



# Aarsleff Supplies Quiet Support

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Consulting engineer Arup was initially concerned that noise and vibration generated from installing precast concrete piles for an extension to its existing offices in Solihull, U.K., could cause problems for the building and its occupants.

This, subsequently, proved to be unfounded as results from acoustic and vibration tests carried out by Arup and specialist-piling contractor, Aarsleff Piling were well within acceptable limits.

“There was concern when the piling first started, that the noise and vibration could cause possible damage to our existing building and disruption to its occupants,” said Ove Arup & Partners director, Nick O’Riordan. “As designers of the extension, we worked with Aarsleff on a technical level through the main contractor, Laser Build to produce a reasonable method of working in an attempt to minimize impact of the piling on the building and its occupants.

“Aarsleff did some noise and vibration monitoring, and we did some acoustic testing to see how the building was behaving. We were able to confirm it was a perception problem rather than a technical matter. This showed us that with appropriate acoustic checks and controls, driven

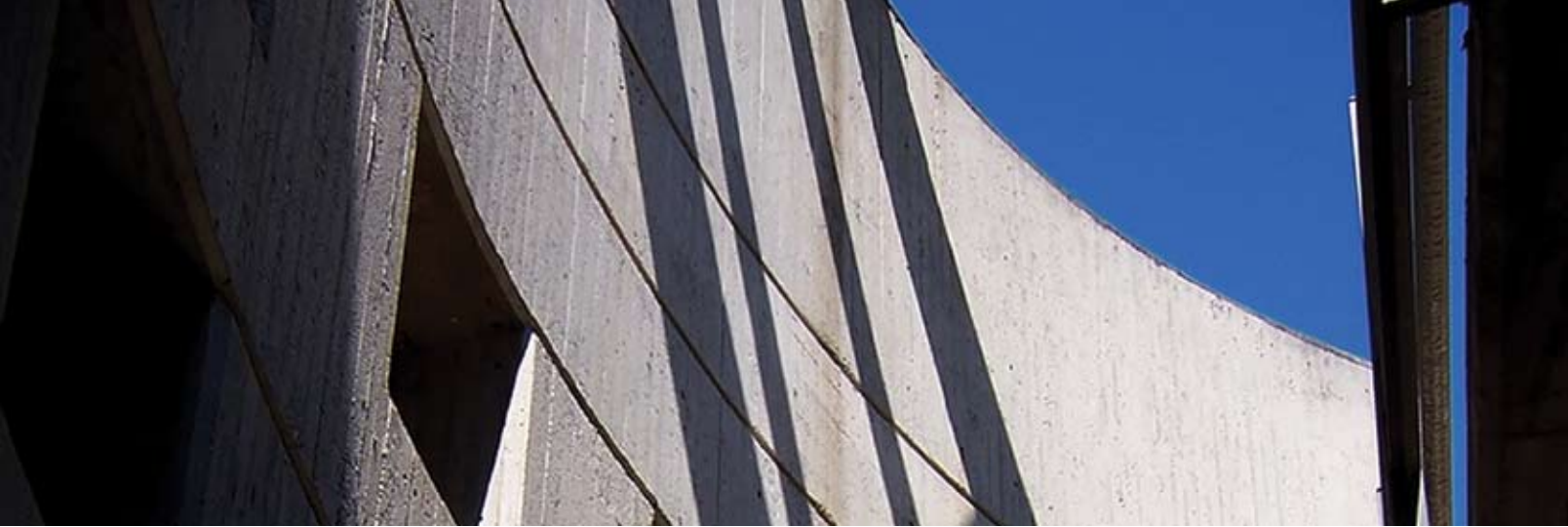
piling with modern equipment could be used very close to occupied buildings.

“There has to be careful planning in advance to ensure the normal concerns about noise and vibration can be allayed, particularly as the velocity of sound in soil and air is different. When you have repetitive hammering you can hear the hammer strike and then feel the ground vibrate milliseconds later, which can be disturbing. But, once we had established that this was a perception problem, piling then proceeded very rapidly and smoothly.”

The new two-storey extension building and foundations were designed by Arup for its own use. Built on driven piled foundations, it combines two of Arup’s previous centers into a single multidisciplinary office hub with particular focus for infrastructure projects. Laser Build was awarded the, approximately, UK\$6.5-million one-year building extension project by developer British Land.

“Although it was unusual to use driven piling next to an existing building, it proved to be the most cost effective solution,” said Laser Build project manager, Chris Wilson.

Aarsleff, working for Laser Build, won the supply, handle pitch and drive contract on open tender to install a mixture of 250-millimeter- and 300-millimeter-square-section continuously reinforced precast concrete piles in groups of twos and threes for working loads of 750 kilonewtons.



Aarsleff did the final design based on piles up to 11 meters long, but prior to start, Aarsleff probed the site down to 15 meters and drove a test pile to confirm ground conditions to establish whether the piles could take the designed working loads.

At this point, Arup raised concerns about noise and vibration, and piling was temporarily halted while awaiting results from the monitoring and test loading.

Results from the test loading enabled Aarsleff to redesign and shorten the continuously reinforced precast concrete piles to 6 meters. Its subsidiary, Centrum Pile made the piles.

Aarsleff, using one of its own Banut700 self-erecting, hydraulic fixed leader piling rigs with a 5-ton drop hammer, drove the 110 piles throughout the day, to found into underlying dense sands and gravel.

“Aarsleff saved us a lot of time and money, as the piles were shorter and installation was much faster,” said Mr. Wilson. “They were driving about 40 piles per day in a nine- to 10-hour day and completed the installation in just three days, instead of the originally anticipated two weeks.”

After installation, the precast concrete piles were statically and dynamically tested by the independent testing company, Precision Mining and Control. ▼





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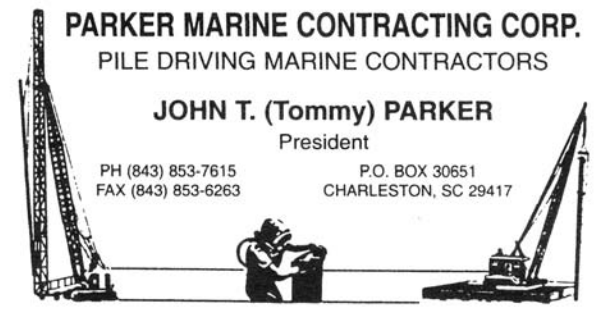



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