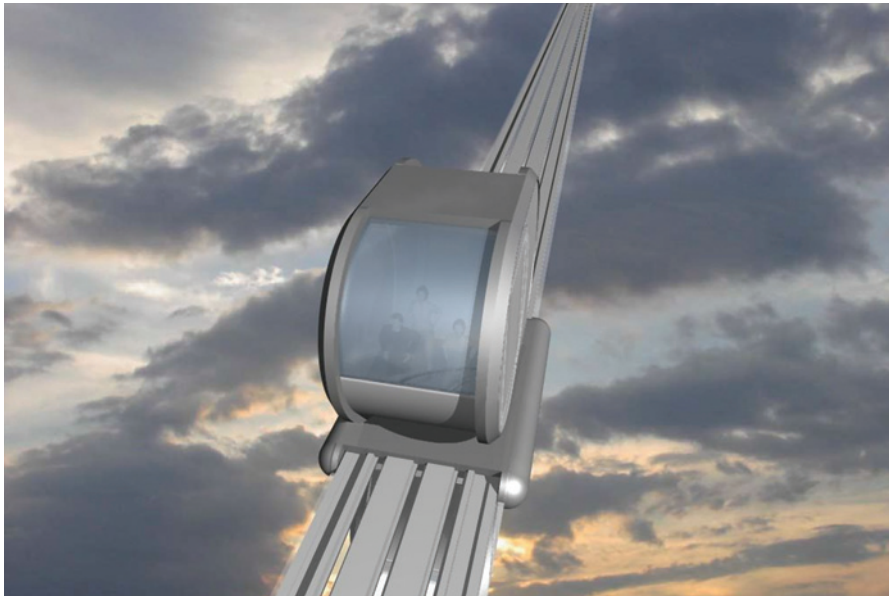


Lerch Bates gives The Shard a special lift

Lerch Bates began work on planning the vertical transportation for The Shard in 2000. It will have been a 12-year marathon for the company when it finally completes the handover inspections for the 40 lifts and escalators in 2012, writes its Chairman, Adrian Godwin.



Above: A visualisation of the Skytrak multi-car lift system.

As with all the monumental buildings where Lerch Bates takes the responsibility for the design of the vertical transportation solution – alongside the architect and the other professionals in the design team – there is a delicate balancing act to perform.

We have to ensure the architect's vision is maintained; that the solution will meet the exacting design requirements set by the property industry for Class A buildings; that the design is fully integrated

with the structural and MEP professionals; and finally, that our design has been refined through many iterations so as not to take one square metre of floor space more than absolutely necessary to achieve all of the above.

As a result, the vertical transportation systems within The Shard could be described as fitting together like the proverbial Swiss watch! In many areas the luxury of having machine rooms for the winding machines,

controls and drives all on one floor is just not possible. In many cases these are stacked on up to three floors directly above each other. This has resulted in unusual CCTV and communication links between machine room areas in order to work efficiently and safely.

I am sure it hasn't escaped the readers' notice that this building is, for its greatest height, a tapering structure that has an ever-reducing footprint as one moves up the tower. Fortunately we were able to adopt the preferred stacking of uses within this unique multi-use tower with the most densely occupied areas at the base i.e. the offices, rising through the hotel and public viewing levels with, finally, the lightest density spaces being the exclusive apartments at the uppermost floors.

Another challenge was how to provide separate entrances and reception areas at the base of the building for all the different user groups so they could each approach their own dedicated lift lobby and lift service.

At a very early stage we were convinced of the need to design in several sky lobbies where users would transfer from fast shuttle lifts to slower local lifts that would stop at their ultimate destination floors. In this way we could move more people more quickly up the tower and again save space. The Shard actually has three upper sky lobbies.

In addition, we speculated and advised the developer that, within the

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timescale of the project's design and construction, double deck lifts with so-called "destination hall call control" (that's where the user 'books' their call and indicates their desired destination floor on a keypad or touch screen in the lobby) would become available. As it turns out this world-leading technology is being literally pioneered here in London within The Shard and two other high rise towers in London. For once London is leading the world with high rise building technology!

