CAPITAL BUDGET COST ESTIMATING GUIDELINES

2013-2015

State of Wisconsin
Department of Administration
Division of State Facilities
Madison, Wisconsin

Prepared By
Division of State Facilities

January 26, 2012

TABLE OF CONTENTS

SECTION 1

OVERVIEW OF THE PROJECT BUDGET

INTRODUCTION

The Division of State Facilities (DSF) has developed the following guideline to assist state agencies with developing project budget estimates for the 2013-2015 Capital Budget. While the guideline is aimed at projects costing over $185,000, many of the same principles and procedures apply to small projects. The guideline provides an overview of the cost estimating process, and summarizes the assumptions and considerations, which must be addressed to prepare a comprehensive budget estimate for the upcoming biennium. It identifies those items and factors which have an impact on project costs, and provides cost data that can be used to develop the budget estimate. This is a guideline only, and should be used accordingly. It is the responsibility of the submitting Agency's estimator to assure that costs used are complete, accurate, and reflect actual job conditions.

Prior to completing a project cost estimate, a project Program Statement should be prepared. Full Program Statements are required for every enumerated project. All-Agency projects should also be programmed to the extent necessary to fully define the project and complete a detailed cost estimate. For additional information on Programming see http://www.doa.wi.gov/docview.asp?docid=7986&locid=4

The attached Project Budget Estimate Worksheet (Exhibit 1) provides a consistent format for developing the budget estimate and a summary of cost considerations. This worksheet is also available as an Excel spreadsheet ***(INSERT LINK FOR cost estimate worksheet.xls)*** can be used along with the instructions that follow to prepare cost estimates for both new construction and remodeling projects. The worksheets should be fully utilized to assure the most adequate estimate. Other approaches are acceptable as long as sufficient data is provided to support the way the estimate was derived. A completed worksheet should be part of the Capital Budget Project Request.

Project specific details must be considered in preparing every estimate. This is particularly true when developing the budget for a remodeling or a multi-use building containing research laboratories, animal rooms, computer facilities, high security, or other complex spaces. The estimator must thoroughly understand the scope of the project, the sophistication of the program, specific facility design requirements, how it will be constructed, its proximity to adjacent facilities, the time of construction, the retroactive applicability of building codes to an existing building, ADA requirements, site and utility conditions, etc. Good estimates are the result of searching out program and design details, evaluating construction and site conditions, and accurately reflecting their cost impacts.

The project budget includes all of the estimated costs associated with an agency's request, and quantitatively and qualitatively reflects program requirements. While the budget estimate is normally prepared far in advance of the actual design and construction phases, its importance should not be underestimated as it is used to establish Agency-wide and State-wide capital improvement plans and budgets.

Current economic conditions in Wisconsin and throughout the US have generally resulted in a significant decrease in construction costs from those observed between in 2008 and earlier. The cost of many construction materials have decreased due to global economic influences including basic supply and demand. Similarly, labor prices have decreased due to more aggressive labor production estimates. Both material and labor costs have been reduced as a result of decreased contractor fees and profit margins. When preparing capital budget cost estimates for 2013-2015, estimators are cautioned in using current market prices, which may be undervalued.

BUDGET FORMAT AND DEFINITIONS

Following is an outline of a project budget summary showing the major cost components and their definitions. This format can be used to summarize the cost estimate developed using the Project Budget Worksheet and the procedures in this guideline.

Example of Project Budget Summary Worksheet

GENERAL INFORMATION

Agency: _____
Project Title: _____
Project Location: _____
Project Description: _____
_____
Date Prepared: _____
Prepared By: _____

Building Information: _____ (gsf-new construction) _____ (asf-new construction)
(if applicable)
_____ (gsf-remodeling) _____ (asf-remodeling)

Other Scope Information: _____
_____
Estimated Bid Date: _____

BUDGET ESTIMATE (enter the totals for each component from the Budget Estimate Worksheet)

Building/Remodeling Costs
Base Building/Remodeling Cost – GSF _____
Special Foundations/Site Preparation _____
Special Design Features/Other Construction _____
Built-in Architectural Equipment _____
Special Mechanical/Electrical Systems _____
Testing & Balancing _____
Building Complexity _____

Utility/Site Development Costs
New Utilities and/or Service Extensions _____
Site Development _____
Project Location/Site Conditions _____
Telecommunications Equipment _____
Asbestos/Lead/Environmental Clean-up _____

Subtotal - Construction Costs _____

Design Costs

Pre-Design Fees(including Programming)		
Base Design Fees		
- Site Survey		
- Geotechnical Investigation		
- Audio/Visual Consultant		
- Commissioning		
- Asbestos/Environmental Consultant		
- Other consultants		
Subtotal - Design Costs		
Other Costs		
Project Contingency		
DSF Management		
Work by Owner		
Movable Equipment		
Special Equipment (Specify)		
Other Allowances (Specify)		
Land		
Total Project Budget Estimate		

PROJECT FUNDING

Anticipated Funding Sources and Amounts:

Source:	
Source:	
Source:	
Source:	

ADDITIONAL COMMENTS (Special project delivery, advanced enumeration, etc)

This table is available as an Excel spreadsheet at ***(INSERT LINK FOR budget summary worksheet.xls)***

2. DEFINITIONS:

a. **Base Building and Remodeling Costs** - all general construction including the excavation, foundations, structure, envelope, interior finishes, fixed equipment. Also included are plumbing and fire protection work; heating, ventilating, and air conditioning (HVAC); lighting, electrical, and code required alarm systems; and elevator work. Base building and remodeling costs exclude site work, major interior demolition and special construction or built-in equipment.

b. **Special Foundations and Site Preparation** - includes any unusual costs required to prepare the site to receive the building. For example, a high water table may require extensive de-watering, unstable soil may require removal, pilings or other stabilization measures, and a site located in a flood-plain may require re-grading or other protection from flooding before construction can begin. The cost of demolishing existing buildings, rerouting utilities and roadways, and clearing the site should also be included.

c. **Special Design Features** - includes additional costs associated with the construction of special design features and other special functional spaces not covered by the base building or remodeling cost. This includes design features such as atriums, plazas, passive solar or other special interior or exterior finishes. It may also include the added cost of providing hazardous materials storage facilities, animal rooms, controlled environmental rooms, high security areas, and other special functional spaces. It should also include the replacement of windows/exterior doors and replacement of the existing roof surfaces or roof repair to the existing structure.

For remodeling work, the cost of meeting current fire safety, handicapped access (current ADA requirements), and other building code requirements occurring outside the area of program remodeling, but retroactively required because of the degree of remodeling work, should be included. These are indicated under Item e below.

d. **Built-in Architectural Equipment** - includes the added cost of providing special built-in or attached equipment which is bid and installed by the construction contractors. This includes built-in equipment for food service, laboratories, gymnasiums, libraries, theaters, prisons, lecture and fixed auditorium seating, hospitals, vehicle maintenance, parking, waste handling, and other special functional spaces.

e. **Special Mechanical/Electrical Equipment/Systems** - includes the added cost for stand alone source heating and air conditioning systems and special mechanical systems such as heat recovery or other energy conservation equipment, refrigeration, chemical fire suppression, or energy management. It also includes the added cost of special electrical systems such as electronic surveillance and alarms, electronic access control, central interruptible power supplies, lightning mitigation equipment, special lighting controls, universal telecommunications and data transmission cabling systems, A/V equipment for Distance Education and other high technology space, plus special services for owner supplied equipment. For remodeling, the cost of upgrading existing mechanical and electrical source equipment should be added.

f. Testing and Balancing - includes the cost of testing and balancing the completed (HVAC) heating, ventilating, and air conditioning systems by an independent contractor to assure that design performance has been achieved. Testing and balancing costs are in the range of 1% to 3% of the total heating, ventilating, and air conditioning cost. On complex remodeling projects and Lab/Research facilities the cost could increase to 5%-8% of the total HVAC cost.

g. **Building Complexity** - includes the added cost of unusual design requirements such as heavy floor loads, irregular building shape, high-rise construction, heavy HVAC or electrical loads, high density interior construction, etc. Suggestions for appropriate design complexity cost adjustment factors are provided in the “Cost Estimating Basics” section of this guideline.

h. **New Utilities and/or Service Extensions** - includes the cost of extending replacing or relocating underground and overhead utility services such as water, sewer, steam, chilled water, gas, electric, communications and mechanical monitoring system from an appropriate source to the building. Projects with existing improvement or utilities need to assess these and include relocation or replacement due to poor condition, inadequate capacity or location conflicts. All costs of upgrading or expanding the supporting infrastructure shall be included in the project budget.

