UNIVERSITI TEKNOLOGI MARA PERAK BRANCH

SELF HEALING CONCRETE FOR FLOOR SLAB

MUHAMMAD HANIF ASYRAF BIN MOHAMED

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

Bachelor of Science (Hons.) Building ConstructionTechnology

Department of Built Environment Studies and Technologies

July 2022

AUTHOR'S DECLARATION

I declare that the work in this innovation project report was carried out in accordance

with the regulations of Universiti Teknologi MARA. It is original and is the results of

my own work, unless otherwise indicated or acknowledgedas referenced work. This

topic has not been submitted to any other academic institution or non-academic

institution for any degree or qualification.

In the event that my innovation project 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

: MUHAMMAD HANIF ASYRAF BIN MOHAMED

Student I.D No.

:2020612378

Programme

: Bachelor of Science (Hons) Construction Technology

Faculty

: Department of Built Environment and Technology

Innovation Project Title

: Self-Healing Concrete for Floor Slab

Signature of Student

Date

: July 2022

iii

ACKNOWLEDGEMENT

First, I would like to thank and grateful to Allah for his merciful and give me the strength to complete the report. It brings me great pleasure to offer our heartfelt gratitude and heartfelt thanks to Assoc. Prof. Dr. Siti Akhtar Bt Mahayuddin for her invaluable direction, support, and assistance in completing the assignment Innovation Project 1 (BCT604). I owe her a debt of gratitude for her invaluable assistance with this task. Next, I would like to thank Dr Asmat Bin Ismail for her valuable direction and guide who had assigned me to finish the report which is Innovation Project 2 (BCT654). Besides that, I also would like to express my sincere gratitude to my supervisor Dr. Nor Asma Hafizah Hadzaman for the unwavering support for his drive, patience, vast expertise, and assistance in accomplishing this project. Cooperation, coordination, and the combined efforts of various sources of knowledge are required for any inter-disciplinary project to be completed.

The report would not have been completed without the assistance andwillingness of my friends to spend some time with me and provide me with thoughts and knowledge for the report. Finally, my heartfelt thanks to my loving parents for their unendinglove, prayers, encouragement, and understanding of the significance of this assignment. Not tomention those who contributed to this assignment, your generosity means a lot to me.

TABLE OF CONTENTS

AUTI	HOR	'S DECLARATION	iii	
ACKI	NOM	/LEDGEMENT	iv	
TABI	LE O	F CONTENTS	. 5	
CHAI	PTE	R 1: INTRODUCTION	10	
1.1	Intr	oduction		
1.2	Bac	kground of Study	14	
1.3	Pro	blem Statement		
1.4	Res	earch Questions	18	
1.5	Res	earch Objectives	18	
1.6	Sco	pe of Study	18	
1.7	Sign	nificant of Studies	19	
CHAI	PTEI	R 2.0: LITERATURE REVIEW	21	
2.2	Var	ious Innovation Approaches	21	
2.2.	.1	BUBBLE DECK PRECAST SLAB	21	
2.2.	.2	LIGHTWEIGHT EPS FLOOR SLAB	23	
2.2.	.3	PRECAST SMART SLAB	25	
2.2.	.4	WASTE TIRES AS AGGREGATE FLOOR SLAB	27	
2.2	Dev	velopment of Innovation Ideas	29	
2.3.	.1	Using Healing Agent for The Healing Process	29	
2.3.	.2	Low-Cost Maintenance and Easy to Repair	31	
2.3.	.3	The Durability and Strength	33	
2.4	Cha	npter Summary	35	
CHAI	PTE	R 3.0 METHODOLOGY	36	
3.1	Intr	oduction	36	
3.2	Inn	ovation Design Framework	37	
3.3	Res	earch Methodology	38	
3.4	Dat	a Collection	38	
3.4.	.1	Literature Review	39	
3.4.2		Observation Method	39	
3.4.3		Simulation	40	
3.4.	.4	Prototype	40	
3.5	Cha	npter Summary	41	
CHAI	PTEI	R 4.0: RESULT AND DISCUSSION	42	
4.1	R	tackground of Chapter	42	

CHAPTER 1: INTRODUCTION

1.1 Introduction

Campus landscape is an important part of campus life because it is regarded as a physical manifestation of the value of a college. Nowadays, many countries have advanced their economy and their building industry toward the developed country, but the environment has played the crucial part in their developing. Sustainable universities must first construct a vision of sustainability, from which a sustainability mission can be formulated then establish and ratify sustainability policies, targets, and goals that are in line with that vision (Hilma, 2020).

There is a lot of criteria for the green campus that related to the industrialized building system (IBS) is for the environment, social and the economic. IBS has a reputation for minimizing waste, however, to realize the waste minimization benefits promised by IBS, the numerous aspects of planning in both of materials management and production management, must be managed (Anuar, 2011). Mostly, the hostel that being used in the Malaysia is the multi storey building by referring to the figure 1.1.