FINAL

LOCATION HYDRAULIC REPORT

Midway Road (CR 712) PD&E STUDY

FROM GLADES CUT OFF ROAD TO SELVITZ ROAD

St. Lucie County, Florida

Financial Project ID No.: 231440-3-22-01

Prepared for:

FLORIDA DEPARTMENT OF TRANSPORTATION

Prepared by:

Inwood Consulting Engineers, Inc.
3000 Dovera Drive
Oviedo, FL 32765

August 2016

Professional Engineer Certificate

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Inwood Consulting Engineers, Inc., a corporation authorized to operate as an engineering business, FEID No. 59-3216593, by the State of Florida, Department of Professional Regulation, and Board of Professional Engineers. I have reviewed or approved the evaluation, findings, opinions and conclusions as reported in this Location Hydraulic Report.

The Final Location Hydraulic Report includes a summary of data collection efforts and assessments for Midway Road (CR 712) PD&E Study from Glades Cut Off Road to Selvitz Road. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of civil engineering as applied through design standards and criteria set forth by the federal, state, and local regulatory agencies as well as professional judgment and experience.

Inwood Consulting Engineers, Inc.
3000 Dovera Drive, Suite 200
Oviedo, Florida 32765
Phone: (407) 971-8850
Fax: (407) 971-8955

Signature: _____

Name: **Renato Chuw, P. E.**

P.E. Number: 56050

Date: August 26, 2016

TABLE OF CONTENTS

PAGE

APPENDICES

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT), District Four, is proposing to widen Midway Road (CR 712) from Glades Cut Off Road to Selvitz Road in St. Lucie County, Florida. The project limits include one bridge over the Florida Turnpike (Bridge ID# 940050) and Canal C-103 that runs parallel to Midway Road within the limits of the project. The improvements consist of widening Midway Road from two to four 11-foot lanes and include 7-foot buffered bike lanes, curb and gutter, a raised median, a 6-foot sidewalk on the north and a 12-foot shared use path on the south. There are two alternatives being investigated to accomplish the widening. The first alternative (Alternative 1) is to shift the alignment to the north and avoid impacting the canal. The second alternative (Alternative 2) is widen to the south and enclose Canal C-103 with a box culvert that will be an extension to the box culvert under construction for the adjacent segment.

The project site is located within Section 1 of Township 36 South, Range 39 East and Section 6 of Township 36 South, Range 40 East. The project is in the North Fork sub basin of the St. Lucie Estuary Watershed as defined by the South Florida Water Management District (SFWMD). The project traverses two (2) Water Body ID's (WBID) as identified by the Florida Department of Environmental Protection (DEP). The project area generally flows from north to south and outfalls into Canal C-103 through cross drains along the roadway. Canal C-103 outfalls into North Fork of the St. Lucie River, which ultimately outfalls into the St. Lucie Aquatic Preserve, which is designated as an Outstanding Florida Water (OFW).

The purpose of this Location Hydraulic Report is to address base floodplain encroachments resulting from the roadway improvements evaluated in the PD&E Study. In accordance with Executive Order 11988 "Floodplain Management", USDOT Order 5650.2, "Floodplain Management Protection", and Federall-Aid Policy Guide 23 CFR 650A, Floodplains must be protected. The intent of these regulations is to avoid or minimize highway encroachments within the 100-year (base) floodplains and to avoid supporting land use development incompatible with floodplain values.

The project is designated Zone X by the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM), meaning there are no floodplains in the vicinity of the project. This classifies the study as "No Involvement."

SECTION 1 PROJECT DESCRIPTION

The Midway Road/County Road (CR) 712 project corridor is centrally located in the eastern part of St. Lucie County, Florida, and is owned and maintained by St. Lucie County. The project corridor extends approximately 1.6 miles along Midway Road (Roadway ID 94530000), from Glades Cut Off Road (Mile Post 5.813) to Selvitz Road (Mile Post 7.405). The project ties into the existing 4-lane section to the west of Glades Cut Off Road and to future 4-lane segments from Selvitz Road to just east of US Highway 1. The project corridor is located in unincorporated St. Lucie County but is the northern border to the City of Port St. Lucie.

Midway Road (CR 712) is a major east-west roadway that provides a vital connection to residents and commuters to and from Interstate 95 (I-95) to the commercial areas along US 1. Within the project limits, Midway Road (CR 712) is a two-lane undivided roadway with a varying posted speed from 35 to 45 miles per hour (mph). It is functionally classified as an Urban Principal Arterial and is designated as a hurricane evacuation route by the Florida Division of Emergency Management. The existing roadway typical section consists of two 12-foot lanes, one in each direction, and the existing right-of-way (R/W) varies with a minimum width of 70 feet. The land uses consist of residential, commercial, government, and industrial facilities, such as Tropicana Products, Inc., CEMEX, Packers of Indian River Ltd., US Post Office, St. Lucie County Sheriff's Office, and New Horizons of the Treasure Coast, Inc.

