



Telford Gardens and Hopewell Centre have weathered the years and Hong Kong's unique conditions well.

BUILDING LIKE A SAUSAGE MACHINE

To continue with building construction methods, I would like to introduce a century-old process that may have escaped notice.

Slipform construction has been used successfully for many decades as it is efficient and economical.

It involves casting concrete to form a building from a mold, which "slips" upward along with the construction process.

It is almost like using a jelly mold, but instead of a predetermined shape dictated by the mold, it is a continuous and uniform tower structure formed by gradually jacking the mold upward as concrete is poured.

The construction process is like a sausage machine, but its success depends on a building design with straight vertical walls and small apertures for windows and other perforations.

The concrete must also have high strength and the ability to dry and harden quickly so the newly cast concrete structure below can be used to support the jacking process of the rising metal formwork being used as a casting mold.

If the correct procedure and appropriate materials are used, the process is quite simple and repeatable.

As an example, the Hopewell Centre, built in the 1980s, was able to achieve a three-day cycle for each floor, which is at least twice as fast as building by the conventional method of using wood shutters supported by scaffolds for columns, wall and slab casting.

It can also do without large tower cranes to lift shutters and other tools and materials.

This seems to be a neat way to construct buildings, especially tall blocks.

Indeed, this method has been employed for a variety of buildings.

Here, apart from the 66-story, 215-meter-tall Hopewell Centre, the Wo Chung Building adjacent to it, the Panda Hotel in Tsuen Wan and KITEC in Kowloon Bay, many residential buildings on Broadwood Road in Happy Valley and Telford Gardens are successful examples.



Nuts and bolts

Edmund Leung

Numerous public housing projects in the last century were also built using this efficient method.

For industrial applications, the tall chimney shields of Castle Peak Power Station, at 250 meters high, were built in the 1980s.

They have stood up to the weather for more than 40 years with minimum maintenance, not to mention the many other industrial buildings and structures that continue to face the test of time.

So why is this efficient method not widely adopted for Hong Kong, where speed and cost are judged as top priorities?

If you talk to some architects, they may shake their heads and condemn it as a disaster for prestigious buildings that favor a varying vertical profile, especially those with large window openings or aesthetic architectural features.

Birthday cakes cannot be made in fancy shapes without substantial additional manual work to add cream for topping, and this is obviously not workable for large-scale industrial concrete application involving buildings.

Different methods of building construction have their own advantages and disadvantages, and what is appropriate for one type of building may not work for others.

In any construction team, close cooperation between the architect, engineers, surveyors and contractors is vital to success.

Buildings must be economical to construct, able to withstand weather for up to a century and be easy to maintain.

Even more importantly, they must be safe and comfortable for occupants. I am pleased to see most buildings here meet these criteria.

Veteran engineer Edmund Leung Kwong-ho casts an expert eye over Hong Kong's iconic infrastructure