERNATIVES CONSIDERED	4
2.1	Rehabilitation Alternative.....	5
2.2	Build Alternatives	6
2.2.1	Movable Bridge Alternative	6
2.2.2	Fixed Bridge Alternatives	9
3.0	EXISTING CONDITIONS.....	13
3.1	Methodology.....	13
3.2	Soils	14
3.3	Existing Wetland Communities	15
3.3.1	Wetland Description.....	15
4.0	WETLAND IMPACT ANALYSIS	16
4.1	Uniform Mitigation Analysis Method	18
4.2	Mitigation Requirements.....	20
4.3	Mitigation Alternatives	20
5.0	PERMITTING AND REVIEW AGENCIES	20
6.0	ESSENTIAL FISH HABITAT	22

List of Figures

Figure 1.	Project Location Map	2
Figure 2.	Existing Bridge Typical Section	3
Figure 3.	Proposed Movable Bridge Typical Section	7
Figure 4.	Proposed Roadway Section West of Proposed Movable Bridge.....	8
Figure 5.	Proposed Roadway Section East of Proposed Movable Bridge	8
Figure 6.	Proposed Fixed Bridge Typical Section.....	9
Figure 7.	Proposed Roadway Section West of Proposed Fixed Bridge	10
Figure 8.	Proposed Roadway Section East of Proposed Fixed Bridge.....	10



List of Tables

Table 1. Potential Wetland Impacts per Alternative	17
Table 2. Representative UMAM Scores for Whitcomb Bayou And Associated Wetland Habitats	19
Table 3. UMAM Summary for Wetland Impacts and Functional Loss	19
Table 4. Gulf of Mexico Essential Fish Habitat – Managed Species Potential Occurrence within Project Limit.....	24

List of Appendices

Appendix A - Conceptual Plans
Appendix B - Soils Map
Appendix C - Land Use Types
Appendix D - Project Area Photos
Appendix E - Wetland Impact Area Maps
Appendix F - UMAM Data Sheets
Appendix G - State Lands Easement

1.0 INTRODUCTION

Pinellas County, in coordination with the Florida Department of Transportation (FDOT) District Seven and the Federal Highway Administration (FHWA), is conducting a Project Development and Environment (PD&E) Study to evaluate alternatives to remove, rehabilitate or replace the existing Beckett Bridge (Bridge no. 154000) in Tarpon Springs, Pinellas County, Florida. The existing bridge was originally constructed in 1924 as a timber structure with a steel movable span. The fixed timber approach spans were replaced with concrete approach spans in 1956. The existing bridge is 358'-6" long, consisting of 10 spans. The bridge has been determined to be eligible for listing in the National Register of Historic Places. Eligibility is based on the bridge's contribution to early development of the area and because it is one of a few known, pre-1965, highway single-leaf rolling-lift bascule bridges remaining in Florida.

Major repairs, which included construction of crutch bents, repair of machinery, replacement of the electrical system and construction of a new control house, were performed in 1996. Additional repairs to the bridge machinery were needed in 1997 and 2011. Major rehabilitation or replacement of the bridge is needed to keep the bridge open and operating efficiently.

The project limits extend along Riverside Drive from Chesapeake Drive across Whitcomb Bayou to Forest Avenue, a distance of approximately 0.3 mile (see **Figure 1** - Project Location). The existing two-lane bridge connects areas west and north of the Bayou to downtown Tarpon Springs. The bridge is also located on a popular route for access to Fred Howard Park, a Pinellas County park located approximately 3.1 miles west on the Gulf of Mexico. Riverside Drive/North Spring Boulevard is an extension of Tarpon Avenue, which is a designated evacuation route. Beckett Bridge provides access to major north/south arterials including Alternate US 19 and US 19 for coastal residents during hurricane evacuation. The bridge also provides access for emergency vehicles, including police, ambulance and fire.

Beckett Bridge is owned and operated by Pinellas County. A bridge tender is only present when required to open the drawbridge for a vessel, there are no full-time bridge tenders. US Coast Guard drawbridge opening regulation (33CFR117.341) states that "The draw of the Beckett Bridge, mile 0.5, at Tarpon Springs, Florida shall open on signal if at least two hours' notice is given." Whitcomb Bayou connects to the Gulf of Mexico via the Anclote River to the north.

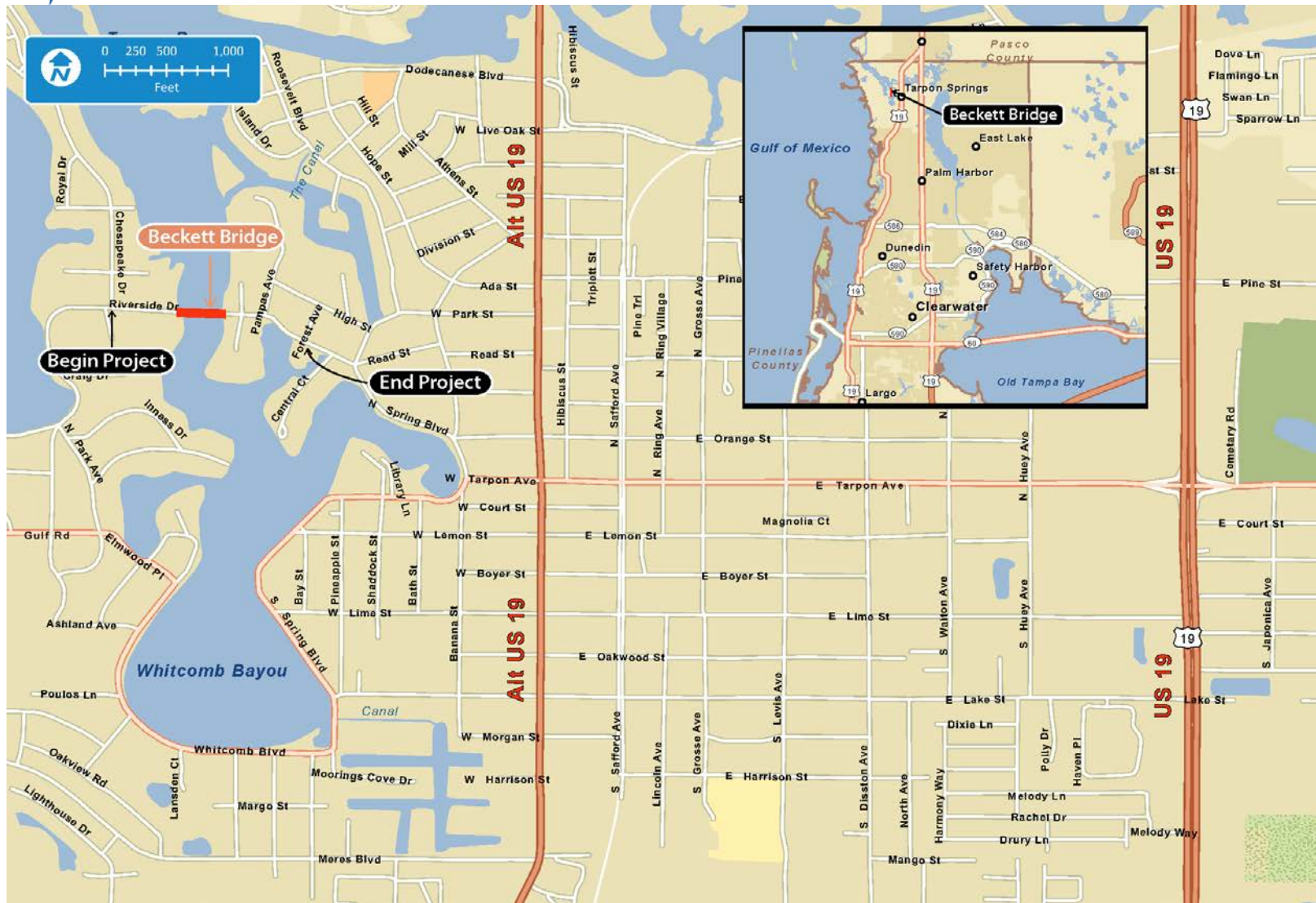


Figure 1 – Project Location



1.1 Project Need

The bridge is considered functionally obsolete. This designation is based primarily on the substandard clear roadway width of only 20 feet and substandard roadway safety features. The existing typical section consists of one, 10-foot wide travel lane in each direction and 2-foot 2-inch-wide sidewalks separated by a curb on both sides of the bridge (see **Figure 2** – Existing Bridge Typical Section).

Minimum required lane and shoulder widths prescribed by the American Association of State Highway and Transportation Officials (AASHTO) are not met. The sidewalks on the bridge are narrow and do not meet current accessibility requirements established by the Americans with Disabilities Act (ADA). The bridge railings do not meet current standards for pedestrian safety or geometric and crash testing safety standards for vehicles. Approach guardrail and transitions and end treatments also do not meet current safety standards.

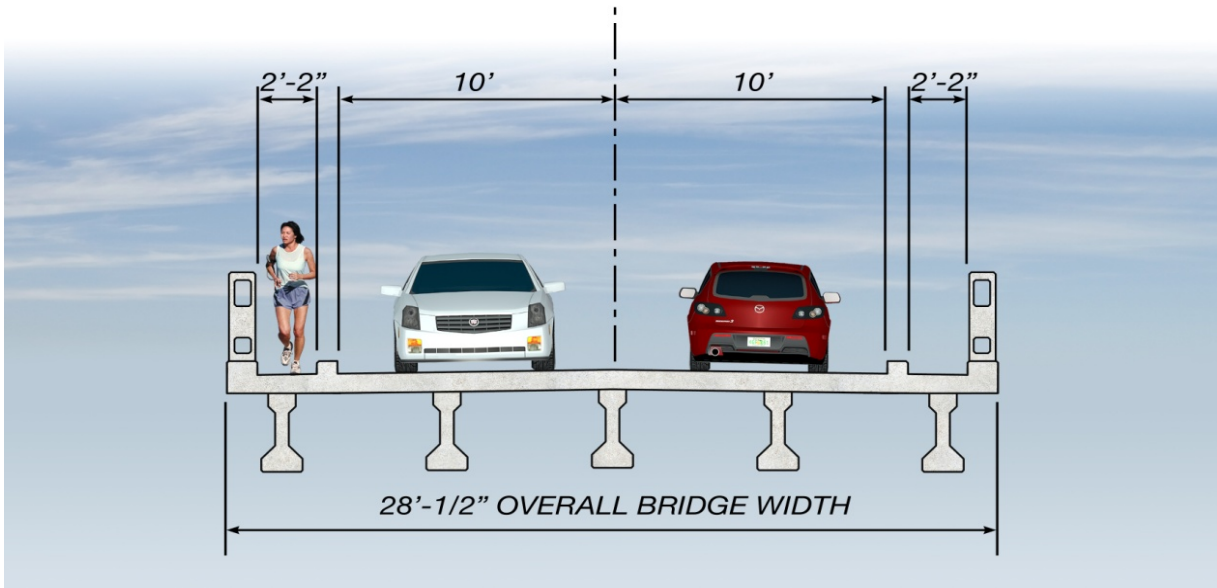


Figure 2 – Existing Bridge Typical Section

According to recent (11/30/11) FDOT inspection reports, the existing bridge has an overall Structure Inventory and Appraisal Sufficiency Rating of 44.9 out of 100. (Sufficiency ratings are a method of evaluating highway bridges by calculating a numeric value between 0 and 100, indicative of bridge sufficiency to remain in service). Although the bridge is not considered Structurally Deficient, the bridge has a substandard load carrying capacity requiring weight restrictions. The bridge is currently

posted for legal loads limited to 2-ton Single Unit Trucks and 15-ton Combination Trucks.

The existing vertical clearance at the fenders is six feet. The tip of the bascule leaf overhangs the fender with the leaf fully raised and does not provide unlimited vertical clearance between the fenders. The existing horizontal clearance between the fenders is 25 feet.

1.1.1 ETDM Evaluation

The FDOT's Efficient Transportation Decision Making (ETDM) process provides agencies and the public access to project planning information, as well as potentially affected environmental resources through use of the internet via the Environmental Screening Tool (EST). The tool facilitates interaction among transportation planners, regulatory agencies and affected communities to provide input on projects prior to the PD&E phase. Review of the proposed transportation improvement by agency representatives provides the Department with early input concerning potential impacts to the environment and community. Key features of the ETDM process include:

- Early agency and community involvement;
- Early identification of avoidance and mitigation strategies;
- Access to comprehensive data in standardized formats;
- Reviews and studies focused on key issues;
- Maximized use of technology for coordination, project scoping and communication.

This project was evaluated through the FDOT's ETDM process and was assigned ETDM project number 13040. Agency comments and a more detailed "Purpose and Need Statement" are available in the ETDM Programming Summary Report, published on June 1, 2011. The issues discussed in the Report will also be addressed in the Preliminary Engineering Report which will be published separately for this project.

2.0 ALTERNATIVES CONSIDERED

The following alternatives are under consideration:

- No-Build - Maintain Existing Bridge
- No-Build - Remove Existing Bridge (includes alternate routing of traffic)
- Rehabilitation of the Existing Bridge
- Replace with a new Movable Bridge
- Replace with a new Fixed Bridge

The “No-Build” alternative includes only routine maintenance to keep the bridge open to traffic until safety issues would require it to be closed. Evaluation of future improvements would occur at a later date. The “No Build with Removal of the Existing Bridge” would result in routine maintenance in the near future with the intent to demolish the bridge when it is no longer safe for traffic, with no plans to replace it with a new one. The concept plans for this alternative are included in **Appendix A**. All bridge replacement alternatives considered will be constructed in approximately the same location as the existing bridge to minimize impacts. Descriptions of the rehabilitation and build alternatives are provided in this section.

2.1 Rehabilitation Alternative

The existing bridge service life can be extended with extensive repairs, implementation of measures that slow the rate of concrete and structural steel deterioration, and replacement of electrical and mechanical systems. However, even after major rehabilitation, it is anticipated that the bridge will require significant ongoing maintenance and periodic additional major repairs with corresponding disruptions to traffic. Furthermore, it will not be practical to extend the life of the bridge indefinitely.

Rehabilitation to the maximum extent would involve replacement of the bascule leaf, the operating system (electrical and mechanical), and construction of crutch bents at each approach bent. These improvements could extend the service life of the bridge 25 to 30 years. Coordination with the USCG indicates that a rehabilitation alternative which substantially modifies the superstructure or substructure is typically not permitted by the USCG unless current navigational guidelines are met. However, it is anticipated that this alternative would be permitted by the USCG since existing guide clearances do not exist. Replacement of the fender system would require a USCG permit. The proposed Rehabilitation Alternative would include the following work and would extend the service life of the bridge a maximum of 25-30 years:

- Replace the sand-cement riprap at the abutments.
- Replace substandard approach guardrails.
- Remove all existing pile jackets and install new cathodic protection jackets on all concrete bent piles as well as steel bascule pier helper piles.
- Repair pile bent cap, bascule pier and bascule rest pier deteriorated concrete and provide cathodic protection in the form of zinc spray metalizing.
- Install crutch bents at Bents 2, 3, 4, 5, 8, 9, 10.
- Replace the Bascule Pier and Rest Pier.
- Replace substandard concrete bridge railings with new traffic railings meeting crash testing requirements of NCHRP 350 (i.e. FDOT Standard Index 422 – 42” Vertical Face Traffic Railing).
- Hydro-blast the deteriorated concrete deck surface and install a new concrete overlay.

- Clean and replace the expansion joints.
- Repair deck underside, beam and diaphragm deteriorated concrete and provide cathodic protection in the form of zinc spray metalizing.
- Rehabilitate the control house including roof, windows and door.
- Replace the bascule leaf including counterweight.
- Replace the open steel and concrete filled grid deck.
- Replace the bascule span main drive machinery as well as the span locks and live load shoes.
- Replace the bascule span electrical system.
- Replace the bascule span traffic gates.
- Replace the bascule span barrier gate.
- Replace the fender system.

2.2 Build Alternatives

All bridge replacement alternatives considered will be constructed in approximately the same location (on the same alignment) as the existing bridge to minimize impacts. One movable bridge alternative and two fixed bridge alternatives have been developed. Concept plans and profile exhibits for all build alternatives are included in Appendix A. Alternate corridors for bridge location will not be evaluated due to the extent of development in the vicinity of the existing bridge. Capacity improvements will not be considered.

2.2.1 Movable Bridge Alternative

The proposed movable span will provide 7.8 feet of vertical clearance at the fenders (in the closed position) and 25 feet of horizontal clearance between fenders for vessels traveling on the waterway. Unlimited vertical clearance will be provided in the open position. The maximum proposed grade is five percent, which meets ADA requirements. The total length of the proposed movable span bridge is 360 feet. The movable span is proposed to be a single leaf bascule span, a less common type of movable span in Florida but more economical for spanning Whitcomb Bayou.

Roadway reconstruction is limited to the bridge approaches. The bridge and roadway will return to existing grade at Pampas Avenue on the east side and east of Chesapeake Drive on the west side. Resurfacing (only) is proposed between Forest and Pampas Avenues.

The proposed roadway profile would be approximately two feet higher than the existing roadway at the west end of the bridge (Begin Bridge Station 135+95 as shown on concept plans), and approximately four feet higher at east end of the bridge ("End Bridge" Station 139+55). The proposed improvements can be constructed within the existing right-of-way; purchase of additional right-of-way is not required.

The proposed bridge typical section for the Movable Bridge Alternative has a total out-to-out width of 47 feet 1 inch as shown in **Figure 3**. The typical section includes two, 11-foot wide travel lanes with 5.5-foot shoulders that can function as undesignated bicycle lanes. Sidewalks, 5.5 feet wide, are proposed on both sides of the bridge.

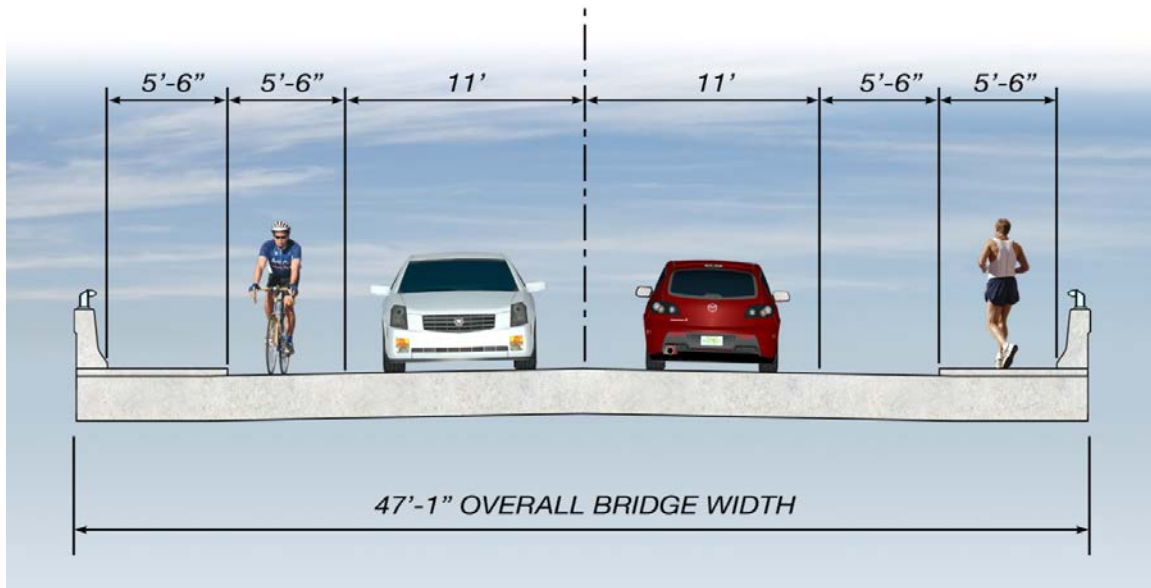


Figure 3 – Proposed Movable Bridge Typical Section

The proposed roadway section for the Movable Bridge Alternative west of the bridge consists of two 10-foot wide through lanes, one in each direction, and four-foot wide outside shoulders that can function as undesignated bicycle lanes. Because of the limited right-of-way, six-foot wide sidewalks are proposed only on the north side of the roadway. No sidewalks are proposed on the south side of the roadway, adjacent to the Bayshore Mobile Home Park. ‘

East of the bridge, the roadway section consists of two 11-foot wide through lanes, one in each direction, and four-foot wide outside shoulders that will function as undesignated bicycle lanes. Six-foot wide sidewalks are proposed on both sides of the roadway. **Figures 4 and 5** illustrate the proposed roadway sections for the west and east sides of the bridge, respectively.

