

GSA ORDER

SUBJECT: P-120, Public Buildings Service Cost and Schedule Management Policy Requirements

1. Purpose. This Order issues and transmits the revised Public Buildings Service Cost and Schedule Management Policy Requirements (referred to throughout this document as P120 or policy) for PBS Design and Construction Cost and Schedule Management Policy.
2. Background. This P120 establishes the quality and level of cost and schedule management services to be provided during the planning, design and construction phases of projects. Whether delivered by in-house or contracted resources, the P120 defines the expected deliverables and strategies to ensure effective budget development and within budget/within scope/within schedule project delivery that also meet all associated statutes, Executive Orders, directives and other associated criteria.
3. Scope and Applicability. The scope of the P120 is to provide policy and criteria defining an integrated cost management process that will be followed throughout the project planning and execution process at PBS, including cost management (cost planning and cost estimating) and schedule management (schedule planning, master scheduling), risk analysis, claims analysis and value management across PBS. The criteria defines the policies, practices and processes to be used in managing the total life cycle cost throughout the planning, design, construction and maintenance phases within the entire Federally-owned and leased portfolio under GSA's jurisdiction, custody or control. The overarching goal of the P120 is to ensure cohesive, seamless policies and procedures that must be followed in practicing cost and schedule management throughout the full life cycle of all PBS design, construction and construction-related building maintenance / repair projects and programs across PBS.
4. Cancellation. This Order cancels and supersedes [PBS 1000.6 P-120, Public Buildings Service Cost and Schedule Management Policy Requirements](#).
5. Policy. The P120 defines:
 - a. The overall policies for implementing the practices of cost management, schedule management and value management throughout the full life cycle phase of an asset at PBS, including capital, non-capital and leasing project delivery.
 - b. The policy and procedures for implementing quality assurance and quality control for the cost, schedule and value management programs to be practiced throughout PBS.
 - c. Requirements and deliverables for projects regarding cost and schedule.

6. Responsibilities. The Office of Design and Construction, Office of Project Delivery manages this guidance. If you have any questions, please contact Richard Robert-Santiago at richard.robert-santiago@gsa.gov.

7. Summary of Changes.

- a. Reduces redundant language and overly written sections with an overall page reduction to less than 80 pages.
- b. Provides guidance to reduce the variability in project execution.
- c. Addresses new best practices to meet new market conditions.
- d. Reformats the Policy to enhance the usability
- e. Provides a more intuitive document for easier use.
- f. Replaces the triage tool with a standard rating based on budget thresholds.
- g. Introduces a master deliverable table for quick and clear reference on requirements.
- h. Reduces the requirement for small projects development of a master deliverable table for quick and clear reference, reducing the requirements for the smaller projects.

8. Signature.

/S/

Nina M. Albert
Commissioner
Public Buildings Service



U.S. General Services Administration

Public Buildings Service
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P120

Public Buildings Service
Cost and Schedule
Management Policy
Requirements

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Introduction

As an independent agency of the United States Government, the U.S. General Services Administration (GSA) has conducted the activities of the Public Buildings Service (PBS) since its creation in 1949. This Cost and Schedule management criteria document supports building construction programs within the PBS and presents the technical and administrative requirements for routine Cost and Schedule management across the project lifecycle.

Cost and schedule management are pillars of Project Delivery Excellence for PBS projects. They rely on sound:

- Cost management practices, including cost planning, cost estimating, cost control, and value management.
- Schedule management practices, including schedule planning, control, and monitoring.
- Quality management practices, including both quality assurance and quality control, which together confirm adherence to the cost and schedule management processes and check the cost and schedule management products for compliance.

As part of GSA's effort to deliver projects efficiently, Cost and Schedule management resources should be considered part of an Integrated Project Delivery philosophy, through which deliverables are reviewed consistently, efficiently, and in a timely manner. Cost and Scheduling professionals must support projects at every lifecycle phase by managing risk, cost, and schedule, as well as by providing feedback to project teams that empowers sound and informed decisions leading to successful project delivery.

The PBS Cost and Schedule Management Policy Requirements (P120) (referred to throughout this document as policy or P120) practices and documentation criteria apply to all professional services activities, whether provided through contract or by GSA/PBS staff. The cost and schedule management tasks addressed in this document enable GSA to establish accurate project costs and schedules, ensure that these costs and schedules are based on programming requirements, keep costs within authorized limits, and collect agency cost data to refine business practices and future cost estimates. Because project delivery methods affect how, and to some degree when, cost and schedule management practices are applied, this document explains the basic requirements associated with each delivery method and establishes the framework to gather and compile this information to serve as a benchmark for future activities.



1.0 PBS Cost and Schedule General Requirements and Policies

1.1 Scope and Processes of Project Delivery Excellence

Scope

This policy governs the preparation and reporting of costs and schedules, and considers aspects of scope management to ensure coordination with the schedule and cost management interfaces.

The policy applies through the total facility life cycle, which includes planning, design, procurement and award, and construction and maintenance phases, for both the GSA-controlled Federally owned and -leased portfolios. It establishes key cost and schedule management principles and basic processes that must be applied to all PBS projects. The policy is applicable to all cost or schedule activities, or products developed by or on behalf of PBS. It does not apply to cost or schedule proposals prepared by lessors, design build contractors, construction managers as contractor (CMc), or construction contractors, except to the degree explicitly incorporated into their leases/contracts.

This policy uses the term “cost estimates” to refer generally to future or past estimates of dollar costs or savings—regardless of budgetary impact—and performance measurement, including calculation and reporting of organizational performance.

This policy also governs Value Management (VM) requirements for PBS. VM is mandated by the Office of Management and Budget’s [OMB Circular A-131](#), and is required by statute. PBS incorporates VM principles into its business culture, applying VM throughout the planning and design process. This policy uses the term “value management” to refer to the process of applying the value methodology to improve the value of a project or process.

1.2 PBS Cost Management

Alignment with [GAO Cost Estimating and Assessment Guide](#).

This policy will ensure that all cost estimate submittal packages prepared in PBS meet the following U.S. Government Accountability Office (GAO)’s Four Characteristics of a Reliable Estimate:

- **Well-documented.** The estimate is thoroughly documented, including source data and significance, clearly detailed calculations and results, and explanations for choosing a particular method or reference.
- **Comprehensive.** The estimate’s level of detail ensures that cost elements are neither omitted nor double-counted.
- **Accurate.** The estimate is unbiased, not overly conservative or overly optimistic, and based on an assessment of most likely costs.



- **Credible.** The estimate discusses any limitations of the analysis from uncertainty or biases surrounding data or assumptions.

The PBS cost estimating process is structured in accordance with the GAO 12 Cost Estimating Best Practices. Careful execution of the 12 practices ensures that all PBS cost estimates are accurate, comprehensive, well documented, credible, and current.

		GAO four characteristics of a reliable estimate			
		Well Documented	Comprehensive	Accurate	Credible
GAO Twelve Best Practices	1. Define the estimate's purpose	•			
	2. Develop the estimating plan		•		
	3. Define the program	•			
	4. Determine the estimating approach.		•		
	5. Identify ground rules and assumptions	•			
	6. Obtain the data	•			
	7. Develop the point estimate and compare it to an independent cost estimate			•	•
	8. Conduct sensitivity analysis				•
	9. Conduct risk and uncertainty analysis.				•
	10. Document the estimate	•			
	11. Present the estimate to management.	•			
	12. Update the estimate to reflect actual costs and changes			•	

Table 1-1: GAO Twelve Best Practices and Four Characteristics of a Quality Cost Estimate

Iterative Process.

Cost estimating is a continuous process over the life of a project. Within the progression of the project delivery, cost estimating must be considered as an iterative process with steps that may be accomplished in varying order or concurrently.

1. Initiation and Research. Initiation and Research marks the start of a project. It is critical to clearly identify the audience for the estimate and what is being estimated. The project goals, key deliverables, and milestones will identify purpose of the estimate.

2. Project Progression. Cost estimates must be brought up-to-date and refined as the project progresses through milestones or phases, as more and better data becomes available, and underlying assumptions change.

3. Cost Analysis. Cost Analysis steps help establish confidence in the estimate. It is crucial that decision-makers have accurate, comprehensive, credible and current estimates.



4. Presentation. Presentation is critical to making a cost estimating decision. A well-documented and presented estimate enables decision-makers.

Continuous updating and refinement of the cost estimate throughout life cycles, processes, or at regular intervals ensure that information used by GSA decision-makers satisfies all of the key requirements for cost estimates.

Overall Objectives of Cost Estimating.

The overall objective of cost estimating changes as the subject project matures.

Initial cost estimates form a baseline rationale for assessing the validity of a concept and for developing funding requests. They are the basis of a Cost Plan in support of project funding. Valid cost estimates increase the validity of requested dollars, which greatly improves the defensibility of a budget request. Quality, risk, and sensitivity analyses—along with thorough documentation and a consistent briefing format—are all important factors when defending an estimate.

In later phases, estimates of cost, performance, and risks influence acquisition decisions and program or budget execution. Cost estimates support operational planning and tactical decision-making, as well as source selection for contracts.

During program execution, or after deployment of a project or investment, updated cost estimates ensure that benefits are being realized within projected costs. Cost estimating helps to identify variances from planned benefits and costs, and allows for the assessment and selection of potential mitigating actions.

1.3 PBS Schedule Management

Alignment with [GAO Schedule Assessment Guide](#).

This policy will ensure that all schedule submittal packages prepared in PBS meet the following GAO's Four Characteristics of a Reliable Schedule:

- **Comprehensive:** A comprehensive schedule includes all necessary activities for both the government and its contractors to accomplish a project's objectives as defined in the project's work breakdown structure (WBS). It realistically reflects how long each activity will take and allows for discrete progress measurement.
- **Well-constructed:** A schedule is well constructed if all its activities are sequenced with straightforward logic. The schedule's critical path represents a true model of the activities that drive the project's earliest completion date.
- **Credible:** A schedule is credible if it reflects the order of events necessary to achieve aggregated products or outcomes. Activities in varying levels of the schedule map to one another, and key dates are in sync with the schedule. The level of necessary schedule contingency and high-priority risks and opportunities are identified by conducting a schedule risk analysis.



- **Controlled:** A schedule is controlled if it is updated periodically, using actual progress and logic to realistically forecast dates for program activities. It is compared against a designated baseline schedule to measure, monitor, and report the project's progress.

The PBS scheduling process is structured in accordance with the GAO 10 Best Practices. Careful execution of the 10 practices ensures that all PBS schedules are accurate, comprehensive, well documented, credible, and controlled.

		GAO four characteristics of a reliable schedule			
		Comprehensive	Well-Constructed	Credible	Controlled
GAO Ten Best Practices	1. Capturing all activities	•			
	2. Sequencing all activities		•		
	3. Assigning resources to all activities	•			
	4. Establishing the durations of all activities	•			
	5. Verifying that the schedule is traceable horizontally and vertically			•	
	6. Confirming that the critical path is valid		•		
	7. Ensuring reasonable total float		•		
	8. Conducting a schedule risk analysis			•	
	9. Updating the schedule using actual progress and logic				•
	10. Maintaining a baseline schedule				•

Table 1-2: GAO Ten Best Practices and Four Characteristics of a Quality Schedule

On-Going Scheduling Process.

Planning and scheduling are continual processes throughout the life of the project. Project planning is the basis for controlling and managing project performance, including managing the relationship between cost and time. The schedule is essentially a model of the project plan.

Schedule Management is a distinct process that involves developing, maintaining, and communicating timetables for the project in the form of schedules. The schedule shows how the work will be accomplished within the constraints of time and resources. It evolves in detail as the project progresses.

Overall Objectives of Scheduling.

The overall objective of scheduling changes as the subject project matures.

- The Master Schedule (MS) forms the baseline documenting all work that must be accomplished. It includes all work necessary, from start to finish, from all parties



for successful project execution. It may comprise many different schedules, representing portions of the program or project.

- A schedule is a fundamental management tool. It must be capable of supporting all levels of project management.
- As distinct phases of the effort progress, schedules comprising the MS become more detailed.

The scheduling effort by GSA must reflect the goals for time, cost, scope, and quality, as well as their relationship to each other. The goals help plan the overall approach to the project with the client, ultimately leading to preparation of the IPMS (Integrated Project Master Schedule).

The MS is a living tool that, although developed early in the project, can change dynamically as the project evolves, due to external and internal program/project revisions and change orders. When used actively, the schedule will guide a project to a successful completion.

GSA also has responsibility to set requirements for detailed schedules prepared at each phase of the project life cycle by those responsible for planning, design, or construction, including the degree of tasks defined, their logical relationship, and external resources included. GSA also monitors any requirements for Earned Value Management (EVM) and monitoring the project during delivery.

1.4 PBS Value Management

Introduction.

Value management is one of the fundamental areas of focus for PBS cost management. The goal of a value management program is to deliver projects and programs at the lowest life cycle cost, while maintaining required functionality. The PBS process follows the [ASTM E 1699 Standard Value Methodology Standard](#), to comply with OMB Circular A-131 and statute.

Overall Objectives of Value Management.

The primary objective of value management is to improve the value received to meet performance needs at a lower life cycle cost. This is achieved through evaluation of project functions. It is critical for PBS to use its resources efficiently, not only for capital expenditures, but for ownership costs through the life of the investment. Value improvement can take many forms, depending on the objectives and requirements of the project.

Value management has secondary objectives of building consensus; inserting additional expertise; and validating alignment of quality, performance, cost, and schedule with project requirements.

Value Management Responsibilities.

The Office of Design and Construction is responsible for reporting PBS VM results to the Office of Acquisition Management, so that the results of the GSA VM program can be reported to OMB



annually. The PBS Central Office uses the Value Management process as a tool for cost and schedule management quality assurance.

The Regional Offices are responsible for ensuring that value management deliverables for a project or program are completed and submitted to the Regional Office Cost Advocate, who in turn must report results of the local VM program to PBS Central Office.

1.5 Key Cost, Schedule, and Value Management Requirements Documents

Sources of Federal Requirements.

Federal laws and policies affecting the way PBS conducts its business generally flow from:

- The [Federal Acquisition Regulation \(FAR\)](#), the source of Federal contract requirements for government estimates, cost and price analyses, and contract changes
- [Office of Management and Budget \(OMB\)](#), which issues circulars for budgeting, discount rates for life cycle costing, and value engineering
- [GAO Cost Estimating and Assessment Guide](#)
- [GAO Schedule Assessment Guide](#)
- The [Code of Federal Regulations \(CFR\)](#) provides requirements for alternative considerations and life-cycle cost analyses
- Other Federal Laws

Cost Management Legislation and Policies.

Congress has enacted legislation and Federal Agencies have promulgated policies to change the way Federal agencies address common cost management problems. Key legislation, regulation and policy framework for the practice of integrated cost management include:

- [GPRA Modernization Act of 2010, P.L. 111-352](#). Updated the Government Performance and Results Act (GPRA) of 1993 which established strategic planning, performance planning, and reporting as a framework for agencies to report progress in achieving their goals. It requires a return on investment that equals or exceeds those of alternatives. The update established reporting on a central website and a central program inventory.
- [Budget Enforcement Act of 1990](#). This act enforces the deficit reduction of the Omnibus Budget Reconciliation Act of 1990 and revises the budget control process.
- [18 United States Code 1001, 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."

