



International Zinc Association

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GALVANIZING IN AQUATICS & ARCHITECTURE

INDOOR SWIMMING POOLS

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galvanize
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Aquatics: Growth of indoor swimming pools.

Westpac Call Centre

Editorial

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Prepared by

Galvanizers Association of Australia

Editors wish to thank the following for their generous assistance in preparing this case study.

- Prior + Cheney Pty Ltd – Architects
- Anthony John Group
- Ceccato Hall & Associates
- S-Square
- SW Healey and Associates
- M & S Steel Buildings
- Smorgon Steel Tube Mills



Lakeside Leisure Centre, Port Stephens

Hot dip galvanizing steel

The sport of swimming has flourished in recent years, when Olympic publicity in particular has brought its popularity to a wide section of the community.

The significant development of hydrotherapy and aquatic exercise treatments has extended the value of 'swimming' to people of all ages. The requirement for facilities to best accommodate their variety of lifestyles has been well addressed by many public authorities and resulted in major aquatic centre projects.

The principle has often been further extended to cover gymnasiums and other dry-sport games in total leisure complexes within local government civic centres.

Economic and planning projections require extensive architectural design development having regard to the growing levels of community participation.

Design

The level of participation and economic analysis are important features of design and require study of community needs and interests.

As major capital investment and large running costs are involved, a fair return to owners and public authorities is needed to justify the investment and to provide for future expansion.

In this context careful asset management plans, with a low maintenance regime, are essential.

Incorporating such factors in a complex requires a structure able to accommodate a number of forms, shapes and site limitations where the use of steel is frequently selected as the most suitable structural material.

Steel's most important attributes are:

- Long-spanning capability with open site lines
- Low structural presence and space occupation
- Design flexibility for future additions
- Many suitable connecting methods such as bolting, welding and pinning.

These features lend themselves particularly well to such structures, however a design adjustment is required to counter the fact that warm water in a pool generates humid chlorine-laden air from water treatment and with its constant surface wetness of the steel.

Heated pools need a raised temperature for swimmer comfort but the resulting evaporation creates corrosive conditions for steel and the need for upgraded steel protection.

The design task described requires the engineering considerations of such features as insulation, ventilation and top quality corrosion control in an environment analogous to marine exposure. The value of a protective coating is measured by its prior proof of suitability, intact installation and long term reliability.



Queanbeyan Aquatic Centre, NSW



Queanbeyan Aquatic Centre, NSW



Lakeside Leisure Centre, Port Stephens

Maintenance

Pool maintenance includes ensuring water quality, services to the public and fabric preservation, all within a high level of surface wear and impact. The need for maintenance derives not only from these conditions but also the degradation of organic paint coatings by UV radiation.

Galvanizing is immune to UV, has outstanding abrasion resistance and good evidence of over 30 years to first maintenance.

Community

Mr Peter Smith, Associate Director of Prior + Cheney Architects summarises by saying, "swimming facilities require highly detailed research to offer a large community segment maximum utility and fulfilment from this enjoyable activity."

This company, whose work is now featured in *galvanize!*, has been designing aquatic facilities for over 18 years and has produced many examples of steel frame structures used in a striking and attractive manner.

Even in Australia's climate, such facilities have become an invaluable aid to our good health and athletic aspirations and have achieved increasingly wide appeal.

Westpac Call Centre

Southgate Corporate Park Cannon Hill, Brisbane

The Westpac Call Centre is a high-tech communications facility designed by Architects Ceccato Hall & Associates to house 600 customer service officers in a functional, spacious, versatile office environment with a secure basement for car parking.

Concrete piers were used in the foundations to support concrete columns constructed to the first floor.

Column-Free Interior

An important feature of the internal office space was that it be column-free. S-Square, which specialises in the creation of large span, column-free structures using post-tensioned steel, was engaged for the project.

Traditionally, column-free spaces such as those required for the Call Centre, necessitate deeper, and hence heavier, steel beams.

In this case trusses are fabricated and erected, and cables passed through the hollow section bottom chords. Stressing is applied to the cables allowing the trusses to span large distances by replacing steel mass with "stored energy". Stressing of the steel cables within the structure provides the storage mechanism.

Tubular trusses such as those used in the Westpac Call Centre have been utilised due to the inherent efficiency and the clean aesthetics of the construction. From a structural point of view the DualGrade tubular sections supplied by Smorgon Steel Tube Mills offer a higher yield capacity of 450MPa versus the more general 350MPa used in regular hollow section steel manufacture.

Operational Efficiency

A distinctive aspect of this building is that it appears to be "inside out" with the trusses exposed to the elements and the cladding connected to the bottom and internal chords. This design feature of cladding of the bottom chords and internal columns was an efficient way of minimising the available volume of air resulting in lower operating costs for air conditioning and fire services.

Award Winning

Constructing the building in this manner exposed the structural steelwork to the elements requiring a higher degree of corrosion protection. The solution to this was after-fabrication hot dip galvanizing of all the external steelwork. This use of galvanizing enabled the building to be the winning entry of the 2003 Zinifex Sorel Award for Industry Achievement.

The Principles

Developer and Project Manager: Anthony John Group

Architects: Ceccato Hall & Associates

Specialist Designer: S-Square

Structural Engineer: SW Healey and Associates

Builder: Ahrens Construction

Fabricator: M & S Steel Buildings

Internal Fitout: DesignInc



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