

CASE STUDY

SPORTS & FITNESS

MBMA
METAL BUILDING MANUFACTURERS ASSOCIATION®
Research | Leadership | Education



Evans Fitness Club • Evans, GA

SPORTS AND FITNESS FIT THE METAL BUILDING MODEL



Sports and fitness are two related lifestyle industries that focus on leisure options for people of all ages, interests and incomes. They represent many diverse options.

SPORTS & FITNESS INCLUDE:

Gyms and physical fitness centers
Yoga studios
Martial arts training
Dance studios
Natatoriums
Sports courts (volleyball, racquetball, basketball, squash, etc.)
Indoor skydiving
Bowling
Hockey
Soccer
Football
Neighborhood activity centers

Metal building systems accommodate these types of businesses very well for a variety of reasons.

HERE ARE THE TOP 10...

1 They meet the criteria of most sports and fitness facility developers. Metal buildings provide business developers with a solution that is quick to construct, long-lasting and low-maintenance. That means lower long-term costs, faster construction that brings the building into service more quickly than other building methods, and minimal facility maintenance requirements over the entire life of the structure.

2 They deliver a versatile, clear span structure. This means there are no required interior columns to impede the reconfiguration of spaces to accommodate changes in sports/fitness equipment, programs, and consumer expectations.

3 They are durable. Metal buildings stand strong against extreme weather conditions and catastrophic disasters. They are also exceptionally fire-resistant. Metal roofing, one element of a metal building, has been shown to withstand winds of 140 mph. In seismic zones, low-weight flexible frame options offer higher resistance to tectonic forces.

4 They are engineered to provide an exact fit for a specific developer's program. The building layout is defined, the building components are manufactured, then all materials are delivered to the construction site as a complete package—assuring single-source responsibility and prompt product delivery. The standardization inherent in systems-based buildings makes design, manufacturing, delivery and building erection possible in as little as two-thirds the normal time for conventional structures.

5 They support process-driven development. A metal building is ideal for sophisticated developers because its design-build model is based on process and critical path, increasing efficiency in both design and construction. Interface with computer-aided design, along with the ability to clad buildings in brick, precast concrete, stone, wood, architectural metal or glass allows great flexibility in design aesthetics.

6 They offer competitive advantages. Advancements in the fabrication of structural elements provide a faster return on investment for a building owner. Since all elements are factory-fabricated, they are pre-cut and pre-punched under precise factory conditions. As a result, quality is increased while waste is decreased. Building erection time and costs are highly predictable since all parts are manufactured and shipped to the site—typically within six to eight weeks from the time an order is submitted. These short build-out times translate to earlier occupancy and a quicker start of business.

7 They expand easily. When a developer achieves success in a sports or fitness location, there is logically a need to expand. With metal building systems, that potential is already built into the products. Expansion typically involves the simple removal of an end or side wall, erection of additional structural frames, and matching the existing wall and

roof coverings to the addition. This flexibility naturally cuts costs and reduces the time and inconvenience typically required to expand or add to an existing structure.

8 They exhibit respect for the environment. Metal buildings are composed of steel and are 100% recyclable. Nearly every metal building component incorporates recycled steel. An independent study also reveals that, for the types of projects where metal buildings are most economical, they typically perform better in life-cycle analyses and have the least material impact on the environment.

9 They provide design criteria to stifle noise. Sports and fitness facility developers are typically concerned about noise levels generated by crowds, cheering and team-spirited revelry. With metal buildings, the proper use of thermal insulation helps prevent the transmission of exterior sound, while quieting the noise within a building by absorbing reverberating sound.

10 They allow for design flexibility. When a developer wants to promote a consistent brand that makes a franchise memorable, they will want to use textures, colors and design elements that represent that overall brand. Metal buildings provide versatility to meet each of the branding objectives through the use of cladding products, alternative coatings, specialized steel elements and unique structural formations.

Architects and constructors who specialize in metal building design-build strategies attest to the value, creativity, reliability and speed of delivery that is found in this form of construction. About half of all one- and two-story commercial buildings in America are created with metal building systems engineering. To speak with an accredited design-build architect or contractor in your area, contact mbma@mbma.com.



