

PROJECT DEVELOPMENT

Module 3

Part 1, Chapter 4

Acronyms

- PD&E – Project Development & Environment
- AADT – Annual Average Daily Traffic
- IJR – Interchange Justification Report
- IMR – Interchange Modification Report
- LOS – Level of Service
- DIRC – District Interchange Review Committee
- HOV – High Occupancy Vehicle
- RCI – Roadway Characteristics Inventory
- LAMP – Low Altitude Mapping Photography
- DTM – Digital Terrain Modeling

Acronyms

- VE – Value Engineering
- TSM – Transportation System Management
- LDCA – Location Design Concept Acceptance
- PDSR – Project Development Summary Report
- LHR – Location Hydraulic Report
- WQIE – Water Quality Impact Evaluation
- ROW – Right of Way
- PSR – Pond Siting Report

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 Project Development and Environment (PD&E) Studies and Reports

This Module will teach you.....

- 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 preferred alternative
- The required engineering

Definitions

- Commitments:
 - ▣ Agreements between the DOT and Others
- Recommendations:
 - ▣ Suggestions and ideas to implement
- Preferred Alternative:
 - ▣ The alternative carried forward to design. A brief description of the proposed alternative which will include the approved typical section and right of way requirements.

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

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

Negotiate with your Consultant

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

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] off _____ to [N, S, E, W] off _____
 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](http://www.dot.state.fl.us/projectmanagementoffice)

FDOT Standard PD&E Staff Hour Ranges

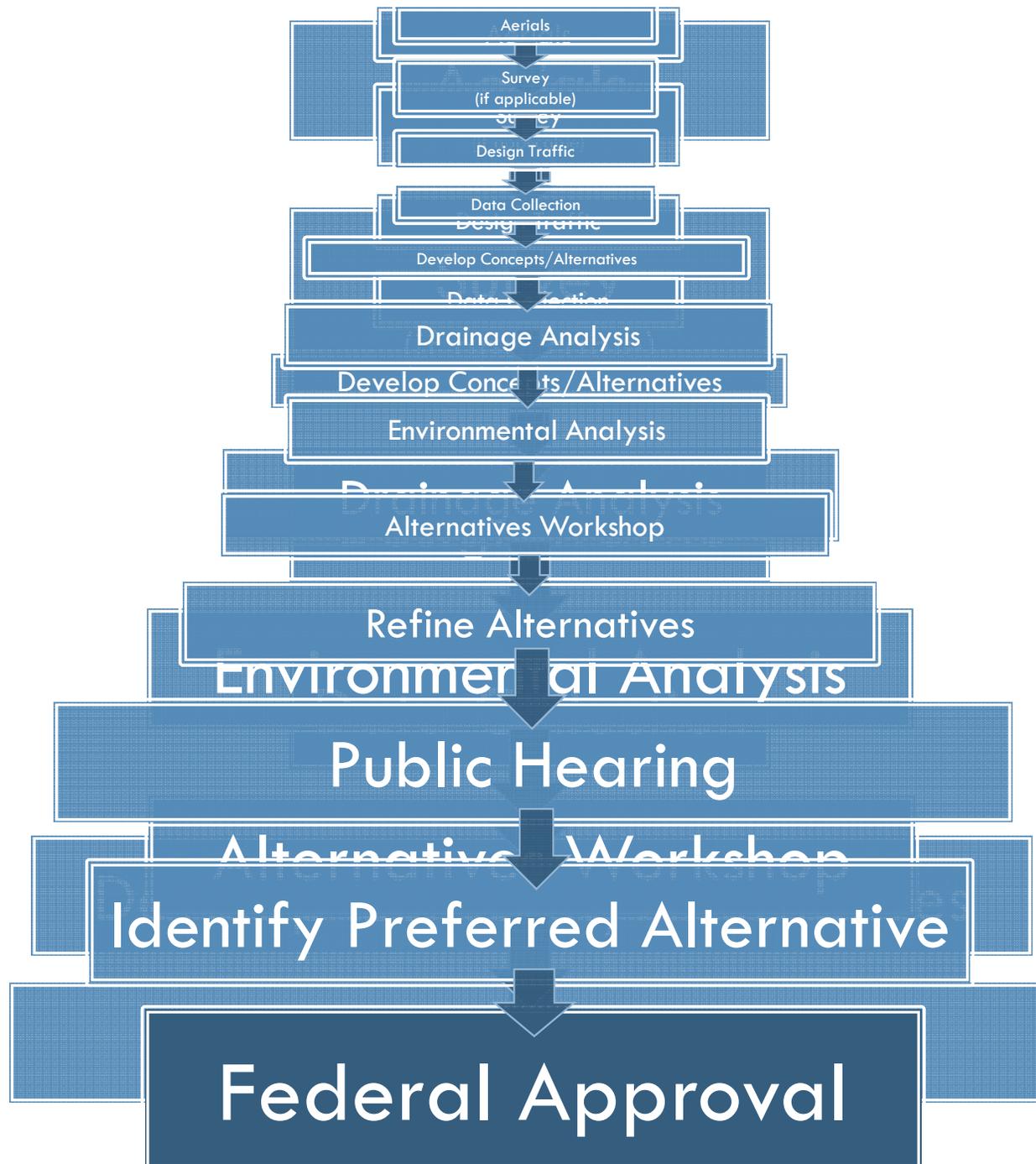
Project Activity: Engineering Analysis and Report

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 26) 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,

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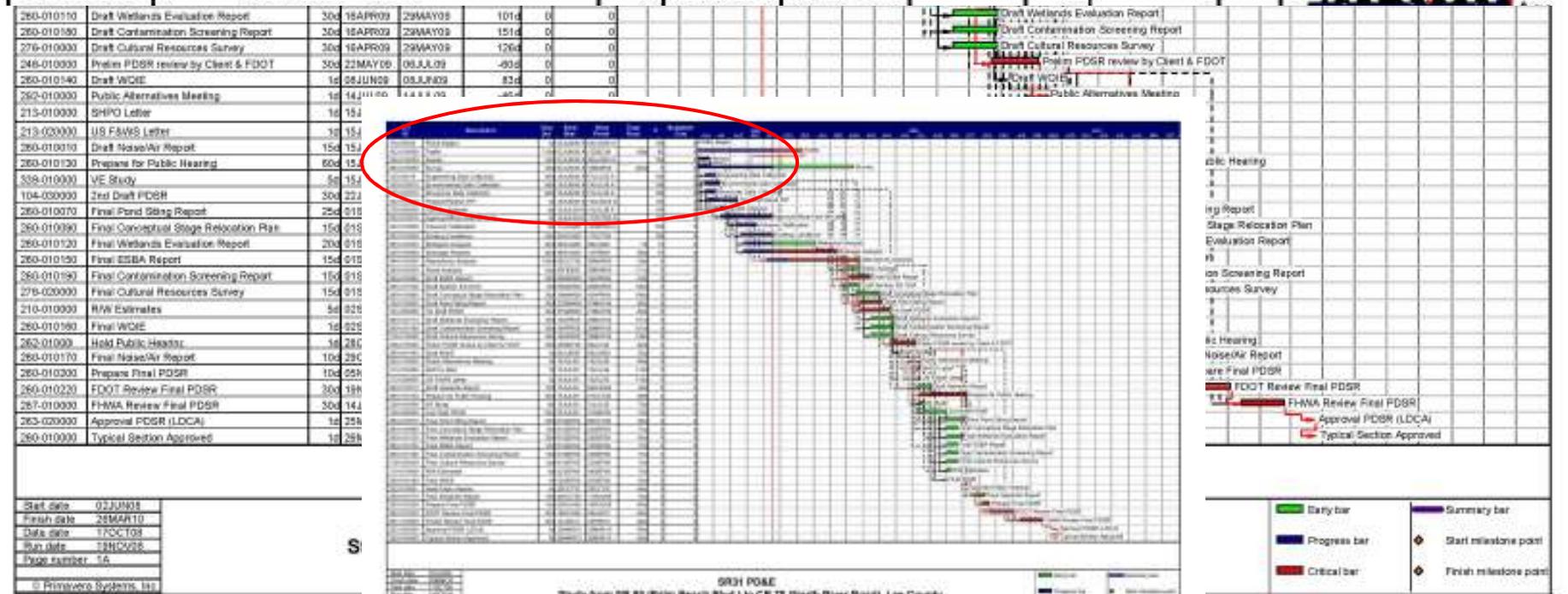
Project Development



