

# The 3 Essentials of Construction Estimating

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Most engineers and Contractors learn construction estimating in “on the job” type training or through the quick turn around classes offered at local training centers. This paper describes the 3 essentials of estimating normally not taught but are required understanding for any estimator or Project Manager.

First, construction estimating is an art not a science. A good estimator is an experienced engineer, designer or field-trained technician. To prepare an effective bid the estimator must have a good feel for the undertaking. The 4 estimating elements normally taught contain the following:

- Material
- Labor
- Overhead
- Profit

We are also taught that material is easy to estimate, labor is harder and overhead and profit are just factors.

Material Costing is made up of the cost of the item, handling markup and sales taxes.

Labor is made up of cost of employee per hour, plus Burden (Fed tax, local Tax, Workman’s comp), Profit, Insurance, and overhead.

Overhead is the cost for lights, facilities, Payroll and legal staff etc.

Profit is a fixed percentage the contractor is shooting for to attain growth and stay in business.

All of the above is obvious to business owners, what is not obvious are the tax treatment different project types can have.

## **Essential#1 Know the taxing authority for the area where to Project is located.**

There are three types of taxing situations.

1. Tax paid: The contractor purchases all his material from vendors and pays taxes as if he is paying retail pricing
2. For resale: Contractor purchases material for resale. The contractor does not pay sales tax but charges and collects sales tax to the entity he is supplying materials for.
3. OEM. (Original Equipment Manufacturer) The contractor supplies the system as a single piece of hardware or system. The State taxing authority defines what is OEM. The contractor must collect and pay tax on the entire project as if it is a single device.

Note: The state will usually define an OEM project as one in which the contractor supplied and installed everything, including on site and off site work. If there is an audit and the state determines it is OEM the contractor could be in trouble. Therefore one must be cautious in this type of transaction

To demonstrate the tax effects on a bid consider the following example:

Material cost=\$100.00  
Sales tax=7.5 Percent  
Markup= 10 percent  
Labor cost =\$100.00

#### Tax Paid: Calculation example

Material Cost\*(1+Tax)\*(1+markup)+ labor cost= Final cost(selling price)  
 $100.00*1.075*1.1+\$100.00=\$218.25$   
tax paid =\$ 7.50

#### Advantages:

No Hassle from taxing authorities, But be prepared to produce evidence if challenged.  
Simple Book Keeping.  
Contractor does not need resellers License.

#### Disadvantages:

Get better discount with resellers License

#### For Resale: example

(Material Cost\*markup)+ (Material Cost\*markup)\*tax+ labor cost=Selling price  
 $\$100.00*1.1=\$110.00+1.075+\$100.00=218.25$   
tax paid=\$ 8.25

#### Advantages:

The price is usually heavily discounted for the contractor. Can be a source of substantial profit.  
Possible cash flow advantage if paying quarterly.

#### Disadvantages:

The Contractor must apply for and have a resellers licenses from the state.  
More Paper work.  
Subject to State audits.  
Must pay quarterly or as dictated by the state depending on level of usage.

#### OEM: example

Material Cost\*markup + labor cost=Selling price + tax  
 $\$110.00 + \$100.00=210.00*1.075=\$225.75$   
Tax paid=\$ 15.75

#### Advantages:

Can be a lower perceived cost if tax is added as a line item.  
Possible cash flow advantage if paying quarterly.

#### Disadvantages:

The State taxing authority determines OEM status.  
Contractor is paying sales tax on labor.

From the above comparisons all things being equal paying the tax “tax paid” would appear to be the best and easiest economic solution. Without taking into account discounts.

## **Essential #2: Know what is going into you labor rates**

Final Selling price of labor is usually built up from factors including:

- Federal and state labor taxes as percentage
- Benefits as a percentage
- Overhead as a percentage
- Contingency (risk) as a percentage
- Profit (markup) as a percentage

Unfortunately some firms use a flat rate for labor costs for the projects they bid. But to be competitive one should use actual labor cost based on function. Also if you use a standard labor rate for everyone managers will tend to try to get the best qualified for the job.

For example

- Federal and state labor taxes= 15%
- Benefits as a percentage= 35%
- Overhead= 10%
- Contingency (risk)= 5%

It is best to not consider contingency as profit as it involves risk. This is factor used to offset labor hour risk and should not be added to profit.

- Profit (markup)=15%

Lets calculate the actual profit on a person making \$35.00 /hour

The actual cost of keeping the employee is

Labor rate \* (1+ Labor taxes %) \* (1+ Benefits %) \* (1+ Overhead %)+ (1+Contingency%) = actual cost

$$35.00 + \$35.00 * 0.15 + 35.00 + 0.35 * 35.00 + 35.00 * 0.1 + 35.00 * .05 = \$57.75$$

Selling cost of employee

Actual cost\* (1+ profit%) = selling cost

$$\$57.75 * 1.15 = \$66.41$$

Profit on the person is \$8.66 or 13% Profit

## **Essential #3: Understanding Profit.**

Profit and markup are not the same thing.

The following chart shows the relation ship of Markup to profit.

Percent Profit is defined as  $(\text{Total selling} - \text{total cost}) / (\text{Total selling}) * 100 = \% \text{ Profit}$

cost	markup	Selling	Profit
100	1	101	0.990099
100	2	102	1.960784
100	3	103	2.912621
100	4	104	3.846154
100	5	105	4.761905
100	10	110	9.090909
100	15	115	13.04348
100	20	120	16.66667
100	30	130	23.07692
100	40	140	28.57143
100	50	150	33.33333
100	60	160	37.5
100	70	170	41.17647
100	80	180	44.44444
100	100	200	50

Thus to get a 15 percent profit which is adequate you should be marking up your material and services at least 20 %.

**Calculations taking into consideration all the above elements**

So to calculate the above 3 scenarios for taxation would yield a profit as shown below.

Cost Basis:

Material

- Material cost=\$100.00
- Salestax=7.5 Percent
- Markup= 10 percent

Labor

- Federal and state labor taxes= 15%
- Benefits as a percentage= 35%
- Overhead= 10%
- Contingency (risk)= 5%

It is best to not consider contingency as profit as it involves risk. This is factor used to offset labor hour risk and should not be added to profit.

- Profit (markup)=15%
- Hourly rate \$35/hr

Tax paid

- Project Profit %= 10.1
- Profit = \$18.66
- Total project Bid Price= \$ 183.91

For resale

- Project Profit %= 10.1
- Profit = \$18.66
- Total project Bid Price= \$ 184.66

OEM

Project Profit %= 9.84

Profit = \$18.66

Total project Bid Price= \$ 189.64

All things being equal paying the tax on the material is the best scenario. But with a substantial discount as a reseller lets say 15 percent on material the new resale numbers become.

For resale

Project Profit becomes 10.3 %.

Total project Bid Price= \$ 166.93

OEM

Project Profit %= 9.98

Total project Bid Price= \$ 171.91

This shows that the contractor can be more competitive as a reseller or OEM supplier.

Conclusion:

The sales tax and labor factors can have a substantial impact on competitive pricing and profit. To calculate the best situation the contractor needs to be able to compare each case side by side to determine the optimum scenario based on a number of factors determined by the state taxing authority and competitive bidding situation. Hopefully this paper will have made the user aware of the factors of markup and taxing situation on profit and competitive bidding and allow the estimator to fine tune bids based on all the factors to maximize profit.