STRUCTURAL RENOVATIONS

*Repair, Reinstate, Restore*

# TECHNICAL ADVICE

## Fire Damaged Concrete

When a fire has occurred, there is a general requirement for an immediate and thorough appraisal to be carried out. Temporary propping may be required.

The fire resistance of concrete structures is usually well above those of minimum requirements with a resultant reserve of strength which enables the structure to withstand the fire and can be repaired.

Reinstatement will be preferential to demolition and rebuilding as the capital outlet is less and direct savings can be made as a result of earlier reoccupation.

The residual strength of structural-quality concrete exposed to fires of up to 300°C is not severely reduced. Concrete exposed to temperatures greater than 500°C can have its compressive strength reduced significantly and advice may be required from a structural engineer.

As a result of heating the colour of the concrete can change. This may be used to indicate the temperatures reached during the fire. A pink discolouration achieved during temperatures of 300°C and above generally coincides with a significant loss of concrete strength.

In addition to the damage to the concrete there is a risk of a loss of strength to the reinforcement as high tensile steel can revert back to mild steel if exposed to severe heat causing a major loss of strength to the members.

The repair of the structure begins with a visual survey and hammer test of the concrete elements. This establishes the extent of pink concrete as well as hollow and defective areas.

The concrete is broken out back to a sound substrate to remove all pink and defective concrete. The reinforcement is then prepared and supplemented if necessary.

A polymer modified concrete repair mortar is then used to reinstate the prepared areas back to the original surface profile by spraying, pouring or hand placed techniques

Furthermore the concrete can be enhanced using specialist stain and smoke covering coatings or pigmented anti-carbonation coatings.

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