- [OMB Circular A-11, Preparation and Submission of Budget Estimates](#) (Clinger-Cohen Act of 1996). Establishes the framework for Federal agencies to formulate a cost-benefit analysis for the budget submission for Federal agency projects and programs. Part 7 establishes “policy for planning, budgeting, acquisition and management of Federal capital assets.”
- [OMB Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs](#). The circular “provides general guidance for conducting benefit-cost and cost-effectiveness analyses. It also provides specific guidance on the discount rates to be used in evaluating Federal programs whose benefits and costs are distributed over time.”
- [OMB Circular A-131 – Value Engineering](#). “Provides guidance to support the sustained use of value engineering (VE) by Federal Departments and Agencies to reduce program and acquisition costs, improve performance, enhance quality, and foster the use of innovation.”
- [10 CFR 436, Subpart A, Methodology and Procedures for Life-Cycle Cost Analyses](#). “Establishes a methodology and procedures for estimating and comparing the life cycle costs of Federal buildings, for determining the life cycle cost effectiveness of energy conservation measures and water conservation measures, and for rank ordering life cycle cost effective measures in order to design a new Federal building or to retrofit an existing Federal building. It also establishes the method by which efficiency must be considered when entering into or renewing leases of Federal building space.”
- FAR, Part 4.802 – Contract Files
- FAR, Part 5.4 – Release of Information
- FAR, Part 7.103 – Agency-Head Responsibilities
- FAR, Part 10.002 – Market Research, Procedures
- FAR, Part 15 – Contracting by Negotiation
- FAR, Part 16.104 – Factors in Selecting Contract Types
- FAR, Part 17.106 – Multi-year Contracting
- FAR, Part 19.807 – Small Business Programs, Competitive 8(a), Estimating Fair Market Price
- FAR, Part 32.503 – Post award Matters
- FAR, Part 36 – Construction and Architect-Engineering Contracts
- FAR, Part 48 – Value Engineering
- FAR, Part 52 – Solicitation Provisions and Contract Clauses



2.0 Foundations of GSA Integrated Cost, Schedule, and Value Management

2.1 [Master Delivery Table](#) and Project Categories

Overview.

Project cost and schedule deliverable requirements vary according to project cost and overall risk. Projects are assigned to Project Categories based on budget and other factors. Category ranges are documented in the [Master Delivery Table](#) (MDT).

The P120 Master Delivery Table for cost and schedule management is a single table used to determine the proper oversight approach, cost and schedule approach, and level of resources required. It establishes a uniform approach across all projects, allowing PBS to set the level of effort for a project based on factors such as magnitude, complexity, and risk.

In the MDT, projects are categorized from 1-4, based on their budget threshold. The table also provides guidance as to which deliverables are required, and which are recommended.

[Table 2-1 P120 Master Delivery Table](#)

2.2 Quality Management, Quality Assurance, and Quality Control

Quality Management (QM) is the comprehensive system that ensures that all practices and deliverables consistently deliver excellence. It starts with the originator of any document, who is responsible for ensuring that their work is planned and executed in accordance with best practices and the established QM policies and procedures; it includes Quality Control checks that the work and the product meet the quality standards, and ends with verification from Quality Assurance that all procedures have been completed.

Quality Control can be defined as the part of quality management focused on fulfilling quality requirements.

Quality Assurance can be defined as part of quality management focused on providing confidence that quality requirements have been fulfilled.

Quality Management efforts involve all levels of PBS.

Quality Management Processes.

Originators: The project team is responsible for completion of the cost, schedule, and value management deliverables for projects, as required by policy. Each party producing a deliverable is responsible for quality in the preparation of their deliverable.



Quality Control can take many forms, depending on the type and complexity of the project, but it must include a review and validation of the initial work and work product by a person independent of the origination. This may be someone who is fully independent of the project team, or may be someone on the project team who was not involved in the development of the work product. The GSA Regional Offices and Service Centers are responsible for quality control to ensure that the scope, cost, schedule, and value management deliverables for all projects are completed in accordance with this document.

Quality Assurance must be performed for all projects. Regional Offices and Service Centers must establish Quality Assurance protocols for projects below prospectus. Central Office will provide the Quality Assurance for projects above prospectus, as well as for special projects as identified.

2.3 Scope, Cost and Schedule Interfaces

Guiding Principles.

Project scope is the work that must be performed to meet a client's program goals for space, function, features, impact, and level of quality. Scope management sets the boundaries for the project and is the foundation on which the other project elements are built. From the beginning, scope helps identify the work tasks and their requirements for completion. Cost and schedule respond to scope requirements, but may set some limits. Assuming they are properly aligned during the planning phase, the baseline scope, budget, and schedule are achievable goals of project execution.

Effective scope management requires accurate definition of a client's requirements in the Planning and Development stage. It also requires a systematic process for monitoring and managing all the factors that may affect or change the program requirements throughout the project design and construction phases through delivery of the finished project.

Scope management is the responsibility of the Project Manager.

Project definition is the level of detail to which a project is described. Scope starts with some basic functionality to meet a need and increases to the development of detailed plans and specifications that enable procuring the construction of the project.

The cost estimate classifications in [ASTM Standard E2516](#) defines five classes of estimate definition based on a percentage of project definition. The classes recognize that an estimate's accuracy is directly related to the level of scope definition.



Project definition-based cost estimate classification from ASTM E2516, and schedule classification from AACE 27R-03				
Estimate class	Degree of project definition	Primary project life cycle	Typical purpose of estimate	Schedule methods used
Class 5	0% - 2%	Project Initiation	Screening or Feasibility	Top-down planning using high level milestones and key project events
Class 4	1% - 15%	Feasibility Studies/PDS	Concept Study or Feasibility	As above, but semi detailed
Class 3	10% - 40%	Concept Design Design Development	Budget authorization or control	“Package” top-down planning using key events, semi-detailed
Class 2	30% - 70%	Design Development Construction Documents	Control or bid/tender	Bottom-up planning, detailed
Class 1	70% - 100%	Construction Documents	Check estimate or bid/tender	Bottom-up planning, detailed

Table 2-2: Classifications by Project Definition

The deliverables for schedule and cost management work from the same information and degree of project definition. The deliverables from these activities should correlate in the level of detail provided.

Any proposed change to project scope is evaluated for its impact to cost and schedule. The evaluation must also consider other implications driven by the change. No change is approved without these evaluations and appropriate approvals. The process also should assure that any conflicting interests among stakeholders are raised and vetted.

Schedule Related Requirements.

Using the baseline schedule together with the Cost/Schedule, the Project Manager will determine if the schedule is realistic and achievable. There will always be the necessity to continually align scope, schedule, and cost during the design process to ensure that the project objectives can be achieved.

2.4 Qualification and Ethics

All professional staff providing cost, schedule, value management, or any related service must be capable of providing the services in accordance with the degree of professional skill, quality, and care ordinarily exercised by members of the same profession currently practicing in the same locality under comparable circumstances, and as expeditiously as is consistent with professional skill and the orderly progress of the work.

Work must be performed under the direction and supervision of qualified individuals as noted below, and all senior staff must have demonstrated experience in the type of work and location of the project.



Estimators:

- Requirements. Estimators who are not GSA employees or contracted employees must have certification as a Certified Cost Professional (CCP) or a Certified Estimating Professional (CEP) by AACE International, or as a Certified Professional Estimator by the American Society of Professional Estimators (ASPE: <https://www.aspenational.org/>), or equivalent.
- 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 defined in the P-120.

Schedulers

- Requirements. Schedulers who are not GSA employees or contracted employees must have certification by a recognized professional organization, such as Planning and Scheduling Professional (PSP) by AACE or PMI Scheduling Professional (PMI-SP: pmi.org), or equivalent.
- Ethics. The standards of practice described in the Canons of Ethics published by the AACE and the Code of Ethics and Professional Conduct published by PMI, and available on both their Web sites, apply to all scheduling services defined in the P-120.

Value Engineering Team Facilitators

- Requirements. Certification as a Certified Value Specialist (CVS) as designated by SAVE International® (<https://www.value-eng.org/>) or an equivalent certification by a recognized value analysis professional body is required to lead a value study.
- Ethics. The Standards of Conduct available on the SAVE International® Web site applies to all value management services.



3.0 GSA Cost Management Requirements

3.1 Policies and Requirements

Cost Management Requirements.

An estimate must be prepared for any capital or non-capital expenditure. Every Government estimate must be prepared as though the Government were competing for the award (**Federal Acquisition Regulation (FAR 36.203)**). Therefore, all estimates, regardless of the life-stage, must reflect costs that a prudent and experienced contractor would incur.

The P-120 establishes format, structure, frequency, and required supporting analyses for the cost management submittals.

Within GSA, cost management has many different purposes:

- **Screening, Selecting, Vetting.** As GSA assesses various approaches, high level estimates support narrowing the possible approaches as costs and benefits of each option are evaluated. (Initiation Phase)
- **Feasibility.** Estimating supports the analysis of alternatives related to the selected approach. (Project Planning and Development Phase)
- **Budget Authorization.** Based on the selected alternative, prepare estimates to support budget requests and authorizations. The budget requested should be tightly aligned with the scope and schedule developed from the planning and development activities. The budget approved may be less than the budget requested.
- **Control.** Create a cost plan based on the approved budget. Estimating at key milestones provides checks against the budget and opportunity for corrective action. (Design Phase, Procurement Phase and Construction Phase)

Independent Government Estimates (IGE).

The FAR requires that an IGE be prepared for all contracts and requires a detailed IGE as defined in FAR Part 36 for all projects exceeding the Simplified Acquisition Threshold.

- An **Independent Government Estimate** is defined as an unbiased cost estimate based upon the specifications and without the influence of a potential contractor's marketing efforts or input. The IGE is generally prepared by either the Government's own representatives, the Architectural and Engineering firm that prepared the design, or the Construction Manager as Advisor.

An IGE is required prior to:

- Commitment of funds (for project funding)
- Contract Solicitation (for contract award)

FAR 36.203 requirements for the estimate used for construction contract award are:

- An IGE of construction costs must be prepared and furnished to the contracting officer at the earliest practicable time for each proposed contract and for each contract modification anticipated to exceed the simplified acquisition threshold.



The contracting officer may require an estimate when the cost of required work is not anticipated to exceed the simplified acquisition threshold. The estimate must be prepared in as much detail as though the Government were competing for award.

- When two-step sealed bidding is used, the IGE must be prepared when the contract requirements are definitized.
- Access to information concerning the IGE must be limited to Government personnel whose official duties require knowledge of the estimate. An exception to this rule may be made during contract negotiations to allow the contracting officer to identify a specialized task and disclose the associated cost breakdown figures in the Government estimate, but only to the extent deemed necessary to arrive at a fair and reasonable price. The overall amount of the IGE must not be disclosed except as permitted by agency regulations.

The cost estimate submitted before planned construction contract action is used as the basis for the 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. When a Third-Party Estimate (TPE) is available, this may be deemed to be the IGE if the TPE meets the level of detail and clarification that a government generated IGE would have, based on scope, project phase, and the requirements of the Master Deliverable Table.

Quality Control will be performed by a qualified government employee, as defined by the Region.

Third Party Estimates.

The **Third-Party Estimates** (TPE) are estimates prepared by an independent professional cost estimator unaffiliated with the design firm and the Construction Manager as Constructor (CMc). A Third-Party Estimate may be performed by the Construction Manager as Advisor (CMa) for the Regional execution team.

The Government requires:

- TPEs for projects with Project Category rating of 4.
- TPE Review of the A-E estimate for construction projects with Project Category rating of 3.

The Third-Party estimator may perform a **cost estimate review** or a **cost estimate**.

- A **cost estimate review** gives an expert opinion on the quality and accuracy of the A-E estimate. The focus of this quality control effort includes approach, completeness, assessing validity of assumptions and risk and reasonableness.
- A **cost estimate** must use the same Work Breakdown Structure (WBS) and estimate detail requirements of the A-E cost estimator. The focus of this quality control effort is similar to the cost estimate review, but has a greater focus on accuracy of the items quantified and priced.



The GSA Third Party estimators must have a thorough understanding of the marketplace in which the project is located, research market prices for general construction items, and specialty items to prepare a cost review or cost estimate.

Professional Services Fee Estimate Preparation.

The FAR requires an Independent Government Estimate of the cost of professional services, such as architect/engineer, construction management, project management, or other specialty consultant services be furnished. (e.g. FAR 36.605, Estimate for A-E contracts; FAR 36.203, Government estimate of construction costs)

All A-E cost proposals and IGEs must include the GSA Forms [2630-14](#) and [2631-14](#). The reference instructions associated with 2630-14 and 2631-14 the forms must be followed.

3.2 Activity Specific Requirements

Prospectus Specific Core Requirements.

In accordance with the Public Buildings Act of 1959 (PL 86-249), as amended, the U.S. 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.

Construction bids may be solicited only if the Estimated Cost of Construction (ECC) amount at final construction documents is within congressionally authorized prospectus limits. The ECC is equal to the sum of the Estimated Cost of Construction at Award (ECCA), the Construction Contingency, and the allowance for Art in Architecture. The construction bids should be no greater than the design to limit of the A-E contract (ECCA amount).

Under-Prospectus Specific Core Requirements.

Budget estimates must be based on defined scope and include stipulated amounts based on percentages directed by policy for design contingency and construction contingency. Budget estimates also include cost for professional services, which may include design services, CMA services, and commissioning services.

Control estimates are required during the design phase to ensure projects are delivered within budget to an agreed-upon scope. Cost management submissions must be prepared meeting the requirements stipulated in this policy.

Construction bids may be solicited only if: (1) the Estimated Total Project Cost (ETPC) is less than the prospectus level for any given year or (2) the IGE is less than or equal to the Design-to-Cost budget. ETPC includes the ECC plus estimated design and review costs plus estimated management and inspection costs.

The IGE for procurement must be in compliance with the applicable guidance found in the FAR.

Leasing Specific Core Requirements.



Leasing Requirements are established in the [GSA Leasing Desk Guide](#), including requirements for estimates. In the event of conflicting requirements, The Leasing Desk Guide Requirements take precedence over the P-120. Specifically, the P-100 does not govern lease proposals from lessors. These are governed by the lease language. Estimates prepared by GSA in support of leasing actions must follow the P-120 requirements.

For additional procedural guidance, see the [Leasing Desk Guide](#).

Alternative Project delivery.

Alternative Project delivery includes delivery methods such as Design Build, CM as Constructor (CMc), CM as Advisor (CMa), among others. The P-120 does not govern cost proposals or bids from alternative delivery contractors. These are governed by the contract language. Estimates prepared by a CMa for GSA, as in CMa or in pre-construction consulting services, or by GSA in support of alternative delivery actions follow the P-120 requirements.

3.3 Cost Management Core Principles

Cost Control Due Diligence.

A **Cost Plan** is a key first cost management step after receiving budget approval. The Cost Plan allocates the overall budget to the various elements of the Work Breakdown Structure. Cost management establishes a system that tracks the current estimate against the cost plan for each Project Structure element.

The initial Cost Plan is prepared by PBS prior to procurement of design or construction services. The cost is tracked throughout the life of the project, from inception to final project close out.

Internal estimate reviews, third party estimates and IGEs are essential elements of the GSA project Quality Control.

3.4 GSA Cost Management Requirements

Estimate Scope.

The estimate must include all elements of the proposed project work (including all professional services contract modifications, such as design), regardless of the phase. It is the estimator's responsibility to ensure that all project costs are fully addressed, and that the scope boundaries are well defined. Even where estimates for portions of the work, such as owner furnished equipment, land acquisition, or entitlements, are provided by others, the estimator is responsible for establishing the total project cost. Not all cost categories will be needed for all estimates.

Where costs are included for details not indicated on the drawings and specifications, the estimator must include and document 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.

The estimate must be structured and formatted to clearly present the key information for decisions that must be made.

