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Advances in Civil Engineering Materials

Selected Articles from the
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About this book

This book presents selected articles from the 4th International Conference on Architecture and Civil Engineering 2021, held in Malaysia. Written by leading researchers and industry professionals, the papers highlight recent advances and addresses current issues in the fields of civil engineering and architecture.

Keywords

- **Smart building materials**
 - **Urban planning**
 - **Structural engineering**
 - **Concrete structures**
 - **Structural analysis and design**
 - **Seismic engineering**
 - **Building technology**
 - **Green buildings**
 - **Structure durability**
 - **Efficient transportation**
 - **Traffic management**
 - **Building maintenance**
-

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Towards the Betterment of Workers' Quarters Within Construction Site in Light of Covid-19 Pandemic: Case Study of Workers' Quarters in Kuching City South, Sarawak

Joy Natalie Cotter, Mervyn Hsin Jyi Wong, Dona Rose Amer Koesmeri, and Ahmad bin Abdul Jalil

Abstract Covid-19 pandemic has been the cause of the most significant global revolution in recent times. The attack from an invisible enemy had caught the world unprepared since its first reported outbreak from Wuhan, China, in 2019. As a result, challenges arising from that of unimaginable proportions soon followed suit, and the world felt the impact of those challenges on so many levels. Most of the economy's industries had been greatly affected, with the construction industry being one of the hardest hit. Sarawak's construction industry is not spared either, as several construction site clusters resulting from workers' quarters popped up from the circle. The scenario creates awareness of the importance of improving the quality of workers' quarters. The Sarawak State Government, through its Ministry of Public Health, Housing and Local Government, had formulated a guideline for Local Authorities on the temporary permit application for workers' quarters' building within construction sites. The response of the permit is studied using a qualitative approach through a case study of workers' quarters within construction sites in the jurisdiction of Kuching City South as the primary research method. The study is mainly based on observation and literature review and discusses the permit implementation response among the construction industry players. The findings from this paper conclude that the implementation of the permit could be observed further to capture a greater level of compliance and accountability to improve the quality of workers' quarters for occupational safety and the general health of labourers.

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Keywords Covid-19 · Pandemic · Construction industry · Construction site · Workers quarters · Temporary permit

1 Introduction

Coronavirus disease, or Covid-19, as it was dubbed when it was initially discovered in 2019 from an outbreak in Wuhan, China, is an infectious disease caused by the SARS-Cov-2 virus, which spreads quickly among humans [1]. The virus is transferred through respiratory-related behaviours when one encounters an infecting person's body fluid from the nasal cavity. Those infected were either symptomatic or asymptomatic, and those who were symptomatic experienced a range of mild-to-severe respiratory illness symptoms that did not require further treatment to severe symptoms that did require additional treatment. Those who become seriously ill as a result of Covid-19 infection are more likely to be in their senior years and have underlying medical conditions such as hypertension, cardiovascular disease, diabetes, HIV, chronic respiratory disease, cancer, renal disorders, or immunodeficiencies, all of which are among the reported Covid-19 comorbidities [2].

Covid-19 initially arrived on Sarawak's shores on 13 March 2020, following the first recorded case of three people in Kuching who tested positive for the virus [3]. The Sarawak State Disaster Management Committee (SDDMC), led by Deputy Premier of Sarawak Datuk Amar Douglas Uggah Embas, was tasked with managing the pandemic in Sarawak by collaborating with various government agencies for daily reporting of cases and the latest news updates, as well as formulating standard operating procedures (SOPs) as needed. On 7 June 2020, two Indonesian construction workers at a construction site in Kuching tested positive for Covid-19 [4], indicating that the virus has made its way into the construction industry. Soon after, a slew of construction site clusters sprouted, owing to the virus's high transmission rate, particularly among those living in cramped and confined quarters and residents' poor cleanliness. The time for improving the condition of workers' quarters could not have arrived at a better time. As a result, the Sarawak State Government's Ministry of Public Health, Housing, and Local Government issued a guideline for Local Authorities on temporary permit applications for workers' quarters' construction sites [5].

Kuching City South area is under the Council of the City of Kuching South (MBKS) jurisdiction and covers an area of 61.53 km² [6]. The area of Kuching City South is relatively developed, and there are many ongoing construction projects in the area. Workers' quarters within construction sites in Kuching, in general, are, for most of the time, unregularized as they are deemed just a temporary structure to be demolished any time prior to completion of projects on-site. This paper studies the response of the temporary permit application on workers' quarters' buildings within construction sites. It brings to discussion the result of the temporary permit implementation in improving their quality and combating the spread of diseases such as Covid-19 as well as other future outbreaks of diseases, supplemented by a

review of the Covid-19 disease outbreak among construction workers, the current condition of workers quarters and the newly formulated guidelines for temporary permit application on workers quarters building within construction sites.

