

# AstroGuard and Cyclone Winston Performance report

Cyclone Protection Australia

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# Severe Tropical Cyclone Winston

- Strongest on record in the Southern Hemisphere
- Category 5 on 19 February. The storm passed directly over Vanua Balavu, where record wind gusts of 306 km/h observed.
- Peak intensity on 20 February, with ten-minute sustained winds of 230 km/h before making landfall on Viti Levu, Fiji.
- Extensive damage on many islands and killed 44 people.
- Nearly 55,000 homes were damaged or destroyed and approximately 350,000 people—roughly 40 percent of Fiji's population—were significantly impacted by the storm.
- Total damage amounted to at least FJ\$539.3 million (US\$255.7 million).

# Review of 2 properties protected by AstroGuard during Tropical Cyclone Winston

- Tavarua
  - A luxury island resort
  - AstroGuard used to protect the timber framed restaurant and bar complex
- Large Denarau private residence
  - Large patio areas protected using welded attachment brackets for the AstroGuard system. Separate living quarters have openings covered in standard manner.
  - Owners live abroad and product is left on the house when they are away during cyclone season
  - Getting household insurance almost impossible

# Tavarua Resort

- Directly in the path of Winston – took the full brunt
- Large sheets attached between uneven timber around restaurant and bar area
  - Protection against wind load
  - Protection against flying debris
  - Protection against water and sand damage
- “Unique properties and versatility of AstroGuard system make this the only viable solution for this structure”
  - Rick Isbell – co owner











Clips attached to structure primarily by the “foot plate” of the clips because of the uneven surface of the timber columns





- Additional sections of fabric 'welded' on with modified clips to close gaps around the columns to minimize sand and water ingress
- This allowed staff to make adjustments from the inside during the cyclone whilst still protected

