



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

**VARIATION ORDER PROCESS FOR RENOVATION OF A  
SINGLE-STOREY HOUSE AT BALOK**

**Prepared by:**

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

**FEBRUARY 2022**

It is recommended that the report of this practical training provided

**By**

**Nur Zuhairah Syazwani Bt Shaifullizam**

**2019208724**

**entitled**

**Variation Order Process For Renovation Of A Single-Storey House At Balok**

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

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**(PERAK)**

**FEBRUARY 2022**

**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 Tenaga Jaya Construction Development Sdn Bhd for duration of 20 weeks starting from 23 September 2021 and ended on 7 January 2021. 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 : 2019208724

Date : 10 January 2022

## **ACKNOWLEDGEMENT**

First and foremost, At the very beginning, I would like to express my deepest gratitude to almighty Allah for giving me the strength and the composure to complete my Diploma in Building courses and prepare this report within the scheduled time.

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Secondly Thanks my heartfelt gratitude to all lecturers that have educated and encouraged me in my effort to become a better student and person. The lecturer frequently advised us on how to structure our project paper. I am also grateful to him for providing me with a thorough understanding of the subject. To Ts. Mohamad Hamdan bin Othman, Report Supervisor, Ts. Muhammad Naim Bin Mahyuddin, Practical Training Coordinator, Ts. Dr. Dzulkarnaen bin Ismail, Programme Coordinator.

In addition, I will acknowledge my friends who inspired and assisted me in completing my work. I hope that this project paper has been completed to fulfil the course requirement.

Thank you so much.

## **ABSTRACT**

Variation Order (VO) is a normal issue in building projects. It requires amending the initial scope of work as specified in the contract. VO is caused by a variety of reasons. As a result, there were cost overruns, delays, and even contract disputes amongst parties. This research was conducted at Balok since it was one of the new projects that needed to be handled. The purpose of this study was to identify the method of variation order process, the time and cost of variation order applied, and to determine the root causes of variation and the impacts of variations on Balok projects. Data collection involved in the survey with an observation and unstructured interviews that happened when site visited. Also, document reviews of the project consisting of variation orders are made and indentified. Significant VO factors affecting time performance, according to the study, include schedule changes, scope changes, design modifications, finance challenges, and a lack of strategic planning. A change in schedule, a financial issue, insufficient working drawing information, a change in specification, and financial challenges were all significant variables influencing cost performance. It is proposed that good financial management and thorough design might help reduce variation orders and hence improve project performance.

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## CHAPTER 1.0

### INTRODUCTION

#### 1.1 Background of Study

One of the most essential aspects in building production is the cost of a construction project. The budget of a project may deviate from the initial estimated price for a variety of reasons. A variation order is one that is ordered in a way that closely complies to the criteria of the contract's variation provisions, and it usually needs documented documentation on the variation where the works deviate from the original contract (Sarwono *et al.*, 2016). Variation orders, in general, entail changes in scope, time and material for further work, and higher charges for additional working hours. Changes in construction projects are unavoidable due to the dynamic and complicated structure of the construction industry, and variation orders are used in all sorts of projects. This might be due, at least in part, to a complete lack of understanding and appreciation for the impact of these changes on project performance (Moselhi *et al.*, 2005).

Variations are inevitable in any construction projects (Ibbs *et al.*, 2001). Variation order are common in construction as it usually happen when the client has dissatisfaction and they want to change their mind. It refers to a collection of orders that allow for changes or additions to a prior permission in the case of capacity or the nature of the activity to be performed. When a variation order is issued, it has a number of unfavourable consequences for both the employer and the construction executors (Anatol & Abhishek *et al.*, 2017, p.1602).

## **1.2 Objectives**

This report covered the process of variation order for renovation project of a single storey house. Therefore, the objectives of this study are:

- i. To investigate the methods of variation order process.
- ii. To analyse the time and cost of variation order applied to this project.
- iii. To determine the causes of variation order and impacts of variation order.

## **1.3 Scope of Study**

This study is carried out at No.15, Lorong Barat Darat 34, Perumahan Balok Darat, 26100, Kuantan, Pahang Darul Makmur. For this project, the study focuses on a variation order procedure. For this, researched the techniques of variation order processing, including the duration and cost of variation orders used on this project as site visit. In addition, this project are investigated the reasons of the variation order procedure and how they affect when the variation order is issued. For this project, the machineries and materials are not what studied as it is focus more on a document issued at a client.

## **1.4 Methods of Study**

### **1. Observation**

Observing is one method of researching and comprehending the ongoing project process. Writer learnt about the variation order procedure and how to issue a variation order to a customer through observation. Writer observed the procedure of variation order for almost a month, taking pictures and take notes as site visit at the project.

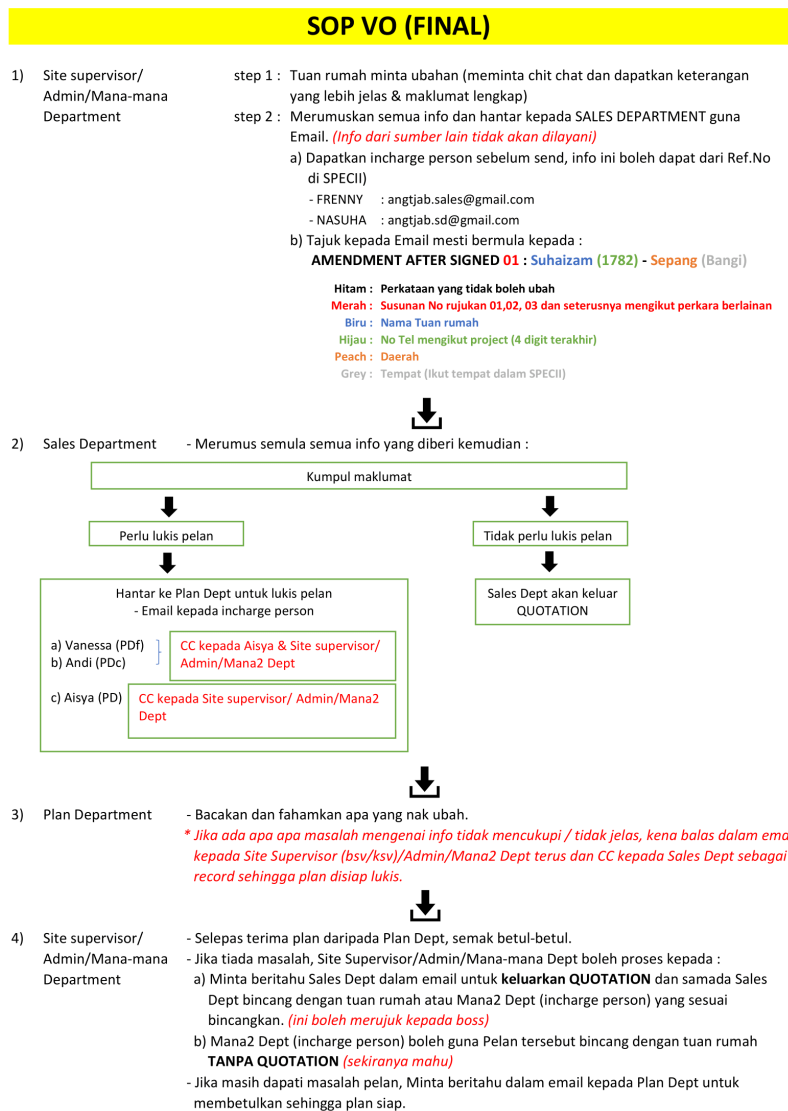
### **2. Interviews**

For this strategy, writer conducting unstructured interviews with supervisors by asking questions about my job. Also, while we're on a site visit, writer ask a question to a labourer if writer don't understand something. This might be useful in the process of order variation. Writer would periodically ask

questions to ensure that writer was up to date on the information that the customer required.

### 3. Document reviews

Document Review is a systematic data collecting process that involves the review of existing records or documents. For this method, writer gathered information by referring to construction drawings created by the plan department. In addition, writer refer to the company's agreed-upon standard operating procedures.



**Figure 1.1 : Standard Operating Procedures for Variation Order**

**Source: SOP Tenaga Jaya Construction**

**SOP VO (FINAL)**



- 5) Sales Department - Selepas terima arahan daripada Mana2 Dept (incharge person) untuk **keluarkan QUOTATION** :  
- selepas keluar **QUOTATION**, samada :  
1) Sales Department direct kepada Owner (tanya boss) dan/atau,  
2) Email balik kepada Site Supervisor untuk bincang dengan owner  
*\* Ikut keadaan tersebut dan keputusan dari Boss*



- 6) Result - Ada 3 Keadaan :  
1) Jika owner masih ada ubahan, procedure atas akan berulang semula lagi start daripada 1) , 2), sehingga 5)  
2) Jika owner tak mahu, Minta Incharge person (Sales Department / Site Supervisor) beritahu dalam email ini sebagai record sama-sama  
3) Jika Owner bersetuju dengan QUOTATION dan PELAN, Sales Department / Site Supervisor (*Depend siapa yang bincang dgn owner*) mesti reply email dengan adanya attachment QUOTATION yang sudah owner signed / sebarang bukti dalam keadaan black/white (*Bentuk whatsapp screenshot, gambar dan sewaktu denganya*) kemudian Sales Dept akan proses kepada VO)



- 7) Sales Department - VO yang sudah Keluar akan pass boss sign dan akan email balik dalam email ini kepada :  
1) Plan Department & Site Supervisor (*Tanpa tunjuk harga*)  
2) Admin Department guna email SIGNED AGREEMENT based on requirement mereka.

