

Laboratory Ref. No. : BC0190402-001-MISL

Date of Issue : 12-06-2019

Page : 1 of 5 Content

A Strength and Robustness Test Report

For

JUMBO Gypsum Partition

Supplied by

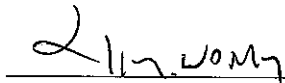
Fujian Jumbo New Material Corporation Limited

Prepare by :


FU HO MAN
Assistant Technical Manager

Date: 13 June 2019

Review by :

**WONG KA MAN**
Senior Manager

Date: 13 June 2019

Laboratory Ref. No. : BC0190402-001-MISL

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Page : 2 of 5 Content

Content

1. Introduction

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Appendix

I Report of individual tests

1. Introduction

This report presents the methods and the results for the strength and robustness tests for the Partition which was built up by the 600mm (W) × 247 mm (H) × 150 mm (T) and density 1100 kg/m³ “JUMBO” Gypsum blocks. The test sponsor, Fujian Jumbo New Material Corporation Limited, is responsible for installation of gypsum blocks into the test fixture with outside dimension:

Junction Partition

[4720 mm + 940 mm] (W) * 2635 mm (H) * 150 mm (T)

Gypsum blocks Description:

Nominal size: 600mm (W) × 247 mm (H) × 150 mm (T)

Density: 1100 kg/m³

Date Cast: 04-03-2019

The gaps around the “JUMBO” Gypsum blocks were filled and touched up with “Gypsum Binder”.

Door set supplier : Hong Kong Standard Fire Resisting Door Manufacturing Company Ltd

Then, strength and robustness tests were conducted in accordance with the requirements BS5234-2:1992 standard.

2. Test Summary of Strength and Robustness Tests to BS 5234-2: 1992

TESTS FOR "HEAVY DUTY" GRADE COMPLIANCE			
Annex	Requirement tested	Observation	Results
A	Stiffness (Load: Up to 500 N)	Max deflection < 1mm, no damage, detachment, loosening or dislodgement of panel and its fixings	Satisfactory
B	Surface damage by small body impact of Junction Assembly (Impact Energy = 6 Nm)	Depth of Indentation < 1.5mm, No visible cracking and breakage	Satisfactory
C	Resistance to damage by impact from a large soft body of Junction Assembly (Impact Energy = 40 Nm)	Max. deformation < 2mm, No visible cracking and breakage	Satisfactory
D	Perforation by small body hard body impact of Junction Assembly (Impact Energy = 15 Nm)	No surface damage and perforation of facing	Satisfactory
E	Resistance to structural damage by large soft body impact (Impact Energy = 120 Nm)	No collapse or dangerous damage	Satisfactory
F	Door slamming (100 Impacts)	Max. deformation < 1mm, No visible cracking and breakage, Door frame fittings & architraves are not detached and loosened.	Satisfactory
	Grade Achieved	Heavy Duty	

2. Test Summary of Strength and Robustness Tests to BS 5234-2: 1992

TESTS FOR "HEAVY DUTY" GRADE COMPLIANCE			
Annex	Requirement tested	Observation	Results
G	Crowd Pressure (Load = 3 kN/m)	No collapse or dangerous damage	Satisfactory
H	Lightweight anchorage - Pull-out (Load Up to 100 N)	Without releasing shim plate and no damage to panel	Satisfactory
J	Lightweight anchorage - Pull down (Load: Up to 250 N)	Without releasing shim plate, no damage to panel and displacement < 2mm	Satisfactory
K	Heavyweight anchorages - Wash basin (Load: Up to 1500 N)	Without releasing shim plate, no damage to panel, residual deformation < 1mm	Satisfactory
L	Heavyweight anchorages - Wall Cupboard (Load: Up to 4000 N)	Without releasing shim plate, no damage to panel, residual deformation < 1mm	Satisfactory

CASTCO

佳力高試驗中心有限公司
CASTCO TESTING CENTRE LIMITED

Appendix I

Report of individual tests

Test Report Determination of Stiffness for Panel Wall Partition

Date of issue: 12-06-2019

Sheet 1 of 3 sheet(s)

Castco LRN : BC0190402-001-MISL

Details As Supplied By Customer:

Customer: Fujian Jumbo New Material Corporation Ltd

Customer Ref. No.: --

Address: --

Job Title: --

Contract No. : --

Supplier: Marshal Engineering Services Co. Limited

Partition Mark: BC0190402-001-MISL

Manufacturer: --

Date Delivered to Site : 02-04-2019

Laboratory Test Result:

Place of test : Fanling

Test date: 09-05-2019

Ambient temperature: (start) 23°C / (end) 23°C

Relative humidity : (start) 68% / (end) 68%

Test method: BS 5234-2: 1992 Annex A

Apply a force perpendicular to the solid area of the specimen:

Processes	Measurement
Height from the bottom of the specimen and horizontally where maximum deflection will occur	1500mm
Measurement instrument distance above the centre point of the application of the load	125mm

Measure deflection:

Processes	Time period	Deflection (mm)	Any changes, damages and defects	Compliance	
Apply a preload to 100N, allow the loaded specimen to stabilize for:	appro. 1 min.		No obvious changes, No damage and defects	Maximum deflection < 15mm; No damage, detachment, loosening or dislodgement of panel and its fixings	
Remove the load and allow the unloaded specimen to stabilize for:	appro. 1 min.		No obvious changes, No damage and defects		
Set the deflection measuring instrument to datum	appro. 2 min.	0.00	No obvious changes, No damage and defects		
Increase the load to:	appro. 2 min.	100N	0.00		No obvious changes, No damage and defects
		200N	0.03		No obvious changes, No damage and defects
		300N	0.07		No obvious changes, No damage and defects
		400N	0.10		No obvious changes, No damage and defects
500N	0.13	No obvious changes, No damage and defects			
Max. deflection during loading cycle:	--	0.15	No obvious changes, No damage and defects		

Test Report
Determination of Stiffness for Panel Wall Partition

Date of issue: 12-06-2019

Sheet 2 of 3 sheet(s)

Castco LRN : BC0190402-001-MISL

Laboratory Test Result (Continued):

Record residual deformation:

Processes	Time period	Residual deformation (to the nearest 0.1mm)	Any changes, damages and defects	Compliance
Remove the load and pad. <i>When the specimen has fully stabilized after completing the test*</i>	5mins	0.00	No obvious changes, No damage and defects	Maximum residual deformation < 2 mm; No damage, detachment, loosening or dislodgement of panel and its fixings

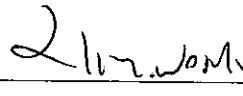
Remark:

1. Test result relate only the specimen tested.
2. The test specimen complies with BS 5234-2 : 1992.

Checked by :


FU HO MAN
Assistant Technical Manager

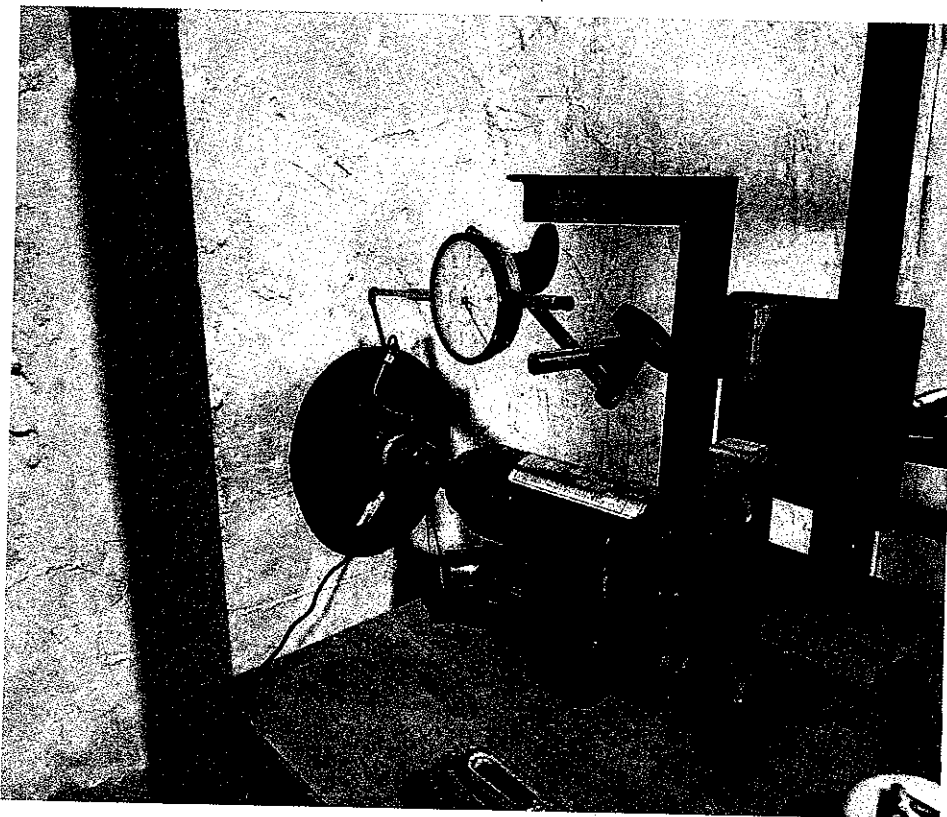
Certified by :


WONG KA MAN
Senior Manager

Date of issue: 12-06-2019

Sheet 3 of 3 sheet(s)

Castco LRN : BC0190402-001-MISL

BC0190402-001-MISL**End of Report**

香港粉嶺安居街33號 33, On Kui Street, Fanling, Hong Kong.

