Available online at www.jomaar.com

JOURNAL OF MANAGEMENT AND ARCHITECTURE RESEARCH
E ISSN: 2689 3541; P ISSN 2689 355X
Volume:06; Issue:01 (2024)

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

WANG ZHIHUA [1], DR. AIMAN AL-ODAINI [2a], DR HJ ARAZI BIN IDRUS [3b]
PhD Research Scholar in Engineering, Lincoln University College, Malaysia
[2, 3] Professor in Lincoln University College, Malaysia
Contact Details: [a] aiman@lincoln.edu.my, [b] profaraziidrus@lincoln.edu.my

Abstract

Exotic "According to Anthony et al. (1992), structural systems and construction materials are equally scarce in Japan and the United States. In most cases, we can identify and improve the materials and methods used by our Japanese counterparts. Similar incidents have occurred in Hong Kong as well. There are very few "tools at one's disposal."

As I oannou and colleagues (1993) point out, rising construction costs are a major concern for the American economy. High construction prices have weakened the industry's competitiveness, resulting in lower capital expenditure and increased manufacturing. As a result, many initiatives have been paused or abandoned due to a lack of funding.

During the design and construction integration process, is an important factor (Vanegas 1987), and its proper application has a direct impact on the efficacy of the finished product (Halpin 1989). When it comes to saving money, "owners and contractors in Hong Kong are increasingly turning to new technology." For example, instead of starting from the bottom up, use a top-down approach. The use of high-strength concrete reduces the size of the column/wall.

Keywords: Cost-Effective Design, Marketplace, Category-Appropriate Deployment.

INTRODUCTIONS

According to Hong Kong government statistics, the population is approximately 6.9 million. As a result, Hong Kong residents place a high value on land. A high-rise structure provides housing for people in densely populated areas. The structure requires a solid foundation to stand on. Land is scarce in Hong Kong, and several slopes were observed. Furthermore, typhoons pose a constant threat in Hong Kong (from June to September). Increased precipitation will have an adverse effect on snow stability. As a result, a large number of slopes are likely to collapse after heavy rains. For example, on June 18, 1971, there were several deaths on Kotewall Road. A significant sum of money The government spends money to renovate the slope in order to make it more stable and safe for people.

Hong Kong developers and "owners" have a limited supply of land, so they will build the largest and tallest skyscrapers they can. As a result, many technologies were used in the construction of high-rise structures (for example, pre-stressing beams and slabs, high strength concrete). When developers use new technologies, the government provides them with a financial incentive.

Available online at www.jomaar.com

JOURNAL OF MANAGEMENT AND ARCHITECTURE RESEARCH
E ISSN: 2689 3541; P ISSN 2689 355X
Volume:06; Issue:01 (2024)

Pre-cast facades are one example. In order to lower interest rates, developers will use a faster method of acquiring land from the bank. The use of table form" formwork will reduce the time required to erect the formwork.

LITERATURE REVIEW

This included "a large number of utility lines (such as water and gas lines) and communications lines." That's why Hong Kong didn't use many open cuts. Excavation and lateral support necessitated the use of multiple technologies. Slope stabilization is a common practice in Hong Kong because many slopes are close to buildings and access roads. Examples include sheet piling, pipe pile walls, and grout curtains. Retaining walls and soil nails (for example, LPM works). The government makes significant investments in improving slope safety. According to Michael et al. (2006), SIPs can be used over a timber framework to create an energy-efficient curtain wall. SIPs, on the other hand When combined with a full wall, wall/roof, or wall/roof/floor system, it can form a strong, "energy-efficient building envelope." The type and thickness of foam used in SIP construction can be changed to tailor its insulation capabilities. SIPs may provide better dimensional quality (Gagnon and Adams, 1999).

In Hong Kong, there was no sign of a curtain wall system. Glass curtain walls/Aluminum curtain walls/Aluminum cladding have grown in popularity due to their lightweight design and ability to let in light. The primary building material in Hong Kong buildings is "reinforced concrete," though no wood panels were used.

STATEMENT OF THE PROBLEM

During the five years leading up to 2001, the Hong Kong government spent more than $235 billion Hong Kong dollars on significant Rail, road, land port, and environmental projects. According to a study conducted by the Construction Industry Review Committee (CIRC 2001), construction delays are a major source of concern. There are a few preventative measures that can help Hong Kong's civil construction sector avoid some of the most common delays. However, unless they are implemented by civil construction professionals, it is impossible to predict their effectiveness. The majority of the delays were caused by inclement weather, unexpected ground conditions, miscalculated" amounts, and delays in submitting design information.

