

Test Report

**COMPRESSION TEST ON COLD-FORM STEEL MEMBERS**

by

Associate Professor Dr. Choong Kok Keong (Principal Investigator)

Dr. Fatimah De'nan (Co-Investigator)

School of Civil Engineering

Engineering Campus, Universiti Sains Malaysia

14300 Nibong Tebal, P. Pinang

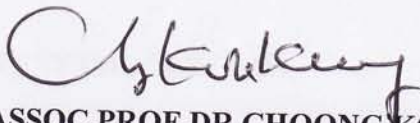
for

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.



**ASSOC. PROF. DR. CHOONG KOK KEONG**  
**Principal Investigator**

**ASSOC. PROF. DR. CHOONG KOK KEONG**  
**SCHOOL OF CIVIL ENGINEERING**  
**ENGINEERING CAMPUS**  
**UNIVERSITI SAINS MALAYSIA**

## INTRODUCTION

A series of compression 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 14 2010 at the Heavy Structure Laboratory of the School of Civil Engineering, Universiti Sains Malaysia. The objective of the test was to determine strut capacity of the specimen.

## TEST PROCEDURES

The tensile test was carried out using SHIMADZU 1000kN universal testing machine according to specification stated in BS 5950: Part 5 (1998). Speed of the tensile test was set to 0.5 mm/min. 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

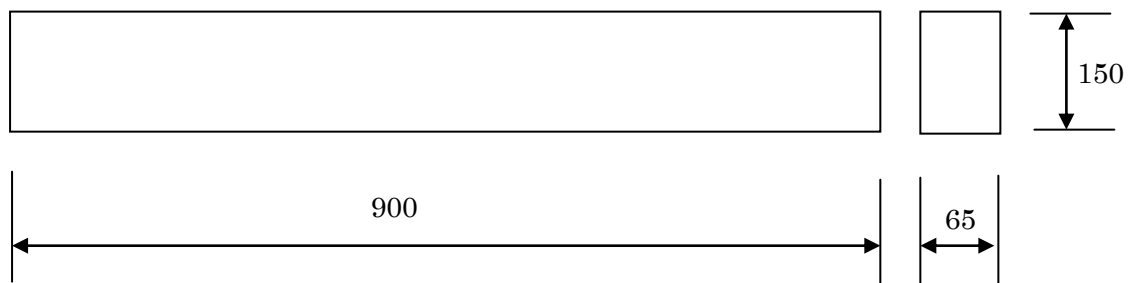


Figure 1 Shape and dimension of specimen used in the tensile test (dimension in mm)

## RESULTS

From curves of Force (kN) vs Stroke (mm) obtained, it is found that the Strut Capacity ( $P_{cs}$ ) for the 6 specimen are as shown in Table 2, 3 and 4.

**Table 2 Strut Capacity for specimen of t=1.9 mm**

<u>Specimen</u>	<u><math>P_{cs}</math> (kN)</u>
S1(1.9 mm)	190.469
S2(1.9 mm)	206.313

**Table 3 Strut Capacity for specimen of t=1.5 mm**

<u>Specimen</u>	<u><math>P_{cs}</math> (kN)</u>
S1(1.5 mm)	141.969
S2(1.5 mm)	147.375

**Table 4 Strut Capacity for specimen of t=1.2 mm**

<u>Specimen</u>	<u><math>P_{cs}</math> (kN)</u>
S1(1.2 mm)	107.938
S2(1.2 mm)	107.156

Figure 2(a), (b) and (c) shows the picture of the specimen during testing, failure of the specimen after test and all specimen involved. The experimentally obtained Force-Stroke curves are shown in Appendix 1.

