

EFFECT OF ENVIRONMENT ON STRUCTURAL STEEL

A project report presented in partial fulfilment of the requirements for the
award of Bachelor of Mechanical Engineering (Hons)
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PREFACE

This report was prepared after completing a study on the "*Effect of Environment on Structural Steel*". The study was part of the requirement for the award of Bachelor of Mechanical Engineering (Hons) of Institut Teknologi MARA. It is aimed at identifying the various types of environments, and the influence each environment has on structural steel.

The report is not intended to be a comprehensive textbook but rather an introduction and guide to the principles and mechanisms of environmental degradation of structural steel.

We would like to take the opportunity to express our heartiest gratitude and appreciation to Ir. Dr. Mohamad Nor Bin Berhan for his continuous guidance and assistance towards the completion of the project. It would have been very difficult to carry out this study without the enthusiastic support and advice given by him throughout the study period. We are very grateful for this help.

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1. INTRODUCTION

For the past half a decade, Malaysia had been experiencing a series of incidence of building accidents and failures. The height of these incidences is the *Highland Towers* tragedy in which more than forty people perished. The tragedy sent shock waves across the nation. This was then followed by a number of incidences where buildings under construction crumbled to the ground. Two or three cases of light rail transit (LRT) floating construction girders, which fell to the ground, were also reported. These incidents made headlines in the mass media and stunned the whole nation.

Investigations upon investigations were carried out. Eventually, in most cases, investigations revealed that these failures were attributed to design inferiority, human errors, poor construction, and lack of supervision.

Nothing has been said about accidents or failures contributed by the degradation of materials influenced by the environment. Failure mode differs from industry to industry. While most failures were due to the factors above, a significant proportion can be attributed, at least in part, to environmental degradation of structural materials. As such, it is of importance if studies could be made under the subject of material science, to investigate the influence of environment on structural materials, in this case, structural steel. In view of this matter, had prompted us to take up a project related to the subject aforementioned.