Management Methods Manual

Bulletin

Bulletin No. ES 2
File: Estimating

Unit Pricing

Foreword

This bulletin should be used in conjunction with bulletin number CO 1 (Change Orders) and bulletin number PD 2 (Factors Affecting Labor Productivity). The intent of this bulletin is to discuss the "Unit Price" basis for pricing changes. MCAA's intent is to promote a better understanding of considerations to be given in the formulation of fair and equitable unit prices for the consumer and the contractor and what pitfalls a contractor can expect in the implementation of a unit price change or contract.

INTRODUCTION

In an attempt to reduce the evaluation of changes to a simple counting of "beans", many owners, general contractors, construction managers, engineers and architects go to great lengths in soliciting and implementing unit price schedules. On the surface this approach seems to be simple and equitable. In reality it is quite complex and rarely equitable.

The results of a recent survey conducted in a major metropolitan area showed that contractor-calculated unit prices based on the same specification and time frame varied immensely from contractor to contractor. Comparison pricing of a piping sketch of a 4† bypass connection and valve between two 8† mains using (a) the individual contractor's unit prices and (b) the contractor's usual estimating procedures indicated that every respondent would have fared better without unit prices. The unit price method did not offer the contractor the opportunity to charge for items such as: tie in to existing; drain and refill; testing; disruption of work crews; etc.

The unfairness of unit prices for construction work should be evident to all. If the price established is based on the "worst" condition that the contractor will encounter, the price is unfair to the consumer. While a price based on the "best" jobsite condition is unfair to the contractor. In actuality, the unit prices most of us will see will be the result of negotiation based on "average" job conditions. As we all know, job conditions rarely turn out to be average in any specific location or instance and, therefore, will result in prices that are usually "unfair" to the contractor.

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These questions must be asked:

1. How are unit prices established?
2. What pitfalls can a contractor expect to see?

ESTABLISHING A "FAIR" UNIT PRICE SCHEDULE

We are all accustomed to the normal pricing procedures we use to bid and win jobs. We painstakingly take-off, itemize and price each item of equipment, each foot of pipe, every fitting and valve, each pound of duct, taking into account countless drawing notes and specification comments which we think might affect the cost of our work. After the take-off is complete, we apply our overhead and profit margins and submit our price. During the take-off, we evaluate each work situation and assign varying degrees of difficulty to the cost of the work in an attempt to forecast the differences in jobsite conditions.

Any attempt to account for all jobsite variances in the development of a unit price schedule would result in a huge and unmanageable matrix of numbers and conditions. Therefore the approach taken by most contractors is to develop unit prices that reflect the "worst" possible conditions. This usually results in severe confrontation between the buyer and seller, something no contractor needs when trying to negotiate a job. The final outcome is usually a schedule that favors the customer.

A practical way to establish a unit price schedule that is equitable to both parties is to use a "Base Schedule" and "Correction Factor" approach. Under this approach, the final unit price is established by using costs and procedures for normal job conditions and then adjusting them by applying multipliers to reflect actual conditions.

Guidelines

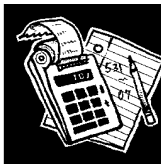
The following guidelines should be used in the preparation of the "base" unit price schedule.

1. Estimate all costs to be encountered in performance of each item. (See Bulletin No. PD 2 Factors Affecting Labor Productivity.)
2. Be sure to include the following:
   - Office overhead
   - Field overhead
   - Material and labor cost escalation
   - Added costs of processing changes
   - Added costs for coordination
   - Added costs for bonds and other special insurance
   - Safety
   - Warranty
3. Include fair and reasonable profit margin.

Contract Stipulations

The "base" price parameters should be clearly set out, advising all parties that "only" the listed items (such as those shown below) are taken into consideration when compiling costs for each item.

