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CHAPTER 20 – Project Development Cost Estimates

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CHAPTER 20 – Project Development Cost Estimates

SECTION 1 - Project Cost Estimating

ARTICLE 1 - General

Importance of Quality Cost Estimates

The reliability of project cost estimates at every stage in the project development process is necessary for responsible fiscal management. Unreliable cost estimates result in severe problems in Caltrans' programming and budgeting, in local and regional planning, and it results in staffing and budgeting decisions which could impair effective use of resources. This, in turn, affects Caltrans' relations with the California Transportation Commission (CTC), the Legislature, local and regional agencies, and the public, and results in loss of credibility.

The term "project cost estimate", as used during the project development process, includes all capital outlay costs, including right of way, structures and landscaping, but does not normally includes capital outlay support costs. Project cost estimates should never be artificially reduced to stay within the funding limits, nor should they be reduced to make available more project funding for the District. Likewise, project cost estimates should not be artificially raised beyond the contingency percentages provided for in this Chapter unless adequately justified.

Cost Estimate Categories

There are two categories of project cost estimates: Project Planning Cost Estimates and Project Design Cost Estimates. Project Planning Cost Estimates are used for project justification, analysis of alternatives, approval, and for programming. Project Design Cost Estimates are used to summarize the cost of a Project's contract items of work and will be part of the construction contract for the Project.

Consistent and Comprehensive Methodology

Cost estimating is not an exact science. However, Caltrans must strive for reliable project cost estimates, so that projects can be delivered "within budget." To this end, it is required that project cost estimates be prepared using a consistent and comprehensive methodology. Even with a consistent and comprehensive methodology, careful attention is needed to ensure a quality estimate. The cost estimator needs to research, compare and, above all, use their professional judgment to prepare a quality cost estimate. Coordination between the project planning cost estimates, the project design cost

estimates, and the Standard Specifications that will be used to construct the project is required.

Cost Estimates are Not Static

Cost estimates, in a sense, are never completed. They are not static, but have to be reviewed continually to keep them current. The Project Engineer (PE) is responsible for keeping the project cost estimate up-to-date throughout the project development process, while the Project Manager (PM) is responsible for reviewing and approving all project cost estimates and ensuring that the current project cost estimates are entered into the Project Management and Control System (PMCS) data base.

ARTICLE 2 - Policy

Goal and Objective

Caltrans' goal is to avoid project cost overruns. One objective is to identify "unforeseen items of work" before the project concept, scope, and cost have been determined, thus minimizing the differences between preliminary project planning cost estimates and final project design cost estimates. Identifying costly "unforeseen items of work" after the project has been programmed may stop or delay a project.

Project Cost Awareness

Project cost awareness and control must be practiced throughout the project planning and project design phases. This begins by establishing realistic assumptions as to final concept, scope and cost as early in the life of the project as possible.

Standard Formats

Uniform project cost estimating procedures are to be followed. All project cost estimates are to be prepared using the appropriate standard formats as described herein (see Appendix AA).

Accountability

District Management and the PM are to be directly involved and held accountable in estimating project costs, controlling costs and submitting changes to cost estimates for approval.

Monitoring and Updating Cost Estimates

All project cost estimates are to be monitored and maintained current in PMCS. Following the initial estimate, the timing of updates is guided by the following factors:

- Annual update - all cost estimates must be kept current by updating at least once a year. An annual update is only necessary if the estimate is not updated for any of the reasons listed below. If nothing else has changed this update would focus on the unit costs used for the various items in the estimate.
- Programming Cycle - a current cost estimate is needed at the start of each programming cycle so that the next programming document will reflect current cost estimates. Most programming documents are prepared on a two year cycle. The escalated amount used in each programming document establishes a new base against which future cost changes are compared.
- Approval of project development report - project development reports authorizing proceeding further in the Project Development process require development of a project cost estimate. The report guidelines require a cost estimate to be attached to these reports, and their completion marks a milestone in the project development process, i.e., Milestone 010 PSR, Milestone 100 DPR, Milestone 200 PR, Milestone 300 PS&E).
- Significant changes in identified project costs - other appropriate times to update the project cost estimate is when a project development workflow task supports the preparation of a more detailed cost estimate (i.e., when a task involves an activity to review the project and create a cost estimate). Examples of this include when a preliminary site investigation more clearly identifies the hazardous waste problems, or when a materials report clarifies the foundation conditions.

