

EXECUTIVE SUMMARY

During a typical construction project, a contractor may find that the time originally available, or normally expected to perform its work has been severely reduced. To finish the project by the completion date, the contractor is forced to find a way to speed up the progress of its work, or “compress the schedule.” By definition, when the contractor speeds the work up to compensate for the reduction in available time, the schedule is compressed. *Schedule compression*¹ poses a problem to contractors, because it negatively impacts *labor productivity*. This impact translates into lost profits for the contractor. Therefore, understanding how schedule compression affects labor productivity is crucial for increasing project performance, avoiding disputes, and maintaining sound financial status of one's company. For several trades, models have already been developed to quantify the loss of productivity resulting from schedule compression. Unfortunately, a similar model is yet to be developed for the sheet metal contracting trade.

To compress a schedule, contractors, including sheet metal contractors, accelerate the work in order to finish in the lesser time available. The most common way to compress the schedule is either to work longer hours (*overtime*), add more workers (*overmanning*), or implement multiple shifts (*shift work*). The goals of this study were to investigate how schedule compression affects sheet metal contractors' labor productivity, to quantify the effects of the three primary schedule compression methods (Overtime, Shift Work, and Overmanning) on sheet metal contractors'

labor productivity, and to provide schedule compression recommendations to sheet metal contractors. These objectives were achieved by analyzing project data that had been collected from sheet metal contractors across the country. In this study, the labor productivity effects of overtime, shift work, and overmanning were investigated, and models that quantify the impact of each on the labor productivity of sheet metal contractors were developed.

The study results show that when overtime, shift work, and overmanning increase, labor productivity decreases. In this document, quantification models, graphs, tables, and case studies are provided to assist sheet metal contractors in understanding the labor productivity loss caused by overtime, shift work, and overmanning. Recommendations for the contractor are also provided at the end of the report for the purpose of helping to reduce the impact of schedule compression on labor productivity.

¹ *Italicized words defined in glossary*