

A Case Analysis of Hong Kong's High-Rise Building Construction Methods

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Abstract

Exotic "According to Anthony et al., structural systems and construction materials are just as scarce in Japan as they are in the United States (1992). In most cases, we can identify or refine the materials and methods used by our Japanese counterparts. Even in Hong Kong, incidents of a similar nature happened. The number is little "tools at one's disposal. As Ioannou and "colleagues (1993) point out, rising building costs are a major concern for the American economy. High construction prices have weakened the construction industry's competitive position, leading to lower capital expenditure and an increase in manufacturing. As a result, many initiatives

have been put on hold or abandoned due to a lack of funding.

In the design and construction integration process, it is an important factor (Vanegas 1987), and its wise deployment has a direct impact on the efficacy of the final product (Halpin 1989).

When it comes to saving money, "owners and contractors in Hong Kong are increasingly resorting to new technology. For instance, rather than building from the bottom up, employ a top-down strategy. The use of" high-strength concrete minimises the size of the column/wall.

Keyword: Cost Effective Design, Marketplace, Category Wise Deployment

INTRODUCTION: There are "around 6.9 million people in Hong Kong, according to the Hong Kong Government's statistics. As a result, the land resource is extremely valuable to the people of Hong Kong. A high-rise structure gives a place for people to live in a crowded area. The structure needs a solid foundation" to stand on.

Land is scarce "in Hong Kong, and several slopes were seen. Furthermore, typhoons are a constant threat in Hong Kong (June to September). Increased precipitation will have a negative impact on snow stability. As a result, a large number of slopes are likely to collapse following significant rains. There were a number of deaths at Kotewall Road on the 18th of June, 1971, as an example. A significant amount of money is spent by the government to renovate the slope in order to make it more stable and to keep" people safe.

Developers and "owners in Hong Kong have a limited supply of land, therefore they'll build the largest and tallest skyscrapers they can. Many technologies were employed in the construction of high-rise structures as a result (e.g. pre-stressing beam" and slab, high strength concrete).

When new "technologies are used by developers, the government rewards them with a financial incentive. A pre-cast facade would be one example. In order to lower the interest rate, developers will adopt a faster technique of acquiring land from the bank. Formwork erection time will be reduced by using table form" formwork.

LITERATURE REVIEW

This included "a large number of utility lines (such as water and gas lines), as well as communications lines. That's why Hong Kong didn't utilize a lot of open cuts Excavation and lateral support required the application of a variety of technologies (ELS). Using sheet piling, pipe pile wall, or grout curtain as an example, Slope stabilization is a typical practice in Hong Kong since many slopes are close to buildings and access roads. Retaining walls and soil nails (e.g. LPM works). The government invests a lot of money and resources into improving the safety of the slopes. Over timber framework, SIPs may be utilized to build an energy efficient curtain wall, according to Michael et al. (2006). SIPs, on the other" hand, may provide a robust, "energy-efficient building envelope when used in combination with a full wall, wall/roof, or wall/roof/floor system. It is possible to tailor SIP construction's insulation capabilities by changing the kind and thickness of foam. With SIPs, you may get better dimensional quality (Gagnon and" Adams, 1999).

In Hong Kong, "there was no evidence of a curtain wall system. Because of their low weight and ability to let in light, glass curtain walls/Aluminum curtain walls/Aluminum cladding have become popular. Reinforced Concrete" is the primary building material in Hong Kong Building, although no wood panel was utilised.

STATEMENT OF THE PROBLEM

Approximately the "course of the five years preceding up to 2001, the Hong Kong government spent over \$235 billion Hong Kong dollars on significant rail, road, land port, and environmental projects. Delays in the construction sector are a major concern, according to a study by the Construction Industry Review Committee (CIRC 2001). There are a few preventative methods that can help the civil construction sector in Hong Kong avoid some of the most prevalent delays. However, unless they are put into practise by civil construction professionals, it is impossible to know how effective they will be. Most of the delays were caused by bad weather, unexpected ground conditions, miscalculated" amounts, and delays in submitting design information.

The new technology "will be used by the contractor, AP, RSE, and developer to overcome the delay caused by the previous stage. The contractor, on the other side, may lack the necessary expertise in this field, resulting in delays and accidents. There is a lot of regulation in place because of this. To transmit the weight from a wall and a column into a column in Hong Kong, most residential buildings use a transfer plate/girder. Then the foundation will bear the weight

of the load. In order to create a shopping" mall or other commercial area, Transfer Plate is employed.

Objective of the Study

- To analyze the "method to improve worker safety and health via the development" of new technology.

Research Questions

- How the "worker safety and health via the development of new technology can" be achieved?

RESEARCH METHODOLOGY

When it comes to "slope safety, GEO has a vital role in ensuring that the design of earthworks is up to date with the most recent requirements. District Divisions of the GEO are responsible for geotechnical checking in Hong Kong: the Mainland West Division, the Mainland East" Division, and the Island Division.

The District "Divisions inspect the quality of private sector, public authority, and government department site preparation, slope" upgrading, earth retaining structures, and deep excavations. Every day, District Division workers "deal with a wide range of geotechnical issues related to projects that are often located in exceptionally challenging terrain. Slopes and reclaimed land necessitate large-scale earthworks and deep excavations, respectively. As a result, the team is continuously in communication with private sector engineers and architects, as well as professional personnel from various" government agencies.

