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# PREPARATION OF THE OFFICIAL CONSTRUCTION COST ESTIMATE

## PURPOSE:

To document the methods used by the Central Office Estimates Section in preparing the Official Cost Estimate and by the District Offices in their preparation of the District estimate of construction costs for projects which the Department wishes to advertise for competitive bidding.

## AUTHORITY:

Sections 334.044(2)(7) & (29), 337.11(1)&(4) and 337.168(1), Florida Statutes

## SCOPE:

This procedure describes the activities and responsibilities of the Central/District Estimates Offices from the receipt of the current monthly production list, through the various computer programs necessary to produce the Central or District estimate, including the bid review process.

Individuals affected by this procedure include Central/District Roadway Design, Central/ District Specifications, Central/District Construction Offices, Central/District Contracts Administration, Central Production Management, and District Directors of Production.

## GENERAL:

This is a five step process (plus committee meetings) which begins with development of the file names and uses, Central/District Estimates Office worksheet and the mailing and receipt of plans and specifications. The second step addresses the Central Office preparation of the Official Cost Estimate and the District Offices' preparation of the District estimate for authorization purposes. The third step outlines the bidding process after the Central/District Estimates have been prepared. The bid process covers three phases; the Pre-letting, the Letting, and the Post Letting processes. The fourth step covers the process involved in doing a post-bid review with a contractor. The fifth step is the process of preparing the bid review package followed by both the Technical Review and Contract Awards Committees.

# 1. PREPARATION OF JOBS FOR THE CES JOB FILE

## 1.1 THE CONTRACT ESTIMATING SYSTEM (CES)

The CES was developed to automate as much as possible the various reports, procedures and computations necessary to produce accurate/timely contract cost estimates. This requires the maintenance of a great deal of information contained in three separate files:

### 1.1.1 CES Master Pay Item File

It contains all of the information necessary to compute the cost per unit of material in-place by utilizing tasks and direct material cost. Standard tasks are composed of standard crews and likewise the crews are composed of resources (labor, equipment and materials) which are all contained within the file. The cost obtained can be adjusted by a geographic factor for current job conditions and locations. Other data contained in this file includes but is not limited to the following:

(a) State Materials Office (Gainesville) data related to actual testing of materials done during the construction of the project.

(b) Standard pay item descriptions, unit of measure, and related information.

(c) Pay item history information as obtained from the Bid Analysis Management Systems (BAMS).

(d) Pay item final quantities and cost as obtained from the Contracts Reporting System (CRS) from prior jobs.

### 1.1.2 CES Job Estimates File

It contains all of the job headers and characteristics as provided by the various design sections and consultants throughout the state. The data contained in this file consists of all the pay items, their quantities, and any overrides by the district offices for the entire job. The Job Estimates File supports design functions directly by providing the capability of calculating a cost estimate during the early stages and throughout the design phase.

### 1.1.3 CES Cross Reference File

Its purpose is to relate pay item numbers to the pseudo numbers contained in the

master file (as defined in the CES manual). The system design is directed toward a one-time entry of each piece of information. This is done so that all reports can be printed rapidly with minimum input data.

## 1.2 CENTRAL AND DISTRICT ESTIMATES OFFICE WORKSHEETS

Each month Production Management or the District Director of Production forwards to the Estimates Engineer the current production list containing the projects that are scheduled for the current letting plus the following two months. (Three Month Production List)

### 1.2.1 Receipt of Current Month's Schedule

The production list establishes those projects that are scheduled for the next monthly letting. These are listed by district and/or county and includes the following information:

(a) County, Section and District Numbers
(b) Financial Project Number
(c) Federal Job Number
(d) State Road Number and Length
(e) Date Plans are due in Tallahassee
(f) Participation Code (Funding)
(g) Type and Scope of Work
(h) Critical Deadlines to be met are as follows: (if let in Central Office)

- Date Plans to be sent to Tallahassee
- Date Plans and Estimate are sent to Federal Aid Office
- Date of Authorization and Advertisement
- Scheduled Letting Date

### 1.2.2 From the Foregoing Information

The estimator establishes a priority list of contract plans to be estimated. A cost estimate will be required in a timely manner to meet the critical dates list. The Federal and State requirements are as follows:

(a) **Federal Aid Projects:** (Usually let in Central Office). For these projects, the Federal Highway Administration requires that all full oversight cost estimates be forwarded to them six (6) weeks before the scheduled letting date for authorization purposes. All exempt Federal Aid projects are authorized with electronic signature by FHWA. Federal project estimates that are sent to Central Office must be loaded in CES on Friday before the letting date.

