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NATURAL VENTILATION IN HOUSING DESIGN

This dissertation is prepared to fulfill part of the requirements for honoring of Bachelor (Hons.) Building Surveying

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APRIL 2001

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Synopsis

Many new housing in Malaysia now are based on the western context and experience, often fail although attempts are made to adapt it to local condition. They are ill-suited to local climate and create social setting and living environments which are alienating and do not fit the local culture.

For a tropical country like Malaysia, natural ventilation is most sensible form of ventilation system. It has the advantage of being easy to be constructed and cheaper to maintain compared with the mechanical system. Natural ventilation can easily be achieved by the provision of specific apertures in the building fabric, such as open able windows and ventilator ducts, which can be control by the building's occupants.

This dissertation will focus on designing the natural ventilation system by looking on its element and factors are got to consider in designing the natural ventilation system for residential house. The traditional Malay house and modern housing design are taken as a case study.

Acknowledgement

As for completion of this dissertation, I would like to thanks those who had help me in my research Encik Rahim, Pn Jamilah, En. Hamid, and especially to my family. Puan Siti Zalehar from Paya Rumput, Melaka whom had help me to learn more about the natural ventilation system. The residents of the house in which patiently, promptly and enthusiastically answer all the numerous questions.

I would also like to thank my supervisor, Cik Rubiah who has given me the guidance and her unfailing support. All my lectures and my friends of Bachelor in Building Surveying 04 for their support, friendship and the effort in doing these dissertation along with me.

I hope this dissertation will gave some ideas and though to the designer in develop a better housing in the future. So, that we can be proud of our heritage.

Hafidi B. Abu Hassan

1.0 INTRODUCTION

1.1 Preface

The attempt is to establish a better understanding and design approach though the study of various housing planning and design in various criteria considering the needs for environmental comfort in Malaysia climatic condition and cultural. Malaysia climate are categories as hot and humid. Therefore a design for a house should have the characteristic that balancing the needs to suit the climate needs. The approaches based on the western context often fail to adapt to the local condition. That accrues because of the different climate and local culture.

This dissertation will focus on how the natural ventilation system can be optimized used for cooling the indoor temperature. The designer should studies how far the ventilation needed for getting comfort to the occupant. The functions of ventilation only can be achieved if the designers deeply understand the principles and system are used for ventilation.

The designer can no longer ignore the effects of climate on houses; they must understand and use the fundamentals of natural ventilation to improve their designs. This is because the natural ventilation system is one of the cheaper ventilation systems. The natural ventilation inside the house not only given ventilation but it also have a direct influence on the health, comfort and well being of the occupants.

This dissertation will discuss detail on the factors should be considering in designing the house, examples; building layout, orientation, air movement, wind, building material, vegetation, openings and etc. The natural ventilation element should be designed correctly by considering the inlet and outlet opening. If not the element did not function efficiency and the designer should control the wind entering to the house.

The traditional Malay house was chosen as a case study because the house was used optimized natural ventilation system by providing a lot of opening and also takes consideration on the surrounding environment. The modern house design today becomes just shelter and did not takes any consideration on natural ventilation. So, the modern houses only depend on the mechanical means for getting thermal comfort and not for healthy air. The research will try to figure out the how far the element of natural ventilation system in traditional Malay house is adapted to the modern housing design and the factors are considering in designing the traditional house and modern house design for in order to optimized the natural ventilation.

From the research, I hope it can give a better understanding in designing the natural ventilation system for the residential house. Hopefully this dissertation will also can use as a guideline to the designer for better designing the natural ventilation system.