



**DEPARTMENT OF BUILDING  
UNIVERSITI TEKNOLOGI MARA  
(PERAK)**

**RESTORATION OF ROOF AND CEILING**

**Prepared by:  
MUHAMMAD FAIZ AHDA BIN KHAIROL  
2016458334**

**DEPARTMENT OF BUILDING**  
**FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING**  
**UNIVERSITI TEKNOLOGI MARA**  
**(PERAK)**

**DECEMBER 2018**

It is recommended that the report of this practical training provided

**By**

**Muhammad Faiz Ahda Bin Khairol**

**2016458334**

**Entitled**

**Restoration of Roof and Ceiling**

accepted in partial fulfillment of requirement for obtaining the Diploma In Building.

Report Supervisor : En. Noor Azam Bin Yahaya

Practical Training Coordinator : En. Muhammad Naim Bin Mahyuddin.

Programme Coordinator : Dr. Dzulkarnaen Bin Ismai

**DEPARTMENT OF BUILDING  
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING  
UNIVERSITI TEKNOLOGI MARA  
(PERAK)**

**DECEMBER 2018**

**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 session that I underwent at ImanpuriSdnBhd for duration of 14 weeks starting from 3 September 2018 and ended on 7 December 2018. It is submitted as one of prerequisite requirements of DBG307 and accepted as a partial fulfillment of the requirements for obtaining Diploma in Building.

.....  
Name : Muhammad FaizAhda Bin Khairol

UiTM ID No. : 2016458334

Date : 7 December 2018

## ACKNOWLEDGEMENT

I would like to express my gratitude to all parties that advice guide and help me during practical training period. Firstly, I would like to thank ImanpuriSdn.Bhd especially the manager, En. MohdAnis Bin Amiruddin for the opportunity to conduct my practical training at his company. The company professional team consists of Puan Zuilmah Binti Hamzah, Mrs Fahimi Naemah Binti Hamzah, Mrs Aainaa Binti Rosezali, Mrs Syazwani Binti Amiruddin and Mrs Halijah Binti Alamin who have help me to make better understanding and blending well in working environment. Besides, they also provide their cooperation with me in my daily task and always providing guide and help whenever necessary. Moreover, I also would like to thank En. Jamruz who has been assigned as my practical supervisor for his enthusiasm and commitment in guiding me to learn and develop my understanding about the construction environment and work. It is really an honour to work with them for three months of practical training period.

Apart from that, I would also like to thank the UiTM lectures who have helped me either directly or indirectly. I extend this gratitude to the Practical Training Coordinator, En. Naim Bin Mahyuddin for his commitment in handling the practical training subject code DBG307. Furthermore, I would also like to thank my supervising lecturer, En. Noor Azam Bin Yahayafor sharing his pearls of wisdom with us during the course of this research and his comments on an earlier version of this practical report that greatly improved the report. This gratitude also has been show towards my academic supervisor, En.Zulkifli Bin Abdul Halim for his help during this practical training period.

Last but not least, I immensely grateful to my parents who have helps me indirectly over the years.



## **ABSTRACT**

Roof is a compulsory part of every building structure. It is beneficial in providing protection for the inside compartment of the building from any weather threat. When it has been used over many years, it is necessary to replace the roof if there are any defects happen. Thus, this report is written to show the overall restoration progress of roof structure. The objective of this report is to study the suitable method that can be used to renovate the roof according the guidelines. It is focusing on restoration works of roof structure and other related structure such as ceiling and rain water down pipe at the residencies area. These renovation works are important to maintain the building structure therefore helping to provide a better place for living.

## CONTENTS

<b>CHAPTER</b>	<b>CONTENTS</b>	<b>PAGE NUMBER</b>
	Acknowledgements	I
	Abstract	ii
	Contents	iii
	List of Tables	iv
	List of Figures	v
<b>1.0</b>	<b>INTRODUCTION</b>	
1.1	Background and Scope of Study	1
1.2	Objectives	2
1.3	Methods of Study	3
<b>2.0</b>	<b>COMPANY BACKGROUND</b>	
2.1	Introduction to Company	5
2.2	Company Profile	6
2.3	Organization Chart	7
2.4	List of Projects	11
	2.4.1 Completed Projects	11
	2.4.2 Project in Progress	13
<b>3.0</b>	<b>CASE STUDY</b>	
3.1	Introduction to case study	14
3.2	Methods of Restoration	17
3.3	Problems	28
3.4	Cost and Time	30
<b>4.0</b>	<b>CONCLUSION</b>	
4.1	Conclusion	35
	<b>REFERENCES</b>	36
	<b>APPENDIX</b>	37

## **LIST OF TABLES**

Table 2.1	List of Completed Projects	12
Table 2.2	List of On-going Projects	13
Table 3.1	List of Material for Roof Renovation	17

## LIST OF FIGURES

Figure 1.1	Example of Observation Data	3
Figure 1.2	Example of Observation Data	4
Figure 2.1	Office Organization Chart of ImanpuriSdnBhd	8
Figure 2.2	Site Organization Chart	10
Figure 3.1	The location of Low Cost Apartment SubangPerdana 3	14
Figure 3.2	Lifting Materials	20
Figure 3.3	Dismantle of existing Roof Structure	20
Figure 3.4	Temporary Covering for Roof Structure	21
Figure 3.5	Dismantle Gutter	21
Figure 3.6	Installation of New Trusses System	22
Figure 3.7	Installation of Wire Netting	22
Figure 3.8	Installation of Aluminium Foil	23
Figure 3.9	Installation of Fiber Glass Wool	23
Figure 3.10	Installation of Metal Covering	24
Figure 3.11	Installation of Gutter	24
Figure 3.12	Clearing Process	25
Figure 3.13	Dismantle of Existing Ceiling Structure	25
Figure 3.14	Installation of Ceiling Structure	26
Figure 3.15	Installation of Ceiling	26
Figure 3.16	Apply Ceiling Finishes	27
Figure 3.17	Completed Ceiling Works	27
Figure 3.18	Physical S-Curve of project KPKT SP3	31
Figure 3.19	Financial S-Curve of Project KPKT SP3	33
Figure 3.20	Claim Interim for Project KPKT SP3	34

## CHAPTER 1.0

### INTRODUCTION

#### 1.1 Background and Scope of Study

Roof is a structure whereas its external element has been designed to withstand any extremes weather and temperature. Roof structure consists of many elements despites its cover which is trusses, insulation, gutter, ridge board and others. The cover or outer element of the roof can be made up from several type of material. Some of them are metal roofing, slate roofing, shingle roofing, asphalt roofing and clay roofing. Each of them comes with different function specifically. As for metal deck roofing, it usually been choose as the roof covering because it provide easy manufacturing and assembling procedures. It also been widely known due to its stiffness and strength that can withstand any wind load and even greater it also can support such load of workmen walking over during fabrication process. However, the inner side of the roof can be easily deterioratedafter a long time. Thus, it needs to undergo maintenance once in a while. Therefore, the aim of this report is to discover the traditional remedial work of maintaining metal deck roof which involves renovation and replacement of existing roof structures, insulation and other related works.

For accomplish the aim as stated above, the study is carried out at Low cost apartment Taman Subang Perdana which located near Shah Alam, Selangor. This study is focusing in renovation of existing roof specifically. Therefore, this site is surely suitable to done this research as it provides the opportunity to learn about the roof renovation method including the materials and machineries involved in this project.

## **1.2 Objectives**

1. To explain method of roof restoration works.
2. To describe ceiling restoration works.
3. To study the problem that arises during restoration works.



### 1.3 Method of Study

As a way to determine the sufficient information for this report, some effective research methods are being applied. All the research methods are stated below.

#### 1. Observation

- On purpose to find the information about the methods of constructing metal deck roof, the author has spent some of my time at the construction site. Normally, about half a day are being spent at the roof level to get a clear view about the renovation process. This observation is recorded by pictures and notes.



Figure 1.1 – Example of observation data

#### 2. Interviews

- Interviews can be categorized into two which are unstructured interviews and semi structured interviews. However, only unstructured-interviews are being applied into this study. Unstructured-interviews are interview that being done during the event or work happen. As for its name, mostly I done these interviews while supervising the work at site. These interviews involved me and several other parties such as quantity surveyor, project manager, site supervisor and labours.

### 3. Document Reviews

- To enhance the value of the information gathered, I also review some important document such as drawings, progress report and company profile. Drawings are important to understand the site condition. Meanwhile, progress report is the best medium to understand the whole condition of project which can surely enlighten this report writing. Lastly, I also review company profile to gain better understanding about the organization and Imanpuri Sdn Bhd.

