

# Advice on Vehicle barriers on routes used by riders and carriage-drivers in England and Wales

The  
British  
Horse  
Society

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Barriers which are intended to prevent access with motor vehicles are obstructions on a right of way unless the right of way was created subject to their limitation on use, or unless they are installed by the highway authority under Section 66 or 115 of the Highways Act 1980 for the safety of legitimate users.

## Are barriers really necessary?

Even if they are legal, barriers can cause serious hazards for equestrians—riders and drivers of horse-drawn carriages—and their horses and other legitimate users of the way, and may prevent their use of the way. Riders may be unseated if their horse chooses to jump the barrier—this is a common response of horses. Cyclists may not be able to lift a bicycle over the structure. Wheelchair users may be unable to pass. Visually impaired may not detect a barrier and be injured by it or discouraged from using a route.

The requirements of the Equality Act 2010 must be taken into account. A barrier affects people with impaired mobility and impaired vision as well as riders who may have difficulty negotiating the structure safely and carriage-drivers are commonly excluded completely. Equestrians are quite often people with limited mobility whose horse and/or vehicle provides them with highly beneficial means for open air exercise. Horse-drawn vehicles adapted for use by wheelchair users are increasingly common.

## Is there evidence?

Is the threat that suggests a barrier is needed genuine? Is there evidence rather than just perception? Installing a barrier is a common 'knee-jerk' reaction but there may be no evidence that it will remove antisocial behaviour, yet it will have a detrimental effect on legitimate users of the way.

## Barriers near the road

Any barrier should always be set well back from the roadside so that riders or carriage-drivers have space to align themselves for the structure and to negotiate it away from the additional hazard from motor vehicles. Structures should not cause equestrians to be delayed on the road as that increases the risk of a motor vehicle hitting them, particularly where motor traffic is at high speed.

This general requirement may have to be relaxed at certain sites where there is a proven problem of fly-tipping or parking and the wish is to prevent motor vehicles pulling off the road by placing bollards. Bollards at the roadside can generally be easily negotiated by riders but may be a problem to carriage-drivers because of the length of horse and vehicle meaning they have to swing out into the road to clear the bollards.

A 'horse stile' (see below) or step-over barrier (see below) of any type should never be installed at the roadside because of the danger of a horse jumping the barrier into the road or aligning to negotiate the barrier on the road while at risk from vehicles. Barriers other than bollards commonly cause considerable difficulty to equestrians because horses are likely to have been taught to jump similar obstacles.

If the solution appears to be a barrier close to the road edge, consideration must also be given to space for riders or carriage-drivers waiting to cross or join the road. Bollards are therefore likely to be the only acceptable constraint at the roadside.

All barriers must have:

1. Straight approach and exit of at least 3m length on a bridleway, 6m on byways to allow the horse (and vehicle) to be aligned and opportunity to assess the structure
2. Level well-drained ground free from overhanging vegetation to 3.7m height (in case a horse jumps the structure)
3. A non-slip and giving surface as a horse may jump the barrier and slip or be injured (i.e. not tarmac)
4. On a bridleway joining a road, ample space for at least three horses to wait between the barrier and a road (5m assuming at least 3m width available but need not be straight as in 1.)

## Bollards

The preference of the BHS to prevent access by four-wheeled vehicles would be for bollards as being least restrictive to legitimate users. They may also be used to prevent parking vehicles, which commonly obstruct access to a bridleway or byway for equestrians, particularly carriage-drivers. Lockable bollards which can be lowered may benefit landowners and the emergency

services where occasional motor vehicle access is desirable. Bollards obviously will not prevent access by motorcycles or quad bikes but neither will a gate that is usable by equestrians.

Bollards should have smooth tops and edges and have gaps between them of no less than **1.5m on a bridleway, 1.8m on a byway**. Round bollards are preferred. On byways, the minimum gap is 3m so a gap of 1.8m is illegal unless authorised by the highway authority's rights of way service as necessary for the safety of users.

