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GSA

GSA Public Buildings Service

P-120

project estimating requirements

for the public buildings service

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P-120

project estimating requirements

for the public buildings service

U.S. General Services Administration
Office of the Chief Architect
January 2007

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introduction

This cost-estimating and cost-management criteria document supports building construction programs within the Public Buildings Service (PBS) of the U.S. General Services Administration (GSA). This document presents the technical and administrative requirements for routine cost-estimating and cost-management tasks involved in a construction project's planning and execution stages, and defines cost-estimating practices and standards for professional services. This document replaces the previously issued GSA Handbook P 3440.5 and all associated versions.

The instructions and criteria in this document are applicable to programming, design, construction-management, and other professional-services contracts that involve cost-estimating and cost-management tasks. The criteria for practices and documentation requirements apply to all professional services activities, whether provided through contract or by in-house GSA/PBS staff.

The cost-estimating tasks addressed in this document must establish accurate project costs, ensure that they are based on programming requirements, keep costs within authorized limits, and collect GSA cost data to refine business practices and future cost estimates.

Since project delivery methods affect how, and to some degree when, cost-management practices are applied, this document explains the basic requirements associated with each delivery method.

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document organization

This document has three major chapters:

1 general requirements and principles

This chapter presents the general estimating practices and standards required for all estimating services. It covers qualifications of estimators and estimating firms, principles of effective cost management, different types and formats of estimates, approaches to estimating, and the various cost-estimating and management tools available.

2 prospectus project requirements

This chapter defines the estimating service required for prospectus projects, including deliverables in the context of planning, design, and construction stages.

3 delivery methods and deliverables

This chapter explains when the deliverables defined in Chapter 2 must be provided for the following four delivery methods:

- Traditional (Design-Bid-Build)
- Design-Build Performance
- Design-Build (Bridging)
- Construction Manager as Constructor (CMc)

Table 3 in this chapter shows the cost-estimating tasking requirements for the delivery methods by size and type of project.

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acknowledgements

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1

general requirements and principles

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1 general philosophy

The Federal Acquisition Regulation (FAR) 36.203 requires that every Government estimate be prepared as though the Government were competing for the award. Therefore, all costs that a prudent and experienced contractor would incur must be included in project cost estimates. A listing of known facts, construction tasks, and supplemental judgments form the basis of the estimate at each stage of design. This provides a realistic approach to estimating, and it creates a history of project cost development.

P100, Facilities Standards for the Public Buildings Service, lists the estimating deliverable requirements for each design phase, but they are clarified here.

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2 estimator qualification and ethics

1 requirements

Capital project estimate submissions must be prepared by professional cost estimators unaffiliated with the design team or the Construction Manager as Contractor (CMc). Certification as a cost engineer by the Association for the Advancement of Cost Engineering (AACE), or as a certified professional estimator by the American Society of Professional Estimators (ASPE), is supporting evidence of an estimator's qualifications, although it is not required.

2 independent government estimate (IGE)

The FAR requires that an IGE be prepared for all contracts exceeding $100,000. When life-cycle costing or other economic analyses are required to support a design decision, professional estimators must establish construction cost estimates for all options if any one of them is expected to have a first cost in excess of $100,000.

The final cost estimate submitted for the 100% construction documents phase is used as the basis for the final IGE, which the contracting officer uses to determine whether an offeror's proposed price is fair and reasonable and reflects an understanding of the project requirements.

A qualified Government employee whose major responsibility is creating or approving cost estimates for GSA must sign and approve the IGE, which serves as the basis for commitment of funds before the solicitation is issued

3 ethics

The standards of practice described in the Canons of Ethics published by the AACE and the ASPE, and available on both their Web sites, apply to all estimating services.

4 due diligence expectations

GSA expects proper diligence in the preparation of estimates, which will grow steadily more accurate as the design progresses. While the estimator may need to make many assumptions in preparing the concept design estimate, once the construction documents phase has begun,

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estimates will no longer contain major assumptions. The project team will designate one person to compare successive project estimates and prepare an orderly and comprehensive reconciliation.

The architect-engineer (A-E) must work closely with GSA's independent estimator to coordinate the estimates with design submissions and the scope of work, to review assumptions concerning exclusions and inclusions, and generally to ensure that the estimate reflects GSA's intent. These estimators must have a thorough understanding of the marketplace in which the project is located, research market prices, and obtain price quotes for specialty items.

5 penalties

GSA contractors are advised to be aware of 18 United States Code 1001, which deals with the False Statements Act. This code states, in part:

> *"…whoever, in any matter within the jurisdiction of the executive, legislative, or judicial branch of the Government of the United States, knowingly and willfully -*
>
> *(1) falsifies, conceals, or covers up by any trick, scheme, or device a material fact;*
>
> *(2) makes any materially false, fictitious, or fraudulent statement or representation; or*
>
> *(3) makes or uses any false writing or document knowing the same to contain any materially false, fictitious, or fraudulent statement or entry;*
>
> *shall be fined under this title, imprisoned not more than 5 years or, if the offense involves international or domestic terrorism (as defined in section 2331), imprisoned not more than 8 years, or both."*

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3 cost estimating and management practices

1 cost management principles

design within budget

Unless otherwise specified in design-contract documents, the A-E must design the project so that construction costs will not exceed the funding limitations established as the Basis of Fee Negotiation. FAR 36.609-1 requires that the A-E redesign the project at the firm's own expense to ensure that a responsive construction bid amount will be within funding limitations.

prospectus authorization/appropriation

In accordance with the Public Buildings Act of 1959 (PL 86-249), as amended, the United States Congress must authorize the scope and budget of each major capital construction project before design begins. Once Congress has approved a project's construction budget, it cannot be increased, so the design team must approach prospectus funding as an absolute limit.

pursuit of construction services

Construction bids may be solicited only if the Estimated Cost of Construction at Award (ECCA) amount at final construction documents is within congressionally authorized prospectus limits.

itemized cost management

When project funds are secured from different agencies or are provided as a dedicated allowance for a specific program goal, independent estimates must be made for each, allowing separate tracking of expenditures. Funding allocated for such projects is tracked to confirm that expenditures are apportioned according to amounts authorized by each agency, so as not to exceed the dedicated allowance.

independent estimates

The Government requires third-party estimators for major construction projects to verify

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that the project's scope and cost are within budget. These estimates are prepared by an independent cost estimator who is not affiliated with the design firm or the Construction Manager as Contractor (CMc). The design team provides all required documentation for the estimator to provide estimates for, at a minimum, the following phases:

- Final Concept Design
- Final Design Development
- 90% Construction Documents
- 100% Construction Documents

2 estimating formats

Using standard estimating formats for cost estimating and cost management:

- Ensures a uniform cost-control framework throughout the various stages of project development.
- Defines a proper level of detail to set expectations for the estimating effort.
- Serves as a checklist to ensure complete coverage of project scope.
- Provides for a standardized historical database or library.

space type estimates

This format, used primarily for new construction projects, applies space-type unit costs to planned space needs, resulting in a set of space-related construction costs. These costs may be adjusted by adding known costs for special requirements defined through other estimating formats. The sum of space-type costs and special-requirement costs equals an Estimated Construction Cost (ECC) for the project.

Since GSA's General Construction Cost Review Guide (GCCRG) uses space-type estimates, cost estimators must be familiar with this technique (see Chapter 1, Section 4.4 for an explanation of GCCRG).

uniformat estimates

Uniformat estimating applies unit-cost data to building-system and component site elements. This "systems" approach uses a hierarchical structure of cost elements, beginning at Level 1 with basic systems, such as Substructure, Exterior Enclosure, and Interior Construction,

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and proceeding to successively more detailed subdivisions of these systems at Levels 2-5. The resulting levels of detail not only serve to structure cost information but also facilitate estimates to whatever level of detail the design team can provide as the project is developed through the design submission phases. For example, by the final concept design phase, the design team and estimator may have Level 4 information on Substructure, but only Level 2 detail for Interior Construction.

Although the construction industry uses several variations on the Uniformat concept, GSA requires that cost estimators use its particular version, for consistency in use and maintenance of GSA's cost databases. GSA's Uniformat estimating format is illustrated in *Appendix A: Estimating Formats.*

masterformat estimates

MasterFormat, a product of the Construction Specifications Institute (CSI), is the most widely used standard for organizing building-project specifications and detailed cost-estimating data in the U.S. It is used particularly when drawings and specifications are sufficiently detailed to allow material and equipment quantity takeoffs, and it is typically aligned with a general contractor's approach to preparing a bid. Visit the Construction Specifications Institute Web site (www.csinet.org) for more information.

work-item estimates

GSA Repair and Alterations (R&A) projects tend to utilize scope descriptions and cost estimates organized by work items. While work items may vary significantly depending on the nature of the project, as defined by GSA program offices and client requirements, the following list reflects a typical, but not comprehensive, work-item classification for R&A projects:

- Building exterior
- Building interior
- Accessibility
- Structural
- Mechanical
- Plumbing
- Electrical
- Life safety
- Elevators
- Hazardous materials abatement
- Roofing
- Security

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Traditionally, R&A projects have used the work-item basis because it allows the removal or addition of project scope to meet budgetary limitations and allowances. GSA assigns alphabetical codes to the work items when describing the project and its costs for each R&A prospectus, as required by the Office of Management and Budget (OMB) and Congress.

See Chapter 2 for further description of non-prospectus projects.

other formats

GSA may require that estimates be formatted in additional ways. For instance, it may be necessary to subdivide estimates for individual buildings and other components into new construction and major renovation.

Work items on non-prospectus projects frequently evolve from Building Evaluation Reports (BERs), and estimates for these projects may follow a Work Breakdown Structure (WBS). Situations that might require a WBS include:

- Differing financial commitments of multiple tenants of a project, requiring separate contracts for each tenant's work.
- The need for separate contracts for buildings and their site work, such as at border stations.
- Phased renovation projects requiring swing space for a variety of tenants or departments.
- Projects to be funded over more than one year.
- Separation of a project into base-contract work and options or alternates.

Projects below $100,000 may be executed under line-item or job-order contracts, for which cost estimates are derived from line-item databases. Cost proposals for the services of the A-E's estimator and the independent government estimator must be submitted to GSA on Form 2630/2631, shown in Appendix E.

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4 estimating requirements

1 general

The Government requires cost estimates for, at a minimum, the following phases of design

- Establishing an initial project baseline.
- Preliminary concept design, with multiple schemes of design
- Final concept design preceding value engineering
- Final concept design
- Design development preceding value engineering
- Final design development
- 75% construction documents
- 90% construction documents
- 100% construction documents

The estimate must include all elements of the proposed project work (including all design-contract modifications), regardless of the design phase. The estimate must all include verification and continuity of cost budgets in the transfer from estimate to the contractor's schedule of values. Where costs are included for details not indicated on the drawings and specifications, the independent government estimator must include design assumptions to complete the scope. The estimator must check all cost-estimate calculations for accuracy and completeness, including assessing whether estimates completely and accurately represent design features and quantities.

Lump-sum pricing is not acceptable without description and quantification.

2 warm-lit shell vs. tenant-improvement (TI) cost estimates

GSA's pricing policy calls for a separate tenant-improvement breakdown of all tenant-space fitout, identified by agency. You can find GSA's pricing policy and the related modifications and clarifications at the following external Web site: http://www.gsa.gov/rentpricingpolicy

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For further inquiries, contact Beth Lemanski, David C. Baker, or Kelly Juarez of PBS Real Property Asset Management.

The agency housing and supporting floor plans must be used to organize the estimate detail by:

- Warm-lit shell
- Tenant-agency fitout
- Security upgrades

3 contents and degree of detail

Table 1 illustrates the formats and minimum level of detail required for cost estimates at each design phase.

unit pricing

Unit-price cost estimates are based on detailed design documents and developed by adding up the direct costs of materials and supplies, labor, and construction equipment for each individual task of construction work. The basis for these unit costs must be well documented and included in the supporting data of the estimate. To these direct costs are added applicable indirect costs, such as overhead and profit at a subcontractor level, to reflect the in-place construction cost per unit of work required.

For concept design estimates, it is acceptable to use unit prices combining labor, materials, and equipment costs in a single figure. For estimates prepared at the design development and construction documents phases, GSA requires separate labor, material, and equipment unit pricing.

Items that are a significant percentage of the total project's cost require the greatest estimating effort. For such items, indirect costs and other markups associated with each task or work item must be separately identified and considered. On a project-by-project basis GSA requires quotes from suppliers or specialty contractors to document the costs of such major items, and the estimator must be prepared to discuss them with GSA.

Documentation of unit-price data for smaller items could include price quotes, audits, catalog cuts, and historical costs to clarify price bases and assumptions made when other information is not available. The independent government estimator provides a general

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statement describing the sources of unit costs and quantities used for each cost division or category, but individual source references for each itemized cost element are not required.

general conditions and profit

Feasibility Studies, Program Development Studies, and Concept Design

A percentage allowance–an overall percentage allowance for the General Contractor's general conditions, bonds, insurance, and corporate overhead and profit–is appropriate if the project involves no unusual coordination, site preparation, or specialized support services.

Design Development and Construction Documents

It is appropriate to estimate these costs with two breakdowns:

- General Conditions: Comprised of itemized general requirements and job-site supervision.
- Mark-Ups: Comprised of general and administrative costs (including state and local taxes), profit, bonds, and insurance.

site and design contingencies

Contingencies are an integral part of the total estimated costs of a project and cover costs that may result from incomplete design, unforeseen and unpredictable conditions, or uncertainties concerning project scope. The amount of the contingency will depend on the status of design, procurement, and construction, as well as the complexity and uncertainties of the component parts of the project. Contingency is not to be used to avoid making an accurate assessment of expected cost. GSA may choose to set aside separate contingencies for major schedule changes, unknown design factors, unanticipated regulatory standards or changes, additions to project scope, force majeure situations, or congressional budget cuts.

Contingencies must always be separately identified so that the magnitude of a contingency's impact is clear. For example, the Independent Government Estimator may never add contingency by concealing it within unit pricing or quantity estimates or takeoffs.

Site and design contingencies start at 10% during the programming and planning stages and are reduced to zero as the design develops (see Table 2).

