

# The method of ibs and conventional system construction essay



Labour productivity comparison between structural building systems showing that the number of trades for each building system was highly labour intensive because it consisted of four major operations, namely the erection of scaffolding and formwork, installation of reverse, casting of concrete and dismantling of scaffolding and formwork. On the other hand, the IBS required fewer construction operations. For instance, the cast in-situ tunnel form system did not require scaffolding to support the slab while the precast concrete system was pre-assembly in the factory, hence reducing on site labour input.

crew size comparison between structural building system;

Crew size comparison between structural building systems showing that the conventional building system was significantly different from the IBS.

However, no significant difference was found between building systems in IBS. Hence, they were grouped into homogeneous subset . on average, IBS required a crew size of 22 people while the conventional building system required a crew size of 14 people. These crew sizes were further broken down into carpenter, precast panel erector, steel form erector, bartender, concrete and crane operator. In term of percentage, the conventional building system require d 7% more than size of the IBS. this was because the conventional building system required more construction trades than the IBS.

cycle time comparison between structural building system;

Cycle time comparison between structural building system show that the mean cycle time for completion of structural element of one house, the total

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construction duration for a project can be predetermined. This can be to evaluate the project extension of time submitted by the contractor. In terms of percentage, the conventional building system required 26% more than cast in-situ table form system, 41% of cast in-situ half tunnel form system 53% of precast concrete

## **2. 4 Factor of choosing method of IBS and conventional system**

According to the Warszawski (1999), that is the factor of comparison between IBS and conventional system:

factor

IBS

Conventional system

Quality

Quality-controlled and high aesthetic and products through the process of controlled pre-fabrication and simplified installation.

Factory production of fabricated components minimizes errors and imperfections, resulting in better quality products, better workmanship and superior finishes.

An IBS components produces higher quality of components attainable through careful selection of materials, use of advantages technology and strict quality assurance control.

The initial capital investment for setting up a permanent factor is relatively experience. Plant, equipment, skilled worker, management resources need to be acquired before production can be commenced.

Less (cannot change the design flexibility as components ordered was fixed in sizes)

Materials may manage by semi-skill people.

Uncertain weather can result in less-than expected construction.

More (design can change flexibility, or can cast in-situ)

Speed of construction time

Faster completion of construction projects due to the usage of standardized prefabricated components and simplified installation processes.

An industrialized building system allow for faster construction time because casting of precast element at factory and foundation work at the site can occur simultaneously. This provides earlier occupation of the building, thus reducing interest payment or capital outlays.

Generally, all building system requires lesser time to fabricated the building components, which may include time taken to fabricated, erect and dismantle formwork and to cure the concrete.

Speed of construction is according to labour productivity and materials delivery to construction site.

Time consuming where the process can be delay by weather or scheduling conflict.

Construction of in-situ work requires the fixing and casting time, thus it is slow.

Cost of construction

The initial cost of constructing the factory, casting beds and support machinery is usually expensive and can only be removed when undertaking large project.

The repetitive use of the formwork made up steel, aluminium, etc and scaffolding provides considerable cost savings.

For large project, the initials capital investment in the building system can be amortized to a large extent, especially when the cost is given a wider spread. Prefabrication capitalizes on a faster turnover, giving savings on overheads and other operational costs.

Greater control over manufacturing results dramatically reduces the chance of cost overruns.

Need to employ professional person to in charge.

Construction cost increase due to uncontrollable variables such as weather and scheduling conflict.

If suitable materials are choosing, cost of construction will decrease.

## Storage and equipment space

For the purpose of erecting and assembling precast panels into their position, heavy crane is required especially for multi-storey building. It is therefore important to incorporate this additional cost when adopting a prefabrication system.

The prefabrication system relies heavily on sophisticated plants, which have to be well coordinated and maintained by skilled operators. Breakdown in any section would hold-up the entire production line.

A large work area for the factory, tower cranes, trailers and storage space for the precast components are normally required. Most construction sites are congested and are quite often unable to provide the large area required.

Need to provide a storage for machinery.

Bigger space is needed materials storage

Lesser large equipment at site like tower crane, mobile crane and etc.

Safety and cleaner

Construction is not affected by adverse weather condition because prefabricated component is done in a factory controlled environment.

Safer construction site due to reduction of site workers, materials and construction wastage.

Construction operation is safer without large equipment like tower crane and etc.

transportation

It is found that casting of large-panel system can reduce labour cost up to 30 percent. However, these cost savings are partially offset by the transportation costs. The transportation of large panels is also subject to the must taken into consideration when adopting a prefabrication system.

All materials are deliver under small sizes and package form, thus all materials are easily transport to construction site.

Labour

Low site worker required due to simplified construction methods.

Prefabrication takes place at a centralized factory, thus reducing labour requirement at site. This is true especially when high degree of mechanization involved.

Due to the higher degree of mechanization, professional person is needed. Skilled workers are replaced by plant machinery, tower crane and mobile loaders. Using more of the workers is semi-skilled and skilled worker.

High site workers required due to traditional construction methods.

Using more of the workers is semi-skilled and skilled worker.

(source: Peng, 1986; Abdullah, 2003; Warszawski, 1999; Zaini, 2000; CIDB, 2003, 2005; Ingemar Lofgren & Kent Gylltoft, 1996; Raymond, 2002)