



اَللّٰهُمَّ صَلِّ وَسَلِّمْ عَلٰى سَيِّدِنَا مُحَمَّدٍ  
UNIVERSITI  
TEKNOLOGI MARA  
MALAYSIA

## TECHNOLOGY BLUEPRINT TITLE

---

**Faculty** : **Mechanical Engineering**

**Program** : **Mechanical Engineering**

**Program Code** : **EM 220**

**Course** : **ENTREPRENUERSHIP TECHNOLOGY**

**Course Code** : **ENT 600**

**Semester** : **7**

**Group Name** : **Ergonomic Wheelbarrow**

**Group Members** : **Amsyar Wajdi Bin Ismail**  
**Muhamad Helmi Affandi bin Adnan**  
**Mohammad Zarriq Adzrin bin Mohd Pooad**

**Submitted to**

**PN ZANARIAH ZAINAL ABIDIN**

**Submission Date**

**6 December 2017**

## TABLE OF CONTENTS

<b>Contents</b>	<b>Page Number</b>
<b>1.0 EXECUTIVE SUMMARY</b>	<b>1</b>
<b>2.0 PRODUCT DESCRIPTION</b>	<b>2</b>
<b>3.0 TECHNOLOGY DESCRIPTION</b>	<b>8</b>
<b>4.0 MARKET ANALYSIS AND STRATEGIES</b>	<b>13</b>
<b>5.0 MANAGEMENT TEAM</b>	<b>19</b>
<b>6.0 FINANCIAL ESTIMATES</b>	<b>23</b>
<b>7.0 PROJECT MILESTONES</b>	<b>25</b>
<b>8.0 CONCLUSIONS</b>	<b>28</b>

## **1.0 EXECUTIVE SUMMARY**

The product to be developed is an ergonomic wheelbarrow. The ergonomic wheelbarrow developed to ease the burden of people while carrying load as well as taking care of consumer health. The name of this wheelbarrow seemly matched with the main function because this ergonomic wheelbarrow help to prevent consumer from lower back pain because of carrying heavy load.

Ergonomic wheelbarrow will be sold to the three main party. The three main party are Construction Company, Landscape Company and home owner. This is the main target buyer for our product. With the rapid growth of this wheelbarrow use, the product offers tremendous advantages as well as the thousands of other workers assigned the responsibility of carrying loads for any project every day.

This product will be positioned as a high-end equipment which enables workers to carry more loads in a time via advancement made to the amount of tires being install for the purpose of improving stability and absorbing shock. There is currently no other company that produces this type of wheelbarrow with the functional features we are going to develop.

It will be sold in retail markets with both traditional selling which in physical store and online website. It also will be promote in our company website so buyer can do research which read all description and advantages of our product before buying this ergonomic wheelbarrow.

This ergonomic wheelbarrow will be sold in the market with price RM600. This price is reasonable to compare with its function. It is because the packages come with the ergonomic wheelbarrow are worth it.

## **2.0 PRODUCT DESCRIPTION**

### **2.1 Purpose of the Product**

Ergonomic wheelbarrow was developed to easier consumer to carry heavy load using wheelbarrow while protect the consumer from lower back pain.

### **2.2 Detail of the Product**

The product to be developed is an ergonomic wheelbarrow. The innovation of ergonomic wheelbarrow are:

#### **a. An adjustable absorber to adjust level at rear tire**

The adjustable wheelbarrow is control by push button at the handle of wheelbarrow. The user need to control the level by pressing the push button. The height position adjusted to allow the consumer to adjust at comfortable height (and mechanically efficient) for wheeling and dumping. With adding this feature, the user will not suffer to the lower back pain.

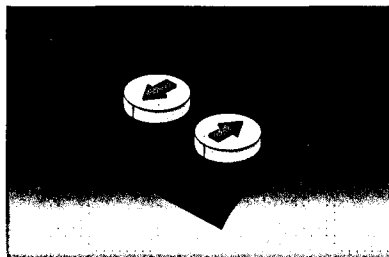


Figure 1: Push Button

#### **b. Brake system**

A brake system was added which it is attached on the front tire. This brake as the safety aspect when the user want to stop the ergonomic wheelbarrow. The brake lever locate at handle which will easier the user to pull the brake as the brake already at their hand.

**c. Use three tires to ease the moving of ergonomic wheelbarrow**

From the improvising the conventional wheelbarrow, ergonomic wheelbarrow has been built with added two tires at the back to make it more stable. Besides, both tires at the back are smaller than the front tire. We also use the pneumatic-type of the wheelbarrow tire because it has an internal air-filled tube which you inflate like a bicycle tire for all of the three tires. The benefit is the air acts as a shock absorber, which it provides a smoother experience in general, and also very useful if wheeling on rough surfaces or on uneven road.

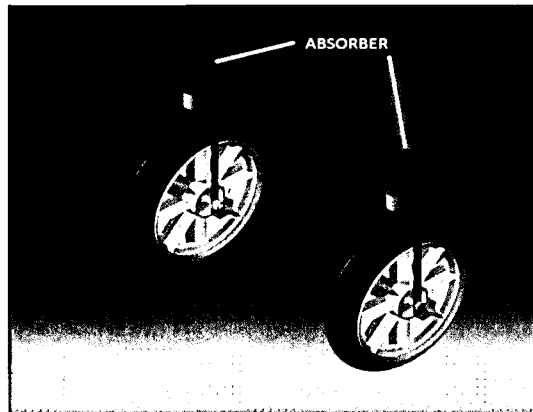


Figure 2: Absorber & Tires

**d. Upgrading size of tray**

The body which is the tray of the wheelbarrow is made up from the durable material which is steel. It makes them strong enough to carry almost any loads. The wheelbarrow has been upgrading by increasing the dimensions of the tray to carry the larger loads. The size of ergonomic wheelbarrow tray was double the size of conventional wheelbarrow tray. Besides, the tray is sprayed with spray paint to prevent it from being rust. In addition, steel is cheaper compare with other materials used for the tray.