Chapter 1 – Introduction to Bid Summarization

An estimator must be honest with himself and most of all, his employer. A poorly summarized project will waste irreplaceable time and money and puts the company at risk.

1. The Importance of Bid Summarization

Summarizing the estimate is the final step in the estimating process. It is the most important step in preparing an estimate. The potential for major mistakes during this step is highly possible unless it is handled carefully.

The Bid Summary requires the estimator to switch hats to that of a businessman. This process requires the estimator to think about risks and profitability.

Here are some reminders for summarizing your bid:

- Believe in your estimate and estimator.
- Use a labor crew mix that can be achieved.
- Include all costs and expenses.
- Save where you can.
- Check items that may increase in cost – e.g.: copper wire, steel.
- If you discount quoted packages, be sure they are reasonably obtainable discounts.
- Allow an accurate percentage of overhead.
- Include a reasonable percentage of profit to cover the risks incurred on the project.

2. Bid Summary Components

The Bid Summary components will vary between different types of projects and clients. The important thing to remember is that all material and labor costs are included, both direct and indirect. A detailed explanation of the summarization process is explained in Chapter 3 in this volume.

3. Basic Bid Summarization Terms

1) **Allowance**: In bidding, money set aside in contracts for items that have not been selected and specified.

2) **Direct Costs:** The costs directly attributed to a work-scope, such as labor, materials and subcontracts. It does not include indirect costs like office overhead.

3) **Indirect Costs:** Costs for items and activities not directly related to constructing a structure but are necessary to complete the project, i.e. contractor's overhead expense.

4) **Job Expenses**: Expenses that are not part of the material costs of the project. This can include depreciation of tools or equipment that are used from job to job, testing, site office, and storage and similar expenses.

5) **Project Labor Factors**: Conditions that affect labor productivity. Project Labor Factors are related to overtime, weather, multistory buildings, shift work, and site conditions and accessibility. Project Labor Factors are handled in the summarization of the estimate.

6) **Recap or Bid Summary**: A quick cost summary of your proposal, often broken down by the type or category, such as the amount spent on materials, on labor and on outside costs such as subcontractors.

7) **Overhead Costs:** Costs of a general and administrative nature required for the operation of the contracting business which occur on a continuing basis, whether projects are involved or not.

8) **Profit:** The return on the investment and risks which remain after all project costs have been paid.

4. Bid Summarization Mistakes

Bidding mistakes are made in the summarization and submission of the bid. An incorrect estimate maybe complete, but it could be based on an incorrect labor column and incorrect labor mix.

The estimator should strive to avoid mistakes, even small ones can have a detrimental impact on the project.

Estimating and bidding are two distinct functions of the estimator. When the estimator tries to do both functions at the same time, mistakes are inevitable. Estimating is quantifying and is handled during the take-off process. Bidding is the summarization of the estimate.

The second most important responsibility of the estimator is to provide all the necessary information to the chief estimator so that the project can be properly bid.

Once the estimator is confident the take-off is complete, accurately priced and labored, it is time to focus on bidding the project.

Here are the most common bidding mistakes:

1) Voluntary price cuts
2) Incorrect wage rates

3) Ignoring obvious risks
4) Missing permit and inspection costs
5) Missing equipment rental costs
6) Failure to include supervision costs
7) Missing allowance(s)
8) Per diem and travel expenses
9) Project Labor factors ignored – overtime, weather, multi-story, shift impact
10) Improper bid forms
11) Incomplete bid forms
12) Forgetting to sign the bid documents
13) Vague scope letter
14) Chasing a competitor's price
15) Too much optimism
16) Failure to review in a timely manner.
17) Misunderstood project duration
18) Failure to include labor escalation costs
19) Failure to review a previous similar project
20) Insufficient overhead & profit
21) Unrealistic labor class ratio
22) Misunderstanding the scope of work

Helps to prevent bidding mistakes:

1) Avoid interruptions.
2) Review the Instructions to Bidders carefully.
3) Know the scope of work well.
4) Be sure to understand the schedule and completion date.
5) Know the phasing requirements of the project.
6) Obtain multiple quotes for all equipment packages, avoid using budgets if possible.
7) Use a realistic labor mix.
8) Use a master list of bid clarifications and exclusions and modify for the project.
9) Have the take-off, all necessary forms, bonds, etc. ready 24 hours before the bid is due.
10) Prepare scope letter well in advance.

The consequences of errors and omissions are borne by the contractor, not the estimator. The true cost of a project is not known until the project is complete. If the estimated cost is equal or greater than the actual cost, then a profit is realized. If the estimated cost is less than the actual cost, then the project loses money.

The estimator has a tremendous responsibility and must strive to perform his or her duties at the highest level. Every time a contractor submits a bid, he is taking some risk, many times, a huge risk. The first line of defense in minimizing risks, is an accurate estimate and complete bid summary.

