

**TEST REPORT**

**Mechanical Strength Test for Panel Systems Products  
ANSI / BIFMA X5.6 - 2003**

Test Date: May 7, 2010

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## TABLE OF CONTENTS

1.	INTRODUCTION	PAGE	4
2.	TEST APPARATUS	PAGE	4
3.	DESCRIPTION OF ASSEMBLY	PAGE	5
4.	TEST PROCEDURE	PAGE	5
5.	TEST RESULTS	PAGE	6
6.	TEST DATA	PAGE	8
7.	PHOTOGRAPHS / DIAGRAMS	PAGE	9



# Structural Testing Laboratory



SLT-1001  
IMT Modular Partitions LTD  
6/01/2010  
Page 3 of 10

Tested and witnessed by:

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## 1. INTRODUCTION

On May 7, 2010, mechanical strength tests were conducted on a glass wall panel system manufactured by IMT Modular Partitions Ltd of Toronto, Ontario. Testing was conducted at NGC Testing Services<sup>TM</sup> located in Buffalo, New York. The panel system tested measured 9 ft high by 12 ft long and was tested in accordance to ANSI/BIFMA X5.6 - 2003. During testing, the panels were subjected to various functional and proof loads that were applied to a single shelf that directly hung from a panel by means of a gusset bracket system. The purpose of the testing is to evaluate the ability of the panel frames and connections to withstand static loads to which they may be subjected to when in use.

The test samples were installed by qualified personnel of IMT Modular Partitions Ltd. The samples were received on May 4, 2010 and were left crated until client inspection and installation.

Testing was conducted by Steven Armenia, Test Technician at NGC Testing Services<sup>TM</sup> and witnessed by Shay Sekler from IMT Modular Partitions Ltd.

**Wall assembly built, in accordance to Section 3 of this report, shall meet the “pass” criteria detailed in the BIFMA X5.6 – 2003 Standard for testing conducted.**

## 2. TEST APPARATUS

The frame utilized for testing was constructed by employees of IMT Corporation and observed by employees of NGC Testing Services<sup>TM</sup>. The wall panels were installed within an acoustical chamber. The sample size was manufactured to accommodate the opening of the test chamber. Sample size was 9 ft tall by 12 ft wide. Panel sizes were nominally 48 in. wide by 108 in. tall. Three (3) panels were used during testing. A single shelf was placed on the center panel at mid-height. The shelf was made out of press board material and attached to the supplied brackets with four (4) 3/8 in. pan head screws, two (2) per bracket.

Loads were applied to the shelf with 25 lb and/or 50 lb bags and/or concrete blocks. Center panel deflectional measurements were measured with a 2 in. Starrett digital indicator.

### 3. DESCRIPTION OF ASSEMBLY

A metal "C" channel, 2-1/2 in. wide x 2-3/8 in. high x 144 in. long was horizontally mounted and mechanically fastened to the header top and base of the test opening. Metal 4 in. wide x 1-1/4 in. high x 107-3/4 in. long vertically mounted wall starter C channel was set in place on the left and right outside perimeter of the test opening. Four 2-1/4 in. deep x 1-1/4 in. wide flange metal Type 2700 posts, were vertically mounted between the top and bottom channels with two of the posts, each, set adjacent to an outside starter channel. One post installed at 48 in. on center from one outside post and the other post installed 44-3/4 in. from the opposite outside post. The posts had two evenly spaced vertical rows of slots on each side. Four (two top and two bottom) cross member channels per span between posts were installed for additional support. The cross members consisted of a total of eight 48 in. channels and four 44-1/2 in. long channels. Two cross members were installed back to back at 7 in. (178mm) from the top in each span between sets of posts and two cross members were installed back to back at 11-3/4 in. from the bottom in each span between sets of posts. The top outer skins (laminated particle board) on each side of the partition consisted of one 44-3/4 in. wide x 7 in. high x 5/8 in. thick and two 48 in. wide x 7 in. high x 5/8 in. thick solid panel sections. The bottom outer skins (laminated particle board) on each side of the partition consisted of one 44-3/4 in. wide x 11-3/4 in. high x 5/8 in. thick and two 48 in. wide x 11-3/4 in. high x 5/8 in. thick solid panel sections. The cavity between the posts and outer solid skins was filled with 2 in. thick mineral wool. The center section was covered with 6mm clear glass skins on each side of the partition consisting of one 44-7/16 wide x 87-1/2 in. high and two 47-1/2 in. x 87-1/2 in. metal framed sections. The solid and glazed panels had attached clips on the back side for attaching to the posts using the slots in the posts. The seams between panels and at the outer perimeter were sealed with rubber gasketing.

### 4. TEST PROCEDURE

Testing was conducted in accordance to ANSI/BIFMA X5.6-2003 Mechanical Strength Test for Panel Systems Products.

Test Loads were calculated through Table 1 – Test Loads for Surfaces, page 15 of the standard. The load is calculated based on the height of available space above the surface, but not to exceed 12 in. For the functional load, 0.017 lbs./in.<sup>3</sup>. Using the shelf dimensions and the maximum space above shelf, 12 in. For the proof load, 0.026 lbs./in.<sup>3</sup>.

