Our technical office manages the design and manufacture of our arched, galvanised steel structures. This office is responsible for project calculations and for preparing detailed workshop and manufacturing drawings. All structural steel work is designed and manufactured for use with fabric membrane coverings to ensure that the structure and its covering are securely connected and assembled. All structures are designed and manufactured in accordance with current regulations and the reference standards listed below.

**THEORETICAL LOADS:**

**Own weight.**

**Snow overload:** This is the snow load at the height above sea level of the installation site.

**Wind overload:** This is the wind load for the installation site with reference to the Roughness Class and the Exposure Category. The calculation values are chosen on the basis of the circular n° 156A.A.GG./STC of 04-07-96 para C.7.6 concerning open constructions.

**Fabric pretensioning:** This is the two-way axial prestressing exerted by the fabric membrane cover on an arch at a constant load; this value is not required by current legislation. Design standard U50.00.299.0 of November 1996 – Tent structures, tension structures, air supported structures – Instructions for calculation, construction, testing, use and maintenance.

**Seismic overloads:** The seismic deformations in our arched structures do not endanger the connections between structural elements. The movement of foundations specified in the standards does not significantly modify loading and it is not therefore necessary.
The following materials are used in our arched steel structures:

Special rods and plates: FE 510 B – FN (EN 10025).
Tie bolts: FE 430 B – FN (EN 10025).
Structural steelwork: FE 360 B – FN (EN 10025).
Bolts and nuts: Class 8.8 or higher
Welding electrodes: 44 Class 4 B (UNI 5132) or equivalent.
Concrete: Rck > 250 daN / cm².
Reinforcing steel for foundations: FeB 44K, cut to size.

TREATMENTS:
Metal parts are hot-dip galvanised in a molten zinc bath. This ensures that open profile is suitably galvanised on the inside and the outside. Threaded parts such as bolts are electrolytically galvanised.

PARTICOLARI DI CONFEZIONE DELLA MEMBRANA IMPERMEABILIZZATA
The membrane cover consists of a high-tensile polyester fibre fabric weatherproofed on both sides with a PVC coating. The membrane used for covering arched structures is made from a synthetic, rot-proof, polyester fabric.
The fabric fibre count is Dtex 1,500 which corresponds to the weight of a yarn reel of 9,000 metres.
The mechanical characteristics of the membrane are specified during the design stage and are selected on the basis of the accidental overloads to which the fabric may be subject.
Six types of material are available. The characteristics of these types are shown on the technical data sheets for each type. Various types of surface lacquering are used. The type used depends on the finish required. Acrylic lacquering is the most commonly used.
The cover membrane is manufactured by cutting shaped fabric strips and then joining these using high-frequency welding. The resulting cover is a one-piece membrane. Even large covers are one-piece. This ensures that there is no danger of leaks at the joints. During manufacture the cover is shaped so that a saddle is formed between one arch and another. This has two results: 1) A pleasing appearance. The shaped membrane is a tension structure with a double curvature. 2) Uniform distribution of stress over the entire surface of the cover. There are no hazardous concentrations of stress at particular points of the covering and no slack cover areas which might flap or move about in the wind.
The covers are complete with a series of special fittings. These include steel cables which provide the necessary traction and resistance to overloads. Cables are arched to distribute stress radially.

The cover is raised and stretched over the galvanised steel structure. In the standard version, the cover is anchored to the ground at the two end bays by tubes inserted in special seams. On the long sides, the cover is anchored to the structure base by steel cables anchored to special plates. Tensioners and threaded bars are used to stretch and pretension the cover.
On the version fitted with the End Bay Walling optional, the cover is anchored above ground level using steel cables which are in turn anchored to special plates. Cover stretching and pretensioning is done using galvanised tensioners.
The pretensioning and the double curvature of the cover shape are two major factors in ensuring that the cover lasts for a long time. These two factors guarantee a uniform distribution of stress and a high safety coefficient in all areas of the cover even under heavy snow and wind loading.
The bottom part of the structure is closed off by vertical, sliding partitions made from impermeable fabric. These side partitions or covers are suspended from runners and rails on the main cover. Side partitions make it easy to open and close the structure very quickly. A structure can be changed from a closed, indoor facility to an open-air, outdoor facility in a matter of moments. All our fabric covers are available in twin membrane versions. The additional membrane acts as insulation, cutting thermal loss coefficients and heating bills during winter. It more than makes up for the lack of solar heating on cloudy days.

GALVANIZED STEEL