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table 1. requirements for cost estimating at each design phase

Project Phase	Estimate WBS	Detail Level	Summary Level	Estimate Basis	TI/Shell
Concept Design	GSA Uniformat	III	II	Parameter and Quantification	Yes
Design Development	GSA Uniformat	IV; Note 5	III	Quantification and Parameter	Yes
	CSI Masterformat	Note 1 & 5	Note 1		
75% CD	GSA Uniformat	N/A	III	Quantification	Yes
	CSI Masterformat	Note 2 & 5	Note 3		
90% CD	GSA Uniformat	N/A	III	Quantification	Yes
	CSI Masterformat	Note 4 & 5	Note 3		
100% CD	GSA Uniformat	N/A	III	Quantification	Yes
	CSI Masterformat	Note 4 & 5	Note 3		

Note 1. If the detailed drawings and outline specifications are available, provide the CSI Masterformat cost estimate at the greatest detail that the drawings and specifications will support.

Note 2. The level of detail of the cost estimate in CSI Masterformat corresponds to Uniformat Level IV, as defined in this document.

Note 3. The summary of the cost estimate in CSI Masterformat corresponds to Uniformat Level III, as defined in this document.

Note 4. The level of detail of the cost estimate in CSI Masterformat corresponds to Uniformat Level V, as defined in this document.

Note 5. Unit prices are broken down into labor, materials, and equipment.

table 2. guidelines for standard site and design contingencies

ESTIMATE CATEGORY	%
Program/Planning	10%
Concept Design	7%–10%
Design Development	5%–7.5%
Intermediate Construction Documents	2-5%
Final Construction Documents	0%

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escalation

Escalation is the anticipated increase in the project's Escalation is the anticipated increase in the project's cost due to inflation between the time the estimate is prepared and when the project is finished, since inflation continues during project construction. For simplicity, the estimator must assume that half of the work will occur before the midpoint of construction and half after. Therefore, the estimate is escalated to the midpoint of construction to reflect the contractor's provision for inflation in its bid.

In the planning stage, escalation rates are taken from the GCCRG. As the design progresses, the A-E and GSA must agree on an annual construction-cost escalation compounding rate, based on a market survey prepared by the A-E, for use in all design estimates and cost analyses. It is the responsibility of the design A-E to control the cost of the project so that when the ECCA budget is reduced by the forecasted escalation rate, the residual budget amount equals the current value of the project.

art-in-architecture

The art-in-architecture set aside amount is 0.5% of ECCA.

construction contingency

The construction contingency is an allowance for cost growth that may occur during construction as a result of unexpected circumstances or incomplete design documents. GSA currently recommends 7% for new construction projects and 10% for renovations, but may direct the use of different figures on a project-by-project basis.

applying markups, contingency and escalation

Figure 1 demonstrates how mark-ups, contingencies, and escalation should be calculated and applied to projects.

reviewing and reconciling estimates

On projects for which GSA requires the preparation of an IGE, the A-E is responsible for designating a member of its team to reconcile the IGE with its own estimate in an orderly and comprehensive manner.

cost-management requirements

Accurate estimating is an important component of GSA's cost-management process, as well as an important decision-making tool for the design team in its selection of systems

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and materials. In order to serve these purposes, careful consideration must be given to the following:

- **Cost-element comparisons –** Prepared at each milestone to compare the current estimate to the previous milestone estimate and to the overall budget and to the baseline estimate to ascertain whether design or scope changes have been made or need to be made. Refer to the estimate tracking sheets in Appendix B.
- **Earned-value accounting –** Used in conjunction with cost-element comparisons, the earned-value process allocates cost as it is committed, or as a part of the project is completed. Decisions regarding contingency and escalation are important in this process. For additional information, see the Whole Building Design Guide web site at www.wbdg.org.
- **Life-cycle cost analysis –** Used to evaluate the implications of decisions made during the design process not only on initial cost but also on life-cycle costs. Issues considered typically include energy utilization, sustainability, maintenance, and operations. See Chapter 2, Section 2.2 for details.
- **Shell and core, security upgrades, and tenant improvement (fitout) –** GSA requires subdividing the estimate into costs for the shell and core and tenant improvements, including the associated professional services costs included in the occupancy agreement between tenants and GSA. Both the A-E's estimator and the independent government estimator must submit their cost proposals for professional services to GSA using Forms 2630 and 2631. See Appendix E for sample forms.
- **Phasing/scheduling packages –** Used for project work divided into more than one construction phase. Separate cost estimates, accompanied by an overall project ECCA summary, support each phase. For phased new construction, a construction management (CM) firm hired by GSA must prepare a post-award construction cost analysis for each phase. After contract award of the last construction phase, a combined post-award construction analysis for the composite project bid is prepared.
- **Multistructure projects –** Projects involving more than one structure require separate estimates for each structure. Separate site construction-cost estimates must be associated with the estimates for each structure involved. A CM firm hired by GSA must prepare a construction-cost analyses for each structure and site development after the multistructure project is awarded.
- **Bid alternates and options –** A CM firm hired by GSA must prepare separate cost estimates for the base bid and for each individual alternate or option when the project requires them.

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figure 1. calculation of mark-ups, contingencies, and escalation

GSA	ESTIMATED TOTAL PROJECT COST			
PROJECT TITLE	0			
PROJECT LOCATION	0			
Item Description	Quantity	Unit Measurement		Totals
ECC (Estimated Construction Cost)				
Sub-Total UNIFORMAT System Elements			Sum All Elements	$28,674,350
Design and Site Contingency	10%	%	+	$2,867,435
			Sub -Total	$31,541,785
General Contractor Overhead, Profit, and Bonds	20%	%	+	$6,308,357
			Sub - Total	$37,850,142
Escalation:Current Date To Escal Date - See Summary	7.1%	Use GCCRG %	+	$2,680,113
ECCA (Estimated Construction Cost At Award)			**ECCA**	$40,530,255
Reservations				$0
Art-In-Architecture	0.5%	%	+	$202,651
( )				
( )				
			Sub-Total	$202,651
Construction Contingency	7%	%	+	$2,837,118
			ECC	$43,570,024
EDRC (Estimated Design & Review Cost)				
Design	7%	%		$3,137,042
CM	2%	%	+	$871,400
Other		%	+	$0
			EDRC	$4,008,442
EMIC (Estimated Management & Inspection Cost) - From D&C Service Tool Website				
Design	1%	%		$435,700
M&I	3%	%	+	$1,307,101
			EMIC	$1,742,801
ESC (Estimated Site Cost)				
Land		$		$0
Demolition		$	+	$0
Relocation (Associated With Site Purchase)		$	+	$0
			ESC	$0
ETPC (Estimated Total Project Cost)	Date:		**ETPC**	$49,321,268

Project Development Cost Estimating Requirements

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benchmarking

Benchmarking may be required to assess and verify the cost of a project by reference to established costs for similar facilities. GSA has access to a number of tools useful to estimators involved in benchmarking.

4 cost-estimating and cost-management tools

gsa cost estimating tools and spreadsheets

GCCRG

GSA developed the General Construction Cost Review Guide (GCCRG) to assist estimating in the planning phase of new construction projects. **Figure 2** is an example of a GCCRG estimate.

Project Cost Estimate (PCE)

The PCE was designed for programming and pre-design estimates. Applications may include BERs, feasibility and program development studies, site acquisition and Market Survey studies, and design. **Figure 3** is an example of a PCE tool summary, **Figure 4** is an excerpt of a more detailed estimate sheet.

Building Life-Cycle Cost (BLCC) and Life-Cycle Cost (LCC) Spreadsheets

See Chapter 2, Section 2.2 for details.

cost-estimating systems

GSA encourages but does not require the use of computer-based cost-estimating programs to mitigate manual calculation errors and facilitate changes. The requirements defined in this document can be easily met by using various commercially available computer software programs and spreadsheets. Generic spreadsheets allow user adaptation and offer flexibility in applying different cost databases.

Figure 5 is an excerpt from a Uniformat-structured estimate report from a cost-estimating system used at the design development phase. It illustrates the requirement to break down unit prices into labor, materials, and equipment. The report uses the Uniformat levels to organize the estimate and define the detail of the unit price items.

Figure 6 is an excerpt from a MasterFormat-structured estimate report developed at the design development phase. It illustrates the requirement to break down unit prices into labor, materials, and equipment.

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figure 2. general construction cost review guide (GCCRG)

GENERAL CONSTRUCTION COST REVIEW GUIDE - COST BENCHMARK TOOL FY 2006

[Note: All unit cost data in 10/2005 dollars - escalations of cost data to this date made in this form. Shaded areas used for calculations or fixed data input - and are not editable]

Prepared Date: 2/2/06

Project Title:

Location (for Location Factor and Escalation)

State: ALABAMA

City: STATE AVERAGE

Building Type: LOW RISE OFFICE BUILDING SHELL (3 FLO

Constr. Award / Reference Date: 10/1/06

[Note: Costs include escalation to the mid-point of normal constr.]

Seismic Factor (See Seismic and Security Tab): 1.00

Security Factor (From Seismic and Security Tab): 3

[Input Security Level as A=1, B=2, or C=3 - See notes for Level D or E]

Space #	Space Type (See Definitions Tab) - Note: Cannot use CT unit costs in Office Bldgs.	Space USF (from Housing Plan)	Efficiency Factor (default is mid-typical)	Calculated GSF	TI Unit Cost (per selected Bldg Type)	Location Factor	Seismic Factor	Inflation Factor	GCCRG BENCHMARK COST
TENANT IMPROVEMENT (TI) COSTS:									
1a	General Office - 80% OPEN OFFICE		74.0%	0	21	0.90	1.00	1.059	$0
1b	General Office - 50% OPEN OFFICE		72.5%	0	24	0.90	1.00	1.059	$0
1c	General Office - 20% OPEN OFFICE		71.0%	0	27	0.90	1.00	1.059	$0
2	ENHANCED OFFICE (Courthouse only)		70.0%	0	0	0.90	1.00	1.059	$0
3	GENERAL STORAGE		81.0%	0	12	0.90	1.00	1.059	$0
7	LABORATORY (DRY)		58.0%	0	247	0.90	1.00	1.059	$0
8	LABORATORY (WET)		58.0%	0	388	0.90	1.00	1.059	$0
9	HOLDING CELL / DETENTION		74.0%	0	0	0.90	1.00	1.059	$0
10	PRIVATE TOILETS		61.0%	0	244	0.90	1.00	1.059	$0
11	CLINIC/HEALTH UNITS		61.0%	0	84	0.90	1.00	1.059	$0
12	PHYSICAL FITNESS		61.0%	0	52	0.90	1.00	1.059	$0
13	CHILD CARE		61.0%	0	70	0.90	1.00	1.059	$0
14	CONFERENCE/ CLASSROOM		65.0%	0	34	0.90	1.00	1.059	$0
15	AUDITORIUM		65.0%	0	123	0.90	1.00	1.059	$0
16	LIBRARIES		70.0%	0	25	0.90	1.00	1.059	$0
17	ADP (MAINFRAME)		65.0%	0	198	0.90	1.00	1.059	$0
18	ADP (HIGH PC)		74.0%	0	99	0.90	1.00	1.059	$0
19	FIRING RANGE		74.0%	0	0	0.90	1.00	1.059	$0
20	COURTROOM (Courthouse only)		65.0%	0	0	0.90	1.00	1.059	$0
21	JUDICIAL HEARING		65.0%	0	266	0.90	1.00	1.059	$0
22	JUDICIAL CHAMBERS (Courthouse only)		65.0%	0	0	0.90	1.00	1.059	$0
23	LIGHT INDUSTRIAL		89.0%	0	25	0.90	1.00	1.059	$0
24	WAREHOUSE (only Utility Bldg)		89.0%	0	0	0.90	1.00	1.059	$0
25	JOINT USE, RETAIL		68.0%	0	35	0.90	1.00	1.059	$0
26	FOOD SERVICE (CAFETERIA)		68.0%	0	117	0.90	1.00	1.059	$0
	Other (special application of unusual types)		100.0%	0		0.90	1.00	1.059	$0
TOTAL - TENANT IMPROVEMENT COSTS									$0
TOTAL BUILDING STRUCTURE		USF:		GSF :	Shell Cost/GSF:				
(MARKET) BLDG. SHELL AND CORE COST		0		0	166	0.90	1.00	1.059	$0
Progressive and Raised Floor				0	19.46	0.90	1.00	1.059	$0
Security for Level C				0	35.63	0.90	1.00	1.059	$0
TOTAL BUILDING STRUCTURE:									$0
TOTAL BUILDING SHELL AND TI COST:									$0
PARKING COSTS:		SPACES	GSF/SPACE	GSF	Cost Factor - $/GSF				
4	INSIDE PARKING (BASEMENT)		400	0	90	0.90	1.00	1.059	$0
5	OUTSIDE PARKING (STRUCTURED)		400	0	54	0.90	1.00	1.059	$0
6	OUTSIDE PARKING (SURFACE)		350	0	12	0.90	1.00	1.059	$0
	Parking COST								$0
	Structured Parking Addnl. Cost: Security-Parking Level C	N/A	N/A	0	0.67	0.90	1.00	1.059	$0
TOTAL - PARKING COSTS									$0
SPECIAL REQUIREMENTS COSTS									
I. Addnl. Tenant Items Amortized in Rent					GSF or quantity $/GSF or Lump Sum				
	Addnl. Security Level C or higher								$0
	Other - Reserved for future technology	N/A	N/A						$0
	Addnl. No Market Comparables - SUBTOTAL:								$0
II. Agency Special Reqts. (Generally RWA)			Item	Unit	Unit Cost				
	Addnl. Requirements (e.g. Telecom, redundant systems)					0.90	1.00	1.059	$0
	Facility Specific (e.g. Agency Tunnels)					0.90	1.00	1.059	$0
	Other					0.90	1.00	1.059	$0
	Agency Special - Subtotal:								$0
III. Special Project Requirements			Item	Unit	Unit Cost				
	Project or Site unique reqts.					0.90	1.00	1.059	$0
	Large site impts. Costs					0.90	1.00	1.059	$0
	Other					0.90	1.00	1.059	$0
	Project or Site Specific Subtotal:								$0
ESTIMATED CONSTRUCTION COST (ECC):									$0