The system tested was constructed in the test frame as described in Section 4 of this report. In addition, using a 15-3/4 in. gusset brackets, a shelf measuring 48 in. wide by 12 in. deep by 1 in. thick was installed on the center panel with the surface height 48 in. from the floor. A digital indicator was positioned directly in the center of the middle panel, center of the wall run, to measure the deflection of the assembly under load and the amount of set after the removal of the load. The indicator was then zeroed.

For section 6.2.2 of the test standard, a 117 lb. functional load was evenly applied to the entire shelving area. The load was held for a period of 60 minutes, during which time a deflection reading was recorded at 10 minute intervals. At the 60 minute point, the final deflection was recorded, the loads completely removed, and a set deflection reading recorded.

**NO LOSS of serviceability or structural integrity was detected**

For section 6.3.1 of the test standard, a 180 lb. proof load was applied, calculated from volume of available space of shelf, from Table 1 of the test standard. The same test specimen was used for this part of the test. The test load was evenly distributed over the entire shelving area. The initial center deflection measurement was recorded and the timer started. The proof load was held for a period of 15 minutes, during which time a deflection reading was recorded at 5 minute intervals. At the 15 minute mark, the final deflection reading was recorded, the loads completely removed and a set deflection reading was recorded.

**NO LOSS of serviceability or structural integrity was detected**

## 5. TEST RESULTS

The following is a summary of the test results:

The load is calculated based on the height of available space above the surface, but not to exceed 12 in. For the functional load, 0.017 lbs./in.<sup>3</sup>.

## 6.2.2 Shelf Loading Functional Load Distributed

Shelf dimensions were 48 in. wide by 12 in. deep and 12 in. area above it, giving a total volume of 6,912 in.<sup>3</sup>, multiply by factor given in Table 1 – Test Loads for Surfaces in the standard (0.017 lbs./in.<sup>3</sup>). Load calculated and applied was 6,912 in.<sup>3</sup> x 0.017 lbs./in.<sup>3</sup> = 117.5 lbs.

<u>Bag weights, lbs</u>	
1	41.2
2	39.1
3	25.6
4	11.4
<b>Total</b>	<b>117.3 lbs</b>

Length of test                      60 minutes  
 Deflection @ 60 Minutes      0.025 in.

**NO LOSS of serviceability or structural integrity was detected**

## 6.3.1 Shelf Loading Proof Load Distributed

Shelf dimensions were 48 in. wide by 12 in. deep and 12 in. area above it, giving a total volume of 6,912 in.<sup>3</sup>, multiply by factor given in Table 1 – Test Loads for Surfaces in the standard (0.026 lbs./in.<sup>3</sup>). Load calculated and applied was 6,912 in.<sup>3</sup> x 0.026 lbs./in.<sup>3</sup> = 179.7 lbs.

<u>Bag weights, lbs</u>	
1	41.2
2	39.1
3	29.9
4	30.0
5	29.9
6	11.4
<b>Total</b>	<b>181.5 lbs</b>

Length of test                      15 minutes  
 Deflection @ 15 Minutes      0.001 in.

**NO LOSS of serviceability or structural integrity was detected**

## 6. TEST DATA

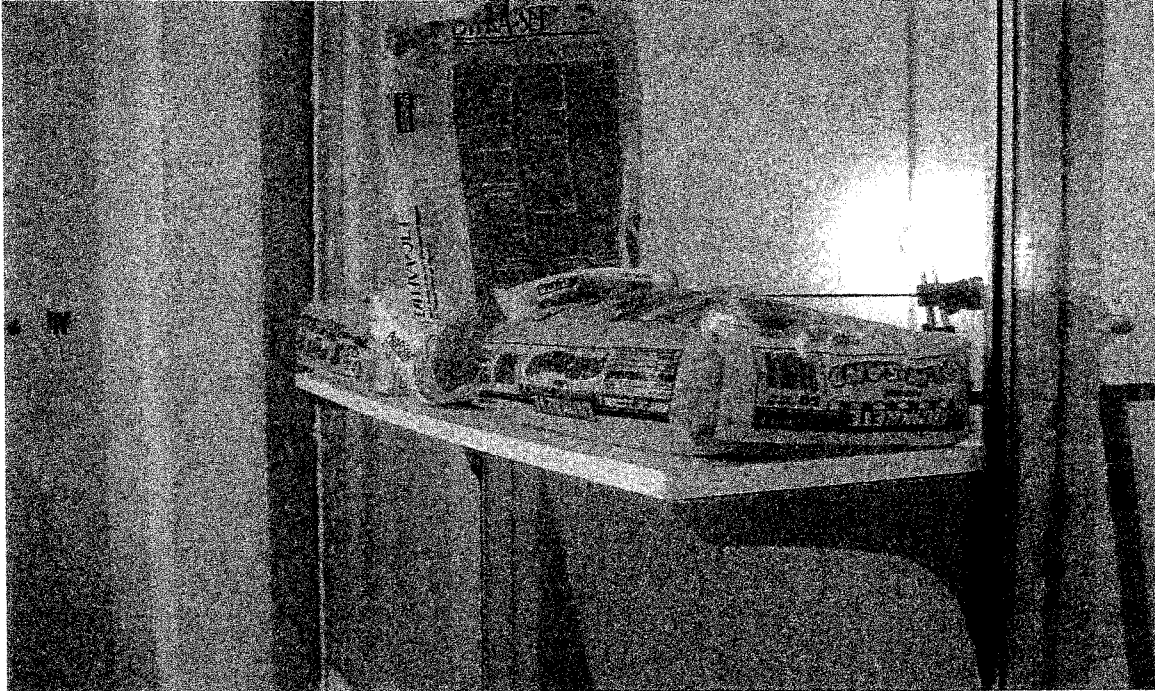
	<b>STRUCTURAL DATA SHEET</b>				
	ANSI / BIFMA X5.6-2003				
	Temperature, Deg F 64		Humidity 49%		
DATE:	5/7/2010	PROJECT NO.		TEST NO.	SLT-1001
		TECHNICIAN	SMA	SHEET NO.	1