The estimate must reflect the planned delivery method, and allocate costs accordingly. See Glossary for specifics related to commonly used [delivery methods](#).

Pricing of Work Items.

GSA requires that work items be measured and priced at a level of detail that is commensurate with the level of design, as noted in the [P120 Master Deliverables Table](#).

Pricing must reflect the conditions of construction and address all premium factors such as

- Logistic complexity (phasing, constrained site conditions, difficulty of accessing the equipment, etc.)
- Existing conditions, including hazardous materials
- Non-standard working hours, overtime, shift premiums

Where quantities can be measured with sufficient confidence, work item pricing must be based on measured quantities. Parametrically derived quantities or assumptions may be made in the absence of measurable detail.

Individual work items must have unit-price cost estimates unless otherwise stated. The basis for these unit costs must be well documented and included in the supporting data of the estimate. For construction estimates, add applicable indirect costs, such as overhead and profit at a subcontractor level, to these direct costs to reflect the in-place construction cost per unit of work required.

- Lump-sum pricing is not acceptable without description and quantification.
- For estimates prepared during Project Initiation and Project Planning and Development phases, it is acceptable to use unit prices combining labor, materials, and equipment costs in a single figure.
- For concept design and schematic estimates, it is acceptable to use unit prices combining labor, materials, and equipment costs in a single figure.
- Other Design Phase estimates and Procurement, Construction, and Closeout Phase estimates require 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 may require 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 estimator provides a general 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.

Allowances, Contingencies and Reserves.

In preparing budgets and estimates for construction projects and programs it is necessary to include a provision for monies to cover unknown or unforeseen circumstances and risks. PBS cost management practices follow the guidance set forth in [ASTM E2168 Standard Classification for Allowance, Contingency, and Reserve Sums in Building Construction Estimating](#).

Key principles are:

- **Allowances** are used for planned project items until they can be better defined. They are part of the construction estimate.
- **Contingencies** are used for unintended, not directly controllable project occurrences. They are part of the project estimate.
- **Reserves** are held by management for unforeseen changes in project requirements. They are part of the program estimate.

Within the ASTM definitions, the [Design \(or Estimating\) Contingency](#) is technically an Allowance for completion of the defined planned project scope.

Allowances and Contingencies must always be separately identified, so that the magnitude of a contingency's impact is clear. For example, the estimator may never add an allowance or contingency by concealing it within unit pricing or quantity estimates or takeoffs. For any allowance, a comprehensive list of assumptions should be included within the summary. Costs for assumptions should be quantitative and not based on lump sum, percentage-based, or inclusive-based on a single unit cost.

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.

Bid Options / Alternates.

Where indicated by the [Master Delivery Table](#), the A-E is required to propose Bid Options / Alternates. The proposed Bid Options / Alternates must reduce the ECCA to 10 percent below the budget limitation. When Bid Options / Alternates are used in the project, separate cost estimates for the base bid and for each individual option or alternate are required. The estimates must follow the required project WBS.



Reviewing and Reconciling Estimates.

GSA requires a thorough review and acceptance of the cost management submittal of an A-E deliverable as part of a Quality Control process. After GSA completes an internal review of the estimate, a final estimate addressing GSA comments is submitted.

When GSA requires the preparation of a Third-Party Estimate or an Independent Government Estimate, the A-E is responsible for designating a member of its team to reconcile the TPE or IGE with its own estimate in an orderly and comprehensive manner. A final estimate reflecting the reconciled estimate is submitted.

Benchmarking.

Benchmarking may be required to assess and verify the cost of a project by reference to established costs for similar facilities.

GSA's regional project manager must provide 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.

3.5 GSA Cost Estimate Elements

Direct Cost.

Direct Cost includes all physical elements of the construction:

- All labor, material, and equipment costs for permanent components of the physical construction
- Associated temporary construction directly related to permanent components, such as concrete formwork. Sitewide temporary facilities are typically included with Field Overhead
- Field supervision directly related to permanent construction, such as working supervisors. General superintendents and sitewide management are typically included with Field or Home Office Overhead
- Subcontractor Field and Home Office Overhead cost and profit
- Allowances related to permanent construction elements, such as an allowance for miscellaneous metals
- Sales and use taxes on construction inputs

Design Contingency.

The design contingency is an allowance to cover expected but undefined permanent construction elements.

Design 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 on the complexity and uncertainties of the component parts of the project.

Guidelines for Standard Design Contingencies (percentage of Direct Cost)				
Estimate Category	Capital		Non-Capital	
	New Construction	R&A	Simple Projects	Complex Projects
Planning and Development	10%	10%	10%	15%
Concept Design	7.5% – 10%	10% - 15%	7.5% – 10%	10% - 15%
Design Development	5% - 7.5%	7.5% – 10%	5% - 7.5%	7.5% – 10%
75% Construction Documents	2% - 5%	3.5% - 7.5%	2% - 5%	5% - 7.5%
90% Construction Documents	1% - 3%	1.5% - 3.5%	1% - 3%	2.5% - 4.5%
Final Construction Documents	0%	0%	0%	0%
Guidelines for Standard Construction Contingencies (percentage of ECCA)				
New Capital Construction, Capital 7%			7%	
Modernization, Capital 10%			10%	
Limited Scope Repair and Alteration, Capital			10%	
Complex Scope Repair and Alteration, Non-Capital			10%	
Limited Scope Repair and Alteration, Non-Capital			10%	

Table 3-1: Contingency Guidelines.

General Conditions and Profit.

General Conditions and Profit are defined in [ASTM E2083 Standard Classification for Building Construction Field Requirements, and Office Overhead & Profit](#). ASTM does not define or use the term “General Conditions.”

Building Construction Field Requirements, and Office Overhead & Profit include:

- All costs incurred by the prime contractor in managing and running the site, whether in the field or home office, including:
 - Field/site set-up and accommodation
 - Management, supervision, and field engineering
 - Personnel travel and lodging
 - Safety and protection
 - Construction aids, equipment, and tools
 - Temporary construction
 - Environmental requirements
 - Quality Control, inspection, and testing
 - Maintenance and housekeeping
- Bonds, permits, fees and insurances
- The portion of the contractor’s home office costs and corporate overhead allocated to the construction contract.
 - Office expenses
 - Office staff not assigned to a specific project



- Business operations
- Insurances
- Financing
- Any fee or profit mark-up applied by the prime contractor as compensation for undertaking the work

Building Construction Field Requirements, and Office Overhead & Profit can be estimated as a percentage allowance or by using detailed cost build-up.

Special Use Taxes.

Special use taxes cover any taxes imposed on the completed construction project, such as Gross Receipts Taxes, Transaction Privilege Taxes, or certain states' (such as Washington's) Sales Taxes.

Escalation.

The escalation estimate is a contingency to address future cost increases due to:

- Market inflation and cost increases
- Changes in cost due to changes in code or practice

For simplicity, the estimator may assume that half of the work will occur before the midpoint of construction and half after, and therefore, escalate the estimate to the midpoint of construction to reflect the contractor's provision for inflation in its bid. Where a cost-loaded schedule is provided, escalation may be calculated by activity.

The Market Study prepared for the project estimate submission must be a primary data source determining an appropriate escalation allowance.

Construction Contingency.

The construction contingency is a contingency to cover changes in the contract cost during construction. These changes may arise from unforeseen site conditions, design coordination, etc.

Any cost impacts resulting from scope change must be accommodated by approved revisions to the project funding and not through the use of construction contingency.

Art in Architecture.

[Art In Architecture](#) is a specific allowance required by GSA policy for installation of art in new Federal construction and major modernization projects above prospectus level only. It is set at 0.5% of the Estimated Cost of Construction.



Design, Review, Management, and Inspection Costs.

Design, Review, Management, and Inspection costs are costs incurred by GSA for professional services for designing and managing the project. There are two categories:

- Design and Review covers all non-construction activities for the design phase services, including both design and design phase CM services, whether provided by GSA or an independent CMA. Design and Review also includes any design phase commissioning (Cx) services, plan review, or similar services.
- Management and Inspection covers all non-construction activities during the construction phase, including the design firm's Construction Administration services, CM services (whether provided by GSA or an independent CMA), and any construction or close-out commissioning services.

Furnishings, Fixtures and Equipment (FF&E), IT/AV, Personal Items.

Any furnishings or equipment necessary for the completion of the project, but not included in the direct cost, are included in this section. This includes any acquisition costs for owner furnished equipment that is installed by the contractor.

Establishing the scope and cost allocations for FF&E, IT/AV, personal items, etc., is essential to ensure that budgets are accurate and adequate for project delivery. It is the estimator's responsibility to review budgets for completeness.

Items commonly included in this section are:

- Fixed and moveable furniture, including workstations
- Tenant equipment
- Active IT/AV equipment, including servers, hubs, routers, wireless access points, AV head-end controllers
- Terminal IT/AV equipment, including monitors, docking stations, handsets, etc.
- Move-in and installation costs

Land Acquisition/Real Estate Costs.

Land Acquisition and Real Estate costs include any cost related to acquiring the site as a developable site. The costs could include:

- Purchase or leasing costs
- Commissions, legal fees, leasing commissions
- Surveys or appraisal fees
- Entitlements or mitigation activities undertaken as part of the acquisition

Financing.

Financing typically is not included within GSA estimates, but it may be needed for specific project delivery methods, such as Design, Build, Finance, Operate, Maintain (DBFOM), where the contractor has specific carrying or financing obligations.



GSA Estimate Terminology			
Abbreviation	Full name of term	Term represents	Cost Estimate elements included
CECC	Current Estimated Cost of Construction	Estimate of construction as designed (bid amount) in current dollars	–Direct Cost + Design Contingency + General Conditions and Profit + Special Use Taxes
ECCA	Estimated Cost of Construction at Award	Estimate of construction as designed (bid amount) escalated to actual dates of construction	CECC + Escalation
ECC	Estimated Cost of Construction	Estimate of construction including construction phase changes, escalated to actual dates of construction	ECCA + Construction Contingency
EDRC	Estimated Design and Review Costs	Estimate of design phase professional services	Design and Review Costs
EMIC	Estimated Management and Inspection Costs	Estimate of construction phase professional services	Management and Inspection Costs
ETPC	Estimated Total Project Cost	Estimate of Total Project Cost	ECC + Art in Architecture + EDRC + EMIC + Furnishings/Equipment + Land Acquisition + Financing

Table 3-2: GSA Estimate Terminology

3.6 Estimate Requirements for Specific Delivery Methods

The allocation of costs within the estimate breakdown must be adjusted to reflect delivery methods other than Design-Bid-Build, as follows:

Design/Build.

- Any design services undertaken by the Contractor must be priced within the Estimated Cost of Construction at Award (ECCA).
- Any design or coordination (construction) contingency retained by the contractor in their bid must be priced within the ECCA.
- Any taxes on professional services (for example, Sales Tax in Washington State) must be included in the ECCA.
- The Design/Build ECCA can be designated Estimated Design/Build Contract Award Amount (EDBCA).
- Design or management services provided by GSA or GSA-retained consultants, including pre-design, performance specifications, or bridging documents must be included in EDRC or EMIC.
- The Construction Contingency, EDRC and EMIC line items must be reduced accordingly.



CM as Constructor.

- Any Construction Management services, including any design phase services, undertaken by the Contractor must be priced within the Estimated Cost of Construction (ECC).
- Any design or co-ordination (construction) contingency retained by the contractor must be priced within the ECC.
- Any taxes on professional services (for example, Sales Tax in Washington State) must be included in the ECC.
- Design or management services provided by GSA or GSA retained consultants, including pre-design, performance specifications or bridging documents must be included in EDRC or EMIC.
- The Construction Contingency, EDRC, and EMIC line items must be reduced accordingly.

3.7 Work Breakdown Structures (WBS)

WBS Overview.

The purpose of the Work Breakdown Structure is to organize and report costs by major project elements, such as Core/Shell and Tenant Improvements, or by phase, typically to match costs with funding streams or cost “buckets”. The WBS elements will therefore vary by project and project needs, but there are standard GSA WBS requirements for common project types, for example, GSA pricing policy as set out in the Pricing Desk Guide, requires a separation between the building shell and core costs, tenant improvements for each tenant costs, and the amortized capital security costs (i.e., vehicular barriers, secure doors and locks, progressive collapse, blast mitigation, and window glazing).

The intent of the WBS is to organize costs in a useful and meaningful way for the project. The breakdown may be organized by physical elements, (Building A, Building B, etc.), by phase, by activity (planning, design, construction, etc.), according to project needs. It may even be a mix, for instance, breaking down first by phase, then by physical element.

Situations that influence 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 the course of more than one year
- Separation of a project into base-contract work and options or alternates



The Project Manager (PM), in conjunction with the cost and schedule management technical team members, will create a workable WBS for the program or project that meets these requirements. Typically, WBS should be no more than four or five layers deep.

New Construction and Major Renovation.

It may be necessary to subdivide estimates for individual buildings and other components into new construction and major renovation.

Building Shell and Tenant Improvement (TI) Projects.

For estimates prepared by, or on behalf of GSA, GSA's pricing policy ([Pricing Deck Guide, 5th edition, 2019](#)) calls for a separate Tenant-Improvement breakdown of all tenant-space fit-out, identified by agency. This is a separate tenant improvement estimate for each tenant. The WBS must be organized for this requirement. This requirement does not govern for proposals submitted by lessors.

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

- Building Shell
- Tenant-agency fit-out
- Security upgrades

The associated professional services costs included in the occupancy agreement between tenants and GSA must be reported using this WBS.

Campus and Multi-structure Projects.

Projects involving more than one structure may require separate estimates for each structure (e.g., buildings, canopies, sitework). Separate site construction-cost estimates may be associated with the estimates for each structure involved. The A-E and/or a construction management (CM) firm hired by GSA must prepare a construction-cost analysis for each structure and site development after award of a multi-structure project.

Phased Projects.

For project work divided into more than one construction phase, separate cost estimates, accompanied by an overall project estimate summary, support each phase. For phased construction, the A-E or 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.

Mixed Funding Projects.



When project funds are secured from different agencies or are provided as a dedicated allowance for a specific program goal, the WBS must allow for separate tracking of these elements. 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. The WBS for the project must support the tracking of costs for the different agencies.

Work Items Project Structure Considerations.

When projects are defined by work item (replace roof, add mailroom, for example), the WBS can be structured by the work items. This is commonly found in Repair and Alteration projects, but could apply to any project. For these types of projects, the [GSA Inventory Reporting Information System \(IRIS\)](#) is commonly used as one or more of the WBS levels.

3.8 Cost Breakdown Structures (CBS)

The purpose of the Cost Breakdown Structure is to organize and report costs for each component of the Work Breakdown Structure in a consistent and systematic manner. While Work Breakdown Structures are tailored to each project, the CBS is uniform throughout GSA.

GSA uses standard cost breakdown structures for cost estimating and cost management activities. A standard CBS:

- 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

While CBS provide consistency and a framework for cost estimates, the allocation of costs may vary based on delivery type and project requirements. Workers' Compensation insurance, for example, typically is carried within the Direct Cost labor element, but may be included in Field Overhead if a project has a wrap-up insurance, such as an Owner Controlled Insurance Program (OCIP).

