STATE OF FLORIDA
Florida Department of Transportation



Engineer's Project Cost Development

HANDBOOK

October 2026

Forecasting and Project Cost Office
Tallahassee, Florida

Engineer's Project Cost Development Handbook

TABLE OF CONTENTS

1. INTRODUCTION 3
1.1 Purpose 3
1.2 Authority 3
1.3 Scope 3
1.4 Distribution 3
1.5 Glossary of Terms and Abbreviations 3
1.6 Comments or Suggestions for Handbook Revisions 5
1.7 Training 5
1.8 Templates 5
1.9 Attachments 5
1.10 Continuous Improvements 5

2. Process and Responsibilities 5
2.1 Purpose 5
2.2 Districts 5
2.3 Consultants 5

3. DEVELOPMENT OF THE ENGINEER'S PROJECT COST 6
3.1 Purpose 6
3.2 Engineer's Project Cost Process 6
3.3 IPC Coordination 8
3.4 Meetings 10
3.5 Deliverables 10

Attachment A – Engineer's Project Cost Flowchart 12

1. INTRODUCTION

1.1 Purpose

This **Engineer's Project Cost Development Handbook (Handbook)** provides instructions for consistent processes in developing an **Engineer's Project Cost (EPC)** for Florida Department of Transportation (Department or FDOT) projects. The **Handbook** provides technical guidance and techniques for Consultants and Department personnel developing an **Engineer's Project Cost**.

1.2 Authority

This **Handbook** is authorized under Sections 20.23(4)(a), 334.048, 337.11, and 337.168 of the Florida Statutes (F.S.), which govern the Department's structure, rulemaking, and cost estimation process.

1.3 Scope

Principal users of this **Handbook** will be Department personnel and Consultants involved with the development of an **Engineer's Project Cost**. Updates and revisions to this document will be made as processes evolve to reflect new standards and practices.

1.4 Distribution

This **Handbook** and templates are available on the Forecasting and Project Cost Office's website: https://www.fdot.gov/fpo/fpc/publications/handbooks

1.5 Glossary of Terms and Abbreviations

1.5.1 **Allowance:** A value established for an item of work/category or traditional percentage-based item where detailed quantities are not available at the time or will never be developed for estimating purposes. Prices for **allowances** may be developed in several ways, the most common being percentage, unit price, or lump sum amount. Examples of percentage-based **allowances** include Maintenance of Traffic, Mobilization, **Project Unknowns**, and Design-Build; examples of Work/Categories that may be assigned **allowances** in the initial or scoping phase are ITS, Drainage, Signalization, Unique Structures, and other such items.

1.5.2 **Basis of Engineer's Project Cost:** An organized set of data and narrative explaining the approach, considerations, and assumptions for defining **pay items,** quantities, and unit costs in project cost development. The **Basis of Engineer's Project Cost** is a section within the **Project Document Memorandum** that accompanies the **Engineer's Project Cost** on projects over $100 million.

1.5.3 **Consultant PM:** The individual responsible for signing and sealing documents prepared by the design team during the design phase and used by construction personnel to build a project.

1.5.4 **Computer-Aided Design (CAD):** A digital process for creating 2D or 3D design simulations of real-world goods and products, complete with scale, precision, and physical properties, to optimize and perfect designs before construction.

1.5.5 **Department-owned Risk:** Identifiable conditions or events that are unplanned, beyond the contractor's control, and deemed compensable by the Department through the change management process. These may include, but are not limited to, plan errors, unforeseen conditions, or situations explicitly addressed in Department specifications or contract documents.

1.5.6 **Design Confidence:** The degree of certainty that a design will meet its performance requirements and function as intended under specified conditions. This involves evaluating the thoroughness of the design process, the accuracy of models, and the reliability of the materials and method used to produce the design documents and quantities the **Engineer's Project Cost** is based on. The **Design Confidence** will be documented in the **Design Confidence Report.**

1.5.7 **Design Quantities and Estimates (DQE) Application:** A web-based application used during design phases to produce detailed construction cost estimates for roadway and bridge projects. Designers input **pay items** and quantities via the Designer Interface, while the District Estimator has access to apply unit prices to generate a **District project cost**.

