

Passive safety and the 'Lost' National Annex

David Milne believes local authorities need practical guidelines to help them build a robust case to justify the use of passively safe street furniture.



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Passive safe street furniture is not being as rapidly adopted on non-trunk roads as it deserves. Designers are perhaps unaware of the 'lost' National Annex to EN 12767 which provides the official guidance on use of passively safe street furniture. The content of the National Annex is limited by CEN rules and provides limited advice on developing a robust case to justify use of passively safe street furniture. The Passive Revolution plan to publish more comprehensive guidelines on their website in 2009.

Increasingly, most new signs and lighting columns now being installed on the trunk road network are passively safe. This take-up of passive safety on the trunk road network has been a great success driven by:

- a) The availability of relevant advice in T89/04 and then TA89/05 in the DMRB (Design Manual for Roads and Bridges) on the internet. However, TA89/05 was withdrawn in March this year.
- b) Passively safe street furniture is accepted as a proven safe alternative to safety barriers in TD19/06 in the DMRB
- c) The availability of suitable passively safe signposts and lighting columns
- d) The proven safety record of passively safe street furniture in service both in the UK and across Europe
- e) The use of passively safe posts and columns on trunk roads and motorways avoids the need for short runs of protective barrier with energy absorbing terminals. This typically speeds installation, reduces traffic management and traffic delays during barrier erection and is usually more economical in initial cost and for maintenance as barriers are often struck glancing blows

While Cheshire and Durham County Councils (and many other highway authorities) have internal policies on passive safety and the adoption of passively safe street furniture progress on passive safety has certainly been slower

and less universal than on trunk roads. This is to be regretted as the analysis of the accident figures in Table 1 demonstrates the vast majority of serious casualties and deaths from hitting lighting columns and sign posts (and trees) occur on local authority roads.

Reasons for this slow take up not withstanding on non-trunk roads include:

- a) Lack of suitable advice for non trunk roads as TA89/05 (and TA89/04 before that) were written with trunk roads in mind
- b) A shortage of advice on vehicle speed relative to the chance of serious injury. Impacts with large conventional signposts and lighting columns can be dangerous at relatively low speeds
- c) Lack of guidance on the cost of going passively safe and the potential safety benefits in financial terms
- d) Highway authorities do not routinely protect signs and other roadside hazards with barriers except perhaps on their fastest roads. With no cost savings from omitting barriers the passively safe option will usually be more expensive. However, with new products being developed all the time and increased competition passive safety is becoming more affordable.
- e) Providing an increased level of electrical safety for passively safe lighting columns and illuminated signs adds significantly to their cost.
- f) Local authority roads are perceived as less dangerous than trunk roads and motorways because of their lower speeds. However Table 1 demonstrates most serious injuries and deaths from hitting street furniture will occur on local authority roads.
- g) Roadside safety is a large and difficult problem with trees, ditches, walls and other hazards and where pedestrian safety is also a major concern. Passive safety is only a part of this problem and may not be

thought a priority.

Early in 2008 the Highways Agency withdrew TA89/05 and BSI published a revision to BSEN 12767:2001 entitled BS EN 12767:2007 *Passive safety of support structures for road equipment - Requirements, classification and test methods*. This document now contained an additional National Annex (NA) entitled *Recommendations for passively safe support structures for road equipment*. The National Annex was intended to replace TA89 and extend the much needed advice on the use of passively safe street furniture to non trunk and urban roads.

EN 12767 has generally been proved a sound standard. Products crash tested to the standard have an excellent safety record. The National Annex at the back of this document has not made a significant impact largely because:

- a) unlike TA89/05 which was freely available on the web as part of the *Design Manual for Roads and Bridges* it is now necessary to buy the full standard BSEN 12767:2007 at a cost of £92 to obtain the four pages of guidance in the National Annex
- b) BSI and other organisations selling BS EN 12767:2008 on the internet make no mention of the inclusion of the National Annex contents or its coverage

Suppliers of passively safe products confirm there is often limited awareness of the NA among highway engineers.

When you obtain BS EN 12767:2008 and consult the National Annex *Recommendations for passively safe support structures for road equipment* you may be disappointed by the narrow scope. It quite rightly advises a highway authority has the responsibility to decide on whether to use passively safe street furniture or not stating 'The decision to specify products which conform to performance classes from BS EN 12767:2007 in a particular situation, rather than class 0, is a matter for the road authority' (class 0 is not passively

safe). This decision, where no guidance is given, goes to the heart of passive safety.

Decisions on whether to go for passive safety should have regard for the likely reduction of casualties and the additional costs for passively safe street furniture. The excellent safety record of passively safe street furniture (no deaths or serious injuries in the UK so far) and the annual road toll (approaching 100 deaths and more than 500 serious injuries from hitting conventional signposts, signal posts and lighting columns on our roads every year) are not discussed in the NA so the NA is of little help in alerting you to or in evaluating the benefits of passive safety.