i. **Site Development** - includes site features such as vehicle, access roads, parking, pedestrian and bicycle paths and sidewalks, curbs, site lighting, retaining walls, grading, drainage, storm sewers, landscaping, planters, outdoor seating and other site improvements. Modify or replace pavements which are deteriorating or damaged, do not meet ADA requirements, pond water, unable to sustain construction traffic or insufficient for loads for proposed traffic. Include temporary vehicle, bicycle and pedestrian access modifications and parking modifications required to accommodate site access and agency needs during construction. Include grading and storm drainage features such as retention ponds, ditches, swales, rain gardens or other filtration/infiltration means to control site drainage, protect buildings and paved areas and meet code requirements. Include electrical service for pedestrian and vehicle parking site lighting.

j. **Project Location/Site Conditions** - an addition or reduction in the total building/remodeling cost may be warranted because the project is located in a higher or lower cost market than reflected in the unit costs provided in Exhibit 2 or other historical unit costs used to develop the estimate. For example Milwaukee is a higher cost market area than LaCrosse. Added costs may also be incurred for projects with such conditions as limited access or storage space, work occurring within an occupied or secure space, and projects with an accelerated construction period. Adjustment factors for project location and other site conditions are provided in the "Cost Estimating Basics" section of this guideline.

k. **Telecommunications Equipment** - includes the cost of telephone and authorized terminal data equipment (telephones, data processing, or audio/video equipment) which is normally purchased and installed independently from the building construction contracts. Telecommunication equipment may need to be included in the agency's Information Technology (I.T.) Plan. A cost of $400-$600 for each workstation would be included in the project budget, refer to Exhibit 2.

l. **Asbestos Abatement/Environmental Clean-Up** - includes the removal and proper disposal of asbestos and lead containing materials, PCBs, and underground fuel storage tanks occurring within the project area, plus the environmental remediation associated with these or other hazardous materials. This work may be handled as a separate contract by others, but the cost should be included in the budget estimate below the construction line.

m. **Design Fees** - includes the design fees for the architect/engineer services. A *guideline* for current design fees is provided in Exhibit 3. There is a separate line for pre-design services. If the project requires pre-design these services become part of the overall cost of the project.

n. **Other Design Fees** – includes the design fees for:

- Audio/Visual Consultants (estimated at 1.5% of the A/E contract)
- Programming
- Master Plan Studies,
- Asbestos/Environmental Consultant
- Food Service Consultant
- Commissioning (estimated to be up to 1.0% of the Construction Budget. See guideline included in Exhibit 3)
- Building Information Modeling (BIM) (estimated at 5 % of the A/E contract)

Also included under this fee are miscellaneous items such as Department of Commerce approvals, printing, and other items generally not in the A/E contract. Miscellaneous fees should be separate in the estimate, so that the funds can be accounted for each separate fee.

o. **Project Contingency** - is included in the budget to provide a bidding contingency and to cover unforeseen revisions required during construction. The normal contingency is 7% of the total construction cost for projects greater than $250,000, and is not to exceed 10% for smaller projects or remodeling work up to $1,000,000. The amount of contingency is dependent upon the type of work and the degree of difficulty in developing the budget estimate. The contingency line will be reduced on a sliding scale after the design report has been completed by the A/E and when the project has gone through the bidding process.

p. **DSF Project Delivery Fee**- includes the fee for contract administration and project delivery by DSF. The guideline for current supervision fees is provided in Exhibit 3. The project delivery cost should be separated from the design fee and other design fees in the budget estimate and should be 4% of the construction and project contingency line.

q. **Work by Owner**- includes Owner Agency costs associated with completing a portion of the project construction with their own staff.

r. **Movable Equipment** - includes expenditures for furnishings not provided as part of the construction work such as chairs, tables, desks, etc. The average movable equipment budget for an office building is between 4-8% of the building cost for new construction. This will vary for other buildings depending upon the type and function. The agency may already have all or a portion of the needed equipment, so this must be considered when estimating the movable equipment budget. DSF strongly recommends that a general movable equipment list be generated by the agency for each building type before the budget is established. The life expectancy for items included in the movable equipment list should be at least 10 years and cost over $100. The agency should realize that existing equipment, which is already available, could be utilized in the new or remodeled facility. Too often this factor is over-looked when preparing an equipment list and budget.

s. **Special Equipment** - includes special program equipment such as electron microscopes, automated filing equipment, needed computers & start-up software, animal cages, etc. which are generally purchased directly from a manufacturer or distributor and not included in the building construction contracts.

t. **Land Cost** - includes the cost of all parcels comprising the construction site and associated costs. Land costs should be included in the project budget only when land purchase is required. The value of land already owned should not be included.

u. **Start Up Costs** - the start up cost for a new building or remodeled facility should be included in the operating budget. Start up costs are normally considered to be expendable or consumable supplies. The start up must be requested by the agency as part of the biennial budget process as a part of the operating budget. Included in this category are licensed vehicles (automobiles, vans and trucks). In addition to the vehicles, the following types of inventory supplies must be on hand when the facility is ready for occupancy and use: general housekeeping supplies, office supplies, maintenance parts and supplies, and computer supplies.

PROJECT BUDGET ESTIMATING PROCEDURES/WORKSHEET

Following is a summary of the step-by-step procedures for developing a project budget estimate using the Project Budget Worksheet (Exhibit 1).

1. Define Project Space Needs: Page 1 of the worksheet is used to summarize the space needs and base building costs for the project. This is used with the Part 1 program statement when only large blocks or categories of space and general site considerations are known and can be estimated. Special features or detailed design requirements may not be defined at this point and assumptions about their cost impact may be required.

   The total gross area to be remodeled or constructed to accommodate the program is the requested net assignable area divided by an appropriate efficiency factor obtained from Exhibit 3 or another source. The gross area and cost of individual portions of a building can be determined separately and added together to arrive at the total building area and base building cost.

2. Select Base Building or Remodeling Unit Costs: Perform a thorough review of the request and select appropriate unit costs from Exhibit 2 or another source of cost data that closely reflect their scope of work for the proposed project. These unit costs should be adjusted for size and escalated to the project bid date as explained in the "Cost Estimating Basics" section of this guideline. Refer to the "Estimating the Cost of a New Building", or "Estimating Remodeling Project Costs" sections of this guideline for more information about the selection of base unit costs.

3. Identify Additional Building/Remodeling Costs: Page 2 of the worksheet provides a checklist of additional cost items generally not covered by the selected base unit costs. Identify and calculate additional costs and escalate to the proposed bid date. Also select appropriate building complexity/design construction cost adjustments from the factors provided in the "Cost Estimating Basics" section of this guideline. Each of these additional cost items and factors may have an impact on the cost estimate and, if overlooked, the estimate may be low. Amounts used for added costs can be derived from cost experience on past state projects, estimates provided by local contractors, or cost estimating data published by R.S. Means, Marshall and Swift or any other historical data. If there are any questions on added costs to the estimate, please consult the Division of State Facilities contact list:
   http://www.doa.state.wi.us/category.asp?linkcatid=775&linkid=58&locid=4

   Each project will usually contain some additional design or construction features which may result in higher costs. This is especially true for remodeling projects where the scope of work varies widely from one project to another, requiring the second page of the worksheet to be utilized even more. Make sure all costs are documented on the work sheet so the final project estimate can be justified by others.

4. Calculate Total Building and Construction Cost: The total adjusted building cost is the sum of the base building cost on Page 1, plus the additional costs and adjustments identified on Page 2. The cost of site and utility work is then added and further adjustments for location and site conditions are made on Page 3, producing a total estimated construction cost. Finally, allowances for fees, contingency, etc. are added to arrive at the total project budget estimate.

5. Review Assumptions and Calculations: Review the project request and functional program, look at other sources of cost information, and confirm the validity of the total budget amount.

   While the general procedures for cost estimating outlined above are relatively simple, the estimator must fully assess the scope of work in the program and its cost impact in order to produce an accurate project budget. Graphs, charts and worksheets on costs do not substitute for good judgment in arriving at a realistic budget estimate.

SECTION 2

COST ESTIMATING BASICS

SCOPE AND PURPOSE

Preparation of either a new building or remodeling budget requires an understanding of the cost estimating concepts which apply to all state projects and the cost adjustments for design and construction conditions which must be addressed. This section provides this information and explains the role of each item in the development of the project budget. All estimates should be rounded off to the nearest $100 or the nearest $1,000 if the project exceeds $500,000.

