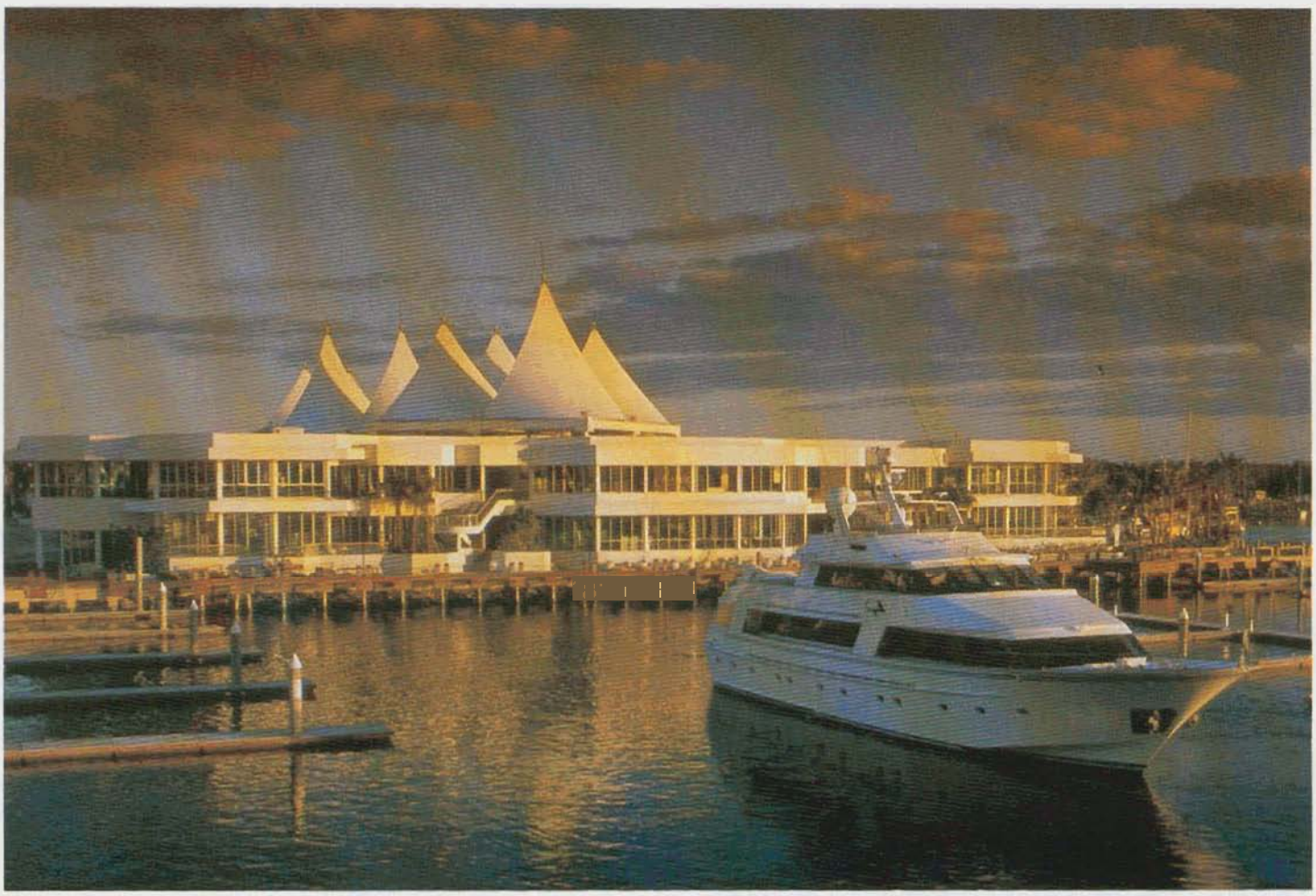
WARP & WEFT

MEMBRANE STRUCTURES ASSOCIATION OF AUSTRALASIA NEWSLETTER

ISSUE 6 1989



MARINA MIRAGE SAILS

Gold Coast

Brilliantly echoing the nautical setting of the Southport Broadwater are the fabrlc salls over Marina Mirage Gold Coast.

The sail elements each made up of a mainsall and jibsail cover a total of ten (10) courtyards. The twelve (12) metre square tension membrane fabrlc salls were conceived and designed by McWilliam Freeform, in association with Media Five Architects.