-----DONE-----

**Figure 1.2 : Standard Operating Procedures for Variation Order**

**Source: SOP Tenaga Jaya Construction**

## **CHAPTER 2.0**

### **COMPANY BACKGROUND**

#### **2.1 Introduction of Company**

Tenaga Jaya Construction Development Sdn Bhd is a company that started in 2005. Before, they known as Tenaga Jaya Construction as they were specialist in bungalow construction on its own land, with more than 26 years of experience. They were able to construct over 1053 dwellings without abandoning any records. They also successfully opened three branches in Temerloh, Kuantan, and Bangi.

#### **2.2 Company Profile**

Tenaga Jaya Construction Development Sdn Bhd or Tenaga Jaya Construction opened their first branches in Temerloh located at No.2 Jalan Semantan Baru 2, Simpang Songsang, 28000 Temerloh, Pahang. They also opened a second branches at A-69, Tingkat Satu, Perkampungan Seri Setali, Jalan Haji Ahmad, 25300 Kuantan, Pahang and third branch at E-1-11(1<sup>st</sup> Floor), Jalan Bg 3B/1, Bangi Gateway 3B, 43650 Bandar Baru Bangi, Selangor. This company is a grade 5 in construction.

Mr Ang Hwa Wah is the director manager, and he is an ambitious man who takes his business seriously, working hard to achieve what he has today. The company has now moved to development in order to expand their business. In 2022, as planned, this company will begin to open for housing selection.

### **2.3 Company Organisation Chart**

Mr Ang Hwa Wah is the company's director manager, and he is the one who gives all orders. Because this company does not have an HR department, the marketing department handles all of the documentation pertaining to all of the employees. They are also in charge of marketing and making the TJC known via social media. As the middleman, the administration department also assists in the management of all work in this company. Furthermore, there is a sales staff that handles all client meetings and assists clients in achieving their goals to build their dream house. The site department is in charge of ensuring that all construction work progresses smoothly since they manage it extremely professionally.

# ORGANIZATION CHART

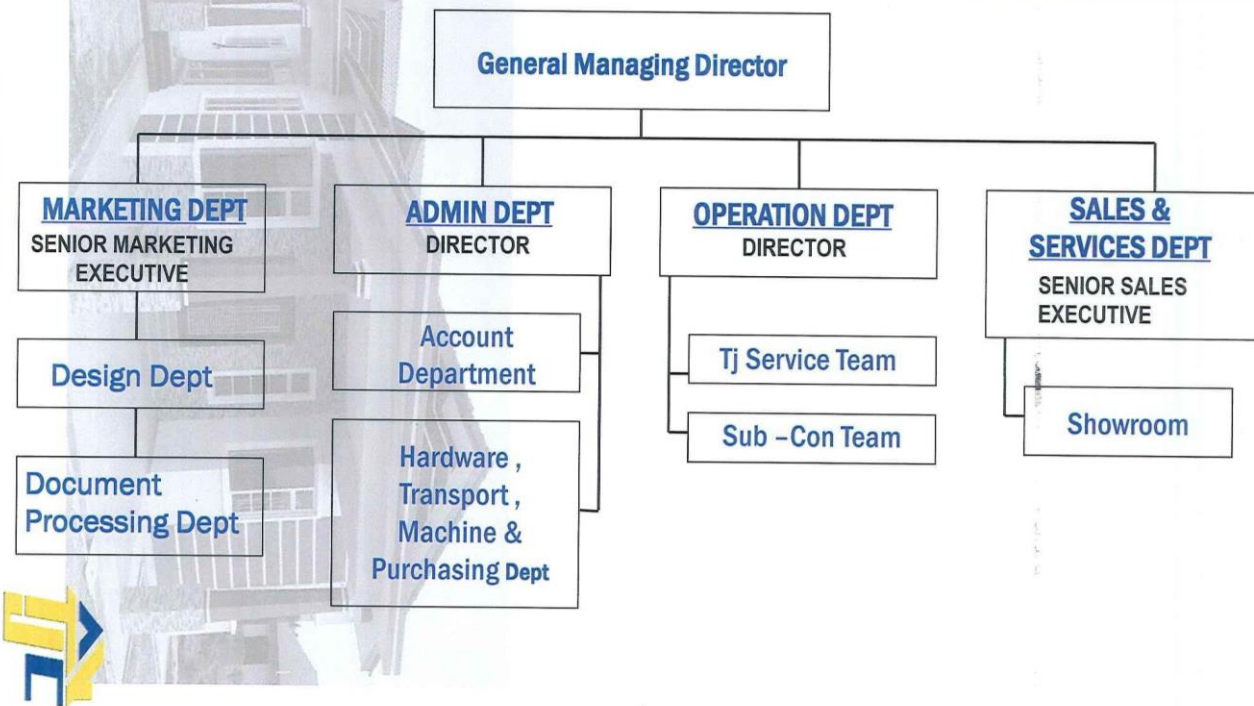


Figure 2.1 : Organization chart of Tenaga Jaya Construction



## 2.4 List of Projects

### 2.4.1 Completed Projects

Table 2.1 : List of completed projects

No .	Project Title	Project Value	Start Date	Completion Date	Project Duration	Client
1.	CONSTRUCTION AND COMPLETION OF A SINGLE-STOREY HOUSE AT NO. HAKMILIK GM 2130, NO LOT 120130, MUKIM PENOR, DAERAH KUANTAN, PAHANG DARUL MAKMUR	RM330,000.00	25/11/19	25/11/20	1 year	NOOR AIDAA BINTI ABDUL RAHIM
2.	RENOVATION OF A SINGLE STOREY SEMI-D HOUSE AT NO. HAKMILIK PN 5049, NO LOT 42764, MUKIM KUALA KUANTAN, DAERAH KUANTAN, PAHANG DARUL MAKMUR.	RM251,000.00	19/7/19	19/7/19	1 year	SYED MOHD HAKHIRI BIN SYED HASSAN

3.	CONSTRUCTION AND COMPLETION OF A ONE AND HALF-STOREY HOUSE AT NO. HAKMILIK GM 29482, NO LOT 129195, MUKIM KUALA KUANTAN, DAERAH KUANTAN, PAHANG DARUL MAKMUR.	RM424,50 0.00	24/8/1 9	24/8/20	1 year	NORLIZATI BINTI MANSOR
4.	CONSTRUCTION AND COMPLETION OF A SINGLE-STOREY HOUSE AT NO. HAKMILIK HSM 90464, NO LOT PT 139901, MUKIM KUALA KUANTAN, DAERAH KUANTAN, PAHANG DARUL MAKMUR.	RM325,00 0.00	24/6/1 9	24/6/20	1 year	RASIDI BIN ROSLAN

5.	CONSTRUCTION AND COMPLETION OF A SINGLE- STOREY HOUSE AT NO. HAKMILIK GM 980, NO LOT 2246, MUKIM PAHANG TUA, DAERAH PEKAN, PAHANG DARUL MAKMUR	RM255,00 0.00	19/11/ 19	19/11/20	1 year	NUR ZALEHA BINTI MOHD HAMDAN
6.	CONSTRUCTION AND COMPLETION OF A SINGLE- STOREY HOUSE AT NO. HAKMILIK, NO LOT 38661 (SUB LOT-2), JAYA GADING, MUKIM KUALA KUANTAN, DAERAH KUANTAN, PAHANG DARUL MAKMUR	RM195,00 0.00	14/8/1 9	14/8/20	1 year	MUHAMM AD BIN ARIFFIN

7.	RENOVATION OF SINGLE-STOREY HOUSE TO ONE-AND-A-HALF STOREY HOUSE AT NO. HAKMILIK HSM 18988, NO LOT PT 19373, MUKIM KUALA KUANTAN, DAERAH KUANTAN, PAHANG DARUL MAKMUR.	RM366,00 0.00	30/9/19	30/9/20	1 year	ZUBAIDAH BINTI MOHAIDIN
8.	CONSTRUCTION AND COMPLETION OF A SINGLE-STOREY HOUSE AT NO. HAKMILIK HSM 4114, NO LOT PT 13489, MUKIM BENTONG, DAERAH BENTONG, PAHANG DARUL MAKMUR.	RM235,00 0.00	19/11/19	19/11/20	1 year	HISAMUDI N BIN ABDUL RAHMAN

## 2.4.2 Project in Progress

**Table 2.2: List of project in progress**

No	Project Title	Project Value	Start Date	Completion Date	Project Duration	Client
1.	CONSTRUCTION AND COMPLETION OF A ONE-STOREY HOUSE WITH MEZZANINE FLOOR AT NO. HAKMILIK PM 21670, NO LOT 71813, BANDAR INDERA MAHKOTA, MUKIM KUALA KUANTAN, DAERAH KUANTAN, PAHANG.	RM452,000.00	7/8/2020	-		NOOR DIANA ASHAARI BINTI MUHAMMAD
2.	RENOVATION OF A SINGLE-STOREY HOUSE AT NO. HAKMILIK PM 4040, NO LOT 109126, MUKIM SUNGAI KARANG, DAERAH KUANTAN,	RM242,000.00	3/4/2021	3/7/2022	1 year	MUHAMMAD SHAHIR BIN SABLIL & SITI SARAH BINTI SERI MASAN

