TECHNICAL BULLETIN No 5
Concrete Testing

OBJECTIVE
To establish the mechanism of degradation in concrete, causing reinforcement corrosion and spalling

STRUCTURE
Various, they can include car parks, bridges and commercial/corporate buildings

OVERVIEW
In order to fully understand the correct repair scenario for a structure it is essential to understand the mechanism of degradation.

In concrete this can be attributed to several external effects, which allow the encased reinforcing steel to become de-passivated and corrode. The passive environment being initially created by the highly alkaline cement.

The main drivers are:

**Carbonation.**
A lowering of the alkaline environment caused by CO₂ permeating the concrete matrix

**Chlorides**
These may be either cast in with the original concrete mix, or ingressed from a maritime environment, or de-icing salts applied to roads.

Testing of a structure will generally identify

- Cover to the reinforcing steel.
- Hammer testing to diagnose delaminated areas.
- Carbonation testing to validate general depth where an alkalinity below circa 9.5Ph exists.
- Chloride sampling by taking drilled dust samples in 3 No graduations for laboratory analysis.
- In chloride effected structures further analysis by ½ cell contour plotting may be relevant.

Given the above data then decisions can be taken with confidence, in respect of remedial measure in order to slow the deterioration.

Testing needs to be undertaken by personnel experienced in both deterioration mechanisms and remedial solutions, such that the 2 may be harmonised.

T : 08458 994444
F : 01543 480676
E : enquiries@makers.biz
W : www.makers.biz

Makers Office Building 4,
Shenstone Business Park
Lynn Lane, Shenstone, WS14 0SB

Registered in England No: 6348341 Registered Office as above