UNIVERSITI TEKNOLOGI MARA

DEPARTMENT OF BUILDING

FACULTY ARCHITECTURAL, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

SEPTEMBER 2015

It is recommended that the report of this practical training provided

By

MOHAMAD ARIF BIN MOHD NASIR

2013821685

Titled

INSTALLATION OF DOUBLE ALUMINIUM LOUVERS WITH GLASS NACO LOUVERS

Accepted in partial fulfillment of requirement has for obtaining Diploma in Building.

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FACULTY ARCHITECTURAL PLANNING AND SURVEYING

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(PERAK)

SEPTEMBER 2015

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 went at Preserver Bina Sdn Bhd for duration 5 months starting from 25 May and 9 October 2015. It is submitted as one of the prerequisite requirements of DBN307 and accepted as a partial fulfilment of the requirement for the Diploma in Building.

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Date : 12 October 2015

ACKNOWLEDGEMENT

Alhamdulillah, first of all I would like thanks to Allah S.W.T because with the greatness I have been done completed Practical training for 5 months by side of Preserver Bina Sdn. Bhd. I would like to give some respect and dedication to all individuals in Preserver Bina Sdn. Bhd, for help I completing this practical training report especially for my practical training supervisor, Pn Zashila Bte Ishak, Kak Lini because had been taught everything about being a supervisor and how to being calm during critical situation . Although, I would like to give credit to Preserver Bina Sdn. Bhd. because had let me being there as practical trainee starting from 25 may 2015 to 9 oktober 2015. Last but not least, I would like to give this dedication toward for my parents, friends and his report supervisor Dr Wan Abdullah Bin Wan Alwi because every single support from them, helps me to build my strength and give some advice to complete this practical training report.

ABSTRACT

Following the procedure for installation of window is very important, hereby this report will discuss about installation of double aluminum louvers with glass naco louvers and also delivery schedule of window frame and window accessories from factory to site. This report was carried out to gain the knowledge how to install the window following the right step and also to gain knowledge how the journey of delivery schedule of window from factory to site storage. The objective of this report is to identify how to install the window that begin from establish datum floor until finish installed all window including window accessories and also to identify what should do when window frame arrive at site, what method to unload window frame. Method to gain information for this report is interview from site supervisor how conduct, by reconnaissance at site look how the workers carried out installation work. This report will also look at all the installation procedure should be followed so that requirement from client is achieve.

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CHAPTER 1.0

PREFACE

1.1 Introduction

Window is a one of building element that important on the building. The major functions of window for opening to allow ventilation occur in the space of the building and also for allow sunlight into the space for illumination. Nowadays, criteria for choosing window not only focus on mention above but selected based on strengthness of the frame, durability at any condition and aesthetic.

William (1995) mention that "window is an important part of exterior design of building. The architecture select types and size that suit the architectural style and proportions of the walls of the building. Window admit light and also provide ventilation".

Ricketts (200) said "The desire of human changing day by day due to aesthetic on window being important characteristic on selection of window and also building which being interest of people for example commercial building contribute to selection of aesthetic". There are many types of window apply on building such as side hung window, casement window, fixed glass, louvers window and more

1.2 Objective

This report has a several objective that will discuss which are:

I. To identify and study how delivery schedule window frame and accessories from the factory to the site

II. To study and identify and studying the method of procedure for installation of aluminium louvers with glass louvers window.

III. To identify the component of window

1.3 Scope of study

The scope study for this report was analysed the step of installation of double aluminium louvers with glass louvers for Malaysia academy of han studies project on lot 10147, mukim of Bukit Katil Melaka Tengah district. Hang Tuah Jaya This scope of study also to gain knowledge the how the journey of window from the factory to site and to know what we should do when the window frame and accessories, what method to unloading frame window from lorry to storage. And also to study the component that involve on window.

1.4 Methodology

There is a several method that uses in this report to gain information which is:

1. Reconnaissance

   Involve during installation work to get experience at site and also look at near sight how they carried out installation work from middle step until final step. Learn how to manage delivery schedule of window frame and window accessories.

2. Interview

   Get the information from people who are versed about installation of window, Mr Ah Lun as a foreman who have experience installation of window about

10 year. Asking how the step to install window. And also Mr Hazim as a site supervisor how to manage the window frame and window accessories when it arrive at site

3. Study on drawing

   Study on drawing how to find frame located before installation work begin. Make sure location and coordinate of frame based on drawing

CHAPTER 2.0

COMPANY BACKGROUND

3.1 Introduction of company

Preserver Bina Sdn. Bhd. is one of the general and specializing in fabrication of steel. This company also constructs including the construction of factories and guest house, Power generation, Petrochemical and Oleo Chemical Plants, Heavy Equipment Installation, Bridge and Infrastructural Steel Structures, Commercial Buildings and High-Rise Buildings, High-Ends show Units, Bungalows and Residential Building.

Preserver Bina Sdn. Bhd. had a multi-talented team of workers as experts who works efficiently as a single force to provide technical expertise and consultancy. This company can design and tailor-make solutions according what clients needed. Besides that, their own Steel Fabrication factory at Lot 4977 & 4978 Jalan Dahlia off Jalan Meru, 41050 Klang, Selangor Darul Ehsan. Therefore, Preserver Bina Sdn Bhd can move forward in line with other companies in Malaysia and abroad.

In 17 April 2009, Preserver Bina Sdn. Bhd. had cooperated with its own partner business as known as Alubina Sdn. Bhd to listed services included fabricated and installed an Aluminum component for general construction and infrastructural projects as well as residential divisions. Alubina Sdn. Bhd. services are backed by very experienced technicians and professional knowledge to ensure high quality products to fulfill client's needs. Alubina Sdn Bhd also has their own factory fabrication at No.22A, Jalan Tiara 5, Bandar Baru Klang, 41150, Klang, Selangor Darul Ehsan.

Figure 2.1: Company logo

Source: preserverbina

2.2 Company profile

Company name		: Preserver Bina Sdn Bhd
Incorporated on		: 1st April 2003
CIDB registration no		: 0120040628-SL 096423 Grade G7(Unlimited)
Quality management system		: ISO 9001:2008 Cert. No. 154418-2014-AQ-MYS-UKAS
Address	(Office)	: Lot 8292 No 3 tingkat 1, Jalan Istimewa, Kg Batu Belah, 41050 Klang, Selangor, Malaysia
	(Factory)	: Lot 4977 & 4978 Jalan Dahlia off Jalan Meru, 41050 Klang Selangor, Malaysia
Paid up capital		: RM 3751000.00
Authorized capital		: RM 5000000.00
Director board		: Khoo Beng Aun , Wong Kok Meng , Ng Boon Chieng , Soon Kien Eng.
Bankers		: OCBC Bank Berhad , United Oversea Berhad (UOB) , Ambank Berhad RHB Bank
Telephone no		:
Fax no		:
Email address		: director@pbinasb.org

2.2.1 Company Awards

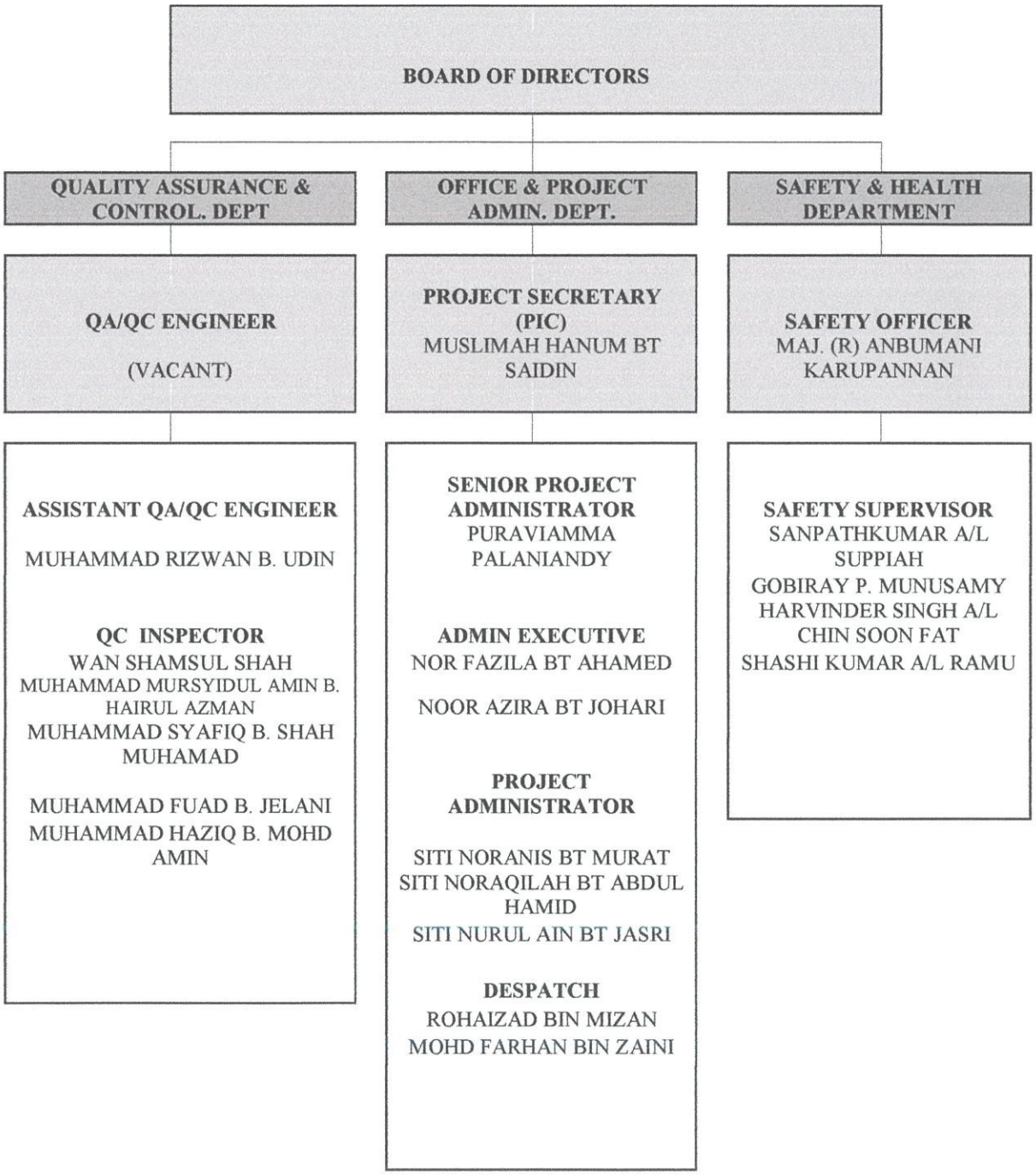
The Awards and recognition Preserver Bina Sdn. Bhd won over the years prove their capabilities. Among the significant ones are:

- 2 Awards from the Malaysia Architects Association (MAA) – Excellence in Architecture – Winning Showroom Building PAM 2007 for the Ameera Residences Sales Gallery.
- Honorary Mention Showroom Building PAM 2007 Awards for excellence in Architecture for the ONE Menerung Showroom & BRDS Sales Gallery Project.
- Achieved 3,000,000 and 2,000,000 Man Hours Without A Lost Time Incident in its Coal Fired Power Plant from TAISEI CORPORATION (in 30th September 2007 and 21st February 2008 respectively).
- Special Recognition as a Specialist Sub-contractor for the SUNCON GROUP OF COMPANIES' Overseas Projects (Sunway Construction).
- Achieved 2,500,000 Man Hours Without Lost Time Accident Safety Performance For the Superstructure Works – 3A University Technology PETRONAS, Tronoh, Perak. Recognition by NAMFATT-ZAQ JV (31st March 2004).
- ISO 900 1:2008, CONSTRUCTION OF STEEL STRUCTURE.
- Preserver Bina Sdn Bhd also won numerous Recognition for Architectural excellence, outstanding reliability and superior performance from numerous other leading developers.

Figure 2.2: List of award

Source: preserverbina

2.3 Organization chart



2.3.1 Site organization chart

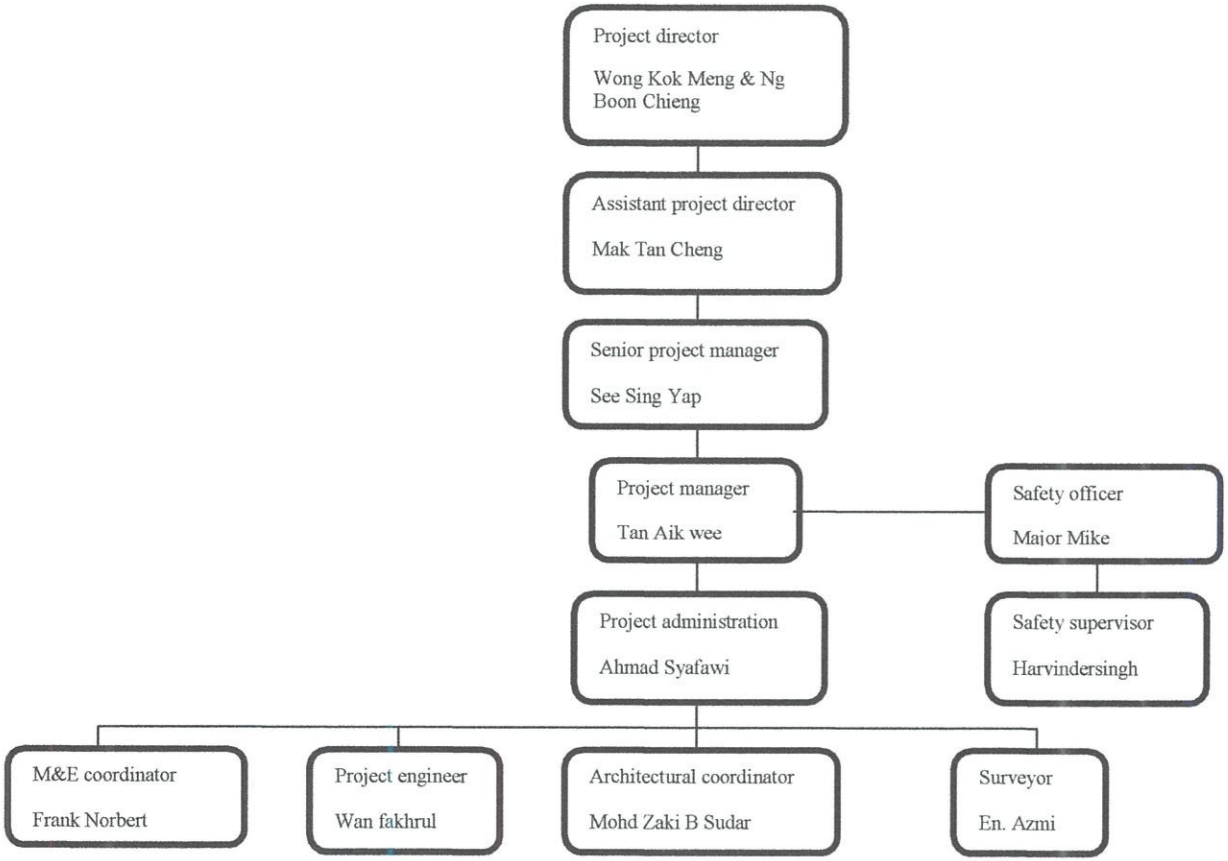


Figure 2.3: Site organization chart for Malaysia academy of Han study

2.4 List of project

2.4.1 Completed Project

Table 2.1: List of completed project

Project	Scope of work	Contract value	Completion date
Samudra Kargo,Bukit Raja The development of a warehouse at Bukit Raja,Klang for M/S Samudra Kargo Sdn Bhd	Main contractor: -substructure -C&S include steel structure -Architecture -M&E	RM 20.4 M	June 2014
KLK-Oleomas New Plant 5B & Tankfarm 2C, Westport Substructure & related civil works For new plant 5B & Tankfarm 2C For M/S KL-Kepong Oleomas Sdn Bhd	Main contractor: -substructure -C&S include steel structure -Architecture -M&E	RM 960 K	July 2014
Nilam Tekad Sdn Bhd-Process Plant & Warehouse package 7, Pulau Indah, Klang Proposed develop of guard house/weighbridge-canopy/canteen/road&drainage/sewerage	Main contractor: -substructure -C&S include steel structure -Architecture -M&E	RM 7.36 M	Apr 2013
Hicom Automotive manufacturer (M) Sdn Bhd Proposed development of Volkswagen facilities for Hicom Automotive	Main contractor: -substructure -C&S include steel structure -Architecture -M&E	RM 46.80 M	Jab 2013

Port Dickson Learning Centre (PDLC) Proposed development learning center at lot 1888, mukim Pasir Panjang daerah Port Dickson Negeri Sembilan	Main contractor: -substructure -C&S include steel structure -Architecture -M&E	RM 15.6 M	July 2012

2.4.2 Project in progress

Table 2.2: On-going project

Project	Scope of work	Contract value	Completion date
Malaysia Academy of Han Studies,Melaka Proposed development of Malaysia academy of han studies on lot 10147, mukim of Bukit Katil Daerah Melaka Tengah, Hang Tuah Jaya.	Main contractor: -substructure -c&s include steel structure -architecture -m&e	RM 66 m	October 2015
Matrade Convention Centre, KL Structural steel work for 1 block pusat pameran matrade 3 tingkat (double volume) dengan tingkat basement tempat letak kereta for TTDI KL Metropolis Sdn Bhd	Construction of steel structure: -Fabrication -Erection	RM 22.5 m	March 2015
Maha Tower, Langkawi Proposed development of mixed commercial building on lot 1424, Kuah langkawi	Main contractor: -substructure -c&s include steel structure -architecture -m&e	RM 100 m	November 2017

CHAPTER 3.0

CASE STUDY

3.1 Introduction of project

Name for this project is Malaysian Academy of Han Studies-Melaka. Proposed development of Malaysia academy of han studies on lot 10147, mukim of Bukit Katil Melaka Tengah district. Hang Tuah Jaya. Preserver bina as main contractor with total project cost RM 60,000,000.00. Contract period is 15 months. Date of commencement is 10th December 2013. Extended completion date is 30th October 2015. Insurance for workmen compensation is RM 6,555,173.32.