(b) **State Projects:** Central/District Office estimates are then prepared for all state projects after the federal aid projects are completed. The priority of all state projects are established in accordance with the preferred letting dates and the availability of funds. State project estimates that are sent to Central Office must be loaded in CES on Friday before the letting date.

### 1.2.3 Receipt of Preliminary Plans and Specifications in Central Office

As each District finishes the contract plans, they are forwarded to the Central/District Roadway Design Office for processing.

By the time the plans are sent to the Central/District Roadway Design Office, the project has been established in the CES Job File. The project characteristics for these projects should have been entered, as well as all pay items and quantities (as shown on the Summary of Quantity Sheets in the plans).

### 1.2.4 Estimate and Plans Integrity Check

When the construction plans are received, a cost estimate worksheet is requested using the Central Office CESPJ12 program or the District CESPJ27 program.

**Note:** The CESPJ12 program generates the Official Cost Estimate and the CESPJ27 program generates the District Estimate for authorization. These estimates show computer generated prices and/or district override prices for each of the pay items. The running of these programs by the Central/District Offices accomplishes the following:

(a) A security block to the system which prohibits any user from adding, changing, or deleting any of the data stored for that project.

(b) A printed report of the estimate for that project. This report will be retained in the job file until an Official Cost Estimate is requested for the project. These reports will remain in the active job folder until the project is executed, approximately 20 days after award.

# 2. PREPARATION OF THE OFFICIAL COST ESTIMATE

## 2.1 THE DESIGN EVALUATION CONSIST OF THE FOLLOWING FUNCTIONS

(a) **Design Functions:** The District Design Office is responsible for all design functions. Each District Design Office has access to the Contract Estimating System (CES) computer facilities. Each District Design Office is responsible for creating each job, establishing all pay items and continuously updating the jobs to ensure consistency between the plans and the automated system. Copies of the plans are delivered to the District Estimator approximately three (3) weeks prior to the due date to Tallahassee.

(b) **Specifications:** The District Specifications Office provides information concerning those pay item tasks and/or materials which are altered for a particular job and therefore require special provisions other than those listed in the standard specifications.

The specifications are delivered with the plans package to Tallahassee on or before the due date. One copy should also be forwarded to the District Estimator. The estimator reviews the plans and specifications to determine if there are any unusual conditions that would affect the overall cost of the project or the cost of any individual pay item.

## 2.2 Locking The CES to Generate a Contract Estimate Worksheet

(a) Upon the receipt of the plans and specifications, the central office estimator locks the CES for that project by submitting the CESPJ12 program. The District Office locks the CES for a project by submitting the CESPJ27 (option 2). This prevents the designers from making further changes in items or quantities. It also ensures that the Summary of Quantities in the plans match exactly with the CES that comprises the Official Cost Estimate. In addition, the CESPJ12 and CESPJ27 programs produce a hard copy of the estimate. This estimate includes a list of all items on the project, along with quantities and computer generated prices and/or district overridden prices for each pay item.

(b) A thorough district estimate is very important as it is used for Federal or State Authorization. The Central Office estimator uses this comprehensive estimate in establishing the unit prices for the Official Cost Estimate in Tallahassee.

(c) Both Central/District Office estimators perform the bidding contractor's role in the analysis and judgment of the scope of work required to complete the contract. Both Central/District Office estimators must make a judgment as to the accuracy

of the computer generated prices on each item. For example:

(1) Does the computer generated price represent the project, or is the price too low or high in relation to the quantity of this particular pay item?

