

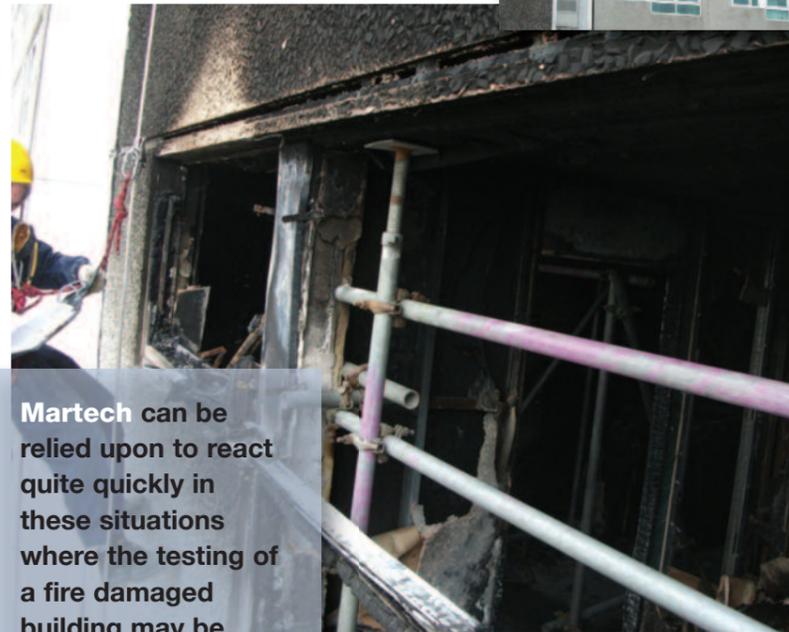


## Fire Damaged Concrete

Building fires are unfortunately not a rare event and whilst the safe evacuation of occupants is the priority the building fabric will suffer from exposure to not only the heat of the fire but also the rapid cooling that can occur with water being sprayed to douse the fire.

Reinforced concrete can be affected by this process and **Martech** engineers are often requested to inspect and test fire damaged concrete similar to the high rise block of flats in the south of England that had suffered from a fire within one of the flats on the ninth floor.

**Martech** engineers abseiled the external elevations and found no severe signs of distress to the panels although there was some very localised pinking of the concrete, classic signs of heat affected concrete, and soot build up on the elevations. These observations together with test data and measurements were reported back to the client for their structural engineers to assess and design a repair specification.



**Martech can be relied upon to react quite quickly in these situations where the testing of a fire damaged building may be needed in an emergency.**

## Floor Slab Fire Damage



Floor slabs built of reinforced concrete are very durable and robust and widely used for storage and access roads

**Martech** were recently requested to carry out a concrete condition survey to a concrete slab at a motor salvage yard where a vehicle fire had possibly damaged the concrete.

Cores were taken to determine the concrete make up and strength from the areas of fire damage and adjacent non effected areas as a control and tested in a laboratory.

**Martech** engineers also inspected the sub base construction in the areas of greatest damage putting all the information, photographs and test results together with repair recommendations in a detailed report to the consultant structural engineers.

**Wherever reinforced concrete is used be it on high rise buildings or floors Martech have the expertise and experience to investigate problems and provide correct remedial solutions.**



Take a look at [www.consultrve.co.uk](http://www.consultrve.co.uk)

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# THIS CAN HAPPEN!

## Falling masonry kills diner at restaurant

An horrific accident recently occurred in London when a very substantial lump of masonry fell from the façade of a building, onto part of a busy restaurant below, hitting a customer on the head with fatal consequences.

This type of incident is thankfully very rare but nevertheless highlights the danger that old buildings can present if not properly and regularly inspected. This accident is the subject of an inquiry, so no blame has as yet been apportioned, **but the local council has urged business owners to check that their structures are safe.**



## THIS CAN BE AVOIDED...

**Martech** engineers carry out many making safe inspections and specialise in removing loose material from buildings, including containing large unstable areas of facades with mesh to prevent pieces falling as an interim measure.