Project Schedule

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

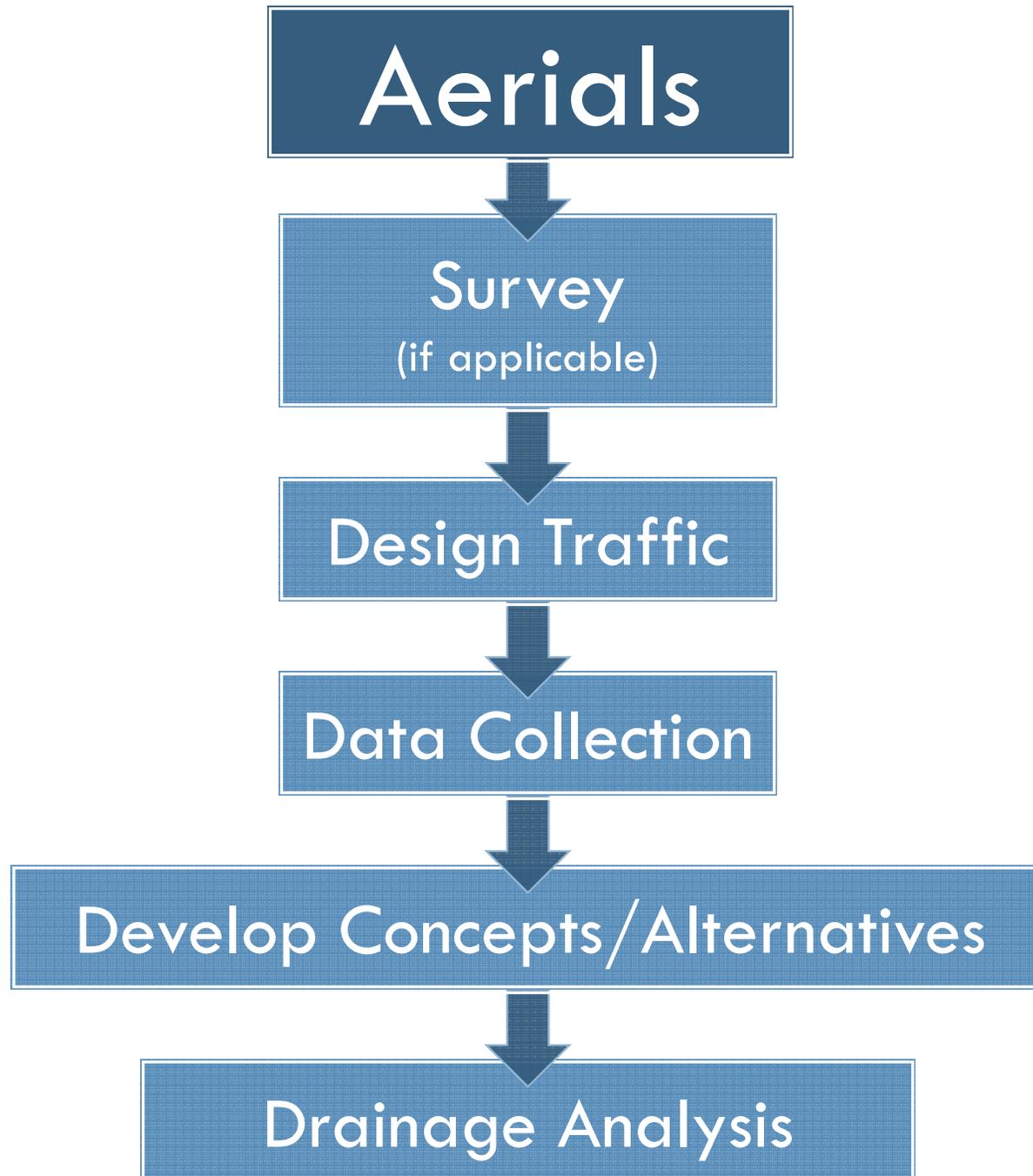
Act ID	Description	Orig Dur	Early Start	Early Finish	Total Float	%	Budgeted Cost	2008				
								JUN	JUL	AUG	SEP	OCT
100-00000	PD&E Begins	1d	02JUN08 A	02JUN08 A		100	0					
102-010000	Traffic	110d	02JUN08 A	12DEC08	-59d	65	0					
254-010000	Aerials	20d	02JUN08 A	26JUN08 A		100	0					
260-010050	Survey	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					



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Project Development



Aerials

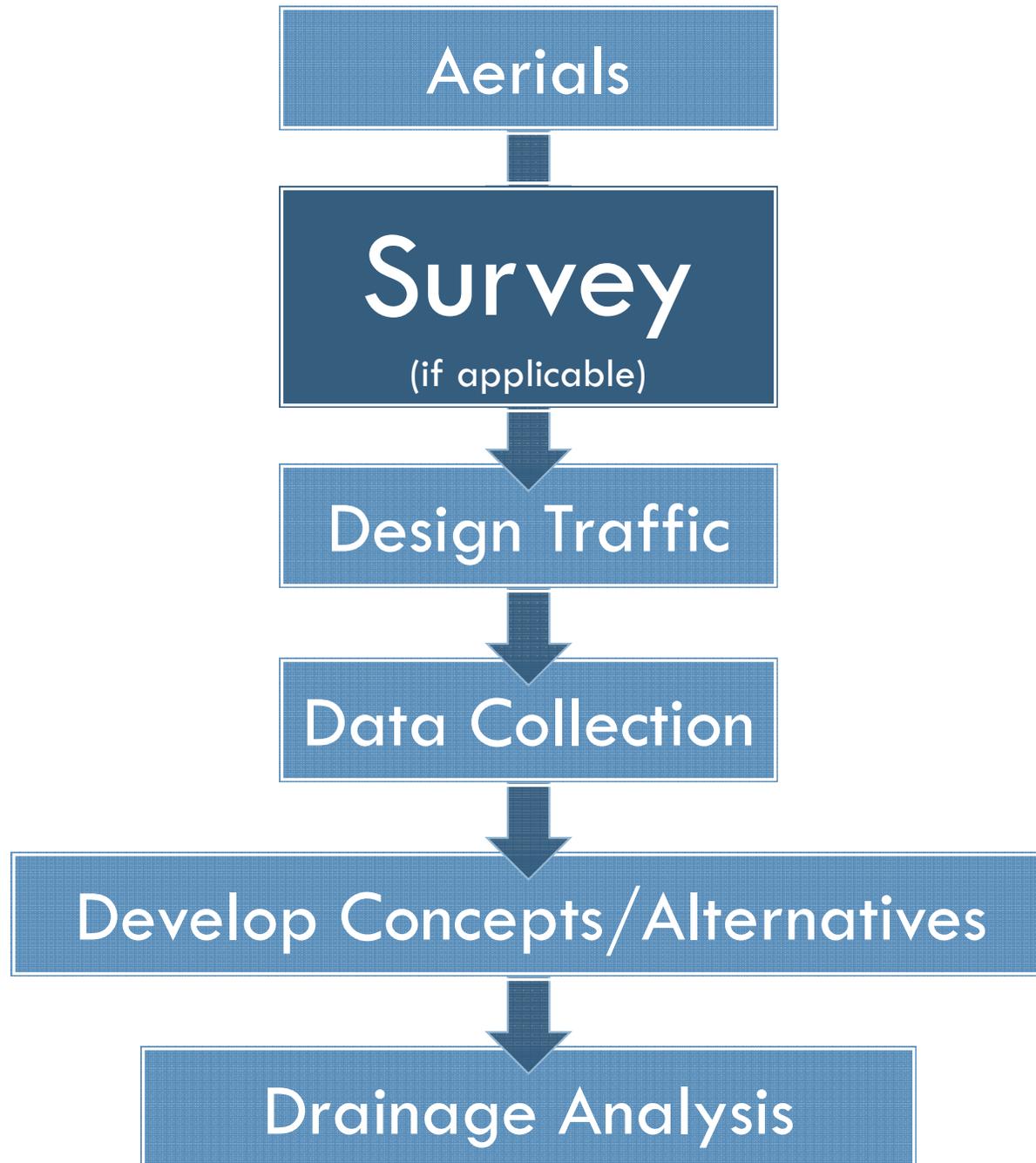
- Scope identifies coverage areas
 - ▣ Determines if using existing aerials or new ones flown
- Scope outlines “scale”
 - ▣ Project Location Map 1' = 300'
 - ▣ Alternatives 1' = 100'
- Smaller scale (lower #) is better for close-up views (intersections, interchanges)

