

UNIVERSITI TEKNOLOGI MARA

PRECAST POLYPROPYLENE PLASTIC WALL

NURSYAZA BINTI NASIR

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

Bachelor of Science (Hons.) Construction Technology
Department of Built Environment and Technology Studies

31st July 2022

AUTHOR'S DECLARATION

I in the name of NURSYAZA BINTI NASIR, declaring that the work that being completed in this innovation project report was carried out in accordance with the regulation of Universiti Teknologi MARA. This innovation project is the original and is the results of my own work, unless otherwise indicated or acknowledge as referenced work. I can ensure that this topic has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

In case or in the event that my innovation report, be found to violate the conditions mentioned above, I voluntarily 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	: NURSYAZA BINTI NASIR
Student's I.D. No.	: 2020810248
Program	: Bachelor of Science (Hons.) Construction Technology
Faculty Studies	: Department of Built Environment and Technology
Innovation Project Title	: Precast Polypropylene Plastic Wall
Signature of Student	:
Date	: 31 st July 2022

ACKNOWLEDGEMENT

Alhamdulillah, praise to Allah, the most Merciful, the most Graceful.

First and foremost, I would like to extend my heartfelt gratitude for the guidance, advice and help rendered throughout the period of finishing this innovation project report by all wonderful lecturers.

Abundance of thanks and grateful to lovely and supportive lecturers, Assoc. Prof Dr. Siti Akhtar binti Mahayuddin and Dr. Asmat binti Ismail, the person that had assisting and guiding me from the start of this innovation idea report until it finished. Thank you very much for all the guidance, supports, brilliant ideas and criticism, suggesting improvements and corrections. Not to forget, my amazing supervisor, Assoc. Prof. Sr. Ts. Dr. Hayroman because he always teaches and guide me in order for me to make the best idea of my innovation project. I am grateful to have him as my supervisor. I value the time, effort, encouragement, and ideas that he contributed towards the successful completion of my innovation idea project. It is an honor for me to be given this opportunity to work and cooperate with all these lecturers during my time to complete this innovation idea report.

Finally, I would like to thank my parent because they have helped me a lot in terms of financial and also mental support over the years. I owe in debt with them as they continue to pray for my best and always give me some support to continue my studies and I will try my best to give my all in this innovation project.

TABLE OF CONTENTS

ACKNOWLEDGEMENT.....	II
CHAPTER 1.....	1
INTRODUCTION AND BACKGROUND.....	1
1.1 Introduction to Precast Concrete Wall Panel	1
1.1.1 Design of Precast Concrete Wall Panel	2
1.1.2 Installation of Precast Concrete Wall Panel.....	3
1.1.3 Lifting Process for Precast Concrete Wall Panel	4
1.1.4 Welding Process for Precast Concrete Wall Panel.....	4
1.1.5 Grouting Process for Precast Concrete Wall Panel.....	6
1.1.6 Bracing and Placing Process for Precast Concrete Wall Panel.....	7
1.2 Problem Statement	8
1.3 Research Question.....	9
1.4 Research Aim and Objectives	9
1.5 Scope of the Study	10
1.6 Limitation of the Study	10
1.7 Significant of Research	11
CHAPTER 2.....	12
LITERATURE REVIEW	12
2.1 Introduction.....	12
2.2 Current Issues on Precast Wall Panel	12
2.2.1 The improper handling and transportation of materials during the wall construction process.....	12
2.2.2 Bacterial and Fungal growth that effect the student's health	14
2.2.3 The occurrence of Plaster Flakes and Peeling.....	15
2.2.4 Structural Deficiency	16
2.3 Comparison of Current Materials for Precast Concrete Wall Panel	17
2.4 Review of Previous Innovation Approach for Precast Wall Panel	20
2.4.1 Modular Wall	21
2.4.2 Algae Filled Wall	23
2.4.3 Insulating Concrete Formwork (ICF).....	24
2.4.4 Brick Laying Robot.....	26
2.4.5 Summary of the 4 Wall Innovations for Student's Accommodation	27
2.5 Erection Crew	28
2.6 Machineries.....	31
2.7 Auxiliary Tools	34

ABSTRACT

Plastic waste is a potentially hazardous concern in today's modern world. This is the most hazardous challenge that humanity faces. Plastic is widely used in our daily lives, such as polythene bags, disposals, furniture, food packaging, and other accessories. Plastics are classified into several different categories based on their chemical composition. In this report, the usage of Polypropylene Plastic Waste act as substitute for aggregates will be further explained. This research reviews on the design of the conventional precast concrete wall and will be compared with the Precast Polypropylene Plastic Wall. Next, the problems and issues on the conventional precast concrete had also been stated. To evaluates this report, the procedure of making the prototype for the Precast Polypropylene Plastic Wall had also been shown along with the lab test results on the specimens.