The academy comprises 12 blocks called drum covering a built up area of 21,553m2, as follow:1 block(drum) of landscape, 1 block (drum) of administrative and classroom auditorium and workshop, 1 block (drum)of office and classroom, 1 block (drum) of office and hostel & 8 blocks (drum) of hostel. This is how it looks after finish construction (refer to photo 3.1)

Photo 3.1: Building design

The client for this project is Malaysia academy of han studies. Lead consultant is studio 505 office hq at Melbourne, Australia. For civil and structural, mechanical and electrical by Arup jururunding Sdn Bhd. Project management consultant by Sweet group office HQ at Singapore. Architect by Akitek KHP. Quantity surveyor by CKP Nizarudin jurukur bahan Sdn Bhd. Interior design by A.I associates Sdn Bhd. Landcape architect by Areca design. This is illustration design by architect (refer to appendix A)

At this site, people call window as facade because of window at exterior finishes of building and also located at the front of building especially an imposing or decorative one. For facade work subcontractor will undertake fabricate work and installation work.

Photo 3.2: mock-up room (sample of façade window)

Photo 3.3: Front view of the project at 73% complete

Photo 3.4: Drum 1 from level 3

Photo 3.5: Site view from water tank elevator

3.2 Case study

Case study in this report will explain how the frame window and the accessories from factory deliver to site and how method to unload the frame from lorry. All this method should be follow to make sure all window safely arrive to storage for installation work. Foreman and supervisor is a responsible people who are need supervise unloading work. This case study also to find the component on the window that involves.

This case study also will discuss how going of installation of double aluminium louvers with naco glass louvers. All the step to install the window should be follow to make sure low mistake happen during installation work. Façade located at every drum and level. (Appendix B). Each window frame is installed next to each other. This drawing showing façade arrangement at drum 2 (refer to appendix C). There are a various type size of window. (Refer to appendix D). The window frame have been fabricated at factory, so it will deliver to site just for installation work.

3.2 Component of the window

1. Window frame

Punmia (1984) mention that "Window frame is main component of the window that support own weight of window". There so many types frame such as timber, aluminium, steel and so on. For this window it use aluminium frame. This is example aluminium profile can be use

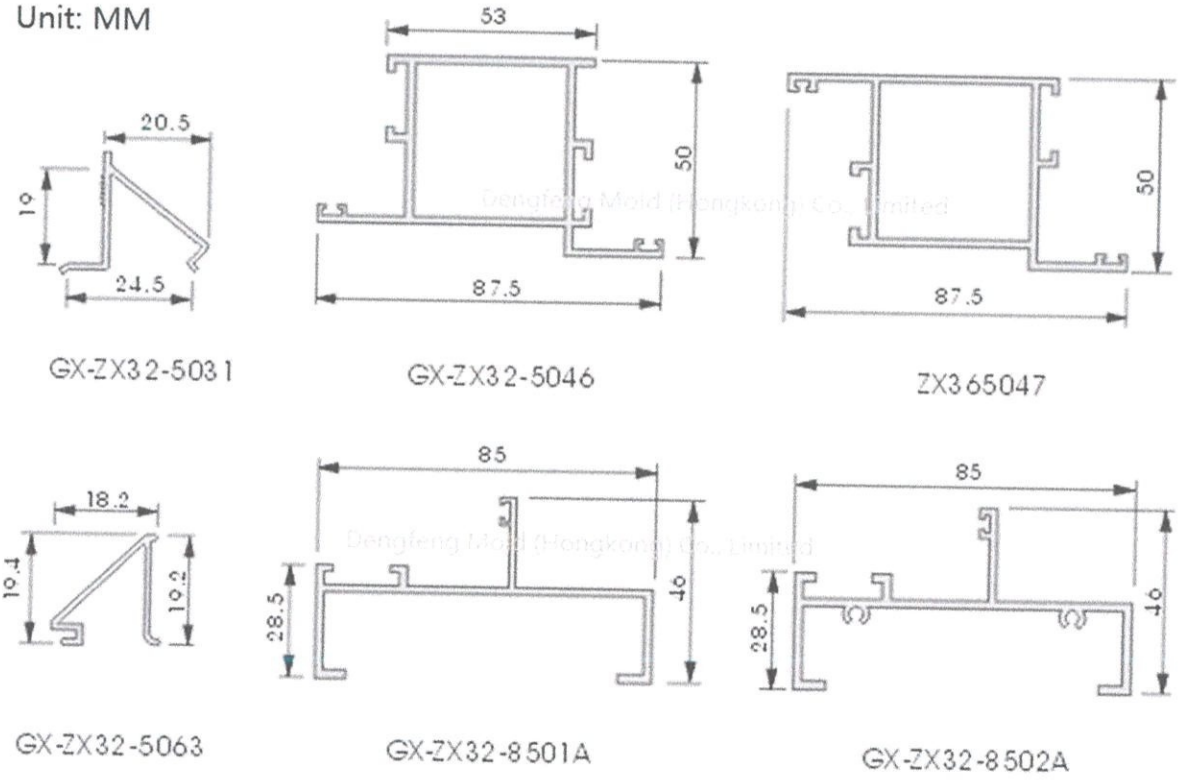


Figure 3.1: Example aluminium profile for frame

Source: http://www.aliexpress.com

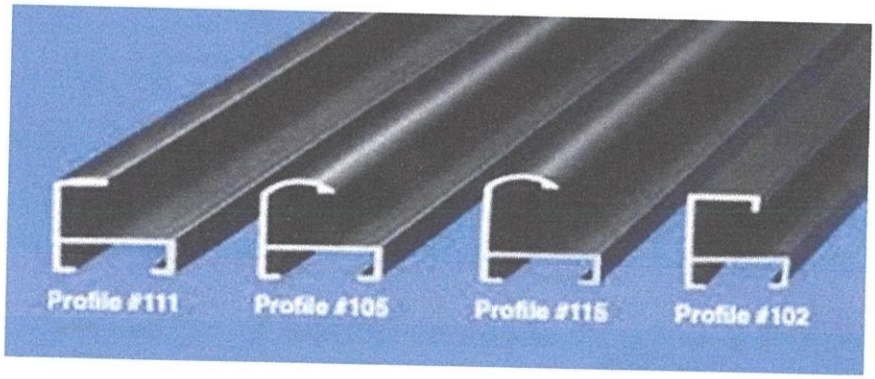


Figure 3.2: Example shopfront of frame

Source:http://www.archivalmethods.com

2. Aluminium blade

Aluminium blade use to allow ventilation and illumination on the room and vice versa. Every pieces of blade is fix at the end of left and right of frame.

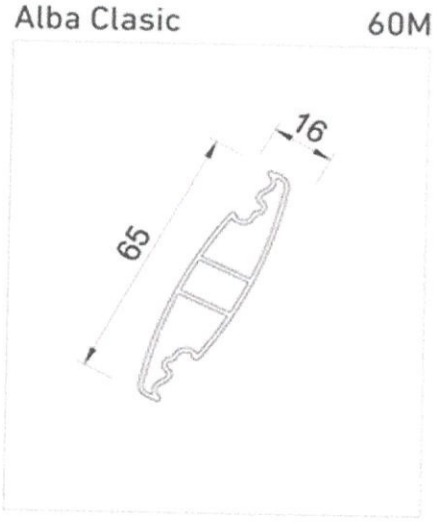


Figure 3.3: Example of aluminium blade profile

Source: http://www.tamiluz.es

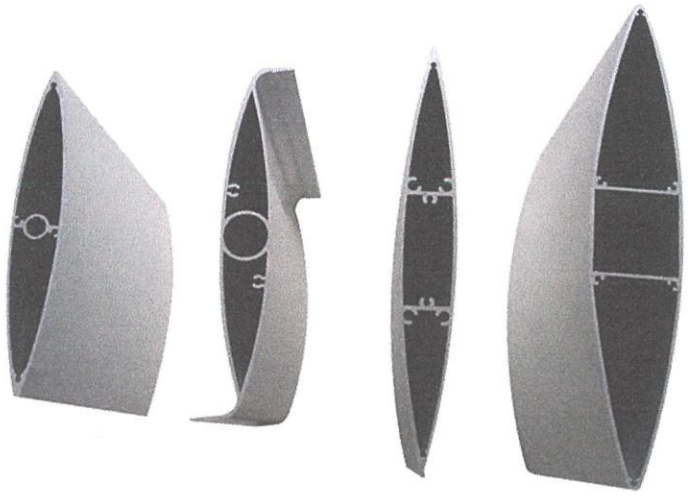


Figure 3.4: Example of shopfront of aluminium blade

Source: http://www.aluminumextrusion-profiles.com

3. Naco glass

The function glass naco same like to aluminium blade but it different between aluminium blade is allow illumination even it close. Types of naco glass that use on this window is clear and tempered glass.

