



SAFETY AND COMFORT AT NEW SUPER STADIUM

I described Kai Tak sports park facilities in my last article. This article will focus on the stadium's construction.

The stadium will be able to cater for a large variety of sporting events, concerts and shows. Accommodating up to 50,000, it will provide comfort in all weather for spectators.

During summer, cool air will be supplied so that they can enjoy the games or shows in comfort. A retractable roof will be fitted to the stadium to allow the show or game to go on in all weather.

When opened, the playing area for football, rugby or other sports events will be fully exposed; when closed, nearby homes will be shielded from the noise and glare of events inside.

The retractable mechanism of the huge roof employs proven and reliable mechanisms for effective operation throughout the life of the stadium.

Twin roof panels, each one half the area of a football pitch, slide open or closed.

The panels will be supported like a railway coach on bogies and steel wheels, running on steel tracks fitted to the roof structure, and pulled open or shut by cables through power winches.

When closed, the roof assembly will form an integral weatherproof and noise insulated cover.

As the function of the stadium does not allow for the placing of any columns in the open area, the gigantic size of the full roof assembly will be supported only on four concrete and steel mega-columns at the perimeter of the stadium.

Major elements of the roof truss will be assembled at ground level.

With a total weight of 5,400 tonnes, it will be lifted in one single piece to the roof level.

Lifting will be by strand jacking from ground level at the four corners supported by the mega-columns.

The remaining roof structure and its heavily insulated covering will be lifted



Nuts and bolts

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and placed by cranes capable of up to 250 tonnes per single lift. The gigantic size of the roof requires special methods of construction and assembly, due to the huge span and the need to build it to be comparatively light weight and still be able to stand up robustly in typhoon conditions.

The roof has been designed and wind-tunnel tested for this purpose, with high-strength steel and special welding technology and skills employed to a stringent standard normally used for offshore platforms capable of withstanding high wind and waves.

For size comparison, the lower member of the main roof structure, in the form of a circular steel tube, is large enough for an adult to comfortably walk through it.

Hong Kong authorities awarded the contract after a tender and careful review, to confirm proven capabilities of the successful consortium, consisting of contractor, consultants and operator.

The Home Affairs Bureau, with an expert team of architects, engineers, surveyors and site-supervision staff oversees all aspects.

The December 2019 contract award was for a HK\$30 billion design-build-operate project, for delivery in 2023.

This is an ambitious program, but when open from 2024, it should coincide with the Paris Olympics, and be in time for the 15th National Games in 2025.

The latest computer-based project control and coordination approach brings trust and transparency among all those professional teams, an all-important factor for effective quality assurance and successful delivery, to this great new world-class venue for the use and enjoyment by the people of Hong Kong.

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