PBS uses two primary CBSs for construction estimates:

- Unifomat II (ASTM E1557)
- MasterFormat (by CSI)

Each CBS provides a hierarchy of organization for grouping and summarizing individual work items. The levels in each CBS are:



Unifomat		
Level	Title	Example
Level 1	Major Group Elements	A Substructure
Level 2	Group Elements	A10 Foundations
Level 3	Individual Elements	A1010 Standard Foundations
Level 4	Sub-elements	A101001 Wall Foundations
Level 5 (not included in ASTM E1557)	Work Items	User defined
MasterFormat		
Level 1	Division	03 Concrete
Level 2	Broad Scope	03 11 Concrete Forming
Level 3	Medium Scope	03 11 13 Structural Cast in Place Forming
Level 4	Narrow Scope	03 11 13 20 Structural CIP – Beams and Girders
Level 5	Work Item	03 11 13 20 XXXX User Defined
IRIS		
Level 1	Work Category Title	320 Roofing Repairs
Level 2	User Defined	User Defined

Table 0-3: Cost Breakdown Structure Hierarchies

The lowest level in each case can be expanded as needed to create a deeper hierarchy. The GSA National Cost Management Tool (NCMT) has a 12-digit work item code, with the last 4 digits user-defined. For example,

03 11 13 20 1650 C.I.P. concrete forms, beams and girders, exterior spandrel, plywood, 24" wide, 4 use, includes shoring, erecting, bracing, stripping and cleaning

Detailed description of the CBS structures are included in **Appendix A**.

3.9 GSA Required Estimate Level of Detail

[ASTM Standard E2516](#) defines five classes of estimate, based on the maturity level of project definition. The classes run from Class 5, being the least developed, to Class 1, being a fully detailed estimate based on Construction Documents. A list of levels is included in **Appendix A**.

Estimate Stage	CBS	CBS Level of Detail (minimum)	ASTM Estimate Class	Basis of Pricing	Pricing
Screening/Order of Magnitude	Space Type	NA	5	Benchmark (historical)	Benchmark
Planning/Feasibility	Unifomat (preferred) Space Type	3	4	Parametric Benchmark (historical)	Combined unit price
Program Development Study	Unifomat	3	4	Parametric	Combined unit price
Concept Design, Preliminary	Unifomat	3	3	Measured with parametric allowances	Combined unit price
Concept Design, Final	Unifomat	4	3	Measured with parametric allowances	Combined unit price



Design Development, to 50%	Uniformat	5	2	Measured with line-item allowances	Combined unit price Lump sum/allowance <15%
Design Development, Final	Uniformat MasterFormat	5	2	Measured with line-item allowances	Combined unit price Lump sum/allowance <10%
Construction Documents to 50%	MasterFormat	5	1	Measured	Detailed unit price (L/M/E) Lump sum/allowance <5%
Construction Documents, Final	MasterFormat	5	1	Measured	Detailed unit price (L/M/E) No Lump sum/allowance

Table 3-4: Levels of Detail by Estimate Stages.

3.10 Cost Estimate Submittal Elements

Cost estimate reports provided at various stages of the planning and design process must include all the cost management activities required for the submittal.

Cost estimate reports must include the following elements, unless specifically excluded, in the sequence shown:

Executive Summary.

The Executive Summary is a brief (one-or two-page) documentation of the key findings from the estimate. These should include, at a minimum,

- A budget analysis, comparing the current estimate with available funds and prior estimates
- An analysis of key variations, and recommendations for correction
- A review of the key decisions, concerns, conditions, and risks or opportunities facing the project
- A statement of any recommendations for action, design, and Value Engineering related to the estimate

Basis of Estimate.

The Basis of Estimate documents the estimate methodology and the basis for development. It should be prepared in accordance with [**AACE International Recommended Practice No 34R-05 Basis of Estimate \(October 2021\)**](#), or other comparable accepted best practices guidance.

At a minimum, the Basis of Estimate should include:

- Listing of documents used in the development of the estimate
- Project description



- Basis for pricing: procurement methodology, conditions of construction/execution, anticipated market conditions, pricing sources, etc. Include key findings from the Market Analysis
- Basis for including undefined elements, assumptions made, allowances, contingencies, etc., including a review of any changes in allowances and contingencies. Include key findings from the risk and sensitivity analysis
- Schedule and basis for escalation allowances
- Exclusions
- Risks and opportunities
- Quality Assurance documentation and sign-off

Cost Summaries.

The cost summaries must be structured to provide a one-page review of the cost components. Typically, there will be at least two summaries, one at the Total Project Cost level, and one at the Construction Cost at Award level. The Construction cost summary will be at Unifomat or MasterFormat Level 2. The cost summary may be software-generated, but should follow the format of [GSA Report 3473 Project Cost Summary](#).

Parametric analysis.

All estimates are required to document the key building design and parametric data and cost summary by parametric quantity. The cost summary may be software generated, but should follow the format shown on the [GSA Cost Tools and Forms](#) inSite web page.

Detailed line-item cost reports.

Detailed line-item reports form the body of the estimate. These reports must show the basis of price build-up in a manner sufficient for GSA review.

The detail reports must be presented clearly in a consistent tabular format, organized and sub-totaled to align with the CBS and WBS at a level of detail commensurate with the design information.

The line-item cost reports may be presented in the native estimating format used by the estimator.

Additional Estimate detail

Where estimates have intermediate data, such as crew mix, mark-up allowances, etc., documentation of these must be submitted with the estimate. Additional estimate detail may be submitted as an appendix, and may be presented in the native estimating format used by the estimator.



Quantity Take Off / Calculation Report

Quantity Take off (QTO) and calculation reports must be submitted as an appendix to the estimate. These may be in the native QTO format used by the estimator.

Documentation of quotes received

Any quotes received must be documented and submitted as an appendix to the estimate. These may be copies of the quotes, or records of telephone/email communication with the vendor.

Quality Assurance Documentation

The estimator must submit Quality Assurance documentation in accordance with their approved QA processes. For IGE and TPE, the QA documentation may follow the independent or third-party estimator's internal processes.

The QA documentation must include, at a minimum, evidence of internal review of take-off, calculations, data input, transfer to summaries, gross quantity validation (bulk checks), and overall estimate outcome.

The QA documentation must include a cover sheet with sign-off by an authorized signatory for the entity providing the estimate.

Estimate Evaluations and Comparisons.

As appropriate, include comparisons to the baseline budget and prior estimates, including assessment major deviations and any necessary corrective or recovery actions. Sections may include:

- **Design to Cost Requirements Report.** When required by the [Master Delivery Table](#), the Design A-E team must submit a list of cost-saving items that collectively would reduce the project's cost to approximately 10 percent below the Design-to-Cost Limit to ensure that the project is developing within budget and scope. The cost estimator will prepare an itemized cost estimate for each cost-saving item at a level of detail commensurate with the primary cost estimate. This applies for all design submissions.
- **Cost Growth Report / Budget Analysis.** An ECCA summary is prepared at each milestone during design, using the [Form 3474, Project Cost Comparison Summary](#), 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. It is required at all submissions during the Design Phase.



Native Files.

Native files for estimates must be submitted in a secure format.

Adjunct Studies

The following adjunct study reports must be submitted as separate volumes with the cost estimate reports, unless specifically excluded. The scope is outlined in Ch. 4: [Adjunct Practices](#).

- Market Study
- Sensitivity Analysis
- Risk Analysis Report
- Life-Cycle Cost Analysis Report

3.11 Cost Estimate Submittal Requirements

Based upon project requirements, the Government requires cost management submissions as shown in the [Master Delivery Table](#).

	Screening/ Order of Magnitude	Planning/ Feasibility	Program Development Study	Concept Design	Design Development	Construction Documents	Bid Analysis	Change Orders/Potential Change Orders
Executive Summary	R	R	R	R	R	R	R	R
Basis of Estimate	R	R	R	R	R	R		R
Cost Summaries	R	R	R	R	R	R	R	R
Detailed line-item reports	R	R	R	R	R	R		R
Additional estimate detail (if appropriate)	R	R	R	R	R	R		R
Quantity take-off				R	R	R		R
Quotes				R	R	R		R
QA Documentation	R	R	R	R	R	R	R	R
Native Files				R	R	R		R
Market Study	R	R	R	R	R	R	R	R
Sensitivity Analysis	R	R	R	R	R	R		
Risk Analysis Report	R	R	R	R	R	R		
Life-Cycle Cost Analysis Report-TCO	R	R	R	R				
Life-Cycle Cost Analysis (Options)				R	R	R		

Table 3-5: Components of Cost Reports (R = Required)

In addition to cost estimating, cost management activities may include:

- Estimating associated with value engineering studies
- Various analyses as requested during construction and close-out, i.e., Value Engineering Change Proposal Analysis (VECP)



3.12 Cost Management Tools

Cost Estimating Systems.

GSA PBS requires internal personnel and contract employees governed by GSA PBS IT policy to use approved internal national cost estimating applications.

GSA encourages, but does not require, professional services contractors to use any specific computer-based estimating programs to prepare cost estimates for submission. However, cost management submittals require more than cost estimates and include other requirements stipulated elsewhere in this policy document.

4.0 Adjunct Practices

4.1 General

A sound cost estimate relies on adjunct practices to inform the estimating team and help explain important cost-related aspects to the project management team. Adjunct practices help ensure that estimates are credible and accurate.

The level of effort required for the adjunct practices that support the cost estimate is set by the [Master Delivery Table](#) and [Table 4-5](#).

4.2 Market Study

A **market study** is essential to provide a cost estimate that will reflect anticipated bids. It explores all factors influencing construction costs appropriate for the current design stage.

It is the responsibility of the A-E to conduct the market study. The market study will:

- Inform the project team of any project market-related risks to consider in risk management
- Assist the cost estimator in understanding of market competition, availability of labor and materials, and site accessibility
- Assist the cost estimator in developing the cost escalation to use when preparing the estimate.

General Requirements.

Best practice dictates that all estimates reflect the anticipated market conditions for the project, and GSA requires estimators to undertake sufficient market evaluation to identify the likely bidding conditions and market impact, regardless of project size or stage. This evaluation may be an informal market assessment based on local expertise, or it may include a formal Market Study. Specific Market Study requirements are laid out in the [Master Delivery Table](#) and [Table 3-5](#). A Market Study report will document the research, findings, and recommendations of a market analysis.

The Market Study is fundamental to establishing appropriate escalation rates and understanding specific risks the project faces in the local market. Information collected may be useful for schedule management activities.

The level of effort for a market study depends on the nature of the project and the market complexities. The specific Market Study requirements for a project will be set by the GSA Project Manager prior to advertising for design services.

The final estimate must incorporate the conclusions of the latest Market Study. The estimate will 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.



GSA's Third-Party Estimator must have a thorough understanding of the marketplace in which the project is located. The Market Study report is shared with the Third-Party Estimator, who may elect to check and validate aspects of the report when using it.

Market Study Types.

A market study will use a variety of sources to collect pertinent data. The level of detail required will influence the sources consulted for the market analysis. It is essential that the sources used have knowledge of construction in the area.

- Preliminary. A preliminary study relies on generally available source information without detailed investigation. It may include aggregating published or web information and project team experience regarding market conditions, level of construction activity, etc. It may also include calls to local sources that are information aggregators.
- Market Investigation. The Market Investigation includes telephone and email contacts to industry information sources consulted, such as designers, contractors, subcontractors, as well as long-lead and key material suppliers. The effort includes revisiting some of the previous contacts to assess if their views have changed. This analysis should more realistically discover and highlight any potential issues related to specific trade subcontractor interest, labor issues, and material supply difficulties.
- Detailed Market Analysis. The detailed analysis includes site visits and in-person interviews. This level of report typically is required only where the market conditions are a significant risk factor for the project, for example, developing a major project in a limited resource market. 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.

Market Study Documentation Expectations.

The Market Study preparer gathers pertinent data as prescribed for the class of study. In classes using interviews of local firms, preparers must have knowledge of construction in the area. Particular emphasis must be placed on ascertaining the availability of mechanical and electrical subcontractors and the associated skilled labor trades.

The Market Study report is part of the complete estimate submission. Its summary gives a market assessment with specific recommendations. It must reflect recent and expected bidding conditions that may influence the cost of construction and list all sources of data. The Market Study includes documentation of all sources:

- Who was contacted (person, firm, phone, e-mail, web URL)
- Where they are located
- When contact was made
- Why they were contacted
- What information was obtained



Sources may include, but are not limited to:

- Publishers of construction market data, such as Construction Market Data (CMD Group)
- Builders-exchanges and construction-reporting firms
- Local government offices/officials for building permits, etc.
- Lending institutions (bankers and commercial mortgage firms)
- Economic development associations
- Builders' associations
- General contractors and subcontractors
- Architecture and engineering firms

4.3 Life Cycle Costing (LCC)

Policy.

Federal facilities must be designed to be cost effective over the life of the investment, that is, they must achieve the required performance at the lowest life cycle cost. A project's design must comprehensively define reasonable scope and performance requirements within the authorized budget for design and construction. Consistent with these constraints, building systems and features must be analyzed and selected to achieve lowest life cycle cost. Life cycle costing is an important element of the [GAO Best Practices](#).

All PBS projects, regardless of Budget Activity area, project size, or stage, must incorporate Life Cycle Cost Analysis considerations into decisions and planning. This evaluation must be sufficient to determine that the selected option meets the requirement for best value, that is, the most resource-efficient way to reliably accomplish a function that meets performance expectations. The Life Cycle Cost Analysis may be an informal evaluation based on design team expertise, or it may include a formal Life Cycle Cost study. Specific LCC requirements are laid out in the [Master Delivery Table](#) and [Table 3-5](#).

Life Cycle Cost Analysis (LCCA).

Life Cycle Cost Analysis must be performed in accordance with [OMB Circular A-94](#) and [ASTM E917](#). Discount Rates must be based on the most recent version of Appendix C to OMB Circular A-94.

Types of Life Cycle Cost Analysis (LCCA).

Total Cost of Ownership (TCO):

- The TCO is the Net Present Value of all costs and benefits of developing, operating, maintaining, and disposing of the building over the analysis period.
- Program costs and costs related to the functional use of the building are typically excluded, but may be considered if appropriate.

Comparative Analysis



- Comparative Analysis is used to compare two or more building elements, components, or systems.
- The comparison analysis only includes differential costs. For example, comparison of mechanical systems should consider maintenance and energy use, but does not consider cleaning or janitorial costs.

The LCC Model report must include:

- Project definition: project scope of the project, objectives, schedule, and constraints
- Summary of discounted costs, total and by year
- Financial and economic parameters: study period, discount rate, key dates, inflation, utility pricing, operational assumptions
- Cost data: capital, operating, maintenance, replacements and repairs, end-of life (residual or disposal), timing
- Computations and analyses: total costs for Initial, annual, cyclical, and end-of-life costs, sensitivity analysis

The cost estimator will support the A-E in the preparation of the LCC reports. Reports must document the effort to allow proper decision-making based on the analysis effort. The report must include:

- Project description: general project information, focus and objective of analysis, constraints
- Alternatives evaluated: describe each alternative, rationale for selecting, non-monetary / intangible considerations
- Summary and Recommendations
- Financial and economic parameters: study period, discount rate, key dates, inflation, utility pricing, operational assumptions
- Cost data: capital, operating, maintenance, replacements and repairs, end-of life (residual or disposal), timing
- Computations and analyses: total costs for initial, annual, cyclical, and end-of-life costs, sensitivity analysis

4.4 Risk Analysis

The Primary Objectives of Risk Analysis.

Within the context of the P120, the objective of risk analysis is to identify key risks or uncertainties that could impact the cost or duration of the work or the successful delivery of the project. It is intended to be used to establish appropriate risk mitigation and management strategies to allow the project to be delivered within budget and schedule. Strategies will include identifying areas that need further analysis or study, setting appropriate project management controls, selecting design options that lower risk, and evaluating general or risk specific contingencies/allowances. Risk analysis should evaluate both negative (threat) and positive (opportunity) uncertainty.