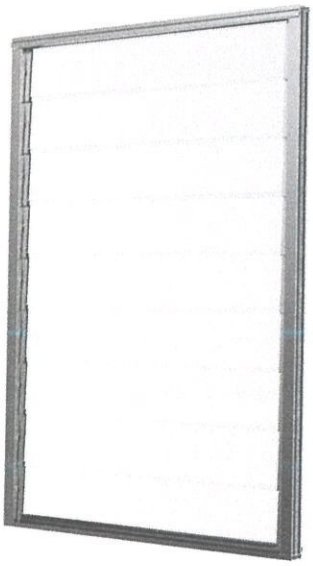


Figure 3.5: Example glass naco while it close

Source: http://www.glasbau-hahn.com

4. Palmair adjustable louvers

The purpose of palmair adjustable louvers is to adjust aluminium blade or naco glas whether open or close.

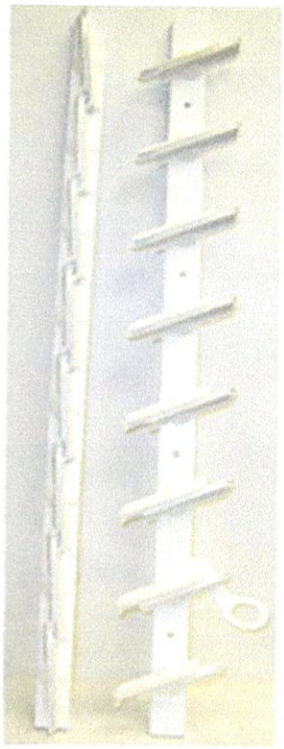


Figure 3.6: example of palmair adjustable louvers

Source: http://www.lowes.com

5. L channel

L channel is fixed to allow weather strip to be installed. It be installed at bottom of every panel

Figure 3.7: shopfront of L channel

6. Weather strip

Weather strip is use to seal the gap on L channel. Weather strip also prevent the rain and water enter the room.

Figure 3.8: weather strip

3.3 Method statement

3.3.1 Delivery schedule of frame window and accessories window:

3.3.1.1. Delivery material

I. The delivery schedule will be planned according to the main processing chart in conjunction to the volume, date and time of delivery, number of trucks and the usage of lifting (hoisting) equipment. Refer to attachment schedule.

II. All the frame will be protected with pvc protection tape.

III. The aluminum frame will be delivering to the factory for fabrication and send to the site directly ready for site installation.

IV. The vehicles used for the delivery shall enter and leave the site according to the site's regulations.

3.3.1.2. Receipt material

I. When unloading, a check to the material for symbol or presence of damage-in-transit and quantity according to the delivery order.

II. Report to the personnel concerned in the manufacturing plant of the damage or lack of quantity, if any, immediately.

3.3.1.3. Unloading

All material will be unloaded by fork-lift, site tower crane or mobile crane from the transporting lorry upon arrival at site. When using tower crane or mobile crane, materials will be hoist using a "polyester lifting slings" with a safety lifting capacity of 2,000 kg (as appropriate).

3.3.1.4. Hoisting

1. All the window frame will be distributed to the designated level base on the type and mode of hoisting.

- Tower Crane/ - in "A-Mobile Crane — During unloading, these material which is stack Rack" will is hoist the transporting lorry using "polyester lifting slings" with a safety lifting capacity of 2,000 kg.

Photo 3.6: Unload window frame from lorry by car crane

Photo 3.7: Car crane

- Passenger - These material will be hoist up to the respective floor Hoist using the passenger hoist.
- Hand Carry - The material will be hand carried by our workers piece by piece from the passenger hoist to be distributed to the respective floor.

2. All delivered aluminium cladding panels will be stored at the appointed temporary stock yard.

3. Aluminium cladding panels to each respective floor will be made on weekly basis, and it will be submitted to the main contractor for approval. Lifting work will follow the approved schedule.

4. The window frame will be store at the appointed area of each designated floor

3.3.1.5. Storage

1. Place of storage is to be given special consideration and as follows: -
    - The place shall be free from rain and ventilation must be good.
    - The place shall be close to the installation area
    - The place shall be away from any major movement to avoid damage by other trades.
2. All aluminium cladding panels are to be stacked against wall (as appropriate). All fitting are to be kept in site store.

3.3.2 Installation of double aluminium louvers with naco glass louvers

3.3.2.1 Preparation

1. Establishing of base reference floor (datum floor). Main Contractor is to survey the general structure of the building (vertically, torsion, in and out, level and structural deviation) on floor to floor and provide the work contractor the datum floor.

2. After determining the datum floor, main contractor is to mark on very floor the survey setting outline and level reference line.

3.3.2.2 Marking for installation

Determine the off-set lines from the survey setting out-line and level reference line for installation.

- Guideline for marking

1. Off-set line to be transferred out as near to the installation position as possible using a short scale ruler to avoid errors.
2. Similarly, marking of level reference should be done for the convenience of easy measurement.

- Location of marking

1. Level marking to be set to column or wall which is 1 meter high from floor finish level.
2. Location of Grid Center Marking at every floor should be convenient for checking the position of fasteners.
3. Location of In-Out Marking will be parallel to the installation face to the aluminum framed window.

- Pulling piano wire

1. Purpose of piano wire is to check the in-out horizontal alignment of aluminum frame window. Therefore, position of piano wire shall be properly transferred from the in-out marking on the floor level. Usually a piano wire of 0.8mm diameter is being used.

- Check marking

1. Counter checking each marking that is provided by Main Contractor to the marking has been set accordingly.
2. Measure the marking for installation from basic reference marking. Counter check both the markings.

3.3.2.3 Inspection of finished work

The entire installed unit will be inspected by Main Contractor's representative base on the following main item:

1. Level Position – Inspect level by level start from ground to level 3 and drum by drum
2. Marking – After inspect supervisor mark the façade with color tape and mark in the drawings.

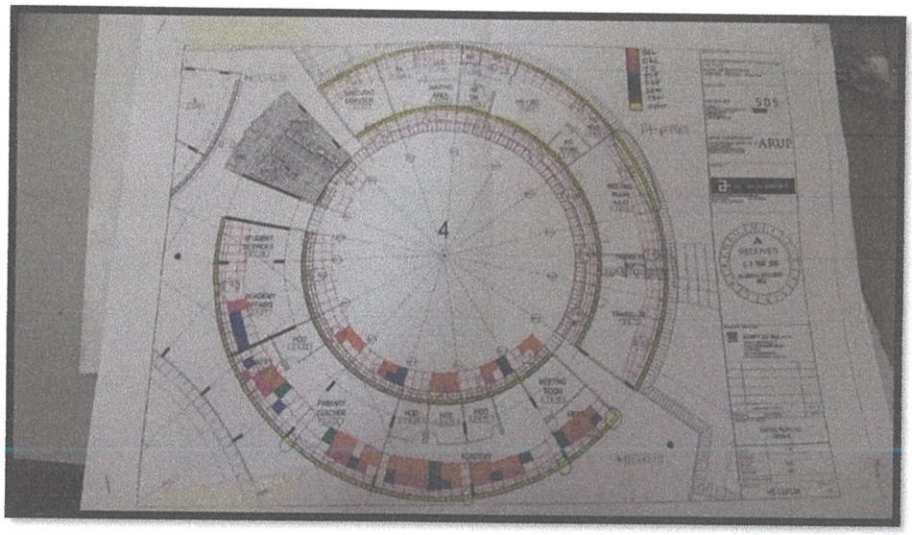


Figure 3.9: Marked with color frame have been installed at Drum 4 level 2

3.3.2.4 Inspection report

The sets of inspection report to be provided:

- 1 set for main contractor
- 1 set for internal reference

3.3.2.5 Setting of frame Window

It is set in accordance to the 3 directional positions.

i. Leveling position

The level of the bracket shall be set by the theodolite and scale with reference to the 1 meter finishing level. The allowable tolerance is ±5mm.

ii. Horizontal in-out position

The horizontal in-out alignment shall be checked with a scale ruler against the off-set line.

iii. Horizontal left-right position

Using the corner unit as a reference starting position, check the balance

frame to the predetermined setting panels' position.

Photo 3.8: Setting frame on position

3.3.2.6 Installation of palmair adjustable, naco glass, aluminium blade, L channel, weather strip

i. Fix palmair adjustable the both side frame at every panel

Photo 3.9: Fixing palmair adjustable

ii. Fix naco aluminium at bottom and middle panel. Then fix naco glass at top panel

Photo 3.10: Fix aluminum blade at bottom panel before peel off protective tape

Photo 3.11: Fixing aluminum blade at middle panel before peel off protective tape

Photo 3.12: Fixing naco glass at top panel

iii. Fix L channel and weather strip at top and bottom every panel

Photo 3.13: Fix L channel

Photo 3.14: Fix weather strip

iv. Peel of the protective tape after finish install.

