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***Title: Optimal construction site layout considering safety and environmental aspects.***

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***Abstract:***

A good site layout is vital to ensure the safety of the working environment and effective and efficient operations. Site layout planning has significant impacts on productivity, costs, and duration of construction. Construction site layout planning involves identifying, sizing, and positioning temporary and permanent facilities within the boundary of the construction site. Site layout planning can be viewed as a complex optimization problem. Although construction site layout planning is a critical process, systematical analysis of this problem is always difficult because of the existence of a vast number of trades and interrelated planning constraints. The problem has been solved using two distinct approaches; optimization techniques and heuristics methods. Mathematical optimization procedures have been developed to produce optimal solutions, but they are only applicable for small-size problems. Artificial intelligent techniques have been used practically to handle real-life problems. On the other hand, heuristic methods have been used to produce good but not optimal solutions for large problems. In this paper, an optimization model has been developed for solving the site layout planning problem considering safety and environmental issues and actual distance between facilities. Genetic algorithms are used as an optimization bed for the developed model, a real-life construction project was tested. The obtained results proved that satisfactory solutions were obtained.