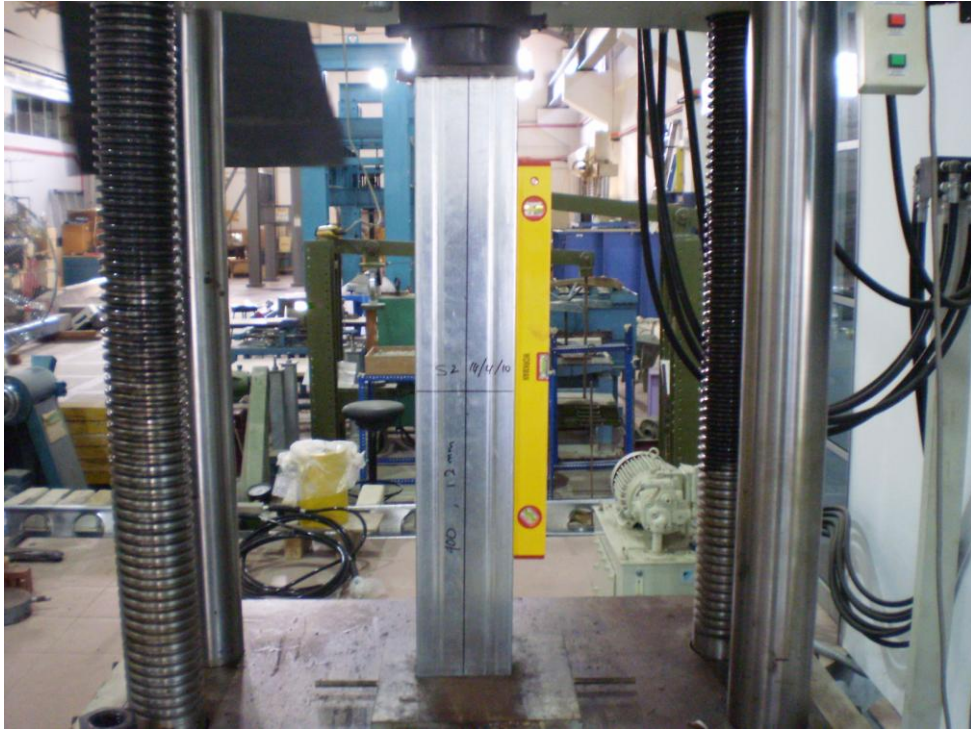


Figure 2(a) During testing

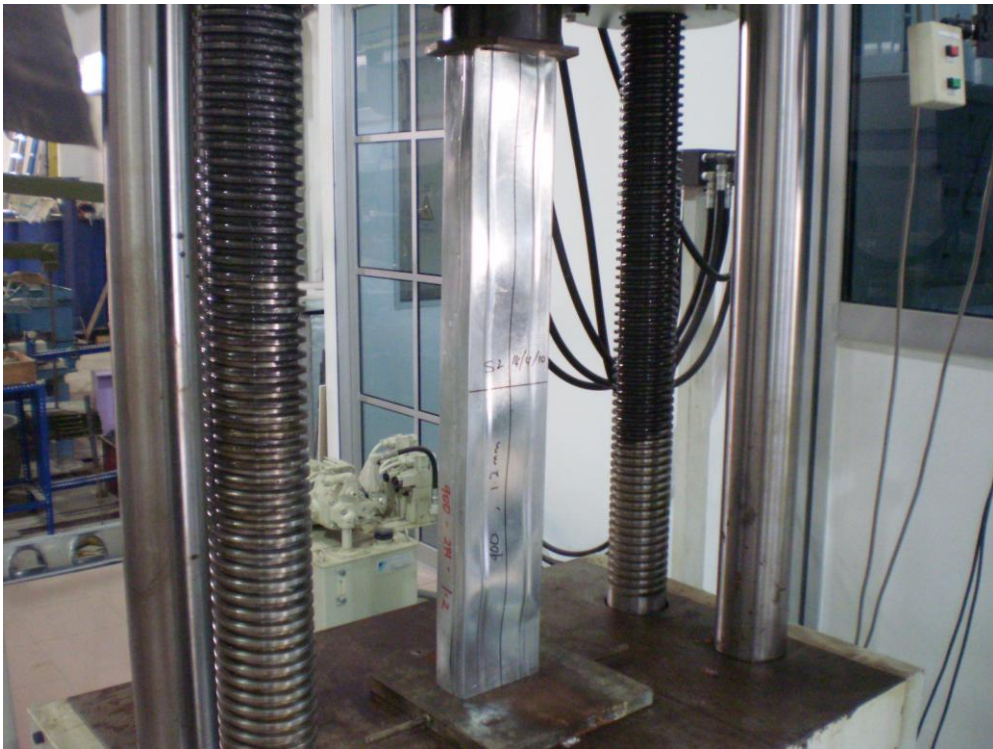


Figure 2(b) Failure of the specimen after test

