SECTION 4. CORE FILLING GROUT and 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 20 or 25MPa concrete (N.B. cylinder strength, not cube strength) with 5mm or 7mm coarse aggregate and 230 slump.

The following summarises the requirements of AS 3700:

- The minimum characteristic compressive strength (f'_c) shall be 12 MPa (Clause 11.7.3).
- Where the grout is to provide corrosion protection to reinforcement it shall have a minimum cement content of 300 kg/m^3, the cement being type GB or GP (Clause 5.8)
- Cement shall comply with AS 3972 (Clause 11.7.2.1)
- The design characteristic compressive strength of the grout (f'_{cg}) shall be the characteristic cylinder strength at 28 days (f'_c) but it shall not exceed 1.3(f'_{uc}) of the masonry units. (Clause 3.5). Note that the grout strength can exceed 1.3(f'_{uc}) but the additional strength shall be disregarded for design purposes.
- The design cross sectional area of grout is the design cross-sectional area of the block minus the plan area of the top surface of the face shells to the extent of any external chamfers and the extent of horizontal portions. (Clauses 4.5.1 and 4.5.7) (Note that the area subtracted from the design cross sectional area of the block is equivalent to the bedded area in mortared hollow masonry and the depth of any raking.)
- 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 (Clause 11.7.1). Thoroughly wetting the block cores immediately prior to grouting is essential to achieve this outcome.
- The maximum size of the coarse aggregate should not be greater than the cover to the bars or fitments or 7mm, whichever is the smaller (Clause 11.7.2.5).
- Despite what is stated in Clause 12.8.2 grout should not be compacted by mechanical vibration as this can result in failure of face shell. It is recommended that all block cores be thoroughly wet down immediately prior to grouting and that the grout be compacted by minimal rodding only to remove any trapped air. Note that air can readily escape the core spaces because the blocks are dry stacked.
- Upon completion of the last lift of ***mortarless*** blockwork, top up the grout after a waiting period of 10 to 30 minutes and rod lightly to merge with the previous pour. (Clause 12.8.2)
- Sampling and testing of grout, when required, shall be in accordance with the requirements for concrete given in AS 3600. (Clause 12.8.3)