

Smaralind Shopping Mall and Convention Centre - AceCad Drawing Office



Smaralind Shopping Mall in Reykjavik is the largest building in Iceland. Atlas Ward Ltd used AceCad's Detailing Department and StruCad software to detail the steel roof structure. AceCad's Structural Design Office was engaged to design the structural connections. ISTAK were the Main Contractor. The Architects for the project were Arkitektar Skogarhlid and the Engineers were from Linuhonnun.

The Building

Smaralind is Reykjavik's newest shopping mall with a surface area of 63,000m². The centre has become a tourist attraction for the region.

The building is said to represent a Viking Ship and is home to a variety of shops and leisure facilities, including an eight-screen cinema complex.

The building is geometrically extremely complex, being curved in section and in plan. In addition to this, the Winter Garden has a feature sloping soffit to its perimeter, which, because of the varying curvilinear section and plan shape of the structure, gives the soffit the form of an irregular helix.

The Challenge

Atlas Ward was asked to design a roof to fit the Viking imagery and to complement Icelandic climate and the physical geography. The original structural design was created on a cast in-situ concrete structure with glulam roof beams and steel arches for the central roof light areas. A steel space frame and tower was designed for the Winter Gardens, located at the east end.

The Solution

Atlas Ward persuaded the team that a simple portalised steel frame with stub columns instead of glulam beams would be preferable. The cinema roof had roof beams supporting reinforced concrete walls. The Winter Garden had steel framed trusses in both directions to provide the large column free zone of about 50m. The trusses were supported on steel columns or concrete walls. The trusses were cranked and the purlins offset to create the external smooth curve of the roof. Roof construction was accomplished with a twin skin system incorporating overpurlin liner panels, insulation and the external skin of Armaseam.

Daniel T Pillai, General Manager of the Direct Export Division of Atlas Ward says, "The dimensioning and fabrication of intricate three-dimensional steelwork elements and components was made possible by the quality and precision of 3D detailing provided by AceCad's Drawing Office and by their StruCad 3D modeller.

"Initial investment in meticulous design and detailing proved worthwhile in the end as the erection was trouble free despite the structure's complexity."

In addition, the StruCad 3D model was used by AceCad to extract the geometrical coordinates and all required data for the manufacture of the Winter Garden's prefabricated soffit cladding panels, each of which is unique.

Paul Glaves from AceCad's Drawing Office says, "This structure is extremely complex from engineering and architectural perspectives. There was a very intense synergy between AceCad's internal departments, Atlas Ward, Istak and with the cladding supplier."