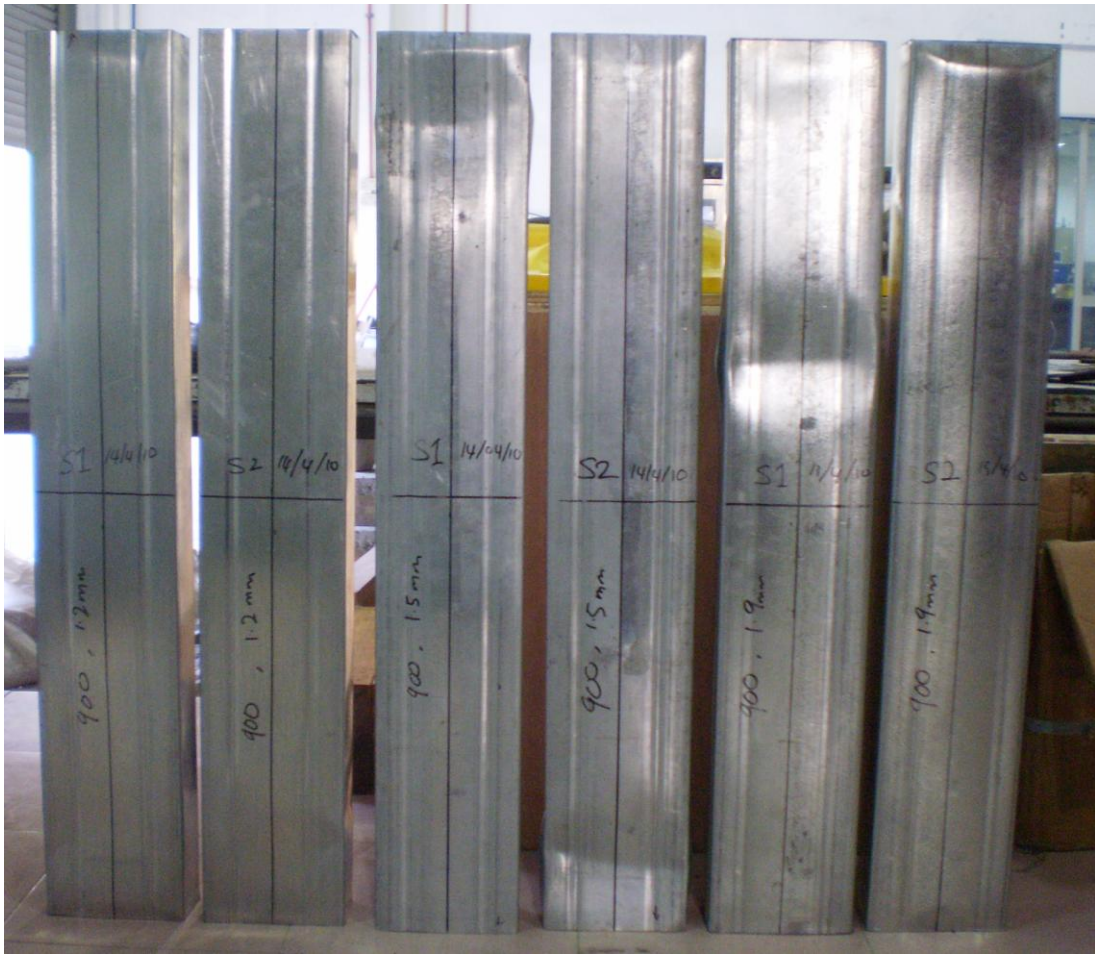


Figure 2(c) All specimen involved

## **Appendix 1**

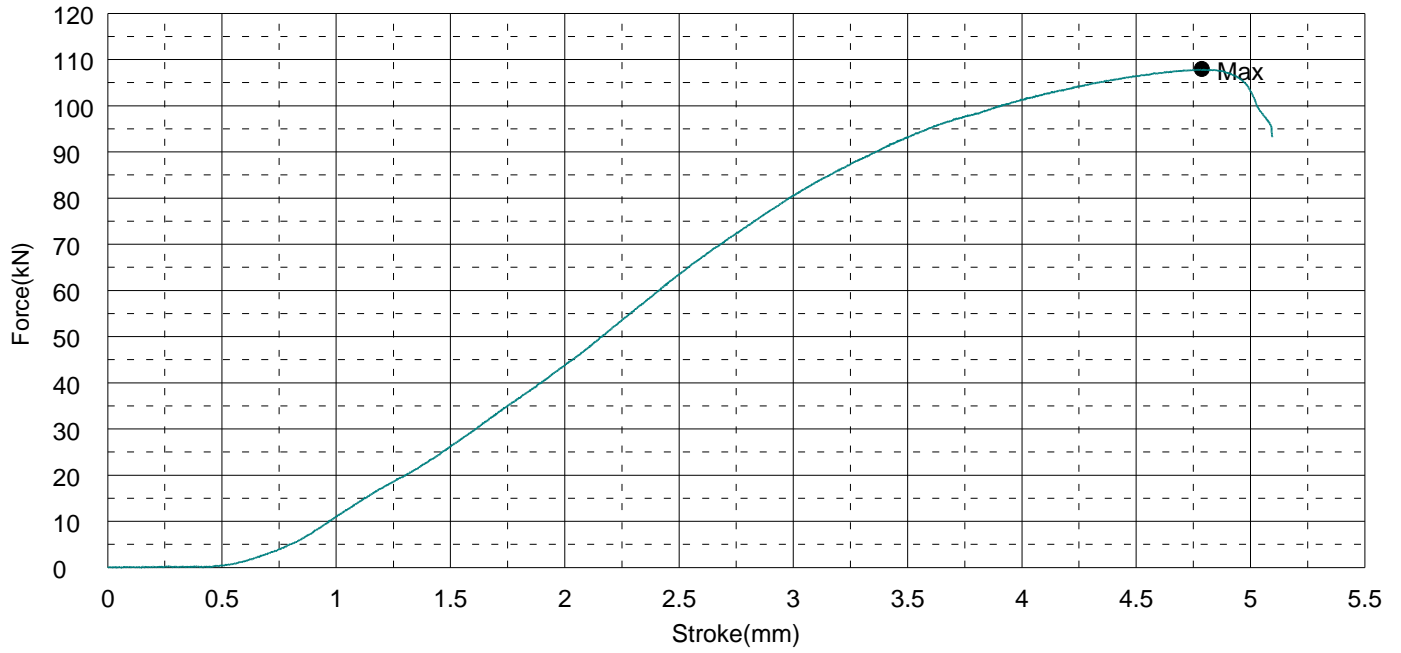
Force-Stroke curves

# SCHOOL OF CIVIL ENGINEERING, USM

## Compression Test

Date : 2010/04/14      Test Type : Comp.  
Sample : 150mm X 65mm X 1.2mm (S1)      Control : Stroke