RESULTS: PROJECT COST ESTIMATE - For Input into Occupancy Agreements

Market Shell ECC Cost: (Building and Parking, including raised floor)			0
Tenant and Amortized Rent Items			0
Tenant Improvement Costs (total of Fitout, SRCI, and Agency Specials)		0	
Security Items (progressive collaspe, blast, and physical security)		0	
Special Project Requirements (not amortized in rent)			0
[Note: TI items need be separated for amortization in rent for respective specific amortization period]			
TOTAL PROJECT ECC	**BUILDING COST/GSF w/o Parking:**	#DIV/0!	$0

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figure 3. example of a project cost summary

GSA

PROJECT COST SUMMARY

Area (GSF) = 700,000

PROJECT TITLE

LOCATION: CITY, STATE

NEW CONSTRUCTION OR R&A Repair and Alterations

	UNIFORMAT SYSTEM ELEMENTS	SUBTOTAL COST	ECC COST	ECC COST/GSF
A11	Foundations	$3,200,000	$4,862,327	$6.95
A12	Basement Construction	$200	$304	$0.00
A21	Superstructure	$800	$1,216	$0.00
B11	Exterior Walls	$0	$0	$0.00
B12	Exterior Glazing & Doors	$1,962,000	$2,981,214	$4.26
B13	Roofing	$7,640,000	$11,608,807	$16.58
C11	Partitions, Doors & Specialties	$1,270,000	$1,929,736	$2.76
C12	Access/Platform Floors	$295,000	$448,246	$0.64
C13	Interior Finishes	$2,040,000	$3,099,734	$4.43
D11	Conveyance Systems	$900	$1,368	$0.00
D21	Plumbing	$490,000	$744,544	$1.06
D22	HVAC	$3,890,000	$5,910,767	$8.44
D31	Fire Protection/Alarm	$600,000	$911,686	$1.30
D41	Electrical Service, Distribution & Emerg. Power	$1,050,150	$1,595,679	$2.28
D42	Lighting and Branch Wiring	$1,720,000	$2,613,501	$3.73
D43	Communications, Security & Other Electrical Systems	$400,000	$607,791	$0.87
E11	Equipment & Furnishings	$800,000	$1,215,582	$1.74
F11	Special Construction	$300	$456	$0.00
F12	Building Demolition and Abatement	$100,000	$151,948	$0.22
G11	Sitework - Building Related	$1,215,000	$1,846,165	$2.64
G12	Other Sitework - Project Related	$2,000,000	$3,038,955	$4.34
	Sub Total A	$28,674,350	$43,570,024	$62.24

Contingency - Unknown Site/Design:	10%	$2,867,435		$4.10
Subtotal	B	$31,541,785		$45.06
General Conditions and Profit:	20% C	$6,308,357		$9.01
Current Estimated Construction Award Cost	B + C	$37,850,142		$54.07
Escalation to Award Date	7.1% D	$2,680,113		$3.83
Estimated Construction Cost at Award	E			
ECCA	B + C + D	$40,530,255		$57.90
Construction Contingency & Art	7.5% F	$3,039,769		$4.34
Estimated Construction Cost				
ECC	E + F	$43,570,024		$62.24
EDRC		$4,008,442		$5.73
EMIC		$1,742,801		$2.49
ESC (Est. Site Cost)		$0		$0.00
ETPC	G	$49,321,268		$70.46

[Link to Location Factors & Escalation] **Escalation Rate Used:** 2.0%

Current Date: 10/18/02 **Estimate Escalation Date:** 04/01/06

Project Development Cost Estimating Requirements

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figure 4. PCE cost-estimate detail excerpt for a concept-design estimate

A11 Foundations

Design Criteria	Soil Capacity (KSF) 3300	Bay Size 20X20	Total No. Floors 4	Seismic Risk 1	
General Description:					

WI Code	Item Description	Quantity	Unit Measurement	Unit Cost	Totals (W/O Markup)	Totals (ECCA)
	Seismic -Vibration Isolation (see seismic study date / /)	1	LS	$3,200,000.00	$3,200,000	$4,523,095
				Total A11	$3,200,000	$4,523,095

A12 Basement Construction

Design Criteria	Water Level 20	Floors Below Grade 2			
General Description:					

WI Code	Item Description	Quantity	Unit Measurement	Unit Cost	Totals (W/O Markup)	Totals (ECCA)
1		1		$200.00	$200	$283
				Total A12	$200	$283

A21 Superstructure

Design Criteria	High Ceiling/Wide-Bay SF	Floor Load Rating	Floor Height	Atrium SF	
General Description:					

WI Code	Item Description	Quantity	Unit Measurement	Unit Cost	Totals (W/O Markup)	Totals (ECCA)

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figure 5. uniformat design-development estimate report excerpt

Project Name: *United States Courthouse*
Project Phase: *Design Development*
Estimator Name:

GSA

GSA DETAIL REPORT

Report Total: **$60,022,044**

U. S. General Services Administration

LEVEL	QTY	Hrs	Crew/ProdFact	LABOR	MATERIAL	EQUIPMENT	OTHERS	TOTAL
Estimate Tree Structure Rollups								
CORE Core/Shell								**$14,438,714**
A Structure								**$14,438,714**
A1 Substructure								**$2,483,849**
A11 Foundations								**$832,593**
A111 Standard Foundations								**$228,614**
A111 2 Column Foundations & Pile Caps								**$228,614**
A111 206 9'0" X 3'0" X 4'6" Spr Ftg PC2								
031580150 Subcontractor: CO	U.C. per M2 -->	0.71	ACARC1	20.746	9.075			29.821
Forms in place, footings, continuous wall, 4 use	240	170	1.000	4978.96	$2,178	$0	$0	$7,157
032170600 Subcontractor: CO	U.C. per MT -->	15.327	SIWRROD	522.624	671.605			1194.229
Reinforcing in place, slab on grade, #3 to #7	8.38	128	1.000	4379.59	$5,628	$0	$0	$10,008
033722400 Subcontractor: CO	U.C. per M3 -->	1.142	ULABC6	27.858		1.408		29.266
Placing conc, footings, spread, under 1 CY, direct chute	89.52	102	1.000	2493.83	$0	$126	$0	$2,620
033960150 Subcontractor: CO	U.C. per M2 -->	0.137	ACMACEF	3.812				3.812
Finishing floors, monolithic, broom finish	235.71	32	1.000	898.6	$0	$0	$0	$899
051080150 Subcontractor: CO	U.C. per EA -->	0.4	ACARCAR	12.445	3.045			15.49
Anchor bolts, J-type, incl nut, washer, 3/4" dia, 18" long	144	58	1.000	1792.07	$438	$0	$0	$2,231
033260150 Subcontractor: CO	U.C. per M3 -->			0	97.553			97.553
Concrete, ready mix, regular weight 1:3:5 mix 3000 psi	89.52		1.000	0	$8,733	$0	$0	$8,733
Subtotal				$19,403	$16,978	$352	$0	$36,733
1st Layer Markups assigned to Detail Items				$3,692	$3,230	$67	$0	$6,989
2nd Layer Branch Markups from AA				$3,811	$3,334	$69	$0	$7,214
3rd Layer Level Markups				$4,647	$4,066	$84	$0	$8,797
TOTAL A111 206 9'0" X 3'0" X 4'6" Spr Ftg PC2		**696**		**$31,553**	**$27,608**	**$573**	**$0**	**$59,733**
24.00 EA	*Level Unit Cost-->*			*$1,314.69*	*$1,150.33*	*$23.87*		*$2,488.89*

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figure 6. CSI masterformat design-development estimate report excerpt

Project Name: *United States Courthouse*
Project Phase: *Design Development*
Estimator Name:

GSA DETAIL REPORT BY CSI

Report Total: **$60,022,044**

U. S. General Services Administration

DESCRIPTION		QTY	Hrs	Crew	LABOR	MATERIAL	EQUIPMENT	OTHERS	TOTAL
03 Concrete									
031580150	Subcontractor: CO	U.C. per M2 -->	0.71	ACARC1	20.748	9.077			29.824
Forms in place, footings, continuous wall, 4 use		44.59	32		$925	$405	$0	$0	$1,330
032170600	Subcontractor: CO	U.C. per MT -->	15.103	SIWRROD	515.034	661.355			1176.39
Reinforcing in place, slab on grade, #3 to #7		0.29	4		$149	$192	$0	$0	$341
033722400	Subcontractor: CO	U.C. per M3 -->	1.141	ULABC6	27.843		1.407		29.251
Placing conc, footings, spread, under 1 CY, direct chute		9.18	10		$256	$0	$13	$0	$269
033960150	Subcontractor: CO	U.C. per M2 -->	0.137	ACMACEF	3.812				3.812
Finishing floors, monolithic, broom finish		24.55	3		$94	$0	$0	$0	$94
033260150	Subcontractor: CO	U.C. per M3 -->				97.51			97.51
Concrete, ready mix, regular weight 1:3:5 mix 3000 psi		9.18			$0	$895	$0	$0	$895
031580150	Subcontractor: CO	U.C. per M2 -->	0.71	ACARC1	20.746	9.075			29.821
Forms in place, footings, continuous wall, 4 use		240	170		$4,979	$2,178	$0	$0	$7,157
032170600	Subcontractor: CO	U.C. per MT -->	15.327	SIWRROD	522.624	671.605			1194.229
Reinforcing in place, slab on grade, #3 to #7		8.38	128		$4,380	$5,628	$0	$0	$10,008
033722400	Subcontractor: CO	U.C. per M3 -->	1.142	ULABC6	27.858		1.408		29.266
Placing conc, footings, spread, under 1 CY, direct chute		89.52	102		$2,494	$0	$126	$0	$2,620
033960150	Subcontractor: CO	U.C. per M2 -->	0.137	ACMACEF	3.812				3.812
Finishing floors, monolithic, broom finish		235.71	32		$899	$0	$0	$0	$899
033260150	Subcontractor: CO	U.C. per M3 -->				97.553			97.553
Concrete, ready mix, regular weight 1:3:5 mix 3000 psi		89.52			$0	$8,733	$0	$0	$8,733
031822100	Subcontractor: CO	U.C. per M2 -->	1.216	ACARC2	36.482	12.016			48.498
Forms in place, walls, job built plyform, to 8' high, 3 use,		174.21	212		$6,355	$2,093	$0	$0	$8,449
032170550	Subcontractor: CO	U.C. per MT -->	9.797	SIWRROD	334.049	635.734			969.784
Reinforcing in place, footings, #8 to #18		4.27	42		$1,426	$2,715	$0	$0	$4,141
033722400	Subcontractor: CO	U.C. per M3 -->	1.142	ULABC6	27.859		1.408		29.267
Placing conc, footings, spread, under 1 CY, direct chute		77.16	88		$2,150	$0	$109	$0	$2,258

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2

prospectus-level projects product/deliverable requirements

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1 preliminary planning and programming project requirements

This chapter deals with GSA's requirements for cost estimating during the design and construction phases of a project. It defines and describes the scope and level of detail required for each potential deliverable and product required, in the context of each phase of the project. For information on the feasibility study and program development study (PDS) phases of a capital project, see GSA's Project Planning Guide, available in PDF format at www.gsa.gov, which is briefly described below.

1 project planning guide

GSA developed the Project Planning Guide to assist participants in the Capital Program development process in evaluating, developing, and implementing Federal facilities projects. The guide outlines the project delivery process and offers some keys to success.

The guide is divided into five sections and several appendices:

- **Overview of GSA's Capital Program –** Outlines GSA's basic capital program development-planning process and the fundamental roles of the feasibility study and the program development study.
- **What's Important and When –** Discusses GSA's primary business and program goals as presented in the feasibility study and the PDS.
- **Pre-Planning Phase –** Describes the role played by GSA's daily management of facility requirements, customer needs, and portfolio planning in the project development process.
- **Feasibility Study Phase –** Outlines the process for beginning, conducting, and completing a feasibility study, a process that ends with the submission of the prospectus package for site and design funding. This section describes the process, deliverables, and keys to successful development of a sound project and site/design-funding request.
- **Program Development Study (PDS) Phase –** Outlines the process for evaluating the feasibility study as the foundation for the PDS, digesting new information, refining the project, and directing the project's design and construction strategy. This section

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discusses the process, deliverables, and keys to successfully supporting a sound design start and construction-funding request.

- **Appendices –** Include process checklists, a glossary, worksheets on team roles, and resources for more information.

2 level and format requirements

Refer to the concept design phase estimating requirements in Table 1, Chapter 1 for the type of estimate required at the preliminary and planning phases.

See Section 2.2 of this chapter for a discussion of Market Surveys required during the Planning phase.

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2 design and construction phase cost estimating

1 basic concept: for all phases

Any design-submission deliverables may include, but are not limited to:

- cost estimates and reports
- market survey
- cost growth reports
- space-type cost analysis
- life-cycle cost analysis
- value engineering studies
- independent estimate reviews
- budget analysis
- construction award bid analysis
- database information preparation
- construction modifications & claims analysis
- value engineering change proposals analysis (VECPS)
- risk analysis reports

The purpose is to establish a cost management system that tracks budgets established based on the prospectus in a Uniformat Level II, comparing cost growth and cost modifications for all Uniformat Level II elements through design, procurement, construction and project completion.

As a general rule, early in the process Uniformat is the primary estimate format, although CSI MasterFormat may be selected on a project-by-project basis. GSA usually requires work items on major renovation projects or when the project is to be separated into major components or subbuildings. The space-type summary is usually required at various project phases. A Cost

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Growth Report is required at all submissions, and a Life-Cycle Cost Analysis is required through design development and potentially during construction documents phases for significant items.

An independent party hired by GSA conducts a value engineering (VE) workshop, and VE is provided in accordance with the design submissions requirements of P100. GSA may elect to conduct an additional VE study at the construction documents phase on a project-by-project basis.

When GSA completes an internal review of the estimate, or reconciles an independent estimate, and at the conclusion of the VE study, a final estimate is submitted.