Tropical Park Equestrian Center • Miami, FL



CASE STUDIES IN BUILDING EXCELLENCE FOR SPORTS & FITNESS





EVANS FITNESS CLUB

*“It’s a practical move
that will save you
time and money in
the long run.”*

Reggie Moore
Brenton Grey Company, Inc.

Evans Fitness Club is a 50,000-square-foot, two-story health and exercise facility. The building includes racquetball courts, a rock climbing wall, a golf simulator, an indoor running track, a two-story spin room, a cardio room with cinema, batting cages, and individual Zen yoga, meditation and aerobics studios. The club also provides a 4,000-square-foot day care center, steam and sauna rooms and two additional businesses: Smoothie King and Evans Medical Weight Loss.

R.W. Allen, a general contracting firm in Augusta, Georgia, assisted the owner with site selection, land purchase and design concepts—well before the ground was broken.

“My advice to any fitness or recreation client is to get with a good design-build contractor prior to spending money on design and engineering,” says Reggie Moore, with the building’s erector, Brenton Grey Company Inc. “It’s a practical move that will save you time and money in the long run.”

Owner and general manager Mike Montarbo envisioned a contemporary, industrial appearance for the fitness center. To achieve this, the contractor recommended a metal building system with a design scheme consisting of exposed columns, bar joists, wide-open interiors and a warm color palette. “We were amazed and wowed by the way it turned out,” Montarbo says. “Since we’ve opened, we’ve had about 30 gym owners tour the facility. They’ve all been blown away by its design, particularly the interior!”

The metal building system is complemented by a second-story mezzanine that was designed independently, but it’s conventional steel tied seamlessly to the metal building.

“The metal building frame allowed us to maximize clear story height and long spans without sacrificing interior space with additional columns,” says John Martin, executive vice president with R.W. Allen. “Compared to conventional construction methods, the savings of going with a pre-engineered roofing system was essentially the equivalent of getting a roof at no additional cost.”

Once Evans Fitness Club turned operational, the end result more than met Montarbo’s expectations. “Everything is better than we anticipated, meeting or exceeding all of our performance standards,” he says. “The energy efficiency alone is phenomenal.



“It has really been a win-win situation. We would highly recommend a metal building system to other owners and developers.”

Mike Montarbo
Evans Fitness Club

We’re paying for energy at two-thirds the cost of a conventional 20,000-square-foot building that we also operate.”

The speed of construction was another important consideration on this project. Steel placement was optimized and manufactured in accordance with the project’s specific needs, which moved the construction process along more quickly in comparison to site-built construction.

“The building’s low price point was also a major advantage,” Montarbo adds. “It gave us the opportunity to incorporate additional elements as we went along, including a center deck.”

In addition to being highly durable, the structure’s framing system was designed to accommodate future expansion needs. “It has really been a win-win situation, and we would highly recommend a metal building system to other owners and developers,” Montarbo concludes. “It is our goal to build another fitness club with similar aesthetics later this year.”

Architectural services were provided by Studio 3 Design Group.



GREAT PARK ICE & FIVEPOINT ARENA



Great Park Ice & FivePoint Arena in Irvine, California, includes three indoor NHL-regulation ice rinks and one Olympic-regulation rink within a massive facility encompassing over 280,000 square feet. The \$100-million, LEED Silver-certified facility serve as the training facility for the professional NHL team, the Anaheim Ducks, as well as for Olympian ice skaters. Further, it serves the community by offering public skating, skate lessons, curling, youth and adult hockey.

The project was built by Pre-Fab Builders, Inc. Construction management was headed by Swinerton, which also brought Rink-Tec onto the team, an international rink contractor based in Minnesota.

The complex is composed of two metal buildings and a conventional building between them, allowing the joined structures to move flexibly in a seismic event and to provide higher resistance to seismic tremors. In a press release, Swinerton explains that metal buildings “have the ability to withstand seismic movement of up to 10 inches, while conventional buildings withstand two inches. Additionally, [metal buildings offer] a cost-efficient alternative to conventional building design in commercial applications.”