	PAHANG.					
3.	CONSTRUCTION AND COMPLETION OF A SINGLE- STOREY HOUSE AT NO LOT 15779, KG KARAK SETIA, MUKIM SABAI, DAERAH BENTONG, NEGERI PAHANG DARUL MAKMUR	RM427,00  0.00	7/5/202  1	7/5/2022	1 year	NURHUD A BINTI MOHAME D FADZIL
4.	CONSTRUCTION AND COMPLETION OF A SINGLE- STOREY HOUSE AT PM 27, NO LOT 1537, KG AYAU, MUKIM ROMPIN, DAERAH ROMPIN, NEGERI PAHANG DARUL MAKMUR	RM350,00  0.00	21/5/20  21	21/5/202  2	1 year	A KASMAN BIN ABU SEMAN

## CHAPTER 3.0

### CASE STUDY

#### 3.1 Introduction to Case Study

This project is a Renovation of A Single-Storey House at No. Hakmilik PM 4040, No Lot 109126, Mukim Sungai Karang, Daerah Kuantan, Pahang Darul Makmur. The value of the project is RM242,000.00 and the date of completion is on 3 July 2022.

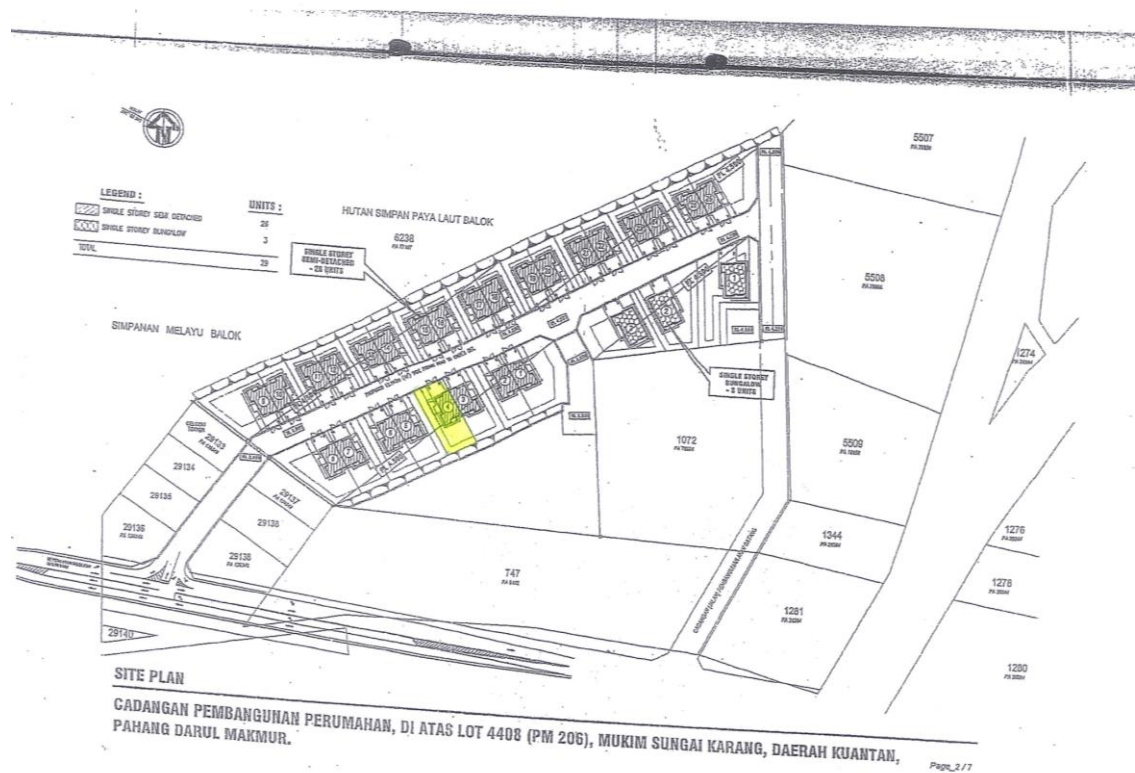
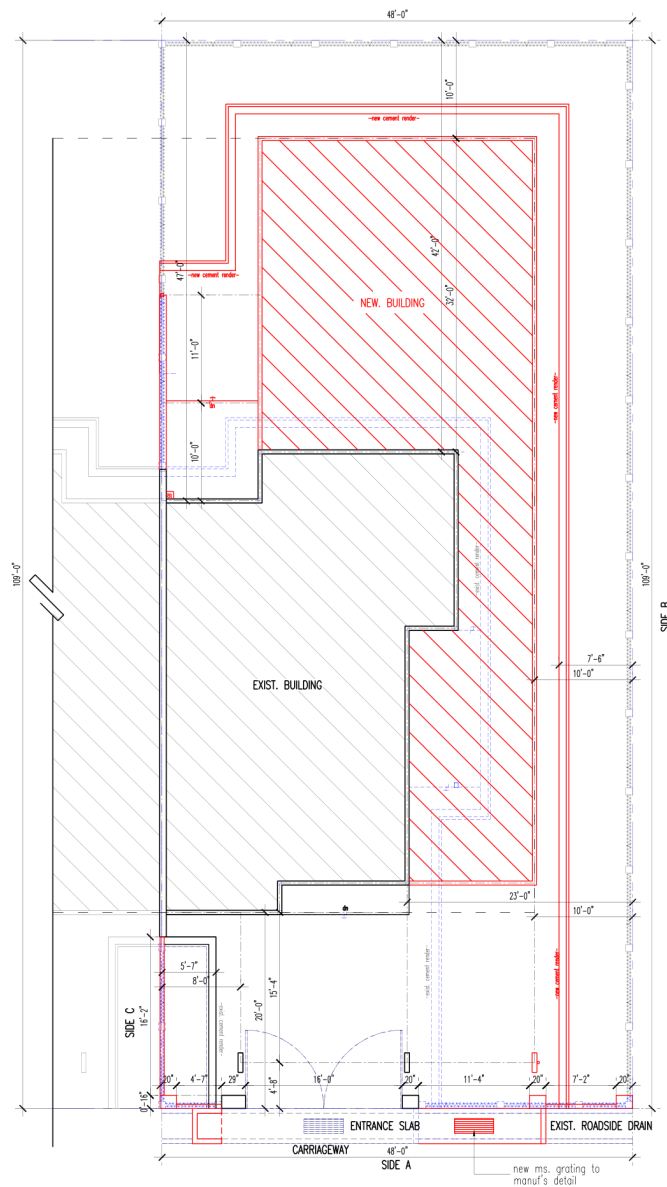


Figure 3.1 : Site Plan by Developer



② SITE PLAN  
REF NO: P/R/21/11-B/ND-NS-HE/22.10.2021/SARAH(PT11)/KUANTAH(BALOK)  
\* FLOOR LEVEL HEIGHT, CEILING LEVEL HEIGHT & ROOF'S PITCH DEGREE WILL BE BASED ON EXIST. HOUSE'S DIMENSION

**Figure 3.2 : Site Plan By Tenaga Jaya Construction**

This project located at Balok, a neighbourhood near the seaside. This is a new housing project because there are still houses that are unoccupied. The customer recently purchased this home and is interested in renovating it. It is a little out of the way from town, and the route is often congested with lorries due to its proximity to the industries.



The activities that carried out on the site are include inspecting the building progress work as to observe the craftsmen complete it correctly according to the signed plan. Also, as negotiated with the customer, work to break down the original house's walls in order to make renovations and add additional space.



