Introduction To BSD CostLink/AE

This chapter introduces BSD CostLink/AE and the included RS Means data. In this chapter, you will find:

- An overview of BSD CostLink/AE,
- An overview of the RS Means costs, and
- An overview of estimating using assemblies.

BSD CostLink/AE Overview

Welcome to a cost-estimating package specifically designed for architects, engineers, and others who are doing budgets, cost plans, and design development estimates. CostLink/AE® is also useful to subcontractors preparing proposals and quotes who want to be able to reference a significant library of RS Means data.

BSD CostLink/AE is a subscription service that includes annually updated cost data from industry leader RS Means. CostLink/AE combines unlimited telephone support and regular software updates with over 11,000 systems and assemblies, 22,000 line items, 75 parametric cost models, and cost indices for 700 U.S. and Canadian locations in a single subscription.

The RS Means data is derived from material, labor, and equipment components. The data is formatted as a single unit cost that includes the pre-computed RS Means subcontractor overhead and profit. This data is described in more detail later in this chapter.

Building an Estimate

The simplest way to create an estimate is to start with one of the 75 parametric models provided with the software. Alternatively, you can construct an estimate by using drag-drop or copy-paste of entire building systems, assemblies, and line items into a project hierarchy, either pre-defined or constructed on the fly. AE makes it easy to place project and data windows side-by-side, assigning cost items to appropriate project folders.

Estimate Structure, Adjustments, and Markups

Templates for Uniformat II, MasterFormat, and a User-Defined hierarchy are provided along with a useful sample project. A single tab on the Summary Info dialog box allows you to choose a location (by selecting your state and city) that automatically adjusts your estimate. You can also add sales tax and modify the default prime contractor markups. The same tab lets you assign percentage markups for other costs such as contingency, escalation, and A/E design.

Modeling

The 75 commercial building cost models provided with the software provide a convenient way to build an estimate early in a project, before any of the major systems have been selected. This model estimate can then be refined as the project design is developed, by adjusting quantities and by substituting assemblies and line items for those assumed by the model. A single tab on the Summary Info dialog box allows you to select a model from the three available categories: Commercial, Institutional, and Industrial. You then enter the gross building area and the length of the building perimeter, select one of six exterior closure and framing systems provided for each model, and review or modify the main model building parameters that serve as the basis for all model cost computations.

Linking

Within an estimate, you can link the quantities of assemblies and line items to the quantities of the folders that contain them. You can even link the quantities of the folders to the quantities of the folders above them. For example, if you are estimating a room that is 250 square feet, then you need 250 square feet of flooring and 250 square feet of ceiling tile. You can create a folder called “room” and give it a quantity of 250 square feet (SF). Then add line items to the folder for flooring and ceiling tiles, linking their quantities to the quantity of the parent folder. If the size of the room changes during the design process, you only need to change the quantity on the folder, and the line items will change automatically.

CostLink/AE also supports dynamic linking to Microsoft Excel. Create a space program or building parameters model and link cells directly to CostLink/AE quantities. Once linked, quantities in CostLink/AE update as the space program and other parameters change.

Simple but Powerful Reports

Simple but powerful report formatting and presentation lets you choose and format your reports in a variety of ways. The report is organized by the folders you create for your estimate. The costs in each report can either include markups in the individual line items, or summarize markups at the end of the report – your choice. You can choose the level of summarization, include or exclude a “percent of total” column, unit cost column, quantity column, and the total cost column. You can specify a report title and footer, apply a company logo to the report, and choose whether to include notes in the report. (AE lets you annotate any or every line of your cost estimate.) Reports can then be printed or exported to a number of formats including PDF, Excel, and Word.

Foundations of CostLink/AE

CostLink/AE is mature. AE is solidly founded on the CostLink/CM framework, which has been tested and improved through three generations of release. BSD has big plans for CostLink/AE as the new vanguard of its cost estimating product line. We know you will be pleased, both with the initial release and the ongoing subscription updates that hallmark our other successful products. We look forward to your productive use of CostLink/AE, and as always, we welcome your feedback.

About the RS Means Cost Data

Your subscription to BSD CostLink/AE includes the current RS Means cost data in the AE Assemblies database and the Building Construction Cost Data database. The following is how RS Means explains what is behind their costs.

The Development of Cost Data

The staff at RS Means continuously monitors developments in the construction industry in order to ensure reliable, thorough, and up-to-date cost information. While overall construction costs may vary relative to general economic conditions, price fluctuations within the industry are dependent upon many factors. Individual price variations may, in fact, be opposite to overall economic trends. Therefore, costs are continually monitored and complete updates are published yearly. Also, new items are frequently added in response to changes in materials and methods.

Costs - $ (U.S.)

All costs represent U.S. national averages and are given in U.S. dollars. The Means City Cost Indexes (Location Adjustment) should be used to adjust costs to a particular location. The City Cost Indexes for Canada can be used to adjust U.S. national averages to local costs in Canadian dollars. No exchange rate conversion is necessary.

