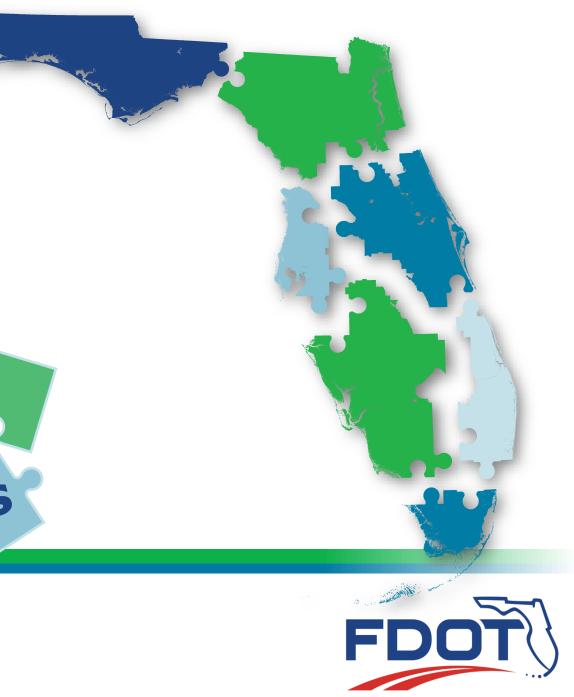
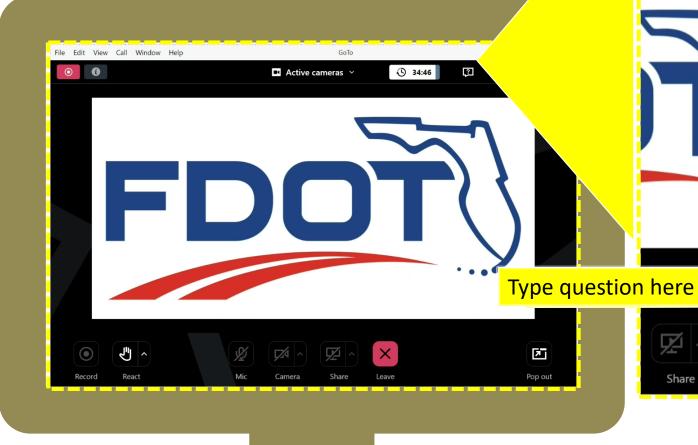


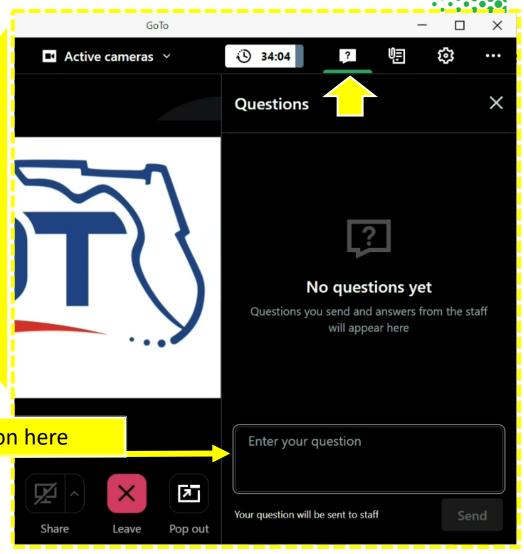
2024 PD&E Manual Part 2, Chapter 3 Training





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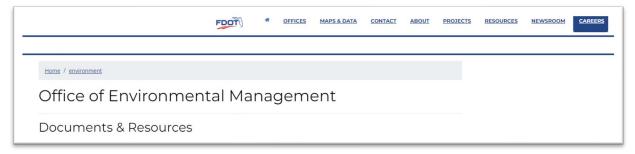




FDOT PD&E Manual Part 2, Chapter 3



OEM Documents and Resources Page: https://www.fdot.gov/environment/documents---resources



FDOT PD&E Manual: https://www.fdot.gov/environment/pubs/pdeman/pdeman-current

Office of Environmental Management PD&E Manual Project Development and Environment Manual (PD&E Manual) Effective July 31, 2024 Pursuant to 23 United States Code (U.S.C.) 327 and the implementing Memorandum of Understanding (MOU) executed on May 26, 2022, the FDOT has assumed and Federal Highway Administration (FHWA) has assigned its responsibilities under the National Environmental Policy Act (NEPA) for highway projects on the State Highway System (SHS) and Local Agency Program (LAP) projects off the SHS (NEPA Assignment). In general, FDOT's assumption includes all highway projects in Florida which source of federal funding comes from FHWA or which constitute a federal action through FHWA. NEPA Assignment includes responsibilities for environmental review, interagency consultation and other activities pertaining to the review or approval of NEPA actions. Consistent with law and the MOU, FDOT will be the Lead Federal Agency for highway projects with approval authority resting in the Office of Environmental Management (OEM). The process outlined in the Project Development and Environment (PD&E) Manual is the Florida Department of Transportation's (FDOT's) procedure for complying with the National Environmental Policy Act (NEPA) of 1969, Title 42 U.S.C. section 4321, et seq., and the MOU mentioned above and describes FDOT's environmental review process.





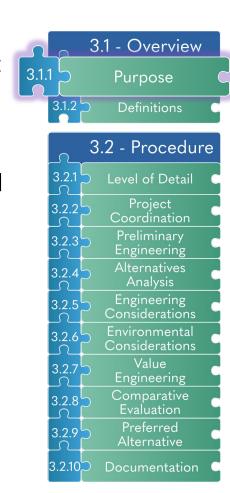
Purpose (Section 3.1.1)



Part 2, Chapter 3 of the PD&E Manual defines FDOT's procedure for engineering analyses to support development of general project location and design concepts during Project Development and Environment (PD&E) Studies.

The Engineering Analysis:

- Builds upon the information developed and documented by FDOT during the Planning phase of a project.
- Defines project features essential to the assessment of project impacts on the social, cultural, natural, and physical environment...
- Seeks to balance project needs while ensuring project costs and environmental impacts are minimized.
- Establishes necessary design considerations to support progression of the project from concept to preliminary design and eventually to final design.