**Figure 3.3 : Front view (right side) of the project at 10% progress.**

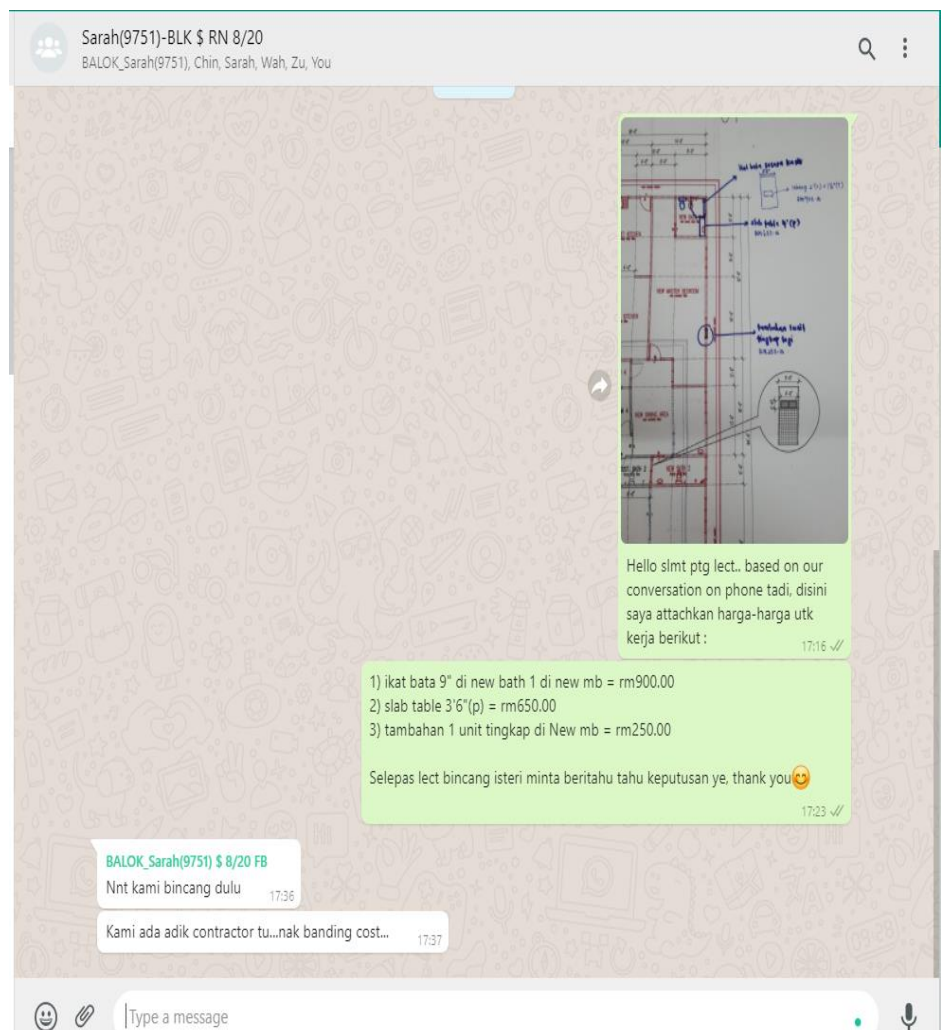


**Figure 3.4 : Front view (right side) of the project at 70% progress.**

## 3.2 The methods of variation order

### a. A design adjustment was requested by the customer

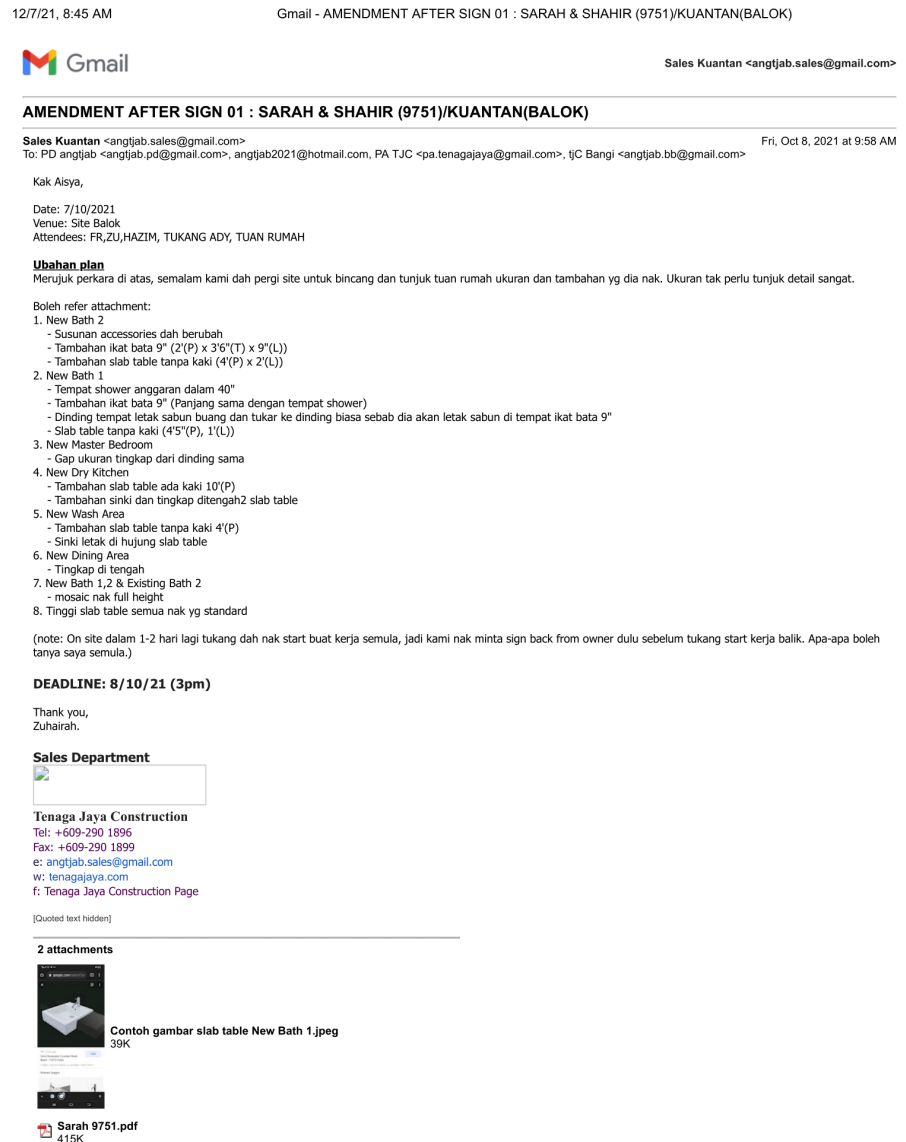
After the building work begins, the customer was to make the desired design adjustments, which the sales department already discuss with the client during the site visit in order to obtain confirmation from the client. This is not matter to be discussed on any medium, such as Whatsapp, a phone conversation, or in person because every information will be take noted to ensure that the information is true.



**Figure 3.5: The conversation of the sales department and the client**

## b. Re-formulate all of the information provided later

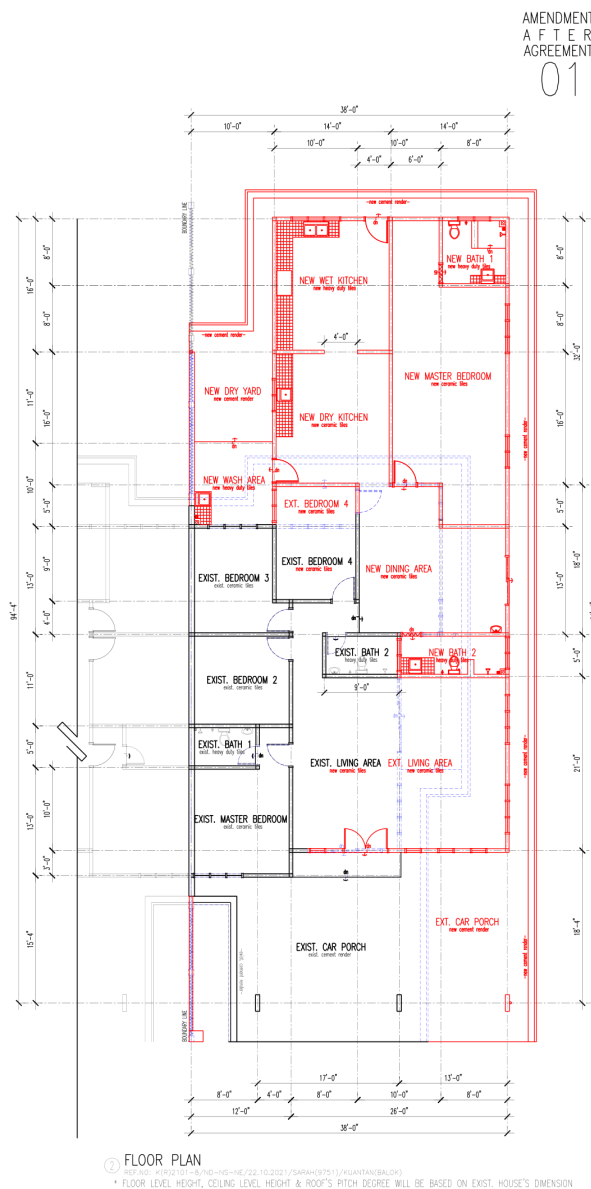
Following that, the sales department evaluated all available information and send an email to the plan department to amend the drawing plan with the client's specifications. Sales department also helps by draft the plan so that the plan department can understand more what the client needs.



