

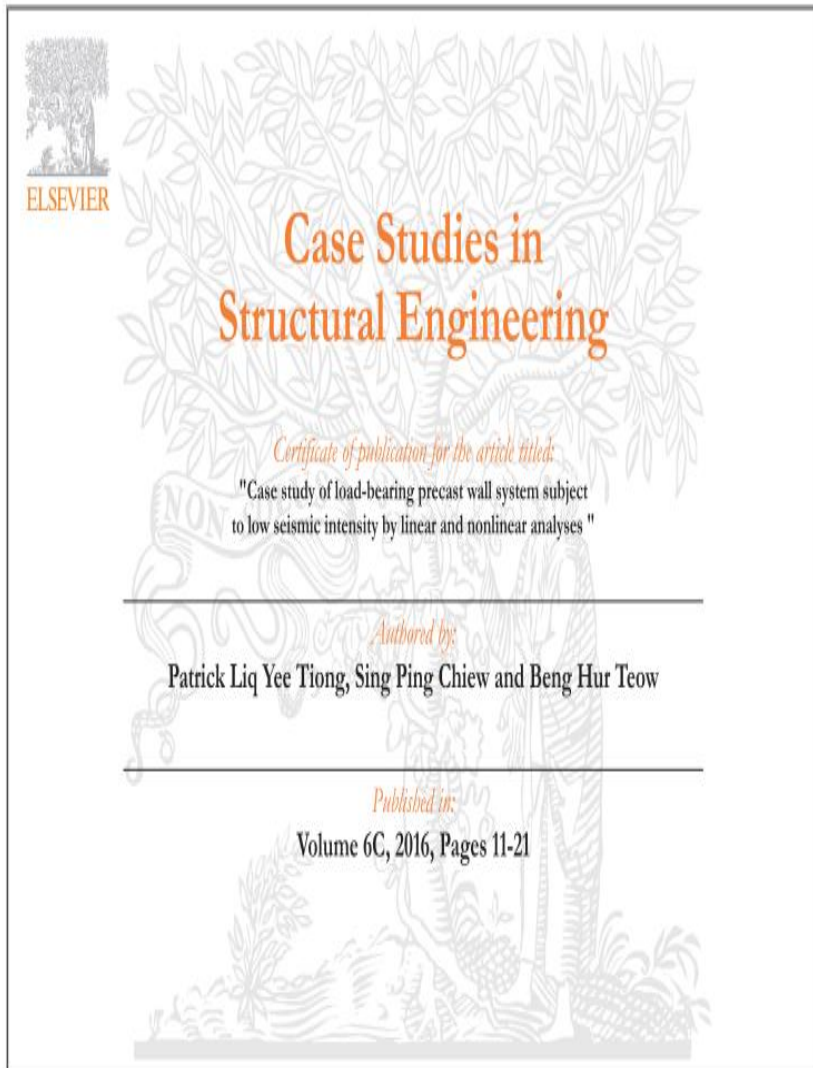
Certificate of publication for article title :

“ Case study of load-bearing precast wall system subject to low seismic intensity by linear and nonlinear analyses “

HC Precast System Sdn Bhd
IBS Superstructure In Malaysia 3 in 1

Load Bearing Wall + Modular Shear Keys + Box System
Wet Joint

HC PRECAST SYSTEM SDN BHD



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Case study of load-bearing precast wall system subject to low seismic intensity by linear and nonlinear analyses

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ABSTRACT

This paper investigates the behaviour of load-bearing precast wall system (namely the HC Precast System – HCPS) subject to seismicity in Malaysia. Recent tremors felt across the country heeded the call for the need of seismic design guidelines to be implemented. For this study, the design ground acceleration for Malaysia has not been finalized. Throughout the years, several schools of thought that occurred among different researchers pertaining to the value of design ground acceleration, ranging from 0.05 g to 0.1 g. The implications of the selected values can be great especially in designing new buildings or retrofitting existing ones. Thus, linear analysis using Modal Response Spectrum Analysis (MRSA) and nonlinear pushover analysis of representative HCPS were performed for this study. The finite element (FE) model focused particularly on the nonlinear behaviour of the interface between a precast wall and cast in-situ column. Prior to the modal and pushover analyses, the FE model was validated against quasi-static cyclic test results of identical precast system obtained from literature. Differences between the MRSA and pushover approaches are presented and discussed. Performance levels of the structural system were subjected to three levels of design ground acceleration (0.05, 0.075 and 0.1 g) have been included.

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1. Introduction

The government of Malaysia has been strongly encouraging the use of Industrialized Building System (IBS) in the construction industry especially for large projects. The precast concrete method and structural steel are the two major components of IBS. However, the level of acceptance of local contractors in using precast concrete construction is very low [15]. This calls for local precast suppliers to take the initiative to develop their own product lines in order to respond to the call from the authorities. Among them are the HC Precast System (HCPS), which consists of structural wall panels prefabricated off-site. The wall panels are joined at site through wet concreting along the vertical joints (Fig. 1). Instead of using conventional timber formwork for site concreting, the modular mould [15] was invented by the system supplier to improve the reusability as well as to speed up the construction process.

