PRELIMINARY ENGINEERING REPORT

Florida Department of Transportation

District X

Project Title

Limits of Project

County, Florida

Financial Management Number: XXXXX-X

ETDM Number: XXXXXX

Date

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016, and executed by Federal Highway Administration and FDOT.

**PROFESSIONAL ENGINEER CERTIFICATION**

**PRELIMINARY ENGINEERING REPORT**

**Project:** Project Title

**ETDM Number:** XXXXX

**Financial Project ID:** XXXXXX-X-XX-XX

**Federal Aid Project Number:** XXXX XXX X

This preliminary engineering report contains engineering information that fulfills the purpose and need for the (road name) Project Development & Environment Study from (south/west project limit) to (north/east project limit) in (county name), Florida. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.

I hereby certify that I am a registered professional engineer in the State of Florida practicing with [insert Consulting Firm Name], and that I have prepared or approved the evaluation, findings, opinions, conclusions or technical advice for this project.

*[****Only Sign and Seal the Final Report***

***Include “DRAFT” on the Cover of the Draft Report****]*

|  |  |
| --- | --- |
|  | This item has been digitally signed and sealed by *[Insert P.E. Name]* on the date adjacent to the seal.Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies. |

**TABLE OF CONTENTS**

1.0 PROJECT SUMMARY 1-1

1.1 Project Description 1-1

1.2 Purpose & Need 1-1

1.3 Commitments 1-1

1.4 Alternatives Analysis Summary 1-1

1.5 Description of Preferred Alternative 1-1

1.6 List of Technical Documents 1-2

2.0 EXISTING CONDITIONS 2-1

2.1 Roadway 2-1

2.2 Right-of-Way 2-1

2.3 Roadway Classification & Context Classification 2-1

2.4 Adjacent Land Use 2-1

2.5 Access Management Classification 2-1

2.6 Design and Posted Speeds 2-1

2.7 Vertical and Horizontal Alignment 2-1

2.8 Pedestrian Accommodations 2-1

2.9 Bicycle Facilities 2-1

2.10 Transit Facilities 2-2

2.11 Pavement Condition 2-2

2.12 Traffic Volumes and Operational Conditions 2-2

2.13 Intersection Layout and Traffic Control 2-2

2.14 Railroad Crossings 2-2

2.15 Crash Data and Safety Analysis 2-2

2.16 Drainage 2-2

2.17 Soils and Geotechnical Data 2-3

2.18 Utilities 2-3

2.19 Lighting 2-3

2.20 Signs 2-3

2.21 Aesthetics Features 2-3

2.22 Bridges and Structures 2-3

3.0 PROJECT DESIGN CONTROLS & CRITERIA 3-1

3.1 Roadway Context Classification 3-1

3.2 Design Control and Criteria 3-1

4.0 ALTERNATIVES ANALYSIS 4-1

4.1 Previous Planning Studies 4-1

4.2 No-Build (No-Action) Alternative 4-1

4.3 Transportation Systems Management and Operations Alternative (TSM&O) 4-1

4.4 Future Conditions 4-1

4.5 Build Alternative(s) 4-2

4.6 Comparative Alternatives Evaluation 4-2

4.7 Selection of the Preferred Alternative 4-2

5.0 PROJECT COORDINATION & PUBLIC INVOLVEMENT 5-1

5.1 Agency Coordination 5-1

5.2 Public Involvement 5-1

6.0 DESIGN FEATURES OF THE PREFERRED ALTERNATIVE 6-1

6.1 Engineering Details of the Preferred Alternative 6-1

6.1.1 Typical Sections 6-1

6.1.2 Bridges and Structures 6-1

6.1.3 Right-of-Way and Relocations 6-1

6.1.4 Horizontal and Vertical Geometry 6-1

6.1.5 Bicycle and Pedestrian Accommodations 6-2

6.1.6 Multi-Modal Accommodations 6-2

6.1.7 Access Management 6-2

6.1.8 Intersection and Interchange Concepts 6-2

6.1.9 Intelligent Transportation System and TSMO Strategies 6-2

6.1.10 Utilities 6-2

6.1.11 Drainage and Stormwater Management Facilities 6-2

6.1.12 Floodplain Analysis 6-3

6.1.13 Transportation Management Plan 6-3

6.1.14 Special Features 6-3

6.1.15 Design Variations and Design Exceptions 6-3

6.1.16 Cost Estimates 6-3

6.2 Summary of Environmental Impacts of the Preferred Alternative 6-3

6.2.1 Future Land Use 6-3

6.2.2 Section 4(f) 6-4

6.2.3 Cultural Resources 6-4

6.2.4 Wetlands 6-4