For information on applying Location Adjustments, see chapter 4.

Model Costs

The base building cost for each of the 75 model buildings is computed from a small number of variables, including total area, perimeter, number of floors, and exterior wall and framing systems. Each of these variables is linked by formulas to assemblies and line items that are added to compute the total base building cost. A number of optional additives are provided for each building model, allowing the user to select appropriate added items and insert required quantities. Each model is based on specific parameters that cannot be varied significantly without invalidating the resulting cost estimate. For example, a building model of two stories cannot be used for a cost estimate of a similar building type of five stories, since many of the systems used and some of the computations would be inappropriate for the taller building.

Material Costs

The RS Means staff contacts manufacturers, dealers, distributors, and contractors all across the U.S. and Canada to determine national average material costs. Included within material costs are fasteners for a normal installation. RS Means engineers use manufacturers' recommendations, written specifications and/or standard construction practice for size and spacing of fasteners. Adjustments to costs may be required for your specific application or location. Material costs do not include sales tax, but can be adjusted in the Cost Tab of the Summary Info in CostLink/AE as described in chapter 4.

Labor Costs

Labor costs are based on the average of wage rates from 30 major U.S. cities. Rates are determined from labor union agreements or prevailing wages for construction trades for the current year. Rates, along with overhead and profit markups, are listed on the inside back cover of the appropriate RS Means cost book. If rate increases are expected within a given year, costs should be adjusted accordingly.

Labor costs reflect productivity based on actual working conditions. These figures include time spent during a normal workday on tasks other than actual installation, such as material receiving and handling, mobilization at site, site movement, breaks, and cleanup. Productivity data is developed over an extended period so as not to be influenced by abnormal variations and reflects a typical average.

Equipment Costs

Equipment costs include not only rental, but also operating costs for equipment under normal use. The operating costs include parts and labor for routine servicing such as repair and replacement of pumps, filters, and worn lines. Normal operating expendables such as fuel, lubricants, tires, and electricity (where applicable) are also included. Extraordinary operating expendables with highly variable wear patterns such as diamond bits and blades are excluded. These costs are included under materials. Equipment rental rates are obtained from industry sources throughout North America—contractors, suppliers, dealers, manufacturers, and distributors.

General Conditions

Prices given in this software include the Installing Contractor's overhead and profit (O&P). General Conditions, when applicable, should also be added to the Total Cost including O&P. The costs for General Conditions are listed in the Reference Section of the appropriate RS Means cost book. General Conditions for the Installing Contractor may range from 0% to 10% of the Total Cost including O&P. For the General or Prime Contractor costs for General Conditions may range from 5% to 15% of the Total Cost including O&P, with a figure of 10% as the most typical allowance.

Overhead and Profit

The costs in this software include O&P for the Installing Contractor. This figure is the arithmetic sum of Material (which is the bare material cost plus 10% for profit), Labor (the base labor cost plus total overhead and profit), and Equipment (the bare equipment cost plus 10% for profit). Details for the calculation of Overhead and Profit on labor are shown on the back cover of the appropriate RS Means cost book.

Factors Affecting Costs

Costs can vary depending upon a number of variables. Here is how RS Means has handled the main factors affecting costs.

Quality

The prices for materials and the workmanship upon which productivity is based represent sound construction work. They are also in line with U.S. government specifications.

Overtime

RS Means has made no allowance for overtime. If you anticipate premium time or work beyond normal working hours, be sure to make an appropriate adjustment to your costs.

Productivity

The productivities used in calculating labor costs are based on working an eight-hour day in daylight hours in moderate temperatures. For work that extends beyond normal work hours or is performed under adverse conditions, productivity may decrease.

Size of Project

The size, scope of work, and type of construction project will have a significant impact on cost. Economies of scale can reduce costs for large projects. Costs can often run higher for small projects. Costs in this database are intended to represent costs for commercial and industrial projects costing $1,000,000 and up, or large multi-family projects. Costs for projects of a significantly different size or type should be adjusted accordingly.

Location

Material prices are for metropolitan areas. However, in dense urban areas, traffic and site storage limitations may increase costs. Beyond a 20-mile radius of large cities, extra trucking or transportation charges may also increase the material costs slightly. On the other hand, lower wage rates may be in effect. Be sure to consider both of these factors when preparing an estimate, particularly if the job site is located in a central city or remote rural location. In addition, highly specialized subcontract items may require travel and per diem expenses for mechanics.

For information on applying location adjustments, see chapter 4.