It is through the Buildings "Department's legislative power that the GEO exerts geotechnical supervision over private sector projects, approving design submissions before construction begins. The geotechnical control of public works is carried out by the District Divisions in accordance with Government administrative directions, to the same standard as for private sector projects. The development of a basement is overseen by at least two governments. Spot checks will be carried out by competent employees to ensure that the drawings will be followed. Supervisory skills are also possessed by" members of the team.

The new "technology is utilised safely and appropriately because the government closely monitors its usage. Using innovative construction technology is safe for the public since the government supervises the design and" construction stages.

RESEARCH DESIGN

CBA buildings "often feature a basement and link to adjacent buildings and mass transportation systems (MTR). Top-down and bottom-up building methods will be used during the construction phase. Because it takes less time" to complete, the top-down building style is becoming increasingly common.

Because the slabs "provide as the horizontal support for the excavation, there is no need for strutting to be used. In other words, it's another benefit of the top-down design approach. As a building's height rises, the materials and construction methods must adapt to meet the new

demands. For example, a prestressed reinforced concrete beam will be used to reduce the depth of the beam and/or the slab in order to " save space.

Pre-tensioned "high-tensile tendons are used to support the concrete before it is cast. Wires are released to provide compressive stress when concrete reaches the desired strength level. It is possible to speed up the development of concrete's strength by proper curing. Steam curing is an example of this. High-rise construction can't go ahead in certain areas because of poor soil conditions. Engineers plan" to use deep foundations such as a large diameter bored pile (LDBP) or a driven H-pile to address this issue.

DATA ANALYSIS

Soil is a Nail's Natural Habitat.

With the goal of ensuring soil "Hong Kong's government invests a lot of money on making the city safer and enhancing the slopes. Therefore, you can find Soil Nail Works stores all throughout Hong Kong. To learn more about the subjects covered by this study, please see the "GEO" section "information.

Soil Head's "main duties" are "protecting the soil nail and providing a place for hydroseeding."

Removing Blockages

Next, the dirt "after you're done hammering, start raking the drain. If the rake drain is constructed beforehand, "To some extent, the drain might get clogged up by the cement grout. When raked, "drains are manipulated in a way" not unlike from how soil nails are used.

Because "Steel reinforcement is manufactured in a conventional length that is limited by shipping and weight issues. Since this is the case, splicing may "be broken down into three classes:

Splicing at the lap "requires a full link between the two lapping bars at the lap."

Two, in this "in this example, mechanical sleeves are threaded onto the ends of the bar before it is mechanically attached. Restricted access to the area or bulky reinforced structural components "call for the use of products of this kind.

Third, a fusion welder. I "Welding changes the bar's characteristics near the weld due to the high temperatures involved, so it is not recommended for high tensile reinforcement. Engineers are obligated to detail "particular reinforcement suitable for welding if the bars are to be joined together.

CONCLUSION

Since land is "property in Hong Kong is expensive, thus developers and owners have little choice but to construct skyscrapers as tall and as wide as they can. Due to the vast quantity of technological apparatus required by high-rise structures, " (e.g. pre-stressing beam and slab, high" strength concrete).

Programmers who employ "cutting-edge research is backed by the state. One example of this is a pre-cast facade. Rather than wait for the bank to sell them land, builders will use a more efficient method in hopes of negotiating a cheaper interest rate. Using a table to set up the formwork will speed up the process "generate moulds.

Eventually, a "plenty of underground conduits and cables. Construction in Hong Kong will seldom need an open cut. Modern tools greatly benefited in both the excavation process and the lateral support (ELS). Because there are so many slopes in close proximity to buildings and access roads in Hong Kong, stabilising techniques such sheet piling, pipe pile wall, and grout curtain will be used often. Soil nails and retaining walls (e.g. LPM works). Engineers "New technologies will be tried out in Hong Kong because of the existing situation there.

LIMITATIONS OF THE STUDY

It is possible to "have neighbours on both sides and across from you in a multistory structure. However, there are certain drawbacks to this. Even if you'd rather be left alone, you may still have to cope with noisy neighbours. Or perhaps you'd want to have some friends over, but you're worried that your neighbours will complain about the noise. You'll need to be extremely forgiving and adaptable if you want to keep excellent connections with your neighbours. Generators have become commonplace in multistory structures in recent years in order to alleviate the problem of frequent power outages. In certain cases, the generator and electricity fail simultaneously. The elevators may also fail. These situations necessitate a considerable effort on your part. Elderly persons could have a hard time with this. You may want to inquire about the builder's backup systems. Buildings with flush ceilings make it harder to install air conditioners and maintain air conditioners or repair leaky pipes, for example. Technicians and plumbers are forced to risk their own safety in order to fix small issues. Find out what safeguards have been put in place to make repairs safe and simple from the builder or other occupants. Multistory residences have a huge number of Internet and TV dishes installed on the rooftops, and they're arranged in a chaotic fashion. In the end, owners are left in the dark as to which dish is actually theirs. Disorganization of the rooftop wiring also diminishes usable patio area. It is possible to alleviate" this issue by appointing an apartment association manager to supervise all TV and Internet connections and maintenance on the roof.

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