

Our ref: MIRA-0888-CPD-0132
Your ref: Order P27426



04 July 2007

Watling Street
Nuneaton
CV10 0TU
UK

For the attention of Mr Darren Copeland

Dear Mr Copeland

VARLEY AND GULLIVER STEEL V6GUARD VEHICLE RESTRAINT SYSTEM

The Varley and Gulliver Steel V6Guard Vehicle Restraint System identified by the Test Report Numbers listed in Table below have shown that the V6Guard VRS is acceptable for use on the Highways Agency road schemes subject to the conditions stated and has met the performance criteria with the stated configuration:

Mandatory Speed Limit not to exceed 70mph

Description of system: Parapet at 1.5m centres into resin fix anchors with holding down bolts
Working width class W3 (Actual Normalised $WW_N = 1.0\text{m}$). (See note 1)

Impact Severity Level: Class B (CFC 180).

Height of parapet = 1.502m (min) to top of top beam (See Notes 2 & 3)

Length of the system tested = 66.00m. (See Note 4)

Post spacing = 1.50m

Un-factored ultimate loads for a post at failure (See Note 5): Bending Moment $M_{ult} = 30 \text{ kNm}$
Co-existent Shear $V_{ult} = 76.9 \text{ kN}$

Performance Class	Test Report No	Test House	Date	Test Type	Test Length (m)	Post Spacing (mm)	Working Width Class	Normalised Working Width WW_N (m)	Severity Index Level (CFC180)
H4a	MIRA-06-1012661-010 And MIRA-06-1011324-001-031	MIRA	31 July 2006 and 13 July 2007	TB11 and TB71	66.0	1.5	W3	1.0 ⁽¹⁾	1.40

Table 1

1. The vehicle intrusion was 1.0m, which was greater than the width of the system. The working width is determined from the vehicle intrusion value. The working width has been normalised, the actual test value recorded was 0.9m
2. Actual parapet tested was 1589mm high when mounted on 75mm high plinth of 600mm width located in front of a trench. The Highways Agency specification requires a parapet to be mounted on a plinth between 50 to 100mm high.
3. The Highways Agency design standard for vehicle parapets requires the following minimum heights measured from the adjoining paved surface to be used:

1000 mm -	for vehicle parapets except as below
	for all bridges over railways
1250 mm -	for bridges carrying motorways, or roads to motorway standards, from which pedestrians, animals, cycles and vehicles drawn by animals are excluded by order
or	
1500 mm -	for all other bridges
1400 mm -	for cycleways immediately adjacent to the vehicle parapet
1500 mm -	for accommodation bridges
1500 mm -	for very high containment level applications
1800 mm -	for bridleways immediately adjacent to the vehicle parapets

In addition mesh or solid infill on the face of the parapet will be required in some circumstances.

4. Where shorter lengths are used, or if the end conditions are changed, it will be necessary for *Varley and Gulliver* to specify how this will affect the performance of the parapet.
5. Un-factored loads to be used in the design of the bridge deck; see BD 37/01 clause 6.7

Use on other UK highways will be at the discretion of the relevant highway authority.

You will also be required to comply with the requirements of the Specification for Highway Works, in particular the quality assurance requirements given in Clause 104 and Appendix A. To assist you in this, I am enclosing the form 'Submission for Compliance with EN 1317'. I am aware that some of the information has already been provided, but the form has been enclosed to assist in the presentation of material that will allow '*Varley and Gulliver Steel V6Guard Vehicle Restraint System*' to be listed in the List of Accepted and Registered Products when it is revised. In particular a list of numbered drawings, which you wish to specify to describe the product in contract documents will be required which uniquely identify *Varley and Gulliver Steel V6Guard Vehicle Restraint System*.

Varley and Gulliver will be responsible for defining any features of the highway, which would limit the use and operation of '*Varley and Gulliver Steel V6Guard Vehicle Restraint System*' such as supporting surface, foundation requirements, horizontal and vertical alignment, environmental conditions, suitability for use in low temperature conditions, etc. You will also be responsible for defining any environmental or material features that would restrict the use of your system, such as its suitability for use at low temperatures.

The *Varley and Gulliver Steel V6Guard Vehicle Restraint System* will be included in the List of Accepted and Registered Products. This can be obtained at the following web address: www.highways.gov.uk/business/8720.aspx

Where it is necessary to join '*Varley and Gulliver Steel V6Guard Vehicle Restraint System*' to another road restraint system Varley and Gulliver will be responsible for demonstrating the performance of any transition and/or end termination to meet the Highways Agency's requirements.

The drawings provided have not been examined by the Highways Agency or MIRA Limited. Varley and Gulliver shall remain responsible for their accuracy and content.

The acceptance of the use of this system on the Highways Agency's road network is based on the information that you have supplied. The Highways Agency's acceptance does not indemnify you against any claims in law. The Highways Agency reserves the right to withdraw its approval if there is evidence that the system performs in a different way from that shown in the Initial Type Test or is required to do so for any other reason.

In the longer term, completion of EN1317 will introduce a system of third party product certification and I can provide give no guarantee that the current Highways Agency/MIRA acceptance will be satisfactory to the Notified Body undertaking this responsibility.

Yours sincerely

A handwritten signature in black ink that reads "Chris Andrews". The signature is written in a cursive style with a large, stylized initial 'C'.

Chris Andrews

Certification and Inspection Technical Manager
MIRA
e-mail: chris.andrews@mira.co.uk

cc: Danny Ruth, Highways Agency

ANNEX A

CEN COMPLIANCE ¹

Initial submission documents to be supplied for consideration of initial type test.

1. Test report in accordance with EN1317 Part1 Section 9.
 2. Video/high speed film of test annotated showing date, test number and performance class.
 3. Still photographs of complete installation including anchorage points.
 4. Still photographs of vehicle before and after impact.
 5. Full drawings of tested item.
 6. Certification from the manufacturer that the item tested complies with drawings supplied.
 7. Certificate from test house.
-
-

Additional information, which will be required on acceptance of initial type test prior to installation.

8. Installation drawings.
9. Manufacturer's specification.
10. Manufacturer's installation instructions including foundation requirements and test methods to verify their performance.
11. Manufacturer's repair and maintenance manual.
12. Certificate of compliance with the quality management scheme for Manufacture of fencing components.²
13. Compliance with the Sector Scheme for the Supply, Erection and Repair of Vehicle Restraint Systems.²
14. Certificate of compliance for the Fabrication and installation of Bridge Parapets and Cradle Anchorages.³
15. Nominal loads (direct forces, moments and co-existent shears) to be transferred from the parapet to the structure or foundation.^{2&3}

Notes

1. *All documents, which are not in English, will have to be translated. If they are in a language other than French or German the promoter will be required to supply a full translation.*
2. *Items 12, 13 and 14 are required for safety fences and barriers.*
3. *Items 14 & 15 are required for parapets.*