

**Domestic Buildings****Reference Details:****Structural Design and Consulting** Arata Isoraki

DSI Services Supply and installation of DYWIDAG Strand Tendons type MA 5,7-0.6".

**Spain's most modern architecture challenges creativity of DSI engineers****Spain, La Coruña: The Museum of Man****The "Museum of Man" or "Domus" (latin for house) can be found on the granite of the Riazor Peninsula above the city of La Coruña. This impressive construction was designed by the famous Japanese architect Arata Isozaki.**

The facade is curved in two planes. The ground plan forms the shape of an arc and, from the side view, it can be seen to spiral upwards. This unusual design gives the impression of a full sail. The facade is made up of 36 specially precast wall sections. A Spanish precast concrete factory within

the PRECON Group was responsible for the construction work. DSI España was brought in to carry out the post-tensioning on the wall sections. The precast elements, 17 m tall, 2.7m wide and 8cm thick, are reinforced by two longitudinal ribs, 35 cm by 17cm, into each of which a steel tendon is inserted (one tendon per rib, two tendons per section).

The 2 tendons were originally going to have 7x0.6" strands, each with a load of 12 tonnes (= 84 tonnes per tendon) to achieve 51.1 kp/cm². Due to the geometrical specifications of the unusually slim wall sections, it was necessary to reduce the number of strands in each tendon to 5 and to use a 60/65 mm sheath. The load applied to each strand was increased to 17 tonnes, thereby maintaining the overall tension in the tendons at 85 tonnes (5 x 17 tonnes).

This alteration was also more cost efficient for the client. The tendons lie along the centre of gravity to avoid any possible Deformation. DSI España recommended to use the SD-plate (SDAO 6805 for active anchors and SDBO 6805 for passive anchors) and this was duly accepted. It was originally intended to use the HOZ 1700 jack with a changing device to carry out the stressing on the 5x0.6" strands.

However, with the use of this method DSI España ran the risk of deforming the wall sections and so another solution had to be found. The problem was solved by using a monostrand jack (type SM 200). The prestressing was done in 2 stages. First of all each strand was stressed with 6 tonnes and then increased to 17 tonnes. Wedge slippage then posed a significant problem.

To reduce the wedge slippage, DSI engineers quickly developed a special chair for support to go on the anchor ring. With the help of this special support, the loss of tension in the short tendons was successfully reduced to an acceptable level.

The entire prestressing operation was carried out by DSI experts with DYWIDAG equipment in the confines of the PRECON concrete factory in Galicia according to schedule. The completion of the concreting stage was particularly critical. A precisely defined time schedule coordinated the setting of the concrete from pouring and stripping right up to the prestressing. The exact geometry of the wall was thereby ensured.