

Making Labor Cost Reduction a Reality

[Electrical Construction and Maintenance](#)

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The cost of automobiles per-capita income in the United States has been reduced from 141% of the median income in 1910 to 33% in 2010, which represents a reduction of 108%. The cost of a home in the same time span has increased from 330% to 619% of median annual income, an increase of 286%. How can the cost of construction be reduced to relieve consumers and building owners of this burden? In addition to the measurement and improvement of productivity, reducing the cost of building can also come from reducing the composite labor cost.



This does not mean reducing individual wages for any employee. Instead, it involves becoming more effective at managing a composite crew that consists of fewer highly technically skilled workers and more unindentured workers. An unindentured worker on an electrical project, for example, would be an electrical “helper” who has applied to an apprenticeship program but has not yet met all of the qualifications to start the program.

When compared with other nations, the United States has enjoyed one of the highest productivity increases of its workforce over the last several decades. However, this national increase in productivity is not mirrored in the construction industry ([click here to see Figure](#)). According to the National Institute of Standards and Technology (NIST), although the construction industry is a major contributor to the U.S. economy, its contribution to national productivity levels lags the national average. The bottom line is this productivity cannot be on par with the rest of the world until it is correctly measured — and that measurement is acted upon for improvement.

Similar to many other industries, in order to improve productivity in the construction industry, specialization of the labor has to match the needs and requirements of the final outcome. In other words, the trades in the construction industry must learn to manage the lower-skilled and unskilled workers to

reduce the overall cost of installation. Take Henry Ford as an example. If it weren't for his assembly line and separation of common versus special tasks, the cost of automobiles would be as high as houses today. Similarly, if Dell's assembly process of computers wasn't so streamlined, fewer people could afford them. Even franchising models like McDonald's are based on the standardization and separation of special versus common activities in the kitchen.

This type of separation of activities and tasks has reached its time in the construction industry — a trend that could change the face of the industry as well as affordability of shelter within a very short period of time. Some might interpret this approach as a “dumbing down” of the skilled trades; however, it's actually quite the opposite. The goal in this new model will be to use highly trained and skilled electricians to do the tasks that put their talents to work while reducing time spent on mundane activities, such as moving material, ordering tools, and performing repetitive tasks (e.g., putting whips on fixtures or painting and marking boxes).

Reduction of the composite rate of labor requires mixing unindentured workers with the skilled trade labor. To avoid the loss of skilled trade's productivity due to lower skilled labor management, the trained electrician has to become a resource manager and understand how to manage the unindentured labor group. The effective management of the lower skilled labor starts with breaking work down into three separate categories:

1. Activities common among all jobs
2. Activities common among the categories of the jobs
3. Activities special about the specific job in hand.

These activities must then further be broken down into three subgroups:

1. Electrical activities, such as:
 - a. Rough-in
 - b. Wire pulls
 - c. Distribution
 - d. Trim or terminating
 - e. Lights
 - f. Commissioning and testing
2. Non-electrical activities that require some skill, such as:
 - a. Material handling
 - b. Inventory/receiving
 - c. Prefab
3. Non-electrical activities that require no skill, such as:
 - a. Mobilization
 - b. Digging/trenching
 - c. Core drilling
 - d. Garbage/cleanup.

To set up the management of the labor, the project manager and labor supervisor start with the process of establishing a Work Breakdown Structure (WBS). The **Photo** shows the process of creating the WBS, involving several foremen, general foreman, and project manager for the electrical contractor on a real project. The WBS is created by first identifying all of the work required to finish the project. Then, the activities required can be categorized according to the two sets of criteria listed above. The electricians' input is critical for the WBS creation, as well as for identifying the category of work and skill level required

to complete the task. The WBS can then be used for other purposes of tracking the job from the foreman's perspective, such as utilization of the ASTM Standard for Job Productivity Measurement (ASTM E2691).

After identifying all of the tasks and grouping them in the above mentioned categories, a process called short interval scheduling (SIS) will enable the supervisor to manage labor's daily activities. For detailed information on this concept and how to set up and run a correct SIS, read the February 2009 article, "The Secrets to Short-Interval Scheduling," also written by Moore and Daneshgari and available on the *EC&M* website at: http://ecmweb.com/construction/shortinterval_scheduling_secret_0201/.

Taking all of these factors into consideration, the key objective is for all players in the construction market to strive to be more efficient. This means the knowledge and experience of these individuals needs to be used in a different manner. In other words, skilled electricians need to use their knowledge and experience to help the unindentured workforce complete basic jobs and move projects along quickly. This can be done by segregating tasks into segments that require high levels of skill and low levels of skill. A new set of tools is also needed to manage and monitor the work progress and ensure that the final product still meets the approval of an inspector and the client.

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