Will I live to an old age asketh the building

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Why the nominal design working life of a building is not its actual lifespan, and the importance of materials, construction and maintenance.



With the increase of highrises in the country, the built industry is often being asked what is the lifespan of these.

The Ingalls building in America, built in 1902, is the world's first reinforced concrete skyscraper and at 115 years old, it is still in use today. Built in 1872, the Delaware building, constructed in steel, is one of America's early skyscrapers and at 145 years old, it still stands today.

On the contrary, there are many newer buildings around the world that have deteriorated and fallen into disuse.

At par with the international building design codes, the Malaysian Standard defines the design working life of a common building to be 50 years. What does this mean? Will the building last only 50 years and fail after?

Buildings are designed to resist environmental forces and withstand environmental exposure conditions.

At present for Malaysia, windstorms are the only environmental forces buildings are designed to resist. These forces are computed based on a mean recurrence interval, and this interval is the design working life. Therefore, the 50 years

simply means that the forces are calculated using events that on average will occur once every 50 years.

As for environmental exposure conditions, keeping the steel components rust free in both reinforced concrete and steel building is important to maintain the structural integrity of the building. For a reinforced concrete building, the design life determines how deep from the face of the concrete the steel reinforcements are placed and the type of concrete to be used.

Therefore, the design working life, 50 years or otherwise, is not the determinant of the lifespan of a building.

What then dictates the lifespan?

The choice and quality of materials and the quality of construction.

And like all objects, buildings have lifecycles. These vary for the different building components. Some components, for example, the mechanical systems and sealants around glazed facades, have a far shorter lifecycle than the primary structural frame. Taking the Ingalls building, for example, although the building is still standing (primary structural frame) the mechanical plants in operation would have been replaced with newer systems. The length of a component's lifecycle is a function of its product and built quality, inspection, maintenance and repair program.

So, it is safe to conclude that buildings, highrises included, designed and built right and appropriately inspected, maintained and repaired are likely to have long lifespans. Like a born healthy person on a good and holistic lifestyle.

Food for thought: With this knowledge, how can you influence the build and maintenance quality of Malaysia's buildings - as a developer, as a purchaser, as an operator, as a design professional, as a builder, as an educator?

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Pink Musings are editorials on our encounters within the Malaysian built environment and as a contribution towards upholding it.