Other factors:

- season of year
- contractor management
- weather conditions
- local union restrictions
- building code requirements
- availability of:
  - adequate energy
  - skilled labor
  - building materials
- owner's special requirements/restrictions
- safety requirements
- environmental considerations

Unpredictable Factors

General business conditions influence "in-place" costs of all items. Substitute materials and construction methods may have to be employed. These may affect the installed cost and/or life cycle costs. Such factors may be difficult to evaluate and cannot necessarily be predicted based on the job's location in a particular section of the country. Thus, where these factors apply, you may find significant, but unavoidable cost variations for which you will have to apply a measure of judgment to your estimate.

Contingencies

Estimates that include an allowance for contingencies have a margin to allow for unforeseen construction difficulties. On alterations or repair jobs, 20% is not an unreasonable allowance to make. If drawings are final and only field contingencies are being considered, 2% to 3% is probably sufficient, and often nothing need be added. As far as the contract is concerned, future changes in plans can be covered by extras.

The contractor should consider inflationary price trends and possible material shortages during the course of the job. Escalation factors are dependent upon both economic conditions and the anticipated time between the estimate and actual construction. If drawings are not complete or approved, or if a budget is required before proceeding with a project, it is wise to add 5% to 10%. Contingencies are a matter of judgment.

Final Checklist

Estimating can be a straightforward process provided you remember the basics. Here is a checklist of some of the items you should remember to do before completing your estimate.

Did you remember to . . .

- factor in the City Cost Index (Location Adjustment) for your locale
- take into consideration which items have been marked up and by how much
- mark up the entire estimate sufficiently for your purposes
- read the background information on techniques and technical matters that could impact your project time span and cost
- include all components of your project in the final estimate
- double check your figures to be sure of your accuracy
- call RS Means if you have any questions about your estimate or the data you've found in our publications

Remember, RS Means stands behind its publications. If you have any questions about your estimate . . . about the costs you've used from their data . . . or even about the technical aspects of the job that may affect your estimate, feel free to call the RS Means editors at 1-800-334-3509.

Assemblies Estimating

BSD CostLink/AE is designed for Assemblies Estimating. The following information about Assemblies Estimating is provided by RS Means.

What Is Assemblies or Systems Estimating?

The grouping of several different trades into building components or broad building elements is the "Systems" or "Assemblies" method of estimating. This method allows the estimator or designer to make quick comparisons of systems in various combinations within predetermined guidelines. Systems, which are best suited to accommodate budget, code, load, insulation, fireproofing, acoustics, energy considerations, and the owner's special requirements can quickly be determined. This method can also be used to help match existing construction.

Systems Estimates vs. Unit Price Estimates

In order to understand how a Systems estimate is assembled, it is a good idea to compare a Unit Price estimate with a System estimate. In a Unit Price estimate, each item is normally included along the guidelines of the 16 (or newer 50) division MasterFormat of the Construction Specifications Institute, Inc. In a Systems estimate, these same items are allocated to one of seven major group elements in the UNIFORMAT II organization of a Systems estimate. Certain items that were formerly grouped into a single trade breakdown must now be allocated among two or more systems.

An example of this difference would be concrete. In a Unit Price estimate, all the concrete items on a job would be priced in the Concrete section of the estimate, CSI Division 3. In a Systems estimate, concrete is found in a number of locations. For instance, concrete is used in all of these systems: Division A10, Foundations; Division A20, Basement Construction; Division B10, Superstructure, and Division B20, Exterior Closure.

Conversely, other items that are listed in separate trade breakdowns in a Unit Price estimate are combined into one division in the Systems estimate. For example, interior partitions might include two CSI divisions: Division 6, Wood Stud Wall; and Division 9, Lath, Plaster and Paint. In the UNIFORMAT II Systems Estimate, these items are all combined in Division C, Interior Construction.

This re-allocation of the familiar items from the CSI format may at first seem confusing, but once the concept is understood, the resultant increase in estimating speed is well worth the initial familiarization required.

When Systems or Assemblies Estimating Is Appropriate

Systems or Assemblies estimating is not a substitute for Unit Price estimating. It is normally done during the earlier conceptual stage before plans have been completed or when preparing a budget. This enables the designer to bring in the project within the owner's budget.

During the actual initial design process, the designer will be forced to make important decisions and “trade-offs” for each of the various systems. Some of the trade-offs can include:

a. Price of each system
b. Appearance, quality and compatibility
c. Story height
d. Clear span
e. Complications and restrictions
f. Thermal characteristics
g. Life cycle costs
h. Acoustical characteristics
i. Fireproofing characteristics
j. Special owner’s requirements in excess of code requirements
k. Code
l. Load

Gathering Information For a Systems Estimate

Before starting a Systems Estimate, gather all the information possible pertaining to the project. Information can be gathered from:

1. Code Requirements
2. Owner's Requirements
3. Preliminary Assumptions
4. Site Inspection and Investigation

Since the Foundation and Substructure design and price is a function of the Superstructure and the site, it is advisable to start the estimate with the Superstructure. Follow this with the Foundation and Substructure, and then the other Systems in the sequence as applicable to your project.