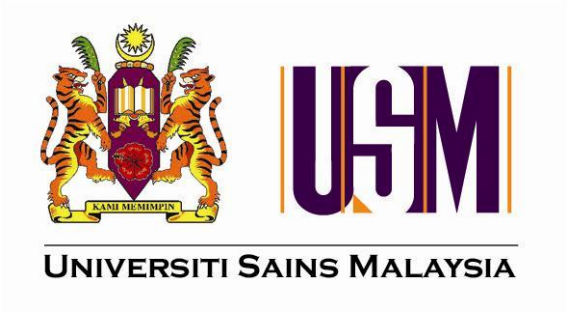

Test Report

FLEXURAL TEST ON COLD-FORM STEEL MEMBERS

by

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for

Tong Yong Metal Sdn Bhd

April 29 2010

DECLARATION

This is to certify that the test has been conducted under my supervision in accordance with established engineering practices without prejudice to any party. The authors of the test report are not liable to any losses incurred due to the use of the data presented in the report.

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INTRODUCTION

A series of flexural test on 6 high tensile steel specimen (thickness of 1.9 mm : 2 specimen; thickness of 1.5 mm : 2 specimen ; thickness of 1.2 mm : 2 specimen) has been carried out on April 20 2010 at the Heavy Structure Laboratory of the School of Civil Engineering, Universiti Sains Malaysia. The objective of the test was to determine
moment capacity of the specimen.

TEST PROCEDURES

The four point bending test was carried out using 100kN flexural testing machine according to specification stated in BS 5950: Part 5 (1998). Speed of the test was set to 0.040 kN/s. Shape of specimen used together with the dimensions are shown in Figure 1. 6 specimens have been tested. Table 1 shows the label and the thickness of the specimen involved.

Table 1

Label	Thickness
150x65x1.9(S1), 150x65x1.9(S2)	1.9 mm
150x65x1.5(S1), 150x65x1.5(S2)	1.5 mm
150x65x1.2(S1), 150x65x1.2(S2)	1.2 mm

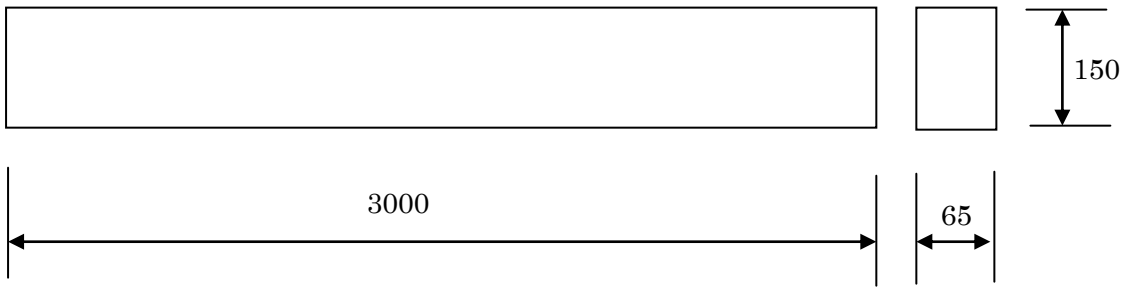


Figure 1 : Shape and dimension of specimen used in the tensile test (dimension in mm)

RESULTS

From curves of Load (kN) vs Deflection (mm) obtained, it is found that the Moment Capacity (M) for the 6 specimen are as shown in Table 2, 3 and 4.

Table 2 Moment Capacity for specimen of t=1.9 mm

Specimen	M (kNm)	
S1(1.9 mm)	11.77	(interlocking on compression side)
S2(1.9 mm)	9.05	(interlocking on tension side)