BUILDING EFFICIENCY

A building request generally defines how much assignable interior area is required to accommodate an agency program. However, additional non-assignable areas for public circulation, building mechanical systems, custodial services, and space occupied by walls and other structural elements must also be designed and constructed to provide a complete functional building. The building efficiency is the relationship between the net assignable area (ASF) and the total gross area (GSF) of the completed building. Following are definitions of these terms:

1. Gross Area: Total gross square feet (GSF) is the sum of all enclosed building floor areas regardless of functional use, including usable basements, hallways, attics, and mezzanines. This is also called the shell of the building. It includes enclosed porches, roofed over work areas, elevator and mechanical shafts, and unfinished program areas. It does not include exterior balconies and plaza areas, covered walks, or low-head pipe trenches. Measurement is from the outside face of the exterior walls, disregarding cornices, pilasters, chimneys, etc., which extend beyond the wall face. Large program areas with non-standard ceiling heights such as a gymnasium which extend through two or more floors should be measured only once.

2. Net Assignable Area: Net assignable square feet (ASF) are the sum of all areas on all floors assigned to or available for assignment to an occupant or program. Areas for public restrooms and circulation (hallways), mechanical systems, custodial services, or building construction elements are not included. Measurement is from the inside face of enclosing walls to the occupied side of a public corridor or permanent wall. No deduction is made for columns or minor building projections.

3. Non-Assignable Area: Total non-assignable square feet is the difference between the total gross area and the net assignable area. It generally includes all mechanical, circulation, custodial, crawl spaces and construction areas which are not usable by the building occupant for their functional program.

4. Building Efficiency: Efficiency is a comparison of the net assignable area to the total gross area, expressed as a percent:

$$\text{Efficiency} = \frac{\text{Net Assignable Area (ASF)}}{\text{Total Gross Area (GSF)}}$$

Typical building efficiency factors for state-owned buildings are shown in Exhibit 2. To determine the total gross area of the proposed building construction, divide the net program assignable area by the appropriate efficiency factor. If too high an efficiency factor is used, inadequate space will be available for mechanical equipment and other vital non-assignable areas. This is especially a concern in research and other lab type buildings with a large amount of program related mechanical and electrical systems. Conversely, too low an efficiency will make the project appear too costly. For a building with different

types of spaces, the gross area for each type can be calculated separately and then added together to derive the total gross building area.

DEGREE OF REMODELING

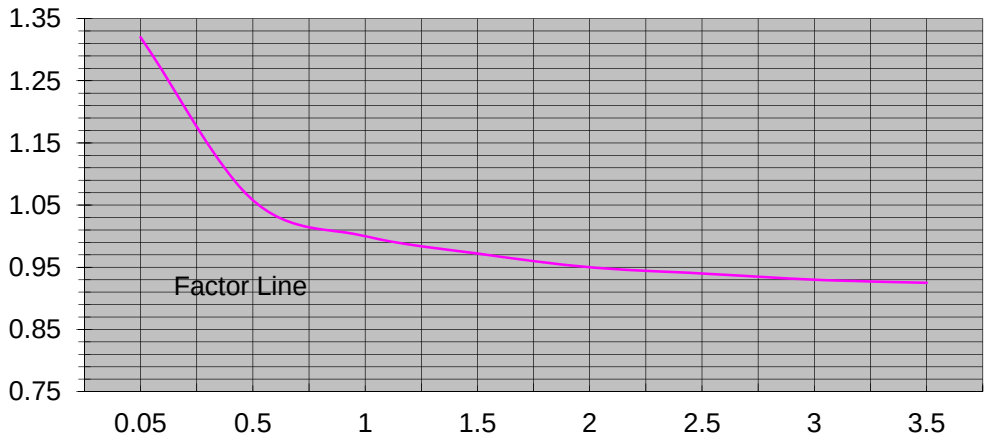
For a remodeling project it is important to determine the portion of the total gross area of the building involved in a proposed remodeling because the State Building Code may require up-graded fire exits, sprinkler systems, and handicapped accessibility work in the non-remodeled portions of the building. If a proposed remodeling involves 25, 50, or 100 percent of the total gross building area, different levels of code compliance are required and the impact must be assessed and included in the budget. A change in use of a portion of an existing building to a more stringent code occupancy classification can also have cost impacts beyond the limits of the proposed remodeling work. For example, additional fire rated separations between remodeled and non-remodeled areas.

The total square feet of remodeling is the sum of all areas both assignable and non-assignable which are directly affected by the remodeling work. The degree of remodeling is expressed as a percent of the total building area:

$$\text{Percent Remodeling} = \text{Total } \frac{\text{Square Feet of Remodeling}}{\text{Total Gross Area of Building}}$$

PROJECT SIZE/COST RELATIONSHIP

Assuming other cost factors are equal, a larger building will generally have a lower building cost per gross square foot than a smaller similar type building. Therefore, when using a unit cost from an existing



building to estimate the cost of another, the following size/cost graph should be used to determine a cost adjustment factor which reflects this difference.

Size Ratio

To develop the unit cost for a new building using the base unit costs provided in Exhibit 2, a size factor must be calculated. The size factor is determined by dividing the size of the proposed building by the size of the typical building. Using this size factor and the graph, a cost relationship between the two buildings can be obtained. The unit cost of the existing building multiplied by this cost factor provides an adjusted unit cost for the proposed building. A similar adjustment should be made for remodeling unit costs. For a project involving a combination of different types of space, use the total of all spaces as the size of the proposed building. Following is an example of the size/cost adjustment:

An existing 2-story office building contains 40,000 gsf, and has a unit cost of $100.00/gsf. A 20,000 gsf similar type building is being proposed, what is the size adjusted unit cost?

$$\text{Size Ratio} = \frac{\text{Proposed Area}}{\text{gsf}} = \frac{20{,}000}{} = .5$$

Typical Area 40,000 gsf

Cost Adjustment Factor (from graph) = 1.05
Adjusted Unit Cost = $100.00/gsf x 1.05 = $105.00/gsf.

LIFE CYCLE COSTING

Under present State Statutes and Building Commission Policy, life cycle costing (LCC) is applicable to both new building and remodeling projects funded through the Capital Budget. LCC is used for evaluating alternative planning and design solutions and assessing their impacts on both initial construction costs and the on-going operation and maintenance costs over the expected life of the facility. The conclusions reached regarding location of project, type of construction, and special systems or components should be reflected in the scope of work being requested for the project, which will in turn dictate what needs to be included in the proposed project budget.

For the 2013-2015 budget assume a bond rate of 5.0%.

PROJECT SCHEDULING AND COST ESCALATION

The time required to design a project may be several months to a year depending upon its size. In order to provide adequate construction funds, the cost estimate must be adjusted to reflect any increases in the cost of material and labor which occur during this time. In the past two biennia the rate of inflation has ranged from 2.5 to 4 percent per year. Likewise, it is important that once a project schedule is established that it be followed and any delays and associated cost increases be avoided.

An approximate schedule for the design, preparation of bid documents, and construction of a project can be developed from the data provided on Exhibit 4. Start by making a rough estimate of the project's cost; next select the correct time elements from Exhibit 4 that correspond to your estimate; then complete the schedule. The design work cannot begin until the project program is completed and funding is authorized to hire an A/E. Estimate when this will occur and establish your schedule accordingly. If a building occupancy date is critical, work back from the required occupancy date to determine when the design work must start in order to have the construction completed on time.

From a cost standpoint the key date is the projected bid date. Unit costs from previous projects or the new construction and remodeling cost data provided in this guideline may be used to develop a cost estimate for the proposed project. These costs reflect an ENR Index of 5120 for January 2012 with escalation factor. This figure must be escalated to the projected bid date of the proposed project. The ENR Cost Index factors shown on Exhibit 5 shall be used to make this escalation. The ENR Index corresponding to the projected bid date is divided by the ENR Index corresponding to the bid date of the previous project. The result is then multiplied by the unit cost of the previous project to provide an escalated unit cost. Following is an example of the cost escalation adjustment:

An existing building had a unit cost of $95.00/gsf based on an ENR Index of 5120. The estimated ENR Index for the proposed bid date of a similar new building is January of 2014 at an ENR Index of 5542. What is the escalated unit cost?

$$\text{Escalation Factor} = \frac{\text{ENR Proposed}}{\text{ENR Existing}} = \frac{5542}{5120} = 1.08$$

Escalated Cost = $95.00/gsf x 1.08 = $102.60/gsf

BUILDING DESIGN AND CONSTRUCTION COST FACTORS

Each new building or remodeling project is unique. Construction costs are dependent on the complexity of the agency's project program, the quantity and quality of the required construction, the location of the project and its site conditions, the market conditions at the time of bidding, and many other factors. Therefore, it is important that the costs used to develop the project cost estimate reflect the true conditions anticipated for the project.