**SALINAN**

No. Kontrak : KPKT/CPPP/PENY/5/35/2017

**KERAJAAN MALAYSIA**  
**KEMENTERIAN KESEJAHTERAAN BANDAR, PERUMAHAN DAN KERAJAAN**  
**TEMPATAN**  
**SURAT SETUJU TERIMA**

Rujukan Kami : KPKT/CPPP/UP/12/5/S/17 (00)  
Tarikh : 28.12.17

Pengarah Urusan  
**IMANPURI SDN. BHD.**  
14A, Jalan Balapan 13/32  
Seksyen 13  
40100 Shah Alam  
Selangor

Tuan,

Tender Untuk : **KERJA-KERJA PEMBAIKAN BUMBUNG, SILING DAN LAIN-LAIN KERJA YANG BERKAITAN BAGI RUMAH PANGSA KOS RENDAH, TAMAN SUBANG PERDANA 3, SHAH ALAM, SELANGOR**

No. Kontrak : **KPKT/CPPP/PENY/5/35/2017**

Dengan ini dimaklumkan bahawa Kerajaan telah bersetuju menerima tawaran tender tuan dengan harga sebanyak Ringgit Malaysia: Empat Juta Enam Ratus Lapan Belas Ribu Sembilan Ratus Lima dan Sen Enam Belas Sahaja (RM 4,618,906.16) yang merupakan harga kontrak bagi tempoh kontrak selama 60 minggu tertakluk kepada dokumen tender yang menjadi sebahagian daripada perolehan ini dan Surat Setuju Terima ini berserta dengan *Lampiran A* kepada Surat Setuju Terima iaitu maklumat terperinci kontrak (selepas ini disebut sebagai "Surat ini").

2. Dengan pengakuan penerimaan Surat ini berserta lampiran berkaitan, suatu kontrak yang mengikat terbentuk di antara Kerajaan dengan syarikat tuan. Satu dokumen kontrak hendaklah ditandatangani dalam kadar segera dengan memasukkan semua terma sebagaimana dokumen tender serta semua terma dalam *Lampiran A* sehingga dokumen kontrak tersebut ditandatangani, Surat ini hendaklah terus mengikat kedua-dua pihak.

3. Harga kontrak adalah termasuk peruntukan Kerajaan sebanyak 6% Cukai Barang dan Perkhidmatan (CBP) memandangkan syarikat tuan telah berdaftar dengan Jabatan Kastam Diraja Malaysia (JKDM) mengikut Akta Cukai Barang dan Perkhidmatan 2014 [Akta 762] dan tarikh pendaftaran tersebut telah berkuat kuasa sebelum atau pada tarikh Surat ini dikeluarkan mengikut Akta 762.

1

Tandatangan & Cop (Kerajaan) : .....

Tandatangan & Cop (Syarikat) : .....



Figure 1.2: Example of documents review (Source: Imanpuri Sdn Bhd)

All of these methods of study that have been list above have surely given me the upper hand to completing this assignment right before the deadline.

## CHAPTER 2.0

### COMPANY BACKGROUND

#### 2.1 Introduction of Company



Imanpuri Sdn. Bhd is a bumiputra company which is located in the heart modern capital city of Selangor in Shah Alam. This company established on 25<sup>th</sup> April 2012 by the founder, En. Mohd Anis Bin Amiruddin who has seventeen years of experience in construction industry. This company is majoring in architecture and interior design. However, Imanpuri Sdn Bhd also known to be a contractor that successfully completes many government and private project beforehand. While moving forward, this company use the vision “where quality is our main concern, where professional is our heart” as its guidance. Generally, this company can be considered as family business due to the fact that some of its staff which are related by blood towards one another.

## **2.2 Company Profile**

Company profile is a platform of every company or contractor to introduce their company to the market place. A really good and aspiring company profile can led or guarantee for investor to invest into their company. As for construction industry, a good company profile can ensure the client confidence about the company and thus award them with the contract which later known as letter of award.

As a company, Imanpuri Sdn Bhd also has its own company profile. Due to the fact that the company is an interior design and architecture, so they has to prepare two company profiles which for interior design and contractor each. The construction company profile is literally the same as interior design except is more focusing the show the company vision and previous experience in construction industry.

Company profiles usually describe the company financial status, corporate details and previous working experiences apart from company backgrounds. Imanpuri Sdn Bhd has been classified as G6 Company which indicates their capability in handling a project that cost up to RM 10 million.



## **2.3 Organization Chart**

### **2.3.1 Office Organization Chart**

Imanpuri Sdn Bhd is being managed by two managing directors, En. Mohd Anis Bin Amiruddin and Puan Zuilmah Binti Hamzah. After that, there are four departments below managing director which consists of Construction and Engineering, Account and Admin, and Architecture and Interior Design.

Firstly, architecture department is being led by En. Hisamuddin Bin Md Kio with the help of En. Mohd Rosli Bin Ahmad. This department is responsible to handle all architecture works such as make drawing.

On the other hand, the construction and engineering department is managed by project manager, En. Jamruz. The other staffs of this department are En Muhammad Asnawi as site engineer, Mrs. Aainaa as quantity surveyor and Mohamad Aiman as site supervisor. Technically, this department handle all the construction related work which usually be done on site.

The next department which is interior design department is handling the related work for interior designing such as office renovation. This department is managed by En. Mohd Azmi Bin Kamal followed by project designer, Mrs. Norhaslinda with help of En. Abdul Rahim and Mrs. Fahimi Naemah.

The last and crucial department is account and admin. Account and admin is responsible to handle the account of company which can cause a great loss if being managed by incompetent accountant. This department is divided into the part which is account and human resources. Account is managed by Mrs. Halijah while Mrs. Syazwani is elected as human resources and admin.

The overall office organization is shown as in the figure 2.1.

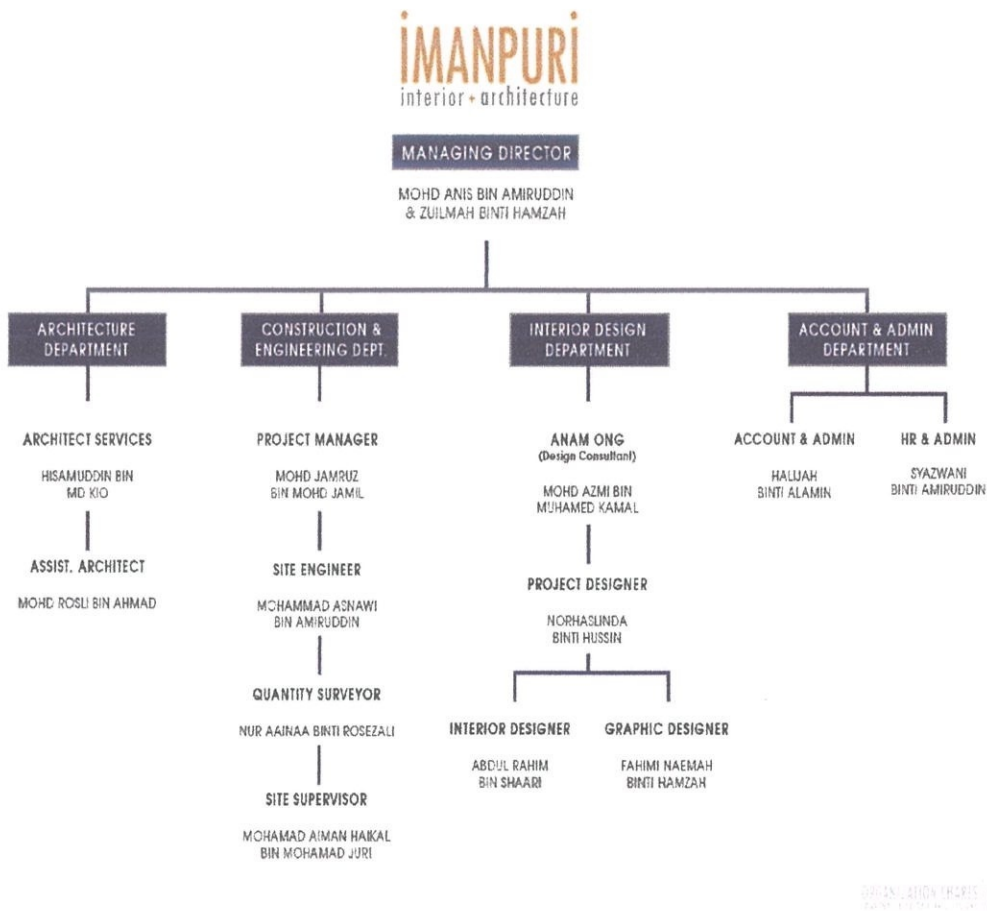


Figure 2.1: Organization Chart of Imanpuri Sdn. Bhd. (Source: Imanpuri Sdn. Bhd.)



### **2.3.2 Site Organization Chart**

Imanpuri Sdn Bhd can manage up to four construction site at each time. One of the sites is located at Subang Perdana 3 which is the site that I have been assigned to take care of. Like all other site, this site also has its own organization plan.

The head of this site is the first managing director, En. Mohd Anis. The director is responsible to supervise the site progress and related matter of costing. He also will be the one who will interact and communicate with the client.

Under director, there is the first and the only one project manager, En. Jamruz. Project manager usually handle more than two projects at a time. He is responsible to keep track of the construction progress. To become a project manager, someone must know how to use and handle work programme or also known as Microsoft project. En. Jamruz as a project manager usually use this programmer to make sure that the project is not delay based on the progress.