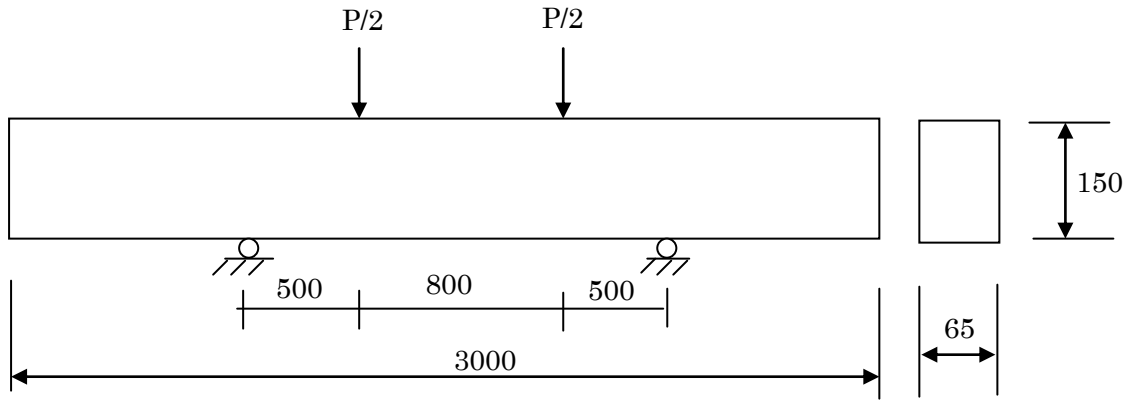
Table 3 Moment Capacity for specimen of t=1.5 mm

Specimen	M (kNm)	
S1(1.5 mm)	7.17	(interlocking on compression side)
S2(1.5 mm)	7.03	(interlocking on compression side)

Table 4 Moment Capacity for specimen of t=1.2 mm

Specimen	M (kNm)	
S1(1.2 mm)	5.23	(interlocking on compression side)
S2(1.2 mm)	6.29	(interlocking on compression side)

Figure 2 show the diagram of testing arrangement.



(All dimension in mm)

Figure 2 Schematic sketch of the four point bending test

Example of the calculation of moment capacity:

Moment capacity = P/2 kN * 0.5 m

Load = maximum load + load of loading system

= 45.44 + 1.62

= 47.06 kN

Moment capacity = 47.06/2 * 0.5

= 11.77 kNm

Figure 3(a), (b) and (c) show the picture of the specimen during testing, failure of the specimen after test and all specimen involved. The experimentally obtained Load-Deflection curves are shown in Appendix 1. Also shown on the respective curve are the Load capacity (Max Force) and maximum displacement points.

Figure 3(a) During testing

Figure 3(b) Failure of the specimen after test

Figure 3(c) All specimen involved

Appendix 1

Load-Deflection curves for the 6 specimen tested.

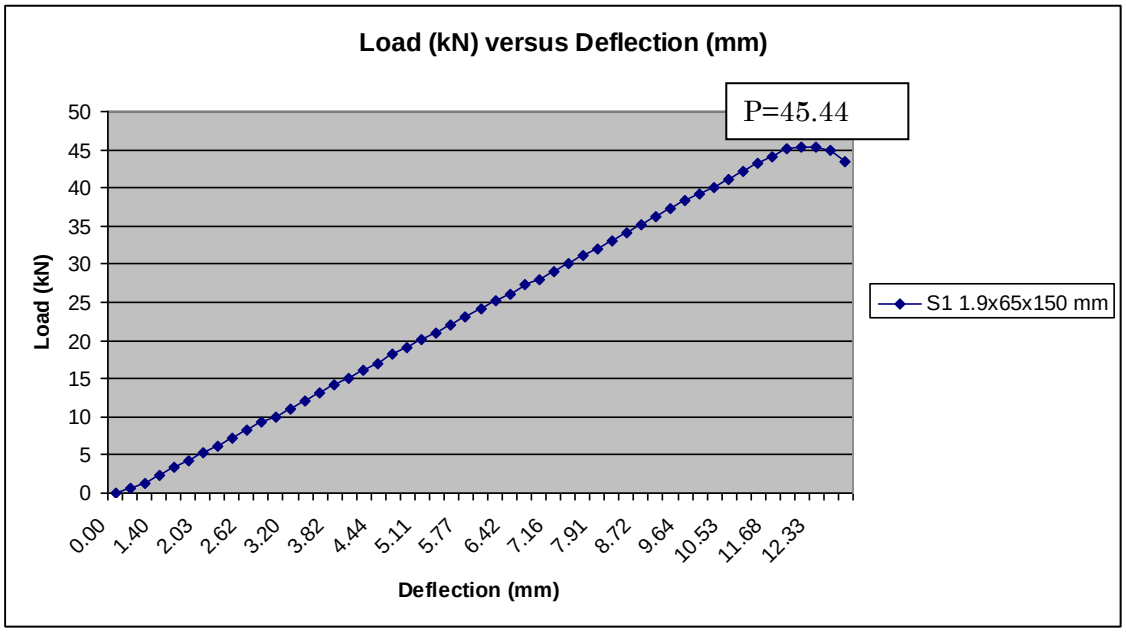


Fig.A1 : Load-deflection curve for sample S1(1.9mm)