6.2.5 Protected Species and Habitat 6-4

6.2.6 Essential Fish Habitat 6-4

6.2.7 Highway Traffic Noise 6-5

6.2.8 Contamination 6-5

APPENDIX 6-1

**LIST OF FIGURES**

FigurePage Number

**LIST OF TABLES**

TablePage Number

**APPENDICES**

# PROJECT SUMMARY

## Project Description

*Start with the description from the Efficient Transportation Decision Making (ETDM) and modify as applicable based on the changes in scope between ETDM screening and completion of PD&E. The project description must be written to allow a person without prior knowledge of the area to clearly understand where the project is located. Include:*

* *The name of the facility (with alternate names if applicable)*
* *Limits of the proposed project (length and logical termini)*
* *Name of City and County where the project is located*
* *A brief description of the existing facility*
* *A brief description of the proposed improvements including pedestrian and bicycle accommodation. Discuss navigations issues when project crosses over navigable waters.*

*Include a project map illustrating the project limits.*

## Purpose & Need

*Describe the purpose of the project and then support it by discussing the needs for the project.*

*Purpose and Need must be consistent [verbatim] with purpose and need described in the Environmental Document (Type 2 CE, EA, EIS, SEIR).*

*Discuss the project status including actions taken to date, other agencies and governmental units involved, actions pending, schedules, etc.*

## Commitments

*Identify a list of all commitments that are made during the study. Review final technical documents and agency correspondences to include and list their commitments.*

## Alternatives Analysis Summary

*Provide a summary of alternatives analysis.*

## Description of Preferred Alternative

*Include a brief description of the Preferred Alternative. Briefly explain why it the best alternative to address the purpose and need for the project.*

## List of Technical Documents

*Include a list of all technical documents prepared for the study. Include the date the document was prepared (The initial draft may include Dates of Draft technical documents. The Final PER lists the dates of the final documents).*

*Do not name any of the consultant firms when referencing technical documents.*

# EXISTING CONDITIONS

## Roadway

*Identify number of lanes and all existing roadway and bridge typical sections within the project limits. Briefly explain typical section changes from committed projects that are not part of this PD&E Study.*

## Right-of-Way

*Identify the existing right-of-way within the project limits.*

## Roadway Classification & Context Classification

*Identify the functional and context classification of the existing roadway.*

## Adjacent Land Use

*Identify and discuss the different types of land use adjacent to the right-of-way. Include an existing land use map.*

## Access Management Classification

*Identify the access management classification of the existing roadway.*

## Design and Posted Speeds

*Identify the design speed and posted speed of the facility.*

## Vertical and Horizontal Alignment

*Identify vertical and horizontal alignments of the facility.*

## Pedestrian Accommodations

*Identify sidewalks, crosswalks and/or multi-use paths.*

## Bicycle Facilities

*Identify location, type, width, and designation.*

## Transit Facilities

*Identify transit facilities and provide the routes/schedules. Identify bus stops, park-and-ride lots and transfer centers.*

## Pavement Condition

*Identify the cracking and ride rankings. Document any segment with a rating of 6.4 or less.*

## Traffic Volumes and Operational Conditions

*Identify existing Annual Average Daily Traffic (AADT), Directional Design Hour Volumes (DDHV), truck percentages, pedestrian and bicycle counts, and transit ridership data and operational conditions.*