Name	Max_Force	Max_Disp
Units	kN	mm
1 - 1	107.938	4.78700



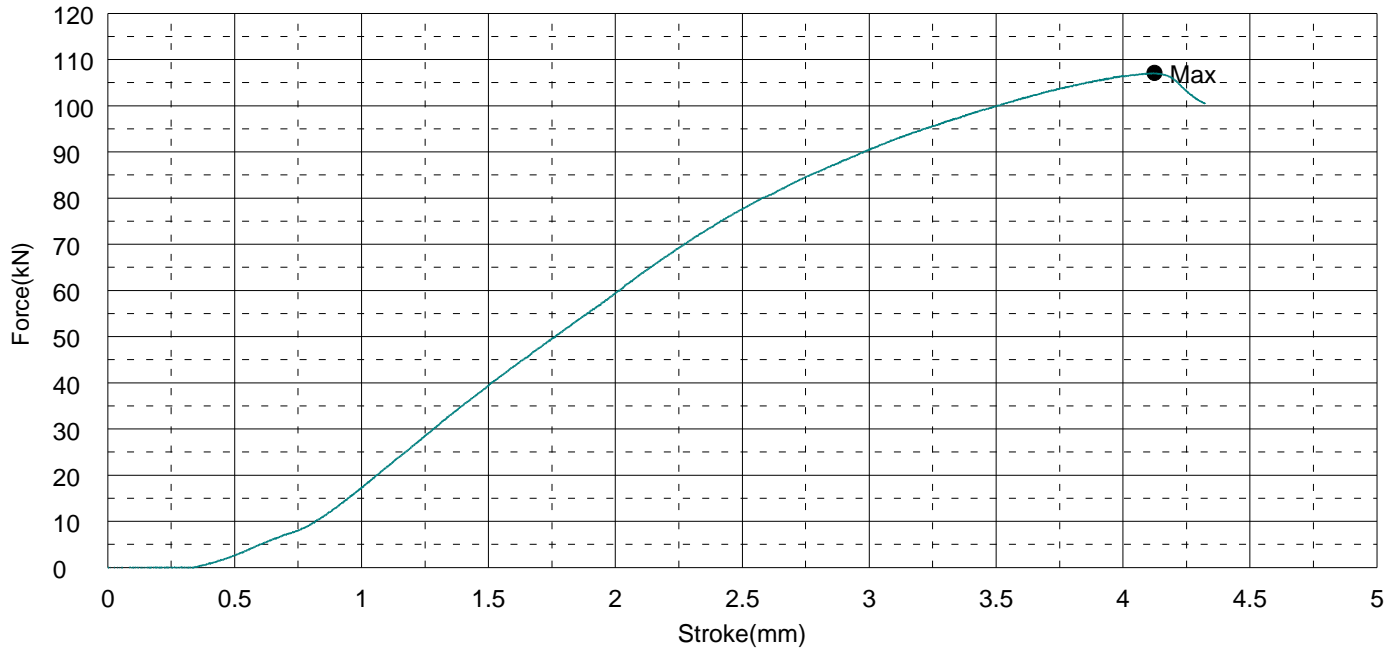


# SCHOOL OF CIVIL ENGINEERING, USM

## Compression Test

Date : 2010/04/14      Test Type : Comp.  
Sample : 150mm X 65mm X 1.2mm (S2)      Control : Stroke

