



Specialist Services to the  
Construction industry

Phone 01752 561300

Fax 01752 605900

Email [sales@swconcreterepairs.co.uk](mailto:sales@swconcreterepairs.co.uk)



## Technical Advice Note No 5

### Factors Affecting Concrete Performance

Design Suitability	<p>Insufficient Consideration at design stage.            Poor structural design e.g.: long, slender beams            Incorrect loading calculations            Inadequate provision for movement expansion joints            Incorrect use of reinforcement e.g.: wrong size bars or overall design</p>
Mix Design	<p>Incorrect cement specified            Wrong type or grading of aggregates            Incorrect water/cement ratios</p>
Workmanship	<p>Failure to observe design details            Incorrect batching and mixing / inconsistent mixing            Incorrect water/cement ratio            Inadequate compaction/vibration            Poor shuttering or formwork            Incorrect use of reinforcement            Allowing corrosion promoting chemicals into the mixing/placement process            Inadequate cover to steel reinforcement            Insufficient curing</p>
Environmental	<p>Excessive mechanical stresses – overloading/subsidence/            unanticipated movement            Excessive temperature changes during placement and during design life            Frost attack – freeze/thaw action causing surface damage            Physical damage such as collision or impact damage, explosion, abrasive wear            Damage from plants and micro organisms, algae, lichen etc            Chemical attack from acids, chemical spillages, acid rain, seawater (salts)            Carbonation attack            Chloride attack            Alkali Silica Reaction (ASR), Electric fields (causing electrochemical reaction)            Shrinkage (plastic or drying shrinkage) / Reactive ironstone etc.</p>