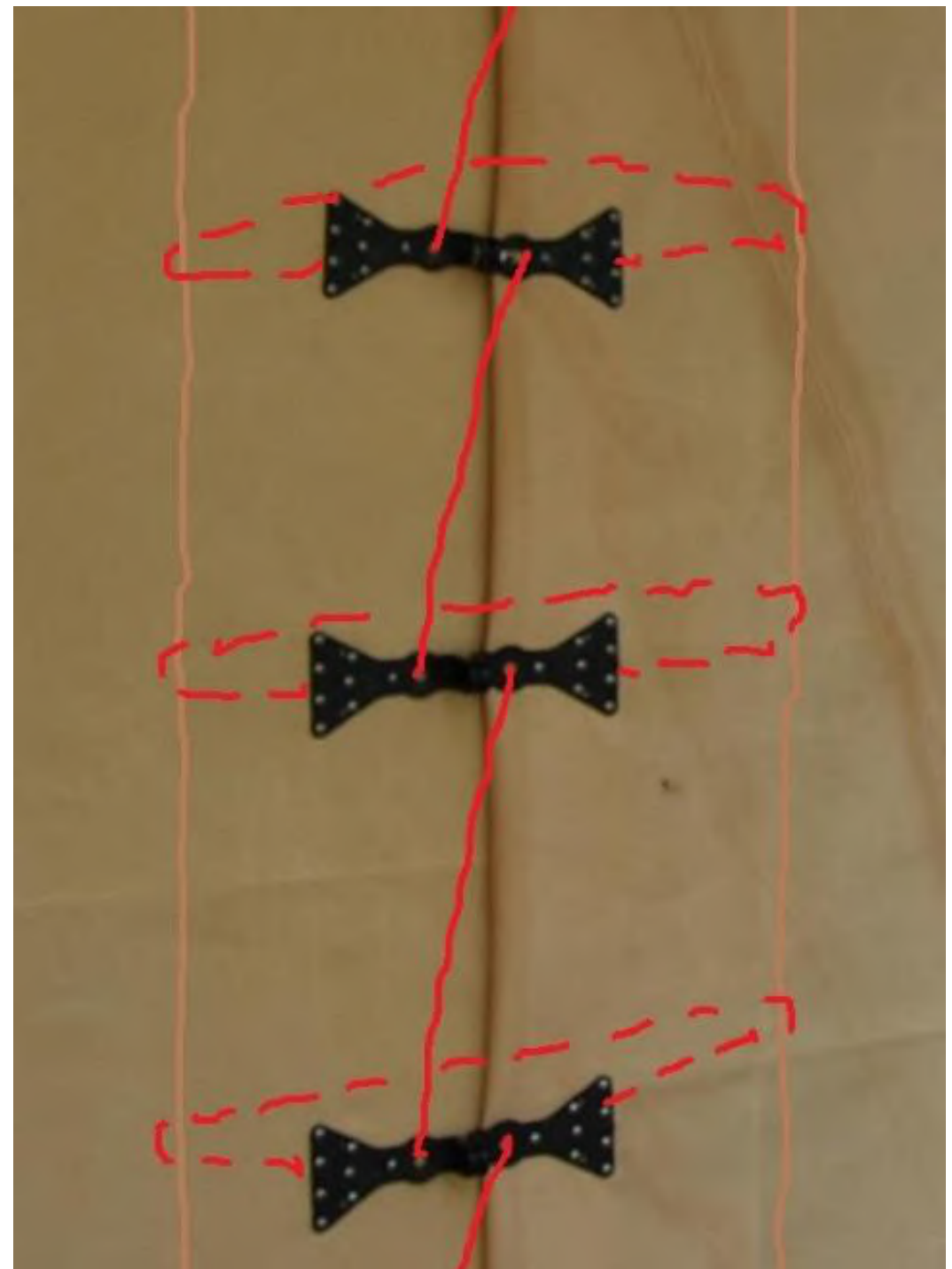


- Huge forces with reported gusting well in excess of 300 km/hr
- Violent , sustained flapping of sheets lead to rotational forces of the clip foot plate against the head of the anchor bolt





- Ropes wrapped around columns passing through clips as shown was the ideal option
- Can use multiple separate loops of appropriate strength rope / cable
- Cosmetically appealing option for homes/resorts who do not wish to have screws in large wooden trunks





# Performance during the cyclone

- **The system withstood the full force of Winston and prevented the destruction of the restaurant complex**
- **The complex was functional within days**
- The large sheets of fabric were exposed to enormous forces without damage or tearing
- The clip system worked without any failures
- As the photos show the sheets are in excess of 10 m<sup>2</sup> and withstood sustained winds of 240km/hr and gusts well in excess of 300 km/hr

# Usual attachment

- Clips usually attached to the frames and walls through the flat area of the clips
  - Similar to the image shown
  - The foot plate is the 90 degree base with the hole
- This arrangement does not expose the screw to the rotational forces



# Denarau residence

- Large home
- Owners live abroad
- Central entertaining area
  - Large spans of AstroGuard attached around the patio area
  - Flat attachment of clips to concrete, additional metal attachments welded into cladded columns around the patio, 90 degree attachments into tiled concrete floor











# Separate sleeping apartments for both families

- Standard attachment of variety of sized fabric sections covering doors and windows





# Post Cyclone Winston

- No damage
- System performed without incident
- Welded attachment on metal posts around patio performed without issues
- Some sagging of some of the larger sheets
  - Allow to dry out with sun exposure
  - May shrink back
  - If not clips can be repositioned with ease



# Summary

- The AstroGuard system has been tested by the strongest cyclone recorded in the Southern Hemisphere
- It performed and withstood huge forces – sheets > 10 m2
- The resort returned to operational status in 2 days with the restaurant/bar complex intact
- The owner believes our system is the only viable option for protection and has expanded the use of AstroGuard on newly built luxury apartments in the resort post his experience during Cyclone Winston
- The home owners in Denarau reassured that their investment and home is protected