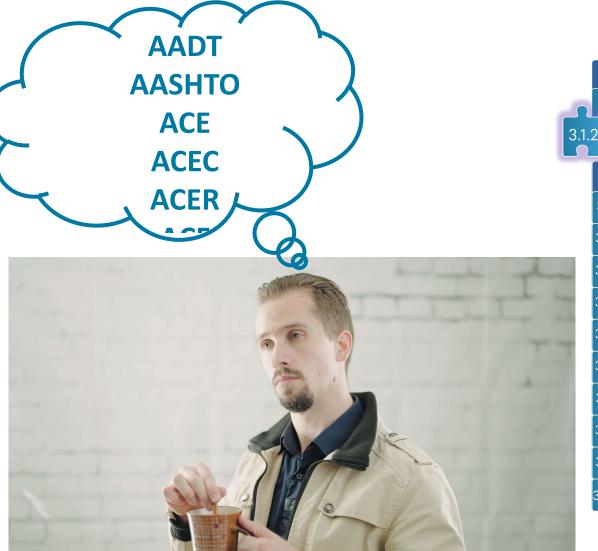


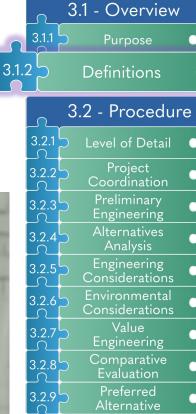




Acronyms and Definitions (Section 3.1.2)

- Frequent acronyms
 - PD&E Study Project
 Development and Environment
 Study
 - **COA** Class of Action
 - PER Preliminary Engineering Report
- Refer to Acronyms List on PD&E Manual webpage
- Definitions of common terms in the Engineering Analysis can be found in Section 3.1.2 of the Chapter



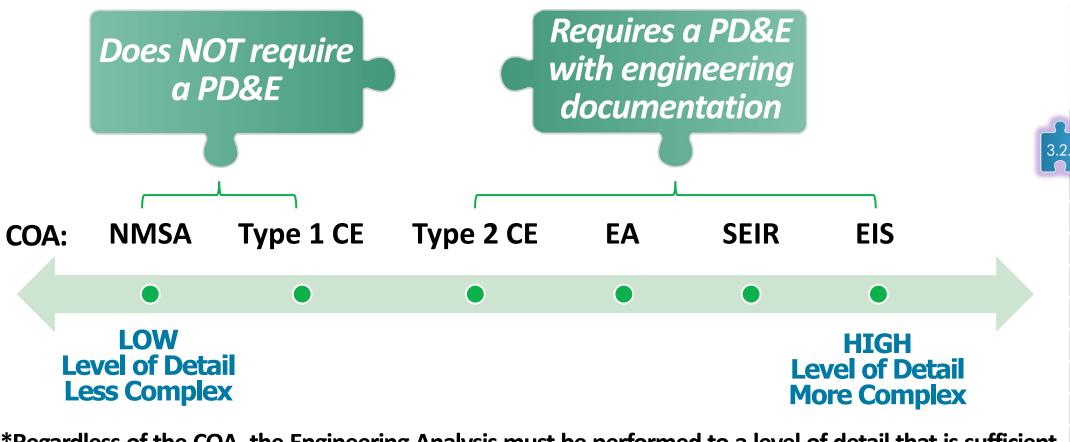






Documentation

Level of Detail of Analysis (Section 3.2.1)



^{*}Regardless of the COA, the Engineering Analysis must be performed to a level of detail that is sufficient to assess the affects on the social, economic, natural, cultural, and physical environment.







Project Coordination (Section 3.2.2)



Coordination is required with other *FDOT Offices*, as well as many *external agencies*, and the public.



Examples of FDOT Offices

- Office of Environmental Management
- Structures Design Office
- Systems Planning Office
- Traffic Operations Office
- Roadway Design Office
- Florida's Turnpike Enterprise
- Others

Examples of External Agencies

- Water Management District
- District Metropolitan Planning Organization (MPO)/Transportation Planning Organization (TPO)
- US Coast Guard
- US Army Corps of Engineers
- Others







Documentation

AUDIENCE ENGAGEMENT



PROJECT COORDINATION The Project Manager is coordinating with these 16 departments/disciplines. Name as many as you can.

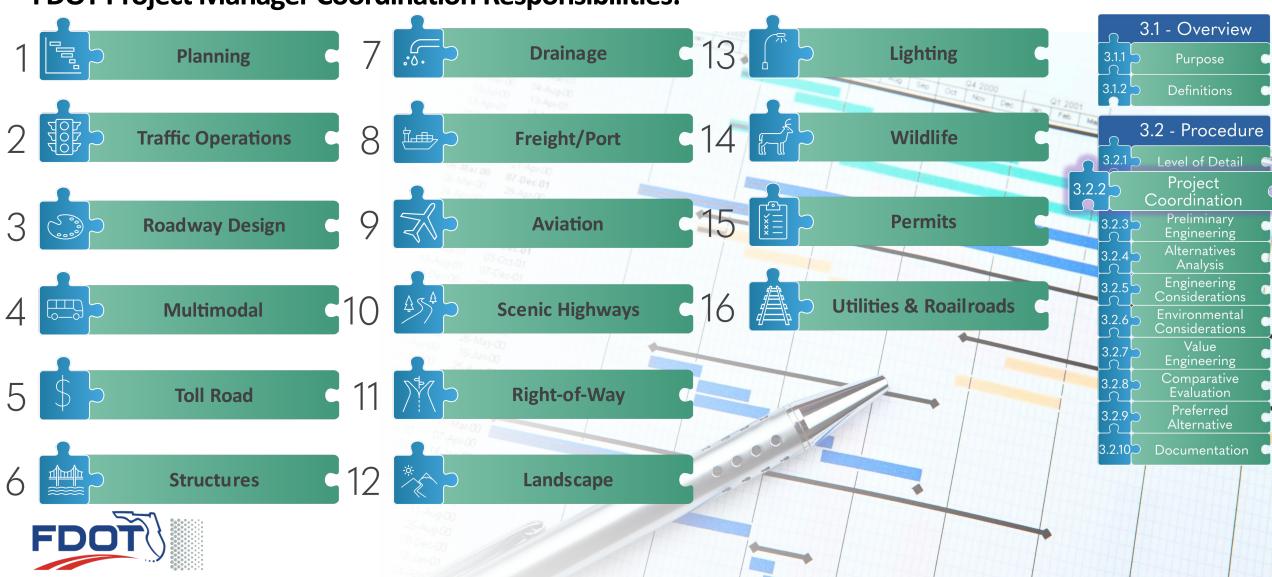




Project Coordination (Section 3.2.2)