## Intersection Layout and Traffic Control

*Identify the intersection configuration and lane assignment, intersection control type, technology, and operational conditions.*

## Railroad Crossings

*Identify the number of tracks, number of train crossings, speed, type of train (passenger or freight), type of warning devices, operating characteristics, railroad right-of-way and Rail Master Plan (if available).*

## Crash Data and Safety Analysis

*Discuss crash rates, severity, number (frequency), types, contributing causes, crash distribution and patterns, identify location of high crash locations, if any.*

## Drainage

*Describe surface water and groundwater features on or near the project. Identify the drainage basins and flow patterns, floodplains and stormwater management systems including regional facilities. Discuss areas with potential drainage problems within the project limits.*

## Soils and Geotechnical Data

*Identify the different soil classifications found in The United States Department of Agriculture (USDA) and the National Resources Conservation Service (NRCS) Soil Survey for the project corridor.*

## Utilities

*List utilities located within the project limits. Include location, Utility Agencies/Owners (UAO), and contact information.*

## Lighting

*Identify the presence of lighting, lighting type, and the maintaining agency.*

## Signs

*Identify all major overhead traffic signs located within the study limits in an aerial map or exhibit and provide a general summary of roadway signs.*

## Aesthetics Features

*Describe any scenic views or vistas on or near the project limits. Identify any aesthetic features (landscaping, pavers, noise wall decors, etc.) within the project limits. Document who is responsible for maintenance activities.*

## Bridges and Structures

*Briefly describe all bridges and features being crossed (rivers, streams, roadway, railroads, etc.). For each bridge, identify the bridge number, bridge type, typical section, type of structure, current conditions (structural and sufficiency rating), ship impact data, horizontal and vertical clearance (if applicable), bridge opening, and channel data. Note presence of any aesthetic or special architectural features.*

*Indicate who is responsible for bridge maintenance.*

# PROJECT DESIGN CONTROLS & CRITERIA

## Roadway Context Classification

*Discuss how roadway context classification was obtained. Discuss any coordination with local agencies.*

## Design Control and Criteria

*List [in tabular form] design controls and criteria used to develop alternatives with their associated manuals, procedures, and guidelines.*

­

# ALTERNATIVES ANALYSIS

## Previous Planning Studies

*Briefly discuss planning studies that were completed to support development of this study.*

*If planning decisions or products were incorporated into NEPA by reference, then*

* *discuss the steps taken to incorporate them and how they were used in the PD&E study;*
* *provide a brief description of the material;*
* *summarize future policy assumptions used in the transportation planning process related to land use, economic development, transportation costs, and network expansion consistent with those to be used in the NEPA process;*
* *discuss changes that have occurred in the area since the study was completed;*
* *include titles of the previous planning reports in the List of Technical Document.*

*If there are no previous planning studies completed, simply say there were no completed planning studies.*

## No-Build (No-Action) Alternative

*Describe the No-Build Alternative which serves as the baseline or benchmark against which the other Alternatives are evaluated. Include reference to any planned projects or conditions that are part of the project no-build condition. Describe the results of not taking action and identify safety and congestions results for example.*

## Transportation Systems Management and Operations Alternative (TSM&O)

*Describe the TSM&O Alternative, including strategies it would use to optimize the efficiency of the existing transportation system or facility. Explain how the TSM&O Alternative would meet (or fail to meet) the project’s purpose and need. Discuss how elements of TSMO were added in the build alternative, if any.*

## Future Conditions

*Briefly discuss future conditions including land use; travel demand; and other improvement plans, if any. Reference traffic report if it was prepared separately. Briefly discuss how future demand volumes and design hour volumes were estimated. Reference Traffic Report, or Interchange Access Request report and Traffic Forecasting Memo for more details.*

## Build Alternative(s)

*Discuss how Build Alternatives were developed. State the assumptions other than those documented in the Design Controls and Criteria. Discuss initial screening of alternatives (based on a fatal flaw analysis) and alternatives that were eliminated from detail study. If the alternatives were screened by studies completed prior to PD&E study, state the title and date of the reports, summarize the decision reached to eliminate the alternatives, include the reports in the Technical Materials section, and upload final reports in SWEPT.*

