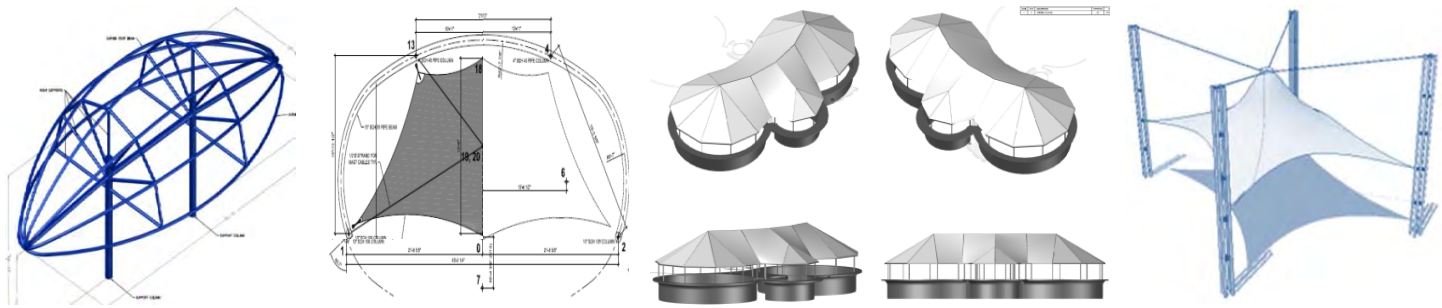
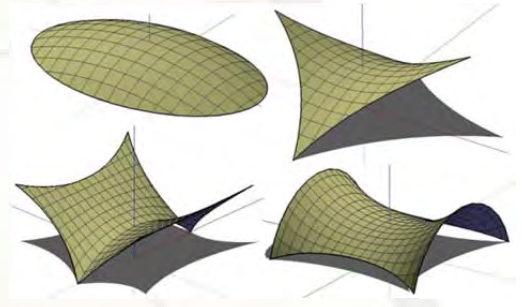


TENSILE FABRIC ARCHITECTURE: The Process

The characteristics of a tensile fabric structure are very different than traditional building components. Flexible and lightweight materials are placed in tension, or combination of tension and compression, to create shapes and designs not possible with traditional materials. The freedom of form is really only confined by imagination and site conditions; and is why tensile architecture is so embraced and utilized for large span roof systems, amphitheatres, and shade structures to provide texture and a unique eye catching element..

Complex curvilinear shapes are more affordable and achievable with fabric, which can be cost prohibitive to do with rigid materials. And, with an extremely high resistance to weather and environmental stress and ability to meet building code requirements, tensile fabric structures can last as long or longer.

The Signature Team designs structures to meet the clients' vision while incorporating the underlining requirements of the project. Working with an experienced company will streamline the entire design, fabrication and installation process, ensuring that the project is kept within the project budget. Our services include building from existing structure systems to designing new systems from ground up. The use of a flexible PVC membrane, cables and custom steel components allow for an endless array of shapes and forms available for a project. The drawings below are examples of tensile systems we have designed.



Our team works on the forefront of every project to ensure the final success of the structure. We listen to the requirements and meet for a final design review prior to start of any fabrication. Taking a project from a conceptual design and review phase allows our clients the lowest estimates on final pricing, and reduces the unknowns from the start. Only after mutual agreement and approval to move forward will the structure move from design into production.

Signature supplies the finished structure with an engineered package complete PE stamp, delivered to your site and a technical supervisor to aid the crew in the installation. Turnkey construction packages are available and priced based on scope of work and location. Signature can integrate custom artwork, colors, signage and logos.

Our tensile systems are used in many applications with our clients being some of the most recognizable across North America. Schools, Universities, developers and private/public institutions have hired Signature Structures for their membrane solutions. References and case studies are available upon request.

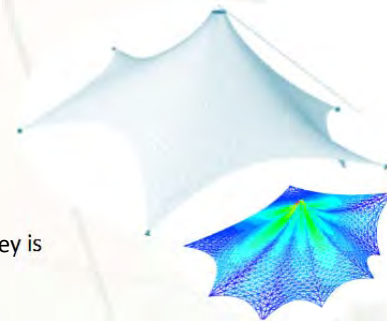
Whether needing a tensile engineering consultant or complete project management from design to construction, Signature will deliver a tensile fabric solution best suited for your project. When you are ready to begin a new project or replace elements of your existing structure, the experienced team at Signature Structures will gladly help with any initial questions.



TENSILE FABRIC ARCHITECTURE: The Process

When designing a tensile fabric structure, materials, the site location and size all play important roles in the final cost. The cost consists of materials, design & engineering and final construction of the structure. The materials are typically comprised of three key elements—steel, fabric and cables. Labor and the site location are also important factors which can affect the cost and should be incorporated at the design stage.

The **first step** in designing a tensile fabric structure is a site visit or detailed review of photographs where the structure will be located. Per the site location and client requirements, we design the optimal roof form which suits the aesthetics and engineering requirement, while keeping in mind the client's budget. In the case of a reskin or roof replacement, we evaluate the structural elements to define what can be recycled and what needs to be replaced, as well as location and set up for a 3D survey. When working with existing structure components, a 3D survey is always required.



The **second step** is a design and engineering review. The design review process begins with input from engineering and construction to ensure efficiencies throughout the project. Then, initial conceptual sketches are sent to the client for input and initial approval. In the final stage we create a 3D design package so the client can easily see the structure before it is built. Upon approval, a components list is created; patterning and shop drawings are drafted; and the fabrication and assembly process can begin.



Step three, the production process, includes procurement, fabrication and assembly. Most metal components of the tensile structure are custom pieces. Precision production requiring laser cutting, shaping and welding take place, forming the tensile structure's components. The metal surface coating is determined during the design phase based on corrosion control, client requirement and application. The finished steel components are sand blasted and prepared for galvanization, epoxy or custom powder coated paint. The cables system, turnbuckles, bolts, fasteners and tensioning components are specified during the design phase, procured or fabricated (if custom) as required, and assembled in a quality controlled environment.



The membrane weight, color and characteristics are determined during the design phase. There is a wide selection of fabrics available. Engineering requirements, in conjunction with the client's requirements, will help determine the best recommendation for the structure. Membrane is fabricated in an IAFI production facility with skilled workers utilizing high quality RF welding machines. The temperature and heat welding process are based on the membrane selection, sub scrim and the membrane manufacturer's best practices. Membrane Fabrication is very important because the look of structure depends on the patterning and shaping that occurs at this time. Throughout this fabrication process, patterning, weld strength, assembly order (and accessories) and systems that integrate within the membrane (pockets, grommets, rings and reinforcements), are routinely checked for compliance. All patterned sections are pieced together on structural RF welding systems and the final quality check is complete. The membrane can be folded in a variety of methods determined by the construction methodology to accommodate the easiest and most economical installation. Upon completion, roof panels are packaged in special PE bags, a complete bill of materials is developed and the components are prepared for loading and shipping.



The **fourth step** is Construction. Throughout the process a project manager works with the client to coordinate the other trades on site, including any concrete foundation work. Fencing, equipment and staging area will be pre-determined and crew will mobilize to the site to receive the material. An experienced crew will work to complete any tear down work (if an existing structure is present) or begin installing the frame work of the new structure. The membrane will be added once the substructure and cables are complete, laid out in its pre-determined packaging and unfolded on the structural system. Both compression and tension are used during the erection process. In this phase, close attention is paid to wrinkles in fabric. By ensuring correct tolerances on the tensioning system and equaling stress across the entire structure, an even tension and finish are successfully completed.

