

21 March 2006

Compelling Solutions Pty Ltd (ATF Eye-Catcher Innovations)
Unit 1/157 Sir Donald Bradman Drive
Hilton SA 5033

Attention: Mr Paul Huxtable

REPORT 06MAAD02839 Pt.1

CLIENT REFERENCE: Req.

TITLE: Protect-it 100A Plastic Column Guard

SAMPLE IDENTIFICATION: Dexion 90M Steel Upright (1.9mm W.T)

WORK REQUESTED: Witness and supervise testing of the Protect-it 100A plastic column guard whilst attached to a Dexion 90M Steel Upright

INVESTIGATING OFFICER(S): Damien Lynch



Monty Luke
Laboratory Manager
Materials Services

1. INTRODUCTION

Mr. Paul Huxtable of Compelling Solutions Pty Ltd (ATF Eye Catcher Innovations) requested that Amdel carry out the witnessing and supervision for the Front and Side Impact test on the Protect-it 100A plastic column guard whilst attached to a DEXION 90M (1.9mm thick) steel upright in accordance with European Racking Code FEM 10.2.02.

The testing was carried out at the premises of Proen Design Australia, Thursday the 16th of March 2006.

2 SUMMARY

- 1.1. Protect-it passes the FRONT Impact test when tested on a Dexion 90M upright (1.9mm W.T.)
- 1.2. Protect-it passes the SIDE impact test when tested on a Dexion 90M upright (1.9mm W.T.)
- 1.3. Without Protect-it guards installed, damage to the upright was evident.
- 1.4. Additional protection is recommended at gangway intersections or aisle corners.

3 EUROPEAN RACKING CODE FEM 10.2.02

"2.6 IMPACT LOADS

Impact damage caused by fork-lift trucks or other moving equipment against rack-uprights shall be avoided by appropriate safety measures. The minimum requirements for the protection of uprights shall be as follows:

An upright protector with a height of not less than 400 mm (15.75 inches) should be positioned at the end upright of each run of racking between cross-aisles.

An upright protector should be positioned at those uprights positioned at all aisle and gangway intersections. The upright protector must be designed for an energy absorption of at least 400 Nm (3540 pound-force-inches) in any direction at any height between 0.10m and 0.40m. Alternatively, reference may be made to FEM users guide 10.2.03.

The upright protector should be positioned in such a way that, after its deformation by absorbing an impact, the upright will not be damaged.

Other uprights may be protected in a direction normal to the aisle at the option of the user."

4 METHOD for MEASURING DAMAGE

- 4.1 The method of determining "damage" is not specified, Proen Design have elected to use the method of determining damage borrowed from *Australian Standard for Steel Storage Racking AS4084-1993, section 9.3.*
 - 4.1.1 A 1 metre long straight edge is placed against the corner of the impacted face to measure deflection.
 - 4.1.1.1 Maximum allowable front deflection is 3mm (0.118 inches)
 - 4.1.1.2 Maximum allowable side deflection is 5mm (0.197inches)

5 RACKING TYPE UNDER TEST

- 5.1 Dexion Mk6 90 M (List of parts supplied by the rack manufacturer)
 - 5.1.1 Dexion 90M columns 1.9mm (0.075 inches thick). Two 1215mm (48 inch) lengths
 - 5.1.2 One standard cross brace
 - 5.1.3 One diagonal cross brace
 - 5.1.4 Four standard base plates
 - 5.1.5 Assorted nuts and bolts
 - 5.1.6 The components are assembled as per the manufacturers instructions

6 TEST APPARATUS

- 6.1 The test jig consists of
- 6.1.1 A vertical frame
- 6.1.2 An impact device weighing 40kg (88.185 pounds) and having a stress concentrator on the impact face that is designed to represent the front edge of a fork tine.
- 6.1.3 The column assembly and base plates under test are assembled to two lengths on 200mm (7.8 inches) wide "C" section. Per the image shown.
- 6.1.4 The weight is raised 1.02 metres (40.16 inches) above the impact surface and released to impact the target zone.

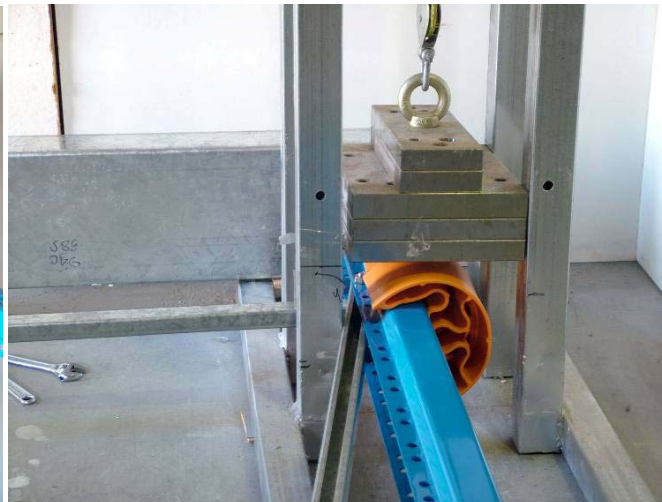


7 PROCEDURE

- 7.1 The column assembly is inserted into the test jig and positioned so that impact will occur at the front of the column, 300mm (11.81 inches) above the column base.
- 7.2 The impact device is raised to a height that will apply an impact energy of 400Nm (3540 pound-force-inches) to the column and released
- 7.3 The column assembly is then removed from the jig and inspected for damage
- 7.4 Any protection devices are then removed to allow inspection of the impacted column.
- 7.5 A front impact and side impact test was conducted as shown below







Front Impact



Side Impact

8 RESULTS - DETAIL

FRONT IMPACT	
Test 1	Test 2
With 3 Protect-its installed	No Protection
<p>Photo of impacted steel section</p>  <p style="text-align: center;">No visible damage Nil Deflection- PASS</p>	<p>Photo of impacted steel section</p>  <p style="text-align: center;">Visible damage 10 mm (0.393 inches) Deflection - FAIL</p>

SIDE IMPACT	
Test 1	Test 2
With 3 Protect-it's installed	No Protection
<p>Photo of impacted steel section</p>  <p style="text-align: center;">No Damage- some paint scratching Nil Deflection - Pass</p>	<p>Photo of impacted steel section</p>  <p style="text-align: center;">Visible Damage 4mm (0.157 inches) Deflection - FAIL</p>

9 Image of an impacted Protect-it Column Guard



10 Testing statement

I Damien Lynch of Amdel Limited supervised and witnessed all testing carried out for the Protect-it 100A Plastic Column Guard as stated above on Thursday the 16th March 2006 at the premises of Proen Design.

All results including measurements, weight verification were checked and verified.

Amdel Materials Division, Mechanical Testing Services has been is a NATA accredited testing Laboratory since 1968 and specialises in load testing of assemblies in accordance with both Australian and International Standards.

Damien Lynch

Team Leader Mechanical Testing
AMDEL Limited