



PHOTOS COURTESY OF UNIVERSAL FABRIC STRUCTURES, INC.

Sports Field Structures

by Suz Trusty

The economic crunch is making a strong impact on all segments of the fabric structure market, with a surge of interest for sports and recreation uses. “It’s driven by the costs of the brick and mortar buildings,” says Steve Miller, director of marketing for Arizon Companies, a supplier of air, tension and frame-supported structures (www.arizoncompanies.com). “Many clients that historically would not have considered an air-supported structure are coming to us now. Our ‘bubbles’ typically run around \$20 per square foot versus \$100 per square foot for a brick and mortar building. They’ll generally last approximately 20 years; sometimes 30.”

“We’re busier on the sports side than any of our other market segments,” reports Jeff Bowman, marketing manager for Universal Fabric Structures, Inc., (UFS, www.ufsinc.com). Based in Quakertown, Pa., the company specializes in the design and manufacture of pre-engineered or custom-made, clear-span, tension fabric membrane structures. Bowman says, “The surge includes many different ‘series’ of steel or aluminum-framed buildings, with multiple options for the fabric covering and at differing price points, for both temporary and permanent uses.”

The increased use of these alternative structures had begun by the end of 2009, according to Brad Williams, Truss Arch specialist for ClearSpan Fabric Structures (www.clearspan.com), a division of Engineering Services & Products Company. As part of the team that concentrates on the frame-supported tension fabric buildings for the sports field market, he anticipates continued growth because of their versatility, as well as costs.

Each of these systems provides a clear, open space for sports activities at a faster installation time than brick and mortar buildings.

Relocation is another economy-related issue. Miller says, “Say an air-supported structure is installed on a college campus, and in five years the college decides to build a dorm on that site. The air-supported structure can be moved to a new location.”

The portability claim for air-supported structures was demonstrated by the relocation of the bubble that had covered the synthetic field at Toronto’s BMO Stadium, home of the Toronto Raptors FC MLS team and Canada’s National Soccer Team. When the decision was made to convert the synthetic field to natural grass, Arizon, which had designed and installed the bubble,

This interior view of a 90-foot-wide, 160-foot-long UFS Phoenix structure under construction shows a major advantage of the frame-supported fabric structures: lots of open space for sports activities.



Work is underway in covering this UFS Phoenix structure for an ice hockey facility in Alberta, Canada.

handled the relocation. Miller says, “The move went flawlessly.”

Tension or frame-supported structures can be relocated or expanded if site needs change. Bowman says, “It’s a quick and simple process. An end is removed, the desired number of segments inserted, and the end replaced. The structure also could be connected to any type of existing building, including brick and mortar. Doors and other openings can be added at any time with minimal effort.”

Another trend at the college level is combining multiple sports within a single structure to get the most value for every dollar

spent. Miller says, "They're planning the size of their open field space to accommodate the dimensions of all sports played on rectangular fields, taking into consideration different configurations for multiple-field layouts. The Arizona air-supported structure built for the University of Colorado at Boulder was conceived as an indoor practice field for their football program. Now it serves as the indoor practice field for their soccer and rugby teams, too. That versatility is a great benefit to their overall athletic program."

That concept has expanded even more at other universities with football, soccer, lacrosse, rugby and sometimes field hockey sharing covered field space on a seasonal basis. Miller says, "Most now are adding track facilities, and many are including baseball and softball as well. Part of that strategy goes back to costs. Though the initial outlay is larger overall, the cost per square foot of a 120,000-square-foot structure is significantly less expensive than the cost per square foot of a 40,000-square-foot structure."

While tennis had been the primary sport served by UFS structures previously, Bowman says, "We're now receiving many inquiries for other sports, especially soccer and the multisport venues. Structures for tennis facilities are generally 90 to 120 feet wide, but UFS structures are available in widths up to 300 feet. The only limitation on length would be the size of the site." With the emphasis on economic issues, Bowman reports UFS designed the Phoenix. "It uses tube steel construction and either polyethylene fabric or PVC fabric. It still meets all the wind and snow load requirements, while filling the demand for even greater cost-sensitive structures."