Chapter 2 – Project Labor Factors

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1. Project Labor Factors Descriptions

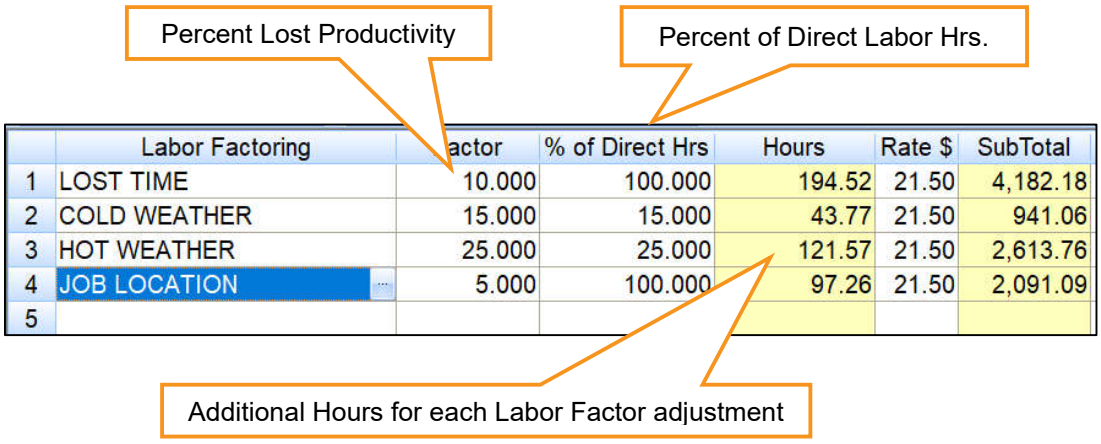
These are conditions that impact the project's labor productivity. Project Labor Factors are percentage adjustments determined by the project conditions and added to the direct labor hours. Project Labor Factors can vary from one geographic location to another and from project to project.

Project Labor Factor attributes:

- Are expressed in percentages
- Some are global to the project
- Some impact only a portion of the project
- Based on geographic location
- Determined by the market(s)
- Are determined by labor forces abilities and availability
- Multiple Labor Factors may apply
- Project Labor Factors are cumulative

Project labor factors are addressed in the bid summarization utilizing the Labor Factoring Screen.

In the screenshot (Trimble ACCUBID Classic Pro) below you can view several project labor factors. Two factors (Lost Time & Job Location) are factored at 100%.



	Labor Factoring	actor	% of Direct Hrs	Hours	Rate $	SubTotal
1	LOST TIME	10.000	100.000	194.52	21.50	4,182.18
2	COLD WEATHER	15.000	15.000	43.77	21.50	941.06
3	HOT WEATHER	25.000	25.000	121.57	21.50	2,613.76
4	JOB LOCATION	5.000	100.000	97.26	21.50	2,091.09
5						

Each Project Labor Factor is expressed in a percentage of lost productivity to a percentage of the project's hours. For example, lost time for checking in and out of a correctional facility would be a percentage of time for each day for 100% of the crew for the complete project's duration. Lost productivity due to cold or hot weather would only be a percentage of the labor hours affected during the inclement weather.

Adjustments are usually made in percentages to the total hours or partial hours depending on the conditions. Project Labor Factor adjustments are cumulative.

No two projects are the same. Be sure to consider all project labor risks and bid accordingly.

Consider the following 24 conditions that affect labor productivity:

1) **Access to work area** – The accessibility of a project is important. Manpower, materials, and equipment must be moved in and out of the work area. If the work area does not allow for easy deliveries, additional labor hours must be added.

2) **Accelerated schedule** – When the project is accelerated it will result in a larger work crew. An accelerated schedule may require overtime and / or multiple shifts. Both overtime and multiple shifts will have an impact on labor productivity, therefore, an adjustment will be necessary. This condition can become very detrimental and can cause labor to double or triple under severe Schedule Acceleration.

3) **Addenda factoring** – Projects where the contract documents are incomplete or lacking in detail, is sure to have many addenda issued. Addenda interrupt the flow of work. Most addenda will impact manpower, material deliveries, and coordination with other trades. An addendum will distract the project foreman from the contract work. A project manager will have increased labor due to the number of addenda issued. This information must be relayed to the field. Sometimes, installed work may have to be removed as a result of the addendum.

4) **Building construction** – If the building is spread out over a large area, then labor required for handling materials and moving equipment will increase. Odd shaped or old buildings pose a challenge. Buildings over three floors will increase labor install time. Buildings with a unique architectural design will require more attention to detail.

5) **Crew size** – The larger the crew size, the larger the lost productivity. Depending on the crew size, non-working supervision may be required. More tools will be required with a larger crew.