Under the supervision of project manager, the site supervisor, site safety and quantity surveyor work together to ensure a smooth progress at the site. Site safety responsible to handle and ensure the safety at the site is at its best. At this site, En Mohammad Idzmir Mirza Bin Ismail is assigned as site cum safety supervisor. On the other hand, the quantity surveyor who is Mrs. Aainaa is responsible for the costing of the project. As a quantity surveyor, Mrs. Aainaa always make sure that this project can make profit as maximum as possible which is the main reason of this business to begin with. On the other hand, En Zieussham acts as site supervisor which are known as the boss in the site. He is responsible to monitor the daily work of the site. Site supervisor normally handle only one site which is quite different from the project manager who handle more than two sites at a time. En Zieussham also responsible to handle the sub-contractor and ensure them to make the work as which they planed beforehand. He also makes contact with the supplier for every deal such as delivery of material to the site.

The overall view of site organization chart is shown as in the figure 2.2.

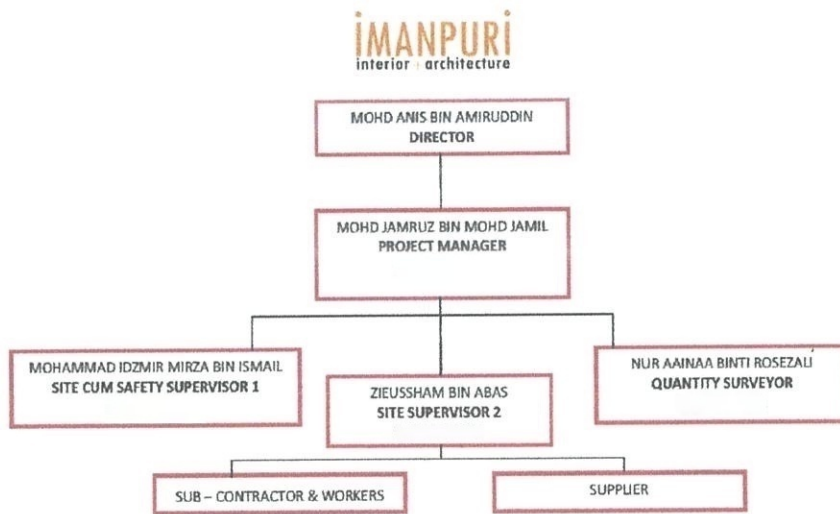


Figure 2.2.: Site Organization Chart. (Source: Imanpuri Sdn. Bhd.)

## **2.4 List of Project**

Over many years, Imanpuri Sdn Bhd has involved themselves in much construction, architecture interior design project. This project will involve either government or private sector. This project has been recorded in company profile and it is dividing into two parts which are completed project and project in progress.

### **2.4.1 Completed Projects**

Completed project is the project that already been finished. It been recorded in a table and usually summaries the past two years projects. The list of completed projects by Imanpuri Sdn Bhd for the year 2017 and 2018 is shown as in the Table 2.1.

Table 2.1: List of Completed Projects.

No.	Project Title	Client	Value of Work	Date of Completion
1	Proposed Interior Design and Renovation Work for SUKE Consultant Office Level 5, Block G, Excella Business Park, Jalan Ampang Putra, Taman Hilir, Kuala Lumpur.	Cantilever Bumi Sdn Bhd	RM 321,216.50	February 2017
2	Proposed Interior Design Works for 3 Storey Semi-D House at Saujana Rawang, Selangor.	En. Ismail Abu Bakar	RM 185,920.99	April 2017
3	Proposed Interior Renovation of Office at Level 3, Wisma Bernama No.28, Jalan 1/654 Off Jalan Tun Abdul Razak, Kuala Lumpur	Pertubuhan Berita Nasional Malaysia (BERNAMA)	RM 1,599,300.31	May 2017
4	Upgrade Masjid Batu Arang, Kuang Selangor.	Pejabat Pembangunan Persekutuan Negeri Selangor	RM 912,784.55	June 2017
5	Proposed Interior Renovation Works to THP Office Level 20 & 26 at Menara TH Selborn Jalan Tun Razak Kuala Lumpur	TH Properties	RM 319,404.08	September 2017
6	Renovation Works at Café Hangar 06 and Extension of Control Substance Warehouse for Engineering	Malaysia Airlines System Berhad	RM 1,719,885.91	October 2017
7	Proposed Renovation Works for MAS Corporate Office at Administrative Support Building Support Zone, KLIA Sepang, Selangor (CEO Office)	Malaysia Airlines System Berhad	RM 14,548.50	November 2017
8	Proposed Refurbishment Works of Operational Maintenance Office of ASU B8 Main Terminal Building (MTB), KLIA Sepang, Selangor	Malaysia Airlines System Berhad	RM 519,011.62	December 2017
9	Proposed Interior Design Fit Out and Refurbishment at Seriemas Life Style Centre Office, Kota Seriemas, Daerah Nilai, Negeri Sembilan	Seriemas Development SdnBhd	RM 569,700.00	January 2018

## 2.4.2 Project in Progress

Project in progress also known as on-going project is a project that still active and not complete. The list of completed projects by Imanpuri Sdn Bhd for the year 2017 and 2018 is shown as in the table 2.2.

Table 2.2: List of On-going Project

No.	Project Title	Client	Value of Work	Starting Date
1	Proposed Renovation Work of Roof, Ceiling and Related Work at Low Cost Apartment Subang Perdana 3, Shah Alam	Kementerian Kesejahteraan Bandar, Perumahan dan Kerajaan Tempatan (KPKT)	RM 4,618,905.16	10 January 2018
2	Proposed Renovation Work of Roof and Related Work at Apartment Nuri, Bandar Bukit Mahkota, Kajang, Selangor.	Pejabat Pembangunan Persekutuan (ICU)	RM 1,622,763.54	15 March 2018
3	Rectification of Existing Roof, Internal and External Ceiling and Related Works at Indah Cempaka Apartment, Pandan Indah, Kuala Lumpur	Pejabat Pembangunan Persekutuan (ICU)	RM 140,000.00	16 June 2018
4	Upgrading Works at Swimming Pool and Sport Complex Toilet and Changing Room at Universiti Teknologi Petronas, 32610 Bandar Seri Iskandar, Perak.	Universiti Teknologi Petronas (UTP)	RM 745,000.00	12 September 2018



## CHAPTER 3.0

### CASE STUDY

#### 3.1 Introduction to Case Study

##### 3.1 Introduction

This report is made based on the project renovation of roof at low cost apartment. This apartment is located at Taman Subang Perdana 3, Subang Perdana, Shah Alam, Selangor. This residential area consists of 5 blocks which is Block 9, Block 10, Block 11, Block 12 and Block 13. Due to the fact that Apartment Subang Perdana 3 has been built for almost 15 years, some of its structure such as roof has been malfunctioned which ultimately cause some nuisance for the residents. Therefore, Ministry of Housing and Local Government has taken great initiative to renovate the existing roof structure to ensure the well-being of the residents.

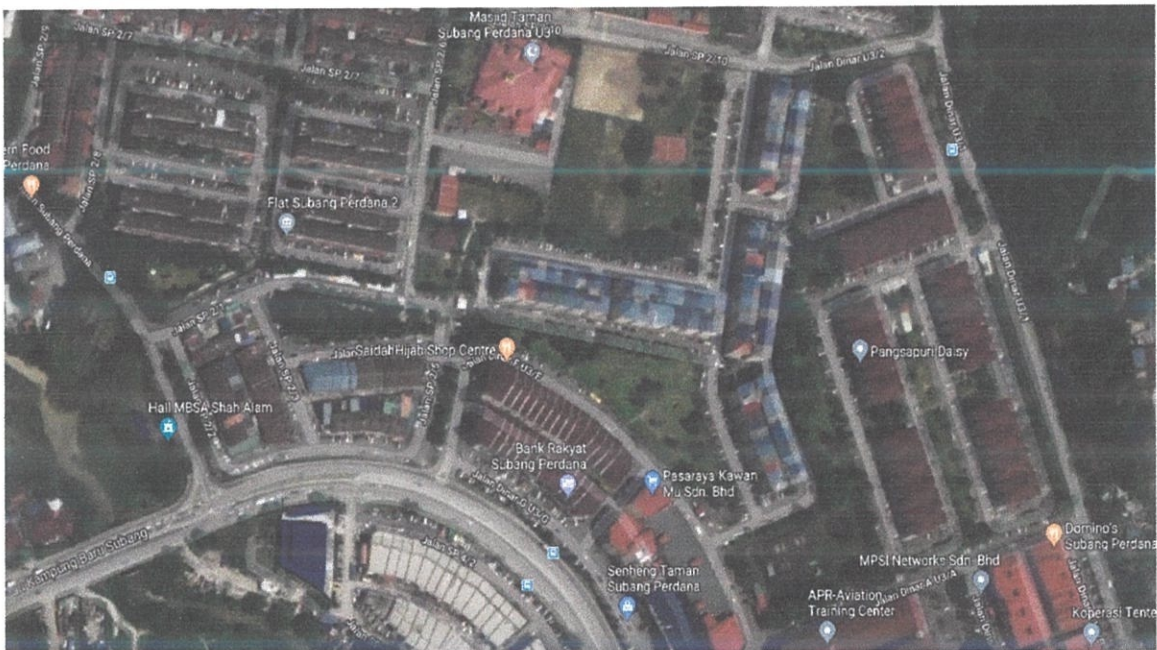


Figure 3.1: The location of Low cost Apartment Subang Perdana 3.