2 cost estimates and summaries

summary of format requirements

Table 1 in Chapter 1 displays the type of estimate to be prepared at the various design stages.

preliminary concepts

Pre-concept estimating generally requires the preparation of estimates on three competing basic schemes/concepts, allowing GSA to select its preferred scheme.

For each scheme, the A-E's estimator prepares separate estimates for phased work, multistructures, and or bid alternates/options. The A-E also submits estimates for concept design analyses/studies as specified in design-programming directives and/or design-criteria references, and a comparison sheet for multiple concepts/schemes.

concept design

These estimating requirements apply to any concept-level submission. If a project's design requires multiple concept submissions, each concept submission must be supported by the estimates described here.

Estimators must calculate quantities for appropriate systems or apply parameters to appropriate building areas. Applied unit costs may be based on combined material and labor costs. Concept estimates must match the estimate format of the budget estimate to facilitate cost-breakdown comparisons. For prospectus work, this typically requires that Uniformat Level 3 estimates be prepared, delineating cost-element categories shown in

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Appendix A.1: Uniformat Level 1-5 Cost Elements. However, certain projects (such as nonprospectus repair and alteration work) may have had their budgetary estimates done in work items or CSI MasterFormat.

Backup worksheets must support detailed estimates, covering all cost-sensitive project data and defining all major assumptions made. Backup estimating data and quantity-survey information may be in any format, grouped under appropriate format classification headings.

The A-E is required to provide the Independent Government Estimator advance copies of all concept plans and documentation early enough to allow for the preparation of required estimates as part of the concept design submission. Advance documents must include floor plans, elevations, sections, and perspective views in sufficient detail to allow a realistic parametric cost assessment. In addition, the A-E provides:

- A statement on the conceptual approach and general features for each major building system, including an itemized listing of anticipated types and approximate capacities/sizes. Block loads for structural, mechanical, and electrical systems.
- Quality levels of major materials and systems to be used, including any special design programming or code requirements relating to fire protection, HVAC, plumbing, electrical, and structural components.
- A copy of the design program to ensure that the estimator understands goals, objectives, and design directives that may not yet be reflected in concept design submission documents.

To ensure that the project is developing on-budget, the A-E's estimator must also submit a list of cost-saving items that collectively would reduce the project's cost to approximately 10 percent below budget.

The Independent Government Estimator is required to prepare an ECCA summary sheet to Uniformat Level 2, representing all project and estimate data. Each ECCA summary must compare the design cost breakdown with any budget cost values escalated to the midpoint of construction, including per-square-meter or square-foot calculations of overall project cost.

design development

To support design development estimating, the A-E provides the Independent Government Estimator the documentation necessary to describe proposed types, quality, and quantities

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of building features, systems, equipment, and materials. Project scheduling must allow for the early delivery of advance copies so that the required estimates can be included with the design development submissions.

As a separate cost-saving task, the A-E's estimator must also submit a list of cost-saving items that collectively would reduce the project's cost to at least 10 percent below budget.

The independent government estimator prepares an ECCA estimate for the base bid and separate estimates for phased work, multistructures, and/or bid alternates or options. An overall project ECCA estimate will also be prepared, incorporating all project segments, for analyses or studies specified in design-programming directives and design-criteria references.

Backup worksheets are required to support the detailed estimates, which represent all cost-sensitive project data and define all major assumptions. Backup estimating data and quantity-survey information may be in any format, but must be grouped under appropriate format classification headings. The Estimate Tracking Sheet and Elemental Cost Summary forms must be submitted, including per-square-meter or square-foot calculations.

construction documents

Estimating requirements given here apply to all required construction documents submissions–75%, 90%, and 100% CDs–unless specified as applicable only to final construction documents.

If the overall project's construction documents estimate exceeds the budget, the A-E is again required to propose cost-saving measures to bring the project within budget, at its own expense. To avoid over-budget construction bids, the A-E's estimator must identify at least five construction cost-saving items, formulated as bid alternates, to bring the project's estimate at least 10 percent below budget.

The Independent Government Estimator prepares an ECCA estimate for the base bid, including separate estimates for phased work, multistructures, and/or bid alternates or options with any addenda. An overall project ECCA estimate is also prepared, incorporating all project segments, for analyses or studies, as specified in design-programming directives and design-criteria references.

ECCA estimates are developed using MasterFormat, with detailed material and labor breakdown and appropriate subdivisions as shown in Appendix A. MasterFormat estimates

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are also summarized in Uniformat Level 3 estimates and work items. For both formats, backup worksheet estimates are arranged by cost categories, with a summary sheet combining all category costs. The 90% and 100% Construction Document estimates are prepared at the same level as required for the contractor performing the construction work, in accordance with the FAR.

Backup worksheets are required to support the detailed estimates, which represent all cost-sensitive project data and define all major assumptions. Backup estimating data and quantity-survey information may be in any format, but must be grouped under appropriate format classification headings.

Submissions must follow the formats in Appendix A and provide per-square-meter or square-foot calculations.

MasterFormat cost estimates are prepared to an equivalent of Uniformat Level 5, with unit prices separately representing material and labor. Cost-element lump-sum estimating for either format system may be used only by permission of GSA. If cost elements are transferred from previous submission levels, quantity values must be verified and unit costs adjusted to reflect escalation to the construction documents submission date. Allowances for design contingencies, general conditions and profit, bonds, and construction escalation are added to calculate the ECCA amount.

3 market survey

GSA requires that the design A-E prepare a Market Survey for every project and for each submission indicated in the *Tasking Matrix* (Table 3 in Chapter 3), and described below.

A Market Survey explores all factors influencing construction costs relevant to the current stage of design. The Market Survey preparer gathers pertinent data by interviewing local firms having knowledge of construction in the area. Possible sources include, but are not limited to, general contractors and subcontractors, builders' associations, local government officials, architectural and engineering firms, builders-exchange and construction-reporting firms, and bankers and commercial mortgage firms. Particular emphasis must be placed on ascertaining the availability of mechanical and electrical subcontractors and the associated skilled labor trades. The Market Survey must reflect recent and expected bidding conditions that may influence the cost of construction and list all sources of data.

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The person who prepares the Market Survey visits the site and local market areas to determine the following:

- Availability and shipping origin of major project materials.
- Capability of local fabricators, precast yards, concrete plants, etc.
- Availability of labor crafts necessary for the project, especially skilled labor.
- Availability of special erection equipment.
- Anticipated capacity of local contractors during bidding period.
- Special conditions that might influence bidding.
- Local escalation experience.
- Site accessibility.
- Batch plant options for concrete and asphalt.
- Applicable local taxes or gross receipts taxes where the project will be constructed.
- Costs of remoteness, such as labor for lost time, housing allowance, or requirement for onsite housing or material delivery costs.

The Market Survey also includes:

- Who was contacted (person, firm, phone, e-mail).
- Where they are located.
- When contact was made.
- Why they were contacted.
- What information was obtained.
- A summary assessment with specific recommendations.

concept design

The A-E conducts a Market Survey as described above and as required by the *Tasking Matrix* (Table 3 in Chapter 3).

design development

During the design development phase, the concept design phase Market Survey is updated, verified, and refined to include all changes necessary to reflect new information

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on local market conditions, such as regional building booms and other potential major projects with comparable construction schedules. These updated Market Surveys are submitted as required by the *Tasking Matrix* (Table 3 in Chapter 3).

construction documents

At the 90% and 100% construction documents phases, the survey process intensifies, and all data gathered is reported. The report clearly depicts the likely bidding market, other projects likely to be on the market, and how hungry the market is likely to be at the scheduled time of bid. The final estimate must incorporate the survey's conclusions and reflect the current bidding climate, including information on the expected number of bidders for general and subcontractors, the amount of competition among contractors, and other conditions that may have an impact on the construction project.

Note that in this phase the project's construction manager as agent will be promoting the project within the construction industry to develop interest for good competition.

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4 cost growth report

GSA uses the Cost Growth Report (CGR) to track cost growth at each design phase by comparison with the project budget. This is done by comparing the prior submission's Uniformat Level 2 costs for each cost element with the current submission's Level 2 costs, and identifying the cause of large variances. The A-E's estimator prepares this report for each design-phase submission, using GSA Form 3474, Project Cost Comparison Summary. See *Appendix B: Estimate Tracking Sheets* for a sample of the form.

preliminary concept design

Each design concept considered during this submission must be within the project's overall construction budget. The A-E will be required to redesign any concept design scheme not within the budget to bring it within budget constraints at its own expense.

For each concept scheme, the A-E's estimator lists cost-saving ideas that collectively will bring project costs within budget. The Independent Government Estimator validates these cost-saving measures by preparing an order of magnitude estimate of savings for each of the A-E's proposed measures. The A-E submits its Cost Growth Report on GSA Form 3474.

final concept design, design development, and construction documents

If the estimates for the concept design and design development submissions exceed the project budget, the A-E is required, at its own expense, to propose cost-saving measures to bring the project within budget. Just as described above for the preliminary concept design's CGR, the A-E summarizes the final concept design estimate on GSA Form 3474 and compares it to the project budget. This report is supported with cost estimates for each proposed cost-saving item. The independent government estimator validates these cost-saving measures as outlined in the paragraph above for the preliminary concept design phase.

If the estimate for 90% construction documents exceeds the project budget, the A-E is required to propose cost reductions in the form of bid alternates sufficient to ensure receipt of bids within budget on the scheduled bid date. The Independent Government Estimator validates these cost-saving measures, as indicated in the paragraph above, for the concept design and design development submissions.

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5 space-type cost analysis

As part of a new construction-project cost-estimate submission, the Independent Government Estimator estimates construction costs by space types by:

- Identifying all project space types, considering at least those categories listed in the GCCRG.
- Separately itemizing special costs outside normal requirements of listed space types, addressing at least those listed in the Appendix as Special Costs Excluded.

6 life-cycle cost analysis

Life-cycle costing (LCC) is the development of all significant costs of acquiring, owning, and using an item, system, or service over a specified length of time. The time period used is the projected effective useful life of the facility, and its determination includes consideration of functional obsolescence of major components or systems. It is used to compare and evaluate the total costs of competing solutions based on the anticipated life of the facility or product to be acquired.

The value of an item includes not only consideration of the costs of acquiring it, but also the costs of using it or the cost of performance for as long as the user needs it. Costs of repairs, operations, preventive maintenance, logistic support utilities, depreciation, and replacement, in addition to capital cost, all contribute to the total cost of a product to a user.

For further guidance refer to Facilities Standards for the Public Buildings Service (PBS P100) and GSA Value Engineering Guide (PBS-PQ250 and 251).

7 value engineering studies

Value engineering (VE) is conducted during the concept design and design development phases to explore cost saving/value-enhancing options before selecting final design features. GSA may conduct additional studies during the 75% and 90% construction documents phases, and for 100% construction documents if deemed necessary due to technical or budgetary constraints. A single study may be appropriate on smaller, less complex projects. The basic approach is to consider macro level issues at concept design and more micro level issues at design development.

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In general, decisions made as a result of the first study will not be reconsidered in the second study unless significant new information is available. Furthermore, design changes implemented as a result of the studies will generally be considered within the bounds of the normal design process. Exceptions to this will be considered on a case-by-case basis.

baseline prospectus

Translate the approved prospectus line items into Uniformat Level II to be used as a basis of comparison and control throughout the project lifecycle.

design concept

For major capital construction and certain other projects, a VE study will be included as a requirement for the concept design submissions. GSA contracts with the VE consultant directly, rather than through the A-E, but the A-E participates in and reviews VE proposals to address project feasibility and adherence to design programming requirements. The A-E's cost estimator must be available to answer the VE consultant's questions concerning the origin of A-E concept design estimate unit costs and interpretation of work-element descriptions. Once GSA determines what VE consultant's recommendations are to be used, the design A-E must incorporate these recommendations into design documents as part of the scope of work.

For new construction projects, the first study at concept design is intended to review basic design decisions that pertain to areas such as:

- Siting and building orientation
- Building form, shape, and massing
- Layout
- Proportion of occupiable area to gross area
- Design criteria
- Building systems selection options
- Space program options
- Building space/volume parameters
- Vertical and horizontal circulation
- Major mechanical-electrical-plumbing (MEP) considerations
- Overall energy considerations

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- Site access/egress
- Overall phasing/scheduling plans
- Subsoil conditions and geological data
- Utility availability

design development

The second value engineering study at the design development phase focuses on more detailed design decisions including:

- Specific building system design
- Specification and performance requirements
- Proposed design details
- Layout options within overall building geometry
- Specific MEP system selections
- Site paving, grading, and utilities
- Phasing and scheduling plans
- Major constructability issues

The A-E must incorporate the VE consultants' recommendations approved by GSA into the design as part of the scope of work.

8 budget analysis

An ECCA summary is prepared at each milestone, using the formats in Appendix B, to compare the current design-cost breakdown with the previous submission's costs or the budget, with all values escalated to the current submission date. The summary must include allowances for design contingencies, general conditions and profit, and construction escalation and yield an overall project cost per square meter or square foot.

9 requirements for bid submission

Procurement officials ensure that the bid packages include a lump-sum bid requirement for each bid option, alternate, and unit-pricing item.

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10 construction-award bid analysis for prospectus-level projects

bid analysis

After the construction contract is awarded, the Independent Government Estimator analyzes the bid cost, using all available cost data, including the contractor's breakdown of costs submitted as the payment schedule for monthly progress payments for each trade or subcontract.

The Independent Government Estimator reviews the final cost estimate in Uniformat Level 3 and revises it to align with the actual bid price. The adjusted cost data is provided to GSA in formats found in Appendices C and D.

After completion of the above cost analysis, the estimator uses a format similar to that found in Appendix D to provide a synopsis of the project space plan, efficiency, scope, and basic design parameter measures.

GSA will provide the A-E and the Independent Government Estimator the following data:

- The abstract of bids received for the procurement with an indication of the award amount and the bids offered by all contractors.
- Any breakdown or verification of contractor or subcontractor prices in the course of contract award.
- The contract's approved schedule of prices to be used for progress payments.

