DEPARTMENT OF BUILDING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

A CASE STUDY OF PRECAST DRAWING AND CONSTRUCTION AT STARBUCKS, DISCOVERY PARK(GAMUDA COVE), TANJUNG 12, SELANGOR.

Prepared by:

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2019204798

DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

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FEBRUARY 2022

It is recommended that the report of this practical training provided.

By

SITI NUR FARZANA BINTI MOHAMAD FAZALI

2019204798

Entitled

PRECAST DRAWING AND CONTRUCTION

AT STARBUCKS, DISCOVERY PARK.

be accepted in partial fulfillment of requirement has for obtaining Diploma in Building,

		_____
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STUDENT'S DECLARATION

I hereby declare that this report is my own work, except for extract and summaries for which the original references stated herein, prepared during a practical training session that I underwent at GreenIBS Consult Sdn Bhd for duration of 20 weeks starting from 23 August 2021 and ended on 7 January 2022. It is submitted as one of the prerequisite requirements of BGN310 and accepted as a partial fulfillment of the requirements for obtaining the Diploma in Building.

…..……

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UiTM ID No : 2019204798

Date : 7 JANUARY 2022

ACKNOWLEDGEMENT

Alhamdullillah, praise to Allah, the Most Merciful, the Most Graceful.

First of all, I would like to say, thank you and grateful to Allah S.W.T as finally I am able to finish the practical training for fulfill my fifth semester for my diploma. I would like to extend my heartfelt gratitude for the guidance, advice and help rendered throughout the period of training by the following group of amazing individuals. First and foremost, I would like to thank En. Saiful Adli Bin Abdul Karim for the opportunity given, to conduct my training in his esteem company. His team of professionals comprising of En. Fadlullah Bin Mat Ali and Pn. Yusmaliza Bt .Mohd Yusof , have enabled me to learn and develop my understanding, knowledge and feel of real time projects, and the theory involved in analysis of structure design, building and civil works. They are also responsible towards streamlining and assessing my training. I am glad that I have opportunity to meet such a amazing professional in industrial of construction world. They keep give me to learn new things and I always got new knowledge of structural drawing such as how to design, how to design a good structure and so on from them during my period of practical training. Also they patiently teach me when ever I did not perform or lost of what I need to do for the work that given to me. It is an honour for me to be given the opportunity to 'work' with all of you.

I would also thank ALL the UiTM lecturers that have taught and nurtured me in becoming a better student and person. I would also like to extend my deepest appreciation to the lecturers who directly involved during my training stint. To Cik Nor Azizah Binti Talkis, Supervisor Lectures, Dr, Dzulkarnaen Bin Ismail, Evualation Lecturer and Programme Coordinator, and Dr. Nor Asma Hafizah Bt. Hadzaman, Practical Training Coordinator, I value the time, effort, encouragement and ideas that they have contributed towards the successful completion of my training, this report and the valuable knowledge that have been shared over the last few semesters.

Last but not least, my special thanks to my beloved parents for their sacrifices over the years, and also also be supportive to me during my practical training. I can not make it out with out my parents support and encourage with bless for me.

Thank you from bottom of my heart, Farzana.

ABSTRACT

The case study topic that I chose and fulfilled for my report was Precast Drawing and Construction at Starbucks, Discovery Park. This report included with the introduction, the company background of the company that I interned. My objectives have been achieved as I was to carry out my practical training, obtain experience in the operation that I was in as well as execute my case study report. The study method that I used throughout this project was by interview boss and engineers relating to data collection and document reviews that I have acquired from the staff and some engineers and also from my research. By the end of my practical training, I have reached a deeper apprehension towards the role of this profession. Furthermore, with this task and the duration of my internship, I am grateful cause have opportunity to intern at this company. They a very kind to me and other intern student, they always give advice and teach new thing about construction and structure design to us. Last but not least, I gain so much acknowledge from this company.

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CHAPTER 1.0

INTRODUCTION

1.1 Background of Study

- In the construction world, there are few types method that usually have been used in construction for built-up any structure buildings. There 3 method that famous among the construction which is cast in-situ, precast, and Industrialized Building System (IBS). Precast concrete is a construction product produced by casting concrete in a reusable mold or "form" which is then cured in a controlled environment, transported to the construction site and lifted into place ("tilt up") (Wikipedia). Precast is used within exterior and interior walls. By producing precast concrete in a controlled environment (typically referred to as a precast plant), the precast concrete is afforded the opportunity to properly cure and be closely monitored by plant employees. Using a precast concrete system offers many potential advantages over onsite casting. Precast concrete production can be performed on ground level, which helps with safety throughout a project. There is greater control over material quality and workmanship in a precast plant compared to a construction site. The forms used in a precast plant can be reused hundreds to thousands of times before they have to be replaced, often making it cheaper than on site casting when looking at the cost per unit of formwork.(https://en.wikipedia.org/wiki/Precast_concrete). There are many structure elements can be form from the precast method such as beam, wall, slab, and column. The mold for built precast elements can be made of timber, steel, plastic, rubber, and fibreglass. Precasting is good at producing large numbers of identical components From this precast method we can get many advantages which is it can be done inside a climate-controlled structure, eliminating problems of rain, dust, cold, or heat, specialised formwork (moulds) can be built for doing many repetitions of the same component, specialised equipment can be used to make, move, and pour the liquid concrete and curing takes place in a controlled environment (https://www.designingbuildings.co.uk/wiki/Precast_concrete). Since, the elements can be made beforehand it to construction started, the project can be done quickly. Not like cast-in situ, that need really care to design for accumulated the strength exactly.

Figure 1: Precast wall

.Source : EBS Precast.

Next are about cast in-situ. Cast-in-situ is the conventional method of concreting. In this Method concrete is prepared on the site and poured in formwork and then cured. It often requires more labours and even takes longer time. Cast in-situ method of concreting requires lots of time because concrete requires minimum 28 days to achieve 99% strength of its total strength. Thus after creating one element, only after 7 days a new element can be created which is dependent on previous one because concrete achieves 65% strength of its total strength in 7 days. (https://www.erpublication.org/published_paper/IJETR033358.pdf).

There are some issue that can be if always used cast in-situ method such as like the quality, because the concrete are prepared at the site and it is can be affected the concrete quality cause of weather.

Figure 2: Cast In-situ concrete slab.

Source : Civil Ways

The 3rd method is IBS, that method are similar to precast method but IBS are the new method in this 'era'. IBS are slowly get into the construction world. Many engineers, contractor, and architecture are tried to use the IBS method for their new project. The industrialised building system (IBS) can be defined in which all building such as wall, slab, beam, column and staircase are mass produced either in factory or at site factory under strict quality control and minimal wet site activities. In another definition by Esa and Nuruddin (1998) claimed that IBS is a continuum beginning from utilizing craftsman for every aspect of construction to a system that make use of manufacturing production in order to minimise resource wastage and enhance value for end users. (Junid, 1986) clarified that elaboration of IBS whereby the IBS in construction industry includes the industrialised process which the components are conceived, planned, fabricated, transported and erected on site. The system balance combination between the software and hardware components. The software elements include system design which study the requirements of end user, market analysis, development of standardise components, establishment of manufacturing and assembly layout and process, allocation of resources and materials and definition of a building designer framework. The software elements provide a prerequisite to create the conducive environment for industrialized building system (IBS) to expand(https://www.ukessays.com/essays/construction/the-definition-of-

industrialised-building-system-construction-essay.php). The Industrialised Building System (IBS) is a construction process that utilizes techniques, products, components or building systems which involved prefabricated components and on-site installation. From the structural classification, there are five IBS main groups that are used in Malaysia as a precast concrete framing, panel and box systems, steel formwork systems, steel framing systems, prefabricated timber framing system and block work system.

Figure 3:Examples of IBS construction.

Source : Property Hunter.

There are many types of construction method however, the aim of this are the precast concrete method at the Discovery Park,Gamuda Cove.

1.2 Objectives

In this report objectives are focused on how the process of structural drawing are making,

- To describe structural drawing of precast wall & precast slab for Starbuck, Discovery Park
- To describe structural drawing of piling and steel framing.
- To determine what is precast method.

1.3 Scope of Study

The scope of study is carried out at Gamuda Cove, Discovery Park, Tanjung 12, Selangor. Gamuda Cove is a new elite city and township that have many activities can do there. The project is to built one building for F&B service which is Starbuck. The area of this Starbuck is 155’10”. Starbuck are known as a famous coffee shop among the z-generation. Surrounding this building are have a park, others food stall, water park, and residence that visitors can enjoy and do any health activities while hangout with friends or family. In this report the structure drawing of Starbucks will be describe and what method are involved in this project for Starbuck building.