The study corridor includes a bridge (ID 940050) over Florida's Turnpike (SR 91). The Florida East Coast (FEC) railroad traverses the corridor by running adjacent and parallel to the Glades Cut Off Road. Canal 103, which was previously part of the North St. Lucie Water Control District, but has since been transferred to St. Lucie County, is the principal receiving water body for the project area and conveys stormwater from the west side of Florida's Turnpike through an existing concrete box culvert. The canal runs parallel along the south side of Midway Road (CR 712) and, after Selvitz Road, it diverges and continues southeasterly to discharge into the North Fork of the St. Lucie River. The North Fork is designated as an Outstanding Florida Water and an Aquatic Preserve. It is the main collector water body in St. Lucie County and discharges into the Indian River Lagoon. The canal, along with the adjacent vegetative buffer, provides a physical separation to the residential homes on the south side.

The Midway Road/CR 712 Project Development & Environment (PD&E) Study from Glades Cut Off Road to Selvitz Road will evaluate alternatives to widen the existing road from two to four lanes within the project limits in order to satisfy future traffic demand and capacity needs. The proposed study will also consider pedestrian, bicycle, and transit facilities and improvements to freight mobility, and it will evaluate operational improvements and access management into some commercial businesses along the project corridor. Additional right-of- way requirements have been evaluated during the PD&E study for offsite ponds in order to meet stormwater management requirements. Please refer to the **Final Pond Siting Report** prepared for this study.

1.1 Purpose and Need

Based on recent traffic data from St. Lucie County, the facility does not adequately handle the existing traffic demand. Without capacity improvements, the traffic operations along the corridor will continue to deteriorate. The primary purpose for this project is to provide additional capacity to meet existing and future traffic needs, improve safety by alleviating existing roadway and capacity deficiencies, and allow opportunities for pedestrian, bicycle, and transit facilities. The additional capacity will also improve freight mobility and enhance emergency evacuation along the project corridor. The purpose and need of this project include Transportation Demand, Capacity, Plan Consistency, Social Demands and Economic Development, Modal Interrelationships, and Roadway Deficiencies.

1.2 Alternatives Considered

Three build alternatives, including the Transportation System Management and Operations (TSMO) alternative, were developed and considered during the preliminary engineering phase of this study. The No-Build Alternative, TSMO Alternatives, and Build Alternative 1 (Canal Avoidance) and Alternative 2 (Box Culvert) are described below.

1.2.1 No-Build Alternative

No improvements are made to Midway Road (CR 712) within the limits of the study.

1.2.2 Build Alternatives

1.2.2.1 Transportation System Management and Operations (TSMO) Alternatives

TSMO alternatives involve improvements designed to maximize the utilization and efficiency of the existing facility through improved system and demand management. The various TSMO options generally include traffic signal and intersection improvements, access management, and transit improvements. The additional capacity required to meet the projected traffic volumes along Midway Road (CR 712) in the design year cannot be provided solely through the implementation of TSMO improvements.

1.2.2.2 Build Alternative 1 (Canal Avoidance)

The typical section includes two, 11-foot travel lanes in each direction separated by a 22-foot median. Seven-foot buffered bike lanes would be provided in each direction located adjacent to the outside travel lanes. Type F curb and gutter is used along the inside and outside lanes and collects stormwater runoff which is then directed to stormwater retention ponds. A six-foot wide sidewalk would be provided on the north side of the roadway, and a 12-foot-wide shared-use path would be provided along the south side of the roadway. The alignment for this alternative would shift to the north to avoid impacts to Canal 103. This typical section requires a minimum of 153 feet of R/W. Since the existing County R/W width varies between 107 feet and 153 feet, from zero feet up to 46 feet of R/W would need to be acquired along the north side of the roadway. The design speed for this typical section would be 45 mph.

1.2.2.3 Build Alternative 2 (Box Culvert)

The roadway and pedestrian features of the typical section for this alternative are similar to Alternative 1 except that Canal 103 would be enclosed with a box culvert. The canal is located within R/W owned by both St. Lucie County and the City of Port St. Lucie. This typical section requires a minimum of 160 feet of R/W. Approximately 25 feet to 32.5 feet of R/W would need to be acquired from the City of Port St. Lucie along the south side of the roadway. Additionally, up to 28 feet of R/W would need to be acquired along the north side of the roadway. The design speed for this typical section would be 45 mph.

