PD&E Project Management 101

Project Development and Environment Process Manual Training

Presented by:

Dat Huynh, P.E.

Richard Young, P.E.

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Florida Department of TRANSPORTATION

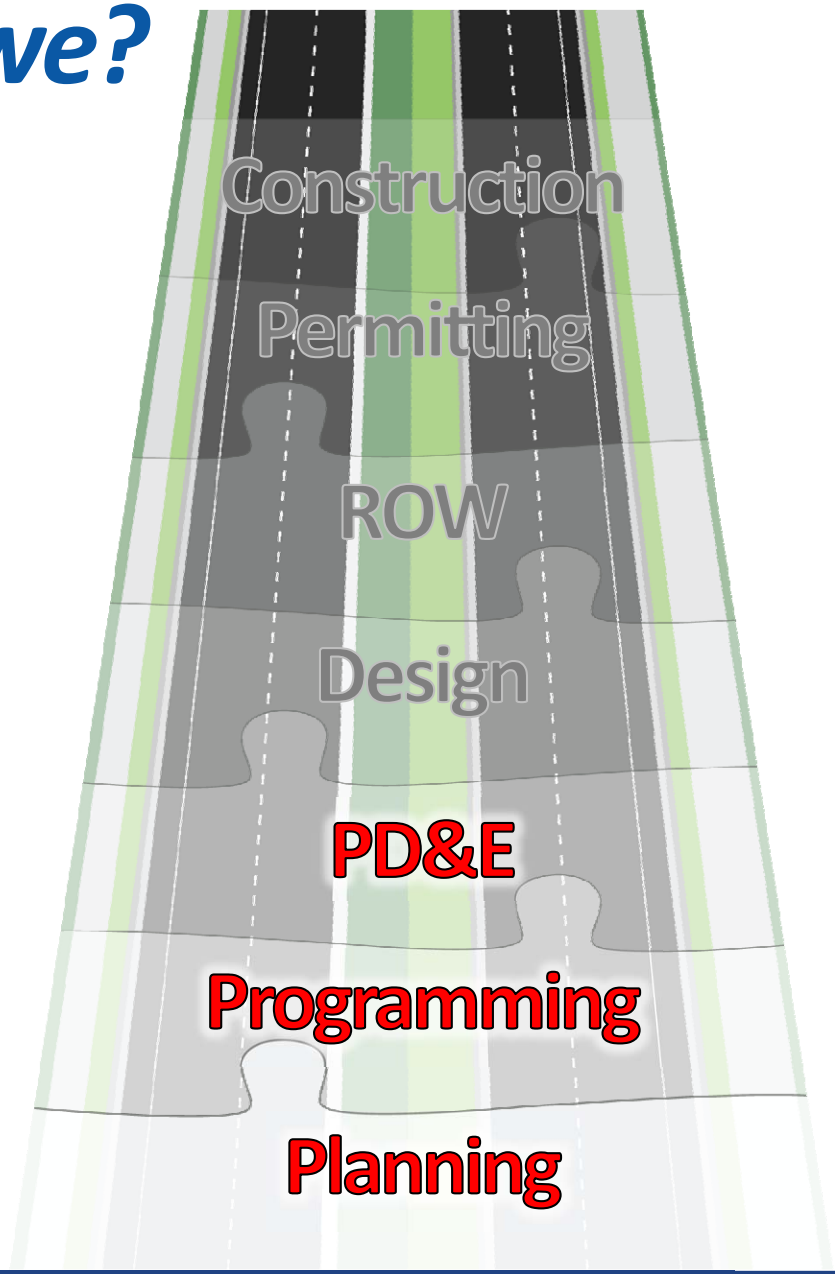
State Environmental Management Office

Learning Objectives

At the conclusion of this session, you will:

- List the key components of the Project Development and Environment (PD&E) project
- Know how to best accomplish tasks required by a PD&E Study.

Where are we?


Construction
Permitting
ROW
Design
PD&E
Programming
Planning

Acronyms

- NEPA – National Environmental Policy Act
- PD&E – Project Development and Environment
- CE – Categorical Exclusion
- EA – Environmental Assessment
- EIS – Environmental Impact Statement
- LDCA – Location Design Concept Acceptance
- COA – Class of Action
- FONSI – Finding of no Significant Impact
- ROD – Record of Decision
- SEIR – State Environmental Impact Report
- NMSA – Non-Major State Action
- PCE – Programmatic Categorical Exclusion
- MiCE - Minor Categorical Exclusion
- PER – Preliminary Engineering Report
- PSR - Programming Summary Report

Introduction

What is NEPA?

- **National Environmental Policy Act** -1969
  - Requires consideration of environmental effects and reasonable alternatives
  - Environmental - natural, human, physical
  - 42 USC, Title 42, Chapter 55, Section 4321

Introduction

- **NEPA** applies to improvement projects when:
  - Federal funds will be used
  - It is (or will be) a State or Federal transportation facility
  - Federal approval of an action is required
    - Permits are required from Federal Agencies (Army Corp, EPA, etc)
    - Project requires review or approval by a Federal Agency

Introduction

NEPA vs. PD&E

- FDOT's PD&E Process is <u>state procedure</u> for complying with NEPA regulations
- In Florida, NEPA = **PD&E**
- **PD&E Manual**
  - Defines the process for Federal and State projects to ensure compliance with **NEPA**

Introduction

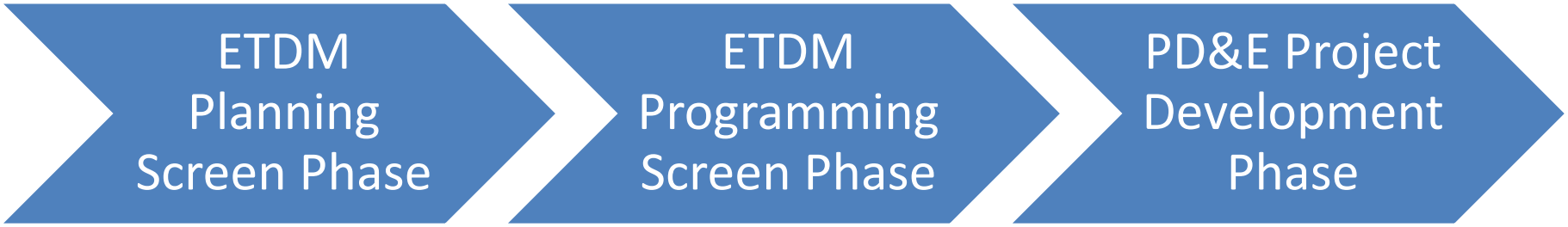
What leads up to PD&E??

- **The ETDM Process**
  - Planning Screen
  - Programming Screen
- **PD&E Process**
  - Data Collection
  - Engineering Analysis
  - Environmental Analysis
  - Public and Community Involvement

