

An Analysis of the Benefits in Estimating at Different Pipe Union Labor Rates

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This paper is an analysis of the costs and benefits of estimating at different union labor rates, based on the location of the project and which jurisdiction the project falls in. The basis of the research is a case study of a Bay Area mechanical contractor (Contractor X) which previously estimated at a single labor rate, and recently developed variable estimating. Through that case study, best practices are developed for union pipe trade estimating. The results of the case study show that estimating protocol should be determined on a project by project basis, and company resources and manpower have to be heavily considered.

Key words: Construction, Estimating, Mechanical, Piping, Plumbing, Union, Labor Rates, Pipe Trades

Introduction

The presence of multiple labor unions in a region can create complications for contractors. As seen in Figure 1, the state of California, particularly the Bay Area, is one of these such regions when it comes to the union pipe trades.



Figure 1: California UA Jurisdictional Map

Every union jurisdiction has their own set of regulations, and companies must be familiar with all the rules or they will take on a significant amount of risk. The most noteworthy example of these regulations is labor rates. Firms must have a comprehensive knowledge of how much every hour of labor on a project is costing them, or they run the risk of performing the project at unfavorable margins. This paper focuses on the pipe trades, and how mechanical contractors can avoid this risk in the preconstruction stages through proper estimating and planning when going after work in multiple jurisdictions.

This research will be focused around a case study of a mechanical contractor (Contractor X) in the Bay Area. The Bay Area has a very complex union presence. As seen in Figure 1, there are six jurisdictions within a 50-mile radius. Any company attempting to self perform plumbing or pipefitting work must be signatory to at least one of these unions. However, competition and growth leads to firms trying to expand into other markets and locations, which as you can tell from the California UA Jurisdictional Map, often leads to working in a different local. Contractors such as the one the case study will focus on have a local they are most comfortable with, and their estimating protocol is well set up for project acquisition in this area. Having knowledge of the cost of labor, in addition to the working conditions, lead to competitive bids and ultimately profitable jobs. However, when going after projects in other jurisdictions, they have to make a determination whether they want to estimate the project as if it were in their home local, or attempt to familiarize themselves with the target local's rules.

The case study will focus on Contractor X, which performs plumbing and mechanical piping work throughout the Bay Area. The union they are most comfortable working with is Local #38, the jurisdiction which San Francisco falls in. Local #38 also happens to have the highest labor rates of all the Bay Area locals. The issue the company faces is that the current estimating protocol treats all projects like they are in San Francisco, utilizing Local #38's high labor rates even if the project is in a different local with lower rates. The case study involves developing an addition to the current estimating spreadsheet which will populate different labor rates based on the location of the project, and thus changing the value of the estimate.

Naturally, this is to be treated with caution. Estimating is the crucial first step to any project. Poor estimates can either price a contractor out of work, or worse, cause the company to lose money. No matter how well a project is managed, it is extremely difficult to make up for a low estimate, and it will likely cause the job to be a loser.

Many people view estimating as a fixed and definitive practice. However, the belief that quantity take offs and productivity rates alone will get you the right number is well outdated. With the increasing complexity of construction projects, contextual factors have become just as important as the hard and fast numbers. Conditions such as project complexity, quality of project information, weather conditions, and characteristics of labor and site conditions all have to be thoroughly considered (Riquelme & Serpell, 2012). Traditional estimating has transitioned to preconstruction services, where contractors are required to conceptually build the project in order to properly estimate it. This is particularly true of firms that self perform any portion of work, such as mechanical contractors, and particularly union contractors.

Although union labor is more productive than its nonunion counterparts (Addison & Chilton, 1993), union contractors pay a premium for that increased productivity. Labor is the biggest risk on a construction project, and the most variable factor for success. In order to be successful on a project, estimating labor correctly is crucial. Union contractors have larger economies of scale (Allen, 1987), but because of higher labor rates, they need to manage those rates more closely than their non-union counterparts in order to reach their higher ceiling. Productivity can be difficult to determine, but determining the labor rates which a contractor needs to charge for every hour of labor can be as complicated. Contractors must determine a rate which makes them competitive, but also ensures they make a profit.

Methodology

The methodology used was to develop a modification to Contractor X's estimating spreadsheet which can allow for variable labor rates based on project location, and make it available for the company's estimators to use.

The new spreadsheet is equipped with a macro utilizing the dropdown menu depicted in Figure 2.