ARTICLE 3 - Current Project Cost Estimate

Most Recent Estimate

The Current Project Cost Estimate is defined in Chapter 6. It is simply the most recent project cost estimate available during either the planning phase or the design phase, regardless of whether it is approved as the "approved cost." It is adjusted from the date of the estimate to January 1 of the current State Fiscal Year. Changes in cost estimates exceeding the thresholds set in the Scope, Cost and Schedule Management Procedures must receive approval from the Deputy Director for Project Development, or the District Director, depending on delegated authority. Refer to Chapter 6 and the [Caltrans Project Management Handbook](#) for further information.

The current project cost estimate is the cost estimate that is maintained in the PMCS Data Base as the latest information on project costs and is shown in the monthly district "Status of Projects" report.

Estimate Includes Right of Way

Since the Current Project Cost Estimate is an estimate of the capital outlay costs, it includes right of way costs. Refer to Section 3, Article 1, for a discussion of the relationship of the right of way cost estimate to the project design cost estimate during the design phase of project development.

ARTICLE 4 - Responsibilities

Project Engineer

- Prepare, revise and update project cost estimates.
- For project estimates that have achieved P.S.&E. milestone, update Engineer's Estimates that are more than three months old.
- Incorporate new or revised cost data from functional units in project cost estimate.
- Provide revised or updated current cost estimates and their respective dates for inclusion in the PMCS database in a timely manner.
- Maintain a record of successive cost estimates for each project, including structure and right of way cost estimates, with documentation of the reasons for significant changes.
- Prepare Program Change Request or Fact Sheet, as appropriate -- see Chapter 6.

Project Manager

- Review and approve all project cost estimates.
- Ensure that current cost estimates and their respective dates are entered into the PMCS database.
- Review and sign Program Change Request or Fact Sheet.

Office of Structure Design

- Prepare, revise and update Structure estimate.
- Enter revised Structure estimates and their respective dates into the PMCS database in a timely manner to keep the current estimate up-to-date.

- Promptly advise the PM of the availability of and significant changes in the Structure estimate; and the reasons for the changes.

District Right of Way

- Prepare, revise and update right-of-way and utility estimates.
- Enter revised current right of way and utilities estimates and their respective dates in the PMCS in a timely manner.
- Insure that expended right of way cost is included or excluded in a consistent manner for cost comparison with earlier estimates.
- Deputy District Director - Right of Way to review and sign Program Change Request -- see Chapter 6.
- Promptly advise the PM of the availability of and significant changes in the right of way and utilities estimate; and the reasons for the changes

District Project Management

- Process Program Change Request -- see the [Caltrans Project Management Handbook](#).
- Obtain comments from Design Coordinator on scope and cost changes -- see Chapter 6, Article 3.

District Director

- Review all estimates prepared at major milestones and for specific project documents such as PSR, DPR, PR, PS&E, etc.
- Monitor project cost and adjust scope to stay within funding capabilities throughout the project development process. This includes taking action at the District level where such action is within District jurisdiction.
- Review and recommend approval of Program Change Requests, or approve if within delegated authority -- see Chapter 6.
- For all projects with an Engineer's Estimate over \$5 million, certify that the contract cost estimate is complete and accurate, reflecting the true scope of the work to be performed and representative of the most current market trends. This District Director certification will be required to achieve Ready to List (RTL). The RTL

certification form has been revised to include this signature and is available from the District Office Engineer.

- Re-certify projects with an Engineer's Estimate more than three months old.

Division Chief - Division of Design

- Maintain appropriate cost estimate formats for use in preparing estimates for all projects.
- Through the Design Coordinator, review, comment on, and recommend approval of all Change Control Documents for scope changes and cost changes, when the costs exceed the District Director approval threshold -- see Chapter 6.