2 Literature Review

The Covid-19 pandemic had caught many industries off-guard due to its high transmission rate among people and the instant adverse effects on employees and stakeholders. 7 June 2020 marked the start of a construction site cluster in Sarawak when two Indonesian construction workers at a construction site in Kuching had tested positive for Covid-19. Subsequently, numerous other construction site clusters were reported, such as Kem Tangap sub-cluster from a construction site workers' quarters in Subis, which is also a sub-cluster of the Pasai Siong cluster that yielded 60 positive Covid-19 cases on 14 February 2021 [7] and the KM20 Jalan Betong cluster from a construction company workers' quarters in Betong that yielded 23 positive Covid-19 cases on 27 August 2021 [8]. The largest construction site workers' quarters cluster recorded by SDDMC to date is the Jalan P. Ramlee cluster from a construction company workers' quarters which yielded a total of 70 positive Covid-19 cases [9]. The current condition of workers' quarters pre-Covid-19 pandemic was already not in its best form. Mass overcrowding and poor hygiene and cleanliness are among the major reported conditions of the worker's quarters [5] due to multiple challenges faced by the contractors, such as constraints of space in construction sites, high construction costs, and a lengthy approval process from local authorities. [10, 11]. Thus, the pandemic only pushes the construction industry to strive towards providing better quality workers quarters for local and foreign construction workers alike.

Throughout the year 2020 to 2021, a series of movement control measures in the form of a Movement Control Order was set in place to curb the spread of Covid-19 nationwide. Similar measures were enforced in Sarawak by the Sarawak Government upon review and approval by the Sarawak State Disaster Management Committee. Among the requirements for on-site compliance by contractors at the time were, among them, daily health screening via body temperature check and symptoms screening, reduction of workers on-site by certain percentages, transportation of construction workers to site to be provided by employers, daily disinfection and sanitization of site, and others. Despite the requirements in place, a more long-term solution was needed to prevent outbreaks of diseases such as Covid-19 and others. The main goal is to improve the quality of workers' quarters on construction sites for labourers' health, safety, and well-being.

On the part of the Federal Government of Malaysia, the Ministry of Public Works (KKR) and the Construction Industry Development Board (CIDB) has looked into the feasibility of building a Centralized Labour Quarters (CLQs) to help overcome these problems [10, 11]. These agencies were also responsible for the formulation of relevant Standard Operating Procedures for the operation of construction sites throughout the Movement Control Order [12]. For this study, the scope covers the context of

Sarawak and the State's government effort to improve the quality of workers' quarters within construction sites. In Sarawak, the Ministry of Public Health, Housing, and Local Government is responsible for formulating guidelines for Local Authorities on the temporary permit application for workers' quarters' buildings within construction sites.

The guideline for Local Authorities on the temporary permit application for workers' quarters' building within construction sites was formulated for the compliance of workers' quarters' application on the requirements of the relevant regulations and legislation by all relevant stakeholders and for the improvement of application processing by Local Authorities [5].

3 Research Method

This paper attempts to study the response of the temporary permit application on workers' quarters' building within construction sites through a qualitative approach whereby the primary research method applied is through a case study of several workers' quarters within construction sites in the jurisdiction of Kuching City South. The study is primarily based on observation and literature review. It discusses the impact of the temporary permit in enhancing the quality of these quarters and combating the development of diseases such as Covid-19 and possible future outbreaks. The study is supplemented by a review of the Covid-19 disease outbreak among construction workers, the current condition of workers' quarters, and the newly formulated guidelines for temporary permit applications for workers' quarters' buildings within construction sites.

4 Case Study

This paper studies three workers' quarters' conditions in three construction sites within the jurisdiction of Kuching City South. For proper observation of the workers' quarters' condition in this study, the identity of the construction sites shall be anonymous in this study and solely labelled as Construction Site A, Construction Site B, and Construction Site C hereafter.