1.4 Methods of Study

i. Observation

The observation that I have and accumulated during do the pratical report are from the staff and engineers at this company. Since it was a past and completed project that obviously I not involve and take over, so I keep asking about the information from from them. I also briefing them what is exactly that I want to do for my practical training report. Hence, the most method that I have use are by interview and documents review for my data collection of report.

ii. Interview

I have managed a few interview for collected data for my report. It was go for both formal and informal ways , such as for the formal way I invited the boss and all the engineers and I asked them which projects that suitable and I should take for my report. They also advised and encourage me for doing the report. I also asked a permission from them for me to access all the documents that I want to looking for completing the report. I barely asked them how the project was going on, who involve in this projects, which companyof architect, QS, contractor are involved in this project, and who is the owner of this project. I also asked them to describe the project for me such as how much cost, how much building have and others. For informal way, I asked my supervisor any documents,drawing that related to my report and teach me how to re-design the project use any software of structure that involved before.

iii. Documents Review

This project was 3 years ago, so I gathered all the documents that involved for the project from the hardcopy and softcopy that company kept e.g. AutoCad drawing (structure and architecture), photos of project, site work photos. All the documents was in the server of the company, so I can access the documents anytime by after I get the permission from them.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction of Company

Figure 4: Logo of the company.

Greenibs Consult Sdn Bhd, or formerly known as NS Prefab Consultant, is a Civil and Structural consultancy company with 100% Bumiputera equity. Greenibs Consult are experts in construction using the Industrialized Building System (IBS), Volumetric Module (VM), and Building Information Modelling (BIM), which are in line with the government aspiration to improve the productivity and quality standard of the construction sectors.

Greenibs Consult Sdn Bhd have a vision and mission for the company to improve and reach the dream of achivement for the company. Vision of Greenibs Consult are to became an internationally recognized engineering organization with high capability, prudent locally & repute globally which offer total technical & engineering solution. For the mission, are to offer total engineering solutions which aligned with modern construction system such as Industrialized Building System & Building Information Modelling, and deliver with outstanding performance that meets client's expectation and values while enhancing employees' capability to satisfy public needs for safety & environmental-friendly.

Greenibs Consult also have few objectives which is will continuously be a reliable partner in offering general civil & structural consultancy services to contractors, Greenibs Consult will play an important role in promoting the Industrialized Building System (IBS) and Volumetric Module (VM) among the construction players in line with the government aspiration. Last but not least, Greenibs Consult Sdn. Bhd will guide and expose Bumiputera engineers, contractor and manufacturers to the Industrialized Building System (IBS) and Volumetric Module (VM) method of construction.

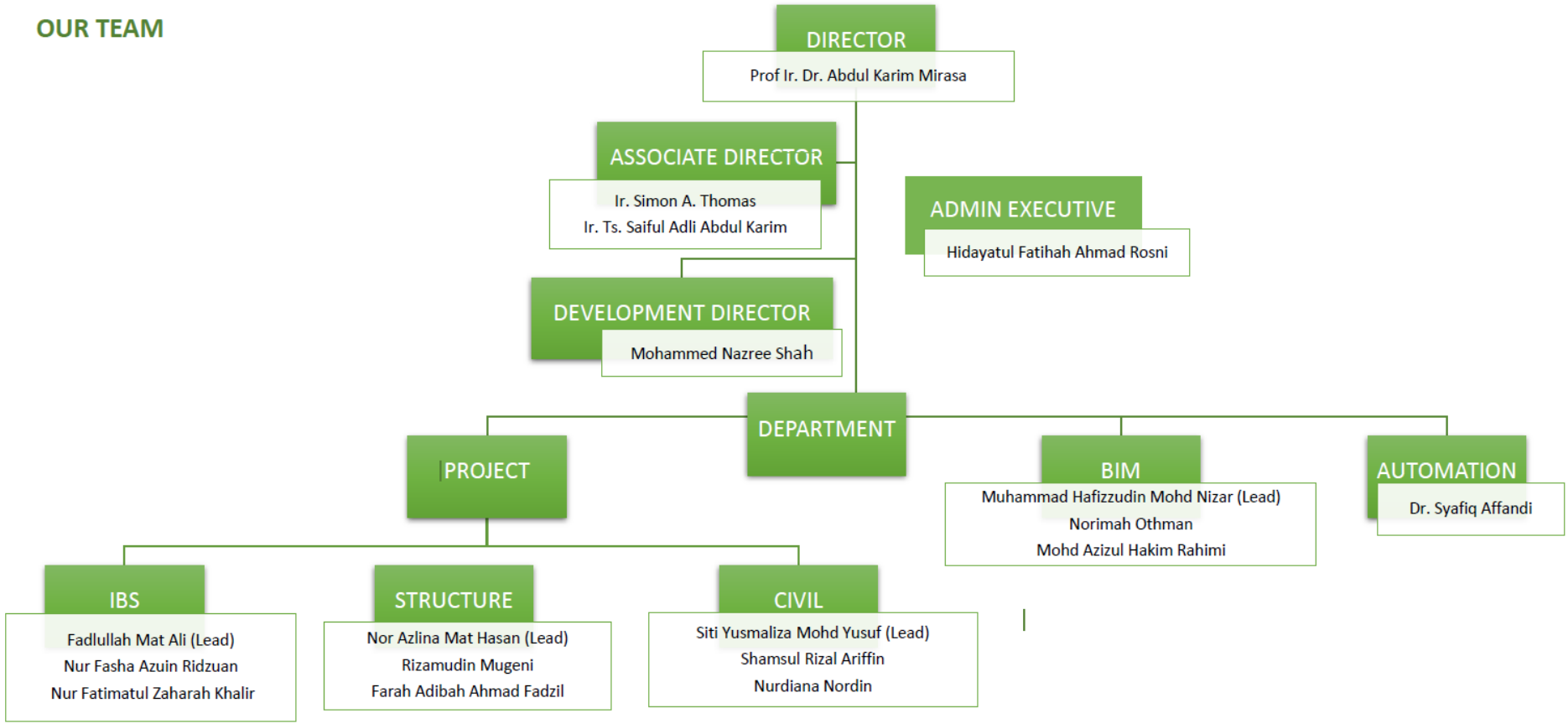
2.2 Company Profile

Greenibs Consult Sdn Bhd has a combined experience of more than 20 years in planning, designing, and supervising the conventional and IBS related construction methods. They have incredible teams who have garnered years of experience through their employment in SP Setia Berhad (Setia Precast and Taisei Prefab of Japan), Global Prefab System Sdn Bhd, KUB Precast Sdn Bhd, JEKS Engineering Sdn Bhd, and others. With these valuable experience the teams are highly capable of consulting various projects from high rise residential buildings to commercial building such as offices, shopping complexes, and industrial buildings, just to name a few. The teams are skillful and ready to share their expertise in the planning stage, design and design coordination, production of shop drawings, and project management. They also provide Professional Engineer's (PE) endorsement for both civil and structure design through their panel of experienced PEs.

Theyalso can dramatically improve the value of engineering for clients by using BIM. BIM is a project management tool that is useful in planning, designing, 3D modeling, coordinating, cash checking, quantifying elements, and project scheduling. BIM can improve productivity, especially with the usage of the 3D model, as it allows Engineers, Architects, and Mechanical Engineers to work in the same system without having any issues with discrepancies with software versions. Greenibs Consult Sdn Bhd has successfully built a building with Level of Details (LOD) 400 which is Dewan Serbaguna MRSM Dungun. Though our highest LOD that they have achieved is 400, they are capable of utilizing the BIM up until LOD 500, or known as facilitymanagement (FM). Theyare also interested in designing a smart building as it can elevate building performance in energy saving and security.

The utilization of IBS and VM significantly reduces the Construction time and on-site labor, and minimizes waste generation while ensuring high quality products. An example of a successful implementation of IBS panels and VM is the Starbucks coffeehouse is the first precast and volumetric module in the world.

2.3 Company Organisation Chart



Ir. Dr Abdul Karim bin Mirasa

Prof Ir. Dr. Abdul Karim bin Mirasa is the Principal of Greenibs Consult Sdn Bhd. He is also a Profesor in Civil Engineering and currently Head of the Civil Engineering Department at Faculty of Engineering, Universiti Malaysia Sabah.

Ir. Ts. Saiful Adli bin Abdul Karim

Ir Ts Saiful Adli bin Abdul Karim is the Associate Director of Greenibs Consult Sdn. Bhd. He holds an Honours Degree in Civil Engineering from UTM, Malaysia in 2007. He started his career as a site engineer with an established Class A contract or for a year after graduation. From thereon, he decided to specialise in precast concrete Industrialised Building System. His overall involvement in the precast field includes modeling and design, prefabrication, and site coordination.