Introduction

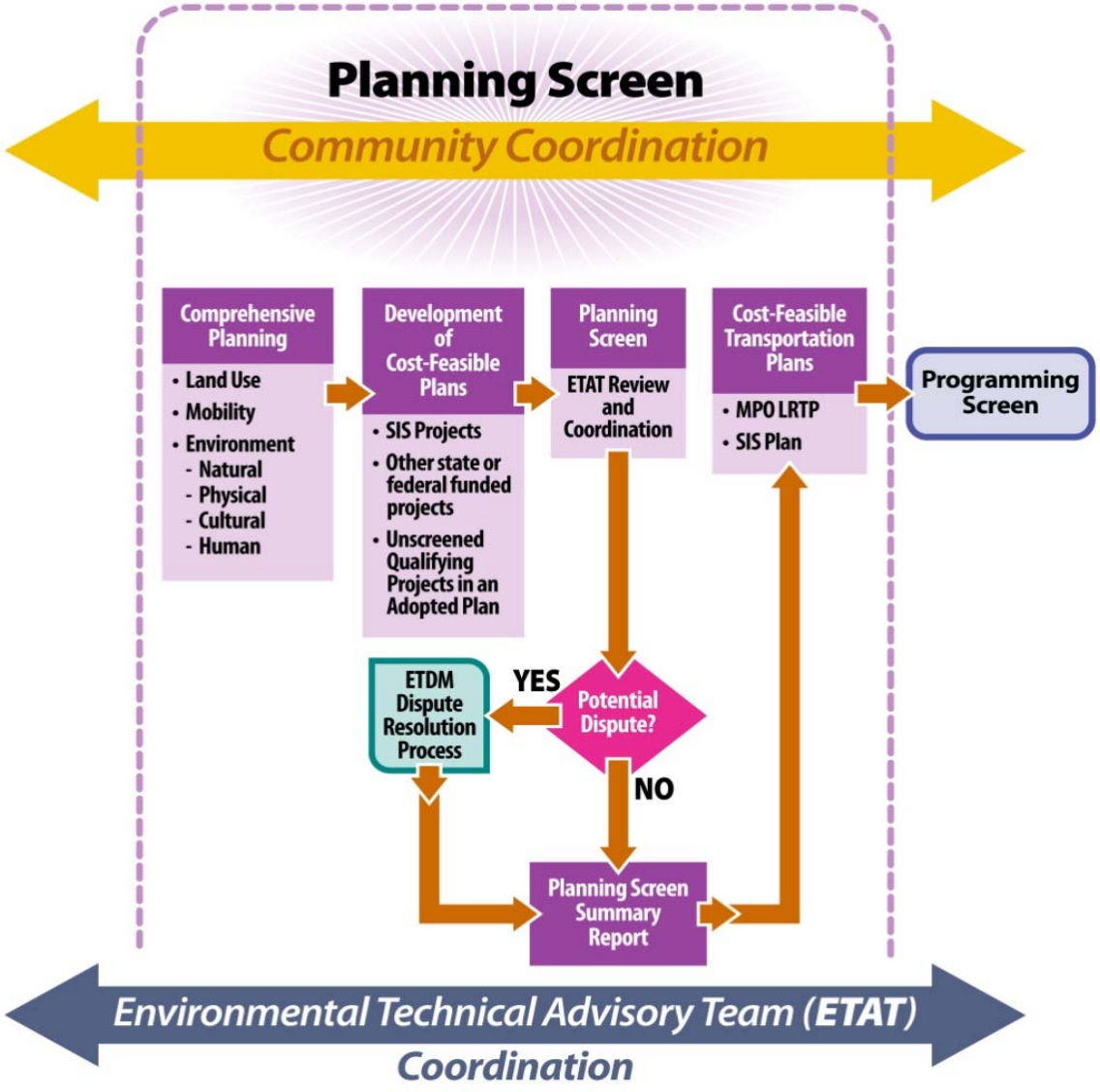
The PD&E process is described in FDOT ***Procedure 650-000-001, Project Development and Environment Manual (PD&E Manual)***.

PD&E Process Flow Chart



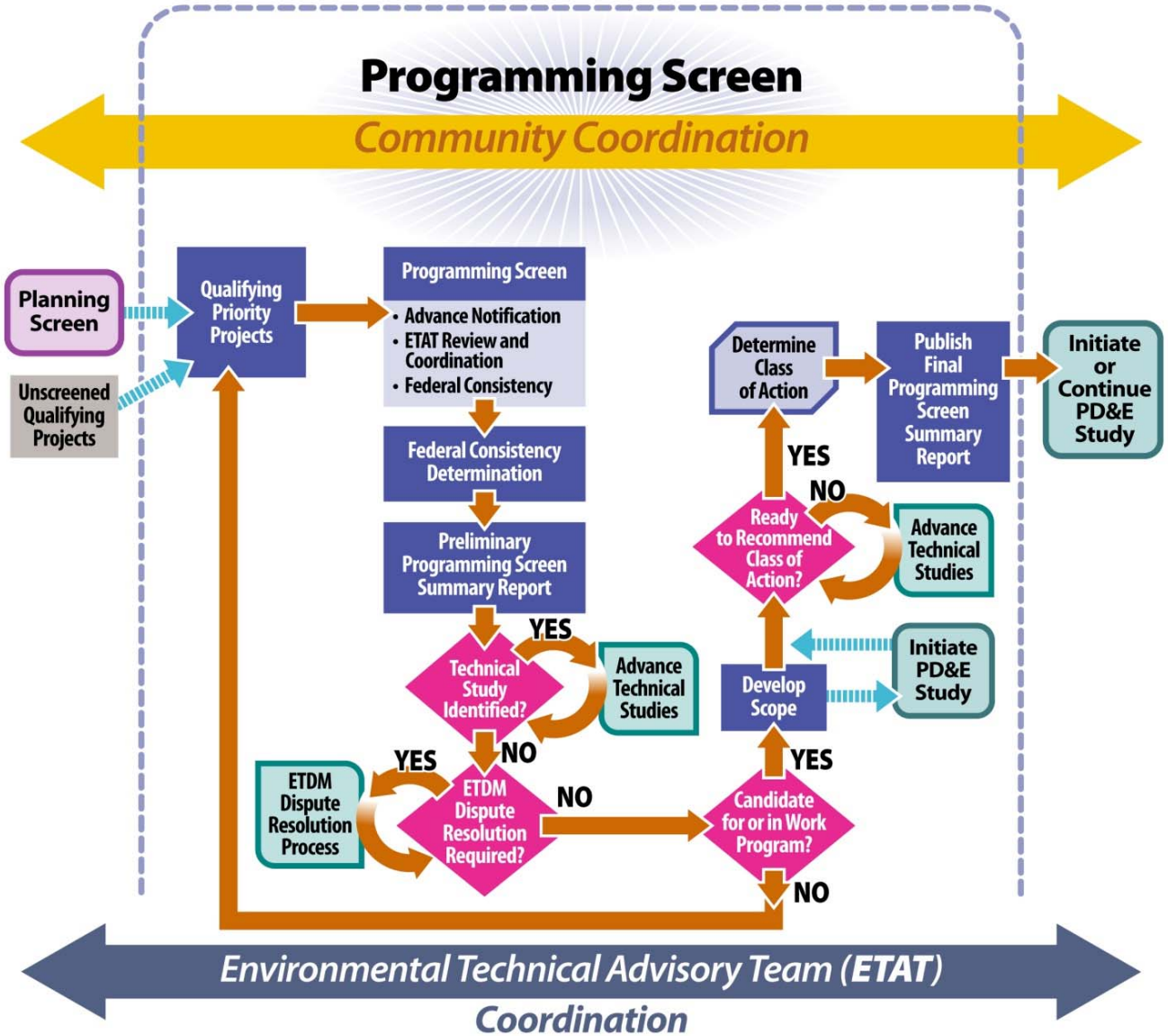
Introduction

- ETDM Planning Screen Phase



Introduction

- ETDM Programming Screen Phase



Introduction

In a nutshell…
The **ETDM** provides continuity of the decision making process from planning through design

Introduction

Typical tasks accomplished in a **PD&E study** includes the following:

- Identification of project needs
- Data collection
- Development of alternatives
- Environmental analysis and report preparation/review
- Public involvement
- Coordination
- Evaluation and selection of alternatives
- Value Engineering (VE)
- Documentation

Project Development

The **purpose** of **Project Development** is to …

- Determine if an Engineering solution which is environmentally feasible can be provided for a transportation need
- Coordinate and Document the PD&E Studies and Reports

PD&E Process

What happens in Project Development?

