

Understanding Labor Units

By George Hague



Definition of a Labor Unit:

A benchmark used by a company or estimator to determine the labor value of an installation

The first distinction an estimator must realize is that a labor unit is not absolute. A labor unit is a benchmark...a starting point. Though this question may seem obvious, ask yourself this:

If three electrical contractors produced the same job, would all three produce the job in the same time?

Obviously, the answer is No. If this is the case, then how can a standard set of labor unit's work for all three companies? This can only be accomplished through factoring. Studying a company's job history and job costing records allows the estimator to become familiar with the company's ability to produce work compared to the labor units. A successful electrical contractor keeps accurate records of job costs and is constantly revising the labor factors according to the standards being set by each job. This concept allows the estimator to use any of the national labor units including NECA, MEANS or any of the other databases available today. Using a standard set of labor units gives the estimator consistency in his or her estimates.

How can several estimators use the same database of labor units if each estimator has individual concepts as to what the labor unit represents?

Each estimator uses the labor unit to his or her own interpretation of its meaning. The units are standard as to listing but individual as to interpretation.

Example: Two estimators are using the same labor unit to install a loadcenter. The 1st estimator uses a four-hour labor unit to represent the entire installation including mounting, terminations, & the installation of breakers. The 2nd estimator uses the 4 hours plus labor units for each breaker installed for a total of 6 hours.

Which estimator is correct? At this point both are. Job costing factors are then applied, correcting the total labor to represent the company's ability to produce against the benchmark. Job costing history indicates that the company typically installs this loadcenter in two hours including breakers.

The first estimator will apply a 50% discount factor to his or her labor estimates, while the second estimator will discount the estimate by two thirds. Both estimates now arrive at the same labor total,

because both adjusted the estimate by factoring with information from job costing records. [It should be noted that not all factoring is discounted; it is possible that a markup applies in some situations]

Each company should select a database of labor units as their standard, whether published or company-created. I recommend the NECA labor units, as they are the benchmark of the electrical construction industry and are periodically updated. Most published labor unit databases available today are directly affected by NECA. Whatever you choose, using the prescribed method here will give you accurate estimates.

The remainder of this article will reference the three labor columns established in the NECA manual. They are **Normal**, **Difficult** and **Most Difficult**.

It would be impossible to relate all the influences that affect labor units, but the following are three principal factors that should be considered:

- 1 Job Degree of Difficulty
- 2 Installation Degree of Difficulty
- 3 The company's ability to perform against the labor unit

Job Degree of Difficulty

The Job Degree of Difficulty takes into account the type of project the company is performing as well as working conditions. So vast are the variations in the electrical industry that before selecting a labor unit on any project, the company should have standard procedures in place to determine which column of NECA to use for a particular estimate. These standards should be rigidly adhered to for consistency.

The simple outline below provides general classifications for use in determining the influence when selecting a labor unit for new, unoccupied areas of building construction. I will suggest a NECA column for each classification.

	NECA LABOR UNITS		
	Normal	Difficult	Most Difficult
Residential Includes Speculation & High-end Homes & Apartment Buildings	●		
Commercial Includes Office Buildings, R&D Buildings, Stores, Malls and Theaters	●		
Institutional Schools, Hospitals, Institutions		●	
Industrial Manufacturing Facilities and Power Plants		●	
Special Sewage and Water Treatment Plants, Mines and Foundries			●

NOTE: Considering that these job types have individual characteristics, it would be ineffective to set up a single column database that is universally applicable.

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Installation Degree of Difficulty

The Installation Degree of Difficulty takes into account special installation difficulty factors such as weather, mounting elevations, weight, occupancy and duplication. Not all difficulty factors add to the labor unit. Some factors, such as duplication, will actually reduce the labor unit.

Labor units are established for certain construction periods and conditions, usually the most favorable. Unusual weather conditions can have direct affect on productivity. Higher temperatures affect the performance of workers who are accustomed to colder climates, while workers from warmer climates are affected by colder weather. This factor cannot be analyzed from tables of labor units and are best appraised based on training & experience.

Here are some examples of factors that increase or decrease the difficulty of an installation which directly affect the labor unit:

- **Mounting Elevations** take into consideration such things as ceiling heights and the floors of a building. All of the factors increase the labor unit. The standard labor unit is increased 5% for installations over 10 feet and 10% for installations of 16 to 20 feet.

For ceiling heights greater than 20 feet, an additional allowance must be made for scaffolding. Remember to include lift rental charges in your estimate. Keep in mind that today's standard of factoring is based on motorized man lifts for over 20 feet. If you are using rolling staging, an allowance for a ground man to supply materials and push the staging may be required. Consideration should be given to the number of staging setups that will be in close proximity to each other. The suggested factor would be to add 5% per foot for that portion over ten feet, using one ground man for one top side electrician.
- **Weight** is always an important factor in labor units. Estimators should obtain weight data on special equipment. Time studies for installations on hours per pound are not consistent. The estimator should develop criteria using job experience data for specific equipment. Equipment manufactures are a good source for labor requirements on special equipment.
- An **Occupancy** adjustment factor should be considered to compensate for the excess labor required when working in occupied areas. The standard labor units (for unoccupied areas) should be increased 50 to 100 percent.
- **Duplication** occurs when multiple installations of like products result in saving installation time. Fixtures in the same concentrated area, parallel conduit runs and multiple conductors in a raceway are all examples of possible deductions for duplication. My pet duplication is multiple conductors in a raceway. Most labor units that you see are for one conductor in a raceway.

If you are pulling four conductors in the same conduit, does it take four times as long as it does for one conductor?

Most contractors will admit that feeders are where they make their biggest profit, and here is a good reason for it. The question always comes up, *why factor? Why adjust some items up while others are adjusted down? It all comes out in the wash, right?* **Project management** is the answer.

After the estimator wins a bid, someone has to produce the project. With an accurate estimate, the project manager has documentation for creative management. Allocating labor resources is critical. Under or over-staffing a job typically affects the bottom line. Project managers need to know specific labor requirements for each phase and task of the job. Accurate hours averaged for the entire job are not enough in today's competitive market. That accuracy needs to be at the phase and task level.

A company's ability to perform against the Labor Unit

This is where many companies either succeed or fall short. Every electrical contracting firm's productivity starts with management, and management starts with an accurate estimate. Information provided to, and communication with, the field are both extremely critical.

Factors to enhance workforce productivity include:

- Submittals approved in a timely manner
- The **right materials** on the job site in the **right quantities** at the **right time**
- Tools and equipment on the job when needed
- Drawings are accurate and marked up including all documentation
- Job progress properly tracked
- Better electricians through company supported education
- The office provides timely administrative support
- The company's work is coordinated with the general contractor and all trades

Competitive construction bidding is one of the biggest gambles contractor's in the electrical industry take. *What are the working conditions? Which general contractor and sub-contractor will be engaged in the project?* These are just two of the pertinent factors a professional estimator considers when anticipating job conditions.

Choosing the right software

When selecting a software package for estimating, remember to consider the many aspects affecting the labor unit including those mentioned in this article; 1) Job Degree of Difficulty, 2) Installation Degree of Difficulty, and 3) The company's ability to meet the labor unit. All three are distinct and separate issues. One adjustment factor is like having one column of labor units. It works for some jobs but not all. Your estimating program should provide several columns for different labor units and the flexibility during take-off to adjust those units when encountering different factors. An estimating program that provides your estimator with this advanced technology will enhance the accuracy of your estimates and increase the profit margin for each of your jobs.