## Martech achieve SAFEcontractor status

**Martech** are pleased to announce we have recently received accreditation from SAFEcontractor, a programme which recognises very high standards of health and safety practice amongst UK contractors. Under the SAFEcontractor system, **Martech** underwent a vetting process which examined the health and safety procedures and track record for safe practice, with a particular focus on our industrial rope access or abseil activities. Having met those high standards **Martech** are now on the SAFEcontractor database accessible to registered users via a web site [www.safecontractor.com](http://www.safecontractor.com).



## Steel Pipe Bridge Inspection

Bridges come in many guises and are put to many uses including the support of essential services pipelines spanning over waterways and roads etc..



Such a steel pipe bridge was needing to be replaced that spanned the River Lea in north London but before the old bridge could be lifted out of place the structural engineers in charge had to know the condition of the structure to assess its integrity for safe lifting.

**Martech** engineers carried out a thorough inspection along the full length of the steel bridge visually inspecting and recording defects and hammer tapping all connection bolts and rivets.

The results of the inspection were stated back to the client in a detailed report highlighting areas of possible concern that may affect the lifting process.

In making their inspections **Martech** engineers made use of their high level abseil experience, using a method of aid climbing on this open structure over water to achieve safe access.

**Martech** used their extensive knowledge and experience of materials corrosion to provide this client with the essential information they needed to ensure a problem free and safe lifting of an old steel pipe bridge to be replaced by a new structure.



Abseiling high rise buildings is an every day occurrence for the engineers at **Martech** and when they were recently requested by consulting engineers to inspect the brickwork of a 20 storey block of flats in London their ropes were at the ready.

The tower block is of reinforced concrete frame construction with brick infill panels originally built over forty years ago and undergone several refurbishment programmes including replacement windows etc.



**Martech** engineers accessed all of the external facades to inspect the brickwork, locate wall ties and calculate their density and inspect their condition by borescope and record a log of all visible defects onto drawings. Photographs were also taken to record these defects including other defects to windows, concrete and joints etc. The brickwork panels were also measured with basic dimensions of the panels put onto drawings for estimation of quantities for remedial work.

Abseiling puts the **Martech** engineers close to the building surfaces for economic, accurate and detailed inspection enabling correct repair specifications to be designed and budgeted for.

## Concrete Underground Duct Survey

Large hospitals use underground ducts and tunnels for the containment of essential services such as power cables, heating and water piping etc, some even have delivery traffic moving underground between buildings on large sites.

**Martech** carried out a concrete condition survey to a reinforced concrete duct system on a large Midlands hospital to determine the nature and extent of any concrete deterioration problems and to report these findings to the client consulting engineers.

**Martech** engineers are fully trained for working in confined spaces and proceeded to survey the concrete duct system with no disruption to the normal workings of the hospital.



The structure was found to be suffering from carbonation of the concrete (a natural ageing process) and showing signs of water ingress from above. Chloride levels were mainly within acceptable limits, with locally high levels from road salt ingress.

**Martech** submitted a detailed report to the consulting engineers with a concrete repair and waterproofing recommendation involving steel reinforcement corrosion inhibitors, galvanic anodes and a protective coating system to the exposed concrete surfaces.

Another example of **Martech** engineers going from abseiling high buildings one week to underground tunnels the next.



## Filler Joist Survey

Filler joists have historically been widely used as a method of constructing reinforced concrete floors on multi floor buildings, in particular those constructed from concrete or structural steel frames. In some cases there are now quality problems associated with inadequate concrete compaction and poor cover around the embedded steel resulting in possible loss of fire protection and strength..

**Martech** were called in by consulting engineers to carry out a concrete condition survey on a building being used as a storage facility in north London where the structure is built from a steel frame with filler joists and concrete floors.

As is often the case with this method of construction **Martech** engineers found areas of advanced carbonation of the concrete, low cover and some poor compaction around the steel joists. Also earlier repairs carried out by others were found to be failing and inadequate for the job.

**Martech** recommended that the structural engineers should initially assess the loading capacity and fire protection of the floors and a repair specification be designed around the use of cathodic protection to protect the steel and placement of the repair concrete by spraying (guniting).

The depth of experience **Martech** can bring to these situations can ensure that the correct diagnosis is made and effective repairs specified for the particular problem.