The original conceptual design provided three gabled buildings side by side with the ridges centered over each rink, but this would result in the need for interior columns and bracing in the locker room and second-floor space. By rotating the ridge, the complex created one large clear-span building, eliminating the columns.



Great Park Ice & FivePoint Arena • Irvine, CA

“Great Park is truly one of the finest sports complexes in the country, and it showcases the versatility and freedom of design one has with a modern metal building.”

Gary Robinson, National Sales Manager
for All Weather Insulated Panels

In addition, spanning the long distance of the rinks assisted in the functionality of the roof as well. “This [change] allowed us to have better design in order to shed water off the roof correctly and not have leaks in the valley gutters,” explains Jerry Hancock, vice president of Pre-Fab Builders.

Due to housing four ice rinks and keeping the building at a constant 55 degrees in Southern California, the facility was designed similar conceptually to a cold storage facility. “Building an ice rink comes with the unique challenge of properly insulating the structure to prevent vapor transfer and condensation,” says Gary Robinson, national sales manager for All Weather Insulated Panels.

In this high-seismic geographic region, and with a building roughly 30 feet tall, standard bracing would

not have supported this structure. A steel buckling-restrained brace system was designed specifically for this application. The braces are steel tubes with a bar inside encased in concrete. “It is very heavy and stout, a way better bracing system for large steel buildings due to seismic requirements,” Hancock says. “That bracing system can minimize or reduce the foundation design by a third and give a lot of advantage. It’s more effort to put in, but once in place it’s a solid platform.”

Hancock also affirms that using a metal building for this application was an ideal solution for two specific reasons—span and cost. He explains that metal buildings “are real cost effective, especially for big span buildings. I like to say, ‘we take a structural steel design and take the fat out.’”



BOSTON SPORTS INSTITUTE



Boston Sports Institute in Wellesley, Massachusetts, is a four building complex offering nearly 102,000 square feet, which provides space for ice rinks, a pool house and a field house with mezzanines for viewing stands and a running track. Other facility features include locker rooms, a warm pool, offices and mechanical rooms. The design incorporates a multi-span gable, symmetrical building and a multi-span gable, un-symmetrical building with an attached single-slope building.

Unique project challenges were addressed throughout the design and construction process. Each required careful coordination among key constituents: the architect, PDA Inc., the general contractor, Dacon Corporation, and the erector, BARNES buildings & management group inc.

One difficulty was the erection of steel over the pool excavation using a 110-ton crane and aerial equipment inside the pool excavation. The challenge was exacerbated by property constraints that allowed only minimal site access on three sides of the building. Another challenge was the installation of the complex iron package, which included a monumental stairway to the mezzanine level, six sets of steel pan stairs, guardrails at the running track and guardrails with wire mesh at all viewing stands, a ships ladder to the roof hatch, a grated tread stair for the pool mechanical room, an elevator pit ladder, a hoist beam, masonry lintels and a galvanized cooling tower.

For mixed-use sports facilities such as this, it is necessary to design the buildings to address high energy demand, temperature fluctuations and humidity-controlled environments related to ice rinks, natatoriums, turf fields and public areas. Operating costs were addressed and reduced by taking extracted thermal energy to keep the rinks frozen and reclaiming it to heat the pools via loop systems with heat exchangers and circulation pumps. Additional energy efficiencies were achieved by specifying LED lighting, high-efficiency water heaters and an ammonia refrigeration system. The 100,000-square-foot roof area and electrical infrastructure are designed to accommodate a 900kW photovoltaic array to reduce electrical grid demand and carbon emissions.



