
**EVALUATION OF PLASTIVAL'S 1.83 m x 1.65 m (72" x 42") CONTOUR
CLEAR VIEW GLASS PANEL ALUMINUM RAIL
TO NBCC'05 & OBC'06 – 4.1.5.15 LOAD ON GUARDS**

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1.0 INTRODUCTION

At the request of Plastival Inc., Bodycote Testing Group was retained to evaluate 3 specimens of their railing systems identified as “Contour Clear View Glass Panel Aluminum Rail System” to the requirements of the 2005 National Building Code of Canada and the 2006 Ontario Building Code. The rail systems were evaluated on a wood-deck substrate provided by Plastival.

Upon receipt, the samples were assigned the following Bodycote Sample No.'s:

Client Sample Description

Bodycote Sample No.

Plastival Contour Clear-View Glass Panel

06-06-M0392-10, 11, & 12

The dimensions of the glass panels tested were measured at 1,572 mm (62.1”) x 960 mm (37.7”) x 6 mm (0.24”).

Appendix A: Detailed drawings and descriptions of the test samples by Plastival Inc. are presented.

Appendix B: PSB Corporation Test Report of BS 6206 1981 “Specification for Impact Performance for Flat Safety Glass and Safety Plastics” for nominal 6 mm safety glass is presented.

Appendix C: Photographs of typical test procedures are presented.

2.0 PROCEDURE

The three specimens of the Plastival Contour Clear-View Glass Panel railing systems were evaluated for compliance to the following code requirements, using a safety factor of x 1.5 applied to all prescribed loads:

1. NBCC – “National Building Code of Canada 2005” for:
 - Inward and outward horizontal loads Section 4.1.5.15.1
 - Individual elements within the guard Section 4.1.5.15.2
 - Vertical loading of the guards Section 4.1.5.15.4

2. OBC – “Ontario Building Code 2006” for:
 - Inward and outward horizontal loads Section 4.1.5.15.1
 - Individual elements within the guard Section 4.1.5.15.2
 - Vertical loading of the guards Section 4.1.5.15.4

3. OBC – 06 / NBCC-05 for:
 - Glass in Guards Section 9.8.8.7.1

3.0 TEST METHOD

Plastival personnel constructed three, 1.83 m x 1.65 m (72" x 42") guard systems of the Contour Clear-View Glass Panel Aluminum Rail in Bodycote's Systems Test lab, from components delivered to the lab by Plastival.

The posts for all tests were anchored to wood-deck substrates constructed by Plastival. The method of assembly and anchorage is illustrated in Appendix A.

All loads were applied using an air activated cylinder and load cell, as illustrated in Appendix C. Loading was done at a rate of 0.5 kN (112 lbs) per minute.

A Pass was given if there were no cracks, breaks or permanent deformation to the element tested after the factored loads were released.

1. NBCC – "National Building Code of Canada 2005":

- Section 4.1.5.15.1(c) states that the inward and outward horizontal loads shall be: A uniform distributed load of 0.75 kN/m or a concentrated load of 1.0 kN 'which-ever governs'
- Section 4.1.5.15.2 states that the in-fill load of 0.5 kN will be applied over a 100 mm² area
- Section 4.1.5.15.4 states that the uniform distributed vertical load on the guards shall be 1.5 kN/m and need not act simultaneously with 4.1.5.15.1(c)

2. OBC – "Ontario Building Code 2006":

- Section 4.1.5.15.1(c) states that the inward and outward horizontal loads shall be: A uniform distributed load of 0.75 kN/m or a concentrated load of 1.0 kN 'which-ever governs'
- Section 4.1.5.15.2 states that the in-fill load of 0.5 kN will be applied over a 100 mm² area
- Section 4.1.5.15.4 states that the uniform distributed vertical load on the guards shall be 1.5 kN/m and need not act simultaneously with 4.1.5.15.1(c)

4.0 RESULTS

The test results for Plastival’s “Contour Clear-View Glass Panel” Aluminum Rail System, BTG Sample # 06-06-M0392-10 11 & 12, are summarized below in Tables 1 & 2.

Table 1 – Summary of Loads Applied on Guards NBCC’05 & OBC’06 - Section 4.1.5.15.1						
BTG Sample # 06-06-M0392-10, 11 & 12 “Plastival Contour Clear View Glass Panel”						
Criteria (6 ft.)	Specified Load	Minimum Design Load Required	1.5 x Factored Load Required	Test Result		
				1	2	3
Uniformly distributed load applied in horizontal direction.	0.75 kN/m (5 0 lbs/ft)	1.33 kN (300 lbf)	2.0 kN (450 lbf)	Pass	Pass	Pass
Concentrated load applied at the midpoint of the rail in a horizontal direction.	1.0 kN (225 lbf)	1.0 kN (225 lbf)	1.5 kN (337.5 lbf)	Pass	Pass	Pass
Concentrated load applied at the end of the rail in horizontal direction.	1.0 kN (22 5lbf)	1.0 kN (225 lbf)	1.5 kN (337.5 lbf)	Pass	Pass	Pass
Concentrated load applied at the midpoint of the rail in vertical down direction.	1.0 kN (225 lbf)	1.0 kN (225 lbf)	1.5 kN (337.5 lbf)	Pass	Pass	Pass
Concentrated load applied at the end of the rail in vertical down direction.	1.0 kN (225 lbf)	1.0 kN (225 lbf)	1.5 kN (337.5 lbf)	Pass	Pass	Pass

Table 2 – Summary of Loads Applied to Elements Within the Guard NBCC’05 & OBC’06 - Section 4.1.5.15.2 (0.5 kN/100 mm²)						
BTG Sample # 06-06-M0392-10, 11 & 12 “Plastival Contour Clear View Glass Panel”						
Criteria (6 ft.)	Specified Load	Minimum Design Load Required	1.5 x Factored Load Required	Test Result		
				1	2	3
Concentrated load applied to individual spindles (100 mm ²).	0.5 kN (113 lbf)	0.5 kN (113 lbf)	0.76 kN (170 lbf)	Pass	Pass	Pass

5.0 CONCLUSIONS

Pass


The Plastival 1.83 m x 1.65 m (72" x 42") Contour Clear-View Glass Panel Aluminum Rail System, when installed on a wood-deck assembly resisted the applicable code loads as stated in the NBCC’05 & OBC’06 Section 4.1.5.15 with an added safety factor of x 1.5.

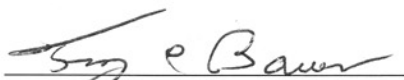
The prescriptive requirements of the NBCC'05 & OBC'06 Section 9.8.8.7. – 1. States:
Glass in Guards: shall be:


- a) Safety glass of the laminated or tempered type conforming to CAN/CGSB-12.1-M.
 - Appendix B: Test Certificate showing glass conformance to BS 6206 1981 "Specification for Impact Performance Requirements for Flat Safety Glass and Safety Plastics".

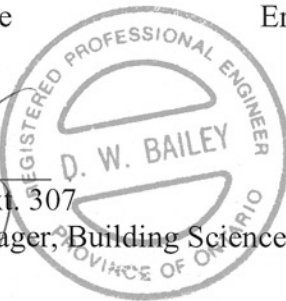
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This report refers only to the particular samples, units, material, instrument, or other subject used and referred to in it, and is limited by the tests and/or analyses performed. Similar articles may not be of like quality, and other testing and/or analysis programs might be desirable and might give different results.

ACCREDITATION

Canadian General Standards Board #76002, Standards Council of Canada #1.

REGISTRATION

ISO 9001: 2000 registered by QMI, Registration #001109.