

Ref: DB 65S K120S 6m and 3m elements with extended couplings

System description

The product DB 65S 6m K120S is a precast concrete vehicle restraint system which was developed by DELTABLOC® and tested to levels T3 W2 and N2 W4 according to EN-1317-2. The system is surface mounted and has an installation length of 60m, consisting of 10 no. freestanding elements with additional anchoring elements to both ends of the installation.

The crash test levels T3 W2 and N2 W4, carried out on 6m elements, were achieved through a combination of the following factors:

- The element weight.
- The special K120S tension bar and joint design between the elements.
- Special K120S coupling system.

Installations with shorter elements and extended couplings

Where site conditions or special installation situations do not allow for the installation with standard 6m elements, then 3m elements can be installed within the overall length of 6m element chain. Similarly, extended couplings of 107mm and 117mm can be used to achieve installations with tighter curve radii.

The following table shows the minimum curve radii which can be achieved using DB 65S 6m and 3m elements, with standard and extended couplings:

Product	Length	Connection	Curve-Radius
DB 65S 3m K120S	3m	Coupling 97mm	22m
DB 65S 3m K120S	3m	Coupling 107mm	17m
DB 65S 3m K120S	3m	Coupling 117mm	12m
DB 65S 6m K120S	6m	Coupling 97mm	43m
DB 65S 6m K120S	6m	Coupling 107mm	33m
DB 65S 6m K120S	6m	Coupling 117mm	24m

The system DB 65S K120S was developed to be used with 6m elements. Because 3m elements are lighter and shorter than standard 6m elements this will lead to an increased dynamic deflection of the system during a vehicular impact.

To demonstrate this a numerical simulation, Report: 21_IND_EVIDENT_TB41_VAL_V2 - 2021-11-08, was carried out to evaluate the influence of 3m elements on the performance level T3 W2 of the system. The simulation variation with 3m elements and 72m installation length, including terminal anchoring, showed that the increased amount of couplings in the installation length lead to a higher displacement, resulting in a working width classification W3.

The use of extended couplings 107mm and 117mm with 6m and 3m elements allows for larger gaps between the elements, which in turn will result in an increased dynamic deflection of the system during a vehicular impact. The measured increased dynamic deflection can only be determined through either crash testing or by carrying out a numerical simulation of the systems.

Summary

The working width of the systems through the use of shorter elements or extended couplings cannot be guaranteed. However, because of the same K120S tension bar, K120S coupling system and the same system weight per linear meter, we expect that the containment levels T3 and N2 will not be negatively influenced by the use of shorter elements or extended couplings.

We trust the above information is satisfactory, however If you require any further information please do not hesitate to contact.

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