The contractor, AP, RSE, and developer will use the new technology to overcome the previous stage's delay. The contractor, on the other hand, may lack the required expertise. in this field, causing delays and accidents. As a result, there are numerous regulations in place. Most residential buildings in Hong Kong use a transfer plate/girder to transmit weight from a wall and a column to a column. Then the foundation will bear the load. Transfer Plate is used in the construction of a shopping mall or other commercial area.

Available online at www.jomaar.com

JOURNAL OF MANAGEMENT AND ARCHITECTURE RESEARCH
E ISSN: 2689 3541; P ISSN 2689 355X
Volume:06; Issue:01 (2024)

The study's objective

To analyze how new technology can improve worker safety and health.

Research Questions: •

How can worker safety and health be improved through the development of new technology?

RESEARCH METHODOLOGY

When it comes to "slope safety," GEO plays an important role in ensuring that earthworks are designed in accordance with the most current requirements. The GEO's District Divisions are in charge of 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 employees "deal with a wide range of geotechnical issues related to projects, which are frequently located in exceptionally challenging terrain." Slopes and reclaimed land require extensive earthworks and deep excavations, respectively. As a result, the team is continuously communicating with the private sector. engineers and architects, as well as professional personnel from a variety of government agencies.

The GEO exercises geotechnical supervision over private sector projects via the Buildings "Department's legislative authority, approving design submissions before construction begins. The District Divisions perform geotechnical control on public works in accordance with Government administrative directions and to the same standards as private sector projects. Basement construction is overseen by at least two governments. Competent employees will conduct spot checks to ensure that the drawings are followed precisely. "Team members possess supervisory skills as well."

The new technology is used safely and appropriately because the government closely monitors its use. It is safe to use innovative construction technologies. the public because the government oversees the design and construction stages.

RESEARCH DESIGN:

CBA buildings "often have a basement and connect to neighboring buildings and mass transportation systems (MTR). Throughout the construction phase, both top-down and bottom-up building methods will be used. Because it takes less time to complete, the top-down building style is becoming more popular.

Strutting is not required because the slabs "provide horizontal support for the excavation." In other words, it's another advantage of the top-down design methodology. As a building's height

Available online at www.jomaar.com

JOURNAL OF MANAGEMENT AND ARCHITECTURE RESEARCH
E ISSN: 2689 3541; P ISSN 2689 355X
Volume:06; Issue:01 (2024)

increases, its materials and construction methods must change to meet the new demands. For example, a prestressed reinforced concrete beam will be used to "save space" by reducing the depth of the beam and/or the slab.

Pre-tensioned "high tensile tendons are used to support Concrete before it is cast. When concrete reaches the desired strength, wires are released to provide compressive stress. Proper curing can speed up the development of concrete strength. Steam curing is one example of this. High-rise construction is not permitted in certain areas due to poor soil conditions. Engineers plan to address this issue with deep foundations such as a large diameter bored pile (LDBP) or a driven H-pile.

DATA ANALYSIS

Soil is a Nail's natural environment.

With the goal of ensuring soil, Hong Kong's government invests heavily in making the city safer and improving the slopes. Soil Nail Works stores can be found all over Hong Kong. To learn more about the topics covered in this study, please see the "GEO" section "information." Its "main duties" have to do with "protecting the soil nail and providing a place for hydroseeding."

Removing blockages

Next, the dirt "After you've finished hammering, begin raking the drain. If the rake drain is built beforehand, "To some extent, the drain may become clogged by the cement grout. When raked, "drains are manipulated in a way" similar to how soil nails are used. Because "steel" Reinforcement is manufactured in a standard length, which is limited by shipping and weight considerations. Since this is the case, splicing can be divided into three classes: Splicing at the lap requires a complete link between the two lapping bars. In this example, mechanical sleeves are threaded onto the ends of the bar prior to mechanical attachment. Restricted access to the area or bulky reinforced structural components "require the use of products of this type."

Third, a fusion welder. Welding alters the bar's properties near the weld due to the high temperatures involved, so it is not recommended for high tensile reinforcement." Engineers are required to describe "specific reinforcement suitable for welding if the bars are to be brought together.

CONCLUSION

Because land in Hong Kong is expensive, developers and owners have little choice but to build skyscrapers as tall and wide as possible. Due to the large amount of technological apparatus required by high-rise structures, "(e.g., pre-stressing beam and slab, high" strength concrete).