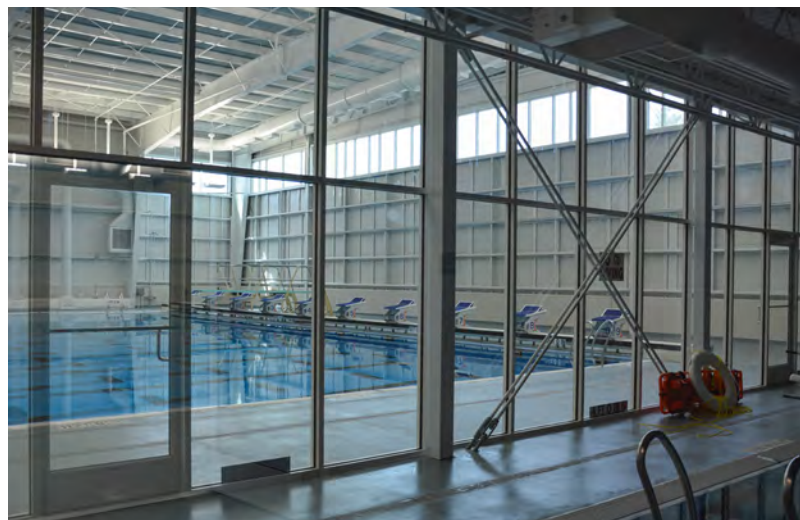
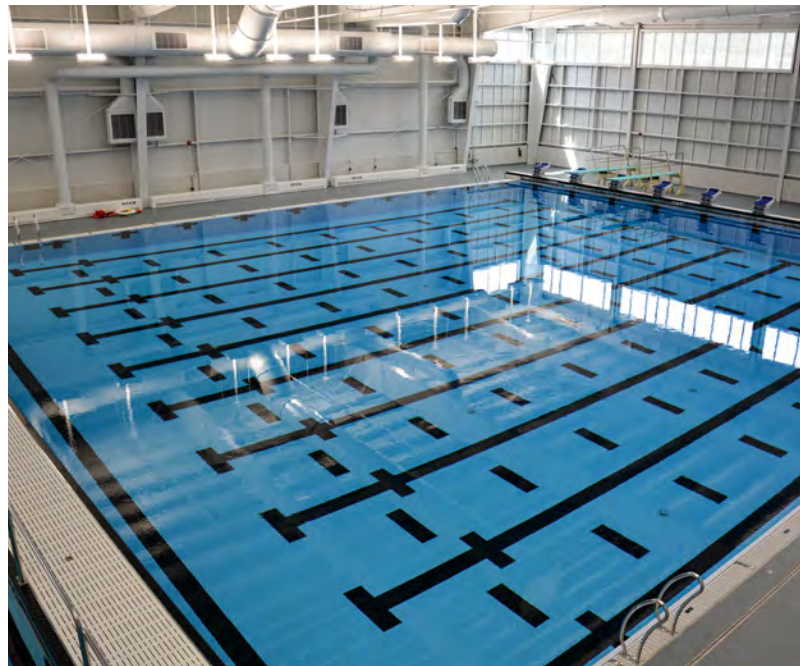
Boston Sports Institute • Wellesley, MA

The high interior relative-humidity levels of the natatoriums (60%) and ice rinks (48%) present an increased risk for condensation across the boundaries of adjacent spaces, adding a level of complexity to interior wall construction. To guard against corrosion, all exposed metal parts are stainless steel with wall and ceiling surfaces finished with epoxy. Thermal insulation, window insulation and vapor barriers help to manage the humidity hurdles. One problem was averted when the design team gave careful consideration to minimizing glare in the competition pool, a potential safety hazard and hindrance to competitive swimming. Anticipating the solar geometry, windows were strategically positioned high on the north side, limiting direct sunlight on the water's surface to only a few hours per year.