This project is being handled under the supervision of Ministry of Housing and Local Government as the Client. This Project is being award to Imanpuri Sdn Bhd as the main contractor on 10 January 2018. To ensure that this project can run smoothly, Imanpuri Sdn Bhd has award 3 Sub-contractors who specialist in roofing, ceiling and electrical each. The first sub contractor is Prima Wahyu Sdn Bhd. This contractor is responsible in renovation of roof structure including roof covering and gutter. Second, Pusadin is the Sub-contractor who is responsible for ceiling works. The last specialist is Zig Electrical which is specialize in electrical system work and also rain water down pipe.

There are some works that are being done in this site. Its main project is the restoration of roof. Besides, there are other works that also being done is this site such as ceiling works, painting works and electrical works. However, the related works only involved the residents at 5<sup>th</sup> floor only. Basically, the main purpose of this project is to change the roof structure which is no more suitable to be use. However, due to the fact that the roof is the crucial part of the building, the roof malfunction works can also affect the ceiling conditions and also wiring works at the upper floor. So that's why there are such related works being included in this contract.

Although there are many works that being done in this site, only the main works such roof restoration and ceiling works that are being discussed in this report.

### 3.1.2 Contract Information

Project Title	: Restoration works of roof and ceiling.
Contract No	: (KPKT/CPPP/PENY/5/35/2017)
Contract Value	: RM 4, 357,457.70
Contractor	: Imanpuri Sdn Bhd
Register class	: CIDB G5 (Bumiputera)
CIDB register Number	: 01201121129-SL147185
Date of Commencement	: 10 <sup>th</sup> January 2018
Date of Completion	: 05 <sup>th</sup> March 2019
Contract Duration	: 60 weeks
Worksmen Compesation Number	: KGNC 055061
Contractor All Risk Number	: KGNC 054170
Performance Bond Value	: RM 230,945.26

### 3.2 Methods of Restoration

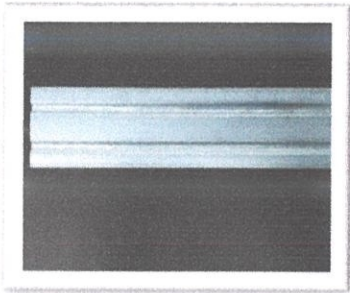
This restoration works consists of two parts which restoration of existing roof and restoration of existing ceilings. Basically, the roof structure will be fixed first before proceeding towards restoration of ceiling work. This is because ceiling works can only start after roofing works finish or otherwise the ceiling has greater probability to defect once again due to exposure of outer environment.

#### 3.2.1 Roof Restoration Process


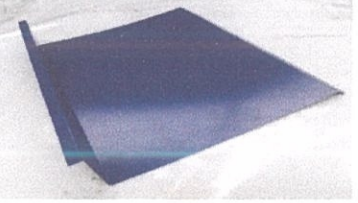
Before starting the renovation works, the contractor has studied the existing drawing first. This is important to make sure the actual cost project which then beneficial in preventing unnecessary loss to the company. For this project, there are only two drawings was studied. Technically the two drawings are the same except the one signifies the roof of block 9, 10, 11 and 13 while the other one indicates the roof structure of block 12. The reason two drawings exists because the number of unit in block 12 is differ compare to the other blocks.

After all the information for the roof structure has been gathered, the contractor proceeds in ordering the required equipment for the renovation process. All the equipment needed for roofing works are stated in table 3.1.

Table 3.1: List of material for roof restoration

BIL	DESCRIPTION	REFERENCE	IMAGE
1	Truss System	MSA/IPSB/TSP3/009	

BIL	DESCRIPTION	REFERENCE	IMAGE
2	Truss System – Screw	MSA/IPSB/TSP3/012	
3	Metal Fascia Board	MSA/IPSB/TSP3/014	
4	Wire Netting	MSA/IPSB/TSP3/017	
5	Fiber Glass Wool	MSA/IPSB/TSP3/018	

BIL	DESCRIPTION	REFERENCE	IMAGE
6	Double Sided Aluminium Foil	MSA/IPSB/TSP3/019	
7	Roof Gutter (ARENSI-MARLEY)	MSA/IPSB/TSP3/020	
8	Ridge Capping	MSA/IPSB/TSP3/022	
9	Wall Flashing	MSA/IPSB/TSP3/023	
10	Metal Deck	MSA/IPSB/TSP3/024	



The restoration process starts by lifting all the materials to the roof level by using mobile crane. The surrounding area around the crane needs to be cleared to prevent any unwanted accidents. The material has been tied carefully and neatly to ensure that the material will not fall down.



Figure 3.2: Lifting Materials

After that, the existing roof structure such as covering will be dismantles and put aside. However, for the roof trusses, only the one which has malfunctioned will be removed.



Figure 3.3: Dismantle of existing roof structure



The exposed area will be covered if when raining to ensure prevent the water from entering the inner side of the building.



Figure 3.4: Temporary covering for roof structure

After dismantling roof structure, the workers will dismantle the gutter and rain water down pipe by using sky lift.

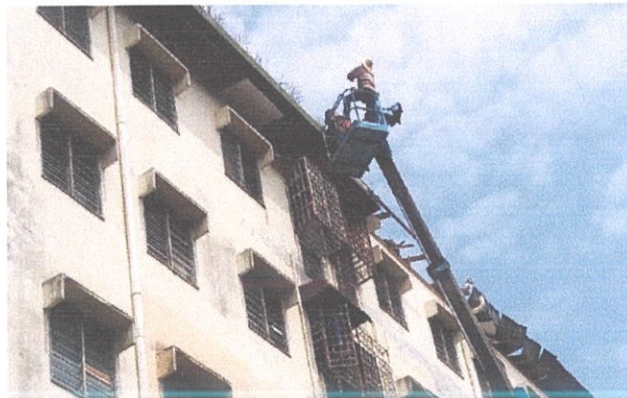


Figure 3.5: Dismantle gutter

Next, the installation of new trusses will begins. This project use lightweight steel trusses which proved to be last longer than the existing trusses which is from wood. The new trusses were installed besides the existing trusses.



Figure 3.6: Installation of new trusses system

The next process involved the installation of wire netting which is also known as chicken netting on top of the new trusses. The netting acts as the support for roofing underlay and insulation. On the other hand, chicken netting can also been used to provide safety nets during renovation process.



Figure 3.7: Installation of wire netting



After that, the workers laid double-sided aluminium foil on top of the wire netting. The aluminium foil acted the insulation for the roof. It is widely uses for metal deck roof system due to its ability to withstand and reflect unnecessary heating from outer environment. The aluminium foil also known to be light in weight and easy to conduct. Aluminium foil was installed by drilling it to the new trusses.



Figure 3.8: Installation of Aluminium Foil

The next process is installation of fiber glass wool. Fiber glass wool is usually use with metal deck roofing system. This is because metal deck roof tend to produce loud noise during raining weather. Therefore, fiber glass wool is introduced to reduce unnecessary noise which can cause nuisance to the residents.



Figure 3.9: Installation of Fiber Glass Wool

After that, the metal deck covering is installed. The covering will be place on top of the fiber glass wool. Once all the covering is installed, ridge capping will be placed.



Figure 3.10: Installation of Metal covering

The gutter system for the roof is installed just before the installation of roof covering. It is functional to flow rain water to the rain water down pipe system. Bear in mind that gutter cannot be installed after roof covering or otherwise its function cannot be fully used.



Figure 3.11: Installation of gutter

Last but not least, after the renovation process is finished, the waste is taking down by using mobile crane. While this process undergo, residents not allowed to roaming around the working area to prevent any unwanted accidents.



Figure 3.12: Clearing process

### 3.2.2 Ceiling Restoration Process

Ceiling is an inner side covering which provides aesthetic value and protection from unwanted things such as dust. Ceiling usually has a long durability compare to roof because it not exposed to outer environment and weather. However, if the roof is damage, it will also affect ceiling structures. Therefore, this project involves ceiling renovation works and this how it runs.

Firstly, the contractor will studied the drawing to identify the amount of ceiling needed in each house to avoid excessive waste. Bear in mind that only the damaged ceiling will be replaced while other are only be applied new finishes. Then, the progress at site starts by dismantling of existing ceiling structures including ceiling trusses. For the ceiling which located on the outside, Sky lift and staging will be used for dismantle process.



Figure 3.13: Dismantle existing ceiling structure.



