DESIGN TASKS - TYPICAL PROJECT

* Create a 3D model of the site.
* Design and model the structure on the computer using tension fabric CAD tools.
* Layout the structure and provide a general arrangement.
* Provide visuals of possible designs for the client.
* Determine the pressure coefficients (wind loads, positive and negative), and to assess the performance of the proposed form.
* Plot and print all drawings and specifications to the detail level required to instruct suppliers.
* Detail the steelwork, fabrication drawings, and rigging.
* Provide the cutting patterns, from the patterning software, to allow the manufacture of the membrane.
* Detail the techniques for the webbing inserts and catenaries, clamping plates at lacing and catenary ends.
* Determine material specification, manufacturing standards and design life for the structural steelwork and rigging.
* Provide all fabrication drawings, laser cutting templates, and weld specifications for the steelwork and rigging.
* Contract manufacturing and installation.

PROJECT DURATION

Typically, a medium sized membrane project will cover 12-16 weeks. The bulk of the design work takes place in a concentrated period during the first month. As most membrane materials are custom made for the project, delivery of the membrane in roll form from the factory is usually 4-6 weeks.

WARRANTIES AND GUARANTEES

Design, analysis and certification of membrane structures is a branch of engineering which requires specialized knowledge, experience and software requirements. Desert Light Structures will obtain manufacturers quality statements and warranties on materials, workmanship, and all other fittings used on the structure; and will contract suitable engineers to provide the technical and design warranties. Factors of safety are determined for each disparate part of the structure. Permanently installed membranes will need to meet the same environmental loads as a traditional building; pressure coefficients, and loading criteria are normally taken from local or national building codes.

John Middendorf is a designer and mechanical engineer with 15 years of experience in fabric and structure projects. In 1987 John began A5 Adventures, Inc. which produced world renown suspended camping tents that revolutionized climbers ability to live on vertical walls in remote, stormy places. After selling the successful design company in 1997, John completed a Master's of Design from Harvard Design School, where he studied architecture and tension fabric structures.

Desert Light Structures, LLC

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# Shade for the Desert

DESERT LIGHT STRUCTURES

Flagstaff, Arizona USA

Tension Fabric Structures

# Desert Light: Shade and Shelter for the Desert

## Commodity, Firmness, and Delight -Vitruvius

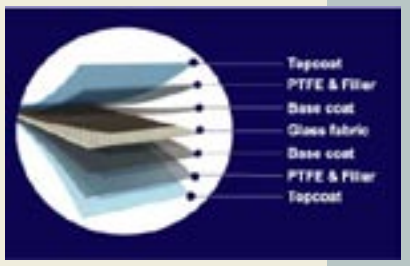
Desert Light Structures, LLC designs custom projects involving the design, analysis, manufacture, and installation of fabric membrane structures in the Colorado Plateau area.

The science of tensioned minimal surfaces has inspired an exciting new fabric technology for architectural applications. Two factors offer applicability for urban scale projects:

1. Recently developed engineered woven fiberglass fabrics are strong, impervious to ultraviolet rays, and have a 35 year life span in desert conditions.

2. Software analysis programs offer precision patterning of complex double curved fabric surfaces.

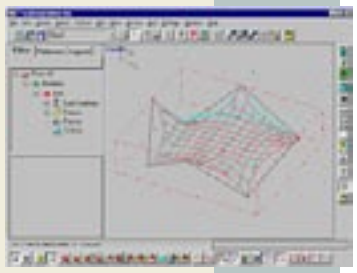
Fiberglass architectural fabrics offer structural integrity for wind and snow loads, durability, and beautiful soft light.

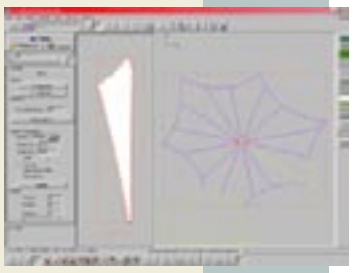



Tension fabric architecture relies on double curvature to ensure the surface remains in stable equilibrium. The pretensioned surface resists deflection from external loads.

## Computer Aided Design

Desert Light Structures utilizes specialized CAD packages which offer graphically interfaced design and analysis for tension fabric structures that produce workable patterns which can then be used for manufacture.





Additional CAD tools are used to offer professional design services to clients. A 3d model can be created of the actual site, and a site analysis mapping available solar radiation can be merged with shading representational tools culminating in final CAD models which can predict accurately aesthetic and economic performance of designs.