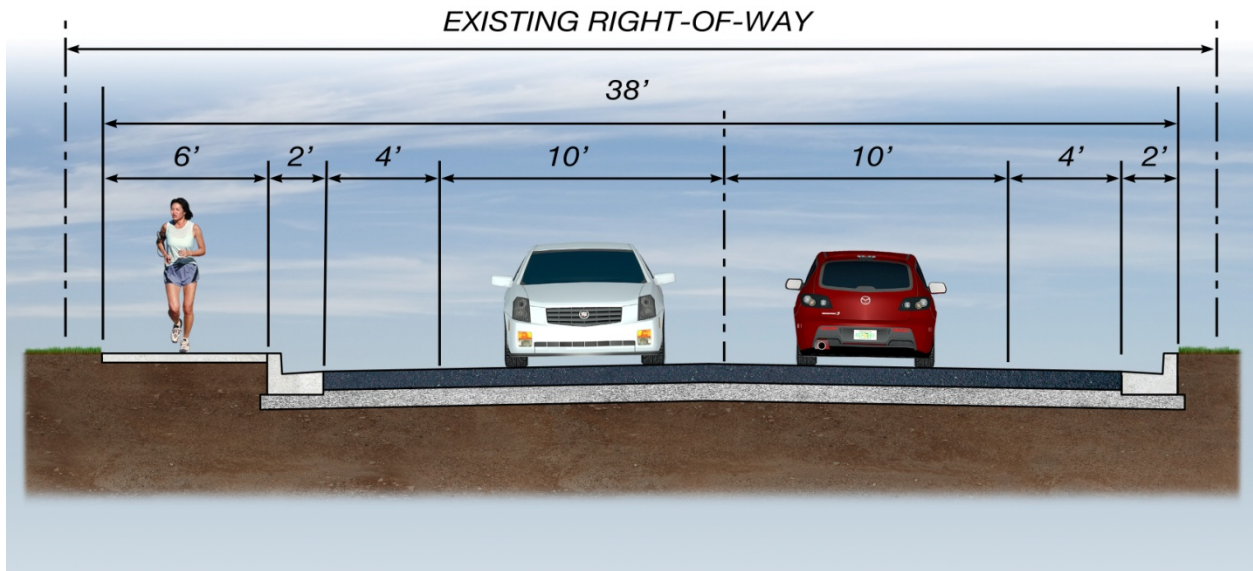


Figure 4 – Proposed Roadway Section West of Proposed Movable Bridge



Figure 5 – Proposed Roadway Section East of Proposed Movable Bridge

2.2.2 Fixed Bridge Alternatives

Two options, A and B, for a fixed bridge alternative were developed. Both options provide approximately 28 feet of vertical clearance at the fenders over Whitcomb Bayou and 25 feet of horizontal clearance between fenders for vessels traveling on the

waterway. The proposed maximum grade is 5%. The total length of the proposed fixed span bridge is 720 feet.

The proposed bridge typical section for the fixed bridge alternatives has an out to out width of 40 feet. It consists of two, eleven foot travel lanes, five foot shoulders (which can be used as undesignated bicycle lanes) on both sides and a five foot sidewalk on the north side of the bridge. To minimize impacts to property owners, a sidewalk is not proposed on the south side of the bridge. See **Figure 6**.

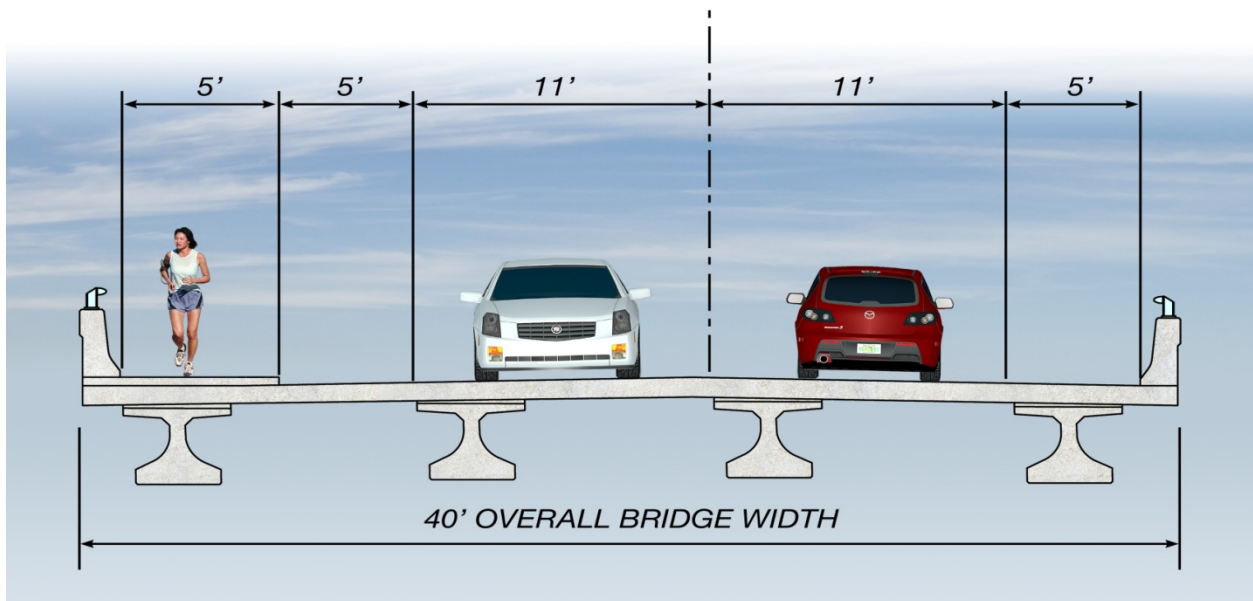


Figure 6 – Proposed Fixed Bridge Typical Section

The proposed roadway section west of the bridge consists of two, ten foot travel lanes, a four foot wide shoulder and six foot sidewalk on the north side of the bridge, and a five foot shoulder on the south side of the bridge. Because of limited right-of-way, a sidewalk is not proposed on the south side of the bridge. The total width of the proposed section is 37 feet which can be constructed in the approximately 40 feet of existing right-of-way.

East of the bridge, the proposed roadway section provides two, 11 foot travel lanes, a four foot wide shoulder and six foot sidewalk on the north side of the bridge, and a five foot shoulder on the south side of the bridge. A sidewalk is not proposed on the south side of the bridge to minimize impacts to adjacent property owners. The total width of the proposed section is 39 feet. **Figures 7 and 8** illustrate the proposed roadway sections for the fixed bridge alternatives.

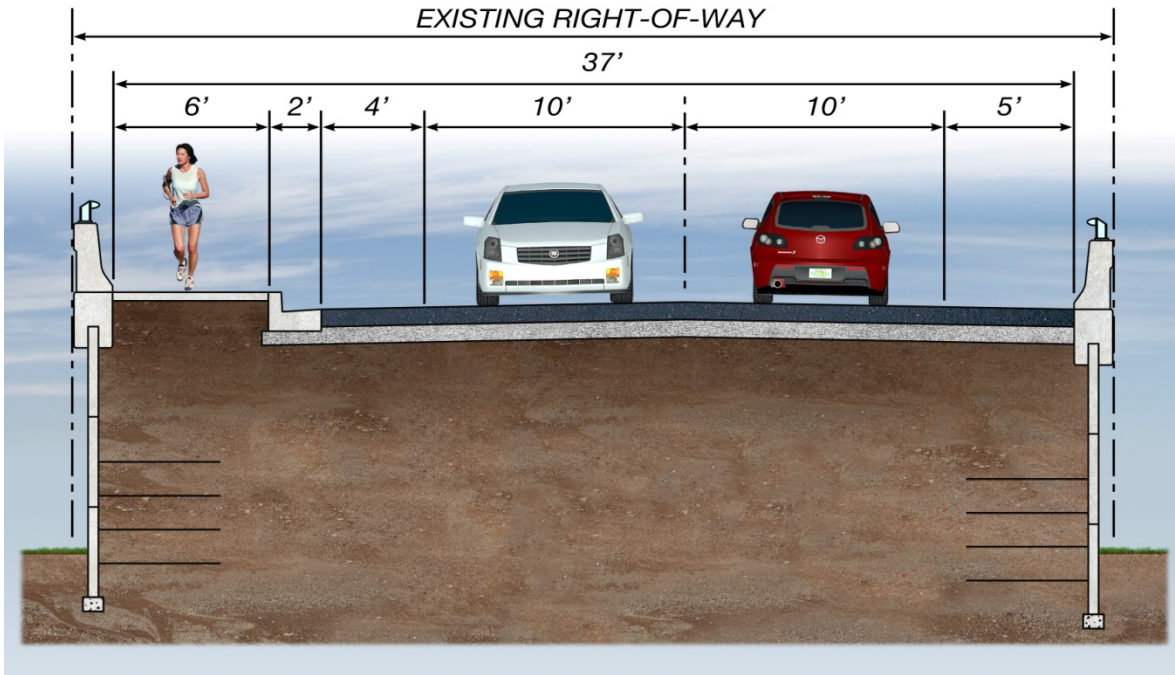


Figure 7 – Proposed Roadway Section West of Proposed Fixed Bridge

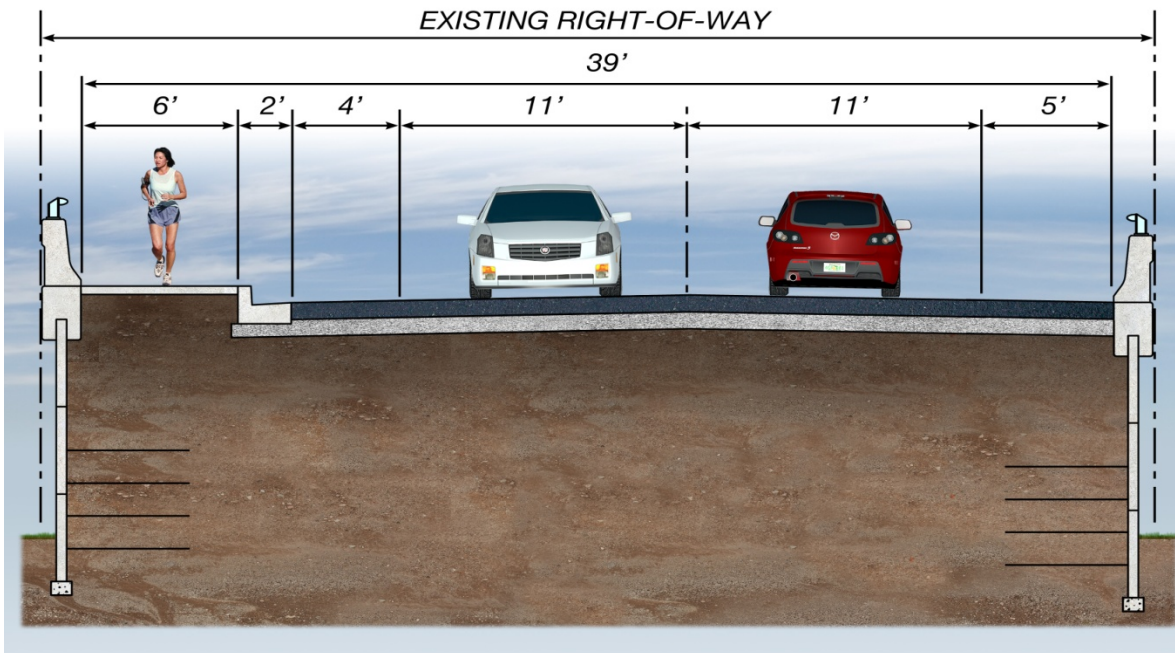


Figure 8 – Proposed Roadway Section East of Proposed Fixed Bridge



Fixed Bridge Alternative – Option A

The roadway profile at the intersection of Chesapeake Drive and Riverside Drive will be only about one foot above existing grade. A proprietary retaining wall system, such as Mechanically Stabilized Earth (MSE), will be required from the Chesapeake Drive to station 134+42, where the bridge begins. The wall will begin just east of Chesapeake Drive on the north side of Riverside Drive and extend approximately 446 feet east. On the south side of the roadway, the wall will begin just west of Chesapeake Drive and extend approximately 420 feet east. The wall will begin just west of Chesapeake Drive and extend approximately 420 feet east. The height of the wall will increase to approximately 19 feet above existing ground, just west of the entrance driveway to the Bayshore Mobile Home Park (MHP). East of the proposed bridge, an MSE wall will extend approximately 340 feet on the north side and about 400 feet on the south side. The wall will end just west of Forest Avenue where the approach roadway will return to the existing grade.

The proposed retaining wall will block access to Riverside Drive for five single family residences west of the bridge, on the north side of the roadway. A new access road for the Bayshore MHP will be constructed north of Riverside Drive. The access road will connect with Chesapeake Drive and extend east through the parcels immediately adjacent to the north side of the roadway. The access road will then turn south and extend under the proposed bridge to connect to the Bayshore Mobile Home Park driveway. The minimum vertical clearance at the Mobile Home driveway will be 14'6". The five single family residences impacted are expected to require relocation.

On the east side of the bridge, the proposed bridge will eliminate the access to Riverside Drive from Venetian Court and Pampas Avenue. A connector road will be constructed from Pampas Avenue through the vacant lot adjacent to the Tarpon Springs Yacht Club, extend under the proposed bridge, and tie into Venetian Court. A minimum vertical clearance of 14'6" is provided at Venetian Court.

Direct access to Riverside Drive for the single family residence on the corner of Pampas Avenue and Riverside Drive will be eliminated by the proposed retaining wall. Access from this location and from Venetian Court to Riverside Drive can be accomplished by traveling north on Pampas Avenue, turning east on High Street and south on Forest Avenue. The single family residence driveway located at approximately Station 145+20 will be modified (raised) to provide direct access to Riverside Drive. Vehicular access will be blocked to docks located south of Riverside Drive in this area.

Fixed Bridge Alternative – Option B

The proposed fixed bridge (Option B) will provide approximately 28 feet of vertical clearance at the fenders over Whitcomb Bayou and 25 feet of horizontal clearance

between fenders for vessels traveling on the waterway. The proposed maximum grade is five percent. The total length of the proposed fixed span bridge is 720 feet.

The roadway is raised about two feet above existing grade at Chesapeake Drive. A retaining wall will extend approximately 429 feet east, and vary in height from 1- 22 feet. The height of the wall will be approximately 22 feet at the entrance driveway to the Bayshore Mobile Home Park. East of the proposed bridge, the retaining wall will extend approximately 320 feet to west of Forest Avenue where the approach roadway will return to the existing grade. The wall will be approximately 14 feet high at Pampas Avenue, eliminating the intersection with Riverside Drive.

The proposed retaining wall will block access to Riverside Drive for five single family residences west of the bridge, immediately north of the roadway. An access road will be constructed through the impacted parcels to provide access to Chesapeake Drive for the two waterfront parcels in this area. It is anticipated that three relocations on the north side of the road will be required. The driveway entrance to Bayshore Mobile Home Park will be eliminated. Construction of a new entrance and exit at Chesapeake Drive will impact approximately seven mobile home lots on the west end of the development.

As in Alternative A above, the proposed fixed bridge will eliminate the access to Riverside Drive from Venetian Court and Pampas Avenue. A connector road will be constructed from Pampas Avenue through the vacant lot adjacent to the Tarpon Springs Yacht Club, and extend under the proposed bridge with a minimum vertical clearance of 14'6". Although the proposed connector for this option minimizes impacts to the Tarpon Springs Yacht Club property, the connector will extend through the vacant residential lot just east of the Venetian Court intersection south of Riverside Drive and connect to Venetian Court.

Direct access to Riverside Drive for the single family residence on the corner of Pampas Avenue and Riverside Drive will be eliminated by the proposed retaining wall. Access from this location and Venetian Court to Riverside Drive can be accomplished by traveling north on Pampas Avenue, turning east on High Street and south on Forest Avenue. The single family residence driveway at approximately station 145+20 will be modified (raised) to provide direct access to Riverside Drive. Vehicular access will be blocked to docks located south of Riverside Drive in this area.

3.0 EXISTING CONDITIONS

The project study area was field reviewed to identify, quantify, and map existing wetland communities. Pursuant to federal and state regulations regarding the protection of wetlands, all projects must avoid and minimize any wetland impacts to the fullest extent practicable. In accordance with this policy, Pinellas County has assessed wetlands within the project study area that may be affected by the proposed bridge rehabilitation or replacement. The project study area includes the project limits extending along Riverside Drive from Chesapeake Drive across Whitcomb Bayou to Forest Avenue with a 500-foot buffer (1,000-foot corridor).

3.1 Methodology

In order to determine the approximate locations and boundaries of existing wetland communities within the project study area, the following information was collected and analyzed prior to conducting field reviews:

- Aerials of the project study area, (1"=100'), 2010;
- U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), *Soil Survey of Pinellas County, Florida*, 2006;
- U.S. Geological Survey (USGS), Topographic Quadrangle Map, 7.5 minute series, Tarpon Springs, FL 1973 (Photorevised 1987);
- U.S. Fish and Wildlife Service (FWS), National Wetlands Inventory, Wetlands Online Mapper: (<http://www.fws.gov/wetlands/Data/Mapper.html>) (Updated October 2011);
- Florida Department of Environmental Protection (FDEP), Map Direct Gateway: (<http://ca.dep.state.fl.us/mapdirect/gateway.jsp>);
- U.S. Fish and Wildlife Service (FWS), *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, et. al. 1979);
- Florida Department of Transportation (FDOT), *Florida Land Use, Cover and Forms Classification System*, (FLUCFCS), 3rd edition, January 1999;
- Southwest Florida Water Management District (SWFWMD), FLUCFCS GIS database (2009); and
- U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), *Hydric Soils of Florida Handbook*, Fourth Edition (Hurt 2007).

Prior to field reviews, the approximate boundaries of wetland communities within the project study area were mapped on true color aerial photographs. On February 7, 2012, environmental scientists familiar with Florida natural communities conducted a field review of the project study area in order to verify wetland community boundaries. On June 4, 2012, environmental scientists familiar with seagrass beds conducted a field review within Whitcomb Bayou within the project study area in order to verify the presence/non-presence of seagrass beds.

All wetland communities within the project study area were classified using the *Florida Land Use, Cover and Forms Classification System* (FLUCFCS) (FDOT 1999) and the *FWS Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, et. al. 1979). Wetland boundaries within the project area were approximated using Chapter 62-340, FAC, – Delineation of the Landward Extent of Wetlands and Surface Waters and the criteria found within the U.S. Army Corps of Engineers (USACE) 2008 *Interim Regional Supplement to the USACE Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region* (ERDC/EL TR-08-30).

During field investigations, each wetland within the project study area was visually inspected. Attention was given to identifying plant species composition for each wetland and adjacent upland habitats. Exotic plant infestations and any other disturbances, such as soil subsidence, canals, power lines, etc. were noted. Attention was also given to identifying wildlife and signs of wildlife usage in each wetland and adjacent upland habitats.

The following subsections describe the soils, wetland communities, and individual wetlands that occur within the project study area.

3.2 Soils

Based upon the USDA, NRCS, *Soil Survey of Pinellas County, Florida* (2006), three soil types are mapped within the project study area. The Soils Map located in **Appendix B** provides the approximate boundaries of these soils in relation to the project study area. According to the *Hydric Soils of Florida Handbook* (Hurt 2007), none of the three soil types found within the project study area are classified as hydric.

Listed below are the soil types found within the project study area, their corresponding NRCS reference number for soils of Pinellas County, Florida, and a general description of the characteristics of each soil type.

Astatula Soils and Urban Land, 0 to 5 percent slopes (4) – This soil complex is excessively drained generally and is found on broad ridges and the lower coastal plain. The Urban land portion of this soil type consists of residential developments, commercial buildings, streets, parking lots, and other types of impervious ground cover. This soil complex has

a very low water capacity and the depth of the seasonal high water table is more than six feet below the surface.

Matlacha and St. Augustine Soils and Urban Land (16) – This soil complex is somewhat poorly drained and is generally found on low ridges and the lower coastal plain. The available water capacity is low and the depth of the seasonal high water table is 1.5 to three feet below the surface from June through October.

Tavares Soils and Urban Land, 0 to 5 percent slopes (29) – This soil complex is moderately well-drained and occurs on knolls, low ridges and along the lower coastal plain. The available water capacity is very low and the depth of the seasonal high water table is 3.5 to six feet below the surface from June through December.

Water (99) – This classification is not a soil description, but is shown by the Soil Survey of Pinellas County to cover a portion of the project study area including Whitcomb Bayou.

3.3 Existing Wetland Communities

In accordance with Executive Order (E.O.) 11990, USDOT Order 5660.1A, wetland habitats within the project study area were evaluated. Based on collected field data and in-house reviews, one surface water was found within the project study area. This is a tidally-influenced, estuarine surface water known as Whitcomb Bayou. Two wetland habitat types are included within the Whitcomb Bayou boundaries of the project study area. A detailed description of Whitcomb Bayou and the wetland habitat types are presented below, which includes the FLUCFCS and FWS wetland classifications, listings of dominant vegetation, bordering habitat types, size, connections to other wetlands, and observed wildlife utilization. The Land Use/Vegetative Cover Type Map located in **Appendix C** shows the land use/habitat types and approximate boundary of Whitcomb Bayou within the project study area. **Appendix D** provides photographs of each wetland and surface water habitat type.

3.3.1 Wetland Description

Surface Water 1 (Whitcomb Bayou)

FLUCFCS: 540 (Bays and Estuaries)

FWS: E2UB3 (Estuarine, Intertidal, Unconsolidated Bottom, Mud)

Bays and estuaries are tidally influenced inlets or large bodies of water that extend from the ocean into the land mass of Florida. Within the project study area, this category includes 10.38 acres of Whitcomb Bayou.

Whitcomb Bayou is part of the Anclote River Bayou complex. The Anclote River Bayou complex is a Class III Outstanding Florida Water in the Pinellas County Aquatic Preserve. Within the project area, the west and east shorelines of the bayou are hardened with

vertical seawalls. Bottom sediments within the project study area consist of unconsolidated mud. According to the Florida Fish and Wildlife Conservation Commission (FWC) (2010), the nearest documented seagrass beds are located approximately 200 feet north of the project study area. However, no seagrass or attached macro-algae were observed within the project study area during the June 2012 field review. No seagrass blades or macro algae branchlets were present within the rack line in or adjacent to the project study area.