Chief - Office of Statewide Project Management and Control

- Process all Program Change Requests for projects submitted to Headquarters when costs exceed District Director approval threshold -- see Chapter 6.
- Hold Project Delivery Meetings to monitor and evaluate scope, cost and schedule changes. (Abbreviated meetings, called Mini Project Delivery Meetings, are often held.)

Headquarters Management

- Deputy Director for Project Delivery makes recommendation for Program Change Requests when approval is not delegated to the District Director.
- Deputy Director of Finance approves (or rejects) Program Change Requests when approval is not delegated to the District Director -- see Chapter 6.

ARTICLE 5 - Coordination with Other Functional Units and Agencies

Consult Others

Other functional units (Structures, Right of Way, Traffic Operations, Materials, Maintenance, Construction, Environmental, Landscape Architecture, etc.) and local entities should be involved, as appropriate, in the preparation of both Project Planning Estimates and Project Design Estimates. Do not create a project cost estimate in a vacuum. Gather as much information as possible for the project and its various alternatives. It is better to have too much information than not enough.

Structures and Right of Way Estimates

The Office of Structure Design will prepare all structure cost estimates and the Right of Way Branch will prepare all right of way cost estimates. The estimates prepared by those functional units are to be combined with the roadway items to obtain the capital outlay costs for the project. For further information on structure cost estimating and right of way cost estimating contact those functional units.

Cooperative Projects

For those projects with contributor funding, segregated cost estimates are needed. To avoid confusion, as soon as the participatory rules for the project are determined, use segregated cost estimates that show the funding responsibilities of the various partners on the project. Define the various participants funding responsibilities as early as possible in the project development process. Communication among the various partners is very necessary to insure reliable project cost estimates.

Intercounty Projects

Segregated cost estimates for those projects situated in more than one county are required. This allows proper crediting against county minimum funding requirements. This need not be done for each item, but rather as a percentage of the total project cost estimate.

Federal Aid Projects

Segregated cost estimates for those projects with Federal funding are required. To avoid confusion, on Federal Aid projects, as soon as the participatory rules for the project are determined, use segregated cost estimates. The FHWA Liaison Engineer should be contacted to discuss any issues relating to Federal Aid.

SECTION 2 - Project Planning Cost Estimates

ARTICLE 1 - General

Project planning cost estimates are cost estimates prepared in advance of project approval. The initial programmed cost (see Chapter 6, Article 2) that appears the first time a project is listed in the STIP, State Highway Operation and Protection Program (SHOPP), Toll Bridge Program or TSM Plan is based on an escalation of a Project Planning Cost Estimate. Project planning cost estimates are categorized as: (1) Project Feasibility; (2) PSR; (3) Draft PR; and (4) PR.

ARTICLE 2 - Project Feasibility Cost Estimate

Initial Cost Estimate

A Project Feasibility Cost Estimate may be required by management to determine whether or not to proceed with development of a project initiation document. It is prepared prior to the project initiation process at the time of the initiation of project planning studies when a highway improvement need has been identified and a project cost estimate is needed to evaluate the proposed improvements.

With management's approval to proceed, the normal process is to update the cost estimate with additional data to produce a PSR Cost Estimate and a programmable project. The Project Feasibility Cost Estimate serves as background information for the PSR Cost Estimate.

Methodology

It is understood that for project cost estimates developed prior to project initiation, sufficient data may not be available to prepare a detailed estimate. However, management may still need project cost information at very early stages to make decisions on whether to proceed with development of a project initiation document. This information has to be factual, but is not to be used for programming the project.

Project Feasibility Cost Estimates in years past, when the majority of State highway projects were new roadways on new alignment with a very well defined scope, were prepared using a variety of methods but most likely on a cost per mile basis for a particular type of facility. Today, the majority of projects either maintain or improve the operation of the existing system. Cost estimates for these projects are more difficult to scope and cannot be determined by a "windshield survey". It is necessary to "walk the job" to obtain factual data to prepare realistic estimates that can be used with confidence.