Name	Max_Force	Max_Disp
Units	kN	mm
1 - 1	107.156	4.12400

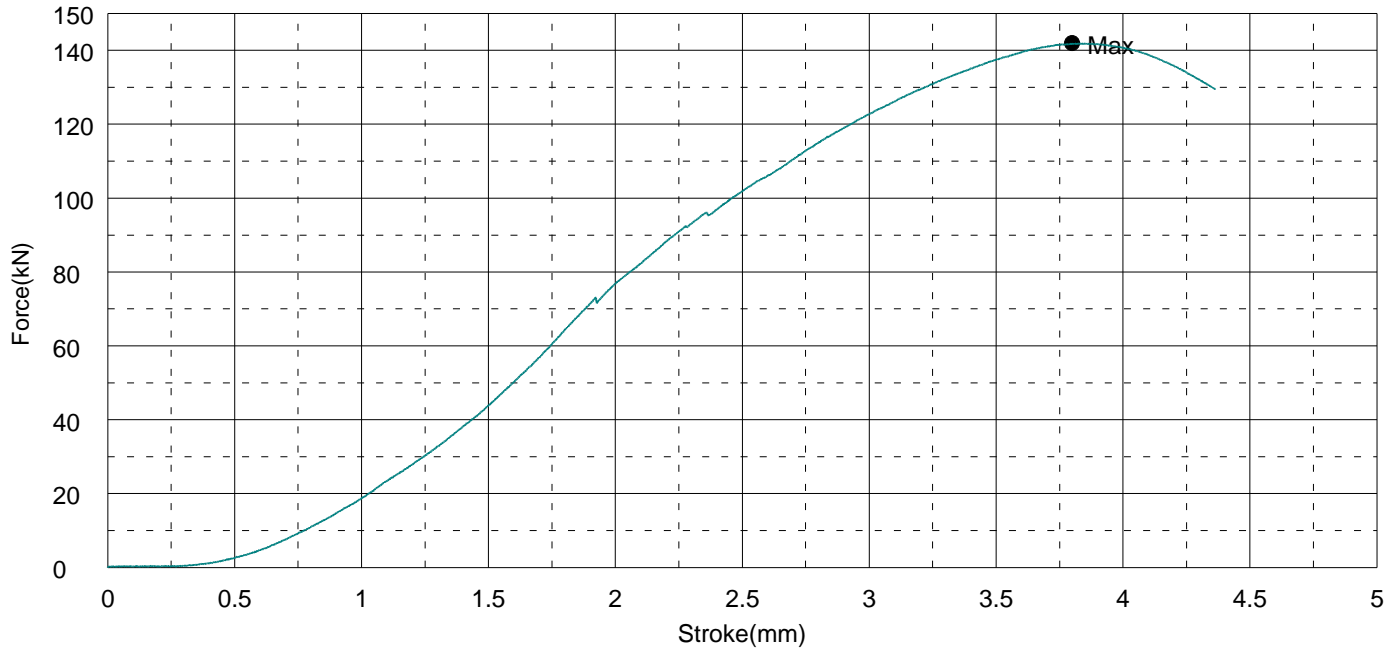


# SCHOOL OF CIVIL ENGINEERING, USM

## Compression Test

Date : 2010/04/14      Test Type : Comp.  
Sample : 150mm X 65mm X 1.5mm (S1)      Control : Stroke

Name	Max_Force	Max_Disp
Units	kN	mm
1 - 1	141.969	3.79900

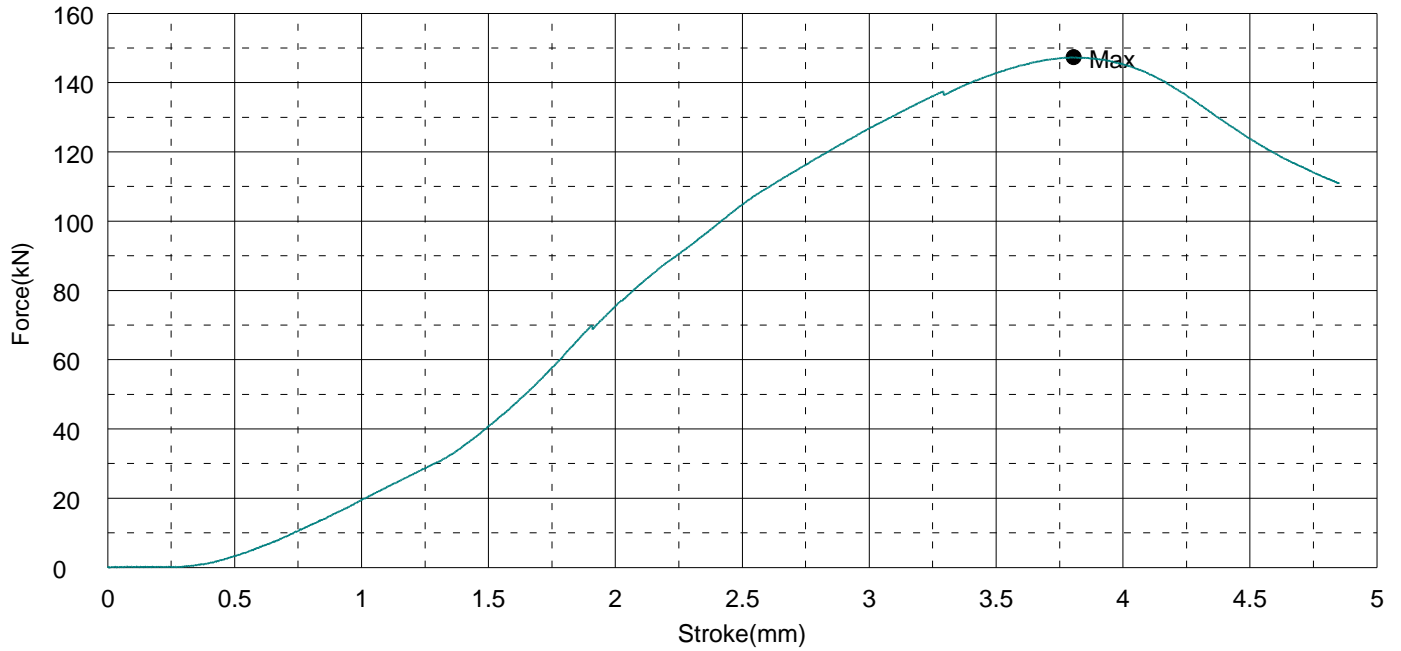


# SCHOOL OF CIVIL ENGINEERING, USM

## Compression Test

Date : 2010/04/14      Test Type : Comp.  
Sample : 150mm X 65mm X 1.5mm (S2)      Control : Stroke

