



Chapter 6

COST CONTROL

A. GENERAL INFORMATION

1. A cost estimate is required at each submission stage.
2. All cost estimates are to be submitted using the OGS forms. These forms contain formulas for the creation of certain estimating numbers.
3. The continual monitoring of costs is essential to keep the project within budget as well as to identify factors that will have a major impact on project costs. The final estimate (submitted as part of the Final Contract Documents Phase) will serve as the “official” estimate for the project. This estimate will be used in review and approval of the contractor’s detailed estimate, which is used for progress payments during construction. It will also be used to evaluate field and/or change orders and termination costs, if necessary. The following standards apply to all estimate submissions:
 - a. All submissions should be in electronic format, legible and include sufficient backup materials to facilitate review and verification by OGS staff.
 - b. Supporting documentation and/or detailed estimates must accompany the [Consultant Estimate Form BDC 178](#) for each submission.
 - c. The estimate should be organized in accordance with the major components of the project, and the total should be distributed among the required disciplines and trades. A separate estimate is required for each bid package (C, H, P, E)
 - d. All calculations and/or descriptions of net area, gross area, or building volume should be estimated based upon American Institute of Architects (AIA) standards and procedures.
 - e. All area and quantity calculations and unit prices used in developing the estimate should be clearly enumerated.
 - f. All labor cost estimates should be based upon prevailing wage rates and standard unit costs for the type of work required. OGS maintains a modeled [Construction Index](#) for use in estimating.

B. ESTIMATE COMPONENTS AND DEFINITIONS

Material and Labor	<p>Material and labor costs, the backbone of the estimate, are based on the best information available on the specific project at a particular design phase. Occasionally starting with square foot costs, the estimate moves toward detailed quantity takeoffs as the plans and specifications develop. Standard published cost data and references as well as historical data and manufacturers or suppliers quotes are used for material. The labor portion of the estimate should represent productivity appropriate to the scope of work and reflect the prevailing wage rates for the county in which the</p>
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	project is located. OGS maintains a modeled Construction Index based on the prevailing wage rates of 11 trades in the 62 counties of New York State.
General Conditions and Division 1	Accounts for project specific costs at the site above the direct material and labor costs. These costs include: bonds and insurance; supervision; field office costs; temporary facilities; general support; equipment and compliance with facility regulations. At the early stages of the project a percentage may be used which is later replaced with the itemized expenses.
Home Office Overhead	Covers a share of the contracting firm's operating costs primarily at the home office including: rent; utilities; postage; office supplies; secretarial and administrative support; taxes, fees and executive salaries.
Profit	The suggested percentages for home office overhead and profit included in the Markup Tables are based on industry standard and accepted practice. An extremely competitive environment may indicate a lower percentage.
Field Order Allowance	An additional (lump sum) amount included in the contract to accommodate contingent activities, i.e., field conditions and error/omission changes to the Contract (Bidding) Documents. <i>A separate Field Order Contingency Allowance, rounded to the nearest \$100, must be calculated based on the total material and labor costs for each bid package.</i>
Other Cash Allowances	If required, include additional amounts included in the contract documents for specific items the contractor must include in his/her bid. Some typical allowances are for special hardware, fire or security systems or utility connections. Documentation demonstrating the need, source and exact amount of the cash allowance must be submitted as backup and must be approved by the Office of the State Comptroller.



<p>Security/Occupied Facility</p>	<p>This is a markup applied to the labor portion of the estimate to cover lost time due to either entering and exiting security check points for contract work within a secure facility or for inefficiency due to working in or adjacent to an occupied space. This can also be used to cover the effects of phasing on contract work progression.</p>
<p>Design Development Contingency</p>	<p>An amount included in the project estimate to provide for unknown/unforeseen circumstances which traditionally arise as the design progresses. <i>As the design is refined in later phases, the amount will be reduced until the Final Construction Document Phase when no contingency should be needed.</i></p>
<p>Escalation</p>	<p>The provision in estimated costs for an increase in the cost of equipment, material, labor, etc., due to continuing price level changes over time.</p>
<p>Estimated Bid Amount</p>	<p>The estimated cost of construction plus the Field Order Contingency Allowance for a single bid package. A separate Estimated Bid Amount (<i>rounded to the nearest \$1,000</i>) is required for each bid package, and it is the amount against which contractors' bids will be compared.</p>
<p>Bid Package</p>	<p>Includes all the separate trade estimates that may be included and bid in the same contract, i.e., the Construction Bid Package could include the following trade estimates:</p> <ul style="list-style-type: none"> • Construction • Elevators • Food service equipment • Site work • Environmental engineering <p>Separate Field Order Contingency Allowances should be combined into one per package and the appropriate percentage based on the size of the bid package estimate should be used -see Markup Tables</p>
<p>Total Estimated Bid Amount</p>	<p>The sum of the Estimated Bid Amounts for the separate contracts.</p>