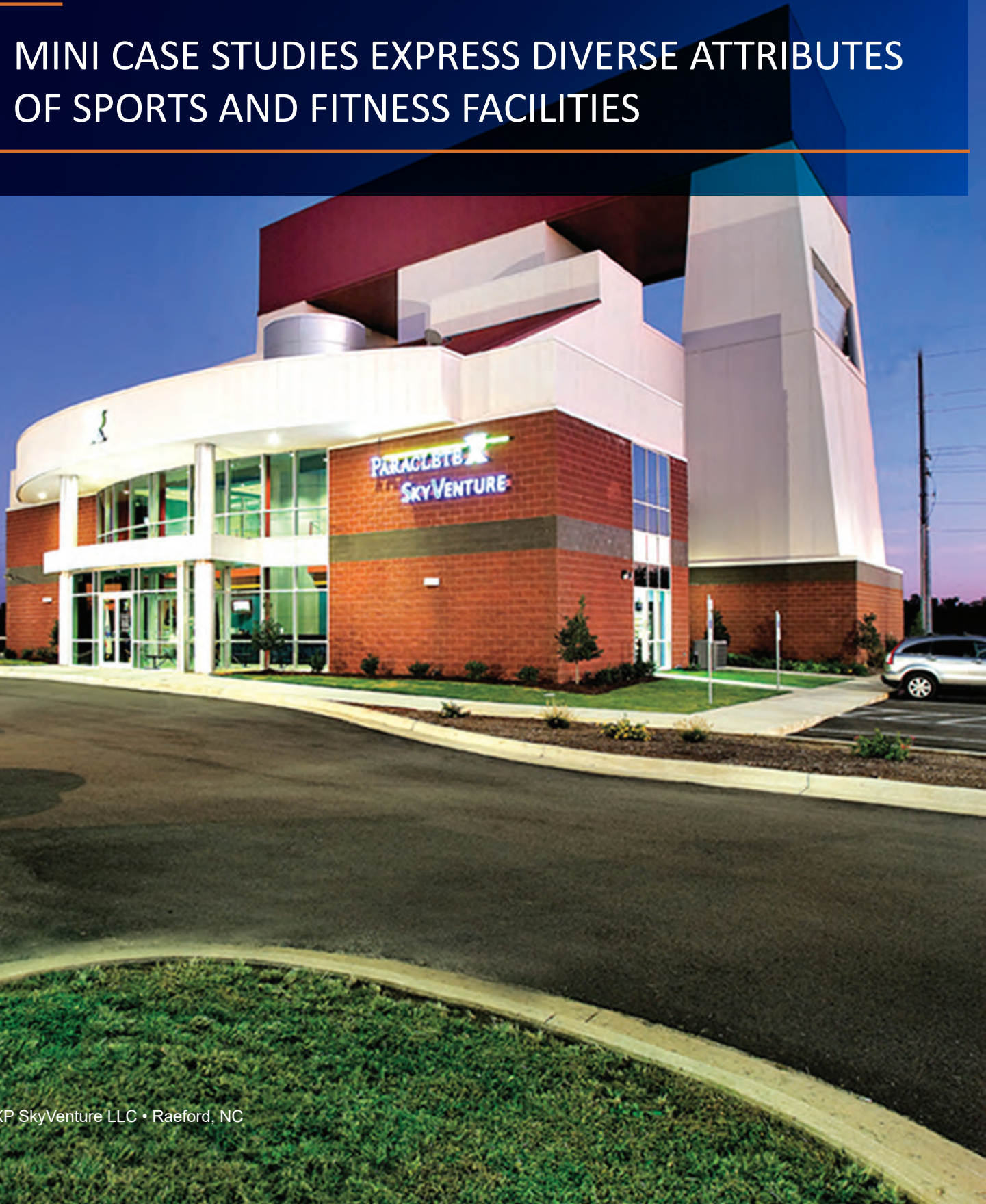
With a movable bulkhead, chair lift and drop-in stair, the competition pool can be reconfigured for multiple uses, such as water polo, competitive diving and recreational swimming. Large-view windows emphasize transparency between sports areas, contributing to an awareness of activity throughout the facility and providing spectator viewing.

On the second level, above the soccer/lacrosse turf field, is a two-lane track for jogging and rehabilitative walking.

Critical design features of structure, materials, light and color contributed to project success.



MINI CASE STUDIES EXPRESS DIVERSE ATTRIBUTES OF SPORTS AND FITNESS FACILITIES



PARACLETE XP SKYVENTURE LLC



Paraclete XP SkyVenture LLC is located near Raeford, North Carolina. This indoor skydiving center serves the Fort Bragg military base, including personnel in the JFK Special Warfare Center and School. The facility also provides training for sport skydivers and entertainment customers. The structure holds a 53-foot-high vertical wind tunnel that is more than 16 feet in diameter at its narrowest point. Four 541-horsepower fans supply wind to banks of airfoil-shaped aluminum turning vanes tucked into each corner around the tunnel. Laid end to end, they would extend almost 3 miles.