Mangrove Swamps

FLUCFCS: 612

FWS: E2SS3 (*Estuarine, Intertidal, Scrub-Shrub, Broad-Leaved Evergreen*)

Mangrove swamps are typically coastal hardwood swamps where red mangrove (*Rhizophora mangle*) and/or black mangroves (*Avicennia germinans*) are pure or predominant. White mangroves (*Laguncularia racemosa*) are also typically found within these swamps. Within the project study area, mangrove stands are dominated by black mangrove, white mangrove, red mangrove, saltweed (*Philoxerus vermicularis*), and marsh elder (*Iva frutescens*). Mangroves were observed on the west end of Beckett Bridge, north and south of the existing roadway. In addition, mangroves and associated species were observed along Whitcomb Bayou on the south side of North Spring Boulevard. The mangroves in this area are trimmed and maintained. Mangrove swamps comprise 0.12 acre of the total project study area. During the field review, no bird nests or wading birds were observed within the mangrove swamps.

Oyster Bars

FLUCFCS: 654

FWS: E2RF2 (*Estuarine, Intertidal, Reef, Mollusk*)

Barnacles (*Balanus* sp.) and oysters (*Crassostrea virginica*) were observed in the intertidal zone attached to the bridge pilings, seawall face, and pieces of debris on the bottom of the bayou. A dense accumulation of live oysters was observed under the east and west ends of Beckett Bridge. Oyster bars comprise 0.17 acre of the total project study area.

4.0 WETLAND IMPACT ANALYSIS

Concept plans for three build alternatives were evaluated for potential wetland impacts. The build alternatives are listed below and described in detail in section 1.2 of this report.

- Alternative 1 – Movable Bridge (7'-8" Vertical Clearance)
- Alternative 2 – Fixed Bridge - Option A (28' Vertical Clearance)
- Alternative 3 – Fixed Bridge - Option B (28' Vertical Clearance)



In addition, the following alternatives were also evaluated:

- No Build
- No Build with Removal of Existing Bridge
- Rehabilitation of the Existing Bridge

Most wetland impacts that may occur as a result of construction of any of the three build alternatives are limited to shading as a result of the widened structure. Vegetated wetland habitats were considered to be impacted if located under the drip line of the proposed structure. Bridge piling impacts are unknown at this time since detailed design is not available. However, it is assumed that the removal of old pilings and replacement of new pilings will result in less or similar open water impacts; therefore, fill impacts to open water habitat underneath the drip line are assumed to be *de minimus*.

Regardless of the alternative selected, new wetland impacts resulting from construction of a new bridge structure are minimal because the proposed alignment would be similar to the location of the existing structure. The potential wetland impacts vary from 0.09 acre associated with proposed Movable Bridge, and 0.14 acre with both proposed Fixed Bridge Options A and B.

Appendix E provides maps that show the potential wetland impact areas. A summary of the proposed wetland impacts for each alternative is provided in Table 1. No permanent wetland impacts will occur to the open water portion of the Whitcomb Bayou as a result of the “No Build”, “No Build with Removal of the Existing Bridge”, or the “Rehabilitation of the Existing Bridge” alternatives.

Table 1: Potential Wetland Impacts per Alternative

Alternatives	FLUCFCS	Habitat Description	Acres in ROW ¹	Acres of Impact ²
Movable Bridge	540	Bays and Estuaries	0.11	0.00
	612	Mangrove Swamp	0.01	0.01
	654	Oyster Bars	0.02	0.02
Total for Movable Bridge Alternative			0.14	0.03
Fixed Bridge – Option A	540	Bays and Estuaries	0.07	0.00
	612	Mangrove Swamp	0.01	0.01
	654	Oyster Bars	0.01	0.01
Total for Fixed Bridge Alternative – Option A			0.09	0.02
Fixed Bridge – Option B	540	Bays and Estuaries	0.07	0.00
	612	Mangrove Swamp	0.01	0.01
	654	Oyster Bars	0.01	0.01
Total for Fixed Bridge Alternative – Option B			0.09	0.02

¹ Includes only those wetland areas directly underneath the proposed structure.

² Fill impacts associated with the new bridge pilings are unknown at this time since detailed design is not available; it is assumed that the removal of old pilings and replacement of new pilings will result in less or similar open water impacts; therefore,

fill impacts to open water habitat underneath the drip line are assumed to be *de minimus*. The piling impacts will be evaluated during the design and permitting phase of this project.

4.1 Uniform Mitigation Analysis Method

The wetlands and surface waters that occur within the project study area and which may be impacted by proposed improvements were assessed using the Uniform Mitigation Assessment Methodology (UMAM) per Chapter 62-345, FAC. UMAM is a method developed by the Florida Department of Environmental Protection (FDEP) and the water management districts to determine the amount of mitigation needed to offset adverse impacts to wetlands. The methodology was designed to assess functions provided by wetlands, the amount that those functions are reduced by a proposed impact, and the amount of mitigation necessary to offset the proposed functional losses. This method is also used to determine the degree of improvement in ecological value that will be created by mitigation activities.

The UMAM assessment includes a Qualitative Characterization (Part 1), as well as a Quantitative Assessment and Scoring (Part 2). The Qualitative Assessment is a basin descriptor of the site being evaluated. The variables described include the following:

- Significant nearby features,
- Water classifications,
- Assessment area size,
- Hydrology and relationship to contiguous offsite wetlands,
- Uniqueness of the assessment area,
- Functions of the assessment area, and
- Wildlife utilization.

The Quantitative Assessment provides a score of the assessment area in both the current condition and “with impact” condition. The assessment scoring evaluates the following parameters:

- Location and landscape support;
- Water environment; and
- Vegetative community.

Table 2 provides a summary of the existing UMAM score of the Whitcomb Bayou and associated wetland habitats within the project study area that would be impacted by the proposed alternatives. **Appendix F** includes all UMAM assessment score sheets.

**TABLE 2:
REPRESENTATIVE UMAM SCORES¹ FOR WHITCOMB BAYOU AND ASSOCIATED WETLAND HABITATS**

Wetland Number	FLUCFCS Code	FWS Classification	UMAM Components						Score (Sum/30)		Delta
			Location and Landscape Support		Water Environment		Vegetation		Current	With	
			Current	With	Current	With	Current	With			
Surface Water 1 (All Alternatives)	612	E2SS3	5	5	8	8	5	0	0.60	0.43	0.17
	654	E2RF2	5	5	8	8	5	1	0.60	0.47	0.13

¹ UMAM scores have not been approved by permitting agencies and are subject to change during the permitting process.

**TABLE 3:
UMAM SUMMARY FOR WETLAND IMPACTS AND FUNCTIONAL LOSS**

Alternatives	FLUCFCS Code	FWS Classification	Delta	Wetland Impacts	
				Impact Acres	Functional Loss ¹
Movable Bridge	612	E2SS3	0.17	0.01	0.002
	654	E2RF2	0.13	0.02	0.001
Total for Movable Bridge Alternative				0.03	0.005
Fixed Bridge – Option A	612	E2SS3	0.17	0.01	0.002
	654	E2RF2	0.13	0.01	0.001
Total for Fixed Bridge Alternative – Option A				0.02	0.003
Fixed Bridge – Option B	612	E2SS3	0.17	0.01	0.002
	654	E2RF2	0.13	0.01	0.001
Total for Fixed Bridge Alternative - Option B				0.02	0.003

¹Total Functional Loss rounded to the nearest hundredth.



4.2 Mitigation Requirements

Utilizing the calculated wetland impact acres and the existing condition UMAM scores, the proposed construction will result in 0.003 to 0.005 units of wetland functional loss (**Table 3**) for all of the alternatives. Mitigation, if required, for the wetland impacts associated with this project is discussed in the following sections.

4.3 Mitigation Alternatives

Mitigation through Chapter 373.4137, F.S. (i.e., Senate Bill, 1986) is not available for this project because FDOT is not the applicant. A review of the available data from FDEP and the water management districts indicates that the proposed project currently is not located within the service area of any permitted mitigation banks. For the reasons listed above, any unavoidable wetland impacts will have to be mitigated (if required) by creating, restoring, enhancing, or preserving wetlands on-site or off-site within the same drainage basin if there are no mitigation opportunities at the project site.

As previously described, wetland impacts to mangroves and oyster beds are minimal for this project regardless of the alternative selected. No seagrass beds will be impacted. If mitigation is required by one of the reviewing agencies, “in-kind” mitigation at the project site may not be a feasible option due to the limited ROW and surrounding developments. Therefore, an “out-of-kind” mitigation option, such as water quality improvements, may be requested during the design and permitting phase of this project. Any proposed mitigation will be coordinated with the NMFS, FWS, and the SWFWMD.

5.0 PERMITTING AND REVIEW AGENCIES

The USACE and the SWFWMD regulate impacts to wetlands and surface waters within the project study area. Other agencies, including the FWS, NMFS, the U.S. Environmental Protection Agency (USEPA), and the FWC, review and comment on environmental permit applications. In addition, the FDEP is delegated with managing the use of sovereign submerged, state-owned lands and regulating stormwater discharges from construction sites. Currently, the following permits and easements are anticipated to be required for this project:



<u>Permit</u>	<u>Issuing Agency</u>
Section 404/Section 10 Dredge and Fill Permit	USACE
Section 9 - USCG Permit	USCG
Environmental Resource Permit (ERP)	SWFWMD
Sovereign Submerged Lands Easement	FDEP
National Pollutant Discharge Elimination System (NPDES)	FDEP

The complexity of the permitting process will depend on the degree of the impact to jurisdictional wetland areas and state-owned, sovereign, submerged lands. With the USACE, a Nationwide 15 Permit (USCG Approved Bridges) will likely be required for the bridge structure. A Nationwide 15 Permit will require compliance with Section 330 of the Nationwide Permit Program. Any fill or discharge into the tidal waters or wetlands of Whitcomb Bayou will also require a Section 10 (River and Harbors Act) permit. A Nationwide 14 permit will most likely be required to authorize the placement of fill in tidal waters. In addition, the proposed project will require compliance with the Section 404(b)(1) guidelines, including verification that all impacts have first been avoided to the greatest extent possible, that unavoidable impacts have been minimized to the greatest extent possible, and that unavoidable impacts have been mitigated in the form of wetlands creation, restoration, and/or enhancement.

In addition to the USACE authorization(s), a Section 9 USCG Bridge Permit will be required for the bridge over Whitcomb Bayou because the waterway is a federally maintained channel. The purpose of this permit is to preserve the public right of navigation and to prevent interference with interstate and foreign commerce. The proposed build alternatives meet the minimum USCG vertical and horizontal clearance guidelines for this waterway. The USCG will coordinate with the NMFS and FWS to address potential environmental concerns during the federal permit application review.

The SWFWMD requires an ERP when construction of any project results in the creation of a new, or modification of an existing surface water management system, or results in impacts to waters of the state or isolated wetlands. As with USACE permits, the complexity associated with the ERP permitting process will depend on the size of the project and/or the extent of wetland impacts. This project may qualify for Noticed General Permit (NGP) if the project will result in less than 0.5 acre of new wetland impact. If the project does not qualify for an NGP, it is anticipated that a Standard General Permit will be required for this project. If a NGP is issued, no mitigation will be required.

Chapter 253 Florida Statute states that authorization is required from the Board of Trustees of the Internal Improvement Trust Fund (Board) for any activities in, on, or over state-owned, sovereign submerged lands (state lands). The FDEP, Division of State Lands has been delegated by the Board to manage the use of state lands for the good of the public; to maintain traditional uses, such as navigation and fishing; to provide

maximum protection of all state lands; and to ensure that all private uses of state lands will generate revenue as just compensation for that privilege. The existing bridge is located within a court ordered easement (File Number 5256, **Appendix G**) granted by the Board in 1996. The existing easement remains valid as long as the 300-foot right-of-way is used for a public bridge. It is anticipated that a replacement bridge on the same alignment can be constructed within the existing easement.

40 CFR Part 122 prohibits point source discharges of stormwater to waters of the United States without a NPDES permit. Under the State of Florida's delegated authority to administer the NPDES program, construction sites that will result in greater than one acre of disturbance must file for and obtain either coverage under an appropriate generic permit contained in Chapter 62-621, FAC, or an individual permit issued pursuant to Chapter 62-620, FAC. A major component of the NPDES permit is the development of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP identifies potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the site and discusses good engineering practices (i.e. best management practices) that will be used to reduce the potential for pollutant discharges during construction.

Depending on the types of permits needed from the regulatory agencies listed above, the permitting process typically ranges from 120 to 210 days.

6.0 ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act required each regional Fishery Management Council to amend their existing fishery management plans to identify and describe essential fish habitat (EFH) for each species under management. EFH is defined by the Act as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Whitcomb Bayou is part of the Anclote River Bayou complex. The Anclote River Bayou complex is a Class III Outstanding Florida Water in the Pinellas County Aquatic Preserve. Whitcomb Bayou is within the Gulf of Mexico Fishery Management Council's (GMFMC) area of jurisdiction, which extends from the coasts of Texas, Louisiana, Mississippi, Alabama, and west Florida to Key West. GMFMC's limits of jurisdiction also extend seaward to the limit of the Exclusive Economic Zone (200 nautical miles from the baseline of the territorial sea).

The GMFMC separates EFH into estuarine and marine components. For the estuarine category, EFH includes estuarine emergent wetlands (saltmarsh and brackish marsh), mangrove wetlands, submerged aquatic vegetation (seagrass), algal flats, mud, sand, shell, and rock substrates, and estuarine water column. The marine category includes the water column, vegetated bottoms, non-vegetated bottoms, live bottoms, coral reefs, geologic features, and Continental shelf features (GMFMC, 2010).

The GMFMC manages 55 species for the Gulf of Mexico area. Of these 55 species, the GMFMC has identified and described EFH for 26 representative managed species. Species accounts of each of the 26 representative managed species were reviewed to assess the potential occurrence of these species within the project study area during any stage of their life cycle. Table 4 lists each of these species and its potential to occur in the project limits. Of the 26 representative fish, shrimp, and crab species listed by the GMFMC, only the gray snapper (*Lutjanus griseus*) is considered to have a high potential to occur within the project limits. The remaining 25 representative species and the coral complex are considered to have a low to no potential to occur within the project limits.

Construction of the proposed project will not result in the loss of open water area designated as EFH. Impacts to oyster beds will likely be temporary; live oysters can be relocated prior to construction and oysters may recolonize the area following construction. Permanent impacts to mangroves are expected with each of the three build alternatives. All permanent and temporary loss of these habitats will be mitigated as described in Section 3.0 as required. Therefore, no populations of any of the 26 representative fish, shrimp, and crab species and the coral complex listed by the GMFMC are expected to be adversely affected by the proposed project.

**TABLE 4
GULF OF MEXICO ESSENTIAL FISH HABITAT – MANAGED SPECIES⁽¹⁾
POTENTIAL OCCURRENCE WITHIN PROJECT LIMIT**

Fishery Management Plan	Species	Potential Occurrence Within Project Limits ⁽²⁾	Comments
Shrimp	Brown shrimp (<i>Penaeus aztecus</i>)	Low	More common in central and western Gulf of Mexico.
	White shrimp (<i>P. setiferus</i>)	Low	More common in central and western Gulf of Mexico.
	Pink shrimp (<i>P. duorarum</i>)	High	Occurs throughout Tampa Bay/Boca Ciega Bay
Red Drum	<i>Sciaenops ocellatus</i>	High	Occurs throughout Tampa Bay/Boca Ciega Bay
Coastal Migratory Pelagic Resources	King mackerel (<i>Scomberomorus cavalla</i>)	None	An off-shore species.
	Spanish mackerel (<i>S. maculatus</i>)	Low	An off-shore species; juveniles may inhabit estuarine areas but are not estuarine-dependent.
	Cobia (<i>Rachycentron canadum</i>)	Low	An off-shore/deep-water species; juveniles may inhabit estuarine areas but are not estuarine-dependent.
	Dolphin/dorado (<i>Coryphaena hippurus</i>)	None	An off-shore, high salinity species.
	Little tunny (<i>Euthynnus alletteratus</i>)	None	An off-shore/deep-water species.
Stone Crab	Florida stone crab (<i>Menippe mercenaria</i>)	Low	Prefers higher salinities.
Spiny Lobster	<i>Panulirus argus</i>	None	Preferred habitat is off-shore coral reefs and seagrasses.
Coral and Coral Reef	Multiple groups/species	Low	Potential for scattered specimens.
Reef Fish	Red grouper (<i>Epinephelus morio</i>)	None	Generally an off-shore species.
	Black grouper (<i>Mycteroperca bonaci</i>)	None	Generally an off-shore species.
	Gag grouper (<i>M. microlepis</i>)	Low	Prefer high salinities.

TABLE 4 Continued
GULF OF MEXICO ESSENTIAL FISH HABITAT – MANAGED SPECIES⁽¹⁾
POTENTIAL OCCURRENCE WITHIN PROJECT LIMIT

Fishery Management Plan	Species	Potential Occurrence in Project Area ⁽²⁾	Comments
Reef Fish - continued	Scamp grouper (<i>M. phenax</i>)	None	Prefer deeper waters (12 – 189 meters).
	Red snapper (<i>Lutjanus campechanus</i>)	None	Prefer deeper waters (17 – 200 meters).
	Vermillion snapper (<i>Rhomboplites aurorubens</i>)	None	Prefer deeper waters (20 – 200 meters).
	Gray snapper (<i>L. griseus</i>)	High	Postlarvae and juvenile found in most estuarine habitats.
	Yellowtail snapper (<i>Ocyurus chrysurus</i>)	Low	Little information available. Juveniles found in <i>Thalassia</i> beds and mangrove roots.
	Lane snapper (<i>L. synagris</i>)	High	Found in mangrove and grassy estuarine areas.
	Greater amberjack (<i>Seriola dumerili</i>)	None	An off-shore species.
	Lesser amberjack (<i>S. fasciata</i>)	None	An off-shore species.
	Tilefish (<i>Lopholatilus chamaeleonticeps</i>)	None	An off-shore/deep-water species.
	Gray triggerfish (<i>Balistes capriscus</i>)	None	An off-shore species.

(1) From “Generic Amendment for Addressing Essential Fish Habitat Requirements in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery of the Gulf of Mexico, United States Waters; Red Drum Fishery of the Gulf of Mexico; Reef Fish Fishery of the Gulf of Mexico; Coastal Migratory Pelagic Resources (Mackerels) in the Gulf of Mexico and South Atlantic; Stone Crab Fishery of the Gulf of Mexico; Spiny Lobster in the Gulf of Mexico and South Atlantic; Coral and Coral Reefs of the Gulf of Mexico,” Gulf of Mexico Fishery Management Council, October 1998.

(2) Ratings are none, low, and high. Ratings based on species abundance and distribution data provided by NMFS at <http://galveston.ssp.nmfs.gov/efh> and <http://ccma.nos.noaa.gov/products/biogeography/gom-efh/>.



APPENDIX A

Conceptual Plans

PRELIMINARY
SUBJECT TO CHANGE



BEGIN PROJECT

CHESAPEAKE DR.

EXISTING
RIGHT OF WAY

PROP. SIDEWALK

EXISTING
RIGHT OF WAY

LEGEND

→ DEMOTES DIRECTION OF TRAVEL

MATCHLINE STA. 134+60.00

ECDriver
 500 N. WESTSHORE BOULEVARD
 SUITE 500
 TAMPA, FL 33609
 CERT. OF AUTHORIZATION #3838

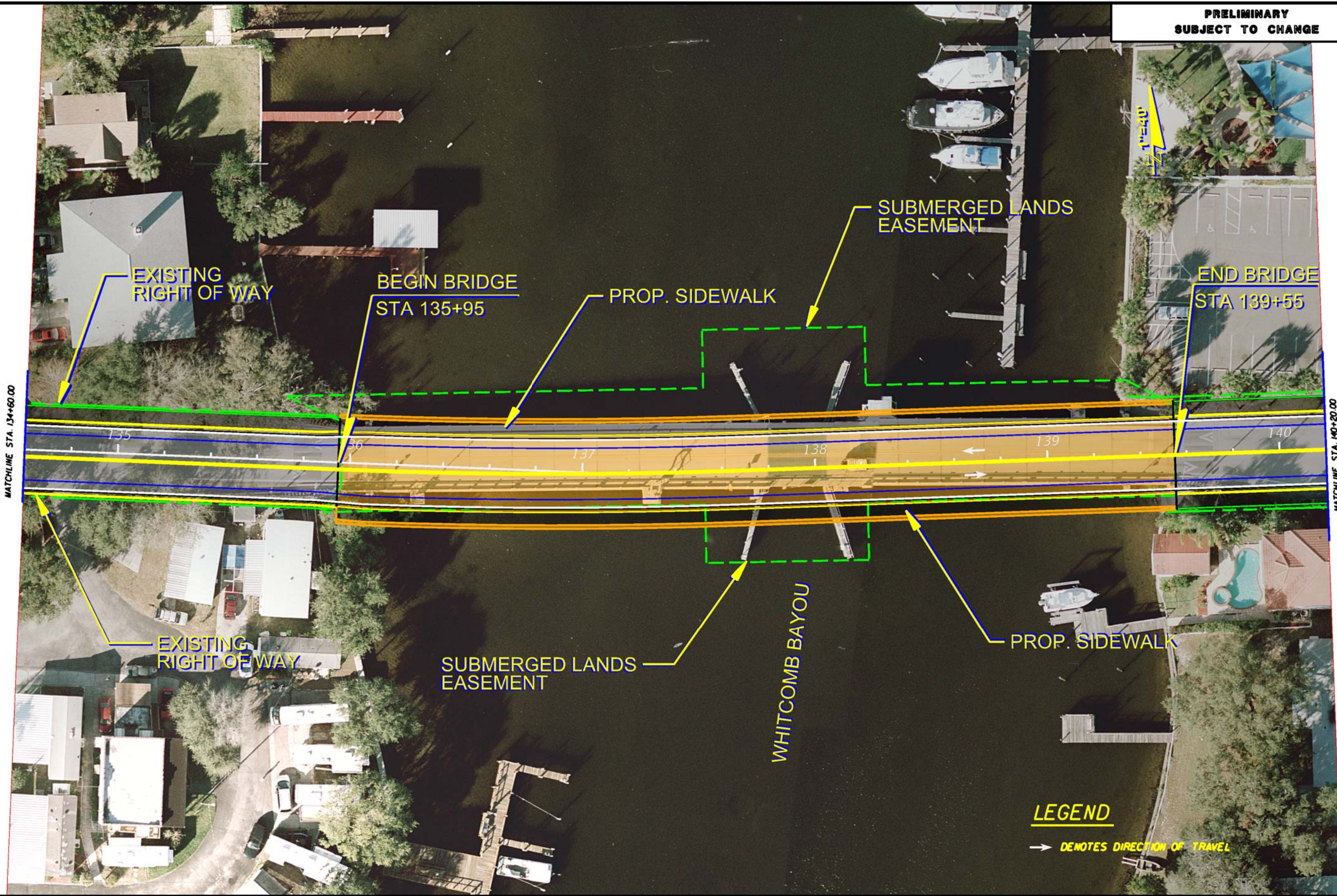


BECKETT BRIDGE (PD&E) STUDY
PINELLAS COUNTY PROJECT NO.: PID 2161
FDOT FPN: 424385-1-28-01

DATE	LOW-LEVEL MOVABLE BRIDGE ALTERNATIVE CONCEPT PLANS

SHEET NO.
1

PRELIMINARY
SUBJECT TO CHANGE



ECDriver
 ASSOCIATES
 500 N. WESTSHORE BOULEVARD
 SUITE 500
 TAMPA, FL 33609
 CERT. OF AUTHORIZATION #3838



BECKETT BRIDGE (PD&E) STUDY
PINELLAS COUNTY PROJECT NO.: PID 2161
FDOT FPN: 424385-1-28-01

DATE

LOW-LEVEL MOVABLE BRIDGE ALTERNATIVE
CONCEPT PLANS

SHEET NO.
2

PRELIMINARY
SUBJECT TO CHANGE



LEGEND

→ DENOTES DIRECTION OF TRAVEL



MATCHLINE STA. 145+80.00

FOREST AVE.

