EMIRATES AIR LINE
LONDON, UK

The Emirates Air Line, also known by some as the Thames Cable Car, spans 1km across the River Thames from the Greenwich Peninsular to the Royal Docks, offering spectacular views of London’s skyline. The UK’s first urban cable car, it carries up to 2,500 people per hour, including cyclists and wheelchair users, in each direction, and reaches heights of up to 90m – higher than the nearby O2 Arena.

The main focus of BuroHappold Engineering structural engineering work was to construct the three 90m towers that meet the cables at their highest point in the centre of the route. Particular challenges included the complex geometry of the sculptural steel cantilever towers, as well as their off-shore location. Completed within schedule, the Emirates Air Line opened on 28th June 2012 in time for the London 2012 Olympic Games.

The completed crisp ribbon sculptures were created in sections from raw 50mm thick steel plates which were doubly curved in Holland. It was this concept, for fabricating and erecting the towers in sections with bolted joints, that was key to the bid team, led by MACE, winning the design and build contract to take the project forward from scheme to construction. The original tender concept was to create the towers as single fabricated assemblies on the ground and lift “obelisk style” to the vertical. This could have proved particularly challenging for the south tower that was founded in the Thames.

The off shore location of the south tower gave us the biggest foundation challenge. With a punishing programme that required the cable car to complete with only 12 months on site, the original concept to build a coffer dam to allow construction of the foundation at the base of the tidal Thames would have been risky. The solution that BuroHappold delivered was a foundation constructed above the river's high water level on steel cased piles built from a jack up barge. The piles were clad to create the illusion of the ribbons spiralling on down to the river base.