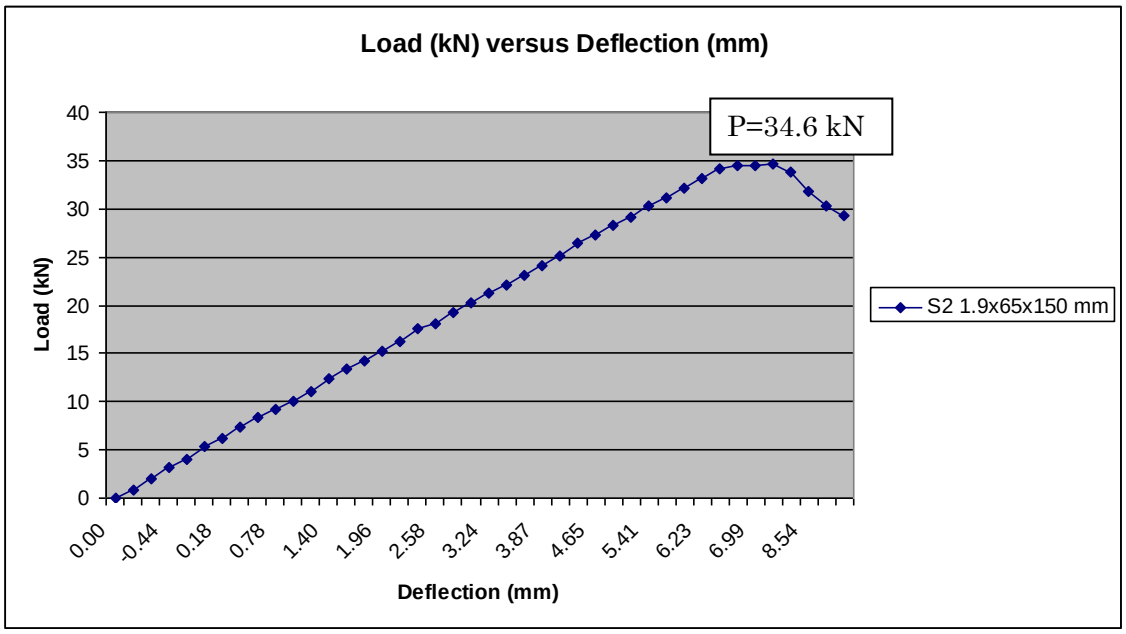


Fig.A2 : Load-deflection curve for sample S2(1.9mm)