FDOT Project Manager Coordination Responsibilities:



Preliminary Engineering Analysis (Section 3.2.3)

The key elements in performing engineering analysis during PD&E are:





		3.1 - Overview	
	3.1.1	Purpose	S
	3.1.2	Definitions	C
		3.2 - Procedur	е
	3.2.1	Level of Detail	5
	3.2.2	Project Coordination	C
3.2.	3	Preliminary Engineering	
	3.2.4	Alternatives Analysis	C
	3.2.5	Engineering Considerations	
	3.2.6	Environmental Considerations	C
	3.2.7	Value Engineering	
	3.2.8	Comparative Evaluation	5
	3.2.9	Preferred Alternative	
	3.2.10	Documentation	



Consistent with Purpose and Need Statement (Section 3.2.3.1)



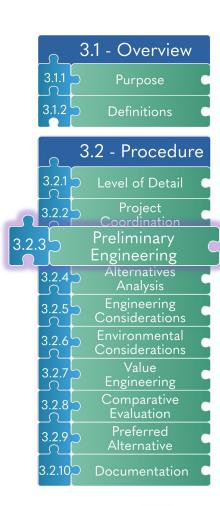
The Purpose and Need (P&N) Statement is generally developed during the Planning phase.

 This statement drives the development of the alternatives considered and evaluated.

The PM must review the *Programming Screen Summary Report* for projects that were screened through the ETDM Process.



Refer to Part 2, Chapter 1 of the PD&E Manual for more information about the P&N Statement.







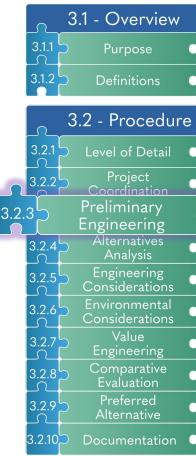
Data Collection (Section 3.2.3.2)

Data collection should begin by focusing on obtaining the data to assess and support the P&N for the project.

Utilize free and easily available data (if current/relevant), and request data from the appropriate sources to fill gaps where needed.

 Many free data sources include both 2D and 3D data including project elevations, GIS data layers, aerial photography, utility information, etc.









Existing Conditions Analysis (Section 3.2.3.3) Previous Planning Studies

Previous planning studies, including *ACERs*, that were completed to support development of this PD&E study should be reviewed and documented in the *PER*.

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 Documents.

If there are no previous planning studies completed, include a statement to that fact in the **PER**.



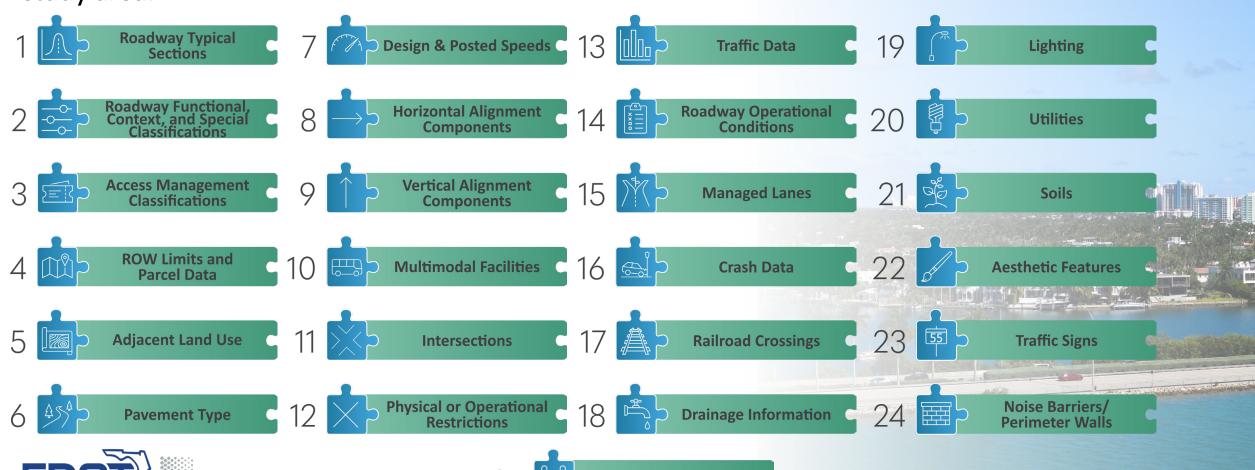






Existing Conditions Analysis (Section 3.2.3.3) Existing Roadway Conditions

Existing roadway conditions should be documented in the **PER** to reflect the following elements. Include a statement in the **PER** of any roadway elements that do not exist in the project limits or study area.

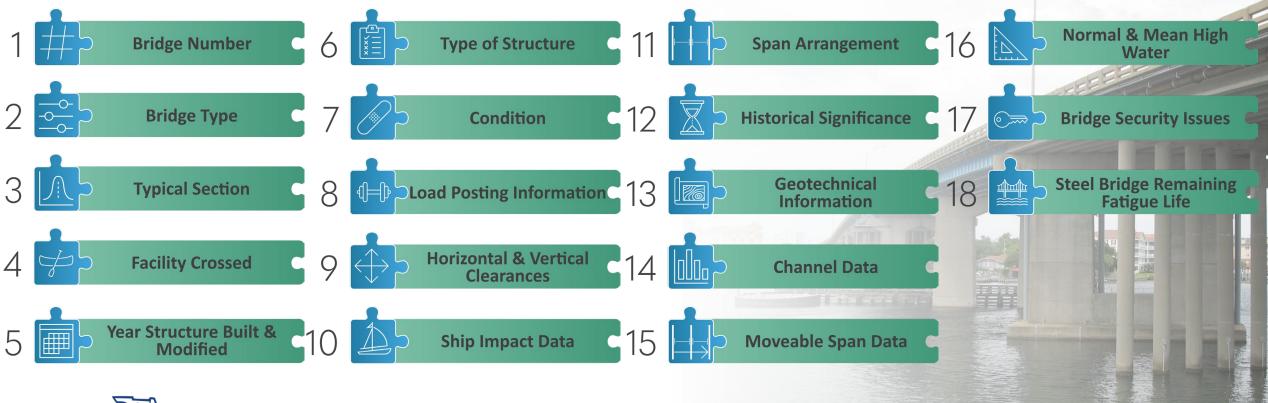




Existing Conditions Analysis (Section 3.2.3.3) Existing Bridges and Structures

FDOT maintains *Bridge Inspection Reports (BIRs)* for every public bridge in Florida. PMs must obtain *BIRs* for each bridge in the existing corridor. The PM should also coordinate Wildlife Crossing features.

