



Reef Casino, Cairns, Australia

Area: ... m²

Architects: Michael Dysart & Partners International

Structural & Façade Engineers: Arup Façade Engineering

Specialist Contractor: JML Engineered Facades



The Reef Casino architects and engineers selected a dome roof to be supported by a shell structure. Members of this shell structure were to be connected by structural nodes utilising by precision investment casting process. Precision investment casting was selected instead of sand casting so as to provide the desired form, finish, corrosion resistance and strength required for this particular architectural design application.

Hycast Metals was engaged to manufacture the main structural connectors which it achieved within set lead-times.

The casino roof structure comprises for tension rod stiffened barrel vaults touching at their corners to form the basic dome shape. Cigar trusses complete the corners. The structural nodes play a critical role in creating equilibrium to support the roof structure.

Clearly visible from the garden area below, the nodes are cast in grade CF-8M stainless steel and feature an underside margin which adds visual appeal to the spare bony design.

Tension rods with drop-forged ends slide into the open-slotted nodes to facilitate erection and minimise on site bolting. The open-slot nodes accommodate the tension at varying angles, thus reducing numerous nodal configurations to a manageable suite, all manufactured by Hycast Metals.

Because of the level of repetition it was critical to have a high degree of similarity at all connection points. Precision investment castings were chosen because they feature mechanical properties which minimise cracking, fracturing or catastrophic failure whilst simultaneously offering excellent tensile capacity and corrosion resistance.

Throughout the production process Quality Control was implemented to monitor mechanical testing and chemical analysis to ensure to ensure the design specification was achieved.