END RESURFACING
END PROJECT

EXISTING
RIGHT OF WAY

EXISTING
RIGHT OF WAY

LEGEND

DENOTES DIRECTION OF TRAVEL

PRELIMINARY
SUBJECT TO CHANGE



LEGEND

→ DEMOTES DIRECTION OF TRAVEL

ECDriver
 500 N. WESTSHORE BOULEVARD
 SUITE 500
 TAMPA, FL 33609
 CERT. OF AUTHORIZATION #3838



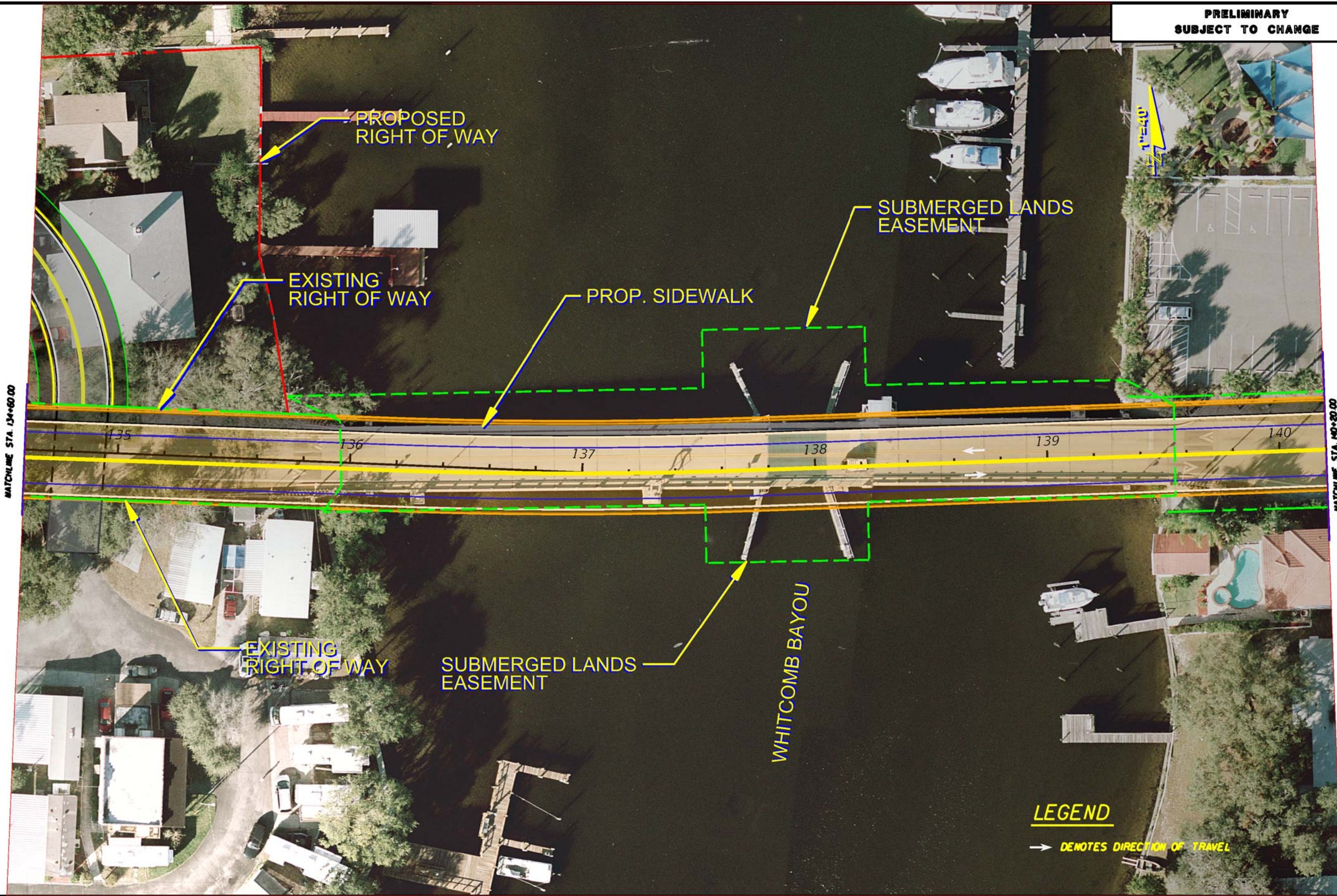
BECKETT BRIDGE (PD&E) STUDY
PINELLAS COUNTY PROJECT NO.: PID 2161
FDOT FPN: 424385-1-28-01

DATE

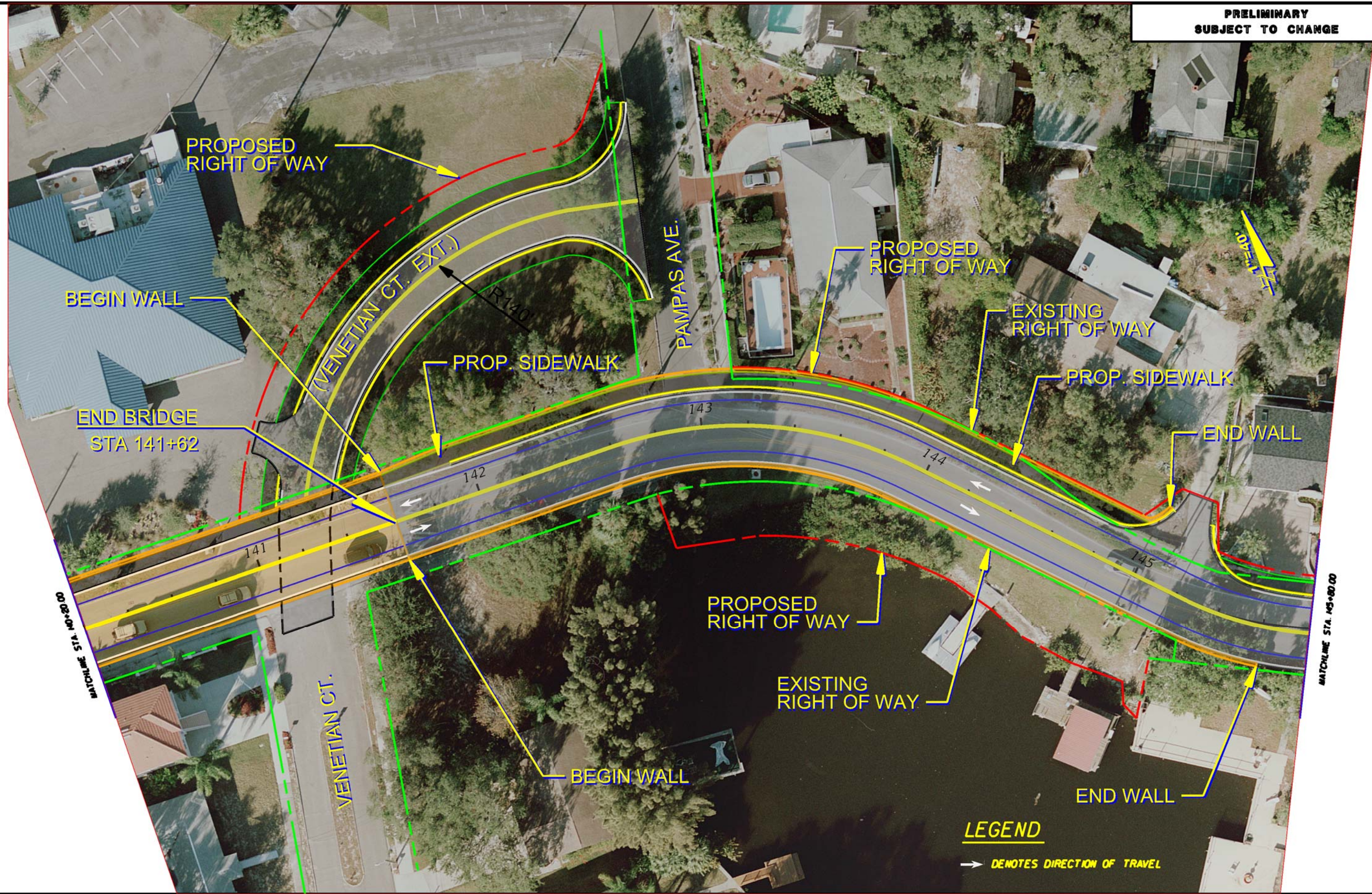
MID-LEVEL FIXED BRIDGE OPTION A
CONCEPT PLANS

SHEET NO.
1

PRELIMINARY
SUBJECT TO CHANGE



LEGEND
 → DENOTES DIRECTION OF TRAVEL





MATCHLINE STA. 45+80.00

LEGEND
→ DENOTES DIRECTION OF TRAVEL

PRELIMINARY
SUBJECT TO CHANGE



MATCHLINE STA. 134+60.00

LEGEND
 → DEMOTES DIRECTION OF TRAVEL

ECDriver
 500 N. WESTSHORE BOULEVARD
 SUITE 500
 TAMPA, FL 33609
 CERT. OF AUTHORIZATION #3838



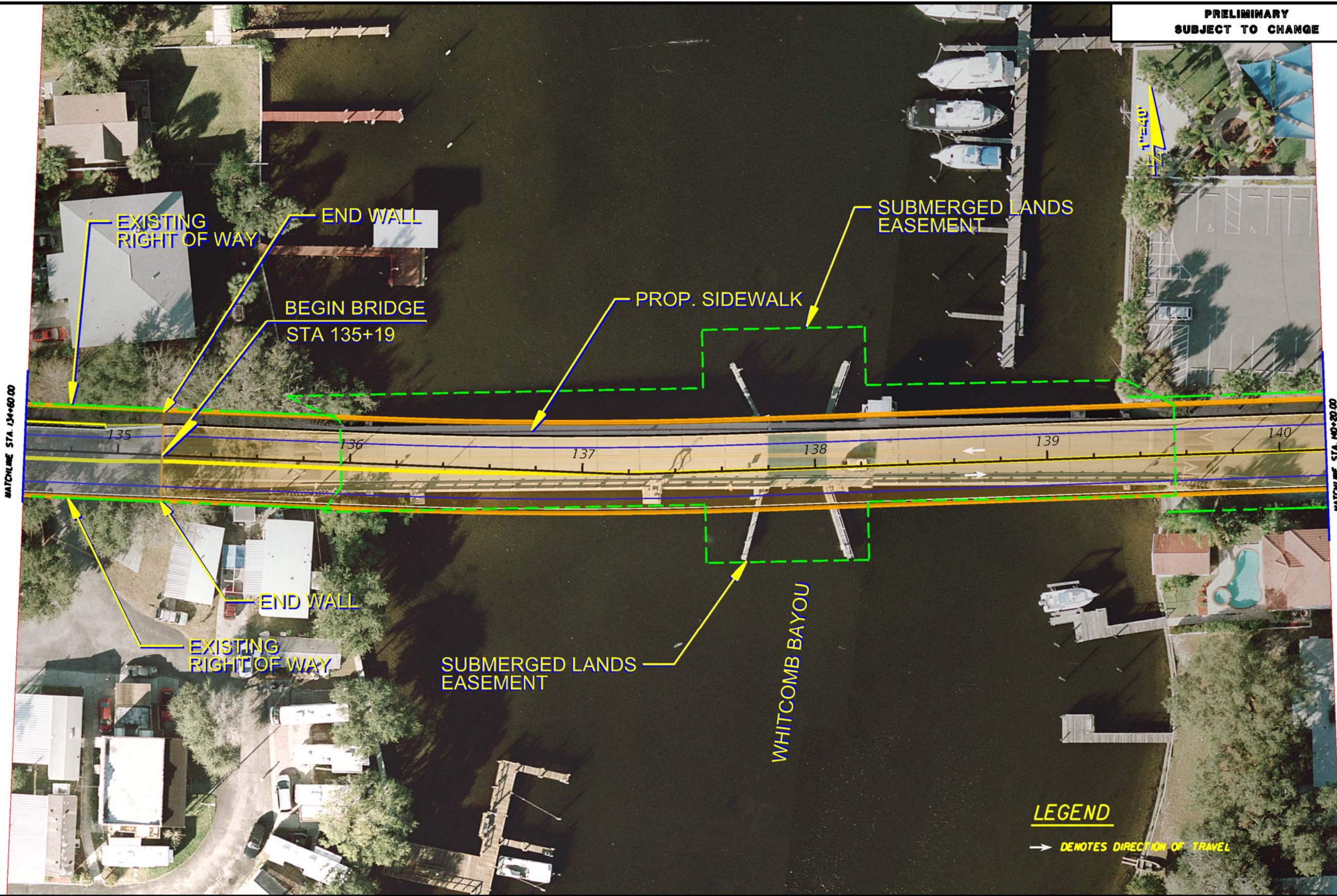
BECKETT BRIDGE (PD&E) STUDY
PINELLAS COUNTY PROJECT NO.: PID 2161
FDOT FPN: 424385-1-28-01

DATE

MID-LEVEL FIXED BRIDGE OPTION B
CONCEPT PLANS

SHEET NO.
1

PRELIMINARY
SUBJECT TO CHANGE



ECDriver
 500 N. WESTSHORE BOULEVARD
 SUITE 500
 TAMPA, FL 33609
 CERT. OF AUTHORIZATION #3838



BECKETT BRIDGE (PD&E) STUDY
PINELLAS COUNTY PROJECT NO.: PID 2161
FDOT FPN: 424385-1-28-01

DATE

MID-LEVEL FIXED BRIDGE OPTION B
CONCEPT PLANS

SHEET NO.
2

PRELIMINARY
SUBJECT TO CHANGE





MATCHLINE STA. 45+80.00

FOREST AVE.

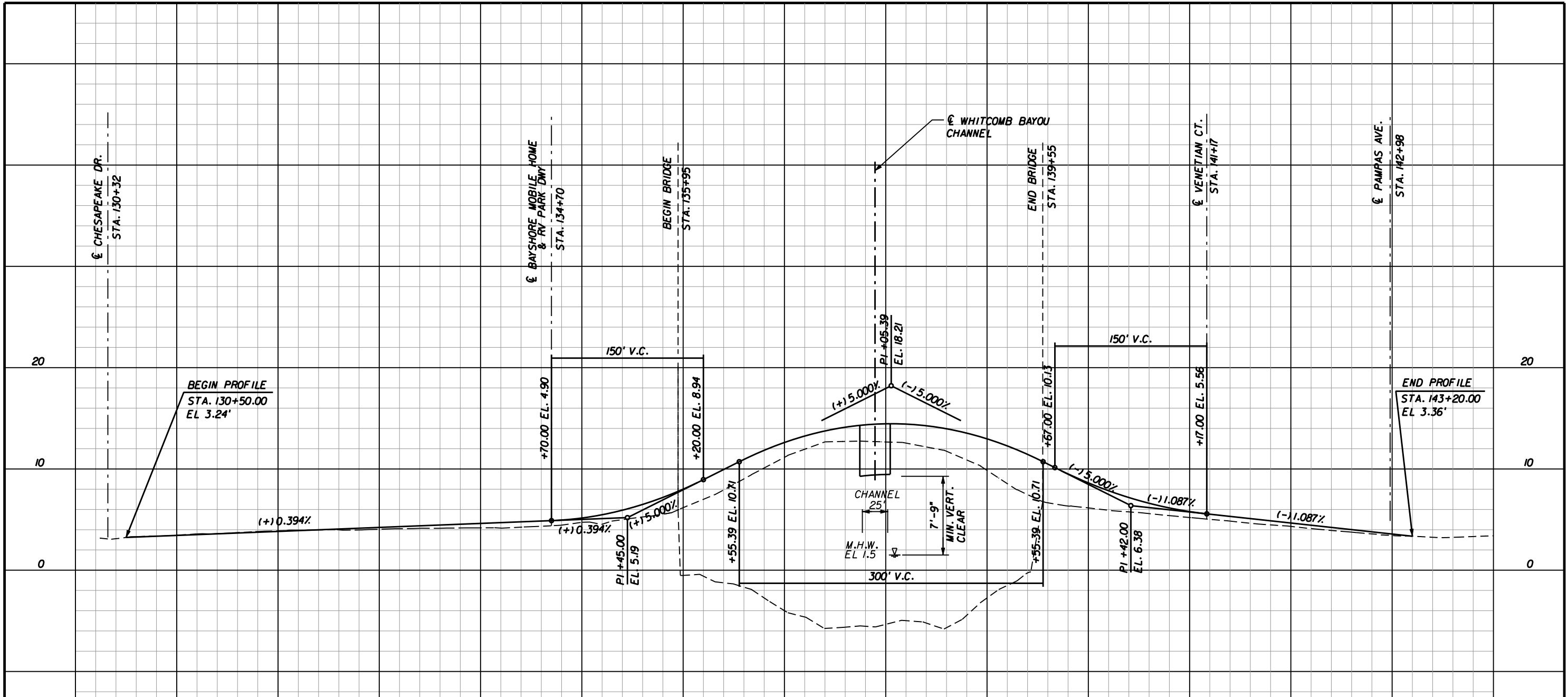
PROPOSED
RIGHT OF WAY
PROP. SIDEWALK

END PROJECT

EXISTING
RIGHT OF WAY

EXISTING
RIGHT OF WAY

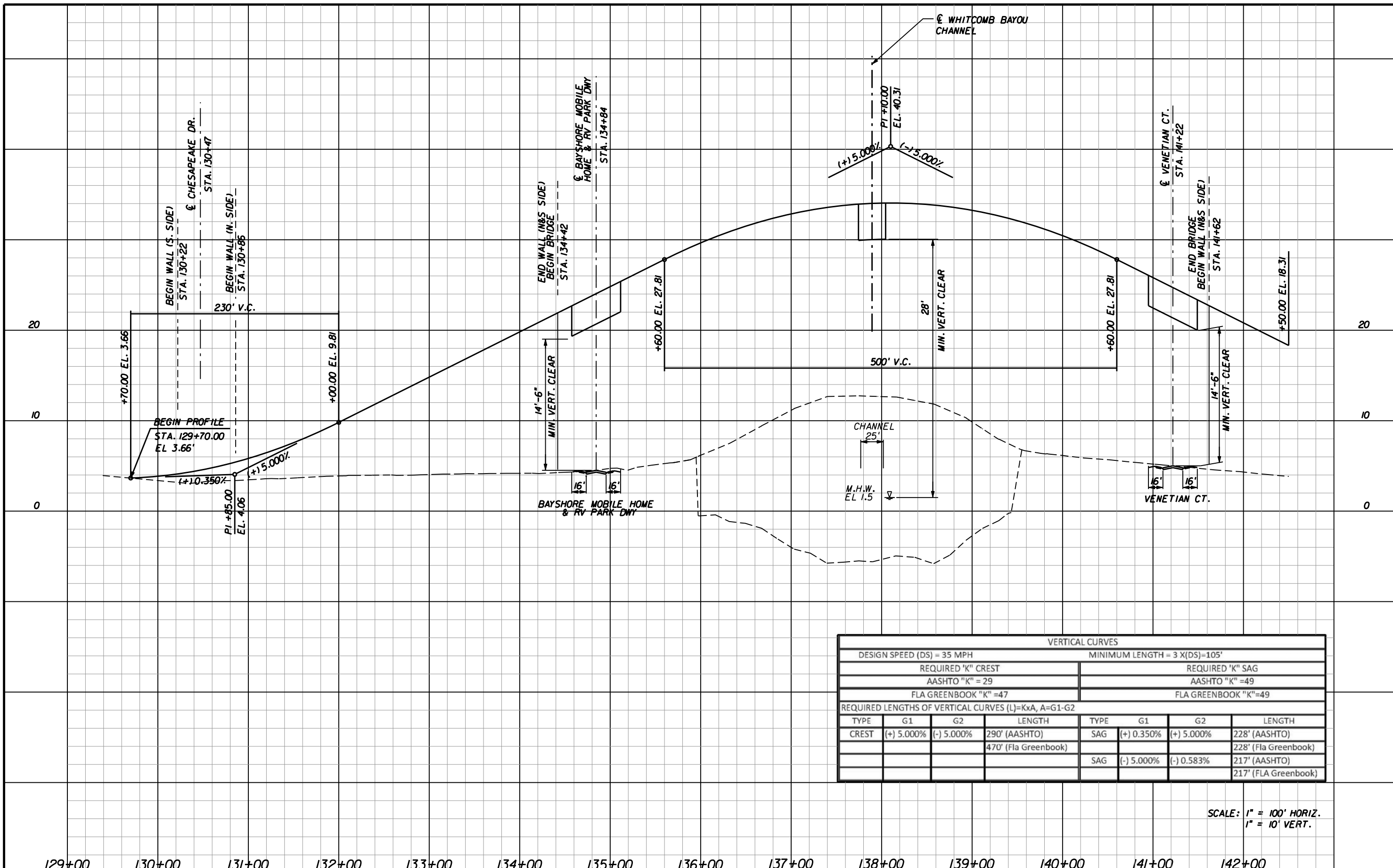
LEGEND
DENOTES DIRECTION OF TRAVEL



VERTICAL CURVES			
DESIGN SPEED (DS) = 35 MPH		MINIMUM LENGTH = 3 X(DS)=105'	
REQUIRED "K" CREST		REQUIRED "K" SAG	
AASHTO "K" = 29		AASHTO "K" = 49	
FLA GREENBOOK "K" = 47		FLA GREENBOOK "K" = 49	
REQUIRED LENGTHS OF VERTICAL CURVES (L)=KxA, A=G1-G2			
TYPE	G1	G2	LENGTH
CREST	(+)	(-) 5.000%	290' (AASHTO)
		(-) 5.000%	470' (Fla Greenbook)
SAG	(-)	(-) 5.000%	192' (AASHTO)
		(-) 1.087%	192' (FLA Greenbook)