Third process is installation of new ceiling structure or trusses. This is important to ensure that it can cover the load of the ceiling and thus prevent it from collapse. For the outside area of ceiling, a sky lift is used.



Figure 3.14: Installation of ceiling structure

Then, the new ceiling will be installed by using specific nails for the ceiling. As usual, for the outside ceiling works, a sky lift will be used.



Figure 3.15: Installation of ceiling

Last but not least, the new ceiling that be installed alongside with old ceiling that still can be used, will be applied new finishes, the finishes used is white Maxilite paint. As before, sky lift will be used for ceiling works outside the building.



Figure 3.16: Apply ceiling finishes

The same process will be repeated for ceiling works in all house units at 5<sup>th</sup> floor.



Figure 3.17: completed ceiling works

### 3.3 Problems

“Under any circumstances, we can never deny problems. It’s not about how to prevent it, but it more about how to face it.” This is the inspiration words that been used by the supervisor whenever problems arise. At the site at Taman Subang Perdana 3, there are some problems that happen which affect the work progress. The problems that identified at this site is related to three parties which are client, sub-contractors and residents.

The client is the main head of every project. If the problems come from them, it will make the whole project look quite miserable. That is the scenarios that happen at this site. The client which is Ministry of Housing and Local Government (KPKT) has given the unfortunate news since the June 2016. Due to the fact that Malaysia has taken the initiative to change Government, many parties especially in construction industries are affected by that. As for this project, the political change in Malaysia has cause all the projects fund or money to be freeze. This happen due to the fact that the account management in KPKT are bound to be move into other sector which force the KPKT account to be freeze. Surely, when all of this happens, it will cause greater problems to the contractor. Fortunately, Imanpuri Sdn Bhd which is being led by competent contractor has a backup plan. Imanpuri Sdn Bhd has taken the fund from other project to ensure that this project can still have a better progress and reducing the delayed of project. As a result, when others companies are struggling to keep finish their project before the deadline, Imanpuri Sdn Bhd has already thinking to finish this project ahead of schedule. This work is being proved and praised by the client.

Secondly, the problems also come from the sub-contractor. As stated before, Imanpuri Sdn Bhd has award some sub-contractors to finish the project. It is surely beneficial to ensure the work progress is going smoothly, but in the meantime, it’s also welcomes more problems. This is exactly what happens at Taman Subang Perdana 3. Due to the fact that the account has been freezed, Imanpuri Sdn Bhd is struggling to ensure the payment to be credit to sub-contractor. A usual scenario,



when the sub-contractors are not being paid, some of them strike. The progress are getting real slow for several months. To overcome this, Imanpuri Sdn Bhd through its Site Supervisor and Project Manager are meeting with all the sub-contractors to discuss the issue. This meeting has reached a positive agreement which the sub-contractors are willing to continue the progress as usual even without being paid before. This all happen due to the fact the the willingness to finish this project not only for owns profit but also for the residents of Subang Perdana 3.

However, some of the residents are quite ungrateful. Quite different from the construction, renovation needs the contractor to handle the residents. This is where the third major problems come from. Early in the project, the work progress has been delayed for such a long time. This all happen due to the fact that there are some of the residents who are not willing to give cooperation. As stated in the agreement, the residents in 5<sup>th</sup> floor level needs to move out in order for renovation process to start. However, some of them did not move out before the designated date as stated in the evacuation notices. This happen because they cannot afford to rent another house while some of them cannot move far away because of their children who go to nearby school. This problem will cause the work to be delay due to inability of the contractor to start the work as it may cause harm to the residents. Fortunately, once again, the quick action taken by Project Director has saved the day. To solve this problem, Imanpuri Sdn Bhd decided to appoint a site agent to handle all problems involving the residents. For this site, the site agent is Joint Management Body (JMB). As a result, many problems are solved by them without even need involvement from the contractor. The site agent also did well when they can make all the residents in block 12 to move as stated in the evacuation notices. On the other hand, the client also provided a temporary place for the residents to stay which is under Projek Perumahan Rakyat (PPR). This contributes for the projects to finish early as contractor can do their work freely without any interruptions.

### **3.4 Cost and Time**

In accepting any construction project, the cost and time stated need to be taken into consideration. As stated before, this project runs for 60 weeks starting from 10<sup>th</sup> January 2018 until 5<sup>th</sup> March 2019. The contract price is about Ringgit Malaysian Four Million Three Hundred Fifty-Seven Thousand Four Hundred Fifty-Seven and Seventy cents. (RM 4,357,457.70).

#### **3.4.1. Time**

As stated in the contract, this project started at 10<sup>th</sup> January 2018 and expected to end before 5<sup>th</sup> March 2019. This means that renovation works will undergo in three months for each block. This significant duration will be the reference for the residents. Thus, for each block, the residents at 5<sup>th</sup> floor will only evacuate their house for three months only. Therefore, Imanpuri Sdn Bhd has set to finish renovation works for each block within 3 months only.

The project started slowly in the beginning due to problems that caused by the residents as stated before. However, starting from March 2018, the contractor is able to catch up the delayed progress. In the middle, the progress turns to become slow once again. This happens due to the fact that Malaysia has changed in government which resulting in political changes. As stated before, this change has caused the fund and account of client to be free. Therefore, the contractor is short of fund. However, with the commitment that has been given by Imanpuri Sdn Bhd, the contractor still is able to catch up the delayed progress even with such problems. In the early October, the client who is amazed by contractor's commitment has worked hard to ensure the entire contractor's claims are being fulfilled. With no longer fund to be the problem, the contractor is able to catch up once again and now they are committed to end this project ahead of schedule. The whole up and down of this project are shown in the figure 3.18.



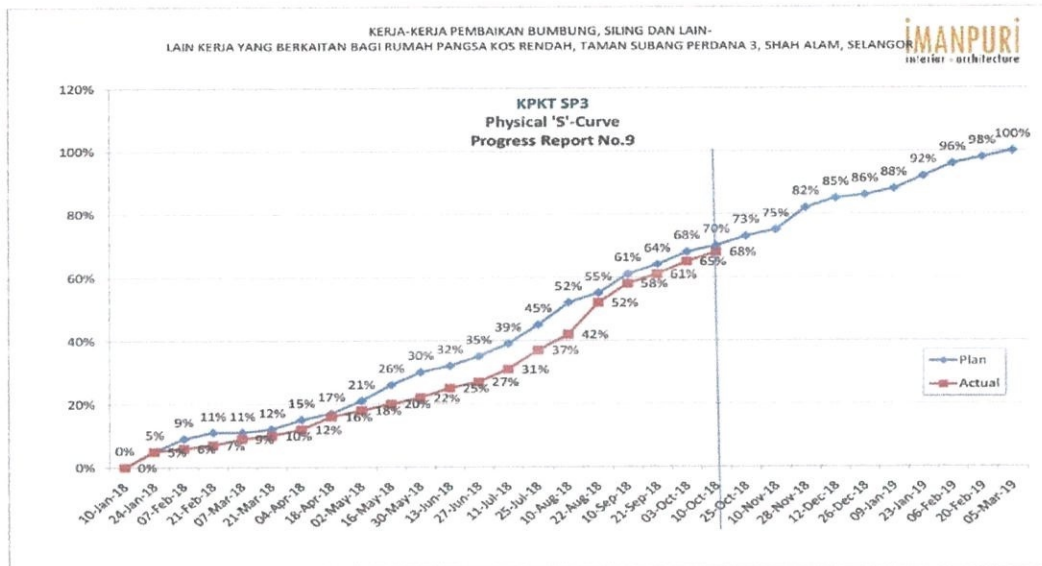


Figure 3.18: Physical S-Curve of Project KPKT SP3 (Source: Imanpuri Sdn Bhd)

As for the scope of work, it started with the roofing works followed by ceiling works and end by electrical works. This order of works is stated in Master Work Programme for Project KPKT SP3. The order of work is important to ensure the work will progress smoothly while preventing any upcoming problems. The overall view can be seen at the Master Work Programme provided.

