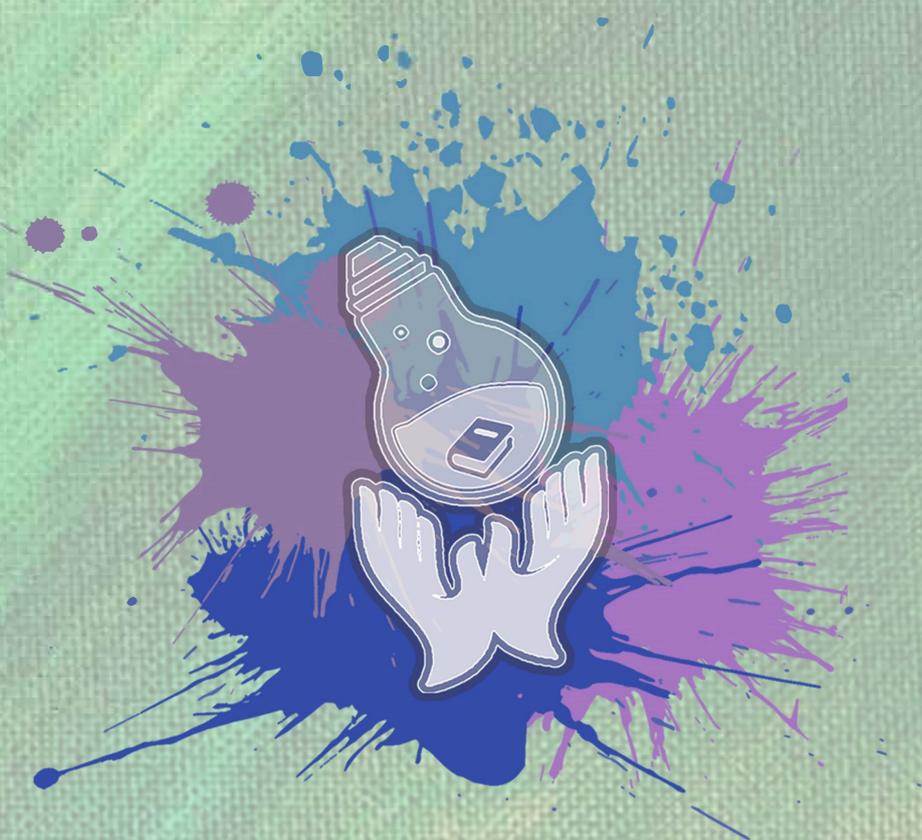




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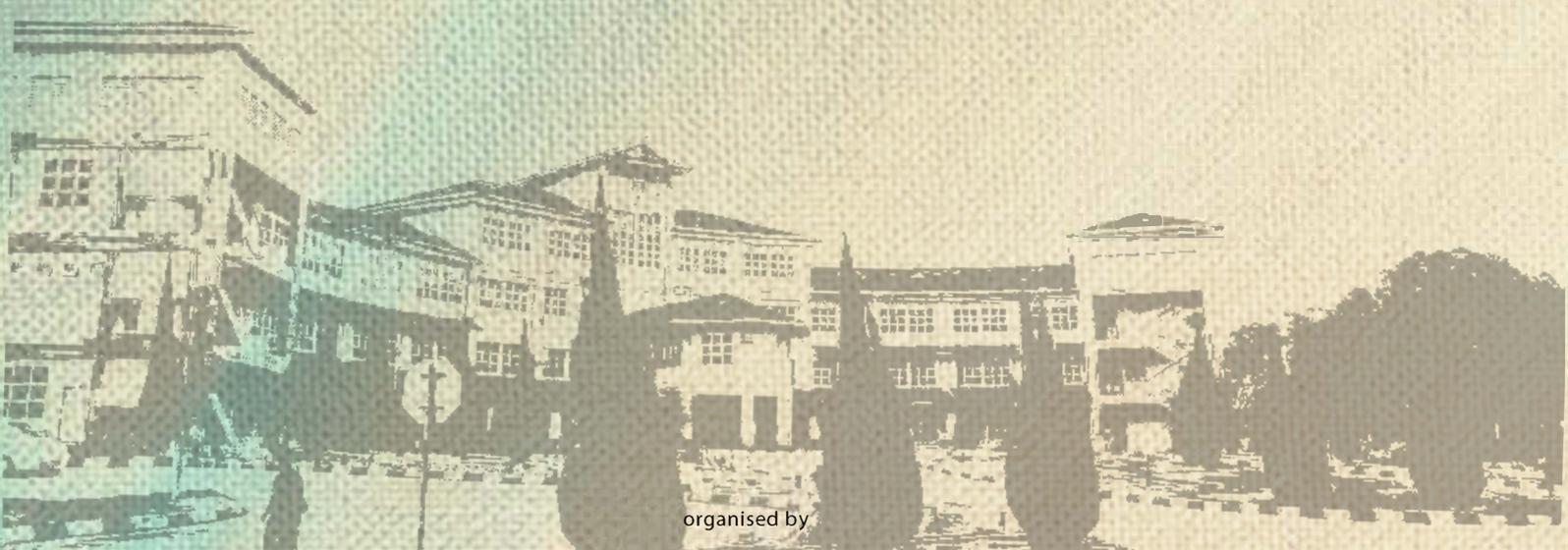
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# TOOLS FOR PRECAST WALL PANEL INSTALLATION