Document the following bridge elements in the **PER**. Include a statement in the **PER** of any elements that do not apply.



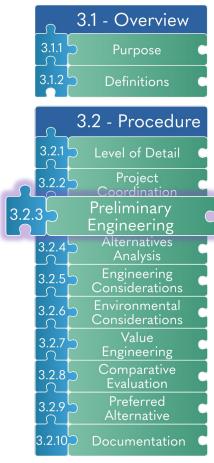


Existing Conditions Analysis (Section 3.2.3.3) Existing Environmental Features

Close coordination between *environmental and engineering staff* is essential to developing alternatives that reduce environmental impacts.









Future Conditions (Section 3.2.3.4)



- other improvement plans should be considered and discussed in the PER.
- Travel demand = design traffic from the PTAR
- Changes in land use and/or context classification can be found in local planning documents (Long Range Transportation Plan, Comprehensive plans, mobility plans, development plans, etc.), local permitting documents, or documentation for nearby projects.
- If the future context classification is different than the existing, the future context classification should be used when developing project alternatives. **FUTURE**

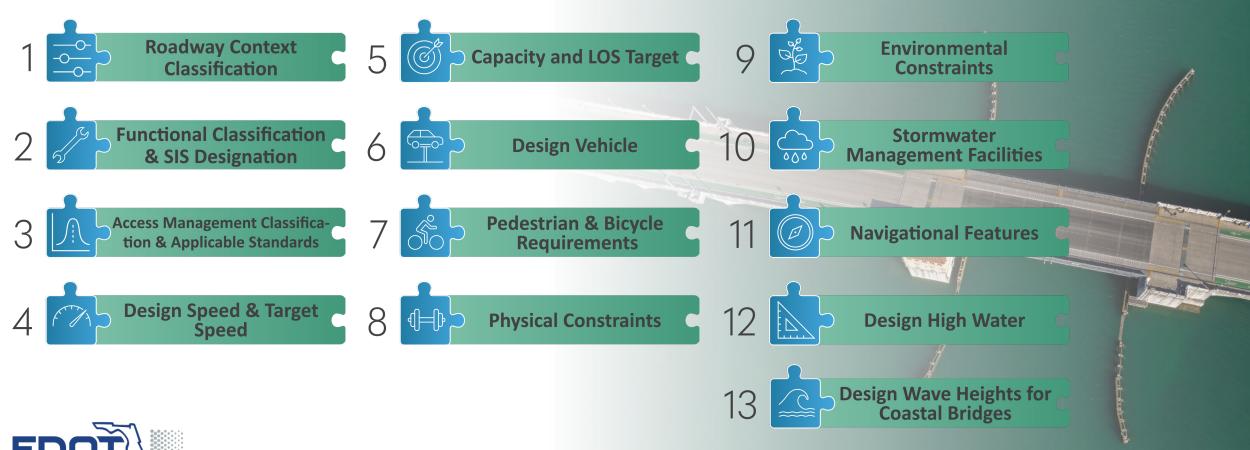




Design Controls and Criteria (Section 3.2.3.5)

Design controls are established parameters or physical characteristics that affect the selection of criteria and standards for geometric design of project alternatives.

Document the following design controls in the **PER**:





Design Controls and Criteria (Section 3.2.3.5)

The design controls guide the selection of the appropriate design criteria to be used in developing project alternatives.

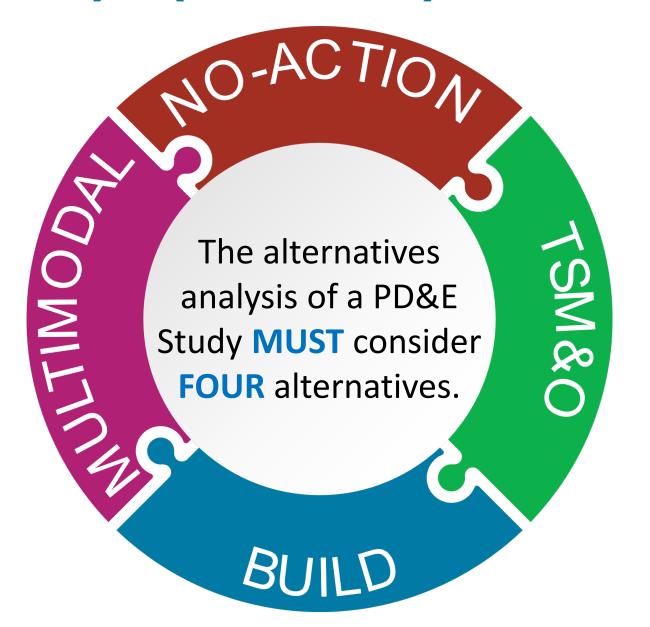
- Sources can include the FDOT FDM and Florida Greenbook depending on the roadway classification.
- Include a table in the *PER* listing the relevant roadway, structure, and drainage design criteria to be used in developing project alternatives.

Design Element	Design Criteria	Source
Lane Width	12 feet	FDM (Section 211.2)
Cross Slopes	0.02 to 0.03	FDM (Figure 211.2.1)
Median Width	64 feet (Without Barrier) 26 feet (With Barrier)	FDM (Table 211.3.1)
Shoulder Width	12 feet (10 feet paved)	FDM (Table 211.4.1)
Superelevation	5% Max.	FDM (Table 210.9.1)
Border Width (Min.)	94 feet	FDM (Section 211.6)
Clear Zone Width Recoverable Terrain (Min.)	24 feet	FDM (Table 215.2.1)
Stopping Sight Distance	861 feet	FDM (Table 211.10.1)
	Horizontal Alignment	
Maximum Deflection w/o HC	0° 45′	FDM (Section 211.7.1)
Maximum Curvature	3° 00′	FDM (Table 210.9.1)
Maximum Degree w/o SE	0° 23′ 21″	FDM (Table 210.9.1)
Desirable Length of Curve	2,100 feet	FDM (Table 211.7.1)
Minimum Length of Curve	1,050 feet	FDM (Table 211.7.1)
	Vertical Alignment	
Vertical Grade	3% Max.	FDM (Table 211.9.1)
Vertical Clearance	16.5 feet (Over Roadway)	FDM (Table 260.6.1)
Min. K, Crest Curve	506	FDM (Table 211.9.2)
Minimum Length (Crest)	1,000 feet – Open Highway 1,800 feet – Within Interchanges	FDM (Table 211.9.3)
Min. K, Sag Curve	206	FDM (Table 211.9.2)
Minimum Length (Sag)	800	FDM (Table 211.9.3)