Fig. 2 shows the force transfer mechanism along the vertical interface between the wall panel and the column. While vertical force (i.e. design load of the structure) is mainly resisted by the shear keys, resistance against lateral force depends

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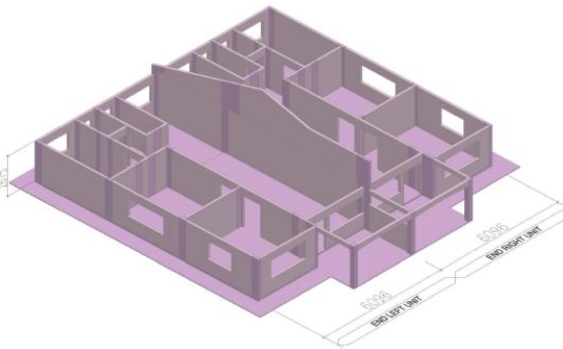
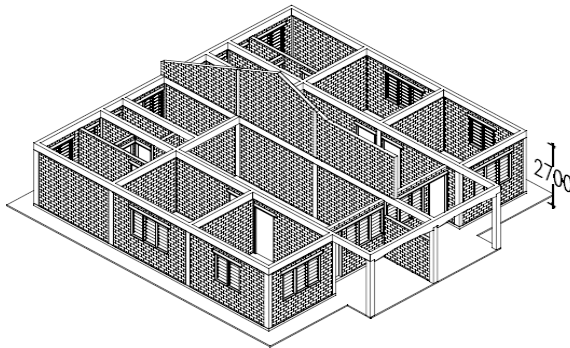
Industrial Building Systems is cheaper then Conventional.

15% to 30%

Open system or proprietary system is a technology.

- If we talk about lowering house prices, what is the best way to do it ?
- The best way is to build houses faster.
- One of the ways is by using Industrial Building Systems (IBS).

Conventional vs HC Precast System Sdn Bhd



Schedule of Rate - Single Storey Semi - D House

Fast & Easy Cost Comparison (xls format)

- 800 ft² : RM 23,688.00 (ex-factory)
- Precast Element : 88% (off site)
- Wet Work : 12% (on site)

Notes :

- Rate to be fill by you
- Rate that has been key in is automatically links to page 2 & page 3
- Rate by HC Precast System Sdn Bhd

IBS Superstructure In Malaysia 3 in 1

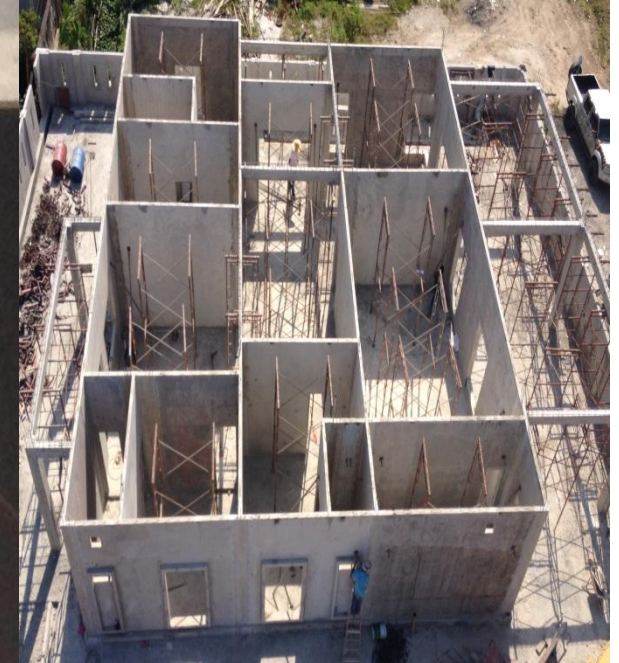
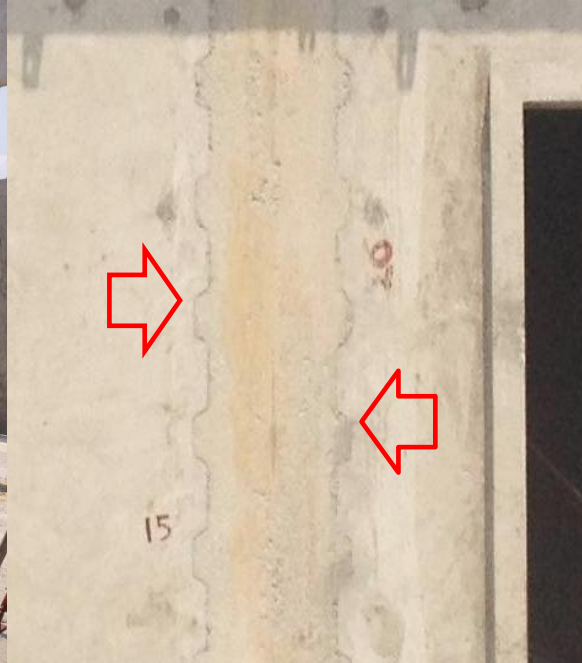
Load Bearing Wall



**Modular Shear Keys
Wet Joint**



Box System



Single Storey Bungalow RM 125,000.00

3,891.31 ft² / Wall High 4.0m / R.C Flat Roof

Completed In 10 Days With 6 Workers

Precast Element 86 % , Wet Work 14 %