<p>Maximum Construction Cost (MCC) or Client Approved Estimate</p>	<p>The Maximum Construction Cost (MCC) is the authorized amount in the project budget for required construction work to which all design work must adhere. The estimate should <i>not</i> exceed this cost. <i>When project demands require exceeding the Maximum Construction Cost as stated in the Scope of Services, the Consultant should propose alternatives to reduce costs and adhere to the MCC.</i> The MCC is the cost of construction only – design fees are not to be included. The Field Order Contingency Allowance required for each bid package is included in the MCC.</p>
<p>Alternates</p>	<p>Additions or subtractions (<i>rounded to the nearest \$100</i>) to an Estimated Bid Amount for substitutions asked for in the Contract (Bidding) Documents.</p>
<p>Estimate Accuracy Range</p>	<p>Expresses a confidence level of the cost estimate to the client at each submission phase.</p>
<p>Design, Inspection and Project Management Fees</p>	<p>Includes design, testing, surveying, construction inspection and project management fees. These are for planning purposes at Program or Budget Phase for the client.</p>

C. COST ESTIMATING TOOLS

1. OGS D&C Cost Control staff developed the following tools and standard forms to assist the Consultant in developing project estimates, as well as to facilitate D&C review.
2. Estimating Forms and Tables: OGS D&C staff uses in-house forms to establish a standardized estimating methodology. Design Consultants are required to use the *Consultant Estimate Form BDC 178* to ensure consistency and facilitate OGS D&C review of submissions. **The BDC 178 is an Excel file that contains the following sheets: estimate summary-history, estimate, estimate revisions, basis of estimate, mark-up tables and instructions.**

Form ID	Form Title	Description
BDC 178	<u>Estimate Summary-History</u>	Commencing with the Program Report, this form is included with <i>each</i> phase submittal and summarizes all individual trade cost estimate information as well as previous estimates, if any, for the project.



Form ID	Form Title	Description
	Estimate	<p><i>This form is used to report the detailed portion of each trade estimate. The Consultant may use his/her own format; however, the following data must be included:</i></p> <ul style="list-style-type: none"> • General conditions and administration • CSI specification number • Quantities • Units • Separate material and labor costs (Labor costs may be reported as a unit cost or labor hours.)
	Estimate Revisions	<p>The Estimate Revision sheet is required at each subsequent submission to quickly highlight and document changes in the estimate and/or design from the previous submission.</p>
	Basis of Estimate	<p>Documents the critical aspects of a project cost estimate and defines the scope of the project. Documents the following: purpose of the estimate (study, budget, program report, etc.), project scope, pricing basis, allowances, assumptions, and exclusions. Assures the client and our project team that the estimate provided is in synch with the purpose of the project.</p> <p>Required at each submission phase for projects over \$2,000,000.</p>

3. The following tables are included as part of the same Excel workbook as additional tools for estimating:
 - a. [Markup Tables](#) - The Markup Tables provide the *suggested* percentages for overhead and profit as well as the *required* percentages for Field Order Allowances and Design Development Contingencies.
 - b. [Wage Rate Table](#) -
 - 1) For each of New York’s 62 counties: These are based on wage rates published by the NYS Department of Labor, and are compiled from base rates and supplemental benefits. Payroll taxes and insurances are not included. Social Security, Medicare, Unemployment, Disability, and Workers Compensation will, together, generally add 30% to wages.

