

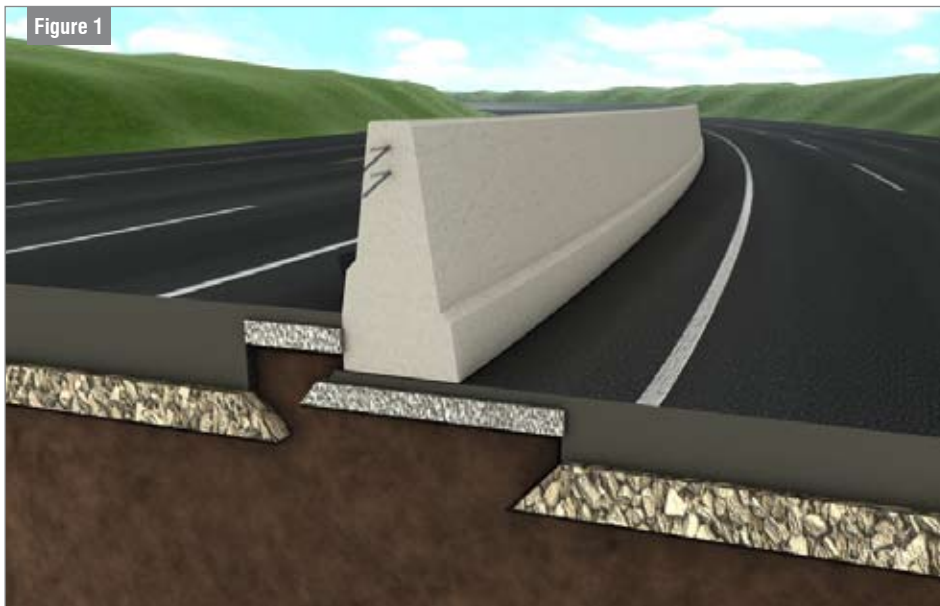
# Concrete Step Barrier Design Guidance

## Variable Profile Concrete Step Barrier (VCSB)

DRAWINGS **CSB/1001** **CSB/1003**

### APPLICATIONS

- **Height difference between carriageways**
- **Superelevation across carriageways**



Variable Concrete Step Barrier

### Design Guidance Notes

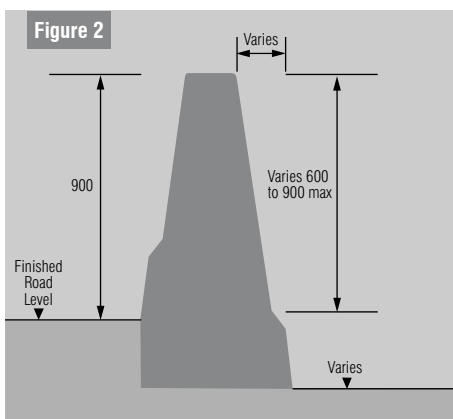
For a temporary difference in level between carriageways of less than 100 mm, the standard profile CSB with a deeper base can be constructed ([Data Sheet DS/CSB/503](#)).

Where the level difference is permanent, a VCSB allows construction of a single barrier to accommodate the height difference.

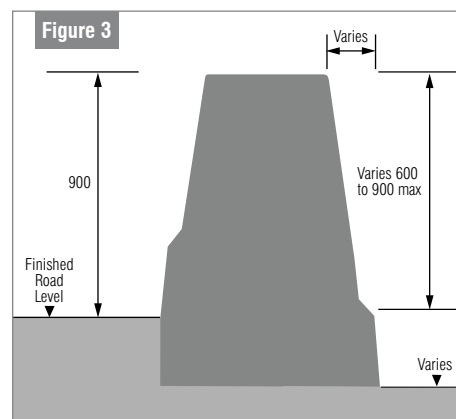
The VCSB is a double-sided step barrier suitable for

use when the difference in level between carriageways is less than 300 mm (Figure 1). The variable profile can accommodate changing carriageway levels. There are two basic designs:

1. VCSB barrier - width at top 200 mm (Figure 2)
2. Wide Variable Concrete Step Barrier (WVCSB) barrier - width at top 600 mm (Figure 3)



Variable Concrete Step Barrier



Wide Variable Concrete Step Barrier

Table 1: Approved working width classes for CSB profiles.	Profile		Maximum height difference	Contaminated performance class	Working width class
		Standard CSB (deep base)	100 mm (temporary)	H2	W2
		VCSB	300 mm	H2	W2
		WVCSB	300 mm	H2	W3

Containment performance and working width classes for variable barriers are given in Table 1.

Analysis of the barriers subject to impact loading has shown that for all level differences up to 300 mm, the VCSB is not subject to higher stresses than the standard profile CSB.

For a carriageway level difference greater than 300 mm, the VCSB can still be used. However, dispensation from the Highways Agency will be required and containment performance may be reduced. For this case, a specialist contractor should be consulted, as there are construction issues associated with the use of a variable mould.

The VCSB uses a special slipform paving mould with moving sides allowing the height of the wall section of the barrier to vary (Figures 4 and 5). The height of the step remains constant at 250 mm above finished road level. The finished height of the barrier must always be at least 900 mm above carriageway level on both traffic faces.

The VCSB can be constructed before or after placement of the adjacent pavement.

Where there is sufficient central reserve width, it is often simpler and more cost-effective to construct dual barriers to accommodate the difference in level between carriageways ([Data Sheet DS/CSB/506](#)).



Variable Concrete Step Barrier



Paving Trough Variable Wide Concrete Step Barrier