COMMON DEFECT ON IBS EDUCATIONAL BUILDING

This academic project is submitted in partial fulfillment of the requirement for the Bachelor Of Building Surveying (Hons.)

AHMAD DANIAL B. MOHAMMED NOR (2007243266)

APRIL 2010
ABSTRACT

The construction industry plays a major role in Malaysian economic growth. However, the industry is not without weaknesses. The challenges often occur in the area of productivity, efficiency of work, quality of work and the delivery of work. The intensive use of foreign unskilled workers, low technology equipments and out-of-dated construction methods, have eventually caused low productivity and inefficiency of work at construction site. IBS is one of the improved building Systems that are being introduced in the construction industry, to achieve the target of faster completion with mass production of the building elements in places out of its final location in a building. A study was conducted to analyses common defect on IBS educational building in Malaysia. Its may be starting from design stage till installation stage. In this research also analyze a caused of the defect based on 5-difference educational project around Malaysia. In this research it used three methodologies to gather all the data. It used a questionnaire, interview and observation. Every chapter has its own perceptions regarding IBS. The case studies been carried out to 5 project as SMK Setia Alam (Selangor), SKJ (T) Kajang (Selangor), SK Nyiur Tujoh (Terenganu), SK Rantau Panjang (Terenganu) and UiTM Jengka (Pahang). In this research also shows the most common defect and the most causes of the related defect on every case study. Summaries have been made to solve the entire defect from those most main factors the influence to defect.
TABLE OF CONTENT

ABSTRACT
ACKNOWLEDGEMENT ii
LIST OF FIGURE iii
LIST OF TABLE iv
LIST OF CHART v
LIST OF PICTURE vi

CHAPTER I: INTRODUCTION

1.1 Introduction 1
1.2 Problem Statement 5
1.3 Aim and Objective 8
1.4 Research scope 9
1.5 Research Methodology 10
  1.5.1 Find the Information/ Primary Data 10
  1.5.2 Literature Review/ Secondary Data 10
  1.5.3. Interview and Questionnaire 10
  1.5.4 Data Analysis and Findings 11

CHAPTER II: IBS / PRE-CAST CONSTRUCTION

2.1 Definition 12
2.2 The Current State of IBS in Malaysia 16
2.3 Pre-cast system 19
2.4 Benefit of pre-cast concrete 19
2.5 Process and Progress of Pre-cast flow
  2.5.1 Design 20
    2.5.1.1 Standard Pre-cast Concrete Unit Design 21
    2.5.1.2 Non-Standard Pre-cast Concrete Unit Design 21
    2.5.1.3 Franchise Pre-cast Concrete Units 21
    2.5.1.4 Joints and Sealants 21
    2.5.1.5 Concrete Mix Design 22
  2.5.2 Production 22
  2.5.3 Storage, Logistic and Delivery 23
  2.5.4 Site 24
    2.5.4.1 Installation and Handling 24
2.6 Summary 26
CHAPTER III: DEFECT

3.1 Definition
   3.1.1 Design Defects. 27
   3.1.2 Product Defects. 28
   3.1.3 Construction Defects. 29
3.2 Common Defect in Construction Industries 34
   3.2.1 Connector Problems 35
   3.2.2 Roof Defect 36
   3.2.3 Crack on Element 37
3.3 Definition of Defect in Pre-cast Construction 38
3.4 Defect on Pre-cast Element 40
3.5 Defect on Pre-cast Educational Building 48
3.6 Summary 50

CHAPTER IV: METHODOLOGY AND CASE STUDY

4.1 Introduction 51
4.2 Methodology 52
4.3 Eastern Pretech (Malaysia) Sdn Bhd 53
   4.3.1 Background 53
   4.3.2 Quality Mission 54
   4.3.3 Product of EPM 55
4.4 Case study 1: Sek. Men. Keb. Setia Alam (Selangor) 59
   4.4.1 Background 60
   4.4.2 Defect on Pre-cast 61
4.5 Case study 2: Sek. Keb. Jenis (T) Kajang (Selangor) 62
   4.5.1 Background 63
   4.5.2 Defect on Pre-cast 64
4.6 Case study 3: Sek. Keb. Nyiur Tujoh (Terenganu) 65
   4.6.1 Background 66
   4.6.2 Defect on Pre-cast 67
4.7 Case study 4: Sek. Keb. Rautau Panjang (Terenganu) 68
   4.7.1 Background 69
   4.7.2 Defect on Pre-cast 70
4.8 Case study 5: UiTM Jengka Blok Asrama (Pahang) 71
   4.8.1 Background 72
   4.8.2 Defect on Pre-cast 73
4.9 Summary 74
## CHAPTER V: DATA COLLECTION

5.0 Introduction 75

5.1 Questionnaires 76

5.2 Section 1: Personal Details
   5.2.1 Profession 77
   5.2.2 Knowledge regarding pre-cast 78

5.3 Feedback regarding pre-cast
   5.3.1 Safety factor on supply a pre-cast to site 79

5.4 Case study 1: Sek. Men. Keb. Setia Alam (Selangor)
   5.4.1 Quality of pre-cast element 80
   5.4.2 Causes of defect on Pre-cast element 81
   5.4.3 Common defect on pre-cast 82

5.5 Case study 2: Sek. Keb. Jenis (T) Kajang (Selangor)
   5.5.1 Quality of pre-cast element 83
   5.5.2 Causes of defect on Pre-cast element 84
   5.5.3 Common defect on pre-cast 85

5.6 Case study 3: Sek. Keb. Nyiur Tujoh (Terenganu)
   5.6.1 Quality of pre-cast element 86
   5.6.2 Causes of defect on Pre-cast element 87
   5.6.3 Common defect on pre-cast 88

5.7 Case study 4: Sek. Keb. Rautau Panjang (Terenganu)
   5.7.1 Quality of pre-cast element 89
   5.7.2 Causes of defect on Pre-cast element 90
   5.7.3 Common defect on pre-cast 91

5.8 Case study 5: UiTM Jengka Blok Asrama (Pahang)
   5.8.1 Quality of pre-cast element 92
   5.8.2 Causes of defect on Pre-cast element 93
   5.8.3 Common defect on pre-cast 94

5.9 Summary
   5.9.1 Quality of pre-cast element 95
   5.9.2 Causes of defect on Pre-cast element 96
   5.9.3 Common defect on pre-cast 97