Traffic Calming & Slowing Vehicle Speeds

Information and frequently asked questions

The type of traffic calming features we use can be split into two main categories, either vertical or horizontal deflections.

Speed Cushions – vertical deflection

A speed cushion is a short, raised, rounded device, normally in the centre of a road lane. Speed cushions are designed to be slightly wider than a car, so car drivers need to slow down and drive over the centre of the speed cushion to minimise the effect. Buses are wider than cars, so they can drive over speed cushions without passengers feeling it.

The advantages of speed cushions include:

- They do not affect a bus that straddles them
- More effective than horizontal treatments at reducing speed cars
- Emergency vehicles can travel more quickly over cushions than speed cushions or speed tables
- Can be avoided by cyclists
- Drainage should not be affected

Speed cushions are effective at reducing motor vehicle speeds, however they are not as effective as speed tables or road humps. Reducing motor vehicle speeds increases safety because:

- The vehicle has travelled less distance before the driver can react to a hazard after seeing it
- Braking distance is reduced, so the vehicle can stop more quickly before a hazard
- A slower moving vehicle will exert less energy on occupants as the vehicle rapidly changes speed on impact (crashes)
- A slower moving vehicle will transfer less energy to a pedestrian in the event of a collision.

Some of the disadvantages are:

- May cause traffic to divert to other routes
- May not reduce motorcycle speeds

Speed Tables – vertical deflection

Speed tables are a raised section of road, with a ramp on both sides. The ramps are painted with white arrows to make them more obvious to motor vehicle drivers.

The aim of the speed table is to slow motor vehicle traffic to a safe speed, as the ramps become uncomfortable for vehicle drivers if they are driven over too fast.

A speed table is normally around 75mm high, and can vary in length.

The advantages of speed tables include:

- Most effective traffic calming treatment
- Can be used as part of an informal crossing for pedestrians
- More acceptable than speed cushions to buses
- The size of the speed table is flexible to fit an area with a safety concern. It could span all parts of a four-arm junction, or be placed on a single straight section of road
- Steeper ramps can increase their effect and shallower ramps can be used on bus routes

Some of the disadvantages are:

- Large speed tables are expensive
- Managing surface water drainage could be complex and costly
- Buses, cyclists and emergency vehicles will need to reduce their speed
- Some traffic is likely to transfer onto alternative routes, potentially causing a problem somewhere else

Road Humps and Sleeping Policemen – vertical deflection

Sleeping policemen and road humps are unusual on South Gloucestershire roads, due to the problems they present to emergency service vehicles and buses, as well as being very uncomfortable to drive over.

Build outs or road narrowing's – horizontal deflection

A road narrowing simply reduces the width of the road on one or both sides.

Motorists will need to drive more carefully in a narrowed section of road to keep their vehicle in the correct road position, which may result in slower vehicle speeds.

In addition, road narrowing can also be used to help pedestrians cross the road more easily and allow better visibility when pulling out from junctions.
Some of the advantages are:

- Targets a specific part of the road
- Can be used on junctions
- Can prevent poor vehicle parking
- Make it easier for pedestrians to cross
- Emergency vehicles should be able to pass without slowing down

Some of the disadvantages are:

- Not as effective as vertical treatments
- Managing water drainage could be complex and costly
- Cyclists and motorcyclists may feel intimidated by some vehicle drivers' behaviour at road narrowing

Priority narrowing's or chicanes – horizontal deflections

Single lane chicanes require one direction of traffic to give way to oncoming vehicles. The chicane normally consists of a raised curb and bollard in one half of the road, with a sign to explain the vehicle traffic priority. For the lane without traffic priority, there are Give Way markings and hatching on approach to the chicane. Groups of chicanes are normally placed with alternating priority down a road, so that each direction of vehicle traffic may have to stop and give priority in equal amounts.

These are not a preferred method of traffic calming in South Gloucestershire. This is because from past experience we have found that motor vehicles without priority may race to the chicane before an oncoming vehicle approaches, or swerve dangerously around the chicane.

Some of the advantages are:

- Are less likely to cause vehicle passenger discomfort (in comparison to vertical treatments)
- Most chicane designs allow cyclists to bypass them
- Emergency vehicles may be able to travel faster around a chicane compared to vertical treatments

Some of the disadvantages are:

- Motor vehicles with priority are not required to reduce their speed
- Motor vehicles without priority are not required to reduce their speed if there is no oncoming vehicle approaching
- Motor vehicles without priority may race to the chicane before an oncoming vehicle approaches, or swerve dangerously around the chicane
- Residents living close to priority narrowing's report increased incidences of road rage between drivers when one fails to give way, also heavy braking can occur near the start of the features
- May cause long delays if there is increased vehicle traffic
- Buses without priority will find it more difficult to find a gap in vehicle traffic and drive around chicanes
- Some traffic is likely to transfer onto alternative routes, potentially causing a problem somewhere else
- Increased accidents for two wheeled vehicles (cyclists and motorcyclists) either because motorists fail to give way to cyclists and motorcyclists when they have right of way or because cyclists and motorcyclists think they can fit through when they don't have priority.
- These are also an issue for busses and their passengers' safety if the bus needs to brake heavily or suddenly and may result in passenger being thrown forward, as a result of this South Gloucestershire don't use these features on bus routes at all.

Speed cameras - can have a speed reducing effect but they are not traffic calming measures

Although speed cameras are not a traffic calming feature, they are often requested by members of the public when consulting on a traffic calming scheme. They cannot be used in place of a traffic calming feature.