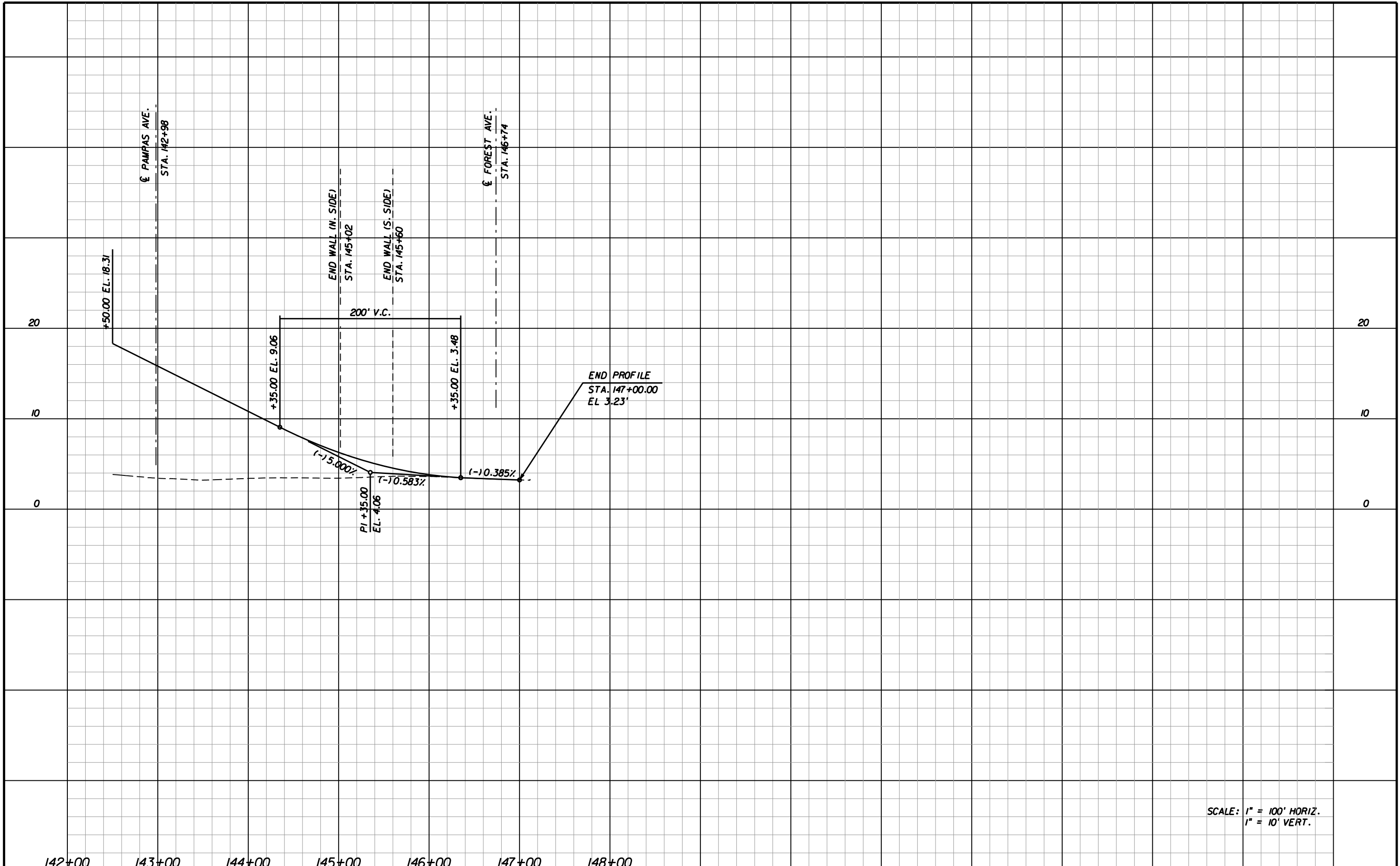
SCALE: 1" = 100' HORIZ.
1" = 10' VERT.

130+00 131+00 132+00 133+00 134+00 135+00 136+00 137+00 138+00 139+00 140+00 141+00 142+00 143+00



VERTICAL CURVES										
DESIGN SPEED (DS) = 35 MPH				MINIMUM LENGTH = 3 X(DS)=105'						
REQUIRED "K" CREST				REQUIRED "K" SAG						
AASHTO "K" = 29				AASHTO "K" = 49						
FLA GREENBOOK "K" = 47				FLA GREENBOOK "K" = 49						
REQUIRED LENGTHS OF VERTICAL CURVES (L)=KxA, A=G1-G2										
TYPE	G1	G2	LENGTH	TYPE	G1	G2	LENGTH			
CREST	(+)	5.000%	(-)	5.000%	SAG	(+)	0.350%	(+)	5.000%	228' (AASHTO)
										470' (Fla Greenbook)
SAG	(-)	5.000%	(-)	0.583%	SAG	(-)	5.000%	(-)	0.583%	217' (AASHTO)
										217' (FLA Greenbook)

SCALE: 1" = 100' HORIZ.
1" = 10' VERT.



SCALE: 1" = 100' HORIZ.
1" = 10' VERT.

142+00 143+00 144+00 145+00 146+00 147+00 148+00

ECDriver
 500 N. WESTSHORE BOULEVARD
 SUITE 500
 TAMPA, FL 33609
 CERT. OF AUTHORIZATION #3838

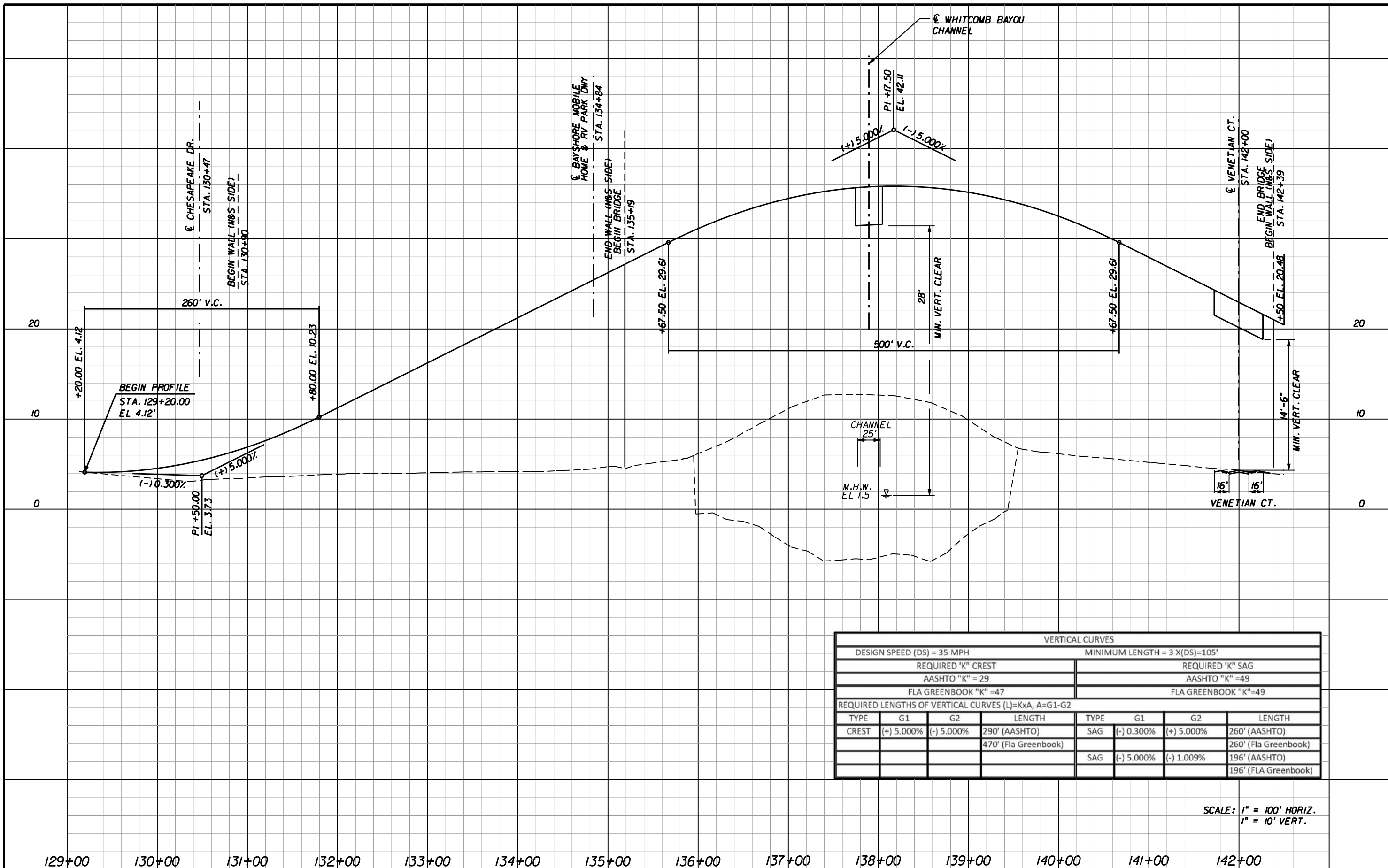


BECKETT BRIDGE (PD&E) STUDY
PINELLAS COUNTY PROJECT NO.: PID 2161

DATE

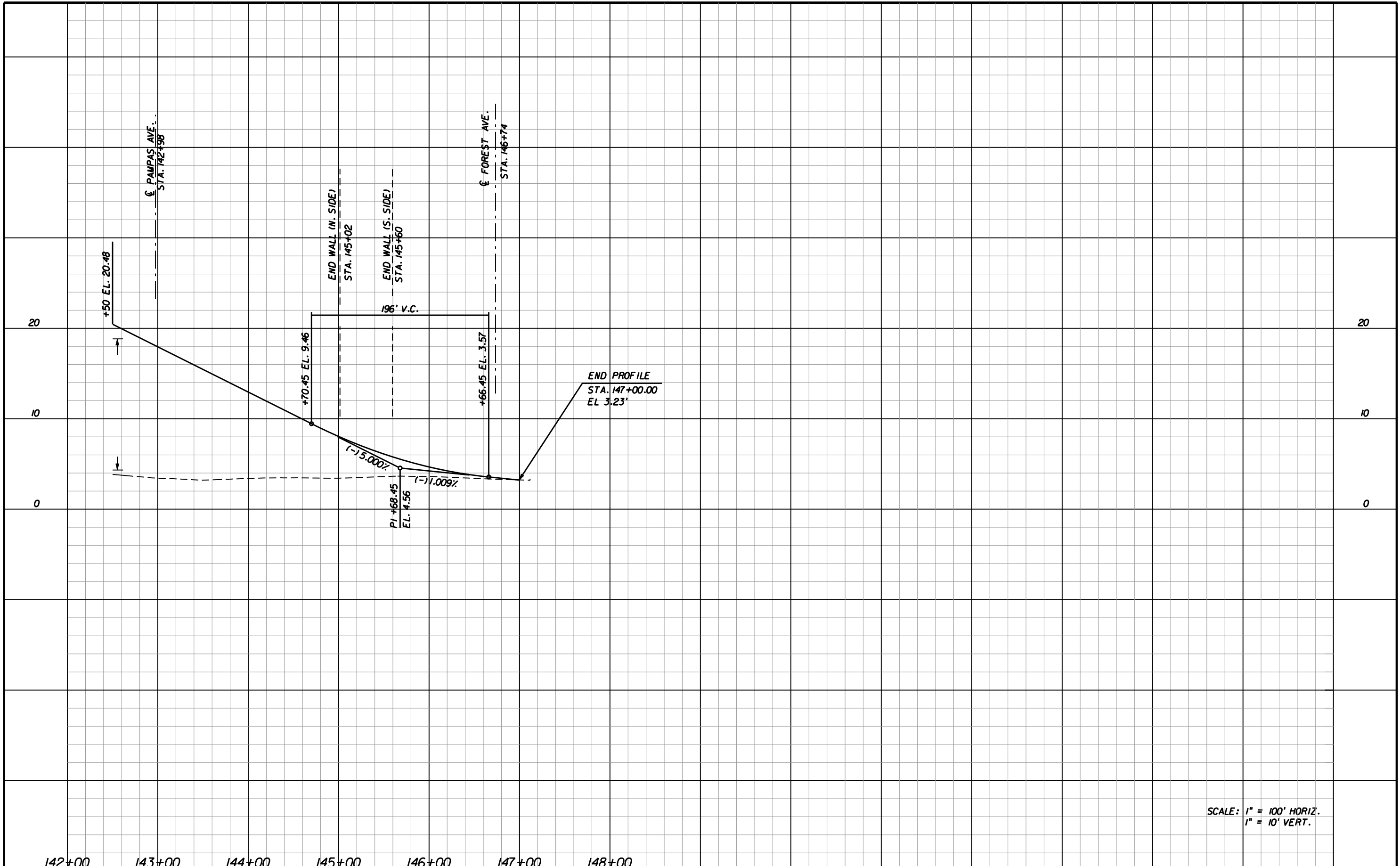
BECKETT BRIDGE PROFILE
MID-LEVEL FIXED BRIDGE ALTERNATIVE A

SHEET NO.
2



VERTICAL CURVES							
DESIGN SPEED (DS) = 35 MPH				MINIMUM LENGTH = 3 X(DS)=105'			
REQUIRED "K" CREST				REQUIRED "K" SAG			
AASHTO "K" = 29				AASHTO "K" = 49			
FLA GREENBOOK "K" = 47				FLA GREENBOOK "K" = 49			
REQUIRED LENGTHS OF VERTICAL CURVES (L)=KxA, A=G1-G2							
TYPE	G1	G2	LENGTH	TYPE	G1	G2	LENGTH
CREST	(+) 5.000%	(-) 5.000%	290' (AASHTO)	SAG	(-) 0.300%	(+) 5.000%	260' (AASHTO)
			470' (Fla Greenbook)				260' (Fla Greenbook)
				SAG	(-) 5.000%	(-) 1.009%	196' (AASHTO)
							196' (FLA Greenbook)

SCALE: 1" = 100' HORIZ.
1" = 10' VERT.



SCALE: 1" = 100' HORIZ.
1" = 10' VERT.

142+00 143+00 144+00 145+00 146+00 147+00 148+00



APPENDIX B

Soils Map

SOIL ID	DESCRIPTION
4	ASTATULA SOILS AND URBAN LAND, 0 TO 5 PERCENT SLOPES
16	MATLACHA AND ST. AUGUSTINE SOILS AND URBAN LAND
29	TAVARES SOILS AND URBAN LAND, 0 TO 5 PERCENT SLOPES
99	WATER

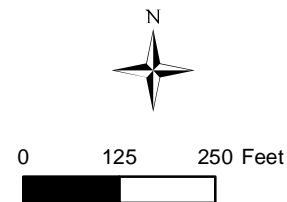


Path: I:\Misc_Jobs\Tia Norman\Beckett Bridge\Beckett Bridge - Soils.mxd

Legend

- Project Study Area
- NRCS Soils

Soils Map
Beckett Bridge PD&E
Tarpon Springs, Pinellas County

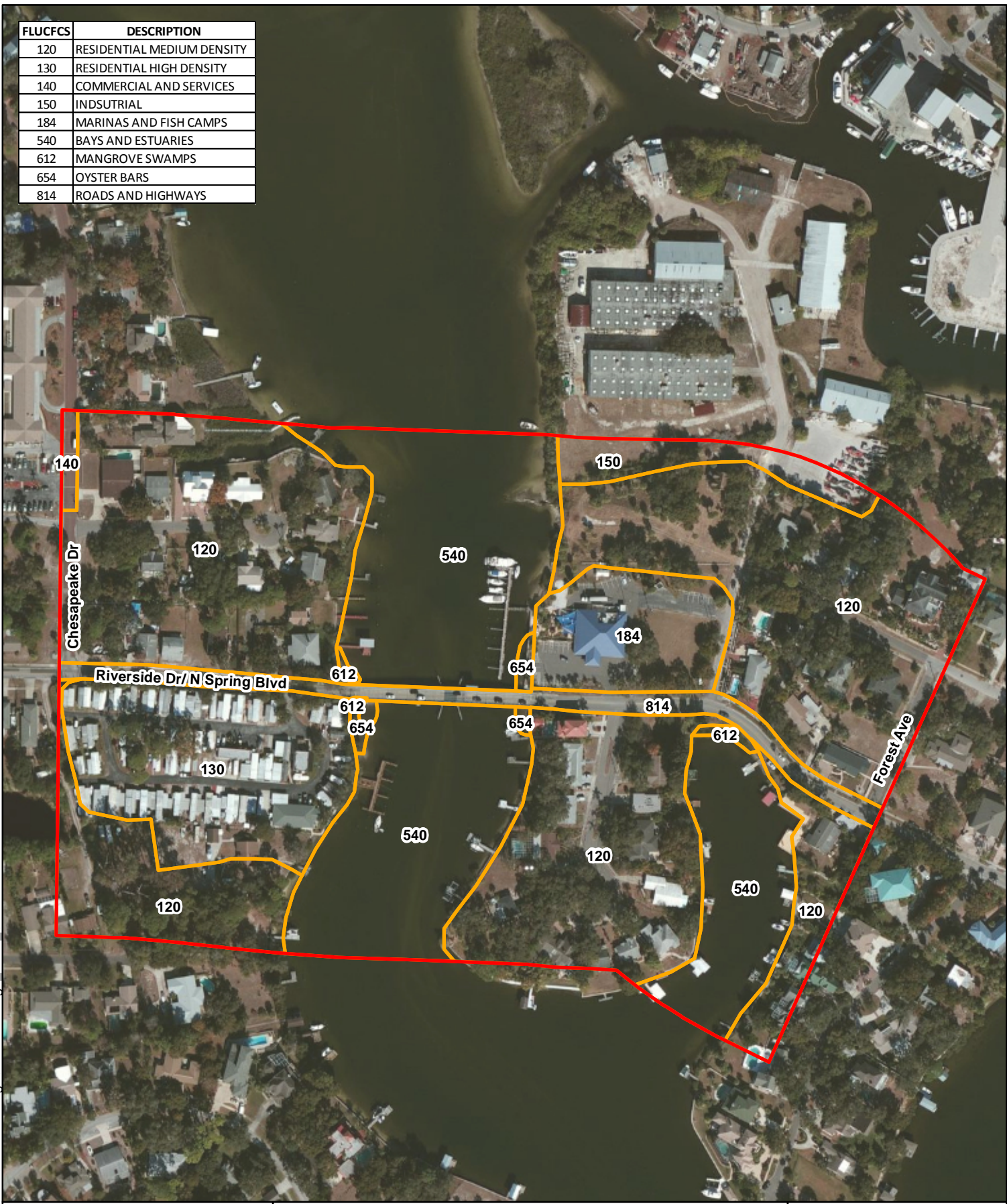




APPENDIX C

Land Use/Vegetative Cover Type

FLUCFCS	DESCRIPTION
120	RESIDENTIAL MEDIUM DENSITY
130	RESIDENTIAL HIGH DENSITY
140	COMMERCIAL AND SERVICES
150	INDSUTRIAL
184	MARINAS AND FISH CAMPS
540	BAYS AND ESTUARIES
612	MANGROVE SWAMPS
654	OYSTER BARS
814	ROADS AND HIGHWAYS

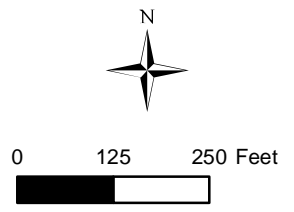


Path: I:\Misc_Jobs\Tia Norman\Beckett Bridge\Beckett Bridge_Land_Use.mxd

Legend

- Project Study Area
- Land Use/ Vegetative Cover

**Land Use/ Vegetative Cover Map
Beckett Bridge PD&E
Tarpon Springs, Pinellas County**





APPENDIX D

Project Area Photos



Photo 1: Mangroves located on the west side of Whitcomb Bayou and north side of Beckett Bridge, facing north.



