Concrete Step Barrier Design Guidance

CSB: Lighting Columns (2) - Wide profiles

DRAWINGS CSB/1005 CSB/ 1006 CSB/1007

Associated Data Sheets DS/CSB/510 DS/CSB/512

APPLICATIONS

- **Lighting columns**
- **Signs and gantries**

Design Guidance Notes

CSB offers wide profiles suitable for mounting lighting columns, signs and gantry supports:

- Wide CSB and variable wide CSB with integral cable trough (TWCSB)
- Wide CSB and variable wide CSB (WCSB)

Wide CSB profiles can be slipformed with an integral cable trough (Figure 1). The widened cross section provides a platform width of 600 mm for mounting lighting columns. The cable duct is laid in the trough, which can then be infilled; where the trough is infilled with concrete, armoured cable is not required. Infill concrete should be the same mix design as the barrier concrete. Sawn joints should be extended through the infill.

Wide variable CSB with integral cable trough

Design of WCSB and TWCSB with lighting columns should generally be in accordance with Design Documents TD 19[1] and BD 94[2]. Dual CSB layouts with lighting columns are discussed on Data Sheets 506 and 510.

Figure 1

Wide Variable CSB with integral cable trough

[1] TD 19 Requirement for Road Restraint Systems
[2] BD 94 Design of Minor Structures
[3] BS EN 10088-3 Stainless steels - technical delivery conditions for semi finished products
[4] BS EN ISO 3506-1 Mechanical properties of corrosion resistant stainless steel fasteners

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Access chambers with covers can be provided where required. Weep holes should be locally drilled to allow drainage from the chambers. Access chambers should not be located in the same 3 m bay as the lighting column.

The depth of the trough can be varied to suit the ducting but the two adjacent nibs must remain as per the standard CSB profile.

Where ducts are introduced into the CSB from supply pillars, that bay is best cast in-situ.

Anchorage systems

Anchorages for the fitting of flange plate mounted lighting columns on wide CSB profiles will be project specific and must conform to the following general Highways Agency specification:

- Internally threaded flush mounted sockets manufactured from high strength stainless steel to BS EN 10088-3[3] Grades 1.4401, 1.4436 or 1.4362 having a minimum 0.2% proof stress of 500 N/mm^2. The use of projecting stud anchors is not permitted.
- Drilled in anchorages shall be either a chemically bonded or undercut system. Mechanical anchors relying on expansion and /or friction should not be used.
- The manufacturer of the selected anchorages shall provide evidence of;
  1. A proven performance standard capable of resisting the maximum tensile and co-existent shear forces imposed by the lighting column in accordance with Design Document BD 94 with appropriate limit state factors applied.
  2. Test data for anchors set in CSB demonstrating that the anchor will retain its performance capability without damaging the concrete barrier when a lighting column fails due to impact or other reason.
- The holding down bolt or stud shall be Class A4-80 stainless steel to BS EN ISO 3506-1[4] or equivalent as specified in BD 94[2]. It is essential that the minimum engagement thread of the bolt or stud into the internal thread of the socket is clearly stated in the installation instructions.

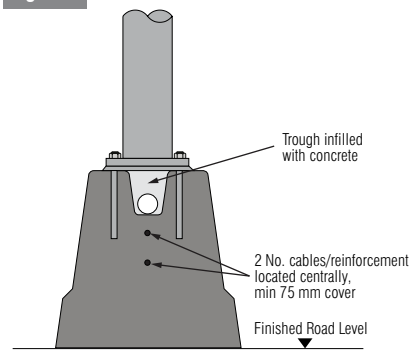
Anchorages are available for mounting 12 m and 15 m high lighting columns on wide CSB profiles.

Approved anchors include the SSR-VDP-TI Lighting Column Anchor from the Fixing Centre Ltd. (FCL) Refer to FCL Technical Data Sheet FCL/08 for anchor properties. Other approved systems may be used.

For 15 m high columns, additional reinforcement or dowels will be required at contraction joints on either side of lighting columns (Drawing CSB/1007).
Contact manufacturer for further details. It is the designer's responsibility to ensure the stability of the total system.

Accommodating anchors

Figure 2



Wide concrete step barrier with integral cable trough (TWCSB)

The location of the reinforcement within the cross-section is lowered as compared to standard CSB in order to avoid a clash with the lighting column anchor system.

For further guidance on installation of anchorages refer to Data Sheet DS/CSB/512

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