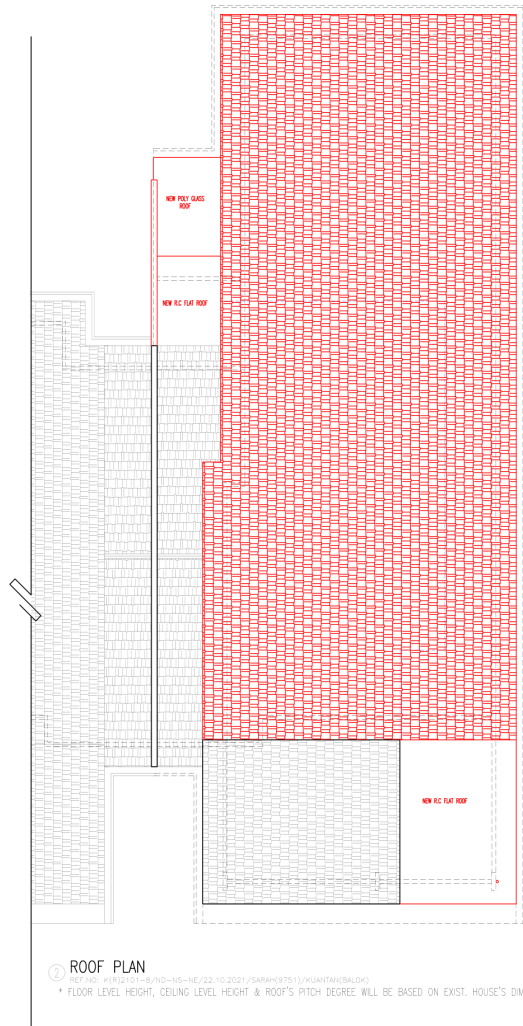
**Figure 3.6: Sales Department email to Plan Department as to amend the plan**

**c. Amendments to the drawing plan**

The plan department examined and comprehended the sales department's email before making adjustments to the drawing plan. The email be detailed enough that the plan department understands what the customer want to amend. To minimise confusion, the planning department will contact the sales department directly what they do not understand. They also have a discussion to avoid undesirable consequences.

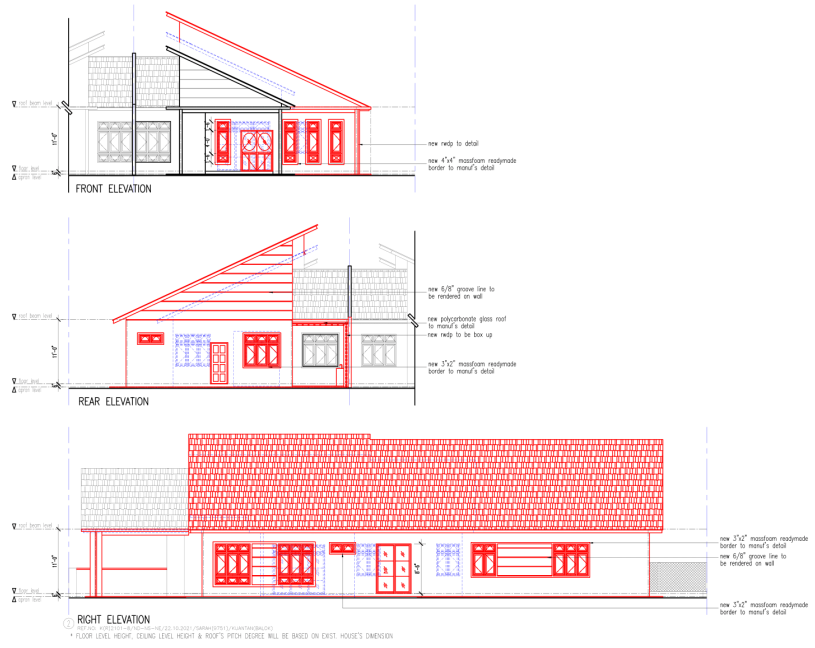


**Figure 3.7: Floor plan that has amend by Plan Department**



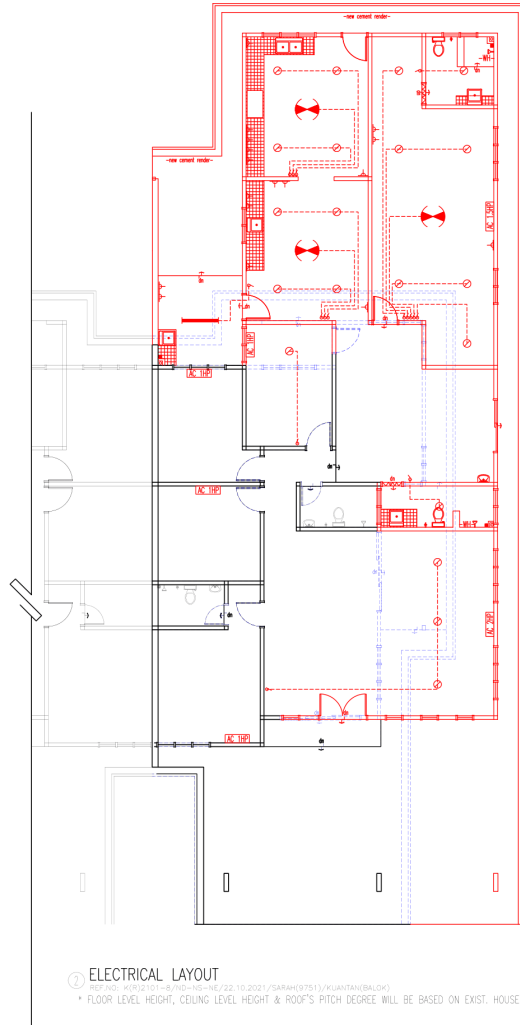
**Figure 3.8: Roof plan that has amend by Plan Department**

AMENDMENT  
AFTER  
AGREEMENT  
01



**Figure 3.9: Right elevation that has amend by Plan Department**

AMENDMENT  
AFTER  
AGREEMENT  
01



**Figure 3.10: Electrical layout that has amend by Plan Department**

#### d. Issue a variation order to the client

When the sales department received the updated plan from the plan department, they may begin make a variation baru order document to be sent to the client. With the updated plan, it will be easy to construct a variation order document so that the client can refer to it to understand what will be addressed in the variation order.

After the client has agreed to the variation order, they pay to the Tenaga Jaya Construction and can proceed to the next step.



NAMA : MUHAMMAD SHAHIR BIN SHABLI & SITI SARAH BINTI SERI MASRAN TARIKH : 29.09.2021  
 K/P NO : 801024-06-5491 & 810827-07-5102 NO. TEL : 016-945 3836 (L)  
 PROJEK : KUANTAN (BALOK) 016-379 9751 (P)  
 NO RUJUKAN : VO01/09.21/FR(ZU)/01

#### VARIATION ORDER (VO)

NO	KETERANGAN	RM
	<b>Merujuk kepada Quotation : Q031/09/2021/FR/03</b>	
	<b>Merujuk kepada Pelan : Amendment After Signed Agreement 01 (Lampiran 1)</b>	
	<b>( 2 ) K(R)2101-4/ND-NS/21.08.2021/SARAH(9751)/KUANTAN (BALOK)</b>	
1)	Kerja-kerja menambah bina rumah :	115,000.00
a)	Menambah bina New Living Area sebanyak 8'(L) x 21'(P) untuk dijadikan keluasan baru 26'(L) x 21'(P) dengan tambahan 2 unit tingkap aluminium berdaun 1 di pandangan hadapan rumah untuk dijadikan 3 unit tingkap berdaun 1. 2 unit tingkap berdaun 3 di pandangan kanan adalah sama seperti pelan asal.	
b)	Existing Bath 2 akan dikekalkan semula seperti rumah asal daripada cadangan meroboh (merujuk kepada SpecII bertarikh 02/04/2021 yang sudah ditandatangani) tetapi disebabkan waktu permintaan, terdapat satu dinding telah roboh, maka, - Dinding asal yang telah roboh akan diikat bata dijadikan dinding semula dan kosongkan sedikit ruangan untuk memasang tingkap jenis "top Hung" seperti merujuk di Lampiran 2. - Jubin lantai & dinding asal akan dipecahkan kemudian pasang dengan jubin baru yg sama jenis dengan jubin New Bath 1. Jubin dinding baru adalah 5'(T) sama ketinggian asal. - Tandas duduk akan diubah kepada yang baru disebabkan sudah rosak. - Aksesori lain akan diguna balik. Sebarang tambahan akan ada kos tambahan.	FOC
c)	New Bath 2 akan dibina di sebelah Existing Bath 2 seperti merujuk dalam pelan baru dengan berukuran 13'(L) x 5'(P) : - Semua aksesori dan kerja adalah sama seperti SpecII bertarikh 02/04/2021 yang sudah ditandatangani	
d)	Menambah bina New Dining Area sebanyak 8'(L) x 13'(P) untuk dijadikan keluasan baru 18'(L) x 13'(P) + 10'(L) x 5'(P) dan tambahan 1 point aircond 2HP tanpa kerja perpaipan air & copper.	
e)	Anjakkan New Kitchen Area ke belakang dan dinamakan sebagai New Wet Kitchen Area : - Ukuran adalah sama dengan New Kitchen Area asal, iaitu 14'(L) x 16'(P). - Semua kerja adalah sama seperti New Kitchen Area termasuk jubin lantai & dinding, kerja perpaipan, kerja wiring, kerja siling dan kerja tingkap. (merujuk kepada SpecII bertarikh 02/04/2021 yang sudah ditandatangani) - Slab table dipanjangkan seperti merujuk dalam pelan baru - 1 unit Pintu Solid (MD10) yang hadap kepada belakang rumah	
f)	New Kitchen Area ditukar dan namakan sebagai New Dry Kitchen Area : - Ukuran kekal sama seperti asal.	