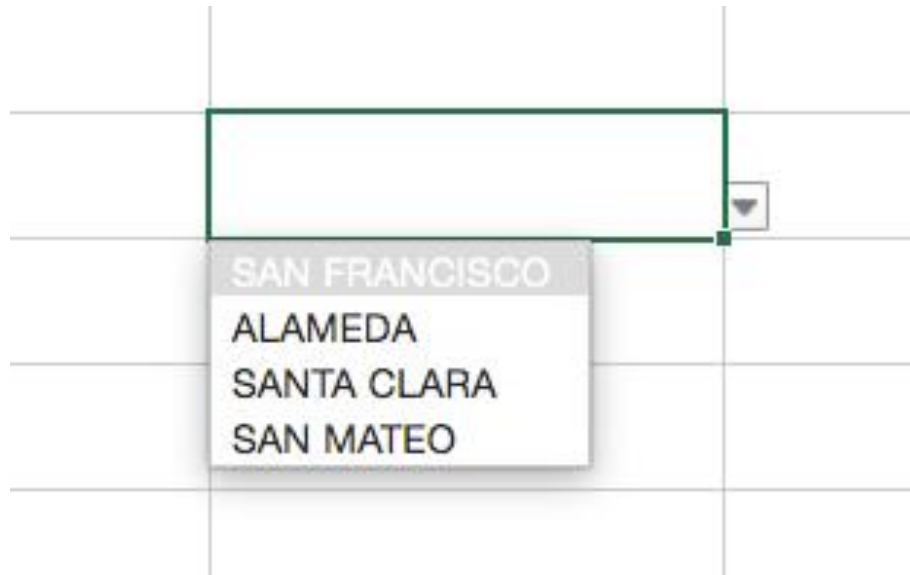


Figure 2: Spreadsheet Macro

This macro allows the estimator to choose the location of the project, giving the option of the four jurisdictions which the majority of the company's work takes place. The default for the spreadsheet is San Francisco, but when a different location is selected, the spreadsheet automatically repopulates the labor rates with the proper values, derived from the given labor rates for that local. Additionally, other data is updated, including whether the local works 7 hour days or 8 hour days.

The idea for this spreadsheet macro was developed from a similar application I saw at a previous internship with a different company. This company, also a union mechanical contractor in the Bay Area, had a macro in their spreadsheet which performed a similar function to change the labor rate for their piping work. However, this contractor had more of a focus on sheet metal. Local #104 is the sheet metal union in the Bay Area, and their jurisdiction is the entire Bay Area, unlike the pipe trade unions which are extremely segmented. Therefore, no matter where you are performing sheet metal work in the region, it is all at the same labor rate.

The purpose of this project is to analyze the effect of variable estimating at a company which the majority of the hours are union pipe trade laborers. By analyzing a trade which has multiple unions present, we will be able to determine whether variable estimating is viable and beneficial.

Results

The results will be separated into two areas. The first will be a case study for a project estimated with the spreadsheet, and the second will be a qualitative analysis of the spreadsheet's viability.

Case Study: Church of Scientology Estimate

The case study will focus on an estimate developed for a project for the Church of Scientology. This project was estimated at first using only San Francisco rates, and then estimated again adjusting for the local union's rates. The project details can be found in *Table 1*.

Table 1: Case Study Project Details

Owner:	Church of Scientology
General Contractor:	GCI
Location:	Mountain View, California
Local Jurisdiction at Project Location:	Local #393
Project Description:	Full demolition and renovation of two, adjacent, existing buildings
Scope:	Plumbing
Approximate Project Value:	~ \$300,000.00
Delta Between Original Estimate and Adjusted Estimate:	~ 5%*

*** One note is that in the adjusted estimate, not every labor hour was estimated at Local #393 rates. The estimating team made the decision to to apply Local #393 rates to half of the labor hours on the project, and applied Local #38 hours to the other half.**

As you can see, there was a significant difference between the original estimate utilizing only Local #38 labor rates, and the estimate applying Local #393 labor rates. Those in the construction industry know how substantial a 5% difference is. Having the ability to comfortably shave that much off of an estimate is extremely useful when trying to be more competitive.

Although the project was not awarded to the estimating team, they were informed that they were competitive, went through a round of follow up questions, and ended up coming in second amongst the four contractors bidding the plumbing scope. Although the project was not awarded, it is more than likely that they would not have been competitive without that 5% delta from the original estimate.

This case study proves the validity of the spreadsheet's intention, which is to increase competitiveness in estimating. Even just estimating half of the labor hours at the lower labor rate had a significant effect on the value of the estimate. The estimating team made the conscious decision to separate the hours like this. After taking their time to make this decision, they were entirely comfortable with the breakdown, and were confident the project would have had every chance to succeed.

Qualitative Analysis

This qualitative analysis was derived from interviews with Jesse Vogan, Chief Estimator at Contractor X. As Chief Estimator, Vogan oversees all preconstruction services, and is ultimately in charge of making the decision whether or not the spreadsheet should be utilized at bid time.

Contractor X to date has only utilized the spreadsheet to estimate around \$7,000 worth of work in addition to the Church of Scientology estimate, so clearly the spreadsheet has not been employed a significant amount. Therefore, the goal of the qualitative analysis became to understand why it is underutilized, and what can be done to improve the new process.

The biggest difficulty in using the spreadsheet comes from the fact that most of the contractor's field foreman are signatory to Local #38. The unions have a rule referred to as "first man in". What that means is that a contractor is allowed to use a foreman from any local, regardless of the project location. However, all labor must be paid their home local wages. That is, if a Local #38 foreman is working on a project in Local #393 jurisdiction, they still must be paid the higher Local #38 wages.

