BISON PRECAST

a Forterra brand

TECHNICAL GUIDANCE NOTE

End cover to prestressing tendons - 20 November 2017

The aim of this technical note is to explain why the ends of prestressing tendons do not require cover or protection when used in normal circumstances.

Part A of the building regulations, states that any structural work using reinforced, prestressed or plain concrete should be designed in accordance with the relevant Eurocodes.

Clause 4.12.3.1.1 of BS8110-1 states that under normal conditions the ends of individual pre-tensioned tendons do not require concrete cover and are not required to be cut off flush with the end of the concrete member. In addition clause 4.12.3.1.2 states that the minimum cement content should not be reduced below 300 kg/m3. Unfortunately there is no like for like clause in the Eurocodes which is a major oversite as the method of manufacturing prestressed slabs / beams is common practice throughout the world and does not allow for cover to the ends of the individual wire/strands. In light of this omission the advice in BS 8110 is put forward as the most up to date and relevant information regardless of the status of the British Standards.

The normal usage for precast prestressed beams is in buildings with cavity wall construction where the ends of the beams bear onto a dpc on the inner leaf of the cavity wall. In accordance with BS 8103-1:2011, table 10 the exposure condition is class XC3 for ground floors. Table A3 of BS8500-1 states that the minimum designated concrete for exposure class XC3 is a strength of RC40/50, which according to Table A15 of BS8500-1 should have a minimum cement content of 340kg/m3. All Forterra Precast prestressed beams are manufactured using concrete with a cube strength greater than 50N/mm2 and a minimum cement content above 350kg/m3. Thus Forterra beams meet the requirements for XC3 exposure conditions.

Many processes of deterioration of concrete only occur in the presence of free water. As such the structure should be designed, wherever possible, to minimize uptake of water or exposure to moisture. This has been achieved by the introduction of a dpc and the fact that the beam end is within a cavity wall.

In summary:

- The British Standards do not require end cover or protection.
- Bearing on to the inner leaf of a cavity wall can be classed as normal.
- The grade of concrete used is greater than that required for the exposure class.
- Free water will not be present within the cavity.
- Building Regulations do not state a requirement for end cover or protection.

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