Photo 2: Whitcomb Bayou facing north.



Photo 3: East side of Whitcomb Bayou north of Beckett Bridge, facing northwest.



Photo 4: Mangroves located on the south side of North Spring Boulevard east of the bridge, facing west.



Photo 5: White mangrove located on the east side of Whitcomb Bayou and the south side of Beckett Bridge.



Photo 6: East side of Whitcomb Bayou on the south side of Beckett Bridge, facing west.



Photo 7: Whitcomb Bayou facing south.



Photo 8: Mangroves and oyster bed on the west side of Whitcomb Bayou and south side of Beckett Bridge, facing west.

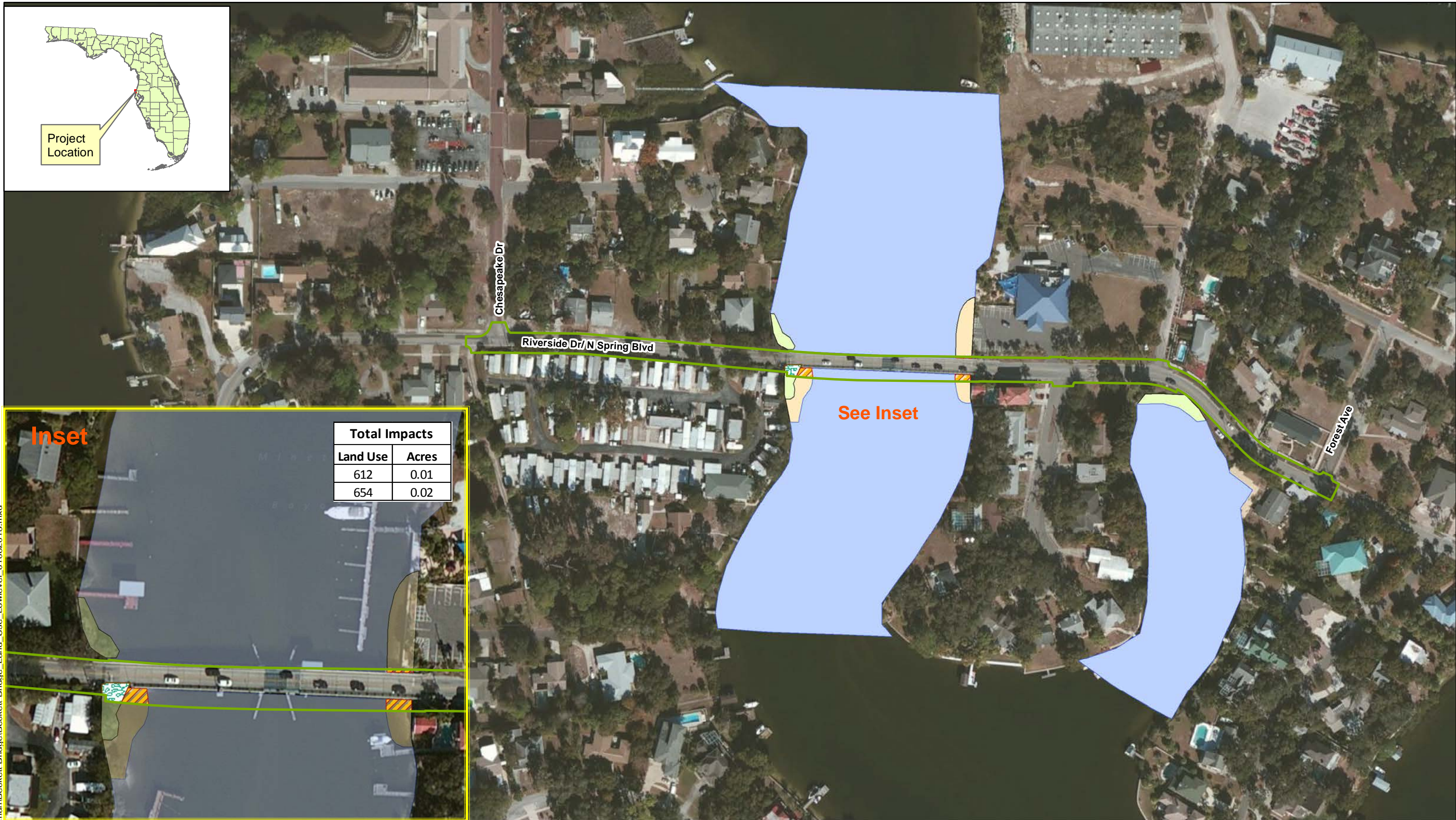


APPENDIX E

Wetland Impact Area Maps



Project Location

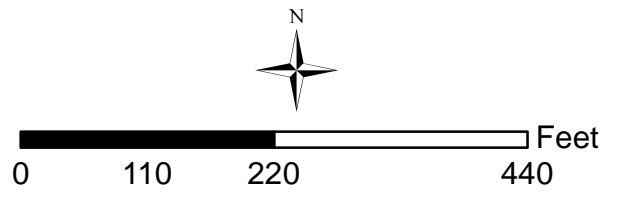


Total Impacts	
Land Use	Acres
612	0.01
654	0.02

Legend

- Low-Level
- BAYS AND ESTUARIES
- MANGROVE SWAMPS
- MANGROVE SWAMPS
- OYSTER BARS
- OYSTER BARS

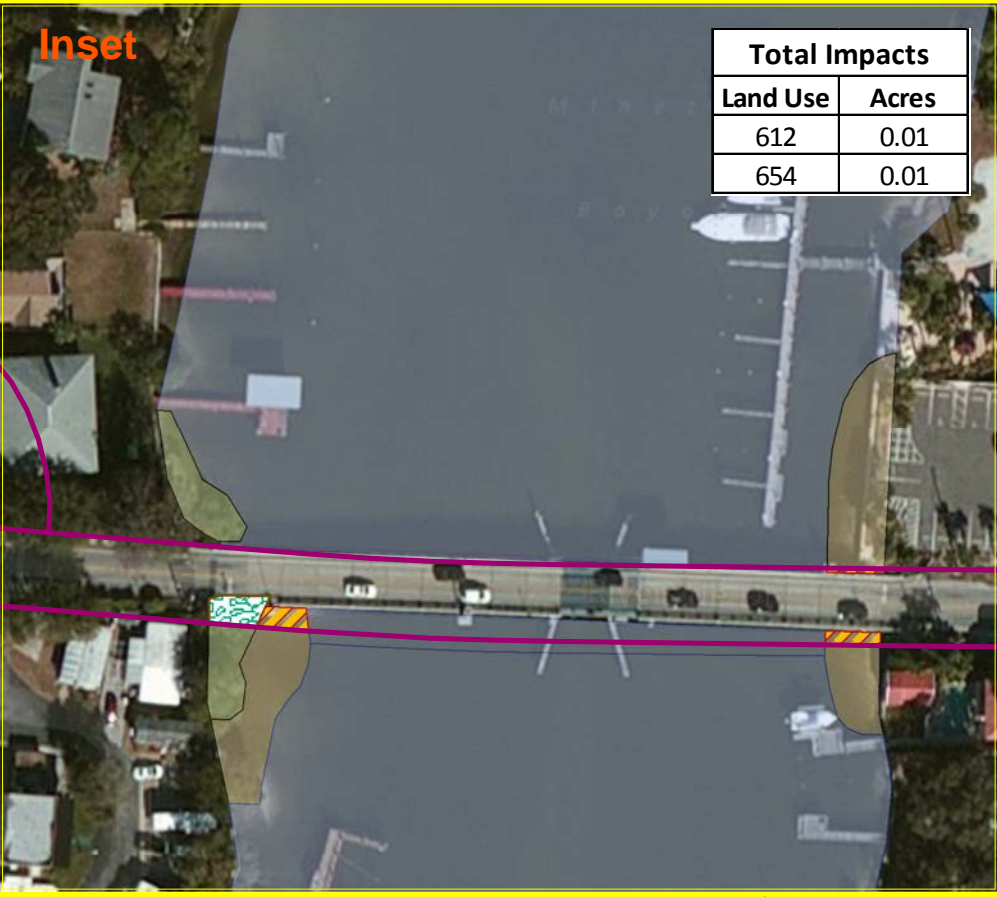
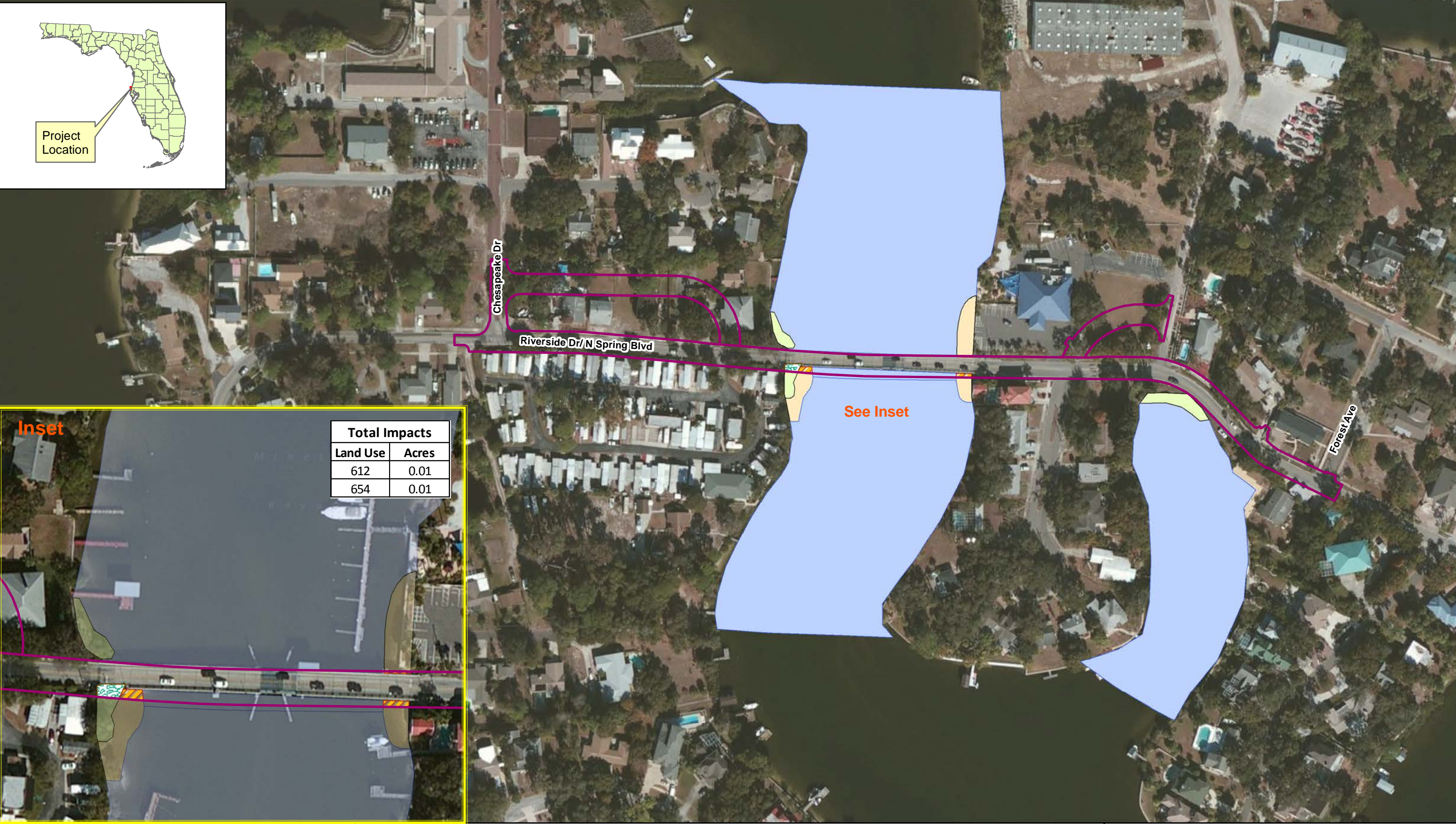
**Wetland and Surface Water Impact Map
Movable Bridge Alternative
Beckett Bridge PD & E
Tarpon Springs, Pinellas County**



Path: I:\Misc_Jobs\Tia Norman\Beckett Bridge\Beckett Bridge_Land_Use_Lowlevel_01082013.mxd



Project Location



Total Impacts	
Land Use	Acres
612	0.01
654	0.01

Legend

Mid-Level Alternative A

Impact

- MANGROVE SWAMPS
- OYSTER BARS

Land Use

- BAYS AND ESTUARIES
- MANGROVE SWAMPS
- OYSTER BARS

Wetland and Surface Water Impact Map
Fixed Bridge Alternative - Option A
Beckett Bridge PD & E
Tarpon Springs, Pinellas County

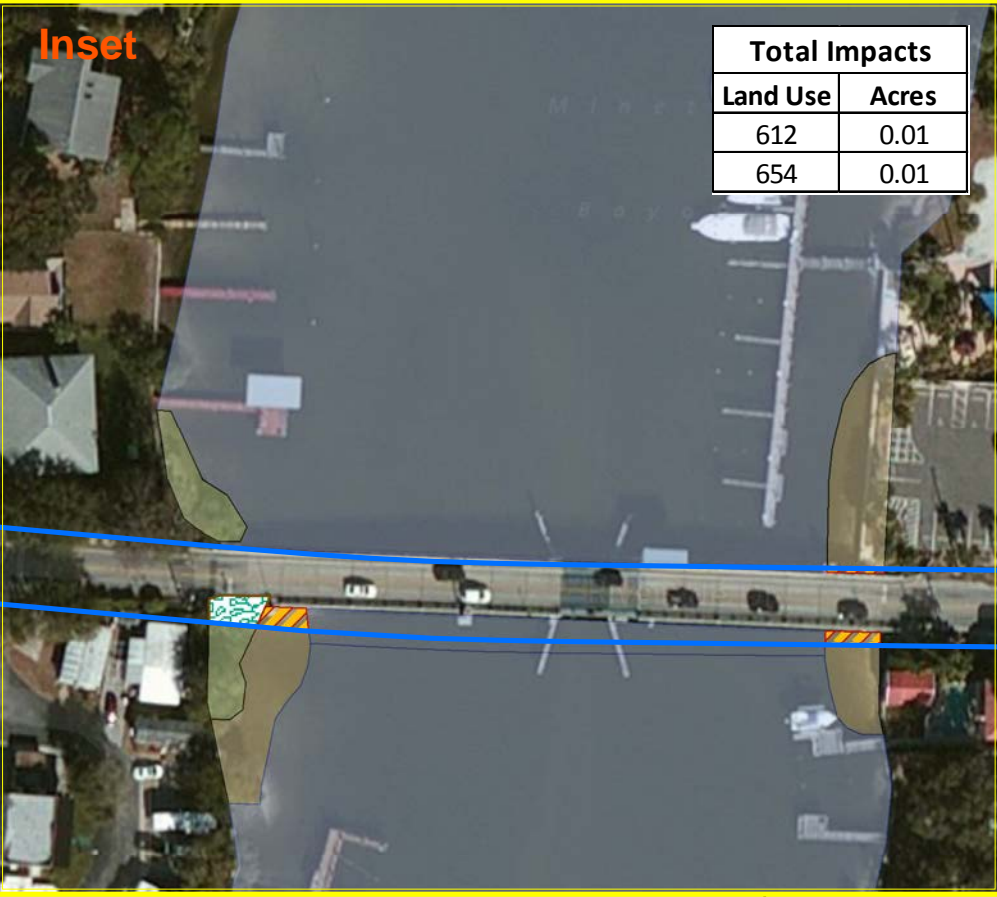
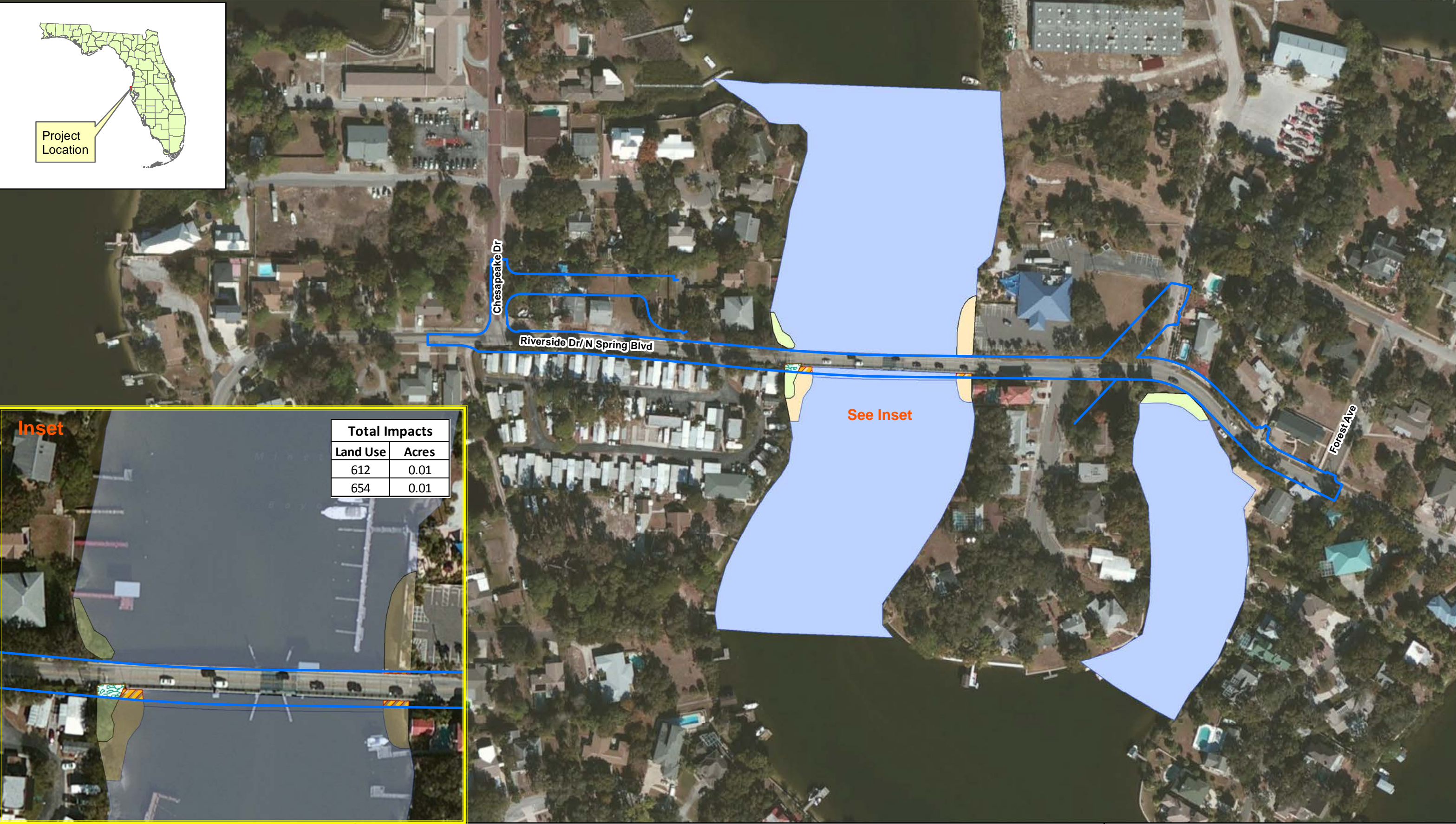
North arrow pointing up.