**SAMPLE** Single self and two brackets. Particle Board construction

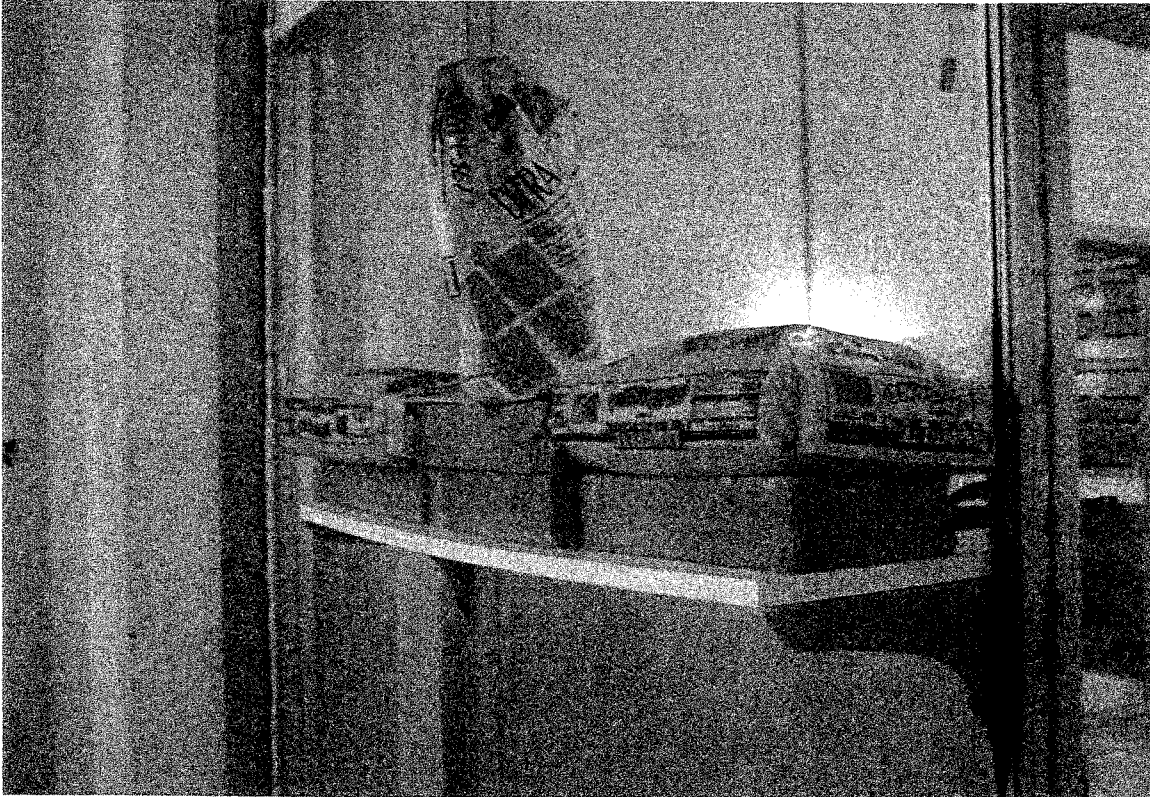
FUNCTIONAL LOAD	TIME, MIN.	DEFLECTION, IN.	OBSERVATIONS
117 Lbs	0	0.000	
	START	0.133	Slight bow in shelf
	10	0.012	
	20	0.018	Shelf brackets bowing outward slightly
	30	0.024	
	40	0.022	
	50	0.025	
	60	0.025	
	SET	0.102	

PROOF LOAD	TIME, MIN.	DEFLECTION, IN.	OBSERVATIONS
180 Lbs	0	0.000	
	START	0.166	Slight bow in shelf
	5	0.003	Shelf brackets bowing outward slightly
	10	0.005	
	15	0.001	
	SET	0.147	

## 7. PHOTOGRAPHS / DIAGRAMS



Distributed Functional Loading



Distributed Proof Loading