Photo 3.15: Window after peel off protective tape

Photo 3.16: After all window installed

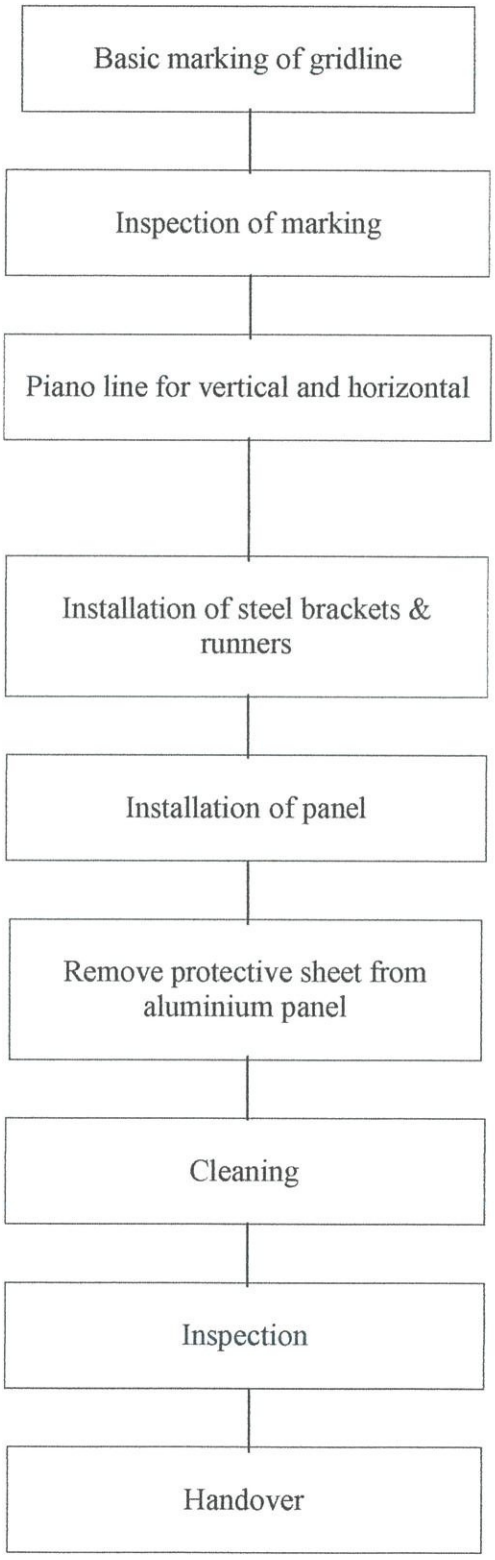


Figure 3.1: Flow chart for installation of window procedure

CHAPTER 4.0

CONCLUSION

In conclusion, got a knowledge about how to install the window following suitable method it is important to ensure the durability of frame in various climate and also to make sure aesthetic value still exist on the building even using this window installation method. Furthermore, I get a knowledge the journey of window frame fabricated at factory to the storage at site. Moreover, I gain technic and step to install the window starting datum floor level. Finally, I got a knowledge component that have on a window.

And also I have feel real working environment at site with a several of condition that so challenging in physically and mentally. Working at site is just not only need a tough physical but also a tough mental because there are a lot of problem and pressure from any direction. Sometimes one problem have been solved, followed by a new problem. For example, workers has strike not to working because did not receive a salary. Tough mental ensure all these problem can be solved with the best solution. I also has learned right step to install the window from beginning until it finish. Basically, step to install window is same but at this site there are a bit different during preliminary installation work. I also gain a knowledge how the journey of frame window from factory to storage. Furthermore, I have learned how to communicate to worker who are cannot speak in english and malay language. Give an order to the head of group that can speak in English also malay to tell them.

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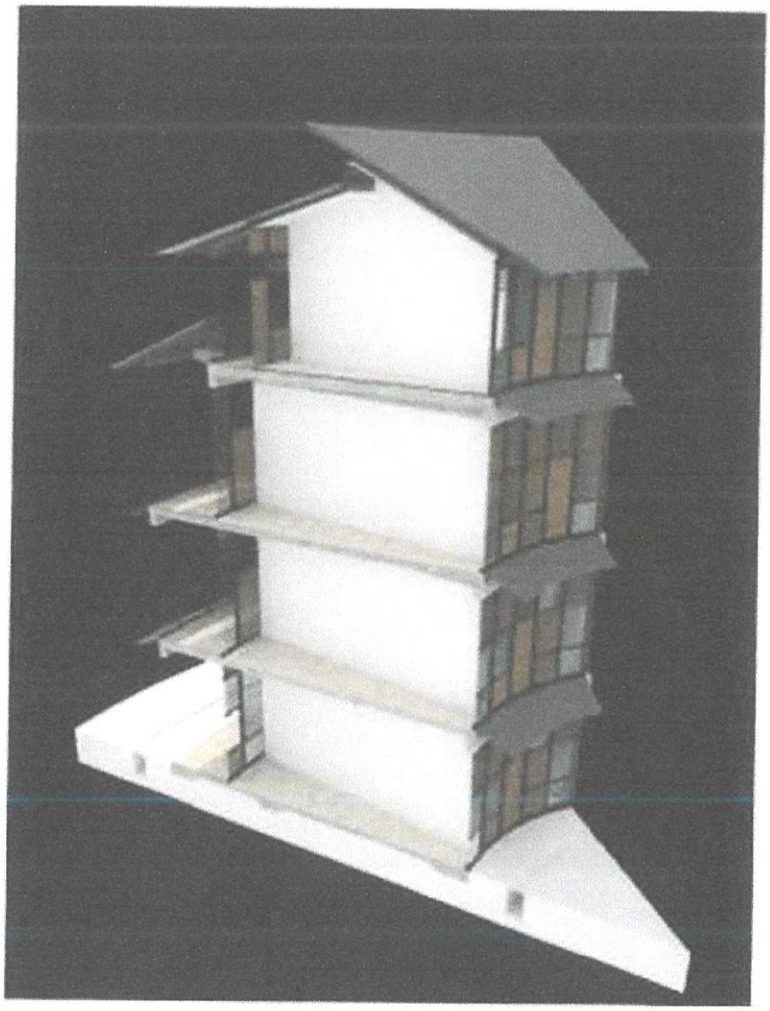
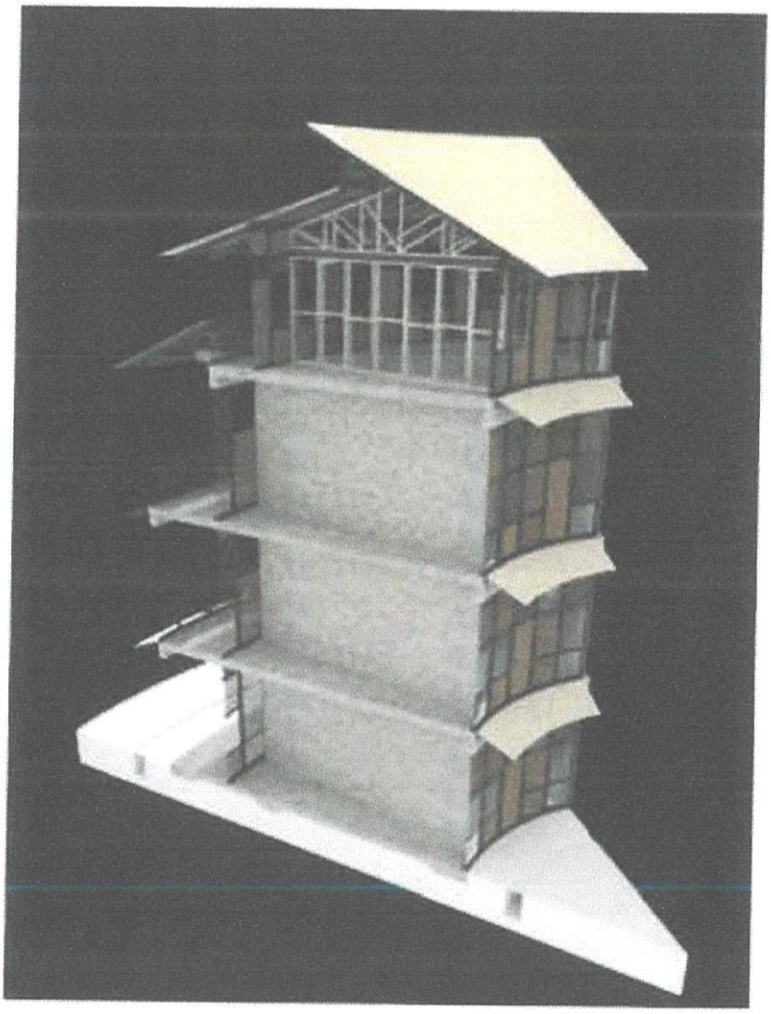
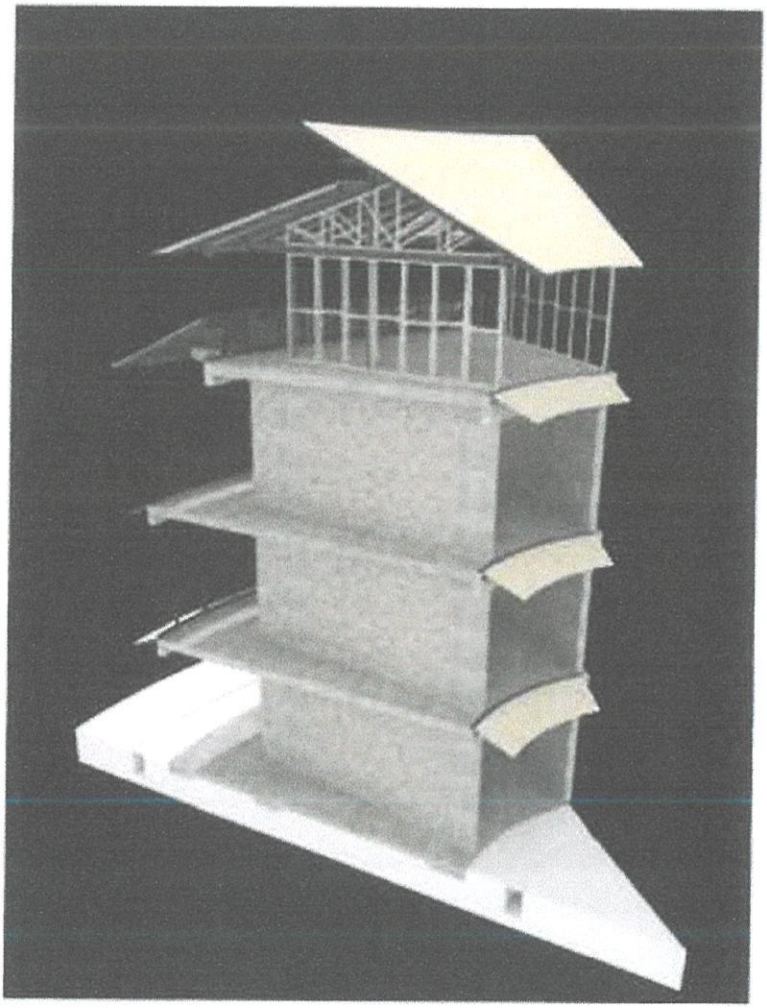
Ricketts, M. (2000). Technology and engineering. Mc Graw Hill, New York.