Aerials



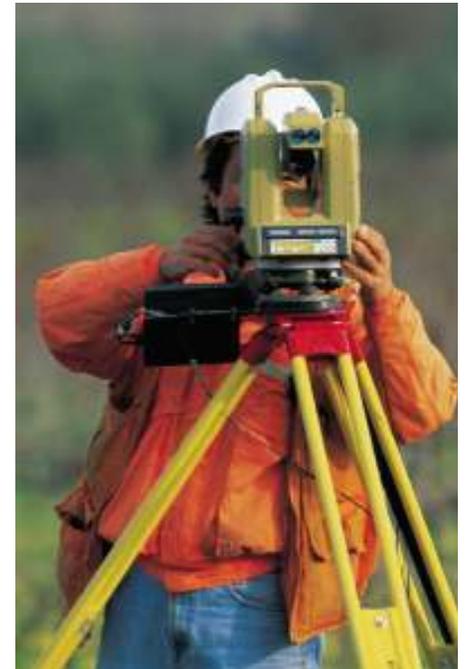
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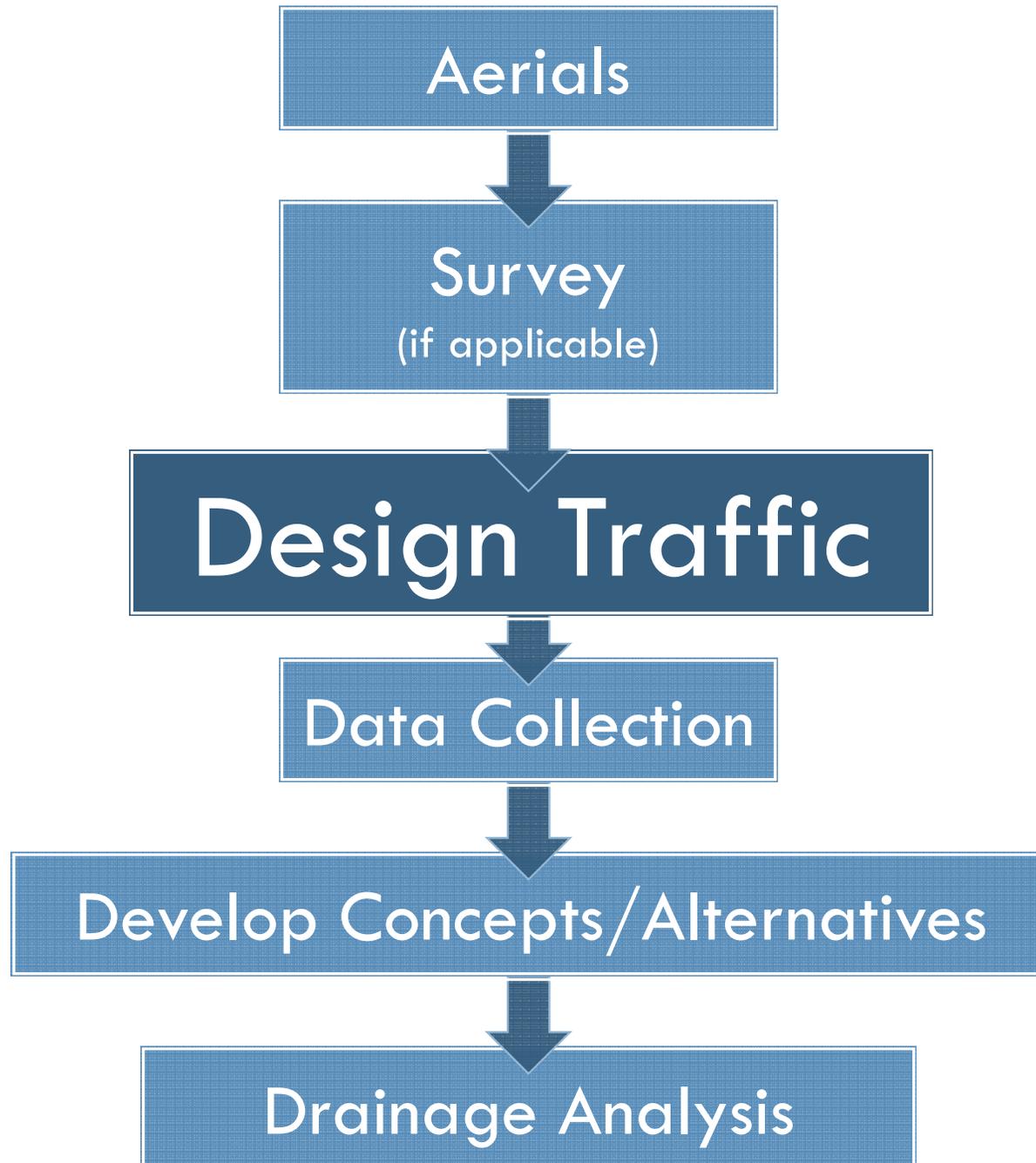
Survey

- PD&E Study usually have some level of survey
 - ▣ Low Altitude Mapping Photography (LAMP)
 - ▣ Digital Terrain Modeling (DTM)
- Initial survey work (at beginning of project)
 - ▣ Base line
 - ▣ Roadway Center line
- Save some survey time for later issues
 - ▣ Pond borings
 - ▣ Side streets



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Project Development



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

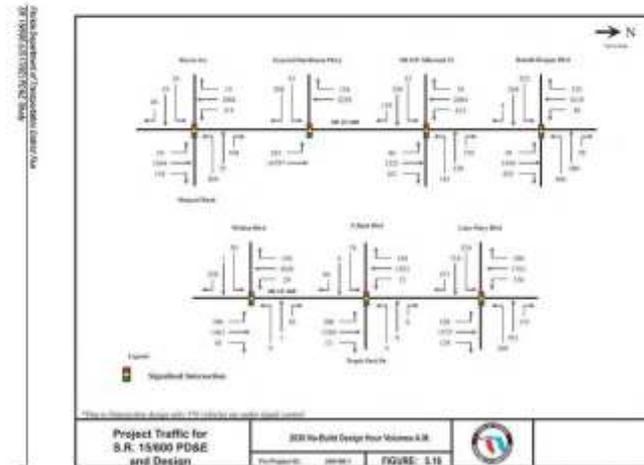
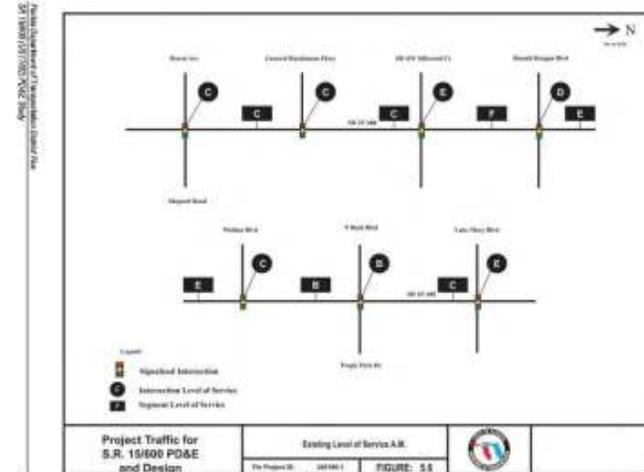
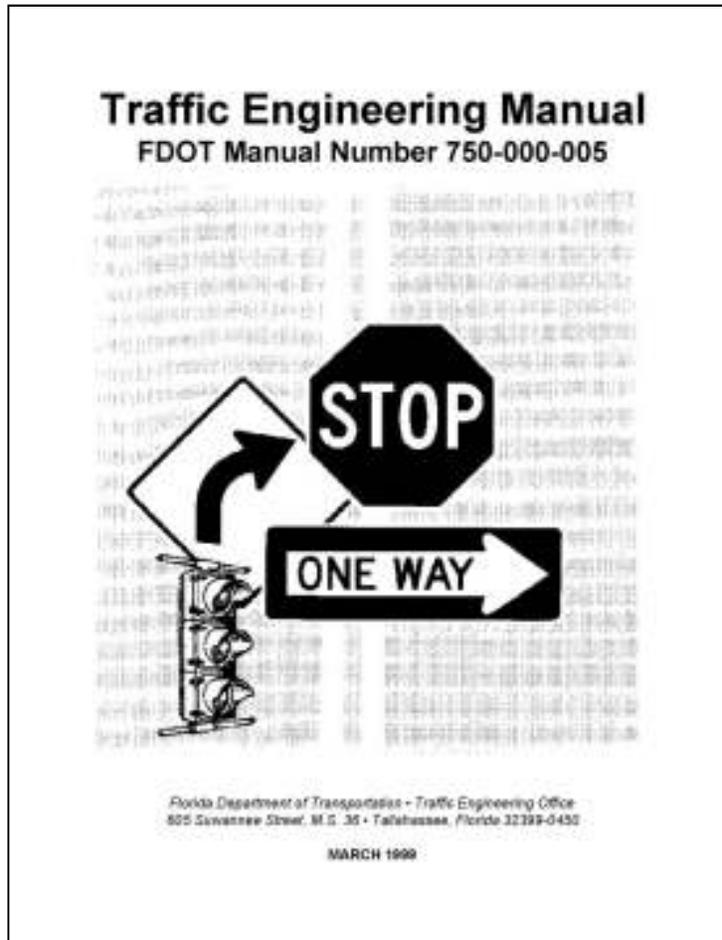


