

# Calculating Labor Hours

## Overview

Items in a project contain four components of labor:

1. Installation
2. Misc. Installation
3. Design
4. Management

Each item has these four labor components calculated based on the base installation hours associated with the item in the project. This document will describe in detail how each component is calculated and what is applied to these calculations.

## Item Calculation Components

The calculation of each labor component is dependent on the following pieces of information

- **Base Installation Hours:** This is associated with an item (assigned on a per item basis). This represents the time required to install the item under normal installation conditions.
- **Phase Difficulty Factor.** This number, assigned to a phase, is used to adjust the number of installation hours (up or down) based on whether the installation for the items in the phase will be easier or harder than normal installation conditions. By default this is one (or 100% where 1 = 100%, 1.1 = 110%, etc.). This factor is only applied to Installation and Misc. Installation labor.
- **Labor Type Factor** (Installation, Misc., Design, Mgt.): This value is based on the settings of the phase. This number is always one (1) for Installation labor. It is adjustable for Misc., Design, and Mgt. labor. The idea behind this factor is that these three types of labor are determined based on a fraction of the installation time.

If an item takes one hour to install and the Design Labor factor is 20%, then .2 hours of design labor are applied to every item.

- **Quantity:** For items in the project, this value will be 1 with the exception of items with the category type = "Wire". In the case of "Wire" items, the quantity is the length of wire purchased.
- **Labor Calculation Type (LCT):** If an item is of category type = "Labor", then this value effects how the labor hours are calculated.

## Example Item

For the descriptions below, the following item will be used:

Quantity	1
Installation Hours	1
Phase Difficulty Factor	125% (1.25)
Misc. Installation Factor	10% (.10)
Design Labor Factor	15% (.15)
Mgt Labor Factor	10% (.10)

## Calculating Labor Hours on non-"Labor" items

From a calculating perspective items can be grouped into two categories: "Labor" and "Everything Else". This section will describe how labor hours are calculated for "Everything Else"

### ***Installation Labor***

Quantity \* Installation Hours \* Difficulty Factor = Total Item Installation Labor Hours

1 (qty) \* 1 (Install hours) \* 1.25 (Difficulty Factor) = 1.25 Total Item Installation Hours

### ***Misc. Installation Labor Hours***

Quantity \* Installation Hours \* Misc. Install Factor \* Difficulty Factor = Total Item Misc. Install Labor Hours

1 (qty) \* 1 (Install hours) \* .1 (Misc. Install Factor) \* 1.25 (Difficulty Factor) = .125 Total Hours

### ***Design Installation Labor Hours***

Quantity \* Installation Hours \* Misc. Install Factor = Total Item Design Labor Hours

1 (qty) \* 1 (Install hours) \* .15 (Design Factor) = .15 Total Design Hours

### ***Management Installation Labor Hours***

Quantity \* Installation Hours \* Misc. Install Factor = Total Item Design Labor Hours

1 (qty) \* 1 (Install hours) \* .10 (Mgt. Factor) = .10 Total Design Hours

### ***Total Labor Hours for the item***

Install + Misc. Install + Design + Mgt = Total Item Labor Hours

1.25 (Install) + .125 (Misc. Install) + .15 (Design) + .10 (Mgt) = 1.625 (Total Hours)

## **Calculating Labor Hours on “Labor” Items**

Labor Items require the consideration of the Labor Calculation Type (LCT) setting. The Labor Calculation Type can be one of the following:

- Fixed
- Variable (Not based on Phase)
- Variable (Not based on Phase) + Fixed
- Variable (Based on Phase)
- Variable (Based on Phase) + Fixed

### ***Fixed Labor Items***

When a labor item has a “Fixed” LTC, there are **NO** hours associated with the item. Installation Labor, Misc. Installation Labor, Design Labor, and Mgt Labor Hours are all zero (0).

Installation Hours	0
Misc. Installation Hours	0
Design Labor Hours	0
Mgt Labor Hours	0

### ***Variable (Not based on Phase)***

When a labor item has a “Variable (Not based on phase)” LCT, the installation hours are calculated by the Installation Hours set to the item. If the user enters “1”, it’s “1”, “2” is “2”, etc.

Items with this LCT have NO hours associated with Misc. Installation Labor, Design Labor, or Mgt. Labor. These components all have zero (0) values

Installation Hours	1
Misc. Installation Hours	0
Design Labor Hours	0
Mgt Labor Hours	0

### ***Variable (Not based on Phase) + Fixed***

This LCT calculated in the same manner as “Variable (Not based on Phase)”.

### ***Variable (Based on Phase)***

Labor Items with this LCT have their labor hour components calculated in the same manner as Non-Labor Items. See the specific calculations above.

### ***Variable (Based on Phase) + Fixed***

Labor Items with this LCT have their labor hour components calculated in the same manner as Non-Labor Items. See the specific calculations above.