CHAPTER 8 MOTORCYCLES AND TRAFFIC CALMING

8.1 Key Points

8.1.1 The majority of motorcycle riders are responsible road users, and have the same polar opinions about traffic calming schemes as other people, facing the same "residents-and-road users" dilemma that most people face. If traffic calming is the only way to improve the road safety record of an area then these factors need attention:

- ❖ Location
- ❖ Lighting
- ❖ Materials
- ❖ Maintenance

The consequences of poor design and maintenance in this context can be harmful for riders, defeating the purpose for which traffic calming was intended.

8.2 Context

8.2.1 Traffic calming measures are very effective in reducing the number of injury accidents, especially in residential areas, and in polarising public opinion about their desirability. Motorcyclists are no more exempt from the intended effects of traffic calming than any other road user. However, they can also suffer disproportionately from unintended effects, often safety-related, which then undermine the casualty-reducing purpose of installing traffic calming measures in the first place. These unintentionally adverse safety effects stem from issues that can be grouped under three headings: design; materials and maintenance. The key point to remember is that riding a motorcycle is a permanent balancing act and that the vehicle has only two small tyre "footprints" to provide grip.

8.3 Design

8.3.1 One of the first questions facing the designer of a traffic calming scheme should be whether to use physical traffic calming measures or not. More subtle changes to the environment, possibly using existing environmental features and taking a holistic approach to the street scene may be more appropriate. It may be possible to adopt a psychological approach to traffic calming methods by modifying the built environment in such a way as to create a "negotiated space" for all road users, with a concomitant reduction in speed, enabling the reduction or even removal of the need for vertical traffic calming features.

Motorcycle negotiating a cushion scheme.
Keith Sharples Photography.

8.3.2 The choice of what type of physical measures to use is normally influenced by a number of factors, including: accident records, traffic volume; pedestrian activity; target speed; the presence of bus routes; the needs of emergency services, sensitivity of the local environment, the views of local residents and budget. Many motorcyclists prefer speed cushions that give the option of riding between the speed cushions rather than over them. This does not negate the measure; the act of aligning a motorcycle to pass through a small gap between speed cushions will bring about

some reduction in speed, although it may fall short of the target speed for the scheme. Useful publications in this area include *Home Zone Design Guidelines* (IHIE 2002) and T*raffic Calming Techniques* (IHT/CSS 2005) and relevant Traffic Advisory Leaflets available from the Department for Transport (DfT).

Location of traffic calming measures

8.3.3 A major problem facing the designer of traffic calming schemes is choosing the location of the measures. The needs and vulnerabilities of motorcyclists should be accounted for along with all the other factors influencing this process. Some important issues are:

- Vertical traffic calming measures should not be located anywhere a motorcyclist will need to brake or changing direction. Ramps for raised junctions should begin far enough back so that the motorcycle negotiates the ramp in a straight line.
- The design of the scheme should include adequate warning signs, both permanent and temporary, warning of the new road layout ahead. Consider using on-site publicity prior to installing the traffic calming measures. Ensure any temporary signs are removed not later than three months after the completion of the scheme.
- Whenever possible a non-vertical speed reducing feature should be used at the entrance to a traffic calming scheme. Since changes in the regulations affecting traffic calming scheme design, some schemes have appeared that start with a speed hump or cushions. Without some form of speed-reducing feature, there is always the risk that a motorcyclist will unintentionally hit the first vertical measure at speed. For a car driver, this could imply an uncomfortable bump. For a motorcyclist, the implication could be serious injury.
- A commonly used non-vertical speed reducing feature in traffic calming schemes is the mini-roundabout. Without careful design, motorcyclists, like other vulnerable road users, can suffer disproportionate risk at these junctions. Particular points to bear in mind include:
  - Adequate skid resistance of the mini-roundabout arrow markings.
  - Most junction designs are checked to make sure that larger vehicles' swept paths can be accommodated. Motorcycles making tight right turns at mini-roundabouts can have stability problems, especially if the turn is more than 90°.
  - Make sure there is adequate advanced warning of the junction type.
  - Ensure adequate visibility; using a mini-roundabout because there is insufficient visibility for a priority junction is rarely a safe option for any road user.

- The design of horizontal schemes, often called chicane schemes, should allow for the fact that motorcyclists on lower-powered machines tend to ride near the kerb. The build-outs often associated with these schemes can pose significant risks:
  - They can catch riders unaware, leading to collision. This

Road hump with no speed reducing feature at the start.
Keith Sharples Photography.

Build outs in association with traffic calming should be conspicuous. *Keith Sharples Photography.*

Build outs in association with traffic calming should be conspicuous. *MCIA.*

Traffic calming features should be well lit. *Keith Sharples Photography.*

is especially a problem when a scheme is recently constructed. Build-outs should be conspicuous.