Scale bar: 0, 110, 220, 440 Feet

Path: I:\Misc_Jobs\Tia Norman\Beckett Bridge\Beckett Bridge_Land_Use_Midlevel_A_01082013.mxd



Project Location



Total Impacts	
Land Use	Acres
612	0.01
654	0.01

Legend

— Mid-Level Alternative B

Impact

- MANGROVE SWAMPS
- OYSTER BARS

Land Use

- BAYS AND ESTUARIES
- MANGROVE SWAMPS
- OYSTER BARS

Wetland and Surface Water Impact Map
Fixed Bridge Alternative - Option B
Beckett Bridge PD & E
Tarpon Springs, Pinellas County

N

0 110 220 440

Feet

Path: I:\Misc_Jobs\Tia Norman\Beckett Bridge\Beckett Bridge_Land_Use_Midlevel_B_01082013.mxd



APPENDIX F

UMAM Data Sheets

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name Beckett Bridge PD&E Study		Application Number		Assessment Area Name or Number Surface Water 1 - Whitcomb Bayou	
FLUCCs code 612 - Mangrove Swamp		Further classification (optional) FWS - E2SS3 (Estuarine, Intertidal, Scrub-shrub, Broad-Leaved Evergreen)		Impact or Mitigation Site? Impact	Assessment Area Size Low Level - 0.01 ac Mid-Level A - 0.01 ac Mid-Level B - 0.01 ac
Basin/Watershed Name/Number Anclote River Bayou Complex (WBID1440A)		Affected Waterbody (Class) III		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) OFW in Pinellas County Aquatic Preserve	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands A small stand of mangroves is located at the west end of the existing bridge, north and south of the roadway along Whitcomb Bayou. Whitcomb Bayou is part of the Anclote River Bayou Complex which is a major embayment of the tidal segment of the Anclote River. The Anclote River discharges to the Gulf of Mexico at the Pasco-Pinellas County Line north of St. Joseph's Sound. Within the project area, Whitcomb Bayou is contained by urban development within the city of Tarpon Springs.					
Assessment area description Whitcomb Bayou is a tidally influenced waterbody. Within the project study area, the mangrove stands are dominated by black mangrove, white mangrove, red mangrove, saltweed, and marsh elder. The mangroves are located on the north and south side of Beckett Bridge on the west side of Whitcomb Bayou. A small mangrove stand is also located on the south side of N. Spring Blvd. directly south of the N. Spring Blvd/Pampas Ave. intersection. Mobile homes, single-family homes, and a yacht club are located upland of the mangrove areas.					
Significant nearby features The project area is located within the city of Tarpon Springs; the Gulf of Mexico is located approximately 3 miles to the west and Lake Tarpon is located approximately 2 miles to the east.			Uniqueness (considering the relative rarity in relation to the regional landscape.) This system is not unique considering the regional landscape.		
Functions Whitcomb Bayou provides breeding, nesting, and nursery areas for a number of wildlife species, provides wildlife corridors, food chain support, natural water flow attenuation, and water quality improvement.			Mitigation for previous permit/other historic use None within the project area.		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) water snakes, brown pelican, wading birds, osprey, bald eagle, raccoon, sponges, oysters, marine worms, barnacles, crabs, mosquitos, numerous other invertebrates, and fishes.			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) wading birds (SSC); Gulf sturgeon (T); manatee (E); snowy plover (T); piping plover (T); black skimmer (SSC); American oyster catcher (SSC); brown pelican (SSC), wood stork (E); least tern (T)		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Observed osprey, seagulls, pigeons, barnacles, oysters, terns, great egret.					
Additional relevant factors:					
Assessment conducted by: T. Norman/S. Durrance			Assessment date(s): 7-Feb-12		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Beckett Bridge PD&E Study	Application Number	Assessment Area Name or Number Surface Water 1 - Whitcomb Bayou
Impact or Mitigation Impact - 612- Mangrove Swamps - Low Level Alternative	Assessment conducted by: T. Norman/S. Durrance	Assessment date: 7-Feb-12

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	Suitable habitat (including natural mangrove areas) is available north and south of the project area to support wildlife species listed in Part I; Wildlife access to the project area is limited by man-made activities and structures, including roadways, the existing bridge with high traffic, and docking structures. Single-family homes (low and high density) are located inside the project area. The project area also includes a yacht club with a multi-slip docking structure.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>5</td> <td>5</td> </tr> </table>	w/o pres or current	with	5	5	
w/o pres or current	with				
5	5				
.500(6)(b)Water Environment (n/a for uplands)	Water levels in the river are tidally affected; Biological indicators of the tidal ranges were present and clearly defined; Water was tannic and cloudy, which may limit sunlight penetration to submerged vegetation; No SAV was observed in the project area. The project area receives runoff from upland single-family homes and the existing bridge and roadway.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>8</td> <td>8</td> </tr> </table>	w/o pres or current	with	8	8	
w/o pres or current	with				
8	8				
.500(6)(c)Community structure	Vegetation and strata within the mangrove swamp is appropriate. Evidence of regeneration (young mangrove seedlings) was observed along the shoreline of Whitcomb Bayou. The mangrove areas have the potential to be utilized by fish as nurseries, by wading birds and shorebirds at low tide for foraging, invertebrates (crabs and mollusks), and reptiles.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>5</td> <td>0</td> </tr> </table>	w/o pres or current	with	5	0	
w/o pres or current	with				
5	0				

Score = sum of above scores/30 (if uplands, divide by 20)	
current	
or w/o pres	
with	
0.60	0.43

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.17 x 0.01 ac = 0.002

Delta = [with-current]
0.17

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Beckett Bridge PD&E Study	Application Number	Assessment Area Name or Number Surface Water 1 - Whitcomb Bayou
Impact or Mitigation Impact - 612- Mangrove Swamps - Mid-Level Alternative A	Assessment conducted by: T. Norman/S. Durrance	Assessment date: 7-Feb-12

Scoring Guidance The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support w/o pres or current 5 with 5	Suitable habitat (including natural mangrove areas) is available north and south of the project area to support wildlife species listed in Part I; Wildlife access to the project area is limited by man-made activities and structures, including roadways, the existing bridge with high traffic, and docking structures. Single-family homes (low and high density) are located inside the project area. The project area also includes a yacht club with a multi-slip docking structure.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current 8 with 8	Water levels in the river are tidally affected; Biological indicators of the tidal ranges were present and clearly defined; Water was tannic and cloudy, which may limit sunlight penetration to submerged vegetation; No SAV was observed in the project area. The project area receives runoff from upland single-family homes and the existing bridge and roadway.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 5 with 0	Vegetation and strata within the mangrove swamp is appropriate. Evidence of regeneration (young mangrove seedlings) was observed along the shoreline of Whitcomb Bayou. The mangrove areas have the potential to be utilized by fish as nurseries, by wading birds and shorebirds at low tide for foraging, invertebrates (crabs and mollusks), and reptiles.

Score = sum of above scores/30 (if uplands, divide by 20) current 0.60 or w/o pres with 0.43

If preservation as mitigation, Preservation adjustment factor = Adjusted mitigation delta =

For impact assessment areas FL = delta x acres = 0.17 x 0.01 ac = 0.002

Delta = [with-current] 0.17

If mitigation Time lag (t-factor) = Risk factor =

For mitigation assessment areas RFG = delta/(t-factor x risk) =
--

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Beckett Bridge PD&E Study	Application Number	Assessment Area Name or Number Surface Water 1 - Whitcomb Bayou
Impact or Mitigation Impact - 612- Mangrove Swamps - Mid-Level Alternative B	Assessment conducted by: T. Norman/S. Durrance	Assessment date: 7-Feb-12

Scoring Guidance The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support w/o pres or current 5 with 5	Suitable habitat (including natural mangrove areas) is available north and south of the project area to support wildlife species listed in Part I; Wildlife access to the project area is limited by man-made activities and structures, including roadways, the existing bridge with high traffic, and docking structures. Single-family homes (low and high density) are located inside the project area. The project area also includes a yacht club with a multi-slip docking structure.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current 8 with 8	Water levels in the river are tidally affected; Biological indicators of the tidal ranges were present and clearly defined; Water was tannic and cloudy, which may limit sunlight penetration to submerged vegetation; No SAV was observed in the project area. The project area receives runoff from upland single-family homes and the existing bridge and roadway.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 5 with 0	Vegetation and strata within the mangrove swamp is appropriate. Evidence of regeneration (young mangrove seedlings) was observed along the shoreline of Whitcomb Bayou. The mangrove areas have the potential to be utilized by fish as nurseries, by wading birds and shorebirds at low tide for foraging, invertebrates (crabs and mollusks), and reptiles.

Score = sum of above scores/30 (if uplands, divide by 20) current or w/o pres 0.60 with 0.43

If preservation as mitigation, Preservation adjustment factor = Adjusted mitigation delta =

For impact assessment areas FL = delta x acres = 0.17 x 0.01 ac = 0.002

Delta = [with-current] 0.17

If mitigation Time lag (t-factor) = Risk factor =

For mitigation assessment areas RFG = delta/(t-factor x risk) =
--

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name Beckett Bridge PD&E Study		Application Number	Assessment Area Name or Number Surface Water 1 - Whitcomb Bayou	
FLUCCs code 654 - Oyster Bars	Further classification (optional) FWS - E2RF2 (Estuarine, Intertidal, Reef, Mollusk)		Impact or Mitigation Site? Impact	Assessment Area Size Low Level - 0.02 ac Mid-Level A - 0.01 ac Mid-Level B - 0.01 ac
Basin/Watershed Name/Number Anclote River Bayou Complex (WBID1440A)	Affected Waterbody (Class) III	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) OFW in Pinellas County Aquatic Preserve		
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Oyster bars are present throughout Whitcomb Bayou. Whitcomb Bayou is part of the Anclote River Bayou Complex which is a major embayment of the tidal segment of the Anclote River. The Anclote River discharges to the Gulf of Mexico at the Pasco-Pinellas County Line north of St. Joseph's Sound. Within the project area, Whitcomb Bayou is contained by urban development within the city of Tarpon Springs.				
Assessment area description Whitcomb Bayou is a tidally influenced waterbody. Within the project study area, oyster beds are located on the north and south sides of Beckett Bridge on the west and east sides of Whitcomb Bayou.				
Significant nearby features The project area is located within the city of Tarpon Springs; the Gulf of Mexico is located approximately 3 miles to the west and Lake Tarpon is located approximately 2 miles to the east.		Uniqueness (considering the relative rarity in relation to the regional landscape.) This system is not unique considering the regional landscape.		
Functions Oyster beds provide foraging areas for a number of wildlife species, food chain support, water quality improvement.		Mitigation for previous permit/other historic use None within the project area.		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Marine worms, crabs, numerous other invertebrates, fishes, wading birds, raptors, and shorebirds		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) wading birds (SSC); Gulf sturgeon (T); snowy plover (T); piping plover (T); black skimmer (SSC); American oyster catcher (SSC); brown pelican (SSC), wood stork (E); least tern (T)		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None				
Additional relevant factors:				
Assessment conducted by: T. Norman/S. Durrance		Assessment date(s): 7-Feb-12		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Beckett Bridge PD&E Study	Application Number	Assessment Area Name or Number Surface Water 1 - Whitcomb Bayou
Impact or Mitigation Impact - 654-Oyster Bars- Low Level Alternative	Assessment conducted by: T. Norman/S. Durrance	Assessment date: 7-Feb-12

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	Suitable habitat is available north and south of the project area to support wildlife species listed in Part I; Wildlife access to the project area is limited by man-made activities and structures, including roadways, the existing bridge with high traffic, and docking structures. Single-family homes (low and high density) are located inside the project area. The project area also includes a yacht club with a multi-slip docking structure.
w/o pres or current	with
5	5

.500(6)(b)Water Environment (n/a for uplands)	Water levels in the river are tidally affected; Biological indicators of the tidal ranges were present and clearly defined; Water was tannic and cloudy, which may limit sunlight penetration to the substrate. No SAV was observed in the project area. The project area receives runoff from upland single-family homes and the existing bridge and roadway.
w/o pres or current	with
8	8

.500(6)(c)Community structure	Community structure is faunal-based and consists of oyster beds that are partially exposed at low tide, providing marginal foraging areas for wading birds, raptors, and shorebirds. Bridge pilings, seawall footer and riprap along the shoreline support oyster and barnacle growth. The area can also be expected to be utilized by various fish species, invertebrates, including mollusks and crabs, and provide foraging areas for a number of fish species, including mullet, sheepshead, red drum, and trout. A portion of the oyster bed area will be impacted by the pilings and construction associated with the new bridge.
1. Vegetation and/or 2. Benthic Community	
w/o pres or current	with
5	1

Score = sum of above scores/30 (if uplands, divide by 20)	
current	
or w/o pres	
with	
0.60	0.47

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.13 X 0.02 ac = 0.003

Delta = [with-current]
0.13

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Beckett Bridge PD&E Study	Application Number	Assessment Area Name or Number Surface Water 1 - Whitcomb Bayou
Impact or Mitigation Impact - 654-Oyster Bars- Mid-Level Alternative A	Assessment conducted by: T. Norman/S. Durrance	Assessment date: 7-Feb-12

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	Suitable habitat is available north and south of the project area to support wildlife species listed in Part I; Wildlife access to the project area is limited by man-made activities and structures, including roadways, the existing bridge with high traffic, and docking structures. Single-family homes (low and high density) are located inside the project area. The project area also includes a yacht club with a multi-slip docking structure.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>5</td> <td>5</td> </tr> </table>	w/o pres or current	with	5	5	
w/o pres or current	with				
5	5				

.500(6)(b)Water Environment (n/a for uplands)	Water levels in the river are tidally affected; Biological indicators of the tidal ranges were present and clearly defined; Water was tannic and cloudy, which may limit sunlight penetration to the substrate. No SAV was observed in the project area. The project area receives runoff from upland single-family homes and the existing bridge and roadway.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>8</td> <td>8</td> </tr> </table>	w/o pres or current	with	8	8	
w/o pres or current	with				
8	8				

.500(6)(c)Community structure	Community structure is faunal-based and consists of oyster beds that are partially exposed at low tide, providing marginal foraging areas for wading birds, raptors, and shorebirds. Bridge pilings, seawall footer and riprap along the shoreline support oyster and barnacle growth. The area can also be expected to be utilized by various fish species, invertebrates, including mollusks and crabs, and provide foraging areas for a number of fish species, including mullet, sheepshead, red drum, and trout. A portion of the oyster bed area will be impacted by the pilings and construction associated with the new bridge.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>5</td> <td>1</td> </tr> </table>	w/o pres or current	with	5	1	
w/o pres or current	with				
5	1				

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.60	0.47

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.13 X 0.01 ac = 0.001

Delta = [with-current]
0.13

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Beckett Bridge PD&E Study	Application Number	Assessment Area Name or Number Surface Water 1 - Whitcomb Bayou
Impact or Mitigation Impact - 654-Oyster Bars- Mid-Level Alternative B	Assessment conducted by: T. Norman/S. Durrance	Assessment date: 7-Feb-12

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	Suitable habitat is available north and south of the project area to support wildlife species listed in Part I; Wildlife access to the project area is limited by man-made activities and structures, including roadways, the existing bridge with high traffic, and docking structures. Single-family homes (low and high density) are located inside the project area. The project area also includes a yacht club with a multi-slip docking structure.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>5</td> <td>5</td> </tr> </table>	w/o pres or current	with	5	5	
w/o pres or current	with				
5	5				

.500(6)(b)Water Environment (n/a for uplands)	Water levels in the river are tidally affected; Biological indicators of the tidal ranges were present and clearly defined; Water was tannic and cloudy, which may limit sunlight penetration to the substrate. No SAV was observed in the project area. The project area receives runoff from upland single-family homes and the existing bridge and roadway.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>8</td> <td>8</td> </tr> </table>	w/o pres or current	with	8	8	
w/o pres or current	with				
8	8				

.500(6)(c)Community structure	Community structure is faunal-based and consists of oyster beds that are partially exposed at low tide, providing marginal foraging areas for wading birds, raptors, and shorebirds. Bridge pilings, seawall footer and riprap along the shoreline support oyster and barnacle growth. The area can also be expected to be utilized by various fish species, invertebrates, including mollusks and crabs, and provide foraging areas for a number of fish species, including mullet, sheepshead, red drum, and trout. A portion of the oyster bed area will be impacted by the pilings and construction associated with the new bridge.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>5</td> <td>1</td> </tr> </table>	w/o pres or current	with	5	1	
w/o pres or current	with				
5	1				

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.60	0.47

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.13 X 0.01 ac = 0.001

Delta = [with-current]
0.13

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =



APPENDIX G

State Lands Easement

TFI Cover Sheet

DM ID _____

Document Type: Trustees of the Internal Improvement Trust Fund Instruments

Instrument: [] Deed [] Lease Submerged Easement [] Permit [] Management Agreement

[] Use Agreement [] Disclaimer [] Quitclaim [] Dedication [] Release

[] Acts of Legislation [] Other

Instrument Number: 29442

Extension: 000

File Number: 5256

Document Date: 02-12-1994

Consideration: _____

Water Body: Whitcomb / Jasper Bayou

Reservations / Reverter: 4/4

Original County: Pinebluff

Section: 11, 12

Township: 27S

Range: 15E

Total Area / Area Unit: .493 (A) Acreage (S) Square Feet

Comments:

The information on this page was collected during the prep phase of scanning and is an aide for data entry. Please refer to the document for actual information.

This Instrument Prepared By:
Cher King
Submerged Lands Section
Bureau of Land Management Services
3900 Commonwealth Boulevard
Mail Station No. 125
Tallahassee, Florida 32399

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND
OF THE STATE OF FLORIDA

SOVEREIGN SUBMERGED LANDS EASEMENT

NO. 29472 (5256-52)
BOT FILE NO. 522682763

THIS EASEMENT is hereby granted by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida, hereinafter referred to as the Grantor.

WITNESSETH: That for the faithful and timely performance of and compliance with the terms and conditions stated herein, the Grantor does hereby grant to Pinellas County Board of County Commissioners, hereinafter referred to as the Grantee, a nonexclusive easement on, under and across the sovereign lands, if any, contained in the allowing legal description:

A parcel of submerged land in Sections 11 and 12, Township 27 South, Range 15 East, in Whitcomb/Tarpon Bayou, Pinellas County, as is more particularly described and shown on Attachment A, dated August 22, 1995.

TO HAVE THE USE OF the hereinabove described premises from February 12, 1996, the effective date of this easement. The terms and conditions of and for which this easement is granted are as follows:

1. USE OF PROPERTY: The above described parcel of land shall be used solely for repair of an existing bridge and installation of a subaqueous electric cable and Grantee shall not engage in any activity except as described in the Department of Environmental Protection, Environmental Resource Permit No. 522682763, dated September 13, 1995, incorporated herein and made a part of this easement by reference.
2. EASEMENT CONSIDERATION: The consideration for this easement shall be an amount as determined by the rule establishing fees for utility crossings. Once the rule is adopted, payment shall be remitted to the Grantor according to the rule. The established fee shall be assessed from the effective date of the subject rule.
3. WARRANTY OF TITLE/GUARANTEE OF SUITABILITY OF USE OF LAND: Grantor neither warrants title to the lands described herein nor guarantees the suitability of any of the lands for any particular use.
4. RIGHTS GRANTED: The rights hereby granted shall be subject to any and all prior rights of the United States and any and all prior grants by the Grantor in and to the submerged lands situated within the limits of this easement.
5. DAMAGE TO EASEMENT PROPERTY AND INTERFERENCE WITH PUBLIC AND PRIVATE RIGHTS: Grantee shall not damage the easement lands or unduly interfere with public or private rights therein.

PINELLAS COUNTY - RIGHT OF WAY
SPECIAL ACCOUNT
ATTN: 92

6. GRANTOR'S RIGHT TO GRANT COMPATIBLE USES OF THE EASEMENT PROPERTY: This easement is nonexclusive, and the Grantor, or its duly authorized agent, shall retain the right to enter the property or to engage in management activities not inconsistent with the use herein provided for and shall retain the right to grant compatible uses of the property to third parties during the term of this easement.

7. RIGHT TO INSPECT: Grantor, or its duly authorized agent, shall have the right at any time to inspect the works and operations of the Grantee in any matter pertaining to this easement.

8. INDEMNIFICATION/INVESTIGATION OF ALL CLAIMS: The Grantee shall investigate all claims of every nature at its expense. Each party is responsible for all personal injury and property damage attributable to the negligent acts or omissions of that party and the officers, employees and agents thereof. Nothing herein shall be construed as an indemnity or a waiver of sovereign immunity enjoyed by any party hereto, as provided in Section 768.28, Florida Statutes, as amended from time to time, or any other law providing limitations on claims.

9. VENUE: Grantee waives venue as to any litigation arising from matters relating to this easement and any such litigation between Grantor and Grantee shall be initiated and maintained only in Leon County, Florida.

10. ASSIGNMENT OF EASEMENT: This easement shall not be assigned or otherwise transferred without prior written consent of the Grantor or its duly authorized agent and which consent shall not be unreasonably withheld. Any assignment or other transfer without prior written consent of the Grantor shall be null and void and without legal effect.

11. TERMINATION: The Grantee, by acceptance of this easement, binds itself, its successors and assigns, to abide by the provisions and conditions herein set forth, and said provisions and conditions shall be deemed covenants of the Grantee, its successors and assigns. In the event the Grantee fails or refuses to comply with the provisions and conditions herein set forth or in the event the Grantee violates any of the provisions and conditions herein, this easement may be terminated by the Grantor upon 30 days written notice to Grantee. If terminated, all of the above-described parcel of land shall revert to the Grantor. All costs, including attorneys' fees, incurred by the Grantor to enforce the provisions of this easement shall be paid by the Grantee. All notices required to be given to Grantee by this easement or applicable law or administrative rules shall be sufficient if sent by U.S. Mail to the following address:

Pinellas County Board of County Commissioners
Department of Public Works
440 Court Street
Clearwater, Florida 34616-5110

The Grantee agrees to notify the Grantor by certified mail of any changes to this address at least ten (10) days before the change is effective.

12. TAXES AND ASSESSMENTS: The Grantee shall assume all responsibility for liabilities that accrue to the subject property or to the improvements thereon, including any and all drainage or special assessments or taxes of every kind and description which are now or may be hereafter lawfully assessed and levied against the subject property during the effective period of this easement which result from the grant of this easement or the activities of Grantee hereunder.

13. REMOVAL OF STRUCTURES/ADMINISTRATIVE FINES: If the Grantee does not remove said structures and equipment occupying and erected upon the premises after expiration or cancellation of this easement, such structures and equipment will be deemed forfeited to the Grantor, and the Grantor may authorize removal and may sell such forfeited structures and equipment after ten (10) days written notice by certified mail addressed to the Grantee at the address specified in Item 11 or at such address on record as provided to the Grantor by the Grantee. However, such remedy shall be in addition to all other remedies available to Grantor under applicable laws, rules and regulations including the right to compel removal of all structures and the right to impose administrative fines.

14. ENFORCEMENT OF PROVISIONS: No failure, or successive failures, on the part of the Grantor to enforce any provision, nor any waiver or successive waivers on its part of any provision herein, shall operate as a discharge thereof or render the same inoperative or impair the right of the Grantor to enforce the same upon any renewal thereof or in the event of subsequent breach or breaches.