A strip map with proposed project features and a proposed typical section should be prepared. Since many project features can be identified only by visual contact, a systematic field review should be made using the strip map and typical section. Adequate preparation time should be allowed.

Scoping for Project Feasibility Estimates

Since the Project Feasibility Cost Estimate is probably the initial cost estimate prepared for the project, there usually is limited information on which to base costs. It is essential, therefore, that the project be adequately scoped. The "worse probable case" scenario should always be assumed, particularly on reconstruction projects. Existing facilities thought to be adequate may become inadequate because of changes to standards, new data, further deterioration prior to construction, etc.

Be Aware of High Cost Items

To give management the best information available on which to base decisions, Project Feasibility Cost Estimates must be as realistic and accurate as possible. Estimators should be aware of high cost items that must be quantified such as: costs of mitigating hazardous waste and other environmental impacts, utility relocation, noise barriers, retaining walls, major storm drains, transportation management plan, traffic handling, etc. Assumptions made during development of the cost estimate should be documented. See Appendix AA for guidelines on estimate preparation.

The Office of Structure Design should be consulted, if structural design work is required, to obtain cost data for the Project Feasibility Cost Estimate. At the feasibility stage, the Right of Way Branch will normally complete the first sheet of the Right of Way Data Sheet with a notation, "NOT VALID FOR PROGRAMMING PURPOSES".

Contingencies

Contingencies should be from 30% to 50% at this stage, depending on the factual data available for preparing the estimate.

ARTICLE 3 - PSR Cost Estimate

Methodology

The PSR Cost Estimate, a required attachment for most project initiation documents, is an expansion of the Project Feasibility Cost Estimate. The format is the same, but additional information must be obtained -- see Appendix AA. Alternatives are developed and evaluated that clearly satisfy the project need and purpose. Because the PSR Cost Estimate will probably be used as the Current Project Planning Cost Estimate from which the programmed cost for the STIP, SHOPP or other programming document is calculated, the importance of a reliable estimate at this stage cannot be overemphasized. It is the initial base against which following estimates are measured and has extremely high visibility.

Specialized Formats

Specialized PSR Cost Estimate formats have been developed to aid in the completion of project cost estimates for pavement rehabilitation project PSSRs, structure rehabilitation project PSSRs, etc., and are an integral part of those documents. These specialized formats were created from the PSR Cost Estimate format but have been simplified to focus on the typical items of work associated with these specialized project types -- see Appendices E, G, H, J, P and Q.

Appropriate Mapping

To adequately prepare a PSR Cost Estimate, it is essential to obtain appropriate mapping. Consultation with the Survey Unit and a review of the [Plans Preparation Manual](#) is advisable.

Additional Information

Additional information that must be obtained includes: existing and forecasted traffic; geotechnical design information (particularly where foundation and slope stability problems can be anticipated); materials and pavement structural section design information; advance planning estimates for new structures and modifying existing structures; hazardous waste assessment; potential environmental issues and mitigation; right of way and utilities data sheets; traffic handling and transportation management plans; utilization of existing resources (recycling), etc. Constructability Reviews should evaluate and validate the project estimate and assumptions made.

Basis for Programming

The project initiation document cost estimate is dated January 1 of the current state fiscal year and is entered into PMCS. For programming, escalate the cost estimate to determine the project cost for a particular year of construction. The project sponsor establishes the escalation rate.

Caltrans is the sponsor for all projects funded solely from the SHOPP and most projects funded from the Interregional Improvement Program. Because funding capacity is spread over multiple years, it may be necessary to develop more than one project cost. Each project cost is based on a different fiscal year of funding capacity. The Division of Transportation Programming provides direction regarding funding capacity.

Use Most Up-To-Date Estimate

If the time period between the approval of the PSR (or other project initiation document, PSSR, NBSSR, etc.) and the date of programming the project is significant, the estimate must be updated. In this case, a Current Project Cost Estimate should be used to program the project.