The peaks of the sails are supported by a mast which Is the central compression element in a network of tensile elements—thus forming the largest example in Australia of a Buckminster Fuller 'tensegrity system'. Supporting cables fan into the corners of the perimeter box trusses.

The fabric salls were manufactured from Shelter-Rite Tedlar PVC/polyester fabrlc. The self-cleaning tedlar surface coating exhibits a high lustre in the Gold Coast sun.

Designed to take maximum advantage of the height restrictions on the Southport Broadwater, soaring some 30 metres above sea level. They fully provide an engineering solution to problems of shade and protection for Marina Mirage and give an important Identity to the whole project.

McWILLIAM FREEFORM
— Designers of Contemporary Structures

McWilliam Consulting Engineers has formalised its specialist structures design section with the introduction of McWilliam Freeform.

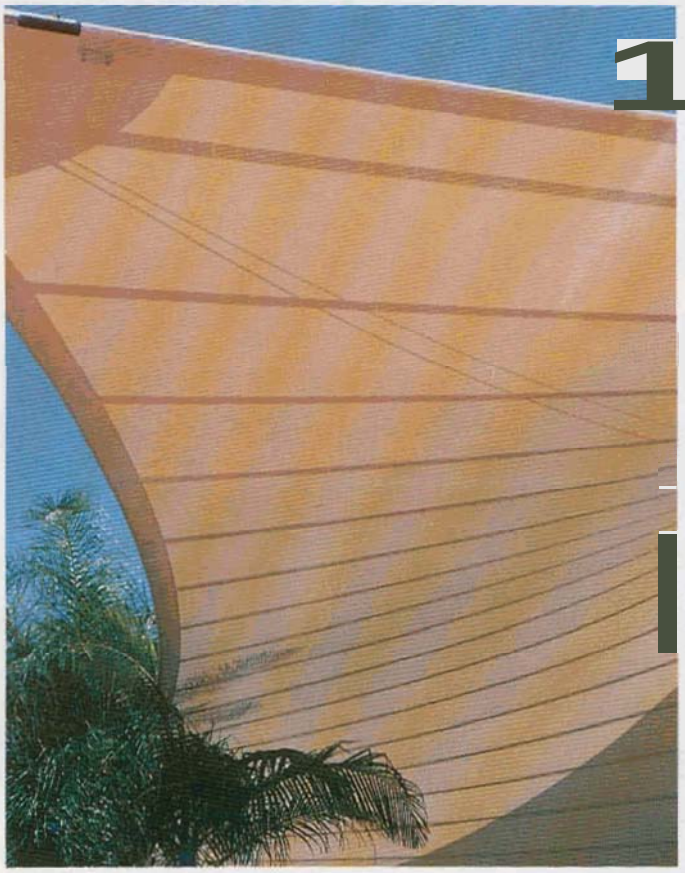
McWilliam Freeform is the specialised arm of McWilliam Consulting Engineers concentrating on tension membrane, cable net and air supported structures as well as contemporary compositematerials such as plastics. acrylic and fibreglass.

According to Mr Bernie Davis. director of the McWilliam Freeform team. the move to formalise this area of the company's operations is a result of increased market demand and an acknowledgement of the importance of this type of innovative work In the building and construction Industry.

"For the past two decades McWilliam has been a promoter of contemporary structural materials and concepts. We have developed considerable expertise In this area combined wlth designing advanced computer programs for shape finding, analysis and detailed freeform design.

"Unlike traditional engineering, specialist structures engineering requires a unique understanding of new and unusual material applications combined wlth mathematically calculated freeform design — in essence the marriage of art and engineering. Demand for this type of ability has become so strong that McWilliam Consulting Engineers has decided to offer this expertise as a distinct service with a specialist team of designers concentrating purely on this unlque form of engineering ingenuity", said Mr Davis.

The McWilliam Freeform team has been responsible for the design of over 200 specialist structures including permanent, retractableand temporary structures. Projects of note Include the Mirage Gold Coast Resort Fabric Sails, the Currumbin Bird Sanctuary Cable Net Aviary. the Mt Coot-tha Tropical Plant Display Glazed Lamella Dome and the North Sydney Olympic Pool Air Supported Roof.



SOUTHPORT MJALL —
Fabric Structures Galore

The re-development of the Nerang Street shopping area Into a high quality malt area, was a fine opportunity for showing the practical and aesthetic value of membrane structures.