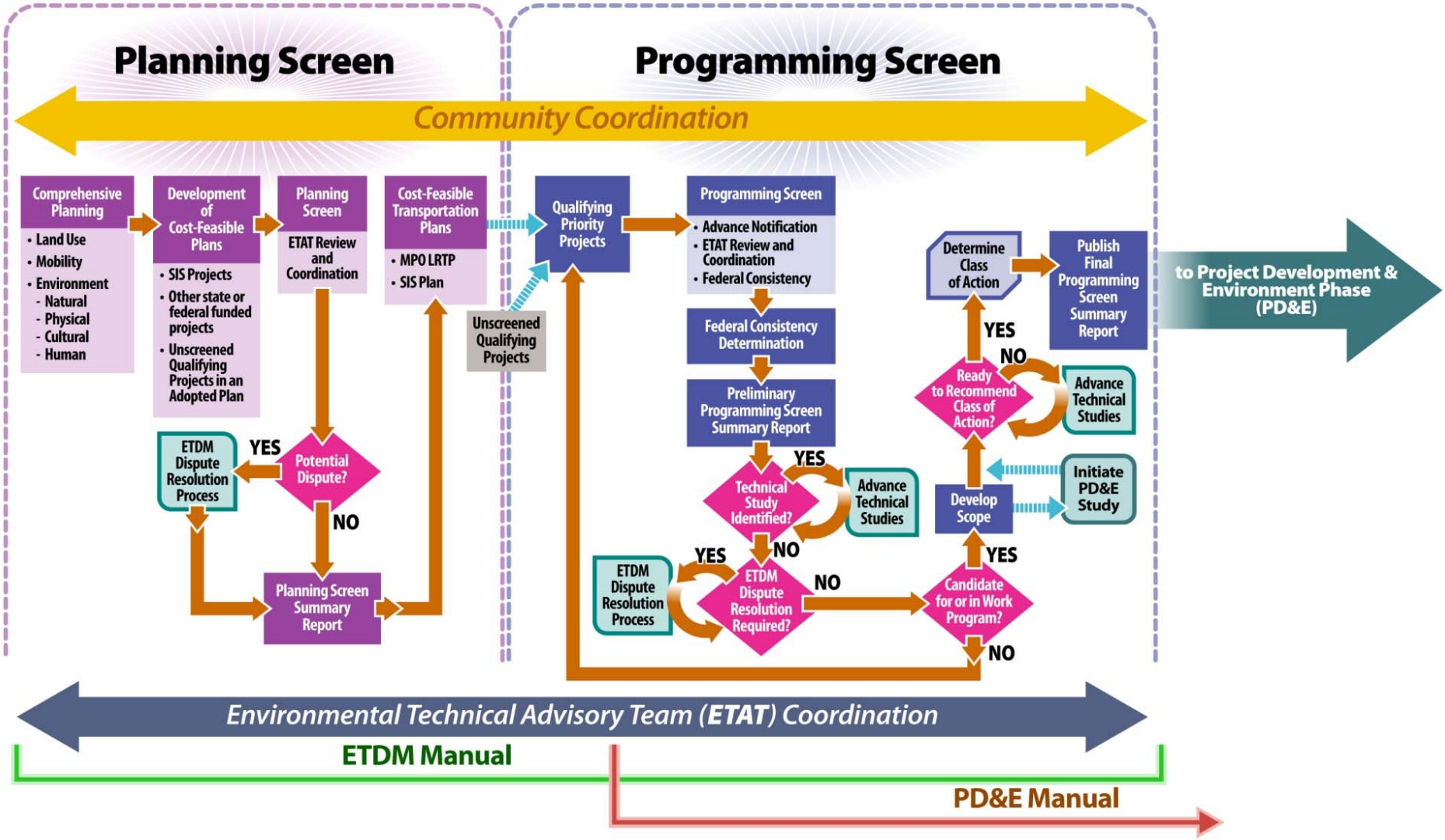
- As a **PD&E Project Manager**, the needed assignments
- The process or flow of a PD&E Study
- How to develop alternatives
- The basis for selecting a recommended alternative
- The required engineering

PD&E Process

Before your PD&E Study begins …

- Review **Programming Screening Report** to Identify:
  - Project Need
  - Engineering Required
  - Environmental Studies Required
  - Permit issues/Types
  - Dispute resolution issues

Identification of Project Needs



Identification of Project Needs

Project needs are discussed in detail in *Part 2, Chapter 5 of the PD&E Manual*

Area-wide needs

- Relate to system deficiencies and local government of community desires.

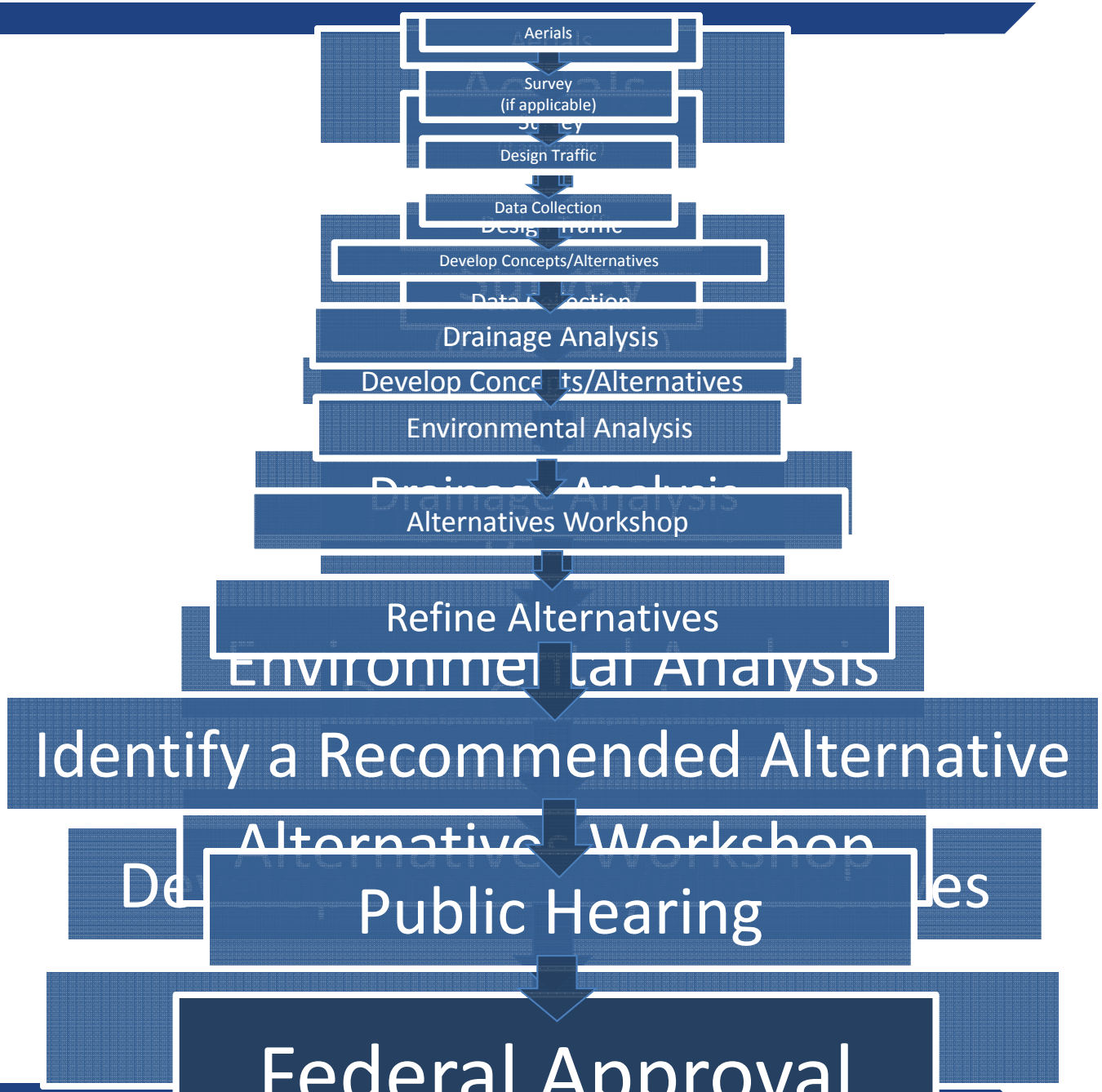
Project corridor Needs

- Relate to route deficiencies (capacity, safety, etc.) and specific community desires within a corridor.
- A review of FDOT databases and/or specialized analyses may be required to determine deficiencies.
- May include deficiencies of the existing facility, the need for additional capacity and the safety of the existing facility.

Identification of Project Needs

Projects Involving the Interstate and providing access:

- Interchange Justification Report (IJR)
- Interchange Modification Report (IMR)
- Systems Interchange Modification Report (SIMR)


Aerials
Survey
(if applicable)
Design Traffic
Data Collection
Develop Concepts/Alternatives
Drainage Analysis
Develop Concepts/Alternatives
Environmental Analysis
Alternatives Workshop
Refine Alternatives
Identify a Recommended Alternative
Public Hearing
Federal Approval

Field Review

- Visit your project!!!
- Get a 'feel' for the area
- Look at land uses, businesses, buildings
- Look at conditions and pavement
- Look around and see:
  - Who might be impacted?
  - What issues might this study remedy?
  - What concerns might adjacent owners have?

