

RETRACTABLE VEHICLE SECURITY BARRIERS

MAINTAINING ROAD SURFACE FRICTION

The design of a Vehicle Access Control Point (VACP) should be based on the Operational Requirements (OR) provided by the site owner or operator. In conjunction with security requirements, the operational needs of a VACP must be carefully considered such that road users are afforded safe access.

Retractable vehicle security barriers

Retractable Vehicle Security Barriers (VSBs) such as road blockers or retractable bollards are typically installed at a VACP to form part of a secure site perimeter. To allow vehicle access, a retractable VSB is drawn down into the ground such that the remaining visible surface of the VSB lays flush with the finished road surface.

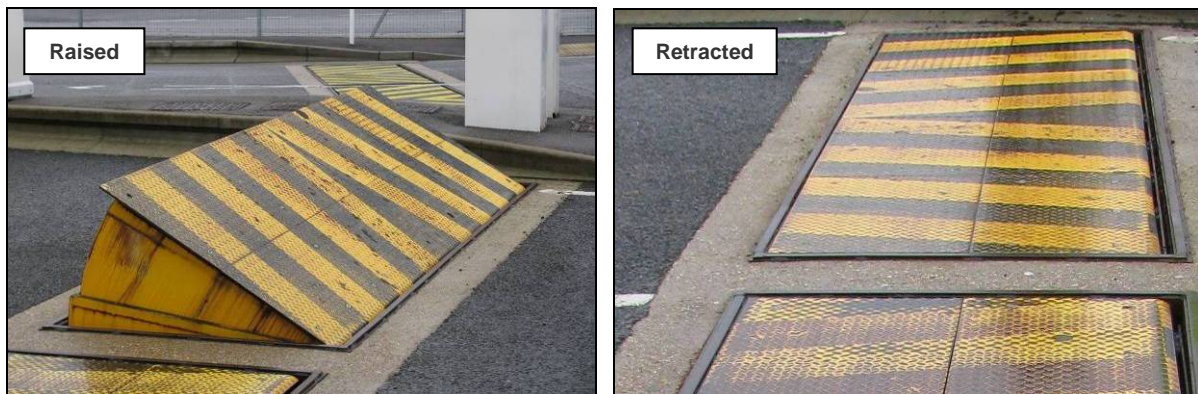


Figure 1: Active road blocker in the raised and retracted position.

From a driver's perspective, an unexpected change (increase or decrease) in road surface grip has the potential to cause a "loss of control" road traffic accident. This is especially important when considering vehicles that are particularly sensitive to changes in road surface grip such as cycles and motorcycles. Therefore, it is important to ensure that any retractable VSB[†] provides a grip level consistent with the surrounding road surface.

The likelihood of a "loss of control" accident occurring is further compounded where there is inconsistent surface grip caused by a retractable VSB positioned near a junction, on a bend, adverse camber or in a braking zone.

[†] Changes in road surface grip level may also be of concern where tracked gates, metallic ramps or utilities covers are present at a VACP.

Good practice

It is recommended that site owners and operators review the health and safety implications for road users as part of the OR process prior to purchase of VSB machinery.

The specification for VACP layout should request a consistent level of road surface grip to ensure safe passage for vehicles through the VACP and that retractable VSBs should not be placed near a junction, on a bend, adverse camber or in a braking zone.

The site owner or operator should commission an analysis of the current road surface grip, in order to determine the need for surface enhancement of any retractable VSBs proposed. The assessment should be undertaken by a qualified engineer or suitably qualified professional using a recognised industry method.

Remedial action – surface enhancement

Where inconsistent road surface grip is caused by an existing retractable VSB, it is possible to retrospectively modify the surface friction properties of the parts of the VSB that sit flush with the finished road surface.

Laboratory and on-site testing has demonstrated that grip levels comparable to typical road surface conditions can be achieved by applying commercially available treatments designed to enhance surface friction.



Figure 2: Blockers fitted with standard Durbar plates and with plates coated with a skid resistant surface treatment.

It is recommended that independent laboratory testing be carried out before surface treatment application and such testing should demonstrate that a potential treatment can provide:

1. Skid resistance consistent with the surrounding road surface at the installation site;
2. Strong adhesion to the VSB;
3. Retention of skid resistance over a defined “wear period”;[‡]
4. Availability in conspicuous colours and able to retain the chosen colour(s) for a period of at least two years.

[‡] The wear period should be agreed between the manufacturer and the site owner and will be determined by local environmental conditions, traffic throughput, vehicle type, operation cycles and VSB positioning.

Ongoing maintenance

During the first three months after surface treatment application, a weekly inspection should be undertaken to look for signs of:

- General wear (especially in the wheel tracks);
- Cracking or loose material;
- Chipped or peeling edges (especially at the corners).

There should be no deterioration of the surface treatment over the initial three month operational period. Any early signs of failure may indicate an underlying fault, application error or may have been caused by physical clash of moving parts or collision with a vehicle.



Figure 3: Surface treatment chipped at corners.

Further monitoring of the condition of treated VSB surfaces should be included as part of the overall regular site maintenance plans. Sites experiencing high volumes of traffic should undertake a proactive review of road surface grip (at VACPs) as part of a regular health and safety assessment.

Application of surface treatments should not affect VSB operation and it is recommended that operational inspections and regular maintenance should be carried out as usual.

Further guidance

PAS 69: Guidance for the selection, installation and use of vehicle security barriers. BSI (2006);

CWA 16221: Vehicle security barriers. Performance requirements, test methods and guidance on application. CEN (2010);

Guide to producing operational requirements. CPNI (2010);

Level 2 OR for HVM. CPNI (2010);

Vehicle security barrier scoping document. CPNI (2010).

More information can be found via the Health & Safety Executive (HSE) website:

Vehicles at work: www.hse.gov.uk/workplacetransport

Contact us

Enquiries: www.cpni.gov.uk/contact-us

Website: www.cpni.gov.uk