Name	Max_Force	Max_Disp
Units	kN	mm
1 - 1	147.375	3.80500

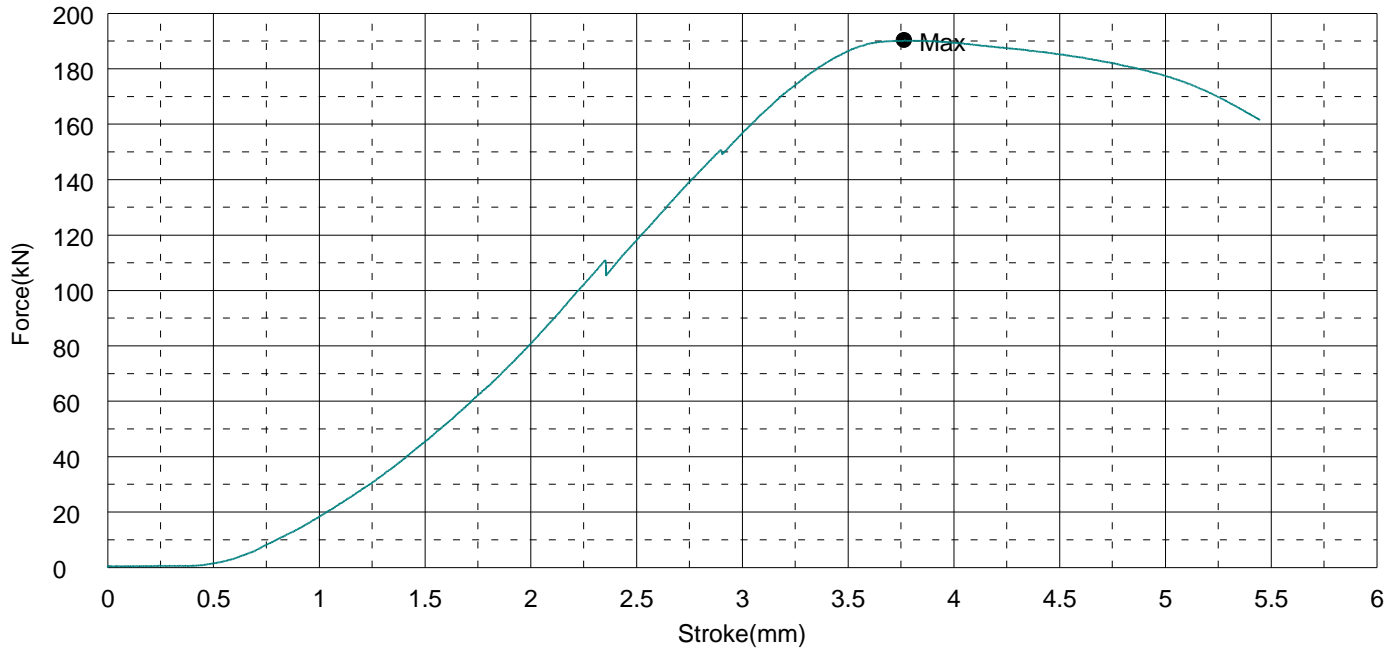


# SCHOOL OF CIVIL ENGINEERING, USM

## Compression Test

Date : 2010/04/13 Test Type : Comp.  
Sample : 150mm X 65mm X 1.9mm (S1) Control : Stroke

Name	Max_Force	Max_Disp
Units	kN	mm
1 - 1	190.469	3.76400



# SCHOOL OF CIVIL ENGINEERING, USM

## Compression Test

Date : 2010/04/13      Test Type : Comp.  
Sample : 150mm X 65mm X 1.9mm (S2)      Control : Stroke

Name	Max_Force	Max_Disp
Units	kN	mm
1 - 1	206.313	4.77400

