

Continuous Flight Auger

Airbus A380 Wing Facility

BROUGHTON, UK



Installation of CFA piles and use of Expanded Head Former

Airbus Industrie are constructing the largest passenger aircraft ever built and the wings for this aircraft are being built at Broughton, Nr Chester. The Airbus A380 Wing Facility, which has a floor area of 85,600 m² is one of the largest manufacturing facilities in the UK. Bachy Soletanche were chosen by the main contractor Laing O'Rourke to construct the foundations for the project.

Ground Conditions

The site is located on the floodplain of the River Dee and consists of low-lying alluvial marshland with 10m of soft clays and silts overlying boulder clay. The clays also contained peat bands up to 3m in thickness. In itself this is a challenging site but the required pile settlements of 0.18mm made this one of the most involved projects undertaken by the Bachy Soletanche CFA team.

Design

On a project of this scale early involvement of the piling contractor's design team is essential. Bachy Soletanche



CLIENT:	Airbus Plc.
MAIN CONTRACTOR:	Laing O'Rourke Ltd.
CONSULTING ENGINEER:	Mouchel, Parkman
DURATION OF WORKS:	3 Years

WORKS QUANTITIES

CFA Piles	7600No
CFA	600mm, 23m depth
CFA	450mm, 20.0m deep
LDA Piles	110 No. large diameter auger piles (900 & 1200mm) 25.0–30.0m deep





worked closely with Laing O'Rourke and their consulting engineer, Mouchel. Design work commenced six months prior to the design and build contract being finalised. A rigorous programme of additional site investigation and preliminary test piles was completed to allow cost-effective value engineered solutions to be developed. The original conceptual design was refined to change the 45m deep large diameter piles into a scheme of 600mm CFA piles of 23m depth, saving half of the cost of the original design estimate.

The piles for the wing assembly area were designed to take a live loading that was vertical and static. The lack of dynamic loading meant that these piles did not need to be tied into the ground slab. This resulted in the pile being finished at the required level with a 300mm deep pile cap removing the need for trimming of the pile. A project time

saving of a least a month was estimated by using this technique.

In the areas of lighter loading there was a 200mm thick slab. The piles were again formed with finished heads but needed an expanded head to prevent punch through of the slab. A steel, conical shaped mould was specially

created to form the expanded head and this was more accurate and neater than the traditional method. A total of 3600 piles were formed in this manner.

The second phase involved installing almost 4000 CFA piles inside the new building as it was constructed around the piling operations.