Prepare Scope of Services

- Standard Scope of Work
  - Public Involvement
  - Engineering
  - Environmental
  - Miscellaneous
- www.dot.state.fl.us/projectmanagementoffice
- Identify required technical studies
- Identify project alternatives for study
- Outline the level of public involvement based on identified community concerns

FDOT Standard PD&E Scope of Services

SCOPE OF SERVICES FOR CONSULTING ENGINEERING SERVICES
PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDIES

This Exhibit forms an integral part of the agreement between the State of Florida Department of Transportation (hereinafter referred to as the DEPARTMENT) and _____ (hereinafter referred to as the CONSULTANT) relative to the transportation facility described as follows:

Financial Project ID:	***000000 0 22 00***
Work Program Item No.:	***0000000 [If applicable]***
Federal Aid Project No.:	***000000X [If applicable]***
County Section No.:	***00000***
Description:	***SR 000 from [N, S, E, W of] _____ to [N, S, E, W of] _____ _____ County***
Bridge No.:	***000000***

PURPOSE

The purpose of this Exhibit is to describe the scope of work and the responsibilities of the CONSULTANT and the DEPARTMENT in connection with the Preliminary Engineering (Conceptual Design), and Environmental Studies necessary to comply with Department procedures and to obtain Federal Highway Administration (FHWA) Location and Design Concept Acceptance (LDCA) of proposed improvements to this transportation facility.

The Project Development Process shall follow the DEPARTMENT'S publication titled "Project Development and Environment Manual", published 07/01/88 and all subsequent revisions. Throughout this Scope of Services portion of this CONSULTANT Contract, the publication will be referred to as the "PD&E Manual". All tasks identified in this scope of work will be done in accordance with the Department's PD&E Manual, unless otherwise stated.

The PD&E Manual incorporates all the requirements of the National Environmental Policy Act (NEPA); Federal law and executive orders; applicable Federal regulations included in the Federal Highway Administration Federal-Aid Policy Guide; and applicable State laws and regulations including Chapter 339.155 of the Florida Statutes. The project documentation prepared by the CONSULTANT in accordance with the PD&E Manual shall therefore be in compliance with all applicable State and Federal laws, executive orders, and regulations.

The CONSULTANT shall perform those engineering services required for LDCA studies, including consideration of all social, economic, environmental effects, and mitigation as required by the FHWA and/or the Project Development and Environment (PD&E) Manual, along with the required environmental documents, engineering reports, preliminary plans, public hearing, and right-of-way maps.

Sections 1 through 4 of the Scope of Services will establish which items of work described in the PD&E Manual are specifically included in this contract, and also which of the items of work will be the responsibility of the CONSULTANT or the DEPARTMENT.

The DEPARTMENT will provide contract administration and provide management services and technical reviews of all work associated with the development and preparation of the engineering/environmental study reports for the transportation facility.

http://www.dot.state.fl.us/projectmanagementoffice

FDOT Standard PD&E Staff Hour Estimation Guidelines

Project Activity: Engineering Analysis and Report

Task No.	Task	Units	Staff Hour Range	Basis for Staff Hour Range
	DATA COLLECTION			
2.1	Field Review	LS	See Basis for Staff Hour Range	This task includes all anticipated field trips needed to collect engineering data. The hours for this task can be estimated by taking the number of trips x the number of staff per trip x hours associated with each trip.
2.2	Aerial Photography	LS	See Basis for Staff Hour Range	This task includes all the coordination necessary in ordering aerial photography, and the reviewing of the product. The criteria used in estimating the hours needed for the task include the length of the project, and the scale and resolution of the aerial photography. If the consultant is to perform the aerial photography in-house, this task will be omitted, and the appropriate staff hour forms from the Roadway Design (Task 28) will be included for this project. If photography is provided for the project in multiple images electronically that are not rectified and/or referenced, then 2 additional hours per image will be needed to move, scale and rotate the images within a design file. LS 12 to 48 hours (plus 2 hours per image for non-rectified and/or non-referenced photography)
2.3	Survey Coordination	LS	See Basis for Staff Hour Range	This task is for the CONSULTANT to coordinate with the survey sub consultant regarding project requirements, review of survey data, and scheduling. If survey is not being done for the project, or if the CONSULTANT is to perform the survey activities in-house, this task will be omitted. The hours estimated for this task will be directly related to the level of survey needed for the project.
2.4	Existing Roadway Characteristics	LS	24 to 60	This task includes the review of all relevant data with regards to the existing roadway, including but not limited to plans, pavement reports, and existing ROW, tax and maintenance maps. The criteria used to estimate the hours for this task include the length of the project, the availability of data, and whether the project is located in an urban or rural setting.
2.5	Existing Structures Characteristics	EA	4 to 80	This task includes the review of all relevant data with regards to the existing roadway, including but not limited to plans, Bridge Inspection Reports, maintenance records, navigation data (if applicable). The hours associated with this task are based on the type of structure. Bridges that are not over a navigable waterway will have a range of 4 to 8 hours per structure depending on the complexity of the structure. Bridges over navigable waterways have a range of 4 to 80 hours. Criteria used in estimating the hours needed are the type of structure, availability of data, and the need for a "waterway user" survey.

http://www.dot.state.fl.us/projectmanagementoffice

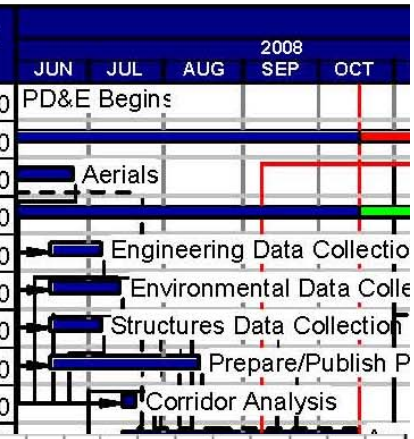
Negotiate with your Consultant

- Standard Man-hour Ranges and Forms
- Use Programming Screen to help determine needed hours for assignments
- “Mutual Gains” negotiations

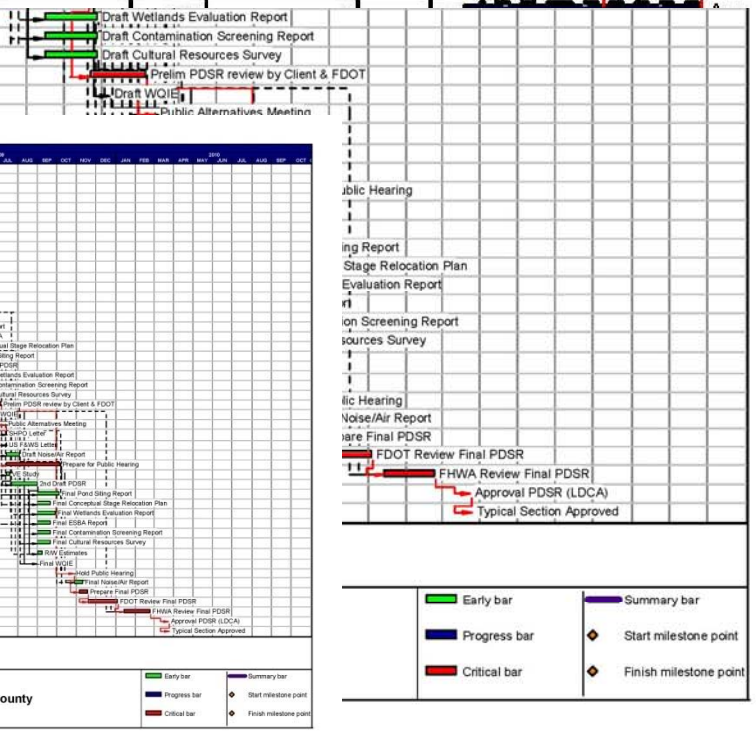
Project Schedule

- At start of project, develop project schedule
  - Primavera/MS Project/PSM
- Identifies project activities
- Identified Start/Finish Dates
- Tracks “Critical Path” through the project
- Kept up-to-date throughout project
- Reviewed at District Production Meetings

Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float	%	Budgeted Cost
100-00000	PD&E Begins	1d	02JUN08 A	02JUN08 A		100	0
102-010000	Traffic	110d	02JUN08 A	12DEC08	-59d	65	0
254-010000	Aerials	20d	02JUN08 A	26JUN08 A		100	0
260-010050	Survey	30d	02JUN08 A	16MAR09	203d	0	0
100-00010	Engineering Data Collection	60d	16JUN08 A	07JUL08 A		100	0
100-010010	Environmental Data Collection	60d	16JUN08 A	14JUL08 A		100	0
260-010210	Structures Data Collection	60d	16JUN08 A	07JUL08 A		100	0
332-010030	Prepare/Publish PIP	1d	16JUN08 A	15AUG08 A		100	0
276-030000	Corridor Analysis	5d	15JUL08 A	21JUL08 A		100	0