Recommended **height of bollards is 600mm**. Taller bollards may be more vulnerable to being removed; shorter bollards are more difficult for carriage-drivers to keep in view, especially when driving a pair. Very short bollards can be a trip hazard.

Where the route has verges, trees or hedges to the sides, a central bollard is not acceptable unless the surface to each side of the bollard is level and even with height clearance to 3.4m and no hedges that may restrict width. Two bollards may be required to give a clear central passage for riders of 1.5m and for carriage-drivers 1.8m.

On a byway, the gap between the bollards and 3m before and beyond it must have **level and even ground**. Uneven ground between or in the approach to bollards may cause a carriage to tip and collide with a bollard. Vegetation must be maintained so that the full width between the bollards is available with a level surface.

It is unlikely that a gap of 1.8m will admit the type of four-wheeled motor vehicles most commonly used for illegal or antisocial access. Smaller street cars are not usually a problem and the smaller four wheel drive vehicles (e.g. Suzuki Jimny 1,645mm wide) would have clearance of less than 80mm each side.

If a gap less than 1.8m is **proven** to be necessary on a byway, local carriage drivers may be willing to accept lockable bollards which can be lowered and for which they have the code, but this is only a solution where such acceptance has been negotiated by the highway authority with local users. The bollard when lowered must be less than 150mm high. Combination locks are more acceptable than key locking padlocks and the code should be circulated to the British Horse Society, British Driving Society and local harness clubs each time it is changed as well as a local list of users to whom it has been supplied. Failing to communicate with users about locks has withdrawn cooperation in many areas. Contact details for acquiring the code must be provided on site.

On a byway leaving a road, bollards should be set back by 6m, so that a horse-drawn carriage does not have to swing into the road to clear the bollards. It may be a difficult manoeuvre for some carriages, so not being exposed to motor traffic is preferred. Where the purpose of the bollards is to prevent fly-tipping or parking, it may be necessary to reduce this length but it should only be done where road traffic flow makes it possible for a horse and carriage to be lined up with the gap in safety.

## Kent Carriage Gap – not recommended

A **Kent Carriage Gap** (figure 1) was an arrangement of bollards at specific widths and heights intended to permit access by horse-drawn carriages and exclude four-wheeled motor vehicles.

The Kent Carriage Gap is **no longer recommended** by the British Horse Society as it obstructs the majority of modern horse-drawn vehicles in use with the intention of narrower vehicles passing between 1 and 2, and wider vehicles passing with one wheel between 1 and 3. It is also rarely

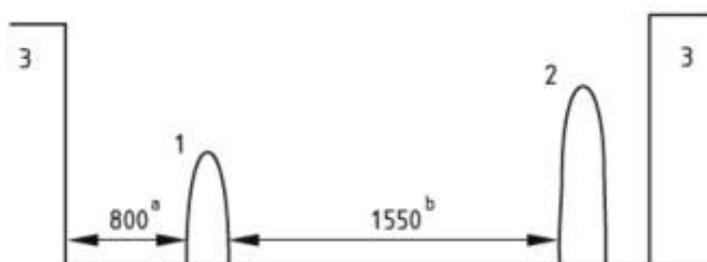


Figure 1 Kent Carriage Gap dimensions from BS5709, 1=300mm high

installed accurately, which makes it more of an obstruction, nor is it maintained so ruts, erosion or vegetation increase the risks through uneven ground. It is not accepted because:

1. The wider gap of 1.5m is too narrow for most vehicles to negotiate safely
2. Bollard 1 is generally far too high for wider vehicles to pass as intended with one wheel between 1 and 3 because ground clearance of many vehicles is less than 200mm and the apparent height may increase with erosion
3. Bollard 1 is impassable by a carriage and pair of horses wider than 1.5m because for the wheel to be between 1 and 3, the bollard is in the path of one horse
4. Reducing the height of Bollard 1 to less than 200mm to allow clearance makes it a trip hazard on foot or for a pair of horses and likely to be obscured by vegetation

## Structures for use on bridleways only

Only bollards may be erected on a byway as the structures below will prevent access by horse-drawn carriages and are therefore only to be considered on bridleways.

