

# Tolerance Management, Failure, and Defects in Construction

*Rana Khallaf, Kamel, M., Habib, O., Farahat, M.*

## Abstract

Tolerance in the construction industry has been regarded as a vague topic due to the paucity of information available on it. As a result, the effect of tolerance and its impact on a project has been neglected in many cases. This impact can sometimes be catastrophic to the testing and commissioning phase of the project and the overall project quality as well. Tolerance management as a science focuses on the acceptable margin of error or discrepancy. One of the main objectives of this paper is to raise awareness about tolerance in construction and how to approach tolerance failures and defects to reduce/eliminate waste. This paper focuses on tolerance management and addresses how it can be applied in the construction field. Literature review was conducted to collect data on tolerance management in various fields and report on its main principles. This paper also introduces two terms: tolerance failure and defects, and discussed the relationship between them. Furthermore, five categories of tolerance failures are introduced. Finally, preliminary solutions and mitigation strategies for tolerance failure categories are proposed.

*Joint International Conference on Design and Construction of Smart City Components, at the German University in Cairo, Egypt 2019, December*