

Zeitschrift: IABSE structures = Constructions AIPC = IVBH Bauwerke
Band: 11 (1987)
Heft: C-41: Tensostuctures

Artikel: The C.F.A.N. mission tent
Autor: Uddell, I
DOI: <https://doi.org/10.5169/seals-20373>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 23.01.2026

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

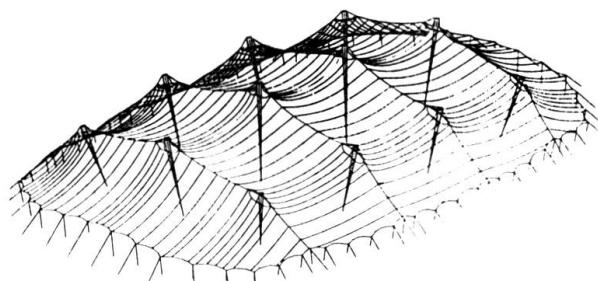


4. The C.F.A.N. Mission Tent

Owner:	<i>Christ for All Nations, Frankfurt</i>
Engineer:	<i>Buro Happold, Bath</i>
Roof Fabricator:	<i>Clyde Canvas</i>
Plan Area:	<i>12,000 m² (95 × 130 m)</i>
Highest Masts:	<i>25 m</i>
Clear Height:	<i>15 m</i>
Construction Time:	<i>9 months</i>
Service Date:	<i>March 1986</i>

The C.F.A.N. mobile mission tent was damaged in a storm at Cape Town. Following this, Buro Happold were appointed to re-engineer it and improve its level of safety and the installation procedures.

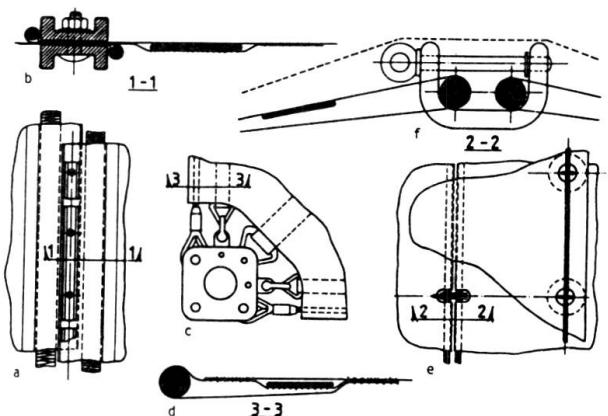
The original Tent had a regular plan form with all masts vertical. The fabric was a relatively light, silicone-coated glass fibre cloth and the valleys of the Tent were restrained with cables to control stresses in the cloth. The form of the Tent was modified by reducing the width at the ends and sloping the masts outward. This



Patterning model

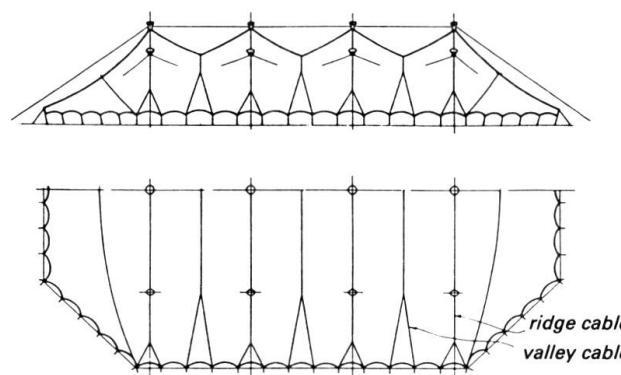
reduced the size of the end fields and increased the curvature of the surface. Wind tunnel tests in a turbulent boundary layer demonstrated that the design loads were such that Type V Grade PVC/polyester fabric (strength 180 kN/m) could be used without the valley cables. Tear-stopping polyester belts were laid across the fields of cloth to minimise the extent of damage should accidental damage from cranes or witch doctors occur. The length of these belts was controlled during fabrication so that they were just loaded under prestress conditions.

