Quantity Survey Method

quantity survey method
A cost-estimating method in which the quantity and quality of all materials used and all categories of labor required are estimated and unit cost figures are applied to arrive at a total cost estimate for labor and materials.

The most comprehensive and accurate method of cost estimating is the quantity survey method, which will more often be applied by a contractor or professional cost estimator than an appraiser. A quantity survey reflects the quantity and quality of all materials used in the construction of an improvement and all categories of labor required. Unit costs are applied to these figures to arrive at a total cost estimate for materials and labor. Then the contractor adds a margin for contingencies, overhead, and profit.

Depending on the size of the project and the resources of the contractor, the quantity survey and cost calculations may be prepared by a single cost estimator or by a number of subcontractors whose bids are compiled by a general contractor and submitted as the final cost estimate. In either case, the analysis details the quantity, quality, and cost of all materials furnished by the general contractor or subcontractor and the appropriate cost allowances.

A general contractor's cost breakdown for the warehouse shown in Figure 18.2 is summarized in Table 18.3. This is only a summary. The specific quantities and costs are not indicated.

Contractor bids do not usually include indirect costs or entrepreneurial profit. The analysis illustrated in Table 18.3 reflects indirect costs and the calculation of entrepreneurial profit as a percentage of total direct and indirect costs. In the examples presented, indirect costs are considered in various stages of the cost-estimating procedure. A breakdown of the costs that make up these estimates is preferred to the percentage adjustment, and the appraiser should provide a breakdown to support the percentages applied. Note that when the direct costs of the individual elements of construction are broken down into discrete amounts, as shown in Table 18.3, less of the indirect costs are accounted for in those cost figures than in the figures for other cost-estimating methods and thus the percentage adjustment for total indirect costs is higher.

Although site improvements such as parking facilities, landscaping, and signage are commonly included in a general contractor's bid, they are not detailed in Table 18.3. They should be included in a cost estimate of all improvements. In a cost estimate of an existing building, a separate itemization of site improvements facilitates the consideration of depreciation. Because the quantity survey method usually produces a cost estimate of a duplicate building, Table 18.3 indicates the reproduction cost of the warehouse building as of the effective appraisal date.

Table 18.3 Warehouse Property—Contractor's Breakdown

General conditions of contract		$7,854
Excavating and grading		24,781
Concrete		182,053
Carpentry		25,473
Masonry		194,231
Structural steel		280,343
Joist, deck, and deck slab		329,827
Roofing		57,494
Insulation		32,378
Sash		5,256
Glazing		11,329
Painting		7,611
Acoustical material		5,803
Flooring		3,335
Electric		75,334
HVAC		67,560
Piping		6,458
Plumbing and sprinkler system		+ 77,461
Subtotal		$1,394,581
Contingencies @ 5.0%		69,729
Contractor's overhead and profit @ 12.0%		+ 167,350
Total proposed contract costs ($27.46 per sq. ft.)		$1,631,660
	(rounded)	$1,631,700
Indirect costs before, during, and after construction*		× 1.27
Subtotal		$2,072,259
Entrepreneurial profit ($2,072,259 × 0.10)		+ 207,226
Total reproduction cost		$2,279,485
Plus site value and site improvements		+ 650,000
Total project value		$2,929,485
	(rounded)	$2,929,000

* For purposes of simplicity, a percentage was applied to account for indirect costs.

In recent years the percentage of a construction contract that is subcontracted out has increased. Subcontractors have become more efficient in their specializations. Subcontractor unit-in-place costs compare favorably with the cost of work done by employees of the general contractor, and the general contractor can operate with reduced overhead. To produce a quantity survey estimate, each contractor and subcontractor must provide a breakdown of materials, labor, overhead, and profit. The contractor's profit may depend on the volume of work that the contractor has lined up.

Although the quantity survey method produces a complete cost analysis of the improvements being appraised, it is time-consuming, costly, and frequently requires the services of an experienced cost estimator. For these reasons this method is seldom used in routine appraisal assignments.