Design Traffic Analysis

- 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



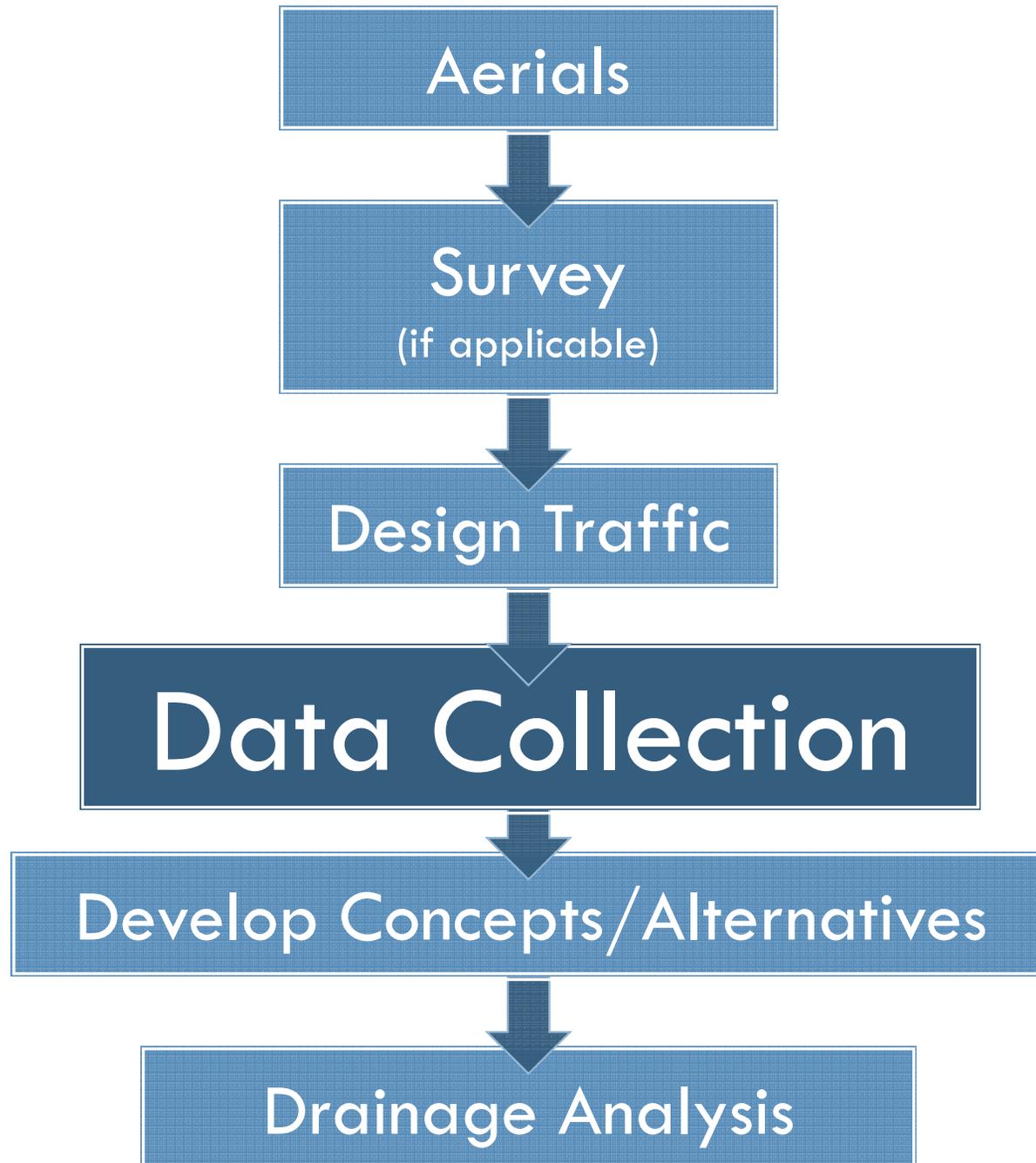
Interchange Design Traffic

- Projects Involving the Interstate and providing access:
 - ▣ Interchange Justification Report (IJR)
 - ▣ Interchange Modification Report (IMR)
- To be decided by the DIRC
- Approved by the Lead Agency



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Project Development



Data Collection

- ❑ FDOT Roadway Characteristics Inventory (RCI)
- ❑ Existing Roadway Plans
- ❑ Straight-line Diagrams
- ❑ Existing Structures Plans
- ❑ Crash Data
- ❑ Existing Signage
- ❑ Utilities
- ❑ Railroads (if applicable)
- ❑ Transportation Plans



Purpose and Need and Data Collection

- ***Purpose and Need*** - Lead Agency concurrence is a part of ETDM programming will be refined throughout the study
- This statement documents why this project is needed
- Early analysis of data collected substantiates the need for an improvement
- Purpose and Need and the data collection – form the basis for developing alternative solutions

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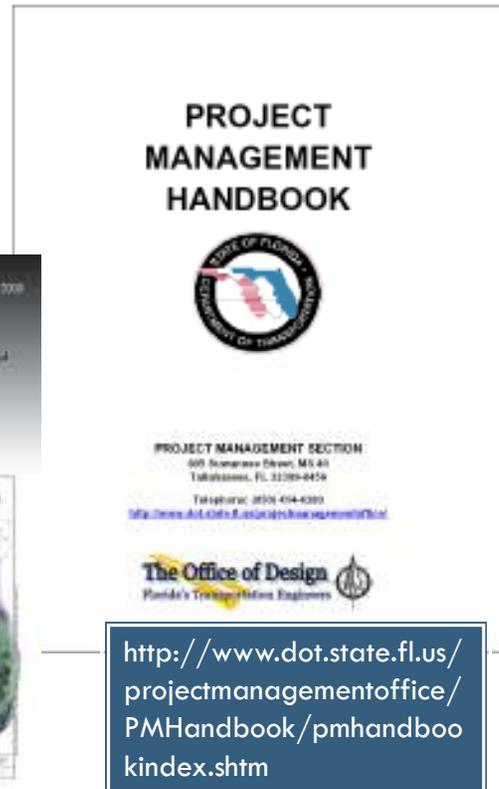
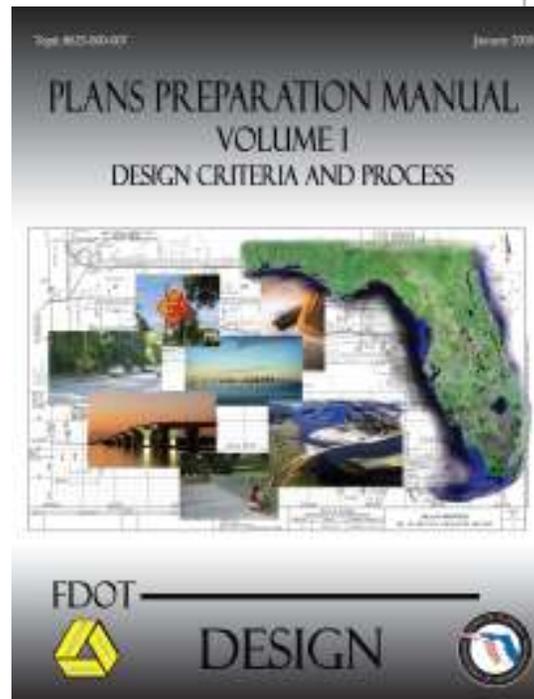
Project Development

