

**Environmental Management of Macau
Construction and Demolition (C&D) Waste**

by

Gong Jieli



Master of Science in Civil Engineering

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**Faculty of Science and Technology
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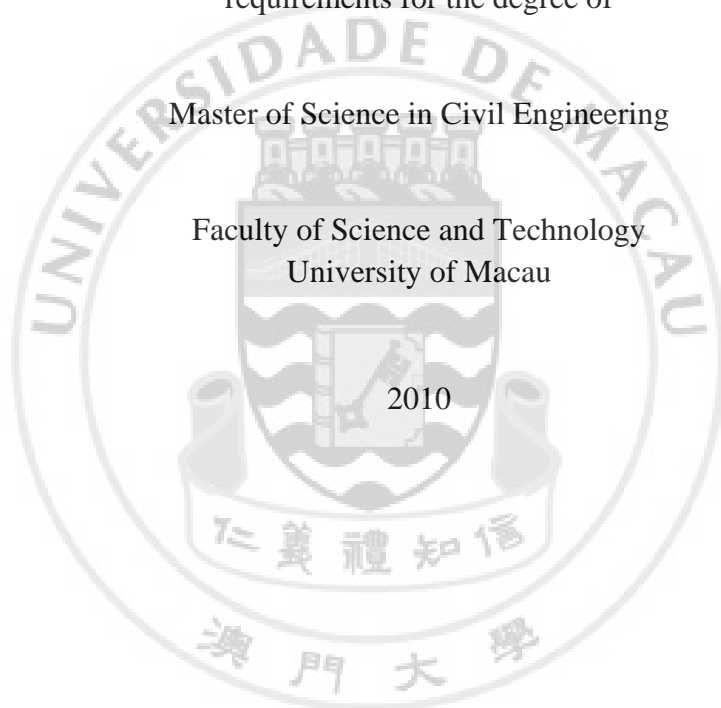
by

Gong Jieli

A thesis submitted in partial fulfillment of the
requirements for the degree of

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University of Macau

Abstract

Environmental Management of Macau Construction & Demolition (C&D) Waste

By Gong Jieliu

Thesis Supervisor: Dr. Ao Ieong Tai Man

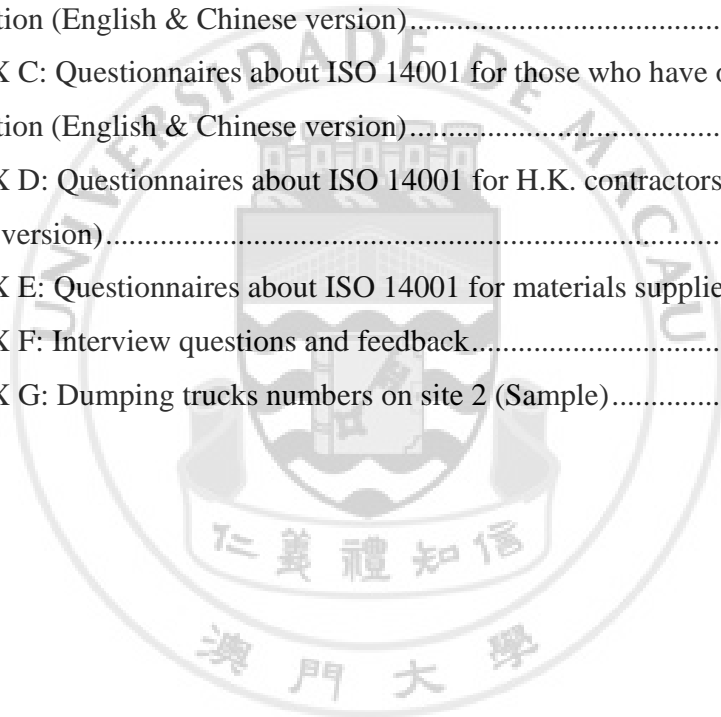
Environmental protection has been becoming an urgent issue to Macau. Huge amounts of waste are being generated by construction activities. This thesis presents an overall survey of construction and demolition waste in Macau. A brief history of waste handling in Macau followed by the methodologies used in obtaining feedback from both the industry and the government are described. The thesis also describes how qualitative and quantitative data are sought through questionnaire surveys, interviews as well as site observation conducted by the candidate. It also presents Macau contractors' view on various environmental management issues such as waste categorization, waste handling and dumping, and management system. Detailed discussion on Macau contractors' feedback on the implementation of the international standard ISO14001 and waste categorization are also presented. It is found that in general Macau contractors control the wastage of materials used within 1%~5%. Regarding quantifying and sorting of construction waste, site observations reviewed that a do-nothing attitude generally existed in the construction industry. Contractors in general are not aware of the importance of quantifying and sorting of construction waste. As a result, only wastes with value are sorted out by Macau contractors. Most contractors indicated that they do not want to establish the ISO 14001 system in their companies because there is a lack of incentive from the Macau Government to do so. Moreover, there are also no complete regulations and laws about environmental protection enacted in Macau. Though there exists more environmental-friendly construction technologies, contractors are hesitated to adopt because of the higher cost involved and a lack of skilled workers.

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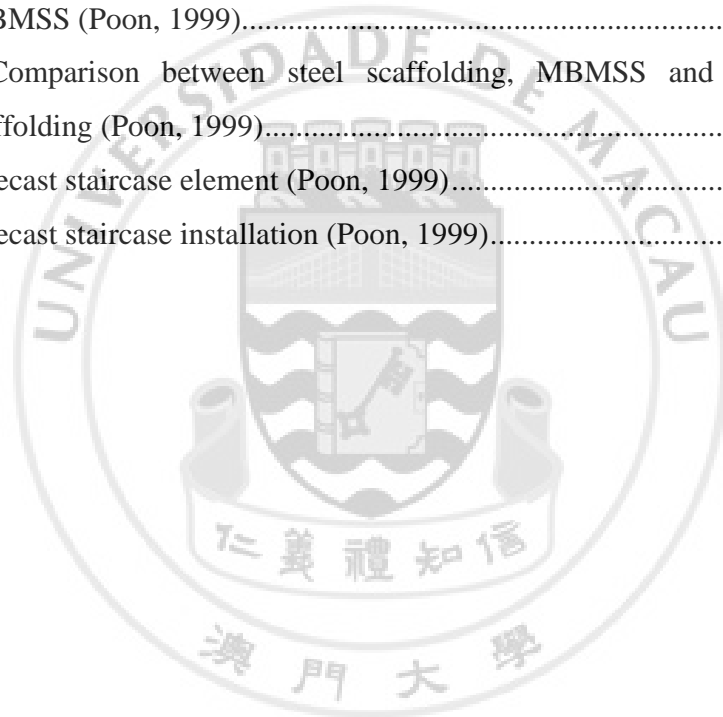
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PREFACE

This thesis is submitted to the University of Macau for the degree of Master of Science in Civil Engineering. The work described herein was performed by the author in the Department of Civil and Environmental Engineering, the University of Macau. The author was supervised by Dr. Ao Jeong Tai Man, Assistant Professor in the Department of Civil and Environmental Engineering. The author declares that the work presented herein is original, unless referenced otherwise in the text.