260-010110	Draft Wetlands Evaluation Report	30d	16APR09	29MAY09	101d	0	0
260-010180	Draft Contamination Screening Report	30d	16APR09	29MAY09	151d	0	0
276-010000	Draft Cultural Resources Survey	30d	16APR09	29MAY09	126d	0	0
246-010000	Prelim PDSR review by Client & FDOT	30d	22MAY09	06JUL09	-60d	0	0
260-010140	Draft WQIE	1d	08JUN09	08JUN09	83d	0	0
292-010000	Public Alternatives Meeting	1d	14J				
213-010000	SHPO Letter	1d	15J				
213-020000	US F&WS Letter	1d	15J				
260-010010	Draft Noise/Air Report	15d	15J				
260-010130	Prepare for Public Hearing	60d	15J				
339-010000	VE Study	5d	15J				
104-030000	2nd Draft PDSR	30d	22J				
260-010070	Final Pond Siting Report	25d	01S				
260-010090	Final Conceptual Stage Relocation Plan	15d	01S				
260-010120	Final Wetlands Evaluation Report	20d	01S				
260-010150	Final ESBA Report	15d	01S				
260-010190	Final Contamination Screening Report	15d	01S				
276-020000	Final Cultural Resources Survey	15d	01S				
210-010000	R/W Estimates	5d	02S				
260-010160	Final WQIE	1d	02S				
262-01000	Hold Public Hearing	1d	28C				
260-010170	Final Noise/Air Report	10d	29C				
260-010200	Prepare Final PDSR	10d	05N				
260-010220	FDOT Review Final PDSR	30d	19N				
287-010000	FHWA Review Final PDSR	30d	14J				
263-020000	Approval PDSR (LDCA)	1d	25N				
260-010000	Typical Section Approved	1d	26N				



Start date	02JUN08
Finish date	26MAR10
Data date	17OCT08
Run date	19NOV08
Page number	1A

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SR31 PD&E
Study from SR 80 (Palm Beach Blvd.) to CR 78 (North River Road), Lee County

Aerials

Survey
(if applicable)

Data Collection

Design Traffic

Develop Concepts/Alternatives

Drainage Analysis

Data Collection

Engineering data that may be collected include:

- existing roadway plans,
- straight-line diagrams,
- right of way maps,
- crash data,
- functional classification and posted speed limit,
- pedestrian or bicycle facilities,
- lighting and traffic signalization,
- utility locations (existing and planned),
- transit and rail operations (existing and planned),
- soils and geotechnical data,
- existing pavement condition,
- traffic volumes (existing and projected),
- drainage maps and features,
- access management and median openings,
- and current aerial photography.

Data Collection

If the study involves an **existing bridge**, the following additional information might also be collected:

- type of structure and existing structure plans,
- structural condition and rating,
- horizontal and vertical clearance,
- span arrangement (number and length),
- and historical significance.

Data Collection

If a **bridge** on the project **crosses a waterway**, information that may also be collected include:

- channel data (alignment, width, depth and required clearance),
- boat traffic survey (size and type of watercraft),
- number of openings for movable structures,
- ship impact data,
- and scour data.

Data Collection

Environmental data that may be collected in response to comments and questions received during the Planning and Programming screens include:

- land uses (existing and proposed),
- cultural features and community services,
- archaeological and historic features,
- natural and biological features,
- known contamination sites,
- existing noise (isopleths) studies,
- socio/economic information,
- and community values, views and opinions regarding the project and area.

Data Collection

It is the **Project Manager's responsibility** to determine what information or data must be collected.

Aerials

Survey
(if applicable)

Data Collection

Design Traffic

Develop Concepts/Alternatives

Drainage Analysis

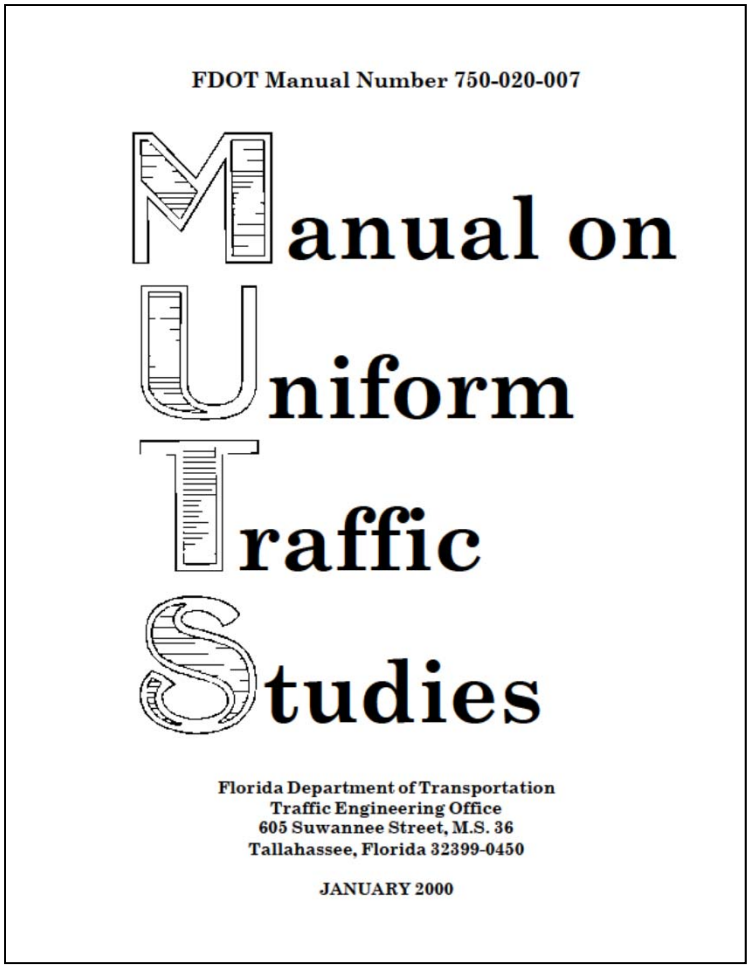
Design Traffic

- FDOT Design Traffic Procedure #525-030-120
- Traffic Study
  - Previously done vs. part of PD&E
- Traffic Methodology
- Traffic Forecasts/Projected Volumes
- Level of Service
- Design Traffic Technical Memorandum
  - Documents Traffic volumes that will addressed by conceptual alternatives

Design Traffic Analysis

- Establishes Design Traffic Volumes
- Addresses Opening, Interim and Design Years
  - AADT and Design Hour
  - LOS
  - Year LOS hit "F"
- Examines Multi-Modal
  - Bus, Rail, Ports …
- Pedestrian Counts

Design Traffic

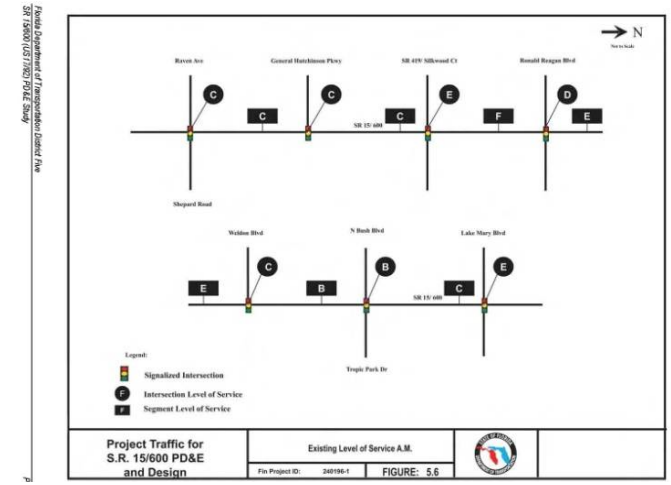


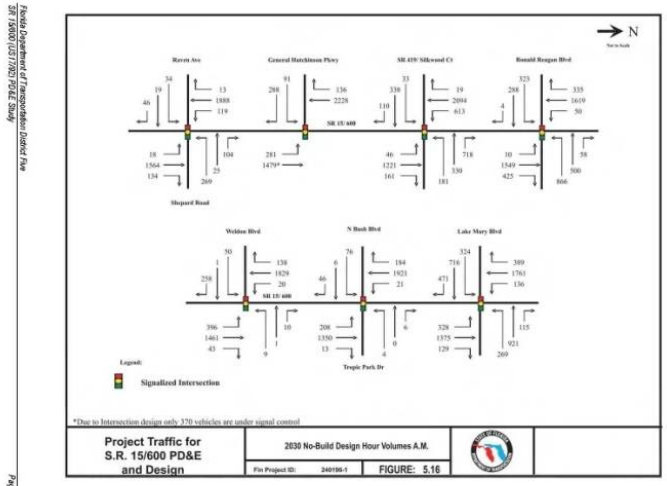
FDOT Manual Number 750-020-007

Manual on Uniform Traffic Studies

Florida Department of Transportation
Traffic Engineering Office
605 Suwannee Street, M.S. 36
Tallahassee, Florida 32399-0450