Ir. Simon Thomas

Ir. Simon A. Thomas, is the Associate Director of Greenibs Consult Sdn. Bhd. He graduated with a Bachelor's Degree in Civil and Structural Engineering at University College United Kingdom (1976-1979).

He is a registered Member of Professional Engineer with the Board of Engineers M alaysia, a member of the Institute of Engineers Malaysia, and a member of the Institu te of Structural Engineers and Civil Engineer, United Kingdom.

Fadlullah Mat Ali

Fadlullah Mat Ali is the Structure Manager of Greenibs Consult Sdn. Bhd. He holds a n Honours Degree in Civil Engineering from UTM, Malaysia in 2004. His overall involvement in the precast field includes modeling and design, prefabrication, and site coordination.

Siti Yusmaliza Binti Mohd Yusof

Siti Yusmaliza Binti Mohd Yusof is the Senior Engineer of Greenibs Consult Sdn. Bhd. She graduated with a Bachelor's Engineering (Civil/Structure) from University Technology Malaysia, Skudai, Johor Darul Takzim in 2007.From her direct involvement in a lot of projects, she is highly capable of drafting, designing infrastructure, reviewing paperwork and design, and project management that includes attending meetings and liaison with various authorities and clients.

Shamsul Rizal Ariffin

Shamsul Rizal Ariffin is the Civil Manager of Greenibs Consult Sdn. Bhd. He graduated with a Bachelor's Engineering (Hons) in Civil Engineering, from UiTM, Malaysia. He is a registered Engineer with B.E.M and has more than 24 years of total working experience in C&S Consultation, Developer, Concessionaire, and Construction firm. He has worked as Technical Designer (Infra works), Senior Executive (Supervision), Project Manager, Senior Design Engineer (Hydrology), Manager (Quality), and Project Coordinator (Construction). In addition,he has work experience in the construction of highrise buildings (Shear Wall System) as well as highway (LATAR) and bridge (Second Penang Bridge). Other experiences include design and supervision of the infrastructure and structure works, local road works, and river constructions

2.4 List of Projects

2.4.1 Completed Projects

NO	PROJECT TITLE	PROJECT VALUE	START DATE	COMPLETION DATE	PROJECT DURATION	CLIENT
1	PEJABAT/KLINIK 3 TINGKAT, TAMAN TASIK PUDU ULU, CHERAS	RM 40 mil.	2015	2017	2 YEARS	Dewan Bandaraya Kuala Lumpur
2	KLINIK KESIHATAN (JENIS 5) DAN KUARTERS KESIHATAN, TEMBANGAU, PAHANG	RM 20 mil.	2015	2018	2 YEARS	Jabatan Kerja Raya
3	GAMUDA COVE, SALES GALLERY, TANJUNG 12, SELANGOR	RM 30 mil.	2016	2019	2 YERAS	Gamuda Land (T12) Sdn Bhd
4	200 UNIT RUMAH TERES, PROGRAM PERUMAHAN RAKYAT (PPR), PELANGAI, PAHANG	RM 40 mil.	2016	2019	3 YEARS	Kementerian Kesejahteraan Bandar Perumahan dan Kajian Tempatan
5	RUMAH SELANGORKU (RSKU), KOTA KEMUNING, SELANGOR	RM 80 mil.	2016	2020	4 YEARS	Hicom Gamuda Development Sdn Bhd
6	RUMAH SELANGORKU (RSKU), KUNDANG, SELANGOR	RM 30 mil.	2016	2020	3 YEARS	Harum Intisari Sdn Bhd
7	DISCOVERY PARK, TANJUNG 12, SELANGOR	RM 45 mil.	2017	2020	2 YEARS	Gamuda Land (T12) Sdn Bhd
8	RUMAH SELANGORKU (RSKU), BUKIT SERAI, SELANGOR	RM 80 mil.	2016	2020	3 YERAS	Bandar Serai Development Sdn Bhd

Table 1.1: List of Completed Projet.

2.4.2 Project in Progress

NO	PROJECT TITLE	PROJECT VALUE	START DATE	COMPLETION DATE	PROJECT DURATION	CLIENT
1	MUSLIM VILLAGE, SERENDAH, SELANGOR	RM 35 mil.	2020	2024	5 YEARS	Raudhah City
2	MASJID ALAM SARI, KAJANG, SELANGOR	RM 25 mil.	2020	2022	2 YEARS	Jabatan Agama Islam Selangor (JAIS)
3	RUMAH SELANGORKU (RSKU), SUBANG BESTARI, SELANGOR	RM 9.5 mil.	2020	2023	3 YEARS	Worldwide Holdings Berhad
4	SURAU TAMAN TASIK UTAMA, MELAKA	RM 8 mil.	2020	2022	2 YEARS	
5	209 UNITS DOUBLE STOREY DETACHED HOUSES, BEDAUN, KUCHING, SARAWAK	RM 25.7 mil.	2020	2023	3 YERAS	Housing Development Corporation (HDC)
6	60 UNIT RUMAH TERES, PEMBANGUNAN DARUL HANA, KUCHING, SARAWAK	RM 13.5 mil.	2019	2022	3 YEARS	Housing Development Corporation (HDC)
7	475 UNIT RUMAH TERES, ULU YAM, SELANGOR	RM 40.23 mil.	2019	2023	4 YEARS	Ringgit Muhibbah Sdn Bhd
8	PROGRAM PERUMAHAN RAKYAT (PPR), MASAI, JOHOR	RM 40.5 mil.	2018	2021	2 YEARS	Canggih Holdings Sdn Bhd
9	THE PEAK BANGLO, BANDAR ULU KELANG, DAERAH GOMBAK, SELANGOR	RM 2 mil.	2021	2023	1 ½ YEARS	Dato’ Sri Wong Tien Poh

CHAPTER 3.0

CASE STUDY (PRECAST DRAWING AND CONSTRUCTION AT STARBUCK, DISCOVERY PARK (GAMUDA COVE), TANJUNG 12, SELANGOR.

3.1 Introduction to Case Study

First and foremost, this main project are Discovery Park, Gamuda Coves, Tanjung 12, Dengkil, Selangor. The project that I took as a case study in this report is the F&B building that inside the Discovery Park which is Starbucks. This project started from 2017 untill 2020, the duration that took for this project are almost 2 years. 2 years are included the park, retail building, water park, go-kart, aerobar, and rock climbing. This project value are so high which is RM 45 million. The owner of this project is Gamuda Land (T12) SDN BHD.

Figure 5: Discovery Park, Gamuda Cove City.

Figure 6: Aerobar at Discovery Park.

Figure 7: Go-kart track.

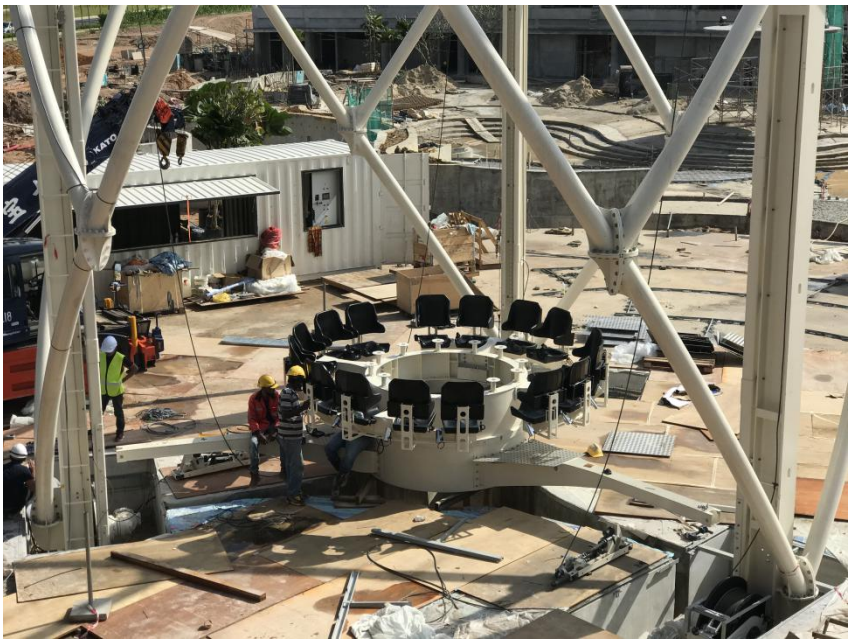


Figure 8: Construction of Aerobar.

Figure 9: Construction of retail building.