11 cost database

GSA uses cost data collected for similar building types to develop space-type cost benchmark tools to improve budget development for future projects. Therefore, GSA's regional project manager provides cost estimates, reconciled estimates, bid analysis, and construction cost reconciling back to the bid estimate to the regional cost advocate or Central Office cost-management staff to compile this data into GSA's cost database.

12 construction modifications and claims analysis

This section provides information, procedures, and guidance for estimating and processing construction contract modifications. Contract modifications include change orders, contractor

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claims, formal resolution of constructive changes, the impact on unchanged work, suspension of work, and time extension.

An independent estimate for contract modifications requested by the Government must be prepared before the proposal request is sent to the contractor. The Independent Government Estimator must be provided the same documents concerning the proposed modification that the contractor will be provided, or have access to them.

The IGE prepared in response to a contractor-initiated proposal must be prepared to the same level of detail as the contractor's proposal and be based on the scope of the modification. A copy of the contractor's proposal with the costs deleted can be used.

Regulations require an IGE for any procurement of $25,000 or more. If the Contracting Officer determines it is necessary, he or she may require estimates of lesser amounts. In the case of contract modifications, the $25,000 trigger figure is the sum of the absolute values of decreases and increases. For example, a modification resulting in decreases of $10,000 and increases of $16,000 would sum to the absolute value of $26,000, and an IGE would be required. Adjustments in methods or formats for the prime purpose of escaping this requirement are prohibited.

For all negotiated procurements, including contract modifications, regulations state that award must not be made unless:

- The final IGE equals or exceeds the negotiated price, or
- In the case of reductions, which must be considered separately from increases, the negotiated credit is equal to or exceeds the final IGE, and
- The correct final IGE is included in the contract file, supplemented by a complete statement justifying the award at a cost different from the estimate, and adequate for subsequent review.

The overall objective of a contract modification negotiation is to reach an agreement with the contractor that is in the best interest of the Government. The lowest possible price does not always meet this objective nor would a "generous" price, if that price offers more payment than necessary to include sufficient incentive. The negotiation team strives for some intermediate point, which is generally regarded as the lowest reasonable price – the amount at the bottom of the price range that the negotiator considers to be fair and reasonable.

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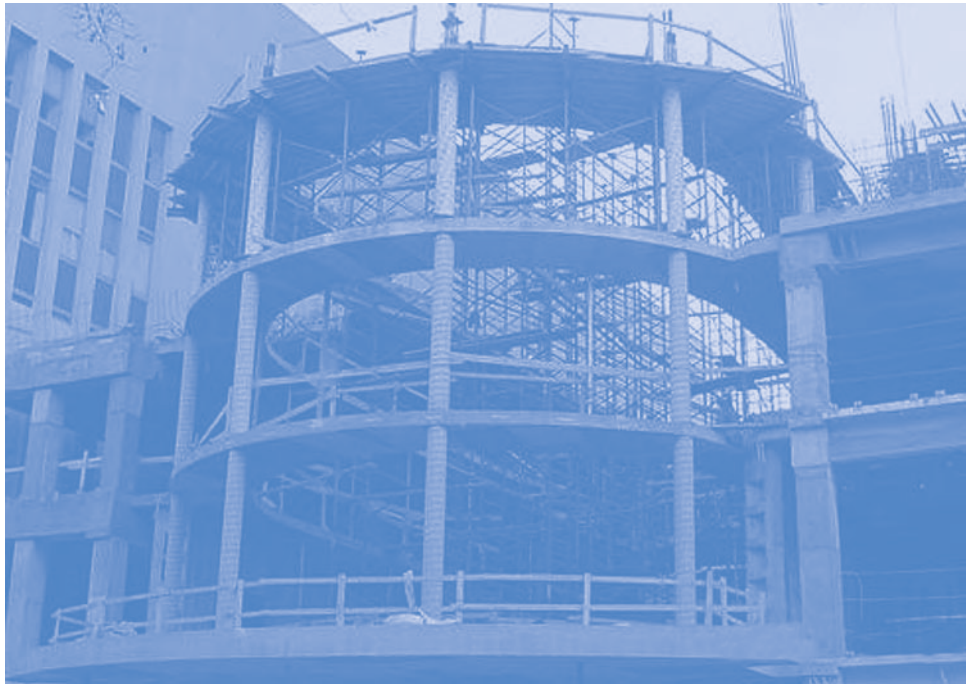
To arrive at this price the negotiator must at least partially rely upon an IGE based on a detailed analysis of the change in requirements and existing job conditions. For the most part, the estimate must be similar to, and take into account, those same conditions and elements occurring in the contract, as each applies to the change order scope. In lieu of better data, the IGE for bid evaluation may be used for assistance. The Independent Government Estimator must understand the scope of the change and prepare an accurate quantity takeoff for each direct item of change, using labor, material, and equipment costs and sequentially applying appropriate overhead, profit, and bond costs. Since this formal, approved IGE is used to evaluate the reasonableness of the contractor's proposal, it must be prepared on a comparable and realistic basis by an estimator familiar with the modification and claim processes. The estimator must review the costs presented in the contractor's proposal for accuracy, reasonableness, and allowableness. Of those costs found allowable (see FAR 31.2), each must be further reviewed for applicability to the requested modification.



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The Independent Government Estimator must:

- Review the change documents and become familiar with the requirements of the changed work.
- Determine the status of construction and how the changed work will fit into the construction schedule.
- Use methods, capabilities, and labor rates matching those of the contractor performing the work.
- Price each item at rates in effect at the time the changed work will be done.
- Attempt to agree with the contractor on scope and estimate structure before preparing the IGE.
- Unless otherwise agreed, use MasterFormat with a level of detail used in the contract documents.
- Use the same level of detail the Government would use if it were competing for the award.
- Compute the net cost or credit by subtracting the total of the original work from the total of the revised work.
- Clearly and adequately describe and identify schedule-related and impact-related costs as a separate part of each estimate.
- Prepare the estimate in a timely manner.

impact cost considerations

When a modification is directed, settlement includes not only the cost and time change of the work directly affected but also the cost and time impact on the unmodified work.

Generally the contractor first presents impact costs as part of the proposal's "claimed" impact costs. The Independent Government Estimator looks for offsetting costs to reduce the impact to the Government. The contractor is required to submit documentation to support the claimed cost, such as narrative calculations and planned rescheduling. To determine the extent of the impact, the approved cost and resource-loaded schedule furnished by the contractor must be developed to reflect actual construction as accurately as possible. The modification work is superimposed on the original schedule so as to

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minimize delay under the given requirements. GSA reviews and accepts, or requests modifications to, the revised schedule.

The Independent Government Estimator classifies each impact cost claimed as either factual or judgmental. Factual costs are fixed and established and can be determined directly from records, such as rental or wage rate agreements or purchase documents.

Once the item has been determined valid as a factual impact, the item cost may be directly calculated. The amount of cost change is either stated on the certification document or can be determined from the scheduled time change of the construction progress plan.

Examples of factual impact costs are:

- Escalation of material prices.
- Escalation of labor wage rates.
- Change in equipment rates.
- Increase for extending the storage period for materials and equipment.
- Increase for extending the contract for labor and subsistence.
- Increase for a longer period of direct onsite overhead personnel, materials, and utilities.
- Increase for a longer period of overhead and project office services.

The Independent Government Estimator identifies judgmental impact costs, which include those that are dependent on variable factors such as performance, efficiency, or methodology and cannot be stated factually prior to actual accomplishment. The contractor's proposal must provide clear and credible support for all judgmental impact costs.

Examples of judgmental impact costs are:

- Change of efficiency resulting from rescheduling.
- Loss of labor efficiency resulting from longer work hours.
- Loss of efficiency caused by disruption of existing orderly processes and procedures.
- Loss of efficiency during rescheduling of manpower.
- Inefficiency incurred from resubmittal of shop drawings, sample materials, etc.

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The Independent Government Estimator weighs any premium costs allowed in the base-contract change proposal against any additional impact costs requested. For example, the Mechanical Contractors Association's productivity rates can be higher than those used in competitively bid work. The estimator must avoid including the contractor's questionable impact costs in the initial Government estimate unless each has been deemed justifiable. Any offsets to impact costs from deleted work may increase the contractor's efficiency and productivity, resulting in a credit to GSA.

estimator's support during negotiations

After the IGE for the modification has been completed, approved, and delivered to the Contracting Officer, the Independent Government Estimator continues to support the negotiations, as directed by the negotiator. The estimator must become thoroughly familiar with negotiating requirements and techniques before participating as part of a negotiating team. He or she marks all estimates "FOR OFFICIAL USE ONLY" to preserve balance during negotiations. The overall amount must not be disclosed under any circumstances prior to award.

13 value-engineering change proposals (VECP's)

VECPs may require preparation of an IGE. Since a VECP will be supported by contractor pricing, the estimator prepares the IGE in a manner similar to that defined previously in "Construction Modifications and Claims Analysis" section (in Chapter 2.2).

14 risk management

The Independent Government Estimator assists in identifying and measuring risks, and then in developing, selecting, implementing, and managing options for addressing those risks. The several types of risk to be considered as part of a risk-management methodology include:

- Schedule
- Cost
- Technical feasibility
- Environmental remediation
- Archaeological

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- Technical obsolescence
- Dependencies between a new project and other projects
- Physical events beyond direct control
- Market and economic events

GSA uses the Construction Industry Institute's (CII) Project Development Rating Index (PDRI) to identify weak areas, which are in effect a risk list.

15 occupancy agreements and tenant-improvements pricing

Cost elements are organized in accordance with GSA's pricing policy, which requires a separate tenant-improvement estimate for each tenant.

The agency housing plan and the supporting floor plans must be used to organize the estimate detail by:

- Warm-lit shell
- Tenant agency fitout
- Security upgrades

In addition to the ECCA the estimator must, for each tenant agency, add the GSA-related cost elements identified in the Space Planning section of the ***GSA Pricing Desk Guide,*** (Section 3.2.10, page 19) and in the Pricing Implementation for Project Managers Guide, Chapter II Project Development Phase.

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3

delivery methods and deliverables

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1 overview

1 requirements for estimates

The matrix of Table 3 indicates the deliverables typically required by delivery method and by size of project.

matrix rows

The matrix rows are organized by the five distinct stages of any project – Planning, Design, Construction Procurement, Construction, and Construction Closeout. Within these are discrete phases, and within each phase there are several activities. To perform the activities, several tasks have to be completed, all as shown on the matrices that follows.

Planning Stage: The planning stage has four phases:

1. Preliminary project development
2. Feasibility study
3. Program development study (PDS)
4. Design-build RFP
5. **Baselining**

Design Stage: The Design stage has three phases:

1. Concept
2. Design development
3. Construction documents

Construction Procurement Stage: There is only one phase and one activity, but two tasks are identified.

Construction Stage: There is only one phase here, but its two main activities are:

1. Construction modifications and claims analysis
2. Value Engineering Change Proposal (VECP)

Construction Closeout Stage: Closeout is the only phase and activity in the Construction Closeout Stage.

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matrix columns

The matrix shows four delivery methods:

1. Traditional (Design-Bid-Build)
2. Construction Manager as Constructor
3. Design-Build with Bridging or Concept documents
4. Design-Build – pure or performance-based

The matrix further organizes each delivery method by project type: New Construction, and Repair & Alteration/Modernization.

Project sizes, defined by construction value, subdivide each project type. Project sizes are:

1. Under $2 million
2. $2 – 10 million
3. $10 – 25 million
4. $25 million and above

New Construction does not use the under $2 million project size.

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2 deliverable flow-charts by delivery

table 3. cost estimating for construction in federal buildings

tasking matrix		traditional							CMc							DB–bridging/ concepts							DB–pure/ perform.-based						
		new			r&a/mod				new			r&a/mod				new			r&a/mod				new			r&a/mod			
activity	task	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M
preliminary project development																													
BER	Work Item Cost Estimates				•	•	•	•				•	•	•	•				•	•	•	•				•	•	•	•
Blast / Prog. Collapse study	Uniformat or Masterformat Cost Estimates				•	•	•	•				•	•	•	•				•	•	•	•				•	•	•	•
Seismic study	Uniformat or Masterformat Cost Estimates				•	•	•					•	•	•					•	•	•					•	•	•	
NEPA	Uniformat or Masterformat Cost Estimates	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Master Plan	Uniformat or Masterformat Cost Estimates	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Special studies	Uniformat or Masterformat Cost Estimates	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
A-E Fee Estimate	Independent Government Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
feasibility study																													
For each development submission	GCCRG/Benchmark Tools or Project Cost Estimating Tool	•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•	
	Project Cost Estimating Tool	•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•	
	Risk Analysis	•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•	
For each available preliminary planning study	Validate/Update Associated Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
For each incorporated preliminary planning study	Project Cost Estimating Tool	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
A-E Fee Estimate	Independent Government Cost Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

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tasking matrix		traditional							CMc							DB–bridging/ concepts							DB–pure/ perform.-based						
		new			r&a/mod				new			r&a/mod				new			r&a/mod				new			r&a/mod			
activity	task	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M
program development study (pds)																													
Feasibility Study Critique	Validate Feasibility Study Estimate	•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•	
For each development submission	Project Cost Estimating Tool	•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•	
	GCCRG for Budget Analysis	•	•	•	•	•	•		•	•	•					•	•	•					•	•	•				
	Market surveys (one submission only)	•	•	•	•	•	•																						
For each available preliminary planning study	Validate / Update Associated Estimate	•	•	•	•	•	•					•	•	•					•	•	•					•	•	•	
For each incorporated preliminary planning study	Validate / Update Associated Estimate	•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•	
design-build RFP																													
Estimating Support	Independent Government Cost Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
concept design																													
Preliminary Submission	Cost Estimates per Table 1 for each submission	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Uniformat or Masterformat Cost Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							
	Market Survey	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							
	Review of A-E Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							
VE workshop	Cost Estimates per PQ250/251	•	•	•	•	•			•	•	•	•	•			•	•	•	•	•			•	•	•	•	•		
Final Submission	Cost Estimates per Table 1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Uniformat or Masterformat Cost Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							
	Independent Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Space Type cost analysis	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Budget Analysis	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