1. All work is assumed to take place on the first floor.
2. All work is to be performed during normal working hours.
3. All work is to be performed no higher than 10 feet from finished floor.
4. All work is to be performed in a continuous manner.
5. Unit price does not include any engineering costs.
6. All work is figured using manpower presently available at jobsite.



7. Specify that certain minimum quantities must be applied to all prices.
8. Specify that all prices are based on "present values" and may be escalated.
9. Specify that your costs only include "your" trade or trades.
10. Work is not to be encumbered by other trades or space limitations.
11. Access to work areas previously covered by construction is to be provided by others at no cost.

Correction Factors

The following aspects of the change should be considered in establishing the "Correction Factors".

1. Size of change:
   a. If the change is severe and large quantities of similar items are being changed, a multiplier less than 1 might be appropriate.
   b. Conversely if the change is small, a multiplier higher than 1 (such as 2 or 3) might be appropriate.
2. Location of change within building:
   a. All costs should be modified to reflect added material and equipment distribution to floors above first floor (such as 1–2% per floor above the third floor and 2–4% per floor above the 20th floor). Refer to MCAA Labor Estimating Manual for correction factors.
   b. Lost time for manpower to arrive at work stations should be included (for example: multiplying by a ratio of paid hours/productive hours).
3. Working conditions (See Bulletin PD 2):
   a. Adverse working conditions (i.e., weather; height from slab; interference from other trades; tight spaces, etc.)
   b. Impact on schedule and size of work force.
   c. Overtime performance.
   d. Stacking of trades.
4. Retesting and recertification of systems:
   a. Add a correction factor to piping unit prices for retesting piping systems.
   b. Add to all sheetmetal unit prices a correction factor for rebalancing air systems.
   c. Add a correction factor to all unit prices for refiling of drawings with building departments.
   d. Add a correction factor to temperature control unit prices for readjusting control systems.
   e. Add a correction factor to thermal insulation unit prices for patching and repair to existing piping and duct insulation if changes are to be done after base job insulation has been completed.

PITFALLS

In the formulation and finalization of the unit price schedule, many pitfalls can be avoided by insisting on recognition in your contract of factors such as those listed above. The following are some of the common traps a contractor might encounter.

1. A request for unit pricing typically reads like this: "All unit prices shall include all items that comprise a complete installation and shall be in accordance with the specifications and the intent of the draw-

ings." This puts the full responsibility on the contractor to include items of work (such as offsets) even if not shown on drawings. This clause should be eliminated during final negotiations.

2. The stipulation that piping unit prices shall include "all fittings" is very common and will result in added cost when encountering offset and coil hook-ups, etc.

3. The contract requirement that the unit price schedule be used for added and deleted work should be eliminated. Deleted work should be credited at the cost used in "winning" the base job. There will be considerable variance between this "cost" and the "unit price." The variance might be high when it involves layers of sub- and subcontracting. The contractors and subcontractors (on all levels) should seek to retain their overhead and a portion of the profit on deducted items.

4. The buyer should not be allowed to have a choice of using the unit price schedule to determine an "upset" price and then proceed on a time and material basis. This method of awarding changes is extremely unfair to the seller as it affords the buyer the opportunity to select the lowest possible price after the work has been completed. The contractor should insist on a definite commitment, at the outset, to one pricing method.

5. Changes in quantities due to coordination and other unforeseen conditions should be considered as adds to the original quotation. The increases should be clearly identified and a revised price submitted as soon as the change is discovered. Do not proceed with the work under the assumption that the buyer will understand. Most likely, he will not.

CONCLUSIONS AND RECOMMENDATIONS

Unit prices are, at best, difficult to establish and even more difficult to utilize to establish a fair and equitable price for changes to contract work. Any attempt to short cut comprehensive estimating and evaluation of work usually will be arbitrarily in the favor of the buyer. Always try to resist the use of "unit pricing" and press for evaluation of changes using your standard estimating procedures, etc. If the buyer insists on "unit prices" then make sure guidelines such as those contained in this bulletin are included in the contract.