

MPANEL NEWS

Form-finding and patterning software for AutoCAD

August 2006

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Paneling and Meshing Click format Help format	Illustrates the methods used to divide a mesh into different colored areas, both for paneling and visualization meshes. Can be used as a generic tutorial on cross sections and rebuilding mesh's from 3D polyfiles.	
Inserting a Block cut Click format Help format	Shows a method used to block out a simple icon into a mesh, which will be created in a contrasting colour.	
Embedded Cables Click format Help format	How to use embedded cables to carry some of the loads in a cone tent design.	
Modular Tent Click format Help format	How to design a modular structure, so that you can add any number of central sections to create different length designs.	

We make learning how to use MPanel as easy as possible. Whether you are an experienced MPanel user, or just starting out, our website offers drawings and videos to help you better understand the functions of MPanel.

Go to our website at www.mpanel.com and look at our Tutorials and Tutorial Videos pages. We have just posted some new drawings to help explain the stressing of a tensile fabric structure. Check back often, as we add to our tutorial drawings frequently.

MPanel Customer Spotlight:

In this and following issues of MPanel News, we are featuring some of the projects built by our existing MPanel customers. We hope this will help you all to know each other and benefit the whole tensile fabric industry by showcasing the many ways that fabric can now be used in Architecture.

TECHNICA Consultoria e Projetos Industriais Ltda. / BRAZIL

Featured Project:

The Fish and Fruit Market of Ananindeua – 2006

By Paulo A. B. Barroso - Civil/Structural Eng.



Sao Paulo, Brazil

INTRODUCTION

Ananindeua is a small town located on the suburb of Belem, a larger city and capital of the state of Para, which integrates the great amazonic rain forest in Brazil. One of the most important income source of the community of Ananindeua is its rich commerce of fish and fruit, produced by local fishermen and farmers. As a result of an uncontrolled growth, the existent market site and its surroundings has turned to one of the busiest places in town. The infra-structure has become inappropriate and the search for a better place was urgent. Last year Technica was invited to join a team for developing a project for a new market place and a roof.



THE FRAMEWORK AND THE MEMBRANE ROOF

The new site will enclose a 3250 m2 of an unused public space, and its location is strategic for transit and all urban facilities. The roof is composed by 42 hexagon 9.6 meters diameter calices (inverted umbrellas), 4 hexagon 16 meters diameter umbrellas, and 2 main cone tents – 16 meters diameter hexagon as well.

The metallic supporting system was designed as very rigid tubular steel space frame. Concerning to the aggressive hot and damp weather, with almost everyday heavy rains, we decided to apply hot dip galvanization to all metalwork. This will improve the weather resistance capacity of steel parts as long as the membrane life.

LOADS AND STRESSES

Since there are no earthquakes, snow loads, hurricanes, etc, in this region, we designed all structural components for the following loads:

Framework self weight	20 kgf/m2
Live loading	25 kgf/m2
Wind speed	108 km/h -
Average pressure or suction	50 kgf/m2
Membrane self weight and fittings	1 kgf/m2
Steel framework stresses according to Brazilian regulations NBR8800 and AISC-ASD 91	
Membrane rupture stresses – Type I $F_u = 60$ kN/m	
Membrane pre-stress: max = 10 kN/m	
Membrane wind loads + pre-stress: max = 15 kN/m	

FABRICATION

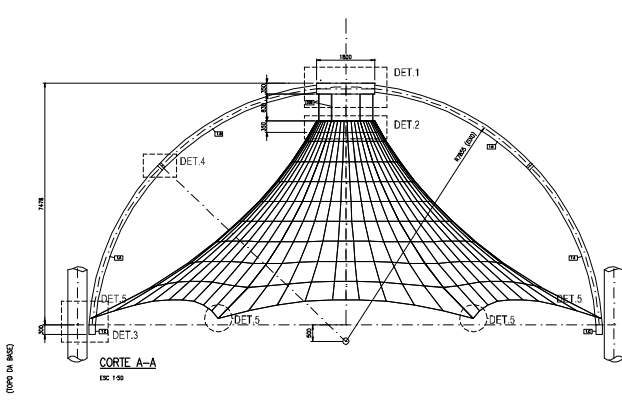
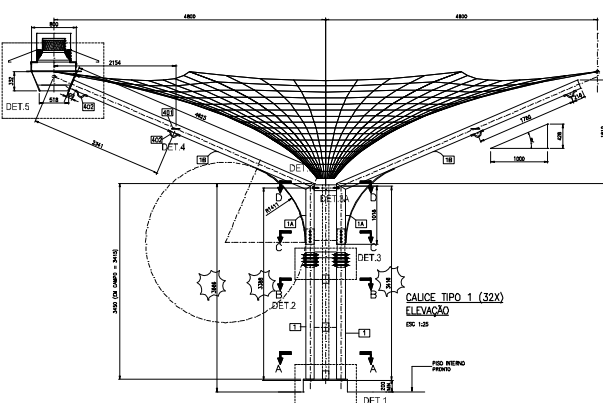
Membrane patterning, cutting and welding, and all steel parts, were engineered and industrialized at one of our associates' facilities in São Paulo, south of Brazil.

ON SITE ASSEMBLY (This project is still under construction)

Erection and assembly on site was made easy by choosing in the design phase, the right sizes and overall dimensions for each structural element. With regards to the site topology and maximum highs to be reached, small handling and rising equipment are to be used.



DESIGN DRAWINGS



THE TEAM AND MATERIALS

Architecture: J. M. Bassalo – Meia Dois Nove Arquitetura e Urbanismo
Consulting and structural engineering for metallics and textile membrane: Paulo A. B. Barroso – TECHNICA Consultoria e Projetos Industriais Ltda.
Metalwork: METALCO
Textiles developing and site assemblage: FORMATTO
Supply coordination: Eng. Rita Bose

Structural steel: ASTM A.36 from national suppliers

Membrane: Type I Mehler and Ferrari

Patterning software: MPanel software

Get your free 30-day MPanel Evaluation

If you haven't yet tried MPanel, please do contact us and we will send you a free, fully functional, evaluation copy of MPanel to try out in your own design environment. We will even hold a training web conference with you to get you started! To request this MPanel evaluation please send us an email with your company contact information to support@mpanel.com.

You can also contact us through Just search for MPanel Support and choose the representative that is closest to you.

The IFAI Expo is just around the corner—visit us at booth 1700

Once again, MPanel will be on show at the IFAI Expo! Please make plans to visit booth #1700 and let us show you some of the features that make MPanel invaluable in your tensile fabric structure design team.

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