

LIGHTWEIGHT ALUMINIUM DOMES FIND NEW HOMES**- IN PUERTO RICO AND USA**

A 102m Temcor dome on a 6.1m steel wall frame Monolith, CA, similar to the dome being built at the AES Total Energy Plant

Temcor, the world's largest aluminium dome builder, has been awarded a contract to manufacture and build a 76.2m diameter Temcor aluminium dome for limestone storage at the AES Total Energy Plant in Guayama, Puerto Rico. The contract was awarded by Roberts & Schaefer, the designer/contractor for the material handling facility at the plant. The limestone will be used in the plant's scrubbers to help reduce sulphur emissions.

"When the project was put to bid, we specified a dome structure as opposed to a silo or other type of building because of a dome's inherent integrity and wind resistance", said David Waltersdorf, Chief Engineer for Roberts & Schaefer. "We considered galvanised steel and concrete structures, as well as aluminium. We ultimately selected aluminium for its durability in the salt atmosphere of the Caribbean. Temcor also had the most competitive bid.

The Puerto Rican location presented additional challenges for Roberts & Schaefer that Temcor was able to solve. The ground at the site is composed of sandy soil, so the possibility of liquefaction caused by an earthquake was a concern. The light weight of a Temcor Aluminium Dome allowed Roberts & Schaefer to use a floating, ring footer foundation, and the geodesic design is very tolerant of settlement, another concern with sandy soil. This type of foundation also reduces the construction costs since expensive pile drives are not necessary. Since Puerto Rico has a very active hurricane season, Temcor engineered the dome to withstand winds of up to 125mph.

Custom features of the dome include: a 4.3m diameter off-centre opening for a concrete stacking tube; 76.2cm gravity vent; two 6.1m high by 5.5m wide equipment openings with aluminium, motorised roll-up doors and canopies extending to the dome support wall and six full panel sky lights.

Temcor will construct the dome using a crane and condor method to build the dome from the outside support wall to the

centre. Construction was scheduled to begin in early January 2001 and should be complete by April 2001.

Meanwhile, Temcor has also provided a lightweight aluminium dome to St Lawrence Cement, USA in order to solve a rocky problem. A 67m Temcor Aluminium Dome was selected by the St Lawrence Cement Co in Hagerstown, Maryland, for its 16,000t limestone storage facility. The inherent advantages of an aluminium dome's light weight and unique design were the answer to the site's bedrock elevation problem.

When the decision was made to build a new storage facility, St Lawrence specified a circular building in order to accommodate its stacker-reclaimer system. The company also needed a building that was durable and required a minimum of maintenance. The site itself presented a formidable challenge: bedrock near the surface would mean extraordinary costs if a typical foundation was used.

The challenge was put to Temcor to design a storage dome that required a reduced number of foundation supports, thereby saving construction costs. Temcor accepted the challenge, designing a lightweight dome that required only 14 piers versus the traditional 42.

"The exceptional structural abilities of a Temcor aluminium dome give us the flexibility to design a storage facility that can meet both the requirements of the owner and the site itself," said Tom Mixer, Temcor's Engineering Manager.

"The all-aluminium building is right for us because the life expectancy is so long, and, anything not aluminium would require more maintenance. Steel rusts and cement cracks," said Bob Van Tassel at St Lawrence. "Also, the aluminium panels of the Temcor system can be replaced if one gets broken by equipment."

The dome was designed to include an opening and canopy to accommodate the Ameco conveyor system and two truck door dormers for access, each with an electric operated door. The dome has been engineered to support a snow load of 35psf.

By Temcor designing the dome with only 14 rock anchors, St Lawrence Cement reaped substantial savings without compromising quality or performance. Temcor's bid was not the lowest, but the maintenance-free aspects of the dome, and Temcor's extensive experience with the US installations made a Temcor dome the right choice.

The rapid erection time of just seven weeks using an average crew of five to seven men added to the advantages.

"Temcor was excellent to work with, very professional" continued Van Tassel. "The dome is a nice piece of architecture, very eye-pleasing."

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Hagerstown cement storage dome