Base for Future Planning Cost Estimates

It should be noted that the programmed cost is the base for comparing future planning or design cost estimates. All percentage increases (or decreases) are applied from the programmed cost. Approved cost changes (see Chapter 6) do not change the programmed cost, but become input to the next programming cycle, unless a Funding Request is made before the next programming cycle -- see Chapter 14, Section 3, Article 1.

Contingencies

Contingencies should be 25% at this stage.

ARTICLE 4 - Draft Project Report Cost Estimate

Methodology

Draft Project Report Cost Estimates use the same format as the Project Feasibility and the PSR Cost Estimates, except they are considerably more detailed -- see Appendix AA. At this time, the cost estimate for each viable project alternative needs to be calculated using updated data from the various functional units involved on the project (i.e.: Materials, Structure Design, Traffic, Hydraulics, Right-of-way, etc.) to produce a quality cost estimate. In addition, environmental and hazardous waste studies should have been completed by this time, so unforeseen costs should be minimal. Assumptions and costs for the Traffic Management Plan should be updated.

Project Cost Increases or Decreases

Cost increases or decreases from the PSR Cost Estimate must be discussed in the Draft Project Report -- see Appendix K. Also, an alternative that can be constructed within the programmed amount and still satisfy or partially satisfy project goals must be developed and discussed in the Draft Project Report.

Contingencies

Contingencies should be 20% at this stage.

ARTICLE 5 - PR Cost Estimate

Methodology

The PR Cost Estimate is prepared as part of the project approval process. This occurs after completion of the public hearing process, selection of the preferred alternative, and completion of the environmental document. The PR Cost Estimate for pavement

rehabilitation, structure rehabilitation, noise barrier, or other projects that are approved at the project initiation stage is the PSR Cost Estimate (PSSR, NBSSR, Combined PSR/PR, etc.).

The PR Cost Estimate is prepared using the same format as used for the other project planning cost estimates, see Appendix AA. However, since the preferred alternative has been selected, the project cost estimate can now be more definitive.

Cost Approval

If the PR Cost Estimate results in a revised project cost estimate, the procedures for establishing and approving the approved cost must be followed -- see Chapter 6. It should be noted that the PR Cost Estimate does not become the base for all future Current Project Cost Estimates comparisons unless it is used to establish a new programmed cost, either in an update of the programming document or by amendment of the programming document. All percentage increases (or decreases) are applied from the programmed cost. Approved cost changes do not change the programmed cost, but become input to the next programming cycle -- see Chapter 4.

Contingencies

Contingencies should be 15% at this stage.

SECTION 3 - Project Design Cost Estimates

ARTICLE 1 - General

Design Cost Estimates

Project Design Cost Estimates are design cost estimates made after Project Report approval and until completion of the PS&E process. These estimates are categorized as either preliminary or final. Project Design Cost Estimates focus on the construction costs of the project and are input into the Basic Engineering Estimating System (BEES). BEES has two components: (1) the District (Highway) Cost Estimate, and (2) the Structures (Bridge) Cost Estimate, that, when combined, equal the total construction cost for the project.

Project Design Cost Estimates should be considerably more detailed than Project Planning Cost Estimates. As engineering and environmental studies progress, more information, such as final contour mapping, materials and drainage information, refined traffic management plans, structure studies, and evaluations from design phase constructability reviews becomes available. This data increases the ability to prepare a more detailed cost estimate.

Construction Cost Only

Project construction costs, however, are only a portion of the capital outlay costs for the project which have been programmed and reported upon during the Project Planning Phase. When current project cost estimates are required during the Project Design Phase, the total project capital outlay costs are implied unless otherwise specified

Total Capital Outlay Costs

Total capital outlay costs for a project includes right of way and construction costs. Right of Way funds are typically expended during the design phase to acquired parcels needed to construct the project. For this reason, there must be close coordination with the Right of Way Branch when comparing project costs during the design phase with the programmed project costs. Care must be taken to insure that all right of way funds (either expended or unexpended) are accounted for and are consistent with the programmed cost.