1/10

**Figure 3.11: Variation order that issued to the client**



**e. Send variation order to site supervisor for further action**

Finally, once everything has been checked, the variation order sent to the site supervisor so that they can continue the construction work that was interrupted due to the addition requested by the client. Labor can save time and do their work more quickly without worrying about client dissatisfaction.

Furthermore, before submitting the variation order to the site supervisor, the sales department must first email the admin department so that they may record it in their file and follow up with the client to collect payment for the variation order. They are usually in charge of delivering the signed back variation order to the site supervisor.

**3.3 The time and cost of variation order applied**

This variation order takes about one week to complete due to the numerous adjustments requested by the customer. Many meetings were arranged with the customer to confirm the improvements that they desired and to ensure that the client was pleased. The meeting took place over a period of two weeks in the TJC Kuantan office, the Client office, and on-site.

Furthermore, the cost for this variation order is RM116,800.00 plus RM9,750.00 for second Variation Order and RM1,400.00 for third Variation Order. There are three variation orders for this project since the customer wants several adjustments. This client is highly meticulous and considers what would happen if the property is damaged. The client also values proper lighting and will ensure that the house has proper ventilation.



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**TENAGA JAYA CONSTRUCTION**

CA0091906-W

No. 2 Jalan Semantan Baru 2, Simpang Songsang, 28000 Temerloh, Pahang Darul Makmur.

Tel: 09-290 1896 Fax: 09-290 1899 H/P: 019-988 3296, 019-932 1883

E: angtjab@gmail.com W: tenagajaya.com FB: Tenaga Jaya Construction Page

NAMA : MUHAMMAD SHAHIR BIN SHABLI & SITI SARAH BINTI SERI MASRAN TARIKH : 29.09.2021  
K/P NO : 801024-06-5491 & 810827-07-5102 NO. TEL : 016-945 3836 (L)  
PROJEK : KUANTAN (BALOK) 016-379 9751 (P)  
NO RUJUKAN : VO01/09.21/FR(ZU)/01

**VARIATION ORDER (VO)**

NO	KETERANGAN	RM
	<b>Merujuk kepada Quotation : Q031/09/2021/FR/03</b>	
	<b>Merujuk kepada Pelan : Amendment After Signed Agreement 01 (Lampiran 1)</b>	
	<b>( 2 ) K(R)2101-4/ND-NS/21.08.2021/SARAH(9751)/KUANTAN (BALOK)</b>	
1)	Kerja-kerja menambah bina rumah :	115,000.00
a)	Menambah bina New Living Area sebanyak 8'(L) x 21'(P) untuk dijadikan keluasan baru 26'(L) x 21'(P) dengan tambahan 2 unit tingkap aluminium berdaun 1 di pandangan hadapan rumah untuk dijadikan 3 unit tingkap berdaun 1. 2 unit tingkap berdaun 3 di pandangan kanan adalah sama seperti pelan asal.	
b)	Existing Bath 2 akan dikekalkan semula seperti rumah asal daripada cadangan meroboh ( <i>merujuk kepada SpecII bertarikh 02/04/2021 yang sudah ditandatangani</i> ) tetapi disebabkan waktu permintaan, terdapat satu dinding telah roboh, maka, - Dinding asal yang telah roboh akan diikat bata dijadikan dinding semula dan kosongkan sedikit ruangan untuk memasang tingkap jenis "top Hung" seperti merujuk di Lampiran 2. - Jubin lantai & dinding asal akan dipecahkan kemudian pasang dengan jubin baru yg sama jenis dengan jubin New Bath 1. Jubin dinding baru adalah 5'(T) sama ketinggian asal. - Tandas duduk akan diubah kepada yang baru disebabkan sudah rosak. - Aksesori lain akan diguna balik. Sebarang tambahan akan ada kos tambahan.	FOC
c)	New Bath 2 akan dibina di sebelah Existing Bath 2 seperti merujuk dalam pelan baru dengan berukuran 13'(L) x 5'(P) : - Semua aksesori dan kerja adalah sama seperti SpecII bertarikh 02/04/2021 yang sudah ditandatangani	
d)	Menambah bina New Dining Area sebanyak 8'(L) x 13'(P) untuk dijadikan keluasan baru 18'(L) x 13'(P) + 10'(L) x 5'(P) dan tambahan 1 point aircond 2HP tanpa kerja perpaipan air & copper.	
e)	Anjukkan New Kitchen Area ke belakang dan dinamakan sebagai New Wet Kitchen Area : - Ukuran adalah sama dengan New Kitchen Area asal, iaitu 14'(L) x 16'(P). - Semua kerja adalah sama seperti New Kitchen Area termasuk jubin lantai & dinding, kerja perpaipan, kerja wiring, kerja siling dan kerja tingkap. ( <i>merujuk kepada SpecII bertarikh 02/04/2021 yang sudah ditandatangani</i> ) - Slab table dipanjangkan seperti merujuk dalam pelan baru - 1 unit Pintu Solid (MD10) yang hadap kepada belakang rumah	
f)	New Kitchen Area ditukar dan namakan sebagai New Dry Kitchen Area : - Ukuran kekal sama seperti asal.	

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**Figure 3.12: First VO that been issued to the client**



	<ul style="list-style-type: none"> <li>- Tiada lagi slab table dan sinki</li> <li>- Hanya ada 1 point water tap di tempat ini. Kedudukan ikut minat tuan rumah</li> <li>- Jubin lantai daripada asal (heavy duty) ditukar kepada ceramic 16" x 16", White Horse Gred A (RM5.00/kg)</li> <li>- Jubin dinding telah pindah ke New Wet Kitchen Area, maka, tempat sini hanya akan melepai dijadikan dinding simen sahaja.</li> <li>- Hanya akan ada 1 unit tingkap berdaun 2</li> <li>- Buang sebahagian dinding belakang untuk dijadikan satu laluan ke New Wet Kitchen Area.</li> <li>- Pintu keluar ke Wash Area dikedalkan.</li> <li>- Kerja wiring adalah sama seperti tempat asal (New Kitchen Area).</li> </ul>	
g)	Menambah bina New Master Bedroom sebanyak 14'(L) x 16'(P) termasuk New Bath 1 berukuran 8'(L) x 8'(P) : <ul style="list-style-type: none"> <li>- Ukuran baru New Master Bedroom adalah [14'(L) x 24'(P)] + [8'(L) x 5'(P)] + [6'(L) x 8'(P)]</li> <li>- Tingkap yang berada di belakang anjak ke sebelah kanan dan tambahan 1 unit tingkap berdaun 2 di sebelah kanan juga.</li> <li>- Tambahan 2 points lampu siling kerana penambahan keluasan bilik</li> </ul>	250.00
h)	Kedudukan New Bath 1 sekarang yang berada di New Master Bedroom adalah dipindah & diperbesarkan dari kedudukan asal, iaitu sebelah kepada Existing Dining Area. Ukuran New Bath 1 sekarang adalah 8'(L) x 8'(P). <ul style="list-style-type: none"> <li>- Aksesori yang diberi adalah sama seperti SpecII bertarikh 02/04/2021 yang sudah ditandatangani.</li> <li>- Tambahan slab table di basin area berukuran 3'6"(P) termasuk jubin 2'x2' (White Horse Gred A), RM18.00/keping</li> <li>- Ikat bata 9" di shower area (sebelah kepada basin area) berukuran 3'6"(L) dari lantai ke siling dan bukaan 1 ruangan di tengah sebagai tempat letak barang-barang mandian. (Lampiran 3)</li> </ul>	650.00 900.00
i)	Menambah panjang dinding sekatan rumah dengan jiran sebelah kiri di New Dry Yard seperti merujuk dalam pelan.	
<b>Total :</b>		<b>116,800.00</b>

**Remarks:**

1. Surat VO ini dikeluarkan sebagai **PENGESAHAN BAGI PERUBAHAN KERJA** selepas TJC mendapat persetujuan berdasarkan daripada Quotation yang telah dikeluarkan di antara Pihak Tuan/Puan dan Pihak Tenaga Jaya Construction dimana secara langsung atau tidak langsung.
2. Setelah surat VO dikeluarkan, segala perubahan seterusnya tidak akan diterima dan keputusan adalah muktamad.
3. **Bayaran tersebut akan bayar segera selepas mendapat Surat ini dan dibuat melalui dengan cara CASH/Cheque/Bankin ke akaun seperti merujuk di bawah :-**

**PUBLIC BANK A/C : 3103-2576-22**  
**MAYBANK A/C : 5560-5750-4510**

**( TENAGA JAYA CONSTRUCTION )**  
**( ANG HWAN WAH )**

**TENAGA JAYA CONSTRUCTION**  
 (CA0091906-W)  
 No. 2, Jalan Semantan Baru 2,  
 Simpang Songsang, 28000 Temerloh,  
 Pahang Darul Makmur.  
 Tel: 09-290 1896, 290 1898 Fax: 09-290 1899

ANG HWAN WAH

**Figure 3.13: First VO that been issued to the client**



NAMA : MUHAMMAD SHAHIR BIN SHABLI & SITI SARAH BINTI SERI MASRAN TARIKH : 11.10.2021  
 K/P NO : 801024-06-5491 & 810827-07-5102 NO. TEL : 016-945 3836 (L)  
 PROJEK : KUANTAN (BALOK) 016-379 9751 (P)  
 NO RUJUKAN : VO02/10.21/FR/01

