

RELIABILITY OF UAV IN CUT AND FILL CALCULATION METHOD

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**Thesis submitted to the Universiti Teknologi MARA Malaysia  
in partial fulfilment for the award of the degree of the  
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## **AUTHOR'S DECLARATION**

I declare that the work in this dissertation 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 acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Postgraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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## **ABSTRACT**

In this research paper, we investigated the earthwork processing methods for construction projects, specifically comparing the Unmanned Aerial Vehicle (UAV) method and the Global Navigation Satellite System (GNSS) method. The earthwork process, crucial in construction, involves moving the earth's surface to new positions, necessitating accurate estimates for efficient project planning. The rapid development in our world has heightened the importance of earthwork processing, particularly in roadway engineering decisions. Through our study, we found that the UAV method provided more consistent and accurate results compared to the GNSS method. The UAV method demonstrated closer agreement with Land Survey (LS) measurements for area, cut volume, and total volume, with differences ranging from 0.30% to 3.92%. Conversely, the GNSS method showed larger discrepancies in several measurements, raising concerns about its accuracy and reliability. Although the GNSS method offers broader coverage and surface area measurements, it requires further refinement. Our research emphasizes the UAV method's reliability, efficiency, and potential for future applications in earthwork calculations.

## TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	<b>AUTHOR'S DECLARATION</b>	<b>i</b>
	<b>ABSTRACT</b>	<b>ii</b>
	<b>ACKNOWLEDGEMENT</b>	<b>iii</b>
	<b>TABLE OF CONTENTS</b>	<b>iv</b>
	<b>LIST OF FIGURES</b>	<b>vi</b>
	<b>LIST OF TABLES</b>	<b>vii</b>
	<b>LIST OF ABBREVIATION</b>	<b>viii</b>
<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
	1.1 RESEARCH BACKGROUND	1
	1.2 PROBLEM STATEMENT	2
	1.3 RESEARCH QUESTION	4
	1.4 AIM	4
	1.5 OBJECTIVE	4
	1.6 GENERAL METHODOLOGY	5
	1.7 SCOPE AND LIMITATION	5
	1.8 STUDY AREA	6
	1.8.1 Data Used	7
	1.8.2 Software Used	7
	1.8.3 Limitation	7
	1.9 EXPECTED OUTCOME	8
<b>2</b>	<b>LITERATURE REVIEW</b>	<b>9</b>
	2.1 INTRODUCTION	9
	2.1.1 Earthwork	9