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tasking matrix		traditional							CMc							DB–bridging/ concepts							DB–pure/ perform.-based						
		new			r&a/mod				new			r&a/mod				new			r&a/mod				new			r&a/mod			
activity	task	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M
Final Submission (continued)	Life Cycle Cost Analysis (Per P-100/Design Program)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Risk Analysis	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	OCA Review & Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
design development																													
Pre-Value Engineering DD Submission	Cost Estimates per Table 1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
	Review of A-E Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
	Life Cycle Cost Analysis (Per P-100/Design Program)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
VE Workshop/Study	Cost Estimates per PQ250/251	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Final DD Submission	Cost Estimates per Table 1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Market Survey	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
	Cost Growth Report	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	OCA Review & Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
	Independent Estimate and reconciliation with A-E Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
construction documents																													
75% CD's	Cost Estimates per Table 1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Review of A-E Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							
	Market Survey	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•													
	CMc Guaranteed Maximum Price								•	•	•	•	•	•	•														
90% CD's	Cost Estimates per Table 1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Market Survey	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							
	Independent Estimate and reconciliation with A-E Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
	Review of A-E Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							
	Cost Growth Report	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

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tasking matrix		traditional							CMc							DB–bridging/ concepts							DB–pure/ perform.-based						
		new			r&a/mod				new			r&a/mod				new			r&a/mod				new			r&a/mod			
activity	task	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M	$25M+	$10–25M	$2–10M	$25M+	$10–25M	$2–10M	Under–2M
OCA Review & Estimate	Uniformat or Masterformat Cost Estimates	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
100% CD's	Cost Estimates per Table 1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Market Survey	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							
	Independent Estimate and reconciliation with A-E Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
	Review of A-E Estimate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•							
	Cost Growth Report	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
construction procurement																													
Construction Award Bid Analysis	Database Information preparation	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Cost and Price Analysis	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
construction																													
Construction Mods & Claims Analysis	Masterformat Cost Estimates	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Value Eng. Change Property (VECP)	Cost Estimates	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Life Cycle cost analysis review (as required)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
construction closeout																													
Closeout	Database Information including Change Orders	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

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estimating formats

1 uniformat level 1-5 cost elements

Level 1		Level 2		Level 3		Level 4	Level 5
A1	Substructure	A11	Foundations	A111	Standard Foundations	• Wall Foundations • Column Foundations & Pile Caps • Perimeter Drainage & Insulation	
				A112	Special Foundations	• Pile Foundations • Grade Beams • Caissons • Underpinning • Dewatering • Raft Foundations • Pressure Injected Footings • Other Special Foundations	
		A12	Basement Construction	A121	Basement Excavation	• Excavation for Basements • Structure Backfill & Compact • Shoring	
				A122	Basement Walls	• Basement Wall Construction • Moisture Protection • Basement Wall Insulation • Interior Skin	
				A123	Slab on Grade	• Standard Slab on Grade • Structural Slab on Grade • Inclined Slab on Grade • Trenches Pits & Bases • Under Slab Drainage & Insulation	
A2	Superstructure	A21	Superstructure	A211	Floor and Column Construction	• Suspended Basement Floor Construction • Upper Floors Construction • Balcony Floor Construction • Ramps • Floor Raceway Systems • Other Floor Construction	
					Roof Construction	• Flat Roof Construction • Pitched Roof Construction • Canopies • Other Roof Construction	
A2	Superstructure	A21	Superstructure	A212	Stair Construction	• Regular Stairs • Curved Stairs • Spiral Stairs • Exterior Fire Escapes • Stair Handrails and Balustrade	
				A214	Special Superstructure Construction		

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Level 1		Level 2		Level 3		Level 4	Level 5
B1	Exterior Enclosure	B1 1	Exterior Walls	B11 1	Exterior Wall Construction	• Exterior Wall Construction • Parapets • Exterior Louvers & Screens • Sun Control Devices (Exterior) • Balcony Walls & Handrails • Exterior Soffits	
				B11 2	Special Wall Elements		
		B1 2	Exterior Glazing & Doors	B12 1	Windows	• Windows • Curtain Walls • Storefronts	
				B12 2	Doors	• Glazed Doors & Entrances • Solid Exterior Doors • Revolving Doors • Overhead Doors • Other Doors & Frames	
				B12-3	Special Glazing		
	Ext. Enclosure	B1 3	Roofing	B13 1	Roof Coverings & Insulation	• Roof Finishes Traffic Coatings & Paving Membranes • Roof Insulation & Fill • Flashings & Trim • Roof Eaves and Soffits • Gutters and Downspouts	
				B13 2	Skylights and Roof Openings	• Glazed Roof Openings • Roof Hatches • Gravity Roof Ventilators	
C1	Interior Construction	C1 1	Partitions, Doors & Specialties	C11 1	Partitions	• Fixed Partitions • Demountable Partitions • Retractable Partitions • Site Built Toilet Partitions • Site Built Compartments & Cubicles • Interior Balustrades & Screens • Interior Windows & Storefronts	
					Interior Doors	• Interior Doors • Interior Door Frames • Interior Door Hardware • Interior Wall Opening Elements • Interior Door Sidelights & Transoms • Interior Hatches & Access Doors • Door Painting & Decoration	
				C11 3	Specialties/ Fittings	• Fabricated Toilet Partitions • Fabricated Compartments & Cubicles • Storage Shelving and Lockers • Ornamental Metals and Handrails • Identifying Devices • Closet Specialties	
		C1 2	Access/ Platform Floors	C12 1	Access Floors		
				C12 2	Platform Floors		

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Level 1		Level 2		Level 3		Level 4	Level 5
C1	Interior Construction	C1 3	Interior Finishes	C13 1	Wall Finishes	• Wall Finishes to Inside of Exterior Wall • Wall Finishes to Interior Walls • Column Finishes	
				C13 2	Floor Finishes	• Floor Toppings • Traffic Membranes • Hardeners and Sealers • Flooring • Carpeting • Bases, Curbs & Trim	
				C13 3	Ceiling Finishes	• Ceiling Finishes Applied to Structure • Suspended Ceilings • Other Ceilings	
D1	Conveyance Systems	D1 1	Conveyance Systems	D11 1	Elevators & Lifts	• Passenger Elevators • Freight Elevators • Lifts • Escalators & Moving Walks	• Escalators • Moving Walks
				D11 2	Escalators, Moving Walks & Other	• Other Conveying Systems	• Dumbwaiters • Pneumatic Tube Systems • Hoists & Cranes • Conveyors • Chutes • Turntables • Baggage Handling & Loading Systems • Transportation System
D2	Mechanical	D2 1	Plumbing	D21 1	Plumbing Fixtures	• Water Closets • Lavatories • Sinks • Bathtubs • Wash Fountains • Showers • Drinking Fountains and Coolers • Bidets & Other Plumbing Fixtures	
				D21 2	Distribution and Drainage Systems	• Domestic Water Distribution	• Cold Water Service • Hot Water Service • Domestic Water Supply Equipment
						• Sanitary Waste	• Waste Piping • Vent Piping • Floor Drains • Sanitary Waste Equipment • Pipe Insulation
						• Rain Water Drainage	• Pipe & Fittings • Roof Drains • Rainwater Drainage Equipment • Insulation
				D21 3	Other Plumbing Systems	• Gas Distribution • Acid Waste System • Interceptors • Pool Piping and Equipment • Decorative Fountain Piping Devices • Other Piping System	

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Level 1		Level 2		Level 3		Level 4	Level 5
D2	Mechanicala	D2 2	HVAC	D22 1	Central Plant Equipment	• Energy Supply	• Oil Supply System • Gas Supply System • Coal Supply System • Coal Supply System • Steam Supply System • Hot Water Supply System • Solar Energy System • Wind Energy System
						• Heat Generating Systems	• Boilers & Furnaces • Boiler Room Piping & Specialties • Auxiliary Equipment • Insulation
						• Cooling Generating Systems	• Chilled Water System • Direct Expansion System
				D22 2	Distribution Systems	• Distribution Systems	• Air Distribution Systems • Exhaust Ventilation Systems • Steam Distribution System • Hot Water Distribution • Chilled Water Distribution • Change-over Distribution System • Glycol Heating Distribution System
						• Terminal & Package Units	• Terminal Self Contained Units • Package Units
						• Systems Testing & Balancing	• Piping System Testing & Balancing • Air System Testing & Balancing • HVAC Commissioning • Other Systems Testing & Balancing
						• Special HVAC Systems & Equipment	• Special Cooling Systems & Devices • Special Humidity Control • Dust & Fume Collectors • Air Curtains • Air Purifiers • Paint Spray Booth Ventilation • General Construction Items (HVAC)
				D22 3	Controls & Interface w/Bldg. Automation	• Heating Generating System • Exhaust & Ventilating Systems • Terminal Devices • Energy Monitoring & Control • Building Automation Systems • Other Controls and Instrumentation	

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Level 1		Level 2		Level 3		Level 4	Level 5
D3	Fire Protection	D3 1	Fire Protection/Alarm	D31 1	Sprinkler and Standpipe Systems	• Fire Protection Sprinkler Systems	• Sprinkler Water Supply • Sprinkler Pumping Equipment • Dry Sprinkler System
						• Standpipe and Hose Systems	• Water Supply • Standpipe Equipment • Fire Hose Equipment
				D31 2	Fire Alarm Systems & Interface w/Bldg. Automation		
				D31 3	Specialties and other Systems	• Fire Protection Specialties	• Fire Extinguishers • Fire Extinguisher Cabinets
						• Other Fire Protection Systems	• Carbon Dioxide System • Foam Generating Equipment • Clean Extinguishing Agent System • Dry Chemical Systems • Hood & Duct Fire Protection
D4	Electrical	D4 1	Electrical Service, Distribution & Emergency Power	D41 1	High Tension Service & Dist.		
				D41 2	Low Tension Service & Dist.		
				D41 3	Emergency Power Systems		
				D41 4	Renewable Electric Generation		
		D4 2	Lighting and Branch Wiring	D42 1	General Purpose Lighting		
				D42 2	Special Lighting		
				D42 3	Branch Wiring (Lighting & Power)		
		D4 3	Communications, Security & Other Electrical Systems	D43 1	Communications	• Public Address & Music Systems • Intercommunication & Paging System • Telephone System • Call System • Television System • Clock & Program System • Fire Alarm System • Security System • Local Area Network	
				D43 2	Security Systems & Interface w/Bldg. Automation		
				D43 3	Other Electrical Systems	• Grounding Systems • Floor Raceway Systems • Other Special Systems & Devices • General Construction Items (Elect.)	

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Level 1		Level 2		Level 3		Level 4	Level 5
E1	Equipment & Furnishings	E1 1	Equipment & Furnishings	E11 1	Equipment	• Commercial Equipment	• Security & Vault Equipment • Commercial Laundry & Dry Cleaning • Vending Equipment • Office Equipment • Food Service Equipment
						• Institutional Equipment	• Ecclesiastical Equipment • Library Equipment • Theater & Stage Equipment • Theater & Stage Equipment • Instrumental Equipment • Audio-Visual Equipment • Detention Equipment • Laboratory Equipment • Medical Equipment • Mortuary Equipment
						• Vehicular Equipment	• Vehicular Service Equipment • Parking Control Equipment • Loading Dock Equipment
						• Fuel Storage Equipment	
						• Other Equipment	• Maintenance Equipment • Solid Waste Handling Equipment • Food Service Equipment • Residential Equipment • Unit Kitchens • Window Washing Equipment • Other Equipment
				E11 2	Furnishings	• Fixed Furnishings & Casework	• Fixed Artwork (except Art in Arch.) • Fixed Casework • Blinds & Other Window Treatment • Fixed Floor Grilles & Mats • Fixed Multiple Seating • Fixed Interior Landscaping
						• Movable Furnishings	• Moveable Artwork • Furniture & Accessories • Moveable Mats & Rugs • Moveable Multiple Seating • Moveable Interior Landscaping
						• Hazardous Waste Remediation	• Removal of Contaminated Soil • Soil Restoration & Treatment
F1	Special Construction, Demolition & Abatement	F1 1	Special Construction	F11 1	Special Structures	• Special Structures	• Air Supported Structures • Pre-engineered Structures • Other Special Structures
						• Integrated Construction	• Integrated Assemblies • Special Purpose Rooms • Other Integrated Construction
				F11 2	Special Const. Systems & Facilities	• Special Construction Systems	• Sound, Vibration & Seismic Construction • Special Security Systems • Vaults • Other Special Construction Systems

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Level 1	Level 2		Level 3		Level 4	Level 5
F1	F1 1		F11 2	Special Const. Systems & Facilities (cont.)	• Special Facilities	• Aquatic Facilities • Ice Rinks • Site Constructed Incinerators • Kennels & Animal Shelters • Liquid & Gas Storage Tanks • Other Special Facilities
		Building Demolitionand Abatement	F12 2	Building Elements Demolition	• Building Interior Demolition • Building Exterior Demolition	
				Hazardous Components Abatement	• Removal of Hazardous Components • Encapsulation of Hazardous Components	
G1	Sitework	G1 1	Sitework-Building Related	G11 1	Site Preparation & Demolition	• Site Clearing	• Clearing & Grubbing • Tree Removal & Thinning
						• Site Demolition and Relocations	• Building Demolition • Demolition of Site Components • Relocation of Building Utilities • Utilities Relocation
						• Site Earthwork	• Site Grading & Excavation • Borrow Fill • Soil Stabilization & Treatment • Site Dewatering • Site Shoring • Embankments • Erosion Control
						• Hazardous Waste Remediation	• Removal of Contaminated Soil • Soil Restoration & Treatment
				G11 2	Site Improvements & Landscaping	• Roadways	• Bases and Sub-Bases • Paving & Surfacing • Curbs & Gutters • Guardrails & Barriers • Painted Lines • Markings & Signage • Vehicular Bridges
						• Parking Lots	• Parking Lot Paving & Surfacing • Parking Lot Paving & Surfacing • Curbs, Rails & Barriers • Parking Booths & Equipment • Markings & Signage
						• Pedestrian Paving	• Paving & Surfacing • Edging • Exterior Steps
						• Site Development	• Fences & Gates • Retaining Walls • Terrace & Perimeter Walls • Signs • Site Furnishings • Fountains, Pools & Watercourses • Playing Fields • Flagpoles • Miscellaneous Structures