*Describe Build Alternative(s) and how it addresses the project’s purpose and need. For each Build Alternative that is evaluated in detail, include discussion of the preliminary horizontal alignment, vertical profile considerations, typical section, right-of-way needs, access management, bridges and structures, and other features such as transit accommodations and bicycle/pedestrian facilities.*

*Support description of Build Alternatives with exhibits and plans that are developed only to the level of detail needed to illustrate the concepts.*

## Comparative Alternatives Evaluation

*Include a matrix that compares each alternative evaluated in detail (including the No-Build Alternative) with respect to the need elements identified in the project’s purpose and need; compatibility with other plans or transportation systems; potential impacts to the social, natural, cultural and physical environment; public and resource agency comments; and project cost (which include Design, Right of Way and Construction). Incorporate by reference the results of the environmental technical analyses to avoid repetition.*

*If a TSM&O Alternative was evaluated in detail, include the alternative in the matrix.*

*If a Value Engineering (VE) study was performed, include the VE Recommended Alternative in the comparative evaluation matrix. Reference and upload the VE Study report in SWEPT.*

## Selection of the Preferred Alternative

*Briefly, discuss the results of the comparative alternatives evaluation. Explain the rationale behind selecting the Preferred Alternative.*

# PROJECT COORDINATION & PUBLIC INVOLVEMENT

## Agency Coordination

*Briefly explain how ETDM comments were used to develop alternatives and identify mitigation (if applicable).*

*Briefly summarize coordination with Metropolitan Planning Organization/County/City and resource agencies.*

## Public Involvement

*Briefly describe public involvement approach followed, reference Comments and Coordination Report for detail. Briefly discuss how public comments were considered in the development and refinement of Build Alternatives.*

*Comments are provided in the Comments and Coordination Report.*

# DESIGN FEATURES OF THE PREFERRED ALTERNATIVE

*This section includes a description of design features of the Preferred Alternative, which may refinement of the Build Alternative described in Chapter 5 as the result of Public Hearing comments.*

*Include a discussion of design refinement performed after the Public Hearing if appropriate.*

*Attach concept plans of the Preferred Alternative in the Appendix.*

## Engineering Details of the Preferred Alternative

### Typical Sections

*Discuss the roadway and bridge typical sections in detail and support discussion by exhibits. Upload Signed and Sealed Typical Section Package in SWEPT*

### Bridges and Structures

*Summarize preferred structure and aesthetic treatment, and utility from the Bridge Development Report, if one was prepared. Include a discussion of general structural plans and elevations if needed for the environmental document or design exception report.*

*Describe existing structures that can be retained and reused. Describe location where new structures (bridge and retaining walls) are required, including the proposed bridge location and layout, profile grade requirements at stream crossings, and justification of use of retaining walls instead of slope embankments.*

### Right-of-Way and Relocations

*If additional right-of-way is required to construct the Preferred Alternative, state the amount of additional right-of-way, the number of impacted parcels, and the number of relocations (residential and business) that the* *Preferred Alternative will require.*

### Horizontal and Vertical Geometry

*Discuss the horizontal and vertical geometry of the Preferred Alternatives. Include [in the appendix] concept plans showing the horizontal and vertical geometry for the project. Include location of the signs in the concept plans.*

### Bicycle and Pedestrian Accommodations

*Discuss provisions for bicycle lanes and sidewalks that are included in the Preferred Alternative.*

### Multi-Modal Accommodations

*Identify any impacts to transit routes, railroads and truck routes along the project including the location and general layout of potential bus turnouts, ramp bypass lanes, or exclusive transit lanes.*

### Access Management

*Briefly discuss any change(s) to existing access management classification that is(are) proposed in the Preferred Alternative. Include language about how the project complies with 335.119, FS, if applicable.*

### Intersection and Interchange Concepts

*Include concept plans showing Preferred Alternative intersections and/or interchange configurations, traffic control types and signs.*