For transport, the 14,000 m² of cloth was broken down into 20 pieces – the largest, 30 × 30 m, weighing 2 t. These were folded and then rolled onto spools.

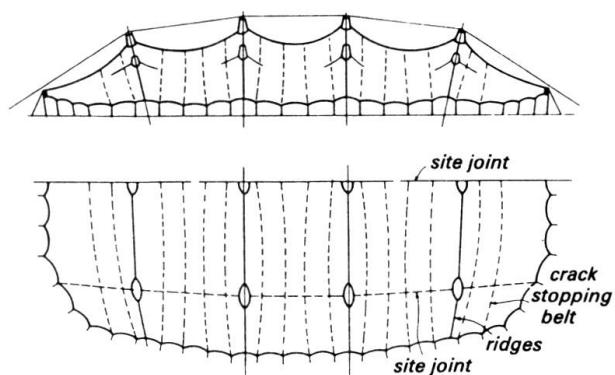


a,b Site Joint; c Corner Point Connection; d Section Thru Boundary Cuff;
e,f Ridge Joint Detail

Details



Original structure

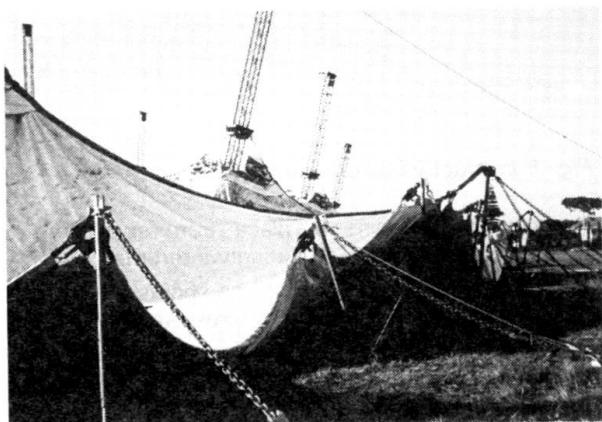


Replacement structure

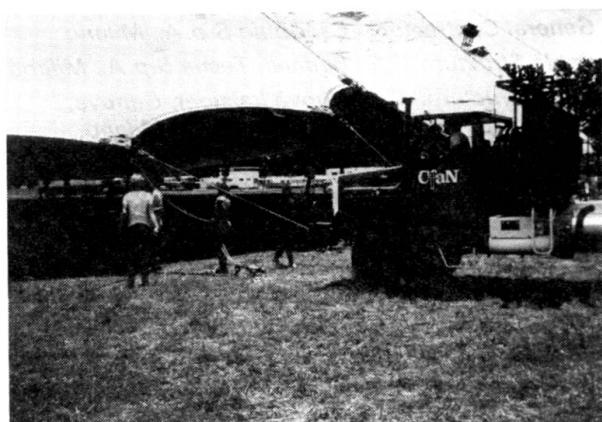
Fields were jointed along the ridge lines by shackling the twinned ridge cables together at 1 m intervals and along longitudinal site joints with bolted plates. The edge details were formed with catenary cables in a bias cut cuff welded to the edge of the cloth. The ridge cables and the boundary cables were backed up with polyester belts to resist tangential forces and to prevent damage during lifting when the cables would not be correctly loaded. The field joints were also reinforced with belts to prevent spread of tearing.

The Tent was prestressed to 500 kg/m weft and 200 kg/m warp by means of winch trucks pulling back on the side masts. The corresponding strains were 4% and -1% so the extensions in the weft direction were considerable. The tie backs were adjusted by chain links hooking into shortening clutches with rigging screws for fine adjustment on the ridge lines. The ground anchors were 7-wire strands about 10 m long grouted into 100 mm holes in the soil.

(I. Uddell)



Erection



Tensioning



Finished structure