(2) Does a pay item contain costs for other work, as referenced by a plan note, causing this item to be higher than the computer price?

(3) Is the project in a remote area far enough away from asphalt, concrete and/or borrow pit sources to cause prices to be inflated due to haul distance?

(4) Is the project adjacent to a contractor's home office thus causing his prices to be reduced?

(5) Has liquid asphalt increased in price, thus causing the cost of asphalt to be increased?

(6) Is this specialized work that has a very low production rate, thus causing an increase in the price of an item?

(7) Is larger than normal equipment required to drive pile or to set beams, causing the price to increase?

(8) Is the project located in an area that will require daily Mobilization/Demobilization cost, thus causing an increase in price?

(9) Are contractors in the vicinity of project overloaded with work, thus increasing the cost of a project?

If a computer generated price is determined to be inaccurate, the estimator will provide an override price that more closely represents the expected cost of these items. However, the estimator **must** be able to substantiate the overridden price.

(d) The District's Official Cost Estimate for Authorization Purposes:

(1) The District offices are now responsible for preparing the District's Official Cost Estimate for Authorization Purposes. This is generated by submitting the CESPJ27 program (option 2 to lock). The CES Coordinator's overridden prices will replace the standard unit prices contained in the master file. This produces the District's Official Cost Estimate and is now forwarded to the Federal Aid Office to be included in the Plans, Specifications and Estimates (PS&E) package for both oversight and

exempt projects. The PS&E package on oversight projects is then forwarded to FHWA. These Federal Estimates become official upon advertisement of each project.

(2) The Districts are also responsible for preparing the District's Official Cost Estimate on state funded projects as well. These are also produced by submitting the CESPJ27 program (option 2 to lock). These estimates for state projects remain in the CES system and are used by the State Estimates Office when preparing the Department's Official Cost Estimate in Tallahassee. These State Estimates become official upon advertisement of each project.

(e) The Central Official Cost Estimate Process (Central Office Only):

(1) After the plans have been received in Tallahassee and adjustments applied, the official estimate is generated for both state and federal projects by submitting the CESPJ12 program. The overridden prices will replace the standard unit prices contained in the master file and/or the District override price. This produces the Department's Official Cost Estimate and should be commensurate with those proposals submitted by the contractors at letting time. Authority: ***Section 337.168(1) Florida Statutes***.

# 3. CENTRAL AND DISTRICT ESTIMATES BID PROCESS

## 3.1 Pre-Letting Procedures

(a) Two (2) days prior to the bid letting, the Central/District Official Cost Estimate for each project is retrieved by the estimator. The estimate amounts are entered so the tolerance report can be generated (see criteria below). The Central/District Official Cost Estimate printouts are locked in a file marked Current Letting. They remain there until the letting process is complete and the contract is executed. After the contract has been executed the Official Cost Estimates are forwarded to the Final Estimates record section. They are then used for final audit purposes as the contract is completed by the contractor.

(b) The Tolerance Report calculates thresholds of 10% or 15% (above overall estimate) and (-)25% (below overall estimate on full oversight Federal projects only) and establishes the tolerance estimate amounts for each contract total. These amounts are then recorded on the estimator's copy of the Prospective Bidders List supplied by the Contracts Administration Office.

## 3.2 Letting Procedures

(a) At the regular monthly letting, personnel from the Estimates Office attend the letting. Tolerance amounts are recorded on the Prospective Bidders List as soon as it is distributed after the 10:30 a.m. deadline on letting day.

(b) As the bids are read out at the letting, they are recorded on the Prospective Bidders List next to each contractor's name that submitted a bid. All single bidder jobs and jobs in which the low bid exceeds the tolerance range by 10% or 15% are noted. All full oversight Federal projects that fall below the estimate by (-)25% or greater are also noted. All project totals that are above and full oversight Federal projects below these estimated tolerances will have to be reviewed and presented to the Technical Review/Awards Committees.

