UNIVERSITY TEKNOLOGI MARA

THE EXPLANATORY STUDY ON NATURAL VENTILATION PROVISIONS FOR TERRACE HOUSES IN KELANTAN: WITH THE ADOPTION OF UBBL

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ABSTRACT

Insufficient opening of area for the natural ventilation which could lead to deterioration of Indoor Air Quality (IAQ). Numerous problems may occur due to improper natural ventilation in a building especially residential building. Insufficient of opening will also resulting to inadequate good indoor air and poor air circulation. This research is aimed to assess and identify the natural ventilation level of terrace houses in Kelantan in order to check the compliance with Uniform Building By-Law UBBL 1984. Three terrace houses were selected as case studies and the provision of natural ventilation for these houses were checked according to UBBL 1984. This research is based on data obtain from the measurement of spaces and opening of selected case study in Kelantan. The research concluded that the size and quantity of the window opening will influence the area of natural ventilation (%) in a space. The result of the study found that enforcing the UBBL compliance is needed for the purpose of obtaining building construction permits. This study also proposed that enforcement be used after the project has been completed, rather than just for the purpose of obtaining permission during the design and construction stages. It is hope that the study helps to get better understanding on natural ventilation and its standard requirement specified by the UBBL.

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TABLE OF CONTENTS

Page

CHAPTER ONE

INTRODUCTION

1.1 RESEARCH BACKGROUND

Good Indoor Air Quality (IAQ) is defined as air without pollutants at dangerous concentrations (Manisalidis et al, 2019). It is essential to ensure the occupants' health and comfort. IAQ is one of the factors that determined the Indoor Environment Quality (IEQ). A building must be designed with a great natural ventilation because it offers additional benefits besides energy usage reductions (De Dear and Brager, 2002). Natural ventilated buildings have a substantially larger tolerable thermal comfort range than buildings with mechanical HVAC systems. Hassan and Ramli (2010) indicated that in order to reach a sufficient air change per hour for contaminant control and air ventilation, it is important to consider the maximum openings on the building walls, because it will create a high air intake into the house, hence, increasing the indoor ventilation rates.

Reduced ventilation rates have been linked to poor indoor air quality (IAQ), that has been associated to a variety of health issues including Sick Building Syndrome (SBS), the prevalence of asthma, lung cancer and other respiratory diseases (Aizat et al, 2009). In addition to decreasing the necessity for mechanical ventilation, a great flow of air movement could deliver a comfortable natural ventilation, temperature conditions, and a great environment. Removing the necessity of mechanical ventilation equipment can save cost and space while also lowering the health risks connected with poorly maintained buildings (Abdullah@AbuBakar, 2005). This research is important because it will determine whether the building have a proper ventilation and follow all the standards that have been set by the authority.

Department of Statistical Malaysia (DOSM) stated that the total existing stock of terrace house in 2019 is 2,343,923 unit. Kelantan state alone have about 33,355 of total existing terrace house unit (DOSM, 2019). According to Saji (2012), after a building is occupied by the users, most of the designs of Malaysian terraced houses