To make the budget estimate as accurate as possible, the following additional cost adjustment factors related to the complexity of the building design and construction, the location of the project, site conditions, etc. should be considered and appropriate assumptions made, when applicable, based on actual conditions anticipated. Each of these factors is included as a line item on the Project Budget Worksheet, and results in dollar amounts are added or subtracted from the estimated building or remodeling cost.

1. Building Complexity Cost Factors (add to Total BASE Building/Remodeling Cost):

    a. Complexity of Program and Related Construction - make an appropriate cost adjustment for unusual program requirements such as heavy floor loads, irregular building shapes, high story height, different roof or floor levels, long span roof structures, high density of partitions and other interior construction, heavy HVAC and electrical loads, etc. Add up to a maximum of 5% for any combination of these items. This adjustment only applies to affected floor areas.

    b. Multi-Story Buildings - high rise buildings involve added cost for hoisting materials, etc. If the base unit cost doesn't reflect this cost, add .5% (.005) for each story over the sixth floor above grade, which would also include a parking structure underneath the proposed building.

2. Construction Cost Factors (add to Total ADJUSTED Building/Remodeling Cost):

    a. Time for Construction - add up to 5-7% for a project with an accelerated construction period, design/build or construction which will be adversely affected by the winter months. The project schedule should be reviewed before submittal of design services.

    b. Site Conditions - add up to 10% for a project with restricted site access, limited material storage space, or in a remote location.

    c. Occupied/Secure Site - add up to 15% for a project in a fully occupied building or in a correctional institution. Any existing building should, if at all possible, be unoccupied and vacated before remodeling is started. This would decrease the cost of a major remodeling project.

    d. Market Conditions/Location - based on location, use the following as a guide to adjust costs:

        deduct - 2% Superior, Wausau
        deduct - 1% Eau Claire, LaCrosse, Appleton, Oshkosh
        > 0% Madison, Janesville, Beloit, Green Bay
        add + 1% Racine, Kenosha, River Falls
        add + 2% Milwaukee

These adjustments may differ depending on the amount of available work, the availability of labor, and other local market conditions existing at the time of bidding.

SECTION 3

ESTIMATING THE COST OF A NEW BUILDING

GENERAL CONSIDERATIONS

The cost of constructing a new building or an addition to an existing building can be estimated by comparing it with the construction costs of similar projects. The estimate can be prepared utilizing either the "gross square foot" (GSF) or the "building component" cost methods. Regardless of the method used, the principles and considerations outlined in the "Cost Estimating Basics" section of this guideline apply. All GSF figures should be rounded off to the nearest 100.

THE GROSS SQUARE FOOT (GSF) COST METHOD

The base unit costs provided in Exhibit 2 represent average GSF building costs for a typical building including necessary support spaces. These costs provide a design and quality level consistent with their functional use. They include all general, mechanical and electrical construction for a complete building, excluding utility extensions and site work. They include code required fire protection systems. They also include a reasonable amount of equipment such as standard library shelving, lab casework, and built-in food service equipment as indicated. Air conditioning is included as indicated. They do not provide for special foundations, unique architectural design or special program construction, telecommunications cabling systems, or special mechanical and electrical equipment not specifically identified.

Following a complete review of the project program requirements, the cost estimate is developed by selecting an appropriate GSF unit building cost for the type of building being constructed, adjusting it for size and cost escalation, and multiplying it by the gross square feet of building area. The GSF costs in Exhibit 2 reflect bid costs based on a January 2010 cost level, so they must be escalated to a future bid date using the ENR Index. The adjusted GSF cost is entered into the Project Budget Worksheet, appropriate adjustments for design and construction conditions are made, and the total budget estimate is calculated as illustrated in the following example.

Refer to the "Cost Estimating Basics" section for detailed information about making adjustments for building efficiency, project size, cost escalation, and design and construction conditions.

BUILDING COMPONENT COST METHOD

Use of the Building Component Cost method requires more detail than is required for the GSF cost method. This method requires separating the construction work into its basic components or systems such as excavation and foundations, structure and envelope, interior subdivision and finishes, plumbing and fire protection, heating and ventilation, electrical, elevator and other special construction. Quantities or parameters which define the scope of each section of work are multiplied by an appropriate unit cost, and the subtotals are added together to produce the estimated total building cost.

Component costs can be obtained from bids received on similar state projects or from several current published cost manuals such as R.S. Mean Co. Building Assemblies Cost Guide, or the Marshall and Swift Segregated Cost Data. These costs must also be escalated to the proposed project bid date.

EXAMPLE OF NEW BUILDING BUDGET ESTIMATE

It is proposed to construct a new two story air conditioned office and classroom building in Eau Claire containing 10,000 ASF of office space, 10,000 ASF of classroom space, and 5,000 ASF of academic wet lab space. Typical efficiency and average GSF building costs are found in Exhibit 2. The projected bid date is January 2014, so the unit costs must be escalated from ENR Index 5120 to 5542, or 1.08 escalation factor. Following is a summary of the gross square feet, size adjustment, and building cost

calculations for this example. These are the figures which are entered into Page 1 of the Project Budget Worksheet when calculating a total project budget estimate.

1. GSF/Unit Cost Summary:

Category	ASF	Eff	GSF	Building $/GSF	Escal $/GSF
Office	10,000	70%	14,700	$95.00	$108.30
Classroom	10,000	66%	15,600	$105.00	$119.70
Wet Lab	5,000	60%	8,300	$191.00	$217.74
Total Gross Area			= 38,600 GSF		

2. Size/Cost Adjustment:

Category	Size Ratio (Actual/Typical)	Cost Adjustment (Graph)
Office	38,600/40,000 = .97	1.02
Classroom	38,600/50,000 = .77	1.04
Wet Lab	38,600/25,000 = 1.54	.97

3. Building Cost Summary:

Category	GSF	$/GSF	Cost Adjust	Category Costs
Office	14,700	$108.30	1.02	$1,623,850
Classroom	15,600	$119.70	1.04	$1,942,013
Wet Lab	8,300	$217.74	.97	$1,753,025
Total Building Cost Estimate			=	$5,318,888

A close look at the project indicates that several design and construction conditions must be factored into the cost estimate. It is desired that an atrium be included in the design to provide circulation and people space. The lab space must accommodate a special horticulture environmental room used for academic experiments. This requires special plumbing, heating, air conditioning, and electrical services. Utility services are readily available, but the site has very limited space for storage of construction materials and equipment. Site development is limited to some sidewalks, a short service drive, and a six car parking area. The calculations and total budget estimate for this example project are shown on the following Project Budget Worksheet. The total calculated project budget estimate is $7,533,900 including design, DSF management, contingency, and other allowances.

DSF PROJECT BUDGET WORKSHEET (page 1)

Date: January 2012
By: T. White

PROJECT TITLE: **NEW 2 STORY OFFICE/LAB COMPLEX**

AGENCY: UW SYSTEM – Eau Claire Campus LOCATION: Eau Claire, WI

NEW BLDG AREA: 38,600 (GSF New Const)
25,000 (ASF New Const) 65% (% Efficiency)

REMDLING AREA: _____ (GSF Remodeling)
_____ (GSF Total Bldg) _____ (% Remodeling)

ESTIMATED BID DATE: JANUARY 2014 PROJECTED ENR INDEX: 5120/5542 = 1.08

Space	GSF	Unit Cost	ENR	Size/Cost Adjustment	BUDGET
OFFICE	14,700	$ 95	1.08	1.02	$1,538,400
CLASSROOM	15,600	$105	1.08	1.04	$1,839,800
LAB	8,300	$191	1.08	.97	$1,660,800

Subtotal $ 5,039,000

REMODELING SPACE/COST SUMMARY:

Trade	RMDL SF	Unit Cost	ENR	Size/Cost Adjustment	BUDGET
General					
- Minor					
- Partial					
- Complete					
Plumbing					
- Minor					
- Partial					
- Complete					
- Special Needs					
HVAC					
- Minor					
- Partial					
- Complete					
AC Only					
Electric					
- Minor					
- Partial					
- Complete					
- Special Needs					
Elevator					

Subtotal $ N/A

TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>>>>>>>> $ 5,039,000

Continue on Page 2**-->>**

WORKSHEET (Page 2)

TOTAL BASE BUILDING/REMODELING COST (from Page 1) **$ 5,039,000**

ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS:

1. Special Foundations/Site Preparation ---------- $ 295,000
   - \- Selective Demolition
   - \- Demolition (*entire structure*)
   - x Site Excavation (*Partial basement 44,000 cy x $5 cy = $220,000)*
   - \- Pilings
   - x Dewatering *$75,000*