## 3.3 Post-Letting Procedures

(a) The Prospective Bidders List, with each bid recorded from the letting, are submitted to data entry (District only). The bids are key punched (by Contracts personnel) at the letting as the bids are read out by the Contracts Administrator. (Central Office only). These bids, along with the previously recorded Official Cost Estimate are combined and submitted under programs CASPJ03 and CASPJ06 to produce the Executive Summary of Letting (Central Office only). This report sorts the bidders on each project by their bid totals, and indicates the percentage difference between each of the bids divided by the Department's Official Cost Estimate. This report is copied and distributed to key DOT personnel but is kept confidential. Authority: ***Section 337.168(1) Florida Statutes***.

(b) A list of jobs to be reviewed (one-bidder jobs, above tolerance jobs and full oversight Federal projects that fall below tolerance) is compiled and distributed to Estimates personnel involved in the review process. A folder is prepared for each review job and all information relating to that job is kept there during the review process. These folders are kept for approximately five years after the project is executed.

(c) On Friday after the letting, District Directors of Production and the District CES Coordinators are sent a Request for Post-Bid Evaluation on all above out of tolerance jobs (Central Office only - this has an 8 day suspense date). Their recommendation to award or reject this project (signed by the District Secretary or designee) is to be included in the review package that is submitted to the Technical Review Committee.

(d) Also, on Friday after the letting, as soon as the Bid versus Estimate (SAS) Report has been generated, a list of mathematical unbalanced bid items is sent to the District Design Project Managers (Central Office only). They review the

computation book and check the quantities of items for possible overruns and/or underruns. If the quantity is found to be in error, the Project Manager calculates the correct quantity and faxes the list back to the estimator. The estimator then calculates the effects of overrun/underruns by multiplying each contractor's unit bid by the overrun amount. The overrun amount is added back to each contractor's total bid. If there is an underrun the amount is subtracted from each contractor's total bid. If this adjustment causes the low bidder's total to become larger than another contractor's total, a switch in low bidders have occurred, which is a materially unbalanced bid. The project must **not** be awarded to the original low bidder. The lowest adjusted bid will then be considered the low bidder and award will be made accordingly.

(e) As soon as the bids have been loaded into the system by the Contracts Administration Office, the low bid versus estimate (SAS) report can then be generated (Central Office only). This is followed by the Unbalanced Bid Item report. The Unbalanced Bid Item program utilizes a bell curve distribution that develops a statistical average unit price (Average 2). The program then establishes a range of acceptable prices to which the contractor's prices are compared. If this comparison is above or below a defined window (range), it is flagged by the program. This flag basically means to check the quantity on the mathematical unbalanced bid items for possible quantity overruns and/or underruns. The flag could also indicate the pay item was **not** needed when a contractor bids a small unit price on an item.

(f) A copy of the low bid versus estimate (SAS report) is also distributed to the estimator/reviewer (Central Office only). The reviewer uses this report to determine the items in which there is a significant absolute ± dollar difference between the low bid and the estimate. Once the items are identified, the estimator is ready to call the contractor. These items will be discussed with the contractor in either a desk review (phone) or a field review as described below.

## 3.4 Determination of Review Projects

### 3.4.1 Desk Review versus Field Reviews

(a) A Desk Review will be conducted by phone on the following:

(1) Single bidder jobs (on full oversight Federal projects only).

(2) All state and federal aid jobs in which the estimate is **below** $500,000 and the bid exceeds the estimate by 15% or greater.

(3) All state and federal aid jobs in which the estimate is **above** $500,000 and the low bid exceeds the estimate by 10% or greater.

(4) Only full oversight Federal projects in which the low bid falls **below** the estimate by (-)25% or greater.

(b) A Field Review will be held on the above out of tolerance jobs when discrepancies between the contractor's bid and the estimate cannot be resolved by phone. If a Field Review is to be conducted, the contractor is contacted by phone within four (4) working days after the letting. After the date and location for the meeting is set, district representatives from Design and Construction are notified and asked to attend.