3.2 To describe drawing of structural drawing precast wall and precast slab for Starbuck, Discovery Park.

A structural drawing, a type of engineering drawing, is a plan or set of plans and details for how a building or other structure will be built. Structural drawings are generally prepared by registered professional engineers, and based on information provided by architectural drawings. The structural drawings are primarily concerned with the load-carrying members of a structure. They outline the size and types of materials to be used, as well as the general demands for connections. They do not address architectural details like surface finishes, partition walls, or mechanical systems. The structural drawings communicate the design of the building's structure to the building authority for review. Structural drawings are also included with a proposed building's contract documents, which guide contractors in detailing, fabricating, and installing parts of the structure.Structural drawing are be made for contractor refer when to construction want to be started. Structural drawing set are include a drawing of layout plan, beam details, column schedule, slab details, piling or foundation layout and details, and general notes.

There are the picture located of Starbucks.

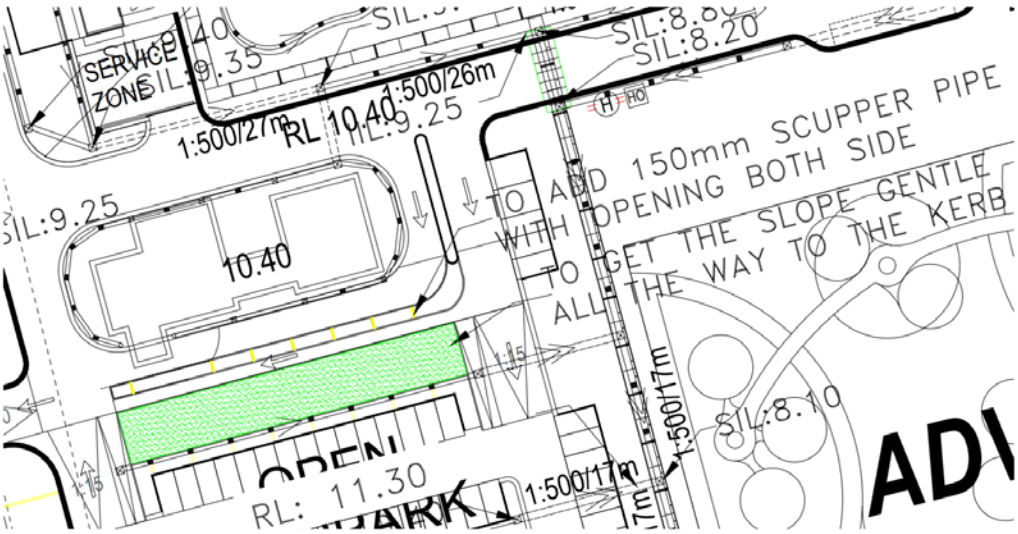


Figure 10: Starbucks Area.

In this picture, Starbucks are completed for the structures.

Figure 11: Starbucks buildings.

This is the layout plan for Starbucks, Discovery Park.

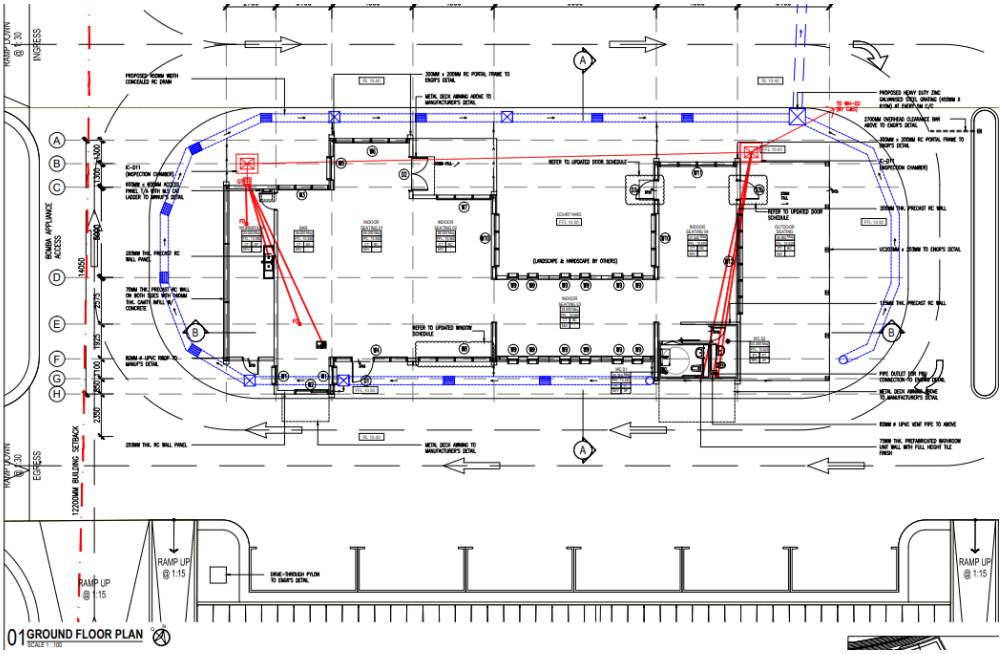


Figure 12: Layout plan.

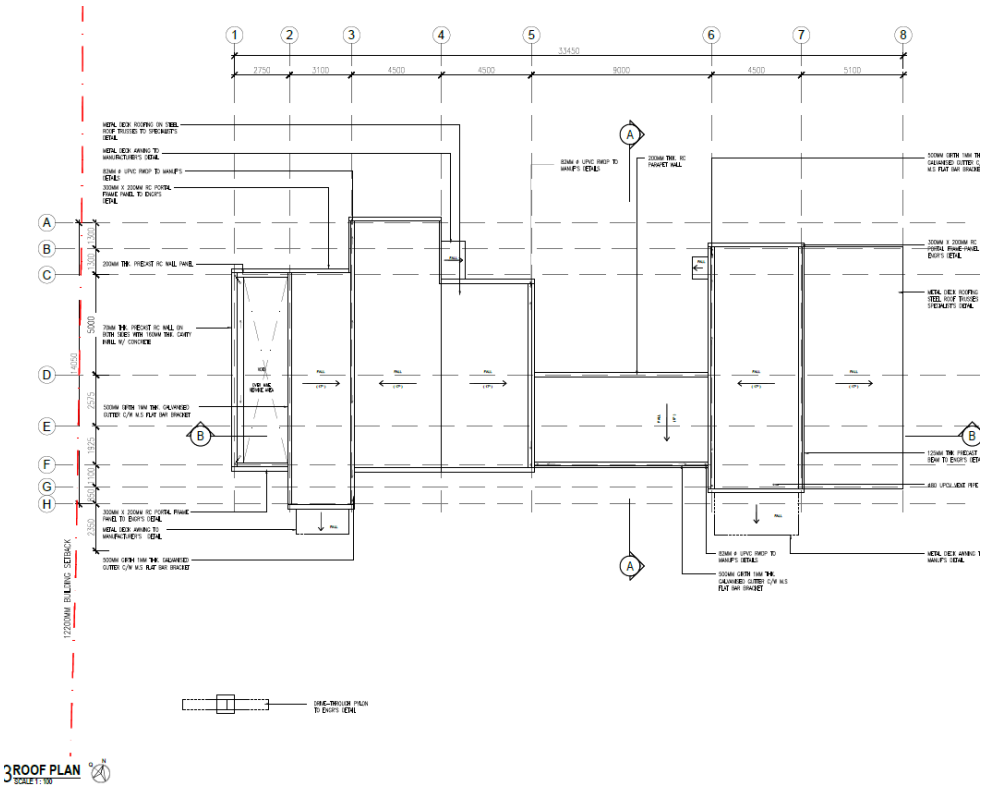


Figure 13: Roof Layout of Starbuks.