4. Sequence for Applying Percentages to Estimates: (A separate estimate is required for each trade and new building.)

Material and Labor Subtotal

- + General Conditions
(On-site overhead if not shown as line items in Division 1 of Project Manual)
- + Home Office Overhead
- + Profit
- + Design Development Contingency
- + Escalation
- + Field Order Allowance

- = Estimated Bid Amount

D. COST ESTIMATE SUBMISSIONS

Budget/Program Phase Estimate	
<p>Description: Budget or Program estimates are generally prepared to form the basis for budget authorization, appropriation, and/or funding. As such, they typically form the initial control estimate against which all actual costs and resources will be monitored. Typically, engineering is from 10% to 40% complete, and would comprise at a minimum partially completed design information for the following: defined site civil information such as site plan, existing site conditions, demolition drawings, utility plan, site electrical plans, room layouts, mechanical system layouts, plumbing layouts, and one-line electrical diagram.</p> <p>Level of Project Definition Required: 10% to 40% of full project definition.</p> <p>End Usage: Budget or Program estimates are typically prepared to support full project funding requests, and become the first of the project phase "control estimates" against which all actual costs and resources will be monitored for variations to the budget. They are used as the project budget until replaced by more detailed estimates.</p>	<p>Estimating Methods Used: Budget/Program may involve a high degree of unit cost line items, although these may be at an assembly level of detail rather than individual components. Historical square foot costs may be utilized when limited information is available. Factoring and other methods may also be used to estimate less-significant areas of the project.</p> <p>Expected Accuracy Range: Typical accuracy ranges for Budget or Program estimates are -15% on the low side, and +25% on the high side, depending on the construction complexity of the project, appropriate reference information, and the inclusion of an appropriate design development contingency. Ranges could exceed those shown in unusual circumstances.</p>

1. Additional Requirements for Budget/Program Phase estimates:

- a. Escalation - to be included from the cost estimate date until the current bid date for the project. If no bid date is available a minimum of two years of escalation should be included in the cost estimate.
- b. Design, Inspection and Project Management Fees - These fees are calculated automatically on the Estimate Summary-History sheet that is part of the Consultant Estimate Form (BDC178). The fees will only be calculated at program or budget phases and are for client planning purposes only.
- c. Estimate Accuracy Range - This is a range of costs that serve to provide the client with a confidence level in the cost estimate. It is an assessment of how far a project's final actual cost can be expected to vary based on various factors. The ranges are calculated automatically at each submission phase and are for client planning purposes only.
- d. Basis of Estimate (BOE) - Documents the critical aspects of a project cost estimate and defines the scope of the project. Documents the following:

purpose of the estimate (study, budget, program report, etc.), project scope, pricing basis, allowances, assumptions, and exclusions. Assures the client and our project team that the estimate provided is in synch with the purpose of the project. The Basis of Estimate is *required* at each submission phase for projects over \$2,000,000.

- e. **Format** - The Program Phase Estimate should be bound into the Program Report. The estimate should include an initial **Consultant Estimate Form** (BDC 178), as well as documentation for any backup data used in developing the estimate.
- f. Total project budget should be distributed among the required disciplines and trades.
- g. Round the final estimate total to two significant digits.

2. Schematic Phase Estimate:

- a. Description:
 - 1) The Schematic Design Phase should arrive at a clearly defined, feasible concept and then present it in a form that achieves Client understanding and acceptance. It is expected to clarify the project Program, explore the most promising alternative design solutions and provide a basis for analyzing the cost of the project.
 - 2) The Schematic Design Phase Estimate has the same description, level of project definition, end usage, estimating methods, expected accuracy range and additional requirements as listed under the Budget/Program Phase Estimate.
 - 3) If a Program Phase Estimate exists, the Schematic Phase Estimate should verify or amend the previously made cost distributions.
 - 4) In the absence of a Program Phase Estimate, the Schematic Phase Estimate will serve to establish associated costs and verify that the project can be constructed within the Maximum Construction Cost as noted in the project Scope of Services.
 - 5) Overall system and component selections should be made and the resultant costs enumerated for this phase.
 - 6) Approximate quantification based upon experience and logic may be used by the Design Consultant to develop a reliable breakdown by disciplines.
- b. Format - The Schematic Phase Estimate should be included with the required Schematic Phase Submission. The estimate should include (depending on whether a Program Phase estimate has been developed) an initial (or follow-up) **Consultant Estimate Form** (BDC 178) as well as documentation for any backup data used in developing the estimate.