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Test Report

Determination of Stiffness for Panel Wall Partition

Date of issue: 12-06-2019

Sheet 1 of 2 sheet(s)

Castco LRN : BC0190402-001-MISL

Details As Supplied By Customer:

Customer: Fujian Jumbo New Material Corporation Ltd

Customer Ref. No.: --

Address: --

Job Title: --

Contract No. : --

Supplier: Marshal Engineering Services Co. Limited

Partition Mark: BC0190402-001-MISL

Manufacturer: --

Date Delivered to Site : 02-04-2019

Laboratory Test Result:

Place of test : Fanling

Test date: 09-05-2019

Ambient temperature: (start) 23°C / (end) 23°C

Relative humidity : (start) 68% / (end) 68%

Test method: BS 5234-2: 1992 Annex B

Position	Impact Energy (Nm)	Pendulum head drop height (m)	Angle of swing (°)	Height above the bottom of the specimen (m)	Any indentation, delamination, fracture of surface, etc.	Depth of indentation, if any (mm)	Compliance
Impacts on the faces of the wall partition:							
1	6	0.2	48.2	1.8	No delamination, No fracture of surface	0.978	Depth of indentation < 1.5 mm; No visible cracking and breakage
2					No delamination, No fracture of surface	0.496	
3					No delamination, No fracture of surface	0.59	
4					No delamination, No fracture of surface	0.578	
5					No delamination, No fracture of surface	1.062	
6					No delamination, No fracture of surface	1.163	
7					No delamination, No fracture of surface	1.395	
8					No delamination, No fracture of surface	0.998	
9					No delamination, No fracture of surface	1.223	
10					No delamination, No fracture of surface	1.047	
Impact at wall partition junction:							
11	6	0.2	48.2	1.75	No delamination, No fracture of surface	0.528	

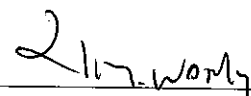
Remark:

1. Test result relate only the specimen tested.
2. The test specimen complies with BS 5234-2 : 1992.

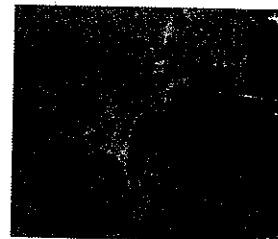
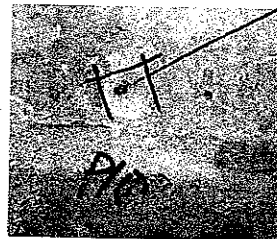
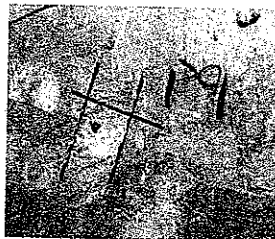
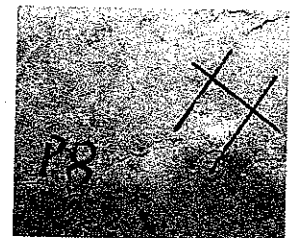
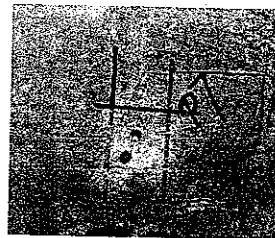
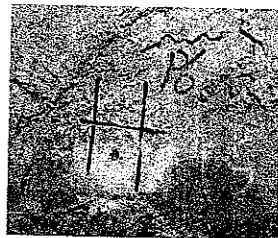
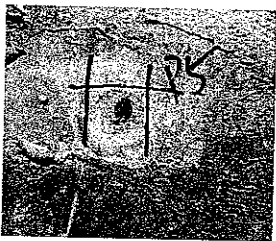
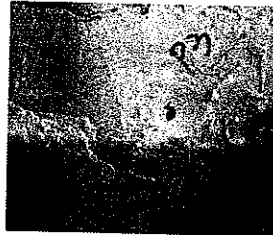
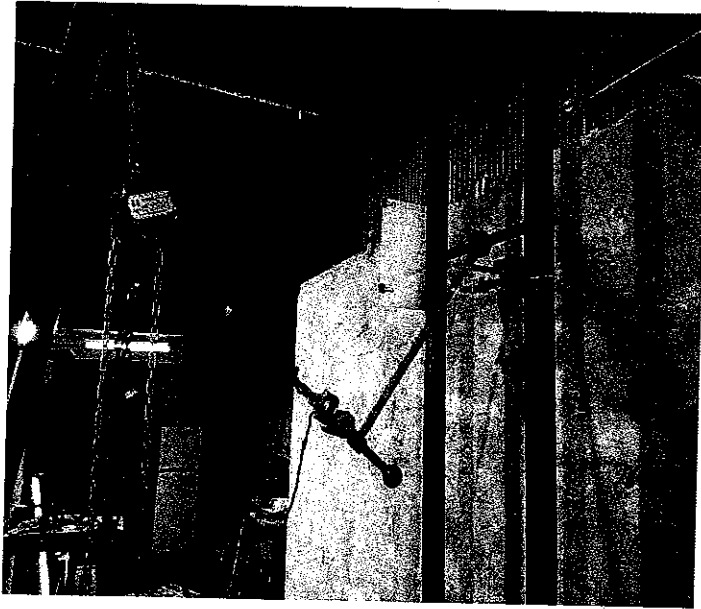
Checked by :

 **FU HO MAN**
Assistant Technical Manager

Certified by :

 **WONG KA MAN**
Senior Manager

BC0190402-001-MISL



End of Report

Test Report

Determination of Resistance to Damage by Large Soft Body Impact for Panel Wall Partition

Date of issue: 12-06-2019

Sheet 1 of 2 sheet(s)

Castco LRN : BC0190402-001-MISL

Details As Supplied By Customer:

Customer: Fujian Jumbo New Material Corporation Ltd

Customer Ref. No.: --

Address: --

Job Title: --

Contract No. : --

Supplier: Marshal Engineering Services Co. Limited

Partition Mark: BC0190402-001-MISL

Manufacturer: --

Date Delivered to Site : 02-04-2019

Laboratory Test Result:

Place of test : Fanling

Test date: 10-05-2019

Ambient temperature: (start) 23°C / (end) 23°C

Relative humidity : (start) 68% / (end) 68%

Test method: BS 5234-2: 1992 Annex C

Position	Height above the bottom of the specimen# (m)	Impact Energy (Nm)	Bag drop height (mm)	Angle of swing (°)	Stablizing time (min)	Any surface or structural damage, changes etc. during the test	Permanent deformation; if any (to the nearest 0.5mm)	Compliance
<u>Impacts to the solid area of the specimen:</u>								
1	1.35	40	82	≤ 65	5	No Obvious change, No Damage	0.1	Maximum deformation < 2 mm; No visible cracking and breakage
2	1.35					No Obvious change, No Damage	0.1	
<u>Impact at wall partition junction:</u>								
3	1.35	40	82	≤ 65	5	No obvious change, No Damage	0.0	

Remark:

The heights above the bottom of the specimen should be within the horizontal band 1.2 m and 1.75 m, at which single impacts are applied normal to the solid area of the specimen.

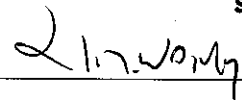
1. Test result relate only the specimen tested.