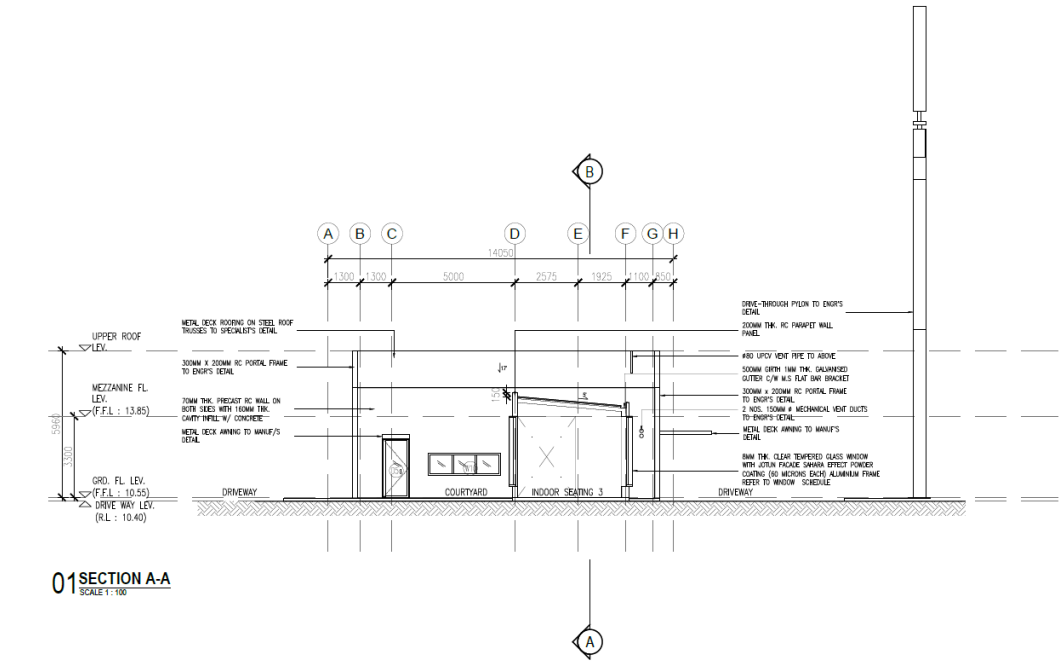


Figure 14: Section A-A

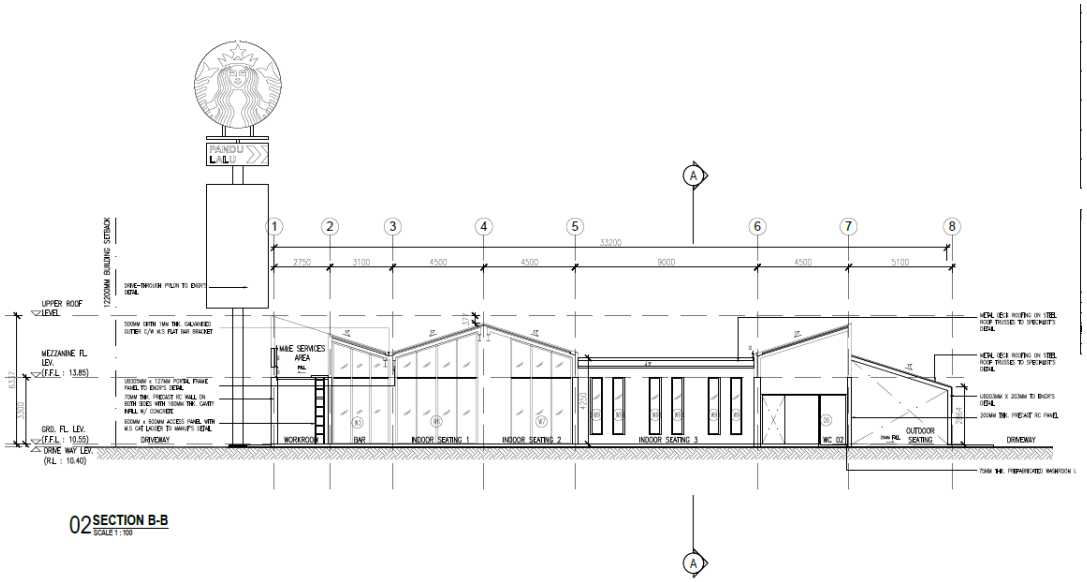


Figure 15; Section B-B.

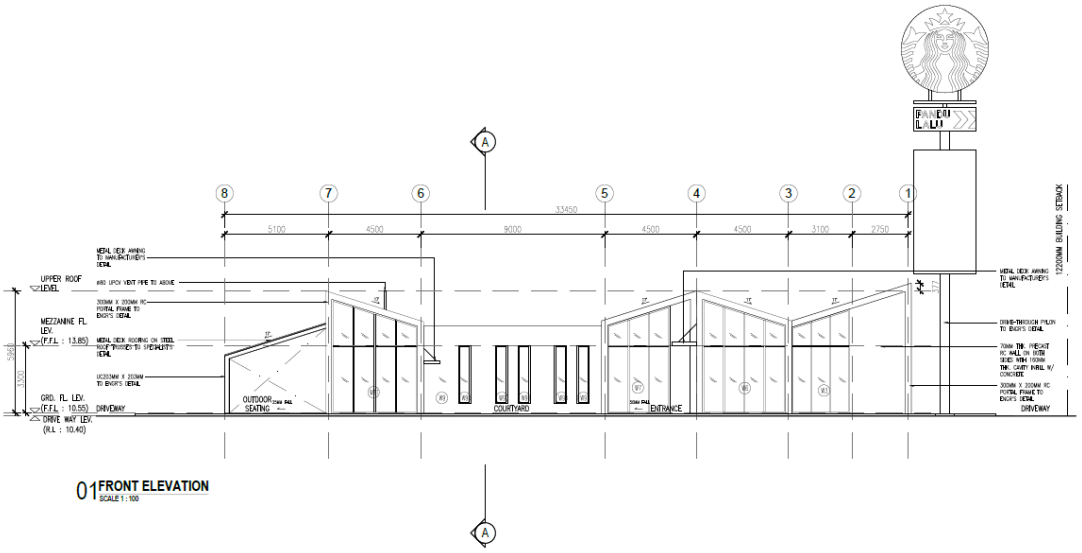


Figure 16: Front elevation.

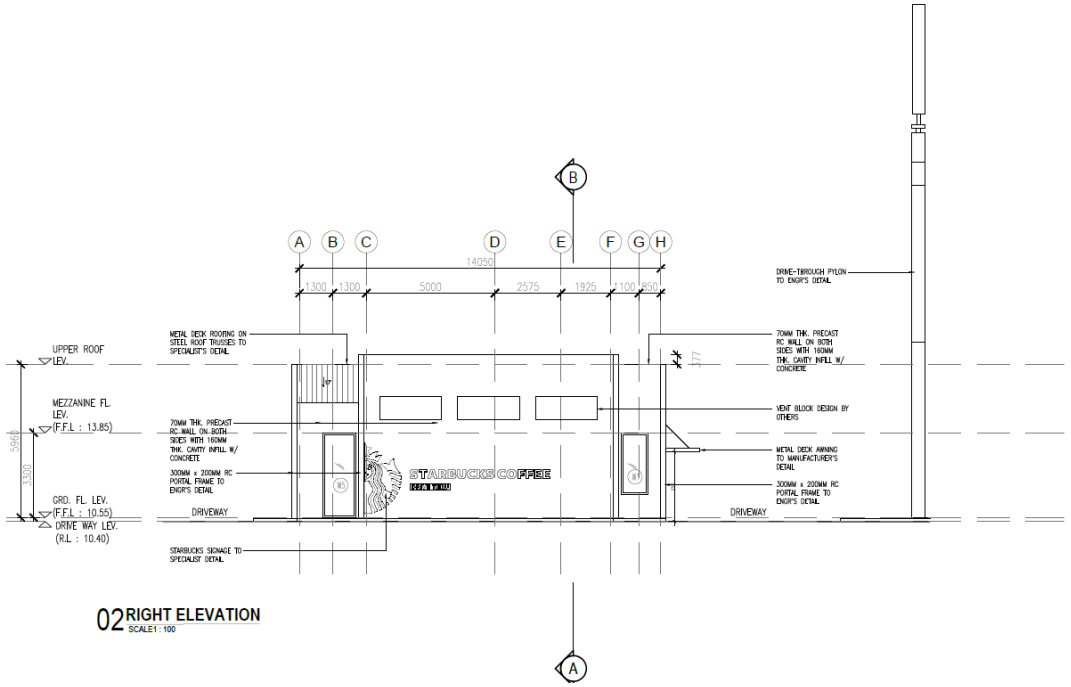


Figure 17: Right elevation.