4.1 Construction Site A

Construction Site A has no evidence of overall compliance with the temporary permit applications guidelines on workers' quarters' building within construction sites. On-site, it is observed that there are no proper temporary workers' quarters as there are only makeshift ones made out of plywood partition boards being set up on the building

that is being constructed. It is observed that these makeshift workers' quarters are improper in safeguarding the health and safety aspect of the labourers on-site as the quarters are located within the building that is undergoing construction and that there is no proper allocation of quarter units per labourers. Thus, the labourers are free to arrange for the allocation among themselves, leading to potential overcrowding within the units (Figs. 1 and 2).

The usage of plywood partition boards also poses a fire risk within these makeshift quarters, especially in the small makeshift kitchens. There is no evidence of compliance with the Malaysian Fire and Rescue Department's (BOMBA) requirement listed in the checklist of the guidelines on temporary permit applications on workers' quarters' buildings within construction sites. It is also observed that there is a lack of hygiene upkeep in the area, which poses a risk of vector-borne diseases spreading among the labourers (Fig. 3).

Fig. 1 Construction site A makeshift workers' quarters set-up within a building undergoing construction



Fig. 2 Construction site A makeshift workers' quarters set-up made of plywood partition boards



Fig. 3 Construction site A makeshift workers' quarters kitchen where there is a pose of fire hazard



4.2 Construction Site B

At Construction Site B, the workers' quarters were observed to have a set-up slightly differently from those at Construction Site A. The workers' quarters on this construction site are built away from the building undergoing ongoing construction. Though it is sited on one corner of the site, there is no evidence of overall compliance with the guidelines on temporary permit applications for workers' quarters' buildings within construction sites. It is observed on-site that there are no proper temporary workers' quarters and all the quarters are makeshift ones made out of plywood partition boards.

Similar to the workers' quarters layout arrangement in Construction Site A, it is observed that there is also no proper allocation of quarters units per labourers, and this leads to potential mass overcrowding within the units. The workers' quarters are mostly improper in safeguarding the health and safety of the labourers on site (Fig. 4).

In addition to the workers' quarters, there is also a makeshift labourers canteen made out of plywood partition boards. However, there is no evidence of proper safeguarding of health and safety, especially in the canteen's cooking area, which poses a potential fire hazard. The lack of evidence of compliance with the Malaysian Fire and Rescue Department's (BOMBA) requirements listed in the checklist of the guidelines on the temporary permit application for building workers' quarters within construction sites makes it even more unsafe for temporary occupancy. In addition to the observation, there is a general lack of hygiene in the area, which increases the likelihood of vector-borne diseases spreading among the labourers (Fig. 5).

Fig. 4 Construction site B workers' quarters sited on one corner of the construction site



Fig. 5 Construction site B makeshift labourers canteen



4.3 Construction Site B

Construction Site C workers' quarters' set-up is similar to Construction Site B because it is also sited on one corner of the site and away from the building undergoing ongoing construction. It is observed on-site that the makeshift workers' quarters are also built from plywood partition boards with no indication of proper allocation of workers' quarters' units per labourers, leading to potential mass overcrowding within the units (Fig. 6).

It is also observed that they are utility cables hanging lowly across the workers' quarters, posing a fire safety risk. There is also a lack of evidence of compliance with the Malaysian Fire and Rescue Department's (BOMBA) requirements listed in the checklist of the guidelines on temporary permit applications for workers' quarters' buildings within construction sites. Thus, it makes it even more unsafe for temporary occupancy. Similar to the other construction sites, there is a general lack of hygiene

Fig. 6 Construction site C workers' quarters sited on the corner of the construction site



Fig. 7 Construction site C workers' quarters' utility cables hanging lowly across the quarters



in the area, which increases the likelihood of vector-borne diseases spreading among the labourers (Fig. 7).

5 Conclusion

The positive response to the implementation of the temporary permit application for workers' quarters' building within construction sites has yet to be seen as evident in the observation done through the three case studies. All the case studies have no evidence of overall compliance with the guidelines on the temporary permit application for building workers' quarters within construction sites. Thus, the quarters are deemed unsafe for occupancy due to the potential risk of fire, health, and safety hazard. The result of observation done in all three case studies is relatively consistent

regarding the condition of the workers' quarters. The main issue of the lack of proper allocation of quarters' units per labourers and lack of upkeep of hygiene potentially leads to the risk of spreading vector-borne diseases among labourers. The occupational safety of workers' quarters and the general health of labourers shall not be compromised as it is high time for their quality to be elevated in tandem with the resiliency of the construction industry after a pandemic. It is hoped that the temporary permit implemented as a basis for improving workers' quarters' quality on construction sites will be observed more closely to capture a higher level of compliance and accountability among stakeholders in the construction industry.

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