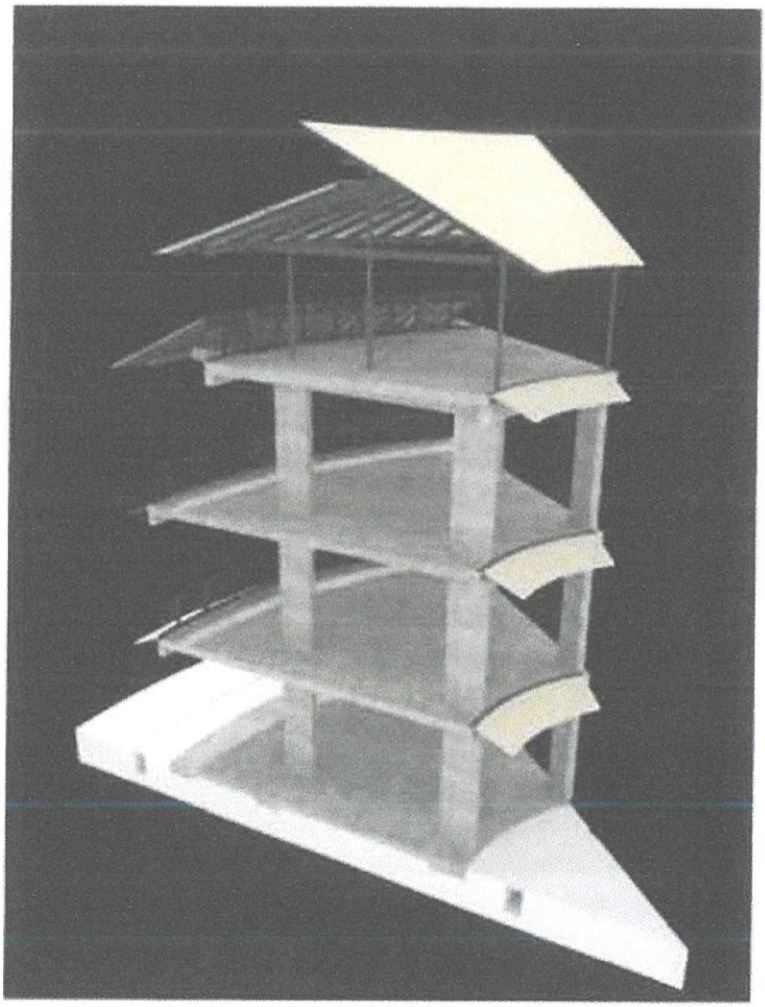
William, P. S. (1995). Finish carpenter: A complete interior and exterior guide. Sterling Publishing Co, New York.

Appendix A: Illustration design by architectural

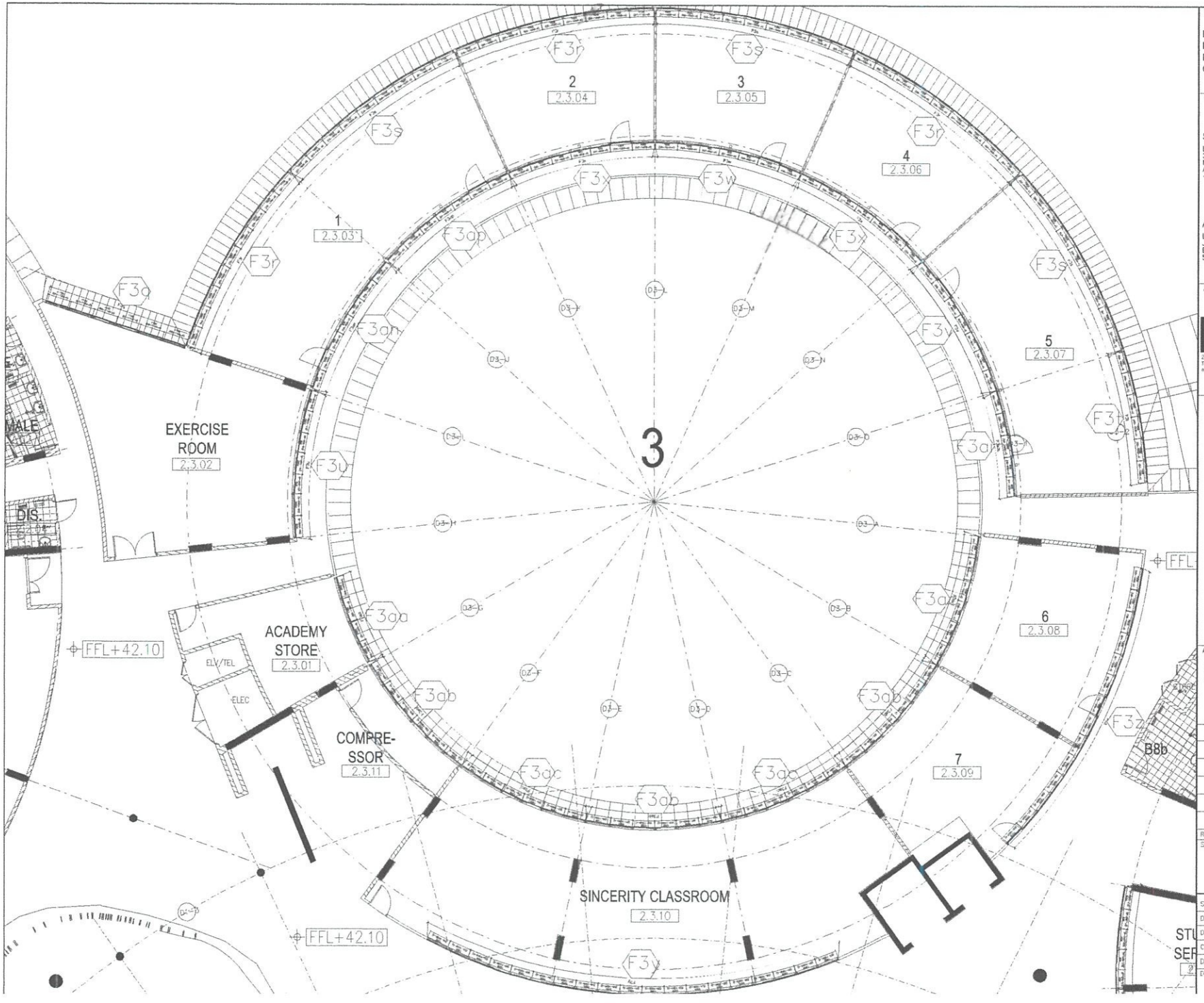








Appendix B: Partial plan for drum 2, 3,4 at level 2



PROJECT & CLIENT :