3. Design Development Phase:

- a. Description:
 - 1) The Design Development Phase defines and describes all the important aspects of the project so that all that remains is the formal documentation step of construction contract documents.
 - 2) The Design Development Design Phase Estimate has the same description, level of project definition, end usage, estimating methods



- and expected accuracy range as listed under the 80% and 100% Phase Estimate.
- 3) If a Schematic Design Estimate exists, the Design Development Estimate should verify or amend the previously made cost distributions.
 - 4) In the absence of a Schematic Design Estimate, the Design Development Phase Estimate will serve to establish associated costs and verify that the project can be constructed within the Maximum Construction Cost as noted in the project Scope of Services.
 - 5) Overall system and component selections should be made and the resultant costs enumerated for this phase.
 - 6) Approximate quantification based upon experience and logic may be used by the Design Consultant to develop a reliable breakdown by disciplines.
- b. **Format:** The Design Development Phase Estimate should be included with the required Design Development Phase submission. The estimate should include (depending on whether a Schematic Design Phase estimate has been developed) an initial (or follow-up) [Consultant Estimate Form](#) (BDC 178) as well as documentation for any backup data used in developing the estimate.
4. **Contract Documents Phase Estimates:** As stated before in Chapter 4, the Contract Documents Phase actually comprises three formal submittal segments:
- a. 80% Submission (coordinate with other references to this phase).
 - b. 100% Submission (Field Check) Phase.

80% and 100% Phase Estimate	
<p>Description: This phase estimate is generally prepared to form a detailed control baseline against which all project work is monitored in terms of cost and progress control. Typically, engineering is from 40% to 80% complete, and would comprise at minimum completed design information. All drawings, plan views, elevation drawings and section drawings are complete; except detailed design schedules, architectural details and control diagrams, which may still be in draft form.</p> <p>Level of Project Definition Required: 40% to 80% of full project definition.</p> <p>End Usage: Estimates are typically prepared as the detailed control baseline against which all actual costs and resources will now be monitored for variations to the budget.</p>	<p>Estimating Methods Used: Estimates always involve a high degree of quantity take-off estimating methods. Estimates are prepared in great detail, and often involve numerous unit cost line items. For those areas of the project still undefined, an assumed level of detail takeoff may be developed to use as line items in the estimate instead of relying on other methods.</p> <p>Expected Accuracy Range: Typical accuracy ranges are -10% on the low side, and +15% on the high side, depending on the construction complexity of the project, appropriate reference information, and the inclusion of an appropriate design development contingency. Ranges could exceed those shown in unusual circumstances.</p>

- c. **Final Submission Phase,** culminating with the completion of documents to be used during bidding and construction of the project. The estimate(s) should become more refined during this phase, resulting in a Final Contract Documents Estimate to serve as the official project estimate (for client agency budgeting purposes).



Final Phase Estimate	
<p>Description: Final estimates will typically be used by D&C for check estimates and becomes the new baseline for cost/schedule control of the project. Final estimates are prepared for the project to comprise a bid check estimate to compare against a contractor's bid estimate, or to evaluate/dispute claims. Typically, engineering is from 90% to 100% complete, and would comprise virtually all engineering and design documentation of the project, and complete project execution and commissioning plans.</p> <p>Level of Project Definition Required: 80% to 100% of full project definition.</p> <p>End Usage: Final estimates are typically prepared to form a current control estimate to be used as the final control baseline against which all actual costs and resources will now be monitored for variations to the budget. They are used to evaluate bids, to support vendor/contractor negotiations, or for claim evaluations and dispute resolution.</p>	<p>Estimating Methods Used: Final estimates involve the highest degree of quantity take-off estimating methods, and require a great amount of effort. All items in the estimate are usually unit cost line items based on actual design quantities.</p> <p>Expected Accuracy Range: Typical accuracy ranges for Final estimates are -5% on the low side, +10% on the high side, depending on the construction complexity of the project, appropriate reference information, and the inclusion of an appropriate design development contingency. Ranges could exceed those shown in unusual circumstances.</p>

- d. Description:
 - 1) Detail costs based upon the exact quantity takeoffs from the contract documents and current and/or projected costs.
 - 2) A separate estimate is required for each trade as identified on the [Consultant Estimate Form](#) (BDC 178).
 - 3) Markups for Home Office Overhead, Profit, Design Development Contingencies, and Field Order Allowances should be noted as separate line items and follow recommended percentages (refer to [Markup Tables](#)).
 - 4) If Addenda issued during the bid period affect construction costs, those costs should be reflected in a modified final estimate.
 - 5) Estimate must be organized by CSI specification section numbers and include separate material and labor unit costs. Each work item should be referenced by its specification section number and subtotaled by divisions.
 - 6) The Consultant should continue to use the forms and other tools mentioned previously, as well as any pertinent source documentation concerning estimates, and all should be submitted for review and approval in accordance with the other documents for this phase.
- e. Format - While the estimates for the Program, Schematic Design and Design Development Phases are bound into the report as required for those phases, the estimates for the Contract Documents Phase should be broken down by contract and separately bound.