InfraBuild

Erina Ice World NSW

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Erina Ice World

STRUCTURAL STEEL ADDS SPARKLE TO NEW VENUE

Ice World at the Erina Fair shopping complex on the NSW Central Coast, is yet another exciting new development using structural steel to construct a fresh, bright and spacious venue awash with light, colour and music.

This exciting new venue now stands ready to train the next generation of Australian skaters.

Opened in November 2003, Ice World is part of the $210 million expansion of the shopping centre managed by Lend Lease's Retail Group.

When Lend Lease's Retail Group planned a major expansion of the Erina Fair shopping centre on the central coast of New South Wales, just north of Sydney, they wanted a drawcard that would attract the rapidly growing young population to the centre.

An ice skating rink was their answer so Lend Lease's Retail Group invited Cooper Development Corporation to build an ice rink on a design/construct/operate basis. The invitation to build the project came as a result of the enormously successful construction of Cooper's Glaciarium at Baulkham Hills, a north-western suburb of Sydney.

Cooper Development Corporation's Design Manager Ken McPhail said most ice skating rinks in Australia have traditionally been large industrial sheds. "Our design starts with a desire to present a fresh and bright new image which is why the entire rear wall above the grandstand on the south side of the building is one huge exposed structural steel window – as close as we can imagine in Australia to an outdoor skating centre."

A structural steel frame was the obvious choice for this project, which is 16 metres high, 80 metres long with a span of 48 metres. The heart of the building is the 60 x 30 metre Olympic sized ice rink overlooked by a steel framed grandstand. Party rooms, corporate meeting rooms, a skate shop and change rooms make up the rest.

"...we found the steel beams have enhanced the solution for column free support of the roof, adding attractiveness to the finished structure."

Peter Waugh of Low & Hooke Partners, the civil, structural, and hydraulic engineers on the project, said that: "The structural steel portal frame design was developed from the previous ice skating facility we built utilising Cellform castellated beams. "

"A hinged base portal frame with fully fixed rafter to column connections provides the frame with two-dimensional stability with wall bracing transversely. We developed a composite Z and C purlin in conjunction with National Engineering to support the roof sheeting and ceiling panels. Rafter out of plane buckling is prevented by a combination of fly braces and tubular bracing."

"The elevated plant rooms are a composite steel and concrete beam construction chosen for their economy and ease and speed of erection. The air supply fan room has separate elevated steel decks supported by the structural steel portal frame columns".

"The steel portal frame building provides a column free thermal envelope, which has to be kept at a constant 15 degree temperature and low 45 percent humidity. Natural light from the south facing structure assists with the thermal efficiency of the building."

Peter Waugh went on to explain that: "The ice slab is a 40mm deep frozen block on top of a 130mm reinforced concrete wearing slab. This is supported off polystyrene, which bears on the suspended concrete slab."

Ken McPhail, Cooper Development Corporation, said that "The building's configuration has 12 structural bays each six and a half metres wide spanning 48 metres of column free space. The cladding sandwich panels are horizontal (Baulkham Hills are vertical) and bolted directly to the structural steel. The illusion of bright coolness has been created by alternating the panels in white and silver."

"A feature of the project is the distinctive bright yellow castellated Cellform beams supporting the skillion roof. National Engineering used their castellated Cellform beams to give a longer spanning, structurally stiffer beam.

The Golden Yellow beams add life and an upbeat note to the interior of the Erina Ice World building."

"This option was recommended by Peter Waugh of Low and Hooke and we found the steel beams have enhanced the solution for column free support of the roof, adding attractiveness to the finished structure. The paint was applied in the National Engineering workshop and arrived on site with the distinctive coat." Ken McPhail added.

Structural steel also makes up the support for the mezzanine and grandstand seating. All the supporting steelwork for the seating of 507 spectators is hot dip galvanized, adding gleam to the colour.

The castellated Cellform beams are fabricated from OneSteels' 300PLUS® 610UB125 sections that, after being Cellformed, are around 900mm deep, with regular 550mm diameter penetrations.

Greg Le Quesne, National Engineering's site engineer on the project, added, "The lightweight steel framing meant we only had to use a single mobile crane to erect the majority of the structural steelwork on site."

The project was completed to the budget of $8.5 million and on time.

CLIENT
Lend Lease Retail

DESIGN
Cooper Development Corporation

BUILDER
Cooper Development Cooperation

STEEL DETAILER
Multiplan Perth

FABRICATION
National Engineering

CIVIL, STRUCTURAL, HYDRAULIC ENGINEERS
Low & Hooke Partners

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