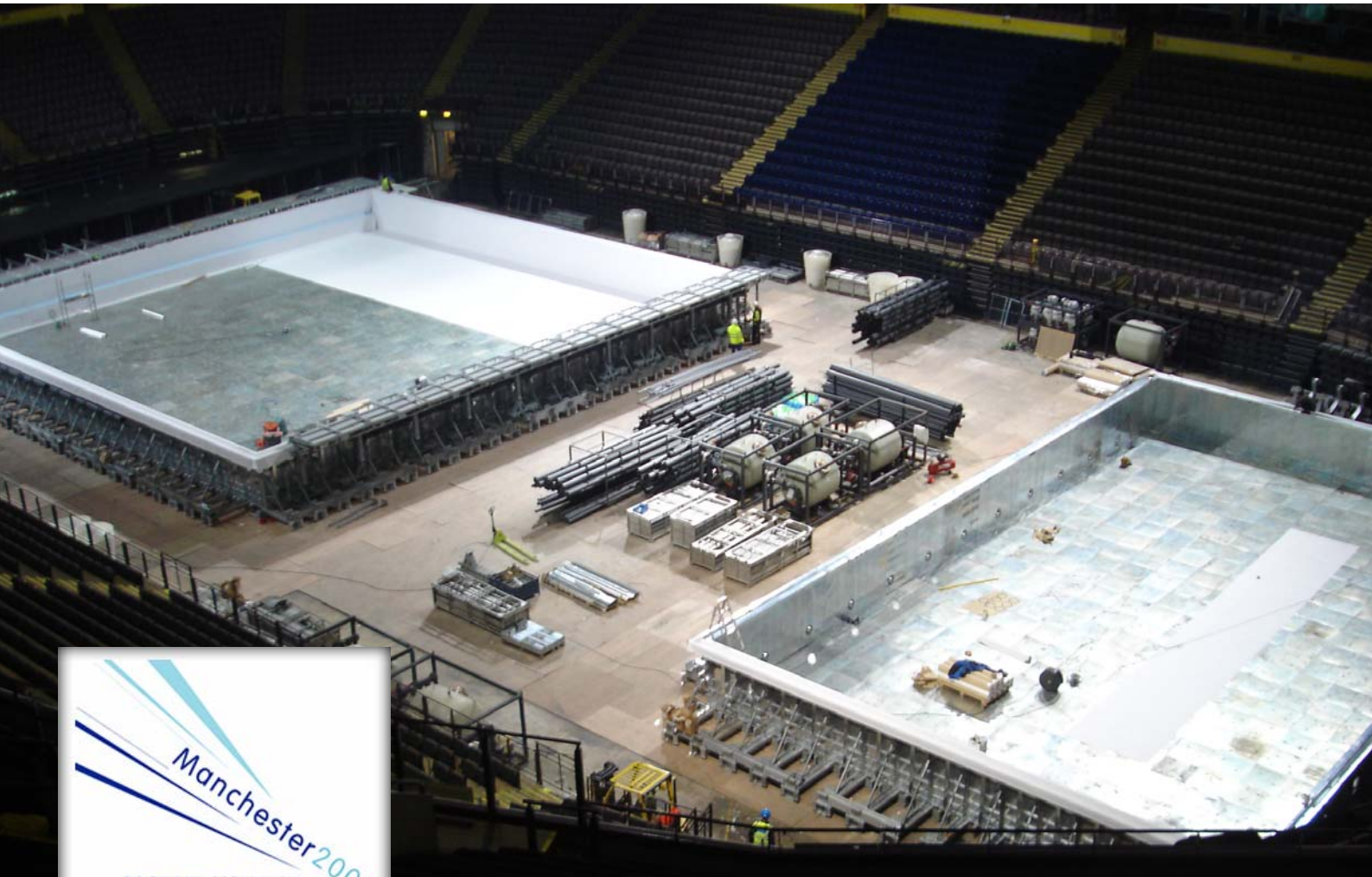


# A world record... in precision measurement!!

Certification for FINA at the World Swimming Championships, Manchester 2008



**Javier Tre, Rogelio López and Amparo Núñez - all teachers at the Universitat Politècnica de Catalunya's School of Topography - have once again taken up the challenge of certifying the official measurements of the pool set to host the World Swimming Championships. They used the strict rules laid down by the Fédération Internationale de Natation (F.I.N.A.). New records and race times will only be officially recognized once this certification has been obtained.**

- when it has to be **right**

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On the occasion of the **9<sup>th</sup> FINA World Swimming Championships (25m)**, held in Manchester from 9<sup>th</sup> to 13<sup>th</sup> April 2008, two temporary pools were purpose-built within the Manchester Evening News Arena. This grand covered venue is very popular, and normally plays host to large-scale concerts and all kinds of cultural events. During the World Swimming Championships, a main competition pool and a second warm-up pool were set up within the arena, the first measuring 25×25×2 metres and the latter 25×15×2 metres.

