

**THE EFFECT OF BUTT-JOINTED DRY BOARD IN PSSDB
SYSTEM WITH DOOR OPENING**

By

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DECLARATION BY THE CANDIDATE

I **Muhammad Shahriz Bin Safingi, 200130428** confirm that the work is my own and that appropriate credit has been given where reference has been made o he work of others.



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ABSTRACT

This paper describes the application of dry boards as a structural component in an innovative composite structural panel system known as Profile Steel Sheet Dry Board (PSSDB) system, with door opening. The profiled steel sheet/dry board panel system is a type of composite system to support loading on building. The proposed system consists of profiled steel sheeting compositely connected to dry board by simple mechanical connectors or screws.

The objective of study is to examine the effect of butt-jointed dry board in PSSDB system with door opening. Three specimens of panel are prepared and tested under axial load, overlapped and jointed condition. The overall dimension of each specimen is 1320 x 1000 mm and door opening 700 x 300 mm. The overall thickness of each specimen are 86 mm. In this experiment was used Bondek II as profiled steel sheet and Cemboard as two skins dry board.

From the experiment results, it was observed that the maximum lateral displacement are divided two sides one on the left and one on the right side. The left side is a placed position of transducer T1 to T4 and right side is placed of position transducers T6 to T9. The position of transducer T5 are placed above the door at 750 height from the bottom edge. Before that, Muhammad Zihan and Rashid place the position of transducer at the right side only. But at this time the experiment place the transducer at left side and right side to compared the results shows. The results are compared at the right side only.

From the results, we can conclude that the butt jointed PSSDB with opening door has an average ultimate load capacity of 302.4 kN and average maximum displacement of 19.2 mm at the left side and 9.6 mm at the right side. The differences of maximum ultimate loads about 8.4% and 7.8% less than that done by Muhammad Zihan results obtained from experiment overlapped profiled steel sheet dry board without joints and Rashid PSSDB with butt joints respectively. The differences of displacement of the compared to Muahammad Zihan and Rashid were 15% and 37.5% respectively. The different thickness of cemboard does not influence the displacements and loads. The results also shows that the maximum displacement always occurred at the height between 600 mm to 800 mm from the bottom edge.

The Young of Modulus (E) value of cemboard determined from the graph direct stress versus direct strain relationship showed a small difference compared to the theoretical values.. The value of E_{CEM} and E_{PSS} from graph direct stress versus direct strain relationship were 3.91 kN/mm² and 241.1 kN/mm² respectively. The theory values of E_{CEM} and E_{PSS} were 4.5 kN/mm² and 205 kN/mm² respectively.

The crack length ranged from 380 mm to 510 mm and occurred at about 1/3 from the top edge of the wall at right and left side of the door opening but no crack occurred above the door opening. There were crushing and buckling on the sides of the opening.