Bowman notes the Phoenix spans are anywhere from 60 to 160 feet wide and any length the facility might want. He says, "They can be used to cover any sports surface: synthetic turf multiuse fields, gymnasiums, tennis courts or ice. Our Canadian distributor, Universal Cover Corporation, recently constructed a Phoenix structure 90 feet wide by 160 feet long for an ice hockey facility in Alberta."

Seeking the highest degree of flexibility is a cooperative, interactive process involving the structure designers, the facility owner and the architect. Miller notes the Arizona project for Eastern Michigan University is a good example. The multisport practice facility opened in June of 2010. A permanent, air-supported structure, it's 410 feet long, 210 feet wide and 76 feet tall. Miller says, "It includes a 1,100-square-foot welcome center and 86,000 square feet of convertible space that can be configured for a football field, an international soccer field, four youth soccer fields or two youth baseball/softball fields. It is used by the varsity football, golf, soccer, baseball and softball teams, along with intramural and club sports and area community youth sports groups."

Sustainability

Buyers of these products have become more focused on sustainability issues, such as the transportation factors for material shipment; the installation factors of construction; recycling options; maintenance costs; and operational costs. Bowman says, "They're looking for details on insulation and R-values that may have been minimal concerns in the past. We're also seeing insulation issues addressed in local building permits, with specific requirements established. Since each municipality is different, all pertinent regulations must be reviewed at the beginning of a project, before working on the design or issuing a cost quote, to insure all standards will be met."


Thus, suppliers report that there is an increase in custom-designed structures. Bowman says, "UFS works with many different composite materials and offers a variety of design options, including a broad choice of colors, structural framing, lighting systems, mechanical fixtures and indoor/outdoor design elements. In addition, we use multiple framing materials and cladding from PVC membranes to hard sidewalls and translucent roof panels."

The International Building Code (IBC), introduced in 2000 by the International Code Council, applies to all structures except one and two-family homes. Referenced within the body of this document are standards established by other organizations, including the National Fire Protection Association, ASTM International and the American National Standards Institute. In structural areas, one of the standards referenced is the Minimum Design Loads for Buildings and Structures as published by the American Society of Civil Engineers (ASCE 7). The regulatory agencies of the states and/or municipalities adopting the IBC also adopt the referenced codes and standards and may attach additional standards or codes of their own.

Thus, frame-supported structures must meet national, regional and local building requirements. The first step of the process is location and site-specific research to determine wind, snow load and seismic code requirements. Miller says, “When Arizon builds a frame-supported structure, we make sure all the safety issues are addressed and emphasize that with the client.”

UFS has also become more proactive in informing potential clients of their quality standards, according to Bowman. “While our structures are designed for full compliance with IBC and ASCE 7, including the issue of balanced and unbalanced snow loads, we build our products to an even higher standard. We also can customize a structure for whatever stability and sustainability parameters the client wishes to meet.”

Miller says the air-supported structures have widely different risk factors for wind resistance and snow load than frame-supported structures. He says, “The Arizon air-supported structures are rated as a preferred risk for insurance coverage, with that rating and the cost to insure similar to that for a brick and mortar structure. We also manufacture the inflation and heating and cooling systems for our domes for total quality control. Our Johnston air rotation unit is used to inflate or to heat or cool. Our air-supported structures are equipped with sensors to detect conditions during inclement weather and make the adjustments in the dome pressure and the heat element as needed to prevent problems from occurring. In addition, we have a variety of proprietary backup systems that kick in if needed.”

Suppliers stress that well-designed, constructed and installed structures, whether air-supported or frame-supported, backed up by seasonal inspection and regular maintenance, will hold up to the seasonal conditions and provide years of service. 

The author is a contributing editor for SportsField Management.

You Name the Sport... We've Got You Covered



Specializing in sports facilities for nearly 30 years with a proven legacy of projects throughout the U.S. and Canada.



Soccer



Swimming



Tennis



Hockey



ISO 9001:2008

ufsinc.com

Universal Fabric Structures, Inc.
2200 Kumry Road
Quakertown, PA 18951
800.634.8368 | +1 215-529-9921