



## Position Statement – **Crash Barriers**

There are no crash barriers that can be considered ‘motorcycle friendly’. In the event of a motorcyclist impacting with a crash barrier the likelihood is that they will be severely injured.

**Priority:-** High

**Where we are now:**

All existing crash barriers have been designed to reduce the severity of a crash when cars and trucks leave the roadway. Until recently there has been little consideration given to the welfare of motorcyclists who collide with these barriers. In many cases the safest barrier for a motorcyclist is ‘no barrier’.

Crash barriers can be classified into three types, rigid, semi rigid and flexible.

Concrete barriers are classified as being ‘rigid’, W-beam (Armco) as ‘semi rigid’ and wire rope as ‘flexible’.

Wire rope barriers are very effective in reducing the severity of crashes when cars and trucks impact with them as they absorb energy. Rigid barriers are less effective as more of the energy of the impact is transmitted to the vehicle occupants resulting in greater injuries. This effect is known as ‘ride-down’ in barrier crash testing.

This is why wire rope barriers are installed instead of W-beam (Armco) or concrete barriers.

While the classifications of rigid, semi rigid and flexible have meaning in car and truck crashes they are meaningless in motorcycle impacts. To motorcyclists, all barriers are ‘rigid’.

There has been little research into what constitutes a motorcycle friendly barrier nor how to make existing barriers less aggressive in causing injury to motorcyclists.

Research has, however, shown that in about half of crashes the rider is still upright on the bike when it impacts a barrier and that it is very likely that the rider will then slide along the top of the barrier with the possibility of impacting the tops of posts. If the rider has separated from the bike and is sliding along the road before impacting that barrier, it is very likely that they will impact the lower part of a post.

There are a number of products available that are designed make crash barriers less 'aggressive' which are designed to prevent riders sliding under the barrier or coming into direct contact with posts or sharp edges.

Suppliers who currently have products that are designed to reduce injury to riders:-

Ingal Civil Products [www.ingalcivil.com.au](http://www.ingalcivil.com.au) :-

- Ezy-Guard barrier which has:- no exposed tops of posts, posts without sharp edges and posts suitable for stack cushions. Ezy-Guard provides a soft ride-down for vehicle occupants and has lower installation costs, providing an alternative to wire rope.
- Rub Rail to prevent riders sliding under guardrail.
- Stack Cushions to cushion the impact with posts.
- Plastic Covers for ET2000 barrier end terminals to reduce injury due to sharp edges.

Australian Construction Products [www.acprod.com.au](http://www.acprod.com.au) :-

- Motorcyclist Protection Rail to prevent riders sliding under guardrail.
- Yellow plastic cover for X-Tension barrier end terminals.

LB International [www.basyc.com.au](http://www.basyc.com.au) :-

- BASYC, a flexible system to prevent riders sliding under guardrail.

ASP Group:- [www.asp-group.com.au](http://www.asp-group.com.au)

- Lattix Signpost System:- an energy absorbing sign support system that removes the need to install barriers to protect sign posts [www.lattix.com.au](http://www.lattix.com.au)
- Biker Mate:- a motorcycle crash cushion for roadside objects which reduces the likelihood of injury to riders [www.euroroadsafety.com/Products/BikerMate.aspx](http://www.euroroadsafety.com/Products/BikerMate.aspx)

Just about all of these products are designed to make W-beam more motorcycle friendly. Cushions to cover the lower part of a wire rope barrier post are the only product designed to reduce injury to riders who collide with wire rope. These cushions are only effective at low speed.

The potential to make W-beam more motorcycle friendly is far greater than that of wire rope barriers.

While a number of rub-rails have been approved for retro-fitting to W-beam barriers to reduce the likelihood of impacting a post when sliding into a barrier, there are currently no systems that can be retro-fitted to reduce the likelihood of impacting with the tops of the posts. There has however, been some research conducted in Europe into developing top rub-rails.

A Swedish research paper has studied the 'whole of life' costs of barriers and found that wire rope barrier is the most expensive, probably due to it having to be repaired after minor impacts.

Other barrier systems suffer less damage that requires repair than does wire rope, notably concrete that rarely has to be repaired.

As a tensioned system, it is important that the tension in the wires of a wire rope barrier are within specification. After an impact wire rope barriers need to be repaired promptly and the tension checked so the barrier will function as designed.

Currently relatively few riders impact wire rope barriers, this is generally thought to be a result of wire rope barriers not being installed on corners of a radius less than 200 metres where riders are more likely to crash and less wire rope barrier installed as compared to W-beam. As more wire rope barrier is installed the likelihood of motorcycle impacts will increase.

### **Where we want to be:**

Road Authorities need to consider the special needs of motorcyclists before installing crash barriers, these include:

- the 'no barrier' option
- locating the barrier as far away from the road way as possible
- use of energy absorbing sign supports to remove the need for crash barriers
- installing products that make barriers less 'aggressive'

Research is needed to determine what constitutes a 'motorcycle friendly' barrier.

Research is needed to develop a top rub-rail to suit Australian W-beam barriers.

Research is required to determine the 'whole of life' cost of barriers in the Australian context.

Not in a position where the number of motorcycle impacts with wire rope barriers becomes significant.

### **How to get there:**

Obtain funding for research into what constitutes a 'motorcycle friendly' barrier

Obtain funding for research into the 'whole of life' cost of barriers

Discourage road authorities from installing wire rope barriers as they have less potential to be motorcycle friendly and have a higher 'whole of life' cost.

Encourage road authorities to repair wire rope barriers promptly and to regularly check the rope tension to ensure the barrier functions correctly when impacted.

Maintain AMC representation on the Standards Australia committee on crash barrier design.

Stay in touch with groups such as the Federation of European Motorcyclists Associations (FEMA) on developments overseas.