The objectives are both informational and analytical:



Informational

- Identifying and characterizing risks and opportunities and bringing them to the forefront of the project team's attention

Analytical

- Preparing a range estimate and schedule
- Identifying reasonable contingency and schedule float levels
- Establishing a risk-informed opinion of probable cost and duration

General Requirements for Risk Analysis.

Qualitative Risk Evaluation.

A Qualitative Risk Evaluation is required for all projects, regardless of size, unless a Quantitative Risk Assessment is being performed. The depth of analysis will depend on the level of risk identified. At a minimum, the qualitative risk assessment must include:

- Identification and documentation of key risks (or opportunities) faced by the project
- Adjectival characterization of the risk by likelihood and impact. The impact scale will depend on project size; for example, a loss of \$100,000 may be viewed as a significant for a small project, while it may be minor for a large one
- Identification and documentation of risk management approach to eliminate, reduce, or mitigate/offset the risk, including qualitative assessment of appropriate contingencies
- A narrative report documenting the key risks, their impact, and the planned management actions to reduce the impact

Quantitative Risk Assessment.

When a quantitative risk analysis is required, the cost estimator will perform a risk analysis using the current estimate. At a minimum, this must include:

- Identification and documentation of risks (or opportunities) faced by the project
- Quantitative characterization of the risk by likelihood and impact. The quantitative characterization must include estimates of probability and cost quantity for the risk event, and the likely probability distribution.
- Identification and documentation of risk management approach to eliminate, reduce, or mitigate/offset the risk.
- Quantitative characterization of the residual risk following planned management actions
- Analytical assessment of appropriate contingencies. Best practice is to use a Monte Carlo simulation on the quantified risk characterization, but alternative approaches may be considered for small or low risk projects.



- A narrative report documenting the key risks, their impact, and the planned management actions to reduce the impact
- A risk register listing the risk detail and analysis

Range Estimate Report.

Whether the risk evaluation is qualitative or quantitative, it should lead to a range estimate. The range estimate is intended to document the low (optimistic), most likely, and high (pessimistic) values for an estimate, based on probability. This is commonly referred to as a three-point estimate. Range estimates can also be expressed using five-point estimates, breaking high and low values into “worst case” and “highest credible,” and “best case” and “lowest credible.”

The range estimate is not intended to capture all possible costs, but rather the credible spread of costs. The points and spread are commonly characterized by “confidence levels,” which represent the percentage probability of costs falling within the range. Commonly used confidence intervals are 90% and 80%. The 90% interval represents that there is a 5% or less chance that the costs will fall below the range and a 5% chance that they will fall above. In the absence of detailed and comprehensive quantitative risk assessment, these high and low values are subjective and imprecise, and the estimator should seek to establish, to their best judgment, the reasonable worst and best cases, with the overall goal of establishing an 80% to 90% confidence interval.

As required by the [Master Delivery Table](#) and [Table 3-5](#), a range estimate must be prepared for the estimate. The range estimate process is used to establish a confidence interval around the point estimate.

Range Estimate Report Requirements.

- GSA requires that the cost estimator prepare a range estimate. The Range Estimate is strictly for the project scope as defined. Any uncertainties in scope should be reflected in the broader Risk Management efforts for the project. The range estimate must consider information gathered from the Market Study.
- The cost estimator will produce the Range Estimate report. The process will include determining the cost impact of known risks, determining the probability that the actual cost will differ materially from the point estimate, performing qualitative and/or quantitative risk analysis, and applying results to the point estimate to determine the risk-adjusted total cost. The estimator must use appropriate risk distributions and ensure that risks are correlated.

Risk Management Support Requirements.



When a project requires formal Risk Management sessions, the estimator and scheduler may be required to support the sessions by providing expert advice on the risks identified.

4.5 Sensitivity Analysis

Primary Objectives of Sensitivity Analysis.

GAO best practice uses sensitivity analysis to understand whether a small change in the factor studied yields a large change in overall cost. A sensitivity analysis aids decision makers in choosing alternatives by presenting a clear picture of the impacts of changes to an assumption or cost driver. A sensitivity analysis is not a substitute for a risk analysis range estimate. It looks at the impact of any single factor on project cost.

General Requirements.

Estimate submissions must include sensitivity analysis as part of the estimating effort, as required in the [Master Delivery Table](#) and [Table 3-5](#). During Feasibility, Program Development, and Concept Design, the estimator must be aided by the designers in the selection of appropriate factors to study. As the design becomes more established, the estimator must focus on factors highlighted by the Market Study.

The sensitivity analysis varies the factor considered by a minimum and maximum amount (worst and best case spread). A sensitivity analysis only varies the specific factor or scenario selected for analysis. It shows how one change will change the overall cost. In this way, it differs from the Range Estimate, which varies multiple project factors at once. The range inputs for a factor should be the same in both exercises.

Document the results of the sensitivity analysis in a Sensitivity Analysis Report, which is submitted as part of the estimate submittal. The report must include:

- Summary: What factors were studied? Summary of impact of each factor studied on overall cost.
- Narrative for each factor studied: Why the factor was selected? Rationale for selecting maximum and minimum values,

Backup for the sensitivity cost estimates is not required for the submission, but should be available if requested.



5.0 Procurement and Construction Phase Requirements

5.1 Procurement Phase Requirements

Contract Award Package.

In accordance with FAR, all contract award actions require Independent Government Estimates (IGE), regardless of procurement strategy or contract structure. The IGE must provide an ECCA estimate for the base bid per the Project Structure, and/or options/bid alternates 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.

The IGE estimates must be marked “FOR OFFICIAL USE ONLY” to preserve balance and confidentiality during negotiation and award. The overall amount must not be disclosed under any circumstances prior to award.

The IGE must be independent of the bidder or proposing entity, as noted in [Section 3.1](#). A CMc, Design Builder, lessor, or any other proposer cannot develop the IGE.

Bid Submission Documents.

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

Bid Evaluation

The estimator must provide support as required during the bid evaluation. This may include analyzing bid breakdown, bid qualifications, and, for negotiated or CMc contracts, ensuring that proposed costs are in accordance with the contractual obligations for pricing.

Negotiated Procurement/Contract Modification

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 negotiation team strives for fair and reasonable price, 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.



- 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.

Cost Analyses.

Construction-Award Bid Analysis. After the construction contract is awarded, GSA will provide the following data to the A-E:

- 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 A-E must:

- Perform an analysis of the bid data, using all available cost data.
- Review the independent cost estimate, which reflects the design upon which the construction award is based.
- Revise the Project Cost Summary (Form 3473) to align with the actual bid price.
 - A simple adjustment of the elemental costs by a single factor derived from the ratio of the independent cost estimate total cost and the award total cost is acceptable. This is the preferred approach should the contractor provide cost data not be easily aligned with the Cost Breakdown Structure of the Project Cost Summary.
 - The adjusted cost data is provided in the appropriate GSA formats; Unifomat II and, if applicable, IRIS Work Item.
 - The A-E may use the IGE in the analysis if desired.
- Based upon the above-cost, post-award bid analysis, complete as required in the [Master Delivery Table](#), and submit the form to the GSA Regional Office and Central Office.



- The form must report the construction cost, as awarded, and parameters based on the primary CBS of the project (i.e., Unifformat II and, if applicable, IRIS Work Item). Each form must compare costs and assigned design parameters.
- The data contributes to the GSA PBS Construction Cost Database.

5.2 Construction & Close-Out Phase Requirements

Contract Amendment Cost Estimate.

An Amendment Cost Estimate is prepared similarly to estimates for the Contract Award Package. The Government estimate must be prepared before the Amendment request is sent to the proposing contractors. The IGE must be provided the same documents concerning the proposed modification that the contractors will be provided.

Change Order/Potential Change Order (PCO).

An IGE must be prepared before the modification request is sent to the contractor. The same documents concerning the proposed modification that the contractor will be provided with must also be provided to the independent estimator.

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 above the Simplified Acquisition Threshold. The Contracting Officer may require estimates of lesser amounts if he or she determines it is necessary. In contract modifications, the trigger amount is the sum of the absolute values of decreases and increases. For example, a modification resulting in decreases of \$100,000 and increases of \$160,000 would sum to an absolute value of \$260,000. Adjustments in methods or formats for the prime purpose of escaping this requirement are prohibited.

Note. The IGE marks all estimates "FOR OFFICIAL USE ONLY" to preserve balance and confidentiality during negotiations. The overall amount must not be disclosed under any circumstances prior to award.

The IGE must:

- Reflect the change documents and the requirements of the changed work.
- Reflect 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.
- 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.

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 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 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 and prices 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.
- The Independent Government Estimator weighs any premium costs allowed in the base contract change proposal against any additional impact costs requested.

Cost Analyses.

- Final Cost Analysis. At the end of Close-Out, the GSA PM is required to submit an updated [Cost Analysis Form](#) to the Regional Office and Central Office Cost Management Program. The Final Cost Analysis captures historic cost data to populate the national database. The PM may use a simple factor of the Final Cost divided by the original Award Amount to adjust the individual cost elements.

Cost Support.

- Requests for Equitable Adjustment Assistance. The estimator will assist the GSA PM in the review of request for Equitable Adjustment submitted by the contractor.
- Monthly Pay Request Support. The GSA PM may request support for review of monthly pay requests from the GSA estimator. This support is solely to provide a second opinion on the request relating to completion status using the Schedule of Values.
- Punch List Analysis Support. The estimator will assist the GSA PM during Close-Out as requested by reviewing the Punch List for potential Change Orders.

6.0 Schedule Management

6.1 Project Schedule Overview

The success of a project's delivery depends on having a reliable schedule that defines when and for how long work will occur, and how each activity is related to the others. The schedule provides a road map for systematic project execution and the means by which to gauge progress, identify and resolve potential problems, and promote accountability. The schedule also provides a time sequence for the duration of a project's activities and provides the dates for major milestones and the activities that drive the schedule. Preparing a robust schedule supports a project manager's ability to lead the project team to deliver the project. It helps others see what's next. Knowing and using a detailed schedule to guide a project's delivery is a good risk-management practice.

The schedule serves as an implementation tool to reflect how the project will progress. The project schedule should:

- Contain activity durations, interdependencies, and constraints that help to identify conflicts and bottlenecks, which harbor risks to a fluid on-time delivery
- When developed, produce a realistic and achievable timetable for executing the work, given the real-world constraints and limitations

The schedule informs as a communication tool in two ways:

- Informs the resources that they are assigned to work and when they are expected to perform work
- Informs the stakeholders of planned progress and, when the project has begun, actual progress

The schedule is an important tool for cost control. The schedule allows the project team to optimize resources to produce cost savings and is essential for determining productivity factors using earned value, allowing the project team to make better cost forecasts early in the project. Forecasting costs is a smart start to understanding the risks of time as money, which is the case when budgets are threatened by time delays.

The schedule is also important in managing changes on a project. Because the activities in the schedule are tied together with logical relationships, the schedule allows the project team to accurately evaluate changes from the plan and identify the resulting impacts to time and resources throughout the entire project lifecycle. The schedule also provides the project team with a tool to evaluate alternative execution strategies to meet business objectives (e.g., reduce duration or costs) by adjusting resources and logic. Managing change correctly is a major means of controlling the risks changes can have on a project's schedule and budget.

6.2 General Scheduling Requirements

A GSA Master Schedule is required for all projects. The Project Manager (PM) is responsible for the Master Schedule. A Master Schedule may be Critical Path Method (CPM) or non-CPM. The schedule is to span from the initiation of the project until the final closeout of the project.



Maintenance and updating of the schedule must be performed by the PM or an agent of the PM on a regular basis. The scheduling method will be determined by project type. The specific project sections below outline requirements.

Contractors are required to provide schedules for their contracted work. Requirements for those schedules are outlined in the [Division One Specifications](#).

All schedules should adhere to the best practices outlined in the [GAO Schedule Assessment Guide](#).

6.3 Scheduling Methods

Two types of scheduling methods are:

A CPM Schedule: A dynamic schedule with individual tasks that are logically linked. Any changes to the schedule are automatically reflected. Tools for creating a CPM Schedule include MS Project and Primavera P6. An example of a CPM schedule is a task based schedule - Gantt Chart.

A Non-CPM Schedule: A static schedule with individual tasks that are NOT logically linked. Changes are not automatically reflected throughout the schedule. Tools for creating a non-CPM schedule include Spreadsheets or Word documents. Examples of Non-CPM schedules include Spreadsheet Bar chart, Milestone schedule, or narrative.

6.4 Types of Schedules

A **Master Schedule** is a project schedule that spans from project inception through project closeout. The Master Schedule must incorporate all phases and tasks that make up the project, including client requirements and issues, external stakeholders, and overall project risks. This schedule is developed and maintained by GSA, typically by the PM or the CMA. Master schedules should be reviewed on a regular basis throughout the project.

A **Milestone Schedule** is a summary level schedule. It contains a list of dates that represent a group of tasks, specifically identified as project milestones. This schedule is developed and maintained by GSA, typically by the PM or the CMA.

A **Contractor Schedule** is a detailed CPM schedule developed by the contractor that identifies how the contractor will perform the work within a contractual timeframe. This schedule is developed and maintained by the contractor and reviewed by GSA.

A **Look-Ahead Schedule** can be developed by the contractor. It outlines what will be happening in the near future on a day-to-day basis. Unlike a master schedule that spans months or even years, the look-ahead schedule is specifically meant to outline what's happening in the next one, two, or three weeks.

6.5 GSA Master Schedule Minimum Requirements

Deadline for master schedule development is prior to the Requirements Finalized milestone



P120 Project Cost and Schedule Management Requirements
for the Public Buildings Service

Project Type	Schedule Type	Detailed Work Breakdown Structure / Milestones	Baseline / Re-baseline Schedule in Kahua at these milestones	Kahua Data Input
Project at or above Simplified Acquisition Threshold (SAT)	CPM Schedule	Generally, no activities over 2 weeks. Required minimum milestones are available at: Milestones Lists	Requirements Finalized Funds Received/Certified Design Award/Lease Award Prior to procurement Construction NTP	Upload CPM Master schedule Upload contractor schedule OR integrate contractor schedule and upload integrated master schedule Enter and baseline milestones
Project under SAT, at or above \$50k	Milestone Schedule	Required minimum milestones are available at: Milestones Lists	Requirements Finalized Funds Received/Certified Design Award/Lease Award Construction NTP	Enter and baseline milestones
Project below \$50k	Milestone Schedule	Required minimum milestones are available at: Milestones Lists	N/A	Enter estimated milestones

Contractor Schedule Minimum Requirements

Project Type	Schedule Type	Detailed Work Breakdown Structure	Kahua Data Input	Baseline / Re-baseline Schedule
Project at or above SAT	CPM Schedule	See applicable division one CPM schedule specifications (013110 or 13120) for details	To be addressed at the project level	Baseline schedule upon acceptance by GSA. See applicable division one CPM schedule specifications (013110 or 13120) for recovery and re-baseline schedule requirements
Project under SAT (excluding micro-purchases)	Milestone Schedule	Include GSA and customer milestone requirements	NA	Baseline schedule is established upon acceptance by GSA. Changes to baseline require acceptance by GSA

6.6 Schedule Evaluation

Baseline and Updated GSA Master Schedule Requirements



A **Baseline Schedule** is a frozen version of the original estimated schedule. After the PM creates a project schedule and reviews it with management and stakeholders, the schedule should be baselined within the scheduling software. The baseline schedule is the reference against which actual schedule performance is monitored. It represents the project's original commitments to all stakeholders. GSA also requires that PMs lock-in important milestone dates within GSA's Project Management System, Kahua. Different sized projects will be required to record different milestones. See the specific project requirements in the [GSA Master Schedule Minimum Requirements](#) table.

