

## VANDALISM OF FABRIC STRUCTURES

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Until recently the fabric structure industry in Australia has lacked continuity necessary to establish a pattern of performance concerning many aspects of fabric structure installations.

The subject of vandalism is often considered in pre-contract discussions. The risk is recognized, however there is little recorded information of occurrences.

CHEMFAB Pty Limited now has the benefit of completing 40 installations comprising 70 individual elements over 10 years.

Table 1 lists all known occurrences related to structures installed by CHEMFAB.

The extent of vandalism gives rise for concern, however a pattern is clear.

- . In the case of malicious vandalism no security existed
- . Access was readily gained to the structures
- . No lighting was in place at night
- . At Wiley Park and St. Annes Church predictions of vandalism were made before construction due to social attitudes in the area.
- . Three occurrences at two installations related to attempted burglaries rather than to malicious vandalism.

Of the three structures that have been vandalized, in two cases this was 'confidently' predicted before construction. At Wiley Park an attempt was made to 'design out' access but unsuccessfully.

In the case of attempted forced entry at Floreat Forum in Perth the need for security was anticipated by the owner, however the extent originally provided was not sufficient. At The Atrium, Rockhampton attention was drawn to the risk during the design process but no preventative action was taken.

A concern of owners and architects is whether cuts to fabric caused by vandalism or other sources will propogate into major tears. In each of the structures involved which incorporate Teflon coated fibreglass membranes no propogation occurred.

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Similarly the low friction Teflon surface of the membrane enabled paint to be successfully removed from the St. Annes Church roof.

In each occurrence either temporary weatherproofing or permanent repairs were effected without significant inconvenience to the building owner. No losses were suffered through attempted forced entry.

Where necessary to restore aesthetics the heat seaming process of Teflon coated fibreglass and techniques developed by the contractor have enabled in situ panel replacement.

While the potential for property damage caused by vandalism is generally understood it is possible that a more serious potential risk exists. From observations at St. Annes Church and Wiley Park, unauthorized access has been gained to the membrane presumably by youths or more seriously, by children. While the properties of the fabric and design of the membrane are such to present no risk resulting from live loads, the angled and often wet slippery surfaces of a fabric structure present a potential hazard.

Conclusions and recommendations are self evident, suffice to say that the possibility of vandalism or forced entry and the means to avoid or minimize the risk should be on the designer's check list. If it is not, then this should be drawn to the architect's attention by the membrane designer/fabricator.

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PROJECT	LOCATION	INSTALLED	ACCESSIBILITY	HISTORY	CORRECTIVE ACTION
ST. ANNES CHURCH	FRANKSTON, VICTORIA	1982	No security fence - unrestricted access. Fabric roof at 1.8m height at two locations.	Initially bricks, stones and other objects thrown on roof from adjacent elevated walkway.  Evidence of access onto roof - knife cuts at two years. Approx. 6 subsequent occurrences. Damage 25mm to 800mm.  Two small circles cut out. Paint poured onto membrane on one occasion. No propogation of cuts.	Repairs by building owner with repair materials supplied.  Paint removed from Teflon surface.  Lights installed.  Affected areas to be reinstated by partial replacement July/August 1989.
WILEY PARK BANDSHELL	SYDNEY, N.S.W.	1989	Open parkland, no boundary fence, no lighting or security patrols. Fabric at approx. 2.5m above ground at front edge of the structure.	Rocks and various rubble on roof during construction.  Four reported occurrences of cuts the first six weeks after completion.  Evidence of access on to roof on several occasions. No propogation of cuts.	Repair and partial panel replacement

PROJECT	LOCATION	INSTALLED	ACCESSIBILITY	HISTORY	CORRECTIVE ACTION
MALIBU HOME UNITS	SOUTHPORT, QLD	1989	Open access to construction site. No lights.	14 knife cuts approx. 20mm after installation and prior to building completion.	Four of seven panels affected. Replace entire membrane.
FLOREAT FORUM SHOPPING CENTRE	PERTH, W.A.	1984	Security fence/gate to rooftop upgraded after first incident. Gate not locked at time of second incident.  Fabric at roof level of single storey construction.	Attempted forced entry 1986. 400mm x 400mm cut.  Height to ground deterred entry into building.  Similar occurrence in 1988. No propagation of cuts.	Automatic lock on security gate. Security fence strengthened.  Full and partial panel replacement of major cuts.  Repair to smaller cuts not visible from Mall below.
THE ATRIUM	ROCKHAMPTON, QLD	1987	Open access across roof level from adjacent first level carpark.	Attempted forced entry 1989. Cut approx. 900mm.  Height from ground into Mall below deterred entry into building.  Cut did not propagate.	Temporary weatherproofing by owner.  Partial panel replacement to be undertaken.

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