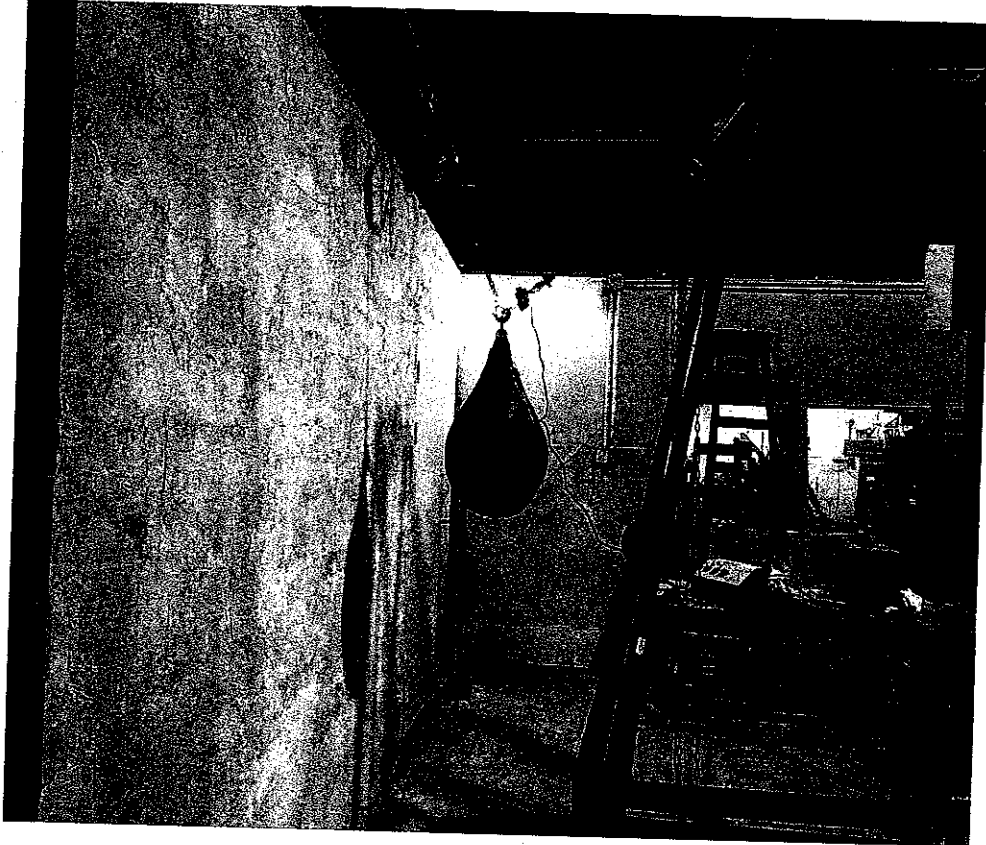
2. The test specimen complies with BS 5234-2 : 1992.

Checked by :


FU HO MAN
Assistant Technical Manager

Certified by :


WONG KA MAN
Senior Manager

BC0190402-001-MISL

End of Report

Test Report

Determination of Resistance to Perforation by Small Hard Body Impact for Panel Wall Partition

Date of issue: 12-06-2019

Sheet 1 of 2 sheet(s)

Castco LRN : BC0190402-001-MISL

Details As Supplied By Customer:

Customer: Fujian Jumbo New Material Corporation Ltd

Customer Ref. No.: --

Address: --

Job Title: --

Contract No. : --

Supplier: Marshal Engineering Services Co. Limited

Partition Mark: BC0190402-001-MISL

Manufacturer: --

Date Delivered to Site : 02-04-2019

Laboratory Test Result:

Place of test : Fanling

Test date: 10-05-2019

Ambient temperature: (start) 23°C / (end) 23°C

Relative humidity : (start) 68% / (end) 68%

Test method: BS 5234-2: 1992 Annex D

Position	Impact Energy (Nm)	Pendulum head drop height (m)	Angle of swing (°)	Height above the bottom of the specimen (m)	Any surface damage and perforation, changes, etc.	Compliance
Impact on the faces of the wall partition:						
1	15	0.5	80.4	1.6	No surface damage, No perforation	No perforation of facing
2					No surface damage, No perforation	
3					No surface damage, No perforation	
4					No surface damage, No perforation	
5					No surface damage, No perforation	
6					No surface damage, No perforation	
7					No surface damage, No perforation	
8					No surface damage, No perforation	
9					No surface damage, No perforation	
10					No surface damage, No perforation	
Impact at wall partition junction:						
11	15	0.5	80.4	1.75	No surface damage, No perforation	

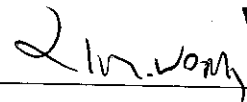
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1. Test result relate only the specimen tested.
2. The test specimen complies with BS 5234-2 : 1992.

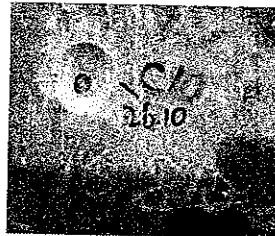
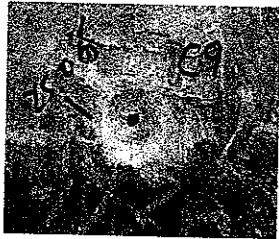
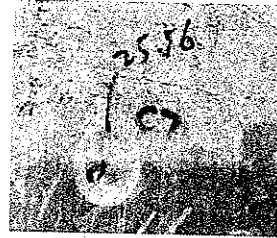
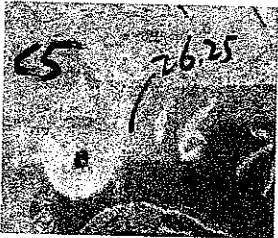
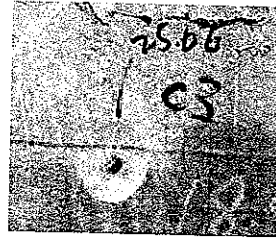
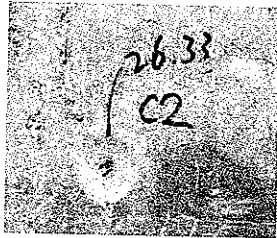
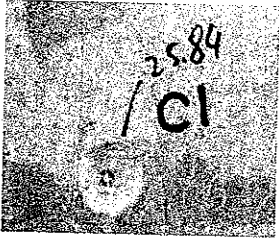
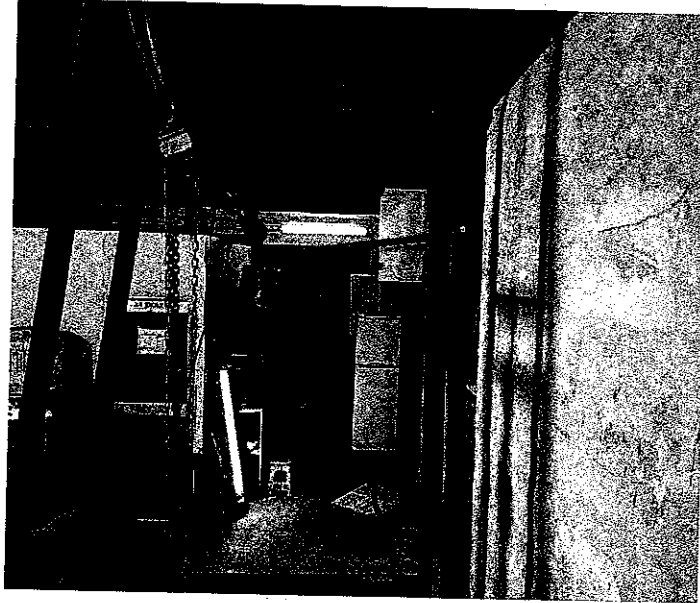
Checked by :

 **FU HO MAN**
Assistant Technical Manager

Certified by :

 **WONG KA MAN**
Senior Manager

BC0190402-001-MISL



End of Report

Test Report

Determination of the Effects of Door Slamming of Panel Wall Partition

Date of issue: 12-06-2019

Sheet 1 of 3 sheet(s)

Castco LRN : BC0190402-001-MISL

Details As Supplied By Customer:

Customer: Fujian Jumbo New Material Corporation Ltd

Customer Ref. No.: --

Address: --

Job Title: --

Contract No. : --

Supplier: Marshal Engineering Services Co. Limited

Partition Mark: BC0190402-001-MISL

Manufacturer: --

Date Delivered to Site : 02-04-2019

Laboratory Test Result:

Place of test : Fanling

Test date: 14-05-2019

Ambient temperature: (start) 23°C / (end) 23°C

Relative humidity : (start) 68% / (end) 68%

Test method: BS 5234-2: 1992 Annex F

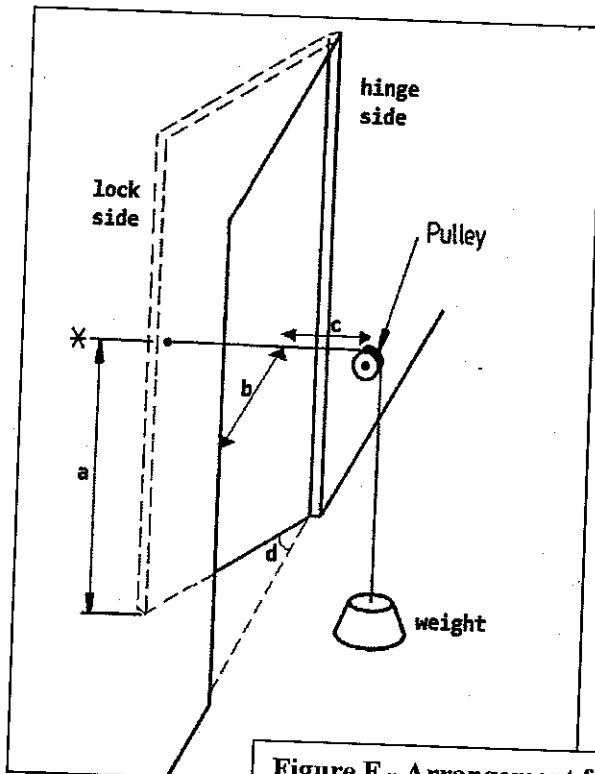


Figure F - Arrangement for door slamming test

Set up the test equipment :

Position	Measurement
a Height of the horizontal line above the bottom of the door leaf (mm)	1000
b Distance between the horizontal line and lock side (mm)	50
c Distance between the pulley and the door jamb (mm)	500
d Angle of the door opens (°)	60
When the weight strikes the platform and removes the tension in the line, the door leaf is closing within: (mm)	20

Form No. BC WALL_DOOR_5234-2-F_W1 dd 23/09/2013

Test Report**Determination of the Effects of Door Slamming of Panel Wall Partition**

Date of issue: 12-06-2019

Sheet 2 of 3 sheet(s)

Castco LRN : BC0190402-001-MISL

Laboratory Test Result: (Continued)**Start the test :**

	No. of slams	Residual displacement (to the nearest 0.1mm)	Any changes, damage, loosening or dislodgement to the partition, fixings or trims
Preslam test	3	0.35	No visual crack, No damage, No detachment, No loosening and No dislodgement on partition, door frame fittings and architraves was observed.
Slam test	100	0.72	No visual crack, No damage, No detachment, No loosening and No dislodgement on partition, door frame fittings and architraves was observed.