A potential solution to implementing the spreadsheet more often is to strictly utilize union labor from the project's jurisdiction. However, as Vogan explains, "Since most of our projects are in San Francisco, most of our field staff is [signatory to Local] #38. With the 'first man in' rule, it means that even if a project is outside of San Francisco, we are most likely going to utilize a #38 foreman to run the project." Companies would prefer to use their best employees to perform their work, and Contractor X is no exception. Their most experienced field staff, which is most comfortable with company protocol and the type of work, are signatory to Local #38. Additionally, a majority of the projects the company performs are tenant improvement and do not require more than one or two field staff. Since they are likely to default with their first laborer being a Local #38 foreman, it does not make sense to estimate at a different labor rate, since the San Francisco rates will have to be paid regardless.

If they were to utilize labor from only the project's jurisdiction, they would have to rely on a significant amount of hall hires and unknown talent. Although the labor rates would be lower, it would be a bet against unproven productivity, which is a very large risk. When it comes to estimating the project, the reduction in the value of the estimate does not make up for the risk of the unknown productivity of the new labor, according to Vogan.

Where the spreadsheet has the most potential is for larger projects, which will require multiple crews. Plumbing and piping contractors are not allowed to utilize labor from another union until their sixth person on the job, so for projects that require larger crews, it is guaranteed that the majority of the labor will come from the project location's local. This was the application for the Church of Scientology estimate, where the project was planned with a three-man crew. Knowing that the next two members of the crew after the foreman would have to be signatory to Local #393, it made sense to estimate half of the hours at the Local #393 rates. Although the Local #38 foreman would still be putting the most hours on the job, applying the delta for a significant amount of the labor on the project is still very effective in comfortably cutting estimates and increasing competitiveness.

Overall, Vogan feels there is potential for the spreadsheet. In addition to getting the cost down, he said a great benefit is adjusting the working days. The original spreadsheet only accounts for seven hour days because Local #38 laborers only work 7 hour days. The new spreadsheet adjusts the estimate to an hour count as opposed to day count, and applies eight hour days, which are worked in all other locals. It makes the estimates far more accurate, because it reflects the true productivity of the non-Local #38 worker. Outside of San Francisco, plumbers and pipefitters are more productive per day because they work longer days, an important fact that the original spreadsheet neglected. In the future, the company would like to see all their estimating protocol transition from day counts to hour counts, to avoid this issue in the future.

In summary, Vogan had this to say about the viability in this new way of estimating: "I think over time with some fine tuning, it will make us much more competitive in other markets where we do not do the bulk of our work right now. As our company continues to grow, we are always looking for new opportunities and ways to market

ourselves. Increasing competitiveness in our estimates is an easy way to accomplish that, and more precise estimating can go a long way.”

Conclusions

Variable estimating is a very valuable concept for union mechanical contractors in regions with several jurisdictions present. For companies like Contractor X that work mostly in an area with high rates, instituting this estimating protocol increases competitiveness. For companies that work in an area with low rates, variable estimating eliminates losses per every labor hour. An additional benefit is being able to institute the local union’s rules, as union rules often change from jurisdiction to jurisdiction.

While all union mechanical contractors should implement some form of variable estimating, it needs to be instituted on a case by case basis. The biggest determining factor for its implementation is company resources. Dependent on the company’s available field personnel, they may not be performing the project with laborers signatory to the project location’s union. Additionally, the size and staffing requirements of the project being estimated needs to be accounted for.

Over time, after further analysis and refinement, estimating spreadsheet modifications could be a great asset for Contractor X. Beyond just labor rates, the goal of the estimating spreadsheet is to make the estimator’s life easier, and ensure that everything on the project is accounted for. The more complex the spreadsheet gets, with more options and variables, the more likely it is that the estimator will be able to account for anything and everything on the project. This is particularly important for junior estimators, who may not have the experience to foresee everything. If the spreadsheet can anticipate and highlight potential risks for an estimate, the more comprehensive the estimate is likely to be. Basic knowledge and skills required for an estimator include escalation impact, risk assessment, productivity analysis, and project planning (Alroomi, Jeong & Oberlender, 2012). If the spreadsheet can take the guess work out of some of these conditions which are traditionally based on experience, it would be greatly beneficial.

Further research for this project would include applying it to other regions of the country, not just California and the Bay Area. This research could easily be applied to other areas that are dense with multiple labor unions. Additionally, it is not limited to the pipe trades. Any unionized construction trade could be applied to this research in the same way.

References

Addison, J. , & Chilton, J. (1993). Can we identify union productivity effects?. *Industrial Relations: A Journal of Economy and Society*, 32(1), 124-132.

Allen, S. G. (1987). Can union labor ever cost less?. *The Quarterly Journal of Economics*, 102(2), 347-373.

Alroomi, A. , Jeong, D. , & Oberlender, G. (2012). Analysis of cost-estimating competencies using criticality matrix and factor analysis. *Journal of Construction Engineering and Management*, 1#38(11), 1270.

Riquelme, P. , & Serpell, A. (2013). Adding qualitative context factors to analogy estimating of construction projects. *Procedia - Social and Behavioral Sciences*, 74, 190-202.