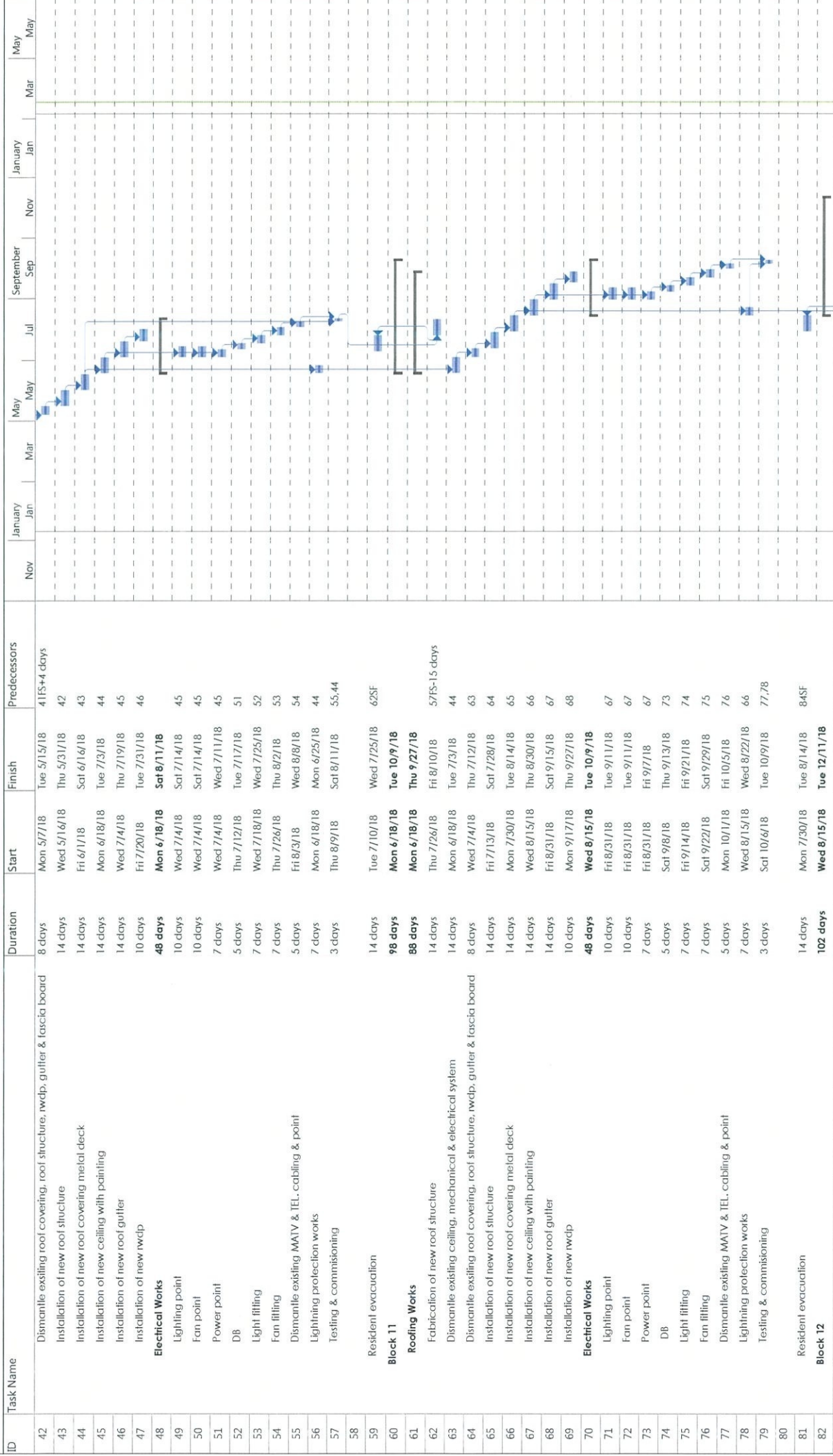
**MASTER WORK PROGRAMME FOR PROJECT RESTORATION WORKS  
AT LOW COST APARTMENT SUBANG PERDANA 3, SHAH ALAM,  
SELANGOR**

ID	Task Name	Duration	Start	Finish	Predecessors	Nov	Jan	Jan	Mar	May	Jul	September	Nov	Jan	Mar	May
1	<b>ROOFING WORKS RUMAH PANGSA KOS RENDAH, SUBANG PERDANA</b>															
2	<b>MILESTONE START</b>	360 days	Wed 1/10/18	Tue 3/5/19												
3	<b>SITE POSSESSION</b>	0 days	Wed 1/10/18	Wed 1/10/18												
4	<b>PRELIMINARIES</b>	1 day	Wed 1/10/18	Wed 1/10/18												
5	Site Establishment	24 days	Thu 1/11/18	Wed 2/7/18												
6	Site office & utilities	3 days	Thu 1/11/18	Sat 1/13/18	3											
7	Preparation of fabrication yard	14 days	Mon 1/15/18	Tue 1/30/18	5											
8	Signboard	5 days	Mon 1/15/18	Fri 1/19/18	5											
9	Mobilization	10 days	Mon 1/15/18	Thu 1/25/18	5											
10		7 days	Wed 1/31/18	Wed 2/7/18	6											
11	<b>CIVIL WORKS</b>	348 days	Mon 1/15/18	Sat 2/23/19												
12	<b>ROOF SYSTEM</b>	348 days	Mon 1/15/18	Sat 2/23/19												
13	Design of new roof system, submission & approval	21 days	Mon 1/15/18	Wed 2/7/18	5											
14																
15	Resident evacuation	14 days	Mon 1/15/18	Tue 1/30/18	5											
16	<b>Block 9</b>	112 days	Wed 1/31/18	Sat 6/9/18												
17	<b>Roofing Works</b>	102 days	Wed 1/31/18	Tue 5/29/18												
18	Fabrication of new roof structure	14 days	Wed 1/31/18	Thu 2/15/18	15											
19	Dismantle existing ceiling, mechanical & electrical system	14 days	Wed 1/31/18	Thu 2/15/18	15											
20	Dismantle existing roof covering, roof structure, rwdp, gutter & fascia board	8 days	Sat 2/24/18	Mon 3/5/18	19/5+7 days											
21	Installation of new roof structure	14 days	Wed 3/14/18	Thu 3/29/18	20/5+7 days											
22	Installation of new roof covering metal deck	14 days	Fri 3/30/18	Sat 4/14/18	21											
23	Installation of new ceiling with painting	14 days	Mon 4/16/18	Tue 5/1/18	22											
24	Installation of new roof gutter	14 days	Wed 5/2/18	Thu 5/17/18	23											
25	Installation of new rwdp	10 days	Fri 5/18/18	Tue 5/29/18	24											
26	<b>Electrical Works</b>	48 days	Mon 4/16/18	Sat 6/9/18												
27	Lighting point	10 days	Wed 5/2/18	Sat 5/12/18	23											
28	Fan point	10 days	Wed 5/2/18	Sat 5/12/18	23											
29	Power point	7 days	Wed 5/2/18	Wed 5/9/18	23											
30	DB	5 days	Thu 5/10/18	Tue 5/15/18	29											
31	Light fitting	7 days	Wed 5/16/18	Wed 5/23/18	30											
32	Fan fitting	7 days	Thu 5/24/18	Thu 5/31/18	31											
33	Dismantle existing MATV & TEL cabling & point	5 days	Fri 6/1/18	Wed 6/6/18	32											
34	Lightning protection works	7 days	Mon 4/16/18	Mon 4/23/18	22											
35	Testing & commissioning	3 days	Thu 6/7/18	Sat 6/9/18	33											
36																
37	Resident evacuation	14 days	Fri 3/30/18	Sat 4/14/18	40SF											
38	<b>Block 10</b>	102 days	Mon 4/16/18	Sat 8/11/18												
39	<b>Roofing Works</b>	92 days	Mon 4/16/18	Tue 7/31/18												
40	Fabrication of new roof structure	14 days	Mon 4/16/18	Tue 5/1/18	22											
41	Dismantle existing ceiling, mechanical & electrical system	14 days	Mon 4/16/18	Tue 5/1/18	22											

Project: tracking MWP BUMBU

Task: Inactive Task (Blue bar), Inactive Milestone (Dotted line), Milestone Summary (Green bar), Project Summary (Grey bar)  
 Split: Inactive Milestone (Dotted line), Manual Task (Blue bar), Duration-only (Grey bar)  
 Milestone: Inactive Milestone (Dotted line), Manual Summary (Blue bar), Start-only (Red bar), Finish-only (Green bar)  
 Summary: Inactive Milestone (Dotted line), Manual Summary (Blue bar), Start-only (Red bar), Finish-only (Green bar), External Tasks (Grey bar)  
 External Milestone: External Milestone (Green bar), Deadline (Red bar), Critical (Red bar), Critical Split (Dotted line), Progress (Blue bar)  
 Manual Progress: Manual Progress (Blue bar)

KPKT Page 1. IMANPURI SDN BHD



Project: tracking .MWP BUMBU

Legend:

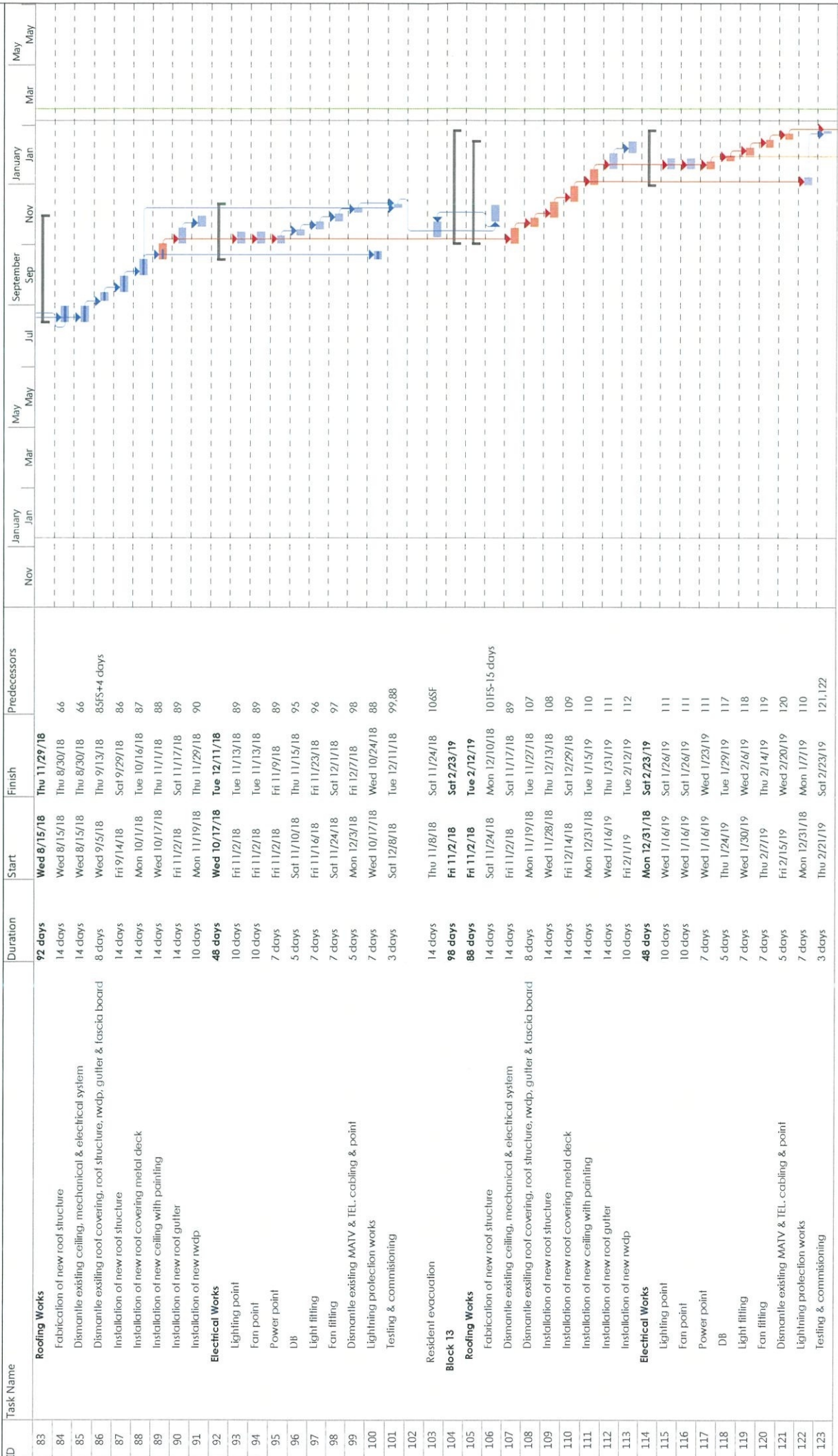
- Task: Blue bar
- Split: Dotted line
- Milestone Summary: Diamond
- Project Summary: Grey bar
- Inactive Task: Light blue bar
- Inactive Milestone: Dotted line
- Inactive Summary: Light grey bar
- Manual Task: Dark blue bar
- Manual Milestone: Diamond
- Manual Summary: Dark grey bar
- Duration-only: Thin blue bar
- External Milestone: Diamond
- Manual Progress: Blue bar
- Deadline: Red bar
- Critical: Red bar
- Critical Split: Dotted line
- Progress: Blue bar
- Start-only: Thin blue bar
- Finish-only: Thin blue bar
- External Tasks: Grey bar

Page 2

IMANPURI SDN BHD

KPKT





**Project: tracking -MWP BUMBU**

KPKT

IMANPURI SDN BHD

Page 3

Legend:

- Task: Inactive Task (blue bar), Inactive Milestone (dotted line)
- Split: Milestone (diamond), Summary (bracket)
- Milestone: Manual Task (solid bar), Duration only (dotted line)
- Summary: Project Summary (bracket), Manual Summary (bracket), Start-only (bracket), Finish-only (bracket), External Tasks (bracket)
- Task: Manual Progress (blue bar), External Milestone (diamond), Deadline (green arrow), Critical (red bar), Critical Split (dotted line), Progress (blue bar)



ID	Task Name	Duration	Start	Finish	Predecessors	Nov	Jan	Mar	May	Jul	Sep	Nov	Jan	Mar	May
124	Final cleaning & site clearing	11 days	Thu 2/21/19	Tue 3/5/19	121										
125	As built drawing	14 days	Thu 1/24/19	Fri 2/8/19	117										
126	Handing over	7 days	Tue 2/26/19	Tue 3/5/19	125FF										
127	Milestone finish	0 days	Tue 3/5/19	Tue 3/5/19	127										



### 3.4.2 Cost

The overall cost of this project is RM 4,357,457.70. This amount will be paid based on the actual progress on site. If the work progress is delayed, the amount that will pay also will reduce. This can be seen thoroughly based on the figure 3.19.

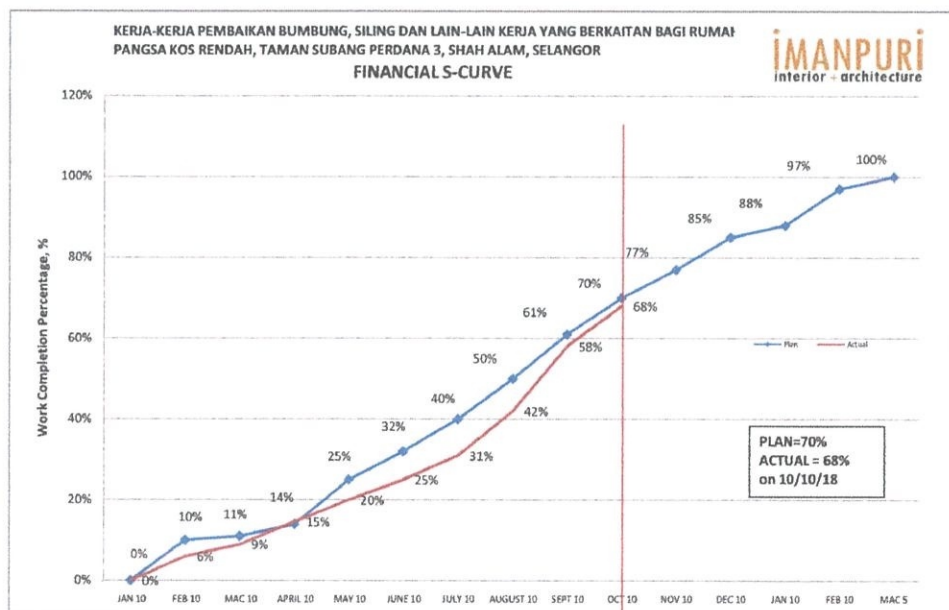


Figure 3.19: Financial S-Curve for Project KPKT SP3 (Source: Imanpuri Sdn Bhd)

During the duration of the project, Imanpuri Sdn Bhd has only make a total amount of three claims which takes amount of Ringgit Malaysian Two Million Six Hundred Ninety-Six Thousand Five Hundred Sixteen and Thirty-Six Cents (RM 2,696,516.36). However, only Ringgit Malaysian Six Hundred Fifty-Nine Thousand

Eight Hundred and Eighty (RM 659,880.00) has been paid. The overall view of claims are shown in figure 3.20.



**KERJA-KERJA PEMBAIKAN BUMBUNG, SILING DAN LAIN-LAIN KERJA YANG BERKAITAN  
BAGI RUMAH PANGSA KOS RENDAH, TAMAN SUBANG PERDANA 3, SHAH ALAM, SELANGOR**



**12.0 CLAIM INTERIM**

INTERIM NO	VALUATION DATE	TOTAL CLAIM (RM)	SUBMISSION DATE	PAYMENT DATE RECEIVED	TOTAL PAID (RM)	REFERENCE
1	31-05-2018	816,850.31	31-05-2018	30-08-2018	659,880.00	
2	21-08-2018	650,040.48	21-08-2018			
3	27-09-2018	1,229,625.57	24-09-2018			
4						
5						
6						
7						
8						
9						

Figure 3.20: Claim Interim for Project KPKT SP3

## **CHAPTER 4.0**

### **CONCLUSION**

#### **4.1 Conclusion**

In a nutshell, it is wise to say that Imanpuri Sdn Bhd has make a perfect plan to ensure that this project will run smoothly and therefore ensure that this project can be finish before the deadline. Firstly, although the renovation method that been use is quite usual and ordinary, it has been proved to be effective. This methods is easy to applied on site while can maximize the profit without reducing the quality of works. The contractor also manage to solve any problems that rising during the durations of project. However, there still some problems that that cause great effect to the project. For example, if the claim still not be paid before the end of this year, the contractor will face a big loss which can affect the project progress and other project progress too. The new structure of roof will be a blessed to its residents. With all the problems with the roof structure, ceiling and electrical has fade away, the residents could live a better way for the upcoming decades.

