

## SECTION 5. CORE FILL GROUT & GROUTING

All **mortarless** masonry walls and piers must be fully grouted, regardless of whether or not they are reinforced, as it is the grout that permanently bonds the masonry units to each other. Although most **mortarless** elements will contain reinforcement, minor structures such as drainage pits and temporary in-ground works may not need to be reinforced.

Core filling grout must be a free flowing concrete with a small sized coarse aggregate. Typically core filling grout is specified as C25/30 concrete (30MPa cube strength) with maximum 5mm coarse aggregate and 230 slump.

The following summarises the requirements of BS 5628-1:2005 and BS 5628-2:2005:

- The tabulated values of  $f_k$  are only valid if the 28-day cube strength of the grout is **no less than the compressive strength of the masonry unit**. (Part 1 Clause 19.1.9)
- The grout should be specified in accordance with BS 8500-1. (Part 2 Clause 6.9.1)
- The maximum size of aggregate should not exceed the cover to the reinforcement minus 5mm. (Part 2 Clause 6.9.1) (This is an impractical recommendation and it is recommended that the requirements of AS 3700 be adopted i.e. the maximum size of the coarse aggregate should not be greater than the cover to the bars or fitments or 20mm, whichever is the smaller.)
- The grout should have a **minimum strength of C25/30** specified in accordance with BS 8500 or equivalent. (BS 5628-2:2005 Clause 10.1.2.5)
- The grout should have **minimum 315 kg/m<sup>3</sup> cement content** for C25/30 grout increased as necessary for higher grades of concrete. (see reproduction of Table 15 in Section 4)
- The **minimum free water/cement ratio** should be as shown in the reproduction of Table 15 (refer Section 4).
- The workability of core filling grout should be appropriate to the size and configuration of the void to be filled and where slumps are specified these should be between 75mm and 175mm for unplasticised mixes. Workability should be considered, and the use of plasticised or superplasticised mixes should also be considered. (BS5628-2:2005 Clause 6.9.2) (Note that the specified slump is typically 230mm in Australia, and a slump in this order is highly recommended)

The grout must have pouring consistency that enables the cores or cavities to be completely filled and reinforcement to be completely surrounded without segregation of the constituents. Thoroughly wetting the block cores immediately prior to grouting is essential to achieve this outcome.

Grout should not be compacted by mechanical vibration as this can result in failure of face shell. As stated above it is recommended that all block cores be thoroughly wet down immediately prior to grouting and it is also recommended that the grout be compacted by minimal rodding only to remove any trapped air.

Upon completion of the last lift of **mortaless** blockwork, top up the grout after a waiting period of 10 to 30 minutes and rod lightly to merge with the previous pour.