UNIVERSITI TEKNOLOGI MARA PERAK BRANCH

ROLL ROOFING WITH COMBINATION OF MDF BOARD

SYAZWANI AQILAH BINTI MOHD KHAIRY

Innovation project report submitted in partial fulfilment of the requirements for the degree of

Bachelor of Science (Hons.) Construction Technology

Faculty of Architecture, Planning & Surveying

August 2022

AUTHOR'S DECLARATION

I declare that the work in this innovation report was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This report has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

In the event that my innovation report, be found to violate the conditions mentioned above, I voluntary waive the right of conferment of my degree and agree be subjected to the disciplinary rules and regulations of Universiti Teknologi MARA.

Name of Student: Syazwani Aqilah binti Mohd Khairy

Student I.D No.: 2019831718

Programme: Bachelor of Science (Hons.)

Construction Technology

Faculty: Architecture, Planning & Surveying

Innovation Report Title: Roll Roofing with Combination of MDF

Board

Signature of Student:

Date: August 2022

ACKNOWLEDGEMENT

Alhamdulillah, praise to Allah, the Most Merciful and the Most Graceful for the strength and His blessing in completing this research successfully. Without His blessing, we are nothing and compare to the pinnacle dust.

First and foremost, I would like to express special appreciation to my supervisor, Sir Ts Muhammad Redza Rosman who encouraged me to pursue this innovation project and taught me throughout the production process of this report. I am feeling blessed to have Sir Redza as my supervisor because he willing to share his knowledge and his skilful guidance, innovative ideas as well as stoic patience are greatly appreciated.

On the other hand, I would like to thank my beloved parents especially my mom for supporting me financially and always give me moral support to finish this innovation report.

Last but not least, I am feeling grateful to all my classmates. They are being very helpful in giving opinions and ideas on this innovation report. It was a pleasure to works with them and I truly appreciate their guidance and ideas.

TABLE OF CONTENTS AUTHOR'S DECLARATION	
ACKNOWLEDGEMENTACKNOWLEDGEMENT	
LIST OF FIGURES	
ABSTRACT	
CHAPTER 1: INTRODUCTION AND BACKGROUND	
1.1 Background of Study	
1.2 Problem Statement	
1.3 Research Questions	
1.4 Research Objectives	
1.5 Scope of Study	
1.6 Limitation of Study	
1.7 Significance of The Study	
CHAPTER 2 LITERATURE REVIEW	
2.1 Introduction	
2.2 Overview of The Past Innovation Approaches	5
2.2.1 Green Roof	5
2.2.2 Solar Roof Shingles	7
2.2.3 Malay Singgora Roof Tiles	9
2.2.4 Cool Roof	11
2.3 Problems Related to Existing Roof Tiles	12
2.3.1 Fragile	12
2.3.2 Heavyweight	14
2.3.3 Water absorption / moisture	15
2.3.4 Damaged shingles	15
2.4 Properties of Rolled Roof	16
2.5 Development of Innovation Idea	18
2.6 Benefits of Proposed Innovation	20
2.7 Source of Inspiration	21
CHAPTER 3 MATERIALS AND METHOD	
3.1 Research Methodology	22
3.1.1 Primary Data	22
3.1.2 Secondary Data	
3.2.2 Simulation	
3.1.3 Prototype	
3.1.4 Data Analysis	
3.2 Experiment	24

ABSTRACT

Malaysia is a growing third-world country that is still experiencing fast economic growth. The construction industry is one of Malaysia's most active industries, contributing significantly to the country's economic growth. Construction industry had gone through several changes starting from ancient methods to conventional and now moving towards to technology. The Industrial Building System (IBS) is gaining popularity in the building sector due to its numerous benefits. The roof is the most significant part of the building since it protects the occupants from a variety of hazards. Roofing needs have increased across the board, resulting in a robust market for roofing materials in terms of performance and physical properties. However, there are several issues that affect the efficiency of the roof materials. According to past research, there have been various challenges affecting the effectiveness of roofing materials. The main identified issues are cracked concrete roof tiles, water absorption and heavyweight. It gives an opportunity to suggest new innovation products to tackle significant concerns by identifying problems. As a result, new innovative concepts are presented to address the highlighted concerns while also promoting the use of construction waste materials for roofing, that is roll roofing with combination of MDF board.