As a general rule of thumb using double deck lifts should enable the designer to use 30-40% less lift shafts with a commensurate saving in floor space. Given the slenderness ratio of The Shard we were convinced that we had to place at least two cars in as many shafts as possible, and therefore office lifts, hotel and public viewing shuttle lifts are all double deck type where users can board and alight simultaneously from two 'decks' or cabins located one directly above the other.

These types of lifts have been installed in many buildings in the past, mostly in North America, however they had suffered some bad press from the buildings' tenants essentially due to the lack of sophistication of the control systems and specifically their inability to know how many passengers were waiting for service and where they wanted to go.

The advent in the 1990s of 'destination hall call control' being applied to conventional single deck lifts held out the prospect that if this technology could be effectively applied to double deck lifts, these well known deficiencies could be overcome, given some additional core planning considerations.

Our early computer simulations of the vertical transportation systems looked very favourable in that the destination double deck (3D) control could boost the so-called "up peak" handling capacity of conventional double deck lifts by at least a further 10% with no service degradation. This was a further vindication of the approach we were taking.

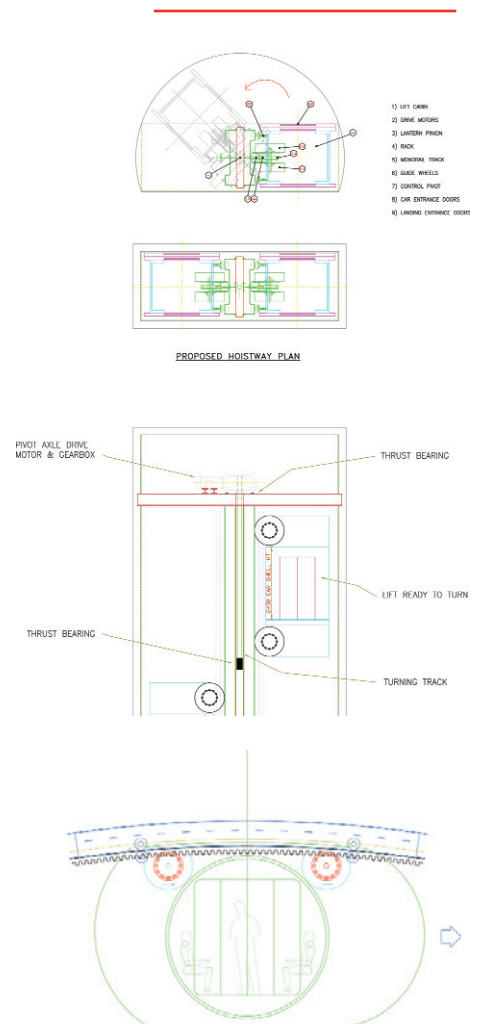
The Shard will exploit this technology to the greatest extent possible by allowing all the office users, as they enter the building, to book their calls automatically at the security turnstiles as they swipe their security cards to gain access to the building. A display screen located on each turnstile will then inform the user which lobby to go to and which car has been assigned to take them to their destination. We are proud to be doing our small part in pushing the technology along on behalf of our clients to ensure the vertical transportation services in The Shard meet the aspirations of everyone connected with the project, as well as its future users.

Not satisfied with having two cars in each lift shaft, Lerch Bates are pioneering a practical ropeless multi-car lift system, nicknamed 'Skytrak' that will allow multiple cars to travel up one shaft and down an adjacent shaft.

In addition the same technology will give the architect the opportunity to have vertical transportation following a curved or circular trajectory, thereby allowing a completely new degree of freedom to design radically new shapes of buildings and serve them very efficiently and effectively.

For further information visit, www.lerchbates.eu/index.php/about/skytrak/

Below: A lift switch assembly proposal model.
Bottom: A technical drawing of the 'skytrak' lift system, which can follow a curved or circular trajectory.



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