JANUARY 2000





Aerials

Survey
(if applicable)

Data Collection

Design Traffic

Develop Concepts/Alternatives

Drainage Analysis

Design Controls

- Classification
- Design Speed
- Level of Service
- Clearances
- Lane Width
- Horizontal and Vertical Controls

http://www.dot.state.fl.us/projectmanagementoffice/PMHandbook/pmhandbookindex.shtm

http://www.dot.state.fl.us/rddesign/PPMManual/2014/

Develop Concepts/Alternatives

- Based on project need and design standards, develop conceptual alternatives
  - No-Build Alternative
  - Transportation Systems Management and Operations (TSM&O Strategies)
  - Multi-Modal Alternatives
  - Build Alternatives
- Consistent with Local Comprehensive Plan

No-Build Alternative

- Describe the beneficial and adverse effects of doing no improvements
- Describe how the No-Build alternative addresses (or doesn't address) the need
- ALWAYS carry the No-Build Alternative through the entire study

Transportation System Management and Operation (TSM&O)

- Maximize the utilization and efficiency of the existing facility
- Small scale improvements that address need
- Managed lanes, etc should be considered

Multi-Modal Alternatives

- Discuss multi-modal alternatives
  - Bus
  - Rail
  - Transit
- Determine if the project should follow the FTA process?

Build Alternatives

- Meet the "Need" identified
- Are feasible
- Reasonable alternatives are identified
  - Written Federal concurrence if an alternative falls below LOS standards or that doesn’t meet "Need"
- Document the elimination of an alternative
- Evaluation Matrix

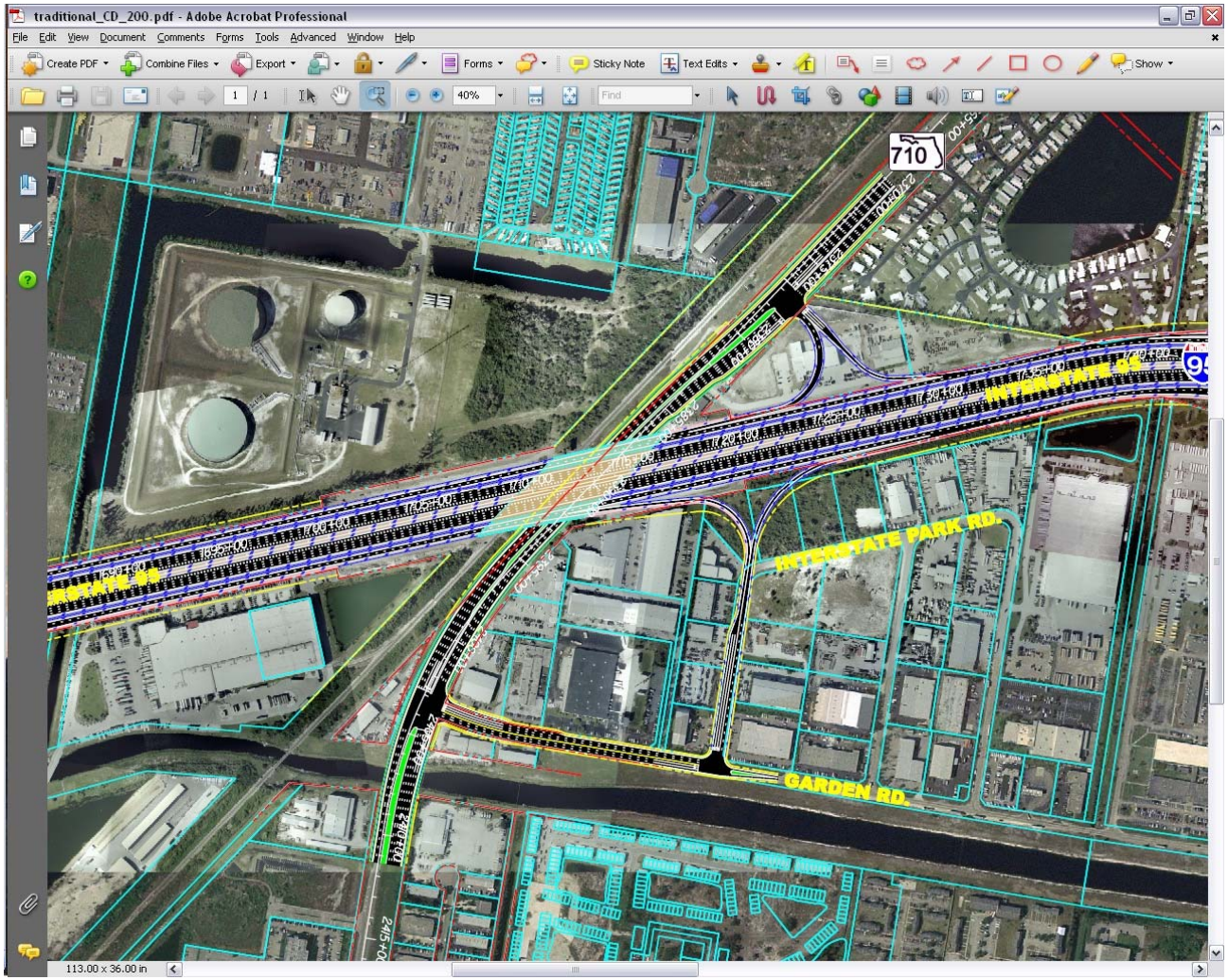
Build Alternatives

- Establish controls and standards for design
  - Functional Classification
  - Design Speed
  - Access Classification
  - Season High Water
  - Clear Zones
  - Shoulder / Median / Lane Width
  - Grades
  - Side Slopes
  - Minimum Horizontal and Vertical Clearance
  - Superelevation
  - Sight Distance

Build Alternatives

- May go through iterations
- Begin to identify where Variances and Exceptions may be needed
- Develop a consistent naming convention
  - Alternative 1, Alternative 1a, Alternative 1b …
- Alternatives laid out on base maps using aerials and survey data

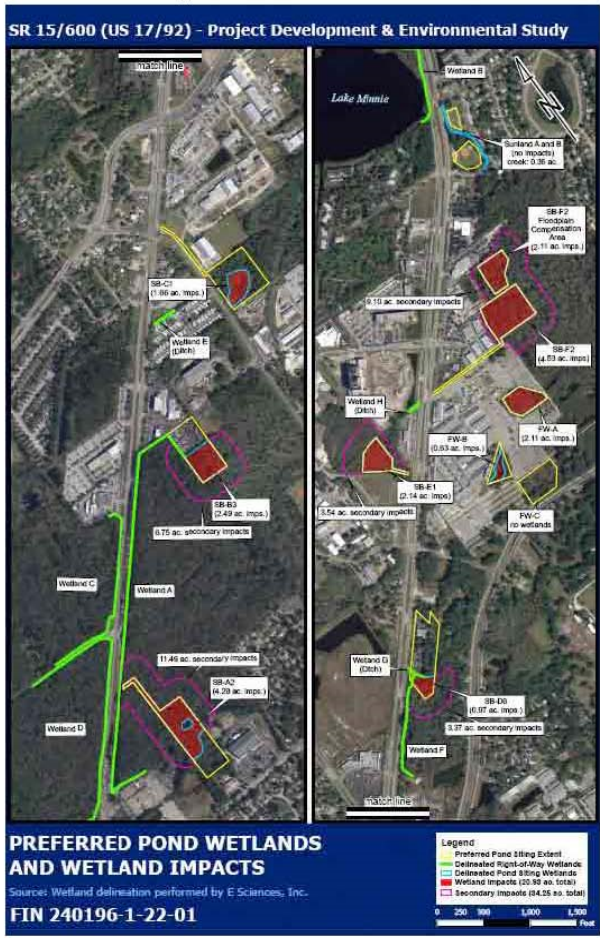
Build Alternatives



Once Alternatives are developed…

- Begin to examine Drainage
- Begin to examine Environmental Impacts

Figure 7.5 Delineated Wetlands



Aerials

Survey
(if applicable)