SECTION 2 FLOODPLAINS

The Federal Emergency Management Agency (FEMA) has developed a Flood Insurance Rate Map (FIRM) for the study area. The relevant FIRM panel numbers are 12111C0169J, 12111C0188J, 12111C0260J and 12111C0276J, for St. Lucie County, Florida dated February 16, 2012. The project is designated Zone X and will not have any floodplain impacts. Please refer to the **FEMA Map in Appendix 1.**

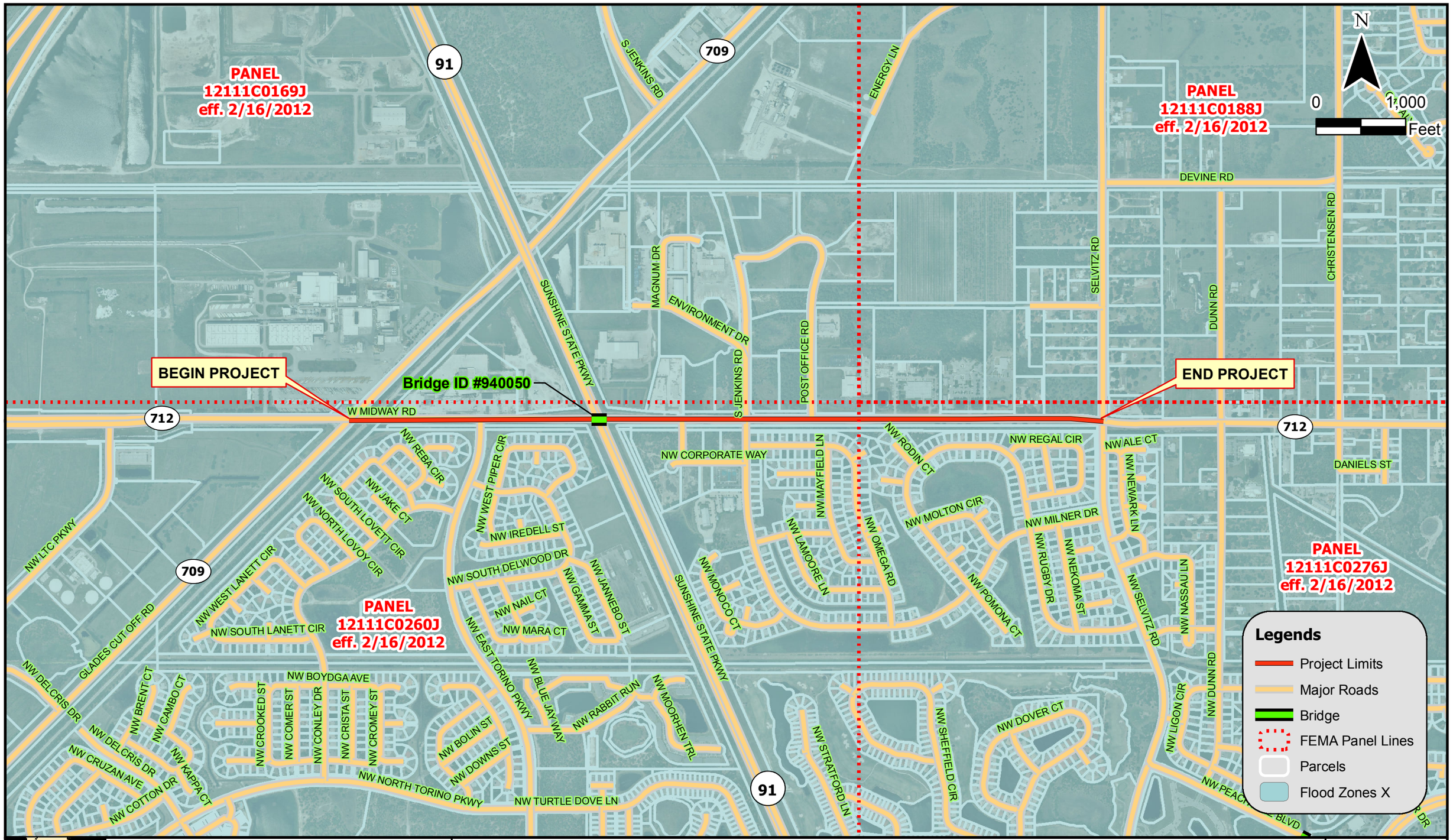
SECTION 3 CONCLUSION

In conclusion, the following floodplain statement is a slightly modified version of statement Number 1 in the FDOT PD&E Manual, tailored for this project:

"All work proposed by this study is outside the horizontal limits of the 100-year floodplain and no work is being performed below the 100-year flood elevation. As a result, this project does not encroach upon the base floodplain."

APPENDIX 1

FEMA Map



Florida Department of Transportation
District 4

Midway Rd. (CR 712)
From Glades Cut Off Road to Selvitz Road
St. Lucie County, Florida
Financial Project ID: 231440-3-22-01
ETDM No. 14177

FEMA MAP