

# Barracks rebuild adds value blending new with old

Lavarack Barracks redevelopment (Stage Four), Townsville



**Substantial use of standard grades of steel fabricated with conventional connection types helped satisfy the Australian Department of Defence's brief as part of a cost effective and efficient 'adaptive reuse' strategy for the latest redevelopment of Lavarack Barracks.**

Located just outside of Townsville, the barracks supports close to 4000 military and over 600 civilian personnel.

The project called for replacing temporary working accommodation with new buildings and refurbishment of a number of 35 year old buildings to help minimise expense whilst providing modern facilities.

Other important aspects of the project brief were for structures to be able to withstand cyclonic conditions as encountered in the region and to be constructed from readily available and durable materials that would last long and require little ongoing maintenance.

The Stage Four structural design work including the 3rd Combat Engineering Regiment and 4th Field Regiment precincts commenced in November 2005 and was recently completed in February.

The 3rd Combat Engineering Regiment precinct involved the staged demolition and construction of approximately 25 new buildings and adaptive reuse of approximately six existing buildings over a 125,000sqm site.

The 4th Field Regiment precinct involved the staged demolition and construction of approximately 18 new buildings and adaptive reuse of four existing buildings over a 70,000sqm site.

Senior Associate with BVN Architecture, **Scott Hardcastle** said that the designs for the new buildings followed a carefully considered architectural approach that addressed a number of climatic, environmental, planning and whole of life considerations.

"Structural steel portal frame systems were introduced to provide flexibility in the external fabric of each building allowing louvred facades to fully open and naturally ventilate spaces with cooling summer breezes," he said.

"Steel framing was exposed on the outside of the buildings, including along the roof edges to provide a strong and deliberate architectural and structural expression. It further reduced the requirement to clad and conceal these elements."

He added that dip galvanised protective finishes were applied to all steelwork elements to provide a long lasting, durable finish that could withstand the harsh tropical and coastal climate of Townsville.

Structural Engineer, MPN Consulting has been involved on a number of Lavarack Barracks Redevelopment Stages since the late 1990s.

**Jeff Milgate** of MPN Consulting said that the design approach had to suit a wide variety of building sizes and types, including office and administration buildings, training facilities, workshops, storage, amenities buildings and vehicle shelters.

"The design objective was to have a cost-effective, clear spanning, durable and robust framing system which suited a variety of building sizes," he said.



"The objective was to use standard steel sections with conventional connection detailing to simplify fabrication, assist speed of erection onsite and provide a cost-effective structural solution.

"The use of steel portal frames provided cost-effective column-free spaces, reduced the extent of wall bracing and permitted future building extensions should they be required later on.

"The steel framing system developed also allowed each building to have a similar architectural appearance by varying frame sizes in proportion to the size of each building."

"The initial preliminary structural design involved studies on various frame spacing distances to determine the most cost-efficient wall and roof framing solution," Mr Milgate said.

For ASI fabricator member, Cairns Steel Fabricators (CSF) which supplied about 600 tonnes of steelwork for Stage Four, the main challenge was to keep several different buildings moving concurrently.

"Understanding how they can be fabricated and erected efficiently was paramount," said CSF General Manager, **Sean Adams**.

*Photos courtesy: Christopher Frederick Jones*



#### **Project Team**

**Client:** Australian Department of Defence

**Architect:** BVN Architecture

**Managing Contractor:** Thiess

**Project Manager:** Coffey Projects

**Structural Engineer:** MPN Consulting

**Steel Fabrication:** Cairns Steel Fabricators

**Steel Detailing:** Cairns Steel Fabricators

**ASI Steel Distributors:** BlueScope Distribution, OneSteel

**ASI Steel Manufacturers:** BlueScope Steel, OneSteel