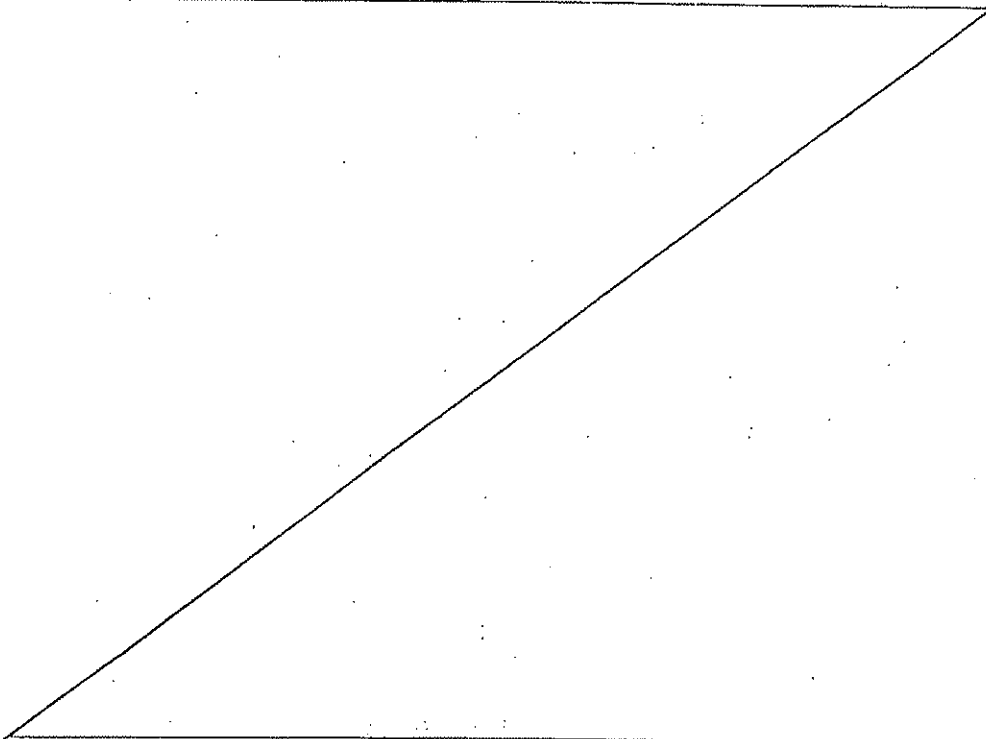
15. RECORDATION OF EASEMENT: The Grantee, at its own expense, shall record this fully executed easement in its entirety in the public records of the county within which the easement site is located within fourteen (14) days after receipt, and shall provide to the Grantor within ten (10) days following the recordation a copy of the recorded easement in its entirety which contains the O.R. Book and pages at which the easement is recorded.

16. AMENDMENT/MODIFICATIONS: This easement is the entire and only agreement between the parties. Its provisions are not severable. Any amendment or modification to this easement must be in writing and must be accepted, acknowledged and executed by the Grantee and Grantor.

17. ACOE AUTHORIZATION: Prior to commencement of construction and/or activities authorized herein, the Grantee shall obtain the U.S. Army Corps of Engineers (COE) permit if it is required by the COE. Any modifications to the construction and/or activities authorized herein that may be required by the COE shall require consideration by and the prior written approval of the Grantor prior to the commencement of construction and/or any activities on sovereign, submerged lands.

18. ADDITIONAL STRUCTURES OR ACTIVITIES/EMERGENCY STRUCTURAL REPAIRS: No additional structures shall be erected and/or activities undertaken, including but not limited to, dredging, relocation/realignment or major repairs or renovations made to authorized structures, on, in or over sovereignty, submerged lands without the prior written consent from the Grantor, with the exception of emergency repairs. Unless specifically authorized in writing by the Grantor, such activities or structures shall be considered unauthorized and a violation of Chapter 253, Florida Statutes, and shall subject the Grantee to administrative fines under Chapter 18-14, Florida Administrative Code. If emergency repairs are required to be undertaken in the interests of public health, safety or welfare, the Grantee shall notify the Grantor of such repairs as quickly as is practicable; provided, however, that such emergency activities shall not exceed the activities authorized by this easement.

19. UPLAND RIPARIAN PROPERTY INTEREST: During the term of this easement, Grantee, pursuant to section 18-21.009, Florida Administrative Code, must either be the record owner of the riparian upland property or have the written consent of the riparian upland property owner(s) to conduct the activity described in this easement. If at any time during the term of this easement, Grantee fails to comply with this requirement, this easement shall terminate and title to this easement shall revert to and vest in the Grantor immediately and automatically.



WITNESSES:

Lydia E. Montes
Original Signature

LYDIA E. MONTES
Typed/Printed Name of Witness

Sandra G. Lynch
Original Signature

Sandra G. Lynch
Typed/Printed Name of Witness

STATE OF FLORIDA
COUNTY OF Hillsborough

The foregoing instrument was acknowledged before me this 31 day of January 1997, by Richard D. Garrity, Ph.D., Director of District Management, Southwest District, Department of Environmental Protection, who is personally known to me.

APPROVED AS TO FORM AND LEGALITY:

Sault Heise
DEP Attorney

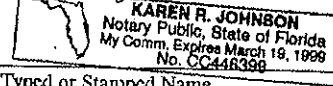
BOARD OF TRUSTEES OF THE INTERNAL
IMPROVEMENT TRUST FUND OF THE STATE
OF FLORIDA

(SEAL)

BY Richard D. Garrity
Richard D. Garrity, Ph.D., Director of District Management, Southwest District, Department of Environmental Protection, as agent for the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida

"GRANTOR"

Karen R. Johnson
Notary Public, State of Florida



Printed, Typed or Stamped Name

My Commission Expires:

3/19/99
Commission/Serial No. CC 448398



WITNESSES:
KARLEEN F. DE BLAKER, CLERK

Deloris R. Barnes
Original Signature
Deloris R. Barnes
Deputy Clerk

Deloris R. Barnes
Typed/Printed Name of Witness

Peter Makriannes Sr.
Original Signature

Peter Makriannes Sr.
Typed/Printed Name of Witness

STATE OF Florida
COUNTY OF Pinellas

The foregoing instrument was acknowledged before me this 26 day of December 1996, by Sallie Parks as Chairman, for and on behalf of Pinellas County Board of County Commissioners. She is personally known to me or who has produced _____, as identification.

My Commission Expires:

Linda R. Reed
MY COMMISSION # CC483043 EXPIRES
July 23, 1999
Commission/Serial No. _____
BONDED THROUGH TRAVELERS INSURANCE, INC.

Pinellas County Board of
County Commissioners (SEAL)
Grantor

BY Sallie Parks
Original Signature of Executing Authority

Sallie Parks
Typed/Printed Name of Executing Authority

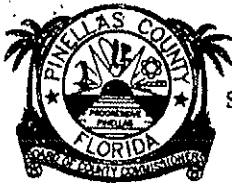
Chairman
Title of Executing Authority

APPROVED AS TO FORM
OFFICE OF COUNTY ATTORNEY

By Carol B. Coker
Attorney

Linda R. Reed
Notary Public, State of FLORIDA

LINDA R. REED
Printed, Typed or Stamped Name



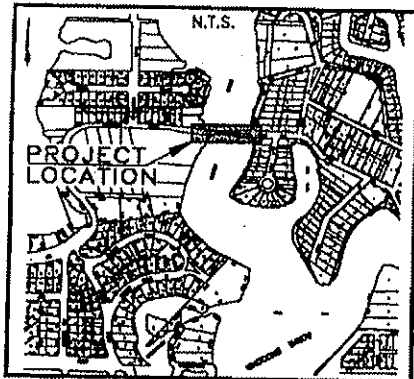
PINELLAS COUNTY PUBLIC WORKS
 LAND SURVEY DIVISION
 22211 U.S. HIGHWAY 19 N.
 CLEARWATER, FLORIDA 34625-2347

PINELLAS COUNTY FLA.
 OFF. REC. BK 9607 PG 1724

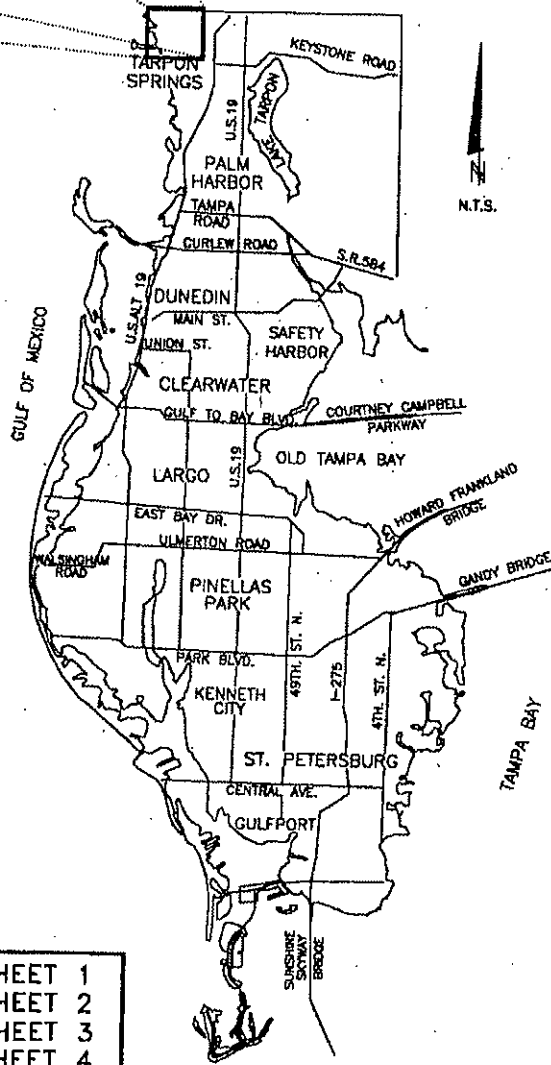


SECTION(S) 11&12, TOWNSHIP 27 SOUTH, RANGE 15 EAST

Additions or deletions by other than the Professional Land Surveyor in responsible charge is prohibited.
 Land Description is invalid without signature and/or embossed seal of the Professional Land Surveyor



PINELLAS COUNTY MAP



**BECKETT BRIDGE
 FILE NO.: 522682763
 PUBLIC EASEMENT**

INDEX

TITLE SHEET AND VICINITY MAP	SHEET 1
LAND SURVEYORS NOTES	SHEET 2
DESCRIPTION	SHEET 3
SKETCH & CERTIFICATION	SHEET 4

Attachment A
 Page 5 of 8 Pages
 Easement No. 29472 (5256-52)



PINELLAS COUNTY PUBLIC WORKS
LAND SURVEY DIVISION
22211 U.S. HIGHWAY 19 N.
CLEARWATER, FLORIDA 34625-2347

SECTION(S) 11&12, TOWNSHIP 27 SOUTH, RANGE 15 EAST

Additions or deletions by other than the Professional Land Surveyor in responsible charge is prohibited.
Land Description is invalid without signature and/or embossed seal of the Professional Land Surveyor

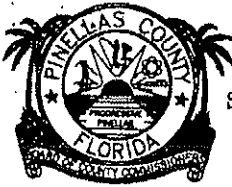


PINELLAS COUNTY FLA.
OFF. REC. BK 9607 PG 1725

LAND SURVEYOR NOTES

1. Type of Survey: Specific Purpose Survey (Chap. 61G17-6.006 (6), F.A.C.)
2. Date of Field Survey: June 7, 1995
3. Not based on an abstract of title. Recorded instruments were provided. Right-of-Way lines shown hereon were compiled from record data. Other easements and/or restrictions may exist.
4. Bearing Basis and Coordinates: Bearings indicated are on an assumed meridian based on the South line of Lot 1, E. M. SMITHS BAYOU SUBDIVISION REVISED, according to plat thereof, as recorded in Plat Book 21, Page 83, public records of Pinellas County, Florida, in the Southeast 1/4 of Section 11, Township 27 South, Range 15 East, Pinellas County, Florida, being $S 85^{\circ}26'00'' E$. Coordinates are assumed, based on the South 1/4 corner of Section 11, Township 27 South, Range 15 East, being $N=1,386,033.11$ ft. and $E=250,775.85$ ft.
5. Survey is invalid without signature and seal. Copies of this Survey, for informational purposes only, are available without signature or seal.
6. Other utilities may exist. Users of this Survey are directed to contact utility owners for additional information.
7. Parent bench mark(s): " PINCO M " having an elevation of 22.77 feet, and " Y 147 PINELLAS CTY " having an elevation of 17.54 feet, National Geodetic Vertical Datum, 1929, Pinellas County Map Number(s) 30 & 29.
8. Additional ground point elevations and contour lines are available upon request.
9. Purpose: To acquire a public easement from the Department of Environmental Protection, Submerged Lands and Environmental Resources Program, acting as the designated agent of the Board of Trustees of the Internal Improvement Trust Fund.
10. Mean High Water Elevation is 1.53 feet, National Geodetic Vertical Datum, 1929, as provided by Douglas A. Thompson, P.L.S., of the Bureau of Survey and Mapping. Derived from the Tarpon Springs Quad via an interpolation between Tide Station 8726905, Tarpon Springs, Anclote River to north and Tide Station 8726892, Spring Bayou, Northeast Whitcomb Bayou to south.
11. Survey Team: R. Gorgen and D. Feyerabend.

Attachment A
Page 6 of 8 Pages
Easement No. 29472 (5256-52)



PINELLAS COUNTY PUBLIC WORKS
LAND SURVEY DIVISION
22211 U.S. HIGHWAY 19 N.
CLEARWATER, FLORIDA 34625-2347

SECTION(S) 11&12, TOWNSHIP 27 SOUTH, RANGE 15 EAST

Additional or deletions by other than the Professional Land Surveyor in responsible charge is prohibited.
Land Description is invalid without signature and/or embossed seal of the Professional Land Surveyor



PINELLAS COUNTY FLA.
OFF. REC. BK 9607 PG 1726

THAT PART OF THE SOVEREIGN LANDS OF THE STATE OF FLORIDA THAT LIE WITHIN THE FOLLOWING DESCRIBED AREA:

A parcel of submerged lands in Tarpon Bayou, in the South 1/2 of Sections 11 and 12, Township 27 South, Range 15 East, Pinellas County, Florida, being described as follows:

Commence at the Southeast corner of Lot 1, E. M. SMITHS BAYOU SUBDIVISION REVISED, according to plat thereof, as recorded in Plat Book 21, Page 63, public records of Pinellas County, Florida, in the Southeast 1/4 of said Section 11, Township 27 South, Range 15 East, Pinellas County, Florida, run S 85°26'00"E, for a distance of 180.34 feet to a point on the Mean High Water Line and the POINT OF BEGINNING; thence N 62°26'42"W, for a distance of 15.42 feet; thence S 88°21'52"E, for a distance of 178.90 feet; thence N 01°38'08"E, for a distance of 25.00 feet; thence S 88°21'52"E, for a distance of 70.00 feet; thence S 01°38'08"W, for a distance of 25.00 feet; thence S 88°21'52"E, for a distance of 111.71 feet; thence S 60°21'53"E, for a distance of 23.43 feet; thence S 01°38'08"W, for a distance of 28.00 feet; thence S 01°38'08"W, for a distance of 11.00 feet; thence N 88°21'52"W, for a distance of 132.39 feet; thence S 01°38'08"W, for a distance of 25.00 feet; thence N 88°21'52"W, for a distance of 70.00 feet; thence N 01°38'08"E, for a distance of 25.00 feet; thence N 88°21'52"W, for a distance of 164.29 feet; thence N 37°44'13"E, for a distance of 13.61 feet; thence N 01°38'08"E, for a distance of 28.00 feet; thence N 62°26'42"W, for a distance of 9.74 feet to the POINT OF BEGINNING.

CONTAINING: 21,487 square feet or 0.493 acres M.O.L.

BEARING BASIS: Bearings indicated are on an assumed meridian based on the South line of Lot 1, E. M. SMITHS BAYOU SUBDIVISION REVISED, according to plat thereof, as recorded in Plat Book 21, Page 63, public records of Pinellas County, Florida, in the Southeast 1/4 of Section 11, Township 27 South, Range 15 East, Pinellas County, Florida, being S 85°26'00"E.

Attachment A
Page 7 of 8 Pages
Easement No. 29472 (5256-52)



PINELLAS COUNTY PUBLIC WORKS
 LAND SURVEY DIVISION
 22211 U.S. HIGHWAY 19 N.
 CLEARWATER, FLORIDA 34625-2347



SECTION(S) 11&12, TOWNSHIP 27 SOUTH, RANGE 15 EAST

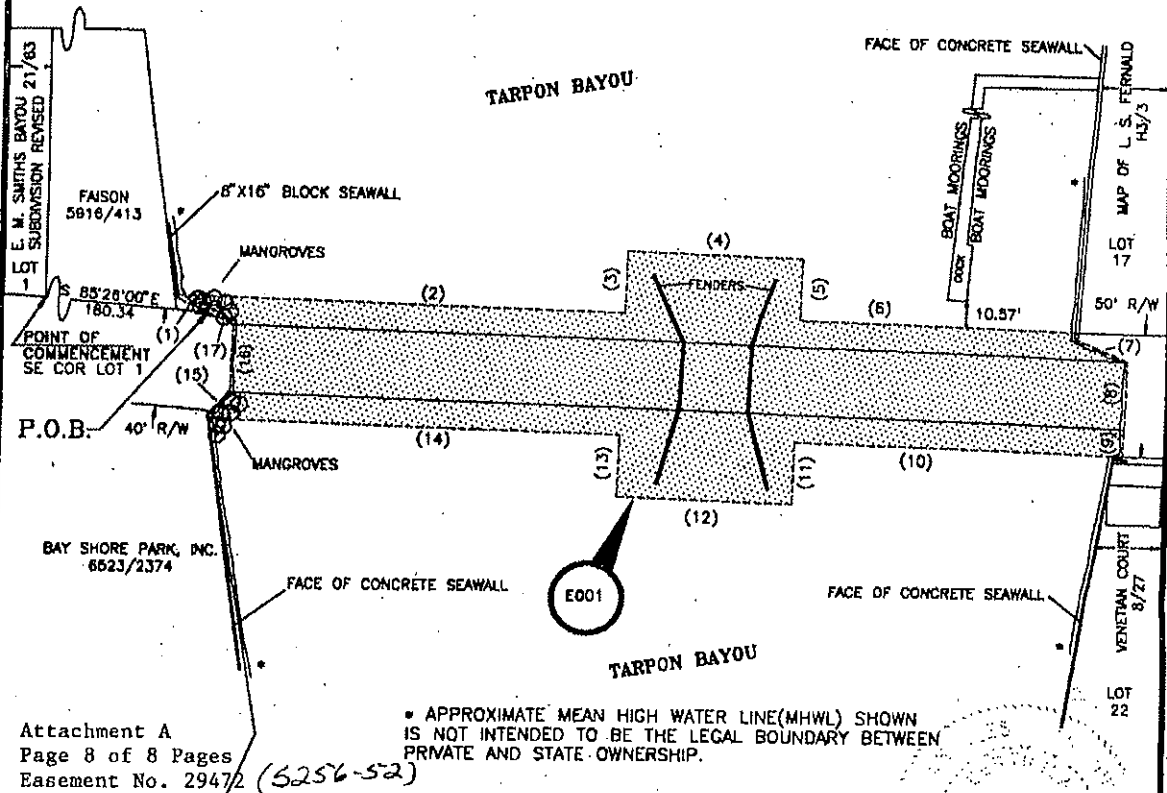
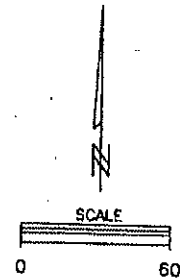
Additional or deletions by other than the Professional Land Surveyor in responsible charge is prohibited.
 Land Description is invalid without signature and/or embossed seal of the Professional Land Surveyor

TANGENT TABLE

NO.	DISTANCE	BEARING
(1)	15.42	N 62°26'42" W
(2)	178.90	S 88°21'52" E
(3)	25.00	N 01°38'08" E
(4)	70.00	S 88°21'52" E
(5)	25.00	S 01°38'08" W
(6)	111.71	S 88°21'52" E
(7)	23.43	S 60°21'53" E
(8)	28.00	S 01°38'08" W
(9)	11.00	S 01°38'08" W
(10)	132.39	N 88°21'52" W
(11)	25.00	S 01°38'08" W
(12)	70.00	N 88°21'52" W
(13)	25.00	N 01°38'08" E
(14)	164.29	N 88°21'52" W
(15)	13.61	N 37°44'13" E
(16)	28.00	N 01°38'08" E
(17)	9.74	N 62°26'42" W

PINELLAS COUNTY FLA.
 OFF. REC. BK 9607 PG 1727

SKETCH--NOT A FIELD SURVEY



Attachment A
 Page 8 of 8 Pages
 Easement No. 29472 (5256-52)

* APPROXIMATE MEAN HIGH WATER LINE (MHWL) SHOWN IS NOT INTENDED TO BE THE LEGAL BOUNDARY BETWEEN PRIVATE AND STATE OWNERSHIP.

CALCULATED BY: DF	The above Sketch and/or Land Description was prepared under my supervision and is true and correct to the best of my knowledge and belief. By: <i>Charles N. Gibson, Jr.</i> Pinellas County Public Works DATE <u>8/22/95</u> CHARLES N. GIBSON, JR., LAND SURVEYOR CERTIFICATE NUMBER: 4238 STATE OF FLORIDA, PHONE # (813) 464-6903
CHECKED BY: HFO	
S.F.N.I. 713	

