

DAINTREE DISCOVERY CENTRE



Atmospheric steel corrosion in Australasia is complex and varied due to Australia's great size and diverse climatic zones.

After-fabrication galvanizing has a wide range of capabilities in service and this Far North Queensland location demanded performance in some of the most extreme conditions possible. After considerable research into serviceability and environmental impact, after-fabrication galvanizing was chosen as the most appropriate form of corrosion protection.

Daintree Discovery Centre – An accredited wet tropics information centre

This Discovery Centre is unique and provides an ideal introduction to a remarkable pocket of rainforest in Far North Queensland.

With advanced eco tourism accreditation, the centre is well recognised as a leader in its field and caters for visitors of all ages at this striking rainforest wilderness.

The centre consists of:

The Aerial Walkway

This provides for intimate rainforest viewing at a mid level while connecting the built units of the centre.

Canopy Tower

The tower stands to a height of 23 metres and offers spectacular views over the top of the tree canopy of the surrounding forest. It is cyclone rated and can accommodate 70 people on 5 viewing platforms.

The interpretative display centre

This offers the latest interactive experiences and a wide range of information on such topics as evolution, ecology, flora, fauna and fungi with a useful library component.

A DVD theatre: this provides films introducing creatures from Cassowaries to Crocodiles.

An Elevated Boardwalk

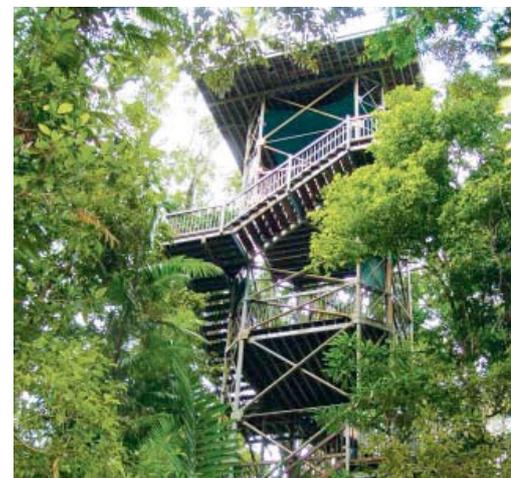
This structure gives access through the forest floor promoting close interaction by enabling visitors to comfortably experience the rainforest at an intimate and elevated level.

Eco Shop: provides souvenirs of this extraordinary experience.

The Daintree Discovery Centre was built in 1989 and is a private enterprise.

Over the 6 years it has been active, the Centre has gained a most impressive record of awards including:

- State Winner 2005 Telstra Queensland Small Business of the Year Award
- Winner 2005 Telstra Queensland Small Business of the Year – MYOB Award
- Winner 2005 North Queensland Best Small Employer of the Year Award
- Winner 2004 Tourism Tropical North Queensland Ecotourism Award
- Winner 2004 Tourism Tropical North Queensland Most Outstanding Submission Award
- Winner 2004 QMBA Tropical North Queensland Tourism & Hospitality Facility under \$2 million
- Finalist 2004 Queensland Tourism Awards



Designing and Building The Centre

Building the Daintree Discovery Centre was an undertaking in the face of the most severe limitations and obstacles of nature.

Prevailing conditions included the difficulties of unmade roads, material load restrictions to manual carrying, a site without power, water or support services and where heavy lifting plant and equipment could not be permitted.

To contain impact on the surroundings, normal welding and hot work were minimized by the use of bolted connections. A stable foundation to achieve no-sway platforms and walkways for the assurance of visitors to this tree top zone was a further design feature.

An innovative 3D design by Quadratic Pty Ltd was instrumental in coordinating the complex design activity.

The project planning required a return to construction fundamentals on the imperative of not damaging the environment whilst building access to experience the location.

The difficulty of this compromise of construction progress and site preservation is well illustrated by the record of regular auxiliary power cuts due to rodents chewing through the wiring.

Weather Conditions

Annual average rainfall varies from 1.2 metres to about 4.2 metres with some areas receiving up to 9.1 metres. These conditions are accompanied by 100% humidity, elevated temperatures and high levels of UV exposure.

The occurrence and type of this rainforest is dependent on both the total and spread of the rainfall throughout the year. The rainfall is higher than anywhere else in Australia and is often referred to as the wet tropics, creating the most difficult construction conditions.

Design and Durability Planning – Steel Construction and Protection.

Given the structural height and span of the various platforms and walkways, steel members were an obvious choice.

However as many protective systems for steel require regular maintenance to meet their required service life, the design had to address upgrading steel protection or alternatively to provide access for regular maintenance and replacement.

In this instance the latter was not a practical option, particularly since product warranties are, in such conditions, strictly limited or often unavailable.

The only course of action therefore was to seek substantive proof of use of products successful in similar environments. Hot dip galvanizing has a long history in Far North Queensland, going back as far as 130 years.



In this context severe steel corrosion is often illustrated as being only at the ocean's edge, in surf or high seas; however the complex environment of this tropical forest includes high salinity, long surface wet time, mould growth, elevated temperatures, and intense UV exposure, all conditions which can contribute to high rates of corrosion within the constant erosion and attack of an undisturbed cycle of life, decay and regeneration.

From an engineering standpoint, the preservation of building materials in this situation is a challenge and permanence hard to achieve.

Summary

Seldom is site delivery and installation of permanent structures as demanding, complex and restrictive of normal construction practice, so it is not surprising that the concept and its execution has won so much acclaim for innovation.

The client's requirements were for damage free coating at installation as well as long service life. **After-Fabrication Galvanizing was the predominant choice of protection for steel elements in this installation.**

Galvanizing's basic characteristics of steel hardness, increased edge cover, cathodic protection, surface patina development, inhibitive properties and UV immunity all come into play in this undertaking.

The Daintree is the oldest continuous rain forest on earth for which this striking Discovery Centre provides an educational gateway to the Queensland World Heritage Region.

*Acknowledgements – Ron Birkett, Director
Daintree Discovery Centre*