Architects Peddle, Thorpe and Harvey conceived five different fabric structure designs including:

Main Area Canapy	—	Upper & Lower 54m X 20m
Stage Canopy	—	10m X 10m
Entry Canoples	—	8m X 8m (4 canopies)
Multibay Hypars	—	16m X 8m (2 canopies)
Single Bay Hypars	—	4m X 3m (14 canopies)

The Main Area Canopy has an upper membrane of double hypar shape symmetrically placed about a 16m high mast. The lower canopy is supported from the same mast approximately 4m lower. The intertwining of these canopies creates a weather proof entertainment area fronting the main stage.

An unusual feature of the main canoples was the "A" frame and backstay arrangement. Supported within a limited space, the 36 Dia and 42 Dia cables carried pre-tension loads of up to 300 KN. A special 50 t (500KN) cable tensioning device wlth direct toad readout was developed by the contractor tor cable pre-tensioning.

A host of smaller structures add a variety of shapes and combined wlth bright steelwork colours, bring a lively feel to the mall.

Seaman Tedlar PVC Polyester fabrics of Class IV and Class II was used for main and smaller structures. Design and Construction contractor was Vesl Membrane Systems (Tension Span Structures).

NEW PRODUCTS

CUTTER FEATURES LASER SYSTEM

The flatbed laser cutter from Island Marine Technology, a British company, is designed to mark out the details of a design directly onto flat or rolled material, and then cut out the panel wlth a CO_2 laser.

The cutter Is primarily intended for use In sailmaking, but It also can be used In making tents, covers, canoples, parachutes, balloons and other fabric products.

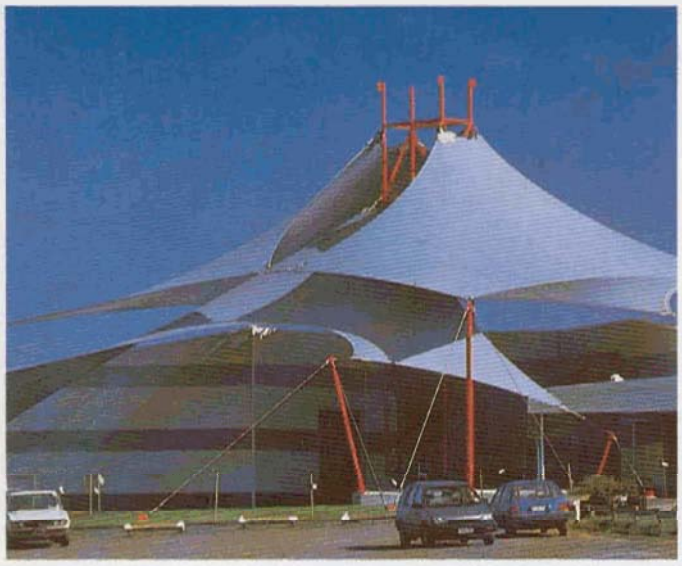
The sealed laser system has no moving parts, needs no external services, and uses a safe, low-voltage power supply.

For more information, contact Mr. P. Newlands, Island Marine Technology Ltd., 41 Horsebridge Hill, Newport, Isle of Wight, P030 5TJ England.

TESTING DEVICE MEASURES FRICTION

Thwing-Albert Instrument Co., Philadelphia, announces the development of its friction tester. This physical testing instrument measures the coefficient of friction of plastic films, textiles and other sheet materials. tt also can perform peel tests. A direct digital readout (3½ digit) displays the test results as either static coefficient of friction, kinetic coefficient of friction, peak load or average load.

For additional information, contact Thwing-Albert Instrument Co., 10960 Dutton Road, Philadelphia, PA 19154:215/637 0100.



FAIRY PENGUIN PARADE REDEVELOPMENT

"While the Fairy Penguins are diminutive in stature their allure to tourists is one of Australia's success stories. It is therefore fitting that the four structures recently completed by Spacetech Pty. Ltd. demonstrate the successful fusion of architecture and engineering in the execution of these two complexly curved, paired, interactive structures. They are extremely sculptured but practical and they are a testament to the excellent co-operation between architectural design, engineering and execution of the final form by contractors."

Client:	Phillip Island Penguin Reserve Committee
Architect:	Daryl Jackson Pty. Ltd.
Engineer:	Connell Group
Membrane Structures:	Spacetech Pty. Ltd.