2. Special Design Features/Other Construction ---------- $ 50,000
   - x Plaza *(front entrance glass atrium $50,000 allowance)*
   - \- Special Exterior/Interior Finishes
   - \- Window/Exterior Door Replacement
   - \- Remove Architectural Barriers
   - \- Interface with Existing Building
   - \- Roof Replacement
   - \- Other (specify)

3. Built-in Architectural Equipment ---------- $ 100,000
   - \- Food Service/Equipment
   - \- Dry/Cold Rooms
   - x Library Shelving/Fixed Seating *($75,000)*
   - \- Prison Security
   - \- Parking/Loading Dock/Waste Handling
   - x- Signage (ADA) *($25,000)*
   - \- Other (specify)

4. Special Mechanical/Electrical Systems ---------- $ 37,000
   - \- HVAC Source Equipment
   - \- Heat Recovery/Refrigeration
   - x Chemical Fire Suppression (*Allowance lab areas $17,000)*
   - \- Energy Management
   - \- Electronic Surveillance
   - \- Lighting Controls
   - \- Service to Owner's Equipment
   - x Testing & Balancing (*$20,000)*

5. Building Complexity Cost Factors ---------- $ 40,000
   - x Irregular Shape/Story Height *(atrium $40,000)*
   - \- Floor Loading/Structural Details
   - \- HVAC/Electric Loads
   - \- Multi-Story Building
   - \- Design Life
   - \- Other (specify)

TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> **$ 5,561,000**

Continue on Page 3**-->>**

WORKSHEET (Page 3)

TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2)		**$ 5,561,000**
UTILITIES/SITE DEVELOPMENT/LOCATION COSTS:		
1. Utilities/Service Extensions		$ 232,000
x Water *8" water main 400 LF x $60/LF = $24,000*		
x Sewer *400/LF x $40/LF = $16,000*		
x Gas *Allowance $10,000*		
x Electric *400/LF x $80 x = $32,000*		
x Steam/Chilled Water *from physical plant $150,000*		
2. Site Development		$ 211,700
x Roads/Walks *200/LF x $26 = $5,200*		
x Parking *60 surface parking spaces x $1,600 = $96,000*		
x Site Lighting/Storm Sewer *Lighting allowance $40,000*		
x Landscaping *7,000 SF x $12.00 = $63,000*		
x Exterior Signage *Allowance $7,500*		
- Other (specify)		
3. Location/Site Conditions Cost Factors		$ ($62,900)
- Time for Construction		
- Restricted or Remote Site/Limited Access		
- Occupied/Secure Site		
- Market Conditions/Location Factor -1%		
- Other (specify)		
4. Telecommunications		$ 45,000
x Workstations/Staff *75 x $600 = $45,000*		
5. Asbestos Abatement/Site Clean-up		$ 0
TOTAL CONSTRUCTION COST >>>>>>>>>>>>>>>>>>>>>>>>>>>>		**$ 5,986,800**
DESIGN/CONTINGENCY/ALLOWANCES:		
1. Design		$ 443,000
x Architect/Engineer *7.4% of Construction - Average Complexity*		
2. Other Design Fees		$ 69,500
x Miscellaneous Fees *$2,500*		
x Audio/Visual Consultant *$7,000*		
x Asbestos Abatement Consultant		
x Commissioning (*up to 1% of Construction Budget)$60,000*		
3. Project Contingency 7% of Construction		$ 419,100
4. DSF Project Delivery Fee 4% of Construction+ Contingency		$ 256,300
5. Work by Owner		$
6. Movable Equipment Allowance *6% of Construction*		$ 359,200
7. Special Equipment		$
8. Other Allowances		$
9. Land Purchase		$
TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>>>>>>>>>		**$ 7,533,900**

SECTION 4

ESTIMATING REMODELING PROJECT COSTS

REMODELING CONSIDERATIONS

A cost estimate for remodeling an existing building is generally more difficult to develop than an estimate for construction of a new building. This is primarily due to the difficulty in assessing the extent of the revisions required to major components such as the heating, ventilating, electrical, plumbing systems and to upgrade the building to current ADA requirements. Therefore, when preparing a remodeling cost estimate it is necessary to evaluate the condition of those components and to make assumptions regarding the need for and cost of their replacement. When assimilating this data it is advisable that the physical plant or building and grounds supervisor is contacted to verify existing conditions and problems, and that the building be physically reviewed. Consideration must also be given to the degree of remodeling involved and any retroactive fire safety and access barrier removal code work which may be required in non-remodeled portions of the building.

A remodeling cost estimate can be prepared utilizing either the “descriptive cost” method or the “detailed cost” method as described below in conjunction with the Project Budget Worksheet provided in the appendix. Some remodeling cost estimates may require a combination of both methods. All GSF figures should be rounded off to the nearest 100. A description and example of the application of these methods is outlined below.

THE DESCRIPTIVE COST METHOD

The descriptive cost method is most applicable to a large comprehensive interior remodeling project where program requirements are known, but where quantities or construction details are difficult to determine. With this method the remodeling work is classified according to the following definitions:

1. Minor Remodeling - This involves the remodeling of space for the same occupancy or for occupancy which requires a comparable or lesser degree of services or surface treatment. The primary emphasis is on utilizing existing spaces with limited partition changes and very limited changes in mechanical and electrical systems. Typically the scope of work involves minor relocating or adding of movable partitions to improve the space utilization; patching floor, wall, and ceiling finishes; minor reallocations of existing plumbing and electrical fixtures; and adjusting the sprinkler heads and air distribution ducts, grilles, temperature control, electrical switches and outlets to conform to the new partition arrangement. It does not include adding air conditioning. In January 2012, the cost for this level of work ranges from approximately $50 - $85 per square foot of the total square feet of remodeled area, including both assignable and non-assignable areas.

2. Partial Remodeling - This involves the remodeling of space to accomplish functional or physical changes for an occupancy which requires more sophisticated services or a higher degree of surface treatment. Typically the scope of work includes removing and replacing a portion of the interior partition systems, upgrading floors, ceilings and wall finishes, and plumbing and electrical fixtures; revising the air distribution and air conditioning system; and rebalancing the air and temperature control system, limited modifications to the fire sprinkler system and correction of minor fire safety and accessibility code violations. In January 2012, the cost for this level of work ranges from about $70 - $105 per square foot of the total square feet of remodeling.

3. Complete Remodeling - This involves extensive demolition and replacement of existing partitions, floor and ceiling coverings, mechanical, and electrical distribution systems within the affected space, and plumbing and electrical fixtures. Replacement of heating/cooling source equipment, main supply ducts, main plumbing waste/vent piping, and medium voltage distribution system are not included. In January 2012, the cost for this level of work ranges from about $110 - $150 per square foot of the total gross remodeled area depending upon the degree of mechanical work required. Complete remodeling may also include the replacement of the windows and correction of major fire safety and accessibility code violations. However, these last two major items are not

included in the unit costs in the following table because their costs vary considerably depending upon the number of windows, exits, and types of construction.

The cost estimate is computed by multiplying the gross remodeled area by the appropriate base unit cost. The following table of unit costs is based upon averages for state remodeling projects.

	Minor	Partial	Complete
General	$35.00	$58.50	$66 – 75.00
Plumbing	11.25	19.50	22.00
HVAC	*15.00	*32.00	34-62.00
Electrical	12.00	21.00	27.00

* Includes repairs to existing heating and ventilation system only

The above unit costs include necessary related demolition work and reflect the cost of remodeling normally encountered in an office or classroom type building. When the remodeling work includes complex mechanical or electrical systems, demolition and equipment, such as in lab, control or research space, these unit costs should be increased by up to 5% or more to reflect the higher costs normally involved. The cost used must be based on the age, use, and existing conditions of the existing facility.

The above costs reflect the cost of remodeling interior building systems and areas only. They do not include structural modifications, reroofing, replacing windows, replacing utility services, tuck-pointing, exterior masonry, adding elevators or fire suppression systems, asbestos and other hazardous materials abatement, or concentrated fire and accessibility code correction work. Replacement of heat/cooling source equipment, and mechanical and electrical services for any special equipment must also be estimated separately. The total square foot remodeling cost for a specific area, including both assignable and non-assignable areas, is the sum of the unit costs applicable to that area. For example, an area might require minor general remodeling ($28.00/SF), partial heat and ventilation ($26.00/SF), and complete replacement of the plumbing and electrical systems ($17.50 and $22.00/SF). The total square foot unit cost for the remodeling work is therefore $94.00/SF.