ARTICLE 2 - Transitioning from Project Planning to Project Design Cost Estimates

Identify Contract Items of Work

Approval of the project by management allows the project to transition from the project planning phase to the project design phase. All of the project features should be known

and many contract items of work can be identified. In addition, the items of work identified and estimated during the project planning phase should now be better defined as work that is being completed by the design staff and the other functional units is completed.

One of the first tasks to complete at this time, is to convert the construction contract related portions of the PR Cost Estimate into the BEES format. To do this, specific contract items of work need to be identified and quantities associated with them need to be calculated. Most of this work should have been done previously to complete the PR Cost Estimate used to approve the project, but not to the detail required for project design cost estimates.

Estimate Components

As previously discussed the Project Design Cost Estimate consists of two components: (1) the District Cost Estimate, and (2) the Structures Cost Estimate. The District Cost Estimate is compiled by the PE to capture all of the highway contract items of work and the costs associated with the construction of those items. The Structures Cost Estimate, as required, is compiled by the Office of Structure Design to capture all of the structural contract items of work on the project and the costs associated with their construction.

ARTICLE 3 - Basic Engineering Estimating System (BEES)

Utilize BEES

All project design cost estimates must be prepared using the BEES -- see [*Ready to List and Construction Contract Award Guide*](#). This system provides the data files required for the Project Information Systems and Analysis (PISA), Bid Opening and Progress Pay System, and produces segregated cost estimates according to fund source.

District, Structures, and Combined Cost Estimate Files

The BEES permits independent storage of data from the District and Office of Structure Design for each project and the recall of separate or combined cost estimates. District (Highway) cost estimate and structure (Bridge) cost estimate files must be established independently. The District and Office of Structure Design are each responsible for updating their own file. Reports may be requested as highway (H), bridge (B) or combined (C) by entering the code (H, B, or C) in the appropriate area on the BEES Report Request Form.

Common Highway and Structure Items

When a combined cost estimate report is requested, the quantities for highway and structure items are integrated. Estimators in the Office of Structure Design and the District should reach prior mutual agreement for prices on common items. Common

Office of Structure Design and District items, such as temporary railing, must also be reviewed carefully to avoid either duplicating quantities or overlooking items in the cost estimate.

District (Highway) Cost Estimate - H

District Cost Estimates should be entered into BEES at the beginning of the design phase using the BEES coded item list. A copy of the BEES coded item list may be requested through the District BEES coordinator.

The BEES format must be used through the completion of the project. As contract items of work are identified and quantities calculated, these quantities should be entered into the BEES. Entering the completed quantities into the BEES as soon as they are calculated facilitates cost estimate updates and eases the preparation of the Final Engineer's Cost Estimate.

Segregated cost estimates for those projects with contributor funding, Federal funding, or in multiple counties must be available in the BEES at the time of PS&E delivery. As soon as the participatory rules for the project are determined, estimators are to use segregated cost estimates in the BEES. By doing this, no changes should be necessary to any segregation once the project is listed for advertisement.

The District Cost Estimate consists of these components (see Appendix AA for further details):

- **Contract Items**

These are the bid contract items of work for the project and as such are listed in the Engineer's Cost Estimate in the Proposal as well as the other Contract documents.

- **Supplemental Work**

Supplemental work is work of an uncertain nature or amount and therefore it is not done on a contract item basis. Work which is known but cannot be predetermined and provided for under contract items of work should be included as supplemental work. Extra work identified in the contract special provisions must be itemized as supplemental work.

- **State-Furnished Materials and Expenses**

Items listed under this component consist of work done by State forces, or others, concurrently with contract construction operations; or materials to be purchased and charged against the project, but which will be paid for directly by the State, not the contractor.

- Contingencies

Contingencies are a percentage of the subtotal of the cost of contract items, supplemental work, and state-furnished materials and expenses, and are included in the grand total of the District Cost Estimate to allow for unforeseen increases.