Compliance: - Maximum displacement < 1 mm

- No visible cracking & breakage of panel

- Door frame fittings & architraves shall not be detached & loosened

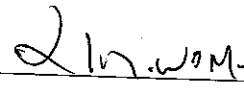
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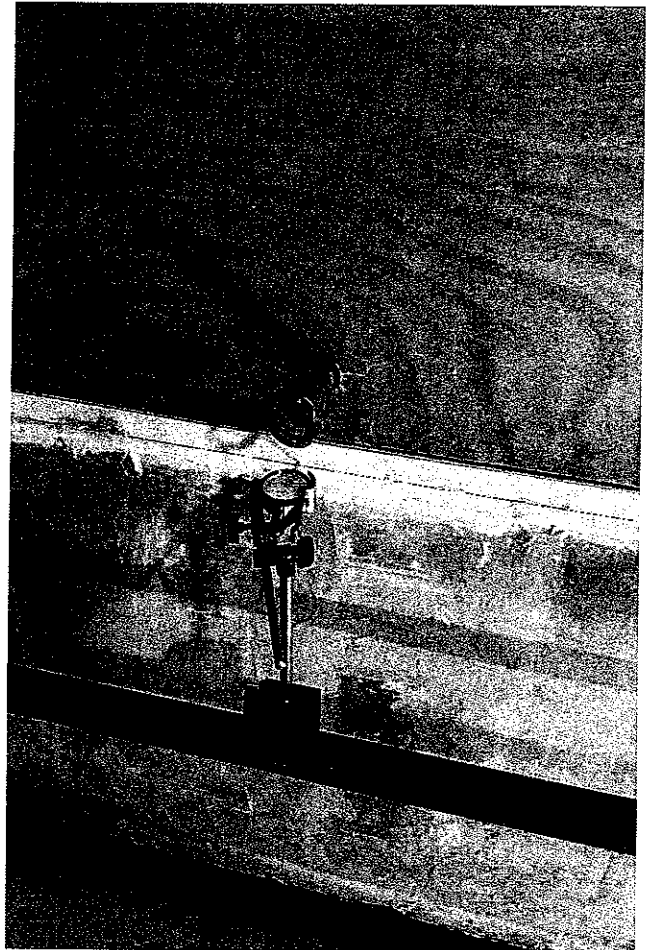
1. Test result relate only the specimen tested.
2. The test specimen complies with BS 5234-2 : 1992.

Checked by : _____


FU HO MAN
 Assistant Technical Manager

Certified by: _____


WONG KA MAN
 Senior Manager

BC0190402-001-MISL

End of Report

Test Report

Determination of Resistance to Crowd Pressure of Panel Wall Partition

Date of issue: 12-06-2019

Sheet 1 of 2 sheet(s)

Castco LRN : BC0190402-001-MISL

Details As Supplied By Customer:

Customer: Fujian Jumbo New Material Corporation Ltd

Customer Ref. No.: --

Address: --

Job Title: --

Contract No. : --

Supplier: Marshal Engineering Services Co. Limited

Partition Mark: BC0190402-001-MISL

Manufacturer: --

Date Delivered to Site : 02-04-2019

Laboratory Test Result:

Place of test : Fanling

Test date: 15-05-2019

Ambient temperature: (start) 26°C / (end) 26°C

Relative humidity : (start) 68% / (end) 68%

Test method: BS 5234-2: 1992 Annex G

<i>Position the beam :</i>				
Processes			Measurement	
Distance between the beam and the lock side of the door			(mm)	250
Height from the bottom of the specimen			(m)	1.2
<i>Position the instrument for measuring deflection :</i>				
Distance above the centre point of the application of the load			(mm)	125
<i>Measure deflection:</i>				
Processes	Time period	Deflection (mm)	Any collapse, damages, dislocation or other changes	Compliance
Apply a preload of 200N to the beam gradually, stabilize for:	appro. 1 min.		No obvious change, No collapse, No damage and No dislocation	No collapse or dangerous damage
Remove the load and allow the unloaded specimen to stabilize for:	appro. 1 min.		No obvious change, No collapse, No damage and No dislocation	
Set the deflection measuring instrument to datum, apply a load of 2kN/m and sustain for:	appro. 2 mins.	0.293	No obvious change, No collapse, No damage and No dislocation	
<i>Record residual deformation:</i>				
Processes	Time period	Residual deformation	Any collapse, damages, dislocation or other changes	Compliance
Remove the load and beam. Allow the specimen to stabilize for:	appro. 5 mins	0.176	No obvious change, No collapse, No damage and No dislocation	No collapse or dangerous damage

Remark:

1. Test result relate only the specimen tested.
2. The test specimen complies with BS 5234-2 : 1992.

Checked by :

FU HO MAN
Assistant Technical Manager

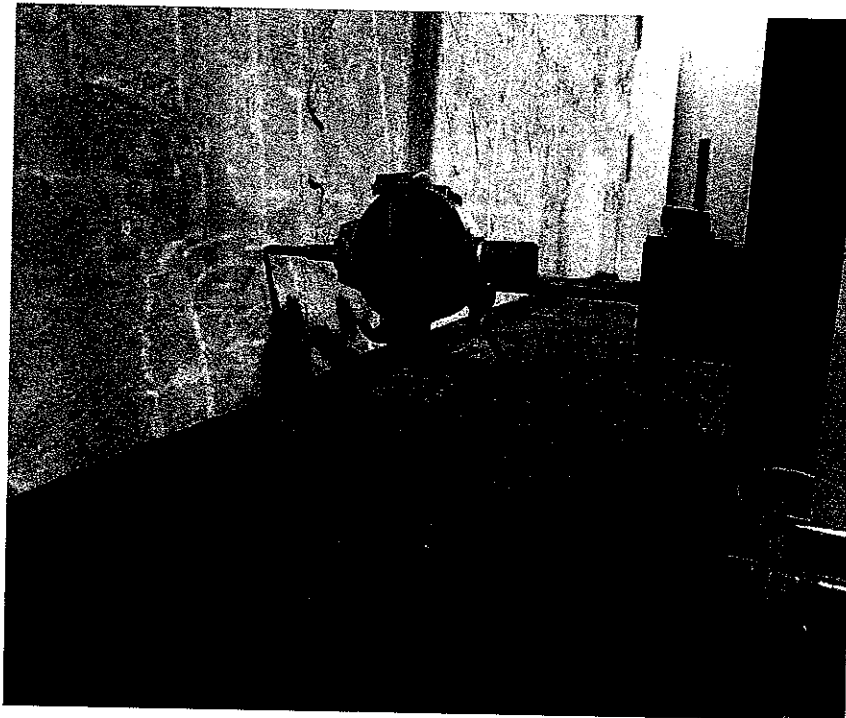
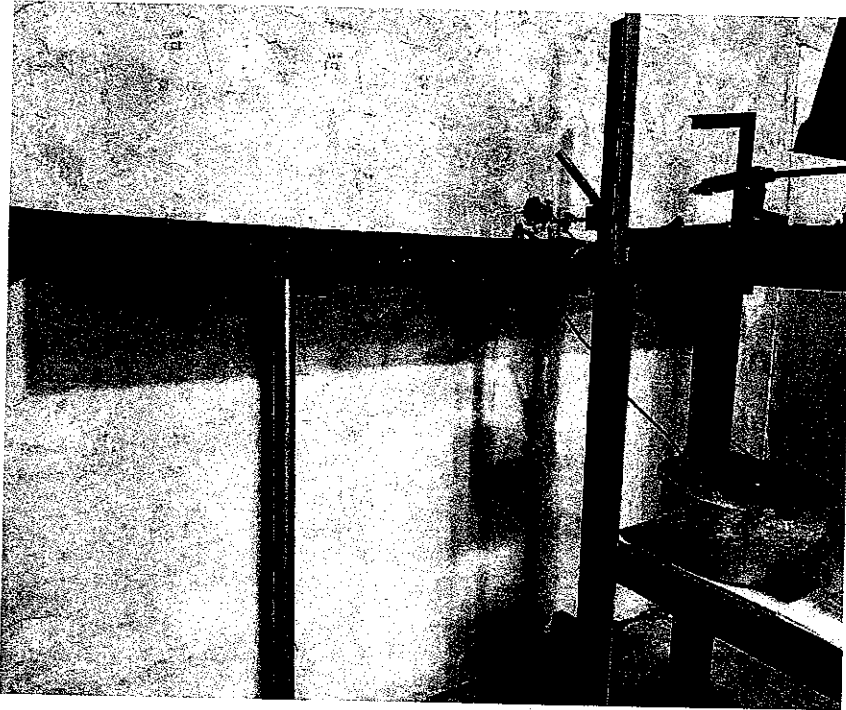
Certified by:

WONG KA MAN
Senior Manager

Date of issue: 12-06-2019

Sheet 2 of 2 sheet(s)

Castco LRN : BC0190402-001-MISL

BC0190402-001-MISL

End of Report

Test Report

Lightweight Anchorage Pull-out Test for Panel Wall Partition

Date of issue: 12-06-2019

Sheet 1 of 2 sheet(s)

Castco LRN : BC0190402-001-MISL

Details As Supplied By Customer:

Customer: Fujian Jumbo New Material Corporation Ltd

Customer Ref. No.: --

Address: --

Job Title: --

Contract No. : --

Supplier: Marshal Engineering Services Co. Limited

Partition Mark: BC0190402-001-MISL

Manufacturer: --

Date Delivered to Site : 02-04-2019

Laboratory Test Result:

Place of test : Fanling

Test date: 15-05-2019

Ambient temperature: (start) 26°C / (end) 26°C

Relative humidity : (start) 68% / (end) 68%

Test method: BS 5234-2: 1992 Annex H

Processes	Time period	Shim plate is released	Any changes or damage to the specimen	Compliance
Apply 20N upward force continuously to the shim plate	--	No	No obvious change and No damage	Without releasing shim plate and no damage to panel.
Apply a load up to 100N to the pull-out test bracket perpendicularly away from the partition by loading equipment	minimum period of 10s	No	No obvious change and No damage	
Sustain the load at 100N	appro. 1 min.	No	No obvious change and No damage	
After remove the load from the pull-out bracket,	--	No	No obvious change and No damage	

Anchor Plung : 1 no. of HILTI HUD-L 8x60mm

Fixing Bolt : 1no. of Ø 5 x 70mm

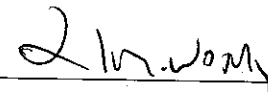
Remark:

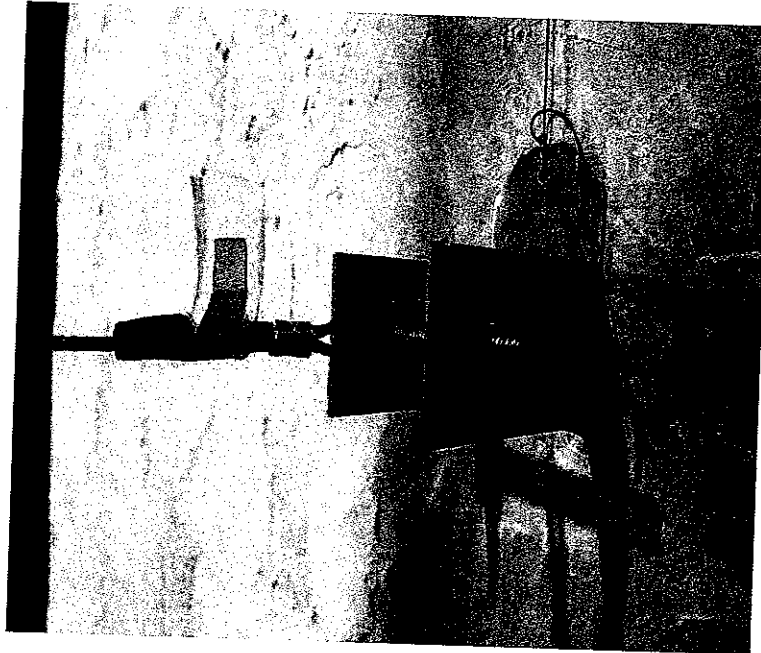
1. Test result relate only the specimen tested.
2. The test specimen complies with BS 5234-2 : 1992.

Checked by :


FU HO MAN
Assistant Technical Manager

Certified by:


WONG KA MAN
Senior Manager

BC0190402-001-MISL

End of Report

Test Report

Lightweight Anchorage Pull-down Test for Panel Wall Partition

Date of issue: 12-06-2019

Sheet 1 of 2 sheet(s)

Castco LRN : BC0190402-001-MISL

Details As Supplied By Customer:

Customer: Fujian Jumbo New Material Corporation Ltd

Customer Ref. No.: --

Address: --

Job Title: --

Contract No. : --

Supplier: Marshal Engineering Services Co. Limited

Partition Mark: BC0190402-001-MISL

Manufacturer: --

Date Delivered to Site : 02-04-2019

Laboratory Test Result:

Place of test : Fanling

Test date: 15-05-2019

Ambient temperature: (start) 27°C / (end) 28°C

Relative humidity : (start) 69% / (end) 69%

Test method: BS 5234-2: 1992 Annex J

Processes	Time period	Displacement (mm)	Shim plate is released	Any damage or changes to the specimen
Apply 20N upward force to the pull-up shim plate	--	--	No	No obvious change and No damage
Increase an applied load from 0 to 250N gradually to the pull-down test bracket by loading equipment	minimum period of 10s	--	No	No obvious change and No damage
Sustain the load at 250N	appro. 1 min.	0.35	No	No obvious change and No damage
Result after remove the load from the pull-down test bracket:	--	0.05	No	No obvious change and No damage
Compliance	1. Without releasing shim plate, 2. 2mm maximum displacement, 3. no damage to panel			

Anchor Plung : 1 no. of HILTI HUD-L 8x60mm

Fixing Bolt : 1no. of Ø 5 x 70mm

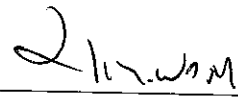
Remark:

1. Test result relate only the specimen tested.
2. The test specimen complies with BS 5234-2 : 1992.

Checked by :

 **FU HO MAN**
Assistant Technical Manager

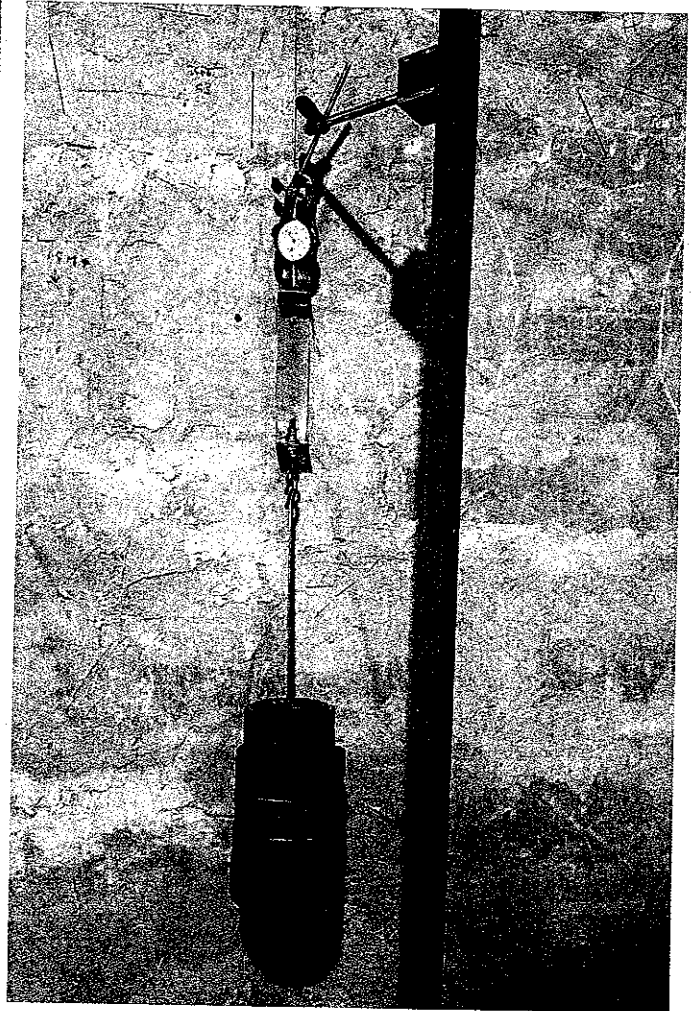
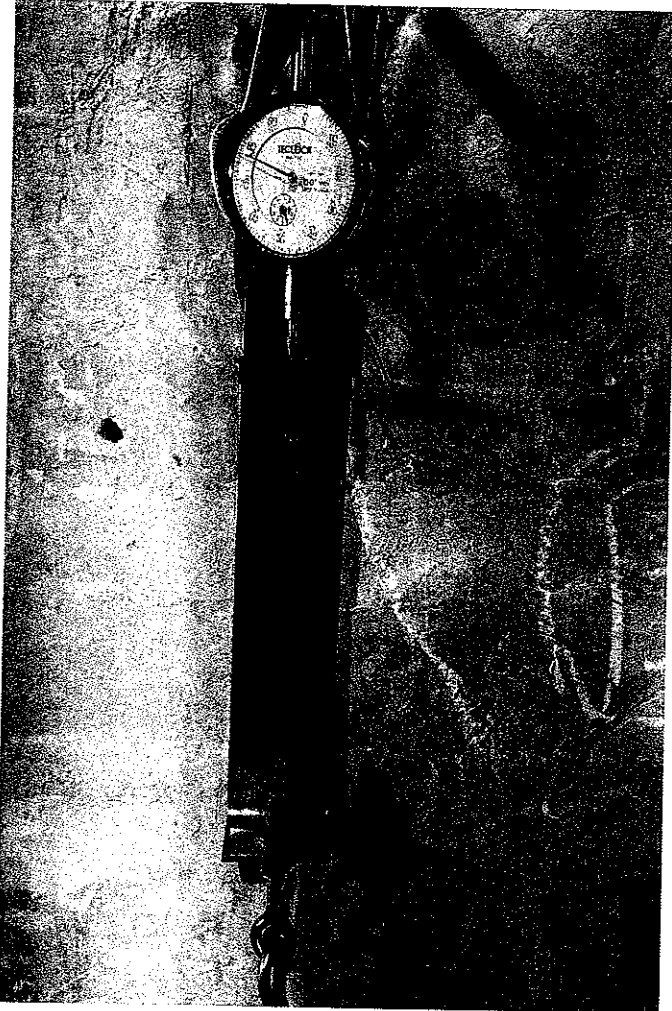
Certified by:

 **WONG KA MAN**
Senior Manager

Date of issue: 12-06-2019

Sheet 2 of 2 sheet(s)

Castco LRN : BC0190402-001-MISL

BC0190402-001-MISL

End of Report

Test Report

Heavyweight Anchorage (Wash Basin) Eccentric Downward Loading Test for Panel Wall Partition

Date of issue: 12-06-2019

Sheet 1 of 3 sheet(s)

Castco LRN : BC0190402-001-MISL

Details As Supplied By Customer:

Customer: Fujian Jumbo New Material Corporation Ltd

Customer Ref. No.: --

Address: --

Job Title: --

Contract No. : --

Supplier: Marshal Engineering Services Co. Limited

Partition Mark: BC0190402-001-MISL

Manufacturer: --

Date Delivered to Site : 02-04-2019

Laboratory Test Result:

Place of test : Fanling

Test date: 16-05-2019

Ambient temperature: (start) 28°C / (end) 28°C

Relative humidity : (start) 69% / (end) 70%

Test method: BS 5234-2: 1992 Annex K

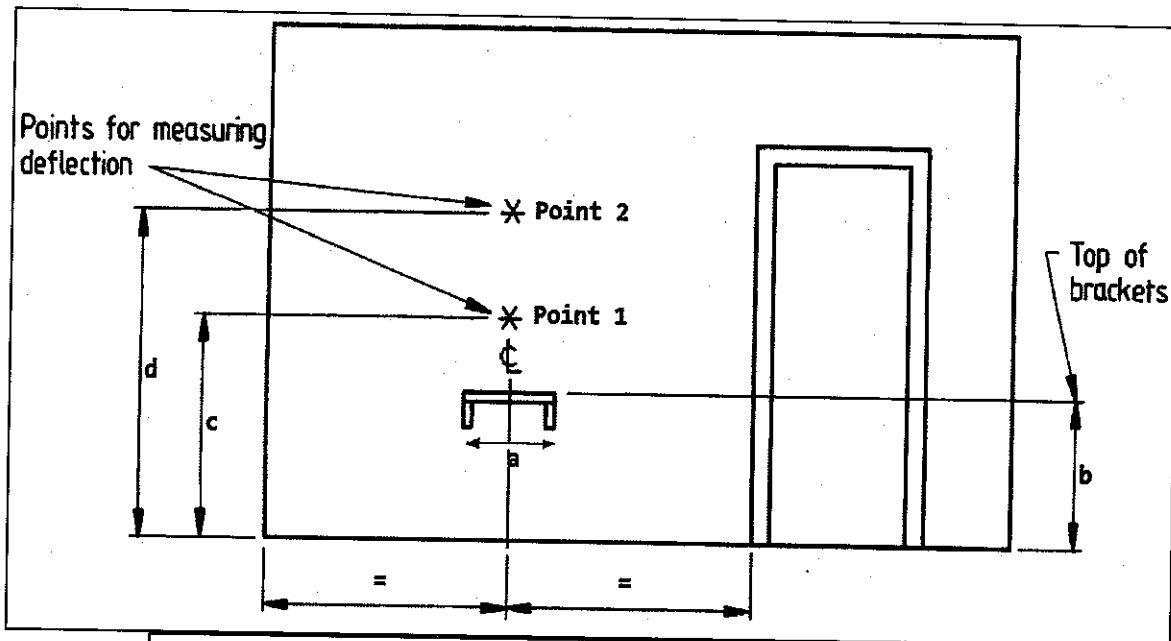


Figure K - Location of wash basin brackets and measuring instruments

Set up the test equipment :

	Position	Measurement
a	Distance apart from each bracket (mm)	500
b	Height above the bottom of the test specimen to the top levels of the brackets (mm)	800
c	Height above the bottom of the test specimen to the Point 1 at the mid point between two brackets to measure the deflection of the partition on both faces (m)	1.2
d	Height above the bottom of the test specimen to the Point 2 at the mid point between two brackets to measure the deflection of the partition on both faces (m)	1.75

Test Report

Heavyweight Anchorage (Wash Basin) Eccentric Downward Loading Test for Panel Wall Partition

Date of issue: 12-06-2019

Sheet 2 of 3 sheet(s)

Castco LRN : BC0190402-001-MISL

Laboratory Test Result: (Continued)

Measure deflection:

Processes	Time period	Deflection (mm)				shim plate is released	Any damage, loosening, or other changes	
		Front side		Rear side				
		Upper	Lower	Upper	Lower			
Apply 20N upward force to each pull-up shim plate	continuously					No	No Damage	
Apply a preload of 200N gradually and stabilize for:	appro. 1 min.					No	No Damage	
Remove the preload and stabilize for:	appro. 1 min.							
Set the deflection measuring instrument to datum, apply a constant load of 500N to the bar joining the brackets and sustain for:	constantly	0.03	0.02	0.00	-0.02	No	No Damage	
Apply and remove load (N)	Total Load (N)							
+250	750	appro. 1 min.	0.03	0.02	-0.01	-0.03	No	No Damage
-250	500	appro. 1 min.	0.03	0.02	-0.01	-0.03	No	No Damage
+250	750	appro. 1 min.	0.03	0.02	-0.01	-0.03	No	No Damage
-250	500	appro. 1 min.	0.03	0.02	-0.01	-0.03	No	No Damage
+500	1000	appro. 1 min.	0.03	0.03	-0.01	-0.04	No	No Damage
-500	500	appro. 1 min.	0.04	0.04	-0.01	-0.03	No	No Damage
+500	1000	appro. 1 min.	0.03	0.03	-0.01	-0.04	No	No Damage
-500	500	appro. 1 min.	0.03	0.03	-0.01	-0.03	No	No Damage
+750	1250	appro. 1 min.	0.05	0.04	-0.02	-0.04	No	No Damage
-750	500	appro. 1 min.	0.05	0.04	-0.01	-0.03	No	No Damage
+750	1250	appro. 1 min.	0.05	0.04	-0.02	-0.04	No	No Damage
-750	500	appro. 1 min.	0.05	0.04	-0.01	-0.03	No	No Damage
+1000	1500	appro. 1 min.	0.09	0.03	-0.05	-0.05	No	No Damage
-1000	500	appro. 1 min.	0.05	0.04	-0.01	-0.03	No	No Damage
+1000	1500	appro. 1 min.	0.1	0.03	-0.04	-0.05	No	No Damage
-1000	500	appro. 1 min.	0.04	0.04	-0.01	-0.03	No	No Damage
Remove all loads. Allow the specimen to stabilize for:	appro. 5 mins	Residual deformation (mm)				No	No Damage	
		0.04	0.05	0.00	-0.03			
Compliance	1. Without releasing shim plate 2. No loosening or detachment or damage to panel 3. For applied load at 500N : Maximum deflection $\leq 5\text{mm}$ 4. For applied load at 1000N, 1250N and 1500N : Maximum deflection $\leq 20\text{mm}$							

Anchor Plug : 4 no. of HILTI HRD-C 10x80mm

Fixing Bolt : 4no. of $\varnothing 7 \times 85\text{mm}$

Remark:

1. Test result relate only the specimen tested.
2. The test specimen complies with BS 5234-2 : 1992.

Checked by :

FU HO MAN
Assistant Technical Manager

Certified by :