1.5.8 **District Project Cost:** An assessment of the present-day construction cost of a project, prepared by the District Estimator.

1.5.9 **Engineer's Project Cost:** An assessment of the reasonable **fair market value** of a construction project, usually produced by the **Consultant PM** responsible for the contract plans.

1.5.10 **Fair Market Value:** A value that reflects a balanced determination of project worth, reflective of prevailing market conditions. It is generally represented by the average of the top three ranked bids (1st, 2nd, and 3rd) rather than the low bid alone. This approach, for both evaluating the accuracy of predictive project costs and for selection of component costs and prices comprising an **Engineer's Project Cost**, ensures that pricing avoids overly aggressive and overly conservative assessments.

1.5.11 **Fixed Cost Pay Item:** A **pay item** with a unit cost set by the Department at the project level. The **pay item** appears in the proposal and bid documents with a set unit cost. **Fixed cost pay items** contain the words "Do Not Bid" in the **pay item** description.

1.5.12 **Independent Project Cost (IPC):** An assessment of the present-day, **fair market value** for the construction cost of a project, determined and prepared by professional cost estimators not engaged in the design or construction of the project, developed in accordance with the **IPC Handbook**. Escalation is not used in this cost assessment.

1.5.13 **IPC Team:** A team of professionals, including consultants or Department staff responsible for developing an **IPC**. The **IPC Team** must meet Department-established minimum qualifications and remain independent from the project.

1.5.14 **Long Range Estimating (LRE) Application:** A web-based application used by Department estimators and Design Consultants to develop potential quantities and provide approximate **pay item** unit costs. This application is typically used during early project development and design phases.

1.5.15 **Parametric Estimating:** A statistical approach to estimating that uses historical cost data to calculate the expected cost of a particular scope of work or **activity.**

1.5.16 **Pay Item:** A number representing work in accordance with the **FDOT Standard Specifications for Road and Bridge Construction** or **Contract Documentation**.

1.5.17 **Plans, Specifications, and Estimate (PS&E):** The contract plans, specifications, and project cost package submittal prepared by the **Consultant PM** and used by the Department for project authorization, advertisement, and letting.

1.5.18 **Project Unknowns:** The cost component of a project utilized for risk events and project features that lack a discernible quantity or value due to variability, incomplete conditions, or unforeseen factors and would potentially increase project scope, add **pay items**, and/or increase quantities.

1.5.19 **Work Breakdown Structure (WBS):** The organizational framework of scheduled tasks necessary to complete the construction of the project.

1.6 Comments or Suggestions for Handbook Revisions

Comments or suggestions on the **Handbook** should be sent to the Forecasting and Project Cost Office at COForecastingandProjectCost@dot.state.fl.us.

1.7 Training

Training for this **Handbook** is not required; however, users are expected to be familiar with its content and apply the guidance for project cost development.

1.8 Templates

The following templates from Central Office are available for the **Consultant PM**'s use:

A. **Engineer's Project Cost Risk Register Template** (XLSX file)
B. **Project Cost Checklist** (XLSX file)
C. **Design Confidence Report** (XLSX file)
D. **Project Document Checklist** (DOCX file)

1.9 Attachments

A. Engineer's Project Cost Process Flowchart

1.10 Continuous Improvements

This **Handbook** will be revised as new technologies and processes emerge. Submit recommendations for updates in accordance with Section 1.6**. Comments or Suggestions for Handbook Revisions**.

2. Process and Responsibilities

2.1 Purpose

In support of the Department's mission, the primary goal of the **Engineer's Project Cost** is to accurately and comprehensively assess present-day, **fair market value** of construction costs for planning and budgeting purposes.

