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Contracts Bulletin # 108 – Sharing the Shop Burden

SHARING THE SHOP BURDEN

Burden can be defined as the added expense associated with the investment in and the operation of fabrication facilities. These expenses will include facilities, equipment, and operating costs.

Shop burden is the fee SMACNA members charge for operating their facility and equipment. Few segments of the construction industry require the levels of investment in facilities, equipment and operating costs that are inherent in sheet metal fabrication. The sheet metal industry is unique in that it manufactures raw material into finished or semi-finished forms within a shop environment.

As a result, sheet metal contractors are often faced with educating general contractors and owners in order to recover those expenses. The ease of a subcontractor recovering these expenses depends, in large part, upon how the message is communicated, how effectively and accurately the subcontractor calculated the burden, and how the issue is addressed through contract provisions.

The following summarizes the components of shop burden, includes recommendations for calculating and communicating the information, and examines the underlying contract provisions. Further details on shop burden issues can be found in the SMACNA document, *Guide to Shop Burden* (hereinafter referred to as "the Guide") (See Footnote 1).

What Falls Under Shop Burden?

Three main categories of shop burden costs are facilities, shop equipment and operating costs. Recovery of these costs depends upon a contractor's ability to accurately measure current operations, and forecast likely increases or decreases in shop burden.

Shop Equipment

All shop equipment costs should be included when assessing shop burden, including varying maintenance costs of the individual machines. Often, sheet metal contractors apply a depreciation charge, as determined by the Internal Revenue Service tables, to calculate shop equipment expenses. However, contractors should not limit their cost analysis or cost recovery to the depreciable life of a particular machine. As the lifespan of a piece of equipment may well outlast the IRS's determination of its longevity, the additional fees collected can be allocated to a general equipment fund to be used to upgrade or replace existing machinery.

Adequate recovery of equipment costs requires a consistent measurement system. Of course, determining the exact cost associated with each piece of equipment is difficult, especially when trying to factor the personnel

and facility expenses.

Additional and related information on shop equipment costs can be found in the SMACNA Guide to Cost Recovery for Sheet Metal and HVAC Equipment, 3rd Edition, 2008. That document is a comprehensive guide to cost recovery for owned equipment. The rates in the manual are intended as guidelines paralleling amounts an equipment owner should charge during rental or contractual periods to recover equipment-related costs on single-shift basis. Go to the [Business/Project Management section](#) on the [SMACNA Web site](#) to get a copy of that document.

Facilities

Unlike most segments of the construction industry, sheet metal contractors produce a majority of their products within their own facilities. The scale and amount of equipment required to fabricate sheet metal requires significant investment in shop space. Not only is space needed for the machinery, but also to stockpile inventory of raw materials and to store the finished product. As a result, the cost of owning, leasing or renting the shop space should be included in the shop burden calculation.

For rented/leased facilities, assuming the entire space is dedicated to fabricating and detailing materials, the entire rental cost should be included in the calculation. If only a portion of the facility is dedicated to the shop, then the rental cost is apportioned according to the actual shop usage percentage. If the facility is owned by the contractor, depreciation costs may be used to determine the overall expense associated with the facility.

If a contract requires fabrication and/or storage onsite, a host of additional expenses will be incurred by the contractor. Mobilization and demobilization includes all activities and costs for transportation of personnel, equipment, supplies and materials to the site, establishing and maintaining offices and other facilities. For a sheet metal contractor, onsite fabrication is largely impractical, but storage of finished product is a consideration and poses a number of important contractual considerations, which are discussed below.

Operating Costs

Operating Costs associated with shop burden are the costs resulting from actual utilization of the shop; including, salaries for shop and support personnel (other than those that are expensed separate and apart from shop burden), utilities, insurance and other maintenance expenses. It is possible to have personnel costs bifurcated, so that some are directly related to the project and others are captured as part of shop burden. The Guide gives the example of a full time delivery person for fabricated materials.

Costs not directly expensed to a particular job may be included in shop burden. The ability to include such costs as part of shop burden requires the sheet metal contractor to have working knowledge of the actual costs and calculating them accurately.

Calculating Shop Burden

As with any business, financial success depends upon revenue exceeding expenses. It is difficult to evaluate a project's profitability without knowing the costs in equipment, labor, training or facilities and equipment maintenance.

Gather Data and Select a Formula

In order to calculate shop burden costs, information must be collected:

- Develop and implement a system to capture labor hours and equipment hours. As part of this, determine how to charge for equipment that is fully depreciated.
- Develop an accurate list of equipment, including its current level of depreciation, and shop operating costs.

- Look ahead to foreseeable changes in personnel, equipment usage, replacement and maintenance costs. Underlying expenses driving shop burden are constantly changing and projected costs will change as well.
- Determine shop hours by each employee. This includes fabricators, the production manager, material handling manager, and foreman, but does not include office, executive, or housekeeping personnel.