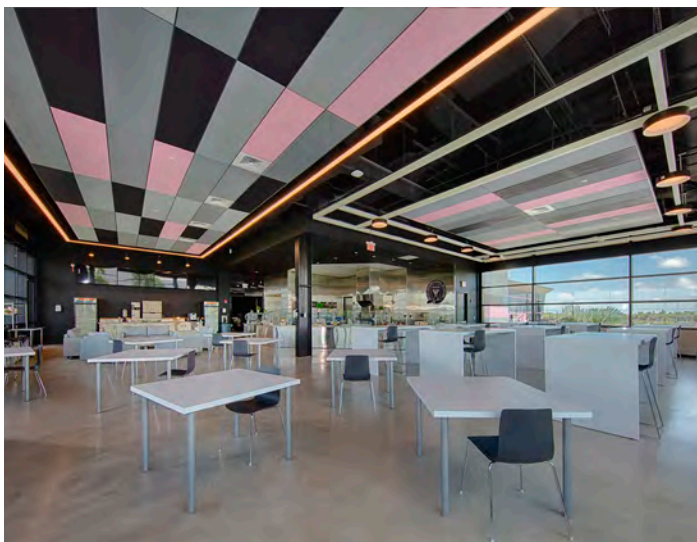
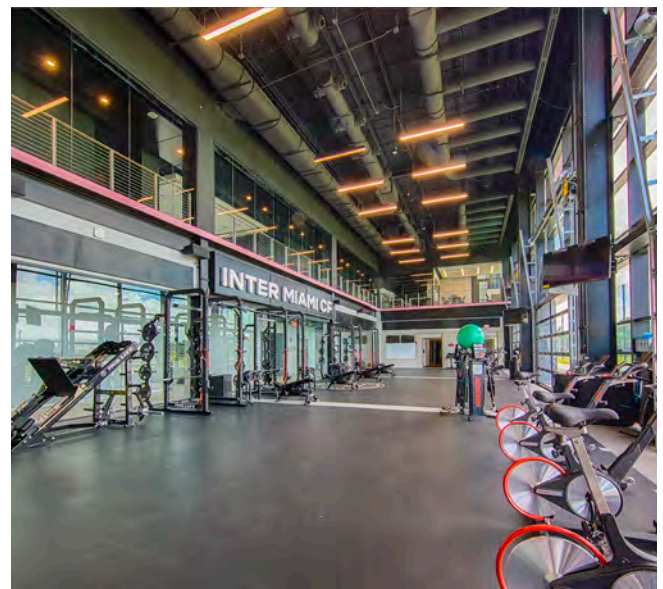
“Some panels for the towers were going up to 70 feet, so we had to be very specific with where and how they were attached,” comments architect Rick Collins, AIA. “We came back with detailed drawings showing each attachment point for final review and worked with the manufacturer’s engineers.”





DRV PNK (Drive Pink) Stadium is an 18,000-seat soccer-specific facility in Fort Lauderdale, Florida, and is the home of the Inter Miami CF Major League Soccer Club and its NEXT Pro reserve team, Inter Miami CF II. The building provides concessions, media provisions and VIP amenities. Situated on a 66-acre site, the property also includes a 54,000-square-foot training venue with six natural grass fields and one turf field, fully lit and with seating for 1,500 to accommodate high school and community sporting events. According to Lemartec Corporation's website, the practice facility is one of the largest in Major League Soccer and offers locker rooms, gyms, hydrotherapy pools with an underwater treadmill, a cafeteria, offices, meeting rooms and media workspaces. Outdoor site amenities are planned, including a community park with a dog park, playground, jogging trail and outdoor sports fields.

DRV PNK STADIUM



Designed by Manica Architecure for Lemartec, the \$145 million design/build sports complex was completed a fast-track schedule in just 11 months.