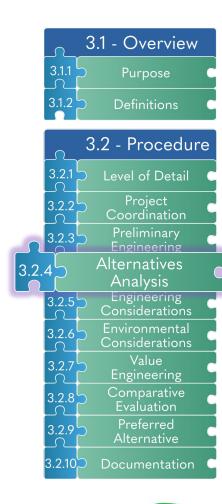




Alternatives Analysis (Section 3.2.4)











No-Action Alternative (Section 3.2.4.1)



The No-Action Alternative (or No-Build Alternative) serves as the baseline, or benchmark against which the Build Alternatives are evaluated. The engineering analysis must analyze the effects of the No-Action Alternative to the same level of detail as the Build Alternatives.



The No-Action Alternative remains under consideration throughout the PD&E Study, including the public hearing. Both the **PER** and Environmental Document must include and discuss the No-Action Alternative.



If applicable, the No-Action Alternative should include a discussion of projects already programmed in the area and if they change any of the anticipated impacts or the purpose and need of the project.



Documentation of the alternatives analysis must include advantages and disadvantages of the No-Action Alternative.





		3.1 - Overview	
	3.1.1	Purpose	C
	3.1.2	Definitions	C
	(3.2 - Procedur	е
	3.2.1	Level of Detail	•
	3.2.2	Project Coordination	C
	3.2.3	Preliminary Engineering	C
3.2.	4	Alternatives Analysis	
	3.2.5	Engineering Considerations	C
	3.2.6	Environmental Considerations	C
	3.2.7	Value Engineering	C
	3.2.8	Comparative Evaluation	C
	3.2.9	Preferred Alternative	
	3.2.10	Documentation	C





TSM&O Alternative (Section 3.2.4.2)

The TSM&O Alternative includes strategies with the operational objective of preserving the capacity and improving the security, safety, and reliability of the transportation system, while minimizing environmental impacts.

Prior to evaluating build alternatives, engineering analysis must demonstrate that maximization of the existing system through various TSM&O strategies will not meet the purpose and need for the project.

2

If the TSM&O Alternative does not meet the purpose and need for the project, the *PER* and Environmental Document must briefly explain why.



		3.1 - Overview			
	3.1.1	Purpose	C		
	3.1.2	Definitions	C		
	3.2 - Procedure				
	3.2.1	Level of Detail	C		
	3.2.2	Project Coordination	C		
	3.2.3	Preliminary Engineering	C		
3.2.	4	Alternatives Analysis			
	3.2.5	Engineering Considerations	C		
	3.2.6	Environmental Considerations	C		
	3.2.7	Value Engineering	C		
	3.2.8	Comparative Evaluation	•		
	3.2.9	Preferred Alternative	C		
	3.2.10	Documentation	C		





Multimodal Alternatives (Section 3.2.4.3)

When consistent with the purpose and need, the alternatives analysis should consider multimodal alternatives.

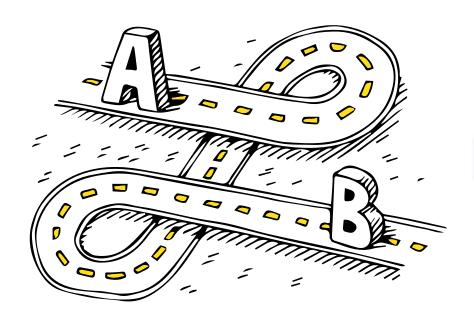
Discussion of multimodal alternatives should include needs that are stated in the Long Range Transportation Plan (LRTP), Transit Development Plan, and Local Government Comprehensive Plan (LGCP).





Build Alternative(s) (Section 3.2.4.4)

- To ensure meaningful evaluation of alternatives, each build alternative must have:
 - 1. *Logical termini* and should be of sufficient length to address environmental matters and the purpose and need on a broad scope.
 - 2. *Independent utility*, i.e., to function as designed and be a reasonable expenditure even if no additional transportation improvements in the area are made.

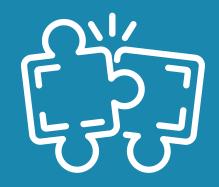






Build Alternative(s) (Section 3.2.4.4)

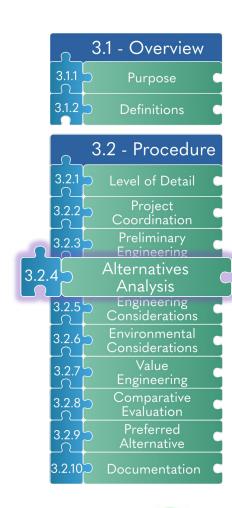




The PM and project team may consider opportunities for developing hybrid alternatives that could incorporate TSM&O strategies and/or multimodal options with the build alternative to meet the purpose and need for the project.



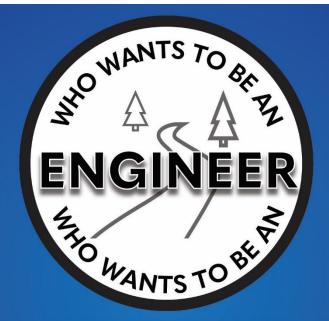
Each alternative must be explored at a sufficient level of detail to support a reasoned choice. All alternatives under consideration must be developed to a comparable level of detail so that their comparative merits may be evaluated.







AUDIENCE ENGAGEMENT



Which of these four alternatives must be considered in the alternatives analysis?