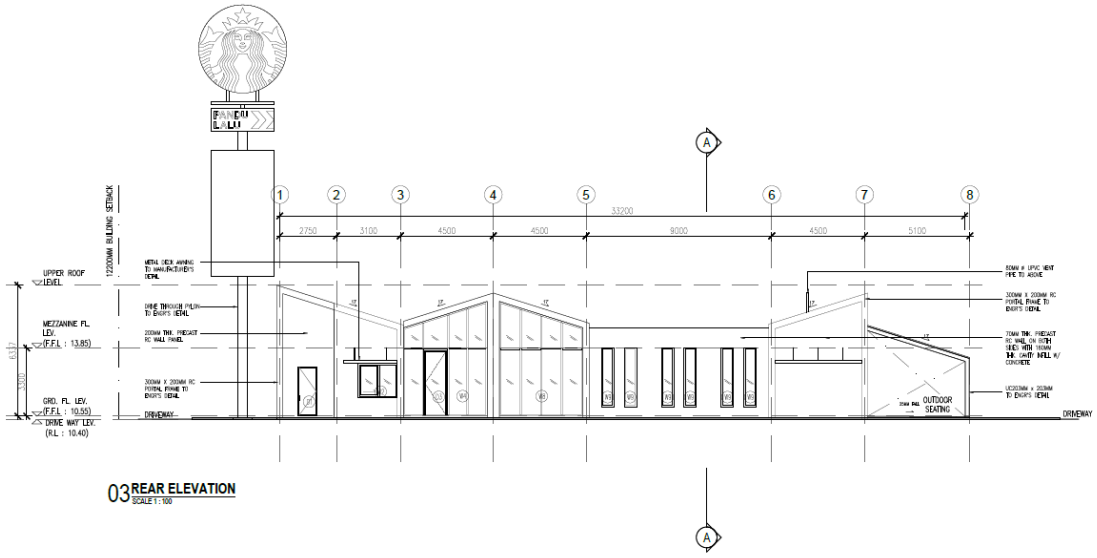


Figure 18: Rear elevation.

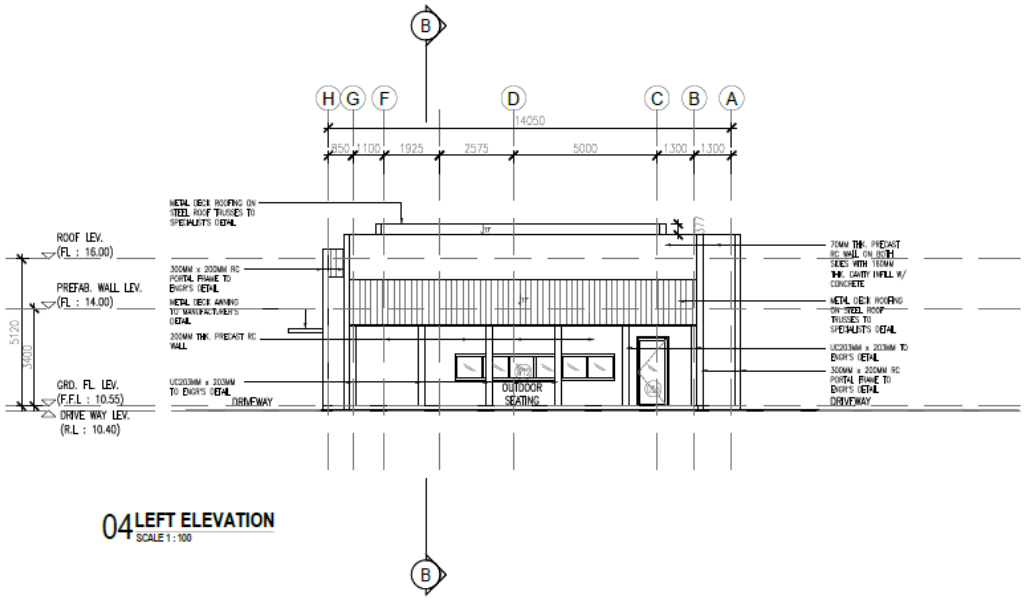


Figure 19: Left elevation.

Figure 20 : 3D drawing of Starbucks.

Figure 21: 3D drawing of Starbucks.

PRECAST WALLS

Materials

a. Concrete grade of precast wall shall be min.Grade C30.
b. Concrete grade of the junction between slab and walls shall be min.C30.
c. Non-shink high strength grout for grouted sleeve connection shall have a minimum strength of 50 N/mm2 at 28 days.

Design

All precast slab shall be designed as pin joint between slab to wall to form simple frame connection. All jointing between precast wall-precast wall shall be grouted sleeve connections, that is by the method of grouting the bars projecting from the lower wall or foundation into corrugated sleeves cast into the precast wall or using welding joint as per details.

Installation of precast walls.

Pitching of precast walls by hoisting at the lifting hook provided at the top of wall. Precast wall shall be guided provided at the top of wall. Precast wall shall be guided carefully by slotting the sleeves into the protuding bars from the foundation or the lower wall.

Wall shall be be held vertically during constructin by push-pull props rigidly secured to the precast wall and to a suffciently strong stable kentledge e.g. concrete blocks, beam and slab.

After the precast have be surveyed and aligned the connection shall be secured. Before the connection works completed and secured, the props shall not be disturbed or removed. For wall to wall connections, the wall to slab junction shall have to be fixed with barces until the elements stabilized by contarctor prior to concreting the insitu portion of slab to wall junction.

15. TYPICAL PRECAST WALL CONNECTION AT TRANSFER FLOOR LEVEL.

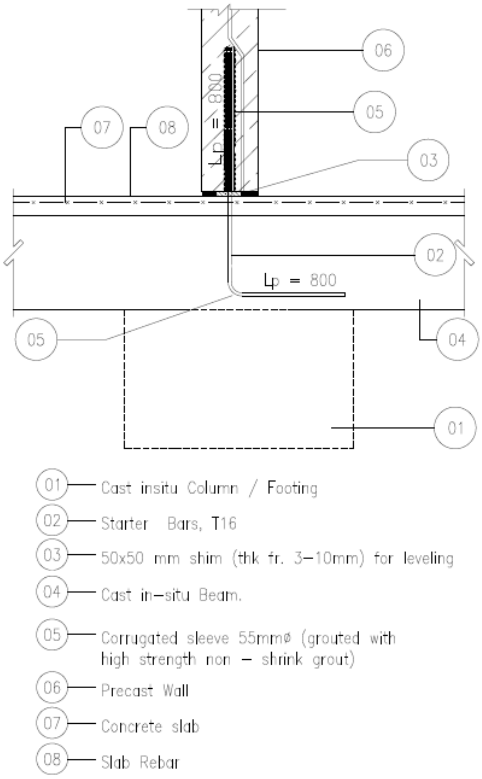


Figure 22: Typical precast wall connection at transfer floor level.

16. TYPICAL PRECAST WALL TO WALL HORIZONTAL CONNECTION

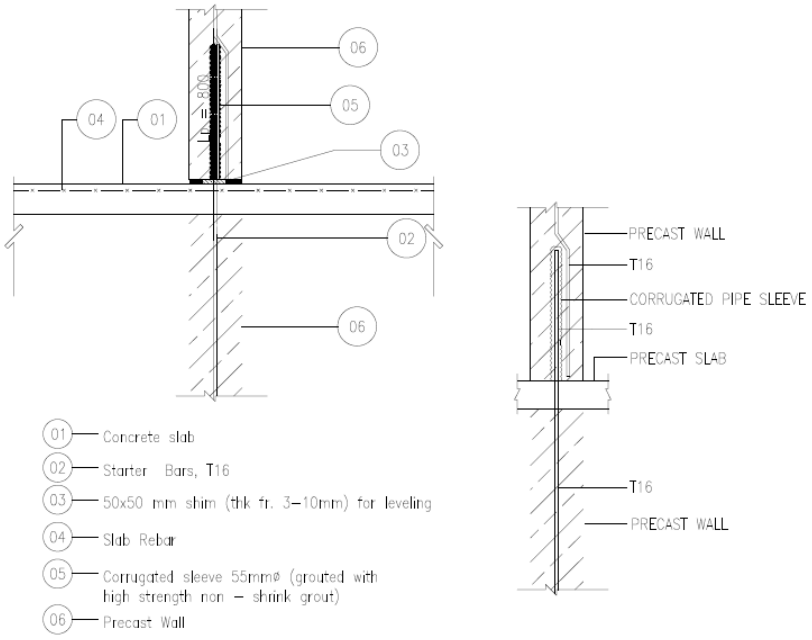


Figure 23: Typical precast wall to wall horizontal connection.

There are the typical wall details for the precast wall of Starbucks.