2.2 Districts

2.2.1 Estimators within the District offices develop the **District Project Cost** in cooperation with District Project Managers and in accordance with the **Estimates Handbook**.

2.2.2 District Estimators and Project Managers should review the **Engineer's Project Cost** for completeness and appropriate unit costs.

2.3 Consultants

2.3.1 **Consultants serving as augmented staff**

Consultants assisting as augmented staff support both Districts and Central Office. These consultants typically have access similar to Department personnel and fulfill responsibilities outlined in Section 2.1, 2.2, 2.3, as applicable.

2.3.2 Design Consultants

Design Consultants, commonly referred to as consultants, designers, engineers of record, (EOR), or **Consultant PM,** may access Department systems and perform functions assigned by the District. These consultants support the District by developing an accurate and comprehensive project cost for use by the Department. Consultant Project Managers are responsible for reviewing and completing the ***Engineer's Project Cost*** and supporting documents and providing this information to the District and Central Office.

3. DEVELOPMENT OF THE ENGINEER'S PROJECT COST

3.1 Purpose

The **Engineer's Project Cost** serves as a critical foundation for budgeting the Department's Work Program. Each project is unique and may require modifications and adaptations of the process. The goal is to accurately and comprehensively assess the present-day, **fair market value** of construction costs reflecting the total project scope utilizing an approach appropriate for the design phase. The process contained herein represents the minimum requirements for developing an **Engineer's Project Cost.**

3.1.1 Requirements

For all projects, the **Consultant PM** will reference the information found in the bid data selection and considerations section 3.2.1. For projects over $100 million, the **Consultant PM** will have additional requirements related to coordination with the **IPC Team**. These requirements are detailed in the **IPC** Coordination section 3.3.

3.1.2 Core Fundamentals

To develop a complete and accurate **Engineer's Project Cost**, specific best practices should be followed. The **Project Cost Checklist** provides prompts for the **Consultant PM** to reference, along with cross-checking project plans and **pay item** list, to confirm that the full project scope is considered and the degree of certainty of the design is conveyed in the **Engineer's Project Cost**.

Project features and components that traditionally lack design progression with early-phase submittals must be included in **Engineer's Project Cost** even in very preliminary design by applying knowledge and experience with similar projects. This approach helps establish **pay items** and their associated quantities to the best of the **Consultant PM's** ability. Relevant assumptions should be informed to mitigate potential scope gaps in project cost development. The use of **allowances** for such items should be limited and supported by documented assumptions when applied. The **Design Confidence Report** and **Engineer's Risk Register** (required for all projects over $20 million) must be used to document the basis of these assumptions and potential for quantity growth.

The **Consultant PM** must select unit prices appropriate for the scope of work without consideration for the budget or funding. Rather than reducing unit prices to meet budget, the **Consultant PM** in coordination with the District must address scope or budget.

These steps are applicable when developing and/or updating the project cost at any design phase.

3.2 Engineer's Project Cost Process

The **Engineer's Project Cost** process, as outlined in this **Handbook** and depicted in the flowchart provided in Attachment A, begins during the PD&E phase and is updated at each design submittal phase. This section outlines the required work.

3.2.1 Bid Data Selection and Considerations

Review historical bid prices for each **pay item**, focusing on the following factors. These considerations ensure that selected bid prices are reasonable for the current project's context. Unit price outliers should be removed from consideration.

