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Part 01

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DEDICATION

This book is dedicated to my loving parents and each and every teacher, lecturers or any academics who do a great job in teaching and research fields delivering a remarkable service to the students.

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Since this book is one of the outcomes of my Masters research, I would like to convey my deepest gratitude to the persons who helped me in that stage also. This is a product of myself, Dr. Kasun Nandapala who is my supervisor, Eng. K.A.B. Weerasinghe and Eng. D.N. Gunasekara.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ABRIVIATIONS

BM – Bending Moment

BS – British Standards

CFD – Computational Fluid Dynamics

FEM – Finite Element Modelling

HVAC – Heating Ventilation and Air Condition

SF – Shear Force

CHAPTER 1

1.1. Background of the study

Every being in the world like human beings, all spices of animals, each and every kind of insects or any type of organisms need safe and secure places to dwell. The ultimate purpose of these places is being protected from climate changes and enemy attacks. The most valuable gift, the power of thinking of the human being made them superior to other beings around him (Nehru, 1930). Though the ancient human lived in caves, dens and huts built on top of the huge trees in the jungle hunting animals at the periods when they were savages, gradual evolution converted him into a domestic being called "farmer". As a result of that, people eventually shifted from caves to well-prepared sheltered places (Patra, 2006). With the passage of time, those places were called houses which represent dwelling places for human beings. These are the places which are always suitable for human beings to dwell comfortably and a place that ensures an excellent balance between men and nature which brings peace, happiness, health, wealth and prosperity to the inmates of the house (Koralage Dayarathna, 2010; Ulusoy & Kuyrukcu, 2012).

This house is the place where any family spends most of the important, precious and valuable time of their lives. But it may not the place where people spent many hours of the day, for instances Doctors spend more than half the day at hospitals, Engineers spent weeks, months and years at their working sites and Professors spend much time in the universities, but any of these places are not houses of any of above-mentioned professionals. Since it is the place where people spend the most precious times of their lives with beloved family members , houses are considered as sacred places as shrines (Aponso Kithsiri, 1995; Wattage Jeewa Bhanumathie, 1995). Because of that people are making a huge effort to build their dream house to be matched with each and every desire of them and their family members.

To achieve their goals, people use various types of knowledge resources such as Civil Engineering and Architectural knowledge and traditional Customs and Beliefs in Building Construction. As a result of the development of the Science and Technology, people commonly use Civil Engineering and Architectural concepts for house construction activities. These concepts refer to the designation of space and creating and constructing the space needed for creating the day to day lives of people easy and the science of construction and designing the built environment. Although the science and technology is in a high standard at the contemporary time, the shadows of traditional customs and beliefs can be seen in most of the fields like building

constructions, town and country planning, medicine etc. likewise e, people have not totally abandoned the customs and beliefs in house construction, which are consist of different branches like Ancient Architecture, Astronomy, Vaasthu Shastra and Feng-Shui. These beliefs in Building Construction which initiated from experiences obtained by day to day activities of our ancestors, highly affected the lives of the people and spread through the society. They were lasting for years and years, remain with slight changes proving that they have mixed with society.

The customs and beliefs which have been adapted in the building construction from ancient times, get differ with respect to the climatic, religious and cultural parameters. Some of them have got labelled as superstitions and have been rejected by the society; but most of them that came from generation to generation with slight differences are still in practise proving that there are some sort of importance of them (Frenando W.L.R., 1998; Guptha, 2015; Koranteng, Afram, & Ayeke, 2015; Rudski, 2003)

Almost all the customs and beliefs in building construction have been influenced by and based on Vaasthu Shastra, Feng-Shui and various religious considerations of the society. Vaasthu Shastra which belongs the period 1500-1000 BC (Glazer, 1978; Guptha, 2015; Koranteng et al., 2015; Mak & Thomas Ng, 2005; Patra, 2006, 2009; Ranjeet.P et al., 2016) is an ancient Indian knowledge as well as a science of Architecture, planning and designing. The word Vaasthu originally derived from the keyword “vas” meaning of dwell or dwelling place, likewise, the term Vaasthu conveys a place of human dwelling more than a single household life. Feng-Shui is an ancient Chinese wisdom literally means “wind and water”, influence the layout and the design of cities and buildings (Mak & Thomas Ng, 2005). The concept of the Feng-Shui born in China and spread in western countries and it can be seen all around the world now.

The Vaasthu and Feng-Shui concepts have spread in Asian countries more than in Western and European Countries. The main reason can be the religious influence. However, the Western People have their own customs and beliefs regarding building construction, mainly for house construction, but they are not as strong as the concepts of Asian Countries. The reason for that difference is the spiritual values which were attributed to the religious influences of Asian countries (Ranawaka Leelananda A.R., 2015; Manawadu S., 2014; Weerasinghe K.A.B., Janaka K.G., and Galappaththi M.P., 2011)

In the modern world, Civil Engineering and Architectural concepts are mainly and mostly applicable to any construction activity. Those concepts refer to the designation of space and it is the art of creating and constructing the space needed for making the day to day lives of human beings easy using the science of construction and designing