The NA advises on EN 12767 test classifications according to type of highway (dependant on speed limit and the presence or not of non motorised users). This advice is largely aimed at preventing 'non motorised users' (pedestrians and cyclists) from being hit in secondary accidents by breakaway signposts or lighting columns or the vehicle after the initial impact (although there have been few if any reported cases of such incidents).

The National Annex could never be a full guide on passive safety applications as the scope of any National Annex is strictly limited by CEN (Comité Européen de Normalisation or the European Standardisation Organisation) whose rules forbid attempts 'to make the National Annex become a handbook' or 'to give design guidance'.

How can individual highway authorities learn about when and how to apply passive safety? I suggest that they:

- a) Consult 'The Passive Revolution' website <http://www.thepassiverevolution.co.uk/> which provides information on products, suppliers and includes videos of their crash demonstrations. If at all possible you should attend one of this organisation's crash days (or one of their seminars). These crash demonstrations unfailingly convince visitors that passive safety has so much to offer and locating larger steel signposts and conventional lighting columns next to the highway without barrier is very dangerous indeed.
- b) Read *Designing Safer Roadside - A Handbook for Highway Engineers*. (I confess an interest - I produced the book). It contains 28 articles covering passive safety, zero vision and barrier and crash cushion design). Don Waller's article explains why and how Durham County Council is adopting a passively safe approach for their roads. This article is a good blueprint for any local au-

| Single vehicle accidents by object hit off carriageway: Built-up and non built-up roads and severity: 2006 | | | | | | | | |
|---|------------|-------------------|-------------------------------|-------------------|------------------------------------|-------------------|--------|-------------------|
| Road Type | Lamp Posts | | Sign Posts or traffic signals | | Telegraph pole or electricity pole | | Trees | |
| | Deaths | Seriously Injured | Deaths | Seriously Injured | Deaths | Seriously Injured | Deaths | Seriously Injured |
| Motorways | 2 | 11 | 4 | 6 | 0 | 1 | 6 | 29 |
| Non Built-up Roads | 12 | 90 | 13 | 70 | 13 | 70 | 212 | 561 |
| Built-up Roads | 41 | 238 | 15 | 110 | 10 | 55 | 54 | 221 |

- c) Target passive safety where it will make most difference and this means initially targeting county A and B roads and the main through routes in urban areas. Quiet residential roads and country lanes can be assigned a lower priority. 20 mph traffic zones in city centres and other roads where speeds are low due to road geometry or on-street parking are relatively safe and probably do not need passive safety. Busy 40 mph and higher speed roads certainly would benefit.
- d) Target new signs and street lights and existing installations on renewal.
- e) Check accident records to target areas where passive safety can make most difference. However the lack of a serious accident to date at a location does not mean one will not happen tomorrow.
- f) Consider protecting roadside trees by barrier or their removal (perhaps mitigating this by new planting remote from the highway)

With the Police Road Death Investigation Manual and the Corporate Manslaughter and Homicide Act of 2007, highway authorities need safety policies and procedures in place. A policy for upgrading signposts and lighting columns for passive safety can be explained to the police after a fatality even if the upgrade is for the future. An absence of policy on passive safety may in the future leave a highway authority vulnerable if the courts think a fatal accident was avoidable and the highway authority was not being pro-active in this area.

New guidelines

The Passive Revolution believe there is a need for guidelines on passive safety for all roads so local authorities can make informed decisions and avail

themselves of a development with a proven potential for preventing road casualties.

They intend to develop and publish guidelines on their website in 2009. It is hoped the guidelines will include:

- a) A short explanation of how passive safety is defined and describe the EN 12767 testing procedures, what is measured and how products are classified
- b) Recommendations for the use of passively safe products on the market related to their classifications for sign, traffic signals and camera masts and lighting columns. This will include a discussion of the safety record of passively signposts and lighting columns in the UK and elsewhere in Europe including identifying known failures/casualties and a discussion of slip based products and their limitations
- c) A discussion on the casualty statistics from hitting roadside hazards and the benefits of keeping verges free of any obstructions that are not passively safe
- d) Advice on the costs and cost benefits of passive safety
- e) Advice on electrical isolation requirements
- f) Advice on prioritising highways for use of passively safe street furniture
- g) A discussion on roadside trees, safety and what can be done
- h) Case studies and examples of passively safe applications

We consider the National Annex cannot within the CEN terms of reference produce full guidelines. It is hoped to publish the Passive Revolution guidelines in 2009 as a living document which will be updated as necessary.

I do believe these guidelines are badly needed especially for non-trunk roads and the lack of such advice is slowing the adoption of a proven tool in reducing road casualties.

Table 1: Figures taken from Road Casualties Great Britain 2006 Table 20. These casualty figures show motorways suffer few serious accidents with signs, lighting columns and trees and that it is overwhelmingly an urban and non-trunk road problem.