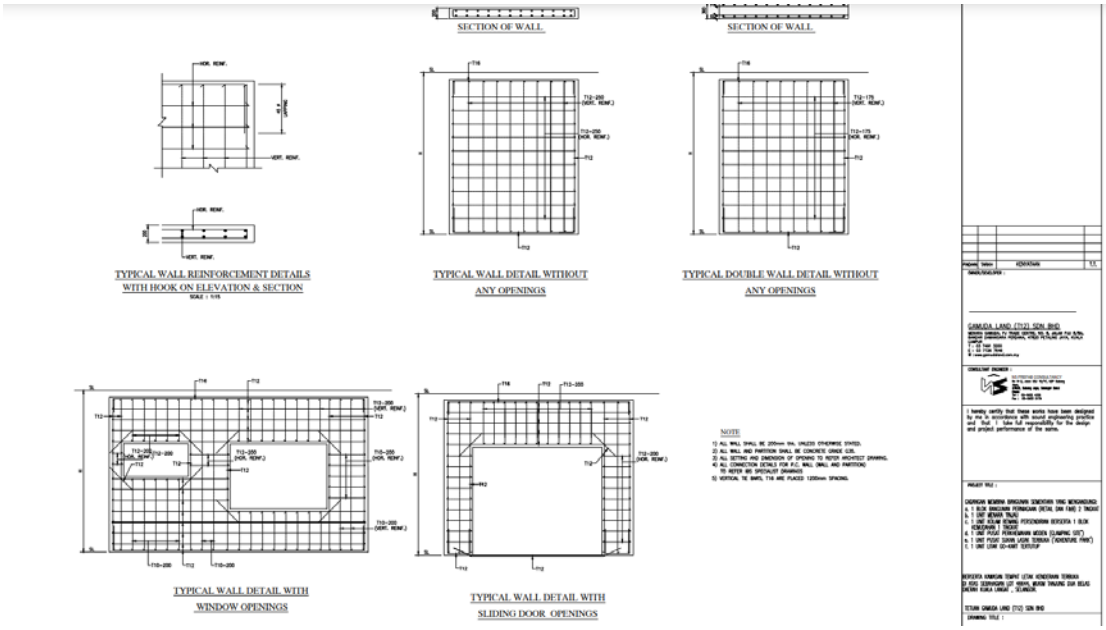


Figure 24: Typical Wall Detail.

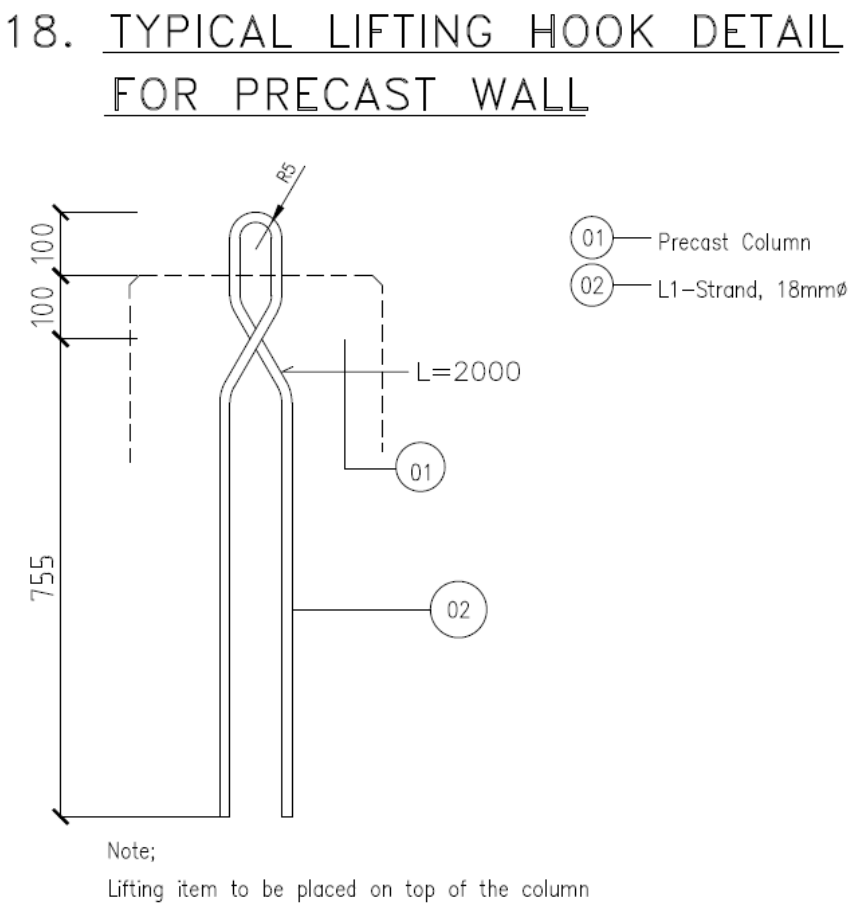


Figure 25: Typical lifting hook detail for precast wall.

There are the layout plan of wall.

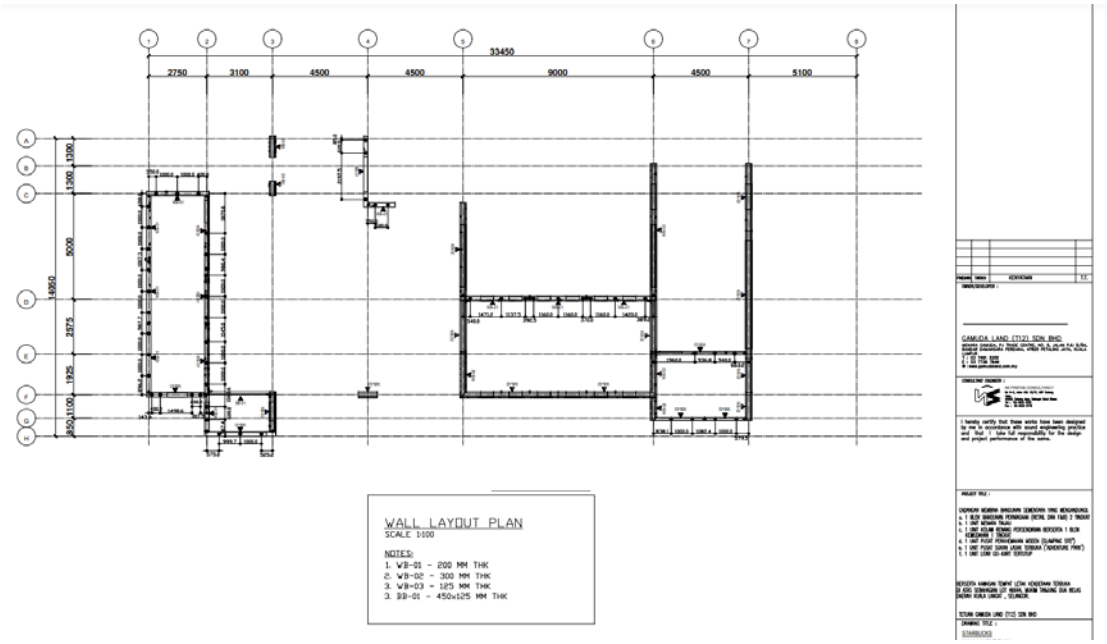


Figure 26: Wall layout.

PRECAST RC LATTICE SLAB

Structural concrete toping 75mm average shall be cast on top of precast slabs and supporting beam with one layer of BRC B8. The top of the topping shall be the final finish level. The topping shall be power-floated smooth to levels as indicated in drawing.

Materials

a. Concrete grade of precast r.c. lattice slab shall not be less than garde C35.
b. Concrete grade of concrete topping on precast slab shall not be less than C25.
c. Concrete grade of jointing concrete shall be grade C25.
d. Reinforcement for the precast slab shall be as per item 2 above.

Design

All precasr slab shall be designed in compliance to BS 8110 : 1997. The design of precast slabs shall allow for the provision of openings for electrical, mechanical and other services ducts and drain pipes. The precast slab shall be design for a fire-resistant of two hours. The final deflection of precast units shall not exceed those allowable specified in BS 8110 : 1985.

INSTALLATION OF PRECAST RC HALF SLAB

Precast lattice slab shall be hoisted with a lifting beam or wire ropes.

JOINTING

Precast lattice slab shall be jointed with appropriate grout and joints provided with reinforcement bars if shown in the drawing. The underside of joint groove shall be brushed clean within an hour after jointing operation to form a neat drip-free-V-groove.

OPENINGS

Openings exceeding 200mm in dia.(or square) in precast plank slabs for joint connection or M&E installation should be performed in green concrete at the factory provided that advance notice is given before production. Openings not made by the factory shall be mode by the contractor at site by hacking or by diamond-tipped coring drill under the engineer supervision. Works for large openings shall be undertaken by contarctor in strict compliance with manufacturer’s instruction and the construction details shall be approved by the Engineer. All related to the making good at the opening shall be carried out by the contractor.

FINISHES

Oil, dirt, loose mortar ard etc., shall be removed prior to application of topping and surfac e shall be wetted 1-2 hours before laying topping concrete. No ponding of water allowed. Laying of topping shall be done orderly in strip formation to achieve correcl level and ovoid cold join s. Poker vibrolor shall be used lo v ibrole lhe lopping. The vibro or shall be dragged along the surface of fresh concrete at intervals not exceeding 200mm. Retarding and super plasticizing admixture is to be added in to mix. Topping

concrete shall be cured for at least 3 days to avoid plastic cracking and to reduce shrinkage cracking.