The state provides funding for programmers who conduct "cutting-edge research." Precast facades are one example of this. Instead of waiting for the bank to sell them land, builders will take a more

Available online at www.jomaar.com

JOURNAL OF MANAGEMENT AND ARCHITECTURE RESEARCH
E ISSN: 2689 3541; P ISSN 2689 355X
Volume:06; Issue:01 (2024)

efficient approach in the hopes of negotiating a lower interest rate. Using a table to set up the formwork will speed up the process of "generating moulds."
Eventually, there will be "plenty of underground conduits and cables." In Hong Kong, open cuts are rarely used in construction. . Modern tools greatly aided both the excavation process and lateral support (ELS). Because there are so many slopes in close proximity to buildings and access roads in Hong Kong, stabilization techniques such as sheet piling, pipe pile wall, and grout curtain will be used frequently. Soil nails and retaining walls (for example, LPM works). Engineers: "New technologies will be tested in Hong Kong due to the current situation.

LIMITATIONS OF THE STUDY

It is possible to have neighbors on both sides and across from you in a multistory building. However, there are some drawbacks to this. Even if you'd rather be alone, you may have to deal with noisy neighbors. Maybe you'd like to invite some friends over, but you're Concerned that your neighbours will complain about the noise. If you want to maintain positive relationships with your neighbours, you must be extremely forgiving and adaptable. Generators have become commonplace in multistory buildings in recent years to address the issue of frequent power outages. In some cases, both the generator and the power supply fail simultaneously. The elevators could also fail. These situations require a significant effort on your part. Elderly people may struggle with this. You might want to ask about the builder's backup systems. Buildings with flush ceilings make it more difficult to install, maintain, and repair leaky pipes, for example. Technicians and plumbers are forced to risk their own safety in order to repair small issues. Find out what safeguards the builder or other occupants have put in place to make repairs safe and simple. Multistory residences have a large number of Internet and TV dishes installed on their rooftops, which are arranged in a disorganized fashion. Finally, owners are unsure which dish is theirs. Disorganized rooftop wiring also reduces usable patio space. It is possible to "address" this issue by appointing an apartment association manager to oversee all TV and Internet connections, as well as roof maintenance.

REFERENCES

1. CHEW (2001), Construction Technology for Tall Buildings, Singapore University Press, Singapore
2. R.C. Smith and C.K. Andres (1986), Principles and Practices of Heavy Construction, Prentice-Hall
3. C.W. Griffin (1986), Manual of Low-Slope Roof Systems, 3rd Edition, Mc. Graw Hill, New York
4. W. McElroy (1993), Roof Builder’s Handbook, PTR Prentice Hall, New Jersey

Available online at www.jomaar.com

JOURNAL OF MANAGEMENT AND ARCHITECTURE RESEARCH
E ISSN: 2689 3541; P ISSN 2689 355X
Volume:06; Issue:01 (2024)

5. C.K. Andres (1998), Principles and Practices of Heavy Construction, 5th Edition, Prentice Hall, New York
6. D. T. Coates (1993), Roofs and Roofing Design and Specification Handbook, Whittles, UK
7. S. Hardy (1997), Time-Saver Details for Roof Design, McGraw-Hill, New York
8. H.W. Harrision (1998), Roofs and Roofing: Performance, Diagnosis, Maintenance, Repair and the Avoidance of Defects, Building Research Establishment, Watford, Hert
9. W. Schuller (1990), The Vertical Building Structure, Van Nostrand Reinhold Buildings Department Environmental Report, Hong Kong Government
10. Code of Practice for Site Supervision 2005, Hong Kong Government
11. Technical Memorandum for Supervision Plans 2005, Hong Kong Government
12. Demolition of Buildings 2004 , Hong Kong Government
13. Code of Practice for Foundations, Hong Kong Government
14. Guidelines on the Design and Construction of Bamboo Scaffolds, Hong Kong Government
15. Code of Practice for Precast Concrete Construction 2003, Hong Kong Government
16. Guide to Trench Excavations (Shoring Support and Drainage Measures), Hong Kong Government
17. Geoguide, Hong Kong Government
18. Highway Slope Manual, Hong Kong Government
19. Technical Guidelines on Landscape Treatment and Bio-engineering for Man-made Slopes and Retaining Walls, Hong Kong Government
20. Guidelines on Safe Access for slope maintenance, Hong Kong Government
21. General Specification for Civil Engineering Works, 1992 Edition (in set of 3 Vols), Hong Kong Government
22. Project Administration Handbook, Hong Kong Government
23. Stephen Liang, Study Material for Structural Design 2, The University of Southern Queensland