## Horse Stile (ridden horse routes only)

Few barriers are wholly effective in deterring motorcycles so the Society may accept that where there is a **genuine risk to public safety from motorcyclists**, the horse stile (sometimes called horse hops or motorbike traps) as specified in the British Standard 5709 for Gaps Gates and Stiles may be installed on a bridleway if the highway authority can justify authorisation of a limiting obstruction which will affect legitimate users including, potentially, their safety.

Horse stiles can limit use by riders, especially children on small ponies, novices and horses which have been taught to jump such obstacles, and people in mobility vehicles, so local use must be considered before installation. Some riders have difficulty with horse stiles, particularly where a horse has not met the structure before so it is vital that the surface is level, even and non-slip to horses on the approach from both directions and throughout the structure. They must not be used unless there is evidence that danger to users from motorcyclists is greater than the disbenefits to legal users.

They **must not** be installed on a byway as carriages cannot negotiate the obstacle (it would be like trying to push a heavily laden wheelbarrow up two high steps). Horse-drawn vehicles vary from 100 to 500kg so cannot be lifted over like a pushchair or bicycle.

Horse stiles are constructed using two parallel railway sleepers or equivalent with each sleeper lying on its narrow face across the line of passage, with fencing to each side forming a rectangle at least 1.5m wide and 1.2m long between the sleepers. Adjacent secure fencing is required to prevent illegal users going round the stile and is pointless unless other entries are secured.

- Height of sleepers 190mm +/- 60mm
- 'Short edge' or diameter 80mm to 160mm
- Width at least 1525mm
- Distance between sleepers 1200mm +/- 100mm

All of **these dimensions should not be exceeded or reduced**; to do so could render the obstacle more dangerous or pointless.

Figure 2 shows a British Standard horse stile with fencing to the right, and a motorcycle barrier that permits wheelchair users, pedestrians and cyclists to the left. (The gap to the left of the structures in the photograph also needs securing.)

It is particularly important that the surface before, after and within the barrier is free-draining and is maintained to prevent erosion as hollowing of the surface would make the sleepers higher, increasing the severity of the obstacle and making horses more likely to jump or to trip.

Reducing the distance between the sleepers would increase the risk of a horse being unable to pass or trying to jump the obstacle. The distance is intended to be such that it is difficult to lift a motorcycle over it.



Figure 2 Horse stile BS5709

The BHS does not recommend using suspended scaffold-type poles or metal bars as they are less visible to horses and if a hoof strikes them in crossing, the noise may startle the horse. However, the Society accepts that in some locations wood is too vulnerable to vandalism but poles should not be suspended as a horse's foot may slip underneath causing a serious injury.

**A gate must never** be hung above the stile or within 4m before or after the line of travel through the stile. The many small steps forwards, backwards and sideways to open the gate are difficult enough without also trying to do them over a step, which will be in the most awkward place.

Ideally, the top edges of sleepers should be rounded or chamfered to reduce injury to horses' legs.

Clear space at least 4m long and 2m wide is required to both sides of the horse stile so that the horse can walk straight through the structure.

Where the stile is installed where a route leaves a road, space for at least three horses is required between the stile and the edge of the road so that they can wait together to cross the road. This also provides stopping distance if a horse should attempt to jump the stile towards the road and, when leaving the road, allows space for the horse to be attentive to the structure without the hazard of motor vehicles.

The ground through the stile and on the approaches should be maintained level, firm and well drained but not hard, slippery or stony. It must not be tarmac as a horse is more likely to slip when stepping over the barrier, and particularly if it should jump the barrier. Where a sealed surface is required, the BHS recommends use of resin or polymer bound rubber-crumb.

## 'Horse Friendly Vehicle Barrier' (ridden horse routes only)



Figure 3 'Horse friendly vehicle barrier' (Centrewire)

A 'horse friendly vehicle barrier' is a term used by a manufacturer for a strong metal barrier with a lowered mid-section over which horses can step. The mid-section must be low enough that it does not encourage a horse to jump it. More robust barriers of the same pattern as that in figure 3 are available.