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## ***Abstract:***

Project in Malaysia already used IBS system and precast wall panel are most of it. Some size of precast wall panel might need a prop to install it. Prop that usually used in the industry might takes time on the process and kind difficult that can make delay of the work. Hence, to find a way to improve the process of installation of prop on the precast wall panel and slab a research are conducted. This study has were using desk study to collect the data.

## ***Keywords:***

IBS wall support; Props; Push and pull prop; Wall panel holder

## **1.0 INTRODUCTION**

Industrialized Building System (IBS) is known as a construction system that consists of a combination of components manufactured either on-site or off-site then positioned and assembled into structures. IBS allows fasters completion time or reduce build time as compared to conventional method. This is because, the speed of IBS construction process is governed by the speed of production and controlled environment of manufacturing facilities. Thus, the need on fast delivery can easily be met by increasing the production capacity. Some of IBS product need a prop for the installation process. Precast wall panel is the famous product in the market that usually need push and pull prop for the installation process. What is push and pull prop, how it operates, push and pull props are used for the vertical alignment of and transferring wind loads from wall and column formwork as well as prefabricated concrete elements. They have been designed regarding a longer service life, low maintenance costs and fast handling. The push-pull props also serve as kicker braces, the provision of additional kickers is not required. Other than that, push and pull prop are been used frequently in the IBS industry especially in the installation of wall panels.

## **2.0 LITERATURE REVIEW**

This innovation is based on concept time saving where as remaining conventional tools it takes time to install the instrument where it effects the time installation of precast wall panel on the site. According to the existing push and pull props, the installation may take time because it needs to make a hole on the precast wall panel and put the wall plug in the precast wall panel before can tighten the nut on the prop's connection. After the precast wall panel been locate at the marking point other holes need to be make on the floor and put the wall plug and tighten the nut to the prop's connection. The smart push and pull prop are innovated with a feature that can improve the time of installation connector props to precast wall panel and slab. With a feature on the connector the prop the no need to make a hole anymore on the precast wall panel and slab. This feature will reduce the time installation and improve the productivity.

## **3.0 METHODOLOGY**

The methods of data collection that is used to collect data are by observations, interview, and desk studies.

### ***3.1 Interview***

By interviewing the project manager and the supervisor from the construction site as the managing department, detailed information can be collected and personal view of the function and productivity about push and pull prop can be taken. Other than that, the time and the cost needed to complete the

task can also be detailed. To get more information, push and pull prop supplier in Malaysia can also be interviewed to get into the matter deeper. The limitation of the existing push and pull prop can be observed, and the ideas of the innovation can also be consulted to see either it is possible or not.

### 3.2 Desk studies

Desk study refers to available data such as journal articles, research documents, books, and online data regarding subjects. Through journal articles, the data and information regarding the different types of push and pull props can be obtained.

### 3.3 Observation

Based on observation on site that use IBS, there were minimum usage of push and pull prop in Malaysia. This is because generally the size of precast wall panel was small and can be install without the push and pull prop. However, a large project such as The Police Quarters project at Sentul. The new police quarters in Taman Keramat AU1 with 300 units that was completed on December 2018 required the prop because the project used large dimension of precast wall panel on the external and internal.

## 4.0 ANALYSIS AND FINDINGS

Push and pull prop was used as tools to support the precast wall panel installation for temporary before the wall panel were fix and can stand independently. The current push and pull props need about 2 – 5 minutes to installation because it needs to make holes to attach the connector props on the surface of wall panel and slab. Sometimes the time for installation was delayed due to human error such as mistakenly punctured wrong holes on the wall panel or the slab and new holes need to be done before the installation. To attach the connector prop to the wall panel and slab, bolt and nut were the item needed to fix the prop to wall panel and slab. With the supervision of the supervisor, human error can be lessened. With smart push and pull props new invention were produced. There no need to make holes to attach the props to wall panel and the slab. Only with click one button then the new innovation on the connector prop will pop out and attach the prop to the wall panel and slab. This will save more time and reduce human mistake because on smart push and pull have spirit level.

## 5.0 CONCLUSION

Smart push and pull prop for precast wall panel installation were created to improve the productivity in construction work and indeed giving a great impact to the development and progress of the national construction industry particularly the Industrialized Building System. The issue of human error and time delay can be prevented. This study aims to identify and analyses the factor of the push and pull prop installation on the precast wall panel.

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