- They force motorcyclists to move to the centre of the road or even, in priority working schemes, into oncoming traffic, much of which is unwilling to give way to a motorcycle, especially a smaller machine.
- The use of low over-run areas as build-outs can cause stability problems if a rider clips the edge. The standards permit an up-stand of no more than 15mm, but even this can cause problems to the rider of a smaller machine when turning.

- Islands or refuges used to reduce the width of the road should be conspicuous, allowing motorcyclists to position themselves correctly in advance, avoiding late and sudden changes of direction.
- Where bicycle bypasses are provided around traffic calming measures, these should be narrow enough to discourage use by motorcycles.
- Always ensure the location of traffic calming measures does not lead to poor drainage; standing surface water could compromise motorcycle safety, especially in freezing conditions.
- Humps and speed cushions should be located 10-15 metres away from junctions to allow riders to turn out and to pass over them vertically. This should be balanced against pedestrian desire lines where flat-topped humps are being specifically installed as crossings.

Lighting

8.3.4 Most traffic engineers understand that street lighting is a specialised subject requiring an increasingly sophisticated approach and comprehensive knowledge of the types of light sources available and the best places to use them. It is of vital importance that the night-time safety and performance of traffic calming measures are not compromised by inadequate street lighting. Motorcycle head lamps are typically less bright than those of other vehicles, making good lighting of traffic calming measures an important factor in making the scheme safer. Obviously the first point of contact will be the local authority street lighting team; if this is not possible, then the Institution of Lighting Engineers (ILE) can provide advice on the technical aspects of scheme lighting to suit all road users, including motorcyclists. The ILE has published a technical report called *Lighting for Traffic Calming Schemes* (ILE 2002). Particular issues to bear in mind are:

- The scheme should be evenly illuminated, with particular attention paid to traffic calming measures that alter the normal road alignment, for example build-outs and chicanes.
- The lighting should provide good colour rendering, especially where colour is an integral part of the scheme.

8.4 Materials

8.4.1 There is an array of choices facing the designer when selecting materials for traffic calming measures, and a number of factors influence this choice. These range from local environmental

considerations, through technical performance and maintenance issues, to financial and purchasing policy factors. To this range of factors must be added the needs of vulnerable road users, including motorcyclists. The choice of materials can have a huge impact on the utility and safety of a traffic calming scheme from the rider's viewpoint. Particular issues to consider include:

- The use of block paving or stone setts, including on speed tables and raised junctions. These often have poor skid resistance, especially when wet. They are hard to maintain, with displaced blocks and alternative reinstatement materials offering uneven and unpredictable surfaces for motorcyclists.
- The use of bitumen to seal cracks and reinstatements. This material has very low skid resistance in wet conditions, yet is routinely used to seal the joints in traffic calming measures, notably speed cushions. Alternative materials are becoming available (FEMA 2004).
- The use of white thermoplastic on traffic calming measures; for example white triangles used to highlight humps are mandatory, but can cause problems when:
  - The material used has insufficient skid resistance. Markings are often at the centre of a lane, just where the wheel tracks of motorcycles will pass.
  - High traffic levels or poorly specified material can cause them to fade quickly, making a bitumen-based measure hard to distinguish against the road surface, especially at night.

- Transverse bars, rumble strips and "dragon's teeth" markings on the approach to gateways and other traffic calming measures are often in the braking zone for road users. If the materials do not provide suitable skid resistance or if they

Setts used in a turning area for motorcycles.
Keith Sharples Photography.

Visible - yes, but slippery too?
Keith Sharples Photography.

White triangles can fade quickly.
Keith Sharples Photography.

Dragon's teeth speed cushion (mid photo) with no speed reducing feature at start. *Keith Sharples Photography.*

Frangible marker post.
Keith Sharples Photography.

Poorly reinstated traffic calming.
Keith Sharples Photography.

Poorly reinstated traffic calming.
Keith Sharples Photography.

present a series of vertical displacements they can constitute an added hazard for motorcyclists.

- The potential to use collapsible or frangible street furniture, especially in locations that could conceivably be in the path of a falling rider.

8.5 Maintenance

8.5.1 The first traffic calming schemes were installed on public roads in the UK in the 1980s and maintenance of these older schemes is now becoming a problem for many local authorities across the country. Poorly-maintained traffic calming schemes can be a hazard to road users and pedestrians alike; as always the consequence of this hazard will often be most severe for motorcyclists. Maintenance issues in general are dealt with in Chapter 6, but particular issues relating to traffic calming schemes include:

- Reinstatement using non-original materials that present an inconsistent road surface to riders.
- Uneven wear on vertical measures, especially where block paving is used, leading to unexpected depressions.
- Road markings that fall below acceptable standards for retro-reflectivity and skid resistance (assuming they met them when new) or even fade away completely.