Our ref: MIRA-0888-CPD-0117
Your ref: Order # 26682

24 September 2006

Watling Street
Nuneaton
CV10 0TU
UK

For the attention of Mr Darren Copeland

Dear Mr Copeland

VARLEY AND GULLIVER VGSN 500 STEEL N1 PARAPET

The *Varley and Gulliver VGSN 500 Steel* Parapet system identified by MIRA, UK Test Report Number MIRA-06-1012661-004 (TB31 test), has shown that the *Varley and Gulliver VGSN 500 Steel* Parapet is acceptable for use on the Highways Agency road schemes with a speed limit of less than 50 mph and has met the following performance criteria with the stated configuration:

Performance Class N1
Working width class W1 (Actual Normalised WW_N = 0.6m).
Severity index level Class A (CFC 180).
Height of parapet = 1.00m (min) to top of top beam (See Note 1 & 2)
Length of the system tested = 27.00m. (See Note 3)
Post spacing = 3.75m
Un-factored ultimate loads for a post at failure (See Note 4) :Bending Moment M_{ult} = 14.135 kNm
Co-existent Shear V_{ult} = 26.29kN

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 Class (CFC180)
N1	MIRA-06-1012661-004	MIRA	9 June 2006	TB31	27	3750	W1	0.6	A

Table 1

1. Actual parapet tested was greater than 1.0m high when mounted on 50mm high plinth. The Highways Agency specification requires a parapet to be mounted on a plinth between 50 to 100mm high.

2. 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.

3. 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.
4. 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 VGSN 500 Steel* Parapet' 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 VGSN 500 Steel* Parapet.

Varley and Gulliver will be responsible for defining any features of the highway, which would limit the use and operation of '*Varley and Gulliver VGSN 500 Steel* Parapet' 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.

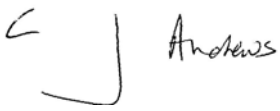
The *Varley and Gulliver VGSN 500 Steel* Parapet will be included in the List of Accepted and Registered Products. This can be obtained at the following web address: www.highways.gov.uk/business/8720.aspx

Where it is necessary to join '*Varley and Gulliver VGSN 500 Steel* Parapet' 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.

Yours sincerely



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.