

The small elevators of the Excelsior Hotel, Hong Kong.

This 1000 room hotel has two 4-car groups of unusually small - 1200KG - elevators. Both groups start from floor zero. The Low-Rise group serves 17 floors and the High-Rise group 15 floors.

The Excelsior was planned during the early 1970's. At that time the writer was the sales manager of the of the elevator division of the Jardine Engineering Corporation, the agents for the Schindler Group. We were asked to submit a tender for a group of 6 large cars serving all 32 floors above floor zero. Unfortunately this was not a good plan. The service qualities of this group would have been unacceptable. Dissatisfied guests would be detrimental for all parties concerned. Our reputation would be at stake as well.

By the time we got involved the basement level and elevator pits had already been cast in reinforced concrete for 6 large elevators with a contract load of about 2000KG. It was obviously going to be costly and difficult to change the elevator plans. We submitted our bid for the 6-car group but were obliged to mention that the service qualities of this group would be unsatisfactory. The logic for recommending a major change of the elevator plan is of interest.

An elevator with a contract speed of say 6 m/s can theoretically travel a distance of 32 floors (say 128 meters) in 22 seconds. For door closing and opening, acceleration and deceleration we must add 11 seconds, i.e. a non-stop trip to floor 32 takes about 33 seconds. This looks good; however, a full car, say 18 passengers with a choice of 32 destinations, will make about 13 or 14 probable stops. Each stop will increase the UP trip by a minimum of 13 seconds for door operation, acceleration, deceleration and passengers entering and leaving the car. Consequently during periods of **heavy traffic** the UP trip only may well take 200 seconds! During the DOWN trips the cars will make a lower number of stops because the cars may reach full load after say 5 or 6 stops and by-pass other DOWN calls. The average Round Trip Time for heavy traffic is likely to be at least 5 or 6 minutes. During these traffic conditions all passengers and particularly DOWN going passengers will experience long waiting times. During heavy traffic the transport capacities of the traditional group as planned, i.e. with UP / DOWN buttons on the landings and floor buttons in the cars, would be insufficient. The group would be out of control and its time-dependent service qualities unacceptable.

We then demonstrated that we could fit 8 smaller elevators within the space that was planned for the group with 6 large cars. With 4-car groups for Low- and High-Rise zones the number of floors served by each group was greatly reduced. Average Round Trip Times and transport capacities (efficiency) were greatly improved for all traffic conditions. After many discussions this - probably less costly - configuration was accepted.

After completion the writer was a regular guest of the Excelsior Hotel and happy to see the two groups performing as expected. Presently the planning and performance of groups of elevators can be greatly improved but that is another story.