As on previous occasions, the company in charge of construction was the Spanish multinational AstralPool. The installation inside the venue was specifically required to not damage the flooring, and so SkyPool technology was employed, using individual panels made from hot

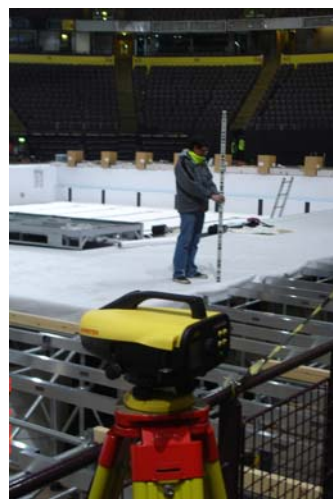
galvanized steel. This system allows the pool to be installed without a single screw or nail in the stadium floor surface.

Accompanying the installation engineers, the topography team from the UPC had to take the measurements required for official certification while the pool was being set up and again once it was finished. Given the scope of the project, they once again opted for the trusted products and technology of Leica Geosystems. The instrument chosen was the Leica TCRP 1201 R 1000+ Total Station. It was the best total station available for this kind of job, taking into account its measurement possibilities without the need for priming, and ease of use. They also used the Leica RX 1250 TC remote control unit and a Leica Sprinter 250 M Digital level.

The measurements were taken wall-to-wall along the central axis of each lane, once the pool structure was installed, without the touch panels used in the competition.

The approach used requires series of reiterative measurements from external points, using laser total stations with and without a reflector. Finally, the most probable value of each series and its corresponding error margin were calculated based on the uncertainty of calibrating laser stations. The Leica TCRP 1201 R 1000+ station used had obtained a calibration certificate from an official laboratory, in compliance with ISO 9001 standards.

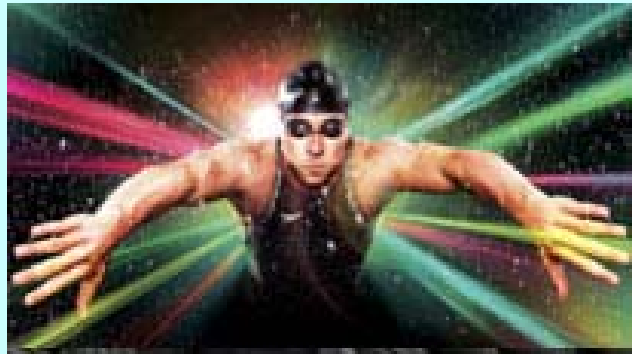
Measurements were also made once both pools had been filled with a combined total of two million litres of water.



In the opinion of Javier Tre, head of the UPC topography team that carried out the project, the main reason for travelling to Manchester with the Leica Geosystems instruments was "absolute faith in the brand, of which the School of Topography has been a client since it opened in 1988". He also remarked that "we were confident and relaxed, because the possibility of the Leica TCRP 1201 measuring without a prism helped to smooth out any problems carrying out the work in these conditions. And sure enough we had no problems and we took the highest quality measurements in the shortest possible time."

The UPC teachers will carry out certification work for FINA at future international swimming championships, for example in Rome 2009, Dubai 2010 and Shanghai 2011. It is more than likely that Leica Geosystems will accompany them once again with their quality products and services.

Throughout the five-day championship, with a total of 616 swimmers representing 116 countries, 18 new world records, 40 championship records and 85 continental records were set. None of them would have been officially recognized without previous certification of the pool's dimensions. The accuracy of Leica Geosystems instruments helps to beat all the records!!



The Fédération Internationale de Natation (F.I.N.A.) establishes tolerance levels for pool dimensions to be used in official competitions. In the case of the world championships in Manchester (25 metres) they were as follows: "Against a nominal length of 25.0 metres, a tolerance of plus 0.03 metre in each lane minus 0.00 metre on both end walls at all points from 0.3 metre above to 0.8 metre below the surface of the water is allowed. These measurements should be certified by a surveyor and another qualified official..." A team comprising teachers from the School of Topography at Universitat Politècnica de Catalunya (UPC) were charged with the task of certifying the official dimensions of the pools built in the Manchester Evening News Arena.

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