- **Recency**
  When analyzing historical bid data, select the most recent projects possible to reflect the most accurate market data. It is recommended to start with project data from the past 6 to 12 months and increase if sufficient data isn't available. The data may need to be inflation adjusted for current year pricing depending on the historical data being analyzed.
- **Geographic Proximity**
  Consider the project's location, as costs vary by region. Unit prices should reflect market conditions in the project area and account for site characteristics such as urban, suburban, or rural settings. When possible, use historical bid data from the same region.
- **Magnitude of Quantity**
  The quantity of a pay item affects material costs and construction expenses due to economies of scale. Larger quantities influence sourcing, delivery, and handling costs. Similarly, the volume of work performed affects efficiency and overall cost.
- **Project Phasing, Construction Sequencing, and Scheduling**
  Identify any contractual commitments or schedule constraints affecting project delivery. The **Consultant PM** should evaluate project-specific requirements that influence phasing and staging, considering their impact on construction efficiency and cost.
- **Site Conditions and Constraints**
  Site conditions and constraints that complicate construction operations can increase costs and must be accounted for in the **Engineer's Project Cost**. Factors to consider include:
  - Poor soil conditions
  - Underwater pile placement
  - Proximity to active railroads or fragile historical buildings
  - Construction near parks, culturally significant or environmentally hazardous sites
  - Existing utilities
  - Limited space for construction activities
- **Construction Delivery Method**
  The construction delivery method must be considered. The complexity of the delivery methods such as design-build or phased design-build includes additional contractual responsibilities for the contractor compared to the traditional bid-build method. These added responsibilities influence the contractor's staffing plan, and the markup applied to the project. Since unit price bid histories are based on the

traditional bid-build method, adjustments may be necessary to account for differences in delivery methods.

- **Historical Bid Data Sources**
  - Relevant project bid history is available on the **Forecasting and Project Cost** website under the reports header https://www.fdot.gov/fpo/fpc and on the **DQE** website using the **Unit Price Search** tab https://dqe.fdot.gov/#/unitpricesearch.
  - Cross-reference Project ID numbers in the **FDOT Project Suite Enterprise Edition (PSEE)** database to gather additional project details such as project size, location, and length.
  - Explore all relevant data sources to conduct a comprehensive bid price analysis.
  - When specific **pay item** cost history is unavailable, the design team should select a similar **pay item** and adjust it based on their professional experience to best represent the work.

3.2.2 **Fixed Cost Pay Items**

The **Consultant PM** will coordinate with the District and add the unit price into the project specification and project estimate.

3.2.3 **QA/QC Process**

As part of its QA/QC process, the design team should prepare the deliverables listed in Section 3.5. Qualified individuals or quality control personnel within the design team must internally review these documents in accordance with the QA/QC requirements established in FDOT Design Manual **(FDM)** 124 – QA/QC Management Plan. The review should verify that proper processes were followed, the deliverables are complete and clearly understandable, and the final costs are reasonable for the project, scope, size, location, complexity, and other cost considerations discussed in this **Handbook**.

3.2.4 **Document Review and Analysis**

Review all available project documentation, including the contract plans set (including component sets), specifications (including Modified Special Provisions and Technical Special Provisions), Estimated Quantities Report, technical reports, environmental permits, and current **FDOT Design Manual, Standard Plans**, and **Basis of Estimates Manual**. Identify all **pay items** and/or major project components during the design phase, ensuring detailed and accurate quantities for each item are determined. The number of items identified should align with the current design milestone, ranging from categories such as lane miles and bridge deck square footage to a comprehensive list of **pay items**.

For non-conventional projects (e.g., design-build, or phased design-build), also review the Request for Proposal and the Concept Plans including an Estimated Quantities Report, if available.

3.3 IPC Coordination

For projects over $100 million resulting in the necessity for an **IPC,** the **Consultant PM** will encounter additional requirements in the development of the **Engineer's Project Cost**. The **Consultant PM** will be responsible for populating the **Project Cost Checklist, Design Confidence Report, and Engineer's Risk Register.** These documents are intended to guide the **Consultant PM** through a detailed process resulting in a thorough assessment of the full scope of the project.

By completing these tasks, the **Consultant PM** will be able to apply greater detail to the **Engineer's Project Cost** by addressing project scope and creating **pay items** with quantities and unit prices that may otherwise have been accounted for as **allowances**.

