CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Rapid growth and development in the construction industry has resulted in increasing demands for more effective and innovative construction systems and techniques. Construction is becoming less dependent on traditional methods of construction which normally would involve commonly using materials such as reinforced concrete and timber system, composite systems, modular systems such as lightweight panels, hollow blocks and other similar industrialized building systems (IBS) that are now becoming more acceptable. (Awang and Badaruzzaman, 2009)

IBS has been introduced into the construction industry in order to enhance the efficiency of construction processes, thus allowing higher productivity and quality, time and cost saving. The IBS is a methodology whereby the construction industry is driven and encouraged towards the production and utilization of pre-fabricated and mass produced building components off-sites in factories or in controlled environment, to be transported and installed rapidly at the sites. (Rahmadi, 2002).

According to Badir (2007), there are 4 types of building systems that available in Malaysia. First is conventional, second is cast in-situ, third is prefabricated and lastly is a composite building system. PSSDB can be classified as a lightweight composite structural system that under IBS. This system consists of Steel Sheeting and Dry Board, which is connected to each other by self-tapping and self-drilling screws (Badaruzzaman, 2013). The PSSDB system is a lightweight and therefore easy to
transportable, and also can be easily erected by semi-skilled labor. Ehsan (2007) stated that, PSSDB system in construction are provide as an improvement walling system, flooring, roofing for small scale building as well as houses.

1.2 BACKGROUND OF STUDY

Wright et al. (1987,1994) were involved in testing several types of sheeting used for composite slabs that has dominated floor construction during in the United Kingdom. They studied the behaviour of sheeting under the load of wet concrete during the construction phase and the performance of the slab under service loading once concrete has reached its hardened stage.

The PSSDB floor panel system carried out the shear and plane bending as the function of the floor is to safely support all the possible vertical loads, and then transfer the load to the foundation via members supporting the floor (Awang, 2009). This application will reduce time and also can decrease the application of roof trusses in building formwork. Hence, this application of PSSDB system in construction can be more economical for industry.

Figure 1.1 : Typical installation of the composite material to form a PSSDB panel

Source : Surat et. al (2001)
1.3 OBJECTIVE OF STUDY

The specific objective of this study and needed to be achieved are:

i. To determine the deflection of a profiled steel sheeting dry board infill with foam concrete by using different thickness of plywood.

ii. To determine the stiffness of Profiled Steel Sheeting (Peva45) performance using bending test and evaluate the properties of dry board (Plywood).

1.4 SCOPE OF STUDY

The scope of this study is to determine the behaviour of in-filled mixture in Profiled Steel Sheeting on the PSSDB floor panel. In this experiment, the bending test will be carried out by using the compression and flexural test machine (Magnus Frame & Apparatus 30 Tonne). The panel will be tested in compression and value reacted loading will be recorded. The thickness of plywood used are 3 mm, 4 mm and 6 mm respectively. While the type of profiled steel sheeting used is Peva45 with a thickness 1.0 mm.

1.5 PROBLEM STATEMENT

Enhancement in productivity and quality essential to build a sustainable local construction industry in order to compete with global industry. Thus, this system is introduced for the purpose of faster and better quality control in order to improve productivity and quality. From the previous researcher, the experiment was conducted and it was found that the possible to achieve approximately 30% increase in stiffness based on the material used. This study proposed to solve the problems due to the cost, durability and also the behavior of the material used.