

Optus Stadium Park

Perth, Australia

Optus Stadium officially opened on 21 January 2018 and is the new home game venue of local Australian Football League teams Fremantle Football Club and the West Coast Eagles. The impressive Arbour stands 10 m tall and 20 m wide, and stretches 450 m around the south side of the Stadium. It connects a new six-platform railway station to the Swan River, over which the Matagarup Bridge is currently being constructed to provide pedestrian access to East Perth. Over a thousand stainless steel cables were installed on the 43 arches that make up the Arbour to create a tensile structure in the form of a canopy. Suspended on the structure using bespoke fittings are 3,076 bronzed artwork panels reflecting Whadjuk and Noongar stories. Stadium Park was constructed on wetlands with cultural heritage significance to the Indigenous community, and its rich Aboriginal history was

the inspiration behind the Arbour's design. More than 13 tonnes of grade 316 stainless steel was used, including in excess of 14 km of 16 mm and 8 mm hamma™ X 1x19 wire rope supplied by ASSDA Member Arcus Wire Group, 20,000 bespoke fittings and over 34,000 screws. Stainless steel was specified for the cable net canopy for its strength and durability to withstand the harsh Western Australian weather conditions, including powerful coastal winds driven from the Indian Ocean. The 16 mm edge cables on the structure were tensioned to forces up to 52kN, with the 8 mm longitudinal and transversal cables tensioned up to maximum of 11kN. In addition, the high quality and aesthetical value of stainless steel complemented the Arbour's design in creating an eye-catching structure for patrons. Structural Dynamics provided value engineering and practical advice to the project engineer Maffei Engineering and project architect Hassell on how to best integrate

stainless steel tensile systems into the design. Their in-house team of engineers used structural and finite element analysis as components of the detailed analysis and modelling on how the cable design would behave and interact within a tensile architecture installation. Structural Dynamics also worked with engineering firm Partridge to undertake the final design, review, slip testing of the bespoke cable clamps and final sign off for the project. Each of the eight different types of cable edge clamps were sent to the National Association of Testing Authorities' (NATA) accredited laboratory for slip testing under wet and dry conditions to ensure their strength and adequacy. The cable fittings were designed to the AS 1170 series: Structural Design Action, AS 4100: Steel Structures and AS 2759: Steel Wire Rope – Use, Operation and Maintenance.



Environment:	marine
Material:	316 stainless steel wire with a thickness of 8.16 mm
Manufacturer:	Arcus Wire Group
Architects:	Structural Dynamics / COX Architecture
Photographs:	Structural Dynamics / Makmax
More information:	strudyna.com.au or assda.asn.au