6) **Dusty environment** – Dusty environments will make working conditions miserable. Keeping tools and materials clean for installation will be a challenge. Additional safety equipment will be required. Proper ventilation is important, a dusty environment will make life miserable for workers and represents a health hazard. Be sure you know OSHA safety regulations related to this type of project.

7) **GC capability** – Subcontractors are at the mercy of the General Contractor. When the GC cannot keep the project on schedule, then all subcontractors are affected. When the experience and performance of the GC is not known, caution must be exercised before entering into a contract. This factor does not apply to all GC's, but it does to some.

8) **GC experience** – This factor is very difficult to know and make adjustments in your estimate. If you have the opportunity to work with a general contractor for the first time, check with other trade contractors for references.

9) **Hazardous environment** – In hazardous locations, more safety precautions are necessary to keep workers safe. When working in an area that is classified as hazardous, it will require special safety equipment and clothing. Restrictions may limit time and exposure of workers to the area, resulting in less time on tools.

10) **Isolated environment** – An isolated work site poses several risks. Health and safety for workers need to be considered. Some examples of isolated work environments are mines, oil exploration, refinery platforms over bodies of water, and high voltage transmission lines. In an isolated workplace, transporting injured workers to health facilities can create the potential for a basic injury to become a life threating event. Communications in isolated environments can be limited. Extended work hours and workdays are sometimes necessary to complete the project timely. This extended work period can create stress, fatigue, and have a psychological impact on workers that will affect productivity. Certain isolated environments may expose workers to dangerous animals or toxic plants. Workers will need shelter during harsh weather conditions.

11) **Job location** – Projects that are located a distance away from the contractor's office or the worker's homes pose extended travel periods to get to and from the project. An allowance of lost time in necessary. At the end of the week, workers will want to get an early start on the weekend to arrive at home as early as possible. Also, material deliveries and equipment transportation will have an impact on the project's productivity.

12) **Multistory impact** – The higher the building, the higher the labor costs. Labor units typically cover a building up to three floors. As a rule, this factor will be at least 1% per floor with a cumulative total. The percentage of this factor will vary with the project. It will depend on the number of construction elevators, project schedule, crew size, and staging area.

13) **Non-local manpower –** The contractor must know his or her field forces. If the contractor must use workers that are out of the area, there can be problems of knowing the skill and ability of the workers.

14) **Occupied facility** – An occupied facility will slow workers' progress. More clean-up, covering existing equipment, and working around existing equipment will be required. If the facility is in operation twenty-four hours, it is obvious that factors are required due to facility personnel and their operations. If the facility is not in operation twenty-four hours, the contractor might consider working second or third shift. This may require electricians to move selected contents in a facility to make the installation easier.

15) **Overtime impact –** An extended overtime schedule will impact labor costs significantly. Overtime produces fatigue and poor mental attitude which results in loss of productivity. The longer the overtime schedule, the greater loss of productivity. NECA has publications that explain this project factor and how to calculate the costs.

16) **Phasing, by area, floor, or building** – When a project is broken down in phases and those phases are sequential, this will require mobilizing and demobilizing.

17) **Poor electrical design** – Poor drawings and poor specifications are detrimental to efficient production. Workers will need to get clarity on tasks.

18) **Renovation** – Renovation is more labor intensive that new construction. Renovations will usually require more coordination with all trades. During renovations, there will be discoveries of issues that will need to be brought to the owner's attention. This will cause delays and waiting for direction from the architect.

19) **Shift work impact –** Multiple shifts can help the contractor meet the construction schedule. When one crew takes over for another, there will be loss time during the shift transition. Project information must be transferred to the next crew of workers. Material handling labor is also increased with multiple shifts. Supervision hours will increase as two foremen will meet to coordinate the transition from one shift to another.

20)**Stacking of trades** - The stacking of trades describes project conditions where multiple tradespeople are working simultaneously in a single work area. Having too many workers in a small work area will reduce labor productivity. The causes of stacking of trades may include, but not limited to the following: rework, scope change, change orders, project acceleration, complexity of work, and poor planning. The following aspects are affected by this labor factor: material handling, work order, limitations of work area, increased idle time, crew management, and scheduling. This labor factor usually has the greatest affect on conduit work and rough-in phases of a project.

21) **Staging location** – When materials are stored away for the work area, there is increased labor to handle equipment and materials to the work site.

22) **Weather conditions** – This Labor Factor is dependant on the contractors' geography location. Cold, hot, and humid weather conditions reduce labor production. In cold weather, workers will retreat to warm up and in hot weather, workers will find a place to cool down. Excessive rain can pose problems for outdoor work, especially for underground work. Severe weather can also pose a problem for meeting the project's completion date. Estimating the percentage adjustment for this factor is difficult.

23) **Work conditions** – Both morale and productivity can be affected when workers are exposed to one or more of the following:

- Excessive noise levels
- Material shortages
- Unsafe working conditions
- Inadequate tools and equipment
- Untidy construction site