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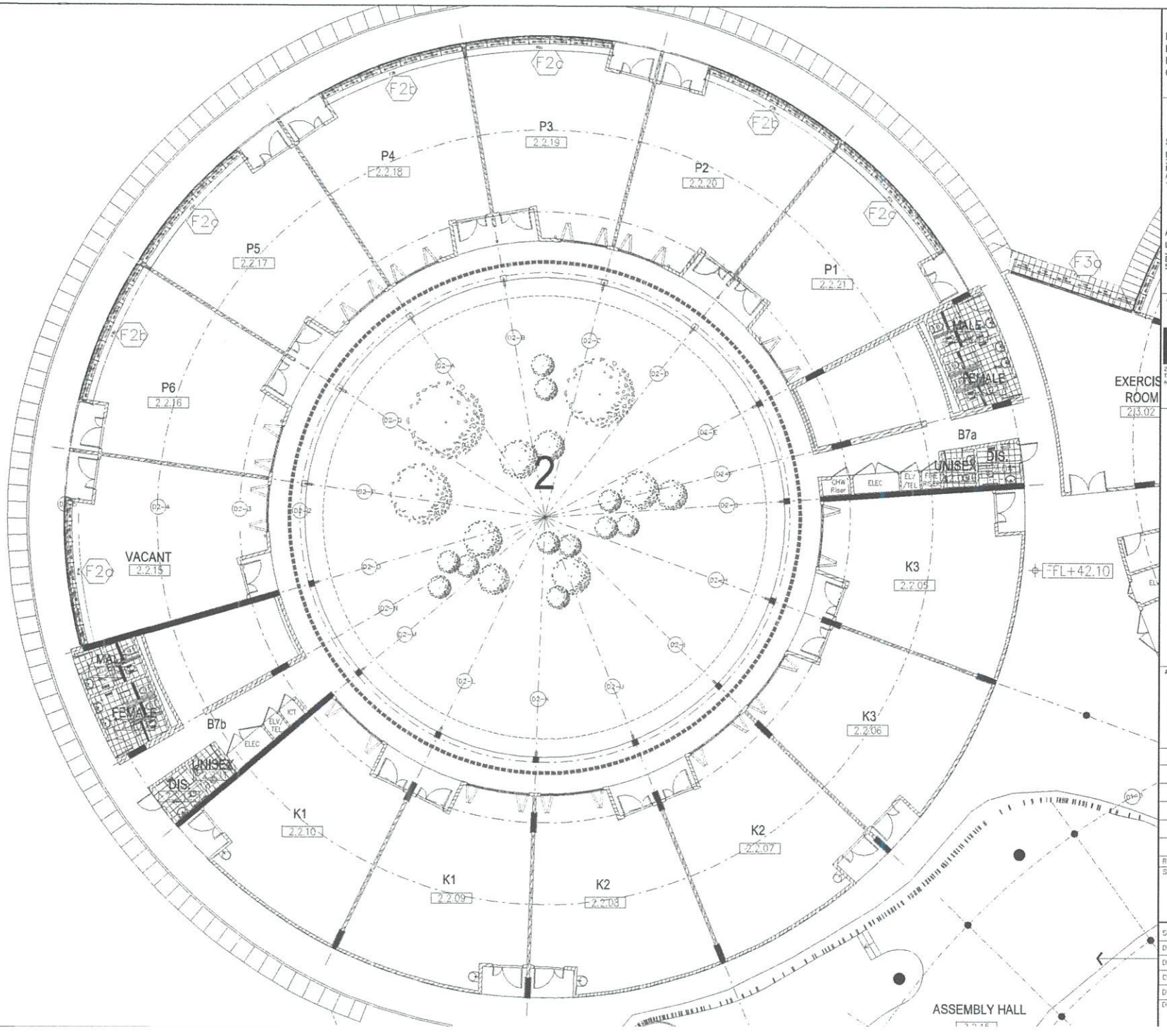
REVISION	DECRIPTION	DATE
-	ISSUED FOR APPROVAL	30.12.14

SUBJECT OF DRWG.:

PARTIAL PLAN LV.2
DRUM 3

SCALE	1 : 50
DESIGNED	-
DRAWN	CHC
CHECKED	LOK
DWG. START DATE	-
DRWG. NO. :	HS-L2-PL03
ISSUE :	00



PROJECT & CLIENT :

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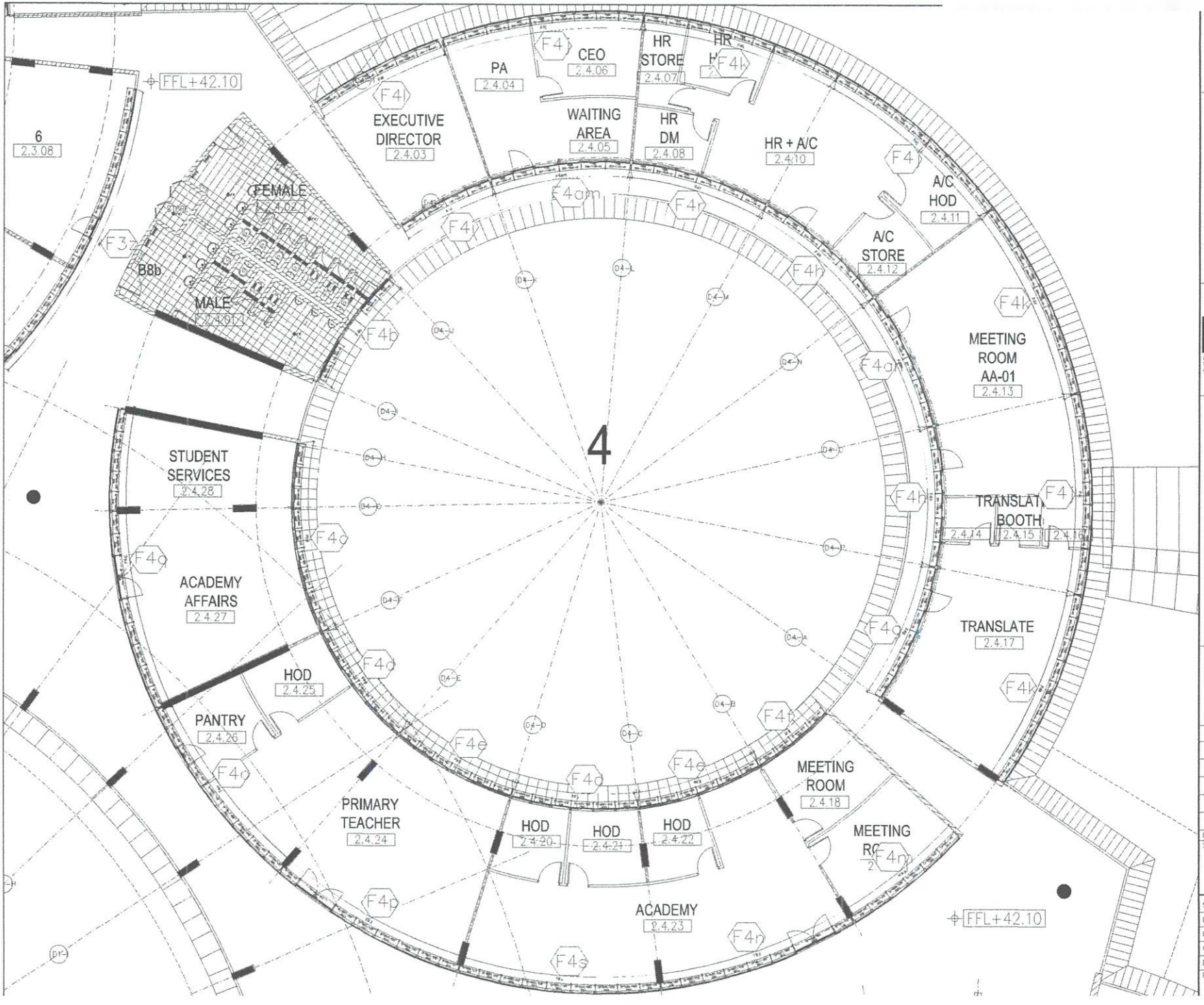
REVISION	DECRIPTION	DATE
-	ISSUED FOR APPROVAL	30.12.14

SUBJECT OF DRWG.:

PARTIAL PLAN LV.2
DRUM 2

SCALE	1 : 60
DESIGNED	-
DRAWN	CHC
CHECKED	LOK
DWG. START DATE	-
DRWG. NO. :	HS-L2-PL02
ISSUE :	00



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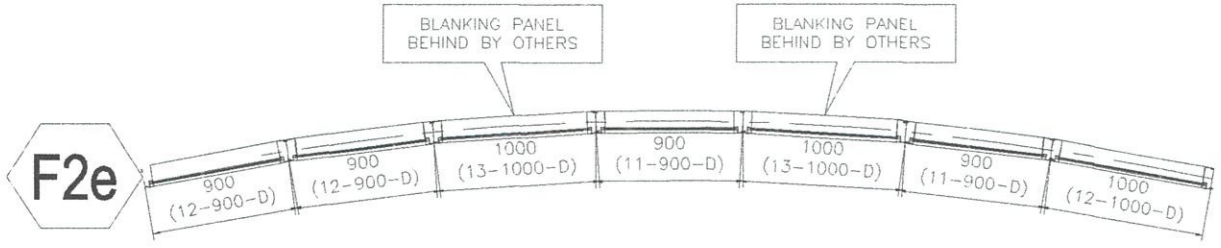
REVISION	DECRIPTION	DATE
-	ISSUED FOR APPROVAL	30.12.14