CHEMFAB EXPANDS IN PACIFIC REGION

Chemfab Pty. Limited of Sydney have recently entered into Supply Agreements with Pacific Region companies.

Structurflex (NZ) will purchase membranes from Chemfab fabricated from Sheerfill (R) Teflon coated fibreglass for Installation in New Zealand, the Pacific Islands and Oceania.

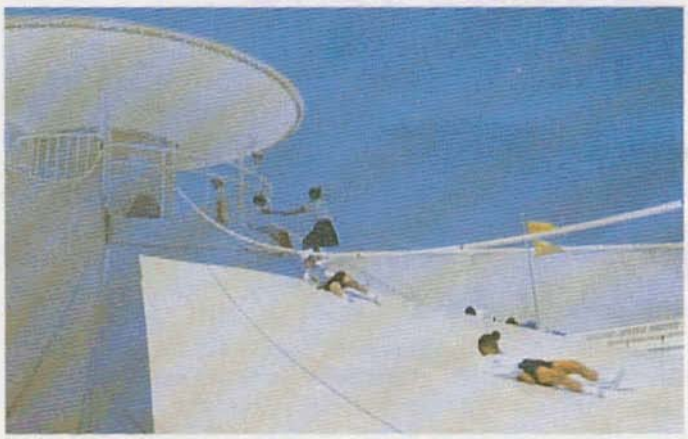
Also L & M Prestressing Pty. Limited of Singapore will purchase teflon coated fibreglass and PVC/polyester membranes from Chemfab for Installation in Singapore, Malaysia, Thailand, Korea, Brunei, Hong Kong and Taiwan.

INNOVATION FROM JAPAN

At the recent IFAI 1988 awards the Talyo Kagyo Corporation were presented with two outstanding achievement awards. The first was for a timber grid shell and canvas structure located at the Silk Road Exposition in Nora.

The second was a fabric roof slide located at the Soon-Co-Ku pavilion in the Silk Road Exposition.

Mr Motonobu Nohmura, director of Talyo Kogyo was a guest speaker at the MSAA Conference 1988 held at the Gold Coast Queensland.



The Son-Go-Ku pavilion, a fabric structure that features a roof slide for children.

MSAA CONFERENCE 1989 IN CANBERRA

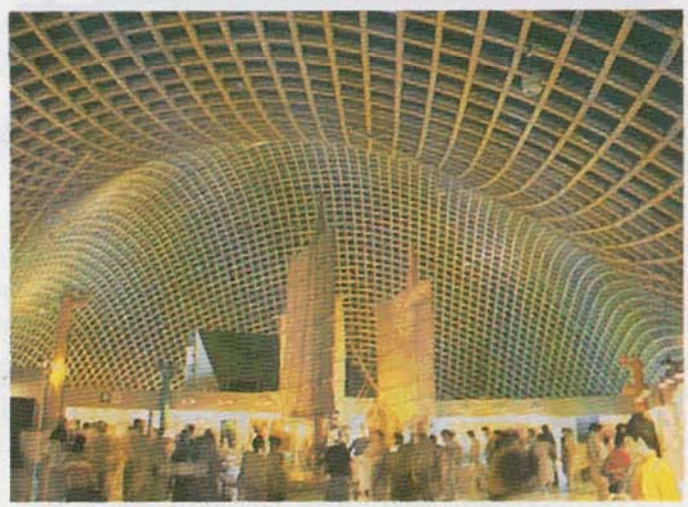
The M.S.A.A. is holding its AGM and annual conference in Canberra on July 13-14, 1989. Members of the association and all interested parties are encouraged to attend this conference whose theme is "Fabric Structures — Performance in Building Development."

The direction of this conference is aimed toward8 real time performance of structures rather than just their design basics and fabrication technologies.

A section of the conference will also be devoted to recent projects in Australia and overseas.

In addition, new releases of materials, processes and services will also be presented.

Enquiries from interested parties should be directed to:-
MSAA — Conference 1989
PO Box 434
Melbourne VIC 3189



A combination design of wooden trusses and canvas for the Noboriojl area at the 1988 Silk Road Exposition in Nara, Japan.