Purpose and Need and Data Collection

Planning Requirements for Environmental Document Approvals with Segmented Implementation					
Document Information:					
Date:	(Current Date)	Document Type:		EIS/EA/CE II	Document Status: Draft/Final
Project Name:	(PD&E Project Title)				FM #: (Original FM#)
Project Limits:	(NEPA Logical Termini/PD&E Study limits)				ETDM #:
Are the limits consistent with the plans? Y/N (Limits presented for approval should be consistent with LRTP, TIP/STIP. If no, explain)					
Identify MPC(s) (if applicable): (Provide MPC(s) Name) Original PD&E FAP# (FAP# Assigned to the PD&E if applicable)					
Segment Information: (Add additional tables as needed to describe all segments within the logical termini limits. Clearly identify segment representing the next funded phase)					
Segment Limits: Segment FM #:					
Currently Adopted CFP-LRTP	COMMENTS				
Y/N	(If N, then provide detail on how implementation and fiscal constraint will be achieved)				
PHASE	Currently Approved TIP	Currently Approved STIP	TIP/STIP \$	TIP/STIP FY	COMMENTS
PE (Final Design)	Y/N	Y/N	\$		(provide comments as appropriate describing status, activities, and implementation steps needed to achieve consistency)
R/W	Y/N	Y/N	\$		(provide comments as appropriate describing status, activities, and implementation steps needed to achieve consistency)
Construction	Y/N	Y/N	\$		(provide comments as appropriate describing status, activities, and implementation steps needed to achieve consistency)
Segment Information: (Add additional tables as needed to describe all segments within the logical termini limits. Clearly identify segment representing the next funded phase)					
Segment Limits: Segment FM #:					
Currently Adopted CFP-LRTP	COMMENTS				
Y/N	(If N, then provide detail on how implementation and fiscal constraint will be achieved)				
PHASE	Currently Approved TIP	Currently Approved STIP	TIP/STIP \$	TIP/STIP FY	COMMENTS
PE (Final Design)	Y/N	Y/N	\$		(provide comments as appropriate describing status, activities, and implementation steps needed to achieve consistency)
R/W	Y/N	Y/N	\$		(provide comments as appropriate describing status, activities, and implementation steps needed to achieve consistency)
Construction	Y/N	Y/N	\$		(provide comments as appropriate describing status, activities, and implementation steps needed to achieve consistency)
FDOT Preparer's Name:			Date:		
Preparer's Signature:			Phone #:		
			Email:		
*Attach: LRTP, TIP, STIP pages					

Design Controls

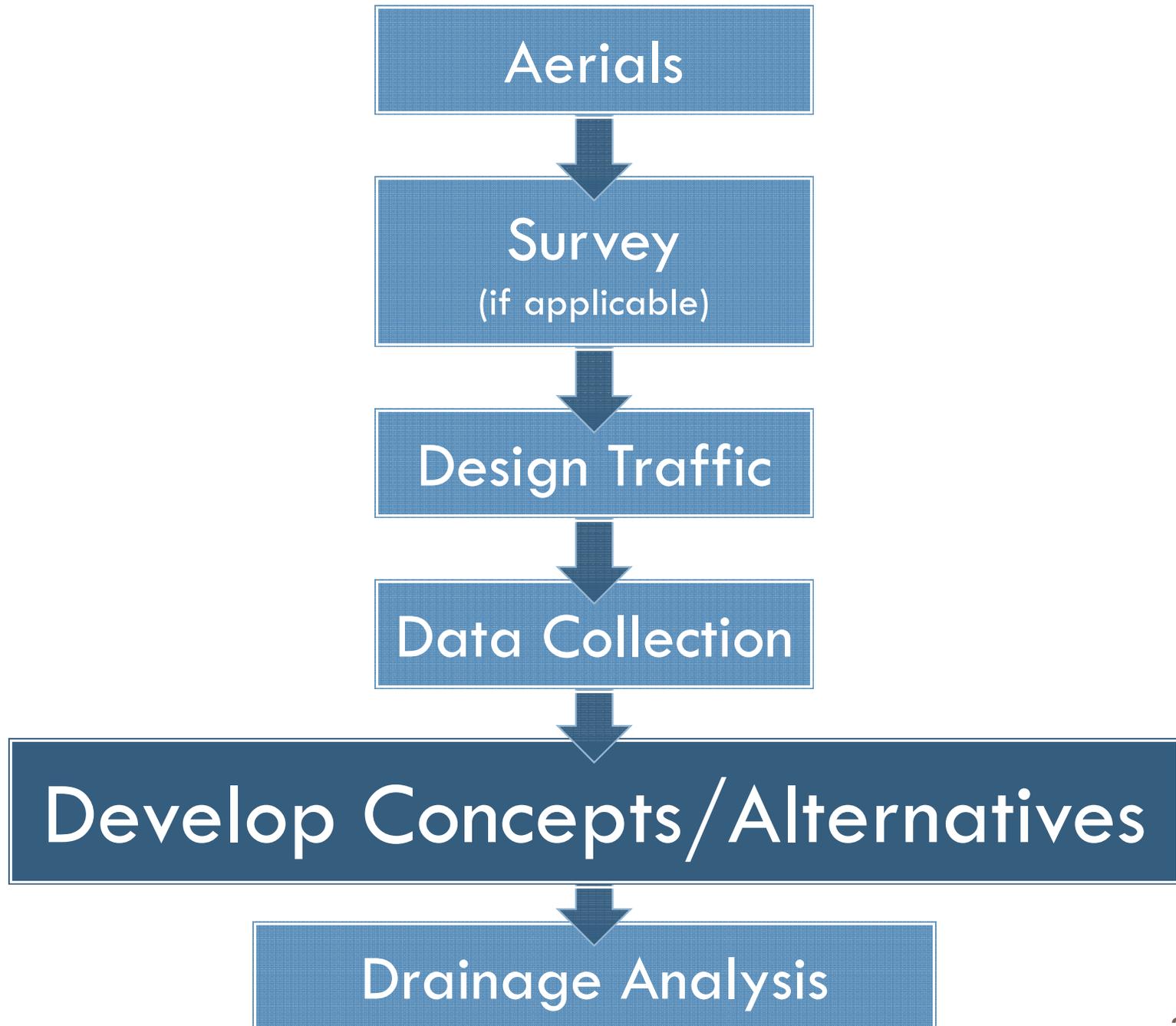
- Classification
- Design Speed
- Level of Service
- Clearances
- Lane Width
- Horizontal and Vertical Controls



<http://www.dot.state.fl.us/rddesign/PPMManual/2009/Volume1/2009Vol1.shtm>

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Project Development



Develop Concepts/Alternatives

- Based on project need and design standards, develop conceptual alternatives
 - ▣ No-Build Alternative
 - ▣ Transportation Systems Management (TSM 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 (TSM)

- Maximize the utilization and efficiency of the existing facility
- Small scale improvements that address need
- HOV lanes, 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
- Begin to identify impact avoidance and minimization
- Develop a consistent naming convention
 - ▣ Alternative 1, Alternative 1 a, Alternative 1 b ...
- Alternatives laid out on base maps using aerials and survey data

Build Alternatives



Every Day Counts

- **FHWA ORDER Classification Code 6640.1A** - Policy on Permissible Project Related Activities during the NEPA process, dated October 1, 2010.
- Aims to reduce project delivery time.
- Any engineering work performed on one alternative prior to final NEPA approval must be approved by FHWA and not prejudice the objective comparison of all the alternatives or limit alternatives.

Once Alternatives are developed...