Remodeling cost estimates, like new construction cost estimates, must be escalated to the bid date and adjusted for size as part of the calculation procedures. As previously stated, the descriptive costs provided above are applicable to an office or classroom building where the gross remodeled area is 20,000 to 30,000 GSF. For projects which are significantly smaller or larger than this range, the total square foot unit cost for remodeling work should be adjusted for size. These costs should also be adjusted to reflect varied design conditions and site constraints, and whether the building will be occupied during construction or phased. These and other appropriate adjustments should be made by following the Project Budget Worksheet and the explanation provided in the “Cost Estimating Basics” sections of this guideline.

THE DETAILED COST METHOD

A more detailed method of cost estimating may be used where the type and area of work is clearly defined and quantities can be estimated. This would be most applicable to a smaller, more limited remodeling project such as remodeling an individual room or replacing a single building component. This method can also be used in conjunction with the descriptive method to cost those items of work not covered by descriptive unit costs.

Unit costs for preparing detailed estimates can be obtained from current cost manuals such as R.S. Mean Co. and from prior state projects dating back to 1990’s.

TOTAL BUILDING REHABILITATION

The cost of total rehabilitation of a building may exceed the cost of constructing new space; therefore, such a project requires the evaluation of its total physical, functional, and economic adequacy for the intended program use.

EXAMPLE OF REMODELING BUDGET ESTIMATE

The proposed remodeling would convert an older classroom-office building to office space. More than 50% of the building is being remodeled and the remodeling must therefore meet the barrier free and fire building code requirements. This means that an elevator and outside ramp must be added, several toilet partitions widened, and the existing stairwells enclosed with fire resistive materials. New roofing is also required. The interior remodeling will consist of removing existing masonry partitions and installing steel stud and drywall partitions, lighting, flooring and ceiling coverings, and the re-routing of the heating and ventilation systems. The building is not air-conditioned. A small computer center requiring unit air conditioning and a new electrical service will be added to the building.

Of the total building area of 30,000 GSF (occupied basement and two floors), 10,000 GSF will be completely remodeled, including 2,000 GSF for a computer center, and 8,000 GSF will only be painted and new ceiling and floor coverings added, plus some other minor work.

Assume that the bidding will occur at ENR Index 5766 (January 2015). The cost escalation adjustment is 1.13 (ENR 5766/5120). Based on a size ratio of .72 (18,000/30,000), the size adjustment from the Size/Cost graph found in the "Cost Estimating Basics" section of this guideline is 1.05. Using the unit costs for the various trades and adjusting them for cost escalation and project size, the following estimate is developed:

		Construction Cost:
1.	10,000 GSF @ $75 (complete general)	= $ 750,000
	10,000 GSF @ $ 11.25 (minor plumbing)	= 112,500
	10,000 GSF @ $32.00 (partial H & V)	= 320,000
	10,000 GSF @ $21.00 (partial electric)	= 210,000
	8,000 GSF @ $35.00 (minor general)	= 280,000
	Add three story elevator - Shaft *($15,000 x 3)*	= 45,000
	Add three story elevator - Equipment *($22,000 x 3)*	= 66,000
	Remodeling Subtotal	= 1,783,500
	Adjust for escalation (1.13) *1,783,500 x .13= $ 231,900*	= $ 231,900
	Adjust for size (1.05) (1,783,500 *+231,900) x .05 = $100,800*	= $ 100,800
	Subtotal	= $2,116,200
2.	Code Compliance Work	
	Front Entrance *$20,000 Allowance*	= $ 20,000
	Add outside ramp	= 50,000
	Signage - *Allowance*	= 7,500
	Subtotal	= $ 77,500
3.	Other Work:	
	Selective Demolition	= 75,000
	Testing & Balancing	= 10,000
	Food Service/Breakroom *$20,000*	= 20,000
	Reroof - 15,000 S.F. *@ $8.00/SF*	= 120,000
	Subtotal	= $ 225,000
	Total Remodeling Construction Cost Estimate	= $ 2,418,700

The Project Budget Worksheet on the following page illustrates the calculation of the total project budget estimate for this example, which includes site development and utility extension/repair. We will also assume that non-remodeled portions of the building will be occupied during construction and the project occurs in Janesville. As shown on the worksheet, the calculated total project budget estimate is $3,687,300 including design, DSF management, contingency, asbestos abatement and other allowances.

DSF PROJECT BUDGET WORKSHEET (page 1)

Date: January 2012
By: T. White

PROJECT TITLE: OFFICE/COMPUTER BUILDING

AGENCY: DPI LOCATION: Janesville

NEW BLDG AREA: _____ (GSF New Const)
_____ (ASF New Const) _____ (% Efficiency)

REMODELING AREA: 18,000 (GSF Remodeling)
30,000 (GSF Total Bldg) 60 (% Remodeling)

ESTIMATED BID DATE: January 2015 PROJECTED ENR INDEX: 5766 (1/2015) / 5120 (1/2012) = 1.13

Space	GSF	Unit Cost	ENR	Size/Cost Adjustment	BUDGET
				Subtotal	$ N/A

REMODELING SPACE/COST SUMMARY:

Trade	RMDL SF	Unit Cost	ENR	Size/Cost Adjustment		BUDGET
General						
- Minor	8,000 GSF	$35.00	1.13	1.05	$	332,200
- Partial						
- Complete	10,000 GSF	$75.00	1.13	1.05	$	889,900
Plumbing						
- Minor	10,000 GSF	$11.25	1.13	1.05	$	133,500
- Partial						
- Complete						
- Special Needs						
HVAC						
- Minor						
- Partial	10,000 GSF	$32.00	1.13	1.05	$	379,700
- Complete						
AC Only						
Electric						
- Minor						
- Partial	10,000 GSF	$21.00	1.13	1.05	$	249,200
- Complete						
- Special Needs						
Elevator	Three Stop @ $37,000 per floor - $111,000 x 1.13 x 1.05				$	131,700
				Subtotal	$	2,116,200

TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>>>>>>>> $ 2,116,200

Continue on Page 2**-->>**

WORKSHEET (Page 2)

TOTAL BASE BUILDING/REMODELING COST (from Page 1) **$ 2,116,200**

ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS:

1. Special Foundations/Site Preparation ---------- $ 75,000

   x Selective Demolition *$75,000*
   - Demolition (entire structure)
   - Site Excavation
   - Pilings
   - Dewatering

2. Special Design Features/Other Construction ---------- $ 190,000

   - Plaza
   - Special Exterior/Interior Finishes
   x Window/Exterior Door Replacement *Front entrance ADA $20,000*
   x Remove Architectural Barriers *Exterior ADA ramp allowance $50,000*
   - Interface with Existing Building
   x Roof Replacement *re-roof 15,000 SF x $8.00 = $120.00*
   Other (specify)

3. Built-in Architectural Equipment ---------- $ 27,500

   x Food Service/Equipment *Breakroom allowance $20,000*
   - Dry/Cold Rooms
   - Library Shelving/Fixed Seating/Stage Rigging
   - Prison Security
   - Parking/Loading Dock/Waste Handling
   x Signage (ADA) *Allowance $7,500*
   - Other (specify)

4. Special Mechanical/Electrical Systems ---------- $ 10,000

   - HVAC Source Equipment
   - Heat Recovery/Refrigeration
   - Chemical Fire Suppression
   - Energy Management
   - Electronic Surveillance
   - Lighting Controls
   - Service to Owner's Equipment
   - Telecommunications Cabling System
   x Testing & Balancing *($10,000 new & existing systems)*

5. Building Complexity Cost Factors ---------- $ 0

   - Irregular Shape/Story Height
   - Floor Loading/Structural Details
   - HVAC/Electric Loads
   - Multi-Story Building
   - Design Life
   - Other (specify)

TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>> **$ 2,418,700**

Continue on Page 3**-->>**

WORKSHEET (Page 3)

TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2) $ 2,418,700

UTILITIES/SITE DEVELOPMENT/LOCATION COSTS:

1. Utilities/Service Extensions ---------- $ 25,000
   - \- Water
   - \- Sewer
   - \- Gas
   - x Electric *New service allowance $25,000*
   - \- Steam/Chilled Water

2. Site Development ---------- $ 33,900
   - x Roads/Walks *150/LF x $26 = $3,900*
   - \- Parking
   - x Site Lighting/Storm Sewer *Allowance $5,000*
   - x Landscaping *Allowance $25,000*
   - \- Exterior Signage
   - \- Other (specify)

3. Location/Site Conditions Cost Factors ---------- $ 296,200
   - \- Time for Construction
   - \- Restricted or Remote Site/Limited Access
   - x Occupied/Secure Site *15% $296,200*
   - x Market Conditions/Location Factor *(+0%)*
   - \- Other (specify)

4. Telecommunications ---------- $ 36,000
   - x Workstations/Staff *60 x $600 = $36,000*

5. Asbestos Abatement/Environmental Clean-up ---------- $ 75,000

TOTAL CONSTRUCTION COST >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> $ 2,884,800