**VARIATION ORDER (VO)**

NO	KETERANGAN	RM
	<b>Merujuk kepada Quotation : Q039/10/2021/FR/01</b>	
	<b>Merujuk kepada Pelan : Merujuk kepada lampiran 1</b>	
1)	Kerja-kerja tambahan jubin dinding di New Bath 1 & 2 dan Exist Bath 2 : a) New Bath 1 & : - Darpada 7'(T) kepada siling b) Existing Bath 2 - Darpada 5'(T) kepada siling	5,800.00
2)	Kerja-kerja menolak dan menambah bina dinding ikat bata 9" di : a) New Bath 1 - Menolak kerja-kerja ikat bata 9" di shower area seperti merujuk di <b>VO01/09.21/FR(ZU)/01</b> dengan harga RM900.00 kepada menambah bina dinding jenis ikat bata 9" di antara shower area dan wc area termasuk jubin 1'x2' (RM6.50/kpg) berukuran 3'4"(P) x 9"(L) x 3'6"(T). b) New Bath 2 termasuk jubin 1'x2' (RM6.50/kpg) berukuran 2'(P) x 9"(L) x 3'6"(T)	450.00
3)	Kerja-kerja menambah bina Slab Table termasuk jubin 2'x2' (RM18.00/kpg) di : a) Dry Kitchen Area berukuran 10'(P) x 2'(L) x 3'(T) b) Wash Area berukuran 4'(P) x 2'(L) tanpa kaki c) New Bath 2 berukuran 4'(P) x 2'(L) tanpa kaki	3,500.00
4)	Kerja-kerja mengubah slab table di New Bath 1 seperti merujuk di <b>VO01/09.21/FR(ZU)/01</b> dengan ukuran 3'6"(P) x 2'(L) tanpa kaki kepada ukuran 4'5"(P) x 1'(L) tanpa kaki. <b>(Cara bina merujuk kepada Lampiran 2)</b>	KONTRA
5)	Kerja-kerja menentu kedudukan tingkap di : a) Dry Kitchen Area - Di tengah ikut panjang slab table b) New Master Bedroom - Merujuk kepada Lampiran 1	NIL
6)	Kerja-kerja meroboh dan membina balik kedudukan tingkap di New Dining Area agar tingkap tersebut berada di tengah antara dinding New Master Bedroom dan New Bath 2.	FOC
	<b>JUMLAH :</b>	<b>9,750.00</b>

**Remarks:**

- Surat VO ini dikeluarkan sebagai **PENGESAHAN BAGI PERUBAHAN KERJA** selepas TJC mendapat persetujuan berdasarkan daripada Quotation yang telah dikeluarkan di antara Pihak Tuan/Puan dan Pihak Tenaga Jaya Construction dimana secara langsung atau tidak langsung.
- Setelah surat VO dikeluarkan, segala perubahan seterusnya tidak akan diterima dan keputusan adalah muktamad.
- Bayaran tersebut akan bayar segera selepas mendapat Surat ini dan dibuat melalui dengan cara CASH/Cheque/Bankin ke akaun seperti merujuk di bawah :-

**Figure 3.14: Second VO that been issued to the client**




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**TENAGA JAYA CONSTRUCTION** CA0091906-W

No. 2 Jalan Semantan Baru 2, Simpang Singsang, 28000 Temerloh, Pahang Darul Makmur.  
Tel: 09-290 1896 Fax: 09-290 1899 H/P: 019-988 3296, 019-932 1883  
E: angtjab@gmail.com W: tenagajaya.com FB: Tenaga Jaya Construction Page

NAMA : MUHAMMAD SHAHIR BIN SHABLI & SITI SARAH BINTI SERI MASRAN TARIKH : 25.10.2021  
K/P NO : 801024-06-5491 & 810827-07-5102 NO. TEL : 016-945 3836 (L)  
PROJEK : KUANTAN (BALOK) 016-379 9751 (P)  
NO RUJUKAN : VO03/10.21/FR/01

#### VARIATION ORDER (VO)

NO	KETERANGAN	RM
	<u>Merujuk kepada Quotation : Q040/10/2021/FR/01</u> <u>Merujuk kepada Pelan : Merujuk kepada lampiran 1</u>	
1)	1) Kerja-kerja menukar 1 unit tingkap berdaun 3 kepada 1 unit pintu sliding yang berukuran 6'(L) x 8'6"(T) tanpa top hung dan bahan binaan adalah : a) Kaca 5mm berwarna hitam. b) Bingkai aluminium berwarna silver.  <div style="text-align: center;">Lebar pintu sliding baru adalah 6'</div>  <div style="text-align: center;">mengikat bata</div>	1,400.00
	<b>JUMLAH :</b>	<b>1,400.00</b>

#### Remarks:

1. Surat VO ini dikeluarkan sebagai **PENGESAHAN BAGI PERUBAHAN KERJA** selepas TJC mendapat persetujuan berdasarkan daripada Quotation yang telah dikeluarkan di antara Pihak Tuan/Puan dan Pihak Tenaga Jaya Construction dimana secara langsung atau tidak langsung.
2. Setelah surat VO dikeluarkan, segala perubahan seterusnya tidak akan diterima dan keputusan adalah muktamad.
3. **Bayaran tersebut akan bayar segera selepas mendapat Surat ini dan dibuat melalui dengan cara CASH/Cheque/Bankin ke akaun seperti merujuk di bawah :-**

PUBLIC BANK A : 3103-2576-22  
MAYBANK A/C : 5560-5750-4510

( TENAGA JAYA CONSTRUCTION )  
( ANG HWAN WAH )

TENAGA JAYA CONSTRUCTION  
(CA0091906-W)  
No. 2, Jalan Semantan Baru 2,  
Simpang Singsang, 28000 Temerloh,  
Pahang Darul Makmur.  
Tel: 09-290 1896, 290 1898 Fax: 09-290 1899

ANG HWAN WAH

1/7

**Figure 3.15: Third VO that been issued to the client**

### 3.4 The problem occurred and impacts of variation order

#### a. Existing bath and New Bath do not have a good ventilation

The first issue that occurred during this project is the window in the current bath 2 and the new bath 2. There is some disagreement with the customer because they just want it to be a wall and do not want a fixed glass top hung window but this will make the bathroom smell when it will use as the ventilation on the two baths are not that good. The odor of the two baths will make it smell bad, and the bath will quickly get damp. As a result, the company suggests to the customer that the customer add a fixed glass top hung window to improve the ventilation between the two baths.

The customer agreed to add on the top hung window as for the ventilation between the two bath. They also want to add exhaust fan so the ventilation better than before. The impact of this in variation order is that the cost of VO is higher since the window and exhaust fan must be added.

