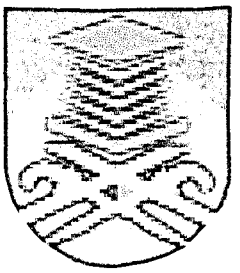

FINAL PROJECT REPORT

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

FACULTY OF MECHANICAL ENGINEERING

MARA UNIVERSITY OF TECHNOLOGY

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STUDY ON CAR BODY FRAME MANUFACTURING

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APPRECIATION

During the course of writing this Final Project Report, we have found the experience to be exhilarating. We could not have done it without the help of others.

First of all, we are grateful to Ir. Hs.Loo, who has helped us through valuable comments and suggestions.

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Finally, we would like to thank our family members for their understanding, patience and love while we worked on this Final Project Report.

INTRODUCTION

Function of the car body.

At its simplest, a car is a beam support at each end by the wheels, so it has to be strong enough not to sag in the middle a property called beam stiffness. A car must also have torsion stiffness. The ability to resist the twisting stresses imposed by any irregular road surface.

Structural strength is also necessary to cope with particular loads, such as the weight of the engine, thus of the spring and minor impacts. To have a strong structure without too much weight means using material as efficiently as possible. But strength is not everything, in addition to providing space for the occupants and their luggage, the body work must also protect them in an accident.

A car body will absorb little of the impact energy in a collision, so more will be transmitted to the occupants. On the other hand, a body that is to weak might collapse on to them. For seat-belted occupants, the ideal is an impenetrable, rigid box, with weaker ends, that will absorb impact energy by progressive crumpling and stop the car less suddenly.

The requirements of good performance will also affect the designers final decision on the shape of this car. The cars movement is opposed by the air. It is travelling through, as well as by the rolling resistance of the tyres. This air dray, as it is called, increases proportionately to the square of the speed for example, is speed is doubled, dray is quadrupled, if speed is trebled, drag is nine times as great.

The effect of drag can be minimized by using a " teardrop" shape and by the body, but this form is impracticable because of the limited passenger space that can be provide in any given length. A compromise bas had to be found between this shape and the earlier bodies, with upright wind screens and external lamps, which caused a high drag. Height has gradually been reduced, wind screens sloped and lamps built in.

Sometimes, however, such changes have gone too far for occupant comfort. On same cars design consideration have resulted in cramped seating. The body has to keep bad weather the occupants, and must also resists itself. If the body is of steel, the designer has to avoid not only embodying traps for rust-producing moisture, but also using certain other metals in contact with the steel, since corrosion would result through electrochemical action.