DESIGN/CONTINGENCY/ALLOWANCES:

1. Design ---------- $ 295,200
   - \- Architect/Engineer 8.5% *(average complexity) +$50,000 pre-design*

2. Other Design Fees ---------- $ 6,500
   - \- Survey/Soils
   - \- Miscellaneous Fees
   - x Audio/Visual Consultant *$4,000*
   - x Asbestos Abatement Consultant *$2,500*
   - x Commissioning *(up to 1% of construction budget)*

3. Project Contingency *9% of Construction* ---------- $ 259,600

4. DSF Project Delivery Fee *4% of Construction + Contingency* ---------- $ 125,800

5. Work by Owner ---------- $

6. Movable Equipment Allowance *4% of Construction (re-use existing)* ----- $ 115,400

7. Special Equipment ---------- $

8. Other Allowances ---------- $

9. Land Purchase ---------- $

TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>>>>>>>>>>>>> $ 3,687,300

EXHIBIT 1

DSF PROJECT BUDGET WORKSHEET (page 1) Date: _____

By: _____

PROJECT TITLE: _____

AGENCY: _____ LOCATION: _____

NEW BLDG AREA: _____ (GSF New Const)
_____ (ASF New Const) _____ (% Efficiency)

REMDLING AREA: _____ (GSF Remodeling)
_____ (GSF Total Bldg) _____ (% Remodeling)

ESTIMATED BID DATE: _____ PROJECTED ENR INDEX: _____

Space	GSF	Unit Cost	ENR	Size/Cost Adjustment	BUDGET

Subtotal $_____

REMODELING SPACE/COST SUMMARY:

Trade	RMDL SF	Unit Cost	ENR	Size/Cost Adjustment	BUDGET
General					
- Minor					
- Partial					
- Complete					
Plumbing					
- Minor					
- Partial					
- Complete					
- Special Needs					
HVAC					
- Minor					
- Partial					
- Complete					
AC Only					
Electrical					
- Minor					
- Partial					
- Complete					
- Special Needs					
Elevator					

Subtotal $_____

TOTAL BASE BUILDING/REMODELING COST >>>>>>>>>>>>>>>>>>>>>>>>> $_____

Continue on Page 2**-->>**

WORKSHEET (Page 2)

TOTAL BASE BUILDING/REMODELING COST (from Page 1) **$**_____

ADDITIONAL BUILDING CONSTRUCTION/REMODELING COSTS:

1. Special Foundations/Site Preparation ---------- $_____
   - Selective Demolition
   - Demolition (entire structure)
   - Site Excavation/Site Preparation
   - Pilings
   - Dewatering

2. Special Design Features/Other Construction ---------- $_____
   - Plaza
   - Special Exterior/Interior Finishes
   - Window/Exterior Door Replacement
   - Remove Architectural Barriers
   - Interface with Existing Building
   - Roof Replacement
   - Other (specify)

3. Built-in Architectural Equipment ---------- $_____
   - Food Service/Equipment
   - Dry/Cold Rooms
   - Library Shelving/Fixed Seating/Stage Rigging
   - Prison Security
   - Parking/Loading Dock/Waste Handling
   - Signage (ADA)
   - Other (specify)

4. Special Mechanical/Electrical Systems ---------- $_____
   - HVAC Source Equipment
   - Heat Recovery/Refrigeration
   - Chemical Fire Suppression
   - Energy Management
   - Electronic Surveillance
   - Lighting Controls
   - Service to Owner's Equipment
   - Testing & Balancing

5. Building Complexity Cost Factors ---------- $_____
   - Irregular Shape/Story Height
   - Floor Loading/Structural Details
   - HVAC/Electric Loads
   - Multi-Story Building
   - Design Life
   - Other (specify)

TOTAL ADJUSTED BUILDING/REMODELING COST >>>>>>>>>>>>>> **$**_____

Continue on Page 3**-->>**

WORKSHEET (Page 3)

TOTAL ADJUSTED BUILDING/REMODELING COST (from Page 2) **$**_____

UTILITIES/SITE DEVELOPMENT/LOCATION COSTS:

1. Utilities/Service Extensions ---------- $_____
   - Water
   - Sewer
   - Gas
   - Electric
   - Steam/Chilled Water

2. Site Development ---------- $_____
   - Roads/Walks/Curbs
   - Surface Parking
   - Site Lighting/Storm Sewer
   - Landscaping
   - Exterior Signage
   - Other (specify)

3. Location/Site Conditions Cost Factors ---------- $_____
   - Time for Construction
   - Restricted or Remote Site/Limited Access
   - Occupied/Secure Site
   - Market Conditions/Location Factor
   - Other (specify)

4. Telecommunications---------- $_____
   - Workstation/Staff

5. Asbestos Abatement/Environmental Clean-up---------- $_____

DESIGN/CONTINGENCY/ALLOWANCES:

1. Design ---------- $_____
   - Architect/Engineer + Pre-design

2. Other Design Fees ---------- $_____
   - Miscellaneous Fees (Specify)
   - Audio/Visual Consultant
   - Asbestos/Environment Consultant
   - Commissioning

3. Project Contingency ---------- $_____

4. DSF Project Delivery Fee ---------- $_____

5. Work By Owner ---------- $_____

6. Movable Equipment Allowance ---------- $_____

7. Special Equipment ---------- $_____

8. Other Allowances (Specify)---------- $_____

9. Land Purchase ---------- $_____

TOTAL PROJECT BUDGET ESTIMATE >>>>>>>>>>>>>>>>>>>> $_____

EXHIBIT 2

TYPICAL BUILDING EFFICIENCIES AND AVERAGE GSF BUILDING COSTS

Space Category	Bldg. Size (Total GSF)	Efficiency (%)	$/GSF
Classroom/Lecture Building	50,000	66	$ 131-184 *
Fine Arts/Auditorium (Includes $10.00 Fixed Equipment)	50,000	62	$ 210-263 *
Food Service Building (Includes $20.00 Food Service Equipment)	30,000	65	$ 163-174 *
Laboratory Space:	25,000	62	$ 189-236 *
- Academic Dry Lab (Includes $10.00 Lab Equipment)			
- Academic Wet Lab (Includes $18.00 Lab Equipment)	25,000	60	$ 236-420 *
- Research Lab (Includes $18.00 Lab Equipment)	30,000	58	$ 268-420 *
- Computer Lab	30,000	62	$ 158-184*
Library	75,000	75	$ 121-152*
Office Buildings:			
- 1 Story	10,000	72	$ 121-131*
- 2/4 Story	40,000	70	$ 121-158 *
Physical Education Buildings:			
- Arena	80,000	78	$ 95-105
- Gym/Track	115,000	74	$ 107-126
Service and Maintenance Buildings:			
- Vehicle Maintenance	4,000	83	$ 74-84
- General Service	25,000	85	$ 76-84
Storage Buildings:			
- Pole Frame (w/concrete flr, electric)	2,400	95	$ 42-53
- Metal Frame (w/14'wall hght, electric)	5,000	90	$ 53-58
- Heated Warehouse	15,000	86	$ 63-74

EXHIBIT 2 (continued)

Space Category	Bldg. Size (Total GSF)	Efficiency (%)	$/GSF
Student Center (Includes $6.00 Special Equipment)	75,000	65	$ 168-194 *
Visitor Center/Exhibit	10,000	80	$ 126-147 *
Parking Ramp (500 cars) (Approximately $12,300 per stall construction, not total project)	165,000	60	$ 37-42

Note: Parking ramp beneath building (125 cars) approximately $35,000-39,000 per stall construction.

Other Cost Information

Surface parking	$2100-$3150 per auto	(Not including lighting, curb & sidewalk work)
Elevator Equipment (4,500 lbs. 350 ft/min)	$29,000-$44,100 per stop	
Elevator Shaft	$14,000-$26,000 per stop	
Asbestos Abatement	$21.00 per square foot	(Sprayed on fire proofing)
	$3.00 per square foot	(Floor tile)
	$10-$20.00 per lf	(piping insulating)

NOTES:

1. All unit costs marked with an asterisk (*) include air conditioning.

2. Use of movable partitions will increase office efficiencies by 8%-10%.

3. Unfinished basement space will cost 50-55% of the above GSF costs.

4. All costs must be adjusted to reflect the actual size of the proposed building and the projected bid date.

5. The above GSF building costs provide a complete building including normal fixed and special equipment consistent with the type of space. They do not include site or utility work, special architectural features, demolition of existing buildings, or special construction or equipment not identified. The fixed and special equipment costs given represent costs normally bid as a separate contract and installed as part of the original construction work.

