

Firm: AKM Fabrications Ltd
Unit 6, Yarrow Business Centre
Yarrow Road
CHORLEY
PR6 0LP

For the attention of: Mr T McMahon

Technical Services Report

Subject: TESTING OF GUARD RAILS IN
ACCORDANCE WITH EN 13374: 2004
Firm: AKM Fabrications Ltd
Our ref: SPC0162056/0812/2/NW
Your ref:
Date: 28 March 2008

Conditions of Issue:

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Tests marked † are not UKAS accredited.

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INTRODUCTION

Samples of Guard rails, reference “Standard Guard Rail”, “Collapsible Guard Rail” & “Radius Guard Rail”, were received by SATRA on 27 March 2008, for testing in accordance with EN 13374: 2004 Temporary edge protection systems – Product specification & test methods. Testing was carried out on 27 March 2008, in the presence of Mr Andy McMahon, of AKM Fabrications Ltd

CONCLUSIONS

The samples of Guard rails, reference “Standard Guard Rail”, “Collapsible Guard Rail” & “Radius Guard Rail”, as received by SATRA on 27 March 2008, were tested in accordance with EN 13374: 2004, and achieved the results given in the table below:

| SAMPLE REFERENCE | STANDARD | CLAUSE / TEST | PASS / FAIL |
|--|----------------|--|-------------|
| Standard Guard Rail & Collapsible Guard Rail | EN 13374: 2004 | 5.2.1 Additional requirements – Edge protection system class A | PASS |
| Radius Guard Rail | | 5.2.1 Additional requirements – Edge protection system class A | PASS |



Figure 1 – Collapsible Guard Rail

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TEST RESULTS

Table 1 – Testing of “Standard Guard Rail” & “Collapsible Guard Rail” in accordance with EN 13374: 2004

| EN 13374: 2004 CLAUSE / TEST | EN 13374: 2004 REQUIREMENT | RESULT / COMMENT | PASS / FAIL | | | | | | | | | | | | | | |
|--|---|---|----------------|--------------------------|----------------------|--------|-------------------------|--------|-------------------|------|----------------------|------|-----------------------|--------|--------------------|--------|------|
| 5.2.1 Additional requirements – Edge protection system class A | If it is not possible to verify the load requirements by calculation, the static load tests shall be carried out. In this case, to comply with this standard: | | | | | | | | | | | | | | | | |
| | a) On the completion of the deflection tests, the adjusted elastic deflection, δ , shall not be greater than 55 mm | <table> <thead> <tr> <th>Position</th> <th>Elastic deflection / mm</th> </tr> </thead> <tbody> <tr> <td>Top rail, on upright</td> <td>20</td> </tr> <tr> <td>Bottom rail, on upright</td> <td>20</td> </tr> <tr> <td>Top rail, midspan</td> <td>20</td> </tr> <tr> <td>Bottom rail, midspan</td> <td>20</td> </tr> <tr> <td>Downwards, on upright</td> <td>0</td> </tr> <tr> <td>Downwards, midspan</td> <td>40</td> </tr> </tbody> </table> | Position | Elastic deflection / mm | Top rail, on upright | 20 | Bottom rail, on upright | 20 | Top rail, midspan | 20 | Bottom rail, midspan | 20 | Downwards, on upright | 0 | Downwards, midspan | 40 | |
| Position | Elastic deflection / mm | | | | | | | | | | | | | | | | |
| Top rail, on upright | 20 | | | | | | | | | | | | | | | | |
| Bottom rail, on upright | 20 | | | | | | | | | | | | | | | | |
| Top rail, midspan | 20 | | | | | | | | | | | | | | | | |
| Bottom rail, midspan | 20 | | | | | | | | | | | | | | | | |
| Downwards, on upright | 0 | | | | | | | | | | | | | | | | |
| Downwards, midspan | 40 | | | | | | | | | | | | | | | | |
| | b) On completion of the strength tests, the adjusted strength, R_u , shall be not less than 1.2 times the maximum test load | <table> <thead> <tr> <th>Position</th> <th>Peak force / kN</th> </tr> </thead> <tbody> <tr> <td>Top rail, on upright</td> <td>> 0.56</td> </tr> <tr> <td>Bottom rail, on upright</td> <td>> 0.80</td> </tr> <tr> <td>Top rail, midspan</td> <td>0.72</td> </tr> <tr> <td>Bottom rail, midspan</td> <td>0.66</td> </tr> <tr> <td>Downwards, on upright</td> <td>> 2.18</td> </tr> <tr> <td>Downwards, midspan</td> <td>> 2.04</td> </tr> </tbody> </table> | Position | Peak force / kN | Top rail, on upright | > 0.56 | Bottom rail, on upright | > 0.80 | Top rail, midspan | 0.72 | Bottom rail, midspan | 0.66 | Downwards, on upright | > 2.18 | Downwards, midspan | > 2.04 | PASS |
| Position | Peak force / kN | | | | | | | | | | | | | | | | |
| Top rail, on upright | > 0.56 | | | | | | | | | | | | | | | | |
| Bottom rail, on upright | > 0.80 | | | | | | | | | | | | | | | | |
| Top rail, midspan | 0.72 | | | | | | | | | | | | | | | | |
| Bottom rail, midspan | 0.66 | | | | | | | | | | | | | | | | |
| Downwards, on upright | > 2.18 | | | | | | | | | | | | | | | | |
| Downwards, midspan | > 2.04 | | | | | | | | | | | | | | | | |
| | c) The residual deflection, δ_3 , shall not exceed 10 % of the deflection at maximum load, δ_{max} | <table> <thead> <tr> <th>Position</th> <th>Residual deflection / mm</th> </tr> </thead> <tbody> <tr> <td>Top rail, on upright</td> <td>0</td> </tr> <tr> <td>Bottom rail, on upright</td> <td>0</td> </tr> <tr> <td>Top rail, midspan</td> <td>0</td> </tr> <tr> <td>Bottom rail, midspan</td> <td>0</td> </tr> <tr> <td>Downwards, on upright</td> <td>0</td> </tr> <tr> <td>Downwards, midspan</td> <td>0</td> </tr> </tbody> </table> | Position | Residual deflection / mm | Top rail, on upright | 0 | Bottom rail, on upright | 0 | Top rail, midspan | 0 | Bottom rail, midspan | 0 | Downwards, on upright | 0 | Downwards, midspan | 0 | |
| Position | Residual deflection / mm | | | | | | | | | | | | | | | | |
| Top rail, on upright | 0 | | | | | | | | | | | | | | | | |
| Bottom rail, on upright | 0 | | | | | | | | | | | | | | | | |
| Top rail, midspan | 0 | | | | | | | | | | | | | | | | |
| Bottom rail, midspan | 0 | | | | | | | | | | | | | | | | |
| Downwards, on upright | 0 | | | | | | | | | | | | | | | | |
| Downwards, midspan | 0 | | | | | | | | | | | | | | | | |