An **Updated Schedule** documents a project's progress. It is statused on a regular basis using actual data (actual start date, actual finish date, actual duration, etc.). The updated schedule is also commonly referred to as a progress schedule.

An updated schedule is compared to the baseline schedule to track variances. A method of periodic schedule evaluation is schedule variance. Schedule variance is an indicator of whether a project schedule is ahead or behind. It can be performed by GSA and/or the contractor once a schedule has been baselined and updates are submitted. Deviations imply that the project may need to be altered to meet the original schedule, or that the schedule from this point forward should be rebaselined. Variances might indicate risks and should spawn risk management thinking.

When rebaselining a schedule, all stakeholders need to agree and approve the new baseline schedule. It will serve as the point of comparison for the future updated schedules. All past baselines should be archived but not deleted. See [Table 2.1](#) for rebaseline opportunities.

Review of Contractor Schedules

Contractor schedules are required to be updated on a periodic basis, as defined by Division One [CPM schedule specifications \(013110 or 013120\)](#). The contractor must submit a narrative summary of major events and deviations from the baseline schedule. GSA is required to review each Contractor submission against the Contractors baseline schedule.

The GSA project team is required to evaluate contractor schedules for contract compliance, as outlined in the Division One Specifications and GSA COR Handbook. For larger projects, a CMA or Schedule Consultant may perform these duties (see CMA scope of services for details). Other [schedule evaluation tools](#) are available on InSite.

If a contractor is requesting major changes to the project schedule, or requesting additional time, they are required to meet the requirements outlined in the spec. This may include submitting a Fragnet and Time Impact Analysis. If the contractor falls behind schedule, they are required to submit a Recovery Schedule. Refer to Division One CPM schedule specifications for details.

Variance Control and Earned Value Management



Earned Value Management (EVM) is a project performance metric that integrates the scope, schedule, and cost. EVM identifies and forecasts cost and schedule variances. The forecasts aid in projecting and mitigating cost and/or schedule overruns.

Schedule variance is calculated in the project management system between the initial baseline schedule (requirements finalized) and updated schedules including the final schedule. For variances over 15%, the project team will be required to provide an explanation as to why the variance occurred, as part of “lessons learned.” Evaluating schedules is a standard risk management practice.

For owned and post-occupancy lease alteration projects over \$20M, perform earned value management. Per Division One CPM schedule specification 013110, the contractor must use the project’s cost loaded schedule to generate an earned value report and submit it with updated schedules.

For additional resources, see [GSA’s Schedule Management Insite Page](#).

7.0 Value Management

7.1 Guiding Principles

Value Management.

Value Management (VM) refers to the overall PBS program that complies with policies and regulations for Value Engineering (VE) and Value Engineering Change Proposal (VECP). Numerous terms (value engineering, value analysis, value management, value planning, etc.) are used when referring to VM studies. While there are subtle differences among these terms, they all refer to the same process. PBS will uniformly use the term value management (VM) to refer to the application of the VM Job Plan in value study.

Value Management is defined in the [OMB A131 Circular](#) as:

A systematic process of reviewing and analyzing the requirements, functions and elements of systems, project, equipment, facilities, services, and supplies for the purpose of achieving the essential functions at the lowest life cycle cost consistent with required levels of performance, reliability, quality, or safety. The process is generally performed in a workshop environment by a multidisciplinary team of contractor and/or in-house agency personnel (such as an IPT).

The focus is on improving value by identifying the most resource-efficient way to reliably accomplish a function that meets performance expectations. The VM process uses a variety of techniques to arrive at alternative approaches that offer improved value.

The PBS Value Management program must use ASTM and SAVE International references as guidance for the methodology and standard practices of value management. These include, but are not limited to:

- [ASTM E-1699 Standard Practice for Performing Value Engineering \(VE\) / Value Analysis \(VA\) of Projects, Projects and Processes](#)
- [ASTM E-2013 Practice for Constructing FAST Diagrams and Performing Function Analysis During a Value Analysis Study](#)
- [SAVE International Value Methodology Standard](#)

The basic philosophy of the PBS VM program is to enhance the value received per dollar spent over the life cycle of constructed assets. The program centers on several major overall principles:

- The VM program is an integral part of the overall project delivery process and is not a separate activity.
- The application of VM must be planned and scheduled on projects to promote timely, efficient, and effective delivery of services to PBS customer agencies.
- For maximum effect without undue impact on project schedules, VM focus must begin early in the design process.
- Primary emphasis is placed on obtaining maximum life cycle value for first-cost dollars expended within project budgets. Improved value can be represented in a number of different ways, depending upon specific project needs. This would include improved function, flexibility, expandability, maintainability, and/or aesthetics, as well as reduced life cycle cost (LCC).



- First-cost budget increases will be considered when justified based on life cycle cost reductions. This will be a priority use for funds accumulated as a result of budget revisions described above.
- Estimated life cycle cost reductions will be considered and reported as savings only when supported by a life cycle cost analysis. Acceptance and implementation of VM ideas based on projected life-cycle cost reductions are encouraged, whether or not the cost reductions meet the criteria to be counted as savings.
- Regions will have broad flexibility in determining the level of VM effort allocated to each project, based on a reasonable expected return on investment relative to project size, complexity, and status.

7.2 Value Management Requirements

Applicability.

Project Cost. [OMB Circular A-131](#) sets a project cost threshold for which value management is required. The threshold for new projects and programs is \$5 million. All projects \$5 million or greater require value management. Waivers for the requirement may be requested from PBS Value Management Program Office

Value Management may also be required for small projects. The requirement for VM studies is based on factors such as cost or complexity of the project. GSA uses a project rating system to aid in determining the appropriate aspects of the integrated cost management system to apply to the project. The Project Rating determines the level of VM effort for the project. The Project Rating may require some projects below the \$5 million threshold to have a Value Management study. It may trigger a waiver request for other projects.

Value Management may include both formal and informal value management activities.

- Formal VM activities include structured processes, such as workshops, which may be conducted by the project team, or using an independent value engineering study.
- Informal activities include ongoing value management within the project team. These may include maintenance of a value engineering log, regular value-focused sessions during project meetings, and system specific life cycle analyses supporting design decisions.

Timing of VM Activities.

Value Management workshops occur as specified in the [Master Delivery Table](#). GSA may elect to conduct additional VM studies on a project-by-project basis. Specific considerations for additional studies include:

- During the Program Development Study (PDS), some more complex or larger projects would benefit from a VM study applying the VM principles as for value



planning. Any project using the Design-Build performance delivery method should have a VM study during PDS.

- Projects using a Design-Build performance delivery method may have a VM study applying the VM principles for value review, particularly for more complex or larger projects. The VM study should occur during an early Design-Build design review submission.
- During the 75% and 90% construction documents phases, and for 100% construction documents if deemed necessary due to technical or budgetary constraints.

For projects requiring value studies, the Master Schedule and design schedule must include the activities with appropriate time for all the activities.

Monitoring and Reporting Results.

Each regional Design & Construction (D&C) Division Director is expected to monitor the effectiveness of regional D&C VM program activity for annual reporting to OMB.

- Reporting requirements to the Central Office are the minimum to comply with OMB reporting requirements. There are no set numeric goals. Central Office monitoring of regional VM program implementation will be conducted on a periodic “audit” basis only and as a part of overall cost and schedule management quality assurance.
- Internal PBS VM reporting requirements are based on realistic measures of effectiveness: first-cost and life-cycle-cost savings, cost avoidance and VM expenditures. Regional emphasis will be on implementing VM studies on individual projects and reporting results achieved. The Central Office will be responsible for program level analysis and reporting of resources budgeted and return on investment.

7.3 Independent Value Engineering Studies

Independent Value Engineering studies must be undertaken, at a minimum, as required by the [Master Delivery Table](#). Regions may elect to add independent studies.

The procedures of organizing and holding a VM workshop are available in other sources, specifically:

SAVE (<https://www.value-eng.org/>) International Body of Knowledge
SAVE International Value Methodology Standard

Consultants selected to facilitate VM workshops must be thoroughly familiar with the procedures and processes.

Independent VE Facilitator and Multi-disciplinary Team.



GSA policy is to have an independent VE consultant facilitate a value management study using an independent VE team. GSA contracts with the VE consultant directly, rather than through the A-E. However, the design A-E team and CM must be part of the effort. The minimal expectation for workshop participation is through the Information and Function Analysis Phases. The preference is that the design A-E team and CM participate throughout the study. The A-E's cost estimator must be available to answer the VE consultant's questions concerning the origin of A-E design estimate unit costs and interpretation of work-element descriptions.

Following the workshop, the A-E reviews VE proposals to address project feasibility and adherence to design programming requirements. They must incorporate the VE consultant's recommendations that were approved by GSA into the design as part of the scope of work.

[Brooks Architect-Engineer Services Act \(PL92-582\)](#) procurement procedures will be used to award an A-E contract.

Value Management Report.

The Value Management workshop will have two major deliverables: the Value Management Study Results Report and the Value Management Study Final Report. The Results Report includes all the Alternatives from the workshop and the Final Report identifies the Alternatives selected for implementation.

In general, decisions made as a result of the first study will not be reconsidered in a subsequent 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.

The A-E participates in and reviews VM proposals to address project feasibility and adherence to design programming requirements. The A-E's cost estimator must be available to answer the VM consultant's questions concerning the origin of A-E concept design estimate unit costs and interpretation of work-element descriptions. Once GSA determines which VM 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.

At the conclusion of the VM study, a final estimate for the design submittal is submitted.

Value Management Implementation Validation.

The A-E will produce a report to include with the design submission following the VM Study, indicating how each of the agreed VM alternatives were implemented. If an agreed-upon alternative was not implemented, the report will explain why implementation was not possible. A revised and compiled VM Implementation Validation report will be part of the 90% Construction Documents submittal.

7.4 Value Engineering Change Proposal (VECP)

A Value Engineering Change Proposal (VECP) is defined by FAR 52.248-1 as a proposal that requires a change to the contract to implement, and which results in reducing the overall



projected cost to the agency without impairing essential functions or characteristics. It may not involve a change in deliverable end item quantities, in research and development (R&D) end items, or R&D test quantities that are due solely to results of previous testing under this contract, or to the contract type only.

The VECP program is an incentive-based procedure. The VECP clause is mandated in all contracts when the contract amount is estimated to exceed the simplified acquisition threshold, unless an incentive contract is contemplated (FAR 48.202). The contracting officer may include the clause in contracts of lesser value, if the contracting officer sees a potential for significant savings. The incentive-based procedure allows the contractor to initiate proposals of value engineering-based changes to the project. VECP are evaluated on the same basis for the overall VM program.

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 Contract Modifications and Claims Analysis Support in Chapter 5.



Appendix A. Cost Breakdown Structures (CBS)

ASTM Uniformat II

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, Shell, and Interiors, and proceeding to successively more detailed subdivisions of these systems at Levels 2 through 4.

The resulting levels of detail not only serve to structure cost information, but also ensure cost estimates are aligned with the level of detail commensurate with 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 Interiors.

Although the construction industry uses several variations on the Uniformat concept, GSA requires that cost estimators use the ASTM version, for consistency in use and maintenance of GSA’s cost databases. The Uniformat estimating format is illustrated in [Appendix C.1 ASTM Uniformat II](#).

ASTM has several standards related to classification systems for the built environment. Three are particularly pertinent to GSA.

- ASTM E 1557 Classification for Building Elements and Related Sitework – UNIFORMAT II
- ASTM E 2083 Classification for Building Construction Field Requirements, and Office Overhead and Profit
- ASTM E 2168 Classification for Allowance, Contingency, and Reserve Sums in Buildings

This appendix section has tables for the ASTM E-1557 listing, followed by the ASTM E- 2083 listing. They show the classifications to Level 3.



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Level 1		Level 2		Level 3	
A	Substructure	A10	Foundations	A1010	Standard Foundations
				A1020	Special Foundations
				A1030	Slab on Grade
		A20	Basement Construction	A2010	Basement Excavation
				A2020	Basement Walls
B	Shell	B10	Superstructure	B1010	Floor Construction
				B1020	Roof Construction
		B20	Exterior Enclosure	B2010	Exterior Walls
				B2020	Exterior Windows
				B2030	Exterior Doors
		B30	Roofing	B3010	Roof Coverings & Insulation
				B3020	Skylights and Roof Openings
C	Interiors	C10	interior Construction	C1010	Partitions
				C1020	Interior Doors
				C1030	Specialties/Fittings
		C20	Stairs	C2010	Stair Construction
				C2020	Stair Finishes
		C30	Interior Finishes	C3010	Wall Finishes
				C3020	Floor Finishes
				C3030	Ceiling Finishes
D	Services	D10	Conveying	D1010	Elevators & Lifts
				D1020	Escalators, Moving Walks
				D1090	Other Conveying Systems
		D20	Plumbing	D2010	Plumbing Fixtures
				D2020	Distribution and Drainage Systems
				D2030	Sanitary Waste
			D2040	Rainwater Drainage	
			D2090	Other Plumbing Systems	
		D30	HVAC	D3010	Energy Supply
				D3020	Heat Generating Systems
				D3030	Cooling Generating Systems
				D3040	Distribution Systems
				D3050	Terminal and Package Units
				D3060	Controls & Instrumentation
				D3070	Testing & Balancing
				D3090	Other HVAC Systems
		D40	Fire Protection	D4010	Sprinkler and Standpipe Systems
				D4020	Standpipes
				D4030	Fire Protection Specialties
				D4090	Other Fire Protection Systems
		D50	Electrical	D5010	Electrical Service and Distribution



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				D5020	Branch Wiring (Lighting & Power)
				D5030	Communications & Security
E	Equipment and Furnishings	E10	Equipment	E1010	Commercial Equipment
				E1020	Institutional Equipment
				E1030	Vehicular Equipment
				E1090	Other Equipment
		E20	Furnishings	E2010	Fixed Furnishings
				E2020	Moveable Furnishings
F	Special Construction and Demolition	F10	Special Construction	F1010	Special Structures
				F1020	Integrated Construction
				F1030	Special Construction Systems
				F1040	Special Facilities
				F1050	Special Controls and Instrumentation
		F20	Selective Building Demolition	F2010	Building Elements Demolition
				F2020	Hazardous Components Abatement
G	Building Sitework	G10	Site Preparation	G1010	Site Clearing
				G1020	Site Demolition and Relocations
				G1030	Site Earthwork
				G1040	Hazardous Waste Remediation
		G20	Site Improvements	G2010	Roadways
			G2020	Parking Lots	
			G2030	Pedestrian Paving	
			G2040	Site Development	
			G2050	Landscaping	
		G30	Site Mechanical Utilities	G3010	Water Supply
				G3020	Sanitary Sewer
				G3030	Storm Sewer
				G3040	Heating Distribution
				G3050	Cooling Distribution
			G3060	Fuel Distribution	
			G3090	Other Site Mechanical Utilities	
		G40	Site Electrical Utilities	G4010	Electrical Distribution
				G4020	Site Lighting
				G4030	Site Communication & Security
				G4090	Other Site Electrical Utilities
		G90	Other Site Construction	G9010	Site & Pedestrian Tunnels
				G9020	Other Site Systems and Equipment

ASTM E 1557 Classification for Building Elements and Related Sitework – UNIFORMAT II



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X	Field Requirements, Overhead & Profit	X10	Field Requirements	X1005	Bond, Permits, Fees & Insurance
				X1010	Field/Site Set-up & accommodation
				X1015	Management, Supervision & Field Engineering
				X1020	Personnel Travel and Lodging
				X1025	Safety & Protection
				X1030	Construction Aids, Equipment and Tools
				X1035	Temporary Construction
				X1040	Climatic and Environmental Requirements
				X1045	Quality Control, Inspection and Testing
				X1050	Maintenance and Housekeeping
				X1090	Other Contractual Requirements
		X20	Office Overhead & Profit	X2010	Home Office Overhead
				X2020	Profit

ASTM E 2083 Classification for Building Construction Field Requirements, Overhead and Profit



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Construction	A B C D E F G X	Substructure Shell Interiors Services Equipment and Furnishings Special Construction & Demolition Sitework Field Requirements, Overhead and Profit
Furniture & Equipment		Furniture and Furnishings Administration Equipment Production Equipment
Design & Management		Architecture & Engineering Special Consultants Construction & Project Management Testing & Inspection Market Studies Owner's Administration Expenses
Site Acquisition		Land Costs Legal Fees Surveys Appraisal Fees
Leasing/Occupancy		Moving Expenses Leasing Commissions Tenant Inducements Taxes during Construction
Financing		Interim Financing Permanent Financing
Allowances, Contingencies & Reserves		Allowances Contingencies Reserves

ASTM E 2168 Classification for Allowance, Contingency, and Reserve Sums in Buildings

¹ Alternatively, Allowances, Contingencies and Reserves may be distributed separately to individual Level 0 accounts.



