In construction projects, change orders are commonly faced. These change orders, which are issued by the owner, may cause interruption to the contractor's work resulting in damages such as loss of labor productivity and delay damages in addition to cost overruns which may lead to claim. The relationship between change orders and loss of labor productivity is not well understood because of the difficulty of linking the cause of the productivity loss to the change order. So to receive compensation, the contractor needs to prove with a credible calculation, that the productivity loss was a result of the change order issued by the owner.

Compared to all available productivity loss quantification methods, the "Measured Mile" approach is considered the most acceptable and popular approach in litigation. In this study, loss of labor productivity due to change orders is studied using a system dynamics method. A system dynamics model is developed; using Vensim Software, validated and utilized to quantitatively measure the impact of the change in the project scope on labor productivity. Different road construction projects were analyzed using both methods: measured mile analysis and system dynamics model, and the results from those two approaches were compared.

Keywords: Change orders; Productivity; System Dynamics.