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Table 2 – Testing of “Radius Guard Rail” in accordance with EN 13374: 2004

| EN 13374: 2004 CLAUSE / TEST | EN 13374: 2004 REQUIREMENT | RESULT / COMMENT | PASS / FAIL |
|--|---|---|----------------|
| 5.2.1 Additional requirements – Edge protection system class A | <p>If it is not possible to verify the load requirements by calculation, the static load tests shall be carried out. In this case, to comply with this standard:</p> <p>d) On the completion of the deflection tests, the adjusted elastic deflection, δ, shall not be greater than 55 mm</p> <p>e) On completion of the strength tests, the adjusted strength, R_u, shall be not less than 1.2 times the maximum test load</p> <p>f) The residual deflection, δ_3, shall not exceed 10 % of the deflection at maximum load, δ_{max}</p> | <p>Position Elastic deflection / mm</p> <p>Top rail, on upright 30</p> <p>Bottom rail, on upright 20</p> <p>Top rail, midspan 0</p> <p>Bottom rail, midspan 10</p> <p>Downwards, on upright 20</p> <p>Downwards, midspan 30</p> <p>Position Peak force / kN</p> <p>Top rail, on upright 0.94</p> <p>Bottom rail, on upright 0.94</p> <p>Top rail, midspan 0.80</p> <p>Bottom rail, midspan 0.74</p> <p>Downwards, on upright > 2.28</p> <p>Downwards, midspan > 2.06</p> <p>Position Residual deflection / mm</p> <p>Top rail, on upright 0</p> <p>Bottom rail, on upright 0</p> <p>Top rail, midspan 0</p> <p>Bottom rail, midspan 0</p> <p>Downwards, on upright 0</p> <p>Downwards, midspan 0</p> | <p>PASS</p> |

***** END OF REPORT *****