

# Foster and Partners

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## Torre de Collserola

Barcelona, Spain 1987-1992



In the late 1980s, as a result of expanding Spanish television and telephone networks, and the communications requirements of the 1992 Olympic Games, Barcelona was facing an explosion of transmission masts on the neighbouring Tibidabo mountainside. Anticipating the environmental impact this would have, Mayor Pasqual Maragall decided that the communications and broadcasting infrastructure for the entire region should be coordinated. He convinced the three primary players - national and Catalan television and Telefonica - to build a shared telecommunications tower.

The competition brief posed the problem as a balancing act between operational requirements and the desire for a monumental, technological symbol. The solution reinvents the telecommunications tower from first principles.

A conventional reinforced-concrete tower would have required a tapering shaft with a 25-metre-diameter base in order to achieve the 288-metre height required. Following an analysis of precedents, including suspension bridges and shipbuilding techniques, an entirely new structural concept emerged: a hybrid concrete and steel-braced tube. This required a base diameter of only 4.5 metres, dramatically minimising its impact on the mountainside.

In order to meet a construction programme of just 24 months the construction of shaft, mast and equipment decks was overlapped. The steel mast was prefabricated so that it could be manoeuvred inside the hollow shaft. As the shaft was poured, the equipment decks and public observation platform were assembled on the ground ready to be hoisted into position. The drama of the steel-framed structure slowly inching up the shaft was witnessed throughout Barcelona and the surrounding countryside. Finally, the steel radio mast - which tapers to just 0.3 metres in diameter - was telescoped up inside the shaft. The thirteen equipment decks are suspended from the shaft by three primary trusses made of Kevlar - a high-strength material transparent to broadcasting signals - and stabilised by three pairs of steel cables. The curved triangular shape of the platforms was designed to maximise space while integrating structural stiffness with aerodynamic considerations.

Even within this taut, lean form, there is ample provision for change and growth. Equipment can be installed or removed by lift, and a small crane at the top of the mast hoists antennae into place. Inherent flexibility ensures that the tower will be able to respond to an unknown, rapidly evolving, telecommunications future.

[Torre de Collserola Website](#)

**Appointment Date:** 1987

**Construction Date:** 1990

**Completion Date:** 1992

**Statistics:** Area: 5 800 m2

**Height:** 288 m

Client: Torre de Collserola SA