### Intelligent Transportation System and TSMO Strategies

*Include discussion of Intelligent Transportation System (ITS) facilities based on the Systems Engineering analysis and TSMO strategies or technologies that will be added in the Preferred Alternatives. Confirm applicability of TSMO strategies or technologies with the District TSMO Program Engineer.*

### Utilities

*Identify any impacted utilities and costs associated with relocating utilities. Include contact information for impacted utilities. If utilities are located in FDOT ROW by permit, the cost for relocation is at the expense of the utility owner (Note that information here).*

### Drainage and Stormwater Management Facilities

*Discuss the type of drainage system(s) to be used for the Preferred Alternative. Include a discussion of the stormwater management systems.*

### Floodplain Analysis

*Use the Flood Insurance Rate Map (FIRM) or Water Management Districts maintained flood maps (when required) to identify any special flood hazard areas. State if the project is located within a regulatory floodway. Summarize the findings of the Location Hydraulics Report and discuss any mitigation proposed as part of the project.*

### Transportation Management Plan

*Briefly discuss the Transportation Management Plan (TMP) and how it facilitates the general sequence of construction, addresses potential road closures or detours and validates constructability.*

### Special Features

*Briefly discuss any special features such as noise walls, retaining walls, etc..*

### Design Variations and Design Exceptions

*Discuss design controls and criteria that will need a Design Variation or Design Exception. State (and provide date) if any of the Design Variations or Design Exceptions were approved. Include signed Design Variations and Design Exceptions in the appendix.*

### Cost Estimates

*Include a table summarizing estimated project costs (construction, right of way, design, CEI, etc.) based on the Long-Range Estimate (LRE) cost estimates.*

## Summary of Environmental Impacts of the Preferred Alternative

*This section provides a summary of issues and features that affect development of detail design of the Preferred Alternative. Individual subsections should reference corresponding technical reports for detailed description of the issues.*

### Future Land Use

*Discuss planned land use as identified in the comprehensive plan (if available) or any other applicable plans for land use. Discuss the project’s compatibility with nearby land uses, zoning (including special districts or overlays), and comprehensive plans; focus discussion on implications for the environmental effects. Identify measures that will be incorporated into the project to mitigate any potential incompatibility.*

### Section 4(f)

*Identify, by their formal name, any existing or proposed Section 4(f) protected resources, such as public parks, recreational areas, wildlife and waterfowl refuges, and any public or private historic or archaeological sites, along and/or within the study area.*

### Cultural Resources

*Summarize findings of the Cultural Resources Assessment Survey (CRAS). Identify any significant cultural resources within the project Area of Potential Effect (APE) and assess their significance in terms of eligibility for listing on the National Register of Historic Places (NRHP).*

*Summarize findings of the letter submitted to the State Historic Preservation Office (SHPO) and their response.*

### Wetlands

*Summarize the Natural Resource Evaluation (NRE) Report. Briefly discuss the impact of the Preferred Alternative on any wetlands or other surface waters. Include approximate acreage and overall functional loss as determined in the Uniform Mitigation Assessment Methodology (UMAM). If wetlands are impacted, briefly discuss the proposed mitigation measures. List any mitigation banks, or other options, available within the basin.*

### Protected Species and Habitat

*Summarize the NRE Report. Briefly discuss the effect of the Preferred Alternative on protected species and habitats. Summarize the results of any formal or informal interagency consultation.*

### Essential Fish Habitat

*Summarize the NRE Report. Briefly discuss the effect of the Preferred Alternative on essential fish habitat. Summarize the results of any interagency consultation.*

### Highway Traffic Noise

*Discuss land use, proposed project traffic noise levels and any apparent solutions available to mitigate the noise at the receptor locations based on the Noise Study Report (NSR).*

### Contamination

*Summarize the results of the Contamination Screening Evaluation Report (CSER). Identify all contamination sites and risk rating category assigned to each site.*

*Identify the need for any Level II assessment during the Design Phase.*

# APPENDIX