Concrete System Buildings - Need for Period Inspection (Dec 01)

Precast concrete systems were quite widely used in the 1950s to 1970s for the construction of schools, offices and other buildings. Concrete components were mainly reinforced or pretensioned but post-tensioned construction of roof and floor structures was adopted in some systems, eg Intergrid and Laingspan, particularly where larger spans were required in, for example, assembly halls.

During the late 1970s evidence of corrosion of tendons in post-tensioned components came to light in some Intergrid and Laingspan buildings. The corrosion was associated with exposure of tendons to moisture in voids in ducts and sometimes also the presence of chlorides. Investigations at the time concluded that periodic inspection by an experienced engineer is the best available means of obtaining indications of the condition of post-tensioned and pre-tensioned structures and thus of substantially reducing the risk of unexpected failure\(^1\). The task of determining the soundness of steel tendons is especially difficult for post-tensioned construction since tendon corrosion may not produce any visible signs until sudden structural collapse occurs.

The earliest school and other buildings with these forms of construction are now approaching fifty years old. Their post-tensioned tendons may be expected to be in poorer condition and the risk of sudden structural failure to be greater now that in the 1970s unless risk mitigation works have been carried out in the meantime. SCOSS draws the attention of building owners and their professional engineering advisers to the continuing need for periodic inspection and appraisal of these building structures in order to control the risk of structural failure.