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Level 1		Level 2		Level 3		Level 4	Level 5
G1	Sitework (cont.)	G1 1	Sitework-Building Related (cont.)	G11 2	Site Improvements & Landscaping (cont.)	• Landscaping	• Fine Grading & Soil Preparation • Erosion Control Measures • Top Soil & Planting Beds • Seeding & Sodding • Planting • Planters • Irrigation Systems • Other Landscape Features
				G11 3	Site Utilities	• Water Supply & Distribution Systems	• Potable Water Distribution and Storage • Non-Potable Water Distribution and Storage • Well Systems • Fire Protection Distribution and Storage Systems • Pumping Stations • Packaged Water Treatment Plants
						• Sanitary Sewer Systems	• Piping • Manholes • Septic Disposal System • Lift Station • Packaged Water Waste Treatment Plants • Septic Tanks • Drain Fields
						• Storm Sewer Systems	• Piping • Manholes • Headwalls & Catch Basins • Lift Stations • Retention Ponds • Ditches & Culverts
						• Heating Distribution	• Steam Supply • Condensate Return • Hot Water Supply System • Pumping Station
						• Cooling Distribution	• Chilled Water Piping • Wells for Cooling • Pumping Stations • Cooling Towers on Site • Chilled Water Piping • Wells for Cooling • Pumping Stations • Cooling Towers on Site
						• Fuel Distribution	• Fuel Piping • Fuel Equipment • Fuel Storage Tanks • Fuel Dispensing Stations
						• Other Site Mechanical Systems	• Industrial Waste System • Petroleum Oil & Lubricants Distribution System
						• Electrical Distribution	• Substations • Overhead Power Distribution • Underground Power Distribution

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Level 1		Level 2		Level 3		Level 4	Level 5
G1	Sitework (cont.)	G1 1	Sitework-Building Related (cont.)	G11 2	Site Utilities (cont.)	• Site Lighting	• Fixtures & Transformers • Poles • Wiring Conduits & Ductbanks • Site Lighting Controls
						• Site Communications & Security	• Site Communications Systems • Site Security & Alarm System
						• Other Site Electrical Utilities	• Cathodic Protection • Site Emergency Power Generation
		G1 2	Other Sitework Project-related	G12 1	Connecting Tunnels and Bridges	• Service Tunnels • Pedestrian Tunnels • Snow Melting System • Railroad Work • Marine Work • Off-Site Work	
SPECIAL							
Art in Architecture							
Gov't. Furnished Equipment							
Z	General Cond., OH & P	Z1 1	General Cond., OH & P	Z11 1	General Condition, OH & P		
11	Categories (Excl. Special)	21	Categories	56	Categories	236	217

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2 masterformat cost elements (2004 Version)

specifications group

General requirements group
Division 01 General Requirements

facility construction group

Division 02 Existing Conditions
Division 03 Concrete
Division 04 Masonry
Division 05 Metals
Division 06 Wood, Plastics, and Composites
Division 07 Thermal and Moisture Protection
Division 08 Openings
Division 09 Finishes
Division 10 Specialties
Division 11 Equipment
Division 12 Furnishings
Division 13 Special Construction
Division 14 Conveying Equipment
Division 15 Reserved
Division 16 Reserved
Division 17 Reserved
Division 18 Reserved
Division 19 Reserved

facility services subgroup

Division 20 Reserved
Division 21 Fire Suppression
Division 22 Plumbing
Division 23 Heating, Ventilation, A/C
Division 24 Reserve
Division 25 Integrated Automation
Division 26 Electrical
Division 27 Communications
Division 28 Electronic Safety and Security
Division 29 Reserved

site and infrastructure subgroup

Division 49 Reserved
Division 30 Reserved
Division 31 Earthwork
Division 32 Exterior Improvements
Division 33 Utilities
Division 34 Transportation
Division 35 Waterway and Marine Construction
Division 36 Reserved
Division 37 Reserved
Division 38 Reserved
Division 39 Reserved

process equipment subgroup

Division 40 Process Integration
Division 41 Material Processing and Handling Equipment
Division 42 Process Heating, Cooling, and Drying Equipment
Division 43 Process Gas and Liquid Handling, Purification, and Storage Equipment
Division 44 Pollution Control Equipment
Division 45 Industry-Specific Manufacturing Equipment
Division 46 Reserved
Division 47 Reserved
Division 48 Electrical Power Generation
Division 49 Reserved

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estimate tracking sheets

Project Cost Comparison Summary

Project: Project No: Sheet No: 1
Location: Estimator:

		Construction Cost (ECCA) (Level 2)	GSA Target Estimate	Concept Estimate	Design Development Estimate	100% CD Pre-Bid Cost Estimate	Bid Analysis
			Date:	Date:	Date:	Date:	Date:
A	11	Foundations					
A	12	Basement Construction					
A	21	Superstructure					
B	11	Exterior Walls					
B	12	Exterior Glazing & Doors					
B	13	Roofing					
C	11	Partitions, Doors and Specialties					
C	12	Access/Platforms					
C	13	Interior Finishes					
D	11	Conveyance Systems					
D	21	Plumbing					
D	22	HVAC					
D	31	Fire Protection/Alarm					
D	41	Electrical Service, Distribution & Emergency Power					
D	42	Lighting and Branch Wiring					
D	43	Communications, Security & Other Elec. Systems					
E	11	Equipment and Furnishings					
F	11	Special Construction					
F	12	Building Demolition and Abatement					
G	11	Sitework - Building Related					
G	12	Other Sitework - Project Related					
		SCHEDULED CONTRACT AWARD DATE					
		SUBTOTAL					
		DESIGN CONTINGENCY					
	10	GENERAL CONDITIONS AND PROFIT					
		ESCALATION TO SCHEDULED CONTRACT AWARD DATE					
		Progressive Cost					
		Target Cost					
		Difference from Target Cost					
		Cost per SM (SF)					
		Gross Floor Area - SM (SF)					

GSA FORM 3474

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C uniformat project cost summary

Project Cost Summary (Level 3)

Project:	Design Stage:		Gross Area (SM):		Date:		Sheet No. 1 of 2	
Location:			30,015					
Uniformat Element (Levels 2 & 3)	Amount $	Total Cost $	Rate $/SM Gross Floor Area		%	Elemental Cost Data: Quantities	Unit	Notes	Unit Rate
A 11 FOUNDATIONS							SM		
A111 Standard foundations							SM	1	
A112 Special foundation conditions							LS	2	
12 BASEMENT CONSTRUCTION							CM		
A121 Basement Excavation							CM	5	
A122 Basement walls							SM	4	
A123 Slab On Grade							SM	3	
21 SUPERSTRUCTURE							SM		
A211 Floor and Column Construction							SM	7	
A212 Roof Construction							SM	8	
A213 Stair Construction							FLT	9	
A214 Special Superstructure Construction							LS	2	
B 11 EXTERIOR WALLS							SM		
B111 Exterior Wall Construction							SM	10	
B112 Special Wall Elements							SM	11	
12 EXTERIOR GLAZING & DOORS							SM		
B121 Windows							SM	13	
B122 Doors							SM	14	
B122 Special Glazing							SM	15	
13 ROOFING							SM		
B131 Roof Coverings & Insulation							SM	17	
B132 Skylights and Roof Openings							SM	18	
C 11 PARTITIONS, DOORS, SPECIALTIES							SM		
C111 Partitions							SM	19	
C112 Interior Doors							SM	20	
C113 Specialities/Fittings							LS	2	
12 ACCESS/PLATFORMS							SM		
C121 Access Floors							SM	22	
C122 Platform Floors							SM	23	
13 INTERIOR FINISHES							SM		
C131 Wall Finishes							SM	25	
C132 Floor Finishes							SM	26	
C133 Ceiling Finishes							SM	27	
D 11 CONVEYING SYSTEMS							STOP		
D111 Elevators & Lifts							STOP	29	
D112 Escalators, Moving Walks & Other							LM	30	
21 PLUMBING							FIXT		
D211 Plumbing Fixtures							FIXT	31	
D212 Distribution and Drainage Systems							EA	32	
D213 Other Plumbing Systems							LS	2	
22 HVAC							WATTS		
D221 Central Plant Equipment							WATTS	33	
D222 Distribution Systems							WATTS	33	
D223 Controls & Interface w/Bldg. Automation							WATTS	33	
31 FIRE PROTECTION/ALARM							SM		
D311 Sprinkler and Standpipe Systems							SM	34	
D312 Fire Alarm Systems & Interface w/Bldg. Automation							SM	34	
D313 Specialities and other Systems							LS	2	
41 ELECTRICAL SERVICE, DISTRIBUTION & EMERGENCY POWER							KVA		
D411 High Tension Service & Dist.							KVA	35	
D412 Low Tension Service & Dist.							KVA	35	
D413 Emergency Power Systems							KVA	36	
D414 Renewable Electric Generation							LS	2	
42 LIGHTING & BRANCH WIRING							SM		
D421 General Purpose Lighting							SM	37	
D422 Special Lighting							SM	37	
D423 Branch Wiring (Lighting & Power)							SM	37	
43 COMMUNICATIONS, SECURITY, & OTHER ELEC. SYSTEMS							SM		
D431 Communications							SM	37	
D432 Security Systems & Interface w/Bldg. Automation							SM	37	
D433 Other Electrical Systems							LS	2	
E 11 EQUIPMENT & FURNISHINGS							SM		
E111 Equipment							SM	37	
E112 Furnishings							SM	37	
F 11 SPECIAL CONSTRUCTION							LS		
F111 Special Structures							LS	2	
F112 Special Const. Systems & Facilities							LS	2	
12 BUILDING ELEMENTS DEMOLITION							CM		
F121 Building Elements Demolition							CM	38	
F122 Hazardous Components Abatement							CM	38	
G 11 SITEWORK - BUILDING RELATED							SM		
G111 Site Preparation & Demolition							SM	39	
G112 Site Improvements & Landscaping							SM	41	
G113 Site Utilities							LM	40	
12 OTHER SITEWORK - PROJECT RELATED							LS		
G121 Connecting Tunnels and Bridges							LM	42	
G122 Other Site Systems							LS	2	
DIRECT COST SUBTOTAL									
DESIGN CONTINGENCY (Based on subtotal)									
SUBTOTAL									
GENERAL CONDITIONS (OVERHEAD AND PROFIT)									
SUBTOTAL									
ESCALATION FROM TO									
TOTAL ECCA									

Notes:

1. Footprint area at grade level
2. Based on Special Condition
3. Area of Basement on plan measured to outside of enclosing walls
4. Area of wall surface area
5. Includes depth from finished grade elevation to underside of slab-on-grade
6. Sum of areas A211 and 212
7. Gross area of supported floor structures
8. Gross area of roof construction on plan
9. Number of flights from one story to the next
10. Gross area of solid exterior enclosure element
11. Surface area of special wall elements
12. Gross surface area of all exterior doors, windows and curtain walls
13. Surface area of windows
14. Surface area of doors
15. Surface area of special glazing
16. Developed area of roof
17. Area of roof coverings & insulation only
18. Area of skylights and roof openings only
19. Area measured over doors and openings
20. Number of door leafs
21. Sum of areas C121 and C122
22. Area of access floors
23. Area of platform floors
24. Sum of areas C131, C132 and C133
25. Surface area of finished walls
26. Area of finished floors
27. Area of finished ceilings
28. Number of stories above & below ground
29. Number of planed elevator stops
floor to floor height) of escalators
31. Exclude floor and roof drains
32. Number of supply and disposal connections
33. Total capacity of heat generating system & cooling generating system
34. Floor area protected
35. KVA demand, equivalent to transformer ratings
36. Capacity of emergency system
37. Gross floor area
38. Gross volume of struture to be demolished
39. Gross site area
40. Distance from building to service connection
41. Developed area of site
42. Length of tunnels and/or bridges

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building cost analysis forms

form 3472: building cost analysis

Building Type:

Project:

A/E:
General Contractor:

Description of building:

Sketch:

Floor area (by level)			
Level	No.	Gross Area	%
Basements		GSM	#DIV/0!
Ground floor		GSM	#DIV/0!
Upper floors		GSM	#DIV/0!
Penthouse		GSM	#DIV/0!
Totals	0	0.00 GSM	100%

Floor Area (by type)	Occupiable Area		%
		OSM	#DIV/0!
		OSM	#DIV/0!
		OSM	#DIV/0!
		OSM	#DIV/0!
		OSM	#DIV/0!
		OSM	#DIV/0!
		OSM	#DIV/0!
Total:occupiable area	0.00	OSM	100%

Support Area (by type)	Support Area		%
Circulation		SM	#VALUE!
Mech. & Elec. Equip. spare		SM	#VALUE!
Toilets		SM	#VALUE!
Walls partitions, etc.		SM	#VALUE!
Custodial		SM	#VALUE!
Total:support/circulation area	0.00	SM	100%

Configuration data	Quantity	UOM
Below grade		
depth		M
volume		CM
Above grade		
height		M
volume		CM
Exterior closure area		SM
Average perimeter		M
Length to width ratio		
No. of occupants - permanent		EA
visitor		EA

Cost Data

Location:

Bid date:
Market conditions:
Award amount:

		Design Data	Quantity	UOM
A	11	FOUNDATIONS		
		Soil bearing capacity		kPa
		Total design load		Kg
		Bay Size		
		Total design load		Kg
		Total No. of Floors		
	12	BASEMENT CONSTRUCTION		
		Footprint area		SM
		Floors Below Grade		EA
		Water Level		LM
	21	SUPERSTRUCTURE		
		Bay size		
		Loads: live		Kg
		dead		Kg
		wind		Kg
		seismic		Kg
		Stairs		FLIGHTS
B	11	EXTERIOR WALLS		
		Fenestration		%
	12	EXTERIOR GLAZING & DOORS		
	13	ROOFING		
		Openings/skylights		%
C	11	PARTITIONS, DOORS, SPECIALTIES		
		Perm. partitions		M
		Demount. partit.		M
	12	ACCESS PLATFORMS		
	13	INTERIOR FINISHES		
		Spec. floors		SM
		Spec. ceilings		SM
		Spec. finishes		SM
D	11	CONVEYING SYSTEMS		
		Freight elev.		EA
		Passenger elev.		EA
		Escalators		M
	21	PLUMBING		
		Roof/floor drains		EA
		Plumbing Fixtures		EA
	22	HVAC		
		Heating		WATTS
		Cooling		WATTS
		Ventilation		CMM
		Control		ZONES
	31	FIRE PROTECTION & ALARM		
		Sprinkler system		HEADS
		Standpipe system		M
	41	ELECTRICAL SERVICE, DISTRIBUTION & EMERGENCY POW		
		Transformer cap.		KVA
		Motors		KW
	42	LIGHTING & BRANCH WIRING		
		Light/power		WATTS/SM
	43	COMMUNICATIONS, SECURITY, & OTHER ELEC. SYSTEMS		
E	11	EQUIPMENT & FURNISHINGS		
F	11	SPECIAL CONSTRUCTION		
	12	BUILDING ELEMENTS DEMOLITION		
G	11	SITEWORK - BUILDING RELATED		
		Site size		HA
		Avg. utility run		M
		Landscaped area		SM
		Ext. parking		CARS
		Other paved areas		SM
	12	OTHER SITEWORK - PROJECT RELATED		
		Site size		HA
		Avg. utility run		M
		Landscaped area		SM
		Ext. parking		CARS
		Other paved areas		SM

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form 3472: building cost analysis (continued)

ELEMENTAL CATEGORY	MATERIAL QUALITY OR SYSTEM TYPE	SYSTEM COST	PARAMETER QUANTITY	UNIT MEAS.	NOTE	UNIT COST	% COST
A 11 FOUNDATIONS				SM	1		
A111 Standard foundations			0.00	SM	1		
A112 Special foundation conditions			0.00	LS	2		
12 BASEMENT CONSTRUCTION				CM	3		
A121 Basement Excavation			0.00	CM	5		
A122 Basement walls			0.00	SM	4		
A123 Slab On Grade			0.00	SM	3		
21 SUPERSTRUCTURE				SM	6		
A211 Floor and Column Construction			0.00	SM	7		
A212 Roof Construction			0.00	SM	8		
A213 Stair Construction			0.00	FLT	9		
A214 Special Superstructure Construction			0.00	LS	2		
B 11 EXTERIOR WALLS				SM	10		
B111 Exterior Wall Construction			0.00	SM	10		
B112 Special Wall Elements			0.00	SM	11		
12 EXTERIOR GLAZING & DOORS				SM	12		
B121 Windows			0.00	SM	13		
B122 Doors			0.00	SM	14		
B122 Special Glazing			0.00	SM	15		
13 ROOFING				SM	16		
B131 Roof Coverings & Insulation			0.00	SM	17		
B132 Skylights and Roof Openings			0.00	SM	18		
C 11 PARTITIONS, DOORS, SPECIALTIES				SM	19		
C111 Partitions			0.00	SM	19		
C112 Interior Doors			0.00	SM	20		
C113 Specialties/Fittings			0.00	LS	2		
12 ACCESS/PLATFORMS				SM	21		
C121 Access Floors			0.00	SM	22		
C122 Platform Floors			0.00	SM	23		
13 INTERIOR FINISHES				SM	24		
C131 Wall Finishes			0.00	SM	25		
C132 Floor Finishes			0.00	SM	26		
C133 Ceiling Finishes			0.00	SM	27		
D 11 CONVEYING SYSTEMS				STRY	28		
D111 Elevators & Lifts			0.00	STOP	29		
D112 Escalators, Moving Walks & Other			0.00	LM	30		
21 PLUMBING				FIXT	31		
D211 Plumbing Fixtures			0.00	FIXT	31		
D212 Distribution and Drainage Systems			0.00	EA	32		
D213 Other Plumbing Systems			0.00	LS	2		
22 HVAC				WATT	33		
D221 Central Plant Equipment			0.00	WATTS	33		
D222 Distribution Systems			0.00	WATTS	33		
D223 Controls & Interface w/Bldg. Automation			0.00	WATTS	33		
31 FIRE PROTECTION/ALARM				SM	34		
D311 Sprinkler and Standpipe Systems			0.00	SM	34		
D312 Fire Alarm Systems & Interface w/Bldg. Automation			0.00	SM	34		
D313 Specialties and other Systems			0.00	LS	2		
D 41 ELECTRICAL SERVICE, DISTRIBUTION & EMERGENCY POWER				KVA	35		
D411 High Tension Service & Dist.			0.00	KVA	35		
D412 Low Tension Service & Dist.			0.00	KVA	35		
D413 Emergency Power Systems			0.00	KVA	36		
D414 Renewable Electric Generation			0.00	LS	2		
42 LIGHTING & BRANCH WIRING				SM	37		
D421 General Purpose Lighting			0.00	SM	37		
D422 Special Lighting			0.00	SM	37		
D423 Branch Wiring (Lighting & Power)			0.00	SM	37		
43 COMMUNICATIONS, SECURITY, & OTHER ELEC. SYSTEMS				SM	37		
D431 Communications			0.00	SM	37		
D432 Security Systems & Interface w/Bldg. Automation			0.00	SM	37		
D433 Other Electrical Systems			0.00	SM	37		
E 11 EQUIPMENT & FURNISHINGS				SM	37		
E111 Equipment			0.00	SM	37		
E112 Furnishings			0.00	SM	37		
F 11 SPECIAL CONSTRUCTION				LS	2		
F111 Special Structures			0.00	LS	2		
F112 Special Const. Systems & Facilities			0.00	LS	2		
12 BUILDING ELEMENTS DEMOLITION				CM	38		
F121 Building Elements Demolition			0.00	CM	38		
F122 Hazardous Components Abatement			0.00	CM	38		
G 11 SITEWORK - BUILDING RELATED				SM	39		
G111 Site Preparation & Demolition			0.00	SM	39		
G112 Site Improvements & Landscaping			0.00	SM	41		
G113 Site Utilities			0.00	SM	40		
12 OTHER SITEWORK - PROJECT RELATED				LS	2		
G121 Connecting Tunnels and Bridges			0.00	LM	42		
G122 Other Site Systems			0.00	LS	2		
DIRECT COST SUBTOTAL		$0					
DESIGN CONTINGENCY (Based on subtotal)							
SUBTOTAL		$0					
GENERAL CONDITIONS (OVERHEAD AND PROFIT)							
SUBTOTAL		$0					
ESCALATION FROM TO							
TOTAL ECCA		$0					

Notes:

1. Footprint area at grade level
2. Based on Special Condition
3. Area of Basement on plan measured to outside of enclosing walls
4. Area of wall surface area
5. Includes depth from finished grade elevation to underside of slab-on-grade
6. Sum of areas A211 and 212
7. Gross area of supported floor structures
8. Gross area of roof construction on plan
9. Number of flights from one story to the next
10. Gross area of solid exterior enclosure element
11. Surface area of special wall elements
12. Gross surface area of all exterior doors, windows and curtain walls
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26. Area of finished floors
27. Area of finished ceilings
28. Number of stories above & below ground
29. Number of planed elevator stops (vertical floor to floor height) of escalators
31. Exclude floor and roof drains
32. Number of supply and disposal connections
33. Total capacity of heat generating system & cooling generating system
34. Floor area protected
35. KVA demand, equivalent to transformer ratings
36. Capacity of emergency system
37. Gross floor area
38. Gross volume of struture to be demolished
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40. Distance from building to service connection
41. Developed area of site
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e design and maintenance/inspection services forms

form 2631: architect-engineer cost estimate summary

ARCHITECT-ENGINEER COST ESTIMATE SUMMARY

PAGE 1 OF 2 PAGES

PROJECT

Sample

PROJECT NUMBER

ELEMENTS		COST BY DESIGN STAGE							
		SURVEY/ PRE-DESIGN/	PROGRAMMING	CONCEPTS	DESIGN DEVELOPMENT	V/E WORKSHOP	50% CONSTRUCTION DOCUMENTS	100% CONSTRUCTION DOCUMENTS	FINAL SUBMISSION
DIRECT SALARY COSTS									
CONSULTANTS									
OTHER DIRECT COSTS									
OVERHEAD POOL TITLES									
TOTAL COST TO A-E									
PROFIT									
TOTAL COST TO GOVERNMENT									

TOTAL ESTIMATED ESTIMATING FEE FOR PROJECT:

REMARKS

ARCHITECT-DESIGNER FIRM NAME AND ADDRESS (include ZIP code)

Sample

TELEPHONE

AREA CODE | NUMBER

PREPARED BY (Signature and title)

DATE

APPROVED BY (Signature and title)

DATE

GENERAL SERVICES ADMINISTRATION

GSA FORM 2631 (2-71)
(N.L. REV. 5-93)

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form 2630: architect-engineer cost estimate

PAGE OF PAGES

ARCHITECT-ENGINEER COST ESTIMATE

CITY | STATE

BUILDING | PROJECT NO.

DESIGN STAGE | COMPLETION IN WEEKS

COST OF PRICING DATA REFERENCE

A. DIRECT SALARY COSTS

SPECIAL TIES	JOB TITLES	MAN-HOURS	RATES $	AMOUNTS $	TOTALS
PROJECT MANAGEMENT AND COORDINATION					
ARCHITECTURAL					
No. of Dwgs. ( )					
STRUCTURAL					
No. of Dwgs. ( )					
MECHANICAL					
No. of Dwgs. ( )					
ELECTRICAL					
No. of Dwgs. ( )					
SPECIFICATIONS					
No. of Pages ( )					
ESTIMATES					
OTHER					
TOTAL DRAWINGS	TOTAL MAN-HOURS			TOTAL SALARIES A	

B. CONSULTANTS *(Attach estimate)* — AMOUNTS $

1
2
3
4

TOTAL CONSULTANTS B

C. OTHER DIRECT COSTS *(Attach estimate as necessary)* — AMOUNTS $

1
2
3
4

TOTAL OTHER DIRECT COSTS C

D. OVERHEAD POOLS

	TITLES	RATES %	BASES $	ITEMS
1				
2				

ARCHITECT-ENGINEER FIRM NAME AND ADDRESS

E	TOTAL COST TO ARCHITECT-ENGINEER	
F	PROFIT % OF E	
G	TOTAL COST TO GOVERNMENT	

PREPARED BY *(Signature and Title)* | DATE | APPROVED BY *(Signature and Title)* | DATE

GENERAL SERVICES ADMINISTRATION — GSA FORM 2630 (2-71)

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f

acronyms/glossary of terms

A-E - Architect-Engineer.

Approval and Funding – Central Office reviews and evaluates PDS's and Prospectus's for inclusion in the annual GSA fiscal budget request for the entire agency. OMB will evaluate all the various Executive Branch agencies' requests for funds to create a final budget and Congress decides which initiatives will be approved (authorized) and funded (appropriated).

Art-in-Architecture – Program that commissions publicly scaled artworks that are integral parts of the architectural fabric or surrounding landscapes of new or substantially expanded federal buildings through allocation of 0.5 percent of the estimated construction cost.

Benchmarking – A measurement and analysis process that compares relevant selected measures to a selected basis of comparison. Refer to page 11.

BER – Building Evaluation Report.

Cost Estimate – The general term "cost estimate" refers to any officially prepared estimate whether planning, design stage, construction contract or modification

Contingency – An amount added to the cost estimate to allow to provide for uncertain costs events or conditions that experience shows are likely to occur.

CSI – Construction Specifications Institute.

ECC – The Estimated Cost of Construction represents the total cost of construction anticipated through the completion of construction process and includes in the initial bids/offers as well as changes that have been authorized through construction.

ECCA – The Estimated Cost of Construction at Award represents what the initial bids/offer is expected to be. This figure excludes construction contingency but will include design contingency that typically is reduced zero at bid/offer time.

ETPC or TEPC – This is the Estimated Total Project Cost or the Total Estimated Project Cost and as such includes all construction related costs as well as costs associated with site funding, professional services and management services on the part of GSA.

FAR – Federal Acquisition Register.

GCCRG – General Construction Cost Review Guide (GCCRG) provides costs to construct space by space type, escalation and location factors by localities, and a system for developing Cost Benchmarks It is generally published annually.

GSA – General Services Administration.

Independent Government Estimate (IGE) – The Independent Government Estimate is a formal, approved construction cost estimate prepared for contract purposes. This estimate is required for all

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contracts of $100,000 or more and to serve as a guide in establishing a schedule for partial payments.

LCC – Life Cycle Cost.

Market Analysis – Refer to page 21.

Market Survey – Refer to page 20.

Masterformat – A product oriented hierarchical tree structure for construction projects developed and published by the Construction Specifications Institute.

MCA – Mechanical Contractors Association.

Modification estimate – A Government estimate prepared for a specific contract change order, incorporating specific scope, methodology, and circumstances. In addition to cost of the changed work, the modification estimate must also include any cost, which the contractor incurs from impact on the unchanged work. This estimate is used to assist negotiations and to protect the government's interests toward a fair price settlement.

OMB – Office of Management and Budget.

PBS – Public Buildings Service.

PCE – Project Cost Estimate.

PDRI – Project Development Rating Index developed by the Construction Industry Institute's (CII) as a tool to identify weak areas as action items creating a risk list.

PDS – Program Development Study.

Prospectus – The Prospectus is a two- or three-page synopsis of the PDS, prepared by GSA to request Congressional funding for the project.

R&A – Repair and Alteration.

Reconciliation – The process of comparing two or more cost estimates for a project to determine reasons for cost differences.

SRCI – Space Related Cost Impacts.

TI – Tenant Improvements.

Uniformat – A systems oriented hierarchical structure for construction projects.

VE – Value Engineering.

VECP – Value Engineering Change Proposal.

WBS – Work Breakdown Structure. Refer to Section 1.3.3 for definition.

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GSA Public Buildings Service

Office of the Chief Architect
1800 F Street, NW
Washington, DC 20405

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