

**Refer to  
Circular no.  
202**

**Required Combination Types for Durable & Green  
Reinforced or Prestressed Concrete Elements  
(Updated)**

June, 2016

**For Substructure**

| Options        | Lowest Nominal Concrete Cover (mm) | Maximum W/C Ratio | Minimum Combination Content <sup>C</sup> (kg/m <sup>3</sup> ) | Composition                |
|----------------|------------------------------------|-------------------|---|----------------------------|
| 1 <sup>D</sup> | 50 <sup>A</sup> , 75 <sup>B</sup>  | 0.45              | 360   | PC with 66% to 80% GGBS    |
| 2              | 50 <sup>A</sup> , 75 <sup>B</sup>  | 0.40              | 380   | PC with 36% to 55% Fly Ash |
| 3 <sup>D</sup> | 50 <sup>A</sup> , 75 <sup>B</sup>  | 0.35              | 380   | PC with 36% to 65% GGBS    |
| 4              | 50 <sup>A</sup> , 75 <sup>B</sup>  | 0.35              | 380   | PC with 26% to 35% Fly Ash |

**For Superstructures**

| Options         | Compressive Strength Class (Cylinder/Cub) | Lowest Nominal Concrete Cover (mm) | Maximum W/C Ratio | Minimum Combination Content <sup>C</sup> (kg/m <sup>3</sup> ) | Composition                |
|-----------------|---|------------------------------------|-------------------|---|----------------------------|
| 5               | ≥ C45/55 *                                | 30                                 | 0.35              | 380   | PC with 26% to 35% GGBS    |
| 6               | ≥ C45/55 *                                | 30                                 | 0.35              | 380   | PC with 16% to 20% Fly Ash |
| 7 <sup>D</sup>  | C40/50                                    | 30                                 | 0.35              | 380   | PC with 36% to 65% GGBS    |
| 8 <sup>D</sup>  | C40/50                                    | 30                                 | 0.35              | 380   | PC with 26% to 35% Fly Ash |
| 9 <sup>D</sup>  | C32/40                                    | 30                                 | 0.4               | 380   | PC with 66% to 80% GGBS    |
| 10              | C32/40                                    | 30                                 | 0.4               | 380   | PC with 36% to 55% Fly Ash |
| 11 <sup>D</sup> | C32/40                                    | 30                                 | 0.45              | 360   | PC with 36% to 65% GGBS    |
| 12 <sup>D</sup> | C25/30                                    | 35                                 | 0.50              | 340   | PC with 66% to 80% GGBS    |
| 13 <sup>D</sup> | C25/30                                    | 35                                 | 0.50              | 340   | PC with 36% to 55% Fly Ash |
| 14 <sup>D</sup> | Blinding (Non structural elements)        | --                                 | 0.55              | 220   | PC with 36% to 65% GGBS    |
| 15 <sup>D</sup> | Blinding (Non structural elements)        | --                                 | 0.55              | 220   | PC with 26% to 35% Fly Ash |

Reference code number: BS 8500-1:2006

A) For concrete cast against blinding.

B) For concrete cast directly against the soil.

C) For maximum aggregate size of 20 mm.

D) Inclusive of low early strength option.

► PC = Portland Cement.

► GGBS = Ground Granulated Blast furnace Slag.

\* Allow for compressive strength testing at 56 days.

\* Addition 4 to 7% Silica fume for classes ≥ C80/100 is recommended.