Readings in Contemporary Construction Technology and Management

Muhammad Abu Eusuf

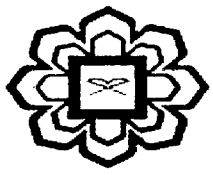
IIUM PRESS
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

READINGS IN CONTEMPORARY CONSTRUCTION TECHNOLOGY AND MANAGEMENT

Edited by:

Muhammad Abu Eusuf

Building Technology and Engineering Kulliyyah of Architecture and Environmental Design International Islamic University Malaysia



IIUM Press

Published by:
IIUM Press
International Islan iversity Malaysia

First Edition, 2011

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

Muhammad Abu Eusuf: Readings in Contemporary Construction Technology and Management

ISBN: 978-967-418-051-5

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed by :
IIUM PRINTING SDN.BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan
Tel: +603-6188 1542 / 44 / 45 Fax: +603-6188 1543
EMAIL: iiumprinting@yahoo.com

Contents

A CONCEPT OF SHEAR WALL FOR THE DESIGN OF HIGH-RISE BUILDINGS CONSTRUCTION

Muhammad Abu Eusuf Ph. D

Department of Building Technology and Engineering
Kulliyyah of Architecture and Environmental Design
International Islamic University Malaysia

ABSTRACT

This chapter is described the analysis and design process of shear wall, which is applied to high- rise building construction. Shear wall resists lateral earthquake force and wind force. Besides, Buildings with cast-in-situ reinforced concrete shear walls are widely used in earthquake-prone area and regions in the world. Research method has been confined in library research and employed software for analysis. The analytical accuracy of complex Shear Wall Systems has always been of concern to the Civil and structural Engineering system. The software of this system is performed on the platform of modeling and the models of this system are usually idealized as line elements instead of continuum elements. Single walls are modeled as cantilevers and walls with openings are modeled as pier/ spandrel systems. In order to find the stiffness, the simple systems models can provide reasonable results. It has always been accepted that a scale based model in the FEM is exact and justifiable.

Keywords: shear stress, shear wall, lateral forces, wind and earthquake prone areas, high-rise building.

INTRODUCTION

Shear walls are vertical elements of the horizontal force resisting system; it can resist forces directed along the length of the wall. Once shear walls are designed and constructed properly, they will have the strength and stiffness to resist the horizontal forces. It is well known to civil and structural engineering system that the key purpose of all kinds of structural systems used in the building structures or any infrastructure is to support gravity loads, the most common loads resulting from the effect of gravity are dead load, imposed live load and climatic snow load. Besides these loads, buildings and any other high-rise structures are also subjected to lateral loads caused by wind, blasting or earthquake and hydrostatic load (refer to Fig. 1). Lateral loads can develop high stresses, produce sway movement or cause vibration (Stafford