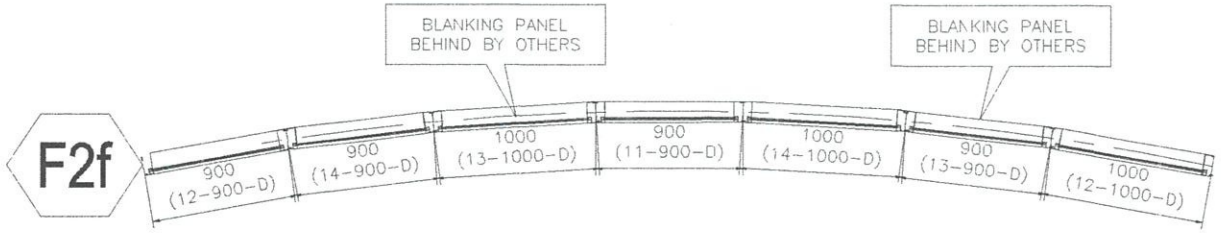
SUBJECT OF DRWG.:

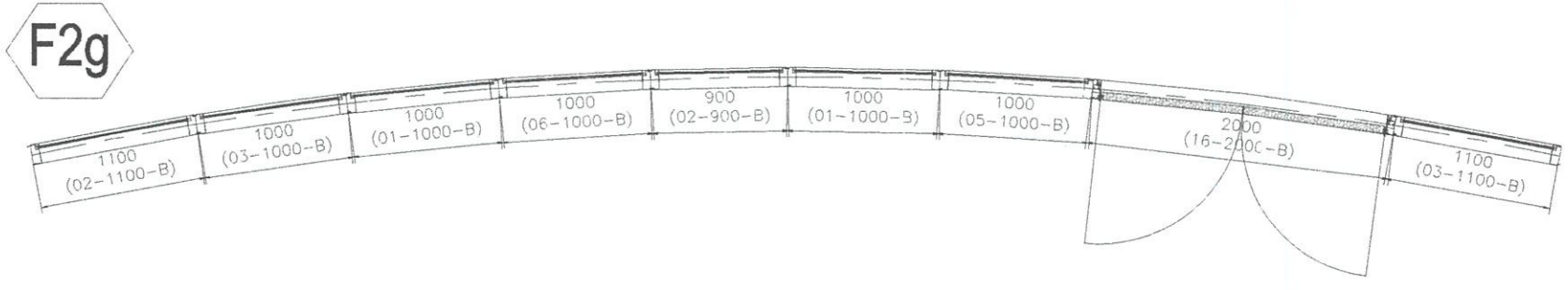
PARTIAL PLAN LV.2
DRUM 4

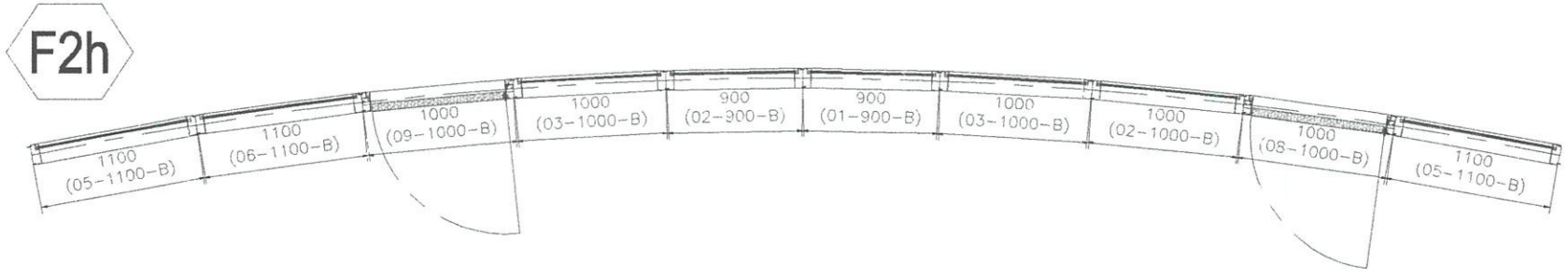
SCALE	1 : 50
DESIGNED	-
DRAWN	CHC
CHECKED	LOK
DWG. START DATE	-
DRWG. NO. :	HS-L2-PL04
ISSUE :	00

Appendix C: Façade drawing arrangement at drum2









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REVISION	DESCRIPTION	DATE
01	ISSUED FOR APPROVAL	14.02.15
00	ISSUED FOR APPROVAL	30.12.14

SUBJECT OF DRWG.:

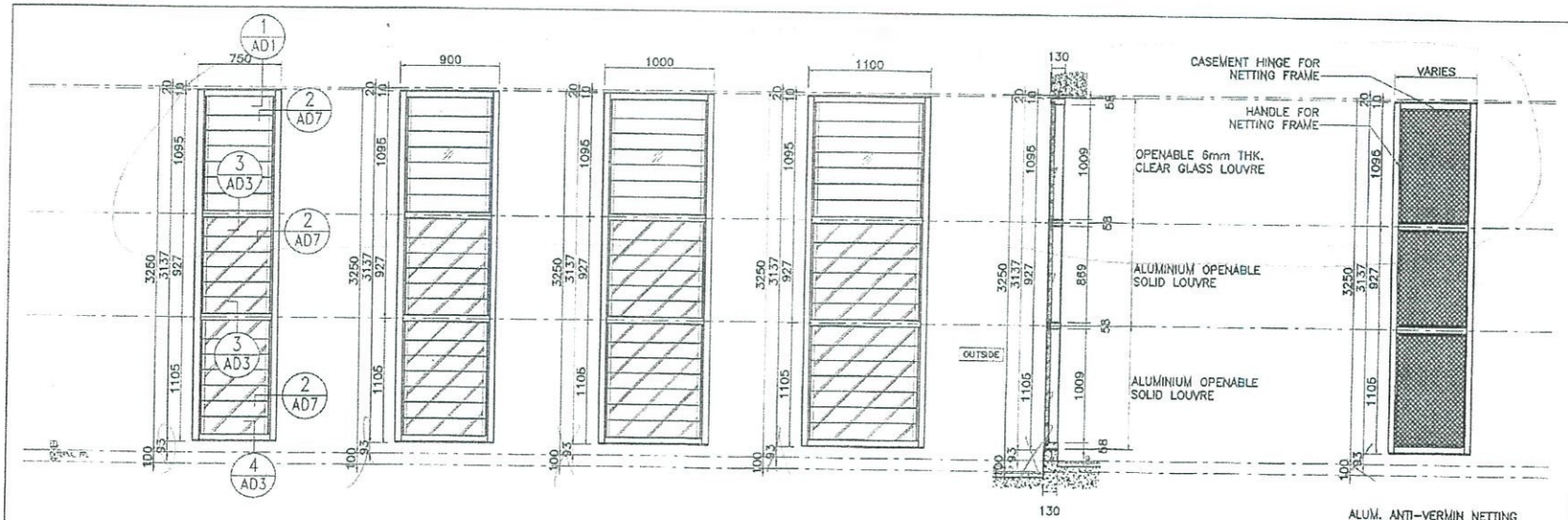
FACADE ARRANGEMENT 2
DRUM 2

SCALE	1 : 10
DESIGNED	-
DRAWN	CHC
CHECKED	LOK
DWG. START DATE	-

DRWG. NO. : HS-2-APL02

ISSUE : 01

Appendix D: Window schedule



TYPE	02-750-A	02-900-A	02-1000-A	02-1100-A
QUANTITY	1 nos.	85 nos.	172 nos.	34 nos.
LOCATION	-	-	-	-
DESCRIPTION	ALUM. LOUVER BLADE & 6mm THK. LOUVER GLASS	ALUM. LOUVER BLADE & 6mm THK. LOUVER GLASS	ALUM. LOUVER BLADE & 6mm THK. LOUVER GLASS	ALUM. LOUVER BLADE & 6mm THK. LOUVER GLASS
FINISH	POWDER COATED	POWDER COATED	POWDER COATED	POWDER COATED

PROJECT & CLIENT :

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REVISION	DESCRIPTION	DATE
03	ISSUED FOR APPROVAL	17.12.14

SUBJECT OF DRWG :

WINDOW SCHEDULE

SCALE	1 : 20
DESIGNED	-
DRAWN	CHC
CHECKED	LOK
DWG. START DATE	15 NOV 2014
DRWG NO. : HS-ASC02	ISSUE 00