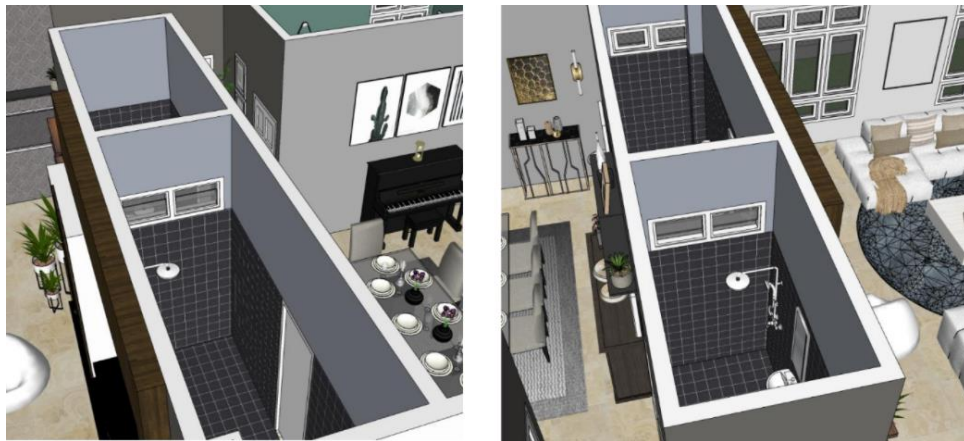


Figure 3.16: Fixed glass top hung window in 3D

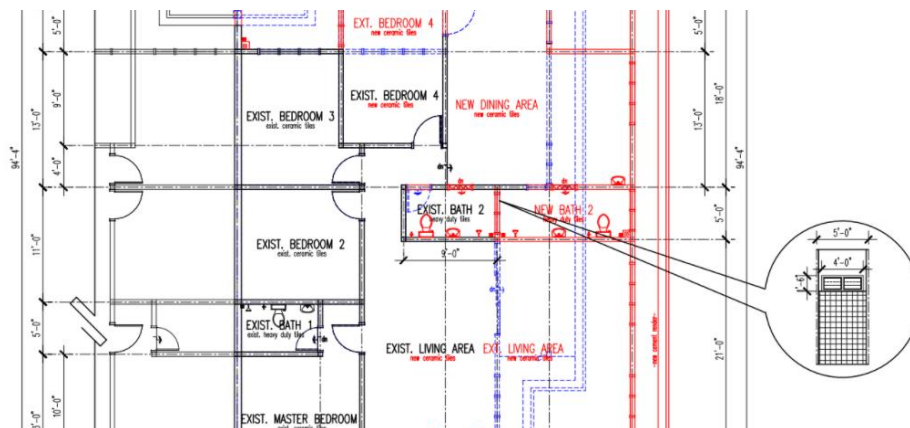


Figure 3.17: Fixed glass top hung window in 2D

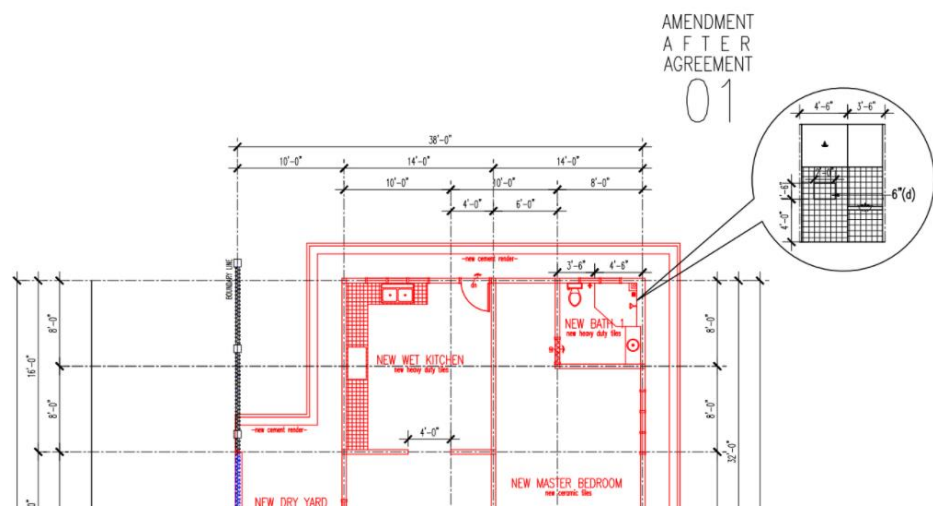
**b. Adding a soap dispenser in Bath master bedroom**

Furthermore, the difficulty occurred when the client wanted to add a soap dispenser since the customer does not want to make it harder for them in the future when a hanging soap stand is already damaged and buying a new one would make the bathroom appear ugly. This happens when the wall is up, making it difficult to build a place to put the soap since the bathroom is really not large enough, and it makes the bathroom even smaller. The bathroom will have less space, making it difficult to walk around.

The impacts of this is delays caused by changes in design specification.



**Figure 3.18: A place to put the soap in 3D**

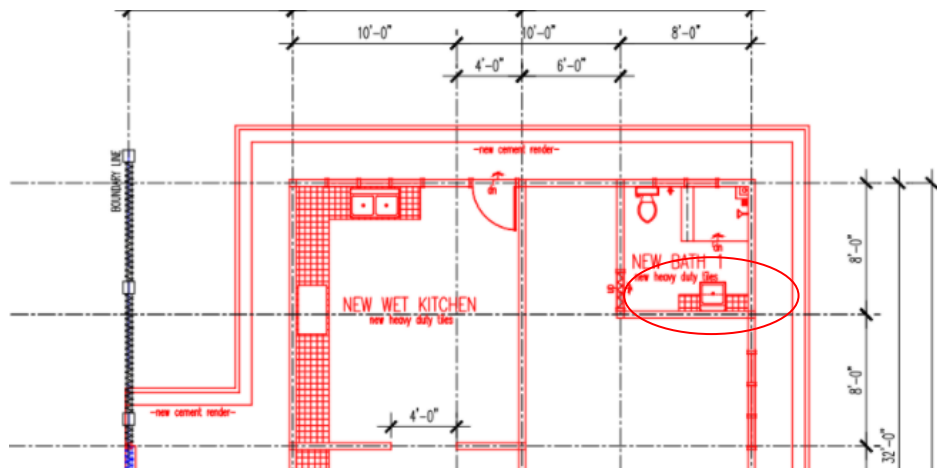


**Figure 3.19: A place to put the soap in 2D**

**c. Changes of design sink in master bathroom**

The third problem occurred is the design of the sink in the master bedroom. The customer wants to change the design of the sink and the position of the sink as shown in figure 3.18 . Before, they want the full slab table for the sink, but change their mind to half of slab table for the sink as when added a wall between the toilet and shower makes the space become more smaller than before and this will effect the movement in the bathroom.

The impact of this problem is the plumber need to wait for the customer to confirm of their design before the plumber started their work and it make a delay for the work to complete. The plan department also need to change the plan many times to make the customer satisfied.



**Figure 3.20: New design of sink that plan department draw**



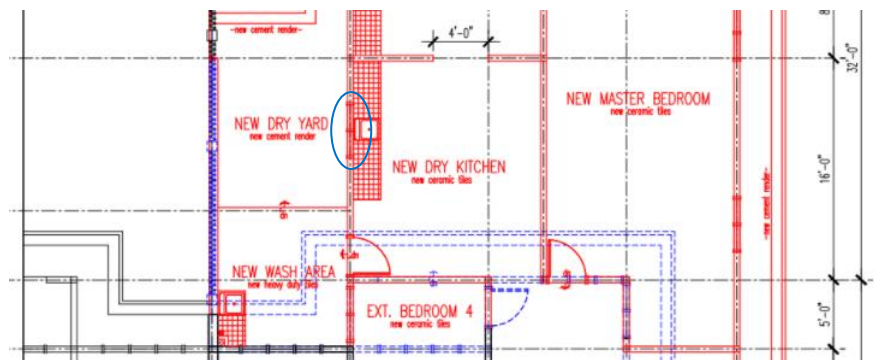
**Figure 3.21: The design of the sink that the customer wants**

**Source:**



**d. A new window in New Dry Kitchen**

The next problem occurred when the labour did not carefully examine the plan and made a mistake. The wall is already fully up as indicated in the figure, with no space left for the window as specified in the plan. This problem is an example of a thoughtless error. As a result, the labour must break down the wall to create room for the window. The impacts of this problem results in rework and demolition. The building work will take longer to complete than promised in the contract. Furthermore, the cost of this work will be higher since the company must pay the consequences of the problem.



**Figure 3.22: Double leaf window in New Dry Kitchen**



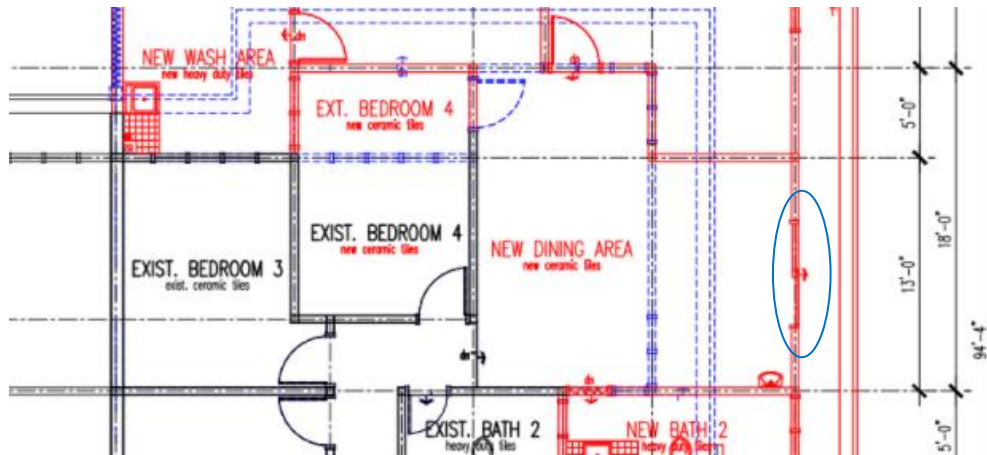
**Figure 3.23: The wall where there should be a double leaf window**

**e. The window in dining area change to the sliding door**

The last issue that occurred throughout this project was that when the customer requested a change of plan, the newly raised wall had to be broken, which resulted in a loss of cost and a long time for the project to be completed. A double-leafed window, for example, had to have its wall break down to make room for a sliding door since the customer preferred a sliding door in the dining room. In addition, there are parts that need to be added to the wall to cover the previous window openings.



**Figure 3.24: Window to change into a sliding door**



**Figure 3.25: New sliding door in amendment floor plan**

## **CHAPTER 4.0**

### **CONCLUSION**

Variation order process is one of the common thing that happen in the construction and help the contractor to solve the problem in site. Several conclusions may be drawn from the study that was carried out within the scope indicated, which may assist in understanding the process of variation order. The report was carried out in Balok and has been observed during the project. The method of the variation order procedure has been known the flow of it and to ensure the project running smoothly as a result of this report. Also, the time and cost of variation orders in this project have been analysed, and it will take two weeks to review the project with the customer due to how detailed the customer is and the total cost of variation order that issued to this project is RM127,950.00. Furthermore, the causes of variation order and impacts of variation order is also been known. According to the study results, customer changes are the most major reasons of variation orders in the construction of building projects. As a result, the project will take longer to complete than promised in the contract. Furthermore, the procedures of this variation order process are not new, since it is a common occurrence in the construction industry. Furthermore, the methods are similar to that of the theory of variation order process.

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