The noted documents will accompany the **Engineer's Project Cost** as required documentation transmitted to the **IPC Team** to support the development of the **IPC**. These documents may aid in facilitation of required meetings such as the kickoff meeting and quantity reconciliation meeting and provide additional project details to inform the **IPC Team** in cost development.

The design team should reference the **IPC Handbook** for guidance related to the relationship between project cost development and design details available per design phase. This section details the approach prescribed to the **IPC Team** for cost and quantity development at each design phase.

3.3.1 Evaluation of Project Risks

A. Develop the Project Risk Register

Identify relevant risk items, assess the potential impact, and determine the probability of occurrence. Risks must be project specific. During the **IPC** development process, the design team will collaborate with the **IPC Team** for review and input at each stage of the Risk Register development. The Risk Register must classify each **project unknown** and **Department-owned Risk**. When a Cost Schedule Risk Analysis (CSRA) has been performed for the project, the risks identified in that document should be carried forward into the risk register.

B. Identify Project Unknowns and other Department-owned Risks

The design team will identify **project unknowns** and events that may lead to cost or schedule impacts. These risks will be compared and correlated with the **IPC Team** during **IPC** development. While risks are unique to each project, general risk categories are outlined in the **IPC Risk Register Template**. The Design category should be classified as **project unknowns**.

C. Identify Probability of Risk Events

Once **project unknowns** and **Department-owned Risks** are identified, the design team will determine the probability of each event occurring. This probability will be expressed as a percentage for each event. The design team will use the **Engineer's Risk Register Template** to assign probabilities and may reference the **Design Confidence Report** to guide probability selection for **project unknowns**. If it is determined that the probability of a risk event is 100 percent, then the event is no longer classified as a risk, and the cost of the event must be moved to the base project cost.

D. Determine Cost Carried by Risk Events

Each **project unknown** and **Department-owned Risk** must be evaluated to determine its overall potential cost impact on the base project cost. After developing the cost or schedule impact of each risk item, the design team will populate the **Engineer's Risk Register Template** and apply the probability percentage to calculate the total risk impact on the project.

The total risk impact of **project unknowns** is then incorporated into the **Engineer's Project Cost** on the **project unknowns** line item.

The total risk impact of other **Department-owned Risks** should be reported separately and not incorporated into the sum total of the **Engineer's Project Cost**.

E. Draw Down of Project Unknowns through Design Progression

As design progresses, the value for **project unknowns** should either transition into the base cost or be removed from the overall project cost. This process does not increase the project scope but refines details from earlier design stages. By Phase IV (Final Design), all known unknowns should either be retired from the Risk Register or incorporated into the base project cost. This progression is illustrated in Figure 1. At the Final Plans phase, there may still remain relevant **Department-owned Risks** that must be documented in the **Engineer's Risk Register**.