- Begin to examine Drainage
- Begin to examine Environmental Impacts

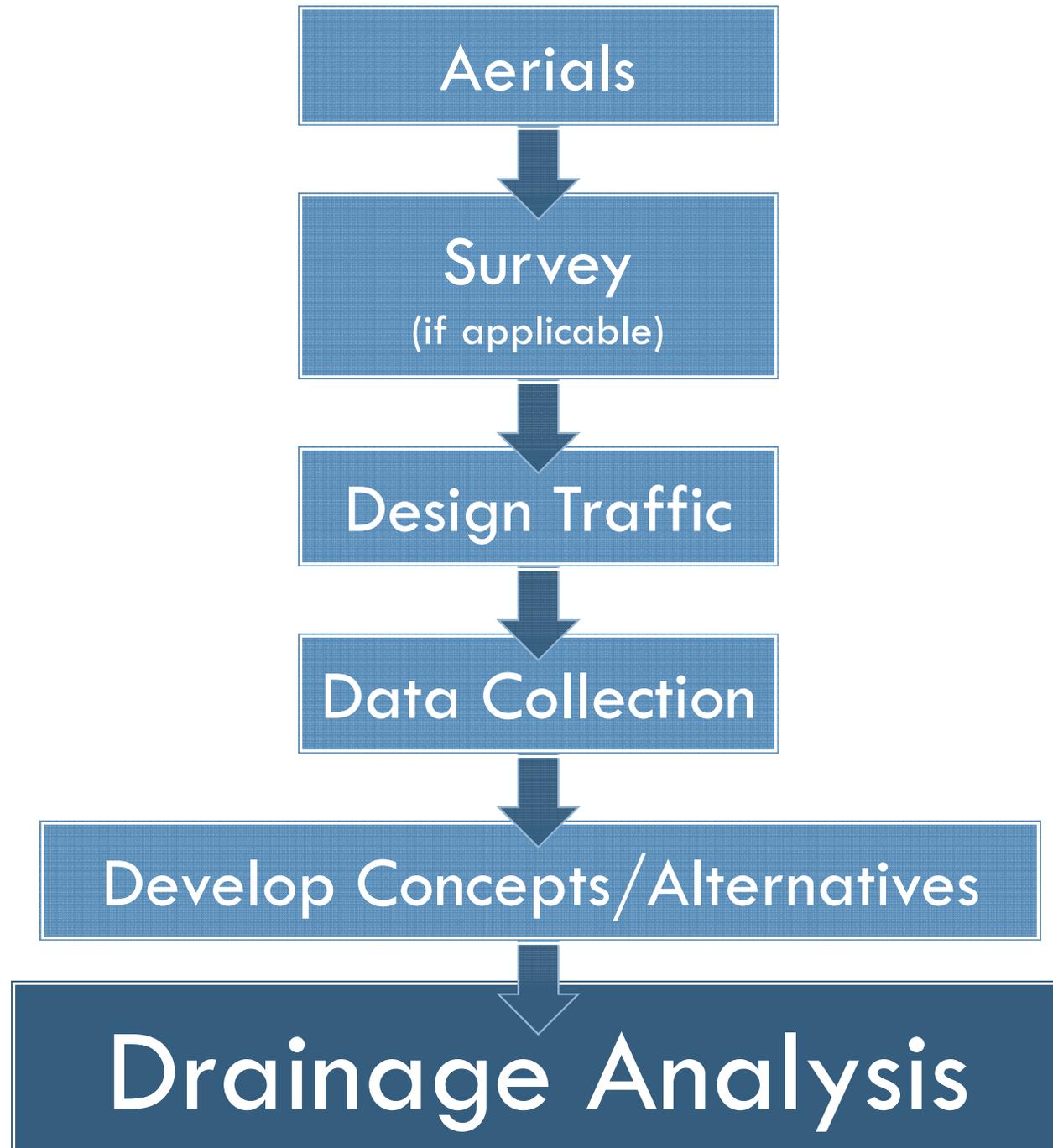


Figure 7.5 Delineated Wetlands



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Drainage Analysis

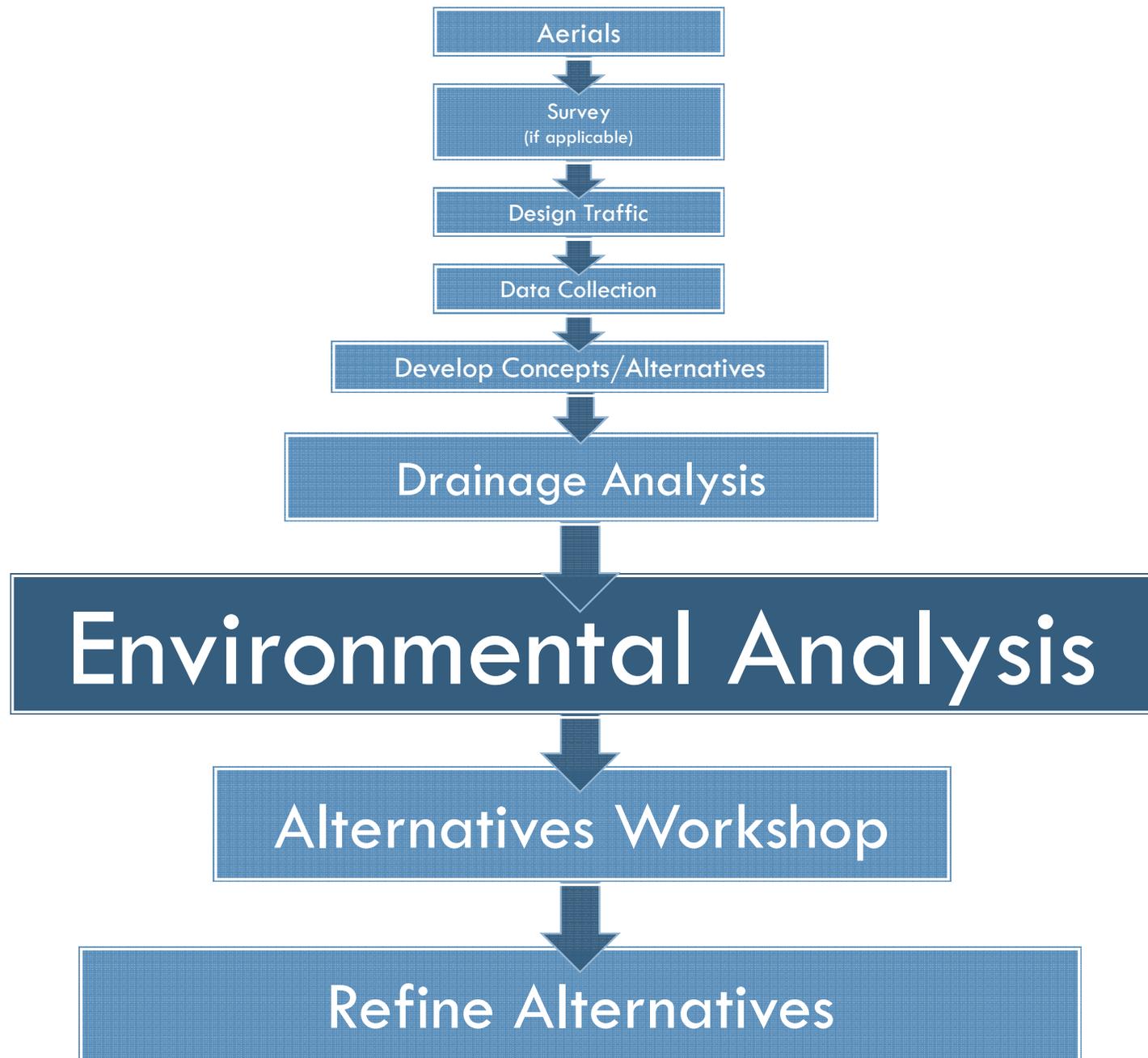
- Potential drainage solutions are developed
 - ▣ Swales
 - ▣ Off-Site Ponds
 - ▣ Curb and Gutter (Urban)
- Meet with Water Management District
 - ▣ Determine Criteria for treatment

Drainage and Water Reports

- Pond Siting Report (PSR)
 - ▣ Identifies potential and preferred pond site locations
 - ROW Impacts
 - Wetland Impacts
 - Conveyance
- Location Hydraulic Report (LHR)
 - ▣ Identifies impacts to floodplains
- Water Quality Impact Evaluation (WQIE)

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Project Development



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

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Project Development



Alternatives Workshop

- Once Alternatives are developed and initial impacts identified
- Hold an Alternatives Public Workshop
 - ▣ Present alternatives
 - ▣ Gather public comment
 - ▣ Help refine alternatives
- Discussed in detail in Module 5 on Friday