TECHNICAL INFORMATION NEWS

Customs Duty on Imported Fabrics

In a previous report we have described the duty paid on WC coated polyester fabric. TCO Items cover PVDF and PVF laminated or coated materials wlth the effect that both of these are imported duty free. On the standard PVC coated polyester however a duty rate of 20% has, until the new year, been charged with a reduction now to 17.5%. This rate will be reducing to 15% whlch is the base line that It will remain at.

New Zealand has a completely duty free Importation base for architectural fabrics and with the relationship between our two countries, fabric structures can be manufactured there and imported into Australia with no duty on arrival. The legal requirement for this to occur is a particular level of local value added work being carried out in New Zealand.

Discussions amongst members and the committee of the association indicates a common attitude prevailing whlch takes the view that the local industry has not been producing a material which Is competitive, thus requiring protection.

An approach has been made to Customs to determine the possible courses of action available towards removing duty entirely from architectural fabric. While them would appear currently to be no similar material made in Australia which would be used by practioners in this field, the difficulty from the Customs' viewpoint is concerned with end use so that industries producing non-architectural grades are still protected by the duty.

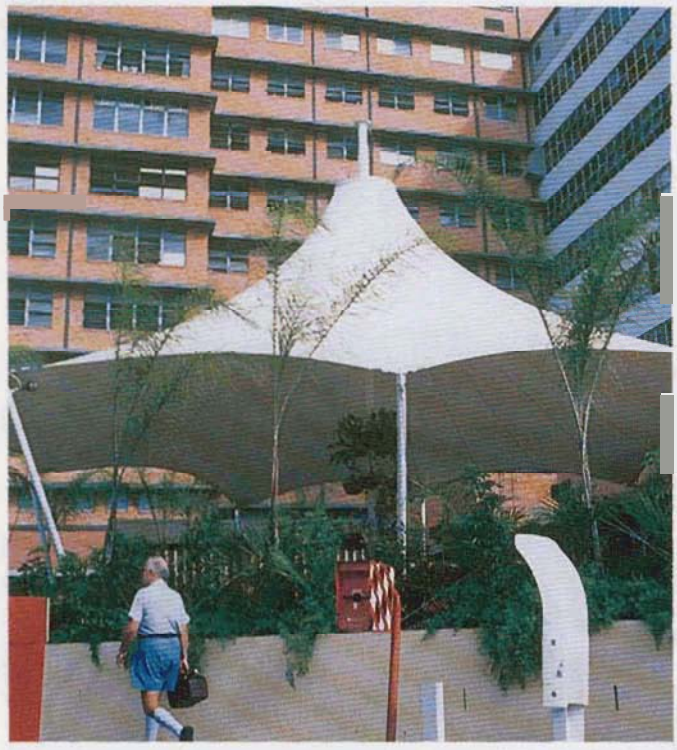
The Technical Subcommittee la undertaking a gradual approach on the matter to attempt removal of that duty for imported fabrics. The reason for thls is that there is no readily available off-the shelf or ready to produce Australian equivalent architectural set of grades of fabric which can comply with the needs of a potential orderer who wishes to construct a structure from materials whlch have a proven life span, performance, set of documents on physical properties and range of surface finishes.

Any members of the association who are aware of available fabrics which are Australian made substitutes should urgently contact the association with advice detailing the nature of these.

Any Australian companies which have an intention to produce or are capable of currently producing these types of materials will be contacted to determine the status of their group. Brella have signalled their intention to produce materials for the Australian market in the near future and have apparently commissioned manufacturing plant of considerable capacity to achieve this end.

Any association members who can assist wlth advice on thls matter are urged to contact the writer at the address below.

David McCready
Chairman M.S.A.A. Technical Subcommittee



FABRIC STRUCTURE CREATES SMOKERS HAVEN

Recent anti-smoking laws have promoted an outdoor eating area at the Princess Alexandra Hospital In Brisbane. Ot course outdoor eatk g areas In Queensland require shade and plenty of ventilation. The solution was a conical shaped fabric structure.

Co-ordination for this project was by 'Who said I had retired' Bob Anderson.

Design and concept by McWilliam Freeform In conjunction with William Job Architects. Contractor and fabric convertor was Geo Pickers (Brls) Pty. Ltd.

PLEASE NOTE:—

All articles and presentations for Warp & Weft 7 are to be submitted to the Editor by the 31st May, 1989.

This Newsletter Is produced by the Membrane Structures Association of Australasia.
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