

## Terminal 5 Roof Lift

**Client:** BAA

**Structural Engineer:** Arup

**Steelwork Contractor:** Watson Steel Structures



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CIVIL 44



**Above:** First roof section has been lifted, second roof section at ground level ready to be lifted.

The new Terminal 5 main building at Heathrow airport has a roof structure with a total weight of 18,000 tonnes. On completion this roof structure will be the largest single span building in the U.K., the total floor space occupying the equivalent of 50 football pitches. The spectacular roof structure is nearer to bridge building than normal construction. The single wave effect is formed by 22 steel box rafters forming perfect bow string arches, supported along each side by 11 pairs of steel support abutments.

Fagioli PSC lifted this roof in six parts during a nine month construction period. The strand jacking was carried out by sixteen computer controlled L180 jacks, powered by

individual electric power packs with all jacking operations being undertaken from a central control cabin located on the ground. Each section had to be lifted to an elevation of 39 metres while staying within the design tolerance of only 50mm. Each of the six operations was performed within a single day.

The strand jacking option was chosen because the working height limitation of 43 metres (dictated by airports radar system) ruled out the use of cranes. The other benefits were the ability to carry out roof cladding and other activities at minimal height with safety, programme and quality benefits associated with working at ground level.