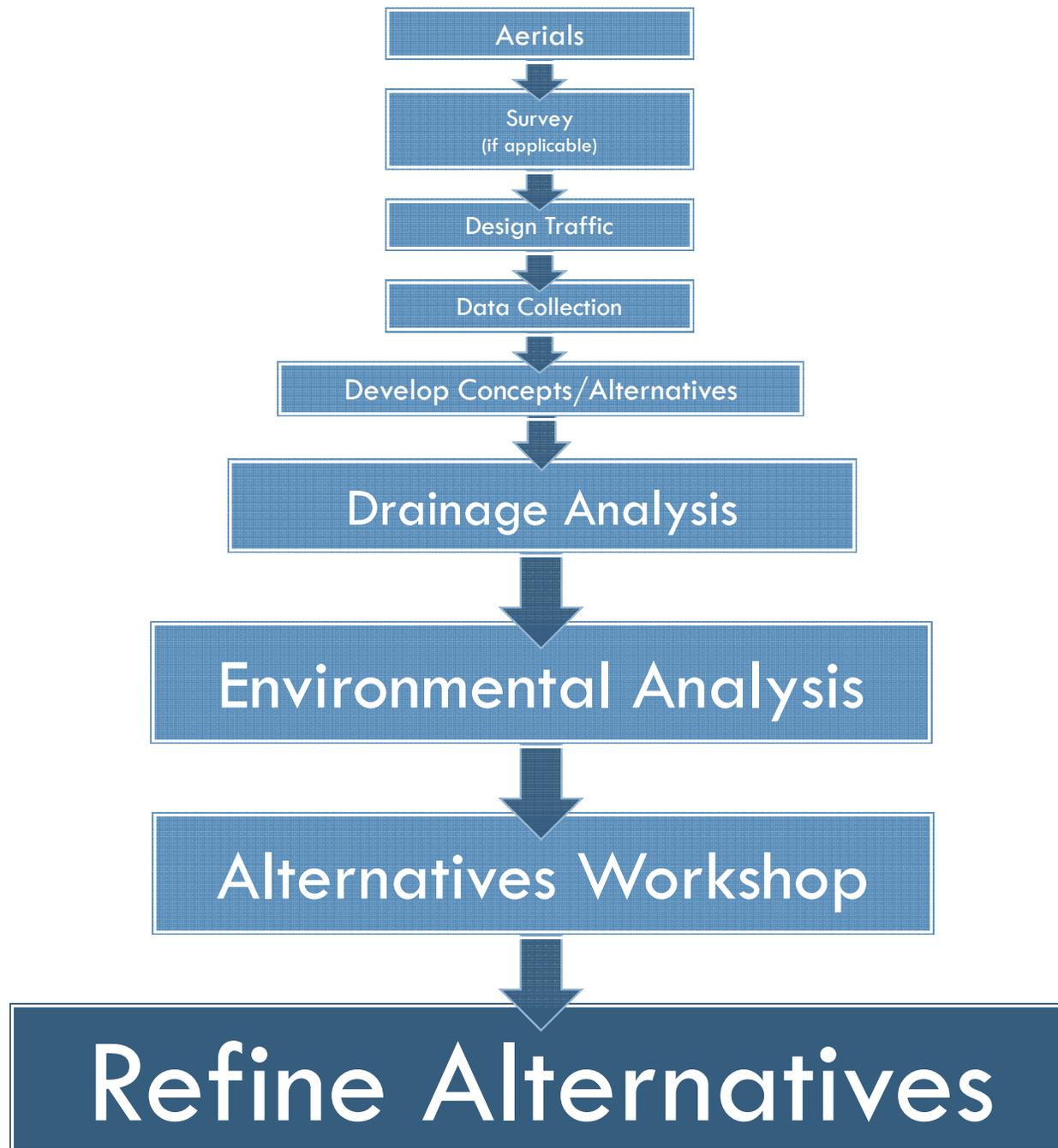


Table 7.9 Alternatives Evaluation Matrix

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		
Number of Sites Potentially Impacted	None	2 (de minimis)
Historic/Archeological		
Number of Sites Potentially Impacted	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	\$34,704,076.60
Construction	\$0	\$37,420,933.50
CEI	\$0	\$3,362,884.84
Total Project Costs	\$0	\$79,881,281.48

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Refine Alternatives

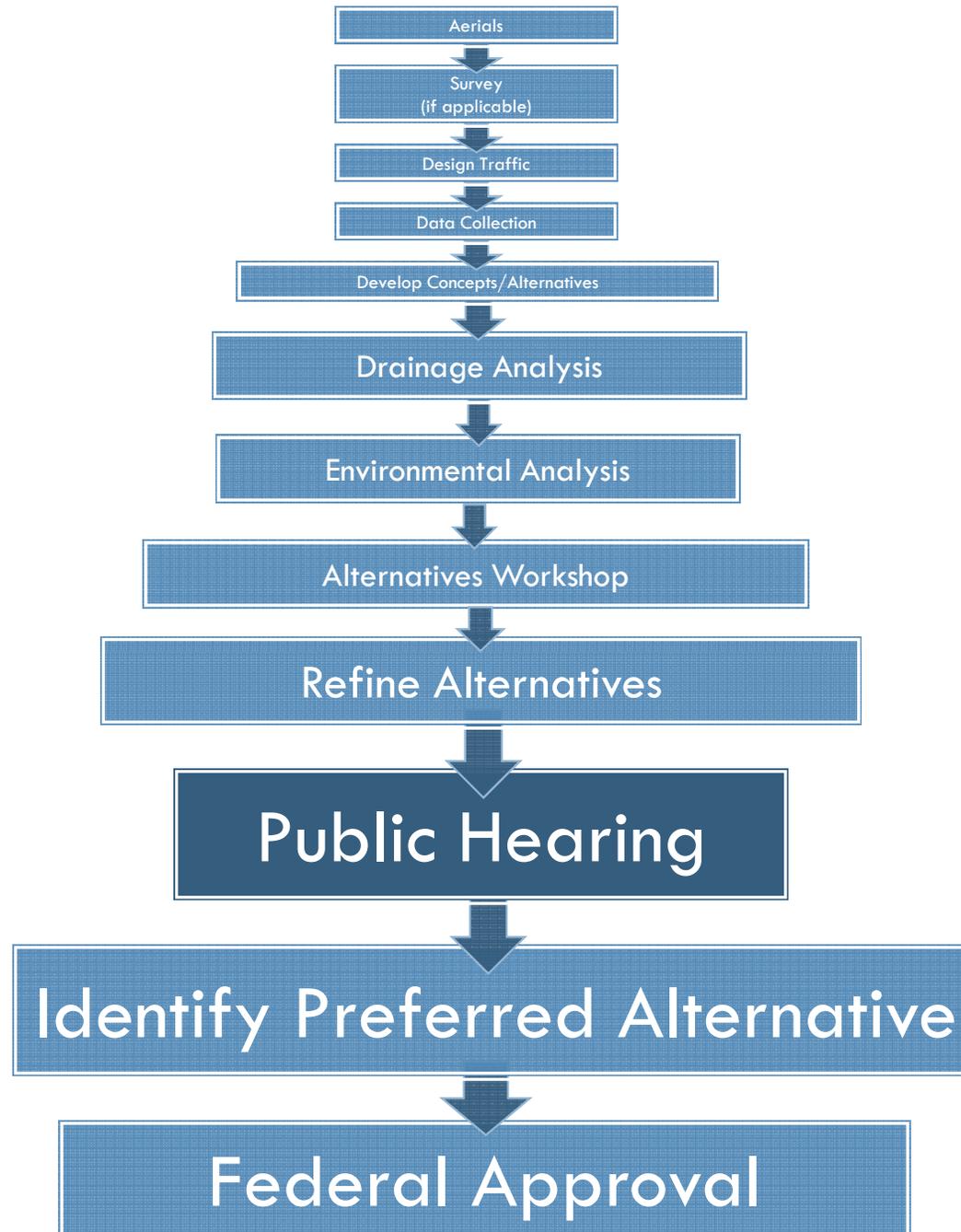
- Incorporate Public Comments
- Make adjustments to alternatives as necessary
- One alternative will begin to become the “Preferred Alternative”

Value Engineering

- Required for projects costing \$20 MIL +
- Schedule with District VE Team
 - ▣ Week-long event
 - ▣ VE Report prepared in advance
- VE recommendations summarized in PDSR or Environmental Document

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Project Development



Public Hearing

- Once Alternatives are Refined
- Public Hearing is required
 - ▣ Present Alternatives
 - ▣ Present the No-Build Alternative
 - ▣ Gather public comment

Anna Maria Island Bridge
PD&E Study
Public Hearing
Florida Power & Light Company
March 30, 2009