CSI MasterFormat (2020)

MasterFormat. 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 for more information.

The Division levels of MasterFormat (2020) are the top-level summary for cost estimates prepared in the MasterFormat cost breakdown structure.

01	General Requirements
02	Existing Conditions
03	Concrete
04	Masonry
05	Metals
06	Wood, Plastic + Composite
07	Thermal + Moisture Protection
08	Openings
09	Finishes
10	Specialties
11	Equipment
12	Furnishings
13	Special Construction
14	Conveying Equipment
21	Fire Suppression
22	Plumbing
23	HVAC
25	Integrated Automation
26	Electrical
27	Communications
28	Electrical Safety + Security
31	Earthwork
32	Exterior Improvements
33	Utilities
34	Transportation
35	Waterway + Marine Construction

MasterFormat Divisions



GSA IRIS

GSA Repair and Alterations (R&A) projects tend to utilize scope descriptions and project budget estimates organized by work items. Work items may vary significantly depending on the nature of the project, as defined by GSA program offices and condition of facility and associated building systems. R&A projects use the IRIS coding system initially as the Cost Breakdown Structure (CBS). As the project develops, IRIS becomes part of the Project Structure.

R&A projects use the IRIS work-item basis. This allows the removal or addition of project scope to meet the condition of facility and systems, and budgetary limitations and allowances.

Expense Categories		
150	Financed Energy Work	Non-capitalized interest cost on time-financed energy use reduction work.
200	Studies and Designs for Expensed Projects	Studies used to define and develop requirements for a proposed construction or R&A project that does not meet PBS' criteria of a capitalized project.
300	General Maintenance Repairs	Work related to commissioning and retro-commissioning of a building that may include minor repairs and maintenance that do not increase the life expectancy or efficiency of an asset.
310	Maintaining Land	General maintenance necessary to maintain building operations. Routine, minor, or emergency repairs or maintenance that do not increase the life expectancy or efficiency of an asset. Includes interior and exterior cleaning, painting, and carpeting.
320	Roofing Repairs	Roofing related work that does not enhance the asset beyond its original condition or increase the life expectancy of the asset, does not improve the asset's original capabilities. Often involves repairs. Includes roofing, flashing, drains.
325	Energy Generating Asset repairs	Does not enhance the asset beyond its original condition or increase the life expectancy of asset or improve the asset's original capabilities or efficiencies. Often involves repairs.
330	Building Structural Repairs	Work related to a building's foundational structure that does not increase the life expectancy or efficiency of the asset. Often involves maintenance, minor repairs, or patchwork. Includes work on beams, columns, slabs, walls, foundations.
335	Security Assets Repairs	Work conducted to security assets or systems that does not enhance the asset beyond its original condition or increase the life expectancy of asset, does not improve the asset's original capabilities or efficiencies. Often involves repairs.
340	Electrical System repairs	Electrical system work that does not enhance the asset beyond its original condition or increase its life expectancy. Repairs to power supply dist. sys., transformers, circuit breakers, lighting, public address sys., electrical controls, telecom. equip.



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345	Fire Protection Systems Repairs	Fire protection systems work that does not enhance the asset beyond its original condition or increase its life expectancy. Does not improve the asset's original capabilities. Includes fire sprinklers, standpipes and other fire safety items.
350	Demolition not Related to New Construction	Demolition and removal work not conducted for capital or R&A improvements. Includes demolition for safety or cosmetic reasons, or as a means of building disposal (i.e., Portfolio Restructuring Efforts)
355	Conveying Systems repairs	Elevator, escalators, and other conveying systems work that does not enhance the asset beyond its original condition or increase its life expectancy, as it does not improve the asset's original capabilities. Maintenance, repairs, or patchwork.
360	HVAC Systems repairs	HVAC Systems and Heating and Chilling Plants work that does not enhance the asset beyond its original condition or increase life expect. Boilers, chillers, cooling towers, hyd. pipe, plumb, cent. stat. air handling equipment, fan coil, air-induct, ducts, or ground source heat pumps.
365	Plumbing System Repairs	Plumbing systems work that does not enhance the asset beyond its original condition or increase its life expectancy. Includes domestic water, irrigation, storm sewer, sanitary sewer, other specialized plumbing systems not related to HVAC or fire protect.
370	Exterior Enclosure Repairs	Work conducted to a building's exterior or facade that does not enhance the asset beyond its original condition or increase the life expectancy of the asset, as it does not improve the asset's original capabilities or efficiencies.
380	Repairs to Interior Construction and Finishes	Interior alterations related work that does not enhance the asset beyond its original condition or increase its life expectancy, as it does not improve the asset's original capabilities or efficiencies for both Federal Courts and Non-Courts space.
385	Restoring Environmental Conditions	Removing, containing, or neutralizing (i.e., cleaning up) environmental contamination incurred while GSA owned the property (excluding soil remediation).
390	Artwork Cleaning	Cleaning and restoring of artwork and murals that bring the asset back to its original condition.
Capital Categories		
400	Land acquisition – N/A	Acquisition of land including activities necessary for the site acquisition, such as appraisals, surveys, title research, relocation, costs to raze an old building on land purchased, and incidental expenses.
405	Building acquisition – N/A	Acquisition of a building including activities necessary for the site acquisition, such as appraisals, surveys, title research, relocation, costs to raze an old building on land purchased, and incidental expenses.



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410	Land improvements	Installation, replacements, additions, or betterments to roadways, driveways, paving, sidewalks, curbs, landscaping, plazas, lawn sprinklers, site utilities, underground storage tanks, and similar land improvements.
411	Soil remediation	Soil remediation resulting from soil contamination caused by a previous owner, a means to prevent future soil contamination, or preparation to sale the property.
415	Demolition for Construction	Demolition and removal of a freestanding structure in order to construct a new structure. Primarily for new construction projects (PG51).
420	Demolition for R&A	Demolition and removal of an asset or portion of an asset attached to a structure in order to improve or increase the life expectancy or efficiency of the structure. Primarily for R&A projects (PG55 and PG54).
450	Studies and or design for Capitalized Projects	Studies funded through PBS funds (not PG80) used to define and develop requirements for a proposed capitalized construction or R&A project
455	Building Commissioning and Retro-Commissioning	Building commissioning and retro-commissioning that leads to the installation and/or replacement of an asset that extends the life expectancy of the building by either replacing or enhancing a substantial portion of the asset or increasing the asset's capabilities or efficiency.
510	Interior construction and finishes (non-Courts)	Interior alterations related work for tenants other than Federal Courts that extends the life expectancy of the asset by either replacing or enhancing a substantial portion of the asset or increasing the asset's capabilities or efficiency.
515	Interior construction and finishes (Courts)	Interior alterations related work projects for Federal Courts that extends the life expectancy of the asset by either replacing or enhancing a substantial portion of the asset or increasing the asset's capabilities or efficiency.
520	Roofing replacements	Roofing related work that that extends the life expectancy of the asset by either replacing or enhancing a substantial portion of the asset or increasing the asset's capabilities or efficiency.
530	Building structural replacements	Work related to a building's foundational structure that that extends its life expectancy (building's structure or foundation) by either replacing or enhancing a substantial portion of the asset or increasing the asset's capabilities or efficiency
540	Electrical systems replacements	Electrical system enhancements, such as replacements, additions, or betterments that extend the life expectancy of the asset by either replacing or enhancing a substantial portion of the asset or increasing the asset's capabilities or efficiency.
550	Conveying system replacements	Improvements related to elevators, escalators and other conveying systems that extend the life expectancy of the asset by either replacing or enhancing a substantial portion of the asset or increasing the asset's capabilities or efficiency.



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560	HVAC systems, Heating and Chilling	HVAC Systems and Heating and Chilling Plants, including ground source heat pumps, and related work that extends the life expectancy of the asset by either replacing or enhancing a substantial portion of the asset or increasing the asset's capabilities or efficiency.
565	Plumbing system replacements	Plumbing systems related work that that extends the life expectancy of the asset by either replacing or enhancing a substantial portion of the asset or increasing the asset's capabilities or efficiency.
570	Exterior enclosure replacements	Enhancing a significant portion of a building's exterior or facade that that extends its life expectancy buildings structure or foundation), by either replacing or enhancing a substantial portion of the asset or increasing the asset's capabilities.
575	New Construction PG51	Prospectus level new construction projects funded through Budget Activity 51 for the acquisition of new facilities, extension of existing facilities, and/or conversion of older facilities through direct Federal construction.
600	ISAs	Interior alterations and finishes for offices, corridors, lobbies and restrooms. Includes partitions, ceilings, walls, and etc.
700	Court Alterations	Court Alterations
710	Vacant Space Recapture	Vacant Space Recapture
800	Fire Protection systems replacement	Fire protection systems related work that that extends life expectancy of asset by either replacing or enhancing a substantial portion of the asset or increasing its capabilities. Includes fire sprinklers, standpipes and other fire safety items.
850	Improving Environmental conditions	Removing, containing, or neutralizing (i.e., cleaning up) environmental contamination that existed prior to GSAs ownership (with the exception of soil remediation)
860	Permanent Security Assets	Security assets or systems that are permanently attached to or customarily transferred with a structure or land, including land, land improvements, and security related buildings.
870	Artwork Acquisition	Acquisition and installation of artwork, including murals, tapestries, sculptures, fountains, plaques, and similar assets.



Appendix B. Glossary and Abbreviations

Glossary

Cost Management Terminology

Budget: A budget is the funds allocated for a project or portion of a project.

Cost Management is the holistic process of maintaining financial control of projects. It includes all activities for

- Establishing baseline plans through developing estimates and cost plans
- Setting budgets and/or cost targets
- Establishing management protocols and data organization and reporting structures
- Tracking and steering to plan through documenting, monitoring and analyzing costs, organizing and reporting cost data
- Managing to plan through updating and re-baselining, taking any necessary corrective action

Cost Estimate/Estimating. A Cost Estimate is a professional opinion of probable cost, based on available information using best judgment and accepted methods of analysis. A cost estimate can be developed at any point in an asset life cycle, whether planning, design, construction, operations, or disposal. It can be based on any level of information, from simple narrative functional requirements to complete construction documents. There will be differences in level of detail and level of confidence, but not in the core principle of professional judgment.

Cost Model/Modeling: A cost model is a term often used for an early-stage cost estimate, particularly where the term “estimate” is used for later stage estimates. The implication is that rather than being measured, quantities are “modeled” based on parametric relationships.

Cost Plan/Planning: A cost plan is a statement of intended allocation of costs, based on known or defined design parameters, project scope, and tenant space requirements, meeting all required quality levels and design standards, within the planned execution schedule. The Cost Plan typically serves as the cost baseline, schedule baseline, and scope baseline. It differs from an estimate in that it is a statement of intention of the project team, not a statement of attributes of an object. As with estimates, the level of detail and granularity may vary widely.

Cost Control: Cost control is the process of managing to budget. It includes developing progress estimates and reviews, tracking cost to plan, analyzing and reporting changes in scope or anticipated cost, and, where needed, recommending corrective action.

Allowance.



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.](#)

Benchmarking. A process applied to assess, establish, and/or verify the cost and scope of a project by reference to established costs/scope for similar facilities. Applied through a variety of estimating tools in place at PBS.

Budget Activities

BA-51 New Construction. This is a no-year activity that provides facilities to house Federal agencies through direct construction of new buildings, acquisition of Postal Service properties, and purchase of commercial buildings from the private sector. New Construction – Government Owned is the only project type.

BA-53 Lease-Contract. BA 53 funding is granted on an annual basis. It provides funding for the acquisition, by lease, of real property for use by Federal agencies. Project types are:

- Tenant Fit-Out
- Build-to-Suit Lease

BA-54 Discretionary Non-Capital Repair and Alteration. The BA 54 funding covers work larger than the BA-61 cap on minor repair work, but below prospectus levels. Repairs incidental to work performed as part of a prospectus project should be included in the prospectus and funded as part of the project under BA 51 or BA 55 funding. The funding is a no-year funding used for repair and alteration projects that are not part of a line item. Project types are:

- Tenant Space Renovation/Space Fit-Out
- Single Building System Repair/Replacement
- Multi-Building System Repair/Replacement

BA-55 Non-discretionary, Line-Item Capital Repair and Alteration. The BA 55 funding covers work major repairs and alterations estimated to cost more than the prospectus level. Prospectus-level Repair and Alteration projects may not be split into below-prospectus-level projects in order to avoid the prospectus requirement. Project types are:

- Single Item Repair
- Multi- System Repair/Alteration
- Modernization

BA-61 Building Maintenance/Repair. The BA 61 funding covers minor repair and operation cost with a budget under \$50,000. Project types are:

- Single Item Repair/Replace
- Multi- System Repair/Replace



- Tenant Fit-Out Alteration

BA 61 also provides for the operation of GSA-controlled, -owned, and -leased facilities, and covers funding for PBS overhead.

BA-64 Building Maintenance/Repair. The BA 64 program covers work in historic buildings. BA 64 covers funds acquired from the leasing of space in federal historic buildings to non-federal tenants, with the requirements of administration, maintenance, repair and restoration, and related expenses associated with historic properties. The BA 64 funding limits are established by the level of funds acquired through the out-lease activity.

BA-80 RWA Funded (New and Repair and Alteration). Budget Activity 80 is a reimbursable activity used to fund reimbursable, annual and no-year, non-recurring reimbursable work requests. The BA 80 funding may be used to cover items such as, but not limited to: 1) alterations requested by tenants for tenant purposes, and 2) above standard level of service provided to tenants in GSA-operated buildings. GSA is reimbursed for these services through reimbursable work authorizations (RWAs).

Building Assessment Tool (BAT). A formal report that provides a current analysis of the conditions of a building's overall structure and operating systems and a preliminary scope of work with budget estimates to correct the deficiencies of the building

Charette. An intensive workshop in which various stakeholders and experts are brought together to address a particular design issue, from a single building to an entire campus, installation, or park. The term can also be applied to shorter, focused project team meetings, project planning meetings, brainstorming sessions, and extensive community visioning events.

[Code and Practice Escalation.](#)

[Contingency, Construction.](#)

[Contingency, Design.](#)

[Cost Breakdown Structure \(CBS\).](#)

Delivery Methods.

