

ANOTHER MITEK ADVANTAGE

LESSONS TO BE LEARNT FROM CYCLONE LARRY

On March 20, 2006 Tropical Cyclone Larry passed through the Innisfail region of North Queensland.

In the days following the cyclone I had the opportunity to view the aftermath and see for myself the severe destruction it had left behind.

From the outset it was evident that any building that had been constructed with engineered roof trusses fared far better than buildings constructed in the older style, using pitched rafters.

Why? The simple answer is that over the years there have been substantial advancements in design and construction combined with greatly improved design codes and tie down requirements.



Prefabrication of roof trusses and wall frames has reduced the uncertainties of construction on site.

And modern engineered building products and connectors that are based on rigid testing and development are far superior to 'generic' products that are manufactured without rigorous quality control.

In the months following the cyclone a comprehensive examination of the damage was carried out by the Cyclone Testing Station at James Cook University Queensland.

In their report they found that the most common types of building failures appeared to be as a result of:-

- Inadequate fastening of roof battens to rafters. In many cases battens had only been fixed with only one or two plain shank nails.

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- Insufficient and inadequate roof bracing e.g. some roofs had been constructed using only sheet roofing as the bracing component.
- Inappropriate connections between rafters and underpurlins and struts in pitched roof construction, and inadequate anchorage to walls.
- Decay and deterioration of fasteners & sheeting due to rust, or in the case of timber, to rot, which compromised the structural performance of many buildings.



- Widespread failure of roller doors, gutters and roof vents.
- Failure of un-reinforced masonry.
- Inadequate consideration of exposure on hill top sites.

However, with any disaster there is always the opportunity to learn from the experience and Cyclone Larry was no exception.

Some of the more important lessons we can apply are:

- Engineered roof trusses are more reliable than conventionally framed roofs because of reduced errors in construction.
- Choose, or specify more durable materials with suitable timber treatment and galvanizing that can withstand prolonged exposure. This, combined with tighter and more stringent inspections and

ongoing maintenance, particularly of waterproof membranes should help to overcome degradation issues.

- Design for buildings on hill tops and exposed sites needs to reflect higher wind speeds resulting from topographic classification as per AS4055.
- Continuing education for carpenters and builders, with emphasis on roof bracing and connections.
- Improved designs for cyclonic conditions are required for roller doors, gutters and roof vents.
- Use quality engineered building products and connectors with proven design capacities, and adhere to information provided by



manufactures on installation procedures.

On the positive side, in areas of substantial damage were pockets of new houses that had withstood the carnage and remained totally intact.

Whilst luck can play its part, good design, adherence to building standards and construction and the use of specially designed engineered building products, most certainly helped to limit the damage.

For more information on the results of Cyclone Larry I would draw your attention to a detailed 96 page CTS report TS51 "Tropical Cyclone Larry-Damage to buildings in Innisfail area" conducted by Cyclone Testing Station- School of Engineering, James Cook University, QLD 4811. The web site: www.eng.jcu.edu.au/cts. TTN