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A Temporary Shelter Proposal for Displaced People

Authors : İrem Yetkin, Feray Maden, Seda Tosun, Yenal Akgün, Özgür Kilit, Koray Korkmaz, Gökhan Kiper, Mustafa Gündüzalp

Abstract : Forced migration, whether caused by conflicts or other factors, frequently places individuals in vulnerable situations, necessitating immediate access to shelter. To promptly address the immediate needs of affected individuals, temporary shelters are often established. These shelters are characterized by their adaptable and functional nature, encompassing lightweight and sustainable structural systems, rapid assembly capabilities, modularity, and transportability. The shelter design is contingent upon demand, resulting in distinct phases for different structural forms. A multi-phased shelter approach covers emergency response, temporary shelter, and permanent reconstruction. Emergency shelters play a critical role in providing immediate life-saving aid, while temporary and transitional shelters, which are also called “t-shelters,” offer longer-term living environments during the recovery and rebuilding phases. Among these, temporary shelters are more extensively covered in the literature due to their diverse inhabiting functions. The roles of emergency shelters and temporary shelters are inherently separate, addressing distinct aspects of sheltering processes. Given their prolonged usage, temporary shelters are built for greater durability compared to emergency shelters. Nonetheless, inadequacies in temporary shelters can lead to challenges in ensuring habitability. Issues like non-expandable structures unsuitable for accommodating large families, the use of short-term shelters that worsen conditions, non-waterproof materials providing insufficient protection against bad weather conditions, and complex installation systems contribute to these problems. Given the aforementioned problems, there arises a need to develop adaptive shelters featuring lightweight components for ease of transport, possess the ability for rapid assembly, and utilize durable materials to withstand adverse weather conditions. In this study, first, the state-of-the-art on temporary shelters is presented. Then, an adaptive temporary shelter composed of foldable plates is proposed, which can easily be assembled and transportable. The proposed shelter is deliberated upon its movement capacity, transportability, and flexibility. This study makes a valuable contribution to the literature since it not only offers a systematic analysis of temporary shelters utilizing kinetic systems but also presents a practical solution that meets the necessary design requirements.

Keywords : deployable structures, foldable plates, forced migration, temporary shelters
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