After identifying and measuring shop burden expenses, the method for determining the contract expense must be selected. There are several examples of basic methods which are summarized in greater detail in the Guide. See Footnote 1. These are percentage based formulas, labor hour add formula, and equipment hour charges. Application of one over another is situation dependent, and recognizes that General and Administrative overhead allowances are generally inadequate to compensate for shop burden expense.

Communicating and Contracting

Why isn't a 15% overhead markup enough for sheet metal contractors?

Contractors must be prepared to respond to this question during contract negotiations. The support for increased compensation is detailed above, but boils down to the fact that few industries take on the type and breadth of fabrication expense required of the sheet metal industry. Because the situation is so unique, it is often difficult to resolve these expenses in favor of the subcontractor without some "outside-the-box" thinking. Among the suggestions posed by members of the industry:

- Recharacterize "shop burden" using industry terms such as "prefabricated materials" Avoid references to overhead as general contractors and owners view that negatively.
- Educate contractors and owners on the services provided, include photos, of the equipment and facilities utilized.
- Develop a consistent means of determining and calculating the expense in a form that clearly relates to the project.
- Itemize separate shop burden components. Examine the possibility of developing an internal invoicing system that allocates the items making up shop burden to each project.

Contract Provisions to Consider When Reallocating Shop Burden

How To Address Shop Burden

AIA A201 states that unless otherwise provided in the contract, the "contractors costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances." For this reason, taking the time to understand and calculate the per use cost of each piece of equipment, the overall facility charge and the operating expenses of the shop is critical.

Without this information, recovery of sunk costs is more difficult. Unfortunately, it is difficult to draft a "one size fits all" contract provision to recoup shop burden costs across all contracts. Each requires individual attention and detail.

There may, however, be other opportunities to shift some expenses based on the General Terms and Conditions. As discussed in prior Contract Bulletins, the contract form or key provisions can impact the allocation of costs.

Mobilization

Except in the middle of a battlefield, nowhere must men coordinate the movement of other men and all materials in the midst of such chaos and with such limited certainty of present facts and future occurrences as in a huge construction project... (See Footnote 2).

The nature of sheet metal fabrication renders on-site manufacturing difficult, if not impossible. The work must be done in a fabrication shop. The transport of finished materials and on-site storage requires additional consideration. If performance is interrupted or delayed, recovery of these mobilization expenses, in addition to the underlying shop costs, becomes less certain.

The contractor's leverage in these situations will depend on a number of factors, including the level of mobilization undertaken and the payment schedule under the existing contract. To the extent the contractor incurs significant fabrication and mobilization expenses upfront, the typical scenario for the sheet metal industry, the weaker the subcontractor's bargaining position. However, a correspondingly front-loaded payment schedule, which compensates the contractor during the early stages, gives greater power in negotiating for the costs associated with the change or delay. (See Footnote 3).

Stored Materials

Storage of prefabricated materials demands separate attention. The following questions should be considered and answered in the contract:

- When will payments for prefabricated materials be made?
- Who is responsible for the care, custody and control of the materials on-site?
- What if the materials are damaged or stolen?
- Who will insure the materials and what sort of policies are required?

The answers to these issues are generally addressed by the terms of the contract. See Contracts Bulletin No. 9 (Storage and Stored Materials).

The obligation to furnish temporary facilities varies under the contract form selected. Under AIA A401, Section 14.1, The Contractor shall furnish and make available at no cost to the Subcontractor the Contractor's temporary facilities, equipment and services . . . " In contrast, Section 8.2.4 of ConsensusDOCS 750 provides that a contractor "may" obtain approval for costs associated with storage, but unless approved otherwise, the presumption is the subcontractor is responsible for such costs.

As a component of the contract, whether allocated as part of shop burden or otherwise, careful attention should be paid to the responsible party for onsite expenses.

Conclusion

Sheet metal fabricators provide a unique and important service to the construction industry. It is the very specialized nature of the fabrication process which renders recovery for the significant fixed costs difficult and general contractors and owners have a limited understanding of what "shop burden" encompasses. In order to recover shop burden costs, SMACNA members must not only include contract provisions that allow recovery of these costs, but educate owners and general contractors that such provisions are both necessary and appropriate.

Footnotes:

¹ Federle & Rowings, Guide to Determining Shop Burden, p.1 (First Ed., 1995) (adapted from SMACNA Business Management Education Committee, 1995 Financial Survey and Ratios, Chantilly, VA, SMACNA, July 1995, pp. 6-7).

² Carl S. Beattie, Apportioning the Risk of Delay in Construction Projects: A Proposed Alternative to the Inadequate "No Damages for Delay" Clause, Wm. & Mary L. Rev. (Mar. 2005)(citing Blake Constr. Co. v. C.J. Coakley Co., 431 A.2d 569, 575 (D.C.Cir. 1981).

³ See Thomas C. Galligan, Jr., Extra Work in Construction Cases: Restitution, Relationship, and Revision, Tulane L. Rev. 855-56 (Mar. 1989).

SMACNA wants the Contracts Bulletin to serve our members. Your feedback or topic suggestions are welcomed by contacting Mike McCullion, Project Manager for Market Sectors, at 703-995-4027 or mmccullion@smacna.org.

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