Construction Manager as Advisor (CMa). A form of Construction Management where the Construction Manager acts as the owner's principal advisor in execution of the project.

Construction Manager as Constructor (CMc). An at-risk form of Construction Management where the General Contractor acts as the Construction Manager. A Guaranteed Maximum Price construction contract is awarded at some point during the design process. The CMc will act more as an advisor until the award of the GMP, then shifts to a vendor relationship acting as a General Contractor.

Design-Bid-Build (D-B-B). This is referred to as the traditional method of project delivery. The architect-engineer completes full working drawings and specifications, which are then competitively bid and constructed by a General Contractor.

Design-Build Bridging (D-B Bridging). A project delivery method in which the architect-engineer establishes the project's requirements and develops a design and specification (bridging documents). The degree of detail for the bridging documents can be as little as concept design or as detailed as design development. A design-builder, selected through a competitive process using the bridging documents, completes the design and acts as the construction contractor under a fixed price.

Design-Build Performance (D-B Performance). A project delivery method in which the architect-engineer and construction contractor are hired together as a team (design-builder), often in conjunction with a developer. The Government prepares a Request for Proposal (RFP) that defines program and performance requirements and will often identify a maximum price. The selection procedure requires competing teams to prepare a conceptual solution based on the RFP and a selection is made on the basis of Best Value.

Job Order Contracting (JOC). A type of IDIQ contract, used for project delivery of small projects using agreed line-item databases as the basis for pricing project scopes. Also known as "Partition Contract."

Design intent drawings (DIDs) Layout line drawings showing partitions and doors; schematic demolition; voice, data, and electrical outlet locations; finishes; generic furniture layout; and any additional details necessary to communicate the design intent to the lessor's architect for the purposes of preparing the construction documents.

Disposal Costs. Costs incurred when leasing, selling, or otherwise disposing of Government-owned property.

Earned Value Management Terminology

Earned Value Management. EVM is designed to integrate cost estimating, schedule development, system development oversight, and risk management. It compares the value of work accomplished in a given period with the value of the work planned for that period. It serves as a means of analyzing cost and schedule performance. By knowing what the planned cost is at any time and comparing that value to the planned cost of completed work and to the actual cost incurred, analysts can measure a program's cost and schedule status.

Earned Value Reporting. Regular production of a report that measures project performance and progress.

Enabling Work. The ancillary work that must be completed to accomplish the primary (objective) work, typically used for maintenance/ repair/alteration projects. The work must be done to accomplish the objective work, but may not always be identified as part of the project scope.

Escalation. 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.



Feasibility Study (FS). The FS defines the project, establishes project requirements, identifies key technical factors (such as zoning, sustainability, engineering), and presents financial data for evaluation of all viable cost options. The FS addresses strategic-scale issues and macro-level data.

[Independent Government Estimate \(IGE\).](#)

[Inventory Reporting Information System \(IRIS\).](#)

Life Cycle Cost (LCC). **Life cycle cost analysis (LCCA)** is the method used to ascertain and demonstrate the life cycle cost performance of a facility. 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.

Long Lead Items. Tasks that require significant advance planning (e.g., ordering furniture, requesting an inspection).

[Market Study.](#)

[MasterFormat®.](#)

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 issued to assist negotiations and to protect the government's interests toward a fair price settlement.

No-Market Comparable Costs. Cost elements that are, by nature, not comparable to the private sector market. Typically, representative of specialized requirements defined in the GSA P100 and other Government requirements, i.e., blast, security. No-market-comparable costs are generally, but not always, a significant factor in determining the cost of construction in a leased market.

Objective Work. The primary work generating a scope of work, typically used for maintenance/repair/alteration projects. The full scope work to accomplish the project includes enabling work, which may not be defined fully in the initial project scope.

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

Project Category Rating. A custom GSA rating that separates project requirements based on monetary size.

Prospectus Document. A funding plan that describes a project, its location, agencies affected by the project, a justification statement, estimated maximum cost of the project, and a description of any prior funding associated with the project.



Prospectus Limitation. An annually adjusted threshold amount based on an index of construction costs. A prospectus must be submitted to Congress for proposed projects in which estimated costs exceed the prospectus limitation.

Repair And Alteration (R&A) Program. See BA-54 definition.

Reserve.

Reconciliation. The action required to come to agreement of the values associated with specific work items or elements making up two or more differing cost estimates for any given project at any given time.

Risk Analysis.

Risk Events.

Reimbursable Work Authority (RWA) A funding document used by customer agencies to pay PBS for above-standard space-related services and above-allowance tenant improvements.

Schedule Management Terminology

Schedule Management is the holistic process of maintaining time control of projects. It includes all activities for

- Establishing baseline schedules
- Establishing management protocols and data organization and reporting structures
- Tracking to plan through documenting, monitoring and analyzing schedule activities
- Organizing and reporting activity data
- Managing to plan through updating and re-baselining, taking any necessary corrective action

Critical Path. The longest continuous sequence of activities in a schedule. Defines the program's or project's earliest completion date or minimum duration.

Float – Total. The amount of time by which a predecessor activity can slip before the delay affects the project's or program's estimated finish date—so that the schedule's flexibility can be determined.

Float – Free. The amount of time by which a predecessor activity can slip before the delay affects the finish date of a specific network of activities

Fragnet. A fragmentary, or subordinate, network that represents a sequence of activities typically related to repetitive effort. Subordinate networks can be inserted into larger networks as a related group of activities

Milestones. An activity/event, with no duration, that is typically used to represent the beginning or end of the project or its interim stages.

Task Dependencies. The relationship between two or more tasks in a project. The 4 dependencies are Finish-to-Start (FS), Start-to-Finish (SF), Start-to-Start (SS), and Finish-to-Finish (FF)



Task Level Tracking. Tracking specific tasks in addition to the milestones. This includes tracking start and finish dates

Sensitivity Analysis.

Tenant Related Core Shell Costs (TRCS). Costs for improvements to the Core/Shell required to accommodate tenant requirements. These may include such items as modifying floor slabs for double-height spaces, adding suite interconnecting stairs, adding special HVAC equipment, etc. TRCS costs are typically paid by RWA.

Uniformat II®. See Appendix A

Uncertainty. The indefiniteness about the outcome of a situation. It is assessed in cost estimate models to estimate the risk (or probability) that a specific funding level will be exceeded.

Value Management. A systematic process of reviewing and analyzing the requirements, functions and elements of systems, project, equipment, facilities, services, and supplies for the purpose of achieving the essential functions at the lowest life cycle cost consistent with required levels of performance, reliability, quality, or safety. The process is generally performed in a workshop environment by a multidisciplinary team of contractor and/or in-house agency personnel (such as an IPT).

Work Breakdown Structure.



Abbreviations

A-E – Architect-Engineer

BAT – Building Assessment Tool

BLCC – Building Life Cycle Cost

CBS – Cost Breakdown Structure

CCP – Certified Cost Professional

CD – Construction Drawings, Construction Documents

CECA – Current Estimated Construction Cost

CEP – Certified Estimating Professional

CEW – Cost Estimate Workbook

CFR – Code of Federal Regulations

CGR – Cost Growth Report

CII – Construction Industry Institute

CM – Construction Manager

CMA – Construction Manager as Advisor

CMc – Construction Manager as Constructor

CPE – Certified Professional Estimator

CPM – Critical Path Method

CSI – Construction Specifications Institute

CVS – Certified Value Specialist

CWE – Current Working Estimate.

DD – Design Development

DES – Detailed Estimating System (component of NCMT)

ECC – Estimated Cost of Construction

ECCA – Estimated Cost of Construction at Award

EDRC – Estimated Design and Review Cost

EISA 2007 – Energy Independence and Security Act 2007

EMIC – Estimated Management and Inspection Cost

EPA 2005 – Energy Policy Act 2005 ETPC – Estimated Total Project Cost

FAR – Federal Acquisition Regulation

FBF – Federal Buildings Fund

GAO – Government Accountability Office



GC – General Contractor
GMP – Guaranteed Maximum Price
GSA – General Services Administration
IGE – Independent Government Estimate
IRIS – Inventory Reporting Information System
LCC – Life Cycle Cost
LCCA – Life Cycle Cost Analysis
NCMT – National Cost Management Tool
NEPA – National Environmental Protection Act
NIST – National Institute of Standards and Technology
OMB – Office of Management and Budget
P100 – Facilities Standards for the Public Buildings Service (PBS-P100)
PBS – Public Buildings Service
PCE – Project Cost Estimate
PDRI – Project Development Rating Index
PDS – Program Development Study
PL – Public Law
PM – Project Manager
QA – Quality Assurance
QC – Quality Control
R&A – Repair and Alteration
RFI – Request for Information
RWA – Reimbursable Work Authorization
SAT – Simplified Acquisition Threshold
S1I – Space Related Cost Impacts
TI – Tenant Improvements
TRCS – Tenant Related Core Shell Costs
VE – Value Engineering
VECP – Value Engineering Change Proposal
WBS – Work Breakdown Structure



Appendix C. Bibliography / References

Bibliography

AACE

AACE International, Recommended Practice No. 17R-97: Cost Estimate Classification System, AACE International, Morgantown, WV, 1997.

AACE International, Recommended Practice No. 31R-03: Reviewing, Validating, and Documenting the Estimate, AACE International, Morgantown, WV, 2009.

AACE International, Recommended Practice No. 34R-05: Basis of Estimate, AACE International, Morgantown, WV, 2007.

AACE International, Recommended Practice No. 40R-08: Contingency Estimating – General Principles, AACE International, Morgantown, WV, 2008.

AACE International, Recommended Practice No. 41R-08: Risk Analysis and Contingency Determination Using Range Estimating, AACE International, Morgantown, WV, 2008.

AACE International, Recommended Practice No. 56R-08: Cost Estimate Classification System – As Applied for the Building and General Construction Industries, AACE International, Morgantown, WV, 1997.

AACE International, Recommended Practice No. 57R-09: Integrated Cost and Schedule Risk Analysis Using Monte Carlo Simulation of a CPM Model, AACE International, Morgantown, WV, 2011.

ASTM

ASTM Standard E 964, 2010, Practice for Measuring Benefit-to-Cost and Savings-to-Investment Ratios for Buildings and Building Systems, ASTM International, West Conshohocken, PA, 2010.

ASTM Standard E 917, 2013, Standard Practice for Measuring Life-Cycle Costs of Buildings and Building Systems, ASTM International, West Conshohocken, PA, 2013.

ASTM Standard E 1057, 2010, Practice for Measuring Internal Rate of Return and Adjusted Internal Rate of Return for Investments in Buildings and Building Systems, ASTM International, West Conshohocken, PA, 2010

ASTM Standard E 1074, 2009, Practice for Measuring Net Benefits for Investments in Buildings and Building Systems, ASTM International, West Conshohocken, PA, 2009.

ASTM Standard E 1121, 2012, Practice for Measuring Payback for Investments in Buildings and Building Systems, ASTM International, West Conshohocken, PA, 2012.

ASTM Standard E 1185, 2012, Guide for Selecting Economic Methods for Evaluating Investments in Buildings and Building Systems, ASTM International, West Conshohocken, PA, 2012.



ASTM Standard E 1557, 2009, Classification for Building Elements and Related Sitework – UNIFORMAT II, ASTM International, West Conshohocken, PA, 2009.

ASTM Standard E 1699, 2014, Standard Practice for Performing Value Engineering (VE) / Value Analysis (VA) of Projects, Projects and Processes, ASTM International, West Conshohocken, PA, 2014.

ASTM Standard E 2013, 2012, Practice for Constructing FAST Diagrams and Performing Function Analysis During a Value Analysis Study, ASTM International, West Conshohocken, PA, 2012.

ASTM Standard E 2083, 2010, Classification for Building Construction Field Requirements, and Office Overhead and Profit, ASTM International, West Conshohocken, PA, 2010.

ASTM Standard E 2168, 2010, Classification for Allowance, Contingency, and Reserve Sums in Buildings, ASTM International, West Conshohocken, PA, 2010.

ASTM Standard E 2204, 2010 Standard Guide for Summarizing the Economic Impacts of Building-Related Projects, ASTM International, West Conshohocken, PA, 2011.

ASTM Standard E 2516, 2011, Standard Classification for Cost Estimate Classification System, ASTM International, West Conshohocken, PA, 2011.

Other

Construction Management Association of America (CMAA), Cost Management Procedures, CMAA, McLean, VA 2008.

Construction Specifications Institute (CSAI), MasterFormat 2010, Alexandria, VA, 2010.
Dell'Isola, Michael D., Architect's Essentials of Cost Management, John Wiley & Sons, Inc., New York, NY, 2002.

GAO (Government Accountability Office), GAO Schedule Assessment Guide, GAO-16- 89G, Washington, D.C., December 2015.

GAO, Cost Estimating and Assessment Guide, GAO-09-3SP, Washington, D.C., March 2009.

Holloman, John K., Editor. Total Cost Management Framework: An Integrated Approach to Portfolio Program and Project Management, (rev.) Morgantown, WV, ACE International, 2012.

Kirk, Stephen J. and Dell'Isola, Alphonse J. Life Cycle Costing for Design Professionals, Second Edition, McGraw-Hill, Inc., New York, NY, 1995.

Lawrence D. Miles Value Foundation, SAVE International Body of Knowledge, Value Methodology Pocket Guide, GOAL/QPC, Salem, NH, 2008

NIST (National Institute of Standards and Technology), NIST Handbook 135 Life-Cycle Costing Manual for the Federal Energy Management Program, 1995 Edition, Gaithersburg, MD, 1996.

SAVE International, Value Methodology Standard, SAVE International, Dayton, OH, 45402, June 2007.

Whole Building Design Guide, www.wbdg.org, National Institute of Building Sciences.



References

ASTM Standard E 2516, 2011, Standard Classification for Cost Estimate Classification System, ASTM International, West Conshohocken, PA, 2011.

ASTM Standard E 1557, 2009, Classification for Building Elements and Related Sitework – UNIFORMAT II, ASTM International, West Conshohocken, PA, 2009.

ASTM Standard E 1699, 2014, Standard Practice for Performing Value Engineering (VE) / Value Analysis (VA) of Projects, Projects and Processes, ASTM International, West Conshohocken, PA, 2014.

ASTM Standard E 2013, 2012, Practice for Constructing FAST Diagrams and Performing Function Analysis During a Value Analysis Study, ASTM International, West Conshohocken, PA, 2012.

ASTM Standard E 2083, 2010, Classification for Building Construction Field Requirements, and Office Overhead and Profit, ASTM International, West Conshohocken, PA, 2010.

ASTM Standard E 2168, 2010, Classification for Allowance, Contingency, and Reserve Sums in Buildings, ASTM International, West Conshohocken, PA, 2010.

ASTM Standard E 2516, 2011, Standard Classification for Cost Estimate Classification System, ASTM International, West Conshohocken, PA, 2011.

Construction Specifications Institute (CSAI), MasterFormat 2010, Alexandria, VA, 2010. GAO, GAO Cost Estimating and Assessment Guide, GAO-09-3SP, Washington, D.C., March 2009.

NIST (National Institute of Standards and Technology), NIST Handbook 135 Life-Cycle Costing Manual for the Federal Energy Management Program, 1995 Edition, Gaithersburg, MD, 1996.

OMB (Office of Management and Budget), Circular A-94 - Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs, Washington, D.C.

OMB, Circular A-131, Value Engineering, Washington, D.C., 2013

SAVE International, Value Methodology Standard, SAVE International, Dayton, OH, 45402, June 2007