Lemartec's website explains that "the schedule was incredibly demanding in order to meet the first home game of the IMCF expansion franchise. Lemartec had to integrate personnel and operating procedures of three different construction firms into a joint venture and hit the ground running." The design-build approach allowed Inter Miami CF to proactively manage the construction process.



Stryker Sports Complex • Wichita, KS

STRYKER SPORTS COMPLEX



The **Stryker Sports Complex** in Wichita, Kansas, is a \$22-million STAR-bond-funded project. It is the largest sporting complex of its kind in the Wichita area and can host over 900 teams per event. The program's signature feature is a 112,000-square-foot indoor facility with a 297-foot clear span. It includes a full-size soccer field (which can be configured into two multi-sport athletic fields), locker rooms, offices and concessions.

To achieve a fast-track completion schedule mandated by the City of Wichita's ambitious deadline, MKEC Engineering Inc. developed several early release design packages, allowing construction to begin several months earlier than would have been possible with a traditional schedule. DLR Group provided architectural services.

Crossland Construction Company Inc. erected the building, which includes the indoor soccer facility as well as stadium improvements. An abundance of rain forced crews to erect the facility in the mud. The challenge was exacerbated by the construction taking place on soil rather than a more typical slab foundation. That challenge, coupled with the long-span construction, required creative solutions. The team brought in two cranes for main-frame erection and used track boom-lifts for the workers to use so they could maneuver more efficiently in the mud. Such creative solutions allowed for on-time project delivery.



Kinetic Sports Complex • Lincoln, NE

KINETIC SPORTS COMPLEX



The \$11-million **Kinetic Sports Complex** in Lincoln, Nebraska, is a 93,500-square-foot venue that includes eight indoor basketball courts that convert into 12 volleyball courts and a 5,000-square-foot training center. An expansive mezzanine stretches across the full west side of the building. Designed by JEO Architecture Inc. and built through the partnership of Manzitto and Schwisow Construction, the award-winning facility is home to Supreme Court Basketball and Volleyball Club Nebraska.

According to Randy Harre with Schwisow, a metal building was ideal for this application because the structure allows for wide clear spans in both directions and has galvanized interior supports. The expansion and contraction capability of the standing seam metal roof was also a plus. He noted an appreciation for the flexibility of exterior products, including the high R-value insulated panels. Harre cites the building's capability to meet corridor architectural requirements and speed of delivery and erection as additional benefits.

The **Bentonville Community Center** in Bentonville, Arkansas, is a spacious metal building system with a standing seam metal roof that enhances the exterior, as do the structure's brick, stone, and architectural-textured metal panels. This 80,000-square-foot space serves residents of all ages, offering amenities such as an aquatic center with zero-depth entry, a family leisure pool and a 25-yard competitive pool. The facility is composed of two physical structures joined by one large wall. The aquatics portion accommodates the high levels of humidity and chlorinated water required for both pool environments. In addition, the center offers a full fitness and exercise facility, a dance/aerobics studio, a gymnasium, an indoor running track, community rooms, an arts and crafts space, secure child care, a senior activity lounge and a mini-branch library.