Design Traffic

Data Collection

Develop Concepts/Alternatives

Drainage Analysis

Environmental Analysis

Alternatives Workshop

Refine Alternatives

Environmental Analysis

- Social Impacts
- Relocation
- Cultural Resources
- Wetlands
- Water Quality
- Outstanding FL Waters
- Floodplains
- Coastal Barrier
- Wildlife and Habitat
- Essential Fish Habitat
- Farmlands
- Noise
- Air
- Contamination

Aerials

Survey
(if applicable)

Design Traffic

Data Collection

Develop Concepts/Alternatives

Drainage Analysis

Environmental Analysis

Alternatives Workshop

Refine Alternatives

Alternatives Workshop

- Once Alternatives are developed and initial impacts identified

- Hold an Alternatives Public Workshop
  - Present alternatives
  - Gather public comment
  - Help refine alternatives

Alternatives Evaluation Matrix

Table 7.9 Alternatives Evaluation Matrix

Evaluation Criteria	No-Build Alternative	Build Alternative Urban Typical Section (inc. Preferred Pond Sites)
Residential Relocation		
Number of Parcels Impacted	None	1
Number of Residences Relocated	None	None
Business Relocations		
Number of Parcels Impacted	None	5
Number of Businesses Relocated	None	1
Unimproved Properties Impacted	None	3
Community Facilities		
Number of Parcels Impacted	None	None
Number of Facilities Relocated	None	None
Minority/Disadvantaged Neighborhoods		
Number of Residences Relocated	None	None
Number of Businesses Relocated	None	None
Number of Community Services Relocated	None	None
Section 4(f)/ Public Parks		
acted	None	2 (*de minimis*)
acted	None	None
Wetland Area (acres impacted)	0	20.93 acres- direct 34.25 acres-secondary
Upland Areas (acres impacted)	0	19.01
Aquatic Preserves/Outstanding Florida Waters Impacted)	None	None
Wild and Scenic Rivers (Impacted)	None	None
Floodplains (Acres Impacted)	None	2.11 acres
Threatened and Endangered Species Involvement (Impacted)	None	6
Farmlands (Acres Impacted)	None	None
Noise (Impacted)	None	1
Potential Contamination Sites (Impacted by Pond and Road Construction)		
Number of High Risk Contamination Sites	None	10
Number of Medium Risk Contamination Sites	None	1
Potential Utility Relocations	None	12
Traffic Service, Operations, Access	Poor (LOS F)	Average (LOS C in Design Year)
Constructability (high, moderate, low)**	N/A	Moderate
Preliminary Engineering	$0	$1,904,128.00
Design	$0	$2,489,258.34
Right-of-Way Acquisition	$0	$34,704,076.80
Construction	$0	$37,420,933.50
CEI	$0	$3,362,884.84
Total Project Costs	$0	$79,881,281.48

Aerials

Survey
(if applicable)

Design Traffic

Data Collection

Develop Concepts/Alternatives

Drainage Analysis

Environmental Analysis

Alternatives Workshop

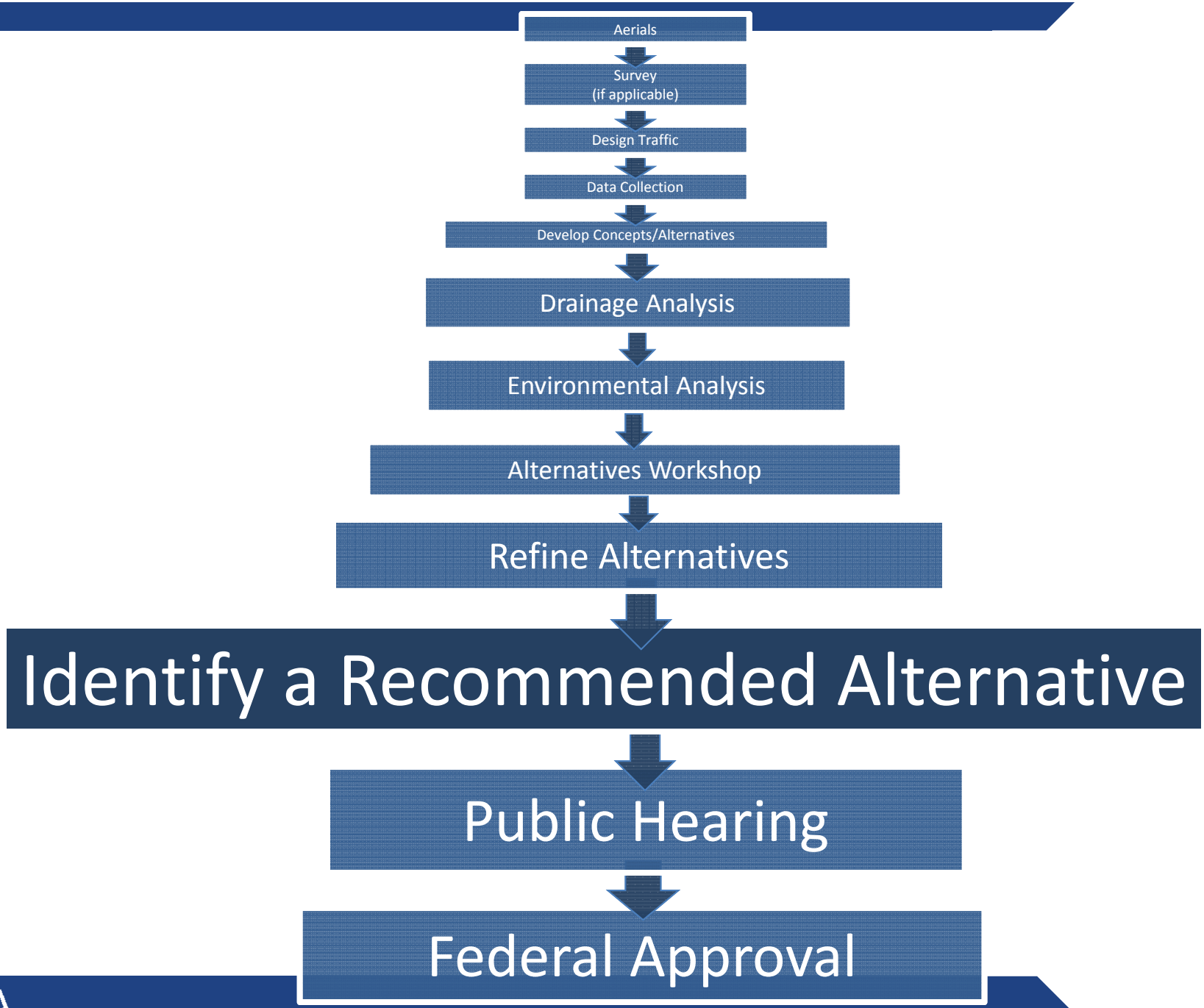
Refine Alternatives

Refine Alternatives

- Incorporate Public Comments
- Make adjustments to alternatives as necessary
- One alternative will begin to become the "Recommended Alternative"

Value Engineering

- Required for projects costing $2 MIL +
  - $20 Million for State and Bridges
  - $25 Million for Federal
- Schedule with District VE Team
  - Week-long event
  - VE Report prepared in advance
- VE recommendations summarized in PER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Federal Approval

Identify a Recommended Alternative

- Identify a **Recommended Alternative**
  - After public comment is gathered
  - Alternatives refined
  - Additional Input
- Recommended **Build Alternative** identified
- Recommended Build Alternative taken to Public Hearing
  - **Build vs. No-Build**

Aerials
Survey
(if applicable)
Design Traffic
Data Collection
Develop Concepts/Alternatives
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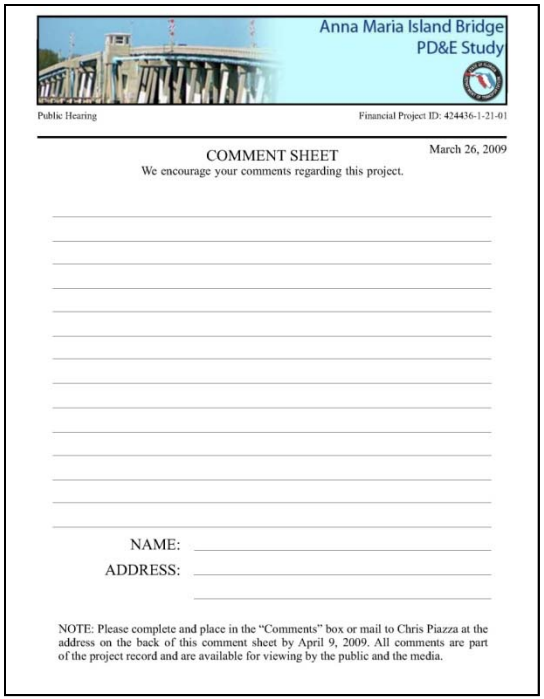
Refine Alternatives
Identify a Recommended Alternative
Public Hearing
Federal Approval

Public Hearing

- Once a Recommended Alternative is recognized
- Public Hearing is required
  - Present a Recommended Alternative
  - Present the No-Build Alternative
  - Gather public comment


Anna Maria Island Bridge
PD&E Study

Public Hearing

Financial Project ID: 424436-1-21-01

March 26, 2009

COMMENT SHEET

We encourage your comments regarding this project.