A. No-Impact, Widening, Independent Utility, Multimodal

C. No-Action, Cost Feasible, Build, TSM&O

B. No-Action, TSM&O, Multimodal, Build

D. No-Build, TSM&O, Cost Feasible, Independent Utility



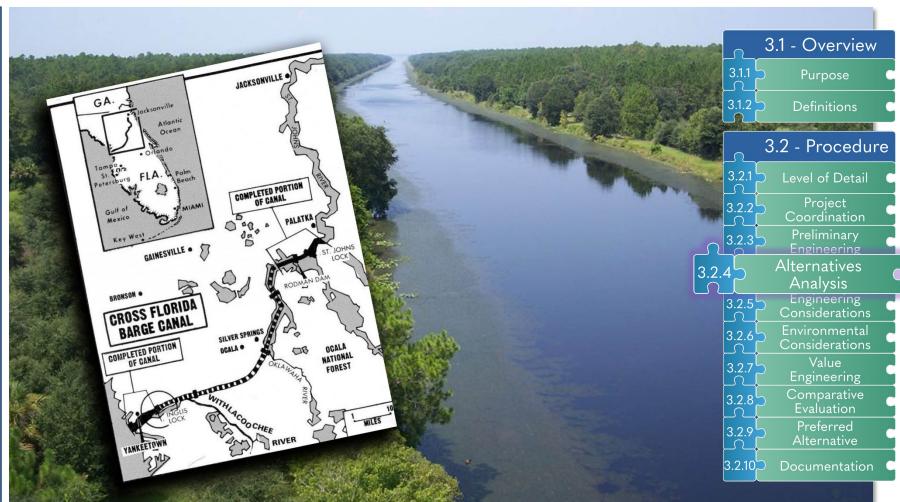


Development of Build Alternatives (Section 3.2.4.4.1)

An EA, Type 2 CE, and SEIR must evaluate at least one Build Alternative and a No-Action Alternative.

The actual number of alternatives evaluated depends on a variety of factors.

Project design criteria and standards must be used when developing the alternatives compatible with context classification and other applicable design controls.

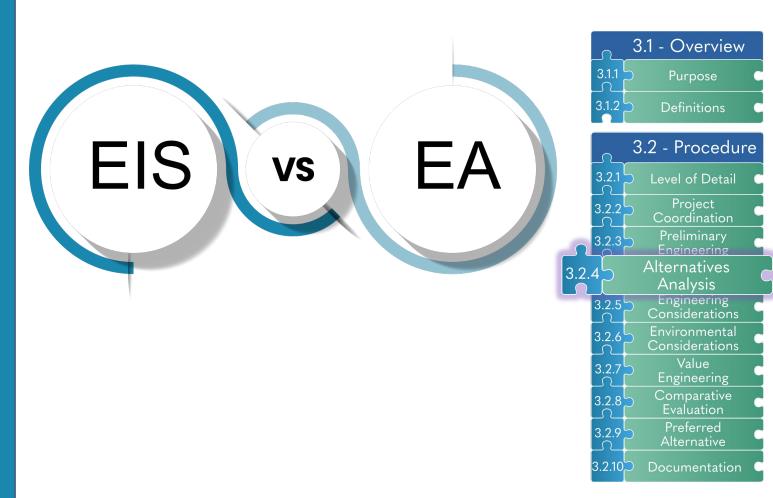






Development of Build Alternatives (Section 3.2.4.4.1)

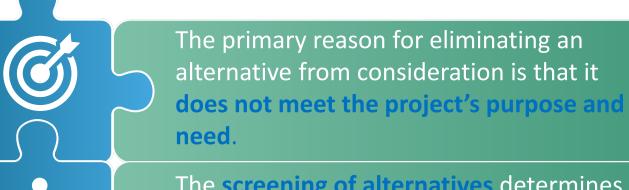
- The *FHWA Technical Advisory T 6640.8A* notes the purpose of the EA is to determine if an EIS is required.
 - The EA does not need to evaluate in detail ALL reasonable alternatives
- An EIS must evaluate all reasonable alternatives or a reasonable range of alternatives in addition to a No-Action Alternative.
- Typically, EISs and complex EAs are developed through a planning process which follows Planning and Environmental Linkages (PEL) for scope and number of alternatives to be considered during the PD&E Study.







Alternatives Considered but Eliminated (Section 3.2.4.4.2)



The screening of alternatives determines if an individual alternative or a concept has one or more deficiencies that prevent it from being successfully implemented.

Although the No-Action Alternative does not typically meet the purpose and need, it must be considered as a viable alternative throughout the study.





AUDIENCE ENGAGEMENT



BUILD ALTERNATIVE(S) There are 23 engineering elements that must be build alternative(s). Name as many as you can.





Engineering Considerations for Build Alternatives (Section 3.2.5)



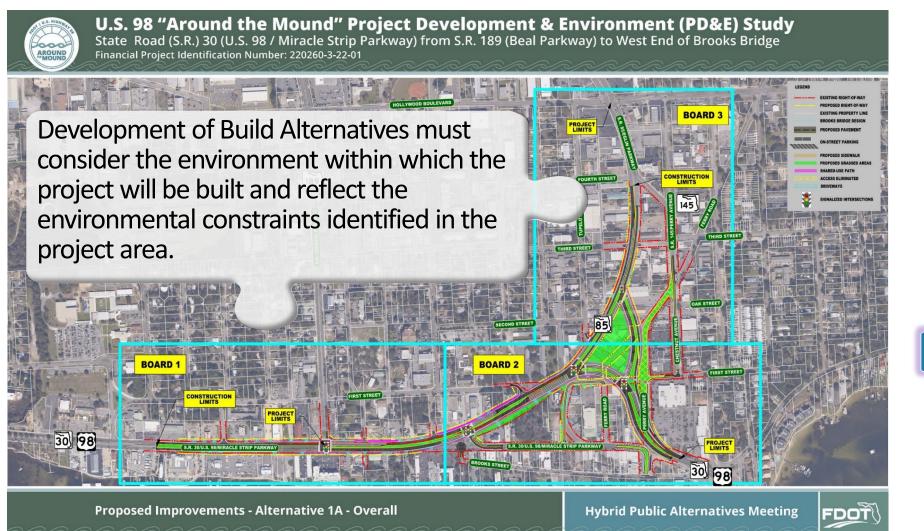
Include a discussion in the **PER** of the following engineering elements. If an engineering element does not apply, include a statement to that fact in the **PER**.