Speed cameras photograph motor vehicles which are travelling over a certain speed - this is usually around 10% over the speed limit. Speed cameras use a radar device to detect the speed of passing motor vehicles. If the speed camera is in use, motorists are either issued with a Notice of Intended Prosecution that may lead to a fine, or invited to attend a speed awareness course. Both the fine and the cost of the course are around £100, however motorists can avoid penalty points on their license by choosing the course instead of the fine.

If the Local authority and the police choose to operate speed cameras together, the money from fines is passed to central government. The local authority or the police do not benefit from fines. Central government do not provide any incentive for local authorities or the police to enable speed cameras

If motorists choose to pay for a speed awareness course instead of paying a fine, this money is used differently. In the Avon and Somerset area, this money was used to cover the costs of running the course, maintaining speed cameras, issuing fines, and any other activities which attempt to increase road safety.

There are restrictions on installing speed cameras, the following are guidelines from the Department for Transport for implementing speed cameras:

- 4 KSIs (Killed or Seriously Injured) per kilometre over the last 3 years
- 8 PIAs (Personal Injury Accidents) per kilometre over the last 3 years
- Speed must be a factor in some or all of the accidents
- 85th percentile speed at least 10% above speed limit plus 2mph - i.e. 35mph in a 30 zone) for free-flowing traffic (excluding any rush-hour periods)
- Must be placed on a relatively straight section of road

Some of the advantages are:

- Extremely effective at keeping motor vehicles within the speed limit
- Can keep speeds low in the wider area (not just immediately in front of the camera)
- Particularly suited to more busy roads, where vertical or horizontal treatments may cause vehicle traffic queues
- No negative impact on emergency vehicles or buses

Some of the disadvantages are:

- A funding structure and an agreement with local police are required to operate cameras. This could be difficult to achieve
- Speed cameras have come under criticism from certain sections of the media, with claims that they do not increase road safety, and are only there to generate money for the government. Although speed cameras have proven positive effects, these claims may lead to some opposition to their introduction

FREQUENTLY ASKED QUESTIONS

Q: Does physical traffic calming features such as speed cushions and tables cause vibration?

A: Extensive research failed to find any conclusive evidence that traffic-induced vibrations from traffic calming can cause building damage. However vibrations from traffic calming will carry much further through Alluvium which could be a disturbance to residents.

Q: Will traffic calming cause more congestion?

A: By generating a consistent flow of vehicles, traffic calming can result in lower and more consistent traffic speeds which in turn helps reduce congestion. Implementing traffic calming can also reduce the volume of traffic choosing to use that road.

Q: Will the traffic calming produce a lot of noise?

A: Whilst traffic calming features can produce some noise when vehicles travel over them, the reduction in traffic speeds and a smoother driving style can result in a reduction in overall noise level. Where possible, speed tables and cushions will be placed where properties are set back from the road.

Q: Do speed cushions and speed tables cause damage to vehicles?

A: Vehicles travelling over speed cushions and tables at appropriate speeds should not suffer damage. Studies have been carried out investigating the effect of repeatedly traversing road humps and no damage was seen, despite repeated passes at speeds up to 40mph. The Highway Code tells motorists that when they approach traffic calming features they should reduce their speed, therefore the assumption is that driver would negotiate these features at a speed less than a 30mph speed limit. Complying with a 20mph speed limit ought to be comfortable for most vehicle occupants.

Q: Does traffic calming cause higher levels of pollution?

A: Low speeds are generally associated with high rates of exhaust emission because they usually involve a high proportion of acceleration and deceleration. However, smooth, low speed driving, in as high a gear as possible, will result in relatively low emissions. The effect on emissions, therefore, of any traffic calming scheme will depend on how the scheme influences both the average speed of traffic and the amount of speed variation. Although some traffic management measures can result in increased emissions per vehicle, they also generally result in a reduction in the volume of traffic. Thus, even though emissions per vehicle may increase, this can be offset by the reduction in traffic. A well designed traffic calming feautre should encorrage a smoother driving style with less accelleration and braking. This should result in reduced emmisions.

Q: Does traffic calming improve road safety?

A: Traffic calming measures have been shown to reduce the frequency of accidents involving pedestrians, cyclists and motorcyclists. It has been shown that on average each 1 mph reduction in mean vehicle speed results in an average accident reduction of 5 per cent (Taylor et al., 2000), though this will vary according to the type and location of the traffic calming. Hence a 10 mph speed reduction may give a 50 per cent accident saving. This result has confirmed two earlier studies (Stark, 1995; Webster & Mackie, 1996)

Reducing vehicle speeds is likely to reduce the severity of any injury resulting from a collision, particularly if the injury is to more vulnerable road user such as pedestrians or cyclists.

Q: Doesn't the council have a duty to keep traffic moving rather than cause delays to journeys with these measures?

The traffic management Act 2004 does require the council to minimise congestion and tackling vehicle emissions is similarly the subject of legislation.

Under Section 41 of the Highways Act 1980, the Council has a duty to maintain the public highway, however section 39 of the Road Traffic Act 1988 also imposes a statutory duty on local authorities to carry out studies into accidents arising in their area and take such measures as appear appropriate to the authority to prevent such accidents. Traffic management schemes will be devised to consider all of these requirements

Case law has found that the existence of a statutory duty does not in itself create a Common Law duty of care but the Common Law position on highways is that individuals are first and foremost responsible for their own safety and that road users should 'take the road as they find it'.