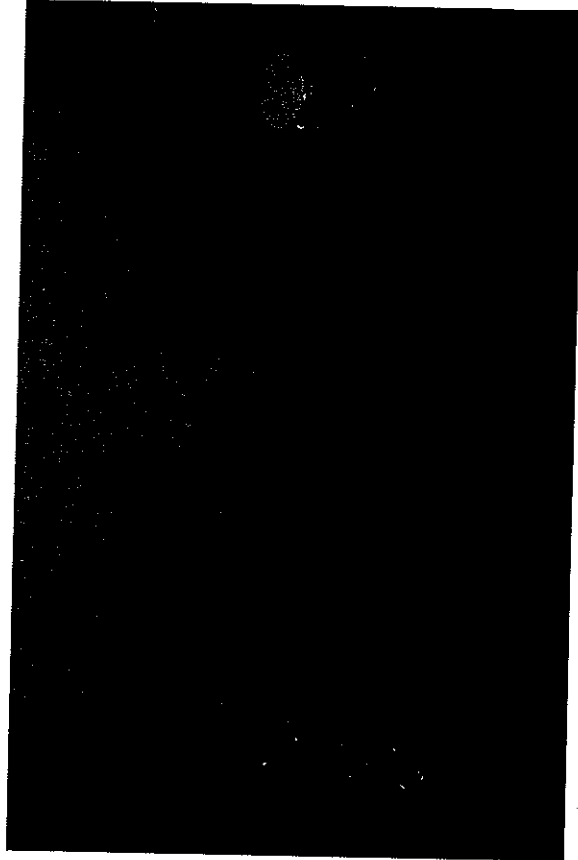
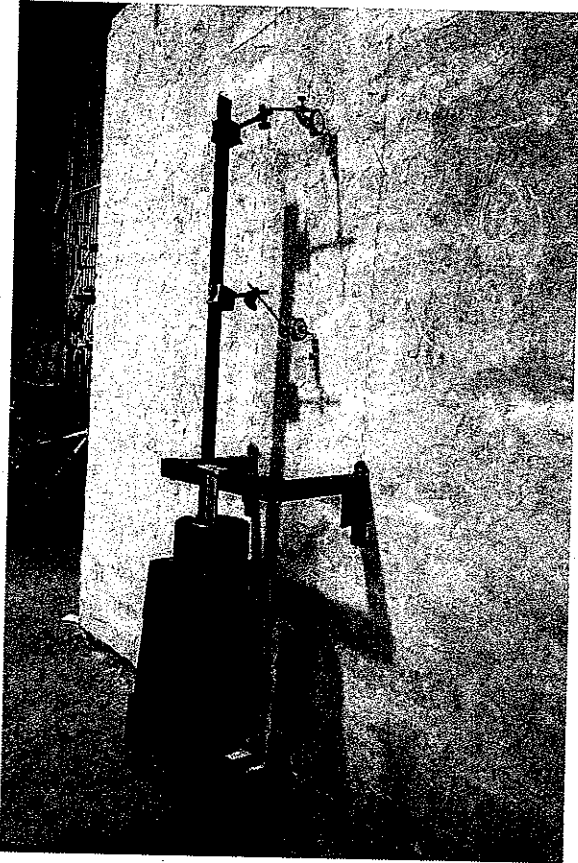
Wong Ka Man

WONG KA MAN
Senior Manager

Date of issue: 12-06-2019

Sheet 3 of 3 sheet(s)

Castco LRN : BC0190402-001-MISL

BC0190402-001-MISL**End of Report**香港粉嶺安居街33號
香港粉嶺安全街29A號33, On Kui Street, Fanling, Hong Kong.
29A, On Chuen Street, Fanling, Hong Kong.Tel : 2597 8333
Fax: 2597 8399E-mail: info@castco.com.hk Website: www.castco.com.hk

Test Report
Heavyweight Anchorage (High Level Wall Cupboard) Eccentric Downward Loading Test
for Panel Wall Partition

Date of issue: 12-06-2019
Sheet 1 of 3 sheet(s)

Castco LRN : BC0190402-001-MISL

Details As Supplied By Customer:

Customer: Fujian Jumbo New Material Corporation Ltd
Address: --
Job Title: --
Contract No. : --
Supplier: Marshal Engineering Services Co. Limited
Manufacturer: --

Customer Ref. No.: --

Partition Mark: BC0190402-001-MISL
Date Delivered to Site : 02-04-2019

Laboratory Test Result:

Place of test : Fanling

Test date: 16-05-2019

Ambient temperature: (start) 28°C / (end) 28°C

Relative humidity : (start) 68% / (end) 70%

Test method: BS 5234-2: 1992 Annex L

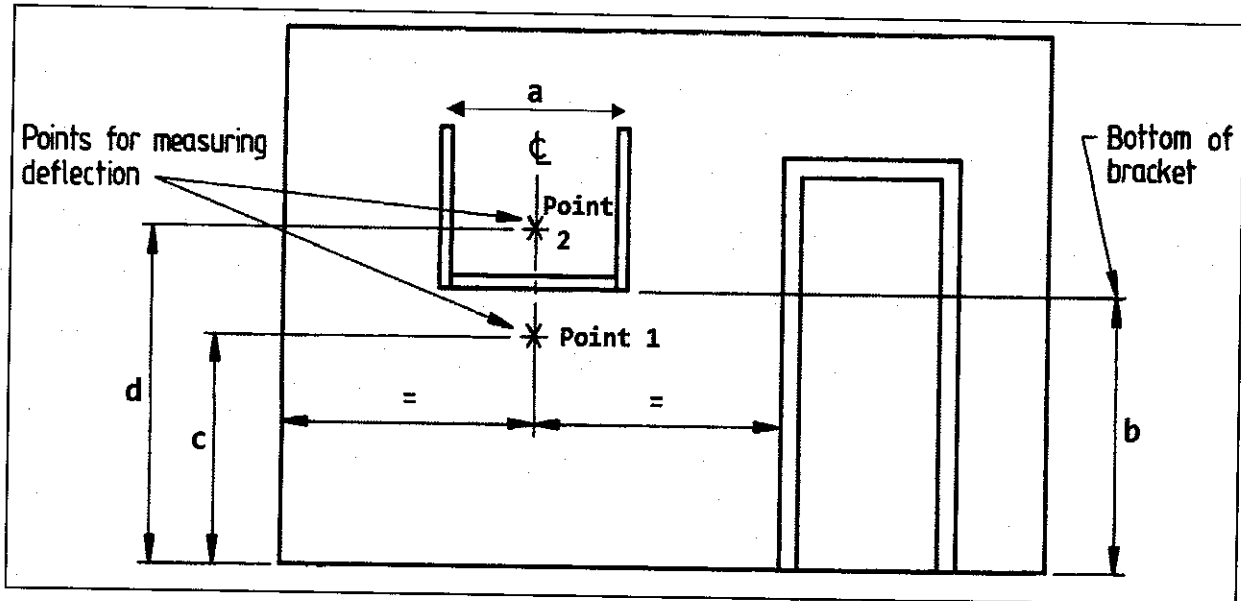


Figure L - Location of wall cupboard brackets and measuring instruments

Set up the test equipment :

Position		Measurement
a	Distance apart from each bracket (mm)	1000
b	Height above the bottom of the test specimen to the tops level with the horizontal member of the brackets (mm)	1500
c	Height above the bottom of the test specimen to the Point 1 at the mid point between two brackets to measure the deflection of the partition on both faces (m)	1.2
d	Height above the bottom of the test specimen to the Point 2 at the mid point between two brackets to measure the deflection of the partition on both faces (m)	1.75

Test Report

Heavyweight Anchorage (High Level Wall Cupboard) Eccentric Downward Loading Test for Panel Wall Partition

Date of issue: 12-06-2019

Sheet 2 of 3 sheet(s)

Castco LRN : BC0190402-001-MISL

Laboratory Test Result: (Continued)

Measure deflection:

Processes	Time period	Deflection (to the nearest 1mm)				shim plate is released	Any damage, loosening, or other changes	
		Front side		Rear side				
		Upper	Lower	Upper	Lower			
Apply 20 ± 1N upward force to each pull-up shim plate	continuously					No	No Damage	
Apply a preload of 200N gradually and stabilize for:	appro. 1 min.					No	No Damage	
Remove the preload and stabilize for:	appro. 1 min.							
Set the deflection measuring instrument to detum. Apply loads: (up to a max. of either 2000N or 4000N as specified by the sponsor)	500N	appro. 1 min.	0.02	0.02	0.00	-0.03	No	No Damage
	1000N	appro. 1 min.	0.02	0.02	0.00	-0.03	No	No Damage
	1500N	appro. 1 min.	0.02	0.03	-0.01	-0.03	No	No Damage
	2000N	appro. 1 min.	0.02	0.03	-0.02	-0.04	No	No Damage
	2500N	appro. 1 min.	0.03	0.04	-0.02	-0.04	No	No Damage
	3000N	appro. 1 min.	0.03	0.04	-0.03	-0.05	No	No Damage
	3500N	appro. 1 min.	0.05	0.06	-0.05	-0.06	No	No Damage
	4000N	appro. 1 min.	0.07	0.09	-0.08	-0.09	No	No Damage
Remove all loads. Allow the specimen to stabilize for:	appro. 5 mins	Residual deformation				No	No Damage	
		0.03	0.04	-0.02	-0.03			
Compliance	1. Without releasing shim plate 2. No loosening or detachment or damage to panel Maximum deflection ≤ 5mm							