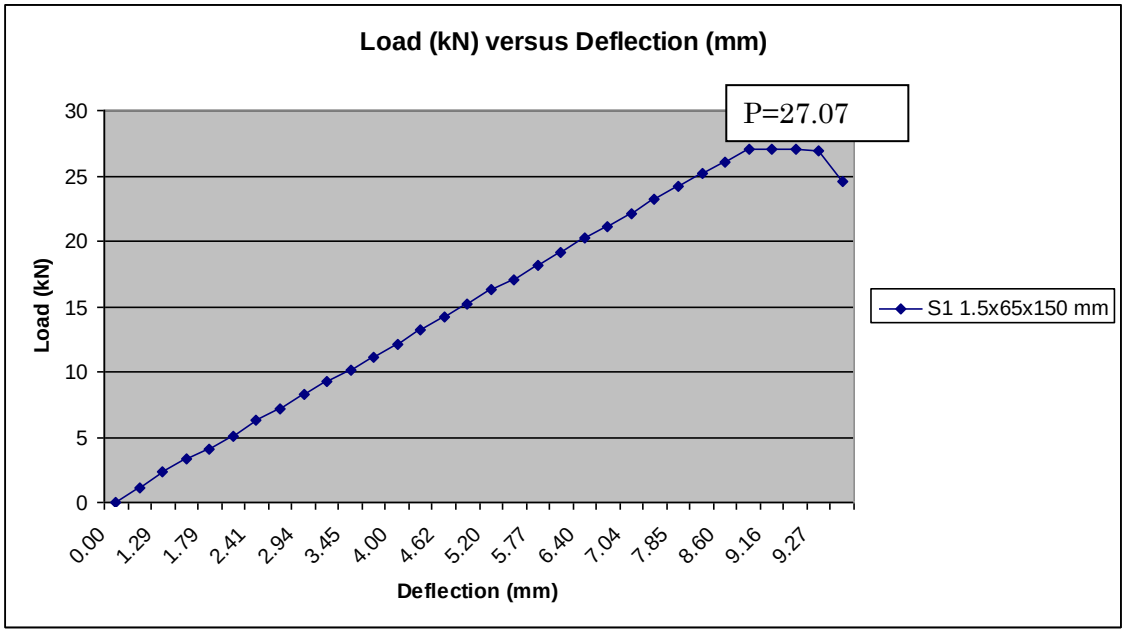


Fig.A3 : Load-deflection curve for sample S1(1.5mm)

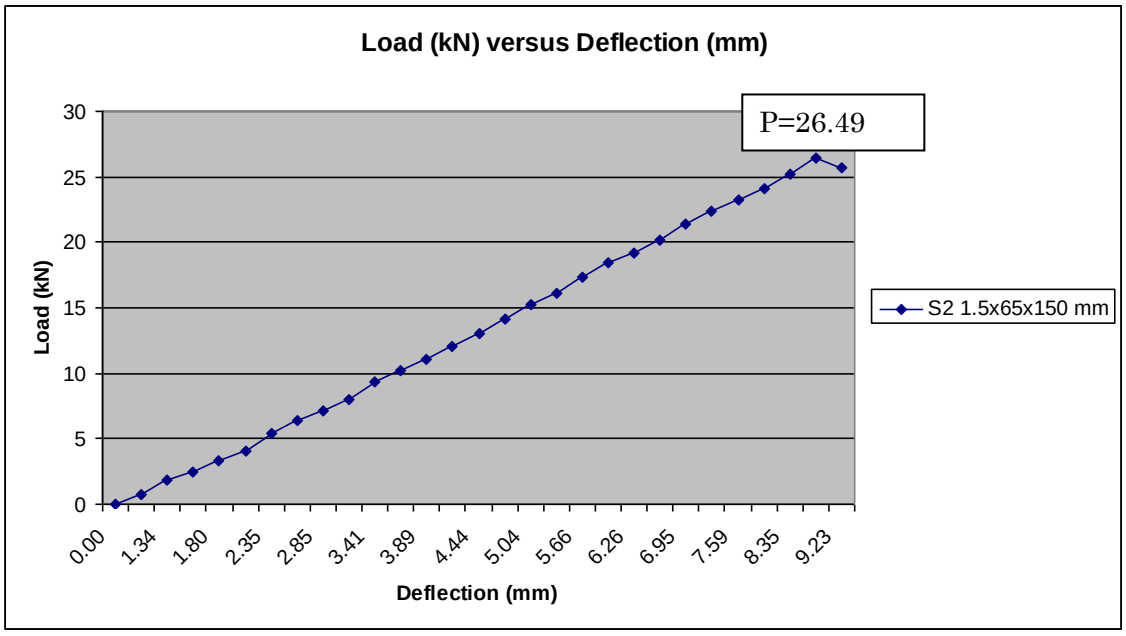


Fig.A4 : Load-deflection curve for sample S2(1.5mm)