NAME:

ADDRESS:

NOTE: Please complete and place in the "Comments" box or mail to Chris Piazza at the address on the back of this comment sheet by April 9, 2009. All comments are part of the project record and are available for viewing by the public and the media.

Select Recommended Alternative

- After Public Hearing, a decision can be made
- Decision on Build vs. No-Build

Documentation

- Public Hearing Transcript
- Type 2 Categorical Exclusion
- Environmental Assessments (EA)
- *Finding of No Significant Impact (FONSI)*
- Environmental Impact Statements (EIS)
- State Environmental Impact Reports (SEIR)
- Environmental Technical Studies
  - *Wetlands Evaluation Report*
  - *Water Quality Impact Evaluation Checklist*
  - *Endangered Species Biological Assessment*
  - *Noise Study Report*
  - *Air Quality Report*
  - *Contamination Screening Evaluation Report*
  - *Cultural Resource Assessment Survey Report*

Documentation

- **Project Reports** and **Documentation**
  - *Preliminary Engineering Report*
  - *Traffic Report*
  - *Typical Section Package*
  - Preliminary plans for preferred alternative with ROW dimensions
  - File correspondence with coordination efforts
  - Conceptual Temporary Traffic Control (TTC) Plan/Transportation Management Plan (TMP)
  - *Interchange Justification or Modification Report (if applicable)*
  - Bridge hydraulic report for the selected alternative (if a bridge over water is included in the project)
  - Safety Analysis in accordance with NCHRP 17-38, Highway Safety Manual (optional)

Preliminary Engineering Report (PER)

- Recommended Alternative:
  - Plan view superimposed on aerial photograph
  - Approved typical section package
  - Special design elements (such as bridges, structures, interchanges, special aesthetic treatments)
  - Description of all project costs, including design, right-of-way, construction, and mitigation

Environmental Summary

- Addresses issues raised during the Planning Screen and Programming Screen analyses
- Summarizes environmental impacts
- Permits (if applicable)
  - List any avoidance (also a form of mitigation)
  - Description of mitigation measures needed
  - Special mitigation plans or agreements
  - Special permit conditions
  - Attached copies of permits (if applicable)

Public Involvement Summary

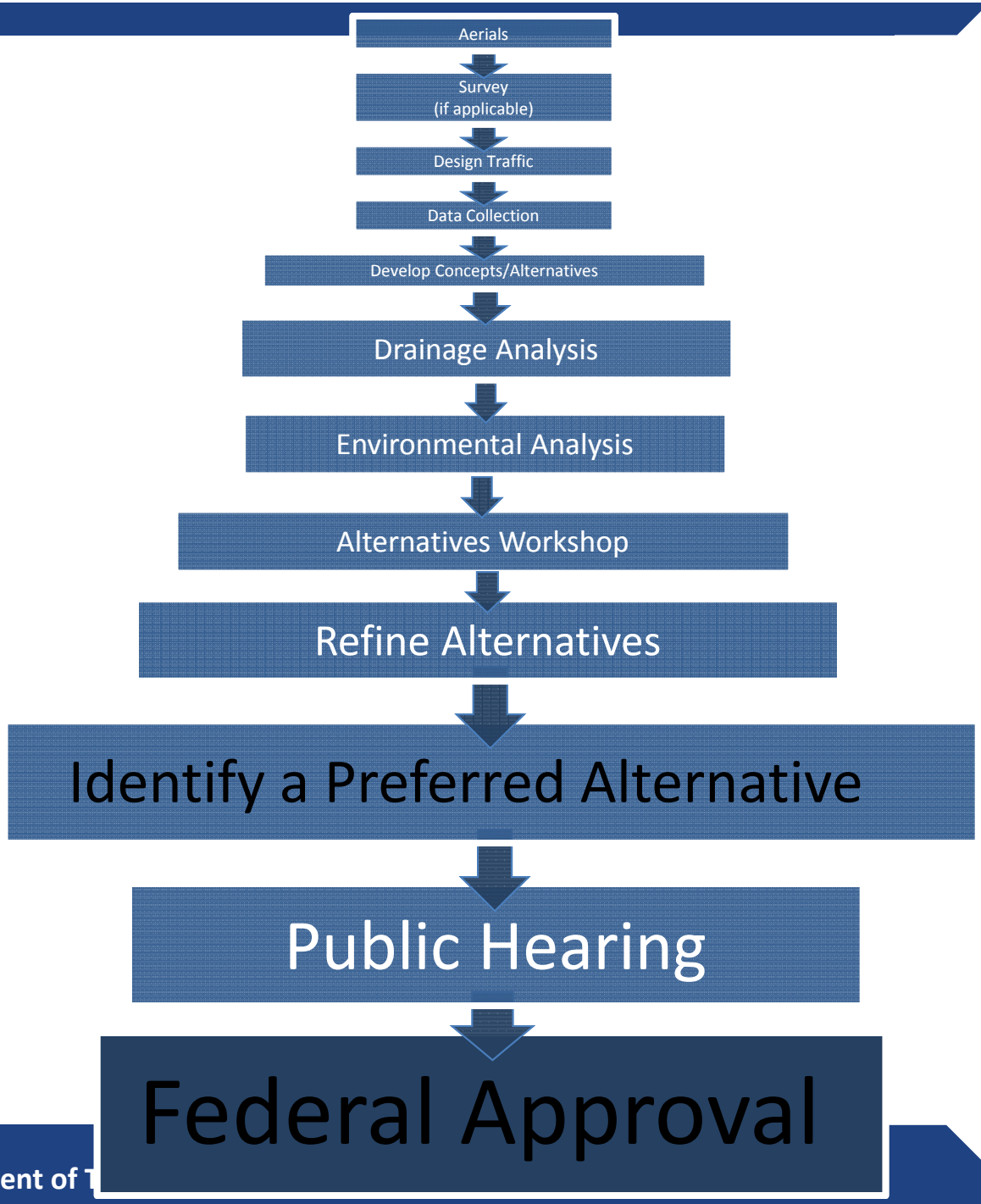
- Summary of the community outreach program
- Description of issues raised by the community, as well as how the project addressed those issues
- For a Type 2 CE, include the Public Hearing Transcript in the Appendix

Commitments & Recommendations

- Recommendations associated with the implementation of the selected alternative
- Commitments to the public and resource agencies
- Commitments which affect the subsequent phases: design, right-of-way, construction, maintenance

PER – Technical Reports

- Technical Reports/Documentation
  - Design Traffic Technical Memo
  - Interchange Justification or Modification Report (IJR or IMR)
  - Pond Siting Report (PSR)
  - Location Hydraulics Report (LHR)
  - Typical Section Package


Aerials
Survey
(if applicable)
Design Traffic
Data Collection
Develop Concepts/Alternatives
Drainage Analysis
Environmental Analysis
Alternatives Workshop
Refine Alternatives
Identify a Preferred Alternative
Public Hearing
Federal Approval

Federal Approval

- PER and Environmental Docs Submitted to Federal Agency
- Federal Agency review and approval
- Location Design Concept Acceptance (LDCA)

For More Information

Presenters:

Dat Huynh, P.E.
305-470-5217
dat.huynh@dot.state.fl.us

Richard Young, P.E.
954-777-4323
richard.young@dot.state.fl.us

References :

- **FDOT PD&E Manual**
  - *Available at:*

  http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman1.shtm
- **FDOT ETDM Manual**
  - *Available at:*

  http://www.dot.state.fl.us/emo/pubs/etdm/etdmmanual.shtm

Questions?