BENTONVILLE COMMUNITY CENTER



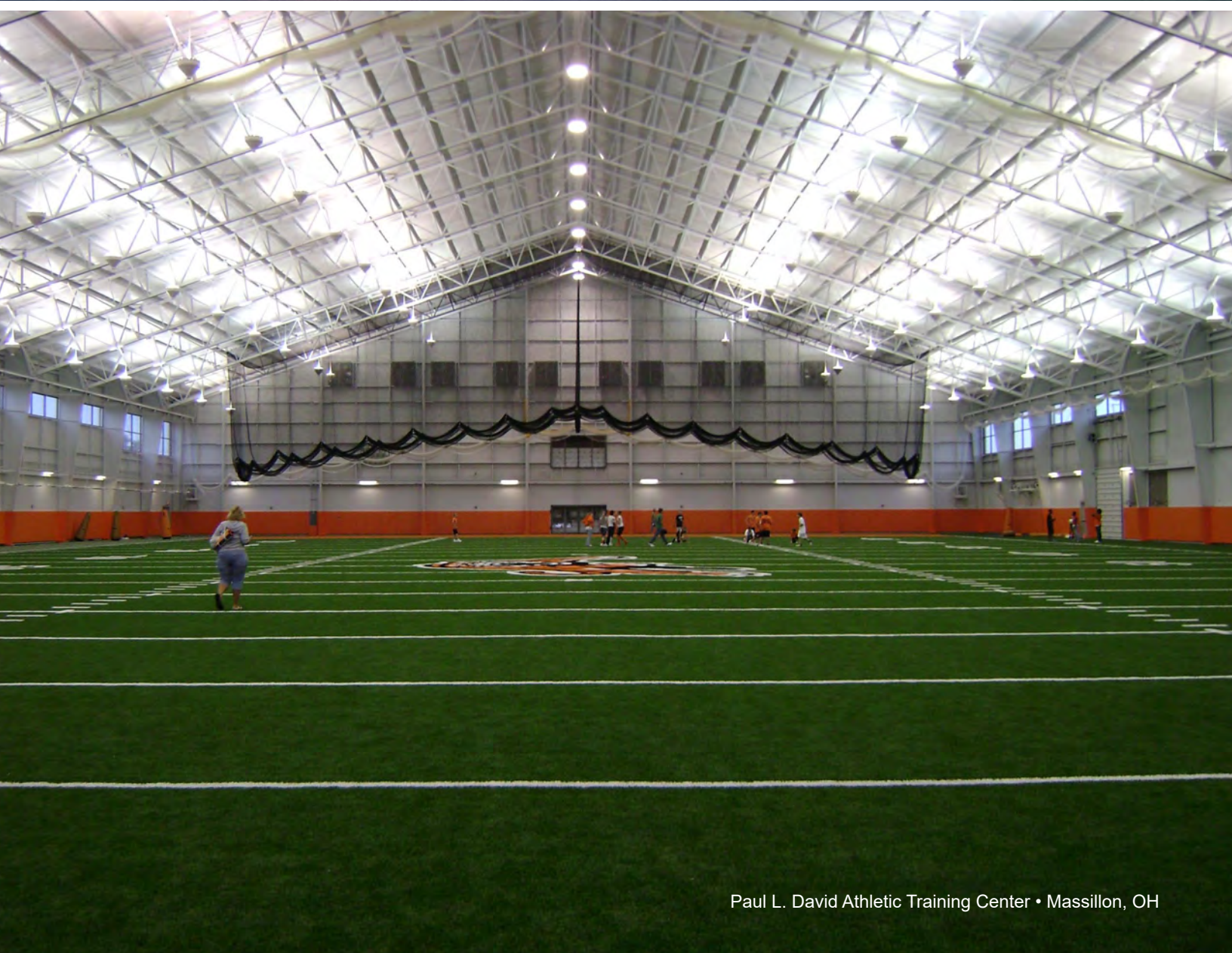


MYRTLE BEACH SPORTS CENTER



With over 15 million visitors annually, the coastal city of Myrtle Beach, South Carolina, home to several world-class meeting and sports facilities, including the **Myrtle Beach Sports Center**. At 100,000 square feet, this state-of-the-art indoor sports complex has a seating capacity of 1,500 to 2,000 spectators, with enough room for eight full-length basketball courts or 16 volleyball courts spread over 72,000 square feet of column-free hardwood space. The \$13.8-million venue can be configured for a variety of other indoor sporting activities, as well as trade show events. Other amenities include a retail area, a café with indoor and outdoor seating, a 1,500-seat telescopic bleacher system, a private mezzanine for elevated viewing, seven multipurpose rooms, and an entertainment zone featuring a climbing wall.

“Talented athletes have been coming to the Myrtle Beach area for years in the name of spirited competition and this new facility is a fantastic way to host even more sporting events and grow our reputation as a sports tourism destination,” says Mark Beale, marketing and business development director for the Myrtle Beach Sports Center.





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Greenbriar Training Center • White Sulphur Springs, WV