11. TYPICAL SEATING FOR PRECAST LATTICE SLAB.

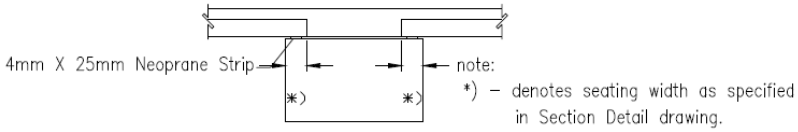


Figure 27: Typical seating for precast latiice slab.

12. TYPICAL JOINT DETAIL

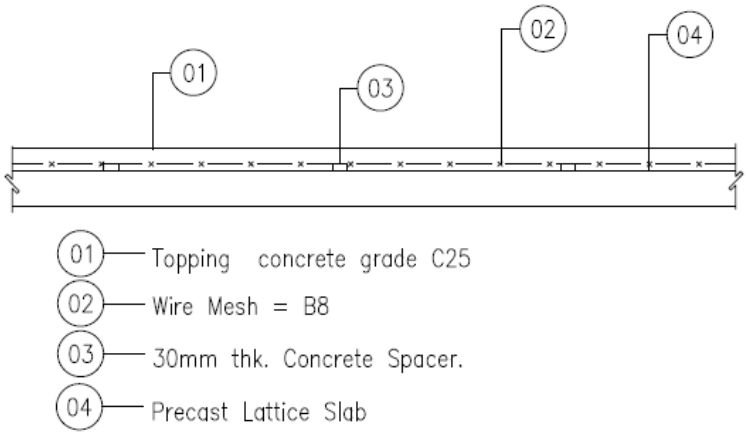


Figure 28 : Typical joint detail for lattice slab.

13. TYPICAL BRICKWALL STIFFENER ON PRECAST LATTICE SLAB.

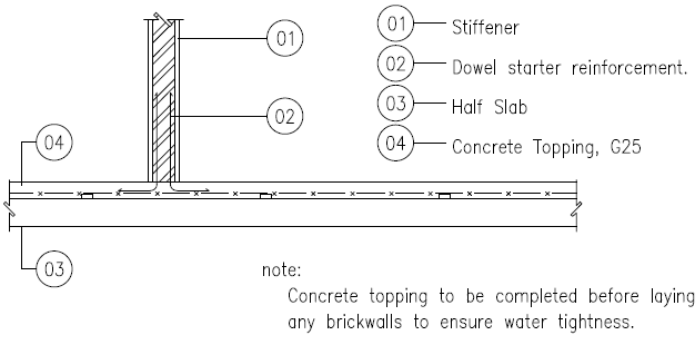


Figure 29: Typical brickwall stiffener on precast lattice slab.

3.3 To describe of structural drawing piling and steel framing for Starbuck, Discovery Park.

This is a piling layout for Starbucks.

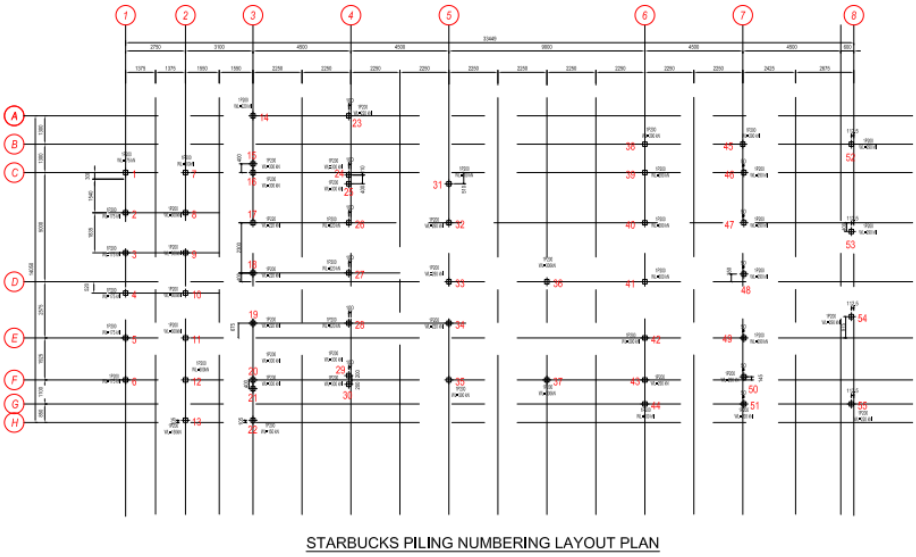


Figure 30: Starbucks piling layout.

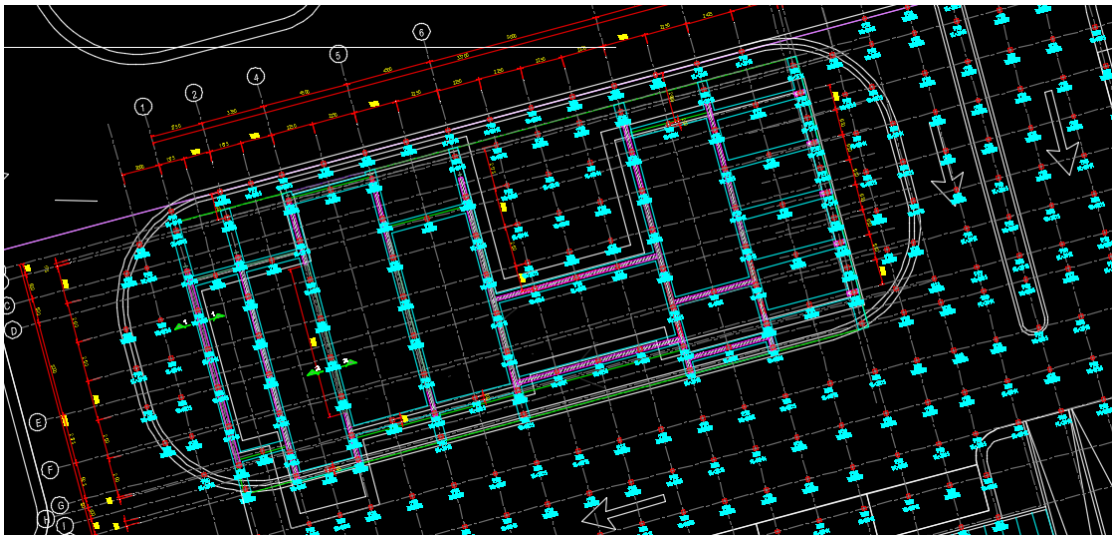


Figure 31: Piling site layout.

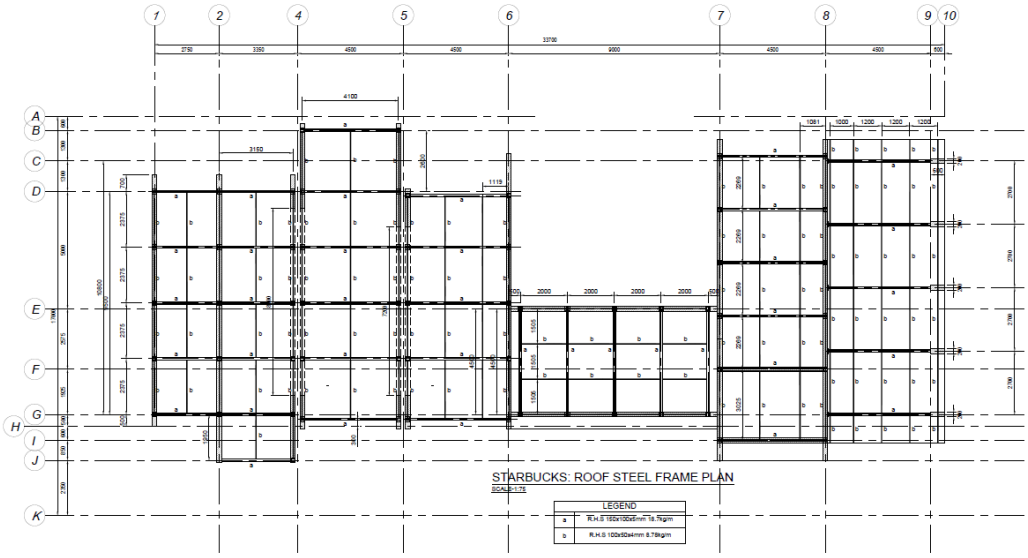


Figure : Starbucks steel framing layout.

CHAPTER 4.0

CONCLUSION

Conclusion that get from this report is, precast are good choices of construction method because it is does not take a long time for completed one project. Also precast method can give built a good structure that can hang for a long time. On this report, there are only have precast wall and slab for the structure construction method. Pictures tha shown on this report are drawing and design about the project.

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