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TEMCOR Completes Construction of Egg-Shaped Dome Frame for Shanghai ScienceLand

Unique Structure is World's Largest Clear-Span Ellipsoid

With a short construction time of only 50 days, the erection of the unique ellipsoid-shaped TEMCOR Aluminum Dome frame at Shanghai ScienceLand is complete and the US\$200 million science and technology museum is scheduled to open this October.

The unique shape of the frame proved to be an engineering challenge. Most larger TEMCOR Aluminum Domes consist of hundreds of equally sized panels, gussets and struts, but since this dome is irregularly shaped and supported on several elevations, the original design of the ScienceLand dome called for more than 1,200 groups of different sized struts, and over 1,000 different sizes of glass panels. "Through engineering, we were able to simplify the design so that only 422 strut groups were required," said Thomas Mixer, TEMCOR's director of production engineering. "That drastic reduction in the number of groups saved valuable manufacturing time without affecting the integrity of the dome."

The frame was manufactured at TEMCOR's Southern California facility and shipped, ready-to-assemble by a Chinese construction crew. "TEMCOR has developed custom-designed dome frame systems that are engineered, manufactured and then delivered to the customer as a pre-fabricated product that is quick to assemble" continued Dagenais. TEMCOR supplied a construction consultant to oversee the erection process and ensure quality control. Once erected, the dome was then covered in locally supplied double-glazed, insulated glass panels.

The ScienceLand Museum complex was designed by the Los Angeles team of RTKL, a world-renowned architectural firm.

TEMCOR has been building aluminum domes and other structures for more than 35 years and has more than 6,000 installations throughout the world in industries as varied as water and wastewater treatment, petroleum and scientific research. TEMCOR Aluminum Domes and roof systems for architectural applications are in place worldwide as sports arenas, cruise terminals, planetariums, churches, and more. ♦

The 67m long by 50m wide x 41m high ellipsoidal frame, covered with glass panels, houses the museum's orientation lobby. "The design of the dome, combined with the inherent strength of the aluminum frame allows for a large clear-span," said Bob Dagenais, TEMCOR's marketing manager of architectural products. "Our dome encloses the 75,000 sq ft (7,000 sq meter) lobby without intruding supports." The orientation lobby will house a planetarium sphere, dinosaur fossils, robots, and more.



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