

## **PROPOSAL FOR A RESEARCH PROJECT ENTITLED:**

### **EVALUATION OF OCCUPANT RISK DURING COLLISION WITH MASONRY PARAPETS AND BOUNDARY WALLS.**

#### **The Issue:**

**Highway Authorities are sometimes faced with the problem of comparing the risks associated with the construction or retention of masonry parapets with their environmental benefits. Boundary walls present a similar risk to parapets.**

**At the moment there is little guidance available to assess occupant risk during a passenger car collision for the purpose of justifying the “Departure from Standards” necessary to allow the use masonry parapets or boundary walls adjacent to the carriageway.**

#### **Background:**

**Scheme development often requires the Highway Engineer to depart from the requirements of the national technical standards in National Parks and areas where it is necessary, or desirable, to provide a finished product that is aesthetically in harmony with the environment.**

**In practice, this usually means that modern forms of construction are allowed for the longer span structures crossing over the carriageway but any shorter-span under-bridges are either masonry arch or masonry faced wherever possible. While the choice of such structures may have cost implications safety is not compromised.**

**But there is overwhelming pressure to use traditional masonry forms of construction for vehicle restraint instead of code-compliant metal safety fences and bridge parapets.**

**The CSS Guidance Note on “ The Assessment and Design of Unreinforced Masonry Vehicle Parapets” is a valuable reference for appraising the vehicle containment capacity of existing masonry parapets and led to the development of BS 6779-4:1999 “ Highway Parapets for Bridges and Other Structures” Part 4: Specification for parapets of reinforced concrete and unreinforced masonry construction.**

**But there is little guidance available on the vehicle occupant safety demerits of using parapets and walls that allow the impacting vehicle to penetrate the fabric of the structure with consequent rapid deceleration. Code-compliant restraints, other than those compliant with BS 6779 Part 4, have minimal effect on the momentum of a vehicle impacting at the standard 20 degree angle. On the other hand, for impacts at greater angles, the fact that the vehicle can penetrate the fabric of the structure may be of benefit to vehicle occupants.**

**There is also the issue of masonry boundary walls that serve no purpose other than to define and protect the boundary of adjacent land. Any such walls located within 4.5 metres of the carriageway are classified as being a hazard in TD 19/85 and require protection by a safety fence. If this is not done then a Departure from Standards is required with a supporting case.**

**Recommendation:**

**That the Bridge Owners Forum gives its support for a nationally funded project to produce guidance on justification for the use of vehicle restraint systems that have a more adverse effect on vehicle occupants than other vehicle restraint options.**

**Delivery:**

**It is recommended that the project be limited to production of guidance based upon a desk study of available technical, statistical and legal information in the first instance.**

**The project should include a requirement to propose means of acquiring the further information required to produce authoritative guidance if the existing information is insufficient i.e. for a second stage to the project.**

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