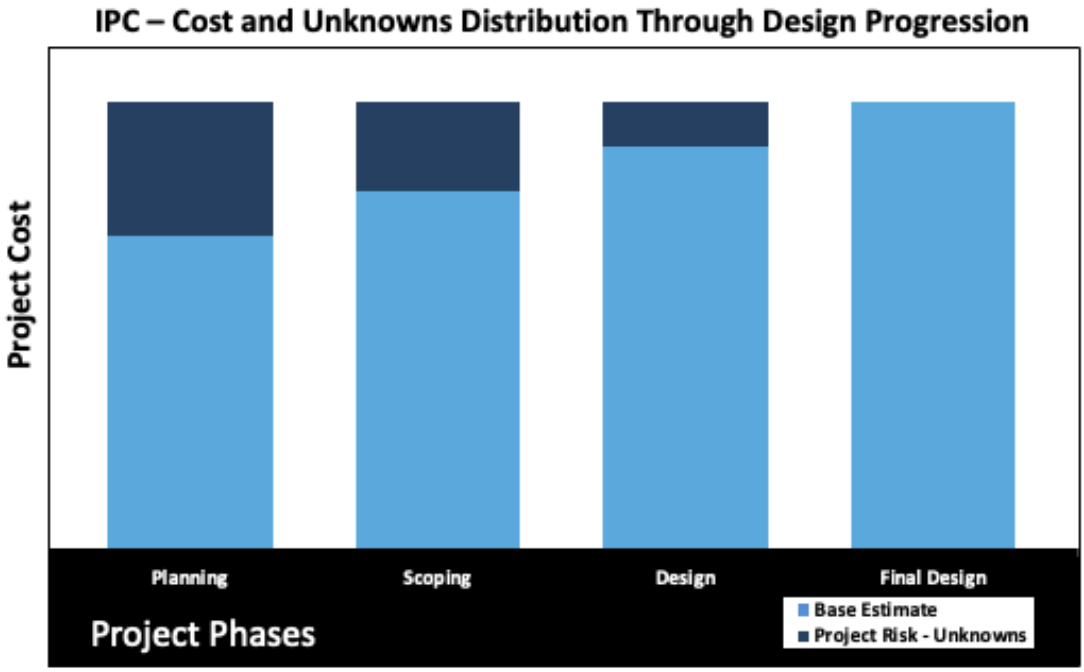


Figure 1. Unknowns Draw Down Process

3.4 Meetings

For projects with cost over $100 million requiring an **IPC,** the **Consultant PM** is responsible for attending the required meetings and presenting project information as defined in the **IPC Handbook**.

Required Meetings:

- Kickoff Meeting
- Quantity Reconciliation Meeting
- Risk Workshops, when applicable

3.5 Deliverables

The following deliverables must be prepared and submitted to the Department:

For all projects:

- **Engineer's Project Cost Report**

For projects with construction cost over $20 million:

- **Engineer's Risk Register**
- **Design Confidence Report**

For projects with construction cost over $100 million:

- **Project Document Memorandum**
- **Project Document Checklist & Project Documents**

3.5.1 Project Document Memorandum

The **Consultant PM** will prepare a memorandum for the Department to facilitate the effective transfer of information between the **Consultant PM**, Department Estimator and the **IPC** consultant (when applicable). The following items, as outlined in the **Project Document Checklist,** should be included and updated at each project milestone including during PD&E and design activities.

1. **Project Information**
   - 1.1. FPID
   - 1.2. State Road No(s). and Local Road name(s)
   - 1.3. Project Summary (Intent of Project or Detailed Description)
   - 1.4. Current Project Phase Development (e.g. Planning/PD&E, Scoping, 15% Line and Grade, 30% Phase I, Concept Plans, 60% Phase II, 90% Phase III, 100% Phase IV, Final)
   - 1.5. Project Limits (MP to MP) for each state and local road
2. **Project Cost Information**
   - 2.1. Funding Type
   - 2.2. Programed Amount (PDC – Present Day Cost)
   - 2.3. Previous EPC Amount, if applicable
   - 2.4. Current EPC Total
   - 2.5. Changes in EPC from previous submittal (N/A if initial EPC) including a description of changes
   - 2.6. Project Component Cost Summary (e.g. Roadway, Structures, Drainage, etc.) including percentage items
3. **Project Requirements, Assumption, and Clarifications**
   - 3.1. Key Project Requirements/Decisions
   - 3.2. Cost Related Project Commitments from PD&E, community outreach, or other sources
   - 3.3. Value Engineering Resolution Discussion of Incorporated Recommendations
   - 3.4. Key EPC Assumptions – In addition to project assumptions, list what is included in percentage and/or lump sum-based items
   - 3.5. Major Risks – Discussion of Risk and Contingency/Project Unknowns
   - 3.6. Discussion of Unit Price Selection

Attachment A – Engineer's Project Cost Flowchart