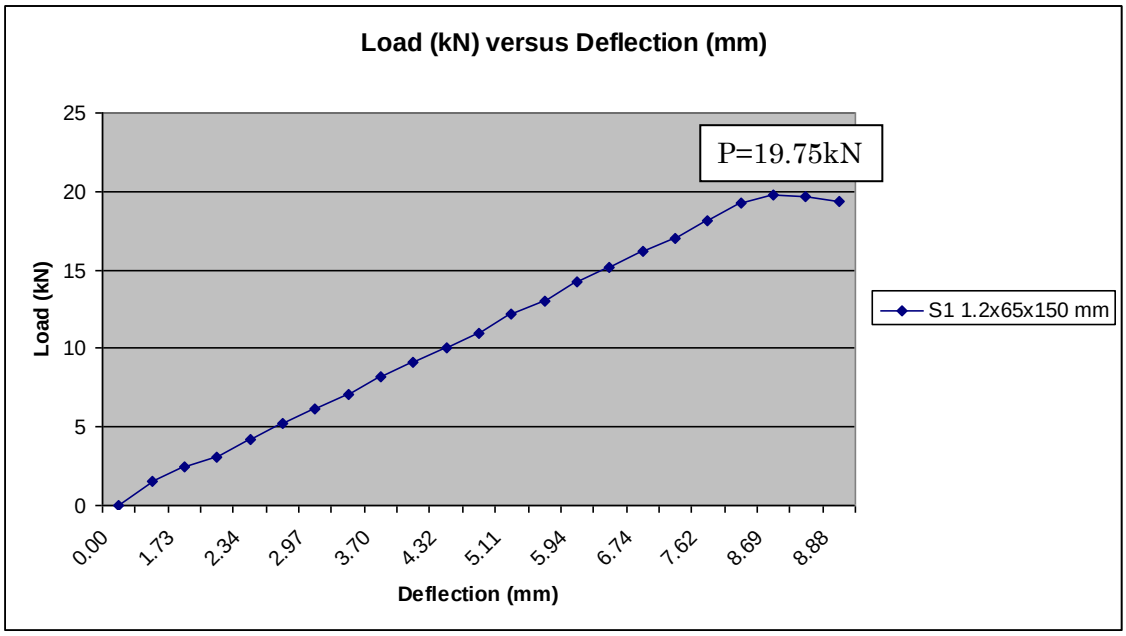


Fig.A5 : Load-deflection curve for sample S1(1.2mm)

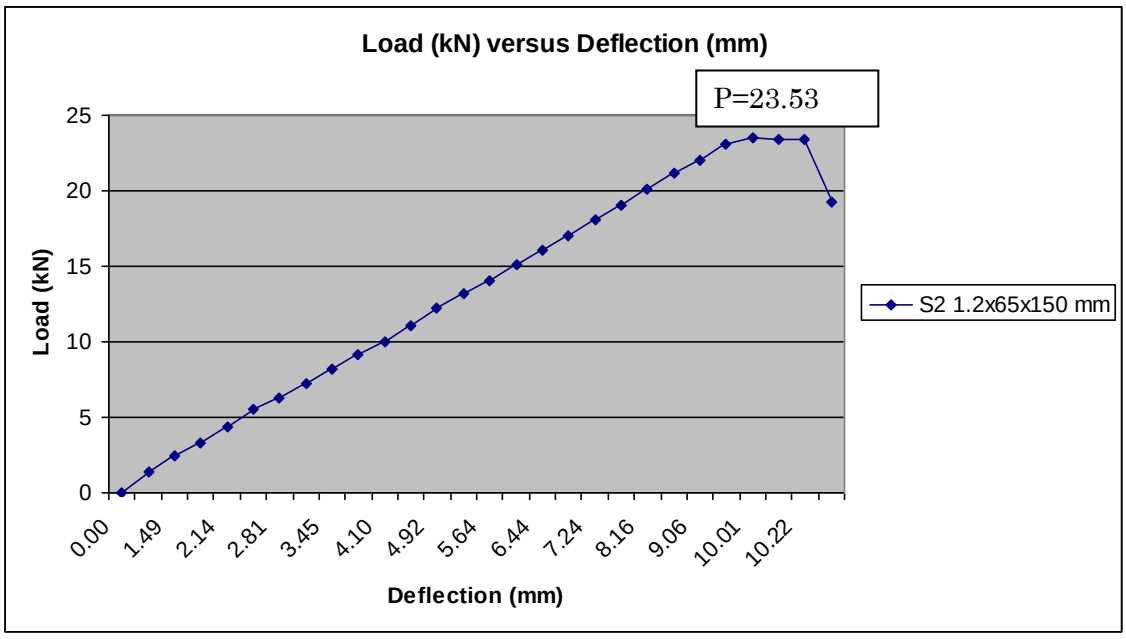


Fig.A6 : Load-deflection curve for sample S2(1.2mm)