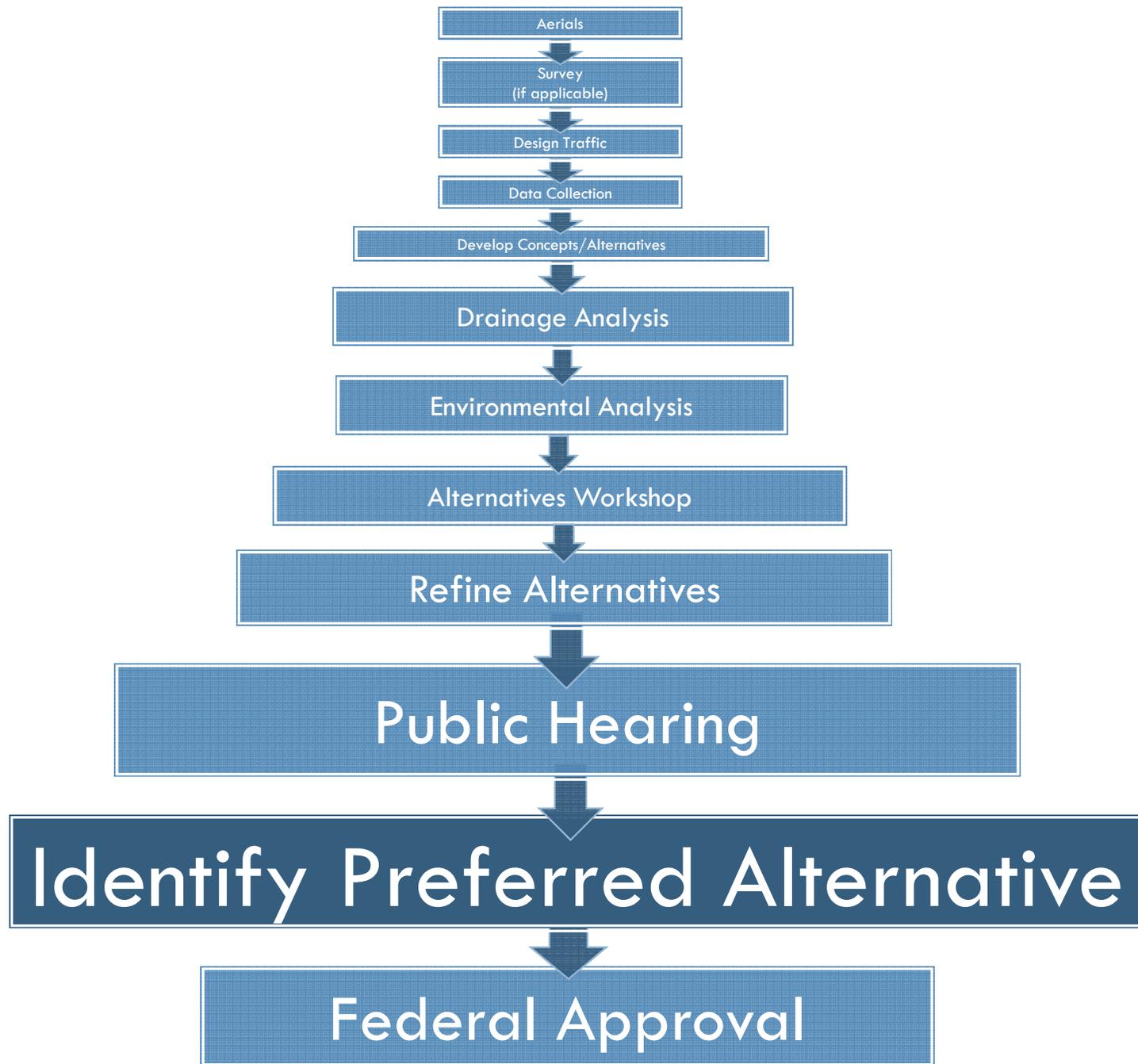
COMMENT SHEET
We encourage your comments regarding this project.

NAME _____
ADDRESS _____

NOTE: Please complete and place in the "Comments" box at staff in Chris Payne 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.

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Identify a Preferred Alternative

- Identify a Preferred Alternative
 - ▣ After public comment is gathered
 - ▣ Additional Input
- Preferred Build Alternative identified
- Preferred Build vs. No Build

Select Preferred Alternative

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



Documentation

- Documentation
 - ▣ Environmental Document
 - ▣ Environmental Technical Studies
 - ▣ Preliminary Engineering Report
- A complete project file must be kept. The project file should be available to provide to the lead agency upon request.

Preliminary Engineering Report

- The purpose of the *PER* is to provide technical engineering information
 - ▣ *supplement's information provided in the Environmental Document.*
 - ▣ *supports the decisions made related to the project alternatives.*
 - ▣ describes the preferred alternative
- Signed and sealed by a Florida Registered Professional Engineer.

Outline of the Preliminary Engineering Report

- **1. Cover Page**
- The cover page should contain the following statement:
- “This preliminary engineering report contains detailed engineering information that fulfills the purpose and need for project _____.”

Outline of the Preliminary Engineering Report

- **2. Summary of Project**
- a. The summary of the ***PER should include the***
- “This preliminary engineering report contains detailed engineering information that fulfills the purpose and need for project _____.”
- b. Commitments and Recommendations
- c. Description of Proposed Action

Outline of the Preliminary Engineering Report

- **3. Existing Conditions – Include information obtained in accordance with *Section 4-2.5.2.2***

- **4. Planning Phase/Corridor Analysis**

- **5. Project Design Standards - List required design standards obtained in accordance with *Section 4-2.5.2.1***

Outline of the Preliminary Engineering Report

6. Alternative Alignment Analysis

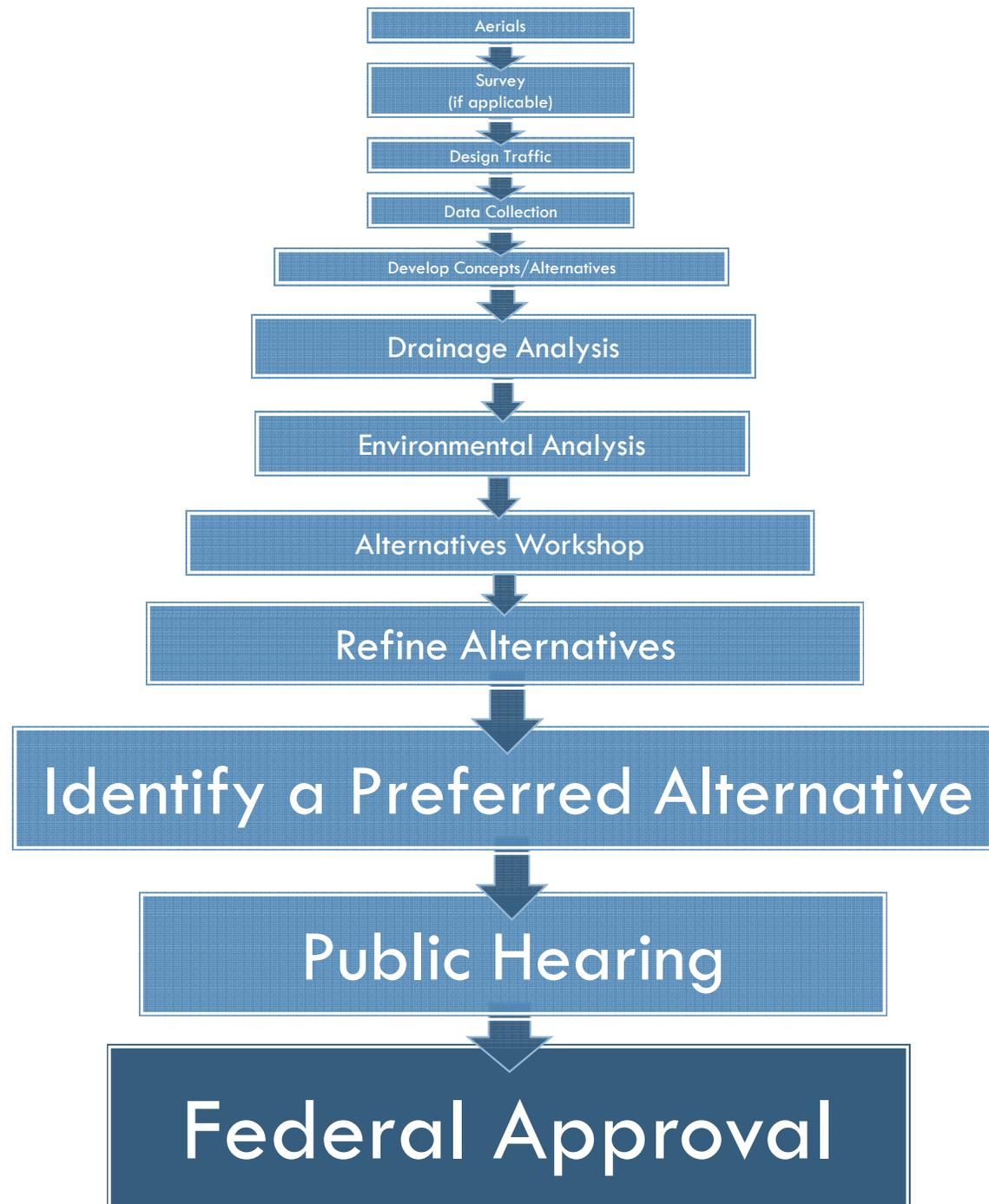
- a. No - Build Alternative (advantages and disadvantages should be considered)
- b. Transportation Systems Management and Operations
- c. Multi-Modal Alternatives
- d. Alternative Evaluation (for each alternative)
- e. Evaluation Matrix – compare all major impacts, at a minimum include:
- f. Recommended Alternative - explain which alternative was chosen by the FDOT and/or project sponsor and the rationale

Outline of the Preliminary Engineering Report

- **7. Design Details of Recommended Alternative (including Typical Section Package)**
- **8. Conceptual Design Plans**
- **9. List of Technical Reports Completed for the Project**

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Project Development



Federal Approval

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

Permitting

- Permit coordination begins during Programming Screen
- Pre-Application
 - ▣ Basis for sufficiency of engineering
 - ▣ Basis for sufficiency of environmental information
 - ▣ Level of detail will vary from project to project
 - ▣ Information can be found in the Programming Summary Report

Permit Applications include:

- Design information
- Stormwater treatment and attenuation information
- Floodplain and Hydraulic information
- Assessment of wetland impacts (type and function)
- Mitigation options to offset project related wetland impacts
- Protected species information