Concrete Step Barrier Design Guidance
Emergency and Maintenance Crossing Points

DRAWINGS SSB/002 SSB/010 SSB/200 SSB/201 SSB/204

APPLICATIONS

- **Emergency Crossing Points (ECP)**
- **Maintenance Crossing Points (MCP) and Maintenance Access**

Typical ECP installation

Design Guidance Notes

A demountable version of the Steel Step Barrier (DSSB) is used at Emergency Crossing Points (ECP) and can also be installed at Maintenance Crossing Points and Maintenance Access (MCP). The barrier is anchored to the surfacing using removable anchors and is equipped with retractable wheels. Figure 1 shows a typical installation

The SSB and DSSB are approved for use by the Highways Agency and conform to BS EN 1317 Parts 1 & 2[1] (Containment Performance Class H2, Working Width W2). The barrier meets the requirements of IAN 68[2], section 3.4.8. Note the requirements of TD 19[3] relax the requirements for opening ECPs and MCPs.

Layout

The layout options for ECPs and MCPs using DSSB are limited by the length of the individual units available. SSB to CSB connection units are 500 mm long. Standard sections of SSB/DSSB are 5450 mm long. Special sections can be manufactured to suit any opening.

When designing ECPs and MCPs, the expansion of the units must be considered; expansion can be accommodated by connection plates with slotted bolt holes.

[1] BS EN 1317: Road Restraint Systems
Part 1: terminology and general criteria for test methods
Part 2: Performance classes, impact test acceptance criteria and test methods for safety barriers
[2] Interim Advice Note 68/06: Infrastructure changes to improve emergency access to and egress from the trunk road network In England.
[3] TD19 Requirement for Road Restraint Systems
[4] Traffic Signs Manual (TSM) Chapter 8 (layout No. 34)

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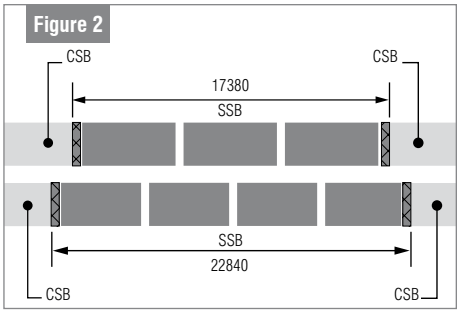
Emergency Crossing Points

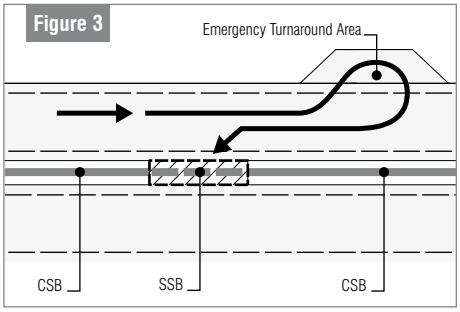
ECPs will typically be either three units (17380 mm) or four units (22840 mm) long (Figure 2).

Figure 2



Configuration of DSSB units at ECP

Figure 3



Typical ECP layout

A typical layout based on IAN 68/06 is illustrated in Figure 3, incorporating an emergency turnaround area. The designer should carry out the appropriate swept path analysis to determine the dimensions required to suit local conditions and expected vehicle types.

Tolerances

The height of the barrier shall be a nominal height of 900 mm above the road surface, with a vertical tolerance of ±5 mm, along the length of the ECP. The vertical tolerance of the surfacing is critical, as it directly affects the ability of the DSSB units to be moved by hand when opening an ECP.

Installation

The units are prefabricated and delivered to site by lorry. They require unloading using either a forklift truck or crane; the DSSB units weigh 850 kg and the connection units weigh 85 kg.

DSSB units are mounted on retractable wheels and are secured vertically into the pavement using 4 No. Hilti HIS-Rn grade 80 stainless sockets with Hilti HVU resin capsules (or similar approved products) and 4 No. M20 x150 mm Grade 70 stainless bolts fixed vertically. Connection units are secured horizontally into adjacent CSB with 4No. M20 bolts.

Opening an ECP

An ECP can be quickly opened by a two-man team, equipped with hand tools (Figure 4).

Figure 4

Opening ECP

Figure 5

Access hatch in DSSB unit

Hatches in the sides of the DSSB units and connection units provide access to the anchors and retractable wheels (Figure 5).

The removal and reinstatement of the units should be carried out in accordance with manufacturer's instructions; on reinstatement, all bolts should be tightened to the correct torque.

Removal of the units to open an ECP requires less than 30 minutes. Reinstatement of the units to close the ECP can also be completed in under 30 minutes

Maintenance Crossing Points and Maintenance Access

The length of barrier opening for the MCP needs to be calculated for each specific location, to suit geometry, SSDs and design speed. Based on the Traffic Signs Manual (TSM)[4], MCPs are typically 200 to 250 m long for a 2-lane contra-flow. It is recommended that the MCP is created by breaking out CSB and removing the debris. An in situ length of CSB can then be inserted when the MCP is no longer required.

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