6. These GSF costs reflect the mix of space normally associated with each type of building or functional space. Good judgment is required to assure that the GSF costs used reflect the intended type and mix of space.

7. Universal telecommunications cabling costs equal $450 - $650 per 1 voice & 2 data or workstation for both voice and data capability or $600-$800 per outlet (1 voice, 2 data, 12 video) for voice, data and video capability. This must be added to the base building cost, page 3 of the budget worksheet.

8. Use the Excel icon below to obtain the worksheet.

EXHIBIT 3

ESTIMATING DESIGN AND PROJECT DELIVERY COSTS

The project budget should include an estimate of the associated design and DSF project delivery costs. The following fee schedule is provided to assist the agency in developing this estimate. **It is not intended as an endorsement of minimum or maximum fees, and actual fees paid may vary.** It should be recognized that each project is unique and that different levels of design effort may occur between projects necessitating modification of the fee schedule. Projects may be classified into one of the following classifications:

High Complexity: Most complex both in design and detail including buildings of specialized architectural character, memorial, historic or monumental nature, requiring special study or analysis and/or involve complex programs, mechanical systems, code requirements, etc. Project types could include Auditorium/Theaters, Communication Buildings, Extended Care Facilities, Complex Engineering Projects, Laboratories, Historical Restoration, Maximum Security Correctional Facilities, Museums, Sewage Treatment Facilities, and Fish Hatcheries.

Average Complexity: Normal or average complexity may include a combination of more and less complex elements in the scope. Project types could include Armories, Building Systems, Maintenance Shops, Firing Ranges, Recreational Facilities, Teaching Laboratories, Medical Office & Clinic, Laundry Facilities, Office Buildings, Site Utilities, University Centers, Residence Halls and Adult/Child Day Care.

Low Complexity: Least complex, projects will be of simple or repetitive construction without any great degree of special finish or design effort. May include project where equipment purchase comprise a large portion of the construction budget. Project types could include Asbestos removal, Building Envelope Repairs, Roofing, Life Safety Compliance, Demolition, Minimum Security Correctional Centers, Park Shelters, Warehouse, Water Towers, Service Garage, Apartments, Site Work and Water Towers.

NEW CONSTRUCTION DESIGN FEE PERCENTAGE

Construction Cost	High Complexity	Average Complexity	Low Complexity
Up to $100,000	13.7	13.1	12.3
$100 – 500,000	13.6	12.8	11.8
$500 – 1,000,000	11.1	10.4	9.4
$1,000,000 - $2.5 mil	10.1	9.3	8.3
$2,000,000 - $5.0 mil	9.2	8.3	7.3
$5,000,000 - $30 mil	8.3	7.4	6.3
$30,000,000 - $50 mil	7	6.2	5.3
Over $50,000,000	6.1	5.5	4.7

In addition to the fees shown above, zoning or neighborhood issues may require significant time spent on public relations and dealings with local officials. If programming is not done by the agency or if extensive program verification is required an additional 0.1% to 1.5% should be added to the fee.

REMODELING DESIGN FEE PERCENTAGE

The design fee for remodeling will increase the standard new construction fee depending upon complexity and project cost. Among the factors to be considered in determining the fee are:
Age and historical values of existing building; Availability and accuracy of existing plans and specifications; Extent and type of functional revisions to the existing building; Requirement of maintaining the building's existing character; and Extent of plumbing, mechanical, and electrical involvement.

Construction Cost	High Complexity	Average Complexity	Low Complexity
Up to $100,000	15.5	13.5	12.5
$100 – 500,000	13.8	13	12
$500 – 1,000,000	11.5	10.6	9.6
$1,000,000 - $2.5 mil	10.4	9.4	8.4
$2,000,000 - $5.0 mil	9.4	8.5	7.4
$5,000,000 - $30 mil	8.4	7.5	6.4
$30,000,000 - $50 mil	7.1	6.3	5.4
Over $50,000,000	6.2	5.6	4.8

COMMISSIONING SERVICES FEES

Commissioning Services fees will vary based upon project scope, complexity, number of commissioned systems and the selected scope of commissioning services as it relates to Commissioning Level One or Two. Because it is hard to define precisely, the cost of commissioning is most commonly and accurately presented as a range of potential costs rather than specific amounts.

Level One Commissioning

This is the basic level of commissioning to be employed as a minimum on all DSF Projects. This will include most Small Projects, most All Agency projects, and on limited Enumerated projects that are simple or utilitarian in nature. This level is most appropriate where the complexity of and interactions between the mechanical and electrical systems is low. The expected range of fees for Level One is 0 to .25% of the construction budget.

Level Two Commissioning

This is an increased level of commissioning which includes all Level 1 commissioning components; and may include All Agency projects and Enumerated projects. This level is most appropriate on projects which are complex or require a higher level of oversight. These include projects where the mechanical and electrical systems are complex and require interactions between systems; where significant testing of life safety, environmental or building envelope systems is appropriate; where certifications are required (LEED®, Green Globes, federal agency certification of labs, etc.) or where the agency program requests it. Level Two Commissioning allows the option for an independent third party commissioning agent. The expected range of fees for Level Two is .15 to 1.0% of the construction budget.

DSF PROJECT DELIVERY FEE

The project delivery fee is calculated at 4% of the total construction cost, plus contingency line. On smaller remodeling projects (less than $100,000) it is recommended that the total design and DSF project delivery fee allowance be not less than 12%, refer to the small project instructions.

SOIL BORINGS AND SURVEYS

For those projects that require a survey to develop a site plan, archeological survey or soil borings, up to 1-3% additional fee may be needed to cover these costs. The fee is calculated at 1-3% of the total construction cost and indicated under other fees in the budget.

SMALL PROJECTS

The DSF Small Project Request/Approval Form, via the DSF Web Page, shall be used for all small projects funding requests. A detailed cost estimate or explanation of how the budget was developed must accompany the project request. The estimating guidelines can be used as a resource for estimating small projects, but DSF recommends that an adequate estimate be obtained from a local contractor or supplier. Requests will not be approved without *adequate cost information and back-up material*.

EXHIBIT 4

DETERMINING CONSTRUCTION TIME

GUIDE FOR DETERMINING TIME REQUIRED TO DESIGN, BID, AND CONSTRUCT

Construction Cost	$ 30,000 to 250,000	$250,000 to 500,000	$ 500,000 to 2,500,000	$2,500,000 to 5,000,000	$ 5,000,000 to 10,000,000	$10,000,000 to 30,000,000
Phase of Project Development:						
Contract for A/E Services	1 Month	2 Month	2 Months	*3 Months	*5 Months	*5 Months
Develop/Review Budget	1 Month	2 Months	2 Months	2 Months	3 Months	4 Months
Develop Preliminary Plans	1 Month	2 Months	2 Months	2 Months	3 Months	3 Months
Complete/Review Design Report	1 Month	1 Months	1 Months	1 Months	2 months	2 Months
Complete Bid Documents	2 Months	2 Months	3 Months	3 Months	3 Months	4 Months
Review Bid Documents (DSF)	1 Month	1 Months	1 Month	1 Month	2 Months	2 Months
Bidding and Contracting	3 Months	3 Months	3 Months	3 Months	3 Months	3 Months
Complete Construction	4-10	8-12	10-15	15-18	18-26	24-34
Estimated Total Time	13-16Months	22 Months	26-32 Months	32-35 Months	38-44 Months	42-48 Months

The above guide is based upon average conditions with no unusual delay in delivery of materials or time lost to poor weather or other conditions. Extrapolate to determine total time within dollar limits.

* The project needs to be publicly advertised for A/E services.

EXHIBIT 5

BUILDING COST ESCALATION PROJECTIONS BASED UPON ENR BUILDING COST INDEX

Mo. - Year	ENR Index
Jan 2002	3581
July 2002	3652
Jan 2003	3648
July 2003	3683
Jan 2004	3767
July 2004	4013
Jan 2005	4112
July 2005	4197
Jan 2006	4335
July 2006	4356
Jan 2007	4432
July 2007	4493
Jan 2008	4557
July 2008	4723
Jan 2009	4782
July 2009	4762
Jan 2010	4800
Jul 2010	4910
Jan 2011	4969
Jul 2011	5074
Jan 2012	5120

Projected ENR's
Based upon projected annual inflation rate of 2.0%.

July 2012	5222
Jan 2013	5327
July 2013	5433
Jan 2014	5542
July 2014	5652
Jan 2015	5766
July 2015	5881
Jan 2016	5999
July 2016	6119
Jan 2017	6241
July 2107	6366
Jan 2018	6493
July 2018	6623
Jan 2019	6756
July 2019	6891