As with a horse stile, access to the sides must be secured otherwise the barrier will not prevent access by motorcyclists. However, in doing so, legitimate users who cannot step over the barrier will be prevented from using the way and this must be taken into account in deciding that a barrier is justified.

'Horse friendly vehicle barriers' should only be used on bridleways where all of the following circumstances apply:

- Lawful motor vehicular access needs to be maintained while deterring illegal use
- There is insufficient space beside a locked field gate for a 1.525m gap
- There is clear evidence of persistent problems with unlawful four wheeled motor vehicular access
- The surface is not tarmac or of any substance that may be slippery for horses
- The authority is able to legally authorise installation of the barrier and is satisfied that the requirements of the Equality Act 2010 are met

A barrier should be at least 5m from the edge of a road; more is desirable where space permits and additional width may be necessary to allow three horses to wait together to cross the road on the road side of the barrier. The length allows for stopping distance if a horse should jump the barrier towards the road and, leaving the road, allows the horse to negotiate the structure away from the distraction of motor traffic.

The space over the barrier and its approaches should be clear of overhanging branches and other hazards to a height of 3.7m in case a horse should jump the barrier.

The ground under the barrier and on the approaches should be level, firm and well drained but not hard, slippery or stony; that is, it should be a surface on which a horse can safely jump. This may require a commitment to maintenance. It **must not be tarmac** as this is too dangerous if a horse jumps the barrier and may cause a horse to slip when stepping over, particularly when wet. Where a sealed surface is required, the BHS recommends use of resin or polymer bound rubber-crumb.

The lowered central part of the gate over which the horse steps should be at least 1.2m wide at the bottom and 2m wide at the top. The top of this section bottom bar should be maximum 190mm  $\pm$  60mm from the ground.

Care must be taken to ensure that the height of the lowered rail does not exceed the maximum recommended height of 250mm overall height measured from the ground beneath that part of the barrier and for at least 2m on each side. Periodic maintenance of the surface under the barrier may be required to ensure it does not erode and increase the height between the ground and the top of the rail. Maintenance should not be simply adding stone to any eroded hollow because loose stone is painful for horses to walk on and may cause injury. Raising the ground immediately below the barrier does not help as it is the height the horse has to step which is important.

There should be solid wooden cladding on both sides of the central section, so that the barrier does not clang if the horse's foot strikes it. It may need to be painted so that the horse can distinguish it more easily from the ground. The edges of the wood should be rounded to reduce incidence of injury to a horse's legs.

As with lockable drop bollards (page three), use of this type of gate on a byway may be locally accepted provided the lock code is easily available to carriage-drivers, however, availability of the code and maintenance of access is vital for this to be considered.

## Chicanes on bridleways (ridden horse routes only)

A chicane formed by lengths of post and rail fencing and/or a locked gate or sleeper across a bridleway can be a helpful means of reducing speeds of cyclists, warning users of proximity to a road or deterring illegal use by motor vehicles. The latter is achieved by the openings in the chicane not being apparent from the road so it looks like a solid barrier.

Chicanes **must not be used on routes** open to carriage-drivers as the space needed to manoeuvre is too variable to accommodate all and is likely to produce a barrier unfit for purpose.

As with all other vehicle barriers, they should be set back from a road by at least 5m so that a group of horses has space to wait at the roadside without being separated by the barrier and, should riders experience difficulty negotiating the barrier, they are not immediately exposed to the traffic on the road. At some sites, risk of vandalism makes wooden fencing undesirable, in which case metal may be used so long as edges and corners are rounded.

