

Early Deterioration in New Buildings

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In Mumbai, it is common to come across old buildings needing major repair. Occasionally we also find buildings, which are in a dilapidated condition and unfit for occupation. When a building has given you about 25 to 30 years of service without much maintenance or repair, it is reasonable to expect that it would need major repair sooner or later. The main causes for this are ageing and inadequate maintenance and care. However, occasionally we come across relatively new buildings needing major structural repair. With an age of less than 15 years (in some cases even less than 8 years) such buildings are found to be in a very bad structural and general health. This premature deterioration is largely due to the poor quality of construction rather than ageing and maintenance. Let us understand the probable causes for this.

Materials:

Bad quality of the materials used for construction can lead to early deterioration. The most common suspect is the sand, which is used in almost all works. If the sand used had excessive silt, organic materials or chlorides (such as the creek sand), it can adversely affect the basic skeleton of the building consisting of RCC, masonry and plaster. Chlorides lead to early and faster corrosion of reinforcement. If the external walls of the building are made of 6" thick concrete block walls cast with such sand, the situation can become worse. Use of high grade cement for masonry and plaster can lead to cracking due to the high heat of hydration released during mixing. Bad quality of other materials also cannot be ruled out.

Workmanship:

Substandard workmanship during construction can also affect the structure adversely. In RCC, this can be in the form of honeycombing of concrete (porous concrete) or inadequate concrete cover to reinforcement, or both. Honeycombing is due to insufficient compaction of concrete, whereas inadequate cover is due to improper placement of bars. These lead to early corrosion of reinforcement especially in thin structural members. In masonry and plaster, bad workmanship may be in the form of loosely filled joints (within walls or between external walls and beams/ columns) and hollow plaster respectively, both of which lead to early and excessive seepage. If your external walls are made up of 6" thick concrete blocks, the situation can become worse. Some of these deficiencies may become evident only after the first 5 to 7 years. Lapses in workmanship may also exist in plumbing, waterproofing (toilets and terrace) and other works.

Proximity to sea/ creek:

Many of the relatively new but severely distressed buildings in Mumbai and Navi Mumbai are found in the locations, which are close to sea or creek. The corrosion of reinforcement observed in the structural members (columns, beams, slabs) in some of them can be alarming. It is mainly because of the high concentration of chlorides and sulphates in the ground water and saline weather, aggravated by substandard materials and workmanship. The high and low tides of the sea can cause severe structural distress, especially on the ground floor. Dampness can rise from soil also and an absence of a damp proof course at the bottom of the walls can allow the dampness to rise quite high.

Other causes:

In some cases it is found that during its construction, the work was stopped, probably due to lack of permissions or due to a dispute, and the structural frame was exposed to sun, rain and misuse for a long duration. Such prolonged exposure to weather can reduce the strength and durability of the building frame. Rampant alterations can lead to destabilization of external walls, especially if they are concrete block walls; and this can cause excessive seepage during monsoon. Imposing elevations, excessive facades, narrow ducts etc create inaccessible areas, which can be difficult to attend to during routine maintenance.

The causes of premature deterioration in relatively new buildings are different from those for old buildings and therefore the approach for the repair (or rather restoration) of such buildings should be quite different from the repair of old buildings. The process should start with a thorough visual survey by your consultant followed by non-destructive testing of the structural frame and chemical tests on concrete, reinforcement and ground water. Repair/ restoration of the main structural frame should be accorded highest priority while allocating funds for the work.

If the foregoing discussion applies to your building, you need to act quickly.

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