Anchor Plung : 4 no. of HILTI HRD-C 10x80mm

Fixing Bolt : 4no. of Ø 7 x 85mm

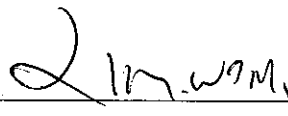
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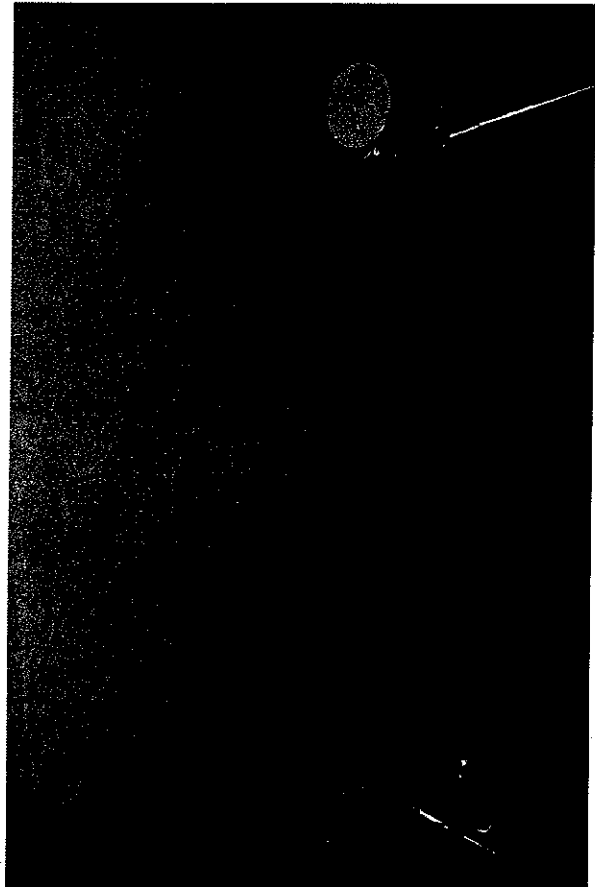
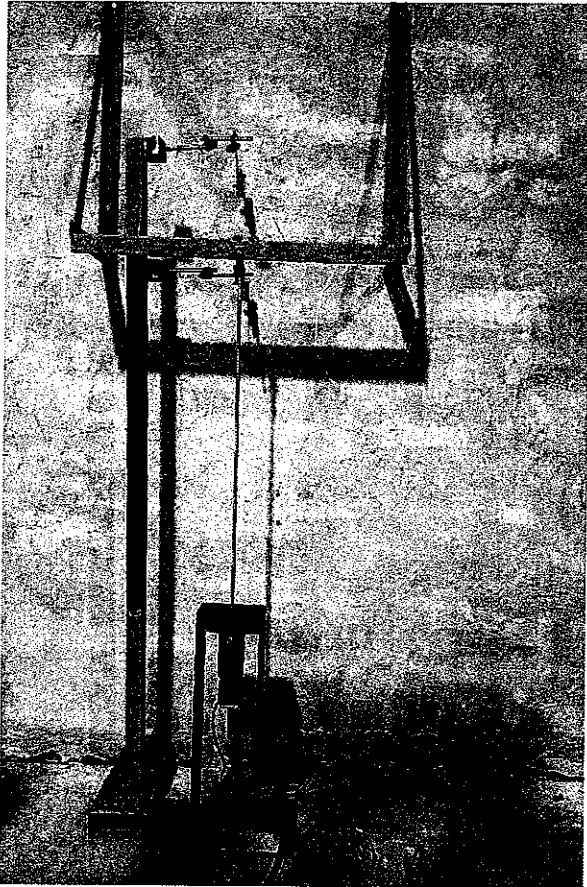
1. Test result relate only the specimen tested.
2. The test specimen complies with BS 5234-2 : 1992.

Checked by :


FU HO MAN
Assistant Technical Manager

Certified by:


WONG KA MAN
Senior Manager

BC0190402-001-MISL**End of Report**香港粉嶺安居街33號
香港粉嶺安全街29A號33, On Kui Street, Fanling, Hong Kong.
29A, On Chuen Street, Fanling, Hong Kong.Tel : 2597 8333
Fax: 2597 8399E-mail: info@castco.com.hk Website: www.castco.com.hk

Test Report**Determination of Resistance to Structural Damage by Large Soft Body Impact for Panel Wall Partition**

Date of issue: 12-06-2019

Sheet 1 of 2 sheet(s)

Castco LRN : BC0190402-001-MISL

Details As Supplied By Customer:

Customer: Fujian Jumbo New Material Corporation Ltd

Customer Ref. No.: --

Address: --

Job Title: --

Contract No. : --

Partition Mark: BC0190402-001-MISL

Supplier: Marshal Engineering Services Co. Limited

Wall Partition Mark:

Manufacturer: --

Date Delivered to Site : 02-04-2019

Laboratory Test Result:Place of test : Fanling

Test date: 14-05-2019

Ambient temperature: (start) 23°C / (end) 23°C

Relative humidity : (start) 68% / (end) 68%

Test method: BS 5234-2: 1992 Annex E

Position #	Impact Energy (Nm)	Bag drop height (mm)	Angle of swing (°)	Height above the bottom of the specimen ^ (m)	Stablizing time (min)	Any surface or structural damage, collapse or dislocation of component parts, changes, etc.	Compliance
1	120	245	≤ 65	1.35	5	No obvious change, No damage, No collapse and No dislocation of component	No collapse or dangerous damage
2	120	245	≤ 65	1.35	5	No obvious change, No damage, No collapse and No dislocation of component	

Remark:

Apply THREE impacts at the two selected positions, which should be different from points previously impacted.

^ The heights above the bottom of the specimen should be within the horizontal band 1.2 m and 1.75 m, at which single impacts are applied normal to the solid area of the specimen.

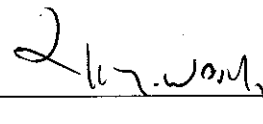
1. Test result relate only the specimen tested.

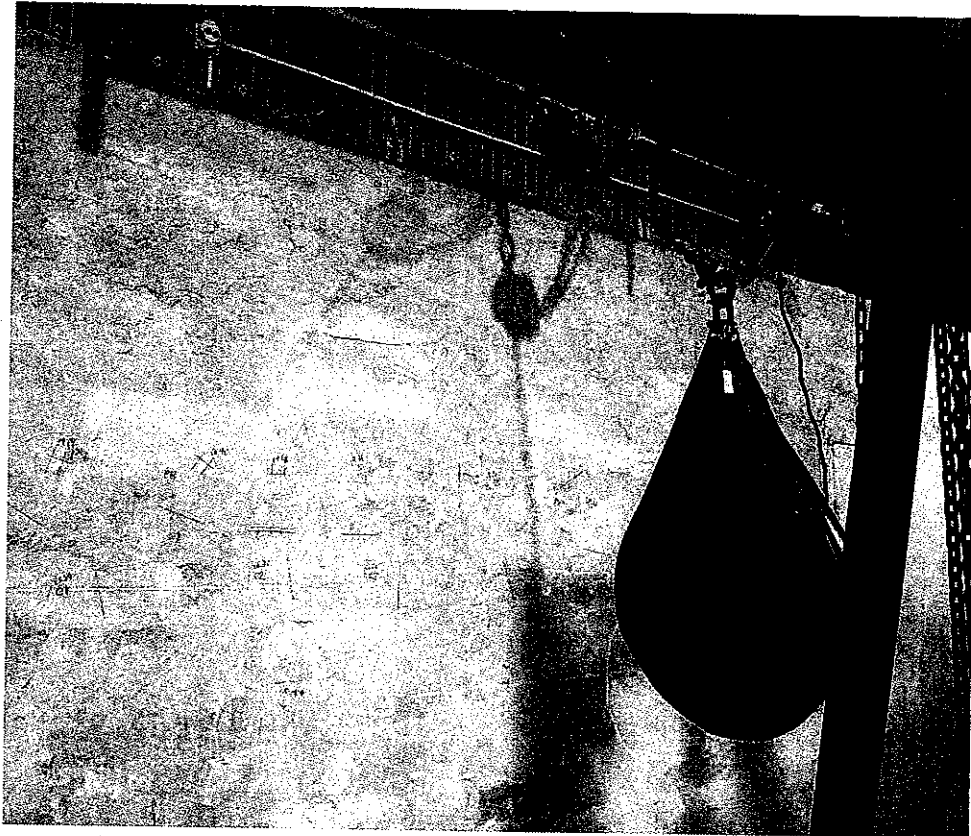
2. The test specimen complies with BS 5234-2 : 1992.

Checked by : _____


FU HO MAN
 Assistant Technical Manager

Certified by: _____


WONG KA MAN
 Senior Manager

BC0190402-001-MISL

End of Report