Environmental Considerations for Build Alternatives (Section 3.2.6)









Value Engineering (Section 3.2.7)



- All projects on the National Highway System (NHS) utilizing Federal aid highway funding with an estimated cost of \$50 million or more for non-bridge projects or \$40 million or more for bridge projects (including all phases of the project), shall have a minimum of one Value Engineering (VE) Study.
- A VE Study can be conducted either during the PD&E phase or during initial engineering design, prior to completion of final design.
- Projects that have a potential for value improvements and do not meet the minimum criteria may also be studied.
 Projects delivered with the Design-Build (DB) method of construction are not required by federal regulation to have a VE analysis.
- If the VE Study is conducted during the PD&E phase, it must occur after alternatives analysis is complete and before the public hearing (if held).

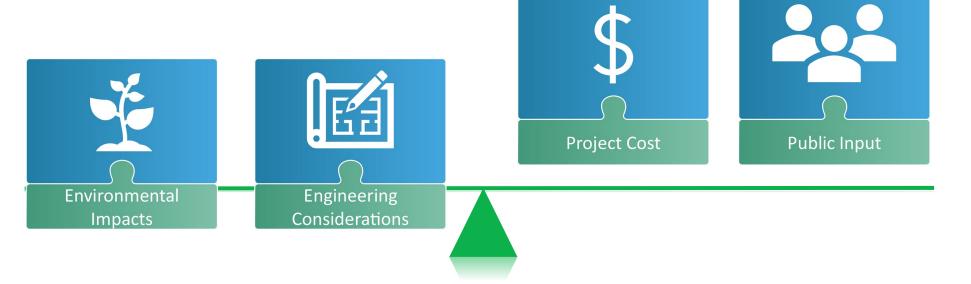






Comparative Alternatives Evaluation (Section 3.2.8)

Each project presents a unique set of challenges and the Project
 Manager must carefully provide a balance between the environmental
 impacts, the engineering considerations and the project costs, along
 with public input when selecting a preferred alternative.









Alternatives Evaluation Matrix Example (Section 3.2.8)

EVALUATION CRITERIA	ut ny	IVE NAME		
LVALUATION CRITERIA	No-Build	Α	В	С
Project Cost				
Purpose & Need				
Social & Economic Environment				
Cultural Environment				
Natural Environment				
Physical Environment				
Traffic Operations & Safety				
LOS				
Throughput				
Delay				
Travel Time				
Safety				
Vehicle Hours Traveled / Vehicle Miles Traveled				
Travel Time Reliability				



	3.1 - Overview	
3.1.1	Purpose	9
3.1.2	Definitions	C
	3.2 - Procedure	,
3.2.1	Level of Detail	C
3.2.2	Project Coordination	C
3.2.3	Preliminary Engineering	C
3.2.4	Alternatives Analysis	C
3.2.5	Engineering Considerations	C
3.2.6	Environmental Considerations	C
3.2.7	Value Engineering	C
3.2.8	Comparative Evaluation	(
3.2.9	Preferred Alternative	C
3.2.1	Documentation	C





Public Involvement (Part 1, Chapter 11 of the PD&E Manual)

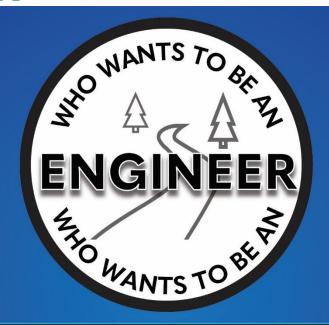
- Public Involvement is a significant component of the Alternatives Evaluation and a PD&E Study.
 - Refer to Part 1, Chapter 11 of the PD&E Manual for more information regarding Public Meetings and Public Hearings.
 - There are several other resources to explore including the OEM Public Involvement page, the OPP Community Engagement Page, and the FDOT Public Involvement Handbook.







AUDIENCE ENGAGEMENT



Is the Preferred Alternative required to be decided before the Public Hearing?

A. YES

B. NO

C. What's a public hearing?

D. How about an alternative question?





Preferred Alternative (Section 3.2.9)





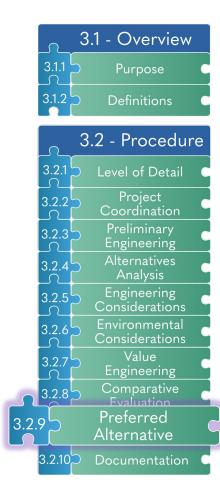
The District should identify the preferred alternative in the appropriate sections of the *PER* and the Environmental Document. Both *PER* and Environmental Document should include supporting reasons for identifying the preferred alternative.



When the design features of the preferred alternative do not meet the designated design criteria, design exceptions or design variations must be prepared and approved per *FDM*, *Part 1*, *Chapter 122*, *Design Exceptions and Design Variations*.



If a preferred alternative is identified prior to the public hearing, it must be presented as such at the public hearing and in the Environmental Document available during the public comment period. It is normally expected that a preferred alternative is chosen prior to the public hearing.







Engineering Details of the Preferred Alternative (Section 3.2.9.1)

Include a discussion in the **PER** of the following engineering elements. If an engineering element does not apply, include a statement to that fact in the **PER**.



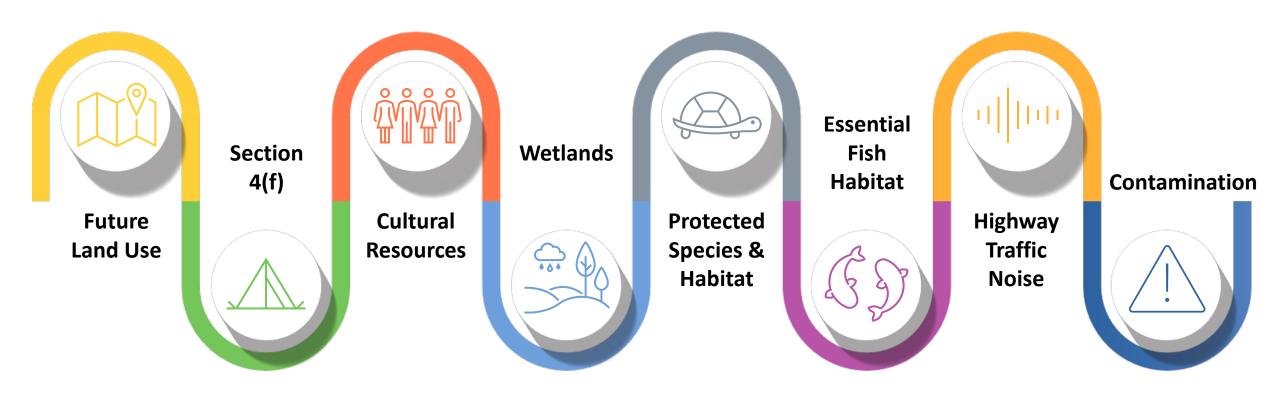




Summary of Environmental Impacts of the Preferred Alternative (Section 3.2.9.2)



Include a summary in the **PER** of the following environmental elements. If an element does not apply, include a statement to that fact in the **PER**.