Structures (Bridge) Cost Estimate - B

The Structures Cost Estimate should be entered into BEES by the Office of Structure Design, as soon as possible after project approval, using the BEES coded item list. However, many contract items of work for structures are not known in enough detail until late in the design phase. For that reason, the Structures Cost Estimate may not be available for use until all of the structural design work is complete. Until the Structures Cost Estimate is available, the cost data used for the PR Cost Estimate should be used as the Structures Cost Estimate. It is important to keep in close contact with the Engineering Service Center Project Functional Manager and the Structures Designer during this time-frame. The PE needs to check to see if any unforeseen complications have occurred which will alter the estimated cost of the structures for the project.

When the Office of Structure Design completes its portion of the project cost estimate during the design phase, that data is input in the BEES similar to the way that the highway contract items of work are input by the District.

ARTICLE 4 - Preliminary Engineer's Cost Estimate

BEES Estimate

The conversion of the construction related portions of the PR Cost Estimate into BEES creates the Preliminary Engineer's Cost Estimate (sometimes called the "blue sheet" estimate because of the paper color it historically has been printed on). The Preliminary Engineer's Cost Estimate is an estimate of the fair and reasonable price the State should expect to pay for each of the contract items of work to be performed. The Preliminary Engineer's Cost Estimate should be updated frequently during the design phase as the project construction details, specifications and plans are finalized into a contract document. The Preliminary Engineer's Cost Estimate is based on the expected contract item prices as of the date of the estimate.

Portion of Capital Outlay Cost

The Preliminary Engineer's Cost Estimate must be used in combination with other cost estimates (right of way, cooperative features, etc.) during the design phase to obtain the capital outlay costs for the project. The Preliminary Engineer's Cost Estimate is used until the project reaches the end of the PS&E development phase and the contract documents are finalized. When this happens, the preliminary cost estimate becomes the Final Engineer's Cost Estimate.

Contingencies

Preliminary Engineer's Cost Estimates prepared prior to PS&E submittal may include an amount up to 10% of the cost estimate for contingencies.

ARTICLE 5 - Final Engineer's Cost Estimate

All Contract Items in BEES

The Final Engineer's Cost Estimate is completed at the end of the PS&E development phase. All contract items have been identified, measured, calculated, and entered into the BEES.

The final Structures Cost Estimate is prepared by the Office of Structure Design and transmitted to the District. The District combines the final District Cost Estimate and the final Structures Cost Estimate into the Final Engineer's Cost Estimate.

Certification of Engineer's Estimate

For projects with an Engineer's Estimates greater than \$5 million, the District Director will be required to certify that the estimate is complete and accurate, reflects the true scope of work to be performed, and accounts for current market trends. This certification is required before a project can achieve Ready to List. Engineer's Estimates that are more than three months old must be updated and recertified.

BEES 'Locked'

After compilation of the PS&E has been completed and the project is ready to list (for advertising), the Final Engineers Cost Estimate is "locked" in the BEES by Headquarters Office Engineer (HQOE). After "locking " only HQOE can alter the BEES file. If changes in the BEES are necessary after it has been locked, contact the Project Management Unit in HQOE. HQOE will review the request and will make the changes or, if timing is such that it is practical, will arrange for unlocking the BEES to allow the District and/or Office of Structure Design to make the changes.

Comparison with Contractor Bids Received

The Final Engineer's Cost Estimate is used for comparison with the various contractor bids received for the project and is the basis for the award of the contract. It should be noted that the money available to construct the project is the sum total of the dollar amount of the low bidder's contract bid items plus the dollar amounts of the supplemental, State furnished materials and expenses, and contingency items.

Contingencies

Contingencies are a percentage of the subtotal of the cost of contract items, supplemental work, and state-furnished materials and expenses, and are included in the grand total of the final cost estimate to allow for unforeseen increases. Contingencies should be 5% or less at this stage. The BEES system automatically allows for a contingency of 5%, but any amount may be entered, either by percent or by specified dollar amount. However, justification is required when a contingency other than 5% is to be included in the final cost estimate.