## REFERENCES

### Books

1. Bell, D. (2000). Roof Construction. Donhead Publishing Ltd, Oxford.
2. Adams, A. (2014). Construction Technology. Mc Graw Hill, New York.
3. Chan Teng Hoong (1999). Bahan dan Binaan. Penerbit Fajar Bakti, Kuala Lumpur.

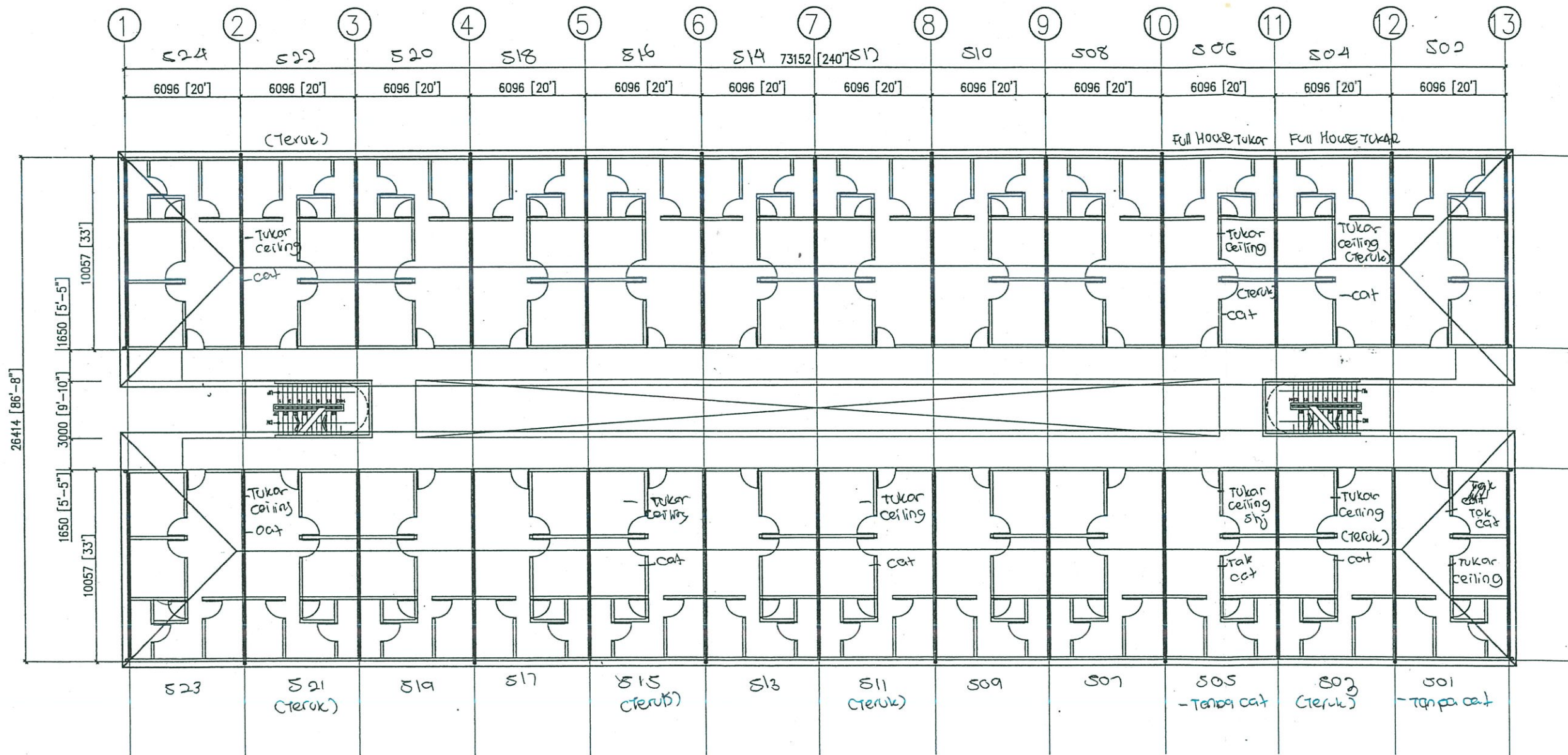
### Website

1. CIDB Malaysia (2014). Available from: <http://www.cidb.com.my>
2. Metal Deck (2000). Available from:  
<https://patents.google.com/patent/US6141932A/en>
3. Roof Structure (1971). Available from:  
<https://patents.google.com/patent/US3605355A/en>



## **APPENDIX**

1. Drawing plan of roof structure for Apartment Subang Perdana 3.



TYPICAL EXISTING LAYOUT FLOOR PLAN 9,10,11 & 13

This drawing is copyright. Contractor must check all dimensions on site. Only figured dimensions are to be worked on. Discrepancies must be reported immediately to the designer in charge before proceeding.

PROJECT TITLE

CLIENT

**IMANPURI**  
interior + architecture

14A, Jalan Balapan 13/32, Seksyen 13,  
40100 Shah Alam,  
Selangor Darul Ehsan

SCALE

1:250

DATE

DRAWN BY

CHECKED BY

ANIS AMIR

DRAWING TITLE

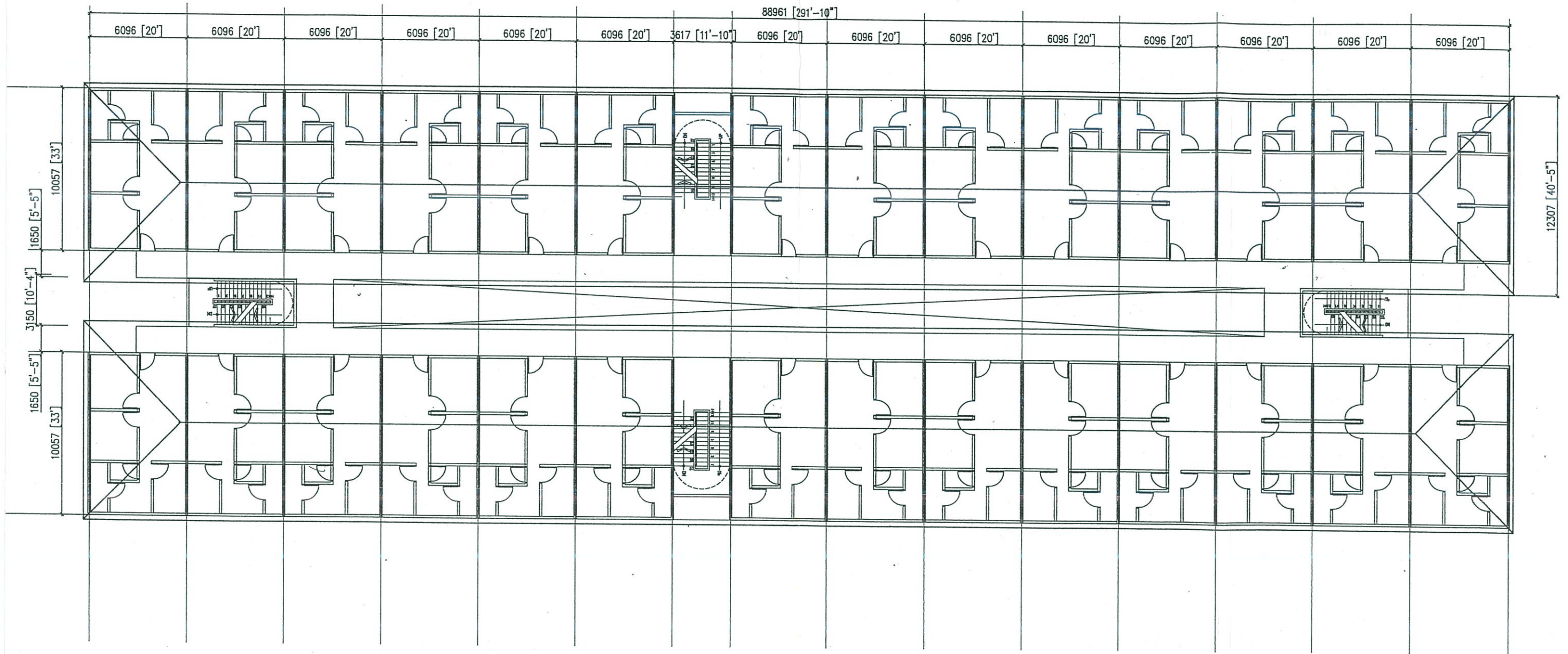
DRAWING NO

2017-IMPDKPKT-

REVISION

31012018





TYPICAL EXISTING LAYOUT FLOOR PLAN BLOCK 12

This drawing is copyright. Contractor must check all dimensions on site. Only figured dimensions are to be worked on. Discrepancies must be reported immediately to the designer in charge before proceeding.

PROJECT TITLE

CLIENT

**IMANPURI**  
interior + architecture

14A, Jalan Balapan 13/32, Seksyen 13,  
40100 Shah Alam,  
Selangor Darul Ehsan

SCALE

1:250

DATE

DRAWN BY

CHECKED BY

ANIS AMIR

DRAWING TITLE

DRAWING NO

2017-IMPD-KPKT-

REVISION

31012018