



# Rapid Design and Construction Management of Emergency Hospital During the COVID-19 Epidemic

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## Abstract

In order to control the spread of the COVID-19 epidemic across the country, China has used all available resources to build infectious disease hospitals in various ways. These hospitals include three modes and adapt to different disease levels: temporary emergency hospitals; makeshift hospitals by transforming public buildings; and existing general wards transformed into infectious wards. Through the practice of several projects, on the basis of the original standard system, China urgently issued a series of relevant standards and guidelines to guide the construction of temporary hospitals. As one of the earliest cases of temporary emergency infectious disease hospital, the Thunder God Mountain Hospital adopted a prefabricated modular design concept in plan design, plane design and component design, and also combined the application of Building Information Modeling (BIM) and Computational Fluid Dynamics (CFD) technology. Based on industrialized module processing and manufacturing, combined with an efficient on-site construction management system, the problem was solved of completing the construction in a very short time, which played a key role in controlling the epidemic situation.

**Keywords:** Thunder God Mountain Hospital; rapid design; standard production; prefabricated construction; construction management.

## 1 Construction Concept of Emergency Hospitals

With the spread of COVID-19, a large number of emergency hospitals have been built, transformed or expanded all over the country. These hospitals can basically be divided into three categories: temporary emergency hospitals; makeshift hospitals; and the transformation of existing hospital wards.

## 2 Relevant Design Guidelines and Standards

The existing national standard system for infectious diseases hospitals in China, which includes

standards for the construction of medical facilities and technical standards for prefabricated buildings, is relatively complete. In the process, some new standards and guidelines on emergency hospitals and makeshift hospitals were formulated on the basis of the existing standard system. Prefabricated light steel structures are suitable for temporary emergency hospitals, which make full use of the standardization, modularization and integration of prefabricated buildings, and this met the requirements for rapid construction in an emergency perfectly.