## 4. POST-BID REVIEW WITH THE CONTRACTOR

**4.1** A review is scheduled with the contractor (either field review or desk review by phone) to discuss the items showing major differences between the estimate and low bid amount (as shown on the SAS report). The contractor is asked to substantiate their bid on these items. Review findings, along with the results of the unbalanced bid reviews are summarized in a detailed report for inclusion in the bid review package which is presented by the Central Office Preliminary Estimate Engineer or the District CES Coordinator, to the Technical Review Committee.

**4.2** After notification from the Contracts Administration Office that the bids have been verified, a report is generated (Central Office only) through the Bid Analysis Management System (BAMS). This report produces a graphic representation of the bid deviations from the Official Cost Estimate. This BAMS plot is also included in the review package which is presented to the Technical Review Committee. Once these bids are placed in the BAMS file, they become a permanent record which can be used later to obtain historical bid pricing data.

## 5. PREPARATION OF THE BID REVIEW PACKAGE

**5.1** The complete bid review package is compiled and copies are made for each member of the Technical Review and Contract Awards Committees. The package consists of the following:

(a) A cover letter which lists all projects for which a review has been made.

(b) For each project listed on the cover letter, there will be a Bid Review Package consisting of the following:

(1) Desk or Field Review Letter
(2) Post-bid Evaluation from District
(3) Letting History, (has job previously been let?)

(4) Central or District Office Bid Analysis
(5) "BAMS" Plot (Central Office only)
(6) Bid Tabulations
(7) "SAS" Report of low bid vs estimate (Central Office only)

**5.2** The original bid review package is kept in the estimator's file and a copy is hand delivered in a sealed envelope to each member of the Technical Review Committee and Contract Awards Committee to ensure the confidentiality of the estimate. Authority: ***Section 337.168 (1) Florida Statutes***.

## 6. THE TECHNICAL REVIEW COMMITTEE MEETING

In the event a project needs to be reviewed, the Estimates Engineer/District CES Coordinator and the Contracts Administrator will attend the Technical Review Committee meeting approximately 14 days after the letting. The committee will discuss all pertinent factors concerning the low bid and make a recommendation to award the contract or reject all bids. These procedures are covered in detail in ***Procedure No. 600-010-004, Technical Review Committee***.

## 7. THE CONTRACT AWARDS COMMITTEE MEETING

The results of the Technical Review Meeting are presented by the chairperson to the Contract Awards Committee for their official decision to award or reject the project. These procedures are covered in detail in ***Procedure No. 600-010-006, Contract Awards Committee***.

## 8. RELIABILITY STANDARD

The Technical Review Committee will, at the request of the Inspector General, issue an annual report assessing the reliability of the engineer's estimate. The reliability will be determined based on the low bids that were either in excess of (above 10 or 15%) or full oversight Federal projects that fall below (-25%) the official cost estimate (awarded jobs only).

Also, if the low bidder's total is more than 10% below the second bidder's total, it will not be used in the reliability calculations. A copy of the reliability report will be forwarded to the Preliminary Estimates Engineer/District CES Coordinator and the State Highway Engineer/District Director of Production. If the reliability consistently falls below average then consideration should be given to analyzing the current cost estimating methodology.

The reliability of the Engineer's Official Cost Estimate/District Estimate will be calculated each calendar year by dividing the number of reviews (above or below the tolerance and

having three or more bidders) by the total number of contracts awarded (with three or more bidders). For example; if 70 contracts were reviewed (above or below the tolerance and having three or more bidders) and there were a total of 350 contracts awarded (with three or more bidders) during that calendar year, then the percentage reviewed is 70 divided by 350 = 20%. Using the rating chart below, the reliability of the Engineer's Official Cost Estimate/District Estimate for that calendar year would be below average.

| Reliability Rating | Calendar Year Percentile Obtained (3 or more bidders only) |
|---|---|
| Excellent | 0 - 5% |
| Above Average | 6 - 10% |
| Average | 11 - 15% |
| Below Average | 16 - 20% |
| Poor | 21 - 25% |
| Unacceptable | 26 - up% |

## 9. TRAINING

None Required

## 10. FORMS

None Required