SPECIFICATION FOR ROAD SAFETY HARDWARE SYSTEMS

APPENDIX B: BRIDGE BARRIER SYSTEMS

Note: This document is released as an interim appendix to the current Specification M23 in support of the recent revision of the NZ Transport Agency Bridge Manual.

1 NON- PROPRIETARY (PUBLIC DOMAIN) BRIDGE BARRIER SYSTEMS

The following drawings detail the non-proprietary (public domain) bridge barrier systems as originally detailed in NZ Transport Agency Bridge Manual and accepted for use subject to the requirements of Section 2 below.

B1 - W-Beam Assembly and Fixing Details (No Top Rail)
B2 - W-Beam Assembly and Fixing Details (With Top Rail)
B3 - Thrie-Beam Assembly and Fixing Details (No Top Rail)
B4 - Thrie-Beam Assembly and Fixing Details (With Top Rail)
B5 – Guardrail Holding Down Details
B6 – Intermediate Anchor Details (W-Beam)
B7 - Intermediate Anchor Details (Thrie-Beam)
B8 – Test Level 4/5 F-shape Monolithic Concrete Barrier - in preparation)
B9 – Test Level 5 Concrete Barrier (PA HT, T80HT) - in preparation)

2 BRIDGE BARRIER PERFORMANCE

Irrespective of any testing regime (such as MASH or NCHRP350) when used for protection of super- and sub-structure elements:

a) W-Beam systems are considered to provide Performance Level 3 protection; and
b) Thrie-Beam systems are considered to provide Performance Level 4 protection;
c) Monolithic concrete systems are considered to provide either Performance Level 4 (at 915mm) or Performance Level 5 (at 1070mm); and
d) “HT” type barriers (PA HT, T80HT) are considered to provide Performance Level 5 (at 1270mm).

W-Beam systems (see B1, B2, B5 and B6) are a legacy system and not accepted for use on State highway bridges.

Thrie-Beam systems (B3, B4, B5 and B7) are a legacy system and only accepted for use on the State highway network on

(i) low volume (less than 1000 vpd) structures; and
(ii) in retro-fit situations to replace existing bridge systems (e.g. post & rail or “tombstone” parapet) where it can be demonstrated that the existing deck cannot take the imposed dead and impact loads from a fully crash tested system.
3  COMPLIANT SITE SPECIFIC USE BRIDGE BARRIER SYSTEMS
On occasion, site specific approval may be granted for use of variations to standard barrier systems. Such approval is to be formally sought from the National Manager Traffic and Safety before finalising any design drawings or contract documentation.

4  STANDARD DRAWINGS
Standard drawings for the systems detailed in section 1 above are shown below (reduced size).

The appropriate layout arrangements shall be reviewed for each project. This drawing shall not be used on contract documents.

<table>
<thead>
<tr>
<th>No.</th>
<th>Standard</th>
<th>Date</th>
<th>Ref/Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Standard Post and Top rail detail removed</td>
<td>9/3/13</td>
<td>B2</td>
</tr>
<tr>
<td>2</td>
<td>Standard Post detail modified</td>
<td>9/3/13</td>
<td>B2</td>
</tr>
<tr>
<td>3</td>
<td>Standard Post detail modified</td>
<td>9/3/13</td>
<td>B2</td>
</tr>
<tr>
<td>4</td>
<td>Non-proprietary Bridge Barrier Systems</td>
<td>8/09/14</td>
<td>B2</td>
</tr>
</tbody>
</table>

Series: Non-proprietary Bridge Barrier Systems
Title: W-Beam Assembly and Fixing Details (With Top Rail)
Barrier Performance Level: 3
The appropriate layout arrangements shall be reviewed for each project. This drawing shall not be used on contract documents.
The appropriate layout arrangements shall be redrawn for each project. This drawing shall not be used on contract documents.

**Standard Detail**

**Title:** Thriebeam Assembly and Fixing Details (With Top Rail)

**Soils:** Non-Proprietary Bridge Barrier Systems

**Ref/Number:** B4

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**Notes:**

1. **All Classroom to Head of Girders After Provision of Agreed Widths and Standards with Dimensions if Required.**
2. **All Ladders except Thriebeam and Top Rail to Be Soared Gysof to NTS 2002 to be Generic to All Ladders.**
3. **Top Rail for Bridge Protection NTS is PM Dark Bronze and Post Fixing Nuts to be Threaded M10 Dark Bronze.**
4. **Thriebeam Posts shall be Powder Coated in the Same Colour as the Main Barrier System.**
5. **All Thriebeam Posts Above 2.5M Will be a Guide.**
6. **In the Case of a Logo Board the Diameter of the Top Rail and Post Fixing Nut at one end of the rail and at the other end the Post Covering shall be a Steel Bar (as per drawing).**
7. **All Pedestrian Barriers and Sockets to be Identically Provided by Contracting Before Installation.**
8. **All Railings to Be In accordance with AGS.**
9. **Corridor Railing to be 1.1m High in accordance with AGS.**
10. **Use of Steel Bar for Post Fixing is Optional.**
11. **If the top rail is to be fixed and desk surface is made from wood, a Steel Bar and Seal shall be used below the hardware to ensure the working conditions are within the scope design.**

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**Barrier Performance Level 4**

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**Bar:** 8
The appropriate layout arrangements shall be redrawn for each project. This drawing shall not be used in contract documents.

<table>
<thead>
<tr>
<th>Ref. Number</th>
<th>Title</th>
<th>Series</th>
<th>Non-Proprietary Bridge Barrier Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>B5</td>
<td>Guardrail Holding Down Bolt Details</td>
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</table>

Notes:
1. All drawings include through bolts, bolted plates, ring washers and nuts. The drawings in Appendix B indicate the use of stainless steel components in all drawings. Where stainless steel is not specified, mild steel or other equivalent shall be used.
2. Washers shall be of the appropriate type to prevent failure of the barrier and the components thereof.
3. Series 200 and 400 shall be in accordance with Appendix B.
4. Barrier must be in accordance with Appendix C and D.
B8 – Test Level 4/5 F-shape Concrete Barrier – in preparation
B9 – Test Level 5 Concrete Barrier – in preparation

Accepted systems are: Pennsylvania DoT “PA HT”, or Texas DoT “T80HT” (aka “Texas HT”)

Notes:
1. Oval section top rail only. Rectangular or other profiles not accepted.
3. Connection of barrier system to structure deck to be checked and confirmed by bridge designer.
4. Neither “HT” configuration suitable for structures with expansion joints providing more than 125mm movement