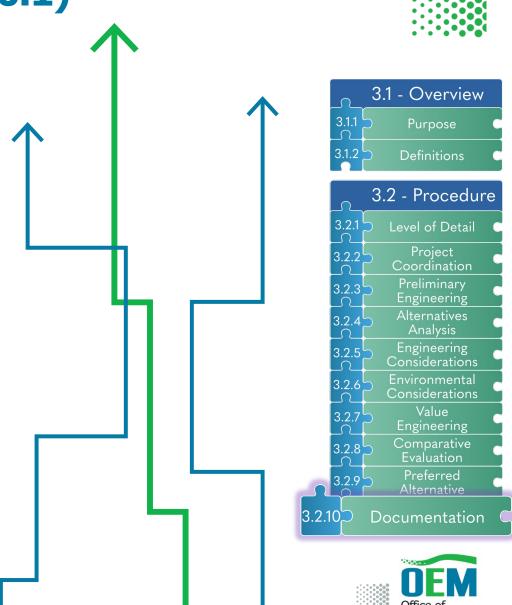




Environmental Document (Section 3.2.10.1)

- The Environmental Document must discuss impacts on the environment from the preferred alternative and other alternatives in a comparative form. The comparative alternatives evaluation must provide a clear basis for the decision to select the preferred alternative.
- The location of alternatives documentation differs depending on the type of Environmental Document.
 - Refer to Section 3.2.10.1 for more guidance on how to document the Alternatives Analysis for each type of Environmental Document.
 - See Part 1, Chapter 5 for more guidance on Type 2 CEs.
 - See **Part 1, Chapters 6 & 7** for more guidance on EAs and FONSIs.
 - See Part 1, Chapters 8 & 9 for more guidance on EISs.





Preliminary Engineering Report (Section 3.2.10.2)





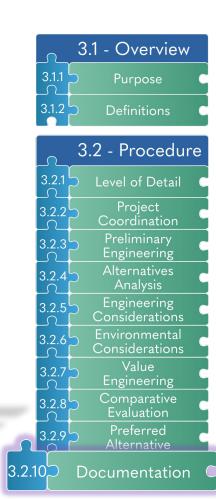
The **PER** is the documentation of the engineering analysis of a PD&E study.



For bridge projects, a *PER* can be substituted with a Bridge Development Report (*BDR*) or Bridge Replacement Report (*BRR*).



A list of items to include in the **PER** are covered in the Chapter, as well as references to appropriate Chapter sections for more information.







PER QC Checklist

Preliminary Engineering Report (PER) QA/QC Checklist

Click or tap here to enter text.

FM#: Click or tap here to enter text. FAP#: Click or tap here to enter text.

Project Limits: Click or tap here to enter text.

Consultant: Click or tap here to enter text.

DEMO QC COMPLETE

Reviewer: Click or tap here to enter text. Click or tap here to enter text.

Additional Information:

= DEMO Responsibility

= OEM Responsibility

Orange = Both

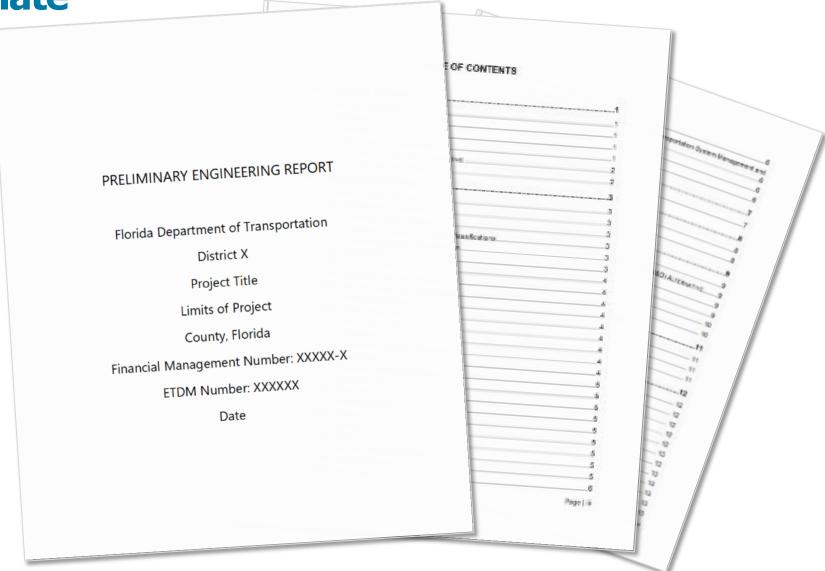
OEM ENGINEER QA COMPLETE Date: Click or tap here to enter date.

The purpose of this checklist is to facilitate the preparation of quality Preliminary Engineering Reports (PERs). This checklist is applicable to Florida Department of Transportation (FDOT) District and consultant preparers and Quality Control (QC).

Date: Click or tap here to enter date.



PER Template







Commitments (Part 2, Chapter 22 of the PD&E Manual)

- Commitments are an important component of a transportation project as they provide assurance to resource agencies and other stakeholders that identified concerns will be addressed in future phases of project delivery.
- The Commitments section should include a list of commitments made, the agreed upon language, and the stakeholder(s) involved.
- All commitments established as a result of the PD&E Study and/or agency coordination must be documented in the Commitments section of the Environmental Document (Type 2 CE, EA, EIS, or SEIR).
 - The commitments should be consistent in all documents when listed, including in the Project Summary section of the *PER*.







Contact



FDOT Office of Environmental Management





State Environmental Development Engineer

Office of Environmental Management

605 Suwannee Street, MS 37

Tallahassee, FL 32399-0450



Phone: 850-414-5209



Email: Catherine.Bradley@dot.state.fl.us





Thank you! Questions and Discussion

