

## Dynamic Construction Site Layout Using Ant Colony Optimization

**Authors :** Yassir AbdelRazig

**Abstract :** Evolutionary optimization methods such as genetic algorithms have been used extensively for the construction site layout problem. More recently, ant colony optimization algorithms, which are evolutionary methods based on the foraging behavior of ants, have been successfully applied to benchmark combinatorial optimization problems. This paper proposes a formulation of the site layout problem in terms of a sequencing problem that is suitable for solution using an ant colony optimization algorithm. In the construction industry, site layout is a very important planning problem. The objective of site layout is to position temporary facilities both geographically and at the correct time such that the construction work can be performed satisfactorily with minimal costs and improved safety and working environment. During the last decade, evolutionary methods such as genetic algorithms have been used extensively for the construction site layout problem. This paper proposes an ant colony optimization model for construction site layout. A simple case study for a highway project is utilized to illustrate the application of the model.

**Keywords :** ant colony, construction site layout, optimization, genetic algorithms

**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development

**Conference Location :** Chicago, United States

**Conference Dates :** December 12-13, 2020