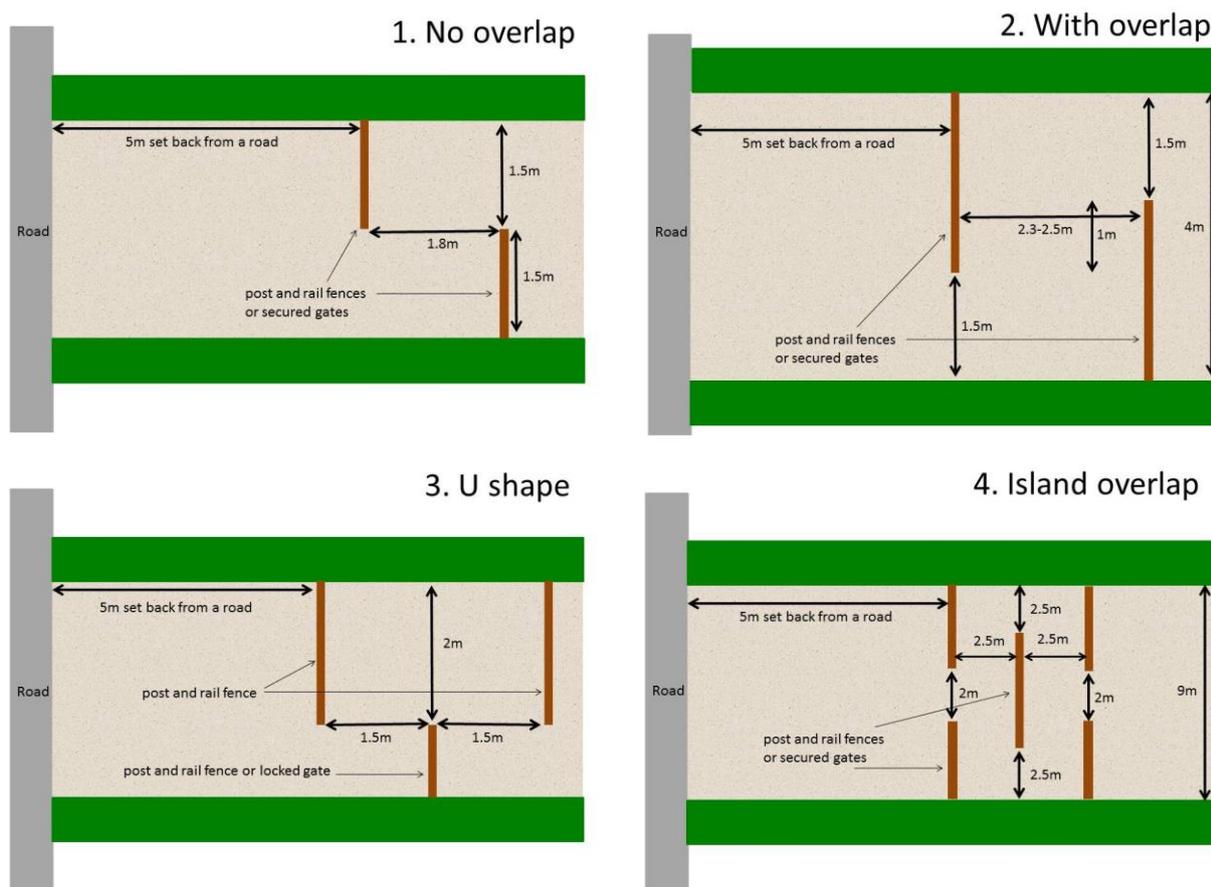


Figure 4: Examples of chicane variations

There are four common variants as shown in figure 4:

1. Two barriers staggered across the track without an overlap,
2. Two barriers with an overlap,
3. Two barriers forming a 'u' shape gap round the end of a third barrier and
4. Five barriers forming a passage round a central island.

Each variation can fill a wider track by extending the barriers but the gaps are the minimum required whatever the length of barrier or overlap because there is a limit to the degree to which a horse can easily bend to negotiate the barrier.

Where a sleeper is used (most likely in example 3), the surface each side of it must be non-slip and with 'give' in case a horse jumps the sleeper. Bound rubber-crumb is recommended as a surface because it is porous, hard-wearing and is most likely to provide 'give' and non-slip conditions for horses where a grass sward is not possible.

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